SEE SHEET 2 FOR INDEX OF SHEETS
AND LIST OF STANDARDS.

RECORD PLANS	
CONTRACTOR:	J.A.MCDONALD INC. -LYNDONVILLE CTR VT
RESIDENT ENGINEER:	JEREMY REED
CONSTRUCTION BEGAN:	JULY 12, 2007
CONSTRUCTION COMPLETE:	NOVEMBER 9, 2007
RECORD PLANS BY:	Jeremy Reed

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

BY Jeremy Reed RESIDENT ENGINEER

DATE February 26, 2008

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.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

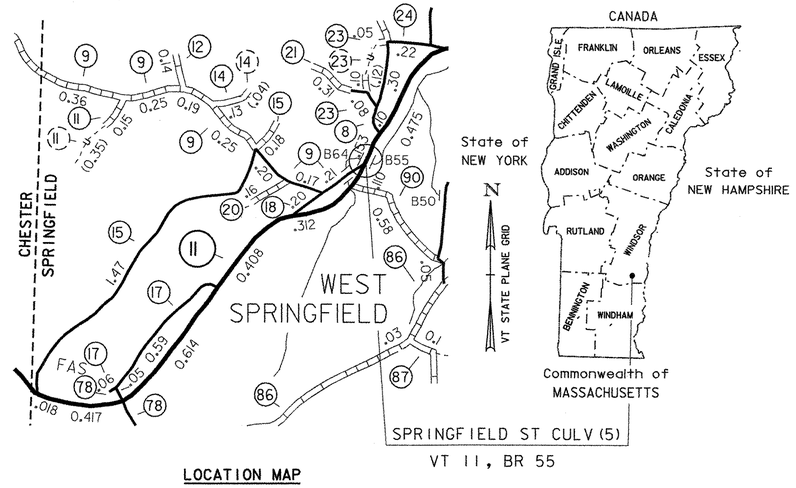
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF SPRINGFIELD
COUNTY OF WINDSOR

ROUTE NO: VT II MAJOR COLLECTOR BRIDGE NO: 55

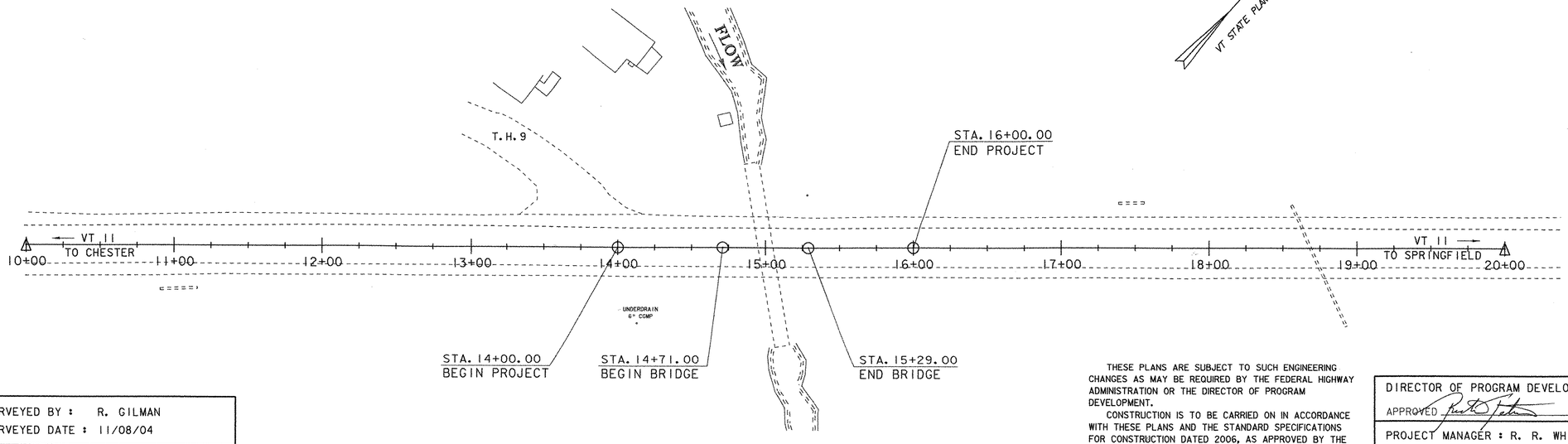
PROJECT LOCATION : BEGINNING AT A POINT IN THE TOWN OF SPRINGFIELD ALONG VT. RTE. II APPROXIMATELY 1.9 MILES EASTERLY FROM THE CHESTER-SPRINGFIELD TOWN LINE.

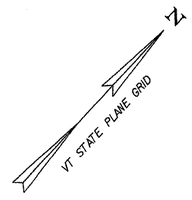
PROJECT DESCRIPTION : REPLACEMENT OF EXISTING METAL CULVERT WITH A BURIED CONCRETE STRUCTURE INCLUDING RELATED APPROACH ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE : 58.00 FEET
LENGTH OF ROADWAY : 142.00 FEET
LENGTH OF PROJECT : 200.00 FEET



LOCATION MAP





40 0 40
SCALE: 1" = 40'-0"

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 : R. GILMAN
SURVEYED DATE : 11/08/04

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83

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 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Rusty Peterson DATE 1-25-07

PROJECT MANAGER : R. R. WHITCOMB

PROJECT NAME : SPRINGFIELD
PROJECT NUMBER : ST CULV (5)

SHEET 1 OF 52 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

INDEX OF SHEETS

1. TITLE SHEET
2. PRELIMINARY INFORMATION SHEET
3. TIE SHEET
4. TYPICAL SECTIONS SHEET
5-6. QUANTITY SHEETS
7-8. LAYOUT SHEETS
9. PROFILE SHEET
10. TRAFFIC CONTROL
11. PHASE II TRAFFIC CONTROL
12. PHASE III TRAFFIC CONTROL
13. PERMANENT TRAFFIC SIGNS & PAVEMENT MARKINGS LAYOUT SHEET
14. TRAFFIC SIGN SUMMARY SHEET
15. BORING INFORMATION SHEET
16. BORING LOGS
17. PLAN & ELEVATION SHEET
18. EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE
19-20. EROSION PREVENTION & SEDIMENT CONTROL EXISTING CONDITIONS
21-22. EROSION PREVENTION & SEDIMENT CONTROL PLAN
23-24. EROSION PREVENTION & SEDIMENT CONTROL FINAL CONDITIONS
25-28. EROSION PREVENTION & SEDIMENT CONTROL DETAILS
29. PROJECT NOTES
30. SUPERSTRUCTURE DETAILS - 33" X 48" BOX BEAM
31. DECK DETAILS
32. BRIDGE END DETAILS
33. TRANSVERSE TENDON AND SHEAR KEY DETAILS
34. ABUTMENT NO. 1 DETAILS
35. ABUTMENT NO. 2 DETAILS
36. ABUTMENT AND WINGWALL TYPICAL SECTIONS
37. FOOTING REINFORCING PLAN
38. REINFORCING STEEL SCHEDULE
39. MATERIALS TRANSITION DETAIL
40-46. MAINLINE SECTIONS
47-52. CHANNEL SECTIONS

INDEX OF STANDARDS

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	6/1/1994
E-100	CONSTRUCTION APPROACH SIGNS	1/2/2004
E-101	CONSTRUCTION SIGN DETAILS	5/30/2003
E-102	CONSTRUCTION SIGN DETAILS	6/3020/03
E-102A	CONSTRUCTION SIGN DETAILS	5/1/2004
E-106	TRAFFIC CONTROL - MISCELLANEOUS DETAILS	3/1/2004
E-107	DELINEATION, BARRICADES AND DETOURS FOR U-TURNS ON DIVIDED HIGHWAY	6/30/2003
E-107A	BREAKAWAY BARRICADE DETAILS	8/8/1995
E-108	CONSTRUCTION ZONE LONGITUDINAL DROP OFFS	8/18/1995
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	8/8/1995
E-123	GUIDE SIGN PLACEMENT MISCELLANEOUS DETAILS	3/16/2004
E-141	REGULATORY SIGN DETAILS	9/20/1995
E-143	REGULATORY SIGN DETAILS	6/15/2004
E-160	FLANGED CHANNEL STEEL SIGN POST	5/20/1999
E-164	SQUARE STEEL SIGN POST	5/20/1999
E-191	PAVEMENT MARKING DETAILS	2/1/1999
E-193	PAVEMENT MARKING DETAILS	8/18/1995
G-1	STEEL BEAM GUARDRAIL WITH STEEL POSTS STEEL BEAM GUARDRAIL WITH WOOD POSTS	1/3/2000
G-1D	STEEL BEAM GUARDRAIL APPROACH END TERMINAL STEEL BEAM GUARDRAIL TRAILING END TERMINAL ANCHOR FOR STEEL BEAM RAIL STEEL BEAM MEDIAN BARRIER	1/3/2000
G-18	PRECAST CONCRETE TEMPORARY TRAFFIC BARRIER	6/1/1994
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11/15/2002

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: April 2007

DRAINAGE AREA : 2.82 sq. mi.
CHARACTER OF TERRAIN : Hilly, mostly forested.
STREAM CHARACTERISTICS : Sinuous, moderately steep.
NATURE OF STREAMBED : Gravel and cobbles.

PEAK FLOW DATA

Q 2.33 =	150 cfs	Q 50 =	540 cfs
Q 10 =	330 cfs	Q 100 =	630 cfs
Q 25 =	450 cfs	Q 500 =	880 cfs

DATE OF FLOOD OF RECORD : Unknown

ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY: @ Q50 = 6.2 ft/s
ICE CONDITIONS : Moderate
DEBRIS: Heavy
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: >1% HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Corrugated Metal Plate Pipe
YEAR BUILT: 1961
CLEAR SPAN(NORMAL TO STREAM): Diameter = 114"
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY OF FULL OPENING: 70.9 sq. ft.
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	736.9'	VELOCITY =	15.8 ft/s
Q10 =	739.5'	"	19.1 ft/s
Q25 =	741.0'	"	20.5 ft/s
Q50 =	742.1'	"	21.3 ft/s
Q100 =	743.1'	"	22.0 ft/s

LONG TERM STREAMBED CHANGES: Scour pool at outlet.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 744.0'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Springfield — DISTANCE: 700'
HIGHWAY# : TH9 — STRUCTURE #: Br64
CLEAR SPAN: 14' — CLEAR HEIGHT: 6'
YEAR BUILT: Unknown — FULL WATERWAY: 84 sq. ft.
STRUCTURE TYPE: Bridge

DOWNSTREAM STRUCTURE

TOWN: Springfield — DISTANCE: 3,600'
HIGHWAY# : VT11 — STRUCTURE #: Br56
CLEAR SPAN: 12'-10" — CLEAR HEIGHT: 8'-4"
YEAR BUILT: 1961 — FULL WATERWAY: 85 sq. ft.
STRUCTURE TYPE: CMPPA

TRAFFIC DATA

YEAR	ADT	DHV	%D	%T	ADTT
2006	6300	700	50	7	380
2026	8100	890	690	10	50

20 year ESAL for flexible pavement from 2006 to 2026 : 2,377,000
40 year ESAL for flexible pavement from 2006 to 2046 : 5,884,000
Design Speed : 50 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Prestress Concrete Box Beam Bridge

CLEAR SPAN(NORMAL TO STREAM): 53'
VERTICAL CLEARANCE ABOVE STREAMBED: 8.8'
WATERWAY OF FULL OPENING: 280 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	734.2'	VELOCITY=	10.3 ft/s
Q10 =	735.5'	"	8.6 ft/s
Q25 =	736.0'	"	9.7 ft/s
Q50 =	736.3'	"	10.4 ft/s
Q100 =	736.6'	"	11.1 ft/s

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 744.0'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 739.8'
VERTICAL CLEARANCE: @ Q50 = 3.5'

SCOUR: No scour with Stone Fill, Type III lining the channel
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	6 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	3 cfs	Depth>1.0'
ORDINARY HIGH WATER:	64 cfs	Depth=2.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required. Water diversion may be required. ***
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

*** If traffic is maintained with phased construction, a temporary pipe maybe used to convey water through the construction area. A 60" pipe is the minimum size that should be used, based on passing a Q2.33 flood with 6.4' of headwater. The contractor may propose other options as long as a minimum water area of 19.6 sq. ft. is maintained.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO HS-25-44
2. DESIGN SPAN 56'
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 4000 psf
   ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING N/A
   TYPE N/A
   ESTIMATED LENGTH
5. STRUCTURAL STEEL AASHTO M270M/M270 GRADE N/A
6. REINFORCING STEEL GRADE 60
7. CONCRETE, HIGH PERFORMANCE CLASS A fc: N/A
   CONCRETE, HIGH PERFORMANCE CLASS B fc: 3500 psi
8. DESIGN SOIL UNIT WEIGHT 140 pcf
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL 3000 psf

TRAFFIC MAINTENANCE

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

* TRAFFIC WILL BE MAINTAINED BY USING PHASED CONSTRUCTION.

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

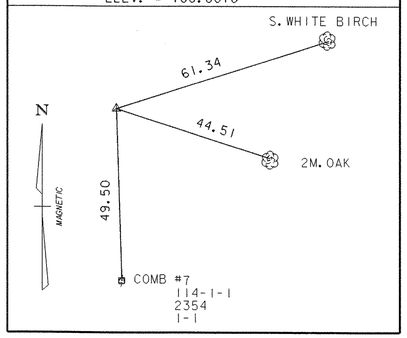
FILE NAME: **s04c178pi.xls** — PLOT DATE: **4/24/2007**
PROJECT MANAGER: **R. Whitcomb** — DRAWN BY: **L. Bullock**
DESIGNED BY: **D. Bonneau** — CHECKED BY: **D. Peterson**
PRELIMINARY INFORMATION SHEET — SHEET 2 OF 52

GPS CONTROL POINTS

TRAVERSE TIES

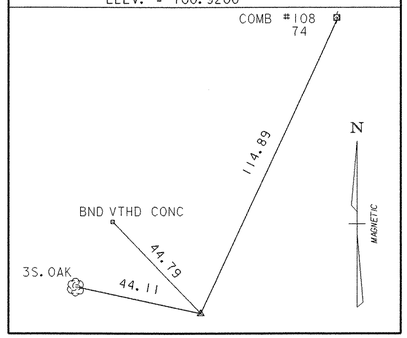
HVCTRL #3

NORTH	= 10495.8859
EAST	= 51542.6223
ELEV.	= 788.8070



HVCTRL #4

NORTH	= 11439.6904
EAST	= 52480.8427
ELEV.	= 700.9200



* MAIN TRAVERSE COMPLETED: NOV. 4, 2004 BY R.GILMAN PC & J.HULETT

ALIGNMENT TIES

VT 11 STA. 10+00.00
N = 10627.2487
E = 51640.3718

VT 11 STA. 20+00.00
N = 11306.5509
E = 52374.2304

CHANNEL LINE STA. 50+00.00
N = 10906.4248
E = 52086.9426

CHANNEL LINE STA. 52+00.00
N = 11027.3748
E = 51927.6596

DATUM

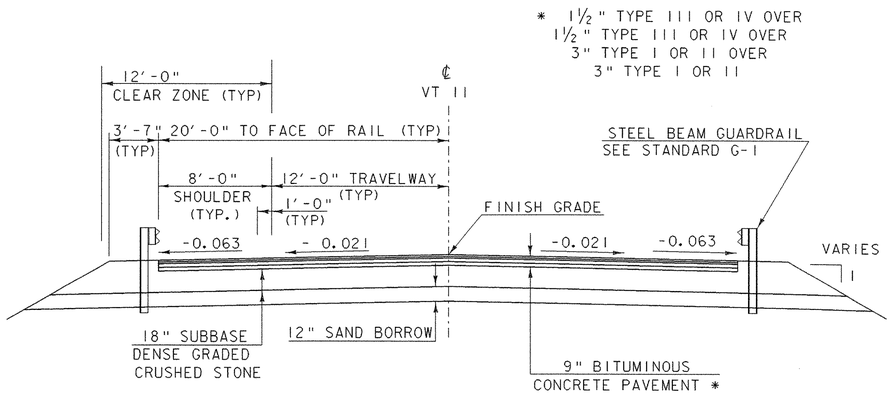
VERTICAL NAVD88
HORIZONTAL ASSUMED
ADJUSTMENT N/A

TIE SHEET

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

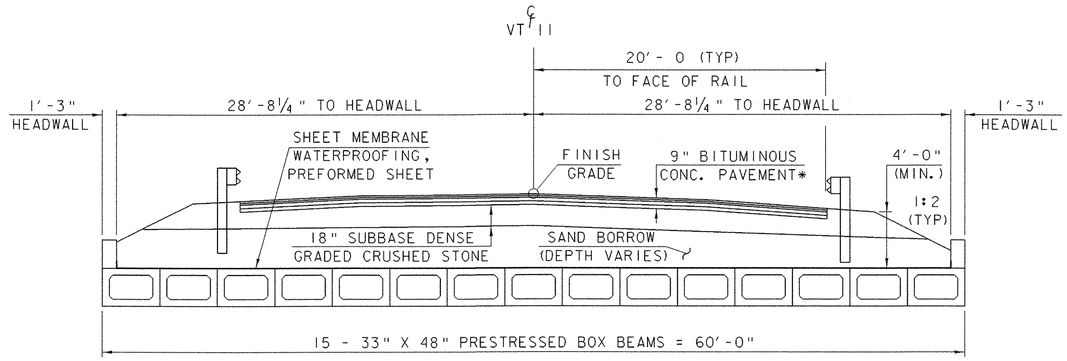
FILE NAME: x04cl78t1.dgn
PROJECT LEADER: R. R. WHITCOMB
DESIGNED BY: J. PERRIGO

PLOT DATE: 21-MAY-2007
DRAWN BY: J.HULETT
CHECKED BY: P.HODGE
SHEET 3 OF 52



ROADWAY TYPICAL SECTION

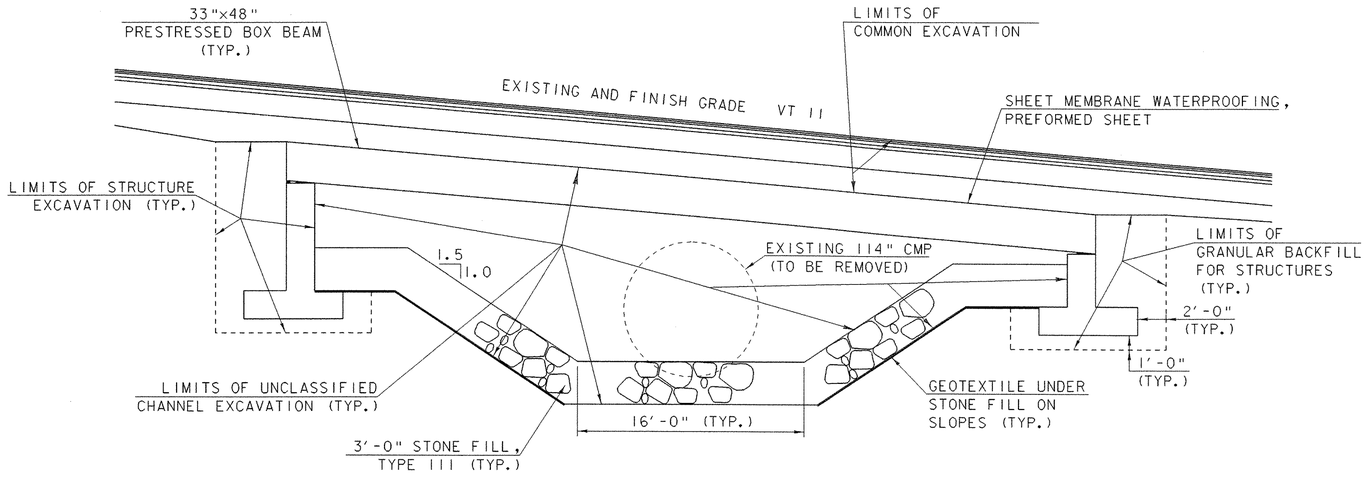
SCALE 1" = 5'-0



NOTE: SEE ROADWAY TYPICAL SECTION FOR ADDITIONAL DETAILS

BRIDGE TYPICAL SECTION

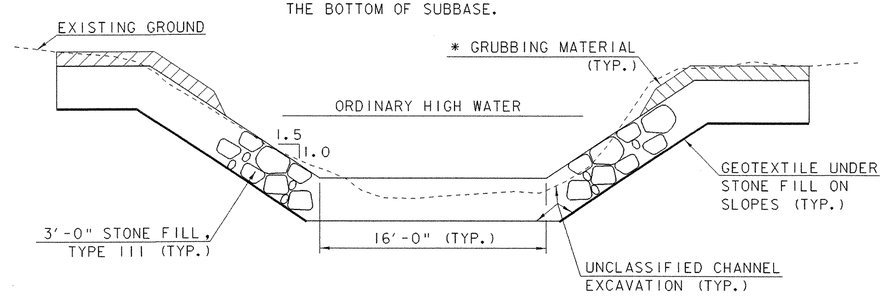
SCALE 1" = 5'-0



SUBSTRUCTURE TYPICAL SECTION

SCALE 1" = 5'-0

* 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.



CHANNEL TYPICAL SECTION

SCALE 1" = 5'-0

MATERIAL TOLERANCES		
PAVEMENT	+/-	¼" (TOTAL THICKNESS)
BASE COURSE	+/-	½"
SUBBASE	+/-	1"
SAND BORROW	+/-	1"
GRANULAR BORROW	+/-	1"

TYPICAL SECTIONS SHEET

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04c178/str/s04c178typ.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: J. PERRIGO
PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: D. PETERSON
SHEET 4 OF 52

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	CHANNEL	SUPER-STRUC-TURE	ABUT. #1	ABUT. #2	EROSION CONTROL	FULL CE ITEMS
1						
2810						
	2170					
850						
					10	
			350	270		
			250	190		
450						
1980						
12						
1220						
		11	119	90		
2250						
			10070	7840		
		1050				
		870				
		812				
		4	5	3		
		377				
	1					
		60				
20						
1						
					2	
80						
3						
30					10	
	740					
2						
5						
1						
750						
80						
1						
1110						
100						
500						
						1
						1
						1

TOTALS

BRIDGE QUANTITY	ROUND	GRAND TOTAL	FINAL
		1	
		2810	
2170		2170	
		850	
		10	
620		620	
440		440	
		450	
		1980	
		12	
		1220	
220		220	
		2250	
17910		17910	
1050		1050	
870		870	
812		812	
12		12	
377		377	
1		1	
60		60	
		20	
		1	
		2	
		80	
		3	
		40	
740		740	
		2	
		5	
		1	
		750	
		80	
		1	
		1110	
		100	
		500	
		1	
		1	
		1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10
CY	COMMON EXCAVATION	203.15
CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27
CY	SAND BORROW	203.31
CY	TRENCH EXCAVATION OF EARTH	204.20
CY	STRUCTURE EXCAVATION	204.25
CY	GRANULAR BACKFILL FOR STRUCTURES	204.30
SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10
CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35
CWT	EMULSIFIED ASPHALT	404.65
TON	BITUMINOUS CONCRETE PAVEMENT (PG 58-28)	406.25
CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34
SF	TEMPORARY STEEL SHEET PILING	505.36
LB	REINFORCING STEEL	507.15
LB	EPOXY COATED REINFORCING STEEL	507.17
LF	PRESTRESSED CONCRETE BOX BEAMS (33" X 48")	510.21
LF	GROUTING SHEAR KEYS	510.24
GAL	WATER REPELLENT , SILANE	514.10
SY	SHEET MEMBRANE WATERPROOFING, PREFORMED SHEET	519.21
EACH	REMOVAL OF STRUCTURE (9'-6" x 120'-0" CGMPP)	529.15
EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11
LF	6" UNDERDRAIN	605.10
EACH	UNDERDRAIN FLUSHING BASIN	605.95
HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25
MGAL	DUST CONTROL WITH WATER	609.10
TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15
CY	STONE FILL, TYPE I	613.10
CY	STONE FILL, TYPE II	613.12
EA	MANUFACTURED TERMINAL SECTION, FLARED	621.50
EACH	ENERGY ABSORPTION ATTENUATOR	621.56
EACH	ANCHOR FOR STEEL BEAM RAIL	621.60
LF	REMOVE AND RESET GUARDRAIL	621.75
LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80
EACH	REMOVAL AND DISPOSAL OF GUIDE POSTS	621.81
LF	TEMPORARY TRAFFIC BARRIER	621.90
HR	UNIFORMED TRAFFIC OFFICERS	630.10
HR	FLAGGERS	630.15
LS	FIELD OFFICE, ENGINEERS	631.10
LS	TESTING EQUIPMENT, CONCRETE	631.16
LS	TESTING EQUIPMENT, BITUMINOUS	631.17

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		TEMPORARY EROSION CONTROL
		(INCLUDED UNDER EROSION CONTROL)
10	CY	ITEM 204.20 TEMPORATY EROSION CONTROL
10	CY	ITEM 613.10 STONE FILL,TYPE I
110	SY	ITEM 649.51 GEOTEXTILE FOR SILT FENCE
10	LB	ITEM 651.17 SEED-WINTER RYE
1	TON	ITEM 651.25 HAY MULCH
10	EA	ITEM 651.26 HAY BALES FOR EROSION CONTROL
30	SY	ITEM 653.20 TEMPORARY EROSION MATTING
20	CY	ITEM 653.25 TEMPORARY STONE CHECK DAM, TYPE I
		EARTHWORKS SUMMARY
562	CY	COMMON EXCAVATION (2810*.2)
651	CY	UNCLASSIFIED CHANNEL EXCAVATION (2170*.3)
1520	CY	STRUCTURE EXCAVATION (620*.33)
2733	CY	TOTAL FILL AVAILIABLE
0	CY	FILL REQUIRED
2733	CY	LESS FILL AVAILABLE
2733	**CY**	**WASTE**

(N.A.B.I) = NOT A BID ITEM

PROJECT NAME: **SPRINGFIELD**
PROJECT NUMBER: **ST CULV (5)**

FILE NAME: **\Structures\s04c178qty.xls**
PROJECT MANAGER: **R. R. WHITCOMB**
DESIGNED BY: **D. PETERSON**
QUANTITY SHEET #1

PLOT DATE: **5/23/2007**
DRAWN BY: **D. PETERSON**
CHECKED BY: **W. LAMMER**
SHEET **5** OF **52**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	CHANNEL	SUPER-STRUC-TURE	ABUT. #1	ABUT. #2	EROSION CONTROL	FULL CE ITEMS	BRIDGE QUANTITY
1							
1							
1200							
1100							
25							
4							
100							
	560						560
					110		
					20		
					10		
					100		
					1		
					1		
					70		
	210						210
					1		
					50		
					1		
					10		
					30		
					960		
					20		
					50		
					1060		
14							
28							
28							
4							
1							
1							
1							
1							
1							

TOTALS

ROUND	GRAND TOTAL	FINAL
	1	
	1	
	1200	
	1100	
	25	
	4	
	100	
	560	
	110	
	20	
	10	
	100	
	1	
	1	
	70	
	210	
	1	
	50	
	1	
	10	
	30	
	960	
	20	
	50	
	1060	
	14	
	28	
	28	
	4	
	1	
	1	
	1	
	1	
	1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
LS	MOBILIZATION/DEMOBILIZATION	635.11
LS	TRAFFIC CONTROL	641.10
LF	DURABLE 4 INCH WHITE LINE, THERMOPLASTIC	646.402
LF	DURABLE 4 INCH YELLOW LINE, THERMOPLASTIC	646.412
LF	DURABLE 24 INCH STOP BAR	646.480
EA	DURABLE LETTER OR SYMBOL	646.490
EACH	LINE STRIPING TARGETS	646.76
SY	GEOTEXTILE UNDER STONE FILL	649.31
SY	GEOTEXTILE FOR SILT FENCE	649.51
LB	SEED	651.15
LB	SEED, WINTER RYE	651.17
LB	FERTILIZER	651.18
T	AGRICULTURAL LIMESTONE	651.20
T	HAY MULCH	651.25
CY	TOPSOIL	651.35
SY	GRUBBING MATERIAL	651.40
LS	EPSC PLAN	652.10
HR	MONITORING EPSC PLAN	652.20
LU	MAINTENANCE OF EPSC PLAN (N.A.B.I)	652.30
EACH	HAY BALES	653.15
SY	TEMPORARY EROSION MATTING	653.20
SY	PERMANENT EROSION MATTING	653.21
CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25
CY	VEHICLE TRACKING PAD	653.35
LF	PROJECT DEMARCATION FENCE	653.55
SF	TRAFFIC SIGNS, TYPE A	675.20
	BEGIN OPTIONS	
LF	FLANGED CHANNEL SIGN POST	675.301
LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341
	END OPTIONS	
EA	REMOVING SIGNS	675.50
LS	SPECIAL PROVISION (TEMPORARY ROADWAY(PHASE II)	900.645
LS	SPECIAL PROVISION (TEMPORARY ROADWAY(PHASE III)	900.645
LU	SPECIAL PROVISION (EMISSION CONTROL DEVICE, BULLDOZER) (N.A.B.I.)	900.650
LU	SPECIAL PROVISION (EMISSION CONTROL DEVICE, DUMP TRUCK) (N.A.B.I.)	900.650
LU	SPECIAL PROVISION (EMISSION CONTROL DEVICE, EXCAVATOR) (N.A.B.I.)	900.650

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		(N.A.B.I) = NOT A BID ITEM

PROJECT NAME: **SPRINGFIELD**
PROJECT NUMBER: **ST CULV (5)**

FILE NAME: **\Structures\s04c178qty.xls**
PROJECT MANAGER: **R. R. WHITCOMB**
DESIGNED BY: **D. PETERSON**
QUANTITY SHEET #2

PLOT DATE: **5/22/2007**
DRAWN BY: **D. PETERSON**
CHECKED BY: **W. LAMMER**
SHEET **6** OF **52**

~~REMOVE AND RESET GUARDRAIL~~
~~STA. 12+00.0 RT. - STA. 14+00.0 RT.~~

CONSTRUCT PAVED APRON
STA. 13+75.0 LT.

STEEL BEAM GUARDRAIL
GALVANIZED
STA. 12+00 RT. STA. 14+00 RT.

VT STATE PLANE GRID

STA. 14+00

EXISTING R.O.W.

BND
VTHD CONC.

GARAGE

FLAG POLE

WELL ARTESIAN

GUYW

7
112
79

RELINQUISHED TH

GR. DRIVE

T.H. 9

MB

SIGN

GRAVEL DRIVE

DITCH

R SIGN

VT 11 POB
STA. 10+00.00

STA. 12+00.00
BEGIN APPROACH

VT 11
TO CHESTER

N47° 12' 39"E

10+00 11+00 12+00 13+00 14+

18" CGMP

7
111X
78

WOODS

ABR E &

GUYW

STA. 14+00.00
END APPROACH
BEGIN PROJECT

MATCH LINE A-A

EXISTING R.O.W.

TRAV.
PT. 3

S. WB

7
114-1-3
2354
1-1

2M. OAK

BND

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

LAYOUT SHEET (1)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

FILE NAME: 04c178\Structures\s04c178bdr.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: G. ROY
DESIGNED BY: J. PERRIGO	CHECKED BY: D. Peterson
s04c178101	SHEET 7 OF 52

STA. 14+00

MATCH LINE A-A

EXISTING R.O.W.

MANUFACTURED TERMINAL SECTION, FLARED
STA. 16+37.5 RT. - STA. 16+76.2 RT.
~~STA. 17+09.6 LT. - STA. 17+48.3 LT.~~
STA. 15+31 LT. - STA. 15+69.7 LT.

ANCHOR FOR STEEL BEAM RAIL
STA. 14+06.0 LT.

~~REMOVE AND RESET GUARDRAIL~~
~~STA. 14+00.0 RT. - STA. 16+37.5 RT.~~
~~STA. 14+00.0 LT. - STA. 17+09.6 LT.~~

REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 16+37.5 RT. - STA. 16+76.6 RT.
STA. 17+09.6 LT. - STA. 17+50.3 LT.

REMOVAL AND DISPOSAL OF GUIDE POSTS
STA. 14+06.0 LT.

UNDERDRAIN FLUSHING BASIN
~~STA. 15+25.0 LT.~~ STA. 15+30 LT.
(SEE PROJECT NOTE NO. 11 ON SHEET 29 FOR MORE INFORMATION)

STEEL BEAM GUARDRAIL GALVANIZED
STA. 14+00 RT. - STA. 16+37.5 RT.
STA. 14+00 LT. - STA. 15+31 LT.

VT STATE PLANE GRID

BND
VHD CONC.

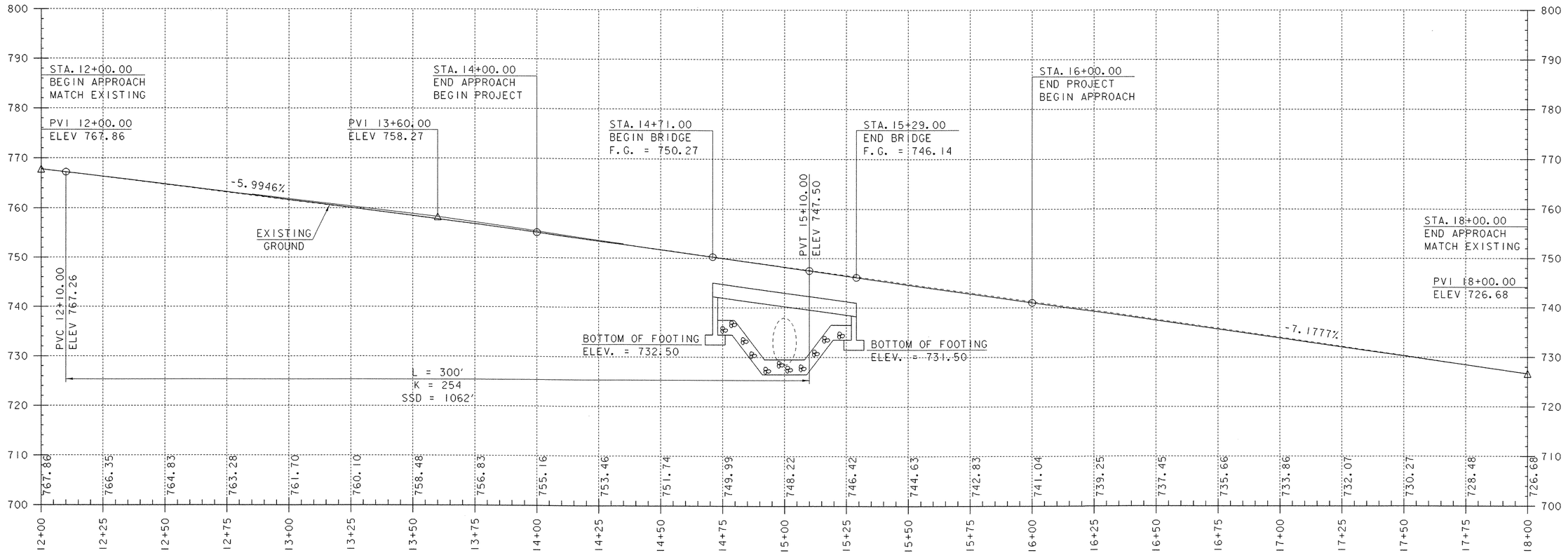
OLD SCHOOL HOUSE
SHED
FLOW
CHANNEL LINE POE
STA. 52+00.00
BM
RRSIR M. HEMLOCK
EL. 737.612
WELL
SPRING HOUSE
M. HEMLOCK
VT 11 STA. 15+00.00 =
CHANNEL STA. 51+00.00
Δ = 100° LT.
FLUSHING BASIN
STA. 14+71.00
BEGIN BRIDGE
F.G. = 750.27
STA. 15+29.00
END BRIDGE
F.G. = 746.14
STA. 16+00.00
END PROJECT
BEGIN APPROACH
APPROXIMATE LOCATION OF UNDERGROUND TELEPHONE
STA. 18+00.00
END APPROACH
VT 11 POE
STA. 20+00.00
WOODS
STONE EMBANKMENT
18" CGMP
DI
SIGN
R 20'
GR
TGM
UT
N47° 12' 39"E
15+00
16+00
17+00
18+00
19+00
20+00
VT 11 TO SPRINGFIELD
18" RCP
GP
109
2300
75
UNDERDRAIN 6" CGMP
1'-0" STONE FILL, TYPE I (TYP.)
111
77
CHANNEL LINE 50+00
N62°47'21"W
ACR E & T
STA. 15+27.98
℄ BRG. ABUT. NO. 2
F.G. = 746.21
STA. 14+72.02
℄ BRG. ABUT. NO. 1
F.G. = 750.20
3'-0" STONE FILL, TYPE III
110
76
STONE WALL
EXISTING R.O.W.
CHANNEL LINE POB
STA. 50+00.00
M. ASH
BM 100
RRSIT MTN. ASH
EL. 728.168

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

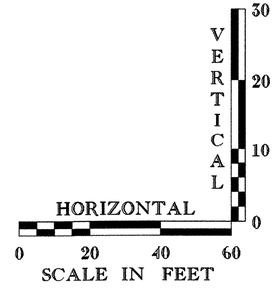
LAYOUT SHEET (2)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)
FILE NAME: 04c178\Structures\s04c178bdr.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R.R. WHITCOMB	DRAWN BY: G. ROY
DESIGNED BY: J. PERRIGO	CHECKED BY: D. Peterson
s04c178102.i	SHEET 8 OF 52

PROFILE ALONG PROPOSED CENTERLINE VT 11



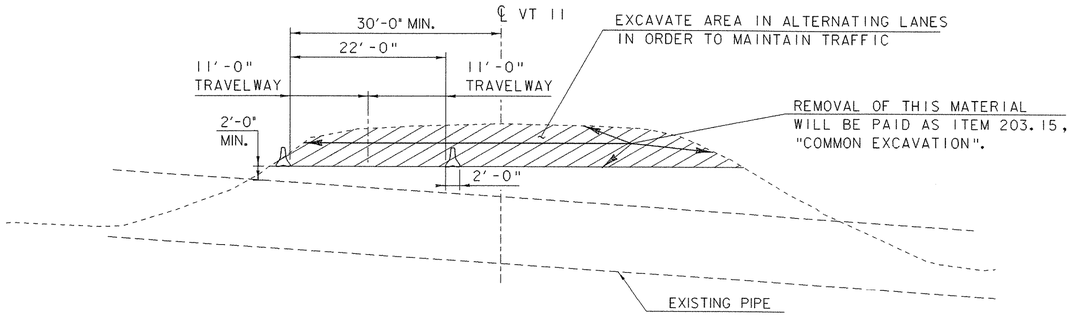
NOTE:
ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG NEW CENTERLINE.
ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADES ALONG NEW CENTERLINE.



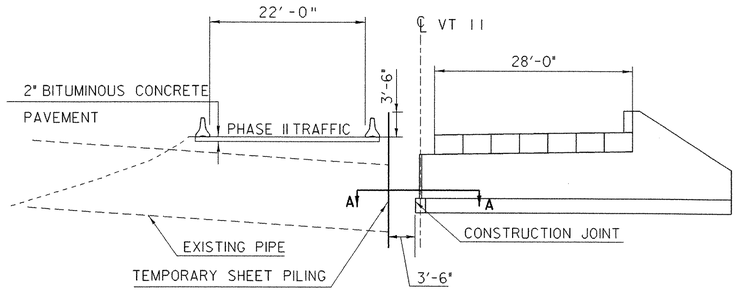
PROFILE SHEET

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

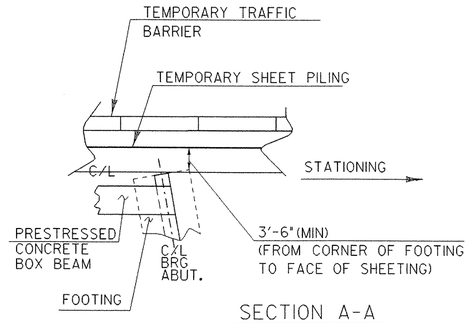
FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R.R. WHITCOMB	DRAWN BY: G. ROY
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178pfl.i	SHEET 9 OF 52



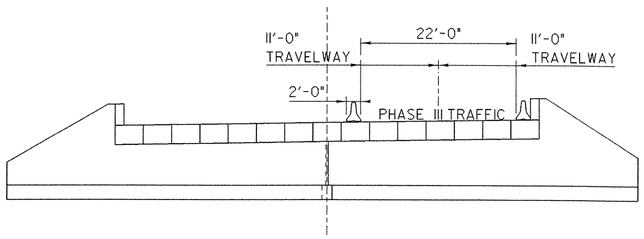
PHASE I



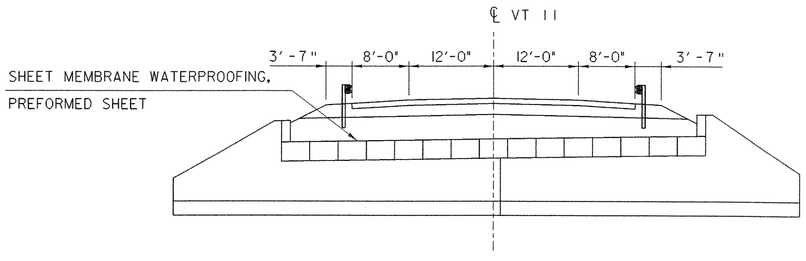
PHASE II



SECTION A-A



PHASE III



PHASE IV

PROPOSED TRAFFIC CONTROL PLAN

PHASE I: EXCAVATE EXISTING ROADWAY, ALTERNATING LANES IN ORDER TO MAINTAIN TRAFFIC UNTIL THE REQUIRED GRADE IS ACHIEVED. A MINIMUM COVER OF 2'-0" IS REQUIRED OVER THE EXISTING PIPE WHILE TRAFFIC IS ROUTED OVER THE PIPE.

THE FOLLOWING SIGNS WILL BE REQUIRED DURING THIS PHASE:
BUMP (W8-1) VAOT STANDARD E 101
PAVEMENT ENDS (W8-3) VAOT STANDARD E101

PHASE II: PLACE TEMPORARY SHEET PILING AND BARRIER AT THE LOCATIONS SHOWN TO CREATE A TWO-WAY TEMPORARY ROADWAY. DIRECT ALL TRAFFIC ONTO THIS ROADWAY. SEE SPECIAL PROVISION 900.645 FOR DETAILS ON TEMPORARY ROADWAY PAY ITEM. WITH TRAFFIC MAINTAINED ON PHASE II TEMPORARY ROADWAY, CONSTRUCT SECTION OF NEW BRIDGE TO THE CONSTRUCTION JOINT AS SHOWN.

PHASE III: CONSTRUCT PHASE III TEMPORARY ROADWAY. TEMPORARY ROADWAY (EXCLUDING BRIDGE DECK) SHALL BE PAVED WITH 2" BITUMINOUS CONCRETE PAVEMENT. TRAFFIC WILL BE ALLOWED DIRECTLY ON THE PRESTRESSED BOX UNITS AFTER ALL POST TENSIONING AND PATCHING IS COMPLETE. CONSTRUCT REMAINING PORTION OF NEW BRIDGE AND CHANNEL.

PHASE IV: PLACE SHEET MEMBRANE WATERPROOFING, PREFORMED FABRIC AND CONSTRUCT NEW ROAD IN ALTERNATING LANES IN ORDER TO MAINTAIN TWO-WAY TRAFFIC.

TRAFFIC CONTROL

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

FILE NAME: 04c178\Structures\s04c178tpl.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: J. PERRIGO
DESIGNED BY: J. PERRIGO	CHECKED BY: C. CARLSON
s04c178m01.i	SHEET 10 OF 52

ATTENUATOR NOTES

ENERGY ABSORPTION ATTENUATORS WILL BE PLACED AS SHOWN ON THE TRAFFIC CONTROL PLAN SHEETS TO ALLOW THE CONTRACTOR ACCESS TO THE WORK AREAS. THE ENERGY ABSORPTION ATTENUATORS FOR THIS PROJECT SHALL BE SUITABLE FOR A NARROW WIDTH APPLICATION AND SHALL BE INSTALLED AS SHOWN ON THE TRAFFIC CONTROL PLAN SHEETS. THESE ATTENUATORS WILL BE PAID FOR UNDER THE ITEM 621.57 "ENERGY ABSORPTION ATTENUATOR" (SAND FILLED PLASTIC BARRELS).

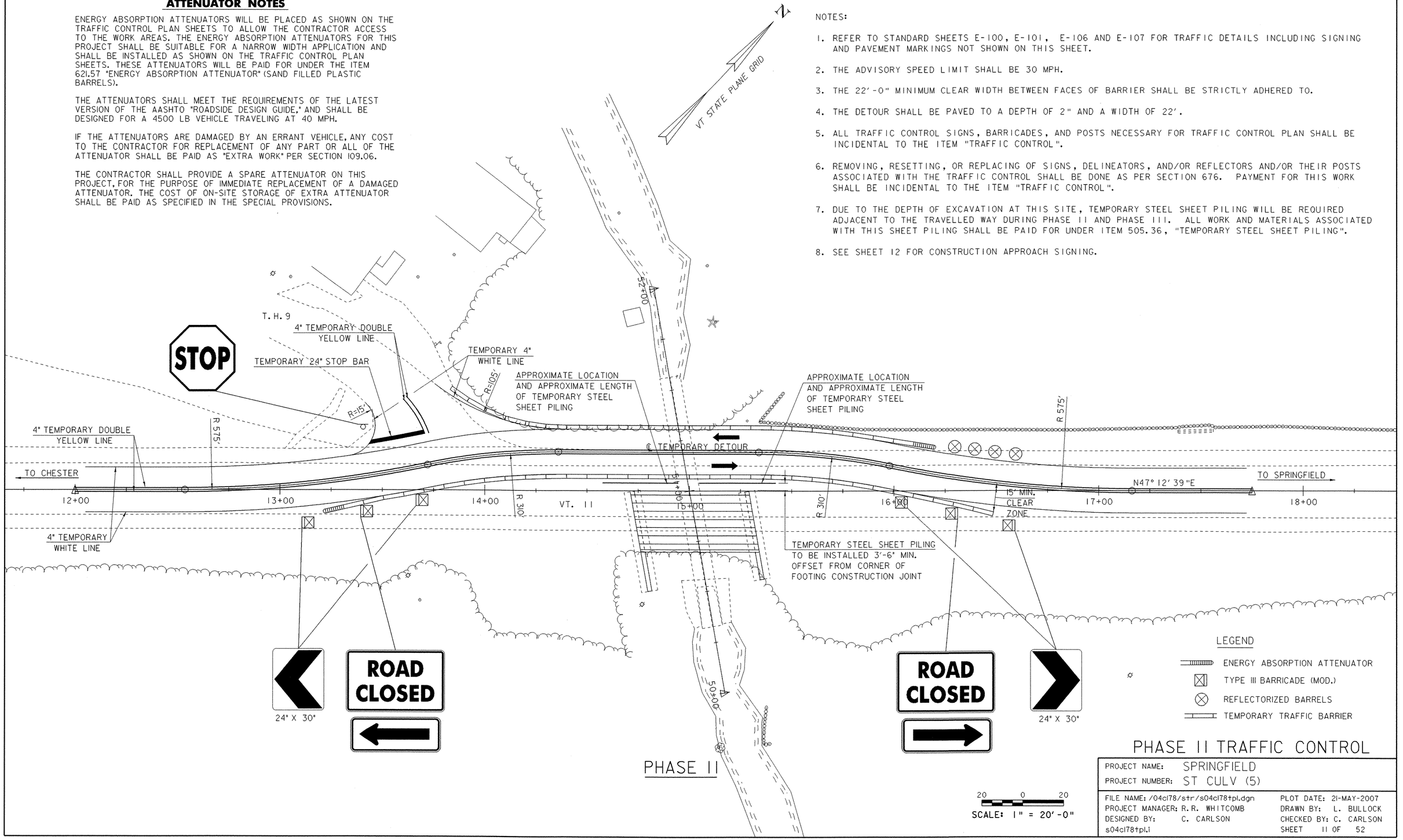
THE ATTENUATORS SHALL MEET THE REQUIREMENTS OF THE LATEST VERSION OF THE AASHTO "ROADSIDE DESIGN GUIDE," AND SHALL BE DESIGNED FOR A 4500 LB VEHICLE TRAVELING AT 40 MPH.

IF THE ATTENUATORS ARE DAMAGED BY AN ERRANT VEHICLE, ANY COST TO THE CONTRACTOR FOR REPLACEMENT OF ANY PART OR ALL OF THE ATTENUATOR SHALL BE PAID AS "EXTRA WORK" PER SECTION 109.06.

THE CONTRACTOR SHALL PROVIDE A SPARE ATTENUATOR ON THIS PROJECT, FOR THE PURPOSE OF IMMEDIATE REPLACEMENT OF A DAMAGED ATTENUATOR. THE COST OF ON-SITE STORAGE OF EXTRA ATTENUATOR SHALL BE PAID AS SPECIFIED IN THE SPECIAL PROVISIONS.

NOTES:

1. REFER TO STANDARD SHEETS E-100, E-101, E-106 AND E-107 FOR TRAFFIC DETAILS INCLUDING SIGNING AND PAVEMENT MARKINGS NOT SHOWN ON THIS SHEET.
2. THE ADVISORY SPEED LIMIT SHALL BE 30 MPH.
3. THE 22'-0" MINIMUM CLEAR WIDTH BETWEEN FACES OF BARRIER SHALL BE STRICTLY ADHERED TO.
4. THE DETOUR SHALL BE PAVED TO A DEPTH OF 2" AND A WIDTH OF 22'.
5. ALL TRAFFIC CONTROL SIGNS, BARRICADES, AND POSTS NECESSARY FOR TRAFFIC CONTROL PLAN SHALL BE INCIDENTAL TO THE ITEM "TRAFFIC CONTROL".
6. REMOVING, RESETTING, OR REPLACING OF SIGNS, DELINEATORS, AND/OR REFLECTORS AND/OR THEIR POSTS ASSOCIATED WITH THE TRAFFIC CONTROL SHALL BE DONE AS PER SECTION 676. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO THE ITEM "TRAFFIC CONTROL".
7. DUE TO THE DEPTH OF EXCAVATION AT THIS SITE, TEMPORARY STEEL SHEET PILING WILL BE REQUIRED ADJACENT TO THE TRAVELLED WAY DURING PHASE II AND PHASE III. ALL WORK AND MATERIALS ASSOCIATED WITH THIS SHEET PILING SHALL BE PAID FOR UNDER ITEM 505.36, "TEMPORARY STEEL SHEET PILING".
8. SEE SHEET 12 FOR CONSTRUCTION APPROACH SIGNING.



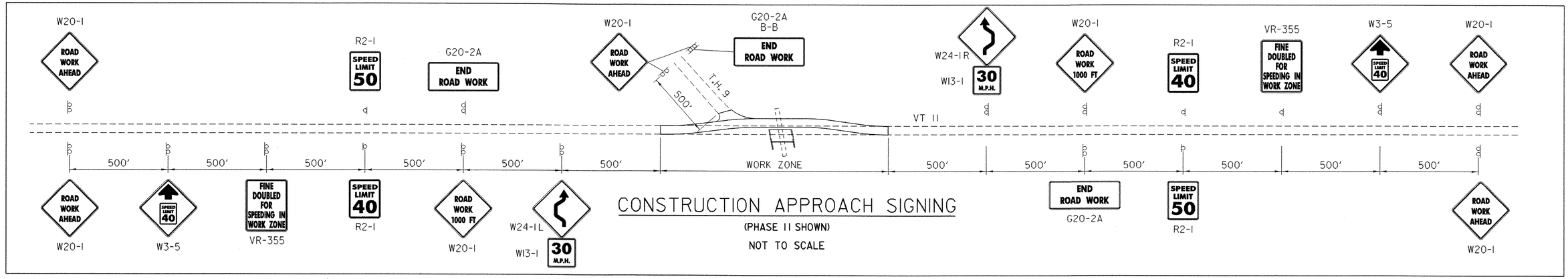
LEGEND

- ENERGY ABSORPTION ATTENUATOR
- TYPE III BARRICADE (MOD.)
- REFLECTORIZED BARRELS
- TEMPORARY TRAFFIC BARRIER

PHASE II TRAFFIC CONTROL

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

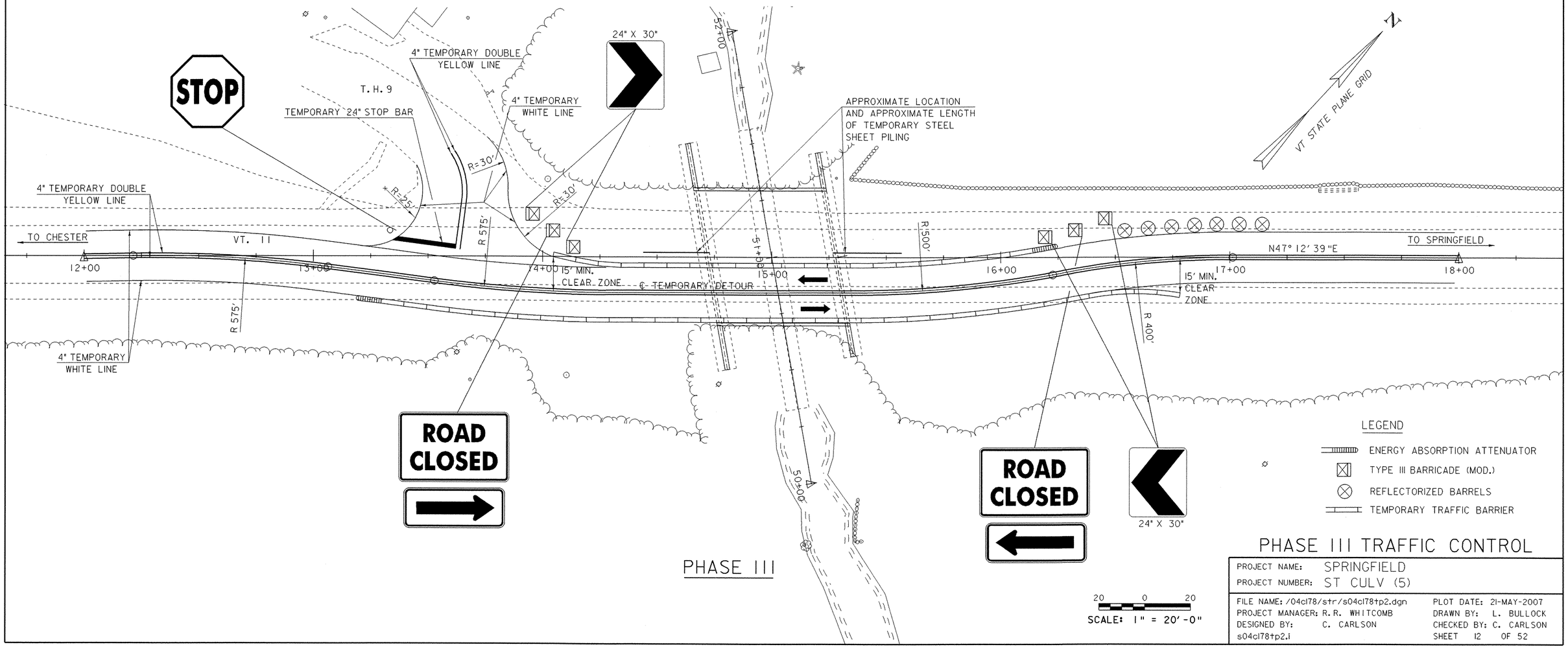
FILE NAME: /04cl78/str/s04cl78tpl.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: L. BULLOCK
DESIGNED BY: C. CARLSON	CHECKED BY: C. CARLSON
s04cl78tpl.i	SHEET 11 OF 52



CONSTRUCTION APPROACH SIGNING

(PHASE II SHOWN)

NOT TO SCALE



PHASE III

PHASE III TRAFFIC CONTROL

20 0 20

SCALE: 1" = 20'-0"

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

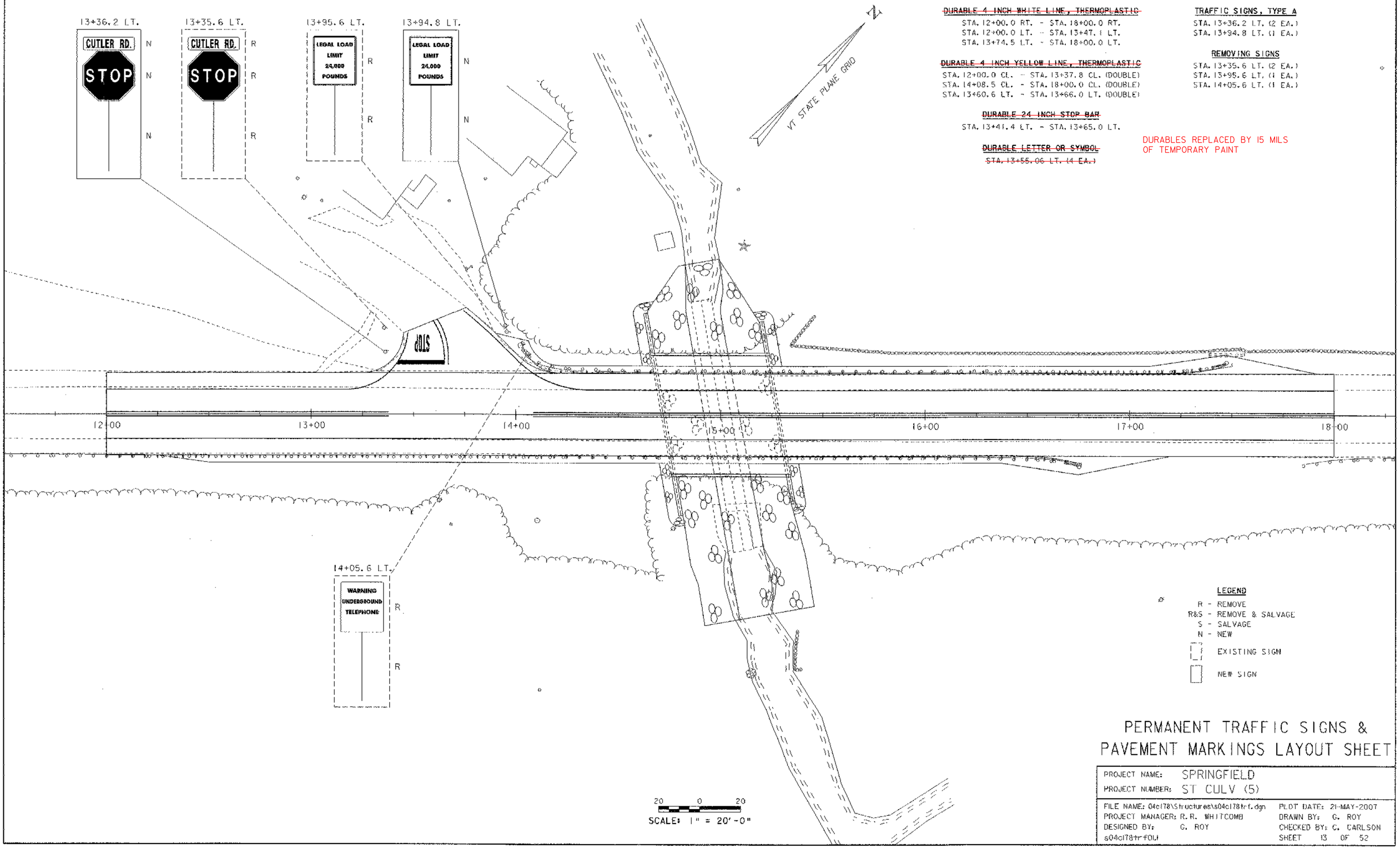
FILE NAME: /04cl78/str/s04cl78tp2.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: L. BULLOCK
DESIGNED BY: C. CARLSON	CHECKED BY: C. CARLSON
s04cl78tp2.i	SHEET 12 OF 52

13+36.2 LT.

13+35.6 LT.

13+95.6 LT.

13+94.8 LT.



14+05.6 LT.

~~DURABLE 4 INCH WHITE LINE, THERMOPLASTIC~~

STA. 12+00.0 RT. - STA. 18+00.0 RT.
STA. 12+00.0 LT. - STA. 13+47.1 LT.
STA. 13+74.5 LT. - STA. 18+00.0 LT.

~~DURABLE 4 INCH YELLOW LINE, THERMOPLASTIC~~

STA. 12+00.0 CL. - STA. 13+37.8 CL. (DOUBLE)
STA. 14+08.5 CL. - STA. 18+00.0 CL. (DOUBLE)
STA. 13+60.6 LT. - STA. 13+66.0 LT. (DOUBLE)

~~DURABLE 24 INCH STOP BAR~~

STA. 13+41.4 LT. - STA. 13+65.0 LT.

~~DURABLE LETTER OR SYMBOL~~

~~STA. 13+55.06 LT. (4 EA.)~~

TRAFFIC SIGNS, TYPE A

STA. 13+36.2 LT. (2 EA.)
STA. 13+94.8 LT. (1 EA.)

REMOVING SIGNS

STA. 13+35.6 LT. (2 EA.)
STA. 13+95.6 LT. (1 EA.)
STA. 14+05.6 LT. (1 EA.)

DURABLES REPLACED BY 15 MILS OF TEMPORARY PAINT

LEGEND

R - REMOVE
R&S - REMOVE & SALVAGE
S - SALVAGE
N - NEW
EXISTING SIGN
NEW SIGN

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

PERMANENT TRAFFIC SIGNS & PAVEMENT MARKINGS LAYOUT SHEET

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: 04c178\Structures\s04c178trf.dgn
PROJECT MANAGER: R.R. WHITCOMB
DESIGNED BY: G. ROY
s04c178trf01.i
PLOT DATE: 21-MAY-2007
DRAWN BY: G. ROY
CHECKED BY: C. CARLSON
SHEET 13 OF 52

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	NEW & SALVAGED SIGNS: SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	"A"	"B"	SALV SIGN	SALV TIS	EXIST POST: RETAIN	SALVAGE	NEW SIGN POSTS: NO. OF POSTS	FLANGED CHANNEL lb/ft 1.42	2.0	3.0	SQUARE STEEL (in) 1.75	2.0	2.5 lb/ft 1.88	2.46	3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0	4.0	4.0 MOD lb/ft 1.3	1.7	1.7	TUBULAR STEEL Ø (in) FOUNDATION	3.0	3.5	4.0	5.0 lb/ft 7.6	9.0	10.8	14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
																		OPTION ITEMS																										
13+36.2 LT.	CUTLER RD.	2	30	9	3.75						1			14			~~14~~			~~1~~																				E-123	
	STOP	1	30	30	5.18																																			R1-1		E-143
13+94.8 LT.	LEGAL LOAD LIMIT 36,000 POUNDS	1	24	30	5.00						1			~~14~~ 12			~~14~~			+																				VR-017		E-141
SUBTOTAL		SF 13.93	SF	EA.	SF						FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB														
ROUNDING		0.07																																								
TOTAL		SF 14.00	SF	EA.	SF						FT ~~28~~ 26			FT 28					LB			EA.	LB				EA.	EA.	LB												

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."

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: 04c178\Structures\sd04c178tss.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: G. ROY
TRAFFIC SIGN SUMMARY SHEET

PLOT DATE: 21-MAY-2007
DRAWN BY: G. ROY
CHECKED BY: C. CARLSON
SHEET 14 OF 52

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	To Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
ROD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)

COLOR			
blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

MUCK - Soft organic soil (containing > 10% organic material.

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

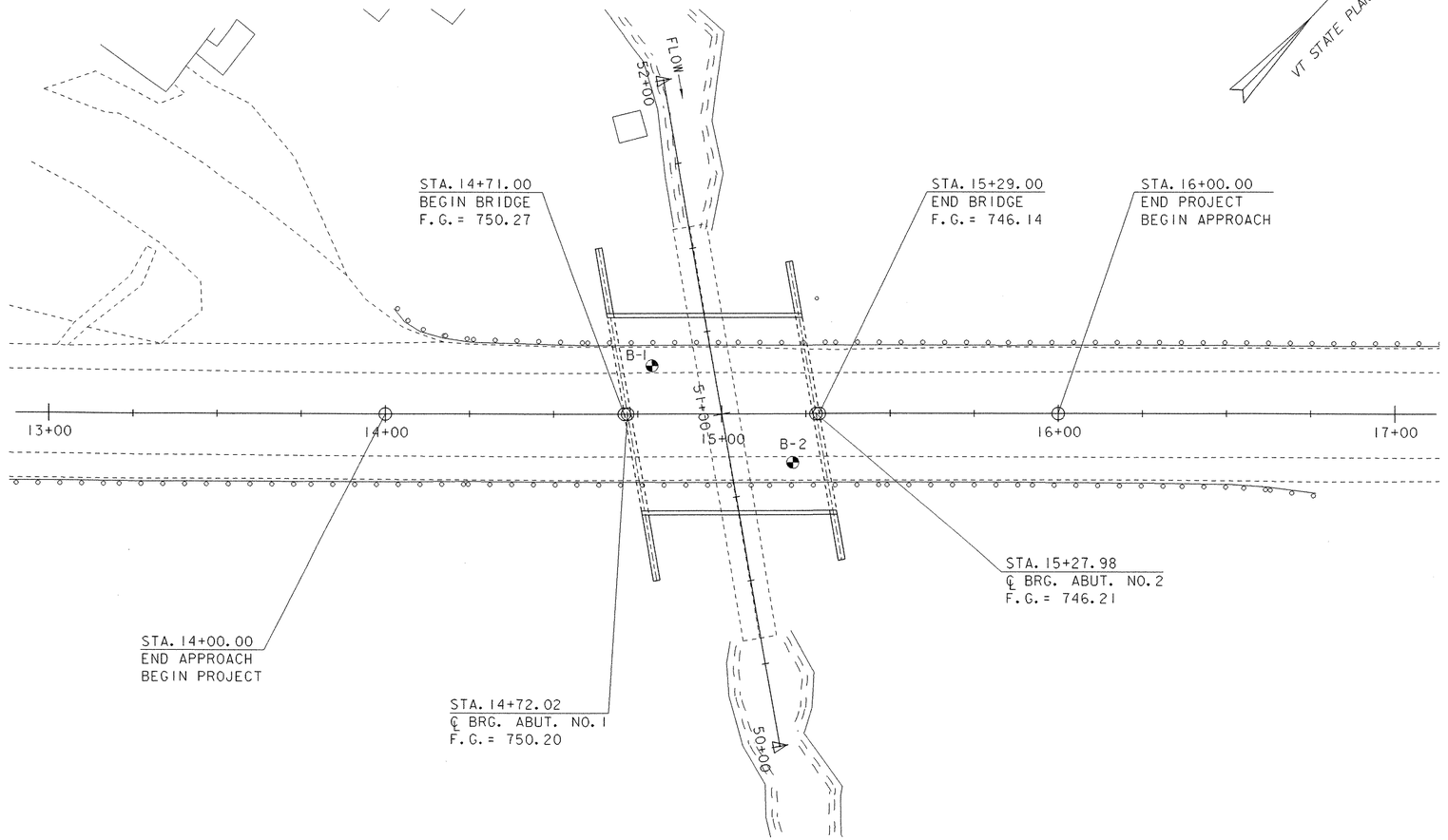
FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.

BORING CHART - MAINLINE

HOLE NO.	STATION	OFFSET	GROUND ELEVATION	BEDROCK ELEVATION
B1	14+79.36	14.00' LT	749.29 FT	NONE
B2	15+21.13	14.00' RT	747.56 FT	NONE



BORING LAYOUT SHEET

20 0 20

SCALE: 1" = 20'-0"

GENERAL NOTES

1. The subsurface explorations shown herein were made between 03-02-06 and 03-21-06 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from avaliable subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

BORING INFORMATION SHEET (1)

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: 04cl78\Str\s04cl78bor.dgn .i
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: C. CARLSON
s04cl78bori.i

PLOT DATE: 21-MAY-2007
DRAWN BY: G. ROY
CHECKED BY: C. CARLSON
SHEET 15 OF 52

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING NUMBER: B-1
SHEET 1 of 1
DATE STARTED: 10/05/05
DATE COMPLETED: 10/06/05

PROJECT NAME: SPRINGFIELD
SITE NAME: VT.11
STATION: 4+79.36
OFFSET: -14.00
VTSPG:

PROJECT NUMBER: ST CULV(5)
SITE NUMBER: MULTI-PLATE
GROUND ELEVATION: 749.29 ft
GROUNDWATER DEPTH: 15.2 ft 10/06/05

BORING CREW
CREW CHIEF: GARROW
DRILLER: GARROW
LOGGER: RUSSELL

BORING RIG: LARGE SKID RIG w/AUTO HAMMER
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: DLG

ABUTMENT NO. 1
BOT. FTG 732.50

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		Asphalt, 0.0 ft – 0.5 ft					
		A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft	22	7.4	34.0	54.3	11.7
		A-2-4, GrSlSa, brn, Moist, Rec. = 0.5 ft	62	10.1	24.9	47.6	27.5
		Cored ahead, Cobbles, 6.5 ft – 8.5 ft					
10		No Recovery, 10.0 ft – 12.0 ft	13				
		Visual Class: A-2-4, Si Sa Gr, brn-gry, Moist, Rec. = 0.4 ft, 15.0 ft – 17.0 ft, Insufficient sample for testing.	40				
		Boulders, 18.5 ft – 22.0 ft					
20		A-4, SlSa HP, gry, Moist, Rec. = 0.9 ft	95/1.0'	9.8	11.2	48.2	40.6
		A-4, SlSa HP, gry, Moist, Rec. = 1.3 ft	103/1.0'	9.7	15.8	46.1	38.1
30		A-2-4, GrSlSa HP, gry, Moist, Rec. = 1.1 ft	R	9.2	24.0	43.7	32.3
		A-4, SlSa HP, gry, Moist, Rec. = 0.5 ft	62/0.5'	9.8	12.0	50.2	37.8
		Boulders & Cobbles, 36.0 ft – 40.0 ft					
40		A-2-4, SlSa, gry, Moist, Rec. = 1.1 ft	98	19.2	7.1	66.4	26.5
		A-4, GrSlSa, gry, Moist, Rec. = 1.8 ft	83	11.8	20.7	40.9	38.4
50		A-4, GrSlSa, gry, Moist, Rec. = 1.9 ft	79	10.7	21.5	40.5	38.0
		Hole stopped @ 52.0 ft					

LOG OF BORING SPRINGFIELD ST CULV(5).GPJ VT ADT.GDT 2/1/06

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING NUMBER: B-2
SHEET 1 of 1
DATE STARTED: 10/04/05
DATE COMPLETED: 10/05/05

PROJECT NAME: SPRINGFIELD
SITE NAME: VT.11
STATION: 5+21.13
OFFSET: 14.00
VTSPG:

PROJECT NUMBER: ST CULV(5)
SITE NUMBER: MULTI-PLATE
GROUND ELEVATION: 747.56 ft
GROUNDWATER DEPTH: Caved in @ 16.3'

BORING CREW
CREW CHIEF: GARROW
DRILLER: GARROW
LOGGER: RUSSELL

BORING RIG: LARGE SKID RIG w/AUTO HAMMER
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: DLG

ABUTMENT NO. 2
BOT. FTG 731.50

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		Asphalt, 0.0 ft – 0.4 ft					
		A-1-b, GrSa, brn, Moist, Rec. = 1.0 ft	18	9.6	38.3	47.6	14.1
		A-2-4, Sa, brn, Moist, Rec. = 1.4 ft	15	11.5	19.2	66.7	14.1
		A-1-b, SaGr, brn-gry, Moist, Rec. = 1.2 ft	30	9.4	44.8	40.1	15.1
		A-1-b, GrSa, gry, Moist, Rec. = 1.6 ft	47	8.6	39.4	45.0	15.6
10		A-2-4, GrSa, gry, Moist, Rec. = 1.6 ft	37	9.9	32.8	48.9	18.3
		A-1-b, GrSa, gry, Moist, Rec. = 1.3 ft	42	9.1	37.8	45.1	17.1
		A-1-b, SaGr, gry, Moist, Rec. = 1.5 ft	71	8.2	46.3	39.0	14.7
		Cobbles, 14.5 ft – 16.0 ft					
		Lost water, Possible void, No Recovery, 16.0 ft – 18.0 ft	29				
		A-1-b, SaGr, brn-gry, MTW, Rec. = 0.7 ft	7	12.2	47.0	39.9	13.1
20		A-4, GrSaSl, gry, MTW, Rec. = 1.5 ft	42	7.7	20.6	34.2	45.2
		Boulder & Hardpan, 22.0 ft – 22.5 ft	R				
		A-4, SlSa HP, gry, MTW, Rec. = 0.8 ft	59/0.3'	9.5	12.6	47.9	39.5
		A-4, SaSl HP, gry, MTW, Rec. = 1.4 ft	52/0.2'	12.6	11.5	42.6	45.9
		A-4, SlSa HP, gry, MTW, Rec. = 1.6 ft	R	10.5	8.1	47.1	44.8
30		A-2-4, SlSa HP, gry, MTW, Rec. = 1.7 ft	112/1.0'	10.4	18.4	49.3	32.3
		A-4, SlSa HP, gry, MTW, Rec. = 1.5 ft	89	11.0	15.3	43.3	41.4
40		A-2-4, SlSa HP, gry, MTW, Rec. = 0.4 ft	118/1.0'	9.0	14.9	49.8	35.3
		A-4, GrSlSa HP, gry, MTW, Rec. = 1.0 ft	R	9.7	24.6	39.4	36.0
50		A-4, SlSa HP, gry, MTW, Rec. = 2.0 ft	89	9.6	16.9	44.2	38.9
		Hole stopped @ 52.0 ft					

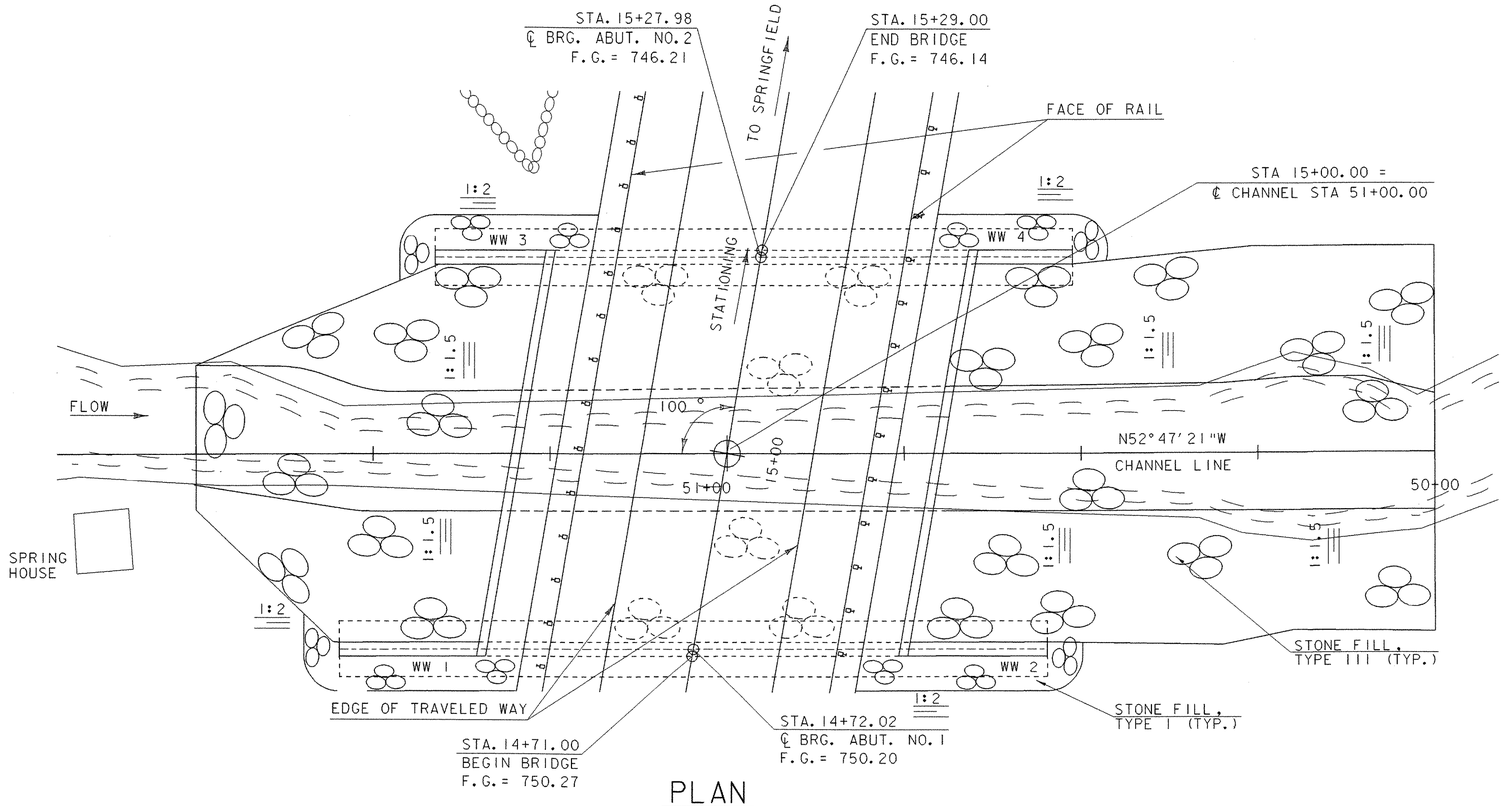
LOG OF BORING SPRINGFIELD ST CULV(5).GPJ VT ADT.GDT 2/1/06

BORING LOGS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

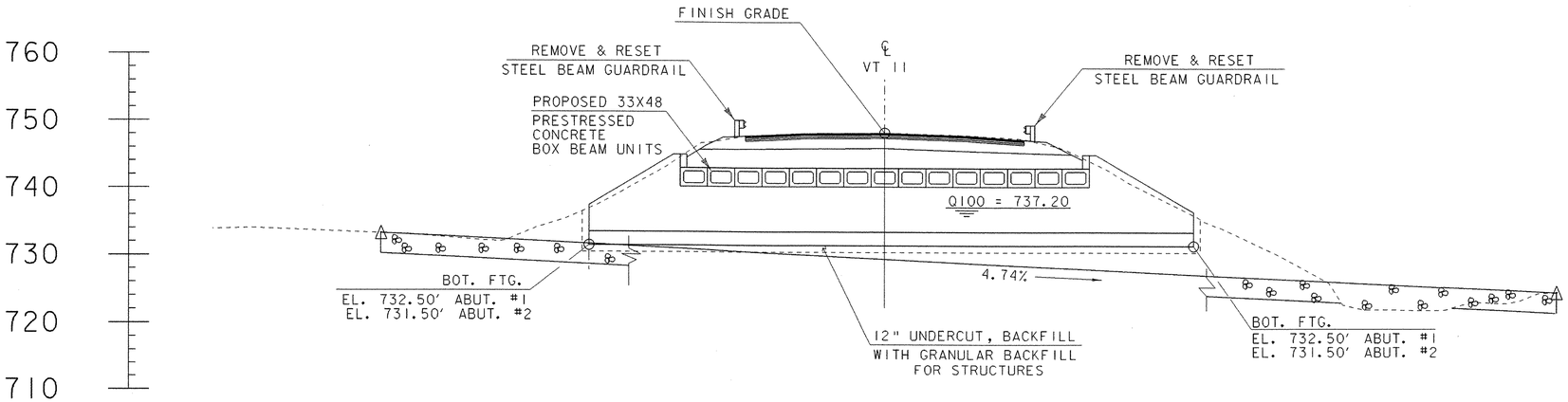
FILE NAME: /04cl78/str/s04cl78bor.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: C. CARLSON
s04cl78bor2.i

PLOT DATE: 21-MAY-2007
DRAWN BY: str3
CHECKED BY: C. CARLSON
SHEET 16 OF 52



PLAN

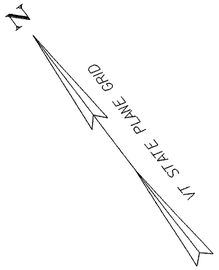
SCALE 1" = 10'-0



SECTION ALONG CHANNEL ℄

(HEADWALLS & FOOTINGS SHOWN FOR CLARITY)

SCALE 1" = 10'-0



PLAN & ELEVATION

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV(5)
FILE NAME: /04cl78/str/s04cl78pe.dgn	PLOT DATE: 21-MAY-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: J. PERRIGO
DESIGNED BY: D. BONNEAU	CHECKED BY: D. PETERSON
s04cl78pe.i	SHEET 17 OF 52

PROJECT DESCRIPTION

This project involves the replacement of a culvert serving an un-named stream. The project is on VT 11, a paved state highway, in the Town of Springfield. The existing 114" corrugated metal culvert will be removed. A new 55' span buried prestressed box beam bridge with concrete stemwalls and footings will be constructed on the existing culvert alignment. Traffic will be maintained during construction via different traffic phases. Total roadway approach work including both approaches, is approximately 600 feet. The limits of construction do not approach any buildings or other structures. Natural resources within the project area have been clearly identified and shown in the existing conditions site plan.

This project will be completed in one construction season.

The project is located at: 43 17' 34" N 72 31' 13" W

Total disturbed area (excluding waste and borrow areas): 0.96 acres
Should conditions change and result in 1or more acres of earth disturbance within the project limits, or should the project become part of a common plan of development, then the contractor will be responsible for additional permitting with the Agency of Natural Resources.

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The property surrounding the project site consists of mostly rolling wooded terrain. Both upstream and downstream slopes average roughly 6 percent grade with well defined drainage ways.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The stream is described as a flashy and steep cold water stream. The streambed is made up of cobbles and gravel with some boulders. The banks along both sides of the river both upstream and downstream are high and steep with mature vegetation consisting of a mix of softwoods with a few hardwood species. The contributing drainage area at the highway crossing is approximately 2.82 sq. mi.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography surrounding the site is mostly rolling hills. There is a residence upstream of the project and overhead utility lines following parallel to VT 11 on the downstream side of the road with relocation required. Buried utilities along VT 11 on the upstream side of the road will also require relocation or temporary support.

VEGETATION:

The vegetation along VT 11 is a mix of roadside grasses & small shrubs to the extent of the project limits. construction activities should not have any effect on other vegetation.

Following construction, the roadside slopes will be stabilized with stone fill and/or grassy vegetation with standard seed and mulch practices.

SOILS:

The soils identified within the project area have been classified as Berkshire & Monadnock fine sandy loam, very stony, on 15 - 35 percent slopes. However, during the construction of VT 11, the grade was raised approximately 10' through this section of roadway and as such, the natural soils throughout the site have been disturbed and filled over. It is expected that coarse granular fill will be the primary soil type encountered during excavation of the existing roadway.

The soils shall be treated as highly erodible.

SENSITIVE RESOURCE AREAS:

No sensitive resource areas other than the stream and riparian area have been identified for this site. Protection of the stream from siltation and erosion will be accomplished to the extent practicable by providing temporary pipes or a lined channel while the footings and stem walls are placed.

There have been no Threatened and Endangered Species identified within the project limits.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

The disturbance of soils will be necessary to remove the existing culvert. A temporary means of conveying the stream through the site will be utilized while the new footings and stem walls are constructed. This will prevent the stream from mixing with disturbed soils until the new stream bed through the bridge has been finished.

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.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for several days prior to final grading shall be tracked and mulched. Slopes shall be stabilized within 48 hours of forecasted rain.

Seeding, mulching and biodegradable erosion control matting, or an equivalent, shall be used to stabilize all slopes greater than 1:3. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction.

Silt fence will be installed a distance of 5'-10' from the toe of fill slopes to prevent sediment transport to down gradient areas. Each line of silt fence will be placed along the contour with the lower edge buried 6" to prevent underflow and ends turned slightly up grade 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 shall be 100'. Silt fence shall be installed prior to any upslope earthwork.

Measures such as temporary stone check dams and silt fence shall be regularly maintained and shall be checked for sediment build-up. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediment shall be disposed of at an approved site such that it will not be subject to erosion.

Stabilized construction entrances to the project site, staging areas, as well as to waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12'x 50'. All surface water flowing to or diverted towards a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipes smaller than 6 inch diameter shall be used. See typical detail on sheet 24 for materials and construction method to be utilized when constructing a stabilized entrance.

PERMANENT EROSION CONTROL MEASURES

Several permanent erosion control measures will be utilized:

Stone lining of the stream banks with Stone Fill, Type III and around the wingwalls and on the disturbed roadway slopes with Stone Fill, Type I will be utilized. The stone lining will stabilize the slopes during storm events.

Stream bank vegetation will be introduced in the grubbing material that is to be placed over the stream bank rip rap.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of receiving waters. The measures include stabilization and structural practices, storm water controls and other pollution prevention controls.

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 by 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 promptly once damage is discovered.

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

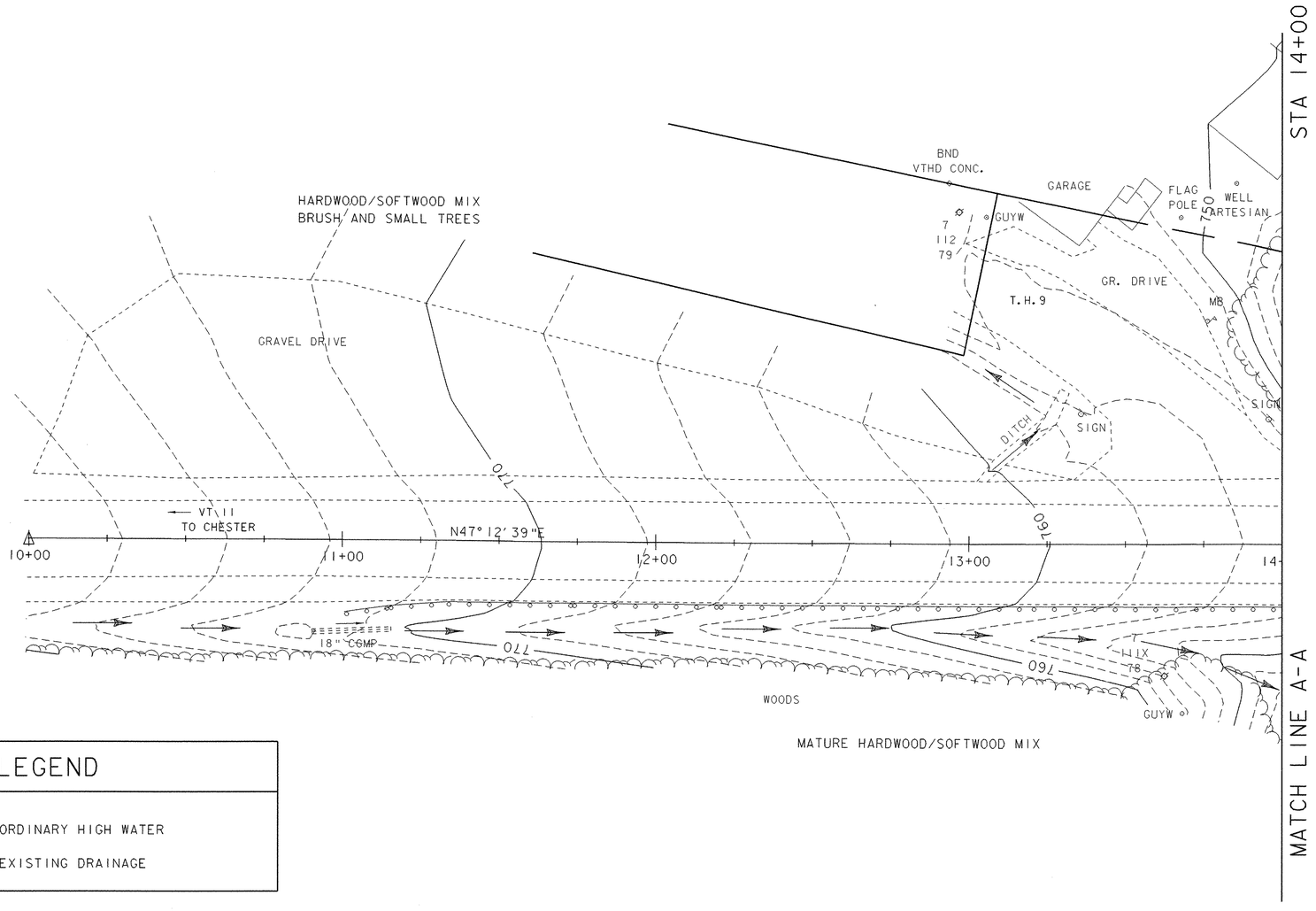
Control only sediment-laden runoff generated by the project site. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

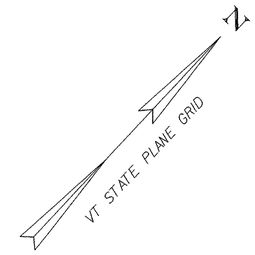
Do not allow construction equipment to operate on the down slope side of perimeter control measures.

EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV(5)

FILE NAME: /04C178/str/s04c178ecbdr.dgn		PLOT DATE:	22-MAY-2007
PROJECT LEADER:	R. WHITCOMB	DRAWN BY:	M. HALE
DESIGNED BY:	D. BONNEAU	CHECKED BY:	C. CARLSON
s04c178ecn.i		SHEET	18 OF 52





LEGEND

- ORDINARY HIGH WATER
- EXISTING DRAINAGE

EXISTING ROW

BND
VTHD CONC

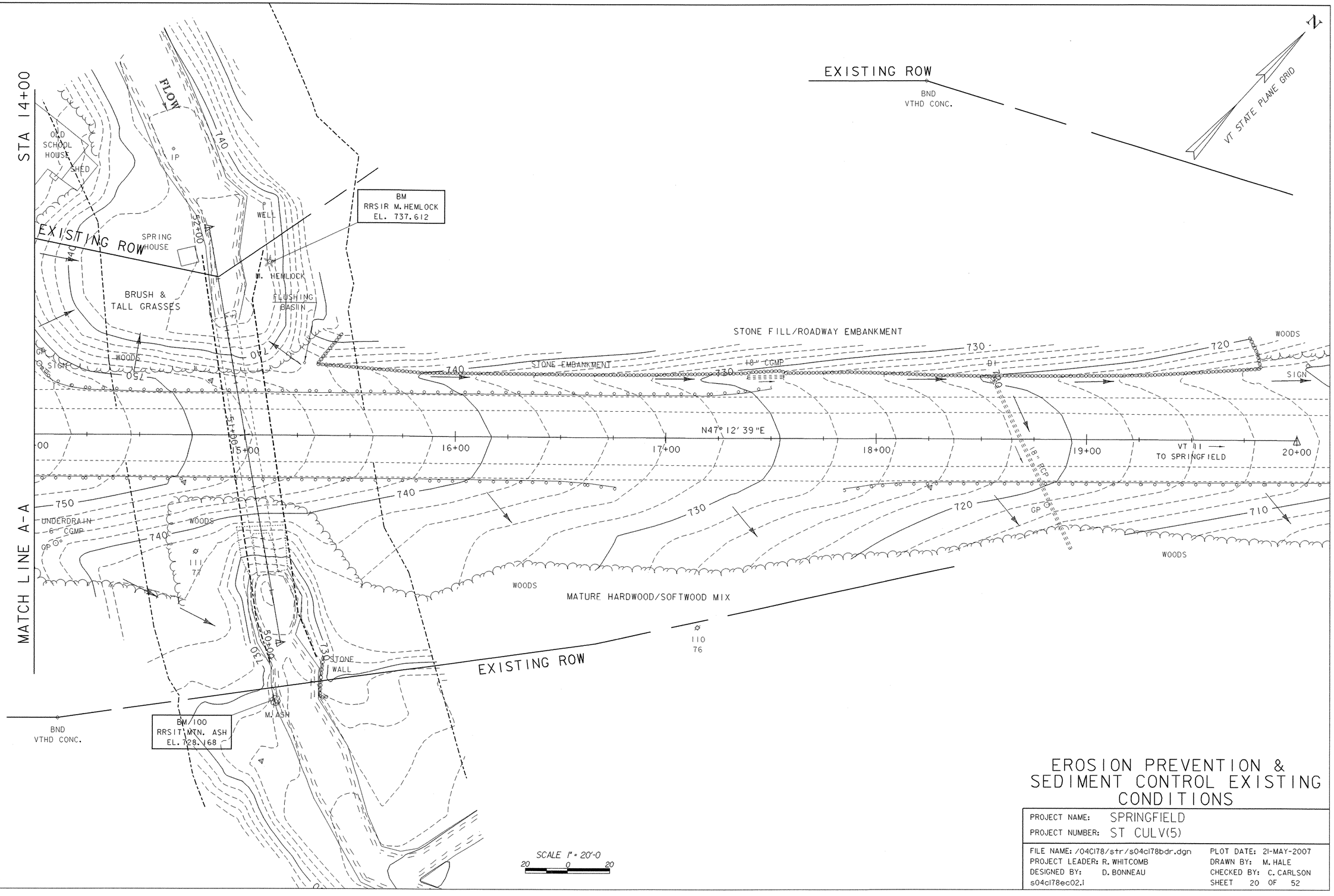
NOTE:
NO RESOURCES HAVE BEEN IDENTIFIED OTHER THAN THE STREAM AND RIPARIAN BUFFER ZONE.

SCALE 1" = 20'-0
20 0 20

EROSION PREVENTION & SEDIMENT CONTROL EXISTING CONDITIONS

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV(5)

FILE NAME: /04C178/str/s04c178ecbdr.dgn		PLOT DATE:	21-MAY-2007
PROJECT LEADER:	R. WHITCOMB	DRAWN BY:	M. HALE
DESIGNED BY:	D. BONNEAU	CHECKED BY:	
s04c178ec01.i		SHEET 19	OF 52



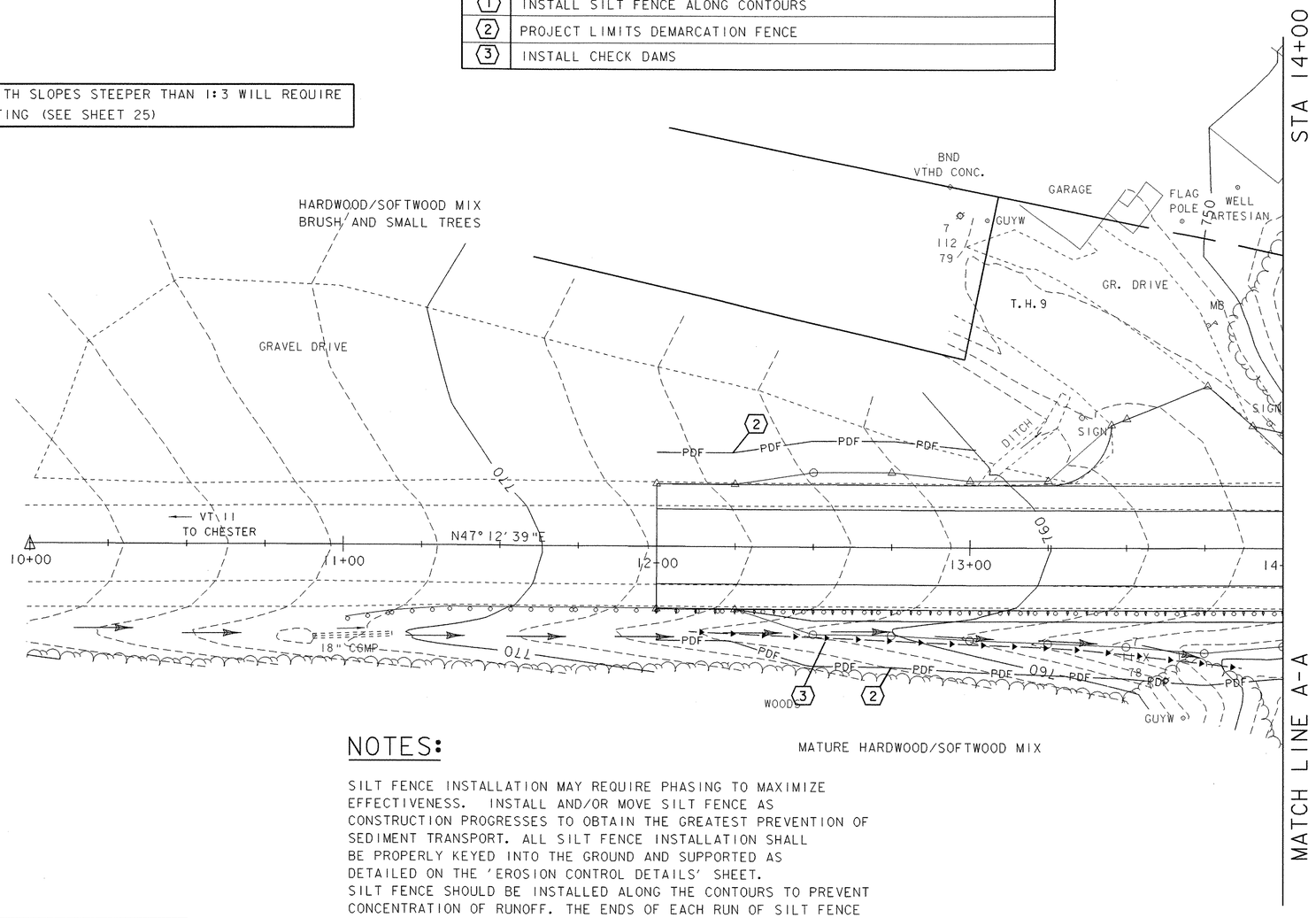
EROSION PREVENTION & SEDIMENT CONTROL EXISTING CONDITIONS

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV(5)

FILE NAME: /04CI78/str/s04ci78bdr.dgn	PLOT DATE: 21-MAY-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: D. BONNEAU	CHECKED BY: C. CARLSON
s04ci78ec02.i	SHEET 20 OF 52

EROSION AND SEDIMENT CONTROL INDEX	
NO.	**DESCRIPTION**
1	INSTALL SILT FENCE ALONG CONTOURS
2	PROJECT LIMITS DEMARCATION FENCE
3	INSTALL CHECK DAMS

NOTE: ALL DISTURBED AREAS WITH SLOPES STEEPER THAN 1:3 WILL REQUIRE TEMPORARY EROSION MATTING (SEE SHEET 25)



NOTES:

SILT FENCE INSTALLATION MAY REQUIRE PHASING TO MAXIMIZE EFFECTIVENESS. INSTALL AND/OR MOVE SILT FENCE AS CONSTRUCTION PROGRESSES TO OBTAIN THE GREATEST PREVENTION OF SEDIMENT TRANSPORT. ALL SILT FENCE INSTALLATION SHALL BE PROPERLY KEYED INTO THE GROUND AND SUPPORTED AS DETAILED ON THE 'EROSION CONTROL DETAILS' SHEET.
SILT FENCE SHOULD BE INSTALLED ALONG THE CONTOURS TO PREVENT CONCENTRATION OF RUNOFF. THE ENDS OF EACH RUN OF SILT FENCE SHOULD BE TURNED UPHILL TO PROVIDE A SMALL POOL FOR SILT SHOULD WATER TRY TO RUN AROUND THE END OF THE SILT FENCE.

SURFACE ROUGHENING HELPS REDUCE RUNOFF VELOCITIES AND INCREASES INFILTRATION RATES. ROUGHENING MAY BE ACCOMPLISHED BY A NUMBER OF METHODS SUCH AS TRACKING UP AND DOWN THE SLOPE WITH A BULLDOZER, TRACKING ACROSS THE SLOPE WITH A WHEELED VEHICLE OR ANY METHOD OF SCARIFYING THE SLOPE SUCH THAT THE GROOVES CREATED RUN PERPENDICULAR TO THE DIRECTION OF WATER RUNOFF.

FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN INDICATED, HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE.

LEGEND

- GEOTEXTILE FOR SILT FENCE
- STONE FILL, TYPE I
- STONE FILL, TYPE III
- PDF — PROJECT DEMARCATION FENCE
- EXISTING DRAINAGE
- CHECK DAMS

N

VT STATE PLANE GRID

SCALE 1" = 20'-0
20 0 20

EROSION PREVENTION & SEDIMENT CONTROL PLAN

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04C178/str/s04c178ecbdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. BONNEAU
s04c178ec03.1

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: C. CARLSON
SHEET 21 OF 52

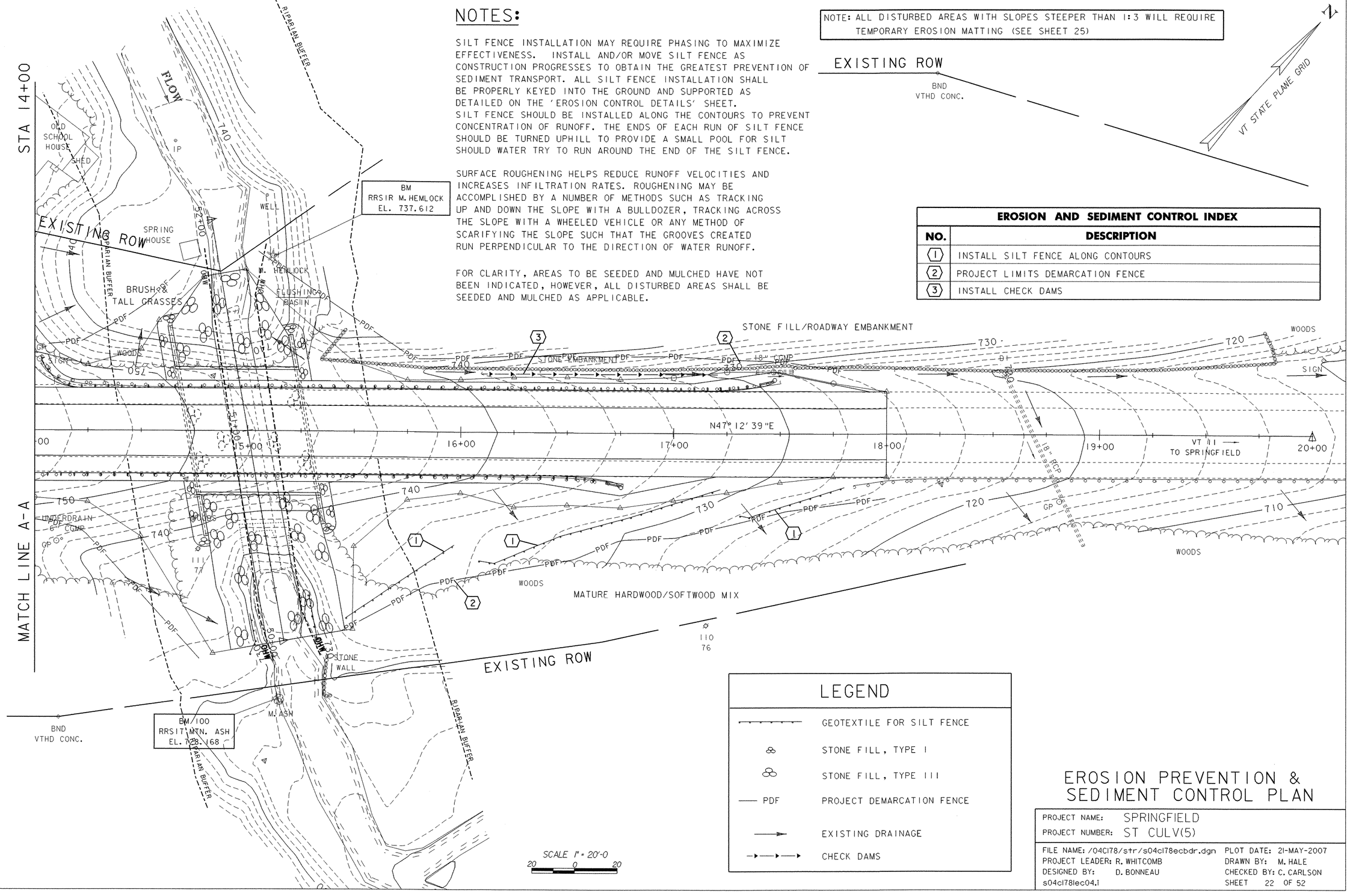
NOTES:

SILT FENCE INSTALLATION MAY REQUIRE PHASING TO MAXIMIZE EFFECTIVENESS. INSTALL AND/OR MOVE SILT FENCE AS CONSTRUCTION PROGRESSES TO OBTAIN THE GREATEST PREVENTION OF SEDIMENT TRANSPORT. ALL SILT FENCE INSTALLATION SHALL BE PROPERLY KEYED INTO THE GROUND AND SUPPORTED AS DETAILED ON THE 'EROSION CONTROL DETAILS' SHEET. SILT FENCE SHOULD BE INSTALLED ALONG THE CONTOURS TO PREVENT CONCENTRATION OF RUNOFF. THE ENDS OF EACH RUN OF SILT FENCE SHOULD BE TURNED UPHILL TO PROVIDE A SMALL POOL FOR SILT SHOULD WATER TRY TO RUN AROUND THE END OF THE SILT FENCE.

SURFACE ROUGHENING HELPS REDUCE RUNOFF VELOCITIES AND INCREASES INFILTRATION RATES. ROUGHENING MAY BE ACCOMPLISHED BY A NUMBER OF METHODS SUCH AS TRACKING UP AND DOWN THE SLOPE WITH A BULLDOZER, TRACKING ACROSS THE SLOPE WITH A WHEELED VEHICLE OR ANY METHOD OF SCARIFYING THE SLOPE SUCH THAT THE GROOVES CREATED RUN PERPENDICULAR TO THE DIRECTION OF WATER RUNOFF.

FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN INDICATED, HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE.

NOTE: ALL DISTURBED AREAS WITH SLOPES STEEPER THAN 1:3 WILL REQUIRE TEMPORARY EROSION MATTING (SEE SHEET 25)



EROSION AND SEDIMENT CONTROL INDEX	
NO.	DESCRIPTION
1	INSTALL SILT FENCE ALONG CONTOURS
2	PROJECT LIMITS DEMARCATION FENCE
3	INSTALL CHECK DAMS

LEGEND

- GEOTEXTILE FOR SILT FENCE
- STONE FILL, TYPE I
- STONE FILL, TYPE III
- PDF — PROJECT DEMARCATION FENCE
- EXISTING DRAINAGE
- CHECK DAMS

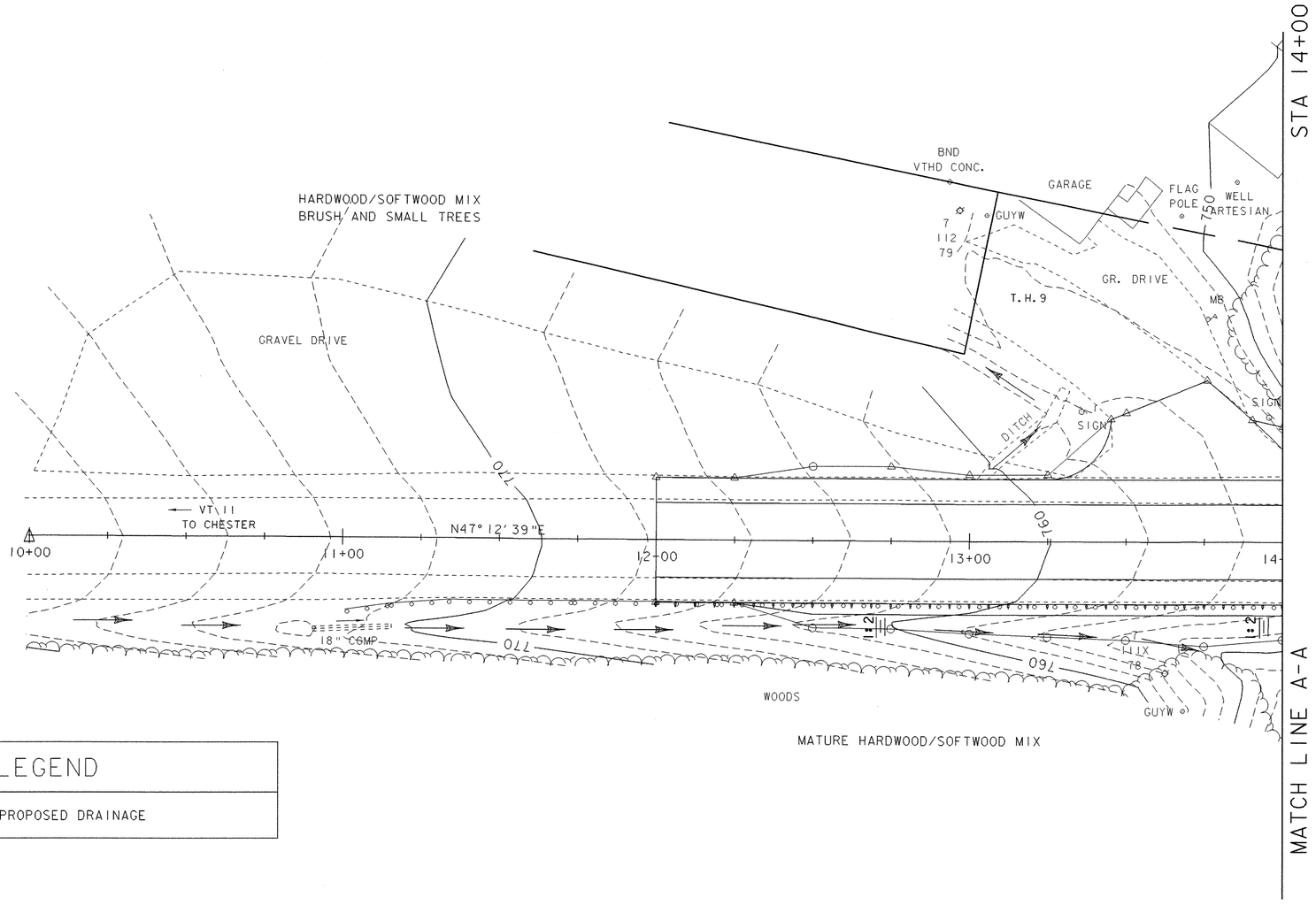
SCALE 1" = 20'-0

EROSION PREVENTION & SEDIMENT CONTROL PLAN

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04CI78/str/s04ci78ecbdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. BONNEAU
s04ci78iec04.1

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: C. CARLSON
SHEET 22 OF 52



LEGEND

PROPOSED DRAINAGE

EXISTING ROW

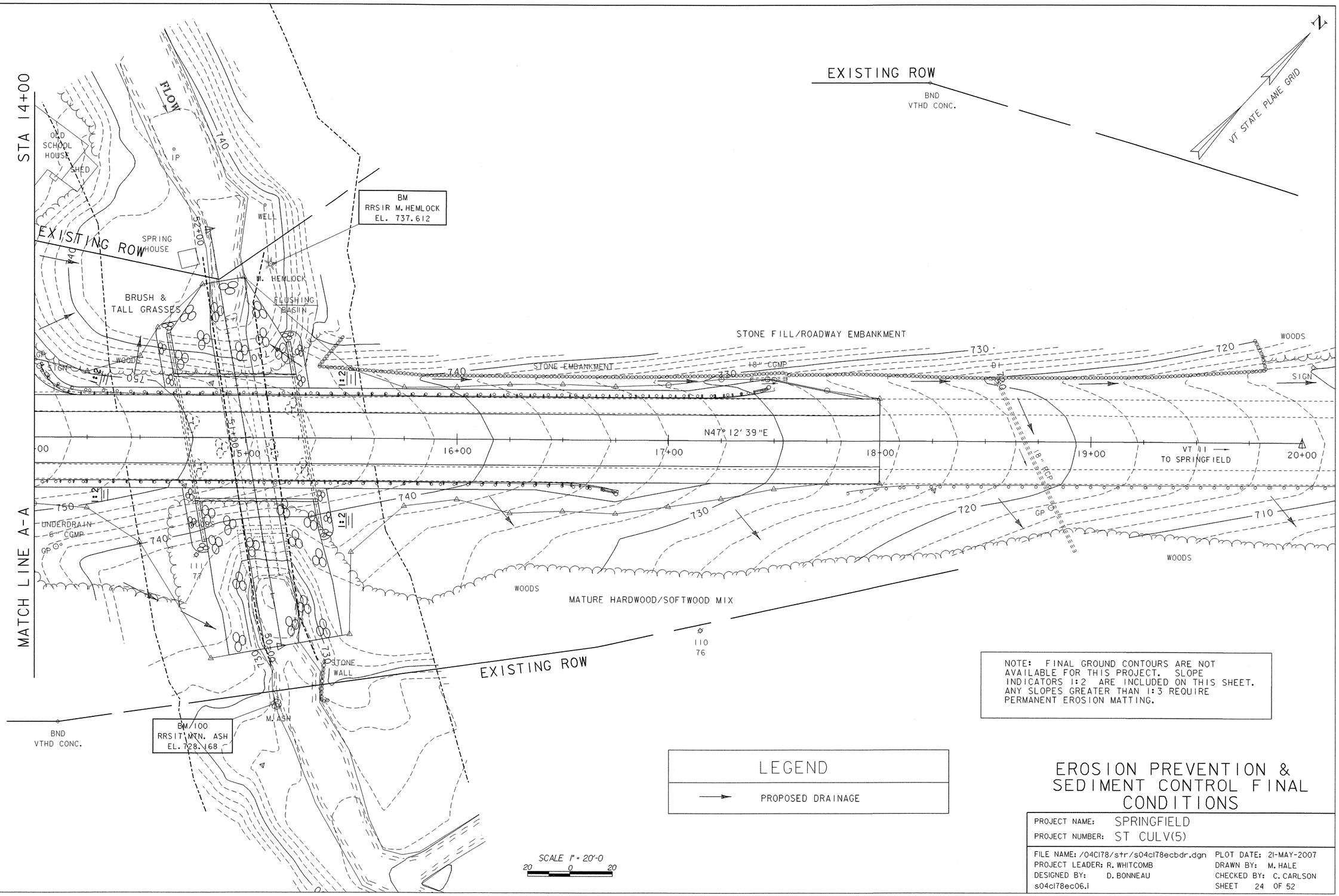
BND
VTHD CONC

SCALE 1" = 20'-0
20 0 20

EROSION PREVENTION & SEDIMENT CONTROL FINAL CONDITIONS

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV(5)

FILE NAME: /04CI78/str/s04ci78ecbdr.dgn		PLOT DATE:	21-MAY-2007
PROJECT LEADER:	R. WHITCOMB	DRAWN BY:	M. HALE
DESIGNED BY:	D. BONNEAU	CHECKED BY:	C. CARLSON
s04ci78ec05.i		SHEET	23 OF 52



NOTE: FINAL GROUND CONTOURS ARE NOT AVAILABLE FOR THIS PROJECT. SLOPE INDICATORS 1:2 ARE INCLUDED ON THIS SHEET. ANY SLOPES GREATER THAN 1:3 REQUIRE PERMANENT EROSION MATTING.

LEGEND

→ PROPOSED DRAINAGE

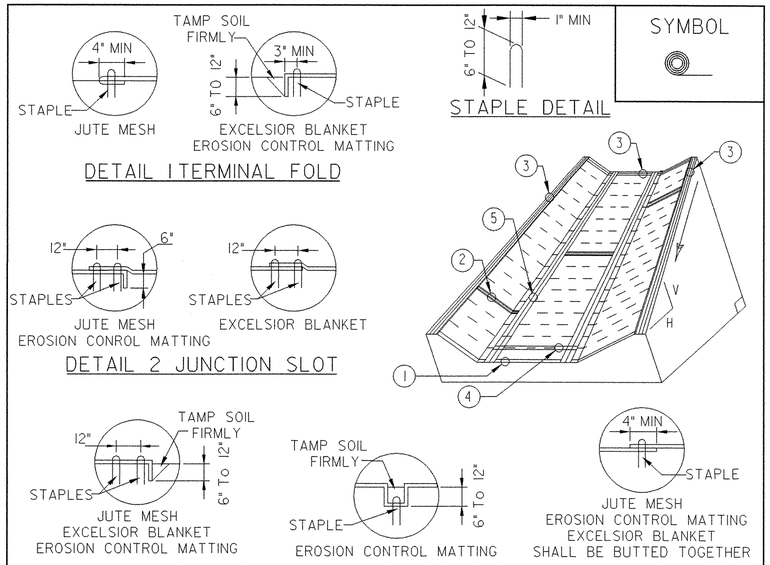
SCALE 1" = 20'-0
20 0 20

EROSION PREVENTION & SEDIMENT CONTROL FINAL CONDITIONS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04CI78/str/s04ci78ecbdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. BONNEAU
s04ci78ec06.i

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: C. CARLSON
SHEET 24 OF 52



CONSTRUCTION SPECIFICATIONS

1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.

2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.

3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.

4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.

5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

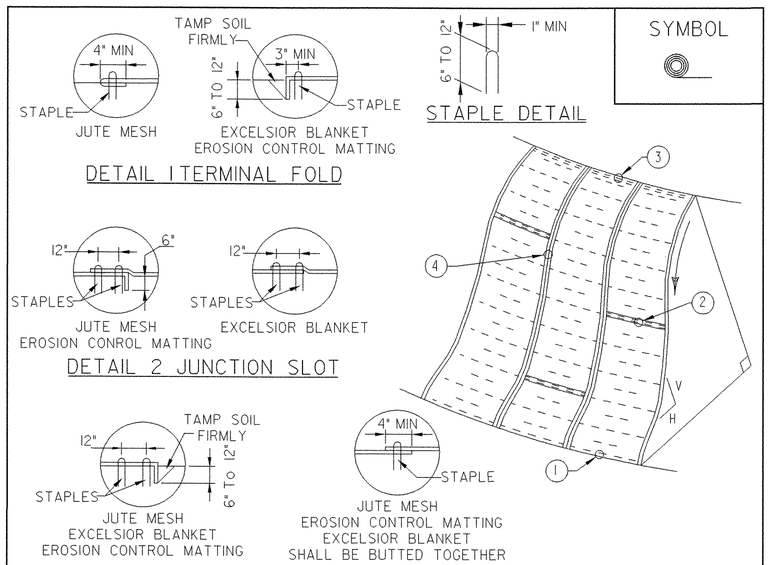
ADAPTED FROM DETAILS PROVIDED BY: ILLINOIS USDA-NRCS
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) DITCH

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.20 TEMPORARY EROSION MATTING OR
653.21 PERMANENT EROSION MATTING

REVISIONS	
MARCH 8, 2007	JMF
APRIL 16, 2007	WHF



CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:IV OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.

2. APPLY FERTILIZER, LIME AND SEED PRIOR TO PLACING MATTING.

3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.

4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.

5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: ILLINOIS USDA-NRCS
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.20 TEMPORARY EROSION MATTING OR
653.21 PERMANENT EROSION MATTING

NEW	
APRIL 16, 2007	WHF
REVISIONS	

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 RYEGRASS	95	85
100.0	60.0			

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.

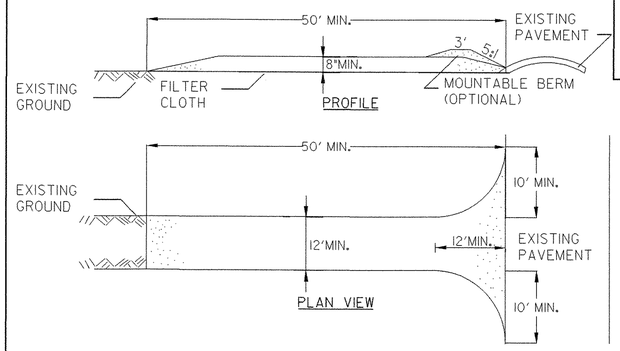
TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

EROSION PREVENTION & SEDIMENT CONTROL DETAILS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04C178/str/s04c178ecbdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. BONNEAU
s04c178ec07.1

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: C. CARLSON
SHEET 25 OF 52



SYMBOL

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH APPLIES).
3. THICKNESS - NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. 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.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.35 VEHICLE TRACKING PAD

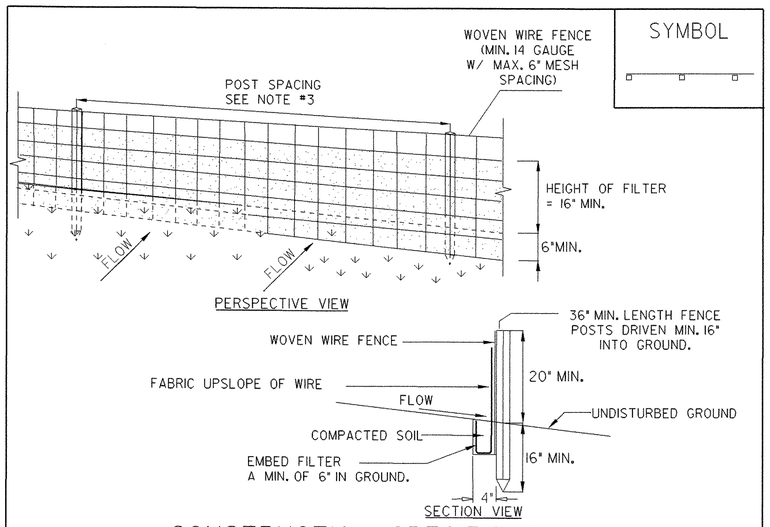
REVISIONS	
FEBRUARY 9, 2007	WHF
MARCH 8, 2007	JMF

EROSION PREVENTION & SEDIMENT CONTROL DETAILS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04CI78/str/s04ci78ecbdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. BONNEAU
s04ci78ec08.i

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: C. CARLSON
SHEET 26 OF 52



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE REINFORCEMENT IS ONLY REQUIRED WITHIN 100 FT UPSLOPE OF RECEIVING WATERS.

2. WHERE REQUIRED FENCE SHALL BE WOVEN WIRE, MIN. 14 GAUGE WITH A 6" MAXIMUM MESH OPENING. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.

3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4'. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.

4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.

5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.

6. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.

7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

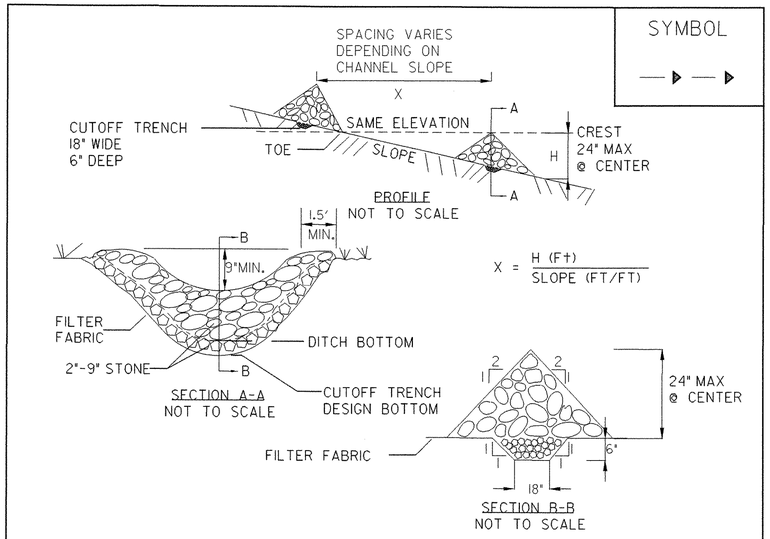
THIS ITEM SHALL BE PAID FOR UNDER ITEM
649.51 GEOTEXTILE FOR SILT FENCE (FILTER FABRIC ONLY FENCE)
900 SERIES SPECIAL PROVISION (WOVEN WIRE REINFORCED FENCE)

EROSION PREVENTION & SEDIMENT CONTROL DETAILS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04C178/str/s04c178ecbdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. BONNEAU
s04c178ec09.i

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: C. CARLSON
SHEET 27 OF 52



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. SET SPACING OF CHECK DAMS SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CHECK DAM

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.25 TEMPORARY STONE CHECK DAM, TYPE I

REVISIONS	
MARCH 8, 2007	JMF

EROSION PREVENTION & SEDIMENT CONTROL DETAILS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04C178/str/s04c178ecbdr.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. BONNEAU
s04c178ec10.i

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: C. CARLSON
SHEET 28 OF 52

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2002 AASHTO BRIDGE DESIGN SPECIFICATIONS AND THEIR LATEST REVISIONS.

2. DIMENSIONS ARE HORIZONTAL OR VERTICAL IN FEET & INCHES AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.

3. THE BRIDGE IS DESIGNED FOR HS 25-44 LIVE LOAD WITH NO ALLOWANCE FOR FUTURE LOADS.

4. WATER QUALITY. PREVENT POLLUTION, AND DISCHARGE OF SILT OR RAW CONCRETE INTO THE WATERWAY AS DIRECTED BY THE RESIDENT ENGINEER.

5. IN-STREAM CONSTRUCTION. PERMITS DESIGNATE AND LIMIT THE PERIOD FOR IN-STREAM CONSTRUCTION FROM JUNE 1 TO OCTOBER 1. THE AGENCY OF NATURAL RESOURCES MUST APPROVE ANY DEVIATION FROM THIS PERIOD IN WRITING.

TRAFFIC CONTROL

6. TRAFFIC SHALL BE MAINTAINED DURING THE CONSTRUCTION OF THE NEW BRIDGE BY PHASED CONSTRUCTION. SEE SHEETS 10-12 AND SPECIAL PROVISION 900.645 FOR MORE INFORMATION.

EARTH & CHANNEL WORK

7. THE EXISTING CULVERT, HEADWALLS AND ANY APPURTENANCES WILL BE REMOVED UNDER PAY ITEM, 529.15, REMOVAL OF STRUCTURE.

8. PLACE STONE FILL UNDER THE BRIDGE BEFORE PLACING THE PRESTRESS UNITS.

9. THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING METHODS OF CONSTRUCTION TO MAINTAIN STREAM FLOW DURING THE CONSTRUCTION OF THIS PROJECT. METHODS MUST COMPLY WITH SOUND ENVIRONMENTAL PRACTICES AND BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION. IF A TEMPORARY PIPE IS USED, IT MUST BE A MINIMUM OF 60" DIAMETER. ALL COSTS ASSOCIATED WITH THIS WORK WILL BE CONSIDERED INCIDENTAL TO ALL OTHER CONTRACT ITEMS.

10. TEMPORARY SHEET PILING IS INCLUDED TO SEPARATE PHASE II AND III CONSTRUCTION. THE TOP LIMIT FOR MEASUREMENT WILL BE A MAXIMUM OF 3.5 FEET ABOVE THE ADJACENT ROADWAY SURFACE AND THE BOTTOM LIMIT WILL BE AS SHOWN IN THE SUBMITTED DESIGN UNLESS DRIVING CONDITIONS PROHIBIT DRIVING TO THE DESIGN DEPTH, IN WHICH CASE, THE BOTTOM LIMIT WILL BE THE ACTUAL DEPTH REACHED.

11. THE UNDERDRAIN FLUSHING BASIN LOCATED AT STATION 15+25 LT SHALL BE REMOVED AND REPLACED IN A NEW LOCATION TO BE DETERMINED BY THE RESIDENT ENGINEER. TWENTY FEET OF 6" UNDERDRAIN IS INCLUDED IN THE QUANTITIES TO BE USED TO CONNECT THE NEW UNDERDRAIN FLUSHING BASIN WITH THE EXISITING UNDERDRAIN.

STRUCTURAL CONCRETE

12. ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B" WILL BE USED FOR ALL NON-PRESTRESSED CONCRETE. THE COST OF INSTALLING THE AGENCY PROVIDED BRIDGE PLAQUE WILL BE CONSIDERED INCIDENTAL TO THIS ITEM.

13. EPOXY COATED REINFORCING STEEL SHALL BE USED IN THE HEADWALLS.

14. UNCOATED REINFORCEMENT SHALL BE USED FOR ALL OTHER NON-PRESTRESSED CONCRETE.

15. THE TOLERANCE FOR PLACEMENT OF REINFORCEMENT WILL BE WITHIN 1 INCH OF THE SPACING AND 1/4 INCH OF THE CONCRETE COVER SHOWN IN THE PLANS.

16. THE MINIMUM CONCRETE COVER FOR REINFORCING STEEL IS 2 INCHES ON THE FACES OF WALLS AGAINST EARTH AND 3 INCHES ELSEWHERE UNLESS OTHERWISE NOTED.

17. CONSTRUCT CONCRETE JOINTS AS INDICATED ON THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER. CONSTRUCT SHEAR KEYS MONOLITHICALLY AND CONTINUOUSLY UNLESS OTHERWISE INDICATED. TERMINATE SHEAR KEYS 6 INCHES FROM ENDS OF JOINTS. PLACE SHEAR KEYS UPWARD IN HORIZONTAL JOINTS.

18. UNLESS OTHERWISE NOTED, ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH BY 1 INCH.

19. CONSTRUCT SCORE MARKS AS INDICATED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

20. APPLY WATER REPELLENT, SILANE TO ALL EXPOSED SURFACES OF WINGWALLS AND HEADWALLS. ALSO APPLY TO EXPOSED SURFACES OF PRESTRESSED FASCIA UNITS INCLUDING THE BOTTOM SURFACE AND THE ABUTMENT BETWEEN THE FASCIA AND A VERTICAL LINE DEFINED BY THE JOINT BETWEEN THE PRESTRESSED FASCIA UNITS AND THE FIRST INTERIOR UNIT.

PRESTRESSED CONCRETE

21. ITEM 510.21 "PRESTRESSED CONCRETE BOX BEAMS". PRESTRESSED PRECAST MEMBERS SHALL:
    A. CONFORM TO SECTION 510 "PRESTRESSED CONCRETE".
    B. BE 33" X 48" BOX BEAMS.
    C. USE CONCRETE WITH F'C = 6,000 PSI AND FC = 4,000 PSI.
    D. BE DESIGNED FOR COMBINATIONS OF AASHTO HS 25-44 LIVE LOAD AND DEAD LOADS INCLUDING VARYING DEPTHS OF ROADWAY FILL MATERIAL UP TO AND INCLUDING FINISH GRADE.
    E. CONTAIN CONTINUOUS VOIDS EXCEPT AS SHOWN IN THE PLAN DETAIL.
    F. HAVE VOID DRAINS AT THE ENDS OF EACH VOID. THE VOID DRAINS SHALL BE 3/4 INCH DIAMETER, NON-FERROUS, AND CLEANED AFTER ERECTION.
    G. CONTAIN PRESTRESSING STRANDS WHICH ARE 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION STRANDS PULLED TO 75% OF THEIR YIELD.
    H. HAVE THE ENDS OF THE STRANDS RECESSED AND GROUTED ACCORDING TO STANDARD PRACTICE.

22. THE FABRICATOR MAY, WITH THE APPROVAL OF THE STRUCTURES ENGINEER, ALTER THE DESIGN TO MEET THE PLANT'S PRESTRESSING OPERATION AND MATERIAL REQUIREMENTS. AN ALTERNATE STRAND CONFIGURATION MAY BE SUBMITTED FOR APPROVAL PROVIDED THAT THE DESIGN IS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT AND THAT THE DESIGN MEETS ALL OF THE APPLICABLE DESIGN CRITERIA, LOADINGS AND CODES.

23. THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL CONCRETE ENGINEER AT THE VAOT MATERIALS AND RESEARCH SECTION TWO WEEKS PRIOR TO THE PRESTRESS FABRICATOR CONSTRUCTING THE UNITS.

24. TRANSVERSE TIES.
    A. THE 1/2 INCH DIAMETER TRANSVERSE STRANDS SHALL BE POLYSTRAND OR EQUIVALENT.
    B. THE STRANDS SHALL BE COVERED WITH A SEAMLESS POLYPROPYLENE SHEATH WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND.
    C. THE 3/4 INCH TIE PLATES SHALL CONFORM TO AASHTO M270/M270M GR 50.
    D. THE PLATES AND CHUCKS SHALL BE GALVANIZED AFTER FABRICATION ACCORDING TO AASHTOM232/M232M.
    E. INSTALL TRANSVERSE STRANDS BEFORE PLACING MORTAR.

25. FILL THE JOINTS BETWEEN THE BOX BEAMS WITH MORTAR, TYPE IV, AS DESCRIBED IN SECTION 510.13. THE CONTRACTOR SHALL SUPPLY ENOUGH GROUT CUBE MOLDS TO MAKE 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES AND A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 1500 PSI MINIMUM COMPRESSIVE STRENGTH REQUIRED FOR POST TENSIONING. PAYMENT SHALL BE BY ITEM 510.24, "GROUTING SHEAR KEYS".

26. **PROPOSED CONSTRUCTION SEQUENCE FOR BOX BEAMS (PHASE II)**

PHASE II

1. LAYOUT WORKING LINES.
   A. LAY OUT WORKING LINES FOR THE ENTIRE BRIDGE WIDTH ON THE BEAM SEAT.
   B. MEASURE ALL WORKING LINES FROM A COMMON WORKING POINT.
   C. BASE THE WORKING LINES ON THE NOMINAL BEAM WIDTHS.

2. VERIFY BEAM SEAT ELEVATIONS
   A. MEASURE ELEVATIONS AT BEAM SEATS.
   B. IF SEATS ARE HIGH, GRIND TO CORRECT ELEVATIONS.
   C. IF SEATS ARE LOW, SHIM TO CORRECT ELEVATIONS. INSTALL BEARINGS.

3. ERECT BEAMS
   A. PLACE BEAMS TO FIT WITHIN THE WORKING LINES.
   B. AS WORK PROGRESSES, INSTALL HARDWOOD WEDGES BETWEEN ADJACENT BEAMS TO MAINTAIN PROPER JOINT OPENING (A MINIMUM OF ONE WEDGE AT EACH LATERAL TIE).
   C. DRILL ANCHOR BOLT HOLES.
   D. PLACE ANCHOR BOLTS.
   E. GROUT ANCHOR BOLTS IN ABUTMENT.

4. INSTALL BACKER ROD
   A. PLACE FILLER BELOW THE KEY'S BOTTOM AS SHOWN ON THE PLANS.

5. INSTALL PHASE II TRANSVERSE TIES
   A. FEED TIES THROUGH DUCTS.
   B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED TO PREVENT SLIPPAGE OF BEAMS.
   C. POST-TENSION TIES USING A CALIBRATED JACK TO APPROXIMATELY 5,000 LBS TO REMOVE SAG IN THE TIE AND TO SEAT THE CHUCK.

6. GROUT SHEAR KEYS
   A. CLEAN JOINTS WITH AN OIL FREE AIR-BLAST IMMEDIATELY BEFORE
   B. GROUT PLACEMENT. VERIFY THAT THE BACKER ROD IS STILL IN PLACE.
   C. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR ADDITIONAL JOINT PREPARATION AND GROUT PLACEMENT.
   D. CAREFULLY ROD JOINTS TO ELIMINATE ANY POSSIBILITY OF VOIDS.

7. POST-TENSION TRANSVERSE TIES
   A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING.
   B. POST- TENSION TIES TO 30 KIP USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL.

8. END DETAILS
   A. GROUT ANCHOR BOLT ENDS IN BOX BEAMS TO BRIDGE SEATS.
   B. BEFORE GROUT CURES, PLACE WASHER PLATE AND INSTALL HOLD DOWN NUTS.
   C. TIGHTEN NUT AND GROUT OVER NUT AND BOLT

9. FINISH WORK
   A. REMOVE WEDGES AND PATCH DECK.

27. **PROPOSED CONSTRUCTION SEQUENCE FOR BOX BEAMS (PHASE III)**

1. REPEAT STEPS 1-4 FROM PHASE II CONSTRUCTION SEQUENCE.

2. INSTALL PHASE III TRANSVERSE TIES:
   A. FEED TIES THROUGH DUCTS FROM DOWNSTREAM FASCIA (PHASE II CONSTRUCTION) THROUGH TO UPSTREAM FASCIA (PHASE III).
   B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED PREVENTING SLIPPAGE OF BEAMS.
   C. POST-TENSION TIES USING A CALIBRATED JACK TO APPROXIMATELY 5,000 LBS TO REMOVE SAG IN THE TIE AND TO SEAT THE CHUCK.

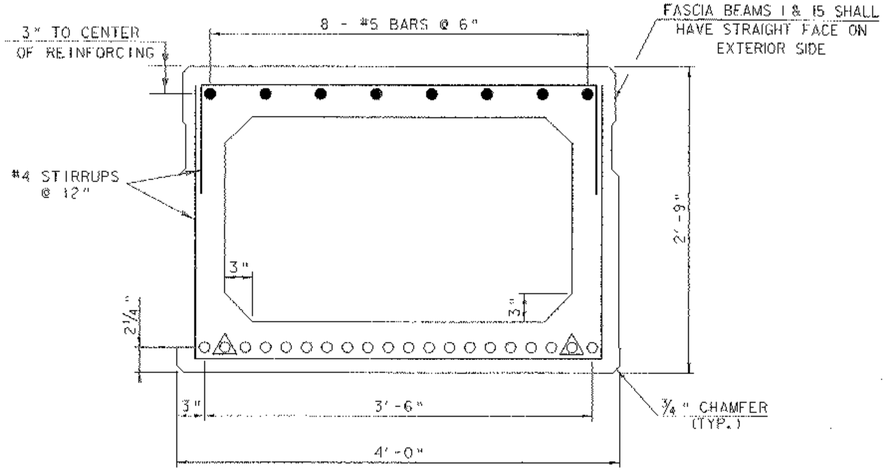
3. REPEAT STEPS 6-9 FROM PHASE II CONSTRUCTION SEQUENCE.

4. FINISH WORK:
   A. REMOVE WEDGES, PATCH DECK AND FASCIA BEAMS AT TRANSVERSE TIES (BOTH UPSTREAM AND DOWNSTREAM FASCIAS).

PROJECT NOTES

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV(5)

FILE NAME: /04cl78/str/s04cl78pn.dgn	PLOT DATE: 23-MAY-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: G. ROY
DESIGNED BY: C. CARLSON	CHECKED BY: C. CARLSON
s04cl78pn.i	SHEET 29 OF 52



33" X 48" BOX BEAM

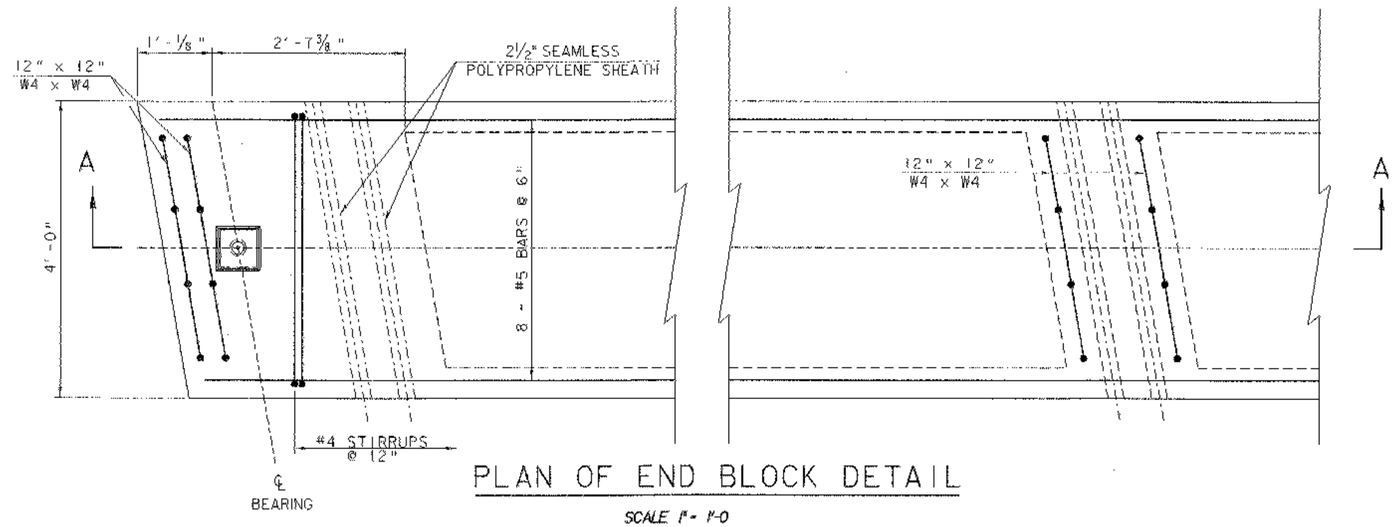
SCALE 1½" = 1'-0

△ = STRAND DEBONDED 5'-0" EACH END

MAX NUMBER OF STRANDS FOR 33" x 48" BEAM

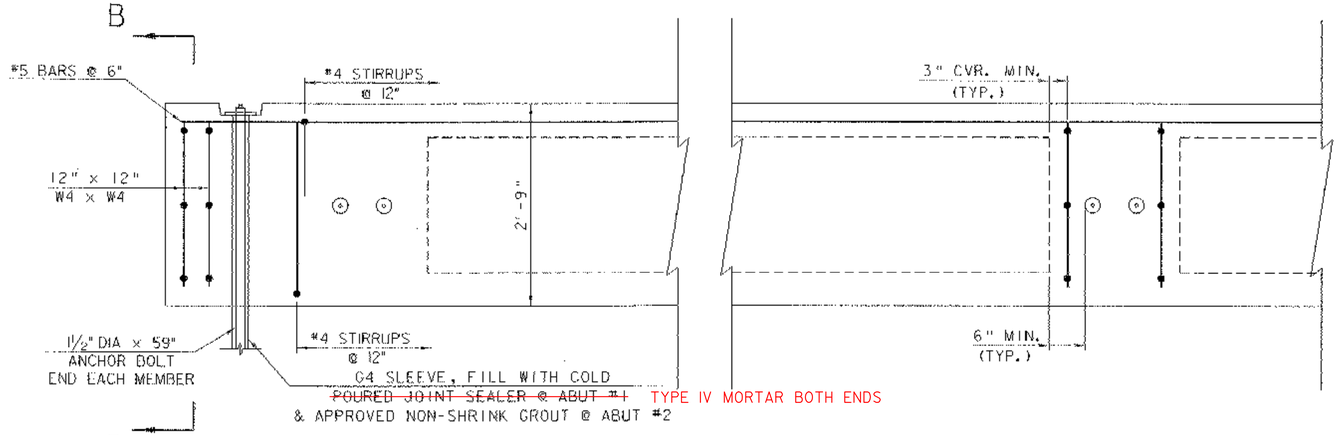
ROW*	NO. OF STRANDS
1 @ 2¼"	20 STRANDS

* ROWS ARE ALWAYS AT SPECIFIED DISTANCES FROM BOTTOM OF UNIT



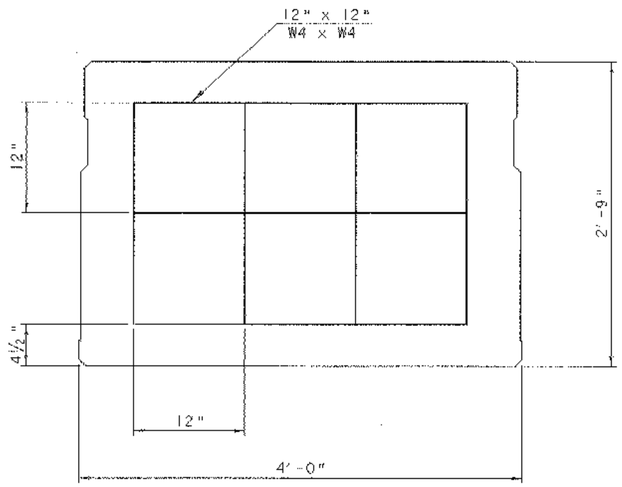
PLAN OF END BLOCK DETAIL

SCALE 1" = 1'-0



BOX BEAM SECTION A-A

SCALE 1" = 1'-0



SECTION B-B

SCALE 1½" = 1'-0

SERVICE LOADS - FINAL CONDITION

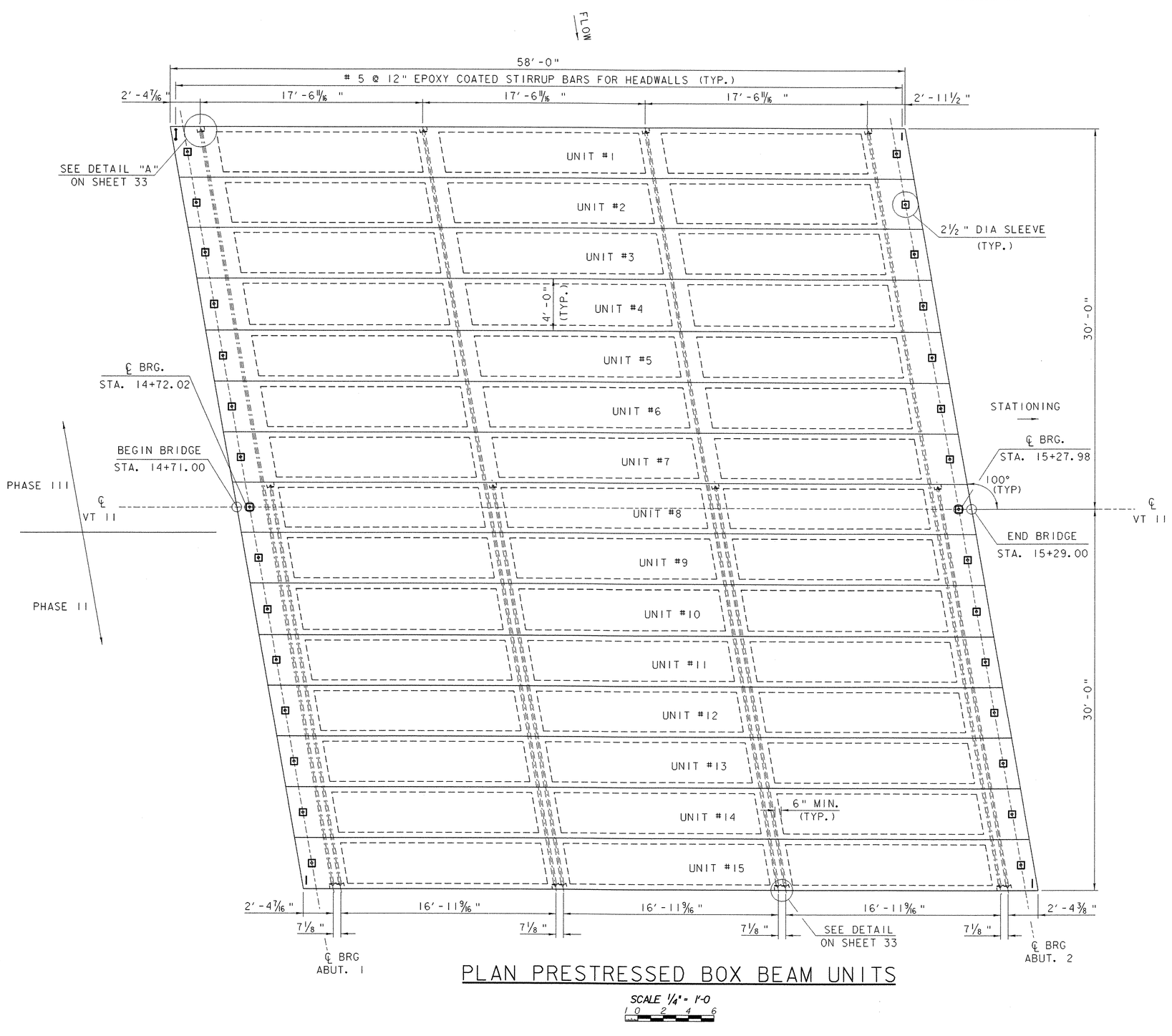
PRESTRESSED CONCRETE BOX BEAM	33" X 48"
MEMBER MOMENT	307 FT KIP
DEAD LOAD MOMENT (W/OUT MEMBER MOMENT)	1098 FT KIP
LIVE LOAD MOMENT	235 FT KIP
DEAD LOAD REACTION	101 KIP
LIVE LOAD REACTION	17 KIP
CAMBER UNDER DEAD LOADS AT ERECTION	0.57 IN
CAMBER UNDER DEAD LOADS AT LONG TERM	-1.7 IN

NOTE:
SEE SHEET 31 FOR FASCIA BEAM DETAILS.

SUPERSTRUCTURE DETAILS
33" x 48" BOX BEAM

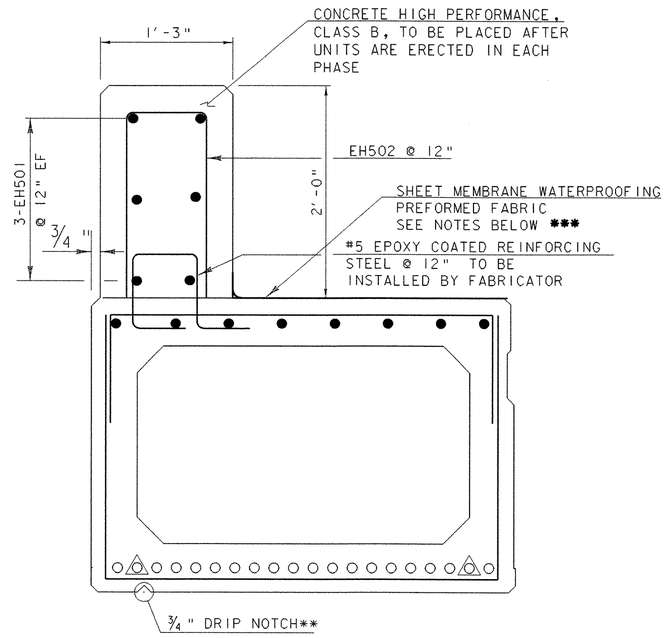
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04cl78/str/s04cl78fp.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. PETERSON
PLOT DATE: 21-MAY-2007
DRAWN BY: D. PETERSON
CHECKED BY: W. LAMMER



PLAN PRESTRESSED BOX BEAM UNITS

SCALE 1/4" = 1'-0



LEFT FASCIA BEAM AND HEADWALL DETAIL (UNIT 1)

(RIGHT FASCIA UNIT 15 IS MIRROR IMAGE OF UNIT 1.)

**STOP DRIP NOTCH 5' -0" FROM ENDS OF UNIT AND OUTLET AT 45° TO FASCIA. DRIP NOTCH ONLY ON FASCIA BEAMS.

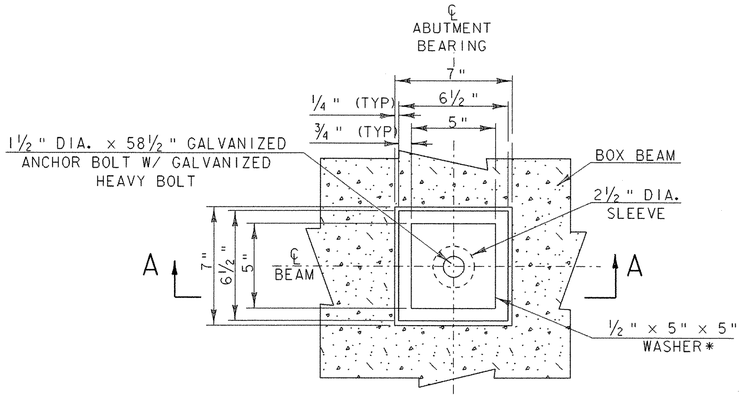
*** SHEET MEMBRANE WATERPROOFING NOTES

1. POLYURETHANE MEMBRANE AND BLAST CLEANING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SHEET MEMBRANE WATERPROOFING.
2. SHEET MEMBRANE WATERPROOFING SHALL EXTEND TO FACE OF HEADWALL.
3. BLAST CLEAN 3 FEET FROM FACE OF HEADWALL AND 3 INCHES UP HEADWALL FACE PRIOR TO PLACING MEMBRANE.
4. TWO COATS OF POLYURETHANE MEMBRANE SHALL BE PLACED 3 INCHES UP THE FACE OF THE HEADWALL AND 4 INCHES ALONG PRESTRESS UNIT.
5. SEE NEXT SHEET FOR ADDITIONAL DETAILS.

DECK DETAILS

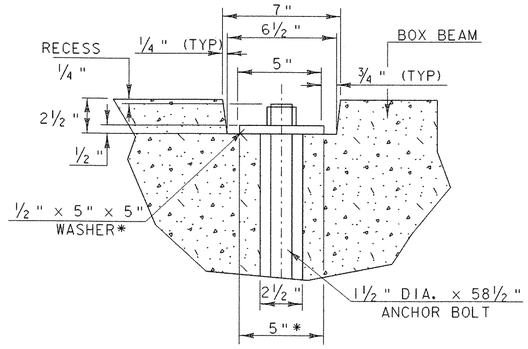
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04cl78/str/s04cl78fp.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. PETERSON
PLOT DATE: 21-MAY-2007
DRAWN BY: D. PETERSON
CHECKED BY: W. LAMMER
SHEET 31 OF 52



END BRIDGE ANCHOR BOLT DETAIL

NTS

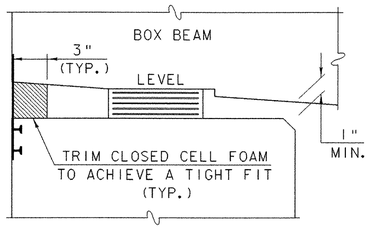


SECTION A-A

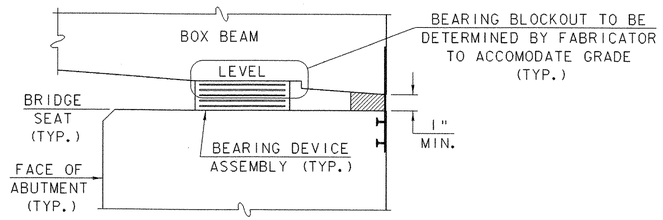
NTS

NOTE:
SEE VAOT SPECIFICATION 714.08 FOR ANCHOR BOLTS & NUTS

* 1/2" x 5" x 5" WASHER WITH 1 1/2" DIA. HOLE (GALVANIZED)



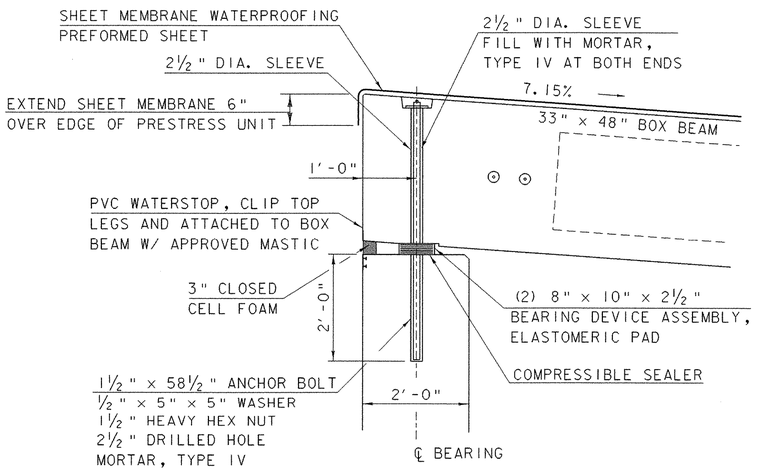
ABUTMENT NO. 1



ABUTMENT NO. 2

BEARING BLOCKOUT DETAILS

NTS



BRIDGE END DETAIL

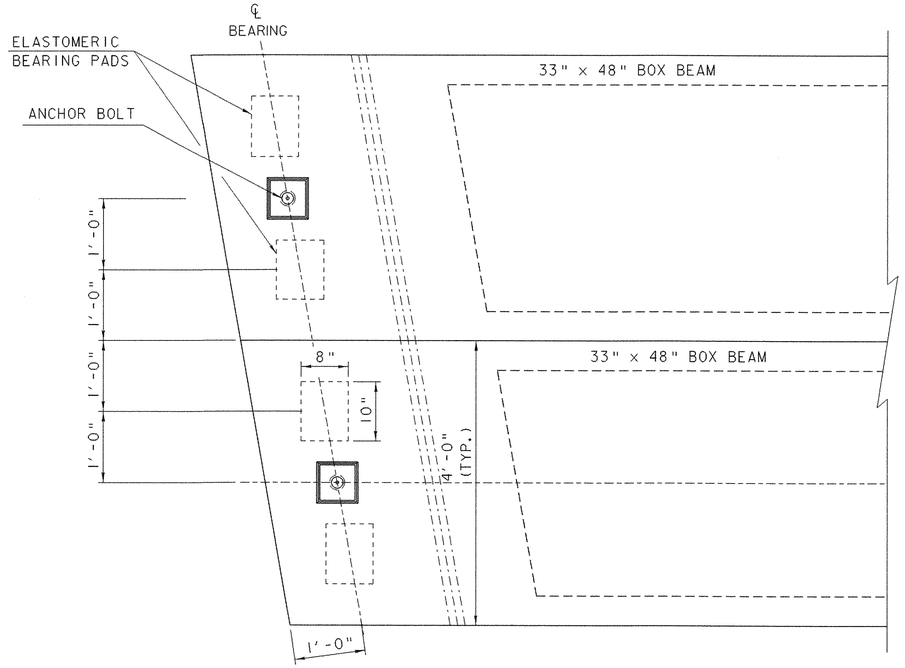
SCALE 3/4" = 1'-0

1 0 1 2

BEARING DEVICE NOTES

1. BEARINGS SHALL BE PAID FOR UNDER ITEM 531.11, "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD"
2. ALTERNATE CONFIGURATIONS FOR ELASTOMERIC BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE BEARING SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE LOADS AND CRITERIA SHOWN ON THIS SHEET AND MAINTAIN THE ANCHORAGE SYSTEM SHOWN. THE BEARINGS SHALL BE DESIGNED ACCORDING TO AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" 2002 EDITION AND ITS LATEST REVISIONS.
3. THE BEARING SHAPE FACTOR SHALL BE BETWEEN 5.0 AND 12.0.
4. ALL REINFORCMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL GRADE 50.3 NO FABRIC REINFORCEMENT WILL BE PERMITTED.
5. ELASTOMERIC BEARINGS REINFORCED WITH STEEL SHALL HAVE A 1/8" EDGE SEAL OF ELASTOMERIC INTEGRAL WITH THE BEARING OVER ALL PLATES.
6. ALL MATERIALS AND FABRICATION SHALL BE PER AASHTO DIVISION II SECTION 18.2 AND AASHTO MATERIAL SPECIFICATION M251.
7. DESIGN CRITERIA:
   - A. TEMPERATURE RANGE: 80 F
   - B. 60 DUROMETER ELASTOMERIC
   - C. MAXIMUM BEARING STRESS: 1000 psi
   - D. DESIGN ROTATION: 0.015 rad
   - E. REACTION/BEAM:
     - RDL: 101 kips
     - RLL: 17 kips
8. COMPRESSIBLE SEALER. THE FABRICATOR SHALL SUPPLY A SELF ADHESIVE COMPRESSIBLE SEALER BETWEEN THE BOTTOM OF THE UNITS AND THE BRIDGE SEAT. THIS COMPRESSIBLE SEALER SHALL SURROUND THE 2 1/2" DIA SLEEVE IN THE UNIT. THE PURPOSE OF THE SEALER IS TO FACILITATE PLACEMENT OF THE "MORTAR, TYPE IV" AROUND THE ANCHOR BOLTS.
9. PAYMENT FOR PROVIDING AND INSTALLING PVC WATERSTOP SHALL BE INCIDENTAL TO ITEM 501.34, "CONCRETE HIGH PERFORMANCE, CLASS B".

KEY	DATE	BY	REVISION
1	06/11/2007	VAOT	ADDENDUM NO. 1

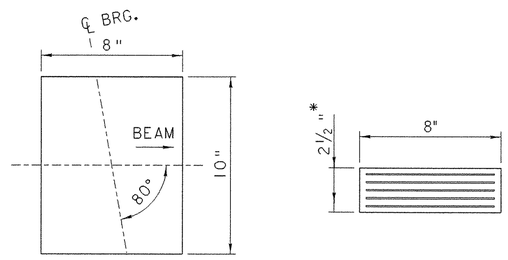


BEARING PAD PLACEMENT DETAIL

(TYPICAL EACH END)

SCALE 1" = 1'-0

1 9 6 3 0 1 2



ELASTOMERIC BEARING DETAIL

* 4 - 3/8" LAYERS OF ELASTOMERIC BETWEEN 5 LAYERS OF 14 GAGE STEEL REINFORCING PLATES

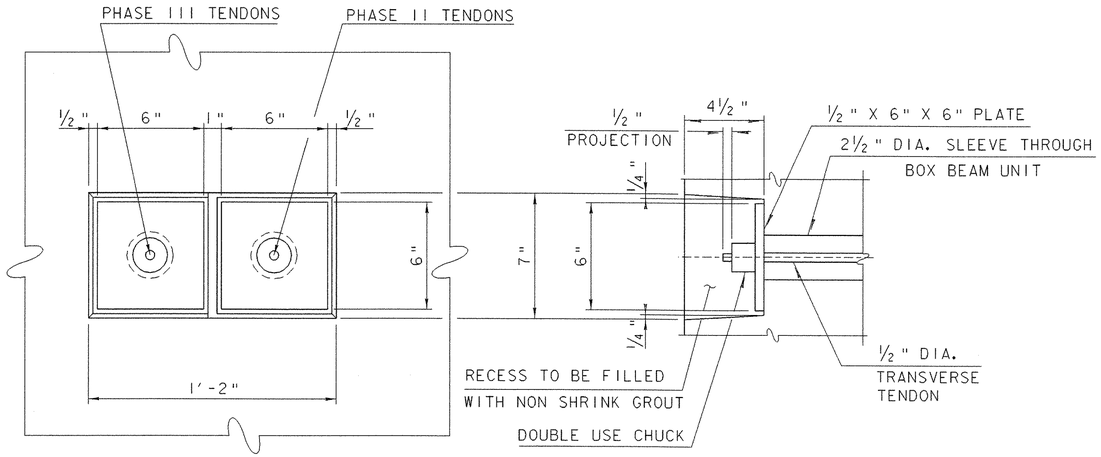
SCALE 3" = 1'-0

1 9 6 3 0 1

BRIDGE END DETAILS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV(5)

FILE NAME: /04c178/str/s04c178fp.dgn
PROJECT LEADER: R. WHITCOMB
DESIGNED BY: D. PETERSON
PLOT DATE: 11-JUN-2007
DRAWN BY: D. PETERSON
CHECKED BY: W. LAMMER
SHEET 32 OF 52



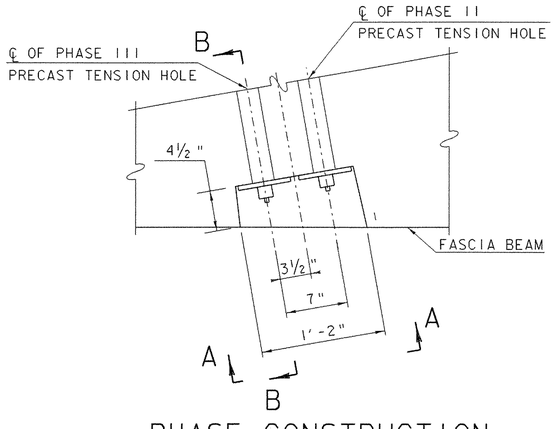
SECTION A-A

SCALE 3" = 1'-0

SECTION B-B

SCALE 3" = 1'-0

NOTES:
1/2 " x 6" x 6" PLATES SHALL BE PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE TENDON IN ALL PLANES.

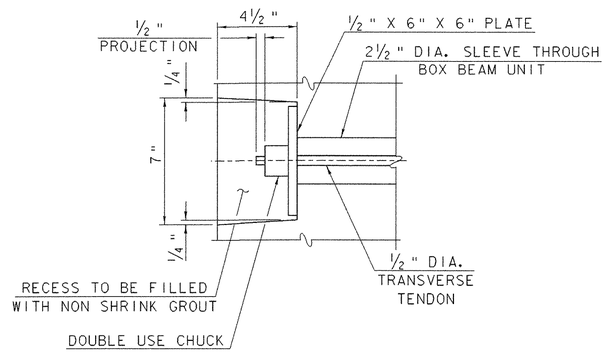


PHASE CONSTRUCTION TRANSVERSE TENDON RECESS

SCALE 1 1/2" = 1'-0

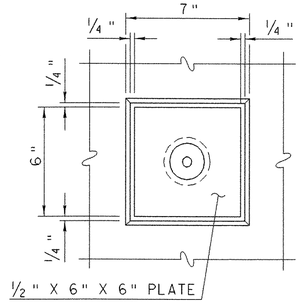
NOTES

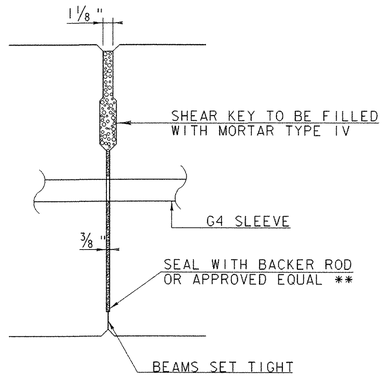
1. TRANSVERSE TIES SHALL BE COVERED BY SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF STRAND, EXCEPT AT ANCHORAGE LOCATIONS. TIES SHALL BE TENSIONED TO 30000#.
2. THE 1/2 " PLATE SHALL CONFORM TO AASHTO M270 GRADE 50. THE PLATE AND CHUCK SHALL BE GALVANIZED ACCORDING TO AASHTO M111.



DETAIL "A"

SCALE 3" = 1'-0

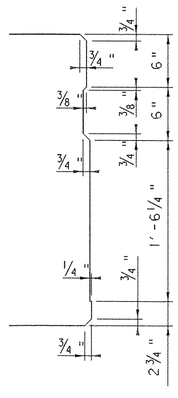




SHEAR KEY SECTION FOR BOX BEAMS

**NOTE: INSTALL AFTER UNITS HAVE BEEN PLACED

SCALE 1 1/2" = 1'-0



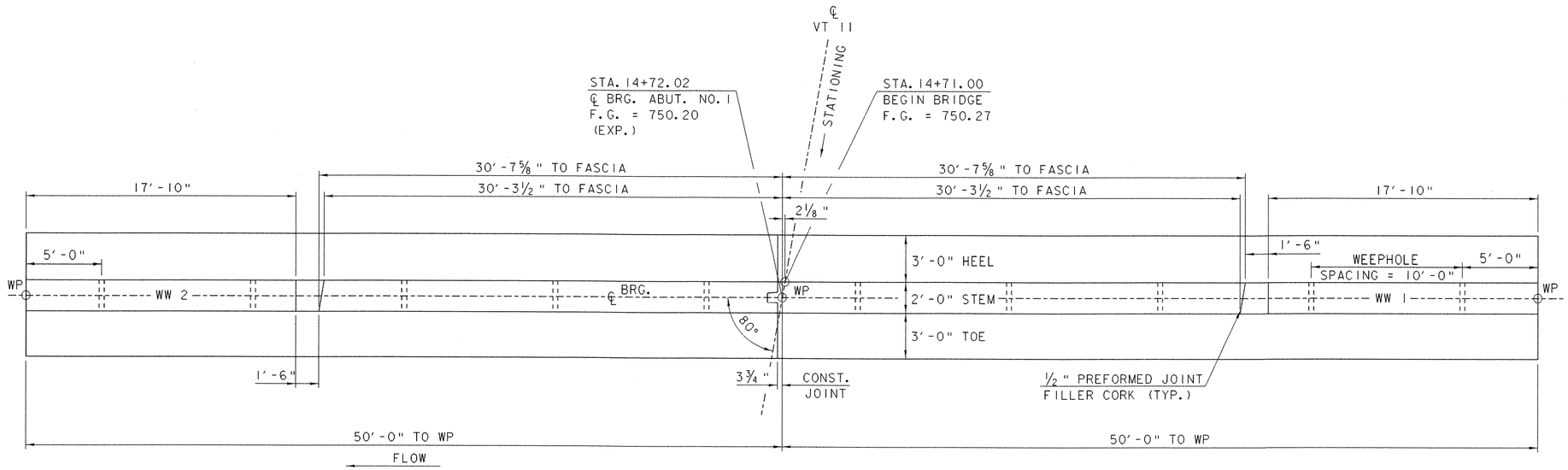
SHEAR KEY DETAIL FOR BOX BEAMS

SCALE 1 1/2" = 1'-0

TRANSVERSE TENDON AND SHEAR KEY DETAILS

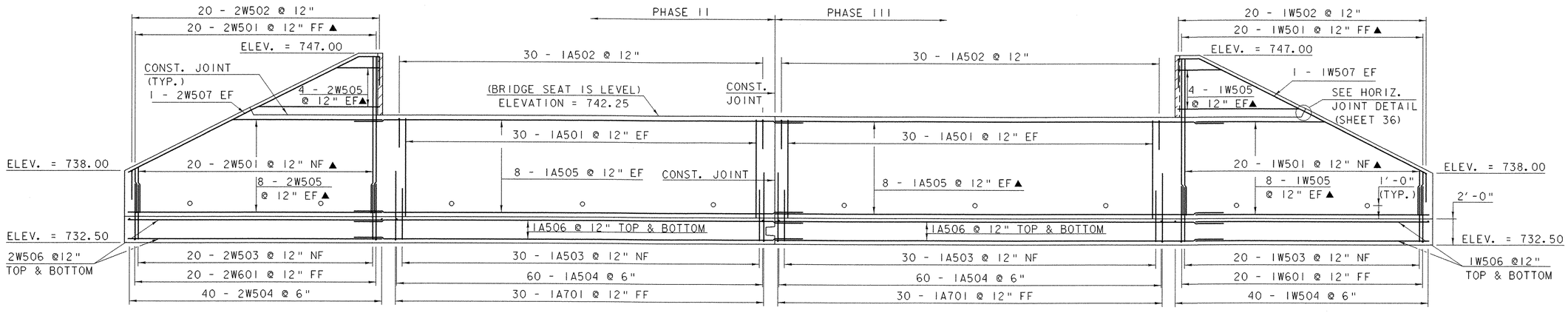
PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV(5)

FILE NAME: /04cl78/str/s04cl78fp.dgn	PLOT DATE: 21-MAY-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: D. PETERSON
DESIGNED BY: D. PETERSON	CHECKED BY: W. LAMMER
	SHEET 33 OF 52



ABUTMENT NO. 1 PLAN

SCALE: ¼" = 1'-0"



ABUTMENT NO. 1 ELEVATION

SCALE: ¼" = 1'-0"

NOTES:

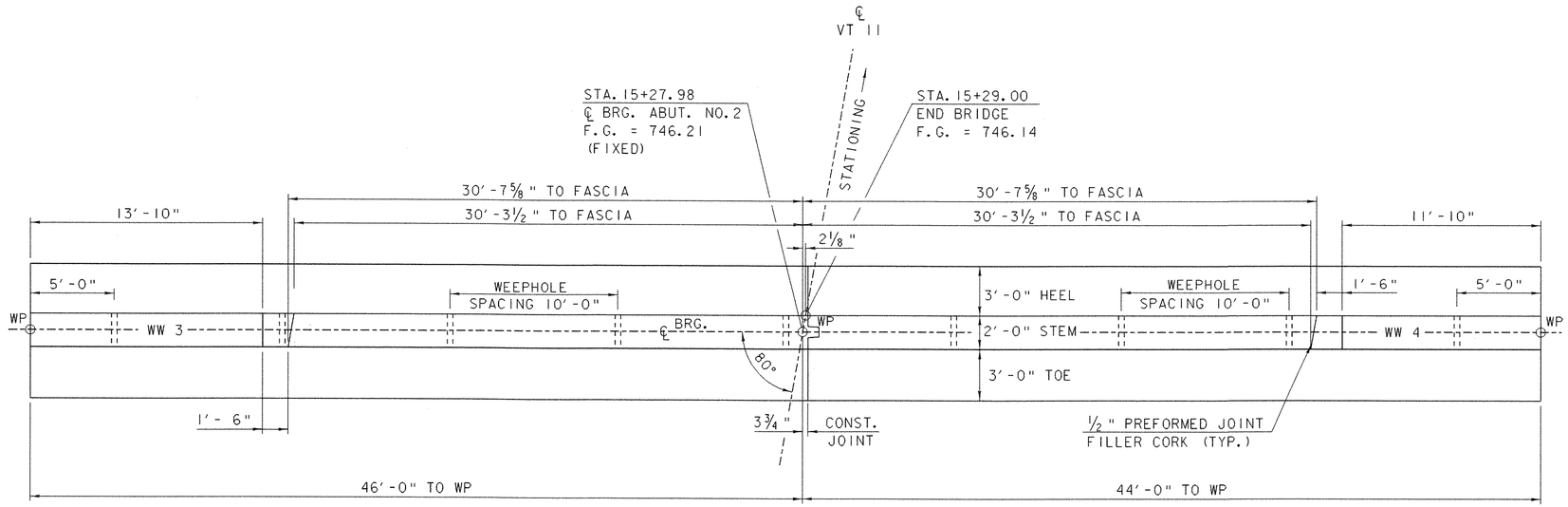
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR UNLESS OTHERWISE SPECIFIED
2'-2" MIN. LAP UNLESS OTHERWISE SPECIFIED

ABUTMENT NO. 1 DETAILS

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: /04cl78/str/s04cl78ab.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: D. PETERSON

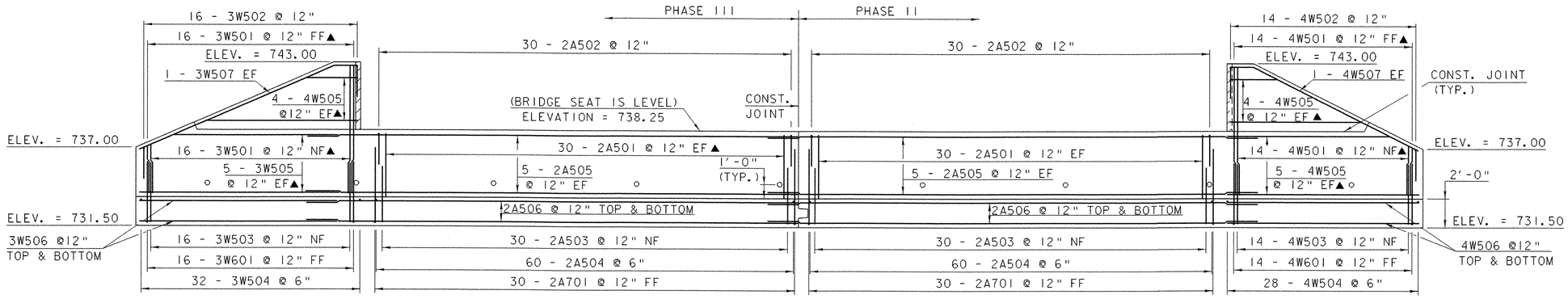
PLOT DATE: 21-MAY-2007
DRAWN BY: D. PETERSON
CHECKED BY: W. LAMMER
SHEET 34 OF 52



ABUTMENT NO. 2 PLAN

SCALE: ¼" = 1'-0"

FLOW →



ABUTMENT NO. 2 ELEVATION

SCALE: ¼" = 1'-0"

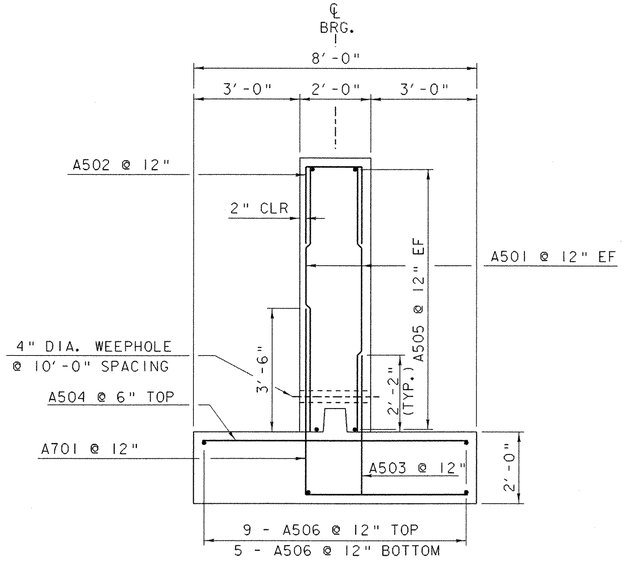
NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR UNLESS OTHERWISE SPECIFIED
2'-2" MIN. LAP UNLESS OTHERWISE SPECIFIED

ABUTMENT NO. 2 DETAILS

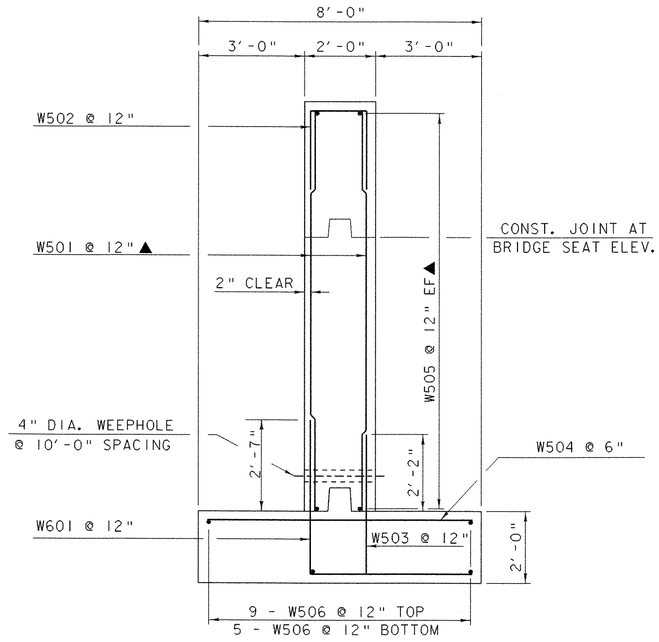
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: /04cl78/str/s04cl78ab.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: D. PETERSON
PLOT DATE: 21-MAY-2007
DRAWN BY: D. PETERSON
CHECKED BY: W. LAMMER
SHEET 35 OF 52



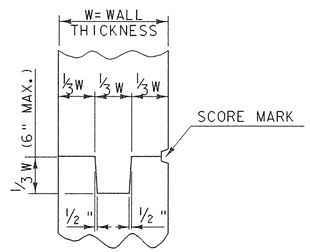
ABUTMENT TYPICAL

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

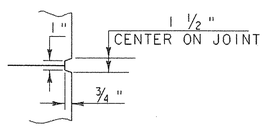


WINGWALL TYPICAL

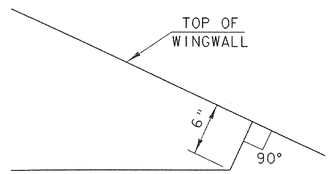
SCALE: 1/2" = 1'-0"



TYPICAL CONCRETE CONSTRUCTION JOINT



SCORE MARK DETAIL



HORIZONTAL CONSTRUCTION JOINT DETAIL

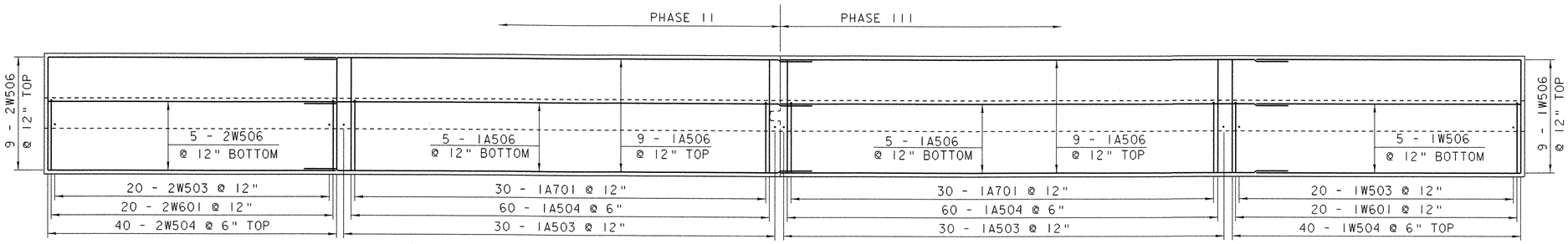
NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR UNLESS OTHERWISE SPECIFIED
2'-2" MIN. LAP UNLESS OTHERWISE SPECIFIED

ABUTMENT AND WINGWALL TYPICAL SECTIONS

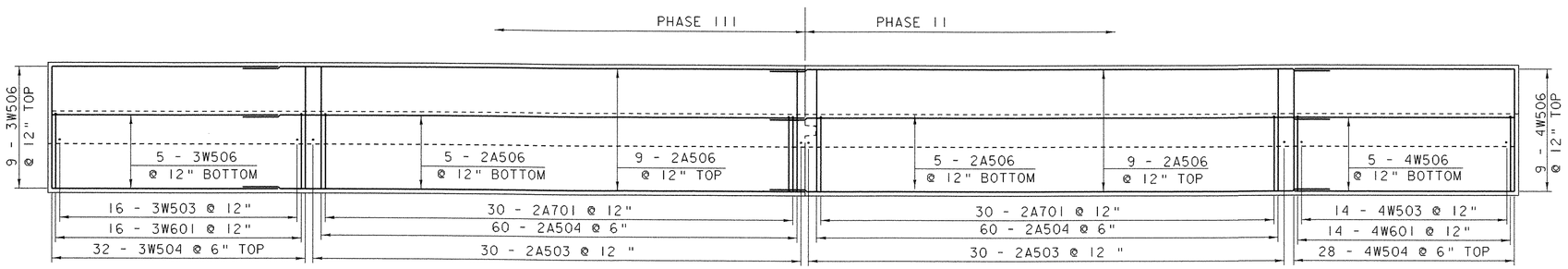
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: /04cl78/str/s04cl78ab.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: D. PETERSON
PLOT DATE: 21-MAY-2007
DRAWN BY: D. PETERSON
CHECKED BY: W. LAMMER
SHEET 36 OF 52



ABUTMENT NO. 1 FOOTING REINFORCING PLAN

SCALE: 1/4" = 1'-0"



ABUTMENT NO. 2 FOOTING REINFORCING PLAN

SCALE: 1/4" = 1'-0"

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR UNLESS OTHERWISE SPECIFIED
2'-2" MIN. LAP UNLESS OTHERWISE SPECIFIED

FOOTING REINFORCING PLAN

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: /04cl78/str/s04cl78ab.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: D. PETERSON

PLOT DATE: 21-MAY-2007
DRAWN BY: D. PETERSON
CHECKED BY: W. LAMMER
SHEET 37 OF 52

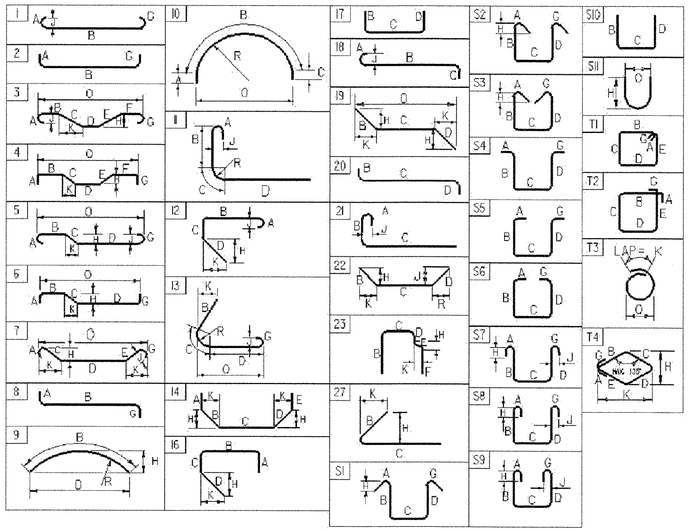
STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	HEADWALLS																
✳	17	5	29'- 10"	EH501	STR												
	116	5	4'- 3"	EH502	S10		1'- 9"	0'- 9"	1'- 9"								
	ABUTMENT NO. 1																
✳	121	5	7'- 6"	1A501	STR												
	60	5	5'- 11"	1A502	S10		2'- 2"	1'- 7"	2'- 2"								
	60	5	3'- 11"	1A503	STR												
	120	5	7'- 6"	1A504	STR												
▲	32	5	34'- 4"	1A505	STR												
	28	5	34'- 4"	1A506	STR												
✳	61	7	9'- 10"	1A701	17		5'- 3"	4'- 7"	---								
	WINGWALL NO. 1																
▲	40	5	12'- 3"	1W501	STR												
	20	5	5'- 11"	1W502	S10		2'- 2"	1'- 7"	2'- 2"								
	20	5	3'- 11"	1W503	STR												
	40	5	7'- 6"	1W504	STR												
▲	24	5	17'- 11"	1W505	STR												
	14	5	17'- 11"	1W506	STR												
	2	5	20'- 9"	1W507	19		1'- 3"	19'- 6"	---				0'- 9"		1'- 5"		
✳	21	6	8'- 11"	1W601	17		4'- 4"	4'- 7"									
	WINGWALL NO. 2																
▲	40	5	12'- 3"	2W501	STR												
	20	5	5'- 11"	2W502	S10		2'- 2"	1'- 7"	2'- 2"								
	20	5	3'- 11"	2W503	STR												
	40	5	7'- 6"	2W504	STR												
▲	24	5	19'- 6"	2W505	STR												
	14	5	19'- 6"	2W506	STR												
	2	5	20'- 9"	2W507	19		1'- 3"	19'- 6"	---				0'- 9"		1'- 5"		
✳	21	6	8'- 11"	2W601	17		4'- 4"	4'- 7"									
	ABUTMENT NO. 2																
	120	5	4'- 6"	2A501	STR												
	60	5	5'- 11"	2A502	S10		2'- 2"	1'- 7"	2'- 2"								
	60	5	3'- 11"	2A503	STR												
	120	5	7'- 6"	2A504	STR												
▲	20	5	34'- 4"	2A505	STR												
	28	5	34'- 4"	2A506	STR												
✳	61	7	9'- 10"	2A701	17		5'- 3"	4'- 7"	---								
	WINGWALL NO. 3																
▲	32	5	9'- 3"	3W501	STR												
	16	5	5'- 11"	3W502	S10		2'- 2"	1'- 7"	2'- 2"								
	16	5	3'- 11"	3W503	STR												
	32	5	7'- 6"	3W504	STR												
▲	18	5	13'- 10"	3W505	STR												
✳	15	5	13'- 10"	3W506	STR												
	2	5	16'- 1"	3W507	19		1'- 3"	14'- 10"	---				0'- 9"		1'- 5"		
✳	17	6	8'- 11"	3W601	17		4'- 4"	4'- 7"									
	WINGWALL NO. 4																
▲	28	5	9'- 3"	4W501	STR												
	14	5	5'- 11"	4W502	S10		2'- 2"	1'- 7"	2'- 2"								
	14	5	3'- 11"	4W503	STR												
	28	5	7'- 6"	4W504	STR												
▲	18	5	13'- 6"	4W505	STR												
	14	5	13'- 6"	4W506	STR												
	2	5	13'- 8"	4W507	19		0'- 8"	13'- 0"	---				0'- 9"		1'- 5"		
✳	15	6	8'- 11"	4W601	17		4'- 4"	4'- 7"									

~ NOTES ~

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



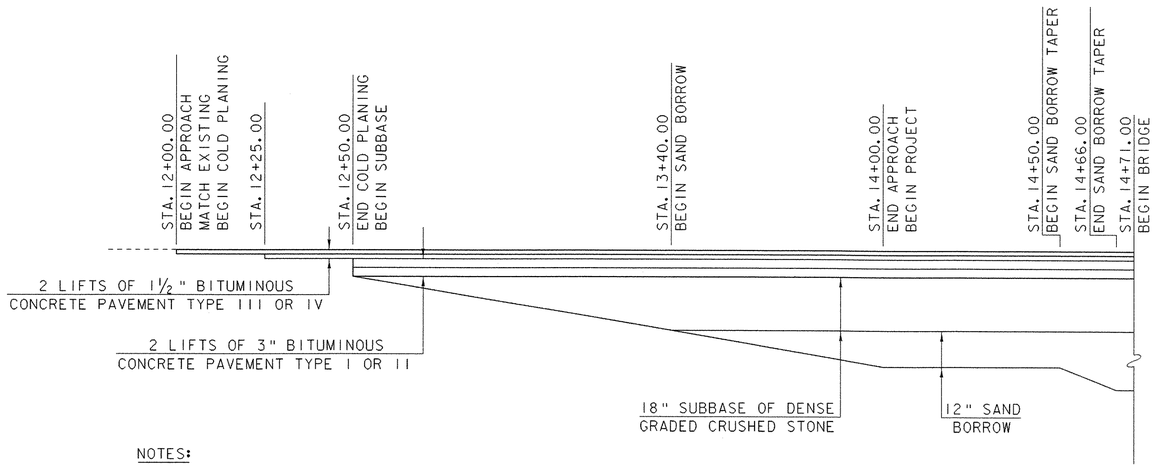
ASTM STANDARD REINFORCING BARS

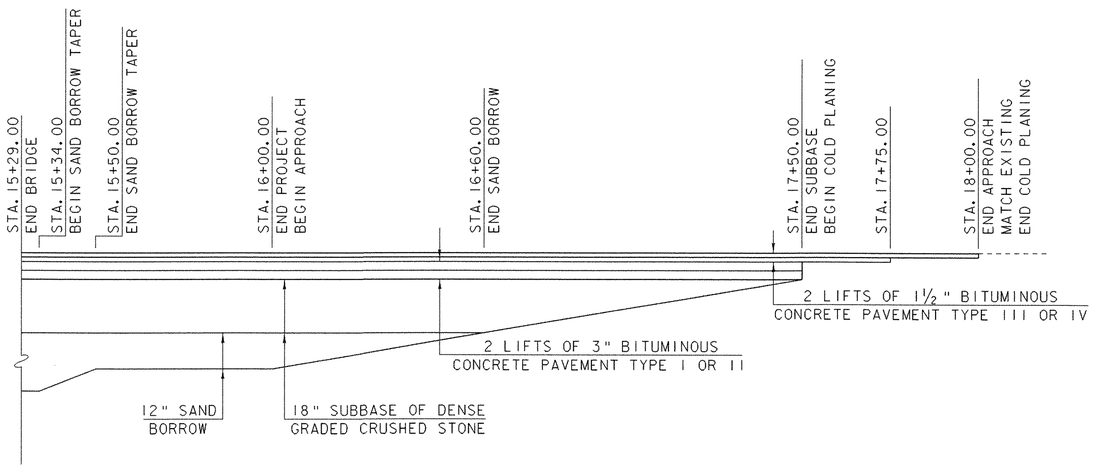
BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION DIAMETER INCHES	AREA INCHES ^{2}	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00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

PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: \04c178\Structures\s04c178rss.xls
PROJECT MANAGER: R. R. Whitcomb
DESIGNED BY: D. Peterson
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: 4/23/2007
DRAWN BY: D. Peterson
CHECKED BY: W. Lammer
SHEET 38 OF 52





NOTES:

1. SEE SECTIONS TO DETERMINE CUT OR FILL.
2. SEE PROJECT TYPICAL SECTIONS FOR ABUTMENT EARTHWORK DETAILS.

MATERIAL TRANSITION DETAIL

20 0 20

HORIZ. SCALE: 1" = 20'-0"

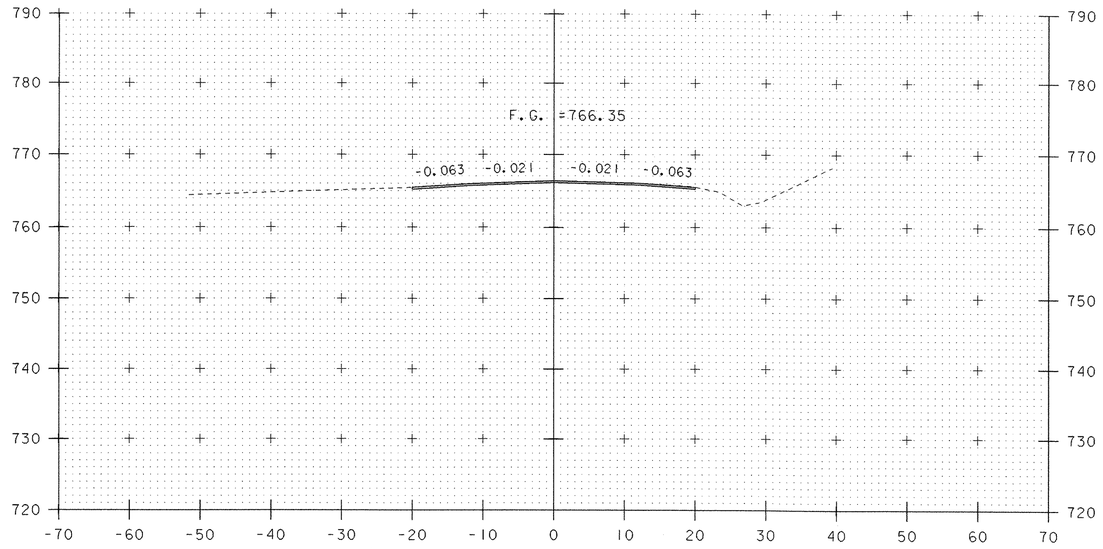
2 0 2

VERT. SCALE: 1" = 2'-0"

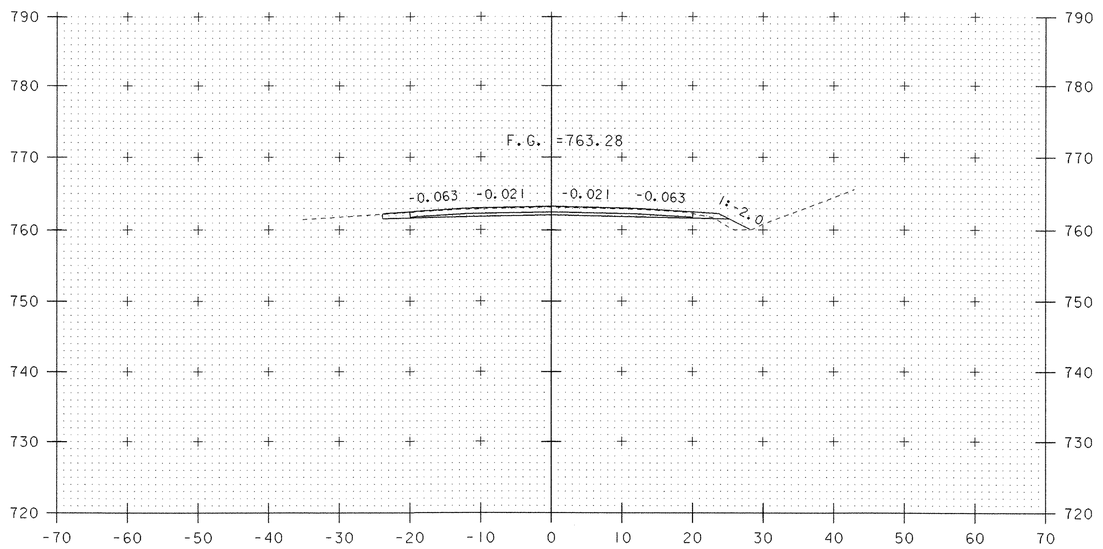
MATERIAL TRANSITION DETAIL

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

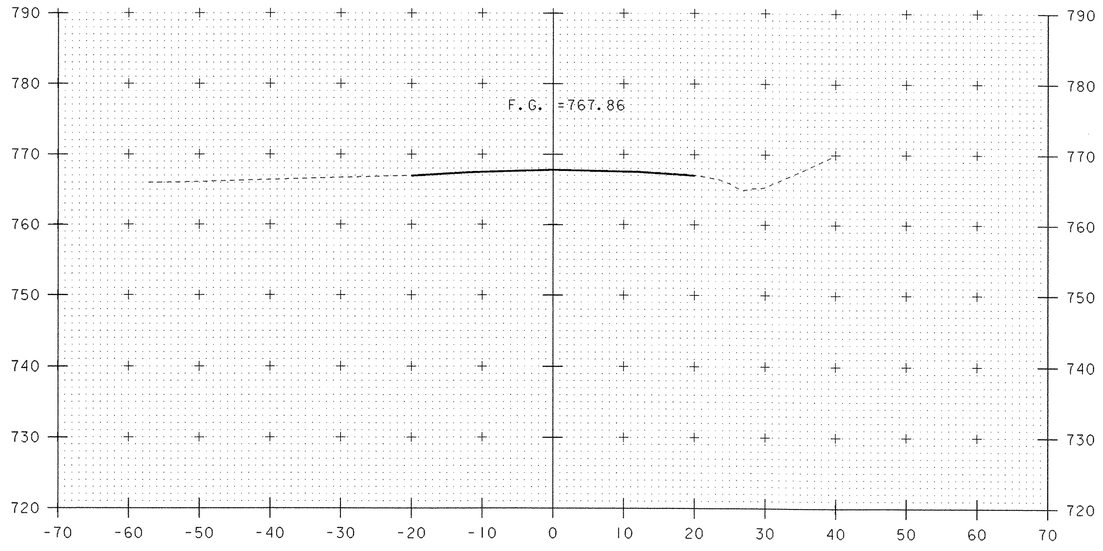
FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: G. ROY
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178mtd.i	SHEET 39 OF 52



12+25

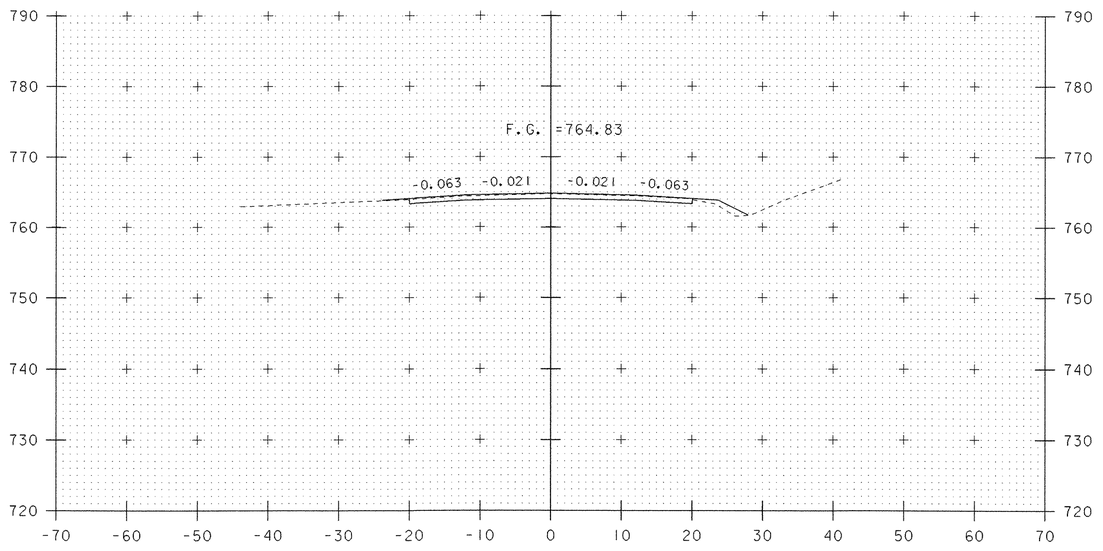


12+75



12+00

STA. 12+00.00
BEGIN APPROACH
MATCH EXISTING



12+50

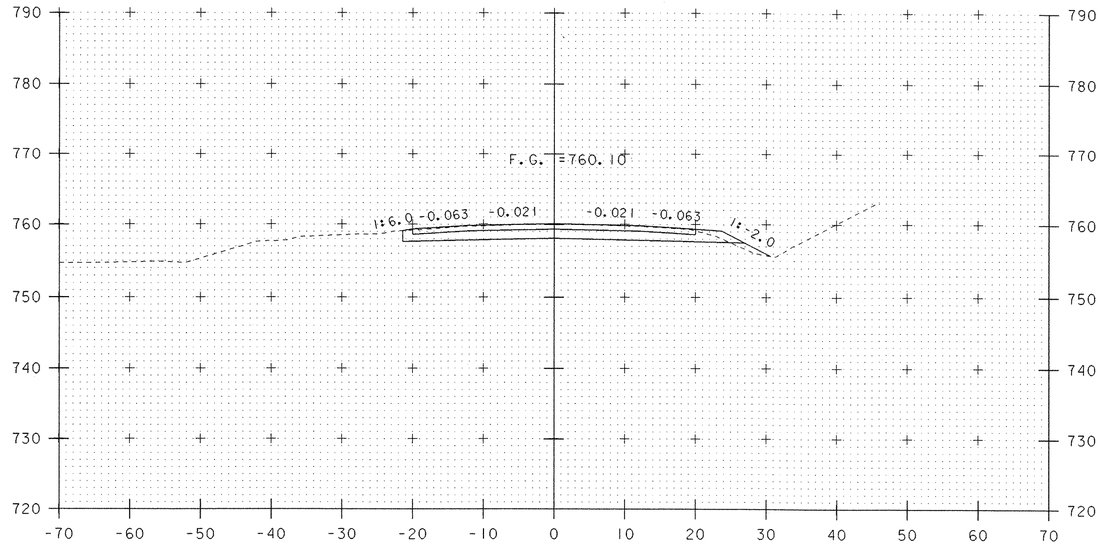
10 0 10

SCALE: 1" = 10'-0"

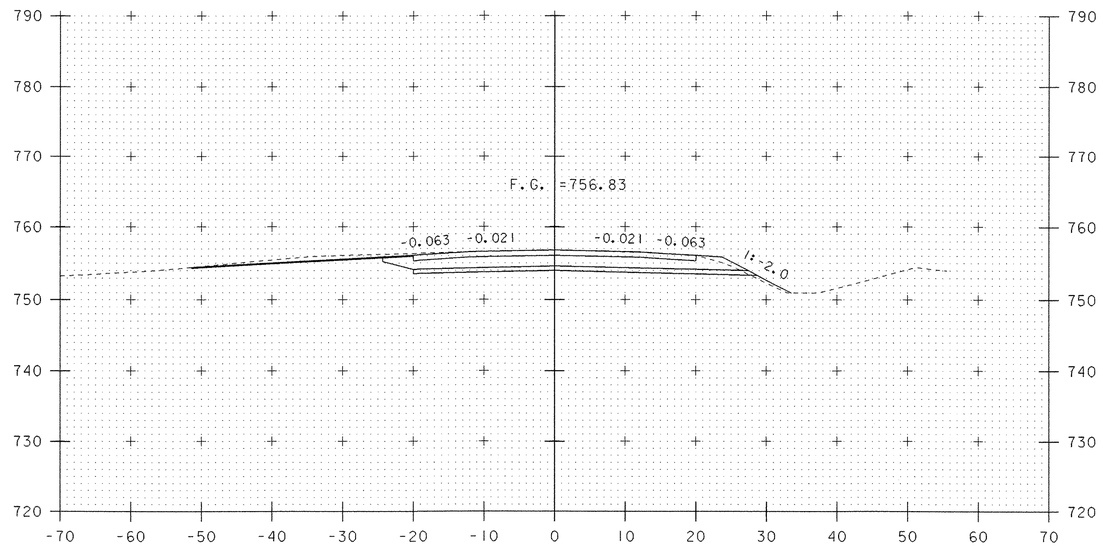
MAINLINE CROSS SECTIONS (1)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

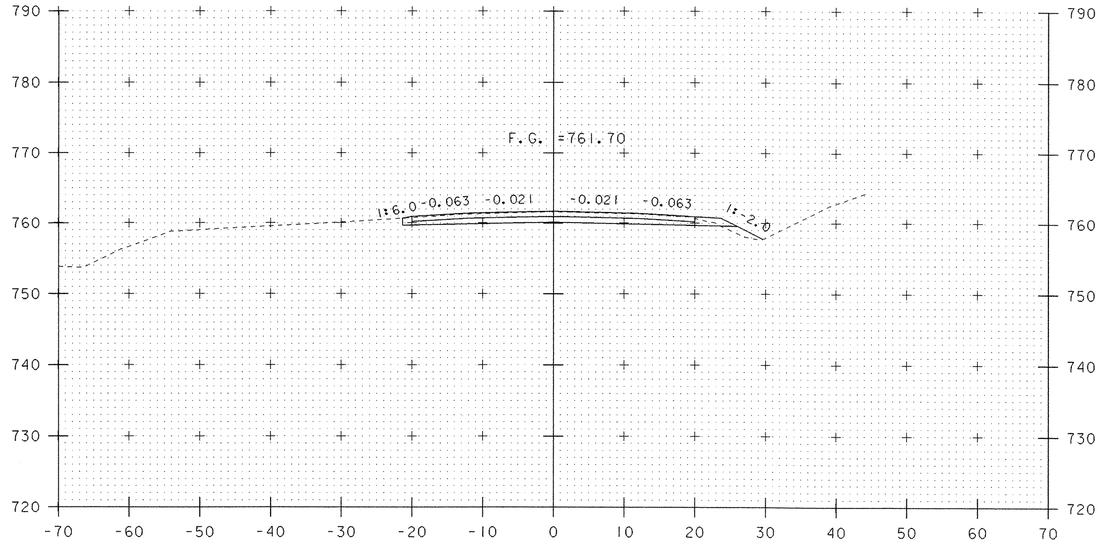
FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R.R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178m01.i	SHEET 40 OF 52



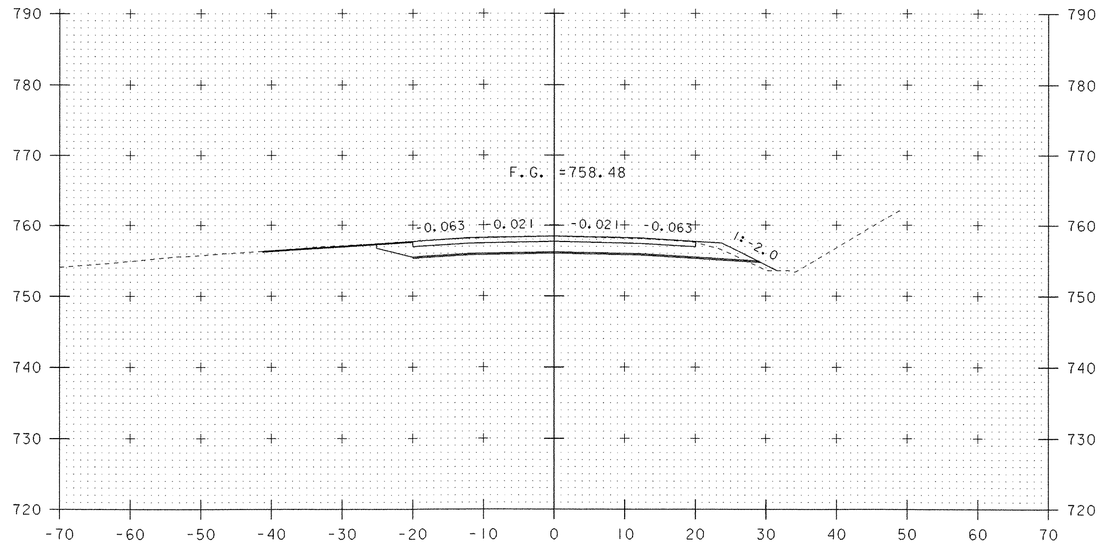
13+25



13+75



13+00



13+50

10 0 10

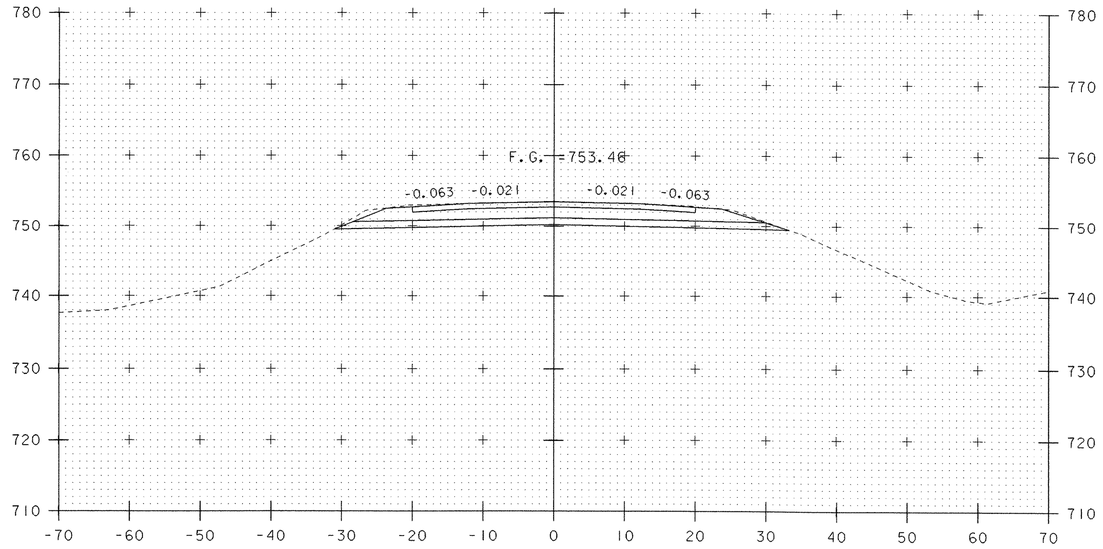
SCALE: 1" = 10'-0"

MAINLINE CROSS SECTIONS (2)

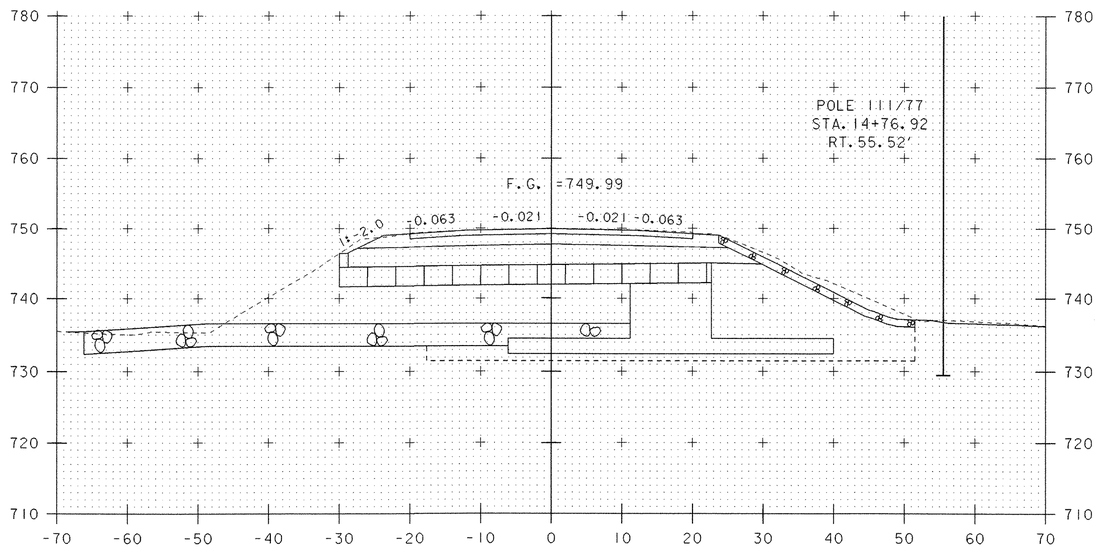
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: 04c178\Structures\s04c178xs1.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: J. PERRIGO
s04c178m02.i

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: D. PETERSON
SHEET 41 OF 52

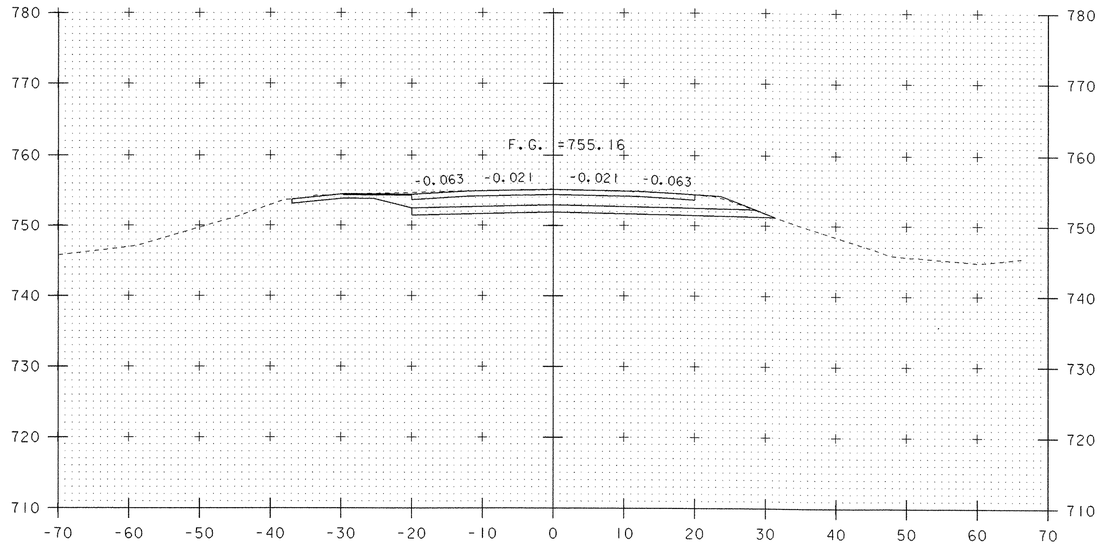


14+25



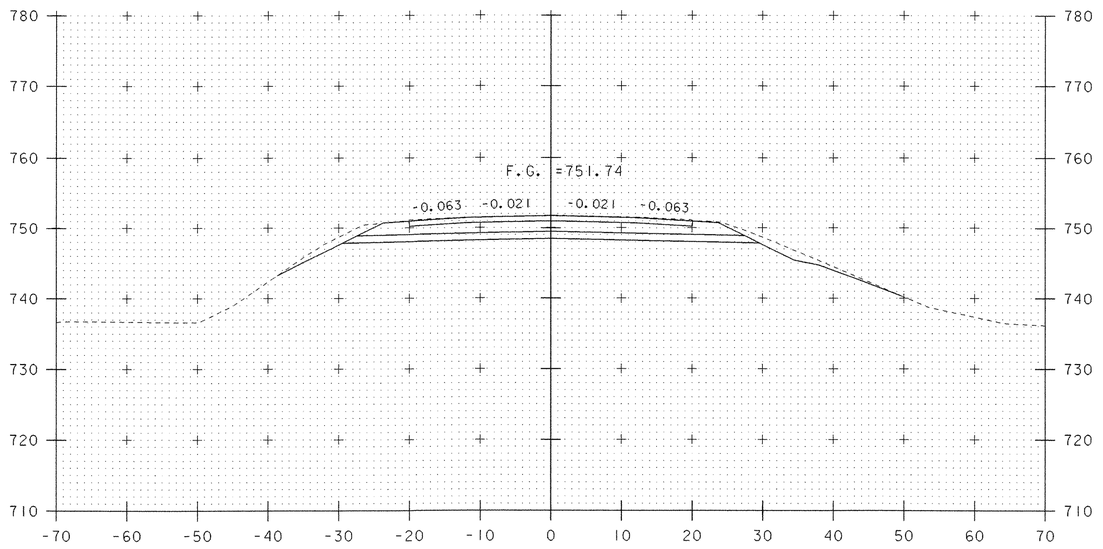
14+75

STA. 14+71.00
BEGIN BRIDGE



14+00

STA. 14+00.00
END APPROACH
BEGIN PROJECT



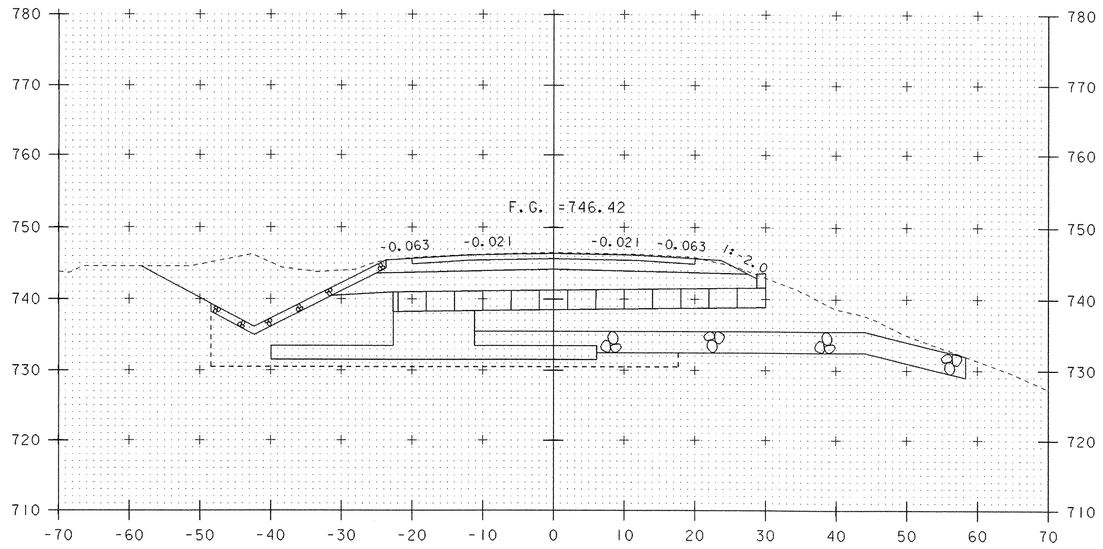
14+50

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

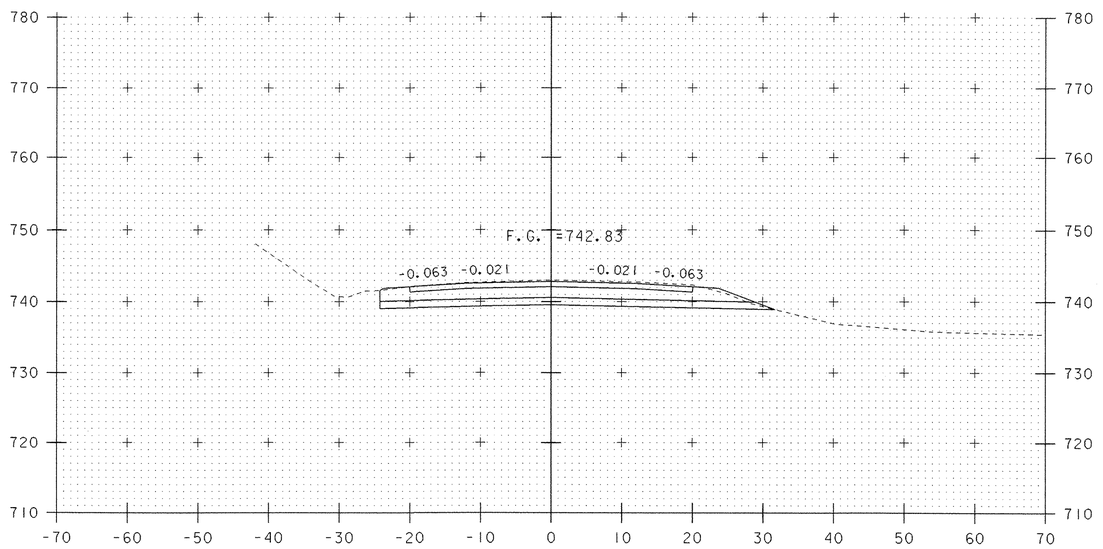
MAINLINE CROSS SECTIONS (3)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

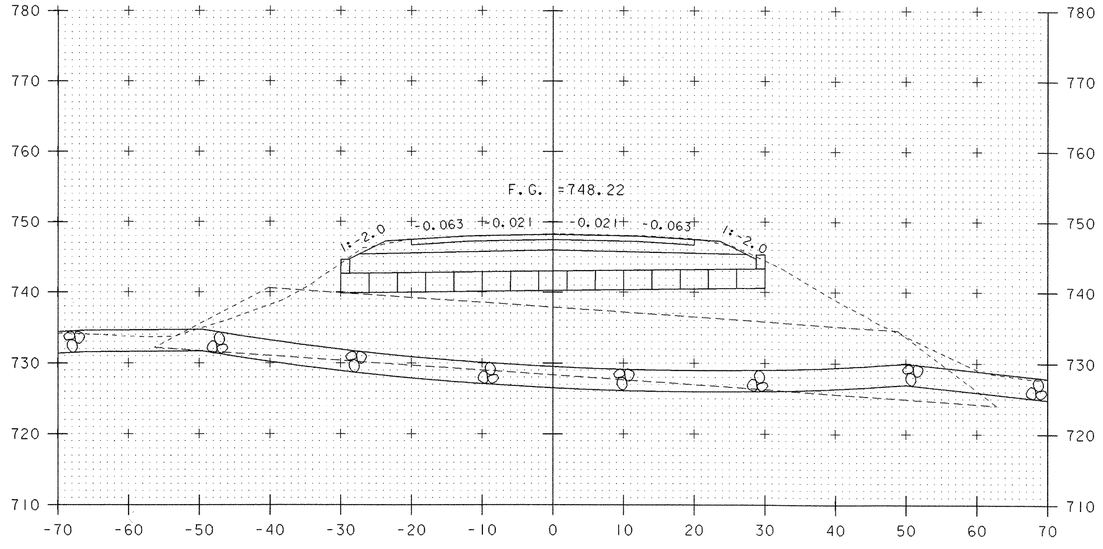
FILE NAME: 04cl78\Structures\s04cl78xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04cl78m03.i	SHEET 42 OF 52



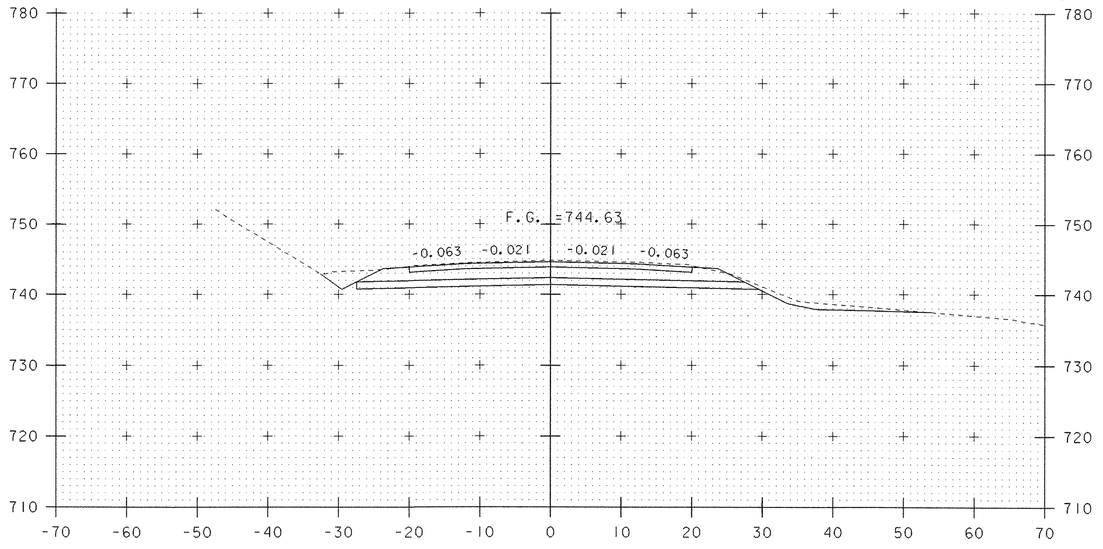
15+25



15+75



15+00



STA. 15+29.00
END BRIDGE

15+50

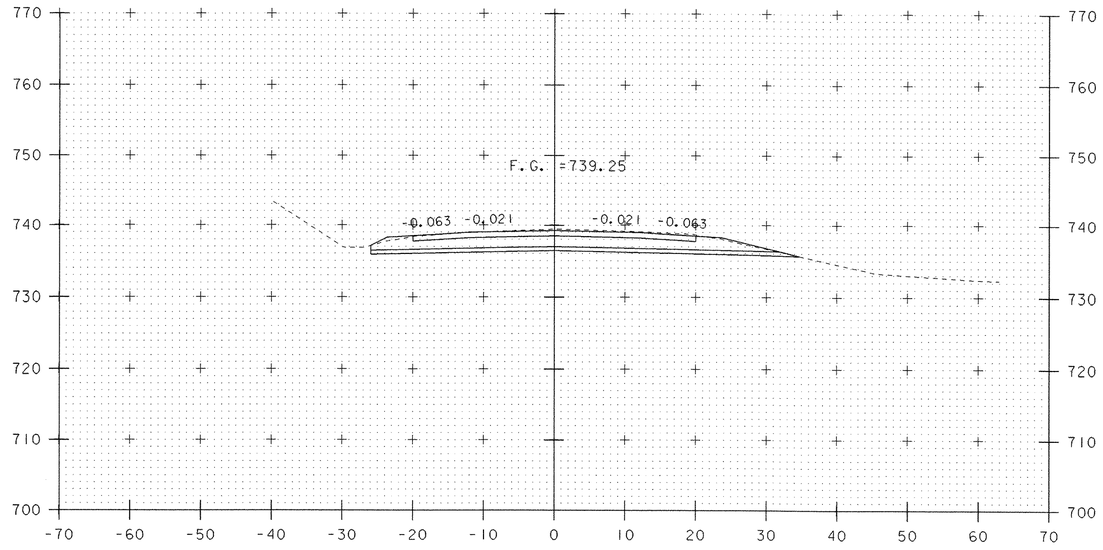
10 0 10

SCALE: 1" = 10'-0"

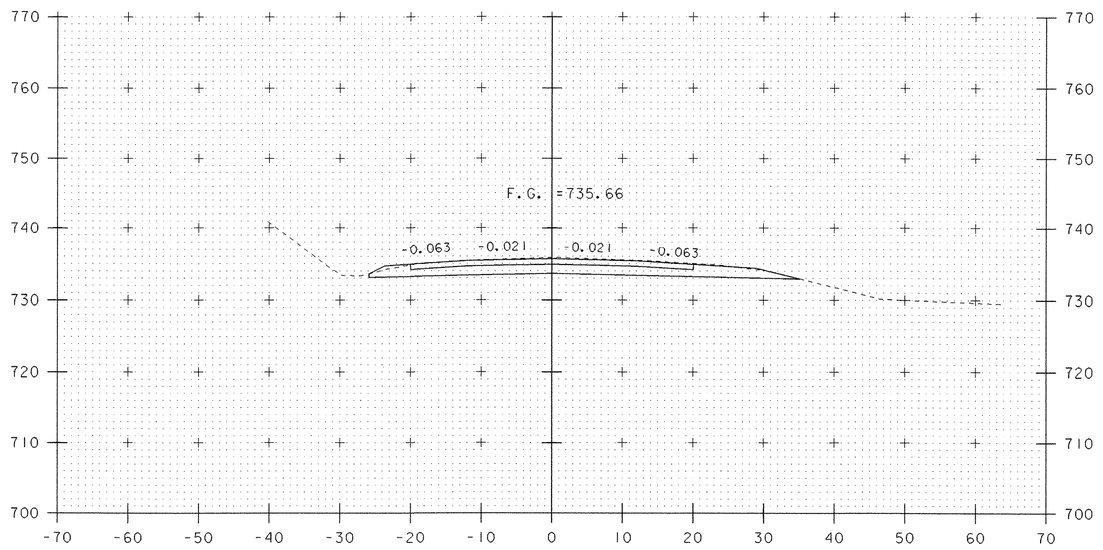
MAINLINE CROSS SECTIONS (4)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R.R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178m04.i	SHEET 43 OF 52



16+25



16+75

16+00

STA. 16+00.00
END PROJECT
BEGIN APPROACH

16+50

10 0 10

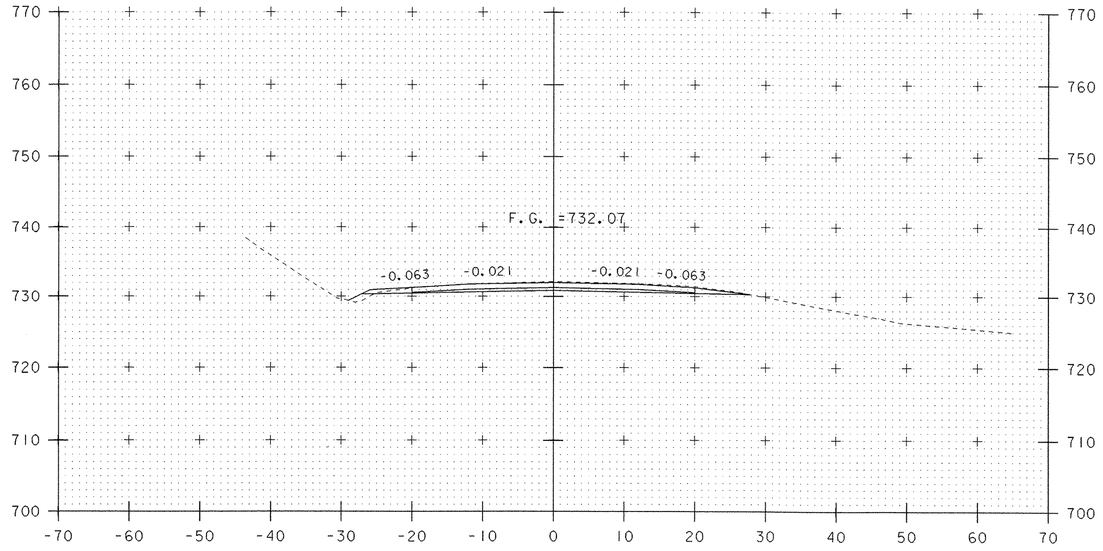
SCALE: 1" = 10'-0"

MAINLINE CROSS SECTIONS (5)

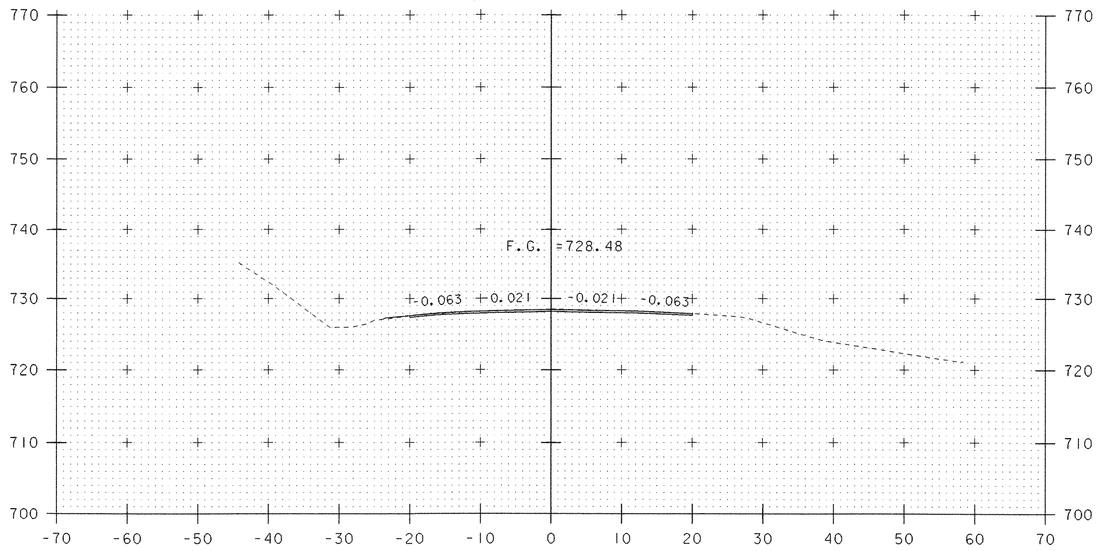
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: 04c178\Structures\s04c178xs1.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: J. PERRIGO
s04c178m05.i

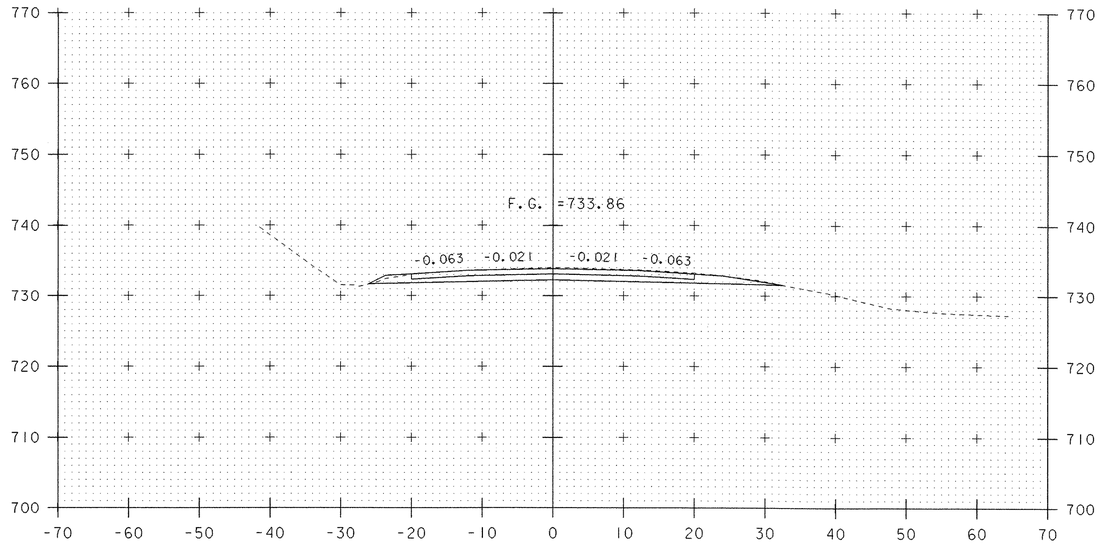
PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: D. PETERSON
SHEET 44 OF 52



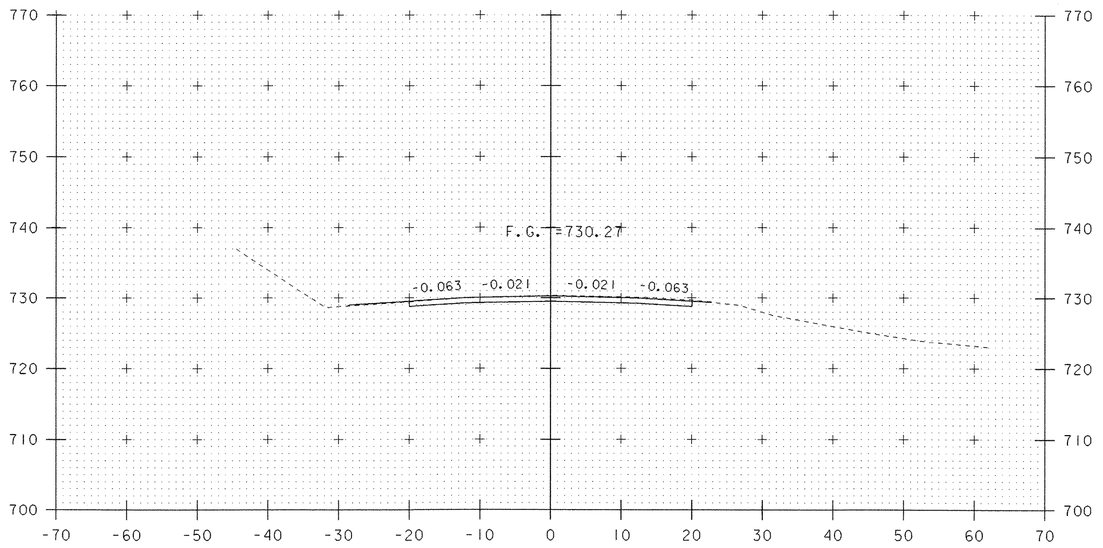
17+25



17+75



17+00



17+50

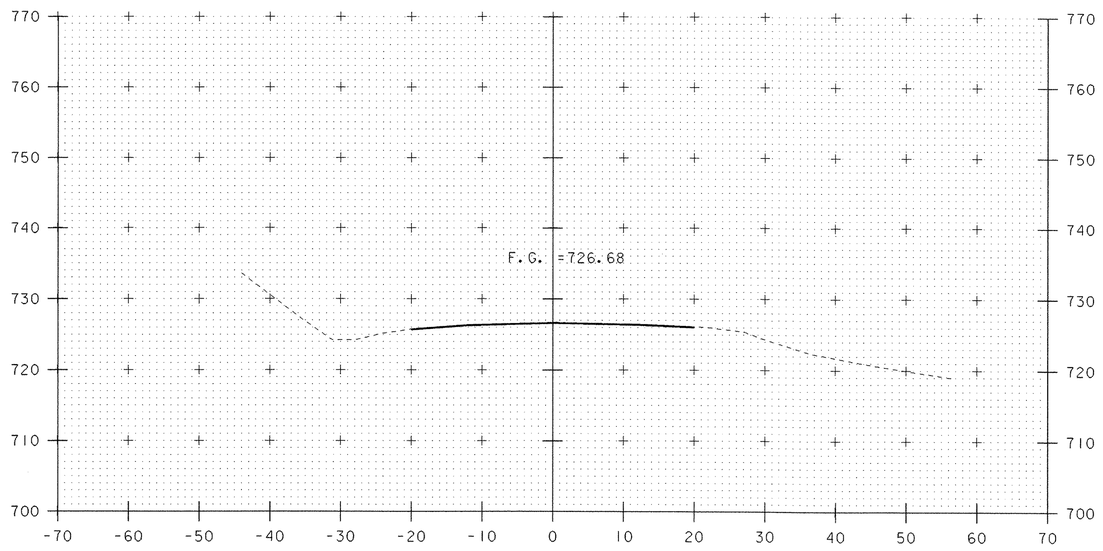
10 0 10

SCALE: 1" = 10'-0"

MAINLINE CROSS SECTIONS (6)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178m06.i	SHEET 45 OF 52



18+00

STA. 18+00.00
END APPROACH
MATCH EXISTING

10 0 10

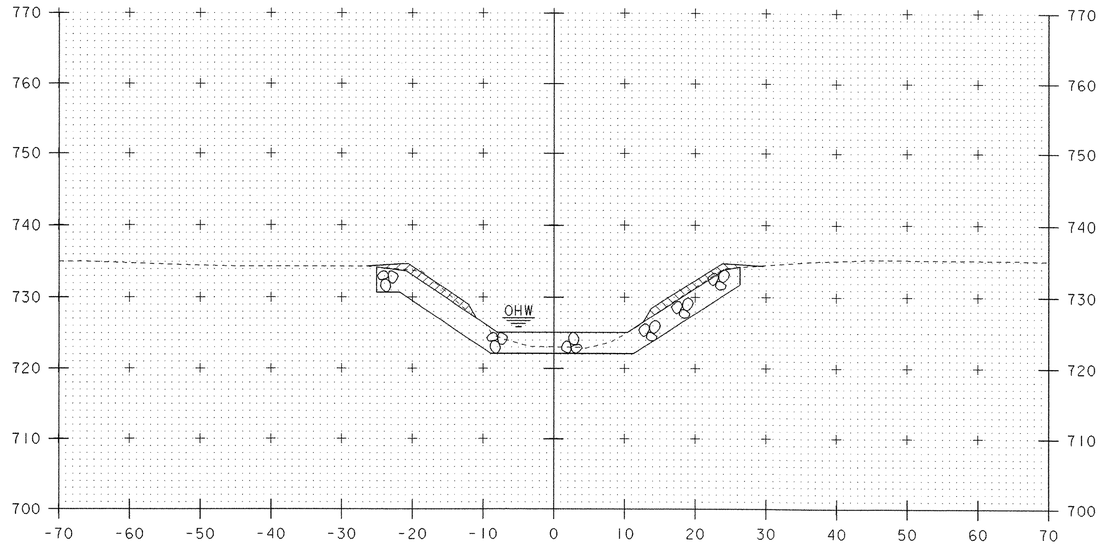
SCALE: 1" = 10'-0"

MAINLINE CROSS SECTIONS (7)

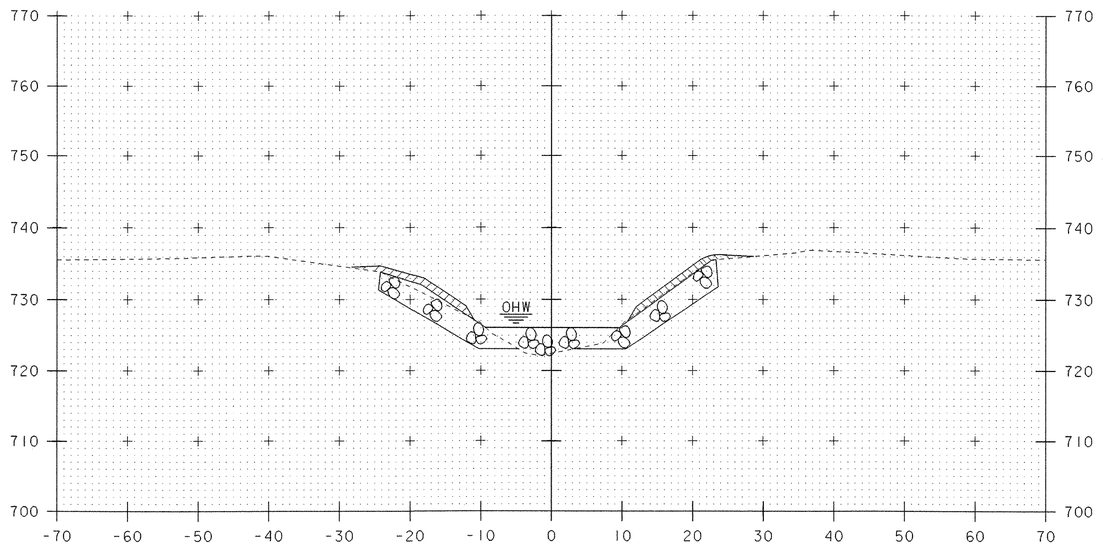
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: 04c178\Structures\s04c178xsl.dgn
PROJECT MANAGER: R. R. WHITCOMB
DESIGNED BY: J. PERRIGO
s04c178m07.i

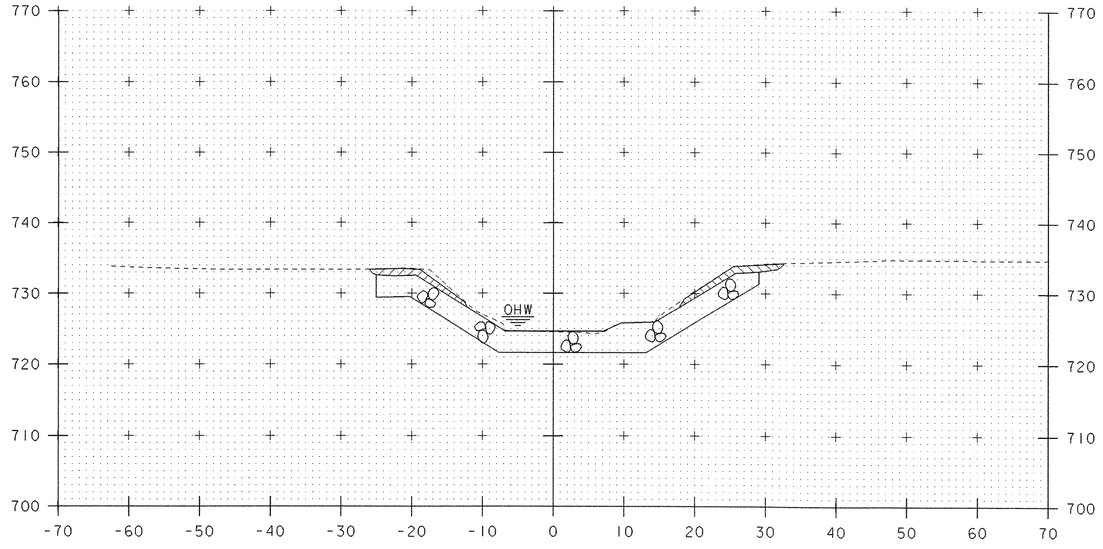
PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: D. PETERSON
SHEET 46 OF 52



50+10

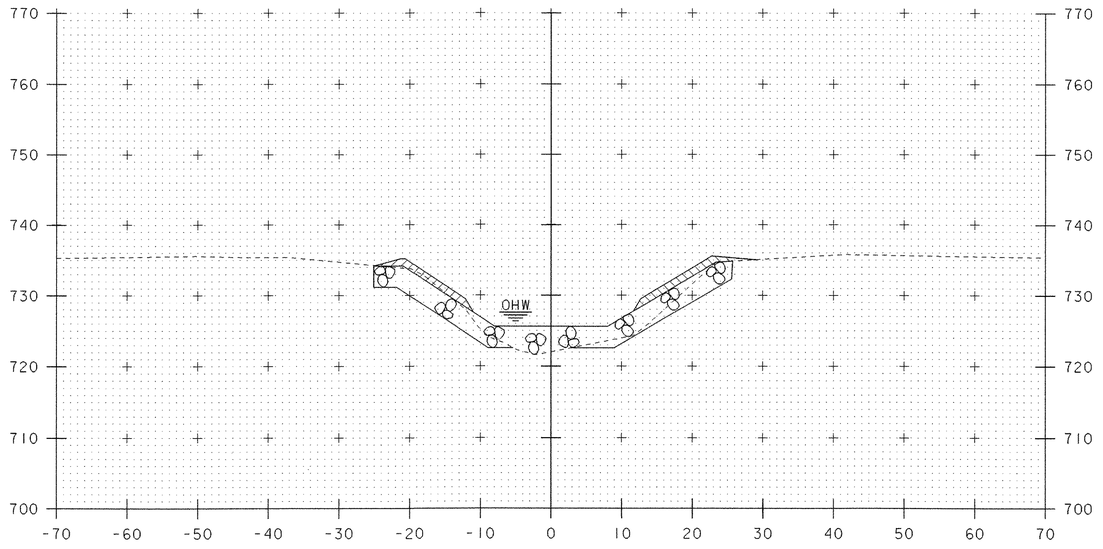


50+30



50+00

STA. 50+00.00
BEGIN UNCL. CHAN. EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE III
GRUBBING MATERIAL



50+20

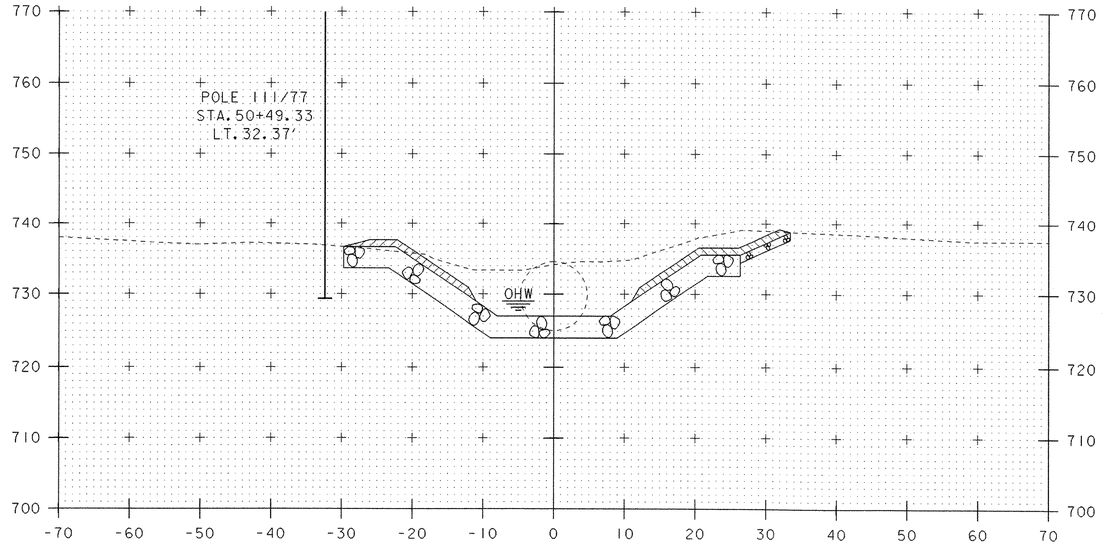
10 0 10

SCALE: 1" = 10'-0"

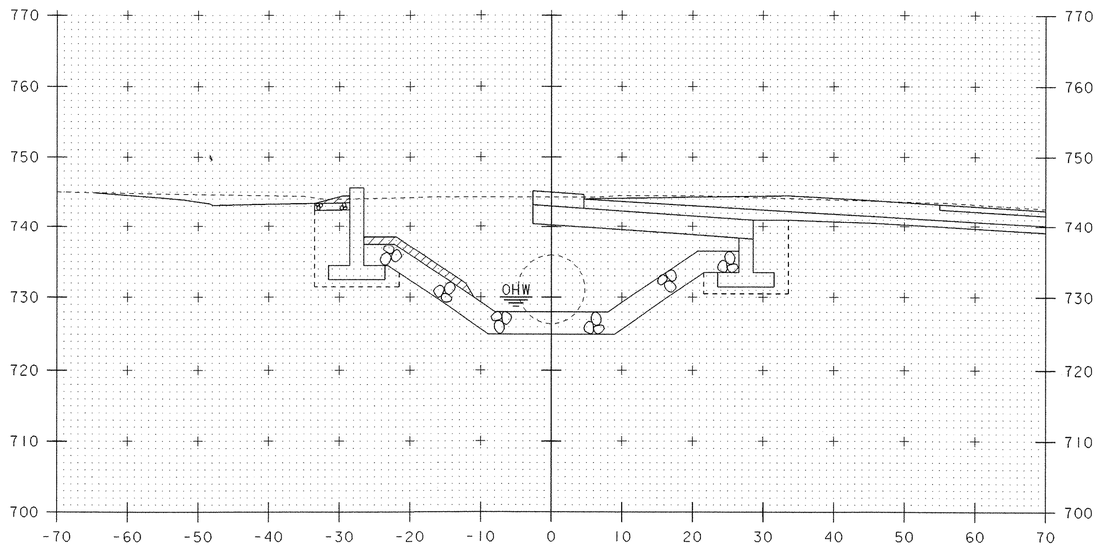
CHANNEL CROSS SECTIONS (1)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

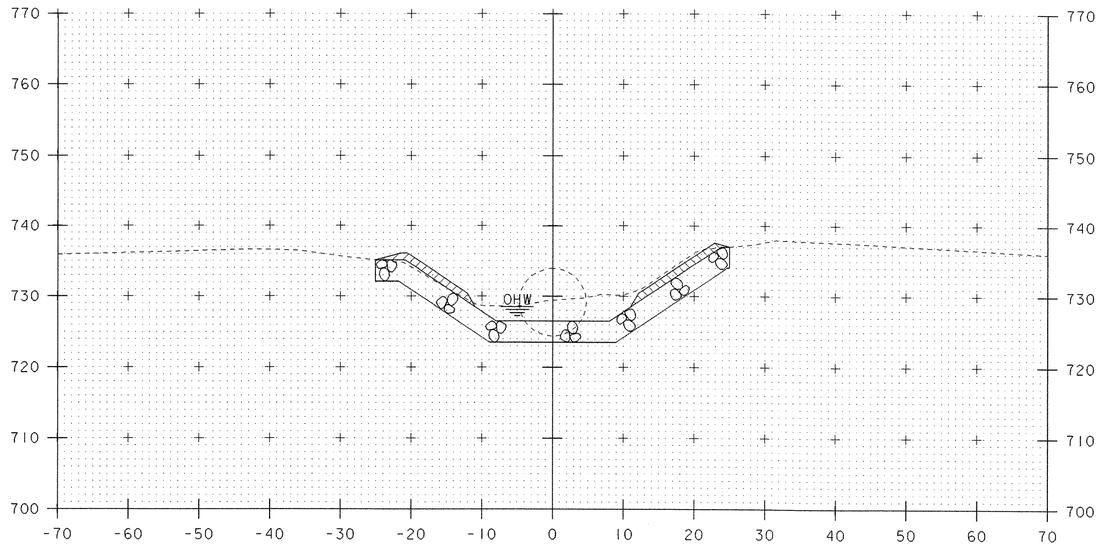
FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178c01.i	SHEET 47 OF 52



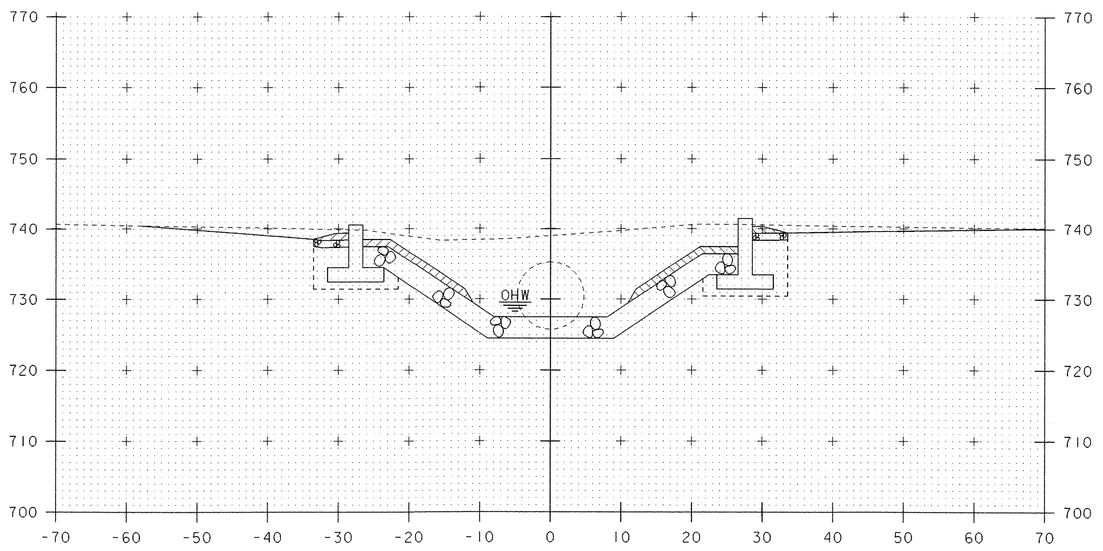
50+50



50+70



50+40



50+60

STA. 50+49.14 RT.
BEGIN STRUCTURE EXCAVATION
GRANULAR BACKFILL FOR STRUCTURES

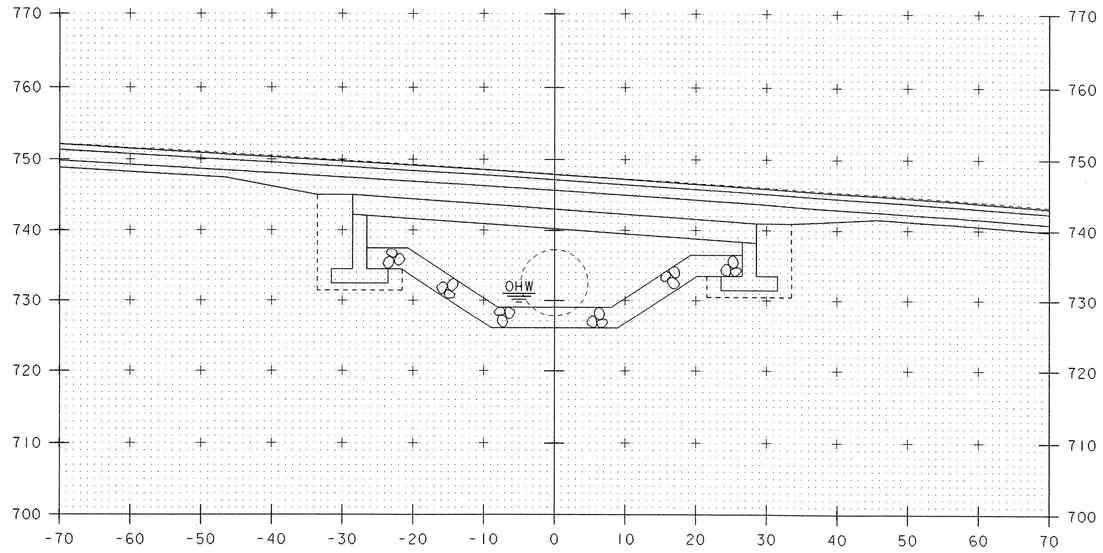
STA. 50+52.8 LT.
BEGIN STRUCTURE EXCAVATION
GRANULAR BACKFILL FOR STRUCTURES

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

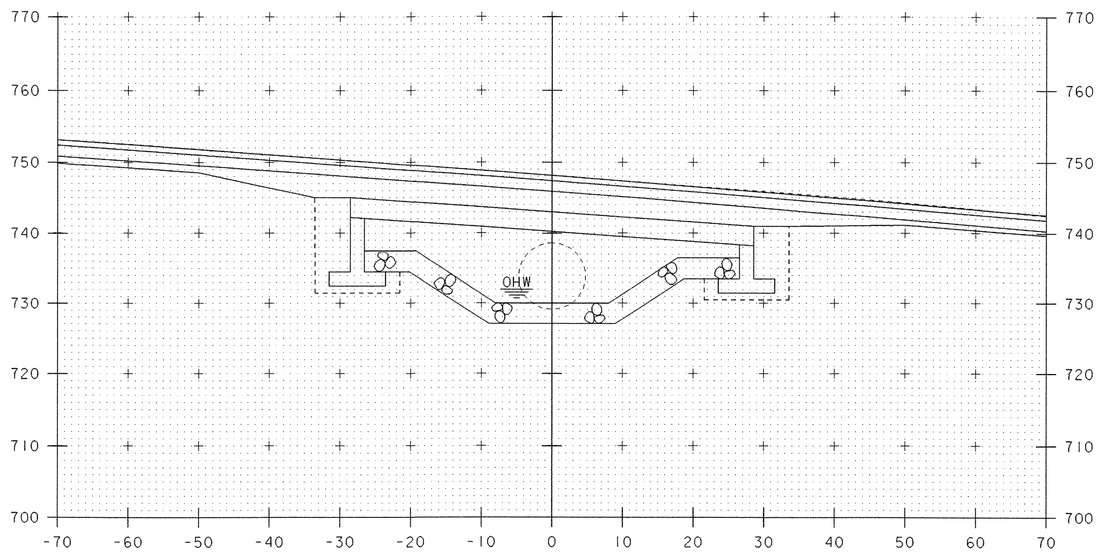
CHANNEL CROSS SECTIONS (2)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

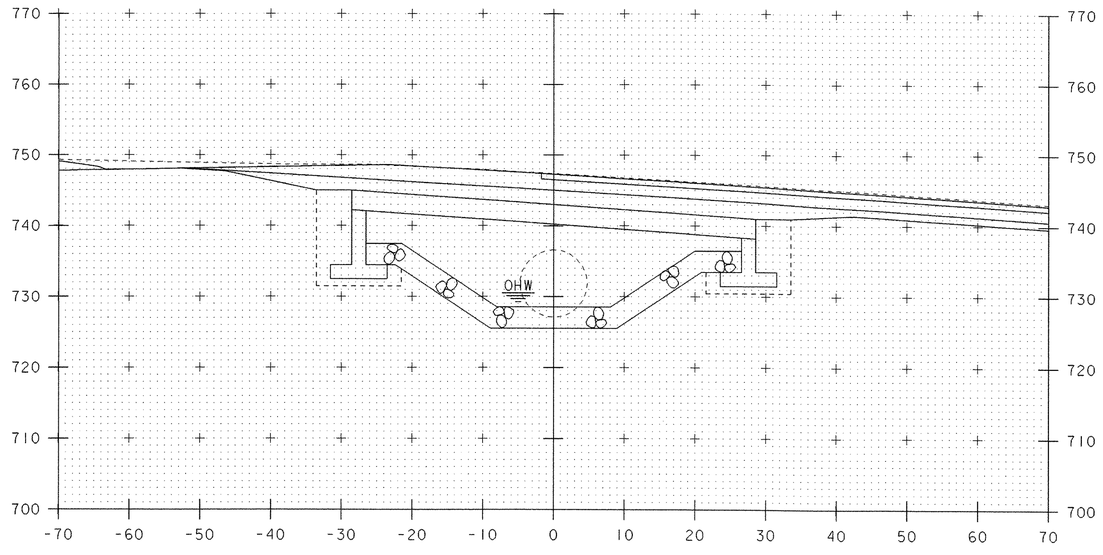
FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R.R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178c02.i	SHEET 48 OF 52



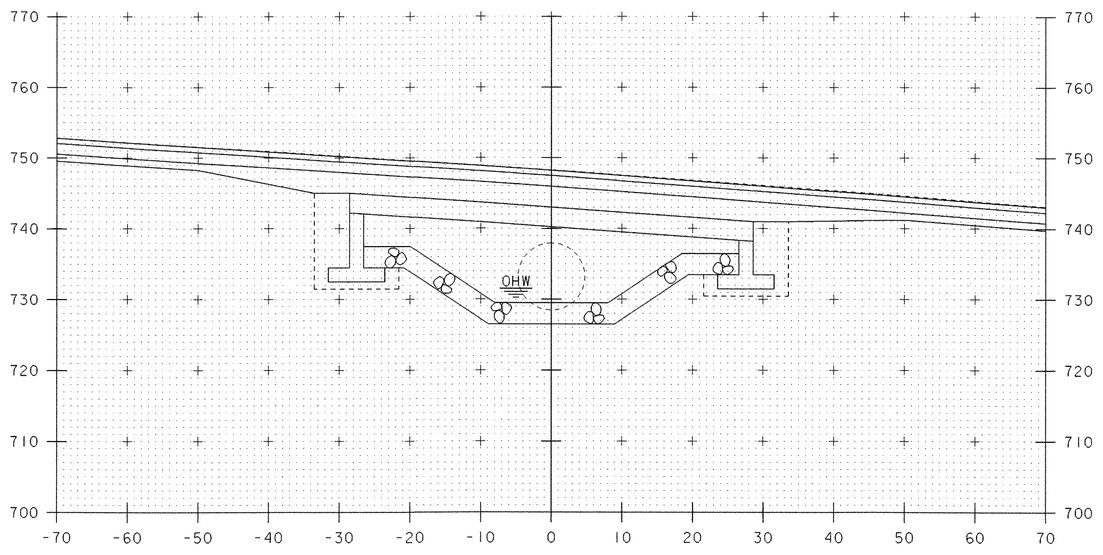
50+90



51+10



50+80



51+00

10 0 10

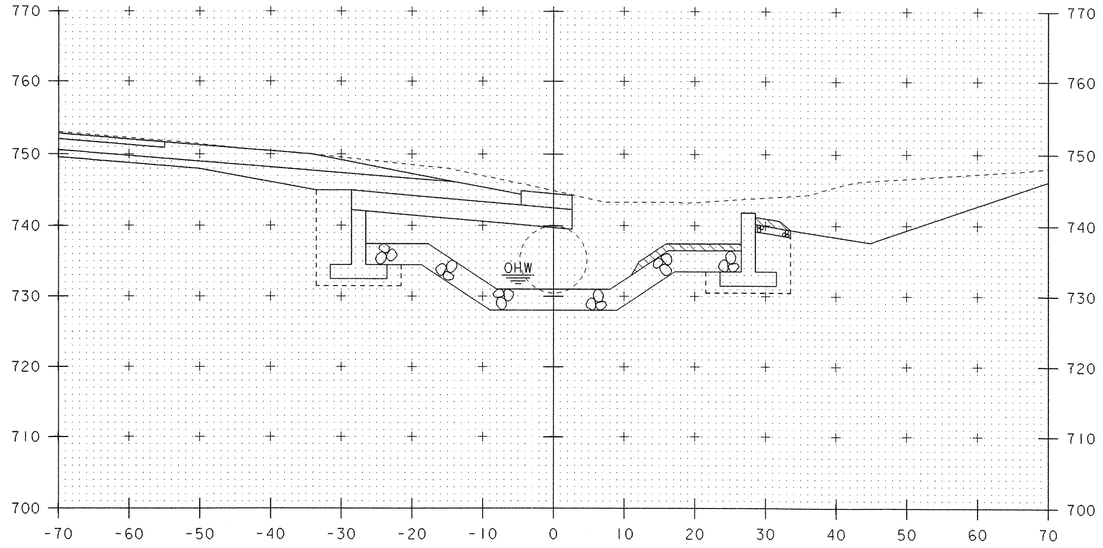
SCALE: 1" = 10'-0"

CHANNEL CROSS SECTIONS (3)

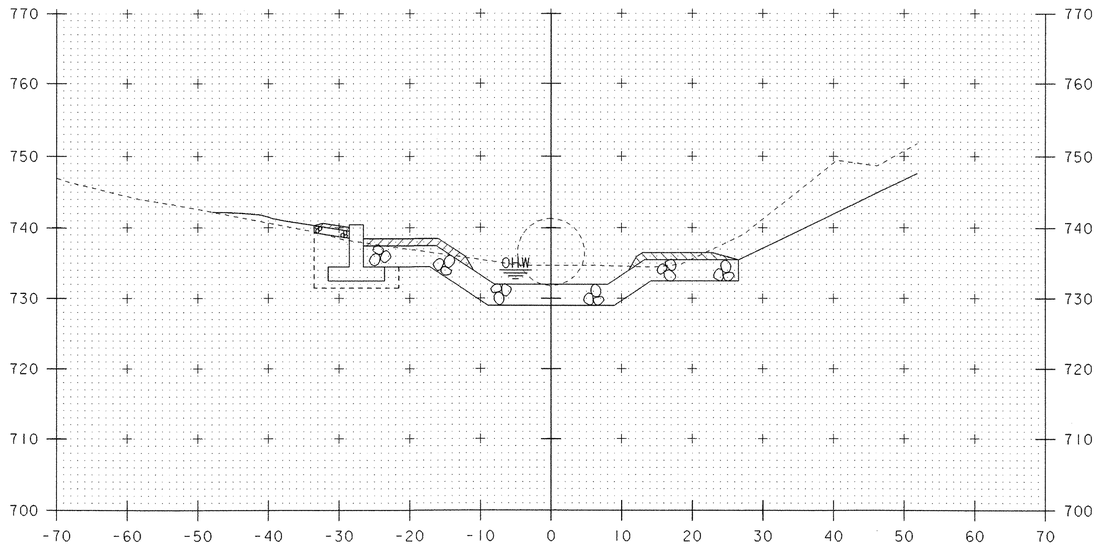
PROJECT NAME: SPRINGFIELD
PROJECT NUMBER: ST CULV (5)

FILE NAME: 04c178\Structures\s04c178xs1.dgn
PROJECT MANAGER: R.R. WHITCOMB
DESIGNED BY: J. PERRIGO
s04c178c03.i

PLOT DATE: 21-MAY-2007
DRAWN BY: M. HALE
CHECKED BY: D. PETERSON
SHEET 49 OF 52

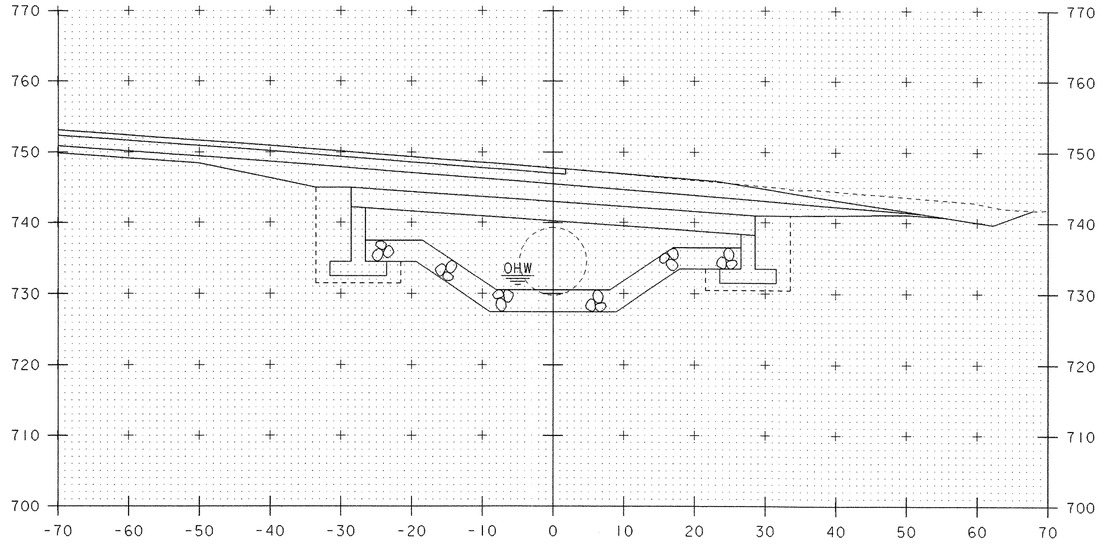


51+30

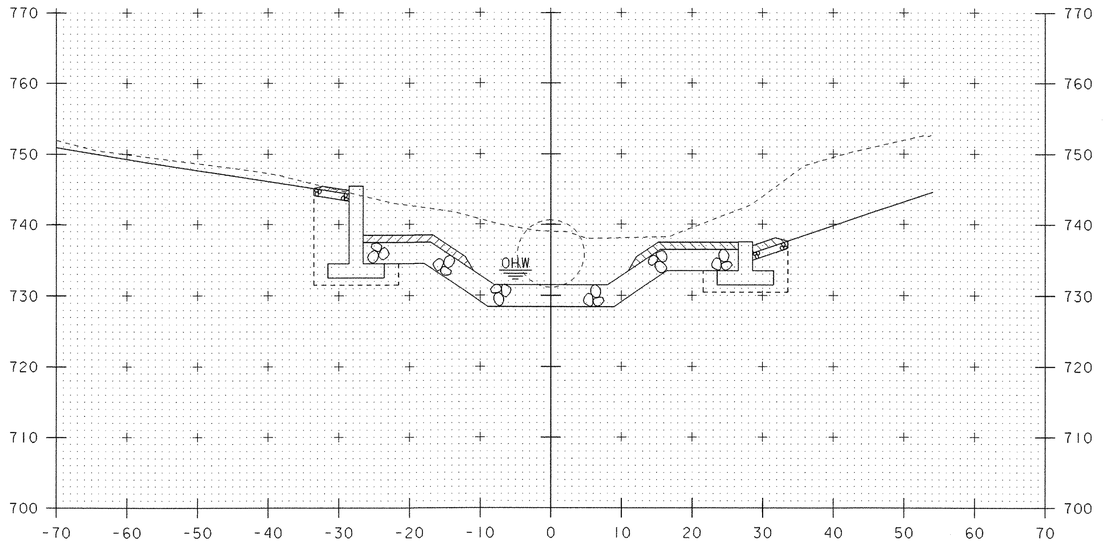


51+50

STA. 51+43.1 RT.
END STRUCTURE EXCAVATION
GRANULAR BACKFILL FOR STRUCTURES



51+20



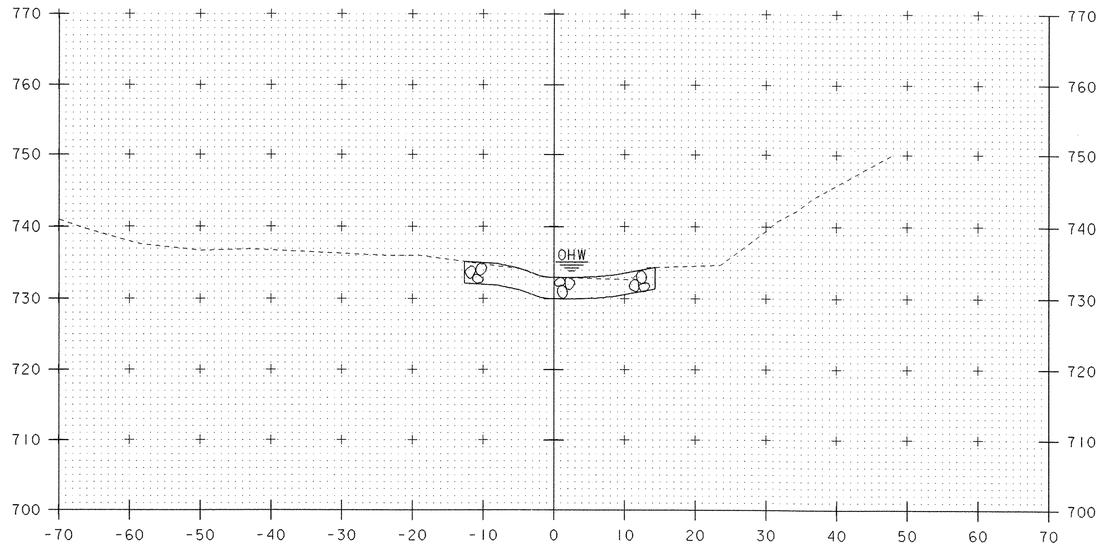
51+40

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

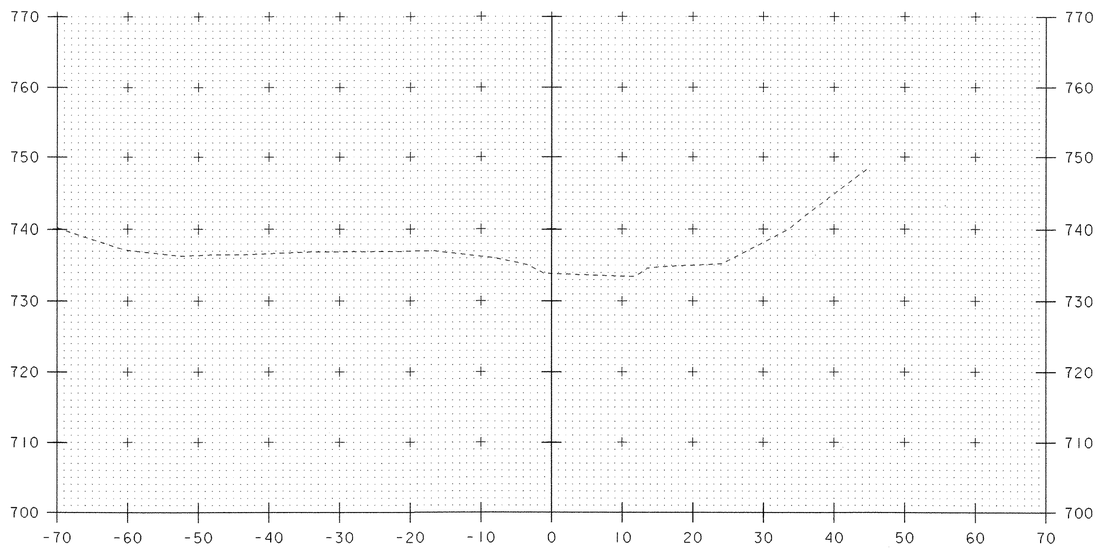
CHANNEL CROSS SECTIONS (4)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

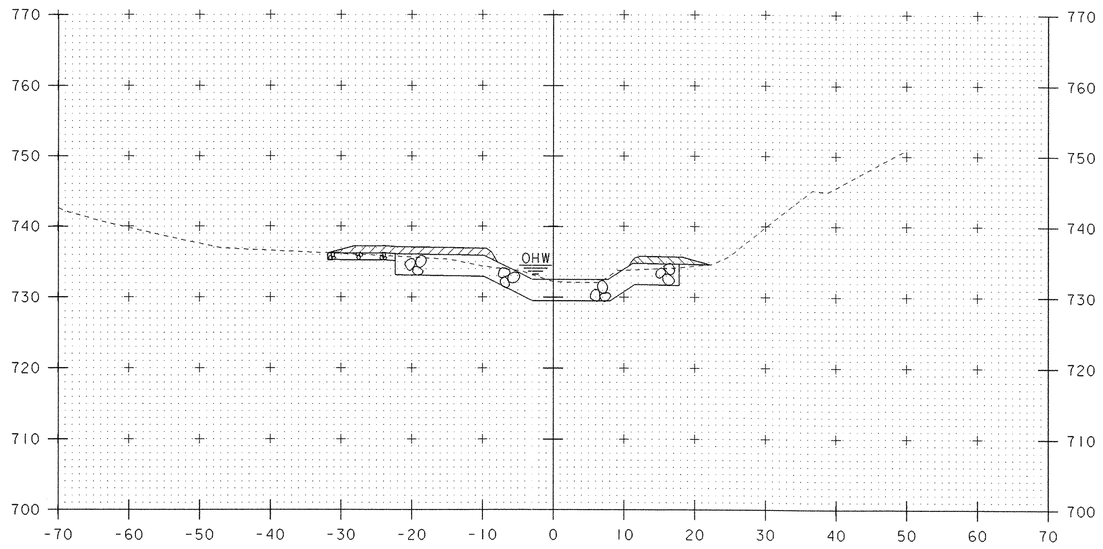
FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178c04.i	SHEET 50 OF 52



51+70

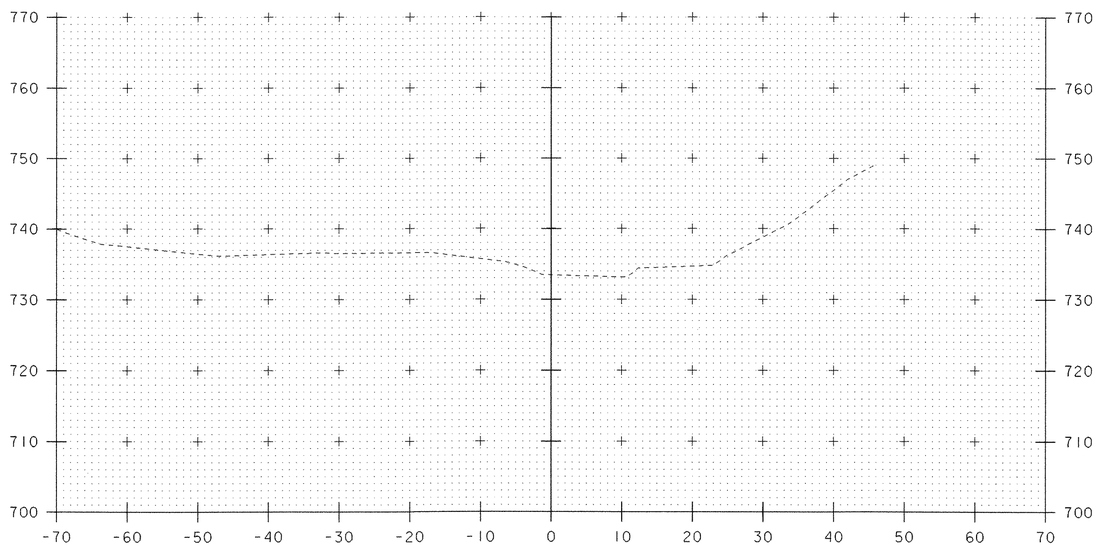


51+90



STA. 51+54.9 LT.
END STRUCTURE EXCAVATION
GRANULAR BACKFILL FOR STRUCTURES

51+60



STA. 51+75.00
END UNCL. CHAN. EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE III
GRUBBING MATERIAL

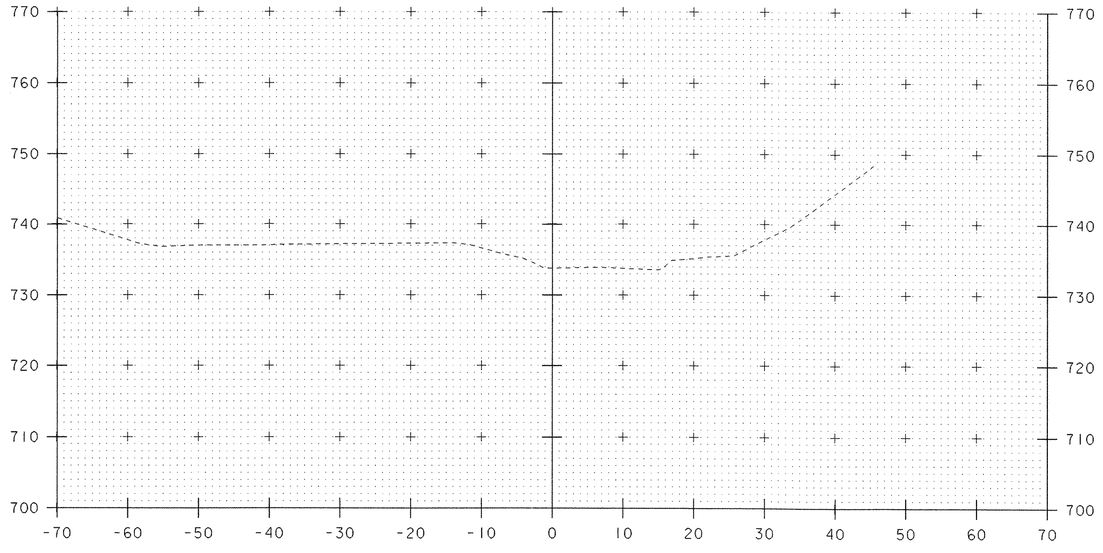
51+80

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

CHANNEL CROSS SECTIONS (5)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R.R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178c05.1	SHEET 51 OF 52



52+00

10 0 10

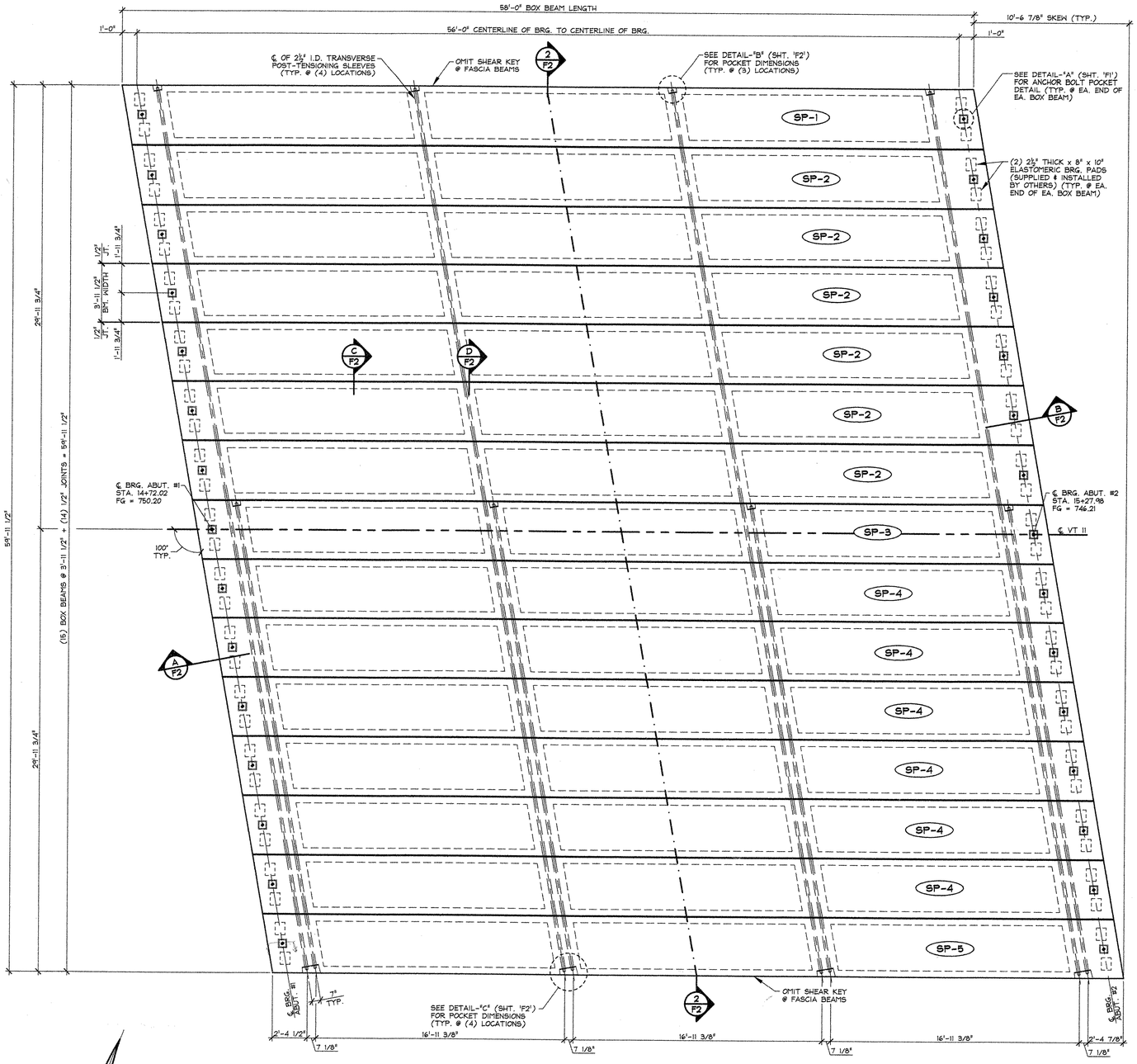
SCALE: 1" = 10'-0"

STA. 52+00 TO STA. 52+00

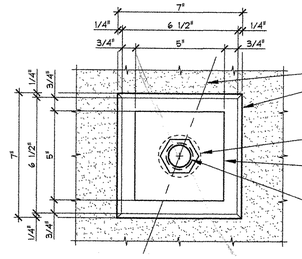
CHANNEL CROSS SECTIONS (6)

PROJECT NAME:	SPRINGFIELD
PROJECT NUMBER:	ST CULV (5)

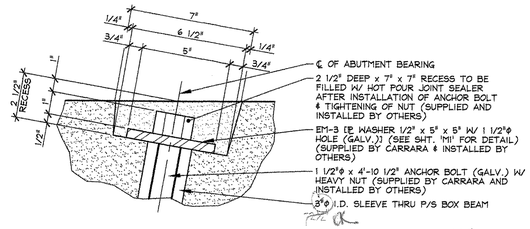
FILE NAME: 04c178\Structures\s04c178xs1.dgn	PLOT DATE: 21-MAY-2007
PROJECT MANAGER: R. R. WHITCOMB	DRAWN BY: M. HALE
DESIGNED BY: J. PERRIGO	CHECKED BY: D. PETERSON
s04c178c06.i	SHEET 52 OF 52



1/F1 PRESTRESSED BOX BEAM LAYOUT
1/4" = 1'-0"



PLAN @ BOX BEAM ℄



SECTION @ BOX BEAM ℄

DETAIL - "A"
3" = 1'-0"
(MIRROR IMAGE)

GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 6,000 PSI.
2. MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4,000 PSI.
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) AND SHALL BE EPOXY COATED.
4. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 0.60"ø x 270 KSI 7-WIRE LOW RELAXATION STRANDS.
5. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 44.0 K AFTER ACCOUNTING FOR CHUCK SLIPPAGE. TENSTION SHALL BE VERIFIED BY MEASURING STRAND ELONGATION. (SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE, THIS SHEET.)
6. ENDS OF PRESTRESSING STRANDS SHALL BE CUT, RECESSED & GROUTED FLUSH WITH END OF BOX BEAMS.
7. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
8. THE TOP OF BEAMS SHALL RECEIVE A FLOAT FINISH.
9. SHEAR KEY SURFACES SHALL BE BLASTED CLEAN.
10. BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. BEAMS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE BEAM ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
11. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. FS10.02 AND FS10.05 RESPECTIVELY.
    DESIGN MIX: J.P.C. BRIDGE MIX 430
12. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
13. THE VOIDS MUST BE VENTED DURING CURING PERIOD.
14. CURING METHOD: AS SOON AS THE TOP OF BEAM IS FINISHED, A COVER OF POLY AND A LAYER OF HOMOSOTE (OR BLUE BOARD) WILL BE PLACED OVER THE BEAM. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW 70°F. THE TEMPERATURE SHALL BE RECORDED BY AUTOMATIC SENSOR INSTRUMENTS ON GRAPH CHARTS, SPACED NOT MORE THAN 100' APART AND WILL CONTINUE UNTIL RELEASE STRENGTH IS ACHIEVED. (NATURAL CURE WITH NO EXTERNAL HEAT APPLIED). EACH CHART SHALL BE MARKED.
15. TRANSVERSE POST-TENSTIONING SEQUENCE:
    A. ONCE VOIDED SLABS ARE ERECTED, POST-TENSION TENDONS TO APPROXIMATELY 5,000 LBS.
    B. GROUT SHEAR KEYS.
    C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI, POST TENSION TENDONS TO 30,000 LBS.

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60"ø x 270 KSI
AREA: 0.217 IN^2
TENSION: 44,000 LB. EACH STRANDS
GRIP-TO-GRIP: 192'-9 3/4" = 192.813'
Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)
EXAMPLE:

$$\Delta = \frac{PL}{AE} = \frac{(44{,}000 - 3{,}000) \times 192.813 \times 12}{0.217 \times 28{,}600{,}000} = 15.29"$$

THEREFORE: (TOLERANCES ± 5%)
△ UPPER LIMIT = 1.05 x 15.29" = 16.05" = 16 1/16"
△ LOWER LIMIT = 0.95 x 15.29" = 14.53" = 14 1/2"

EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:

$$\Delta P = \frac{0.5 \times 41{,}000}{15.29} = 1{,}341 \text{ LBS.}$$

TOTAL TENSIONING FORCE = 44,000 + 1,341 = 45,341 LBS.

STRAND TENSIONING PROCEDURE:

1. PULL EACH STRAND INITIALLY TO 3,000* LBS. AND MARK STRAND.
2. THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,341* LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 14 1/2" & 16 1/16".

* NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

Structure

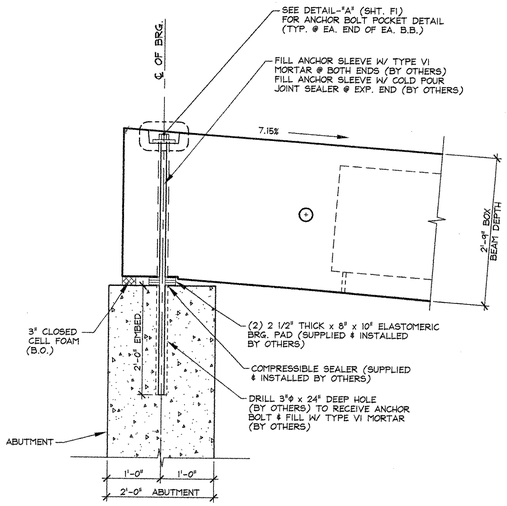
RECEIVED
OK'D BY DRP OK'D BY CWC
JUL 10 2007
RESUBMIT ___ APPROVED AS NOTED
BY RLW DATE 7/12/07

APPROVAL STAMP:

J.P. CARRARA & SONS INC. — Precast & Prestress Manufacturer — 2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	J.A. McDONALD, INC. — CONTRACTOR — LYNDON, VERMONT
STATE OF VERMONT A.O.T. — COUNTY OF WINDSOR	DATE: JUNE 20, 2007
	SCALE: NOTED
TOWN OF SPRINGFIELD — VERMONT ROUTE 11 — BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)	CHKD: D.F. DFTM: T.J.D.
	JOB NO: 23258-007
SUPERSTRUCTURE PLAN & DETAILS	DWG. NO: F1

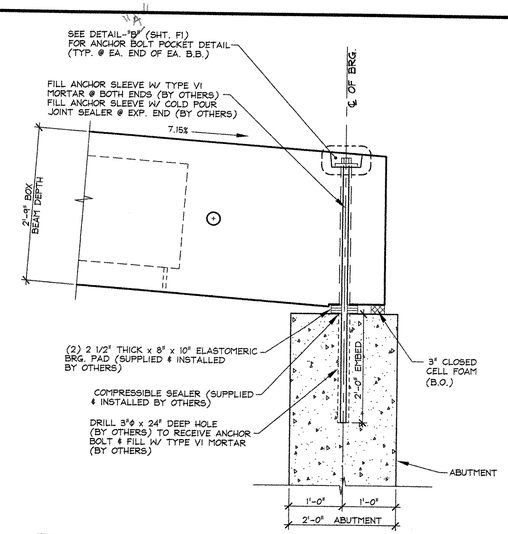
#053

F:\VT-Bridges\23258-007 Springfield Bridge\23256-F1a.dwg, 7/6/2007 11:51:37 AM



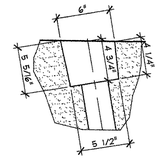
A/F2 BEARING SECTION

3/4" = 1'-0"

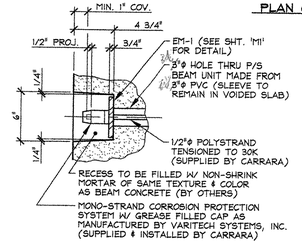


B/F2 BEARING SECTION

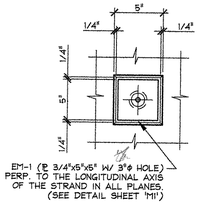
3/4" = 1'-0"



PLAN OF POCKET



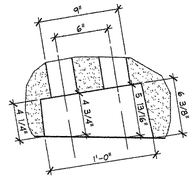
SECTION AT CENTERLINE



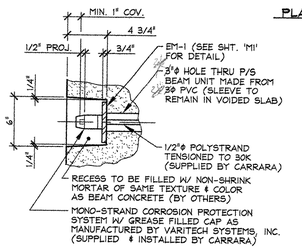
FASCIA ELEVATION

DETAIL - "B"

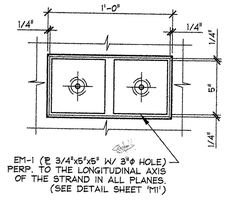
1 1/2" = 1'-0"



PLAN OF POCKET



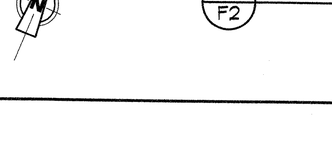
SECTION AT CENTERLINE



FASCIA ELEVATION

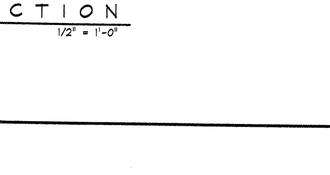
DETAIL - "C"

1 1/2" = 1'-0"



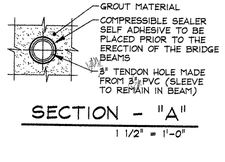
C/F2 TYP. SHEAR KEY SECTION

1" = 1'-0"



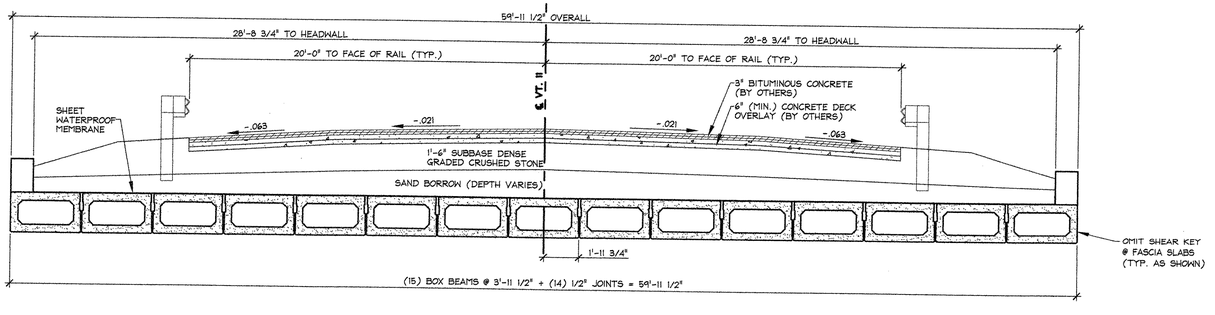
D/F2 SHEAR KEY SECTION @ P.T. SLEEVE

1" = 1'-0"



SECTION - "A"

1 1/2" = 1'-0"



2/F2 TRANSVERSE SECTION

1/2" = 1'-0"

RECEIVED
CK'D BY DRF CK'D BY CWC
JUL 10 2007
RESUBMIT ____ APPROVED AS NOTED
BY RKW DATE 7/12/07

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.A. McDONALD, INC.
CONTRACTOR
LYNDON, VERMONT

STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

DATE: JUNE 20, 2007
SCALE: NOTED

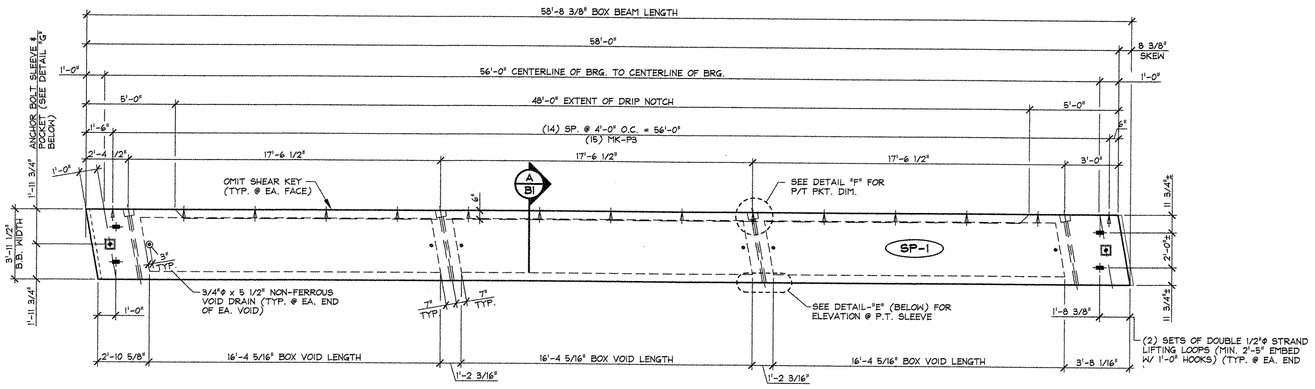
TOWN OF SPRINGFIELD
VERMONT ROUTE 11
BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)

CHKD: D.F. DFTM: T.J.D.
JOB NO: 23258-007

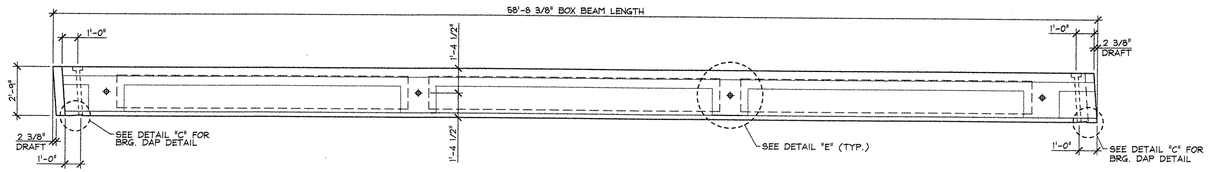
SUPERSTRUCTURE TRANSVERSE SECTION & DETAILS

DWG. NO: F2

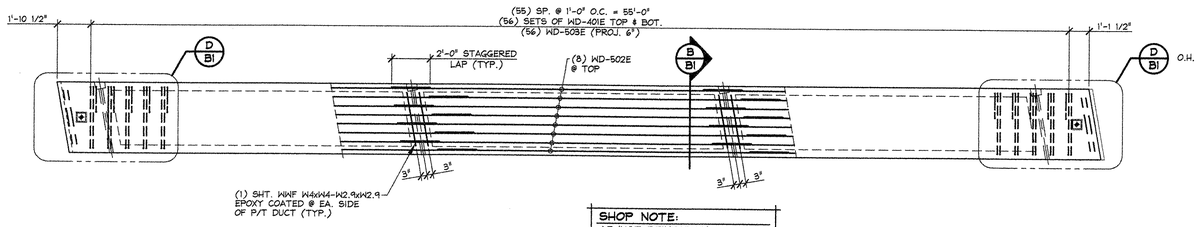
F:\VT-Bridges\23258-007 Springfield Bridge\23256-F2.dwg, 7/6/2007 11:51:07 AM



1 / B1 DIMENSIONAL PLAN VIEW IN FORM
1/4" = 1'-0"

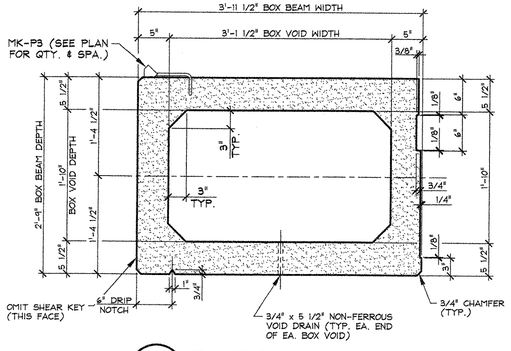


2 / B1 ELEVATION VIEW IN FORM
1/4" = 1'-0"

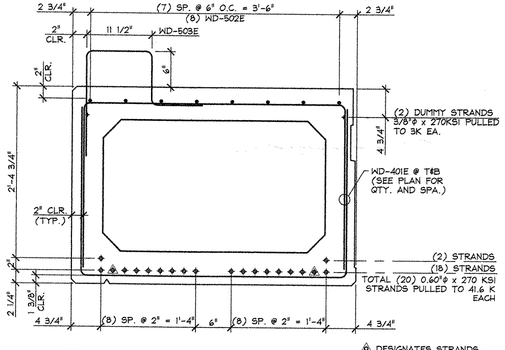


SHOP NOTE:
ADJUST REINFORCING SPACING AS REQUIRED TO CLEAR P.T. SLEEVES, INSERTS, ETC.

3 / B1 REINFORCING PLAN VIEW IN FORM
1/4" = 1'-0"

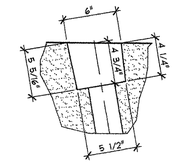


A / B1 DIMENSIONAL SECTION
1" = 1'-0"

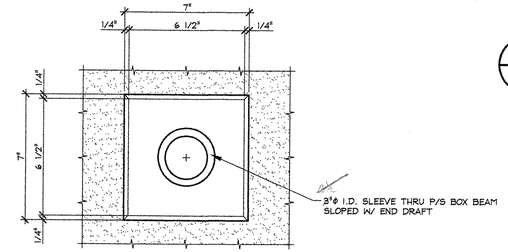


B / B1 REINFORCING SECTION
1" = 1'-0"

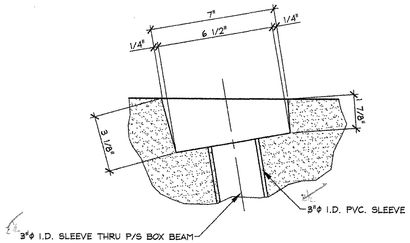
⊕ DESIGNATES STRANDS TO BE DEBONDED 5'-0" FROM EA. END



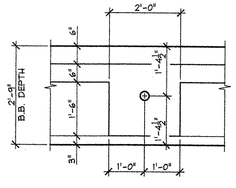
DETAIL - "F"
1 1/2" = 1'-0"



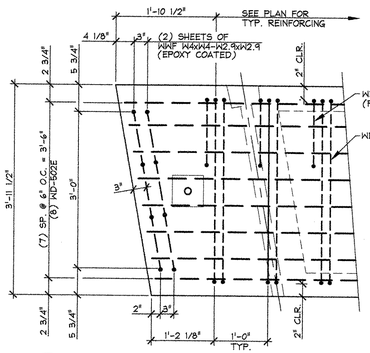
PLAN VIEW



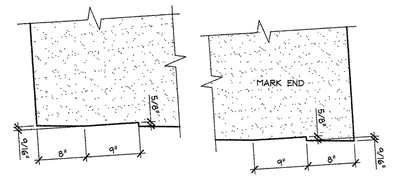
DETAIL - "G"
3" = 1'-0"



DETAIL - "E"
1/2" = 1'-0"



D / B1 END BLOCK REINFORCING DETAIL
1" = 1'-0"

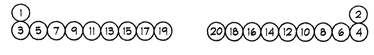


C / B1 BRG. BLOCKOUT DETAILS
1" = 1'-0"

MARK: SP-1	QTY.: 1	WT.: 26.85 T	VOL.: 13.26 cy

MATERIAL LIST / VOIDED BOX BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	401	#4 BENT BAR (EPOXY COATED)	112
2	502	#5 x 57'-8" (W/ (3) 2'-0" STAGGERED LAPS)	8
3	503	#5 BENT BAR	56
4			
5			
6			
7			
8			
9			
10			
11			
12			
13		WWF W4xW4-W2.9xW2.9 [2'-0" x 3'-0"] (EPOXY COATED)	8
14	MK-P3	DAYTON C-24 TYPE 4-APR PRESS-STEEL PRECAST HALF HANGER (GALV.)	15
15		3'-1 1/2" x 1'-10" x 16'-4 5/16" BOX VOID	3
16		3/4"ø x 5 1/2" NON-FERROUS VOID DRAINS	6
17		DOUBLE 1/2"ø STRANDS LIFTING LOOPS	4
18			



DETENSIONING SCHEDULE
N.T.S.

APPROVAL STAMP:

RECEIVED
OK'D BY DKF OK'D BY [illegible]
JUL 10 2007
RESUBMIT ____ APPROVED ✓
BY RLW DATE 7/12/07

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.A. McDONALD, INC.
CONTRACTOR
LYNDON, VERMONT

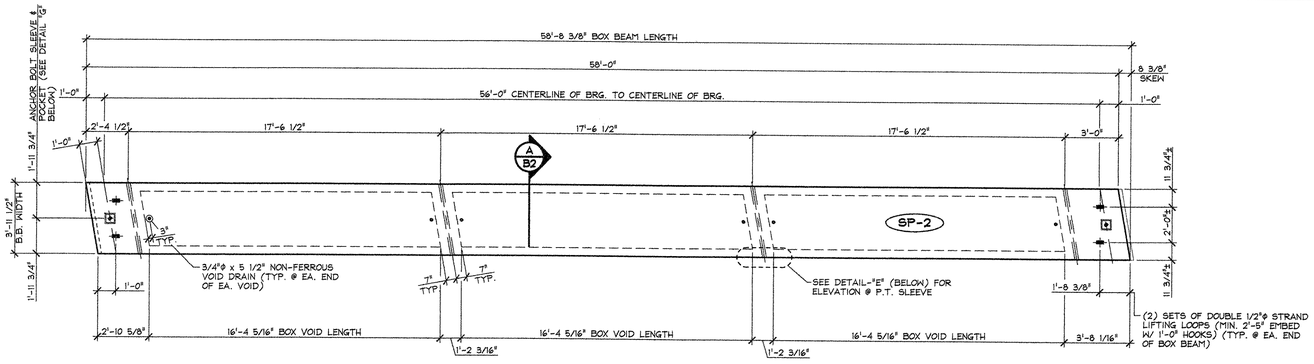
STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

TOWN OF SPRINGFIELD
VERMONT ROUTE 11
BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)

BOX BEAM SECTIONS & DETAILS

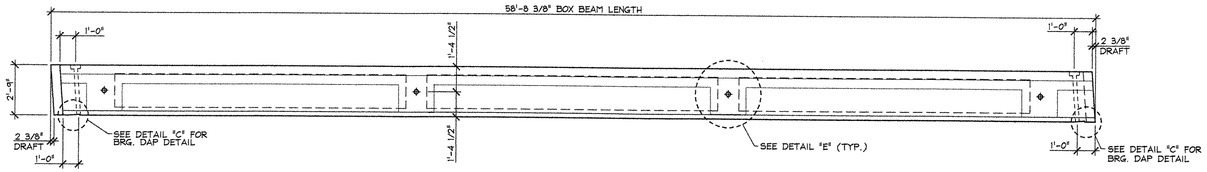
DATE: JUNE 20, 2007
SCALE: NOTED
CHKD: D.F. DFTM: T.J.D
JOB NO: 23258-007
DWG. NO: B1

F:\VT-Bridges\23258-007 Springfield Bridge\B1.dwg, 7/6/2007 11:50:46 AM



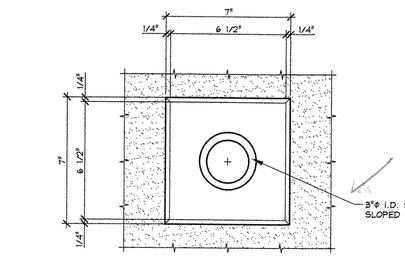
1 / B2 DIMENSIONAL PLAN VIEW IN FORM

1/4" = 1'-0"

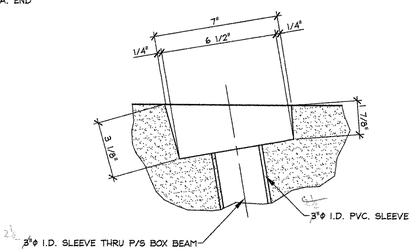


2 / B2 ELEVATION VIEW IN FORM

1/4" = 1'-0"

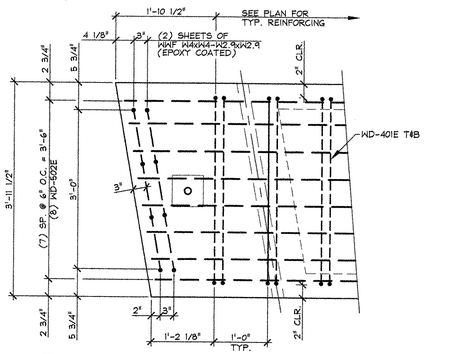


PLAN VIEW



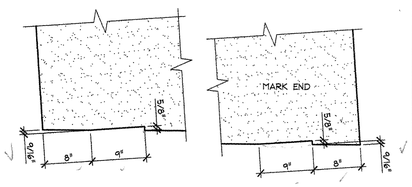
DETAIL - "G"

3" = 1'-0"



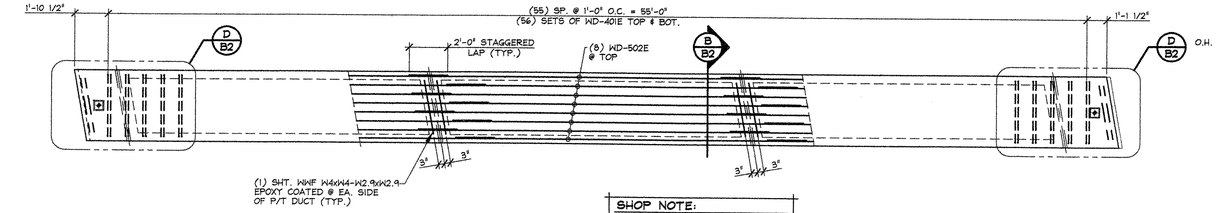
D / B2 END BLOCK REINFORCING DETAIL

1" = 1'-0"



C / B2 BRG. BLOCKOUT DETAILS

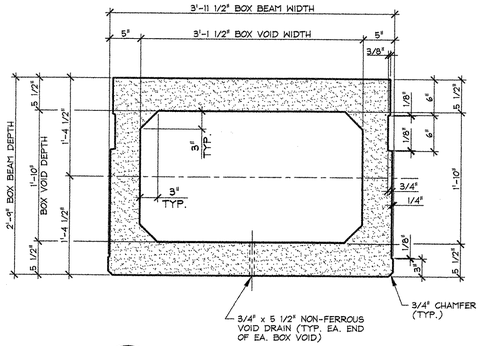
1" = 1'-0"



3 / B2 REINFORCING PLAN VIEW IN FORM

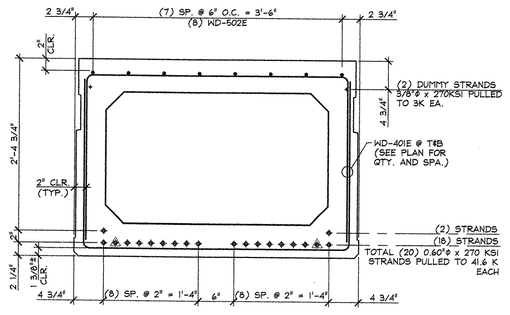
1/4" = 1'-0"

SHOP NOTE:
ADJUST REINFORCING SPACING AS REQUIRED TO CLEAR P.T. SLEEVES, INSERTS, ETC.



A / B2 DIMENSIONAL SECTION

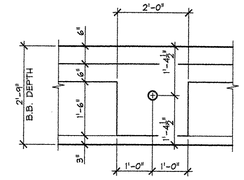
1" = 1'-0"



Ⓐ DESIGNATES STRANDS TO BE DEBONDED 5'-0" FROM EA. END

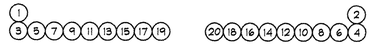
B / B2 REINFORCING SECTION

1" = 1'-0"



DETAIL - "E"

1/2" = 1'-0"



DETENSIONING SCHEDULE

N.T.S.

MARK: SP-2	QTY.: 6	WT.: 26.85 T	VOL.: 13.26 cy

MATERIAL LIST / VOIDED BOX BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	401	#4 BENT BAR (EPOXY COATED)	112
2	502	#5 x 57'-8" (W/ (3) 2'-0" STAGGERED LAPS)	8
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15		WWF W4xW4-W2.9xW2.9 [2'-0" x 3'-0"] (EPOXY COATED)	8
17		3'-1 1/2" x 1'-10" x 16'-4 5/16" BOX VOID	3
18		3/4"ø x 5 1/2" NON-FERROUS VOID DRAINS	6
19		DOUBLE 1/2"ø STRANDS LIFTING LOOPS	4
20			

APPROVAL STAMP:

RECEIVED
OK'D BY DRP OK'D BY CWC
JUL 10 2007
RESUBMIT ____ APPROVED ____
BY RAW DATE 7/12/07

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.A. McDONALD, INC.
CONTRACTOR
LYNDON, VERMONT

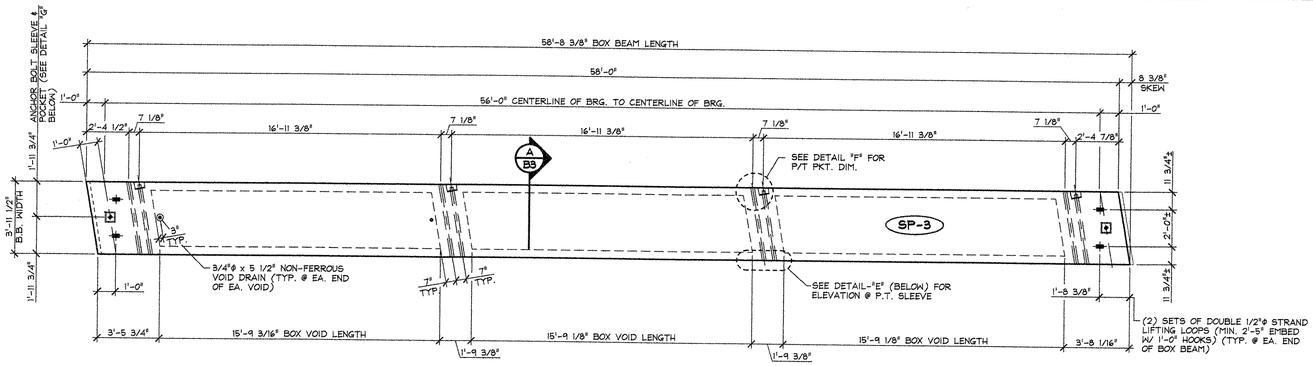
STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

TOWN OF SPRINGFIELD
VERMONT ROUTE 11
BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)

BOX BEAM SECTIONS & DETAILS

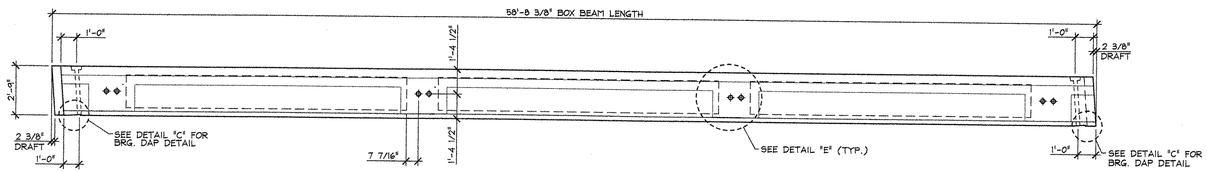
DATE: JUNE 20, 2007
SCALE: NOTED
CHKD: D.F. DFTM: T.J.D
JOB NO: 23258-007
DWG. NO: B2

F:\VT-Bridges\23258-007 Springfield Bridge\B2.dwg, 7/6/2007 11:53:35 AM



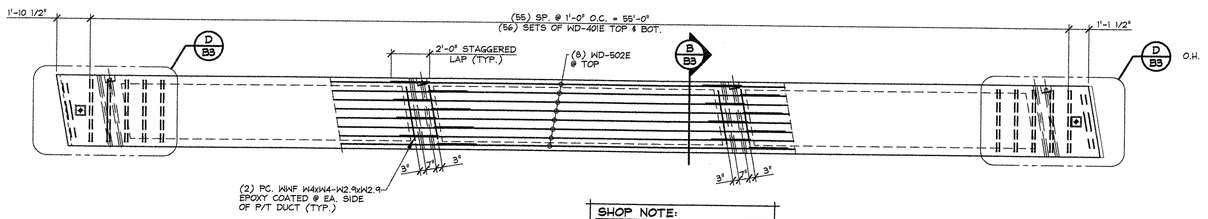
1/B3 DIMENSIONAL PLAN VIEW IN FORM

1/4" = 1'-0"



2/B3 ELEVATION VIEW IN FORM

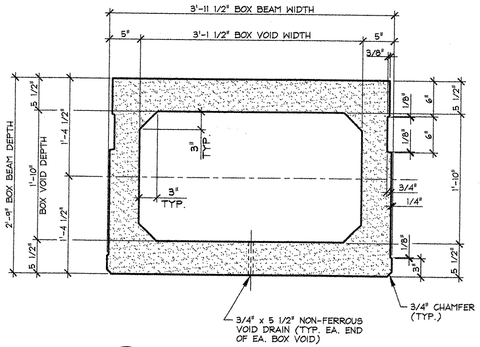
1/4" = 1'-0"



3/B3 REINFORCING PLAN VIEW IN FORM

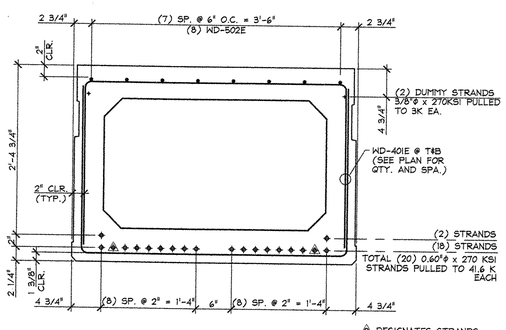
1/4" = 1'-0"

SHOP NOTE:
ADJUST REINFORCING SPACING AS REQUIRED TO CLEAR P.T. SLEEVES, INSERTS, ETC.



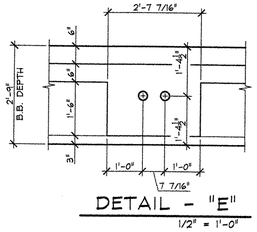
A/B3 DIMENSIONAL SECTION

1" = 1'-0"



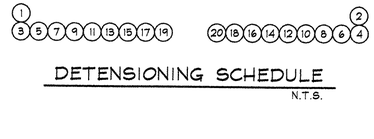
B/B3 REINFORCING SECTION

1" = 1'-0"



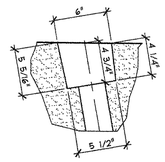
DETAIL - "E"

1/2" = 1'-0"



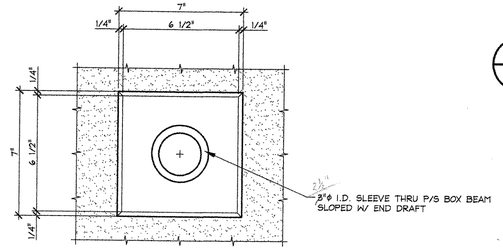
DETENSIONING SCHEDULE

N.T.S.

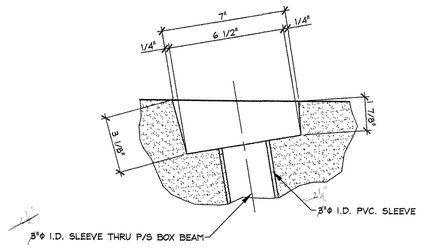


DETAIL - "F"

1 1/2" = 1'-0"

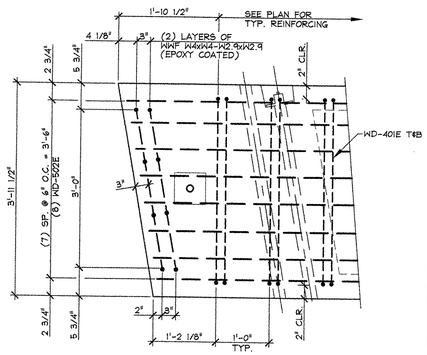


PLAN VIEW



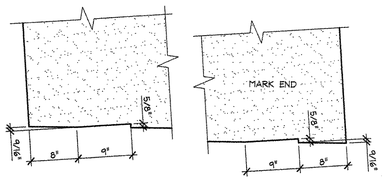
DETAIL - "G"

3" = 1'-0"



D/B3 END BLOCK REINFORCING DETAIL

1" = 1'-0"



C/B3 BRG. BLOCKOUT DETAILS

1" = 1'-0"

MARK: SP-3	QTY.: 1	WT.: 27.58 T	VOL.: 13.62 cy

MATERIAL LIST / VOIDED BOX BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	401	#4 BENT BAR (EPOXY COATED)	112
2	502	#5 x 57'-8" (W/ (3) 2'-0" STAGGERED LAPS)	8
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15		WWF W4xW4-W2.9xW2.9 [2'-0" x 3'-0"] (EPOXY COATED)	8
16		3'-1 1/2" x 1'-10" x 15'-9 3/16" BOX VOID	3
17		3/4"ϕ x 5 1/2" NON-FERROUS VOID DRAINS	6
18		DOUBLE 1/2"ϕ STRANDS LIFTING LOOPS	4
19			

APPROVAL STAMP:

RECEIVED
CK'D BY DEP OK'D BY CWC
JUL 10 2007
RESUBMIT ____ APPROVED ✓
BY PRW DATE 7/12/07

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.A. McDONALD, INC.
CONTRACTOR
LYNDON, VERMONT

STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

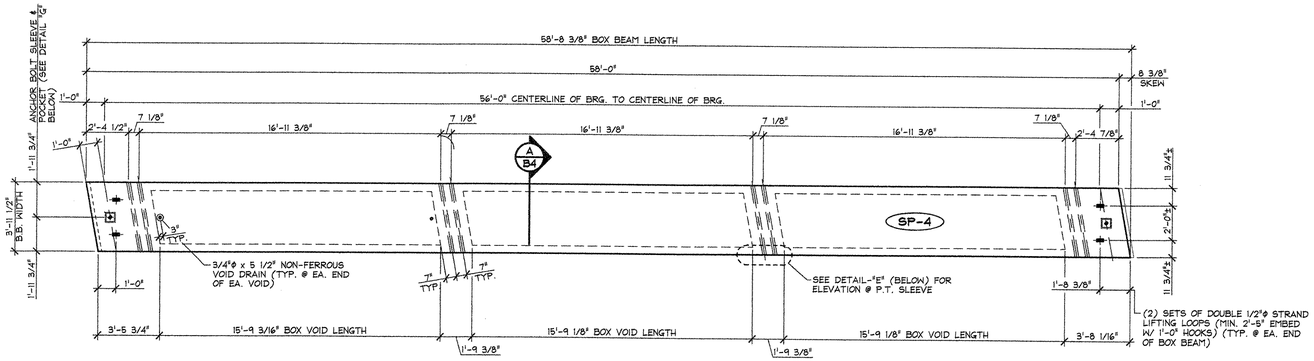
DATE: JUNE 20, 2007
SCALE: NOTED
CHKD: D.F. DFTM: T.J.D
JOB NO: 23258-007

TOWN OF SPRINGFIELD
VERMONT ROUTE 11
BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)

BOX BEAM SECTIONS & DETAILS

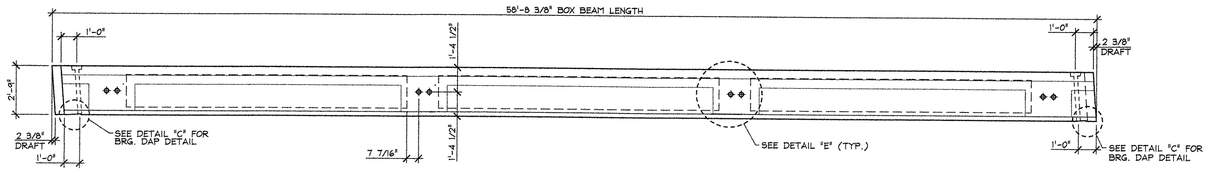
DWG. NO: B3

F:\VT-Bridges\23258-007 Springfield Bridge\B3.dwg, 7/6/2007 11:49:31 AM



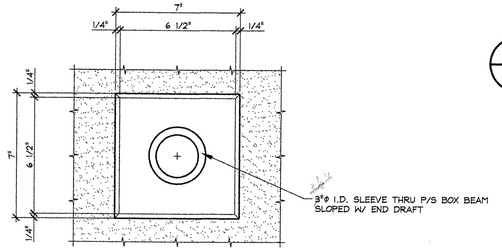
1 B4 DIMENSIONAL PLAN VIEW IN FORM

1/4" = 1'-0"

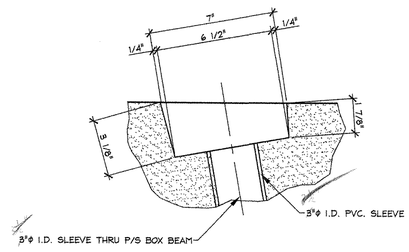


2 B4 ELEVATION VIEW IN FORM

1/4" = 1'-0"

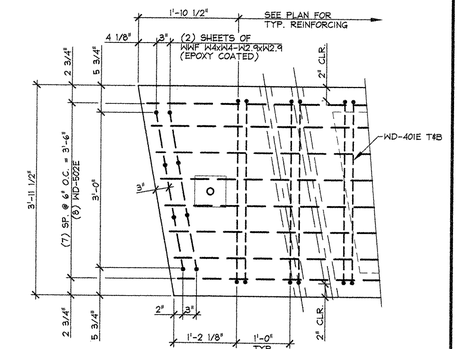


PLAN VIEW



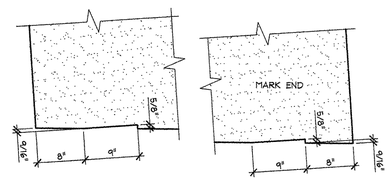
DETAIL - "G"

3" = 1'-0"



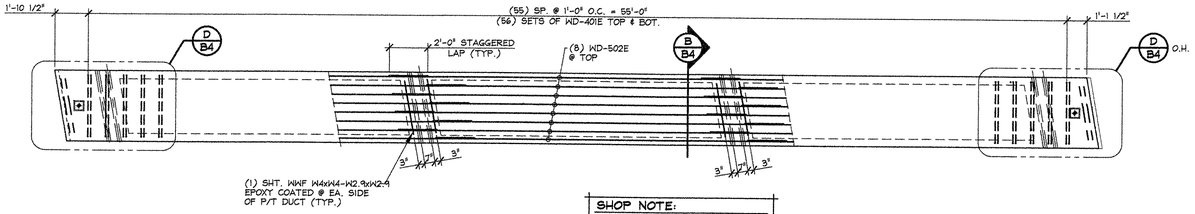
D B4 END BLOCK REINFORCING DETAIL

1" = 1'-0"



C B4 BRG. BLOCKOUT DETAILS

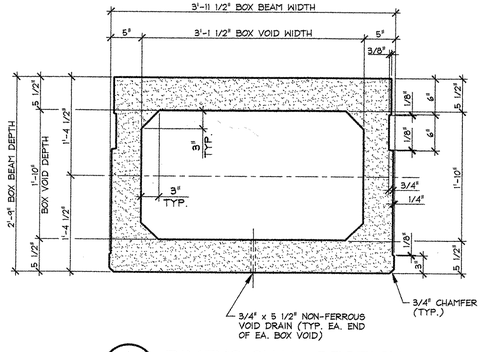
1" = 1'-0"



3 B4 REINFORCING PLAN VIEW IN FORM

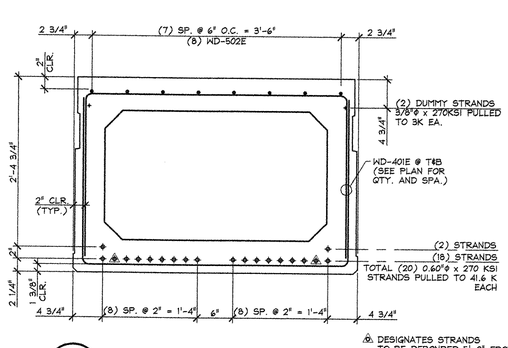
1/4" = 1'-0"

SHOP NOTE:
ADJUST REINFORCING SPACING AS REQUIRED TO CLEAR P.T. SLEEVES, INSERTS, ETC.



A B4 DIMENSIONAL SECTION

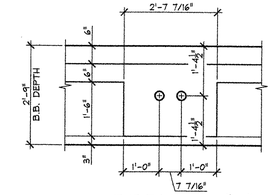
1" = 1'-0"



B B4 REINFORCING SECTION

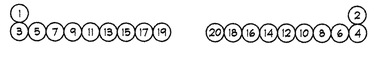
1" = 1'-0"

Ⓓ DESIGNATES STRANDS TO BE DEBONDED 5'-0" FROM EA. END



DETAIL - "E"

1/2" = 1'-0"



DETENSIONING SCHEDULE

N.T.S.

MARK: SP-4	QTY.: 6	WT.: 27.58 T	VOL.: 13.62 cy

MATERIAL LIST / VOIDED BOX BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	401	#4 BENT BAR (EPOXY COATED)	112
2	502	#5 x 57'-8" (W/ (3) 2'-0" STAGGERED LAPS)	8
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15		WWF W4xW4-W2.9xW2.9 [2'-0" x 3'-0"] (EPOXY COATED)	8
17		3'-1 1/2" x 1'-10" x 15'-9 3/16" BOX VOID	3
18		3/4"ø x 5 1/2" NON-FERROUS VOID DRAINS	6
19		DOUBLE 1/2"ø STRANDS LIFTING LOOPS	4
20			

APPROVAL STAMP:

RECEIVED
CK'D BY DRP CK'D BY
JUL 10 2007
RESUBMIT APPROVED
BY DATE 7/12/07

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 OSE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.A. McDONALD, INC.
CONTRACTOR
LYNDON, VERMONT

STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

DATE: JUNE 20, 2007
SCALE: NOTED

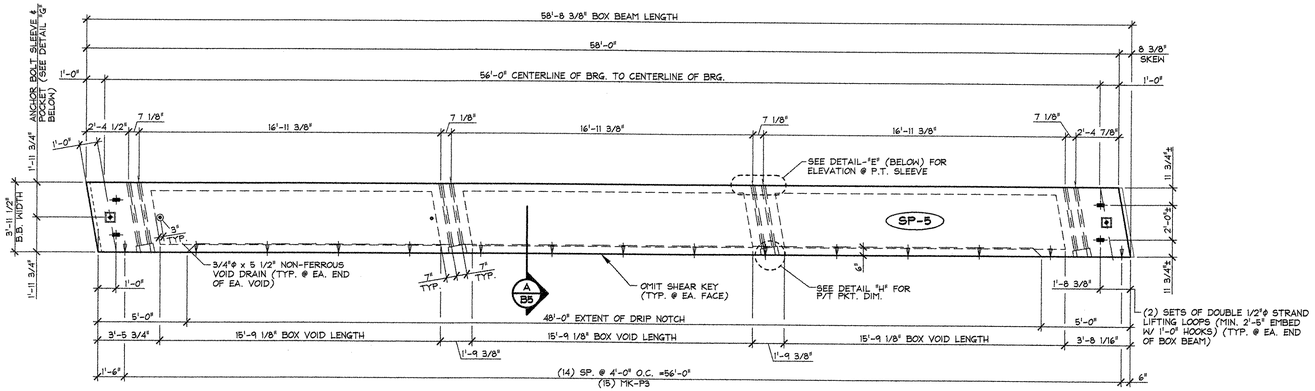
TOWN OF SPRINGFIELD
VERMONT ROUTE 11
BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)

CHKD: D.F. DFTM: T.J.D
JOB NO: 23258-007

BOX BEAM SECTIONS & DETAILS

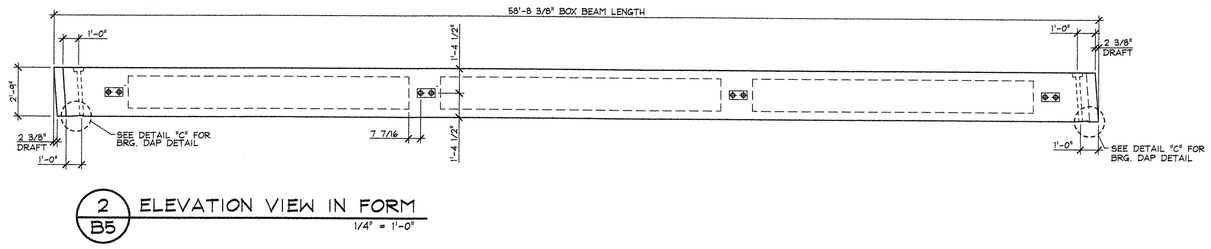
DWG. NO: B4

F:\VT-Bridges\23258-007 Springfield Bridge\B4.dwg, 7/6/2007 11:49:12 AM



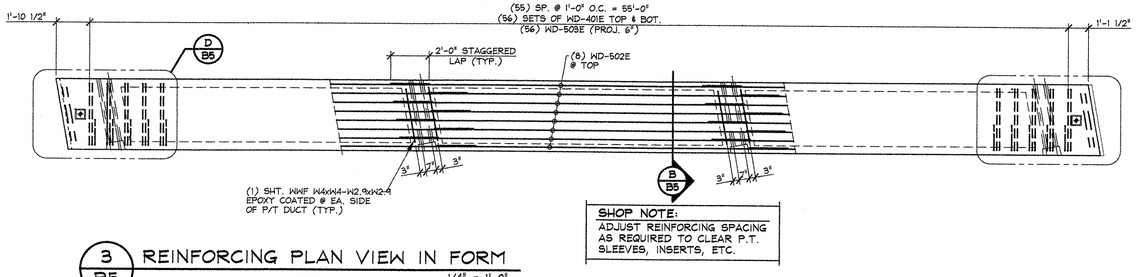
1 / B5 DIMENSIONAL PLAN VIEW IN FORM

1/4" = 1'-0"



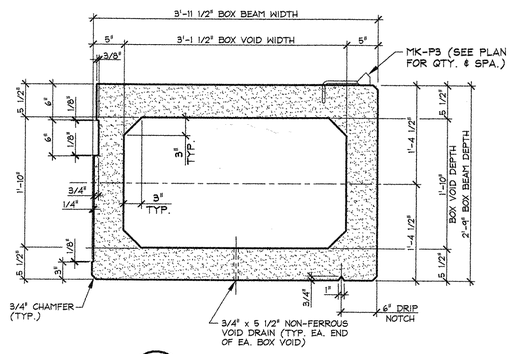
2 / B5 ELEVATION VIEW IN FORM

1/4" = 1'-0"



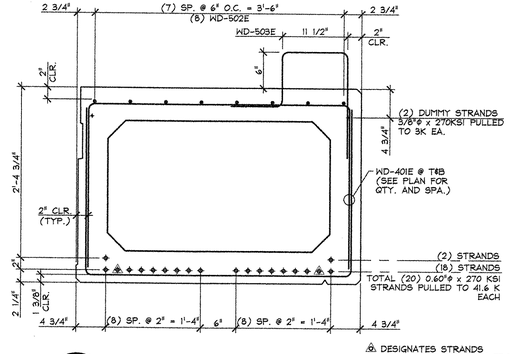
3 / B5 REINFORCING PLAN VIEW IN FORM

1/4" = 1'-0"



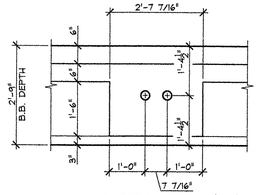
A / B5 DIMENSIONAL SECTION

1" = 1'-0"



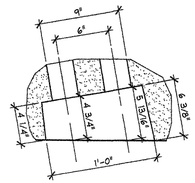
B / B5 REINFORCING SECTION

1" = 1'-0"



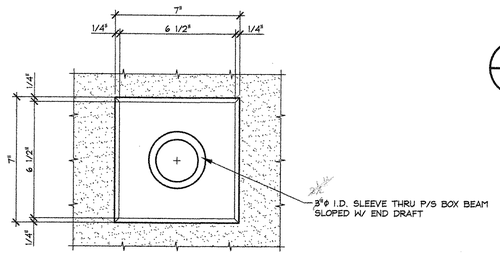
DETAIL - "E"

1/2" = 1'-0"

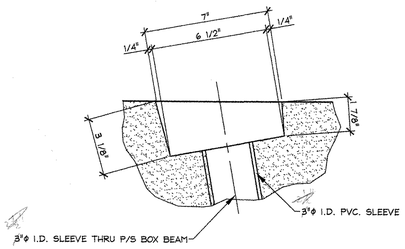


DETAIL - "H"

1 1/2" = 1'-0"

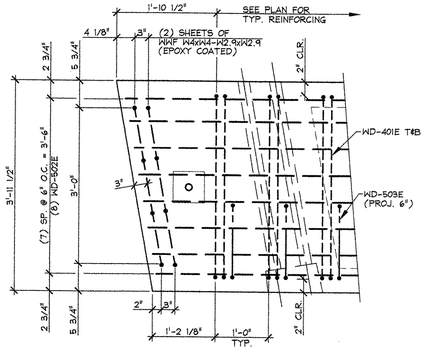


PLAN VIEW



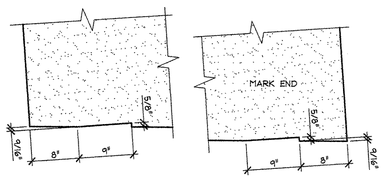
DETAIL - "G"

3" = 1'-0"



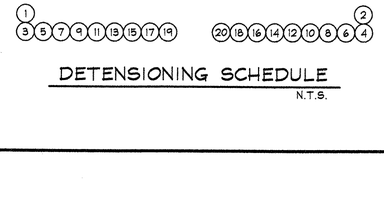
D / B5 END BLOCK REINFORCING DETAIL

1" = 1'-0"



C / B5 BRG. BLOCKOUT DETAILS

1" = 1'-0"



DETENSIONING SCHEDULE

N.T.S.

MARK: SP-5	QTY.: 1	WT.: 27.58 T	VOL.: 13.62 cy

MATERIAL LIST / VOIDED BOX BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	401	#4 BENT BAR (EPOXY COATED)	112
2	502	#5 x 57'-8" (W/ (3) 2'-0" STAGGERED LAPS)	8
3	503	#5 BENT BAR (EPOXY COATED)	56
4			
5			
6			
7			
8			
9			
10			
11			
12			
13		WWF W4xW4-W2.9xW2.9 [2'-0"x3'-0"] (EPOXY COATED	8
14	MK-P3	DAYTON C-24 TYPE 4-APR PRESS-STEEL PRECAST HALF HANGER (GALV.)	15
15		3'-1 1/2" x 1'-10" x 15'-9 1/8" BOX VOID	3
16		3/4"ø x 5 1/2" NON-FERROUS VOID DRAINS	6
17		DOUBLE 1/2"ø STRANDS LIFTING LOOPS	4
18			

APPROVAL STAMP:

RECEIVED
CK'D BY DRP OK'D BY CWC
JUL 10 2007
RESUBMIT ____ APPROVED ✓
BY [signature] DATE 7/12/07

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.A. McDONALD, INC.
CONTRACTOR
LYNDON, VERMONT

STATE OF VERMONT A.O.T.
COUNTY OF WINDSOR

DATE: JUNE 20, 2007
SCALE: NOTED

TOWN OF SPRINGFIELD
VERMONT ROUTE 11
BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)

CHKD: D.F. DFTM: T.J.D
JOB NO: 23258-007

BOX BEAM SECTIONS & DETAILS

DWG. NO: B5

F:\VT-Bridges\23258-007 Springfield Bridge\B5.dwg, 7/6/2007 11:48:59 AM

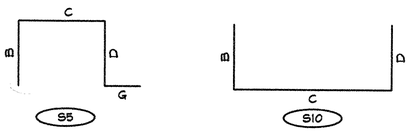
1681

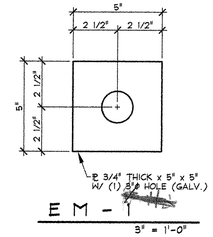
BENT BARS, TIES, & STIRRUPS

ITEM	MARK	QTY.	SIZE	LENGTH	TYPE	A	B	C	D	E	F/R	G	H	J	K	O	GRADE	REMARKS
1	401E	1680	#4	8'-1 1/2"	S10		2'-4"	3'-7 1/2"	2'-4"								60	EPOXY COATED
2	502E	120	#5	57'-8"	STR.												60	E.C. W/ (3) 2'-0" STAGGERED LAPS
3	503E	112	#5	3'-8 1/2"	S5		1'-6"	11 1/2"	9 3/8"			9"					60	EPOXY COATED
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11				Additional Bar														
12				For Test Purposes														
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		

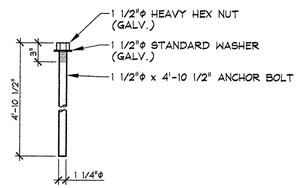
MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	EM-1	16	PL 3/4" x 5" x 5" W/ (1) 3"ø HOLE (GALV.)	FOR ERECTION, SEE DETAIL THIS SHEET
2		4	1/2"ø POLYSTRAND x 36'-0"	FOR ERECTION
3		4	1/2"ø POLYSTRAND x 64'-0"	FOR ERECTION
4		1620	1 1/2"ø x 4'-10 1/2" GALV. ANCHOR BOLT	FOR ERECTION, SEE DETAIL THIS SHEET
5	EM-3	30	PL 1/2" x 5" x 5" W/(1) 1 1/2"ø HOLE (GALV.)	" " "
6	MK-P3	30	DAYTON C-24 TYPE 4-APRPRESS-STEEL HALF HANGER	GALVANIZE
7				
8				
9				
10		21	3'-1 1/2" x 1'-10" x 16'-4 5/16" BOX VOID	
11		24	3'-1 1/2" x 1'-10" x 15'-9 1/8" BOX VOID	
12				
13		90	3/4"ø x 5 1/2" NON-FERROUS VOID DRAIN	
14		60	DOUBLE 1/2"ø STRAND LIFTING LOOPS	
15		120	WWF W4xW4-W2.9xW2.9 [2'-0" x 3'-0"]	EPOXY COATED
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

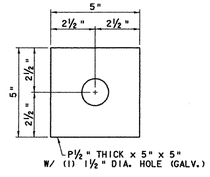




E M - 1
3" = 1'-0"



ANCHOR BOLT DETAIL
1" = 1'-0"



EM - 3
3" = 1'-0"

0

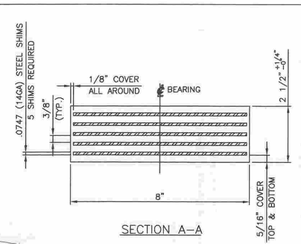
SHS 1½"ø

EM-3

RECEIVED
CK'D BY DRP OK'D BY RMC
JUL 10 2007
RESUBMIT ____ APPROVED AS NOTED
BY RAW DATE 7/12/07

APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2484 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	J.A. McDONALD, INC. CONTRACTOR LYNDON, VERMONT
	STATE OF VERMONT A.O.T. COUNTY OF WINDSOR	DATE: JUNE 20, 2007 SCALE: NOTED
	TOWN OF SPRINGFIELD VERMONT ROUTE 11 BRIDGE NO.: 55 PROJECT NO.: ST CULV(5)	CHKD: D.F. DFTM: T.J.D. JOB NO: 23258-007
	MATERIALS LIST	DWG. NO: M1

F:\VT-Bridges\23258-007 Springfield Bridge\23258-M1.dwg, 7/6/2007 11:48:41 AM

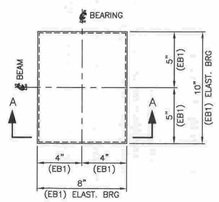


SECTION A–A

60 LAMINATED ELASTOMERIC BEARING PADS, EB1

LAMINATED ELASTOMERIC BEARING 2 1/2" x 8" x 10"
IN ACCORDANCE WITH SECTION 731.03 OF THE STATE OF
VERMONT AGENCY OF TRANSPORTATION STANDARD
SPECIFICATION FOR CONSTRUCTION AND MAINTENANCE OF
HIGHWAYS, STREETS AND BRIDGES.
ELASTOMER – 60 DUROMETER NEOPRENE GR. 3
SHIMS – AASHTO M270 GR 50

Design Load/Brg = 59K



RECEIVED
JUN 28 2007
CK'D BY _____ DK'D BY _____
RESUBMIT _____ APPROVED As Noted
BY RJW DATE 6/29/07

ELASTOMERIC BEARINGS

TYPE: LAMINATED

STATE	COUNTY	PROJECT NAME
VT	N/A	SPRINGFIELD

PROJECT NO.: ST CULV(5)

DYNAMIC RUBBER
A DIVISION OF COSMEC, INC.
1501 ROCKY RIDGE RD.
ATHENS, TX 75751

SCALE: NONE	DRAWN BY: SWT DATE: 6/26/2007	CHECKED BY: KYW DATE: 6/26/2007
SHEET 1 OF 1	DRP NO. 9516	
CUSTOMER: J.A. McDONALD, INC.	DRAWING NUMBER: 9516-D1	REV.: 0

REV.	DESCRIPTION	BY	DATE	CK'D	DATE