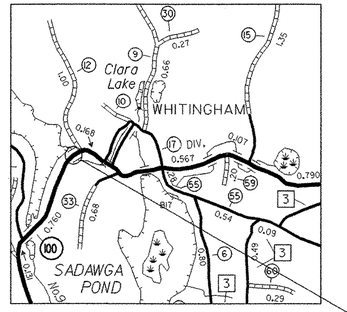
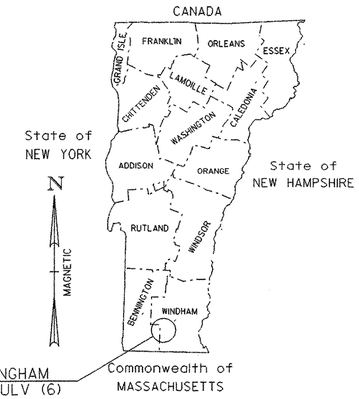
SEE SHEET 2 FOR INDEX OF SHEETS
AND LIST OF STANDARDS

STATE OF VERMONT
AGENCY OF TRANSPORTATION





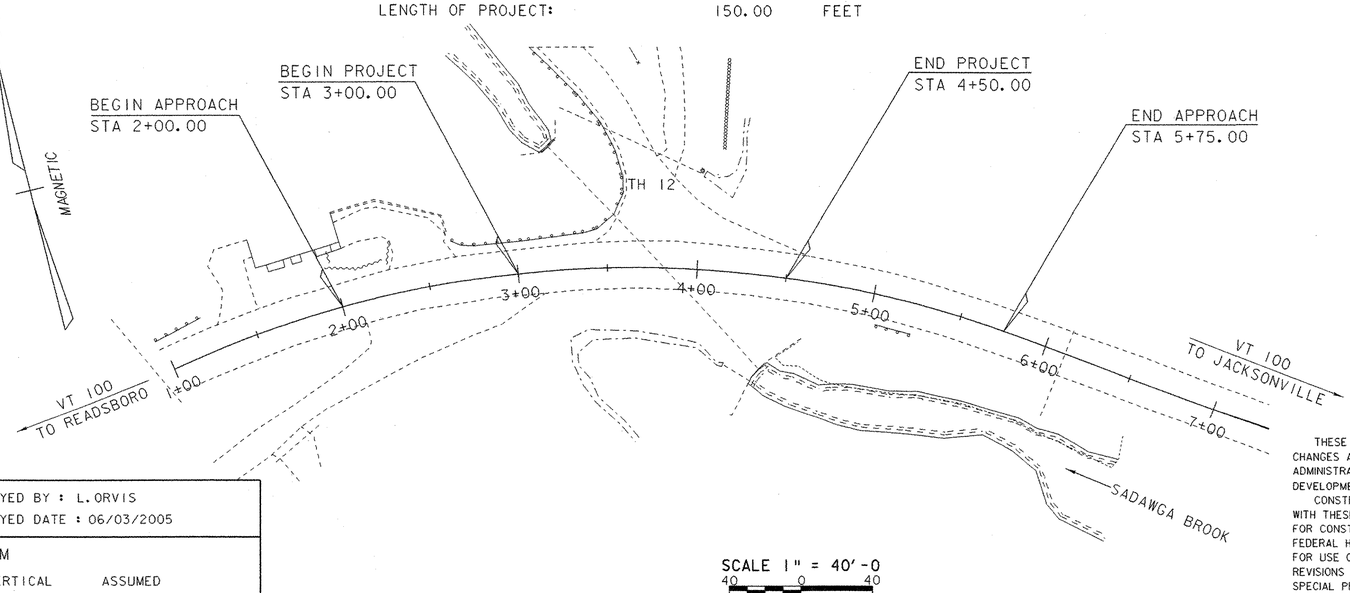
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF WHITINGHAM
COUNTY OF WINDHAM

ROUTE NO. : VT RTE 100, RURAL MAJOR COLLECTOR BRIDGE NO. : 29

PROJECT LOCATION : BEGINNING AT A POINT ON VT 100 75 FEET SOUTHWESTERLY FROM ITS INTERSECTION WITH TH 12 AND PROCEEDING EASTERLY ALONG VT RTE 100 FOR APPROXIMATELY 150 FEET.

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



SCALE 1" = 40'-0
40 0 40

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
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
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : L. ORVIS
SURVEYED DATE : 06/03/2005

DATUM
VERTICAL ASSUMED
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 27-FEB-2006

RECORD PLANS

CONTRACTOR: GEORGE R. CAIRNS & SON, INC. –WINDHAM, VT
RESIDENT ENGINEER: MARK HAUGHWOUT
CONSTRUCTION BEGAN: JUNE 12, 2006
CONSTRUCTION COMPLETE: JULY 17, 2007
RECORD PLANS BY: M. HAUGHWOUT & J. GILMORE

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

BY Mark W. Haughwout RESIDENT ENGINEER
DATE 5/22/08

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.

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard Tetreault DATE 2/27/06

PROJECT MANAGER : C.P. WILLIAMS

PROJECT NAME : WHITINGHAM
PROJECT NUMBER : STP ST CULV (6)

SHEET 1 OF 34 SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS
AND LIST OF STANDARDS

George R. Cairns and Sons Inc.
Contractor

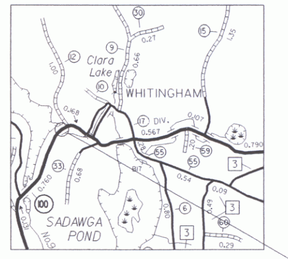
Signature

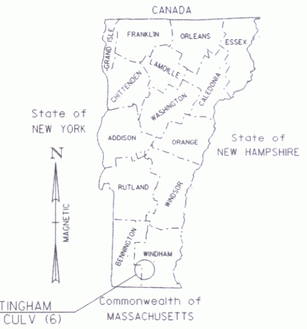
Vice President
Title

David C Dill
Secretary of Transportation
or Duly Authorized Agent

4/28/06
Date

STATE OF VERMONT
AGENCY OF TRANSPORTATION





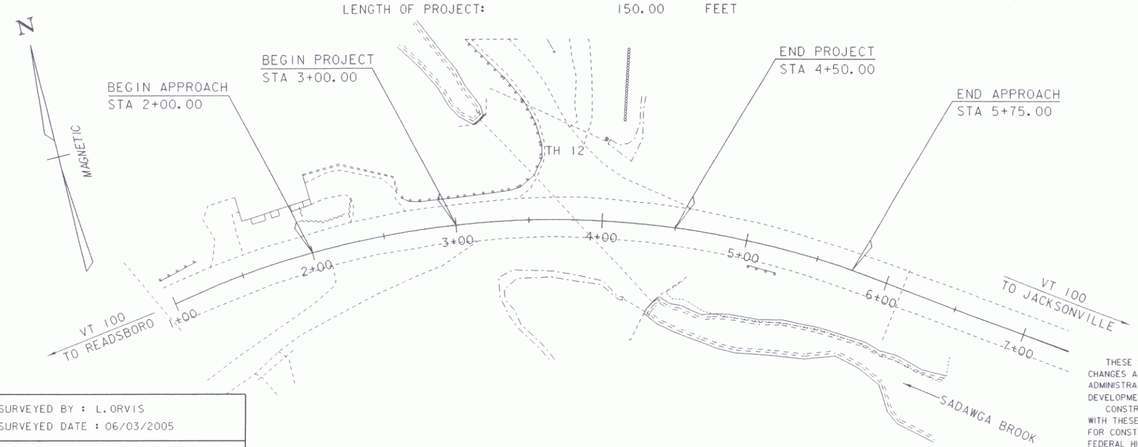
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF WHITINGHAM
COUNTY OF WINDHAM

ROUTE NO. : VT RTE 100, RURAL MAJOR COLLECTOR BRIDGE NO. : 29

PROJECT LOCATION : BEGINNING AT A POINT ON VT 100 75 FEET SOUTHWESTERLY FROM ITS INTERSECTION WITH TH 12 AND PROCEEDING EASTERLY ALONG VT RTE 100 FOR APPROXIMATELY 150 FEET.

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



SCALE 1" = 40'-0
40 0 40

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
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
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : L. ORVIS
SURVEYED DATE : 06/03/2005

DATUM
VERTICAL ASSUMED
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 27-FEB-2006

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard Fortuna DATE 2/27/06
PROJECT MANAGER : C.P. WILLIAMS
PROJECT NAME : WHITINGHAM
PROJECT NUMBER : STP ST CULV (6)
SHEET 1 OF 34 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

INDEX OF SHEETS

1.	TITLE SHEET
2.	PRELIMINARY INFORMATION
3.-4.	QUANTITY SHEETS
5.-6.	TYPICAL SECTIONS
7.	TRAVERSE TIE INFORMATION
8.	ALIGNMENT COORDINATES
9.	LAYOUT
10.	VT 100 PROFILE & SECTION @ TH 12
11.	TRAFFIC SIGN SUMMARY & BANKING DIAGRAM
12.	CULVERT PROFILE & BOX DETAIL
13.	PLAN & ELEVATION
14.	GENERAL NOTES
15.	WING WALL DETAILS
16.	RIGHT-OF-WAY LAYOUT / DETAILS
17.-18.	SEWER LAYOUT SITE PLAN AND DETAILS
19.-21.	MAINLINE CROSS SECTIONS
22.-25.	CHANNEL CROSS SECTIONS
26.	EROSION CONTROL NARRATIVE
27.	EXISTING CONDITIONS SITE PLAN
28.	EROSION PREVENTION AND SEDIMENT CONTROL PLAN
29.	FINAL CONDITIONS SITE PLAN
30.-34.	EROSION CONTROL DETAIL 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-134	BRIDGE NUMBER PLAQUE	8/8/1995
E-138	MILEMARKER DETAILS - STATE & TOWN HIGHWAYS	5/30/2003
E-143	REGULATORY SIGN DETAILS	6/15/2004
E-146	REGULATORY SIGN DETAILS	9/20/1995
E-152	WARNING SIGN DETAILS	5/1/2004
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

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: August 2005

DRAINAGE AREA : 4.4 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas
STREAM CHARACTERISTICS : Sinuous
NATURE OF STREAMBED : Gravel, cobbles and boulders

PEAK FLOW DATA

Q 2.33 =	210 cfs	Q 50 =	610 cfs
Q 10 =	410 cfs	Q 100 =	730 cfs
Q 25 =	510 cfs	Q 500 =	1020 cfs

DATE OF FLOOD OF RECORD: unknown
ESTIMATED DISCHARGE: unknown
WATER SURFACE ELEV.: unknown
NATURAL STREAM VELOCITY: @ Q50 = 19.2 fps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

WATERSHED STORAGE: 6% HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 10' corrugated galvanized metal plate pipe
YEAR BUILT: 1983
CLEAR SPAN(NORMAL TO STREAM): 10'
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 78.5 sq. ft.
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1509.4'	VELOCITY=	15.3 fps
Q10 =	1511.9'	"	18.2 fps
Q25 =	1512.9'	"	19.3 fps
Q50 =	1513.9'	"	20.1 fps
Q100 =	1515.1'	"	21.0 fps

LONG TERM STREAMBED CHANGES: The channel appears to have scoured or degraded several feet at the pipe outlet, compared to the 1981 record plans.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q500
RELIEF ELEVATION: 1520.0'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Whitingham DISTANCE: 1,000'
HIGHWAY# : Vt 100 STRUCTURE #: 30
CLEAR SPAN: 16' CLEAR HEIGHT: 7'
YEAR BUILT: 2005 FULL WATERWAY: 112 sq. ft.
STRUCTURE TYPE: Precast concrete box

DOWNSTREAM STRUCTURE

TOWN: N.A. - Harriman Reservoir 350' downstream DISTANCE:
HIGHWAY# : STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE:

LOAD FACTOR - LOAD RATING (TONS)

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

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	%D	%T	ADTT
2007	890	250	58	6	70
2027	1100	280	58	9	120

20 year ESAL for flexible pavement from 2007 to 2027 : 361,000
40 year ESAL for flexible pavement from 2007 to 2047 : 820,000
Design Speed : 50 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast concrete box: Length = 154' along centerline

CLEAR SPAN(NORMAL TO STREAM): 12.0'
VERTICAL CLEARANCE ABOVE STREAMBED: 9.0'
WATERWAY OF FULL OPENING: 108 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1508.7'	VELOCITY=	9.7 fps
Q10 =	1509.6'	"	12.5 fps
Q25 =	1510.8'	"	13.6 fps
Q50 =	1511.8'	"	14.6 fps
Q100 =	1512.8'	"	15.6 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q500
RELIEF ELEVATION: 1520.0'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1514.0' at inlet
VERTICAL CLEARANCE: @ Q50 = 2.2'

SCOUR: N/A - Box

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	10 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	5 cfs	Depth < 0.5'
ORDINARY HIGH WATER:	90cfs	Depth = 2.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: A temporary bridge is already in place over the existing pipe. *
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

* A 66" diameter pipe, with 24 sq. ft. of waterway area, is the minimum size recommended as a temporary diversion structure to carry flows through the construction site. This size pipe will carry a Q2.33 flow with 7.8' of headwater.

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. REINFORCNG STEEL GRADE
7. CONCRETE, HIGH PERFORMANCE CLASS A f'c:
   CONCRETE, HIGH PERFORMANCE CLASS B f'c:
8. DESIGN SOIL UNIT WEIGHT 140 pcf
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? yes
   IF YES, ON EXISTING STRUCTURE?
   OR ON TEMPORARY BRIDGE? Temporary (see note above)
   ONE OR TWO-WAY TRAVEL? One way travel
2. TRAFFIC CONTROL SIGNALS REQUIRED? yes (currently in place)
3. ARE SIDEWALKS REQUIRED? no
   IF SO, ON WHAT SIDE?

PROJECT NAME: WHITINGHAM
PROJECT NUMBER: ST CULV(6)

FILE NAME: s96j286excel.dgn
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: E.L.RUSTAY
PRELIMINARY INFORMATION SHEET #1

PLOT DATE: 1/13/2006
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	UTILITIES	BRIDGE	FULL C.E.	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
																		EARTHWORKS SUMMARY
					1					1		LS	CLEARING AND GRUBBING (INCL. INDV. TREES & STUMPS)	201.10				
																		FILL AVAILABLE
					740					740		CY	COMMON EXCAVATION	203.15		740	CY	COMMON EXCAVATION: 740 X1.0
								440		440		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27		132	CY	UNCLASSIFIED CHANNEL EXCAVATION: 440 X 0.3
					150					150		CY	SAND BORROW	203.31		798	CY	STRUCTURE EXCAVATION: 2660 X 0.3
					660					660		CY	GRANULAR BORROW	203.32		1670	CY	SUBTOTAL
																0	CY	ROUNDING
								2660		2660		CY	STRUCTURE EXCAVATION	204.25		1670	CY	TOTAL
								880		880		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
					290					290		SY	COLD PLANING-BIT.PAVEMENT	210.10		1670	CY	FILL AVAILABLE
					430					430		CY	SUBBASE OF GRAVEL	301.15		0	CY	FILL REQUIRED
					3					3		CWT	EMULSIFIED ASPHALT	404.65		3840	CY	WASTE
					328					328		TON	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	406.25				
								1		1		CY	CONCRETE, HIGH PERFORMANCE CLASS AA	501.32				
								6		6		GAL	WATER REPELLENT (MOD. - SILANE)	514.10				
								180		180		SY	SHEET MEMBRANE WATERPROOFING (PREFORMED SHEET)	519.20				
					1					1		LS	MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS (MOD.)	527.10				
					1					1		EACH	REMOVAL OF STRUCTURE (1700 SF - EST.)	529.15				
								1		1		LS	PRECAST CONCRETE STRUCTURE (12'-0" X 10'-0" X 154'-0" BOX)	540.10				
					12					12		LF	18" CSP .064 (2-2/3 X 1/2)	601.0015				
					10					10		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25				
					1					1		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15				
					20			10		30		CY	STONE FILL, TYPE I	613.10				
						10				10		CY	STONE FILL, TYPE I (MOD. - CHECK DAM)	613.10				
						20				20		CY	STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)	613.10				
								320		320		CY	STONE FILL, TYPE IV	613.13				
								1		1		LS	TEMPORARY RELOCATION OF STREAM	614.10				
						700				700		LF	SNOW FENCE (MOD. - PDF)	620.70				
					410.25					410.25		LF	HEAVY DUTY STEEL BEAM GUARD RAIL (GALVANIZED)	621.21				
					2					2		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
					214					214		LF	REMOVL AND DISP OF GUARD RAIL	621.80				
					50					50		LF	TEMPORARY TRAFFIC BARRIER	621.90				
							1			1		LS	TRANSFER TO NEW SYSTEM-SANITARY SEWER (MOD.)	628.42				
					160					160		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
					320					320		HR	FLAGGERS	630.15				
									1	1		LS	FIELD OFFICE-ENGINEERS	631.10				
									1	1		LS	TESTING EQUIPMENT - BITUMINOUS	631.17				
									1	1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25				
					1					1		LS	MOBILIZATION / DEMOBILIZATION	635.11				
					1					1		LS	TRAFFIC CONTROL	641.10				
					750					750		LF	4" WHITE LINE	646.20				
					750					750		LF	4" YELLOW LINE	646.21				

PROJECT NAME: **WHITINGHAM**
PROJECT NUMBER: **ST CULV(6)**

FILE NAME: **05c128/Str/s05c128excel.dgn**
PROJECT MANAGER: **C.P.WILLIAMS**
DESIGNED BY: **E.L.RUSTAY**
QUANTITY SHEET #1

PLOT DATE: **03/14/2006**
DRAWN BY: **E.L.RUSTAY**
CHECKED BY: **M.GAGULIC**
SHEET **3** OF **34**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

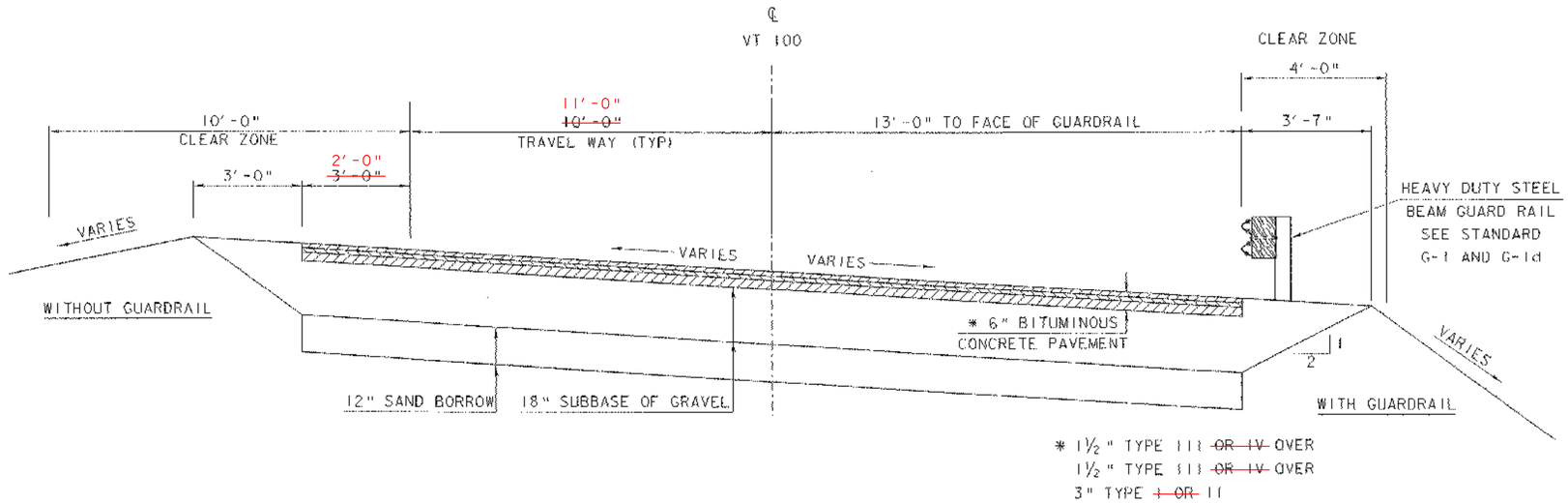
QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
					ROADWAY	EROSION CONTROL	UTILITIES	BRIDGE	FULL C.E.	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
					50					50		SF	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85				
								250		250		SY	GEOTEXTILE UNDER STONE FILL	649.31				
						40				40		SY	GEOTEXTILE FOR SILT FENCE	649.51				
						40				40		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61				
						10				10		LB	SEED	651.15				
						20				20		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				
					40	10				50		CY	TOPSOIL	651.35				
								200		200		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				
						350				350		SY	EROSION MATTING	654.10				
					5.75					5.75		SF	TRAFFIC SIGNS, TYPE A	675.20				
					47.75					47.75		LF	FLANGED CHANNEL SIGN POST	675.301				
					6					6		EACH	REMOVING SIGNS	675.50				
					4					4		EACH	ERECTING SALVAGED SIGNS	675.60				

PROJECT NAME: **WHITINGHAM**
PROJECT NUMBER: **ST CULV(6)**

FILE NAME: **05c128/Str/s05c128excel.dgn**
PROJECT MANAGER: **C.P.WILLIAMS**
DESIGNED BY: **E.L.RUSTAY**
QUANTITY SHEET #2

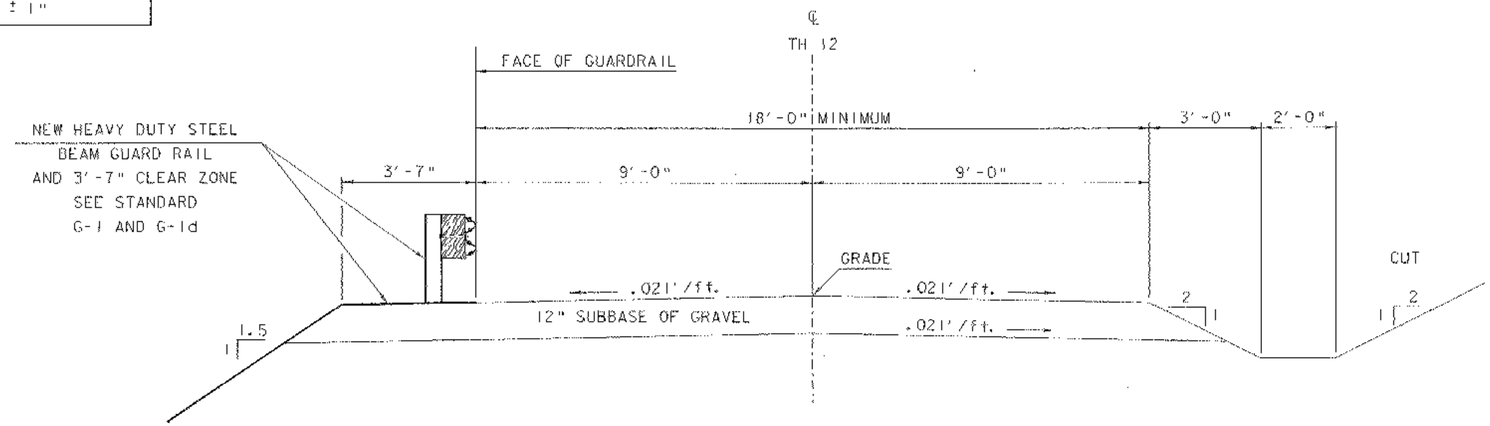
PLOT DATE: **02/23/2006**
DRAWN BY: **E.L.RUSTAY**
CHECKED BY: **M.GAGULIC**
SHEET **4** OF **34**



VT ROUTE 100 TYPICAL ROADWAY SECTION

SCALE ½" = 1'-0

MATERIAL ITEM	TOLERANCE
PAVEMENT	±¼" TOTAL THICKNESS
BASE COURSE	± ½"
SUBBASE	± 1"
SAND BORROW	± 1"
GRANULAR BORROW	± 1"

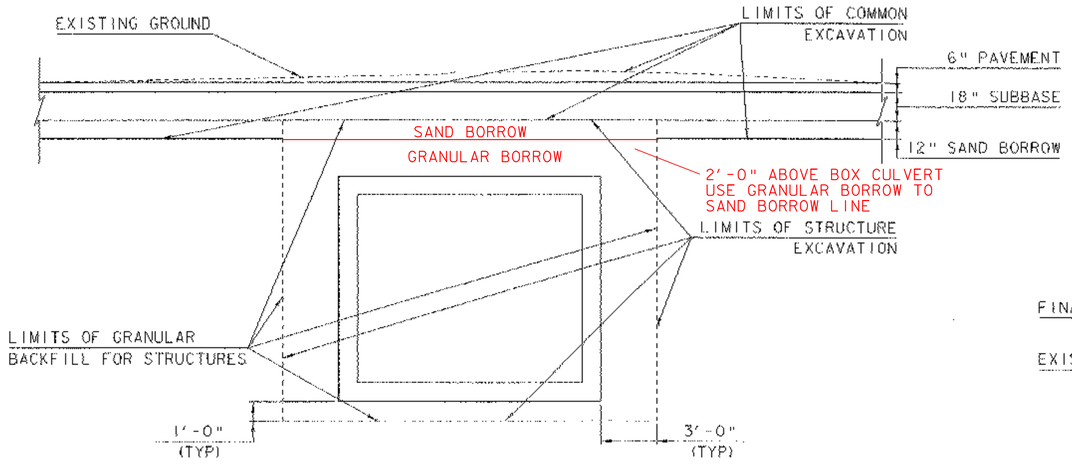


TH 12 TYPICAL ROADWAY SECTION

SCALE ½" = 1'-0

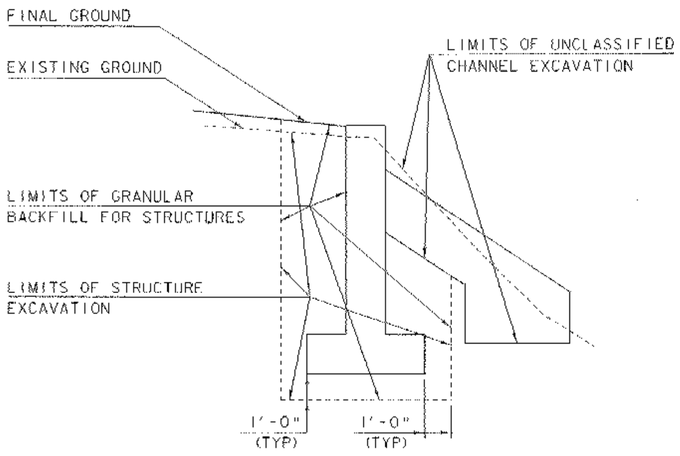
SCALE ½" = 1'-0
1 0 1 2

PROJECT NAME: WHITINGHAM	
PROJECT NUMBER: ST CULV (6)	
FILE NAME: 05d28/Str/s05d28typ.dgn	PLOT DATE: 08-MAR-2006
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
DESIGNED BY: E.L.RUSTAY	CHECKED BY: M.GAGULIC
TYPICAL SECTION	SHEET 5 OF 34



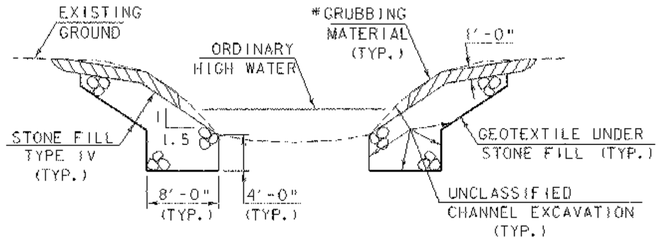
TYPICAL CONCRETE BOX EXCAVATION AND FILL LIMITs

(NTS)



TYPICAL PRECAST WINGWALL EXCAVATION AND FILL DETAIL

(NOT TO SCALE)

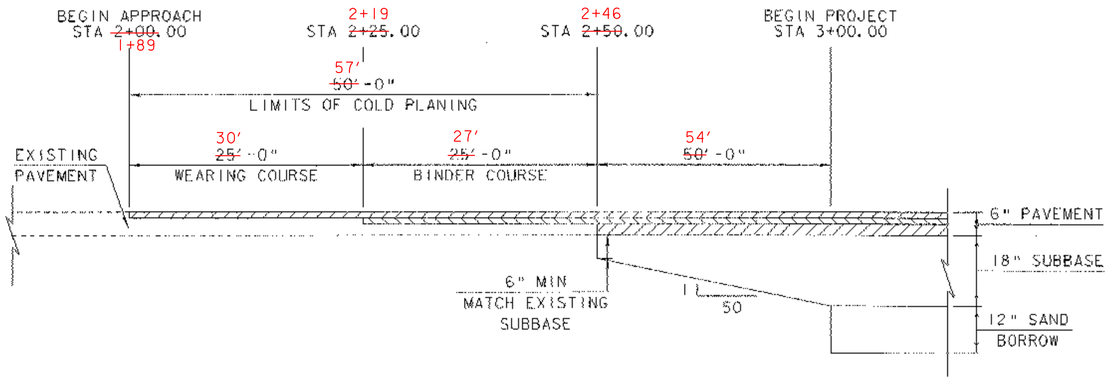


TYPICAL CHANNEL SECTION

(NTS)

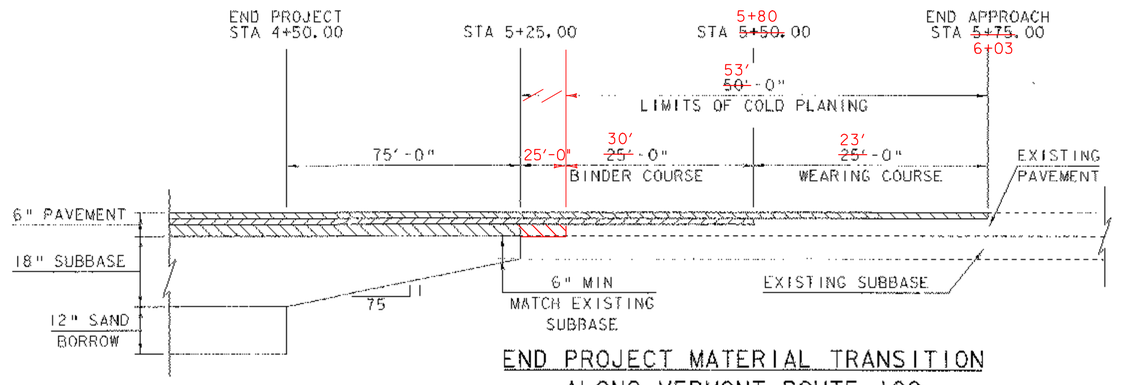
* GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

STA. 5+25 TO STA. 5+50: EXCAVATED OLD PAVEMENT, 8" DEPTH



BEGIN PROJECT MATERIAL TRANSITION ALONG VERMONT ROUTE 100

(NTS)



END PROJECT MATERIAL TRANSITION ALONG VERMONT ROUTE 100

(NTS)

PROJECT NAME: WHITINGHAM	
PROJECT NUMBER: ST CULV (6)	
FILE NAME: 05c128/Str/s05c128typ.dgn	PLOT DATE: 08-MAR-2006
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
DESIGNED BY: E.L.RUSTAY	CHECKED BY: M.GAGULIC
TYPICAL SECTION #1	SHEET 6 OF 34

GPS CONTROL POINTS

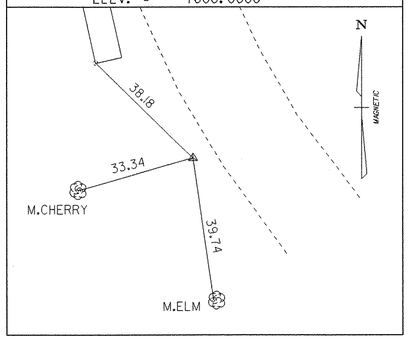
COORDINATES ASSUMED

REFER TO WHITINGHAM ST CULV(3) 04CI42.RW5 FOR CONTROL INFO

TRAVERSE TIES

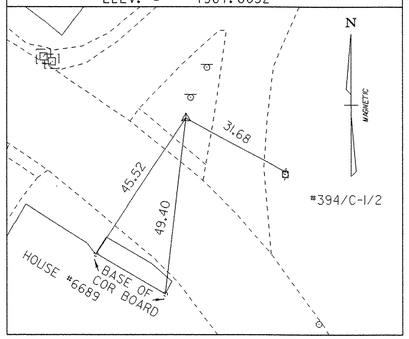
HVCTRL #1

NORTH =	10000.0000
EAST =	50000.0000
ELEV. =	1600.0000



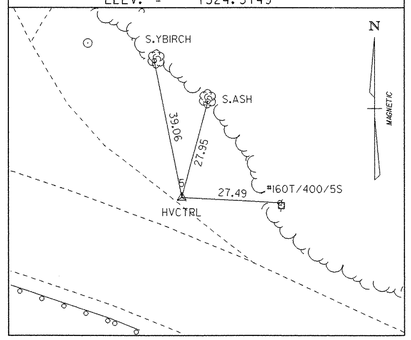
HVCTRL #2

NORTH =	10325.5095
EAST =	49881.5242
ELEV. =	1581.8652



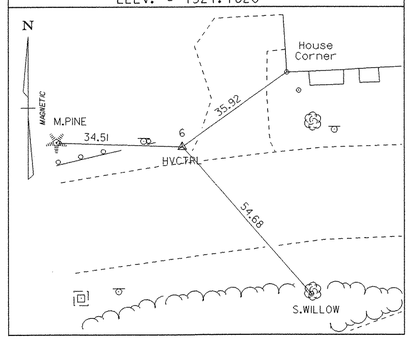
HVCTRL #5

NORTH =	10972.0229
EAST =	48963.3508
ELEV. =	1524.5149



HVCTRL #6

NORTH =	11001.6804
EAST =	48652.1828
ELEV. =	1521.7620



NORTH =	
EAST =	
ELEV. =	

Traverse completed 06-03-2005 by L.ORVIS PC & J.HULETT

ALIGNMENT TIES

NORTH =	
EAST =	

NORTH =	
EAST =	

NORTH =	
EAST =	

NORTH =	
EAST =	

NORTH =	
EAST =	

DATUM

VERTICAL ASSUMED

HORIZONTAL ASSUMED

ADJUSTMENT NONE

PROJECT NAME: Whitingham

PROJECT NUMBER: ST CULV (6)

FILE NAME: 05c128/str/s05c128tie.dgn

PROJECT LEADER: C.P.WILLIAMS

DESIGNED BY: E.L.RUSTAY

TRAVERSE TIE INFORMATION

PLOT DATE: 08-MAR-2006

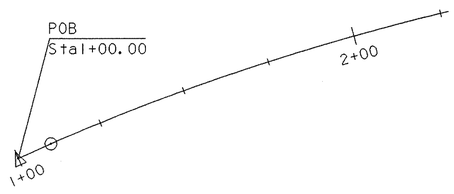
DRAWN BY: R. Bullock

CHECKED BY: M.GAGULIC

SHEET 7 OF 34

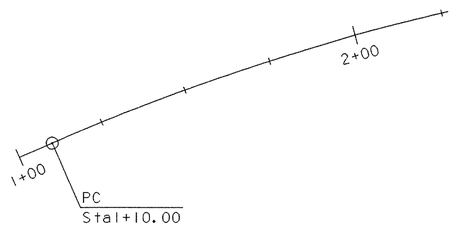
MAINLINE ALIGNMENT INFORMATION

MAINLINE POB STA 1+00.00



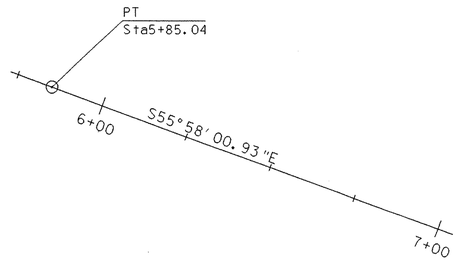
N = 10979.4925
E = 48623.8607

MAINLINE PC #1 STA 1+10.00



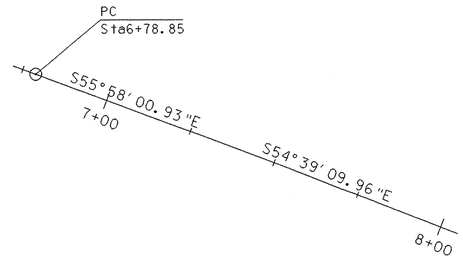
N = 10981.1457
E = 48633.7231

MAINLINE PT #1 STA 5+85.04



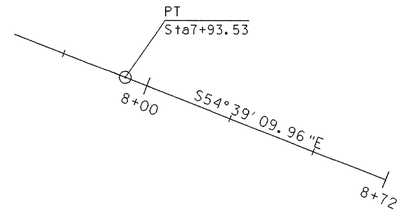
N = 10882.6917
E = 49086.8388

MAINLINE PC #2 STA 6+78.85



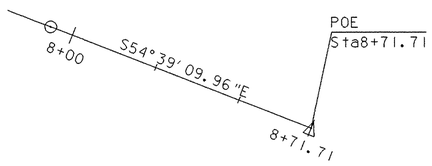
N = 10830.1911
E = 49164.5773

MAINLINE PT #2 STA 7+93.53



N = 10764.9226
E = 49258.8715

MAINLINE POE STA 8+71.71



N = 10719.6931
E = 49322.6398



SCALE 1" = 20'

DATUM
VERTICAL ASSUMED
HORIZONTAL ASSUMED

PROJECT: WHITINGHAM
PROJECT NO.: ST CULV (6)

DESIGN FILE NAME: 05c128/Structures/s05c128tie.dgn
IPARM FILE NAME: s04c176alg.i
SURVEYED BY: L.ORVIS
SQUAD LEADER: C.P.WILLIAMS
ALIGNMENT COORDINATES
PLOT DATE: 08-MAR-2006
SURVEY DATE: 10/2004
DRAWN BY: M.FESSEL
SHEET: 8 OF 34

N

MAGNETIC

EXISTING TOWN ROW

BRIDGE 29 VT 100 S

BRIDGE 29 VT 100 R&S

THIS BM WAS NOT USED.
A CRACK WAS DISCOVERED NEXT TO THE BM. THE SURVEY CREW USED HVC TRL #6

BM#5 CHISELED SQUARE ON SW CORNER OF CONCRETE WALL
ELEV: 1521.596

NO PARKING ON TRAVELED LANES R

NO PARKING ON TRAVELED LANES N

1000 1321 0380 N

1000 1321 0380 R

POST STA 3+52.00
= CHANNEL STA 12+50.00
△ = 110°

MATCH INTO EXISTING GUARDRAIL
STA ~~21+34.50~~ 21+28.00

PI #1
STA 3+59.66 BK
= STA 3+35.38 AHD

PERMANENT CHANNEL EASEMENT

3+50 SADAWGA BROOK

POBE STA 13+50.00

21+43 TH #12 BRICKHOUSE RD.

EXISTING TOWN ROW

ROAD SIGN INSTALLED ON SEPARATE POST - SEE SHEET 11 OF 34

BRICKHOUSE RD STOP 1000 1321 0382 S

BRICKHOUSE RD STOP 1000 1321 0382 R&S

CURVE NO. 1
DELTA= 43°32'55"RT
D = 9°10'02"
R =625.00 FT.
T =249.66 FT.
L =475.04 FT.
E =48.02 FT.

2+74.00

EXISTING UTILITY POLE ERECTED DURING TEMP. BRIDGE INSTALLATION
TEMPORARY TRAFFIC SIGNALS HUNG BETWEEN THIS POLE AND EXISTING UTILITY POLE
DISTRICT TO REMOVE AFTER PROJECT COMPLETION
POLE REMOVED BY 11/27/06

EXISTING SEWER LINE TO BE REPLACED.
SEE SHEETS 18-19 FOR DETAILS

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
STA 2+65.00 LT - 3+45.00 LT
STA 5+04.00 RT - 5+25.00 RT
STA 20+22.00 LT - ~~21+35.00 LT~~ 21+28.00 LT

HEAVY DUTY STEEL BEAM GUARDRAIL
STA ~~2+67.00~~ LT - 3+27.75 LT
STA ~~3+10.00 RT - 5+25.00 RT~~ 3+14.00 RT - 5+32.00 RT
STA 20+11.89 LT - ~~21+34.53 LT~~ 21+28.00 LT

ANCHOR FOR STEEL BEAM GUARDRAIL
~~STA 2+79.00 LT~~ STA. 2+86.00 LT
~~STA 3+22.00 RT~~ STA. 3+27.00 RT

REMOVE/RESET SIGNS
STA 20+32.00 LT - STA 20+30.00 LT
STA 20+44.00 LT - STA 20+45.00 LT (3)

REMOVE SIGN
STA 3+15.00 LT
STA 2+79.00 LT

TRAFFIC SIGNS, TYPE A
STA 3+15.00 LT (NO PARKING ON TRAVELED LANES)
STA 2+75.00 LT (MILE MARKER)
STA 4+20.00 RT (BR 29) STA. 2+45.00 RT (STOP)

4" WHITE LINE
~~STA 2+00.00 - 5+75.00 RT & LT~~ STA. 1+77.00 - 6+25.00 RT & LT

4" YELLOW LINE (DOUBLE)
~~STA 2+00.00 - 5+75.00~~ ℄ BREAKS AT STA. 2+06 - 2+46
STA. 1+61.00 - 6+42.00 AND STA. 3+52 - 3+94

EXISTING TEMPORARY TRAFFIC SIGNALS
MOUNTED ON NEW UTILITY POLE ERECTED DURING TEMP. BRIDGE INSTALLATION
DISTRICT TO REMOVE AFTER PROJECT COMPLETION

EXISTING TEMPORARY TRAFFIC SIGNALS
HUNG BETWEEN EXISTING UTILITY POLES
DISTRICT TO REMOVE AFTER PROJECT COMPLETION

HVCTRL #6
NORTH = 11001.6804
EAST = 48652.1828
ELEV. = 1521.7620

PERMANENT SLOPE EASEMENT

END APRON

R 38'-0"

COMB #B/1/1/2

SEPTIC PLANT
BUILDING CORNER
WELL
FORM TANK SLUDGE STORAGE
R 10'-0" (TYP)

℄ BREAK

DASHED EDGELINE

℄ BREAK

8" ACCOMP GOOD

WATER COURSE

S. YBIRCH

S. ASH

MAINLINE STA 3+75.00
= TH 12 STA 20+00.00
HVCTRL #5
NORTH = 10972.0229
EAST = 48963.3508
ELEV. = 1524.5149
COMB #160T/400/5S

END PROJECT
STA 4+50.00

EXISTING STATE ROW

EXISTING PAVEMENT BREAK

END APPROACH
STA ~~5+75.00~~ 6+03.00

4" WHITE LINE
SMALL SKIPS (3' LENGTH) INSTALLED AT STA. 3+42 TO STA. 4+10 LT (5 DASHES)

EXISTING TEMPORARY 24" STOP BAR
REMOVE AFTER PROJECT COMPLETION

M. PINE

18" CGMP GOOD

VT 100 TO READSBORO

S. WILLOW

GRAVEL DRIVE

COMB #401/SER EA

OLD PENSTOCK

18" CGMP GOOD

RUSSELL LANE (NO. NINE ROAD)

15" CGMP GOOD

EXISTING PAVEMENT BREAK FROM INSTALLATION OF TEMPORARY BRIDGE

BEGIN PROJECT
STA 3+00.00

STOP N

MATCH INTO EXISTING TH12 SURFACE

MAINLINE STA 3+81.61
= CHAN STA 11+88.17

BEGIN APPROACH
STA ~~2+00.~~00
1+89

EXISTING TEMPORARY 24" STOP BAR
REMOVE AFTER PROJECT COMPLETION

APPROXIMAIE LOCATION
℄ EXISTING TEMPORARY ONE WAY BRIDGE
DIMENSIONS = 120' x 14'
BRIDGE REMOVED BY CONTRACTOR AND DIST. #1 FORCES ON 9/1/06.

BRIDGE 29 VT 100 N

STONE FILL TYPE IV (TYP)

STONE FILL TYPE I (TYP)

EXISTING STONE FILL (TYP)

TMB NAIL IN ROOT OF 15" POP. ELEV. 1513.59

MATCH INTO EXISTING GUARDRAIL
STA ~~5+25.00~~ 5+32.00

EXISTING STATE ROW

VT 100 TO JACKSONVILLE

18" CGMP GOOD

POBE STA 18.85

CONSTRUCT DRIVE
STA 2+50.00 RT
STA 2+50.00 LT
BOTH WITH 5' PAVED APRONS

CONSTRUCT TH APPROACH & INTERSECTION OF TH 12 & VT 30'
STA 3+75.00 LT W/ ~~5'~~ PAVED APRON
MATCH INTO EXSITING TH12 SURFACE
WITHIN LIMITS AS SHOWN ON PLANS - LIMITS EXTENDED - SEE PLANS

NEW 18" CSP PIPE 12+75.00
① STA ~~12+81.85~~ RT 24.46-12+89.49 RT 19.11
MATCH INTO EXISTING PIPE 17 L.F.

NEW DRAINAGE DITCH
② STA 3+59.26 RT 35.52-4+15.90 RT 60.84

NEW DRAINAGE DITCH
③ STA. 2+50 RT 40.0 TO STA. 3+59.26 RT 35.52
STONE FILL, TYPE I IN DITCH (AVE. 2.5' WIDTH)

POB STA 10+00.00

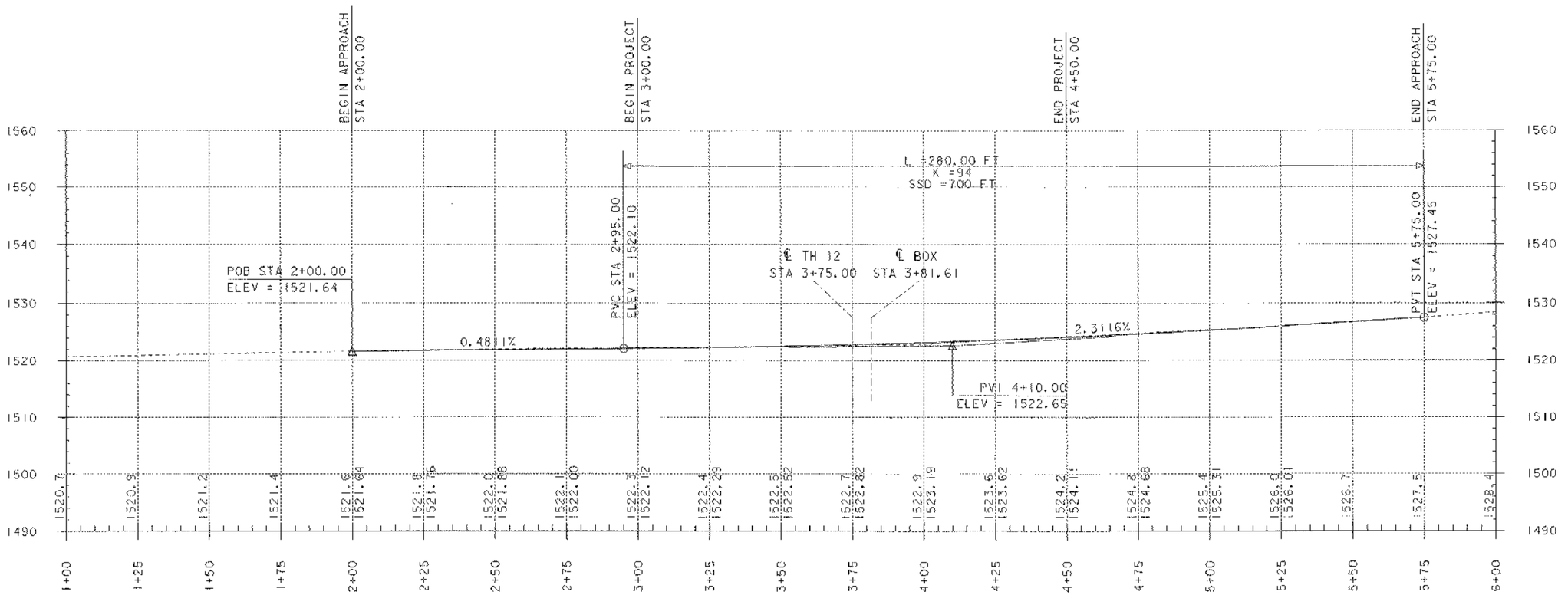
LEGEND
R - REMOVE
N - NEW
R&S - REMOVE & SALVAGE
S - SALVAGE

DATUM
VERTICAL ASSUMED
HORIZONTAL ASSUMED

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

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV(6)
DESIGN FILE NAME: 05c128/Structures/s05c128bdr.dgn	
IPARM FILE NAME: s05c128layout.i	PLOT DATE: 08-MAR-2006
SURVEYED BY: L.ORVIS	SURVEY DATE: 06/2005
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
LAYOUT	SHEET: 9 OF 34

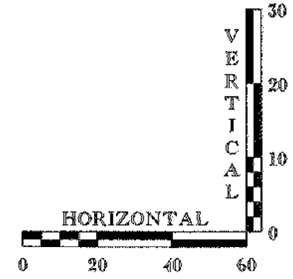
VT 100 MAINLINE PROFILE

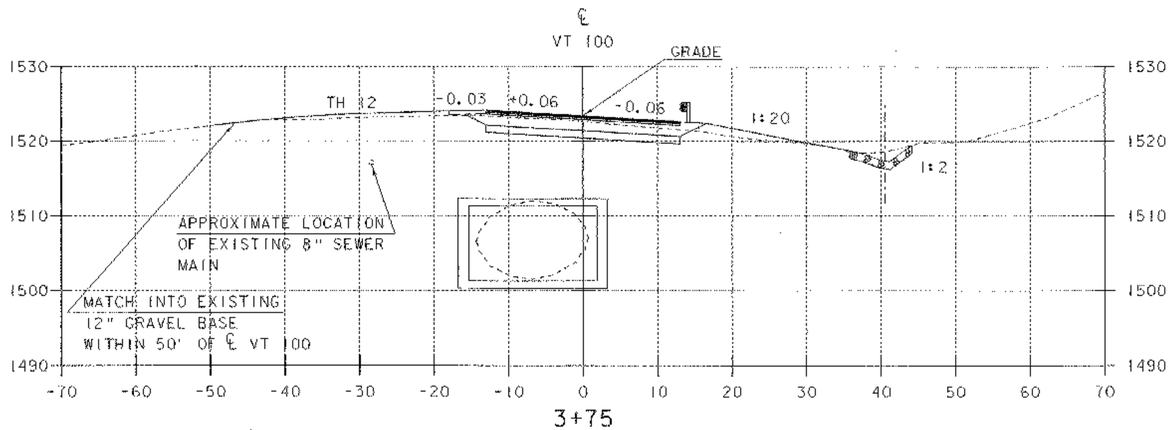


NOTES:

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

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





3+75

MAINLINE CROSS SECTION VT 100 @ INTERSECTION OF TH12

SCALE 1" = 10'

10 0 10

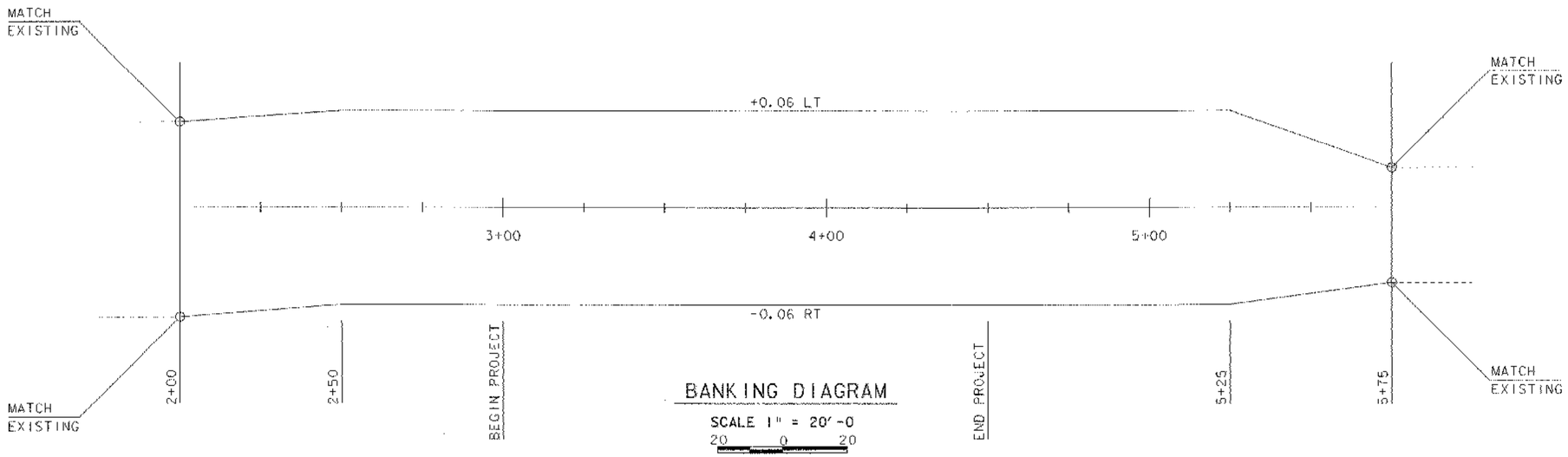
BOX CULVERT RAISED
1'-0" DUE TO LEDGE

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV(6)
DESIGN FILE NAME: 05c128/structures/s05c128pro.dgn	
IPARM FILE NAME: s05c128pro.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGUIC
VT 100 PROFILE & SECTION @ TH12	SHEET: 10 OF 34

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) lb/ft 1.75 1.88	2.0 2.16	2.5 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) lb/ft 3.0 1.3	4.0 1.7	4.0 MOD 1.7	TUBULAR STEEL Ø (in) lb/ft FOUNDATION	3.0 7.6	3.5 9.0	4.0 10.8	5.0 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN REMOVED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
OPTION ITEMS																																				
~~2+75.00~~ LT 2+45.00	1000 1321 0380	1	6	10	0.42						1	~~6.75'~~ 0																					MOUNTED ON ADDED STOP SIGN POST. SEE BELOW.		E-138
3+15.00 LT	NO PARKING ON THIS SIDE LAW	1	24	30	5.00						1			~~12.00'~~ 14'																						E-146
20+30.00 LT	BRIDGE 29 VT 100	1	6	8			1				1		~~9.50'~~ 8'																						E-134
20+45.00 LT	BRICKHOUSE RD	1	24	30			1				1			~~12.00'~~ 10'																					MOUNTED ON ITS OWN POST		E-146
20+45.00 LT	STOP	1	30	30			1				1			12'																					MOUNTED ON ITS OWN POST WITH MILE MARKER		E-143
20+45.00 LT	1000 1321 0382	1	6	10			1																													E-138
4+20.00 RT	BRIDGE 29 VT 100	1	6	8	0.33						1		~~7.50'~~ 8'																							E-134
2+45.00 RT	STOP	1	30	30	6.25						1			12'																					NO STOP SIGN ORIGINALLY - MISSING		E-143

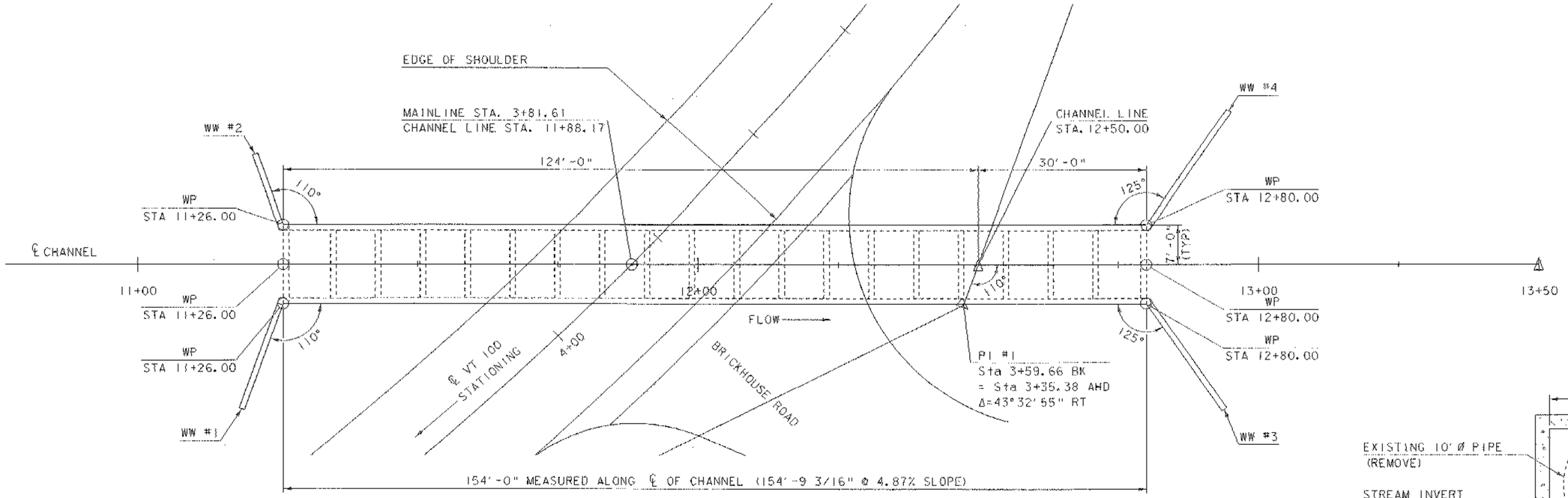


BANKING DIAGRAM
SCALE 1" = 20'-0
20 0 20

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."

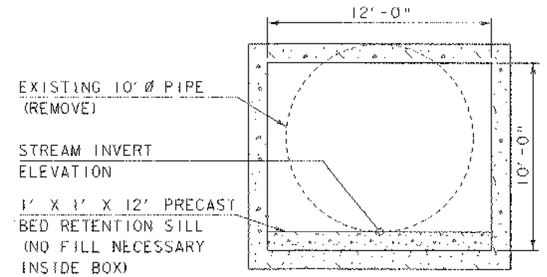
							FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB											
							~~6.75~~ 0	~~17.0~~ 16	~~24.0~~ 48																									
TOTALS	SF	SF	EA.	SF			FT			FT				LB		EA.		LB				EA.	EA.	LB										
	~~5.75~~ 12		4				~~47.75~~ 64																											

PROJECT NAME:	WHITINGHAM
PROJECT NUMBER:	ST CULV(6)
FILE NAME: structures/s05d128tss.dgn	PLOT DATE: 08-MAR-2006
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: E.L.RUSTAY
DESIGNED BY: E.L.RUSTAY	CHECKED BY: M.GAGULIC
TRAFFIC SIGN SUMMARY	SHEET 11 OF 34



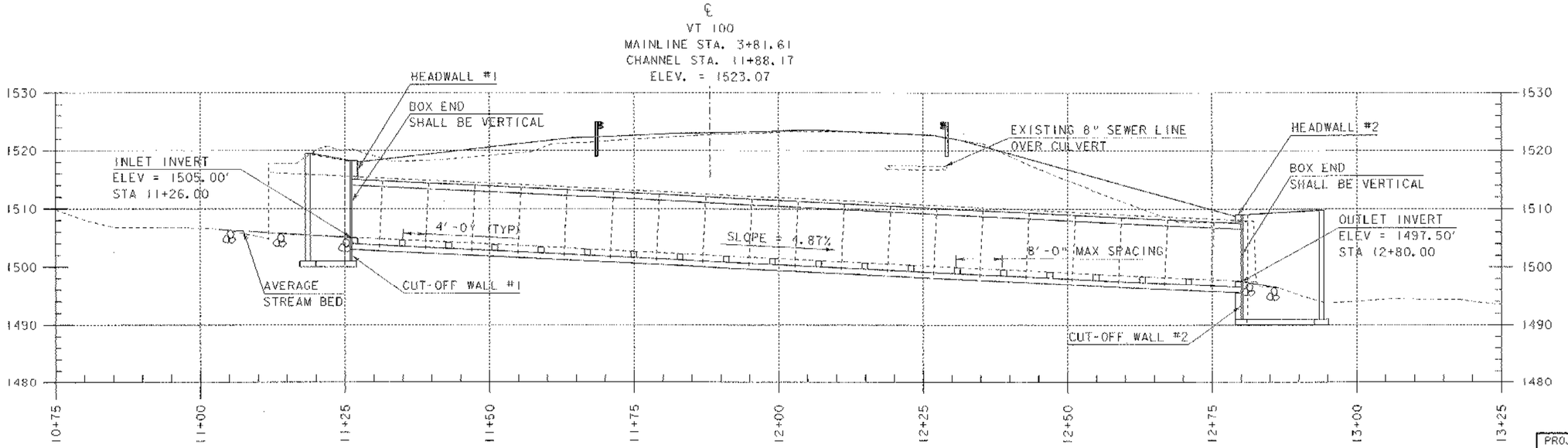
PRECAST CONCRETE BOX LAYOUT

SCALE 1" = 10'-0"



PRECAST CONCRETE BOX SECTION

SCALE 1/4" = 1'-0



PRECAST CONCRETE BOX ELEVATION VIEW

(ALONG ℄ BOX)

SCALE 1" = 10'-0"

ALL GRADES FOR THE BOX CULVERT
AND WINGWALLS WERE RAISED 1'-0".

SCALE 1" = 10'-0"
10 0 10

SCALE 1/4" = 1'-0
1 0 2 4 6

PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128pipepro.dgn	
IPARM FILE NAME: 05c128pipepro.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CULVERT PROFILE & BOX DETAIL	SHEET: 12 OF 34

STONE FILL TYPE I
(TYP)

HEAVY DUTY STEEL BEAM GUARD RAIL
31 SPACES @ 6'-3"

WW #3

WW #4

PI #1
Sta 3+59.66 BK
= Sta 3+35.38 AHD
Δ=43° 32' 55" RT

POST STA 3+52.00
= CHANNEL STA 12+50.00
△ = 110° SUBTANGENT

MAINLINE STA 3+75.00
= TH 12 STA 20+00.00

END PROJECT
STA 4+50.00

END APPROACH
STA 5+75.00

BRICKHOUSE RD.

TH #12

WELL

VT 100
TO READSBORO

GRAVEL DRIVE

BEGIN PROJECT
STA 3+00.00

RUSSELL LANE
(NO. NINE ROAD)

Sta 1+10.00

BEGIN APPROACH
STA 2+00.00

WW #1

WW #2

STONE FILL
TYPE I

STONE FILL, TYPE IV
TO MATCH INTO EXISTING
(TYP)

SADAWGA BROOK

VT 100
TO JACKSONVILLE

1+00 2+00 3+00 4+00 5+00 6+00 7+00

PLAN
SCALE 1" = 20'-0

HEAVY DUTY STEEL BEAM GUARD RAIL
34 SPACES @ 6'-3"

N
MAGNETIC

PAY LIMITS OF HEAVY DUTY STEEL BEAM GUARD RAIL

1540
1530
1520
1510
1500
1490

Q 100 = 1512.80

BOX CULVERT WAS RAISED 1'-0" DUE TO LEDGE.

4'-0"
STONE FILL
TYPE IV
(TYP)

ELEVATION @ UPSTREAM FASCIA
SCALE 1" = 20'-0

SCALE 1" = 20'-0
20 0 20

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/Structures/s05c128pe.dgn	
IPARM FILE NAME: s05c128pe.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY: M.GAGULIC
PLAN AND ELEVATION	SHEET: 13 OF 34

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. TRAFFIC ON VT 100 SHALL BE MAINTAINED THROUGH THE USE OF AN EXISTING ONE LANE TEMPORARY BRIDGE DURING THE CONSTRUCTION PERIOD. CARE SHALL BE TAKEN WHILE REMOVING PAVEMENT AND EXCAVATING UNDER THE TEMPORARY BRIDGE SO AS NOT TO DAMAGE ANY PART OF THE TEMPORARY BRIDGE. THE LIGHTS CONTROLLING THE TRAFFIC FLOW OVER THE TEMPORARY BRIDGE WILL BE THE RESPONSIBILITY OF THE DISTRICT. IF LIGHTS NEED ADJUSTING DURING THE CONSTRUCTION PROJECT, THE CONTRACTOR SHALL CONTACT DISTRICT 1 TECHNICIAN NELSON BLANCHARD AT 447-6924 AND/OR RUSS VELANDER FOR SIGNAL MAINTENANCE AT 828-2519.

5. THE REMOVAL OF THE EXISTING TEMPORARY BRIDGE, LIGHTS, APPROACH SIGNS, JERSEY BARRIERS, ALL CONCRETE BLOCKS AND CONCRETE BEARING BLOCKS WILL BE THE RESPONSIBILITY OF THE DISTRICT. WHEN THE TEMPORARY BRIDGE IS NO LONGER NEEDED, THE CONTRACTOR SHALL CONTACT DISTRICT 1 TECHNICIAN NELSON BLANCHARD AT 447-6924 TO ARRANGE FOR THE REMOVAL. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AT LEAST 2 WEEKS PRIOR TO THE DATE THE TEMPORARY BRIDGE IS TO BE REMOVED. THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING THE APPROACH ROADWAY FILL TRANSITIONING TO THE TEMPORARY BRIDGE, WHICH SHALL BE PAID FOR UNDER ITEM 203.15 "COMMON EXCAVATION".

6. ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL BE USED FOR REMOVAL OF THE EXISTING 10' C.G.M.P. PIPE CULVERT AND ANY PORTIONS OF THE HEADWALLS NOT REMOVED UNDER THE ITEMS "STRUCTURE EXCAVATION" OR "UNCLASSIFIED CHANNEL EXCAVATION". PARTIAL REMOVAL OF 18" C.G.M.P. PIPE BETWEEN STA 12+81 - STA 12+94 RT AS WELL AS THE COMPLETE REMOVAL OF THE PIPE BETWEEN STA 4+17 - STA 4+37 RT SHALL ALSO BE PAID UNDER ITEM 529.15 "REMOVAL OF STRUCTURE".

7. A MINIMUM OF 3 FEET COVER OVER THE BOX MUST BE PROVIDED BEFORE ALLOWING ANY VEHICLE OVER THE NEW STRUCTURE.

8. 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.

9. WATER REPELLENT (MOD. - SILANE) SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE WING WALLS AND HEADWALLS. 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 TOP SURFACE OF BOTTOM SLAB.

10. ALL ROADWAY AND BRIDGE WORK HAS BEEN DESIGNED TO BE CONSTRUCTED WITHIN THE EXISTING HIGHWAY RIGHT-OF-WAY AND/OR PREVIOUSLY ACQUIRED SLOPE AND CHANNEL EASEMENTS AS SHOWN ON THESE PLANS.

11. THERE ARE TWO UTILITY POLES WITH OVERHEAD LINES. ALL OVERHEAD LINES SHALL REMAIN IN PLACE DURING CONSTRUCTION. THE CONTRACTOR SHALL PAY GREAT ATTENTION DURING EXCAVATION OF EXISTING STRUCTURE AND PLACING OF NEW ONE.

PRECAST CONCRETE BOX NOTES:

1. DESIGN CRITERIA:

   A. DESIGN SHALL BE IN ACCORDANCE WITH 2002 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
   B. SOIL UNIT WEIGHT = 140 pcf
   C. DESIGN LIVE LOAD = AASHTO HS-25-44
   D. ALLOWABLE BEARING CAPACITY <= 3KSF
   E. FACTOR OF SAFETY FOR OVERTURNING >= 2.0
   F. FACTOR OF SAFETY FOR SLIDING >= 1.5
   G. FRICTION ANGLE OF THE FOUNDATION SOIL <= 30°
   H. BACKFILL MATERIAL USED SHALL CONFORM TO SECTION 704.08 OF VTRANS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SHALL ALSO HAVE A FRICTION ANGLE OF 34°.

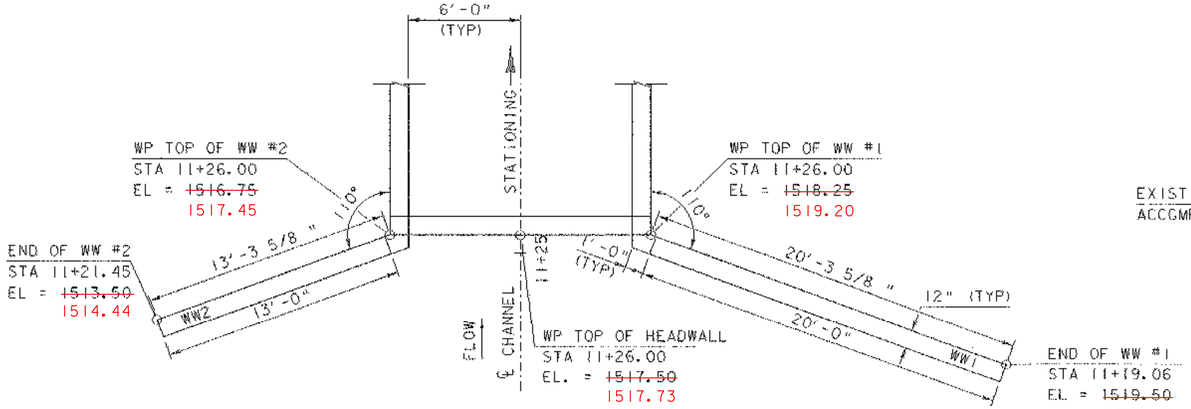
2. THE 8'-0" LONG PRECAST SECTIONS ARE SHOWN FOR REFERENCES ONLY. THE ACTUAL DIMENSIONS AND SHAPE WILL BE DEPENDENT ON THE FABRICATOR. ALL UNITS EXCEPT FIRST AND LAST WILL BE SAME SHAPE AND SAME LENGTH. THE MINIMUM INSIDE DIMENSIONS SHALL BE 10'-0" HEIGHT AND 12'-0" WIDE. THE ENDS OF THE FIRST AND LAST UNITS WHERE THE WINGWALLS ATTACH SHALL BE VERTICAL.

3. BOTH HEADWALLS, WING WALLS #1,#2,#3,#4, AND CUT OFF WALLS SHALL BE PRECAST. THE BED RETENTION SILLS SHALL ALSO BE PRECAST AND ATTACHED TO THE BOX AT THE FACTORY. ALL CONNECTIONS SHALL BE DESIGNED AND SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL. ALL PRECAST CONCRETE COMPONENTS WILL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CONTRACT ITEM 540.10

4. 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.

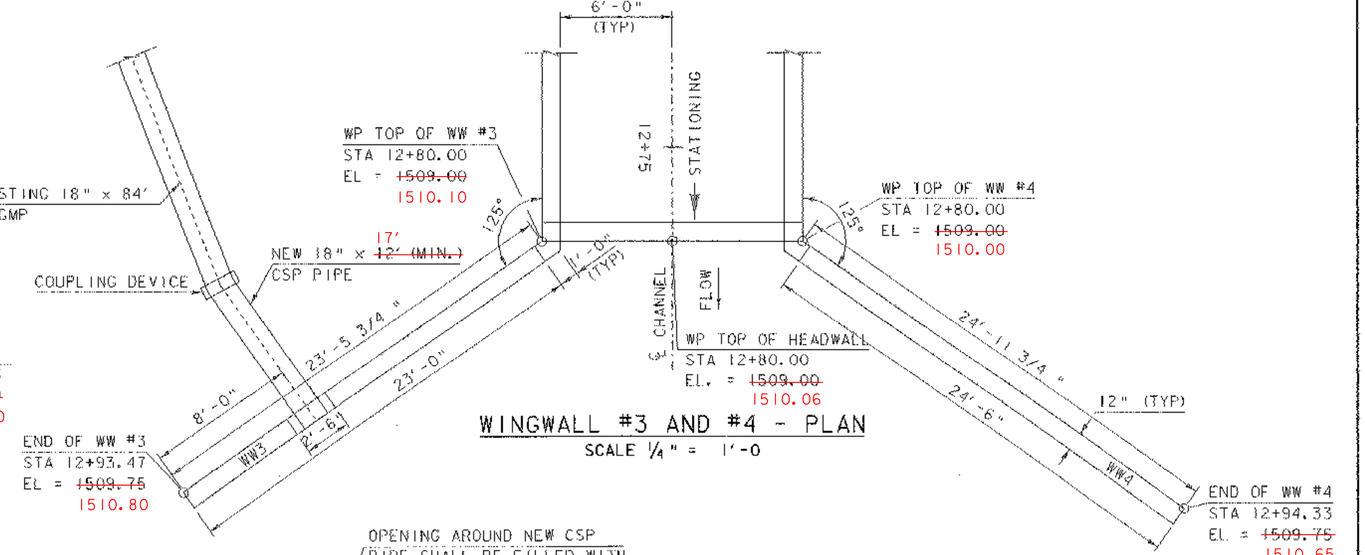
5. A TWO FOOT WIDE STRIP OF MEMBRANE WATERPROOFING SHALL BE APPLIED AT EACH BOX JOINT. THE MEMBRANE SHALL BE CENTERED ON THE JOINT AND COVER THE FULL HEIGHT OF THE SIDE JOINTS. THE TOP OF THE JOINT SHALL THEN BE COVERED WITH THE TWO FOOT STRIP OF MEMBRANE. THE SHEETS SHALL OVERLAP THE EDGES BY ONE FOOT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

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128typ.dgn	
IPARM FILE NAME: s05c128notes.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C. P. WILLIAMS	CHECKED BY: M.GAGULIC
GENERAL NOTES	SHEET: 14 OF 34



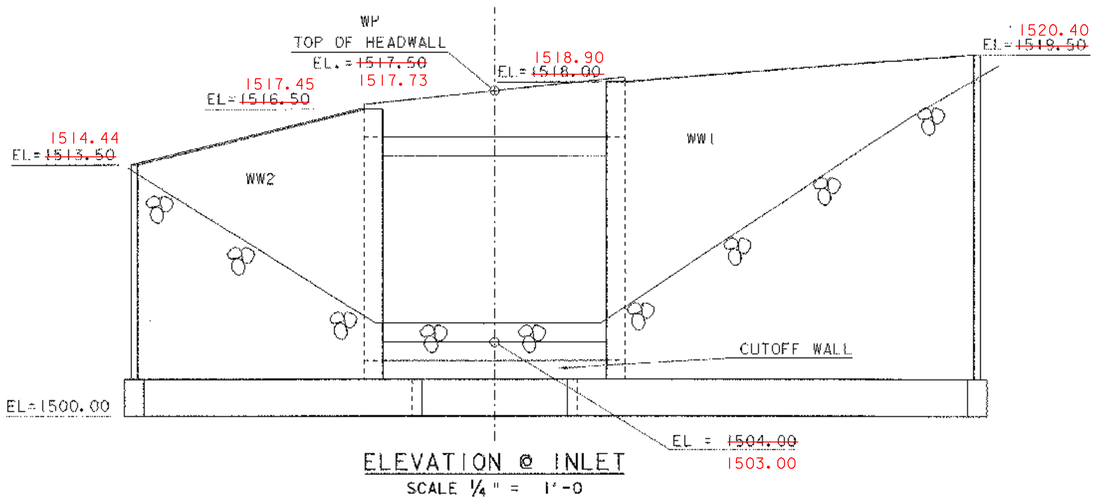
WINGWALL #1 AND #2 - PLAN

SCALE 1/4" = 1'-0



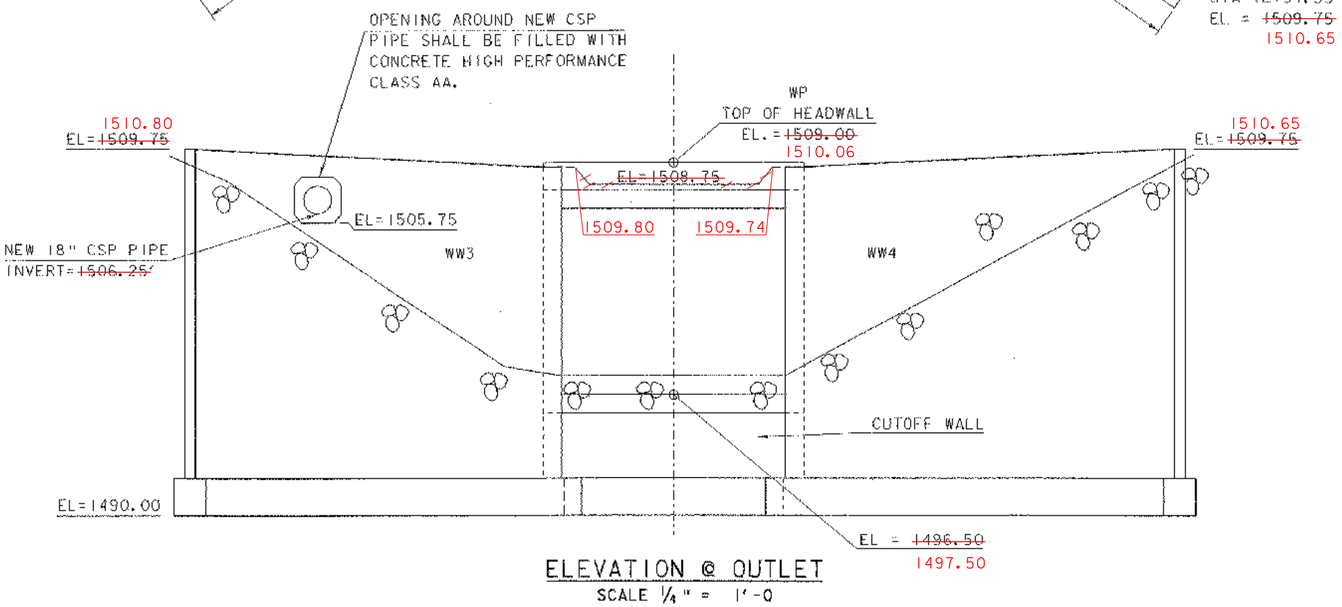
WINGWALL #3 AND #4 - PLAN

SCALE 1/4" = 1'-0



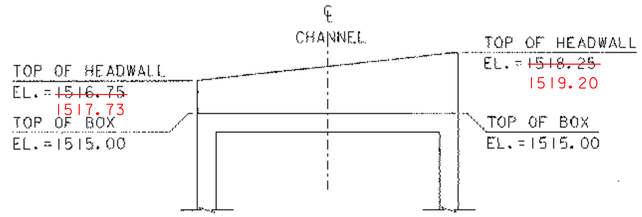
ELEVATION @ INLET

SCALE 1/4" = 1'-0



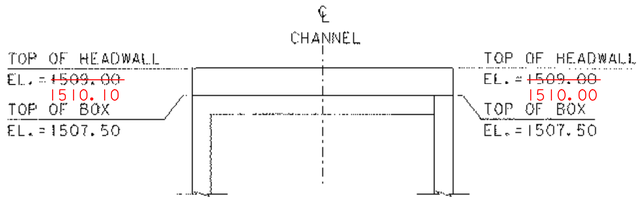
ELEVATION @ OUTLET

SCALE 1/4" = 1'-0



HEADWALL #1-ELEVATION

(LOOKING DOWNSTREAM)
SCALE 1/4" = 1'-0



HEADWALL #2-ELEVATION

(LOOKING UPSTREAM)
SCALE 1/4" = 1'-0

SCALE 1/4" = 1'-0
1 0 2 4 6

PROJECT: WHITTINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05C128pipepro.dgn	
IPARM FILE NAME: 05c128ww.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
WINGWALL DETAILS	SHEET: 15 OF 34

R.O.W. PLAN

N

MAGNETIC

BM#5 CHISELED SQUARE ON SW CORNER OF CONCRETE WALL ELEV: 1521.596

EXISTING TOWN ROW

MATCH INTO EXISTING GUARDRAIL STA 21+34.50

PI #1
STA 3+59.66 BK
= STA 3+35.38 AHD

TOWN OF WHITINGHAM HWY. EASE. 49.5'

PERMANENT CHANNEL EASEMENT

13450 SADANGA BROOK

21+40 TH #12 BRICKHOUSE RD.

EXISTING TOWN ROW

INSTALL & MAINT (P)

INSTALL & MAINT (P)

INSTALL & MAINT (P)

PERM. CHANNEL EASEMENT

GRAVEL DRIVE

WATER COURSE

S. YBIRCH

S. ASH

8" ACCMP GOOD

EXISTING UTILITY POLE ERECTED DURING TEMP. BRIDGE INSTALLATION
TEMPORARY TRAFFIC SIGNALS HUNG BETWEEN THIS POLE AND EXISTING UTILITY POLE
DISTRICT TO REMOVE AFTER PROJECT COMPLETION

EXISTING SEWER LINE TO BE REPLACED.
SEE SHEETS 18-19 FOR DETAILS

MAINLINE STA 3+75.00
= TH 12 STA 20+00.00

HVCTRL #5
NORTH = 10972.0229
EAST = 48963.3508
ELEV. = 1524.5149
COMB #160T/400/5S

END PROJECT
STA 4+50.00

EXISTING TEMPORARY TRAFFIC SIGNALS
MOUNTED ON NEW UTILITY POLE ERECTED DURING TEMP. BRIDGE INSTALLATION
DISTRICT TO REMOVE AFTER PROJECT COMPLETION

EXISTING STATE ROW

EXISTING PAVEMENT BREAK

END APPROACH
STA 5+75.00

EXISTING TEMPORARY 24" STOP BAR
REMOVE AFTER PROJECT COMPLETION

EXISTING TEMPORARY TRAFFIC SIGNALS
HUNG BETWEEN EXISTING UTILITY POLES
DISTRICT TO REMOVE AFTER PROJECT COMPLETION

HVCTRL #6
NORTH = 11001.6804
EAST = 48652.1828
ELEV. = 1521.7620

PERMANENT SLOPE EASEMENT

PERM. SLOPE EASEMENT

COMB #B/I/I/2

SEPTIC PLANT

BUILDING CORNER

WELL

EQUAL TANK SLUDGE STORAGE

POB Sta1+00.00

M. PINE

VT 100 TO READSBORO

18" CGMP GOOD

S. WILLOW

GRAVEL DRIVE

RUSSELL LANE (NO. NINE ROAD)

15" CGMP GOOD

EXISTING PAVEMENT BREAK FROM INSTALLATION OF TEMPORARY BRIDGE

BEGIN PROJECT
STA 3+00.00

BEGIN APPROACH
STA 2+00.00

APPROXIMATE LOCATION ℄ EXISTING TEMPORARY ONE WAY BRIDGE
DIMENSIONS = 120' x 14'

MATCH INTO EXISTING TH12 SURFACE

OLD PENSTOCK

FLOW

STONE FILL TYPE I (TYP)

STONE FILL TYPE IV (TYP)

EXISTING STONE FILL (TYP)

MATCH INTO EXISTING GUARDRAIL
STA 5+25.00

EXISTING STATE ROW

VT 100 TO JACKSONVILLE

18" CGMP GOOD

Sta6+85.04 PT

Sta6+78.85 PC

Sta7+36.19 BK = Sta7+36.19 AH

CURVE NO. 1
DELTA= 43°32'55"RT
D = 9°10'02"
R =625.00 FT.
T =249.66 FT.
L =475.04 FT.
E =48.02 FT.

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
STA 2+65.00 LT - 3+45.00 LT
STA 5+04.00 RT - 5+25.00 RT
STA 20+22.00 LT - 21+35.00 LT

HEAVY DUTY STEEL BEAM GUARDRAIL
STA 2+67.00 LT - 3+27.75 LT
STA 3+10.00 RT - 5+25.00 RT
STA 20+11.89 LT - 21+34.53 LT

ANCHOR FOR STEEL BEAM GUARDRAIL
STA 2+79.00 LT
STA 3+22.00 RT

REMOVE/RESET SIGNS
STA 20+32.00 LT - STA 20+30.00 LT
STA 20+44.00 LT - STA 20+45.00 LT (3)

REMOVE SIGN
STA 3+15.00 LT
STA 2+79.00 LT

TRAFFIC SIGNS, TYPE A
STA 3+15.00 LT
STA 2+75.00 LT
STA 4+20.00 RT

4" WHITE LINE
STA 2+00.00 - 5+75.00 RT & LT

4" YELLOW LINE (DOUBLE)
STA 2+00.00 - 5+75.00

CONSTRUCT DRIVE
STA 2+50.00 RT
STA 2+50.00 LT
BOTH WITH 5' PAVED APRONS

CONSTRUCT TH APPROACH @ INTERSECTION OF TH 12 & VT
STA 3+75.00 LT W/ 5' PAVED APRON
MATCH INTO EXSITING TH12 SURFACE
WITHIN LIMITS AS SHOWN ON PLANS

NEW 18" CSP PIPE
① STA 12+81.85 RT 24.46-12+89.49 RT 19.11
MATCH INTO EXISTING PIPE

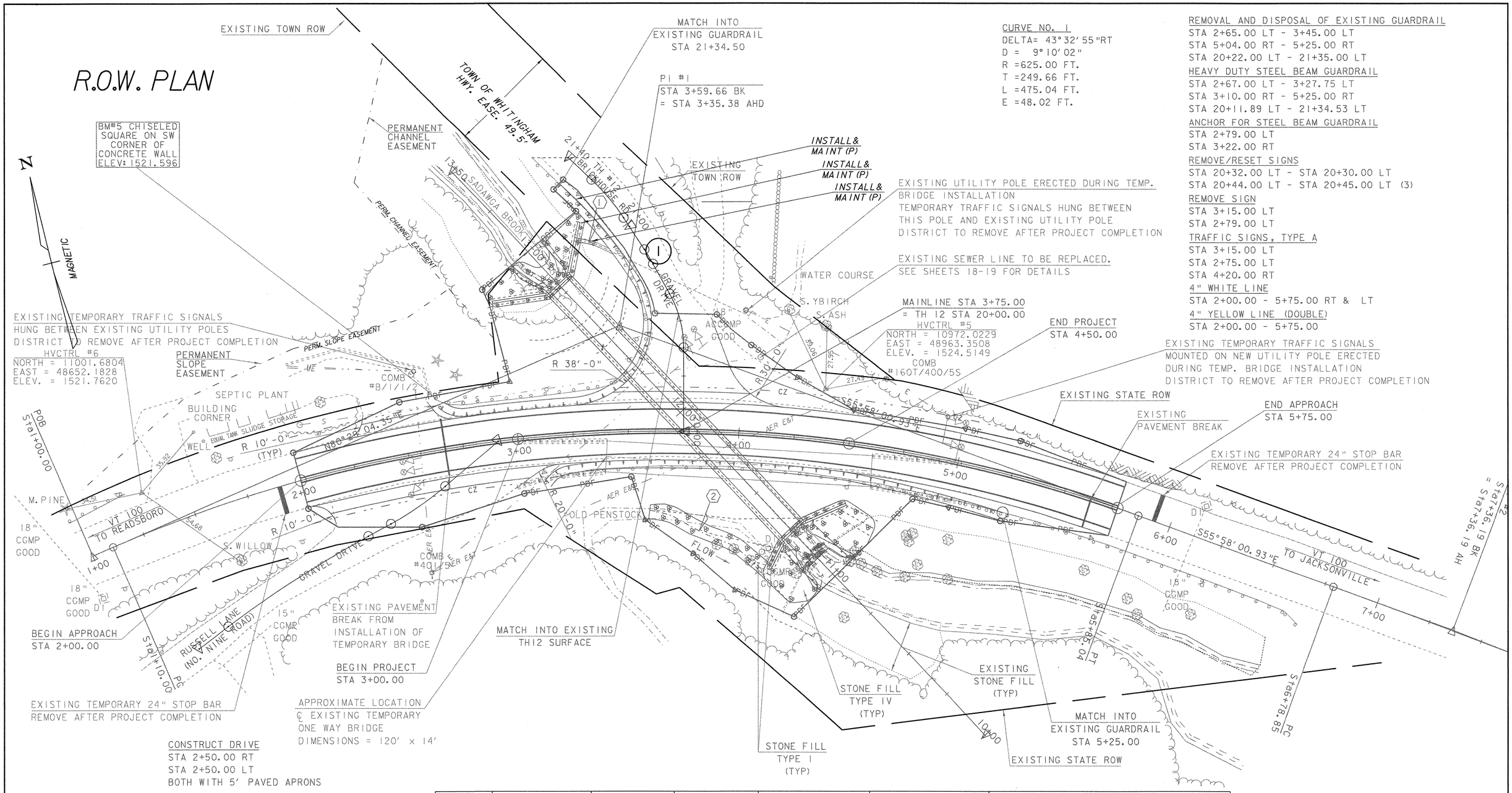
NEW DRAINAGE DITCH
② STA 3+59.26 RT 35.52-4+15.90 RT 60.84

PARCEL	GRANTOR	BEGINNING STATION	ENDING STATION	RIGHTS	REMARKS
1	TOWN OF WHITINGHAM	TH 12 20+54 LT	TH 12 21+35 LT	INSTALL & MAINT (P)	GUARDRAIL
		TH 12 21+00 LT	TH 12 21+10 LT	INSTALL & MAINT (P)	CULVERT
		TH 12 21+02 LT	TH 12 21+20 LT	INSTALL & MAINT (P)	CONCRETE WING WALL, FOOTING & STONE FILL

DATUM
VERTICAL ASSUMED
HORIZONTAL ASSUMED

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

PROJECT: WHITINGHAM
PROJECT NO.: ST CULV(6)
DESIGN FILE NAME: 05c128/Structures/s05c128bdr.dgn
IPARM FILE NAME: s05c128layout.i
PLOT DATE: 08-MAR-2006
SURVEYED BY: L.ORVIS
SURVEY DATE: 06/2005
SQUAD LEADER: C.P.WILLIAMS
DRAWN BY: M.FESSEL
ROW SHEET 1 OF 1
SHEET 16 OF 34



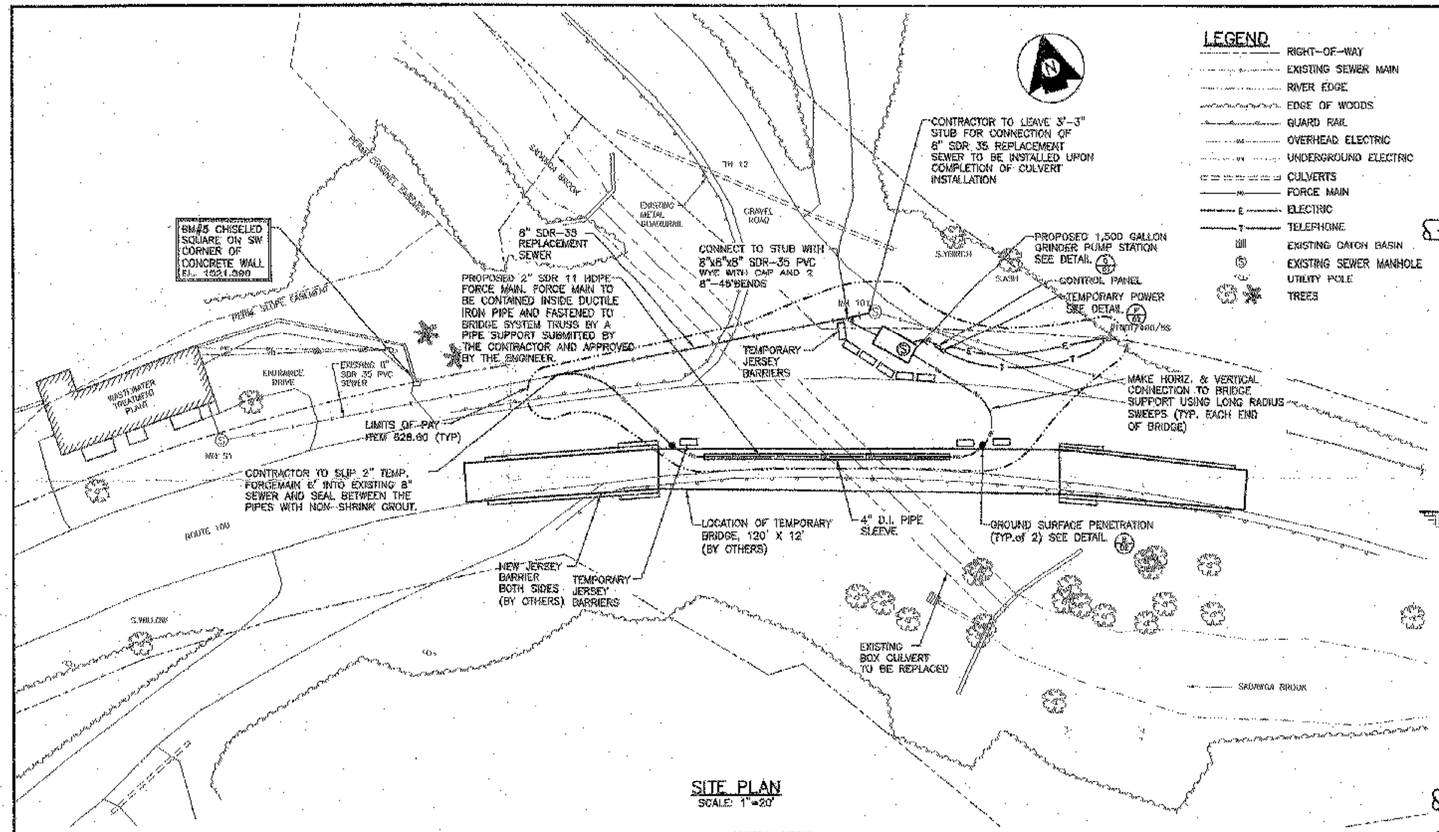
PARCEL	GRANTOR	BEGINNING STATION	ENDING STATION	RIGHTS	REMARKS
1	TOWN OF WHITINGHAM	TH 12 20+54 LT	TH 12 21+35 LT	INSTALL & MAINT (P)	GUARDRAIL
		TH 12 21+00 LT	TH 12 21+10 LT	INSTALL & MAINT (P)	CULVERT
		TH 12 21+02 LT	TH 12 21+20 LT	INSTALL & MAINT (P)	CONCRETE WING WALL, FOOTING & STONE FILL

RECORDING DATA				
TITLE	DATE	TOWN/CITY	BOOK	PAGE
QCD	2/27/06	WHITINGHAM	129	5

DATUM
VERTICAL ASSUMED
HORIZONTAL ASSUMED

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

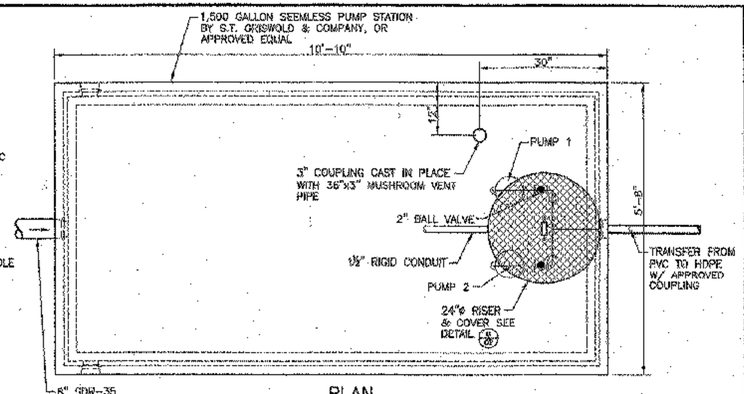
PROJECT: WHITINGHAM
PROJECT NO.: ST CULV(6)
DESIGN FILE NAME: 05c128/Structures/s05c128bdr.dgn
IPARM FILE NAME: s05c128layout.i
SURVEYED BY: L.ORVIS
SQUAD LEADER: C.P.WILLIAMS
ROW SHEET 1 OF 1
PLOT DATE: 21-NOV-2007
SURVEY DATE: 06/2005
DRAWN BY: M.FESSEL
SHEET 16 OF 34



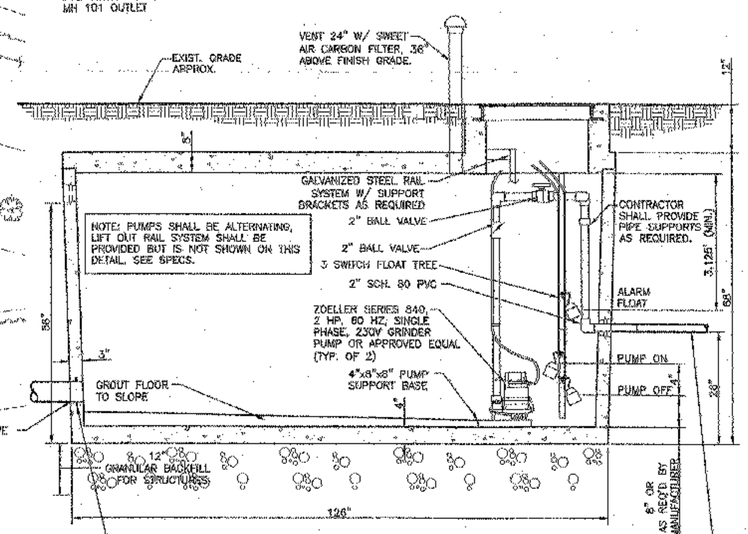
SITE PLAN
SCALE: 1"=20'

LEGEND

- RIGHT-OF-WAY
- EXISTING SEWER MAIN
- RIVER EDGE
- EDGE OF WOODS
- GUARD RAIL
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- CULVERTS
- FORCE MAIN
- ELECTRIC
- TELEPHONE
- EXISTING CATCH BASIN
- EXISTING SEWER MANHOLE
- UTILITY POLE
- TREES



PLAN

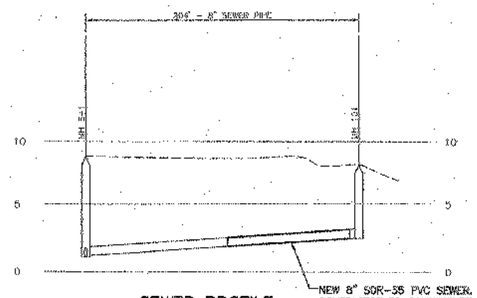


SECTION

PUMP STATION DETAIL
NOT TO SCALE — D / C1

CONSTRUCTION SEQUENCE:

1. CLOSE OFF ROAD AND ACTIVATE TEMPORARY BRIDGE.
2. INSTALL GRINDER PUMP STATION.
3. INSTALL 2" TEMPORARY FORCE MAIN FROM PUMP STA. UNDER THE BRIDGE, TO THE TIE IN LOCATION.
4. PRESSURE TEST THE 2" TEMPORARY FORCE MAIN.
5. ACTIVATE GRINDER UNIT AND PUMPS.
6. TIE IN THE TEMPORARY 2" FORCE MAIN, TEMPORARILY ABANDONING THE EXISTING 8" LINE.
7. IF CONSTRUCTION CONTINUES INTO WINTER MONTHS, ALL BURIED TEMPORARY PIPE SHALL BE COVERED WITH 4" OF RIGID POLYSTYRENE INSULATION BOARD, HDPE FORCE MAIN SHALL BE HEAT TRACED.
8. AFTER DEMOLITION OF BRIDGE CONSTRUCTION, INSTALL NEW PERMANENT 8" SDR-35 REPLACEMENT SEWER FROM STUB OF MH 101 TO THE LIMIT OF DISTURBED SEWER.
9. REMOVE TEMPORARY FORCE MAIN.
10. CONTRACTOR TO EXCAVATE TEMPORARY PUMP STATION AND BACKFILL HOLE.
11. CONTRACTOR RESPONSIBLE FOR PUMPING OUT PUMP STATION AND DISPOSAL OF SOLIDS IN ACCORDANCE WITH ALL LOCAL AND STATE REGULATIONS, THROUGH USE OF A LOCAL SEPTAGE HAULER OR ALTERNATE APPROVED MEANS.
12. PERFORM LEAKAGE TEST ON NEW SEWER, PUT IN SERVICE.
13. SEE NOTE 9 OF GENERAL NOTES.



SEWER PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

GENERAL NOTES:

1. SEE SECTION 828 AND SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIRENTS.
2. CONTRACTOR SHALL COORDINATE PUMP VOLTAGE WITH THAT AVAILABLE AT THE UTILITY POLE.
3. THE CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR THE MEANS AND METHODS OF EVACUATION AND FOR THE DESIGN AND CONSTRUCTION OF THE EXCAVATION SUPPORT SYSTEMS.
4. ELEVTRICAL COMPONENTS INSTALLED INSIDE THE PUMP STATION SHALL BE EXPLOSION PROOF. APPROPRIATE SEALS SHALL BE INSTALLED IN THE CONDUIT BETWEEN THE TANKS AND CONTROL PANEL.
5. ALL EXISTING UNDERGROUND UTILITIES WERE LOCATED USING AVAILABLE INFORMATION. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL UTILITIES WHETHER OR NOT THEY ARE SHOWN ON THE PLANS. ALL REPAIRS TO DAMAGED UTILITIES SHALL BE MADE BY THE CONTRACTOR USING MATERIALS APPROVED BY THE ENGINEER AT NO ADDITIONAL EXPENSE OF THE OWNER.
6. CONTRACTOR TO CONTACT DIG SAFE IN VERMONT AT 1-888-DIG-SAFE, PRIOR TO COMMENCING WORK. CONTRACTOR SHALL VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND ELECTRIC AND TELEPHONE LINES AND TAKE NECESSARY PRECAUTIONS IN STRICT ACCORDANCE WITH OSHA STANDARDS DURING CONSTRUCTION. CONTRACTOR SHALL CONTACT LOCAL ELECTRICAL AND TELEPHONE UTILITIES REGARDING ANY NECESSARY SUPPORT OF ANY UTILITY POLES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR THE SUPPORT OR TEMPORARY RELOCATION OF ALL UTILITY POLES AFFECTED BY THE CONSTRUCTION.
7. EXPLORATORY EXCAVATION IS REQUIRED TO LOCATE UNDERGROUND UTILITIES. CONTRACTOR SHALL USE EXTREME CAUTION TO PREVENT DAMAGE TO EXISTING UTILITIES.
8. LEAKAGE TESTING SHALL BE PERFORMED ON ALL BUILDING SEWERS AND STRUCTURES. TESTING SHALL BE PERFORMED IN PRESENCE OF THE ENGINEER AND CONFORM TO; CHAPTER 1 OF THE ENVIRONMENTAL PROTECTION RULES (EFFECTIVE JAN. 1, 2005), APPENDIX 1-A: DESIGN GUIDELINES, FOR THE FOLLOWING SECTIONS:
   - SEWER COLLECTION SYSTEMS: SECTION 1-A-03(K)
   - MANHOLE STRUCTURES: SECTION 1-A-03(L)
   - SEE SPECIFICATIONS FOR LEAKAGE TEST REQUIREMENTS
9. CONTRACTOR SHALL MAINTAIN SEWER FLOW AT ALL TIMES THROUGH OPERATION OF THE EXISTING SYSTEM, THROUGH BYPASS PUMPING, OR OTHER MEANS APPROVED BY THE ENGINEER.
10. CONTRACTOR TO LOCATE PUMP STATION TO FACILITATE EXCAVATION OF CULVERT AND TO MAINTAIN ACCESS TO TH 12 AT ALL TIMES.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL. A TRAFFIC CONTROL PLAN IS REQUIRED PRIOR TO THE START OF CONSTRUCTION. REQUEST FOR TRAFFIC DETOURS ON LOCAL COLLECTOR ROADS MUST BE REVIEWED AND APPROVED BY LOCAL AUTHORITIES. ACCESS TO RESIDENCES ALONG ROADS SHALL BE AVAILABLE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING LOCAL FIRE, POLICE, AND EMERGENCY SERVICES OF BOTH INITIAL AND ANY CHANGES TO DETOURS OR RESTRICTED TRAFFIC FLOW. TRAFFIC ALONG ROUTE 100 SHALL BE MAINTAINED AT ALL TIMES.
12. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL AT ALL TIMES DURING THE EXECUTION OF THE WORK.
13. ALL WORK SHALL BE DONE IN THE PUBLIC RIGHT-OF-WAY OR EASEMENTS.
14. THE CONTRACTOR SHALL RESTORE ALL LAWNS AND OTHER GRASSED AREAS DISTURBED BY CONSTRUCTION. RESTORATION OF GROWTH SHALL AT LEAST BE FULLY EQUAL TO THAT PREVAILING PRIOR TO CONSTRUCTION.
15. CONTRACTOR SHALL MAINTAIN PUBLIC WALKWAYS, PRIVATE ENTRANCES, BUSINESS ENTRANCES, COMMERCIAL ACCESSES, AND RESIDENTIAL DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
16. CONTRACTOR SHALL REFER TO BRIDGE REPLACEMENT PROJECT PLANS FOR ACTUAL ELEVATIONS.

PUMP STATION DESIGN CRITERIA:

1. AVERAGE DAILY FLOW = 6,000 GPD OR 4.2 GPM.
2. PEAK FLOW = 6,000 GPD x PEAKING FLOW FACTOR OF 4 = 24,000 GPD OR 16.8 GPM
3. EMERGENCY STORAGE =
   - LONGEST POWER OUTAGE OVER 5 YEARS = 3 HOURS
   - ASSUME FLOW OCCURS OVER 16 HOURS DURING OUTAGE =

     6,000 GPD x 14HRS/16HRS x 1 DAY/24HRS x 3HRS = 1,125 GALLONS
   - VOLUME ABOVE ALARM FLOAT =

     3.125' x (10.33') x (5.16') = 166.5 FT = 1,245 GALLONS
4. ALARMS WILL BE SENT TO PROPOSED AUTO DIALER TO NOTIFY TOWN STAFF.
5. SEE SPECIFICATIONS FOR PUMP CONTROLS DETAILS.

THIS SYSTEM WAS NOT USED.
SEE CHANGE OF DESIGN / SUPPLEMENTARY AGREEMENT #1, DATED AUGUST 31, 2006.

RECEIVED MAR 05 2007 UTILITIES

Dufresne-Henry
North Springfield, Vermont
(802) 886-2201 Fax (802) 886-2280
www.dufresne-henry.com

No.	Description	By	Date

VERMONT

VILLAGE OF WHITTINGHAM
TEMPORARY WASTEWATER BYPASS PUMPING FOR THE REPLACEMENT OF HIGHWAY BRIDGE 29, VT. ROUTE 100

SITE PLAN AND DETAILS

WHITTINGHAM

12-5-06
STATE OF VERMONT MICHAEL E. HAYWARD 10,033 REGISTERED PROFESSIONAL ENGINEER

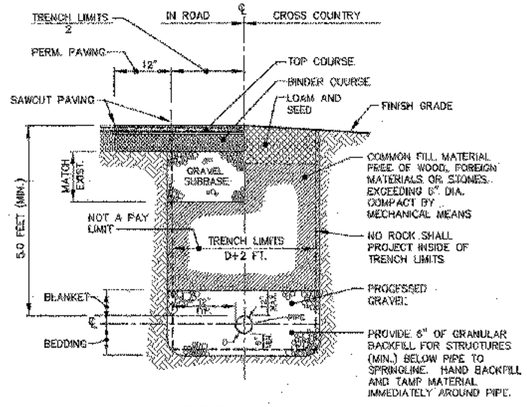
Project No.	4008017
Proj. Manager	M.E. HAYWARD
Proj. Designer	M.G. TINKLER
Drawn By	G.D. MERRICK
Checked By	R.G. TRUE
Scale	AS SHOWN
Approved	
Date	OCTOBER 2006

C1

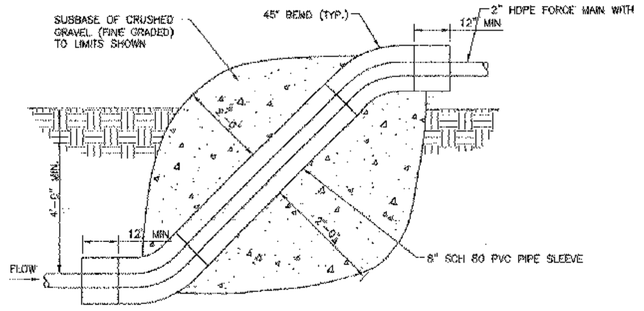
Sheet 1 of 2
D

WHITTINGHAM ST CULV (6)
SEWER LAYOUT
SHEET 17 OF 34

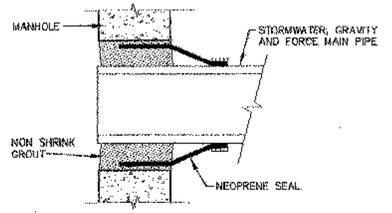
C:\2006\4008017 Middlebury Pumping (Whittingham 17)\Civil\Cad\dwg\4008017-dwg_SITE PLAN_2006-08-21.dgn, SITE PLAN, 2/5/2006 2:45:01 PM, MEHaywood, Dan3550.pc3



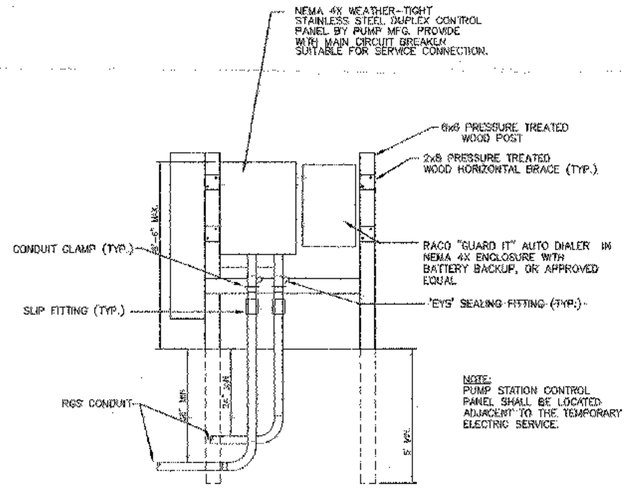
TYPICAL TRENCH DETAIL (A / C1)
NOT TO SCALE



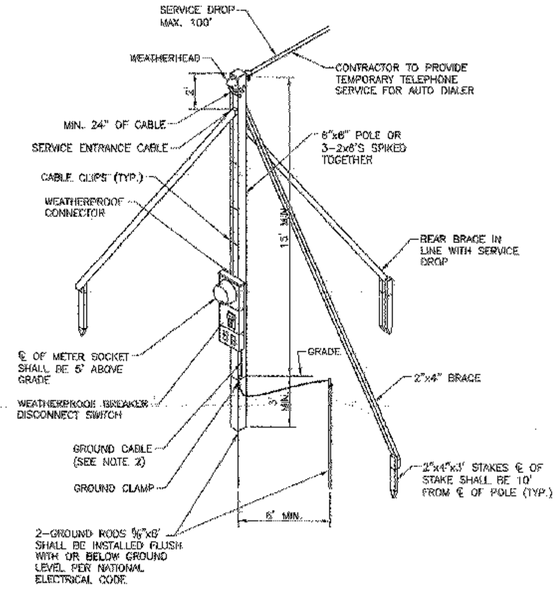
GROUND SURFACE PENETRATION DETAIL (B / C1)
NOT TO SCALE



FLEXIBLE RUBBER BOOT DETAIL (C / C1)
NOT TO SCALE



PUMP STATION-CONTROL PANEL INSTALLATION (E / C1)
NOT TO SCALE



NOTES:

1. A MINIMUM OF 18' CLEARANCE IS REQUIRED ABOVE ALL ROADS, STREETS, NONRESIDENTIAL DRIVEWAYS, PARKING LOTS AND OTHER LAND TRAVERSED BY VEHICLES.
2. A MINIMUM #6 COPPER GROUND CABLE MUST BE CONNECTED IN THE METER SOCKET, TO ITS OWN GROUND TERMINAL. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE ADEQUATELY PROTECTED.
3. RAIN TIGHT SERVICE EQUIPMENT, WITH GROUND FAULT PROTECTION AND PROVISION FOR LOCKING AND ALL OTHER MATERIALS AND EQUIPMENT TO BE OWNED AND INSTALLED BY CUSTOMER. UTILITY TO INSTALL METER AND SERVICE DROP AND CONNECT SERVICE DROP AT WEATHERHEAD.
4. SERVICE LOCATION AND TYPE OF CONSTRUCTION MUST BE APPROVED IN ADVANCE BY UTILITY.
5. WHERE SUBJECT TO STATE OR LOCAL ELECTRICAL INSPECTION, SUCH INSPECTION MUST BE MADE PRIOR TO ENERGIZING.

TYPICAL TEMPORARY SERVICE (F / C1)
NOT TO SCALE

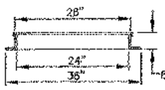
THIS SYSTEM WAS NOT USED.
SEE SHEET 17 OF 34.



COVER PLATE
WEIGHT = 150 LBS.



COVER SECTION



FRAME SECTION
MIN. WEIGHT = 250 LBS.

NOTE:
MANHOLE FRAME AND COVER TO BE LEBARON FOUNDRY, INC., CATALOG NO. LC 268-1 OR APPROVED EQUAL.

MANHOLE FRAME AND COVER DETAIL (G / C1)
NOT TO SCALE

Dufresne-Henry
North Springfield, Vermont
Tel (802) 886-2201 • FAX (802) 886-2280
www.dufresne-henry.com

No.	Revision	By	Date

VERMONT

VILLAGE OF WHITINGHAM
TEMPORARY WASTEWATER BYPASS PUMPING FOR THE REPLACEMENT OF HIGHWAY BRIDGE 29, VT. ROUTE 100

DETAILS

WHITINGHAM, VT

Project No.	4026017
Proj. Manager	M.E. HAYWARD
Proj. Designer	N.G. TRUE
Drawn By	G.D. MERCIE
Checked By	N.G. TRUE
Scale	AS SHOWN
Approved	
Date	OCTOBER 2005

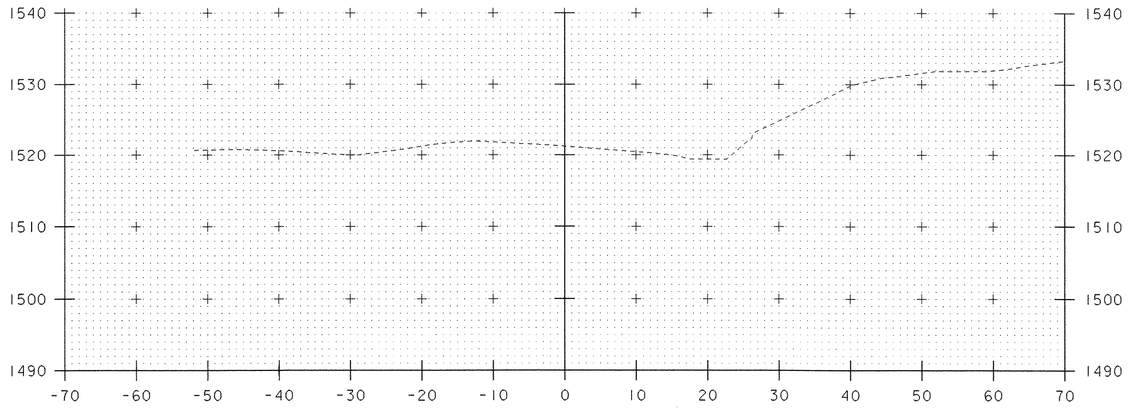
C2

Sheet 2 of 2

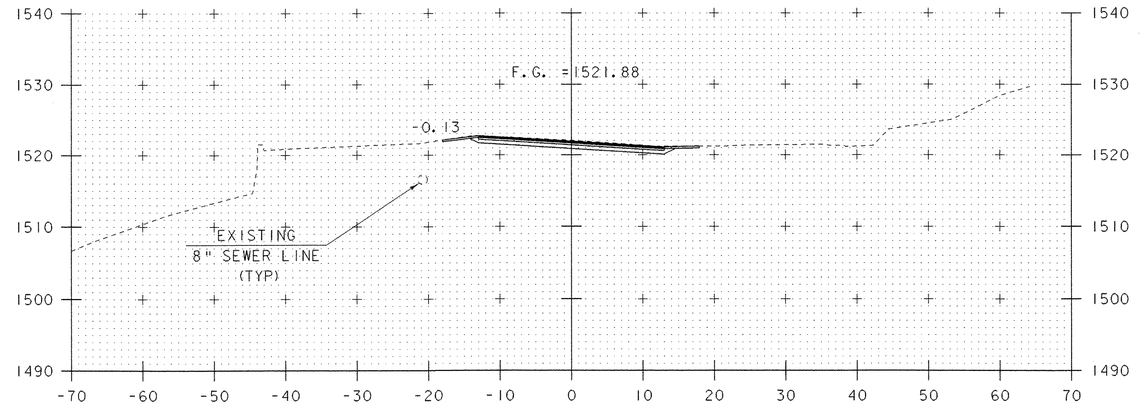
D

WHITINGHAM ST CULV (6)
SEWER DETAILS
SHEET 18 OF 34

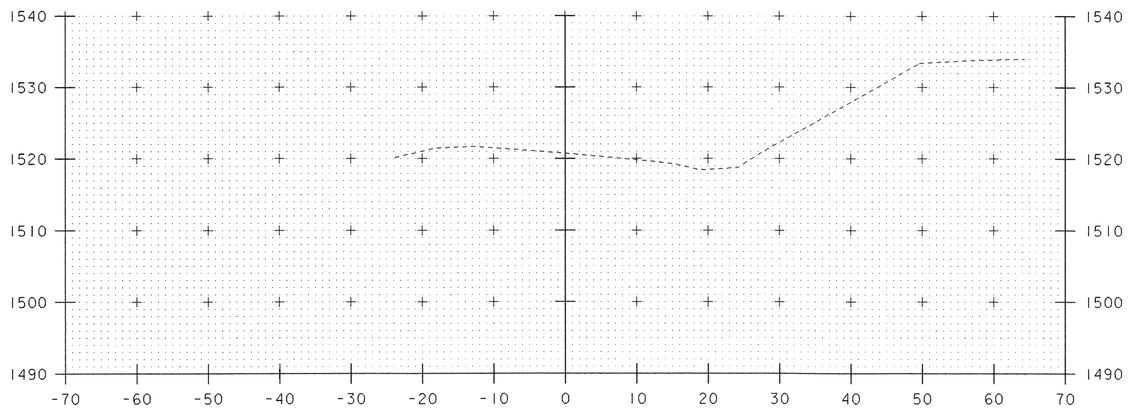
K:\4026017 Whitingham Pumping Whitingham, VT\Civil\C2\4026017C2.dwg, 8/8/2006 2:55:53 PM, Maynard, VT-SPRINGFIELD\Dufresne-Henry.ctb



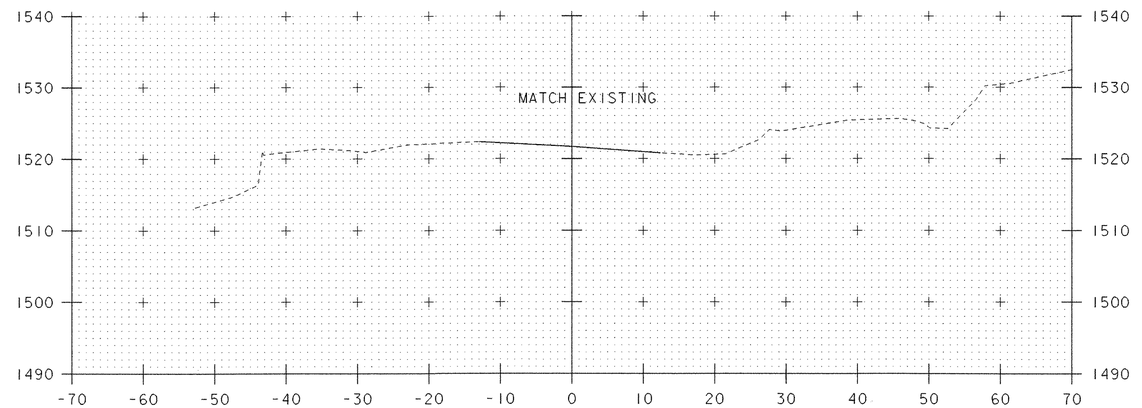
1+50



2+50



1+00



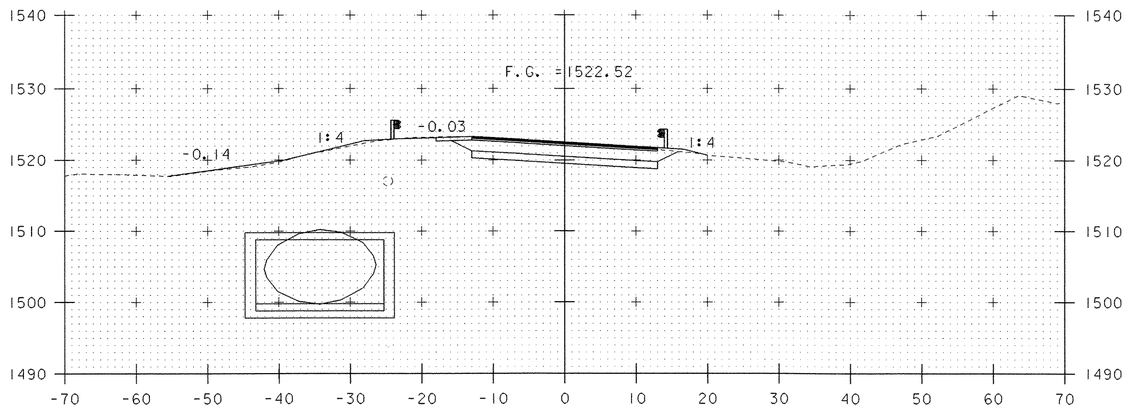
2+00

BEGIN APPROACH

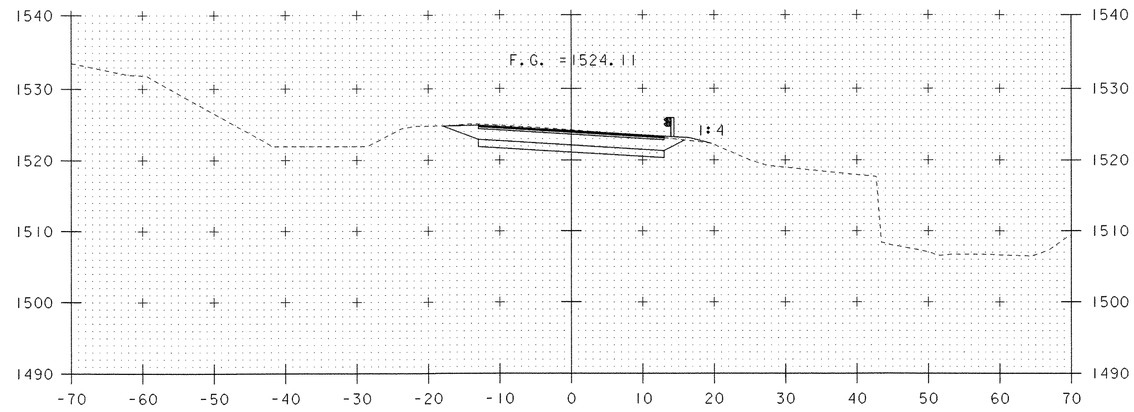
SCALE 1" = 10'-0
10 0 10

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128mll.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
MAINLINE STA 1+00 - STA 2+50	SHEET: 19 OF 34

TEMPORARY BRIDGE APPROACH
NOT SHOWN IN CROSS SECTION
STA 4+62.00 - 5+02.00
APPROXIMATELY 40' X 5' X 15'

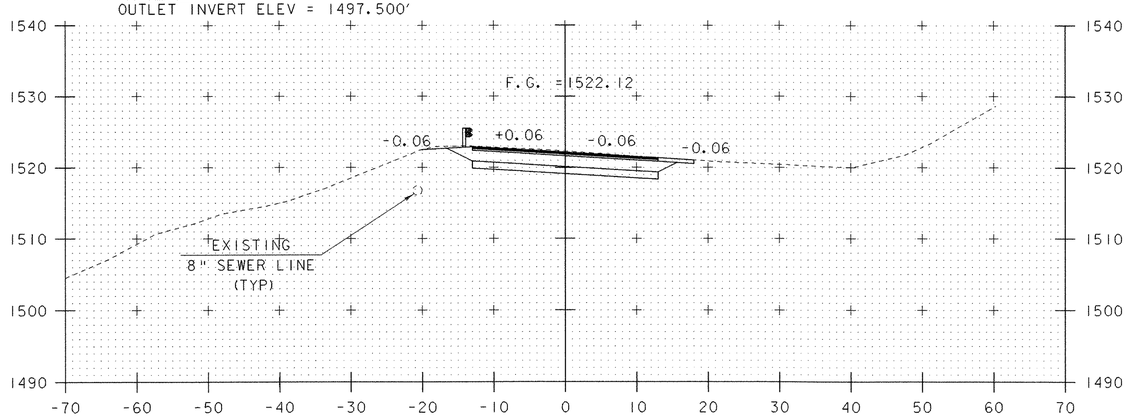


3+50



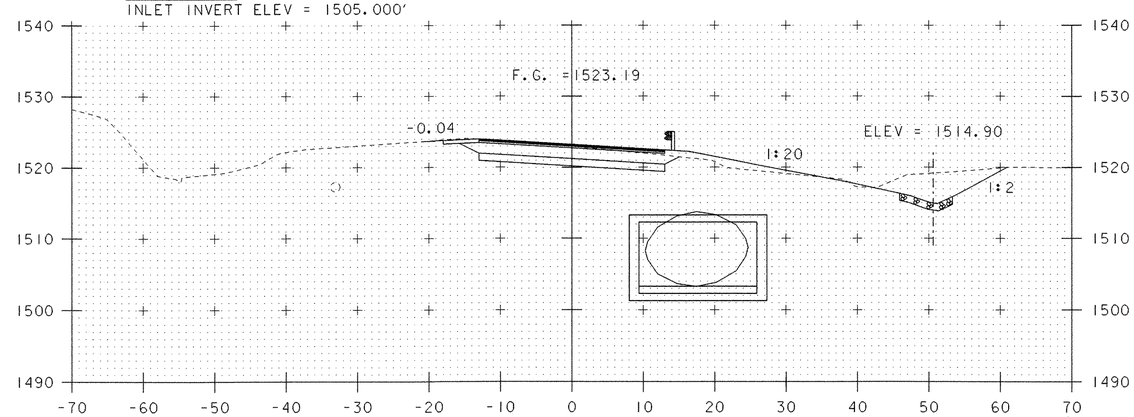
4+50
END PROJECT

STA 3+23.08
OUTLET INVERT ELEV = 1497.500'



3+00
BEGIN PROJECT

STA 4+28.72
INLET INVERT ELEV = 1505.000'

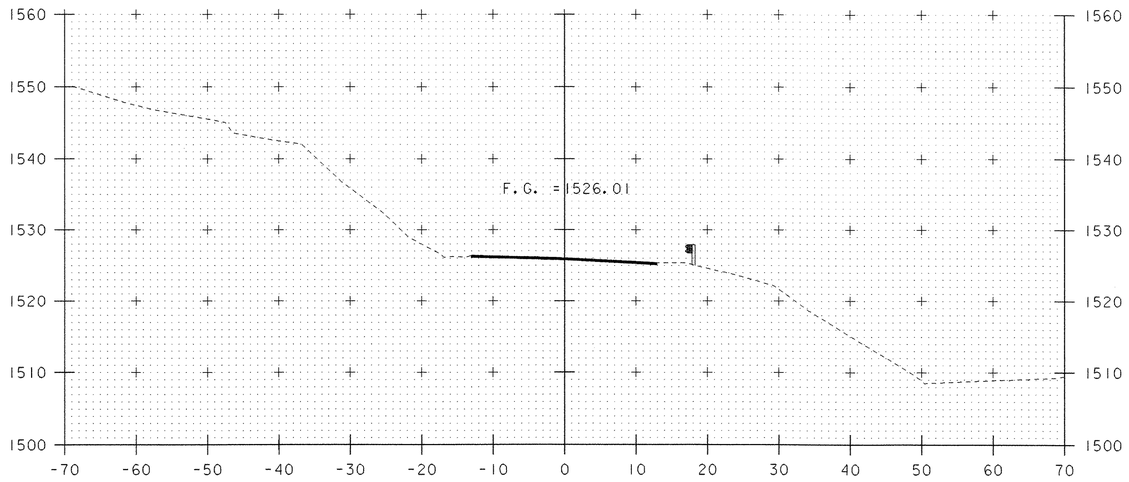


4+00

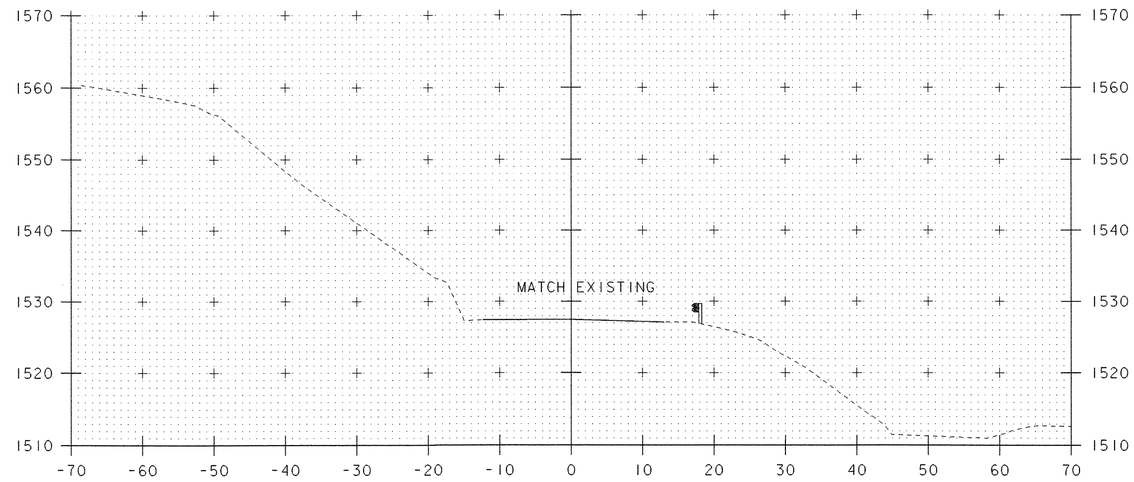
TEMPORARY BRIDGE APPROACH
NOT SHOWN IN CROSS SECTION
STA 3+00.00 - 3+50.00
APPROXIMATELY 50' X 5' X 15'

SCALE 1" = 10'-0
10 0 10

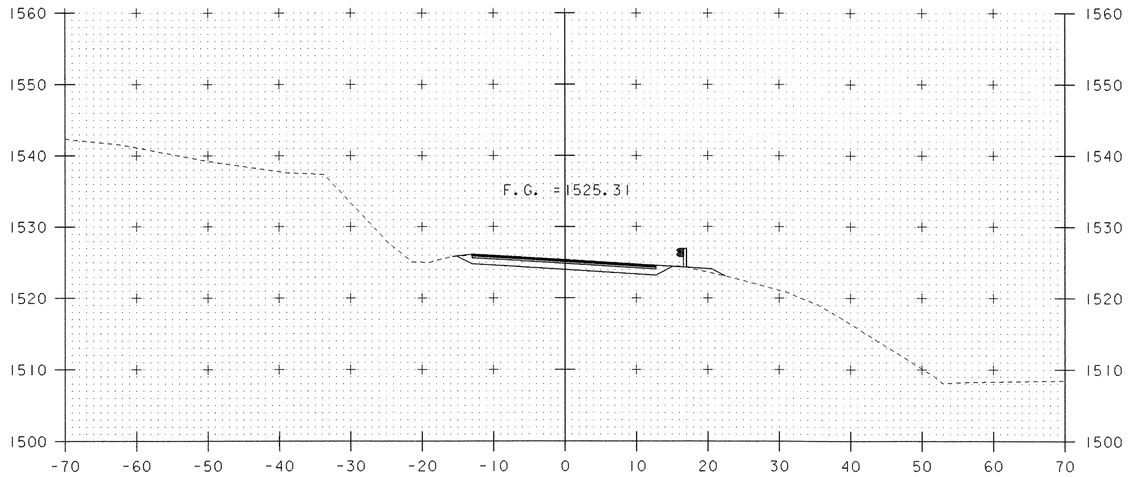
PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128m12.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
MAINLINE STA 3+00 - STA 4+50	SHEET: 20 OF 34



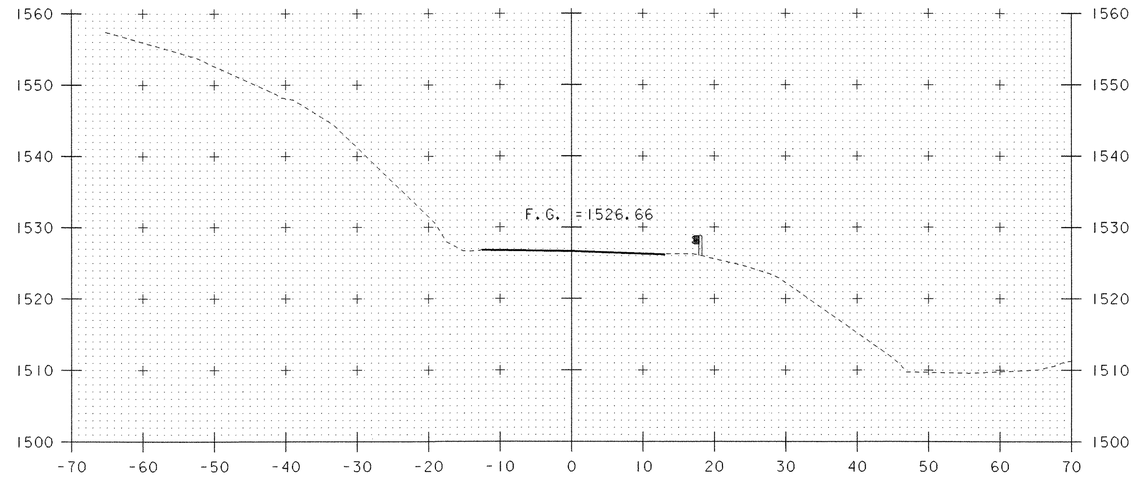
5+25



5+75
END APPROACH



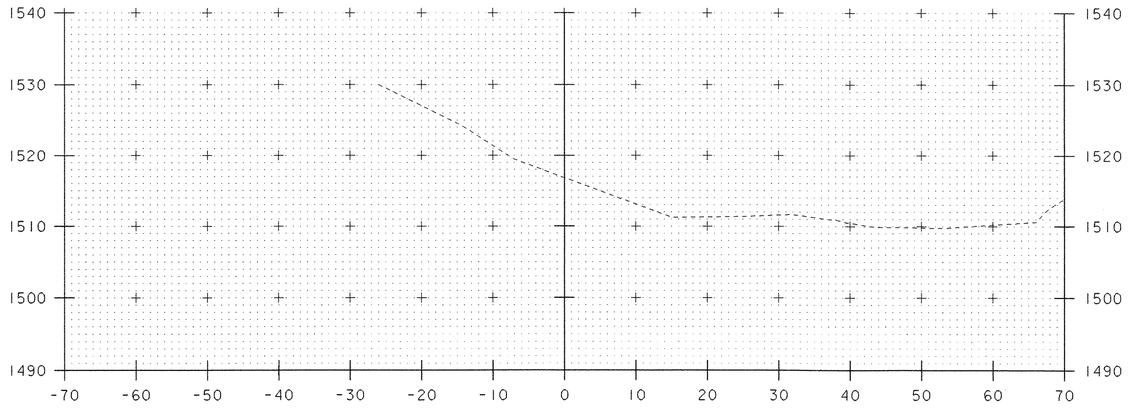
5+00



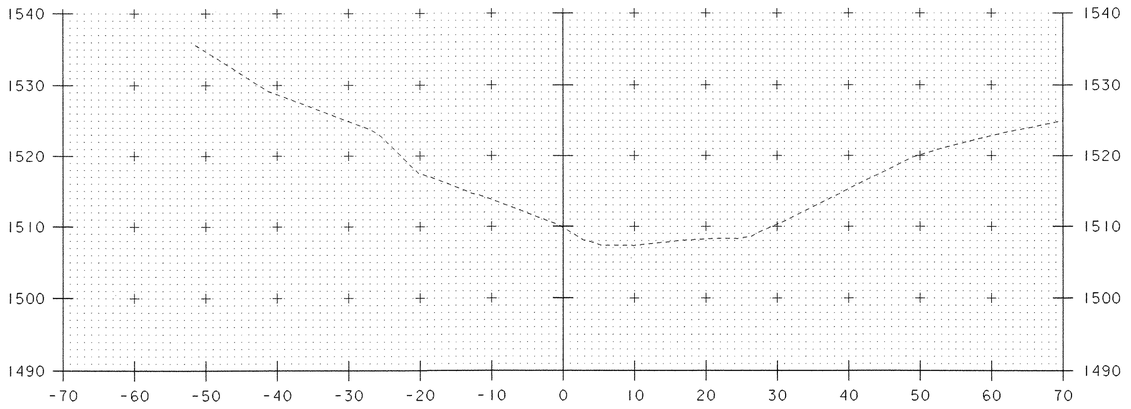
5+50

SCALE 1" = 10'-0
10 0 10

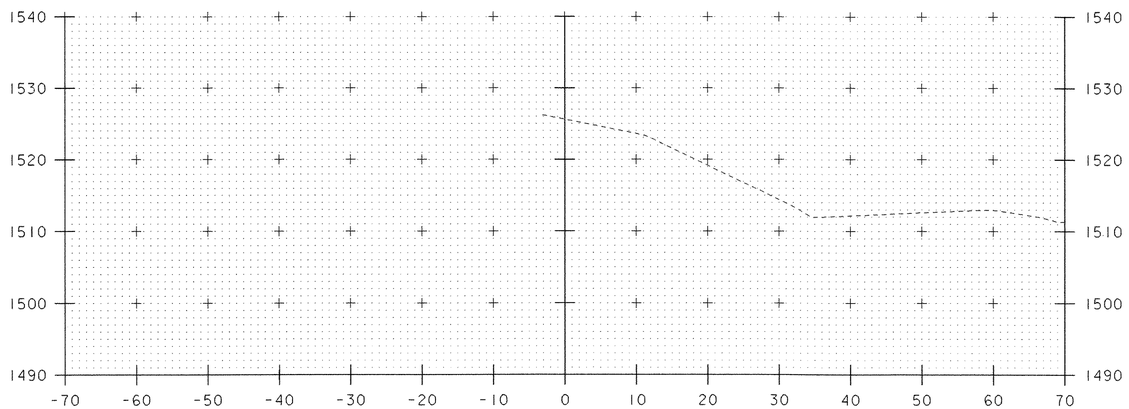
PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128m13.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
MAINLINE STA 5+00 - STA 6+50	SHEET: 21 OF 34



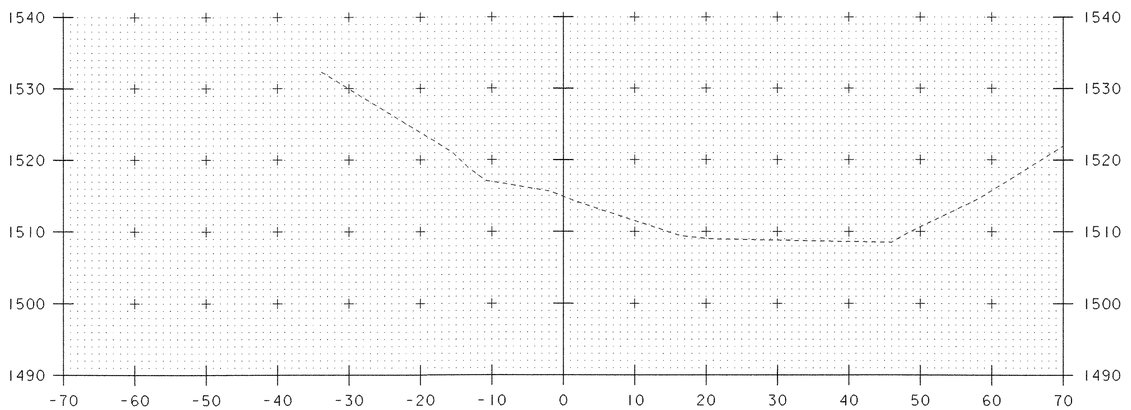
10+25



10+75



10+00



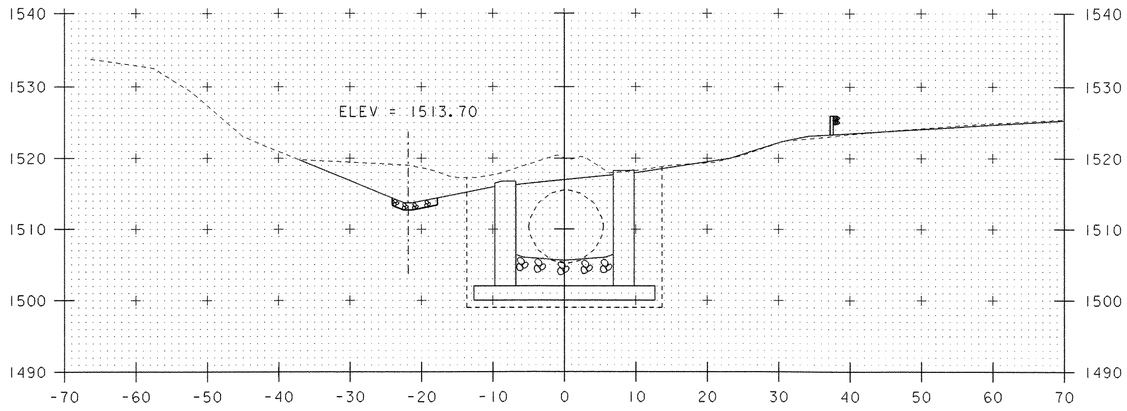
10+50

SCALE 1" = 10'-0
10 0 10

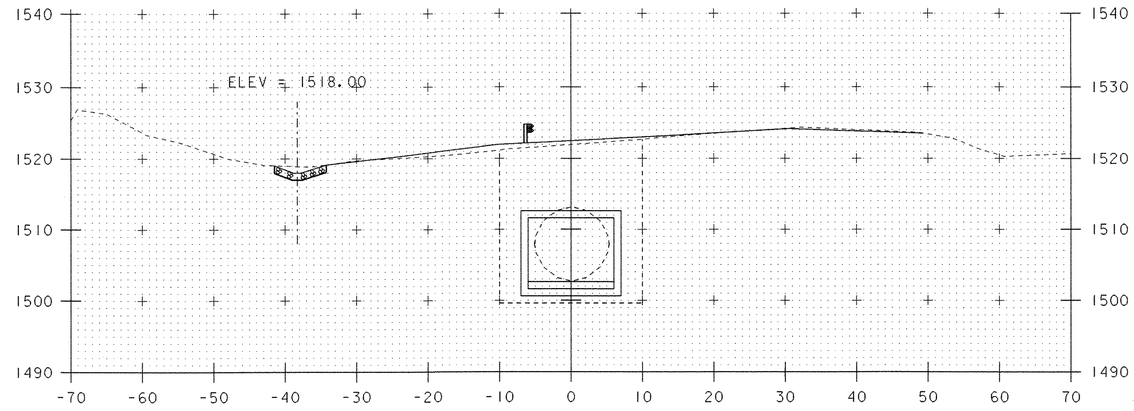
PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128chl.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 10+00 - STA 10+75	SHEET: 22 OF 34

STA 11+26.00 LT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION

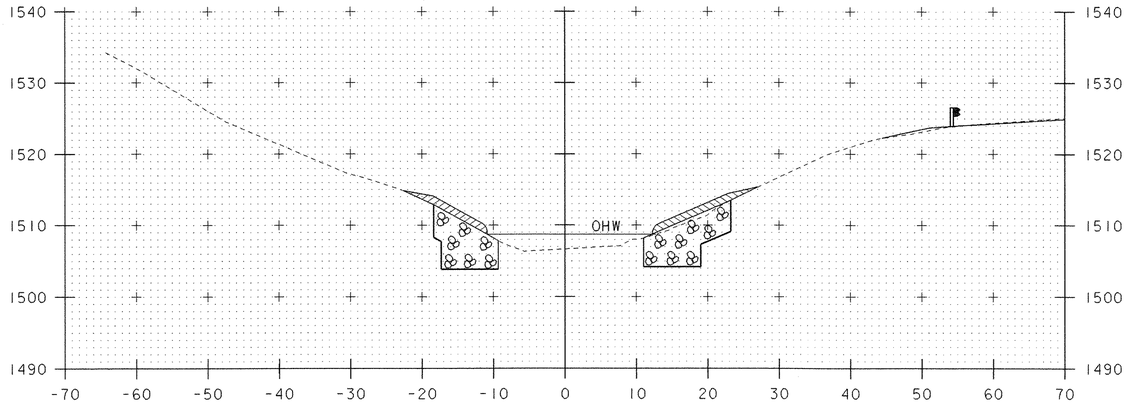
STA 11+26.00 RT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION



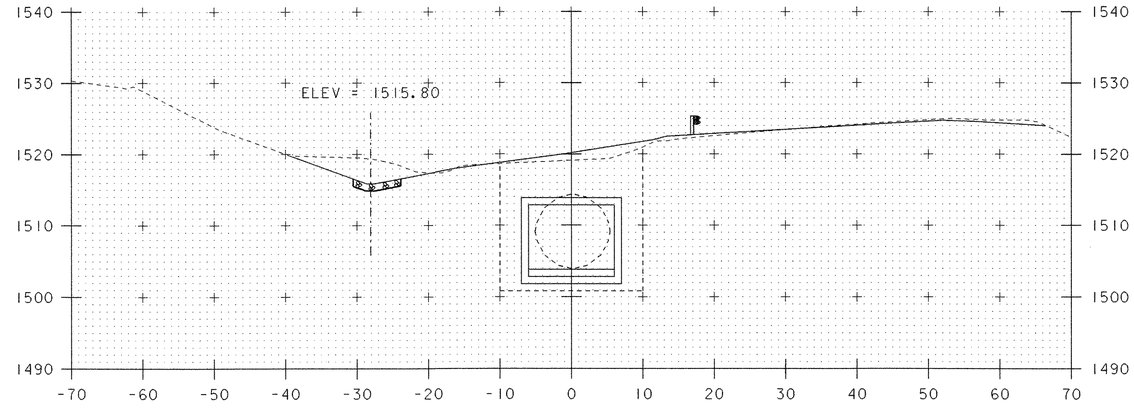
11+25



11+75



11+00



11+50

STA 10+98.00 LT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

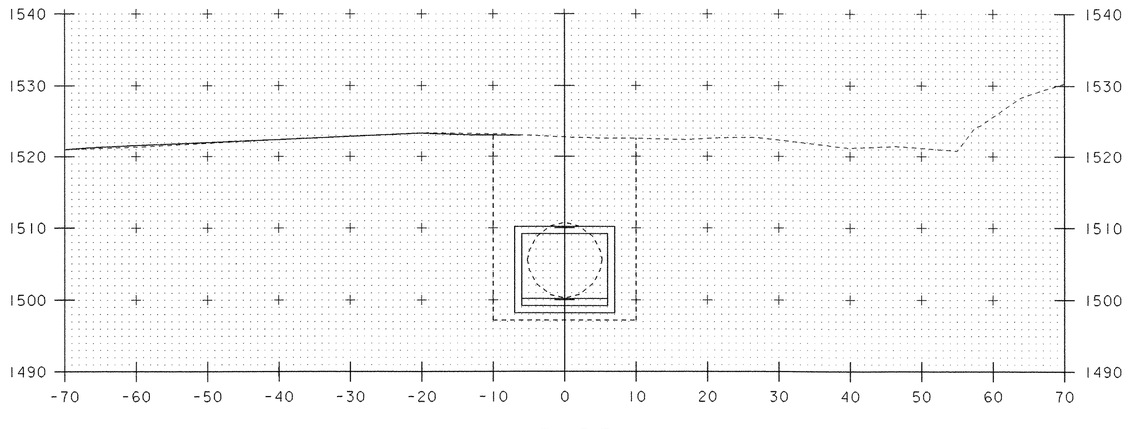
STA 10+99.00 RT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

SCALE 1" = 10'-0
10 0 10

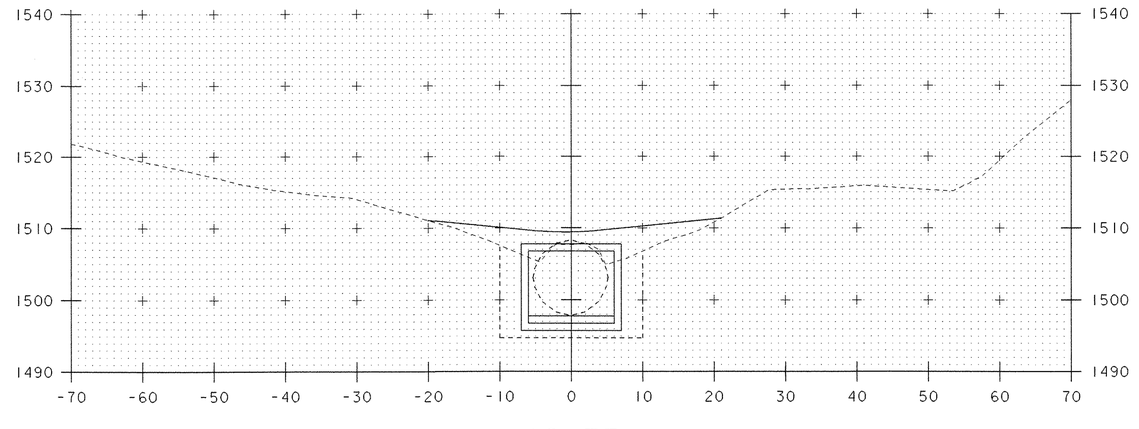
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch2.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 11+00 - STA 11+75	SHEET: 23 OF 34

STA 12+80.00 LT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

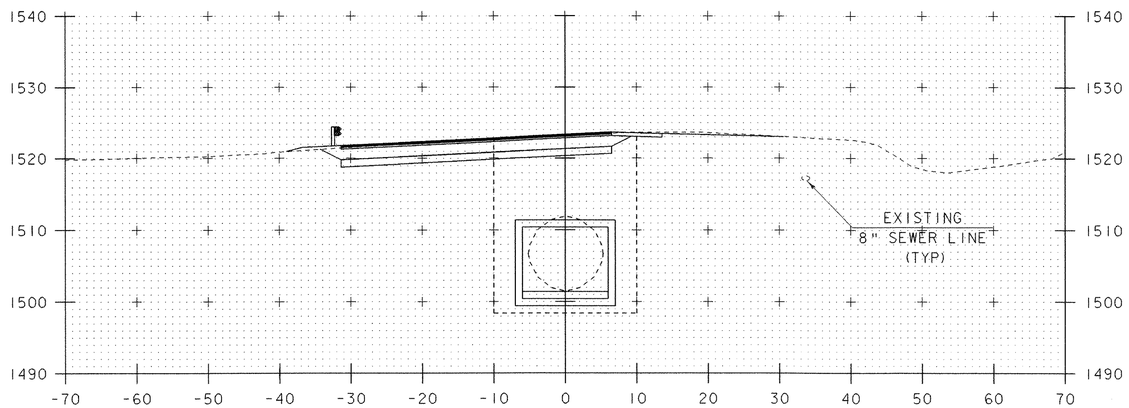
STA 12+80.00 RT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION



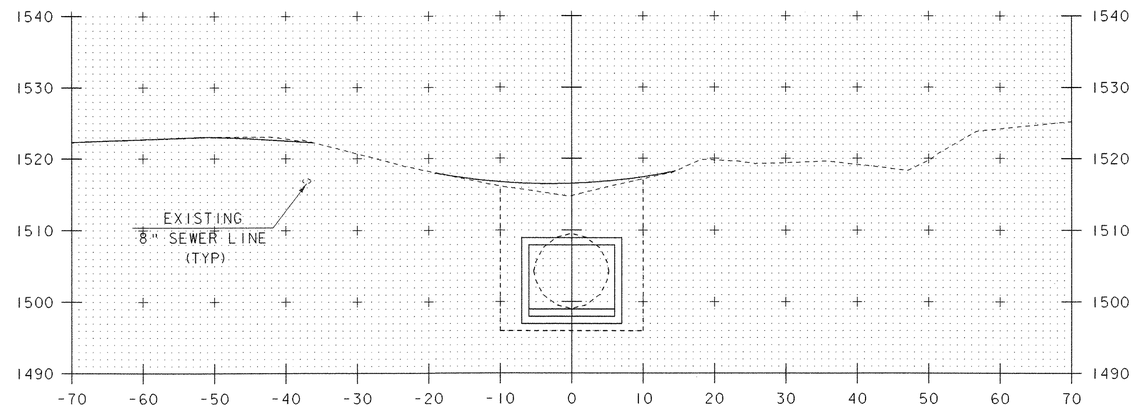
12+25



12+75



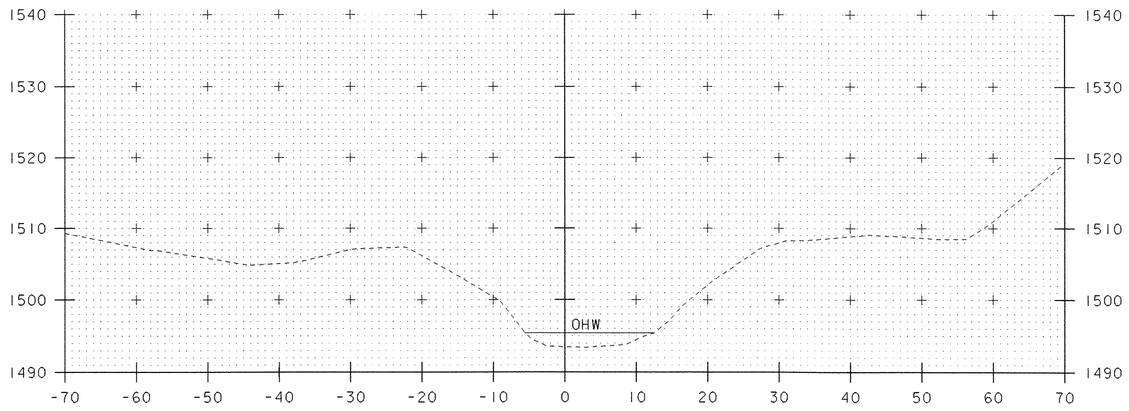
12+00



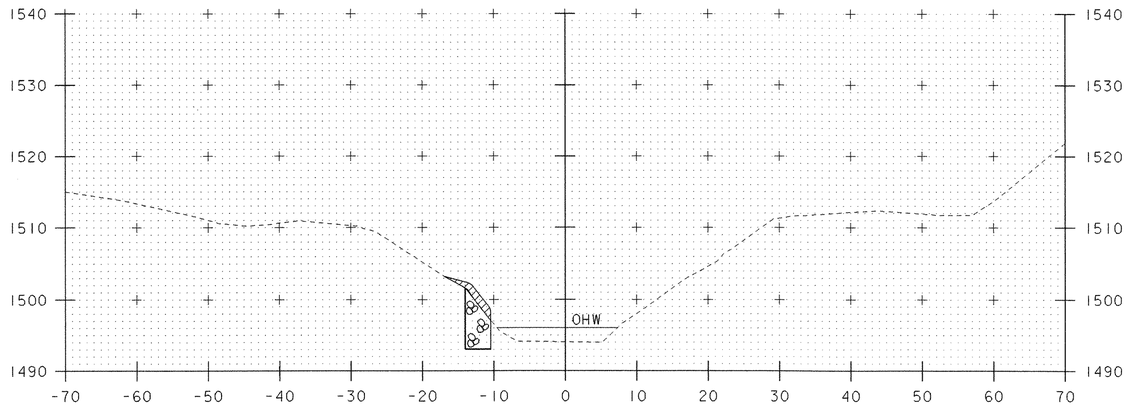
12+50

SCALE 1" = 10'-0
10 0 10

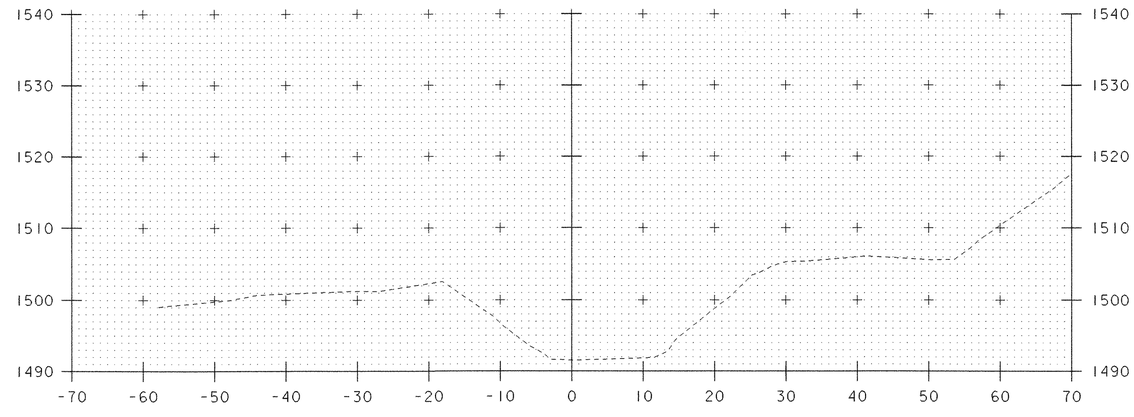
PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch3.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 12+00 - STA 12+75	SHEET: 24 OF 34



13+25



13+00



13+50

STA 13+00.00 LT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION

STA 12+98.00 RT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION

SCALE 1" = 10'-0
10 0 10

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch4.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 13+00 - STA 13+50	SHEET: 25 OF 34

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

This project involves the replacement of Bridge #29, an existing 10' Corrugated Galvanized Metal Plate Pipe (CGMPP) culvert with a pre-cast concrete box culvert and the related approach work. Bridge #29 is located on Vermont Route 100 in the County of Windham, Town of Whitingham, Vermont. The new culvert will be a concrete box approximately 154' long, 12' tall and 14' wide. The new culvert will be on the same alignment as the one it replaces. Traffic will be maintained on VT 100 through the use of a temporary one way bridge, with signal light control.

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

Area of disturbance is approximately 0.61 acres.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS
The property surrounding the project site consists of well established vegetation with moderate to steep slopes at the project site. Due to the nature of the surrounding terrain the project site could receive runoff water from nearby slopes and Russel Lane.

DRAINAGE, WATERWAYS, BODIES OF WATER:
Bridge #29 carries VT 100 over Sadawga Brook, which flows into Harriman Reservoir.
The tributary area at the bridge crossing is 4.4 sq mi.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:
The topography surrounding the project site is hilly, forested with open areas, lakes, ponds and swamps. The stream embankment slopes within the project site range approximately from 1:1 ½ to 1:3. The town of Whitingham septic plant is in the vicinity of the project. There is an underground sewer line within the project limits which must be relocated to allow installation of the new culvert.

VEGETATION:
The vegetation in the project area is trees and brush. The impact to vegetation will be limited to that which is affected by removal of the temporary bridge and the removal and replacement of the 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 Windam, Vermont. The soils in the project vicinity are classified as Worden Loam, very bouldery, with 15-25% slopes. This soil is considered highly erodible. The soil 'K' factor is 0.49.
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 placement of the temporary bridge, the removal and replacement of bridge #29 and its wing and head walls, and roadway approach work. Stabilization of disturbance to the stream banks will be accomplished with Stone Fill, Type IV 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.

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.)

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:
Stone lining of the stream banks with Stone Fill, Type IV as specified by VTrans Hydraulics personnel. This stone will protect the stream bank from erosion during design storm events. Stone Fill, Type I 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. All 1:3 slopes shall be seeded and mulched promptly upon achieving final grade.

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 105.23 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. Any changes shall 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 shall be established if the area is to be without construction activity for a period of 14 days. 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.

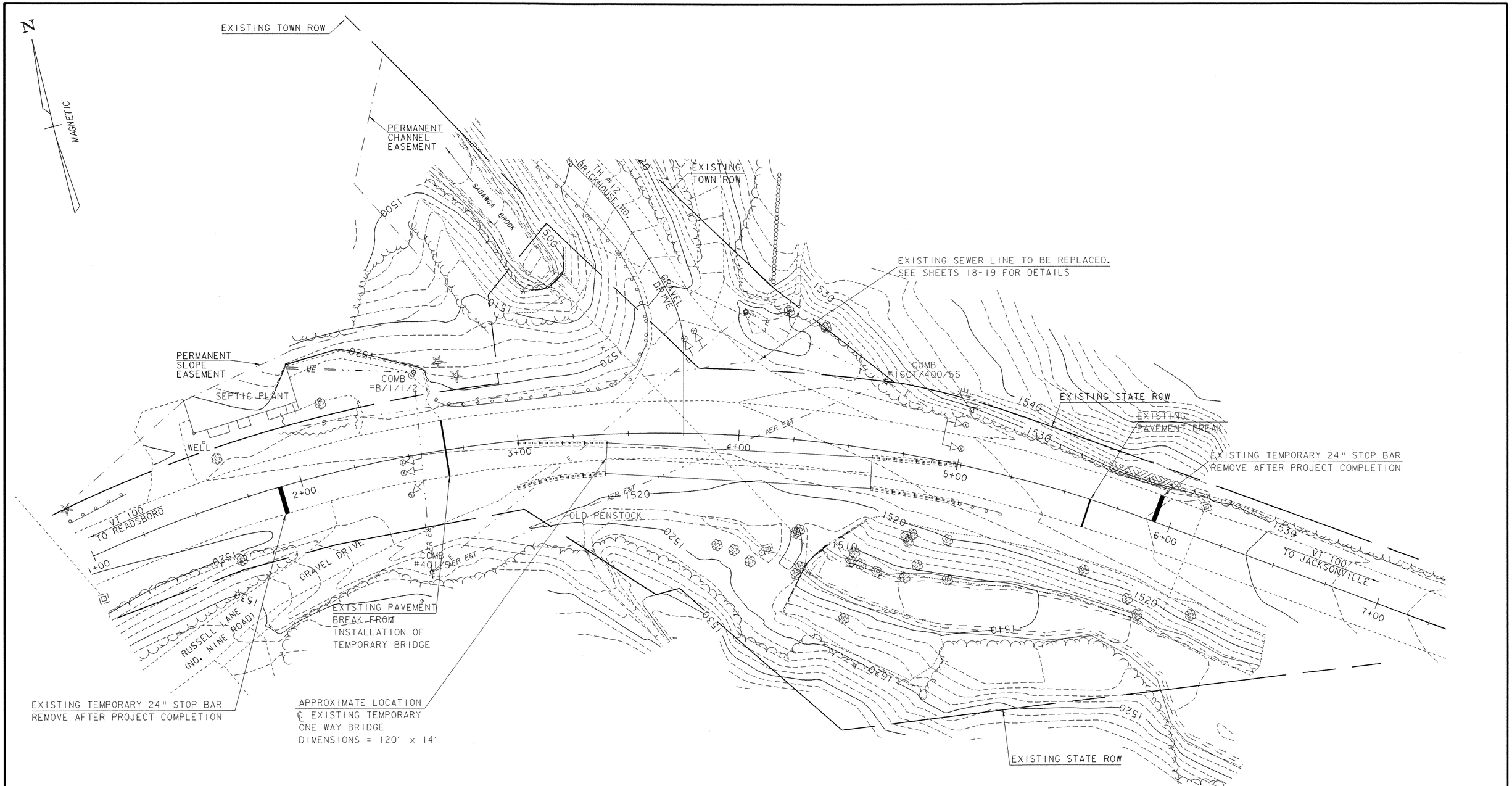
Control only sediment-laden runoff generated by the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

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: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128excel.dgn	
IPARM FILE NAME: s05c128ecnarr.i	PLOT DATE: 08-MAR-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
EROSION CONTROL NARRATIVE	SHEET: 26 OF 34



EXISTING CONDITIONS SITE PLAN

SCALE 1" = 20'-0
20 0 20

DATUM
VERTICAL ASSUMED
HORIZONTAL ASSUMED

PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV(6)

DESIGN FILE NAME: 05c128/Structures/s05c128bdr.dgn
IPARM FILE NAME: s05c128excon.i
PLOT DATE: 08-MAR-2006
SURVEYED BY: L.ORVIS
SURVEY DATE: 06/2005
SQUAD LEADER: C.P.WILLIAMS
DRAWN BY: M.FESSEL
EXISTING CONDITIONS SITE PLAN
SHEET: 27 OF 34

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 NARRATIVE ON SHEET #26.
3. INSTALL EROSION CONTROL MATTING ON DISTURBED SLOPES GREATER THAN 1:3.

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

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

N

MAGNETIC

PERMANENT CHANNEL EASEMENT

PERMANENT SLOPE EASEMENT

EXISTING TOWN ROW

EXISTING STATE ROW

SADAWGA BROOK

BRICKHOUSE RD.

GRAVEL DRIVE

OLD PENSTOCK

RUSSELL LANE (NO. NINE ROAD)

VT 100 TO READSBORO

VT 100 TO JACKSONVILLE

SOIL CLASSIFICATION

WORDEN LOAM
SLOPES: 15-25%
"K FACTOR" 0.49
HIGHLY ERODIBLE LAND

SOIL CLASSIFICATION

WORDEN LOAM
SLOPES: 15-25%
"K FACTOR" 0.49
HIGHLY ERODIBLE LAND

LEGEND

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

DATUM
VERTICAL ASSUMED
HORIZONTAL ASSUMED

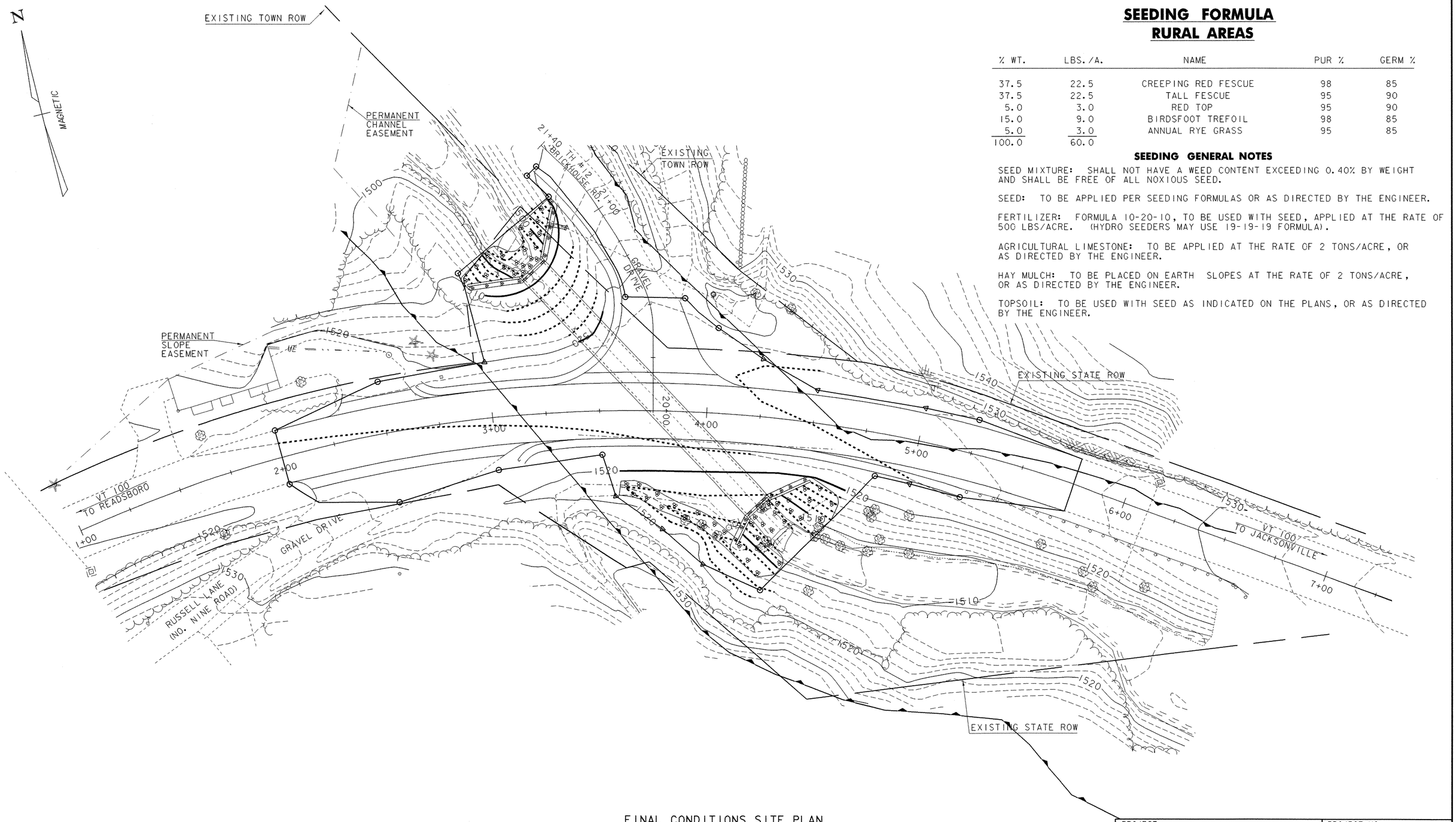
SEE AMENDED EP&SC PLAN

EROSION PREVENTION AND SEDIMENT CONTROL PLAN

SCALE 1" = 20'-0
20 0 20

PROJECT: WHITINGHAM
PROJECT NO.: ST CULV(6)

DESIGN FILE NAME: 05c128/Structures/s05c128bdr.dgn
IPARM FILE NAME: s05c128aro.i
PLOT DATE: 08-MAR-2006
SURVEYED BY: L. ORVIS
SURVEY DATE: 06/2005
SQUAD LEADER: C.P. WILLIAMS
DRAWN BY: M. FESSEL
EROSION & SEDIMENT CONTROL PLAN
SHEET: 28 OF 34



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.

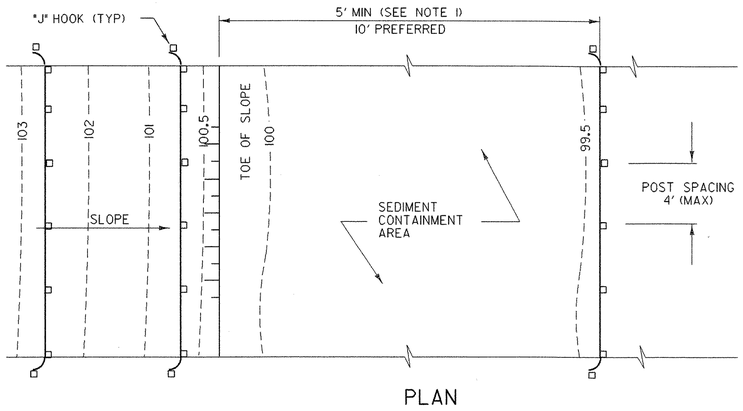
FINAL CONDITIONS SITE PLAN

SCALE 1" = 20'-0
20 0 20

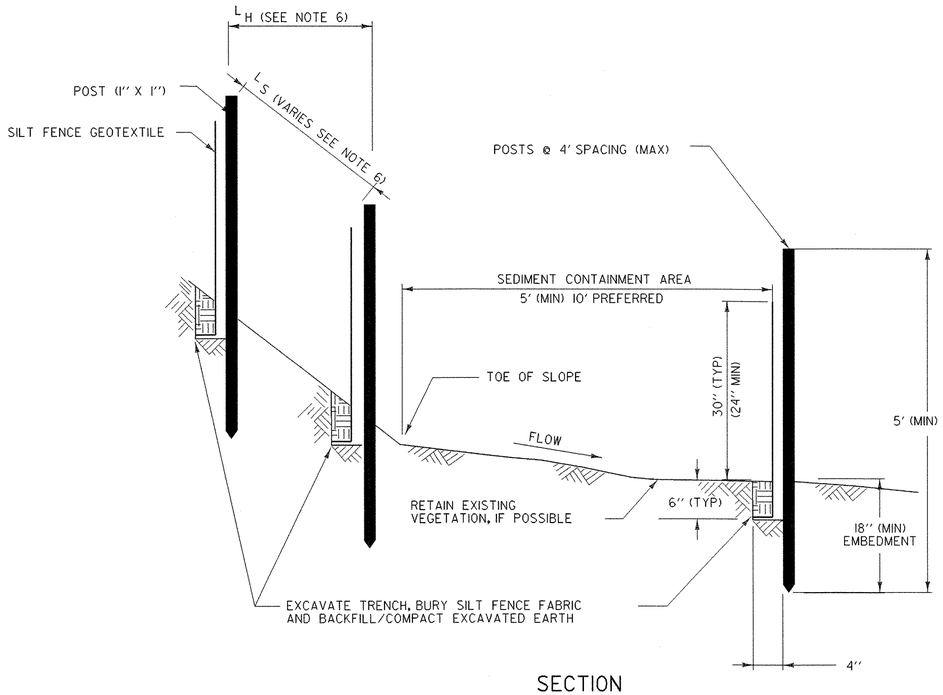
DATUM
VERTICAL ASSUMED
HORIZONTAL ASSUMED

LEGEND
RIPARIAN BUFFER ZONE

PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV(6)
DESIGN FILE NAME: 05c128/Structures/s05c128bdr.dgn	
IPARM FILE NAME: s05c128	PLOT DATE: 08-MAR-2006
SURVEYED BY: L.ORVIS	SURVEY DATE: 06/2005
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
FINAL CONDITIONS SITE PLAN	SHEET: 29 OF 34



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.

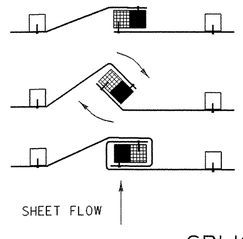
C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

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.



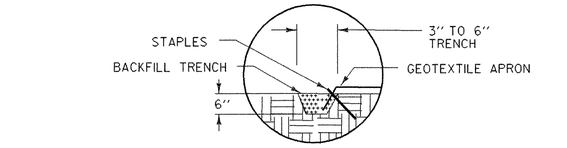
1. PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL
3. DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

SPLICING DETAIL

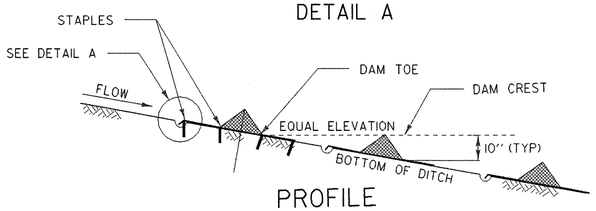
EROSION PREVENTION & SEDIMENT CONTROL DETAILS SILT FENCE

EPSC1

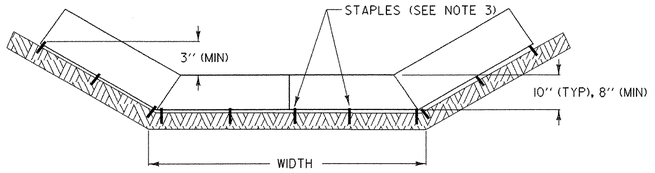
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/Structures/s05c128ecnotes.dgn	
IPARM FILE NAME: s05c128epsc1.i	PLOT DATE: 08-MAR-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
SILT FENCE	SHEET: 30 OF 34



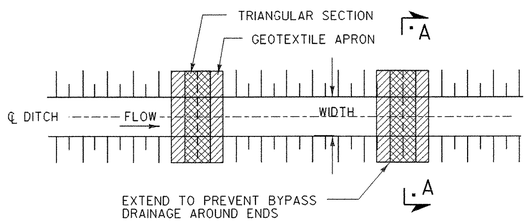
DETAIL A



PROFILE



SECTION A-A

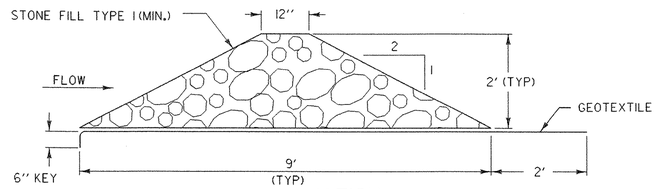


PLAN

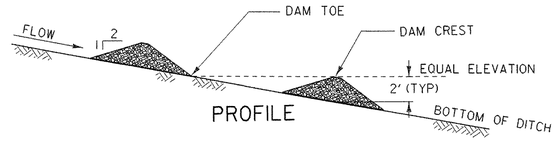
CHECK DAM - TEMPORARY
(PREFABRICATED)

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

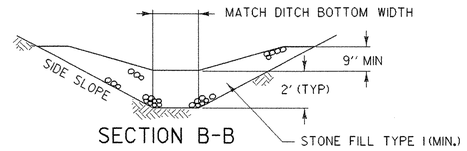
** BASED ON 10" TYPICAL HEIGHT



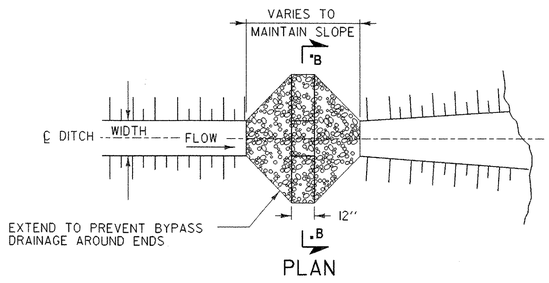
CROSS SECTION



PROFILE



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.

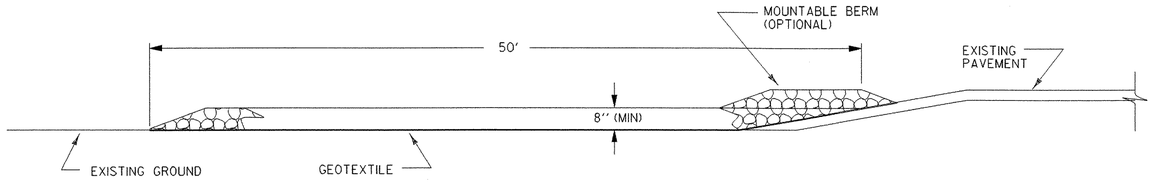
GENERAL NOTES:

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.

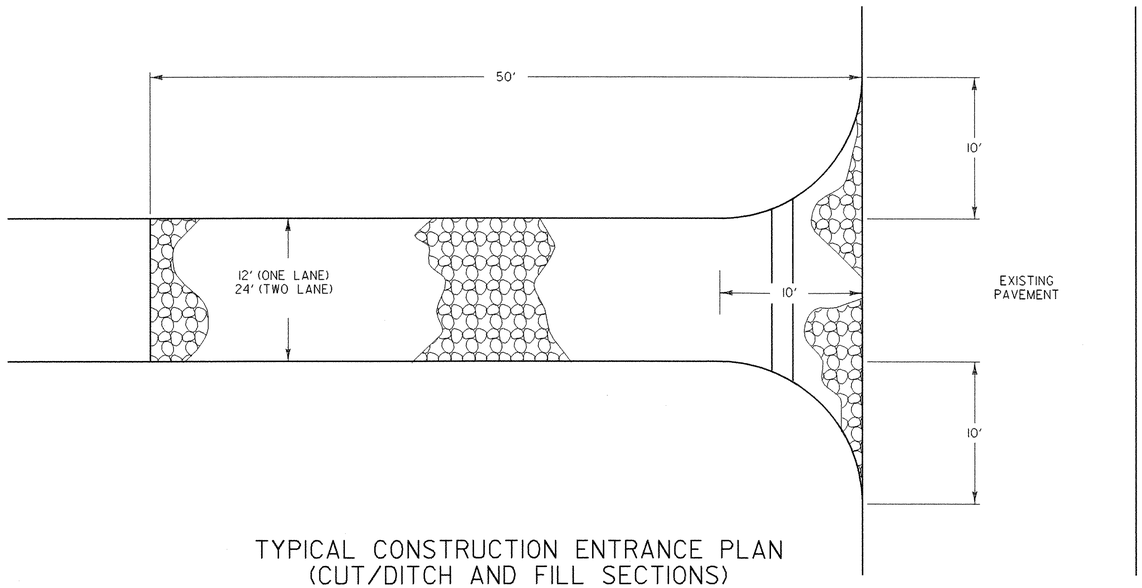
EROSION PREVENTION & SEDIMENT CONTROL DETAILS
CHECK DAMS

EPSC2

PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)
DESIGN FILE NAME: 05c128/Structures/s05c128ecnotes.dgn	
IPARM FILE NAME: s05c128epsc2.i	PLOT DATE: 08-MAR-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
CHECK DAMS	SHEET: 31 OF 34



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



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

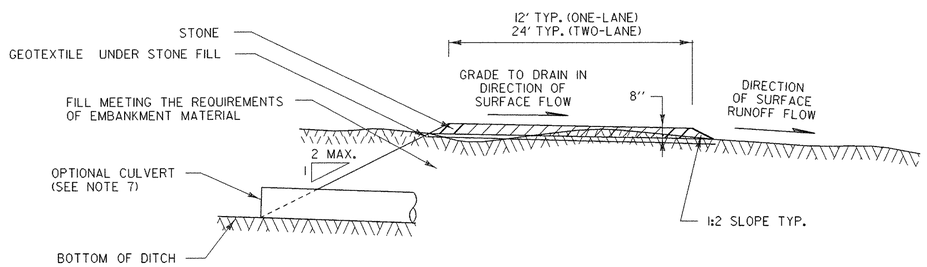
STABILIZED CONSTRUCTION ENTRANCE

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.

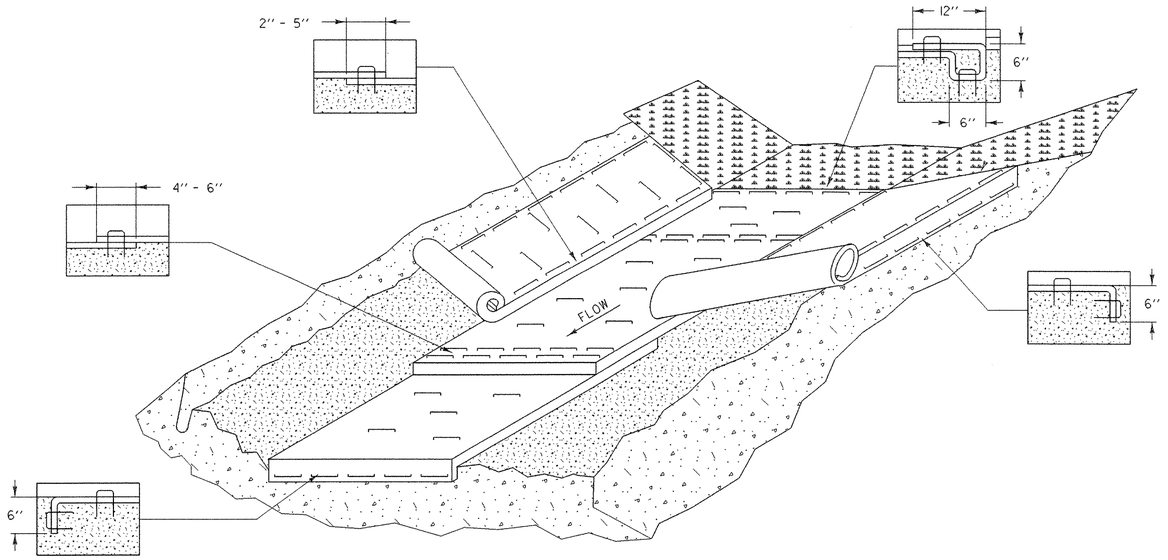


TYPICAL CONSTRUCTION ENTRANCE SECTION

EROSION PREVENTION & SEDIMENT CONTROL DETAILS CONSTRUCTION ENTRANCE

EPSC4

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/Structures/s05c128ecnotes.dgn	
IPARM FILE NAME: s05c128epsc4.i	PLOT DATE: 08-MAR-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
CONSTRUCTION ENTRANCE	SHEET: 32 OF 34



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.

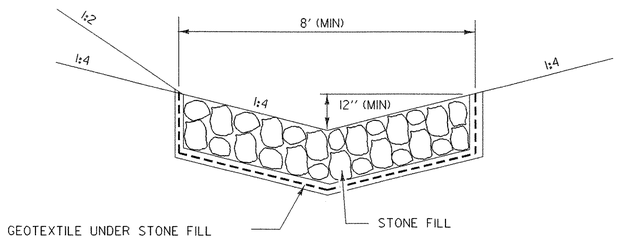
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

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

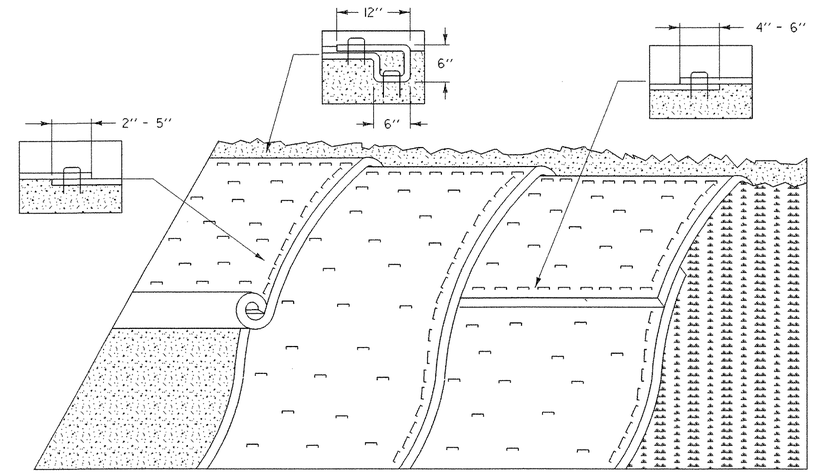
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	1 FT
TYPE II	2 FT

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.

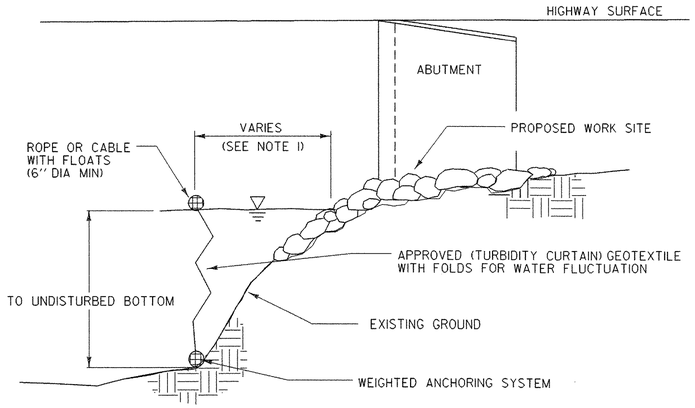
GENERAL NOTES:

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.

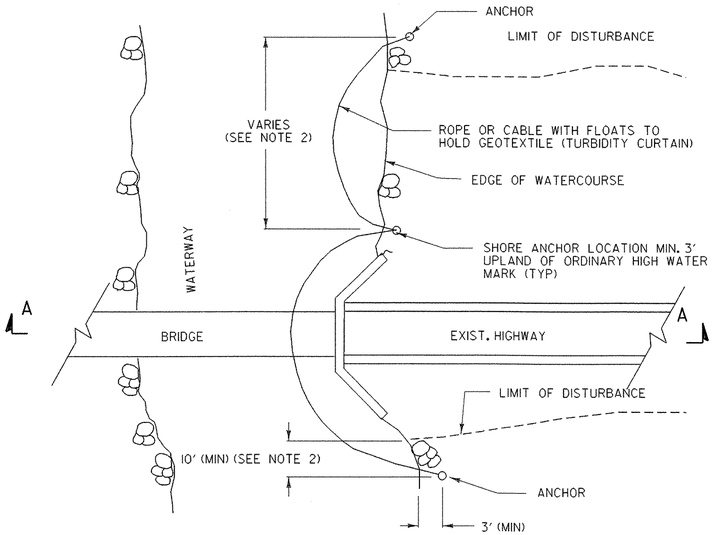
EROSION PREVENTION & SEDIMENT CONTROL DETAILS DITCH & SLOPE PROTECTION

EPSC5

PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)
DESIGN FILE NAME: 05c128/Structures/s05c128ecnotes.dgn	
IPARM FILE NAME: s05c128epsc5.i	PLOT DATE: 08-MAR-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
DITCH & SIDE SLOPE PROTECTION	SHEET: 33 OF 34



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.

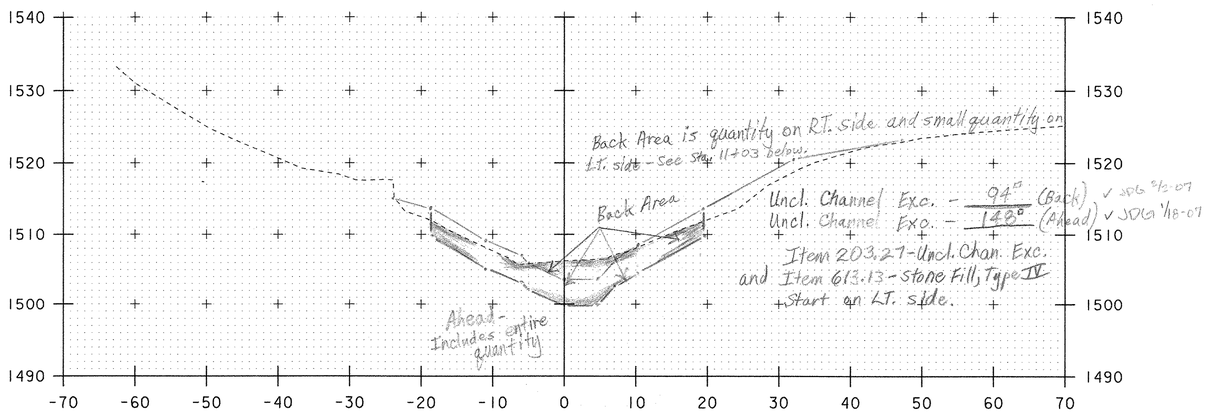
GENERAL NOTES:

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.

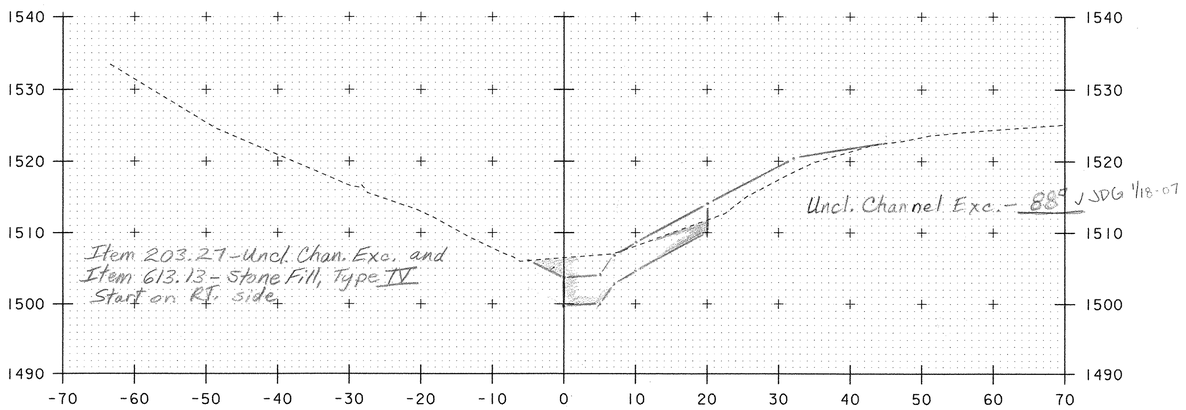
EROSION PREVENTION & SEDIMENT CONTROL DETAILS TURBIDITY CURTAIN

EPSC6

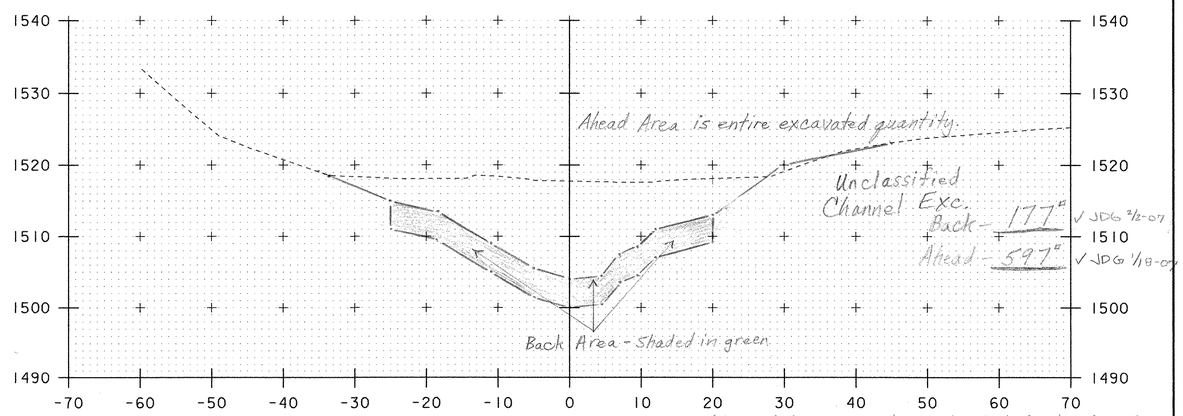
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV(6)
DESIGN FILE NAME: 05c128/Structures/s05c128ecnotes.dgn	
IPARM FILE NAME: s05c128epsc6.i	PLOT DATE: 08-MAR-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
TURBIDITY CURTAIN	SHEET: 34 OF 34



11+05



11+03



11+12

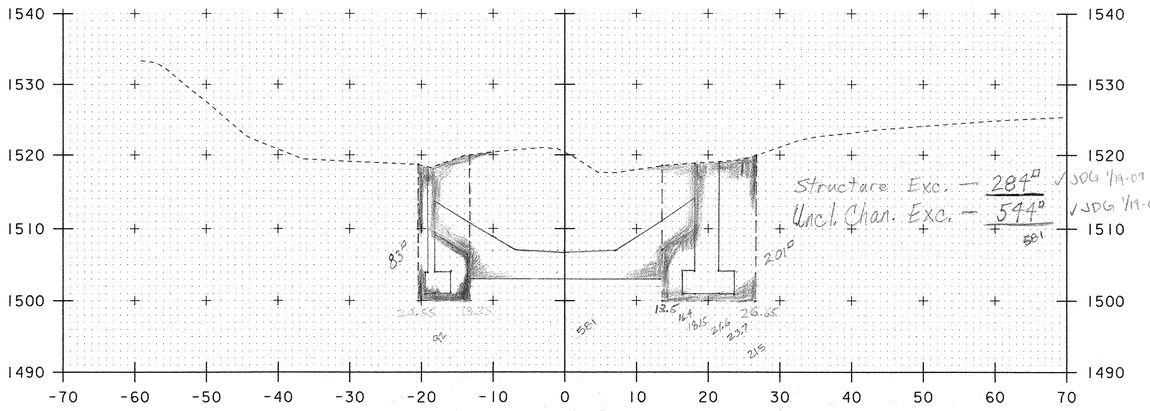
This station is the old inlet headwall location; hence, the reason for the back and ahead quantities.

BACK & AHEAD STATIONS

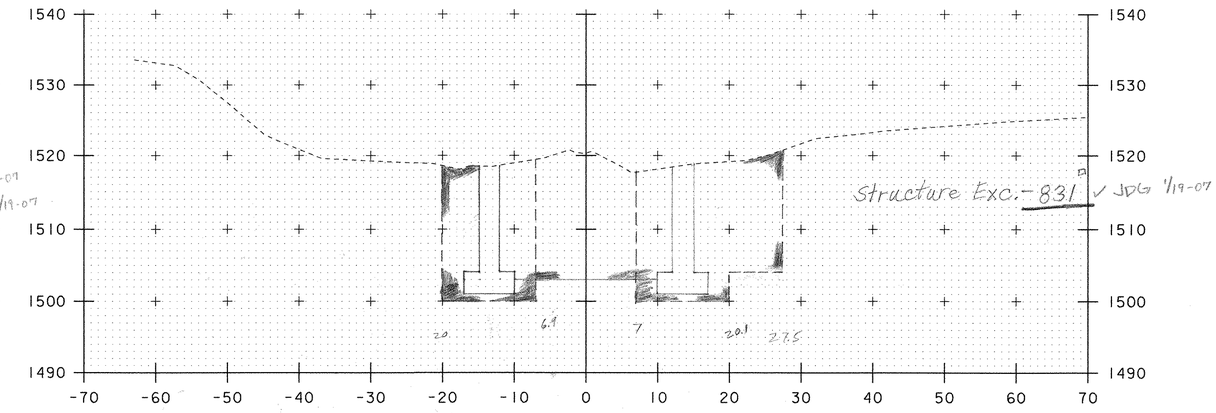
M.W.H. plan. 1/3/07

Scale 1"=10'-0"

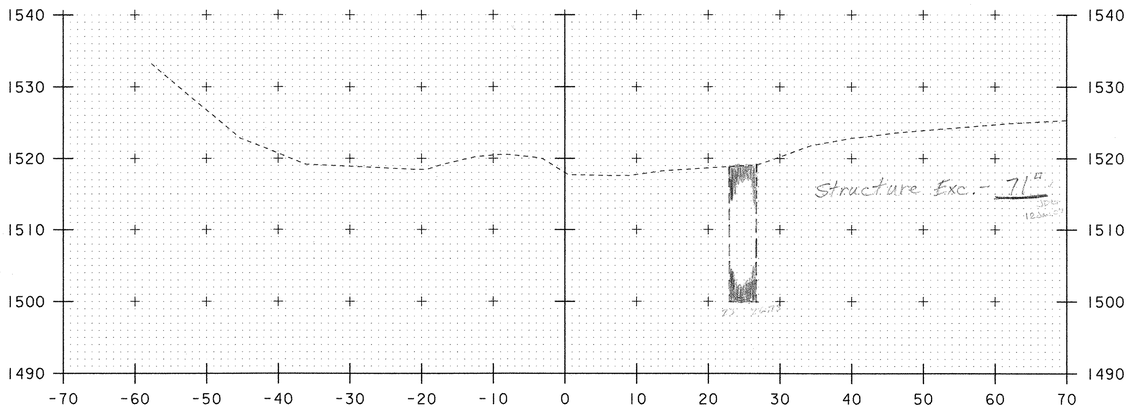
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ER1.i	PLOT DATE: 16-NOV-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL SECTIONS FOR M.HAUGHOUT	SHEET: 15 OF 34



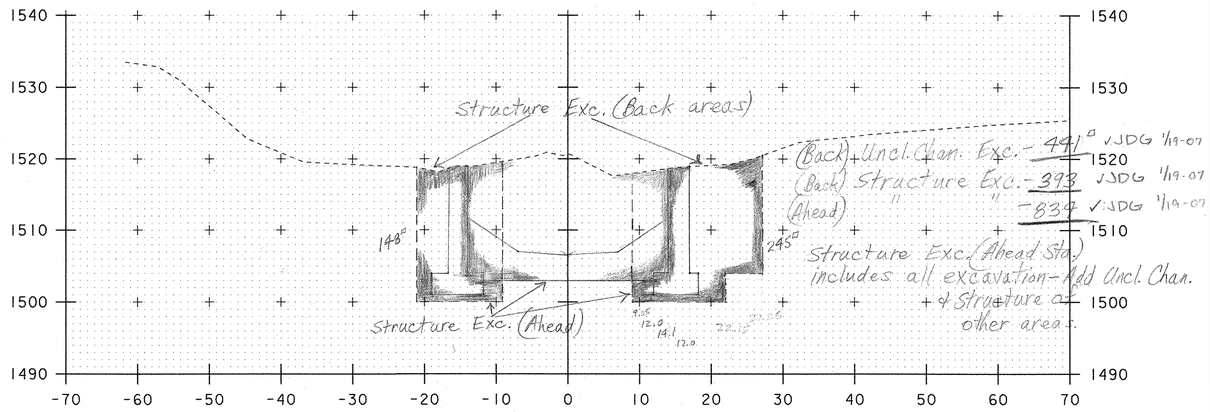
11+20.70



11+23.00



11+17.00

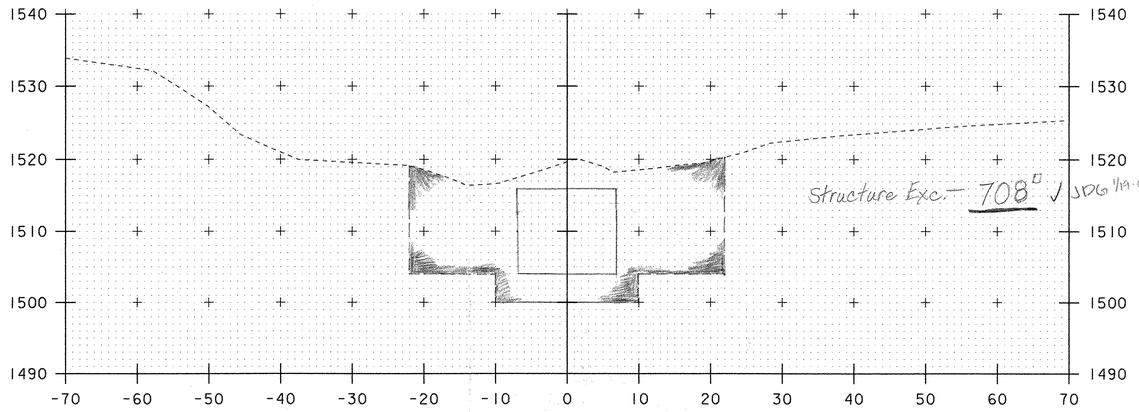


11+22.25

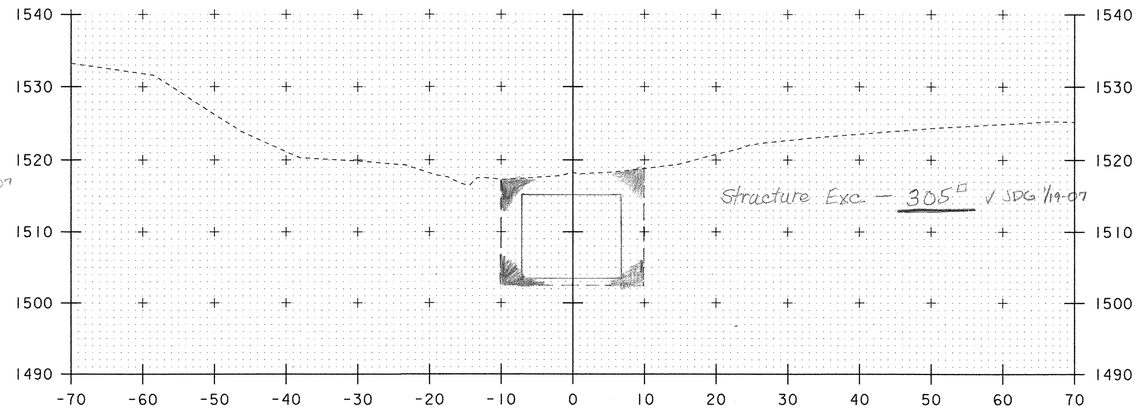
EXCAVATION LIMITS IN FRONT OF FOOTING - END UNCL. CHANNEL EXCAVATION

SCALE 1" = 10'-0
10 0 10

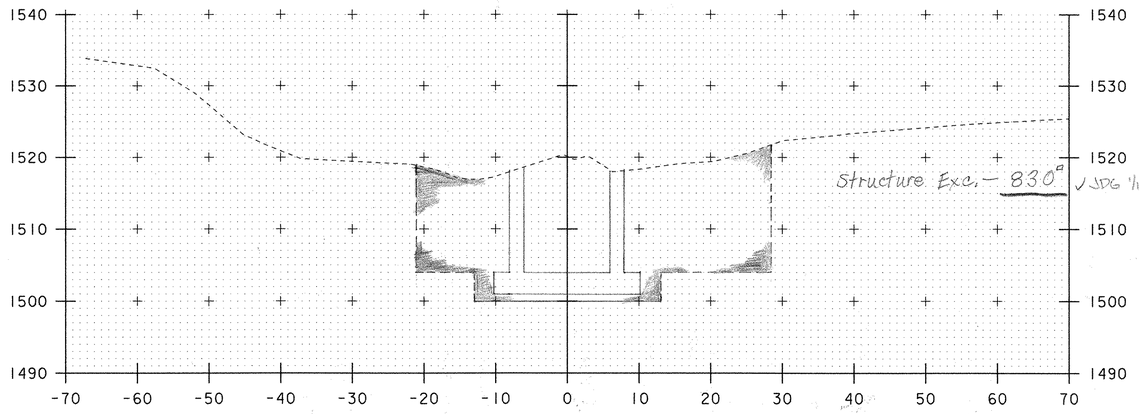
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128.dgn	
IPARM FILE NAME:	PLOT DATE: 08-DEC-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
SECTIONS FOR M.HAUGHWOUT 12/8/06	SHEET: 18 OF 1



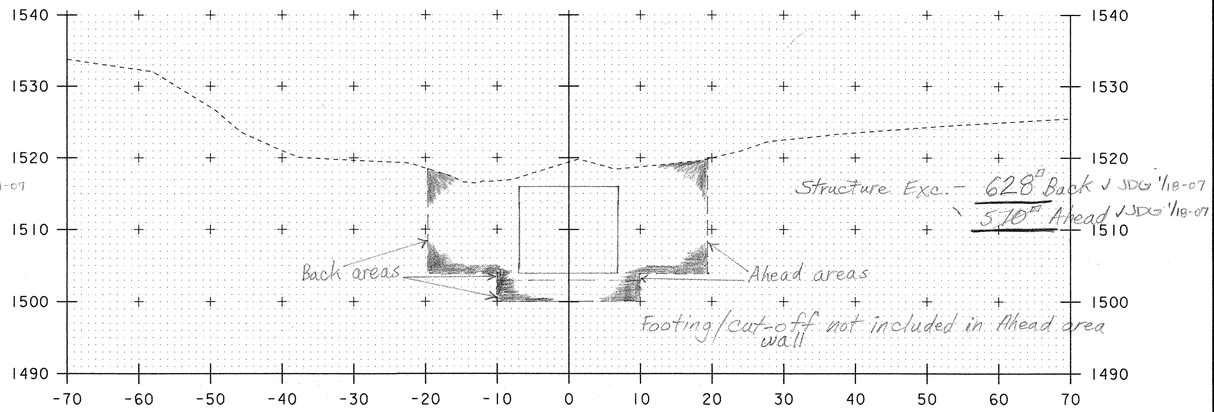
11+27.85



11+32.35



11+25.55

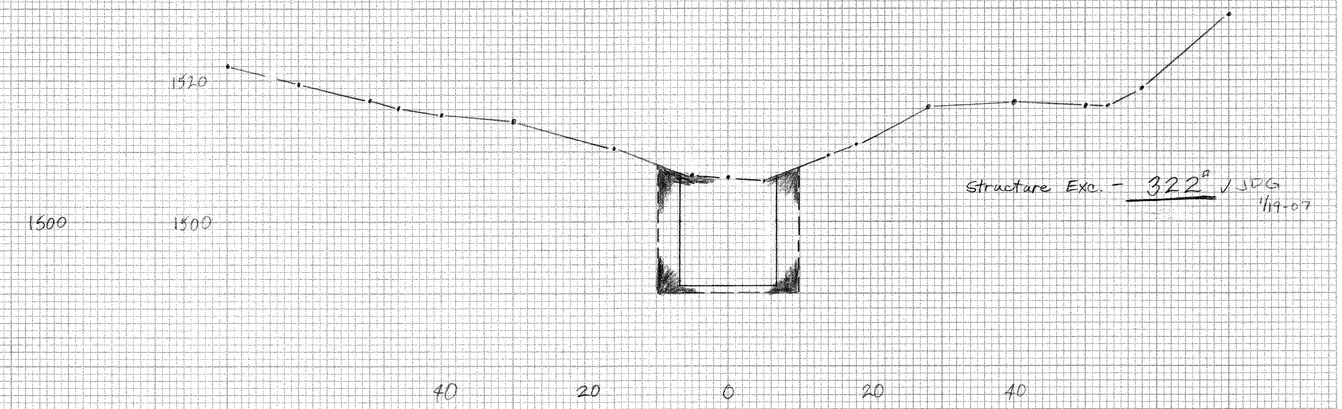


11+28.75

Sections calc. M. White 1/9/07

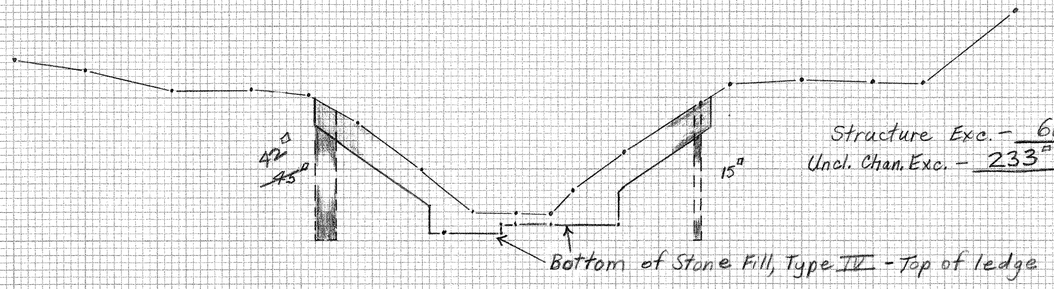
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128.dgn	
IPARM FILE NAME:	PLOT DATE: 22-DEC-2006
DESIGNED BY: E.L. RUSTAY	DRAWN BY: E.L. RUSTAY
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
SECTIONS FOR M. HAUGHWOUT 12/22/06	SHEET: 8B OF 1

SCALE 1" = 10'-0
10 0 10



Structure Exc. - 322 sq ft ✓ JDG 1/19-07

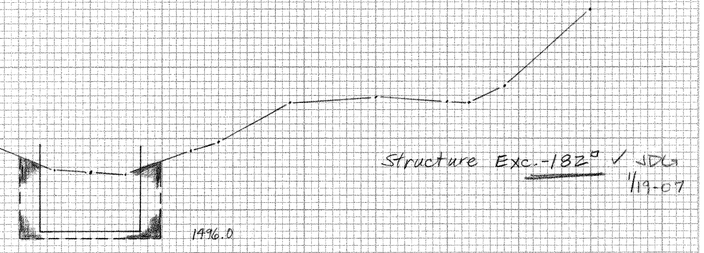
Channel Line Sta. 12+72 Ahead - Cut-off Wall Exc. Limits
Use section & quantity also for Sta. 12+73.40 - Intersection of anchor excavation limits



Structure Exc. - 60 sq ft
Uncl. Chan. Exc. - 233 sq ft ✓ JDG 1/19-07

51 sq ft ✓ M.W.H. 2/2/07

Channel Line 12+96.20



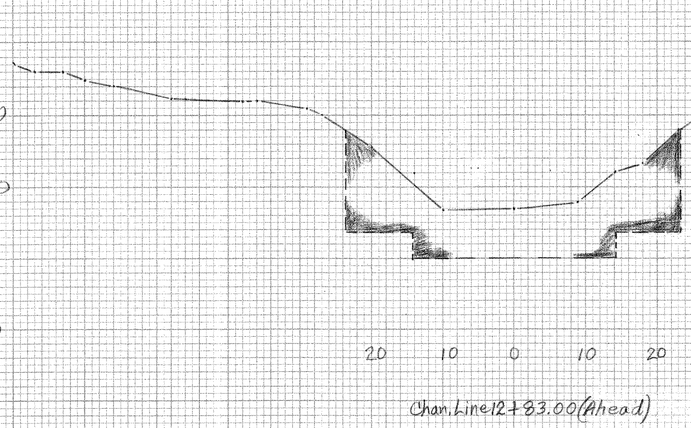
Structure Exc. - 182 sq ft ✓ JDG 1/19-07

Channel Line 12+72 Back

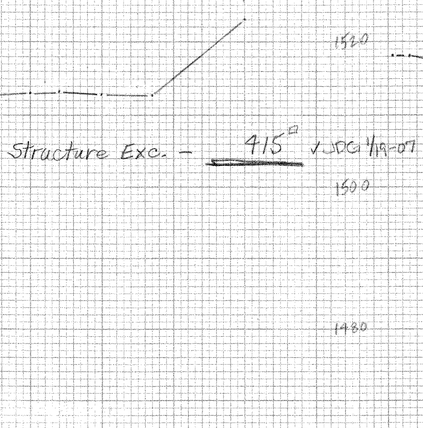
Whitingham STP ST CULV(6)
Structure Exc. Cross-Sections
Chan. Line Sta. 12+72 Back & Ahead, 12+96.20
Plotted by M. Haughwout 12/22/06

Sheet 108 of

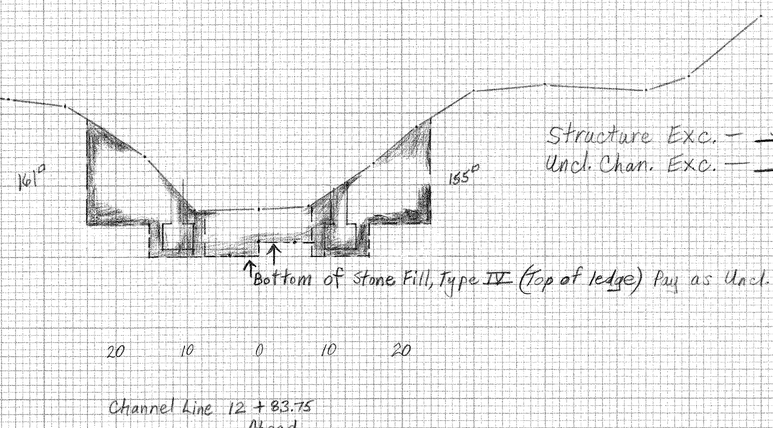
PLATE 3-FULL CROSS SECTION-FULL LINE
HIGHWAY FEDERAL AID SHEET
PRINTED IN U.S.A.



Chan. Line 12+83.00 (Ahead)



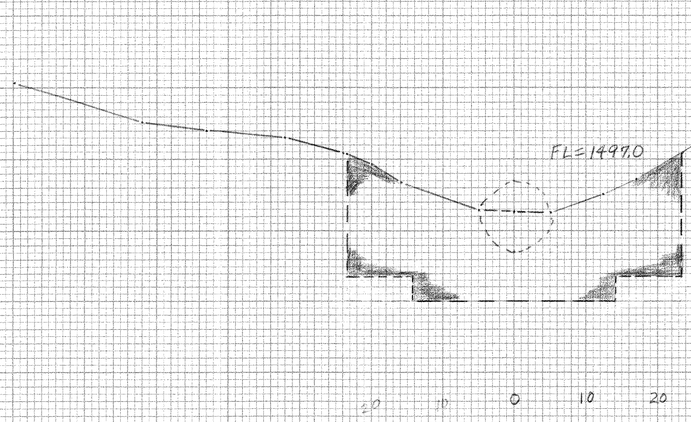
Structure Exc. — 415 cy ✓JDG 1/19-07



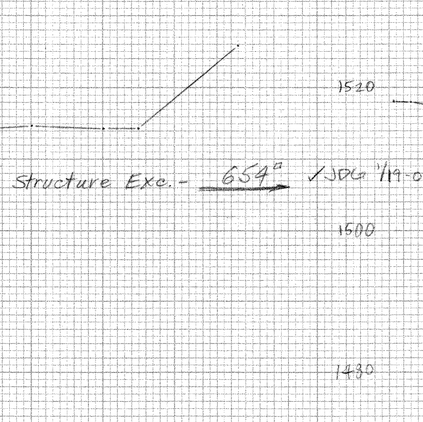
Bottom of Stone Fill, Type ~~IV~~ (Top of ledge) Pay as Uncl. Chan. Exc.

Channel Line 12 + 83.75 Ahead

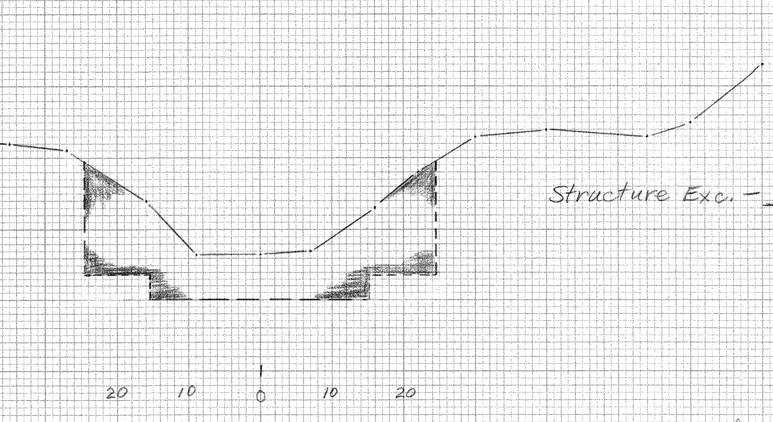
Structure Exc. — 316 cy ✓JDG 1/19-07
Uncl. Chan. Exc. — 121 cy ✓JDG 1/19-07



Chan. Line 12+83.00 End Old 10' Dia. Plate Pipe (Back)



Structure Exc. — 654 cy ✓JDG 1/19-07

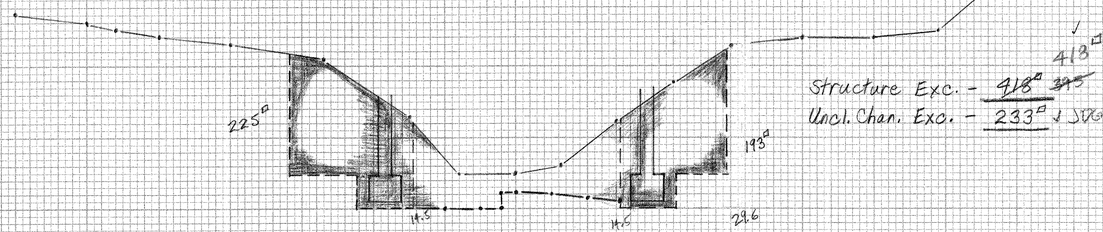


Chan. Line 12+83.75 End Excavation Limits Back 3' Beyond cut-off wall

Structure Exc. — 476 cy ✓JDG 1/19-07

Calc. by M.W.H. 1/11/07
Whittingham STP ST CUL V(G)
Structure & Uncl. Chan. Exc.
Cross Sections Sheet 11B of
Plotted by M. Haughwout
Chan. Line Sta. 12+83 Back & Ahead
" " " 12+83.75 Back & Ahead

PLATE 3-FOOT CHORD SECTION-HULL LINE
MICHIGAN FEDERAL AID SHEET
TAYLOR SURVEY
STATE
DESIGNED
DRAWN
CHECKED
QUANTITIES
NOTE BOOK
PAGE
SURVEY
PLOTTED
STAKED
CHECKED
FINAL

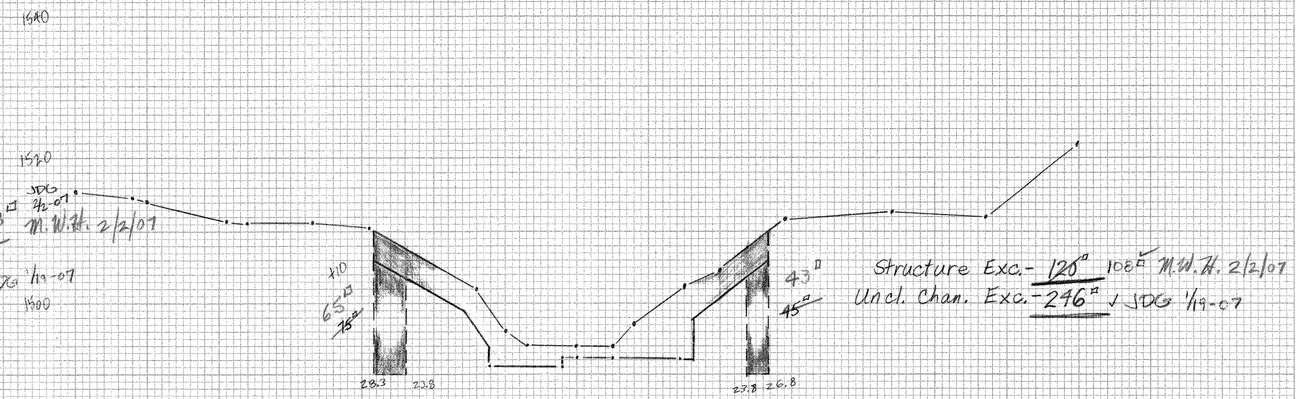


Structure Exc. - 418 ~~395~~
Uncl. Chan. Exc. - 233 ✓ JDG 1/19-07

See below for explanation of areas in green

40 20 0 20 40 60

Channel Line Sta. 12+88.75
Excavation limits - Anchor area LT.

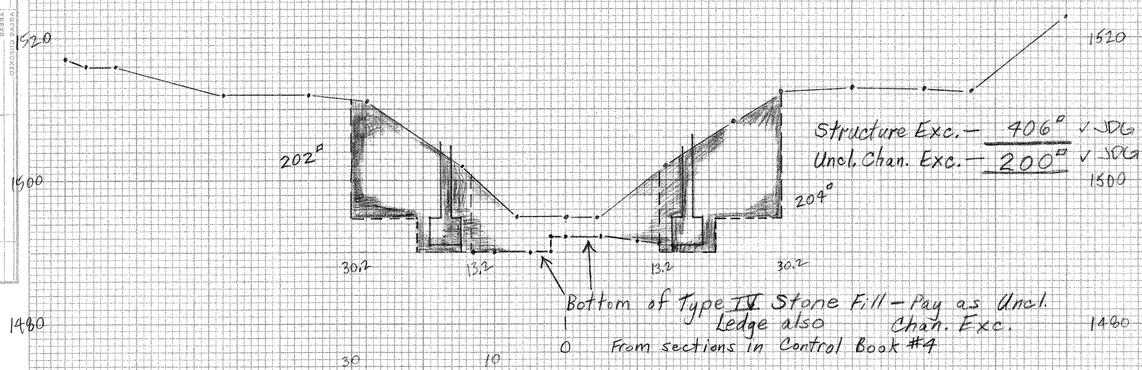


Structure Exc. - 120 105 M.W.H. 2/2/07
Uncl. Chan. Exc. - 246 ✓ JDG 1/19-07

See section at lower left for explanation of areas in green

40 20 0 20 40

Channel Line 12+95.30

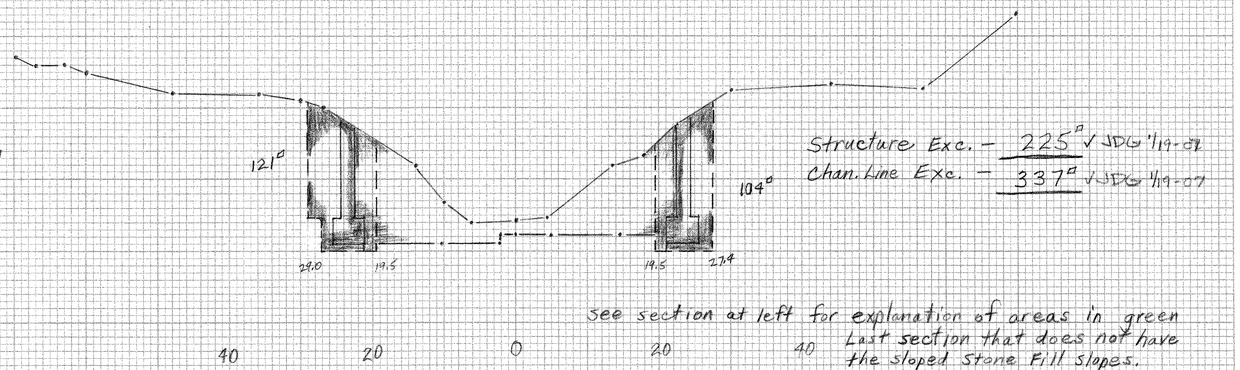


Structure Exc. - 406 ✓ JDG 1/19-07
Uncl. Chan. Exc. - 200 ✓ JDG 1/19-07

Bottom of Type ~~IV~~ Stone Fill - Pay as Uncl. Ledge also Chan. Exc.
From sections in Control Book #4

30 10 0

Channel Line 12+87.80
Excavation limits - Anchor area RT.



Structure Exc. - 225 ✓ JDG 1/19-07
Chan. Line Exc. - 337 ✓ JDG 1/19-07

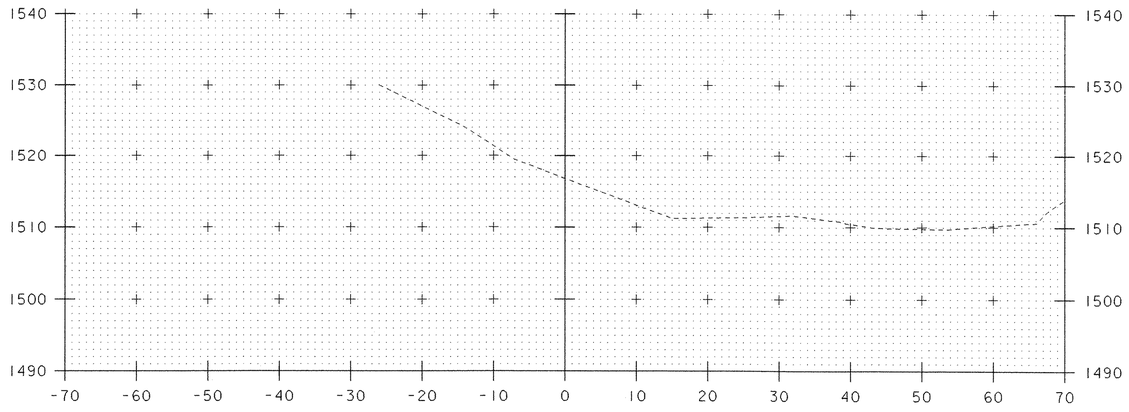
see section at left for explanation of areas in green
Last section that does not have the sloped Stone Fill slopes.
See Sta. 12+92.87

40 20 0 20 40

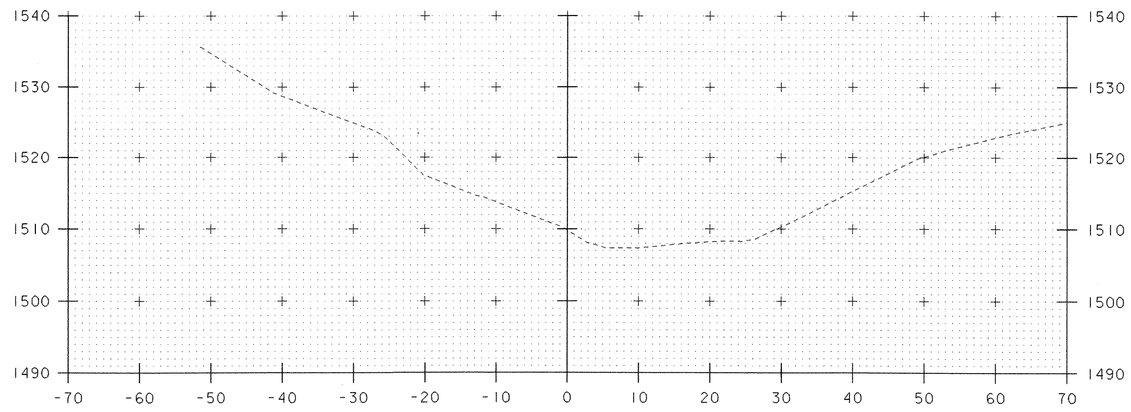
Channel Line 12+92.30
Anchor and WW #3 Exc. Limits - RT.

Calc. by M.W.H. 1/10/07
Whitingham STP ST 0424(6)
Structure & Uncl. Chan. Exc.
Cross Sections Sheet 128 of
Plotted by M. Haughwout

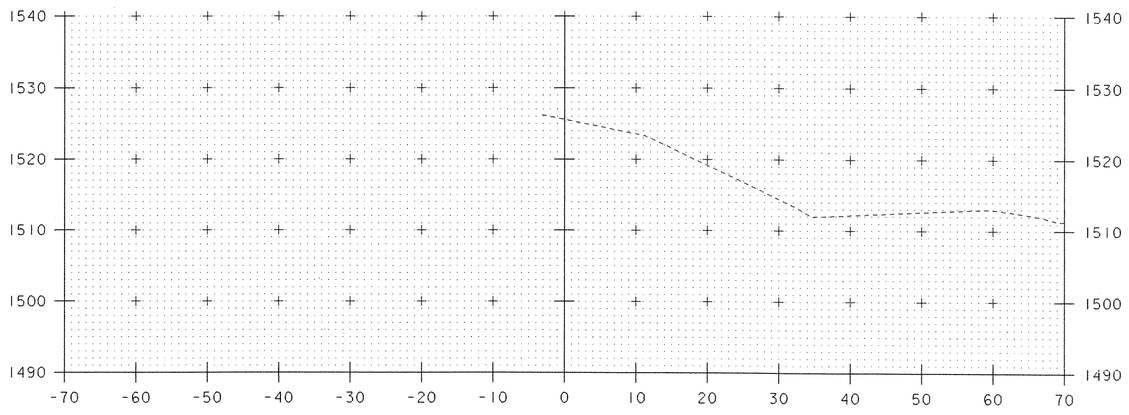
Chan. Line Sta. 12+87.80, 12+88.75, 12+92.30 & 12+95.30



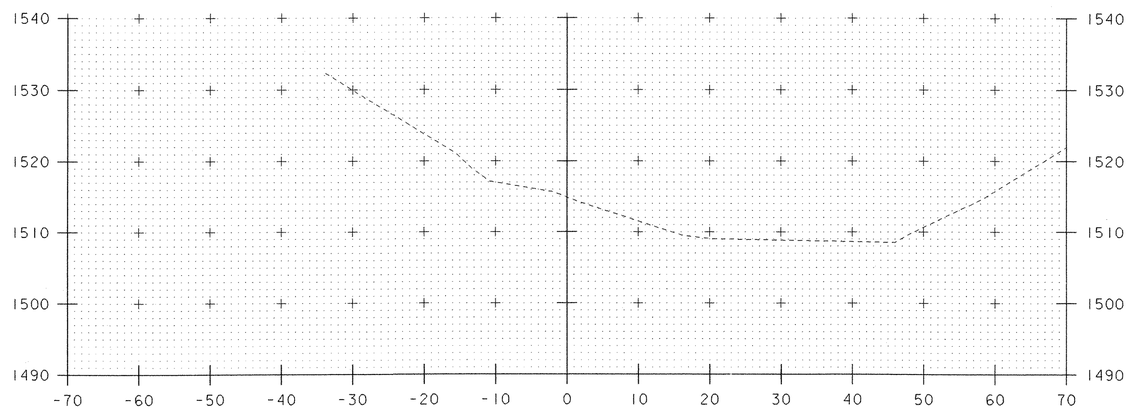
10+25



10+75



10+00

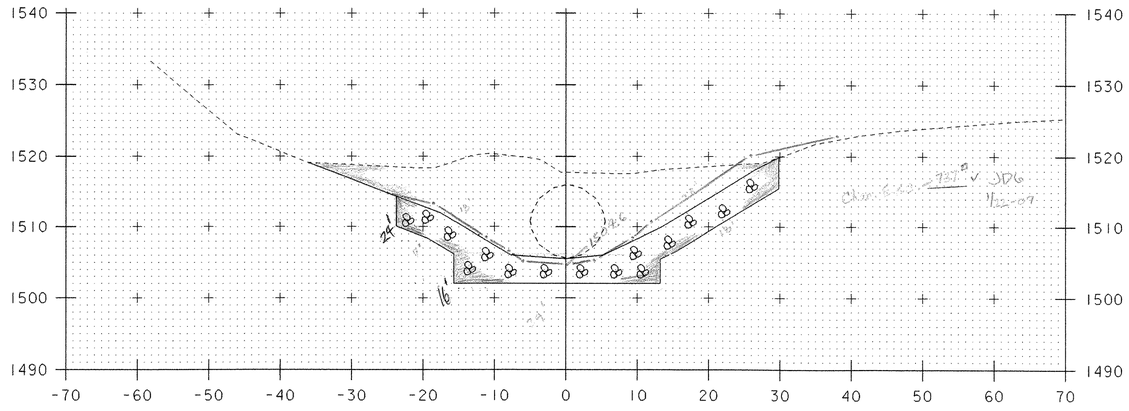


10+50

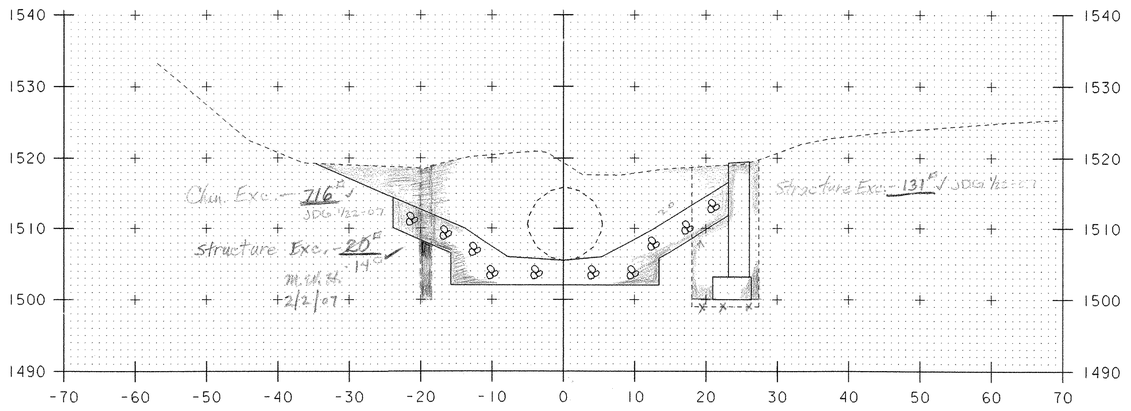
No quantities on this sheet

SCALE 1" = 10'-0
10 0 10

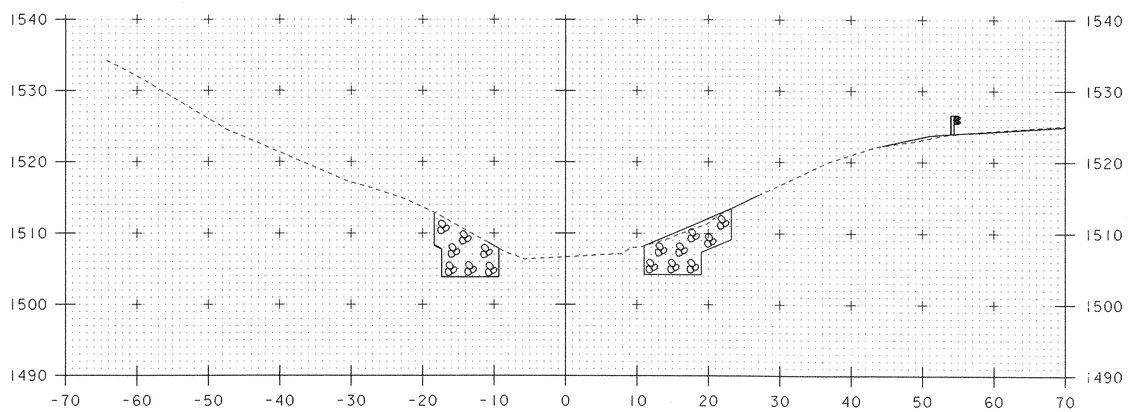
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128chl.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 10+00 - STA 10+75	SHEET: 4 OF 12



11+15.98
FRONT EXCAVATION LIMITS @ WW1



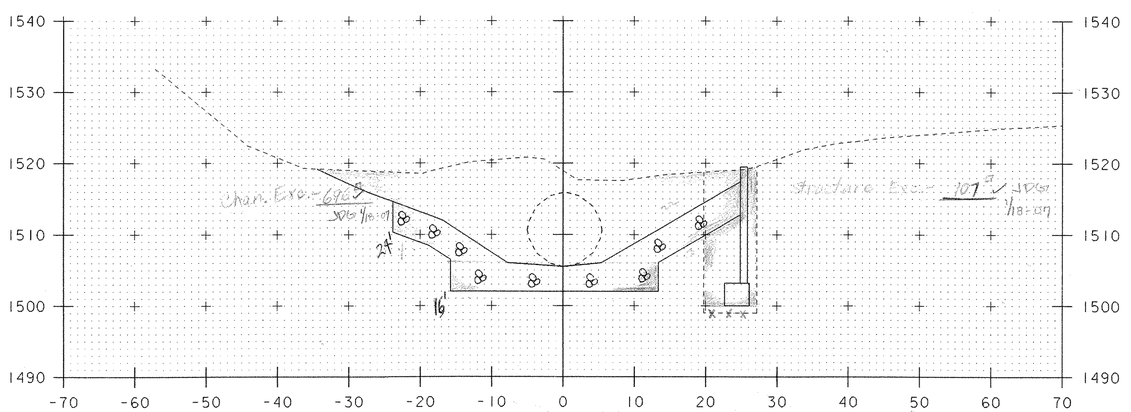
11+19.00
END WW1 BACK FACE



11+00

11+05
~~STA 10+98.00~~ LT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

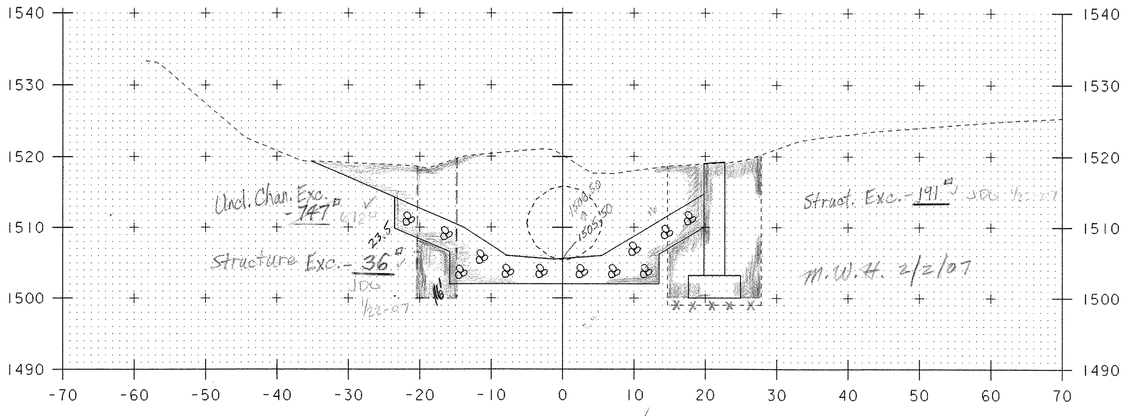
11+03
~~STA 10+99.00~~ RT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION



11+18.38
FRONT EXCAVATION LIMITS @ WW2

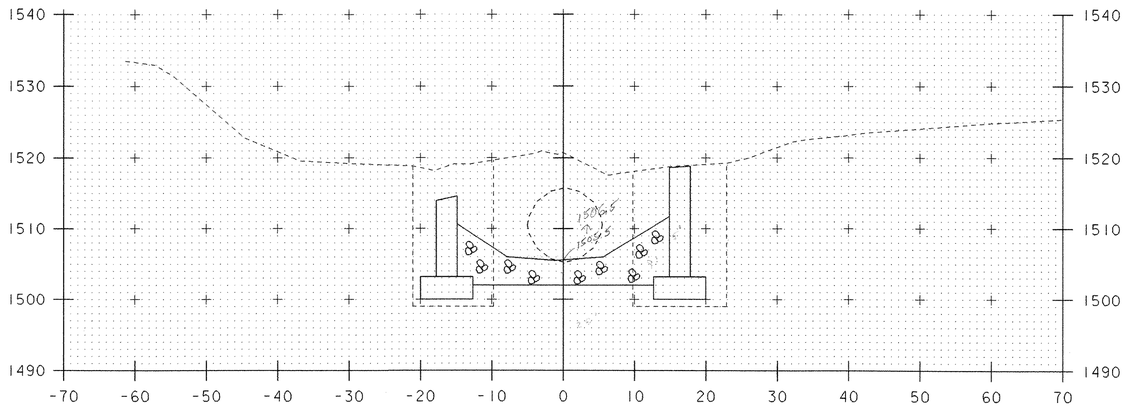
SCALE 1" = 10'-0
10 0 10

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch2.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 11+00 - STA 11+19	SHEET: 5A OF 12



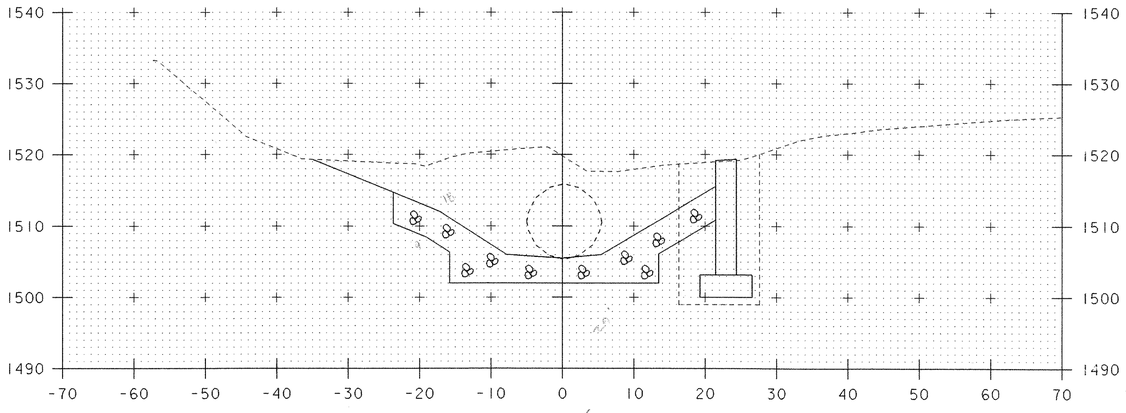
11+20.21

BACK EXCAVATION LIMITS @ WW1



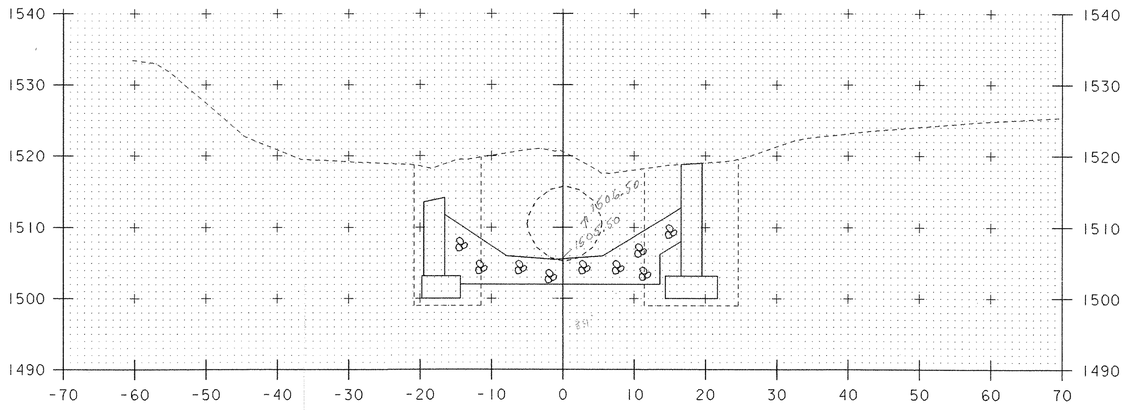
11+22.01

BACK CORNER OF FOOTING @ WW2



11+19.62

BACK CORNER OF FOOTING @ WW1



11+21.39

END WW2 BACK FACE

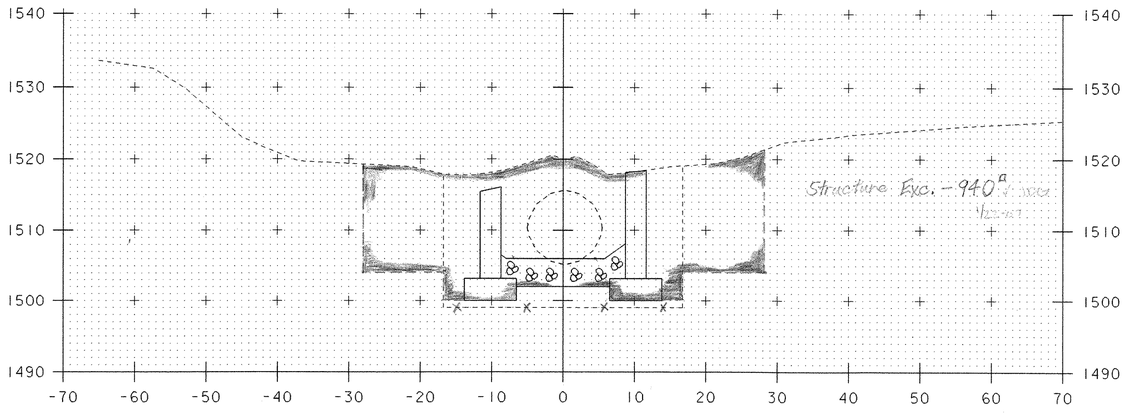
m.w.h. plan, 1/3/07

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch2.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHAN STA 11+19.62 - STA 11+22.01	SHEET: 6A OF 12

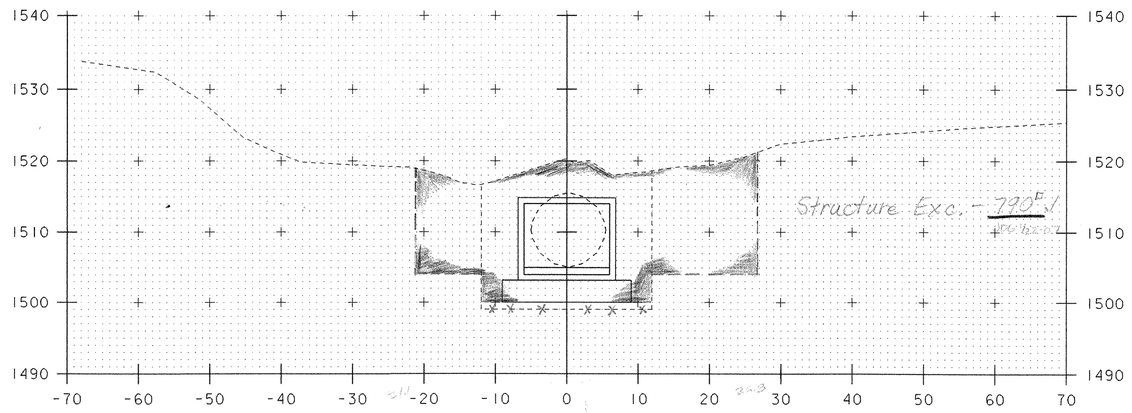
SCALE 1" = 10'-0
10 0 10

STA 11+26.00 LT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION

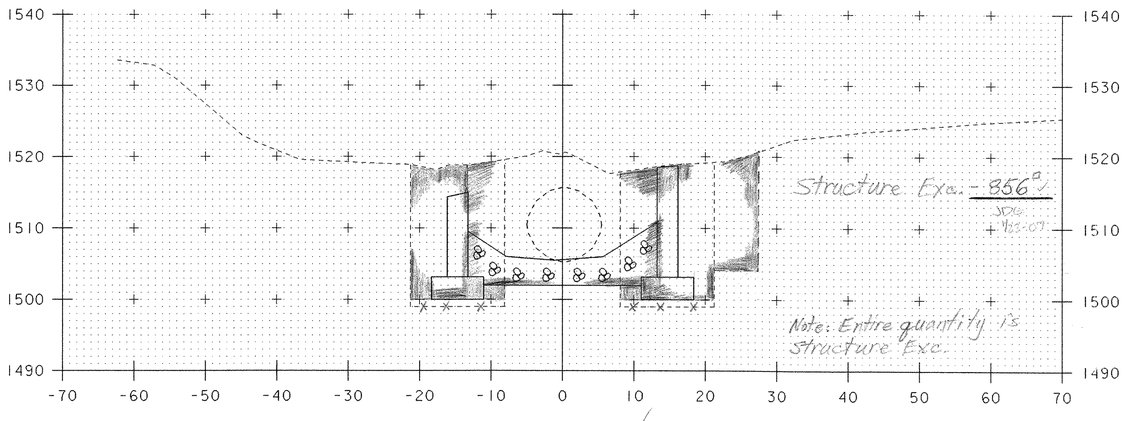
STA 11+26.00 RT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION



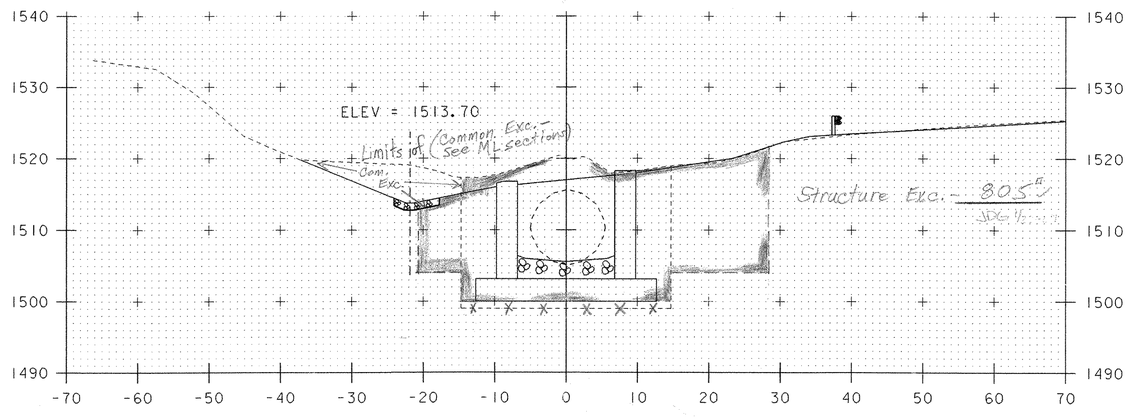
11+24.25
~~EXCAVATION LIMITS @ FRONT OF FOOTING~~ See Section @ Sta. 11+22.25



11+26.00
WP @ BEGIN BOX



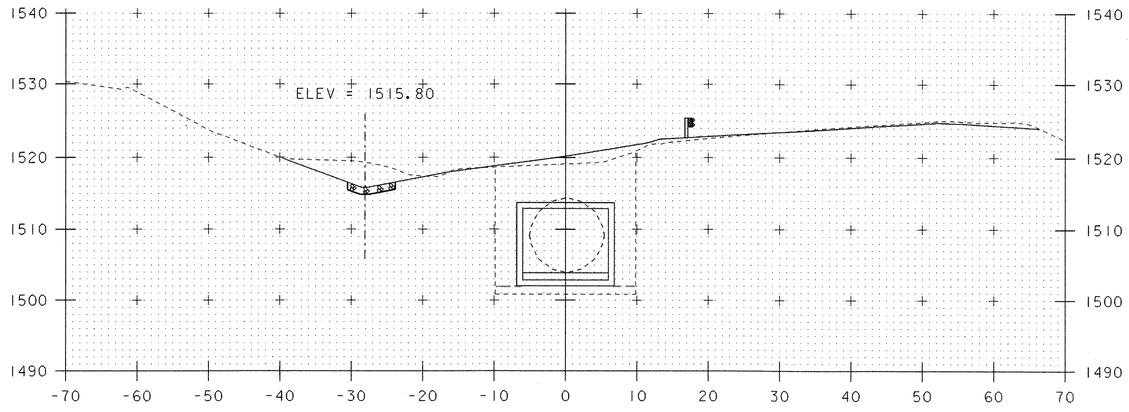
11+22.61
BACK EXCAVATION LIMITS @ WW2



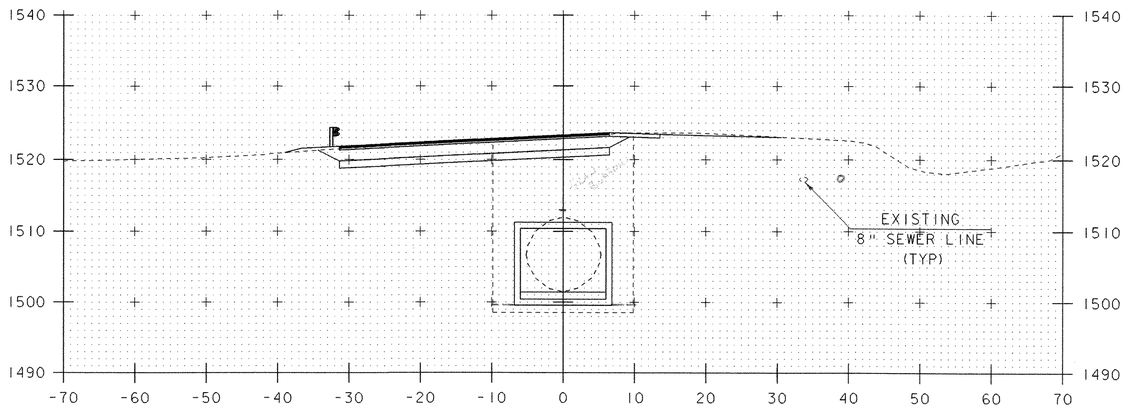
11+25

SCALE 1" = 10'-0
10 0 10

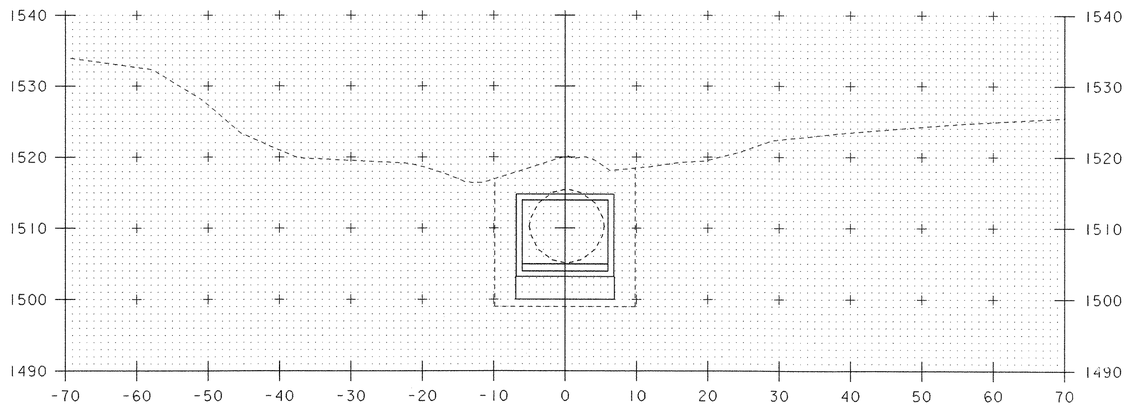
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch2.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHAN STA 11+22.61 - STA 11+26.00	SHEET: 7A OF 12



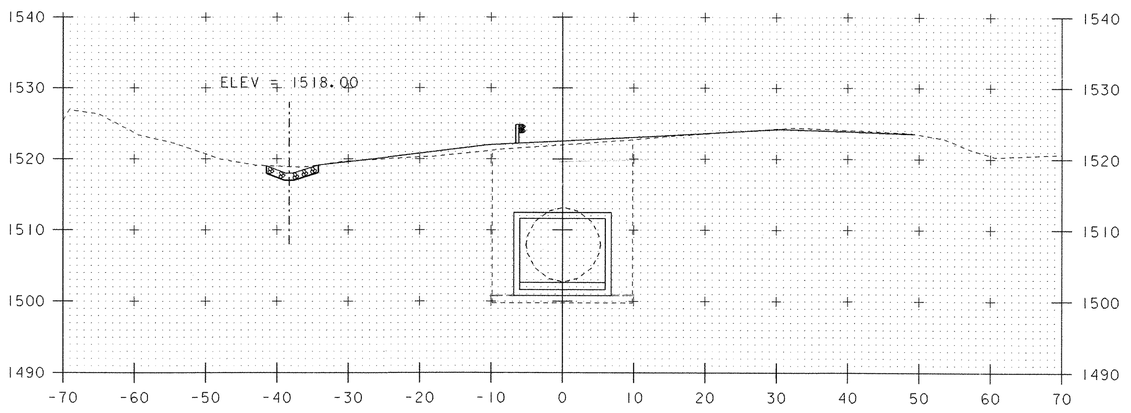
11+50



12+00



11+26.77
EXCAVATION LIMITS

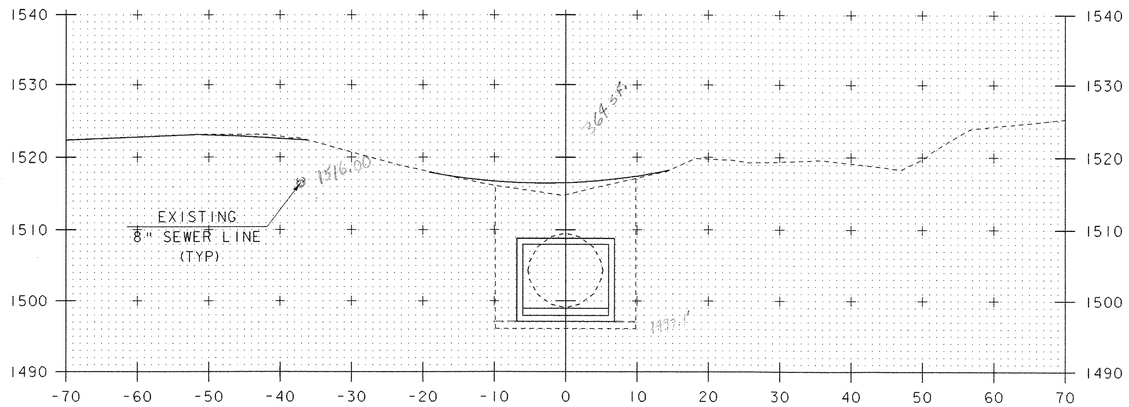


11+75

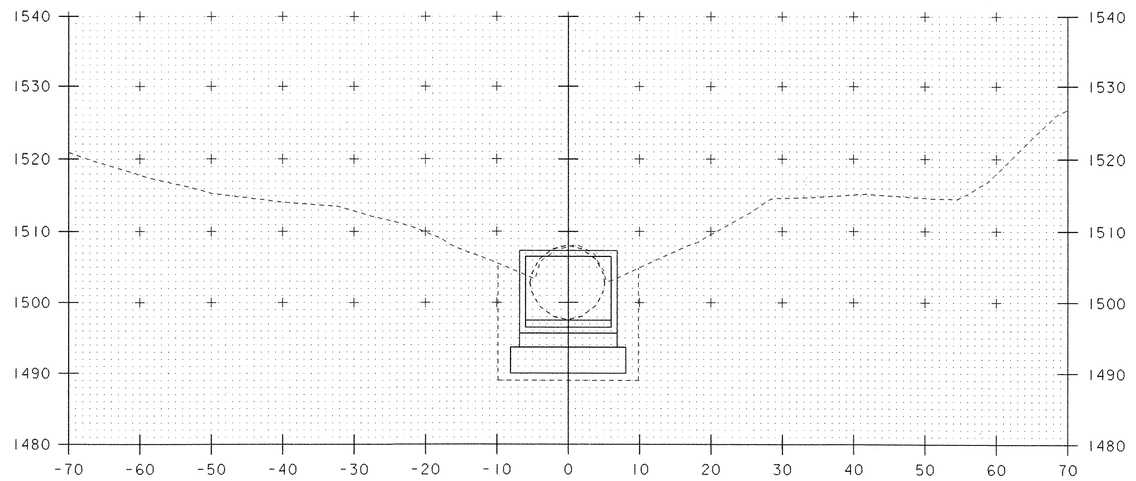
See larger set of plans for quantities calculated.

SCALE 1" = 10'-0
10 0 10

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch2.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHAN STA 11+26.77 - STA 12+00	SHEET: 8 OF 12

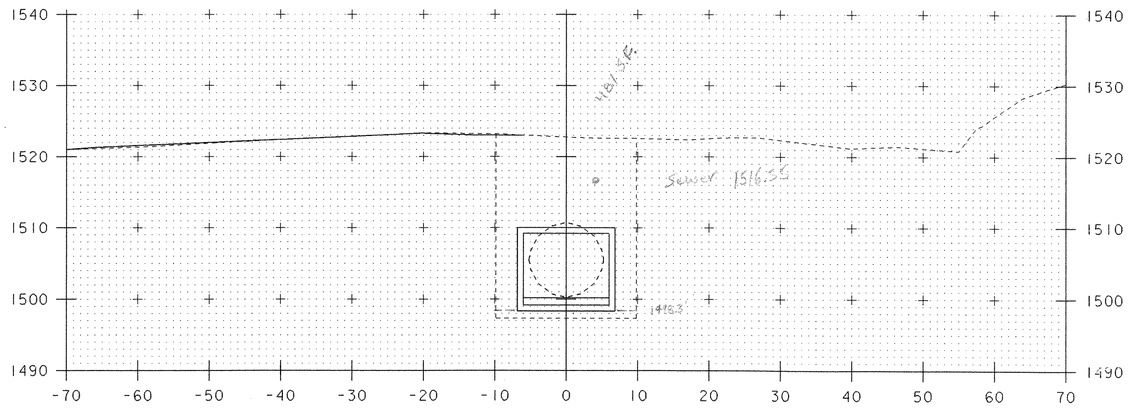


12+50

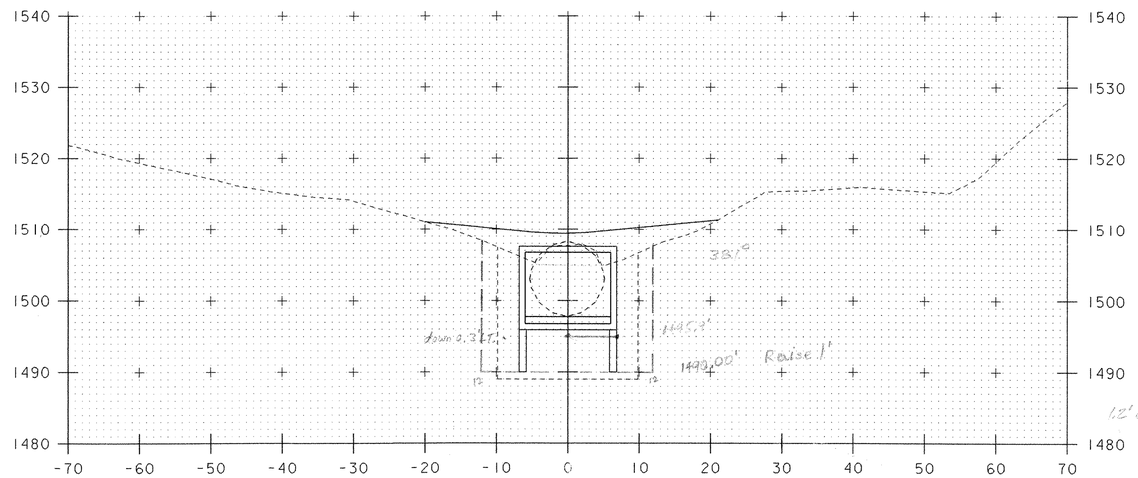


12+79.96

~~EXCAVATION LIMITS~~



12+25



12+75

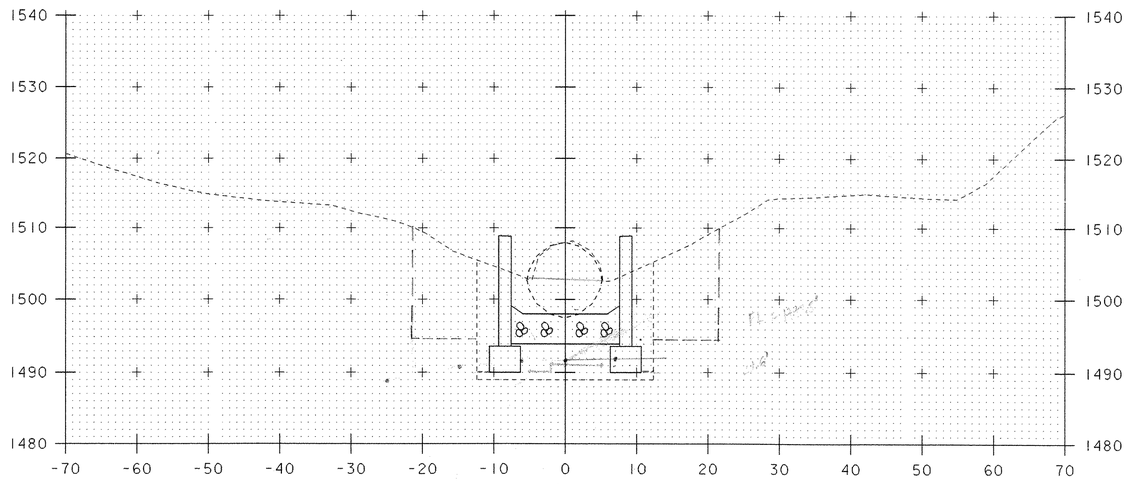
+74

For reference regarding sewer line location only- no quantities

SCALE 1" = 10'-0

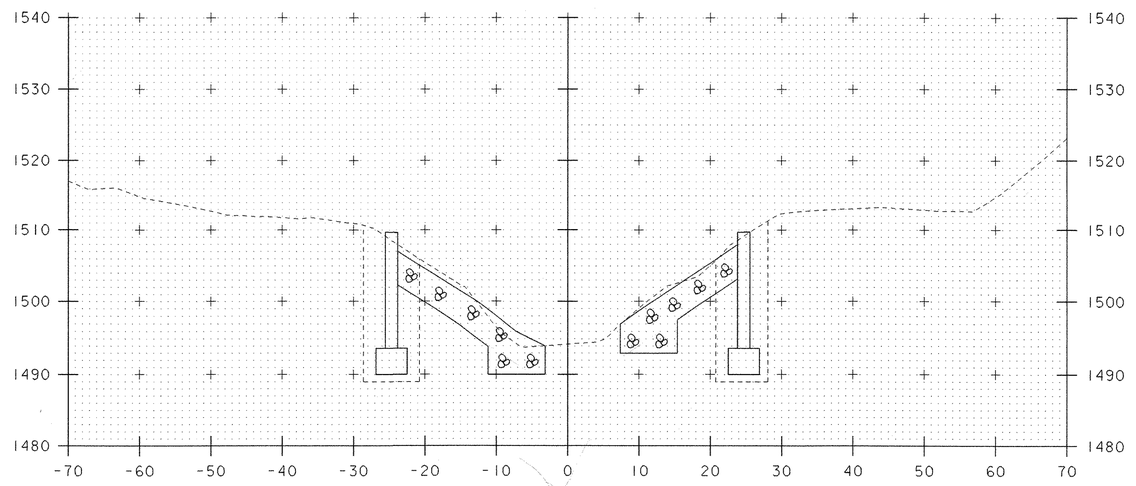
10 0 10

PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch3.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHAN STA 12+25 - STA 12+79.96	SHEET: 9 OF 12



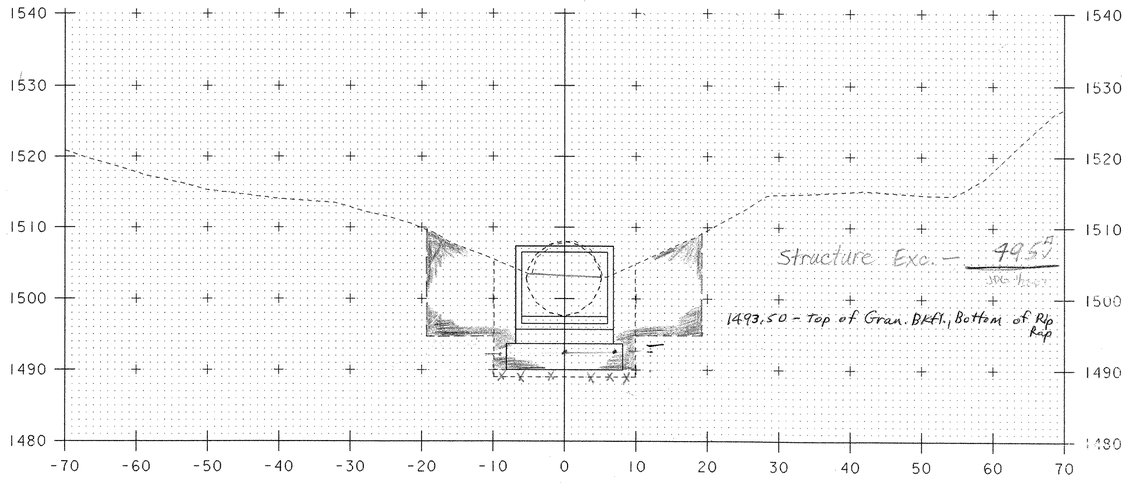
12+81.75 - Section not used

~~EXCAVATION LIMITS @ FRONT OF FOOTING~~ See Chan. Line Sta. 12+83.75



12+93.11 - Section not used

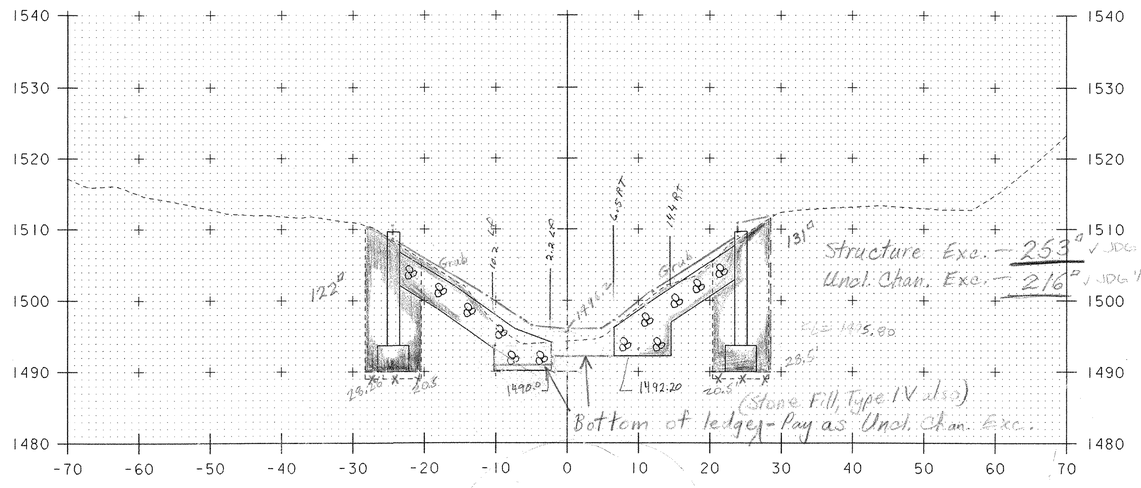
BACK CORNER OF FOOTING @ WW3



12+80

WP @ END BOX

Box Culvert grades were raised 1' due to ledge



12+92.87

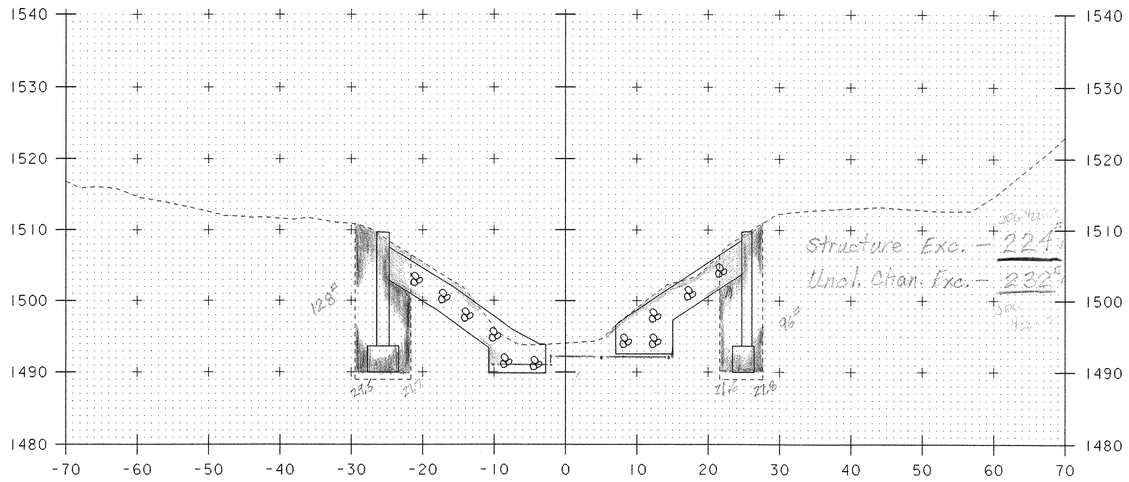
BACK EXCAVATION LIMITS @ WW3

STA 12+80.00 LT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

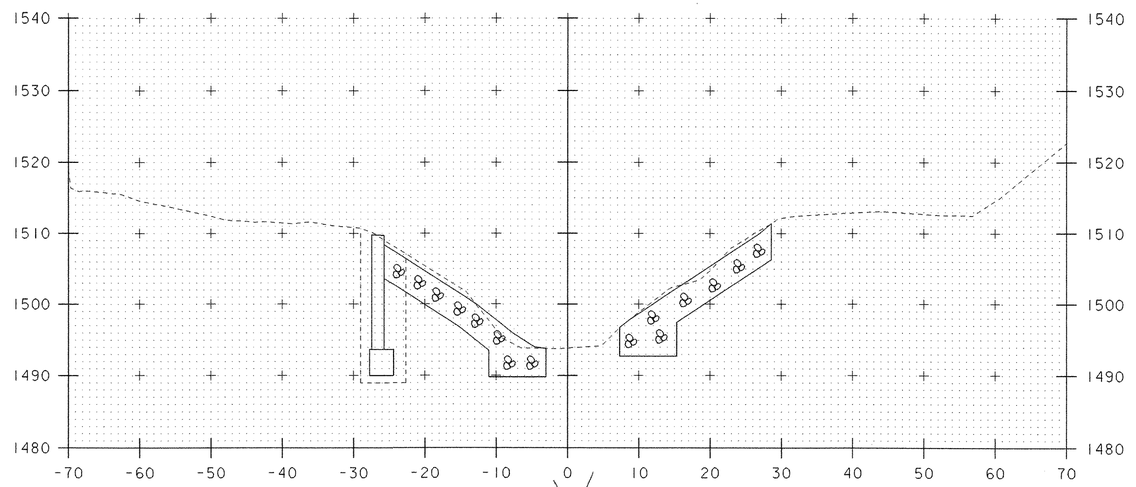
STA 12+80.00 RT
BEGIN STONE FILL TYPE IV
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

SCALE 1" = 10'-0
10 0 10

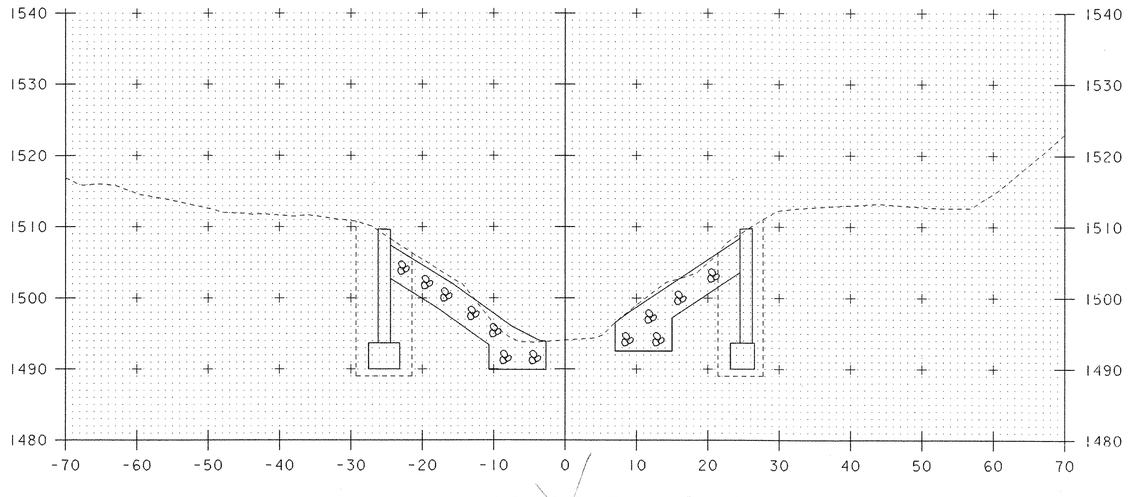
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch3.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 12+00 - STA 12+75	SHEET: 10A OF 12



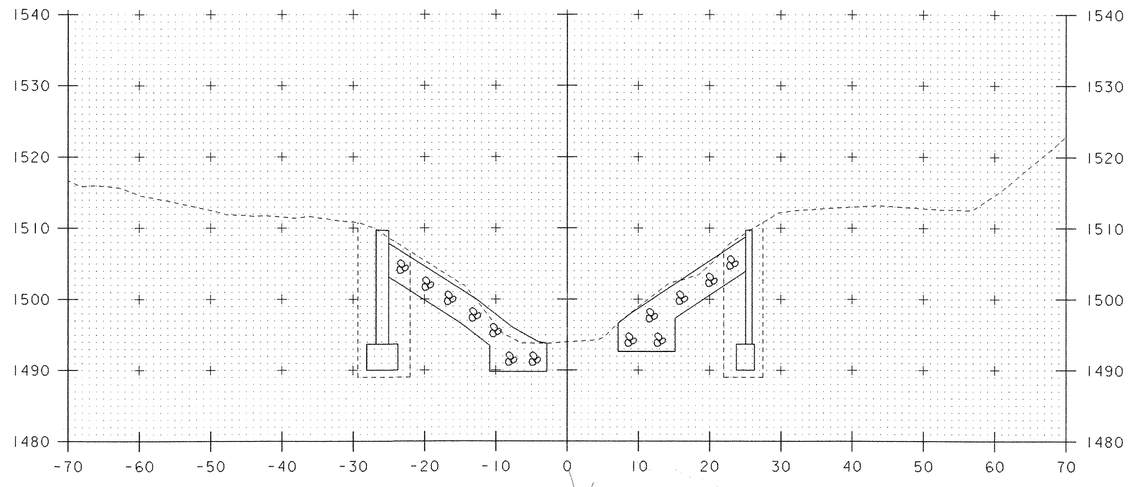
12+93.73
BACK EXCAVATION LIMITS @ WW4



12+94.44 – Section not used
END WW4 BACK FACE



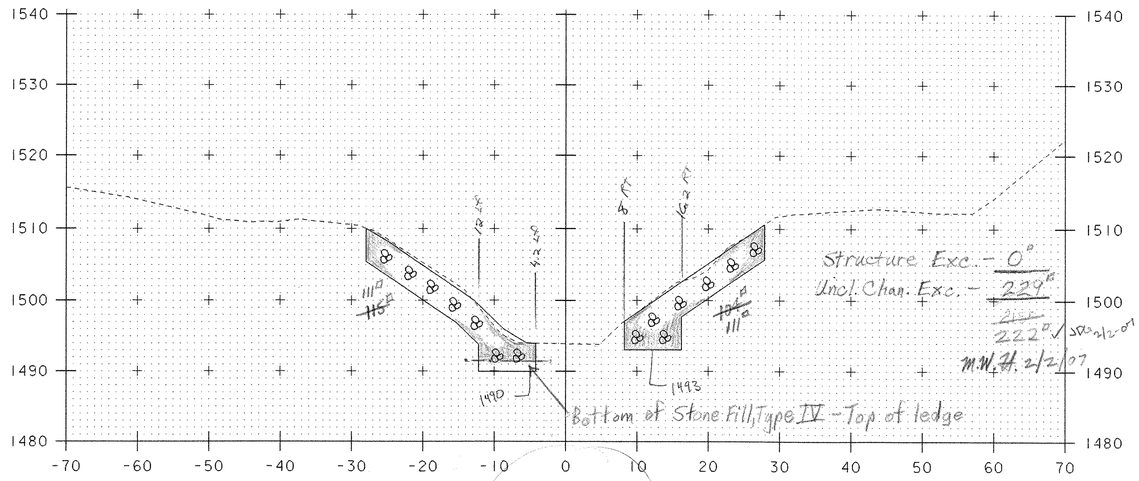
12+93.58 – Section not used
END WW3 BACK FACE



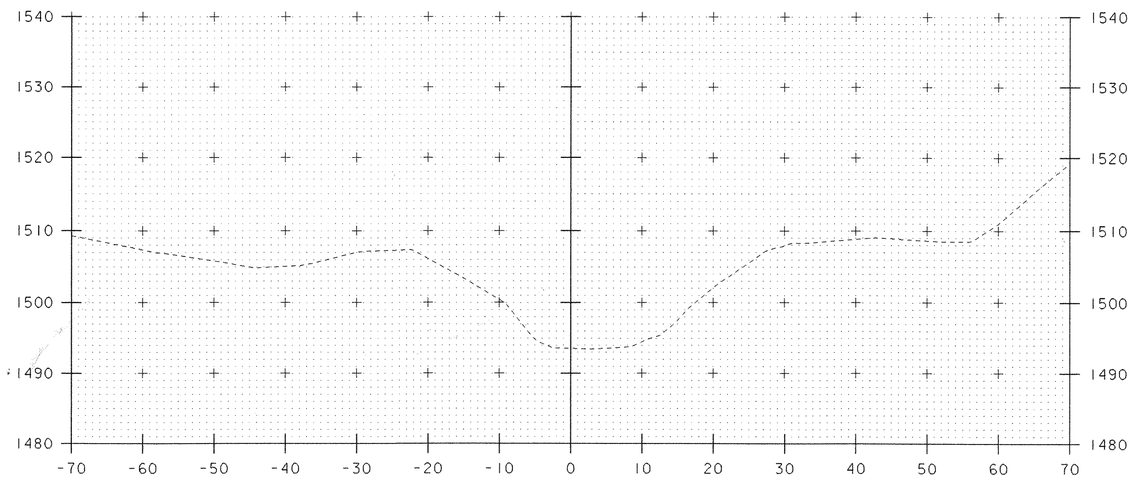
12+93.97 – Section not used
BACK CORNER OF FOOTING @ WW4

SCALE 1" = 10'-0
10 0 10

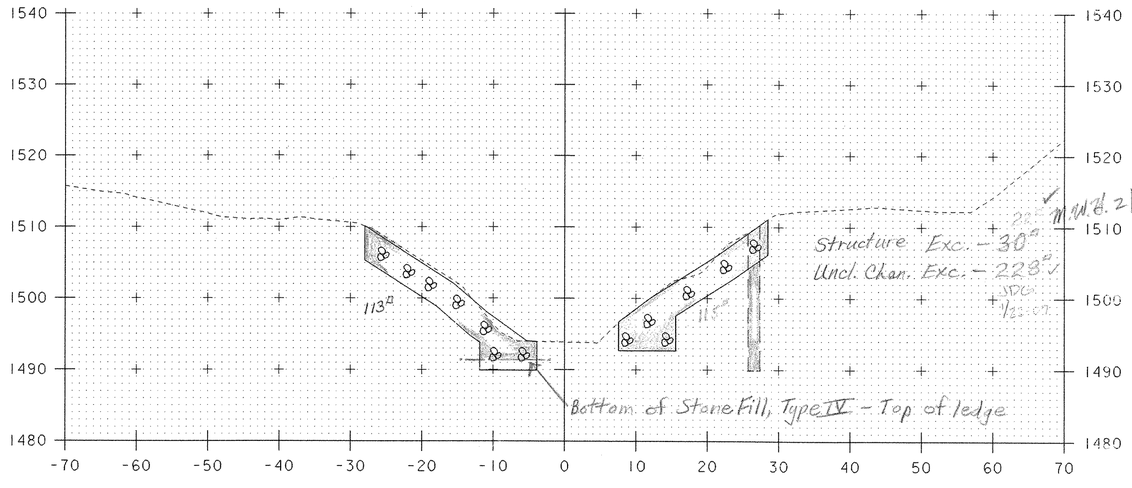
PROJECT: WHITINGHAM	PROJECT NO.: ST CULV (6)
DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn	
IPARM FILE NAME: s05c128ch3.i	PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA 12+00 - STA 12+75	SHEET: 11A OF 12



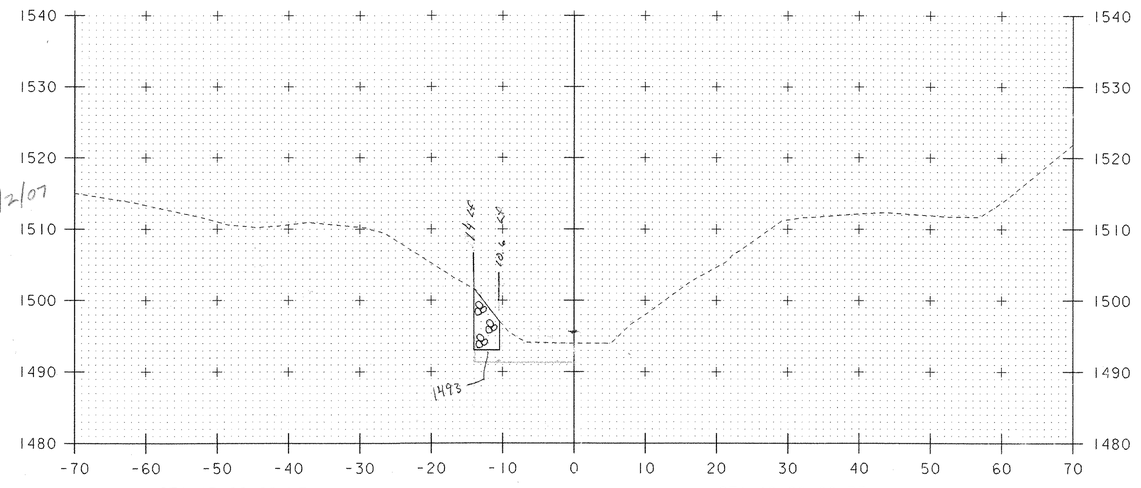
12+97.41 - Use for Sta. 12+98 also
FRONT EXCAVATION LIMITS @ WW4



13+25



12+96.55
FRONT EXCAVATION LIMITS @ WW3



13+00

STA 13+00.00 LT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION

STA 12+98.00 RT
END STONE FILL TYPE IV
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION

SCALE 1" = 10'-0
10 0 10

PROJECT:	PROJECT NO.:
WHITINGHAM	ST CULV (6)

DESIGN FILE NAME: 05c128/structures/s05c128xs.dgn
IPARM FILE NAME: s05c128ch3.i — PLOT DATE: 27-JUN-2006
DESIGNED BY: E.L.RUSTAY — DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS — CHECKED BY: M.CAGULIC
CHANNEL STA 12+00 - STA 12+75 — SHEET: 12A OF 12

Material Submittal
Project Number STP ST CULV (6)
Whitingham, Vermont
for
Vermont Agency of Transportation

Date: June 6, 2006

Previous Submission Number: N/A

Submittal Number: Precast Concrete Structure (Box Culvert) - 001

State of Vermont
Agency of Transportation
Bridge Project Town of Whitingham
County of Windham

Product: Precast Concrete Structure (Box Culvert, Footings, Wing Walls, Head Walls)

Specifications: Item No. 540.10
Drawing No.: 12 of 34, Culvert Profile & Box Detail
13 of 34, Plan and Elevation
14 of 34, General Notes
15 of 34, Wing Wall Details

Manufacturer: Concrete Systems Inc.
9 Commercial Street
Hudson, NH 03051

Supplier: Concrete Systems Inc.
9 Commercial Street
Hudson, NH 03051

Deviation from Specification: _____Yes __X___No

Number of Copies: 6

Contractors review:

Comments: Grout for Typical Wing Wall Section on sheet 2 of 2 will be 5000 psi based on information provided by the supplier.

~~235~~
250

Protection and Repair

SS MORTAR®

Splice-sleeve grout

Description

SS MORTAR® is a nonshrink, high-strength, metallic-aggregate, ready-to-use, special filler mortar for NMB Class 1 and 2 splice sleeves.

Features/Benefits

- ❑ Extended working time – Hardens free of bleeding, settlement, or drying shrinkage when properly mixed, placed, and cured
- ❑ Can be installed at ambient temperatures ranging from as high as 90°F (32°C) to as low as 40°F (4°C) when mixing and placing recommendations are followed
- ❑ Can be pumped or poured

Where to Use SS MORTAR®

- ❑ NMB splice sleeve mechanical connectors for Class 1 and 2 sleeves

Important: Read This First
ChemRex® does not warrant the performance of this product unless the instructions of this document and other related ChemRex® documents are adhered to in all respects.

How to Apply SS MORTAR®

Application - NMB Splice Sleeve Mechanical Connectors
ChemRex® recommends that the user request the services of the local representative for a pre-job conference to plan the installation.

Consistency
The amount of water needed to produce the desired consistency will depend upon mixing time, the temperature of the grout following mixing, and the size of the batch mixed. A batch should contain increments of full bags. The recommended field consistency is 5.0 in. to 6.0 in. (127 mm to 152 mm) as determined by the use of the ChemRex® Inc. Flow Guide. The suggested amount of mixing water for the initial trial mix to produce this flow is 12 - 15% by weight of SS MORTAR® – 1 gallon (8.34 lb.) (3.8 L or kg) per 55 lb. (25 kg) bag. If additional water is required to meet the consistency specification, it should not result in a ChemRex® Flow Guide diameter of greater than 6.5 in. (165 mm) nor should the total water content of the mix exceed a maximum of 17% by weight of SS MORTAR® – 1.1 gallon (9.36 lb.) (4.2 L or kg) per 55 lb. (25 kg) bag.

Preparation
For pre-grout applications, ensure that the splice sleeves are clean and free of all debris, water, and any other foreign matter before starting grout operations.

For post-grout applications, remove the hole seals in the grout inlet and outlet tubes and inspect for blockage in the tubes. Inspect the sleeves and grout tubes with a bright light to ensure there are no foreign materials or obstructions. Blow air through the sleeves using the inlet or outlet tube to ensure there are no obstructions in the sleeves.

Temperature
Store and mix mortar to produce the desired mixed mortar temperatures under jobsite conditions. Use warm water in cold weather. Ideally, the splice sleeve or substrate should be in the 50° to 90°F (10° to 32°C) range. Mixed mortar temperatures should fall between 50° and 90°F (10° and 32°C).

Recommended Temperature Guidelines

	Minimum	Preferred Range	Maximum
Splice Sleeves	40°F (4°C)	50° to 80°F (10° to 27°C)	90°F (32°C)
Mixing Water	40°F (4°C)	50° to 80°F (10° to 27°C)	90°F (32°C)
SS Mortar® as mixed & placed	50°F (10°C)	50°F to 80°F (10° to 27°C)	90°F (32°C)

Caution: When grouting at minimum temperatures, care must be taken to see that the splice sleeve and grout temperatures do not fall below 40°F (4°C) until after final set and that the grout is protected from freezing (32°F (0°C)) until it has reached 1,500 psi (10.3 MPa) compressive strength. Difficulty in pumping and premature stiffening may be the result of excessive grout temperatures.

Mixing
Use drinkable water only. For mixing grout, use an electric drill with a mixing blade. Do not mix by hand. Do not add cement, sand, aggregate, or admixtures.

As the first step in mixing, place all water into the mixing pail, then pour all of the SS MORTAR® into the pail while stirring it with a high-speed mixer. The water requirement should be established in a test batch. After all materials are put into the pail, mix grout for a minimum of 5 minutes or longer if required for a uniform mixture. After the grout has been mixed, use it within 40 minutes. Do not retemper grout by adding water and remixing after it stiffens.

Note: SS MORTAR® is designed to be placed at a spread of 5 to 6 in. (127 to 152 mm) (maximum of 6.5 in. (165 mm)) when a cylinder of nominal dimensions, 2 in. (51 mm) in diameter x 4 in. (102 mm) in length, is filled and lifted off a nonabsorbent flat surface (such as a ChemRex® Flow Guide). The exact amount of water needed will depend upon the temperature of the grout following mixing and the size of the batch mixed, but it should not be greater than 17% of the total mix by weight. The use of warm mixing water, not exceeding 90°F (32°C), may be used with cold, dry grout or when placing at the lower temperature limit of 50°F (10°C).

Limited Warranty Notice
Every reasonable effort is made to apply ChemRex® exacting standards both in the manufacture of our products and in the information which we issue concerning these products and their use. We warrant our products to be of good quality and will replace or, at our election, refund the purchase price of any products proved defective. Satisfactory results depend not only upon quality products, but also upon many factors beyond our control. Therefore, except for such replacement or refund, CHEMREX® MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING ITS PRODUCTS, and CHEMREX® shall have no other liability with respect thereto. Any claim regarding product defect must be received in writing within one (1) year from the date of shipment. No claim will be considered without such written notice or after the specified time interval. User shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith. Any authorized change in the printed recommendations concerning the use of our products must bear the signature of the ChemRex® Technical Manager.

Protection and Repair

MBT mark used under license from MBT Holding AG

ChemRex®
Corporate Office:
889 Valley Park Drive, Shakopee, MN 55379

Customer Service: 1/800/433-9517
Technical Services: 1/800/ChemRex (1/800/243-6739)
Web Site: www.chemrex.com

Form No. 1019305
© 2002 ChemRex®

For professional use only.
Not for sale to or use by the general public.
Printed on recycled paper including 10% post-consumer fiber

7M 1/02
Replaces 1/01

degussa.
Construction Chemicals Americas

051

Placing
In pre-grout applications, pour the grout continuously into the sleeve and rod with a small diameter rod (such as a welding rod) to remove any entrapped air in the sleeve.

In post-grout applications, pump the grout into the inlet tube until it flows freely without air bubbles from the outlet tube. Seal the outlet tube with a rubber stopper of the proper size. Remove the pump nozzle from the inlet tube and immediately seal the inlet tube with a rubber stopper to avoid any loss of grout.

Curing
Cure all exposed grout shoulders by wet curing for 24 hours and by applying a recommended curing compound compliant with ASTM C 309.

For Best Performance

- Store SS MORTAR® in a dry area at a controlled temperature (50° to 90°F (10° to 32°C)), and mix SS MORTAR® to produce the desired mixed grout temperatures under jobsite conditions. Material may be stored warmer for cold weather applications or cooler for hot weather applications.
- Ideally, the splice sleeve or substrate should be in the 50°F to 90°F (10°C to 32°C) range. The temperature of the mixed grout should fall between 50°F and 90°F (10° to 32°C). Consider using heated water in cold weather or chilled water in hot weather to help adjust the mixed grout temperature.
- When grouting at minimum temperatures, care must be taken to see that the splice sleeve and grout temperatures do not fall below 40°F (4°C) and that the grout is protected from freezing (32°F (0°C)). Heat should be maintained until the grout in the sleeves has reached a minimum of 1,500 psi (10.3 MPa) compressive strength as determined by 2 x 2 x 2 in. (51 mm) restrained cubes (ASTM C 942). Difficulty in pumping and premature stiffening may result from grout temperatures outside the recommended range.
- Sampling and Testing: Testing of SS MORTAR® should be performed by an authorized laboratory, and sampling should be done at the jobsite. Follow ASTM C 942 for sampling, fabrication, storage and curing of specimens. Samples must be cured under water at the jobsite for 24 hours before transfer to the laboratory for wet or moist room curing. Samples may be tested to determine early strength gain in order to determine when the sleeves have developed sufficient strength to remove temporary supports or to determine 28-day strength. Consult your local ChemRex® representative for additional information.
- Do not add cement, sand, aggregate, or admixtures.
- Do not use if bag is damaged.
- Make certain the most current version of this data guide is being used; call Customer Service (1-800-433-9517) to verify the most current version.
- Proper application is the responsibility of the user. Field visits by ChemRex® personnel are for the purpose of making technical recommendations only and are not for supervising or providing quality control on the jobsite.

Technical Data

Typical Compressive Strengths
@ 70°F (21°C) (ASTM C 942)

	psi	MPa
1 day	4,000	28
3 days	5,400	38
7 days	7,000	48
28 days	11,000	76

Typical Flexural Strengths
(ASTM C 348)

	psi	MPa
7 days	1,000	6.9
28 days	1,100	7.6

The data shown are based on controlled laboratory tests. Reasonable variations from the results shown may be experienced as a result of temperatures, and atmospheric and jobsite conditions. Field and laboratory tests should be controlled on the basis of the desired placing consistency rather than strictly on the water content.

Consistency
Flow tests were run using the ChemRex® Flow Guide at a spread of 5 to 6 in. (127 to 152 mm).

Description of Flow Test
Use the ChemRex® Flow Guide that consists of a 2 in. (51 mm) diameter x 4 in. (102 mm) cylinder placed in the center of a level, smooth, nonabsorbent surface.

The cylinder is filled with SS MORTAR® level with the surface and is immediately lifted slowly until the SS MORTAR® is discharged. Measure the diameter of the spread in two locations perpendicular with one another and take the average of the two readings.

The ChemRex® Flow Guide is available from ChemRex® but may also be assembled on the jobsite using rigid, non-absorbent materials.

Order Information

Packaging
SS MORTAR®
- 55 lb. (25 kg) moisture-resistant bags

Shelf Life
- SS MORTAR® has a shelf life of approximately 12 months when stored in a cool, dry environment. The expiration date is printed on each bag. Grout which has been stored beyond the expiration date should be discarded.

Coverage
- One 55 lb. (25 kg) bag of SS MORTAR® mixed with 8.25 lb. (3.75 kg) of water produces approximately 0.42 ft.³ (0.012 m³) of material.

Caution

SS MORTAR®

Risks
Eye irritant. Skin irritant. Causes burns. Lung irritant. May cause delayed lung injury.

Precautions
KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with eyes. Wear suitable protective eyewear. Avoid prolonged or repeated contact with skin. Wear suitable gloves. Wear suitable protective clothing. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. Wash soiled clothing before reuse.

First Aid
Wash exposed skin with soap and water. Flush eyes with large quantities of water. If breathing is difficult, move person to fresh air.

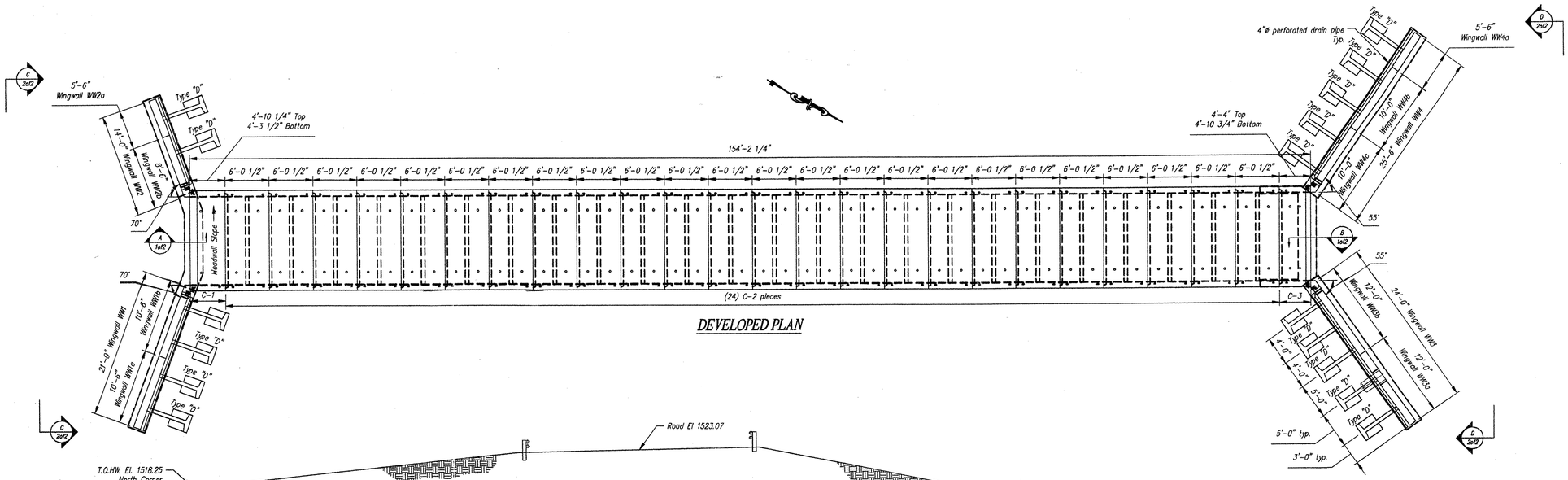
Waste Disposal Method
This product when discarded or disposed of is not listed as a hazardous waste in federal regulations. Dispose of in a landfill in accordance with local regulations.

For additional information on personal protective equipment, first aid, and emergency procedures, refer to the product Material Safety Data Sheet (MSDS) on the job site or contact the company at the address or phone numbers given below.

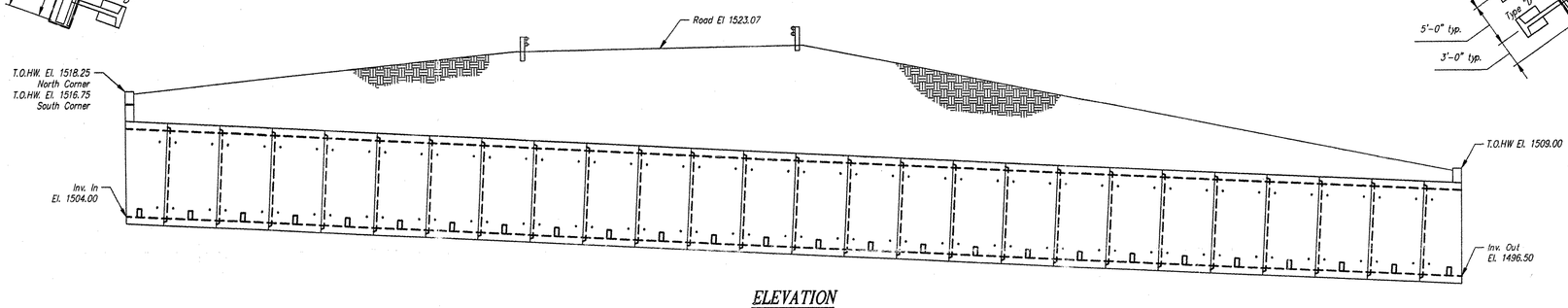
Proposition 65
This product contains materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

VOC Content
This product contains 0 g/L or 0 lbs./gallon.

For medical emergencies only, call ChemTrec 1-800/424-9300).



DEVELOPED PLAN



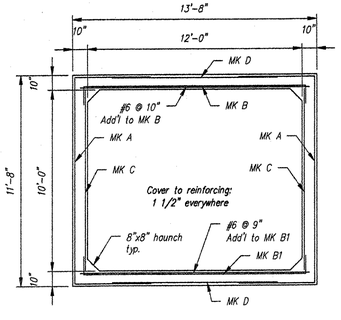
ELEVATION

GENERAL NOTES:

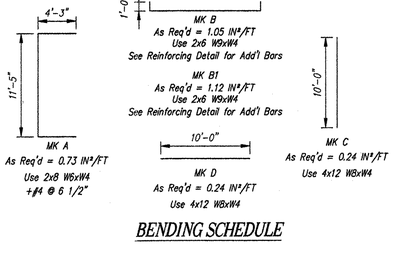
1. *Structure designed and built in accordance with AASHTO "Standard Specifications for Highway Bridges" and ASTM C1433.*
2. *Design Parameters:*
   - *Live load:* AASHTO HS25-44
   - *Earth Cover:* 3' to 13'
   - *Concrete:* Design strength f'c = 5000 psi; Unit weight = 150 pcf
   - *Reinforcing:* ASTM A615 (rebar), grade 60; ASTM A185 (WWF) fy = 60 ksi
   - *Soil:* Unit weight = 140 pcf; Minimum lateral pressure coefficient .25; Maximum lateral pressure coefficient .50
   - Cover to reinforcing: 1 1/2" u.n.o.
3. *Dimensions include a joint gap. Actual culvert piece length is ½" **shorter (i.e. C-2 = 6'-0").***
4. *No dampproofing supplied by CSI.*
5. *DBS are Dowel Bar Splicers and DI are Dowel Ins. These are used to attach the headwalls to the culvert end sections.*
6. *Precast headwall not designed for impact load.*

CUVLERT PIECE SCHEDULE (MX-FA5000SM)					
MARK	QTY	LENGTH	YDS	WEIGHT	
C-1	1	4.58 '	8.60	17.42	TONS
C-2	24	6.00 '	9.18	18.60	TONS
C-3	1	4.58 '	7.72	15.63	TONS
CW-1	1	13.08 '	3.85	7.80	TONS
CW-2	1	13.67 '	8.70	17.62	TONS

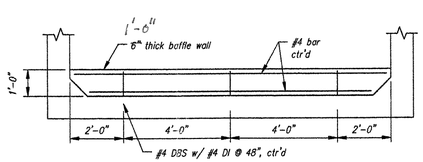
WINGWALL PIECE SCHEDULE (MX-FA4000SM)					
MARK	QTY	LENGTH	YDS	WEIGHT	
WW1a	1	10.50 '	7.20	14.58	TONS
WW1b	1	10.50 '	6.90	13.97	TONS
WW2a	1	5.50 '	2.75	5.57	TONS
WW2b	1	8.50 '	4.45	9.01	TONS
WW3a	1	12.00 '	8.05	16.30	TONS
WW3b	1	12.00 '	8.35	16.91	TONS
WW4a	1	5.50 '	3.75	7.59	TONS
WW4b	1	10.00 '	6.80	13.77	TONS
WW4c	1	10.00 '	6.65	13.47	TONS
F1	1	21.00 '	6.15	12.45	TONS
F2	1	14.00 '	4.10	8.30	TONS
F3	1	24.67 '	8.40	17.01	TONS
F4	1	26.17 '	8.90	18.02	TONS



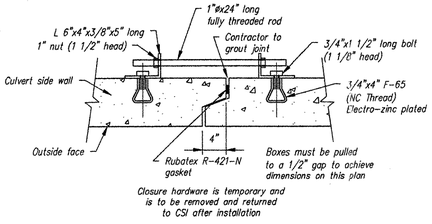
REINFORCING DETAIL



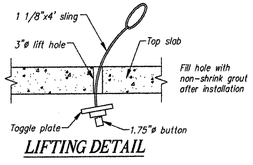
BENDING SCHEDULE



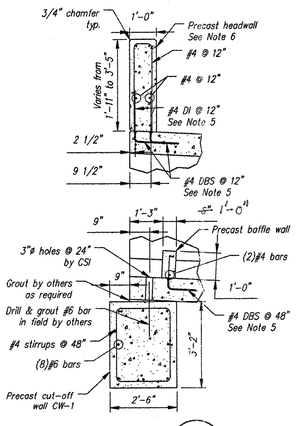
BAFFLE WALL ELEVATION



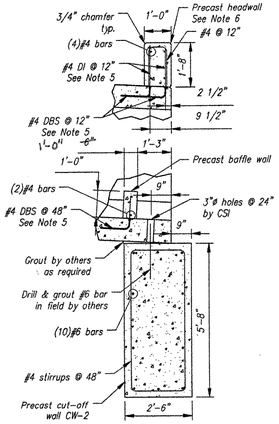
CLOSURE HARDWARE DETAIL



LIFTING DETAIL



SECTION A 1of2



SECTION B 1of2

RECEIVED
CK'D BY ELR OK'D BY AS NOTED
JUN 08 2006
RESUBMIT ____ APPROVED AS NOTED
BY GPW DATE 6/20/06

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.

This drawing contains information proprietary to CONCRETE SYSTEMS, INC. This drawing is disclosed with the understanding that it will be retained in confidence and its use limited solely to the purpose for which it is disclosed. It is understood that no reproduction of this drawing is authorized without permission from CONCRETE SYSTEMS, INC. and that it will be returned to CONCRETE SYSTEMS, INC. upon request.

STATE OF VERMONT
MARCUS HAHN
No. 6599
REGISTERED PROFESSIONAL ENGINEER
6/20/06
Stamp for culvert structural design only

SFC ENGINEERING PARTNERSHIP Inc.
25 SUNDIAL AVENUE, SUITE 205W
MANCHESTER, NH 03103-7230
TEL. 603-647-8700
FAX. 603-647-8711
www.sfceng.com

Rev.	Date	DESCRIPTION	By
5			
4			
3			
2			
1			

REVISIONS

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

Engineer: VAOT
Project No: STP ST CULV (6)
Drawings: Proposed Improvement Bridge Project
Sheets 1 through 34 of 34 sheets
Specifications: Whitingham STP ST CULV (6) Standard Specificaitons for Construction
Other Sources:

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

STATE AGENCY
VAOT
STP ST CULV (6)

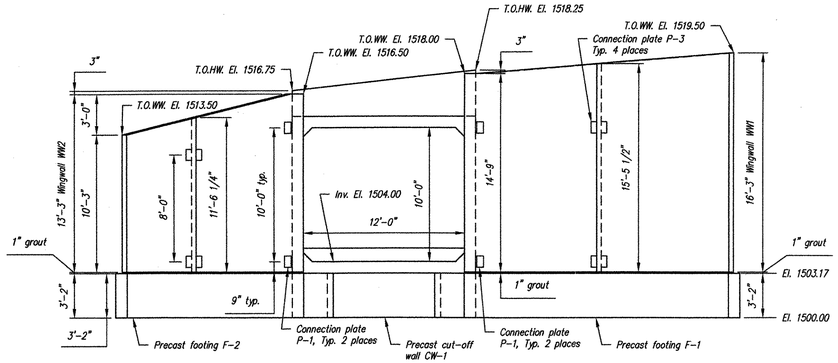
Drawn by M SCOTT Date 08/01/2006
Checked by Date
Approved by Date

TOWN OF WHITINGHAM
PROPOSED IMPROVEMENT BRIDGE PROJECT
WHITINGHAM, VT

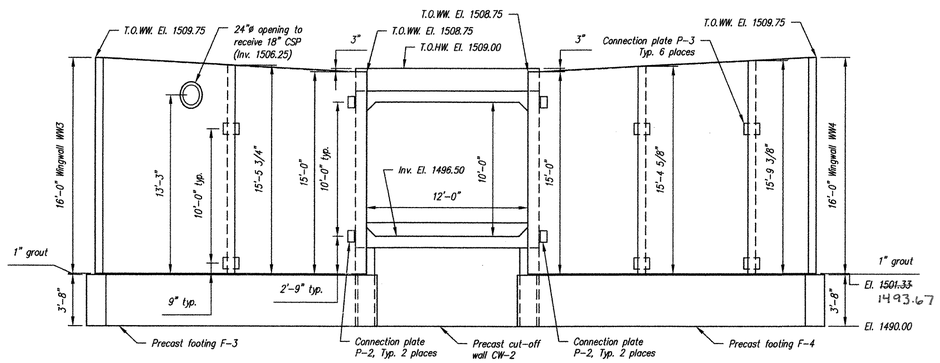
D
BOX CULVERT LAYOUT AND DETAILS
Drawing No. C18126-LO1-1
REV 0

Quantity: Project No: STP ST CULV (6)
SHEET 1 OF 2

053

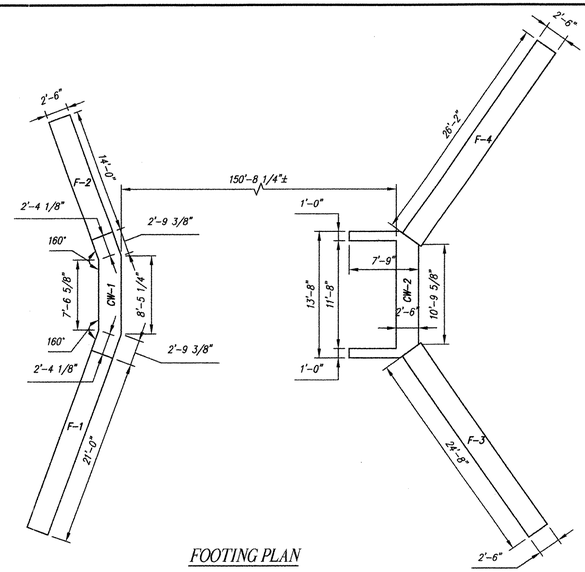


ELEVATION C-C 1of2

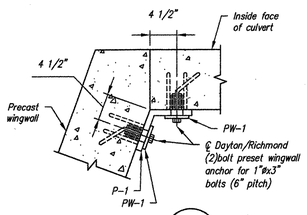


1493.67

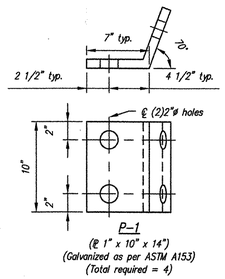
ELEVATION D-D 1of2



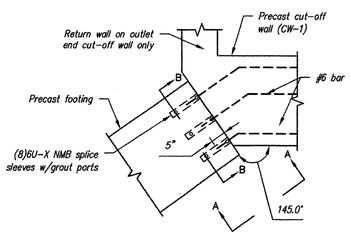
FOOTING PLAN



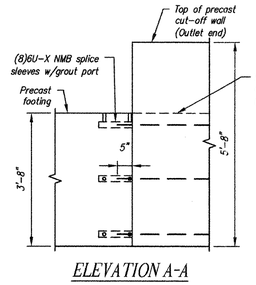
DETAIL 1 2of2



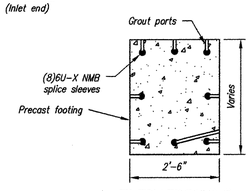
P-1
(℄ 1" x 10" x 14")
(Galvanized as per ASTM A153)
(Total required = 4)



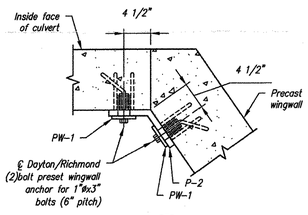
FOOTING TO CUT-OFF WALL CONNECTION DETAIL (PLAN VIEW)



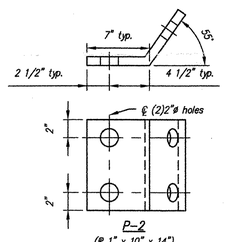
ELEVATION A-A



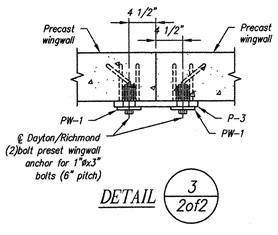
ELEVATION B-B



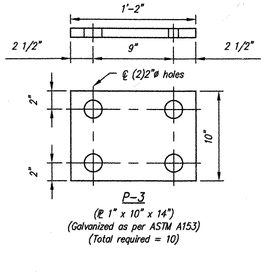
DETAIL 2 2of2



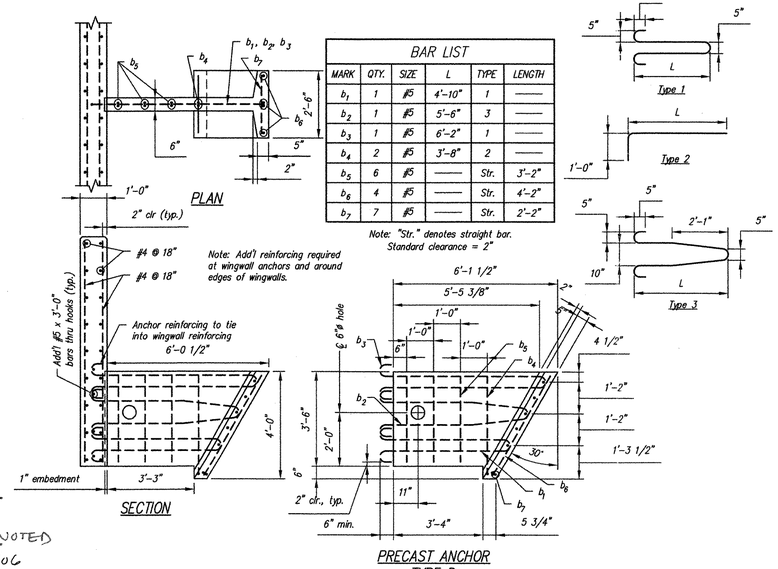
P-2
(℄ 1" x 10" x 14")
(Galvanized as per ASTM A153)
(Total required = 4)



DETAIL 3 2of2



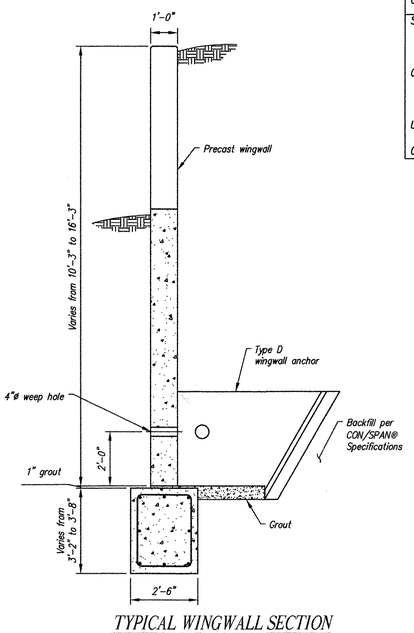
P-3
(℄ 1" x 10" x 14")
(Galvanized as per ASTM A153)
(Total required = 10)



BAR LIST					
MARK	QTY.	SIZE	L	TYPE	LENGTH
b_1	1	#5	4'-10"	1	——
b_2	1	#5	5'-6"	3	——
b_3	1	#5	6'-2"	1	——
b_4	2	#5	3'-8"	2	——
b_5	6	#5	——	Str.	3'-2"
b_6	4	#5	——	Str.	4'-2"
b_7	7	#5	——	Str.	2'-2"

Note: "Str." denotes straight bar. Standard clearance = 2"

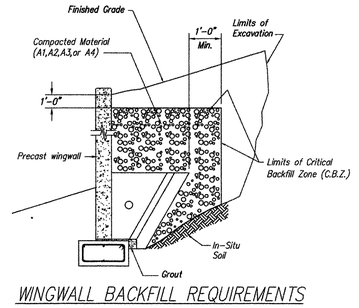
PRECAST ANCHOR TYPE D



TYPICAL WINGWALL SECTION

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

RECEIVED
CK'D BY ELR OK'D BY
JUN 08 2006
RESUBMIT APPROVED AS NOTED
BY GOW DATE 6/20/06

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.

This drawing contains information proprietary to CONCRETE SYSTEMS, INC. This drawing is disclosed with the understanding that it will be retained in confidence and its use limited solely to the purpose for which it is disclosed. It is understood that no reproduction of this drawing is authorized without permission from CONCRETE SYSTEMS, INC. and that it will be returned to CONCRETE SYSTEMS, INC. upon request.

STATE OF VERMONT
WILLIAM D. LOCKWOOD
No. 6738
REGISTERED PROFESSIONAL ENGINEER
6-05-06
Stamp for shipped & bailing design only

CONSPAN® BRIDGE SYSTEMS
3100 Research Blvd © 1991
Dayton, Ohio 45420-1288
Phone: (800) 528-3909
Fax: (937) 254-6365

Rev.	Date	DESCRIPTION	By
5			
4			
3			
2			
1			

REVISIONS

This drawing is based upon information provided from the following documents and/or sources:
Engineer: VAOT
Project No: STP ST CULV (6)
Drawings: Proposed Improvement Bridge Project
Sheets 1 through 34 of 34 sheets
Specifications: Whitingham STP ST CULV (6) Standard Specificaitons for Construction
Other Sources:

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

STATE AGENCY
VAOT
STP ST CULV (6)

Drawn By M SCOTT Date 05/01/2006
Checked By Date
Approved By Date

TOWN OF WHITINGHAM
PROPOSED IMPROVEMENT BRIDGE PROJECT
WHITINGHAM, VT

D
BOX CULVERT WINGWALL DETAILS
Drawing No. C18126-LO1-2
REV 0

Quantity: Project No: STP ST CULV (6) SHEET 2 OF 2

054