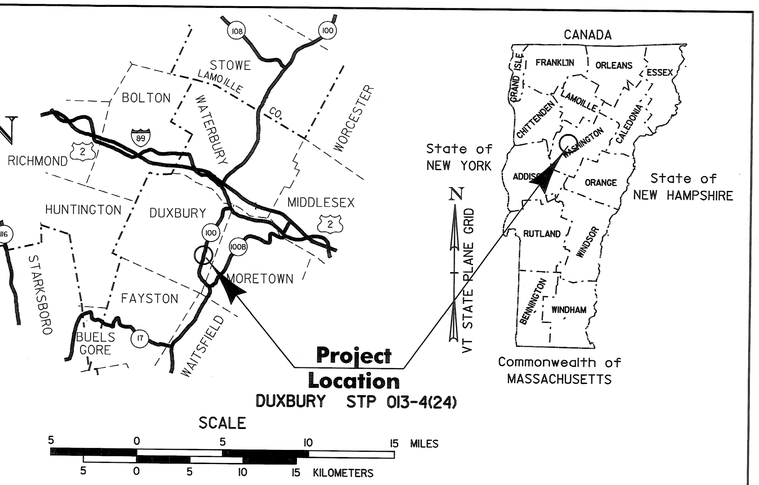
STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF DUXBURY

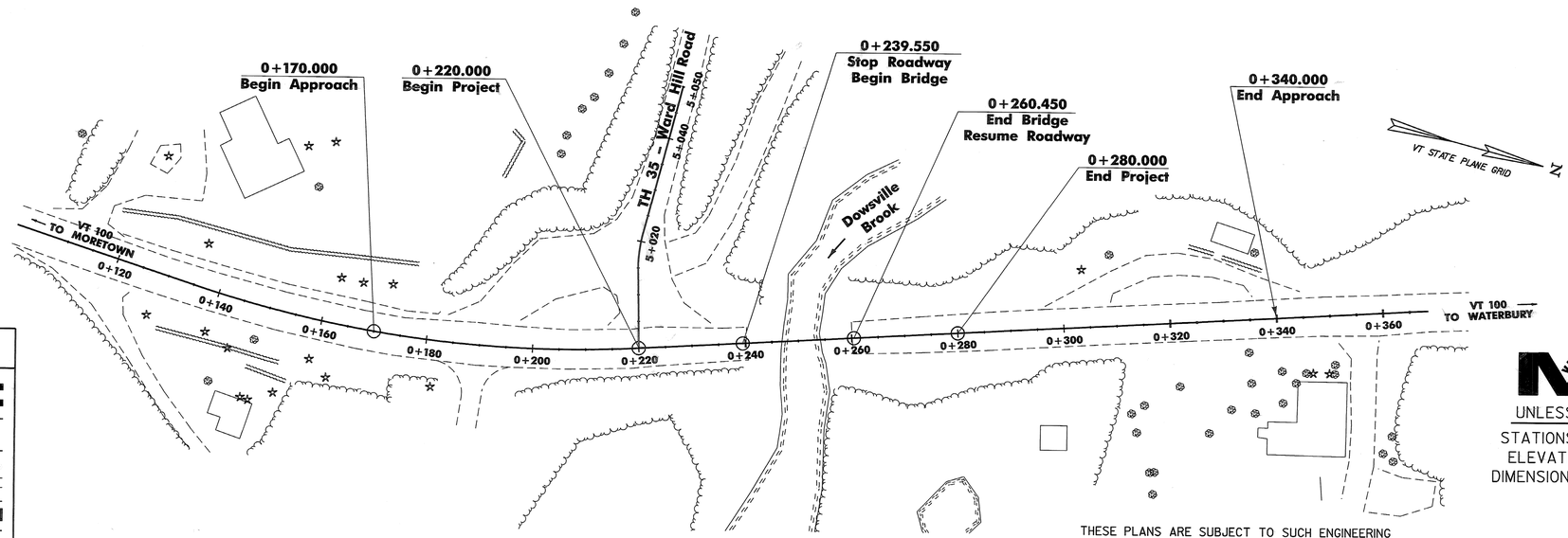
COUNTY OF WASHINGTON

ROUTE NO : VT 100 BRIDGE NO : 187

PROJECT LOCATION : BEGINNING AT A POINT ON VT ROUTE 100, A MINOR ARTERIAL, APPROXIMATELY 0.217 KILOMETERS NORTHERLY OF THE MORETOWN-DUXBURY TOWN LINE AND EXTENDING NORTHERLY ALONG VT ROUTE 100 FOR 0.060 KILOMETERS.

PROJECT DESCRIPTION : WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REPLACEMENT OF BRIDGE #187 OVER DOWSVILLE BROOK WITH NECESSARY ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE : 20.900 METERS.
LENGTH OF ROADWAY : 39.100 METERS.
LENGTH OF PROJECT : 60.000 METERS.



0 10 20 30
SCALE 1:500

RECORD PLANS

CONTRACTOR: AUSTIN CONSTRUCTION INC. - CONCORD, VT

RESIDENT ENGINEER: VIC DWIRE

CONSTRUCTION BEGAN: APRIL 17, 2006

CONSTRUCTION COMPLETE: NOVEMBER 8, 2006

RECORD PLANS BY: VIC DWIRE & BEN LOGAN

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

BY Vic Dwire RESIDENT ENGINEER

DATE 03-23-2010

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.

CONVENTIONAL SYMBOLS

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

SURVEYED BY : L. ORVIS
SURVEYED DATE : MAY 1997

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (1992)

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

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

/PW/86e059/se059br2.dgn se059ti.i PLOTTED 13-SEP-2005

VAOT Metric

UNLESS NOTED OTHERWISE
STATIONS ARE IN KILOMETERS
ELEVATIONS ARE IN METERS
DIMENSIONS ARE IN MILLIMETERS

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED: W. Rob Asst. D. DATE 9-15-05

PROJECT MANAGER : **CRAIG KELLER**

PROJECT NAME : **DUXBURY**
PROJECT NUMBER : **STP 013-4(24)**

SHEET 1 OF 62 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

Metric

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4.	BRIDGE TYPICAL SHEET
5.-6.	QUANTITY SHEETS
7.-10.	ROW SHEETS
11.	TIE SHEET
12.	PLAN SHEET
13.	PROFILE SHEETS
14.	DETOUR PLAN SHEET
15.	DETOUR PROFILE SHEET
16.	BORING PLAN SHEET
17.	BORING LOG SHEET
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24.-28.	EROSION CONTROL DETAIL SHEETS
29.	DRAINAGE PLAN SHEET
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37.	APPROACH SLAB DETAIL SHEET
38.	ABUTMENT TYPICAL SECTION SHEET
39.	ABUTMENT #1 PLAN & ELEVATION SHEET
40.	ABUTMENT #2 PLAN & ELEVATION SHEET
41.	WINGWALL DETAIL SHEET
42.	REINFORCING STEEL SCHEDULE SHEET
43.	PAVEMENT MARKINGS & SIGN SHEET
44.	SIGN SUMMARY SHEET
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46.	NETC RAIL DETAIL SHEET
47.	MATERIAL TRANSITION & SUPERELEVATION DIAGRAMS
48.-53.	MAINLINE CROSS SECTION SHEETS
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60.- 62.	CHANNEL LINE SECTION SHEETS

B-5M	SLOPE GRADING, EMBANKMENTS	1/3/2000
B-11M	UNDERDRAIN - ROCK SUBGRADE, SLOPE STABILIZATION	6/13/1997
B-12M	SIDE ROAD INTERSECTION, DEPRESSED RAMP	1/3/2000
B-17M	GUARD RAIL, TURNOUTS	1/3/2000
B-71	RESIDENTIAL AND COMMERCIAL DRIVES	11/16/2000
D-2M	UNDERDRAIN	6/13/1997
D-3M	TREATED GUTTERS	6/13/1997
D-4M	FLUSHING BASINS, END SECTION	6/13/1997
D-6M	REINF. CONCRETE DROP INLET W/GRATE (DITCHES)	6/13/1997
D-8M	REINFORCED CONCRETE DROP INLET WITH PRECAST COVER & GRATE (BOTTOM SECTION)	1/3/2000
D-9M	REINFORCED CONCRETE DROP INLET TOPS	6/13/1997
D-10M	REINFORCED CONCRETE DROP INLET TOPS	6/13/1997
D-11M	GRATES & COVERS (TYPE A)	6/13/1997
E-100	CONSTRUCTION APPROACH SIGNS	1/2/2004
E-100A	SIDE ROAD CONSTRUCTION APPROACH SIGNS	1/2/2004
E-101	CONSTRUCTION SIGN DETAILS	5/30/2003
E-102	CONSTRUCTION SIGN DETAILS	6/30/2003
E-102A	CONSTRUCTION SIGN DETAILS	8/8/1995
E-106	TRAFFIC CONTROL - MISCELLANEOUS DETAILS	8/8/1995
E-107	DELINEATION, BARRICADES AND DETOURS	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	8/8/1995
E-141	REGULATORY SIGN DETAILS	9/20/1995
E-143	REGULATORY SIGN DETAILS	9/20/1995
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G-1M	STEEL BEAM GUARDRAIL	1/3/2000
G-1DM	ANCHOR FOR STEEL BEAM RAIL	1/3/2000
G-18M	PRECAST CONCRETE TEMPORARY TRAFFIC BARRIER	6/13/1997
G-19M	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	10/15/2002
J-1M	PROJECT AND BOUNDARY MARKERS	6/13/1997
J-3M	MAILBOX SUPPORT DETAILS	6/13/1997

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: March, 2000

DRAINAGE AREA : 18.62 sq. km
CHARACTER OF TERRAIN : Forested, hilly to mountainous
STREAM CHARACTERISTICS : Small to med., stable, perenial, straight
NATURE OF STREAMBED : Cobbles to large boulders

PEAK FLOW DATA

Q 2.33 =	11 cms	Q 50 =	45 cms
Q 10 =	25 cms	Q 100 =	57 cms
Q 25 =	37 cms	Q 500 =	78 cms

DATE OF FLOOD RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @Q50 = 4.0mps
ICE CONDITIONS : Slight
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE: N/A

WATERSHED STORAGE: 1%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single Span Rolled Beam
YEAR BUILT: 1937
CLEAR SPAN(NORMAL TO STREAM): 16.3m
VERTICAL CLEARANCE ABOVE STREAMBED: 4.6 m
WATERWAY OF FULL OPENING: 50 sq m
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	214.7 m	VELOCITY =	2.9 mps
Q10 =	215.3 m	"	4.6 mps
Q25 =	215.6 m	"	4.9 mps
Q50 =	215.8 m	"	5.0 mps
Q100 =	216.2 m	"	3.7 mps*

LONG TERM STREAMBED CHANGES: none

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: N/A
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Duxbury
HIGHWAY # : TH 35
CLEAR SPAN: 2.4 m
YEAR BUILT: Unknown
STRUCTURE TYPE: Steel Boiler Tube
DISTANCE: 4 km
STRUCTURE #: B25
CLEAR HEIGHT: 2.4 m
FULL WATERWAY: 4.5 sq m

DOWNSTREAM STRUCTURE

TOWN: Moretown
HIGHWAY # : VT 100B
CLEAR SPAN: 8.2 m
YEAR BUILT: 1927
STRUCTURE TYPE: Concrete T-Beam Bridge
DISTANCE: 1.6 km
STRUCTURE #: 1
CLEAR HEIGHT: 1.8 m
FULL WATERWAY: 15.0 sq m

LOAD FACTOR LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	33	42					
POSTED	46	59	73		52	54	66
OPERATING		70	87	106	63	64	

COMMENTS: 0

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2005	3900	460	57	6	270
2025	5200	590	57	9	520

20 year ESAL for flexible pavement from 2005 to 2025 : 1,896,000
40 year ESAL for flexible pavement from 2005 to 2045 : 4,856,000
Design Speed : 80 km/h

PROPOSED STRUCTURE

STRUCTURE TYPE: Single Span Steel Girder w/ Integral Abutments

CLEAR SPAN(NORMAL TO STREAM): 19.4 m
VERTICAL CLEARANCE ABOVE STREAMBED: 4.4 m
WATERWAY OF FULL OPENING: 51 sq m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	214.6 m	VELOCITY=	3.2 mps
Q10 =	215.2 m	"	3.5 mps
Q25 =	215.5 m	"	5.0 mps
Q50 =	215.7 m	"	5.3 mps
Q100 =	216.1 m	"	3.6 mps*

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: N/A
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 217.5 m ave
VERTICAL CLEARANCE: @Q100 1.4 m ave

SCOUR: 0.3 m contraction scour @ Q500

REQUIRED CHANNEL PROTECTION: Type IV Stone

PERMIT INFORMATION

AVERAGE DAILY FLOW:	0.4cms	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	0.2cms	0.1m
ORDINARY HIGH WATER:	4.9cms	0.5m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Two-Way Single Span
CLEAR SPAN (NORMAL TO STREAM): 11.2 m (minimum)
VERTICAL CLEARANCE ABOVE STREAMBED: 2.0 m (minimum)
WATERWAY AREA OF FULL OPENING: 20.0 sq m (minimum)

ADDITIONAL INFORMATION

* Velocities for both existing and proposed structures were reported from the downstream fascia of the bridges. The Q100 velocities through the bridges drop off as there is no longer a hydraulic jump induced; as is the case with all other flow regimes.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO MS-22.5
2. DESIGN SPAN 20.44 m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL
   ON LEDGE
4. ALLOWABLE LOAD FOR PILING 623 kN
   TYPE HP 310 X 125 AASHTO M223 GRADE 345
   ESTIMATED LENGTH
5. STRUCTURAL STEEL AASHTO GRADE M270 M/270 GRADE 345 W
6. REINFORCING STEEL GRADE 420
7. CONCRETE, HIGH PERFORMANCE CLASS A f'c : 30 Mpa
   CONCRETE, HIGH PERFORMANCE CLASS B f'c : 25 Mpa
8. SOIL UNIT WEIGHT 140 kcm
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? YES
   IF YES, ON EXISTING STRUCTURE OR ON TEMPORARY BRIDGE: TEMPORARY BRIDGE
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OF TWO WAY TWO-WAY
   TRAFFIC CONTROL SIGNALS REQUIRED NO
   MINIMUM CLEAR SPAN (NORMAL TO STREAM):
   WATERWAY OF FULL OPENING:
   VERTICAL CLEARANCE ABOVE STREAMBED:
   ARE SIDEWALKS REQUIRED? NO
   IF SO, ON WHAT SIDE?
   STRUCTURE TYPE:

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059PI.xls
PROJECT LEADER: T. SUMNER
DESIGNED BY: T. SUMNER
PRELIMINARY INFORMATION SHEET #1

PLOT DATE: 9/20/2005
DRAWN BY: G. SHANGRAW
CHECKED BY: G. SHANGRAW

TYPICAL SECTIONS

45 mm BITUMINOUS CONCRETE PAVEMENT TYPE III

70 mm BITUMINOUS CONCRETE PAVEMENT TYPE II

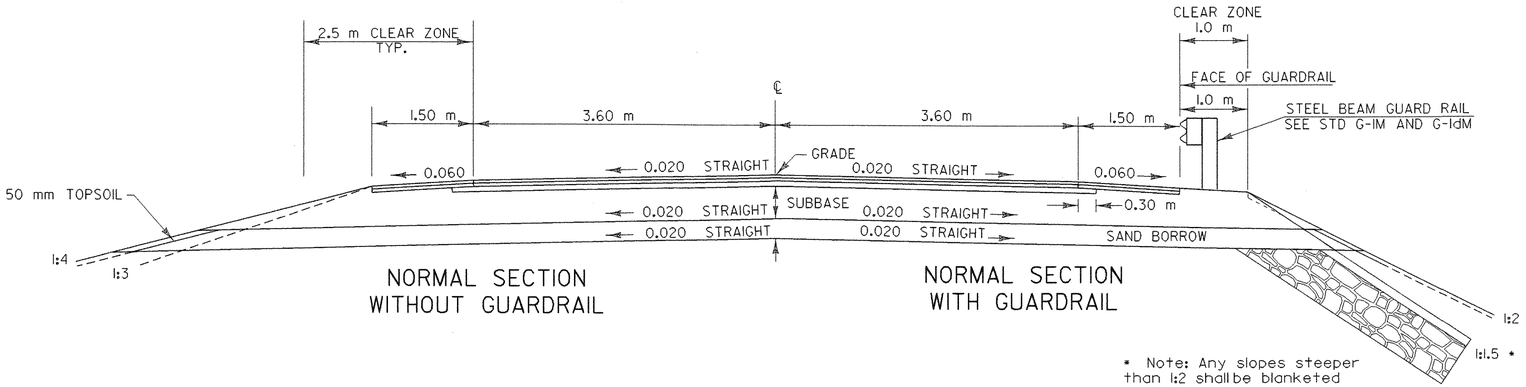
90 mm BITUMINOUS CONCRETE PAVEMENT TYPE I

530 mm SUBBASE OF DENSE GRADED CRUSHED STONE

380 mm SAND BORROW

SHOULDERS: 115 mm BITUMINOUS CONCRETE PAVEMENT
(45mm TYPE III OVER 70mm TYPE II)

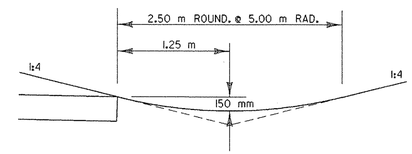
MATERIAL ITEM	TOLERANCE
PAVEMENT	±5 mm TOTAL THICKNESS
SUBBASE	±30 mm
SAND BORROW	±30 mm



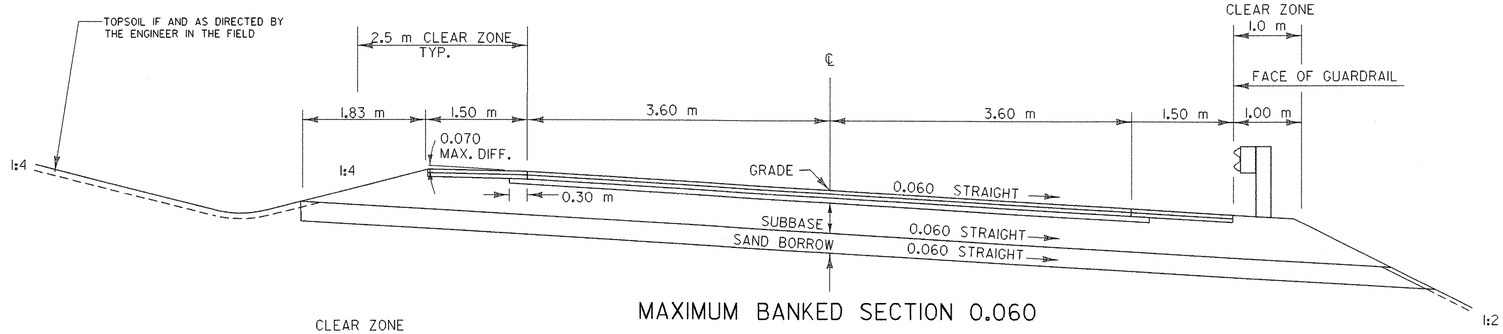
NORMAL SECTION WITHOUT GUARDRAIL

NORMAL SECTION WITH GUARDRAIL

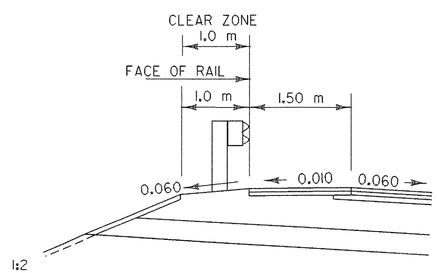
* Note: Any slopes steeper than 1:2 shall be blanketed with 600 mm stone fill, type II. The stone slope shall be covered with 300 mm of suitable excavated earth, seeded, fertilized, and mulched as directed by the resident engineer.



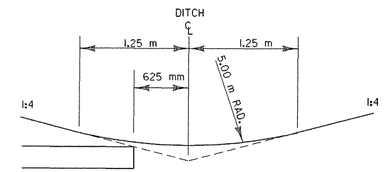
NORMAL SECTION



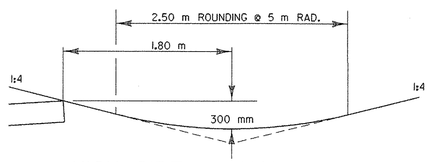
MAXIMUM BANKED SECTION 0.060



HIGH SIDE OF MAX. BANK WITH GUARDRAIL



DETAILS OF DITCH AND BACKSLOPE FOR LOW SIDE OF BANK ≥ 0.042



HIGH SIDE @ MAX. BANKING

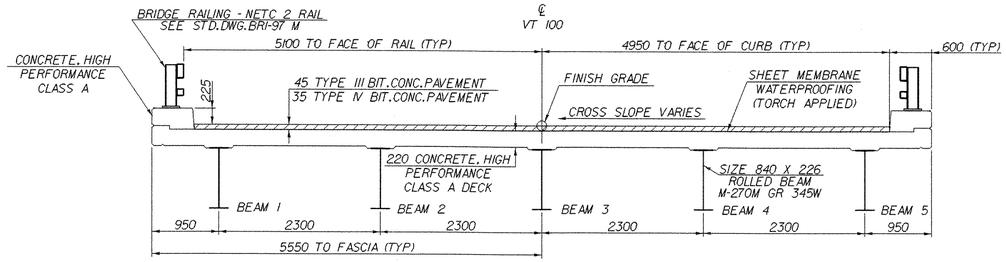
NOT TO SCALE

ROADWAY TYPICAL SHEET

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059typ.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059rty.i

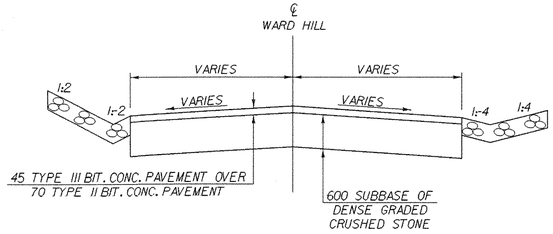
PLOT DATE: 20-OCT-2005
DRAWN BY: Graw
CHECKED BY: T. SUMNER
SHEET 3 OF 62



BRIDGE TYPICAL SECTION

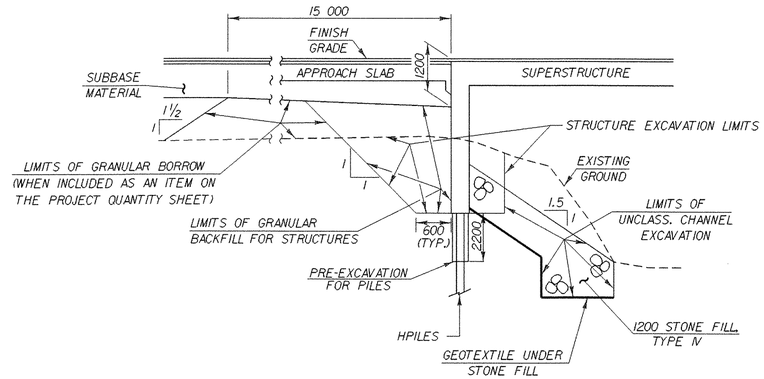
0 1 2 3 4

SCALE = 1:40



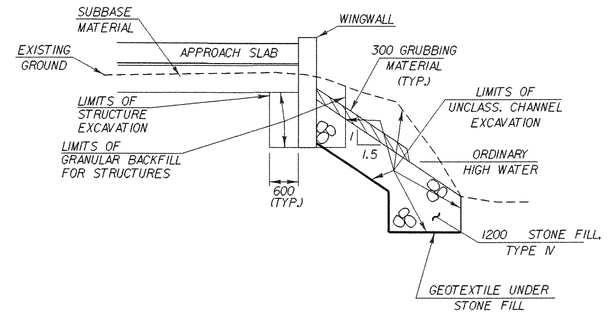
WARD HILL TYPICAL SECTION

(NOT TO SCALE)



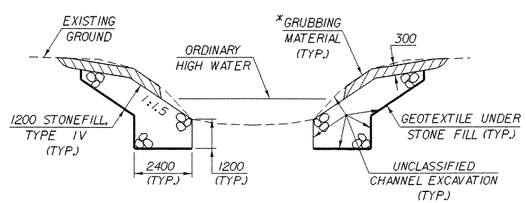
TYPICAL ABUTMENT SECTION

(NOT TO SCALE)



TYPICAL WINGWALL SECTION

(NOT TO SCALE)



TYPICAL CHANNEL SECTION

(NOT TO SCALE)

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

NOTES:

1) MEASUREMENT OF STRUCTURE EXCAVATION SHALL BE MADE BELOW THE LOWER LIMITS OF COMMON EXCAVATION. MEASUREMENT FOR UNCLASSIFIED CHANNEL EXCAVATION SHALL BE MADE OUTSIDE OF THE LIMITS OF STRUCTURE EXCAVATION.
2) THE QUANTITY TO BE MEASURED FOR PAYMENT FOR THE ITEM 204.25 "STRUCTURE EXCAVATION" SHALL BE AS FOLLOWS:
   A) VERTICALLY:
      AS DEFINED IN THE VAOT STANDARD SPECIFICATIONS 204.13 (b), EXCEPT AS NOTED IN NOTE 1.
   B) HORIZONTALLY:
      BETWEEN A VERTICAL PLANE 600 mm OUTSIDE OF THE NEAT LINE OF THE FRONT OF THE ABUTMENT (CHANNEL SIDE) AND AN INCLINED PLANE COMMENCING FROM THE BOTTOM ELEVATION OF THE EXCAVATION OF A POINT 600 mm OUTSIDE THE NEAT LINE OF THE BACK OF THE ABUTMENT (APPROACH SIDE), AND EXTENDING 45° FROM HORIZONTAL .
3) ACTUAL EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY THE EXCAVATION BETWEEN THE LIMITS DESCRIBED IN NOTES 1 AND 2 WILL BE PAID FOR UNDER THE ITEM 204.25 "STRUCTURE EXCAVATION."

WARD HILL TYPICAL SHEET
BRIDGE TYPICAL SHEET

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059typ.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059b+y.i

PLOT DATE: 20-OCT-2005
DRAWN BY: R. H. PELLETT
CHECKED BY: B. NYQUIST
SHEET 4 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

TRAINING	ROADWAY	SUPERSTRUCTURE	CHANNEL	APPROACH SLAB #1	APPROACH SLAB #2	ABUT #1	ABUT #2	EROSION CONTROL	FULL C.E. ITEMS	BRIDGE QUANTITY
1										
1300	1247.8 MAIN LINE 1215.05 WARD HILL				TOTAL = 1462.35					
			320							320
	160									
150	161.94									
130										
110	177.34							10		
						152 85	152 85			170
						39.64	36 35	37.57		70
	360									
	25									
815	799.20							20		
	180									
	600	40				41.09 38	38.99 37			40 136.94 133
		56	56.86							
	6.09			25 23.26	25 25.26					50
						12	13			25
						1				1
						52	52			104
		25305								25305
	310	13110		1665	1665	3665	3670			23975
		1								1
		14				8	8			30
		11								11
		207								207
		54								54
		1								1
		126								126
		1								1
		10								10
	41 39.5									
	41									
	41									
	20 20.4									
	20									
	20									
	3									
	2							1		
	145									
	30 43.11									
								20		
								10		
								5 28.08		
	310 358.5									

TOTALS

ROUND	GRAND TOTAL	FINAL
	1	
	1300	
	320	
	160	
	150	
	130	
	120	
	170	
	70	
	360	
	25	
	835	
	180	
	640	
	133	
	50	
	25	
	1	
	104	
	25305	
	24285	
	1	
	30	
	11	
	207	
	54	
	1	
	125	
	1	
	10	
	41	
	41	
	41	
	20	
	20	
	20	
	3	
	3	
	145	
	30	
	20	
	10	
	5	
	310	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
LS	CLEARING AND GRUBBING (INCLUDING INDIVIDUAL TREES AND STUMPS)	201.10
CM	COMMON EXCAVATION	203.15
CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27
CM	EXCAVATION OF SURFACES AND PAVEMENTS	203.28
CM	SAND BORROW	203.31
CM	GRANULAR BORROW	203.32
CM	TRENCH EXCAVATION OF EARTH	204.20
CM	STRUCTURE EXCAVATION	204.25
CM	GRANULAR BACKFILL FOR STRUCTURES	204.30
SM	COLD PLANING BIT.PAVEMENT	210.10
CM	SUBBASE OF CRUSHED GRAVEL (FINE GRADED)	301.26
CM	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35
KG	EMULSIFIED ASPHALT	406.65
T	BITUMINOUS CONCRETE PAVEMENT (PG 64-34)	460.25
CM	CONCRETE, HIGH PERFORMANCE, CLASS A	501.33
CM	CONCRETE, HIGH PERFORMANCE, CLASS B	501.34
M	PRE-EXCAVATION OF INTEGRAL ABUTMENT PILES	503.20
LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10
M	STEEL PILING FOR INTEGRAL ABUTMENTS (HP310x125)	505.26
KG	STRUCTURAL STEEL (ROLLED BEAM)	506.50
KG	EPOXY COATED REINFORCING STEEL	507.17
LS	SHEAR CONNECTORS (550 - 22 X 180)	508.15
L	WATER REPELLENT (MOD. - SILANE)	514.10
M	BRIDGE EXPANSION JOINT (ASPHALTIC PLUG)	516.10
SM	SHEET MEMBRANE WATERPROOFING (MOD. - TORCH APPLIED)	519.20
M	BRIDGE RAILING - NETC 2 RAIL	525.33
LS	TWO-WAY TEMPORARY BRIDGE (110 SM - EST.) (MOD.)	525.11
SM	REMOVAL OF BRIDGE PAVEMENT	529.10
EACH	REMOVAL OF STRUCTURE (117 SM - EST.)	529.15
EACH	BEARING DEVICE ASSEMBLY (INTEGRAL ABUTMENT)	531.10
	BEGIN OPTION ITEMS	
M	450 mm CSP 1.63 mm (68 mm X 12 mm)	601.0015
M	450 mm RCP CLASS III	601.0815
M	450 mm CPEP	601.0915
M	600 mm CSP 1.63 mm (68 mm X 12 mm)	601.0025
M	600 mm RCP CLASS III	601.0825
M	600 mm CPEP	601.0920
	END OPTION ITEMS	
EACH	CAST IRON GRATE WITH FRAME, TYPE B	604.46
HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25
CM	DUST CONTROL WITH WATER	609.10
CM	STONE FILL, TYPE I	613.10
CM	STONE FILL, TYPE I (MOD. - CHECK DAM)	613.10
CM	STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)	613.10
CM	STONE FILL, TYPE I (MOD. - INLET PROTECTION)	613.10
CM	STONE FILL, TYPE II	613.11

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /PW/86e059/se059qs.xls
PROJECT MANAGER: T. SUMNER
DESIGNED BY: T. SUMNER
QUANTITY SHEET #1

PLOT DATE: 10/17/2005
DRAWN BY: G. SHANGRAW
CHECKED BY: G. SHANGRAW

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TODD 12-1-06
FORGOT ABUT. 2
IN DESIGN FOLDER

QUANTITY SHEET

Metric

SUMMARY OF ESTIMATED QUANTITIES

TRAINING	ROADWAY	SUPERSTRUCTURE	CHANNEL	APPROACH SLAB #1	APPROACH SLAB #2	ABUT #1	ABUT #2	EROSION CONTROL	FULL C.E. ITEMS	BRIDGE QUANTITY
			385 / +385	383.36						385
	1									
	3									
	130							350		
	3									
	4									
	1									
	92									
	225									
	21									
	80									
	100									
									1	
									1	
									1	
									1	
520										
	1									
	311									
	320									
	5									
	4									
	310									
	320									
	5									
	4									
	100									
	6									
	385		350							350
								155		
								15		
								90		
								0.69		
								0.69		
								75		
			550							550
								1		
								50		
								1		
								45		
	3									
	17									
	13									
	1									

TOTALS

ROUND	GRAND TOTAL	FINAL
	385	
	1	
	3	
	350	
	130	
	3	
	4	
	1	
	92	
	225	
	21	
	80	
	100	
	1	
	1	
	1	
	1	
	520	
	1	
	311	
	320	
	5	
	4	
	310	
	320	
	5	
	4	
	100	
	6	
	735	
	155	
	15	
	90	
	0.69	
	0.69	
	75	
	550	
	1	
	50	
	1	
	45	
	3	
	17	
	13	
	1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER
CM	STONE FILL, TYPE IV	613.73
EACH	RELOCATE MAIL BOX, SINGLE SUPPORT	617.10
EACH	STEEL MARKER POSTS	619.16
M	SNOW FENCE (MOD. - PDF)	620.70
M	STEEL BEAM GUARD RAIL (GALVANIZED)	621.20
EACH	MANUFACTURED TERMINAL SECTIONS (FLARED)	621.905
EACH	ANCHOR FOR STEEL BEAM RAIL	621.60
EACH	GUARD RAIL APPR. SECTION NETC 2 RAIL	621.72
M	REMOVL AND DISP OF GUARD RAIL	621.80
M	TEMPORARY TRAFFIC BARRIER	621.90
M	SLEEVES FOR UTILITIES (1 SLEEVE x 150 DIA.)	625.10
HR	UNIFORMED TRAFFIC OFFICERS	630.10
HR	FLAGGERS	630.15
LS	FIELD OFFICE-ENGINEERS	631.10
LS	TESTING EQUIPMENT - CONCRETE	631.16
LS	TESTING EQUIPMENT - BITUMINOUS	631.17
LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25
HR	EMPLOYEE TRAINEESHIP	634.10
LS	MOBILIZATION/DEMOBILIZATION	635.11
M	DURABLE 100 mm WHITE LINE (THERMOPLASTIC)	646.40
M	DURABLE 100 mm YELLOW LINE (THERMOPLASTIC)	646.41
M	DURABLE 600 mm STOP BAR (THERMOPLASTIC)	646.46
EACH	DURABLE LETTER OR SYMBOL (THERMOPLASTIC)	646.50
M	TEMPORARY 100 mm WHITE LINE	646.60
M	TEMPORARY 100 mm YELLOW LINE	646.61
M	TEMPORARY 600 mm STOP BAR	646.66
EACH	TEMPORARY LETTERS OR SYMBOLS	646.70
EACH	LINE STRIPING TARGETS	646.76
SM	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85
SM	GEOTEXTILE UNDER STONE FILL	649.31
SM	GEOTEXTILE FOR SILT FENCE	649.51
KG	SEED	651.15
KG	FERTILIZER	651.18
T	AGRICULTURAL LIMESTONE	651.20
T	HAY MULCH	651.25
CM	TOPSOIL	651.35
SM	GRUBBING MATERIAL	651.40
LS	EROSION & SEDIMENT CONTROL PLAN	652.10
HR	MONITORING EROSION & SEDIMENT CONTROL PLAN	652.20
LU	MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30
SM	EROSION MATTING (STRAW MATTING)	654.10
SM	TRAFFIC SIGNS, TYPE A	675.20
M	FLANGED CHANNEL SIGN POST	675.301
EACH	REMOVING SIGNS	676.50
EACH	ERECTING SALVAGED SIGNS	676.60

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /PW/se059/se059qs.xls
PROJECT MANAGER: T. SUMNER
DESIGNED BY: T. SUMNER
QUANTITY SHEET #2

PLOT DATE: 10/17/2005
DRAWN BY: G. SHANGRAW
CHECKED BY: G. SHANGRAW
SHEET 6 OF 62

Metric

STATE OF VERMONT
AGENCY OF TRANSPORTATION
RIGHT OF WAY PLANS
DETAIL SHEET

TABLE OF PROJECT PROPERTY ACQUISITION

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS			TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS
1	HARDIN, SUSAN G. &	12	0+206.8 LT.	0+214.4 LT.			CONST.	(T)	8 SM±	WDOE	08-08-03	DUXBURY	89	18-	86.1 S.F.±
	BAUER, ERIC C.		0+209.2 LT.	0+210.8 LT.			SLOPE	(T)	1.3 SM±					19	14.0 S.F.±
			0+210.3 LT.	0+214.5 LT.			DITCH & DRAINAGE	(P)	5.0 SM±						53.8 S.F.±
2A	STARCK, JOAN B.	12	0+190.6 LT.	0+210.3 LT.			SLOPE	(T)	186.2 SM±	WD	08-08-03	DUXBURY	89	20-	2,004.8 S.F.±
			0+210.3 LT.	0+213.0 LT.			DITCH & DRAINAGE	(P)	1.5 SM±					22	16.1 S.F.±
			0+212.0 LT.				CULVERT	(P)							INCL. DI
2B			0+199.2 RT.	0+250.2 RT.			DETOUR	(T)	0.07 HA±						TWO WAY VEHICULAR 0.17A±;
															INCLUDES EROSION CONTROL
			0+213.0 RT.	0+237.0 RT.			SLOPE	(P)	88.4 SM±						951.6 S.F.±
			0+237.0 RT.	0+245.6 RT.			CHANNEL	(P)	35 SM±						376.7 S.F.±
2C			0+186.3 RT.	0+250.2 RT.	0.11HA±		ALL R.T. & I.								HWY. EASE. VT. RTE. 100 &
															T.H. #35 (0.27A±)
3A	ADAMS, ROBERT D.	12	0+228.0 LT.	0+239.3 LT.			SLOPE	(T)	39.9 SM±	WD	05-12-04	DUXBURY	92	24-	429.5 S.F.±
														25	
			0+228.3 LT.				INSTALL	(P)							GUARDRAIL
			0+232.0 LT.	0+232.8 LT.			CULVERT	(P)							
			0+239.3 LT.	0+248.0 LT.			CHANNEL	(P)	14.4 SM±						155.0 S.F.±
			0+229.0 LT.	0+239.3 LT.			DITCH & DRAINAGE	(P)	14.0 SM±						150.7 S.F.±
			T.H. #35 5+017.4 RT.				DRIVE	(T)							GRAVEL 5.6M
			0+238.0 LT.	0+249.6 LT.			INSTALL	(T)	91.2 SM±						EROSION CONTROL
															982.2 S.F.±
			0+231.0 LT.	0+239.3 LT.			DITCH & DRAINAGE	(P)	4.5 SM±						48.4 S.F.±
3B		12	0+212.5 LT.	0+252.6 LT.	378.7 SM±		ALL R.T. & I.								HWY. EASE. VT. RTE. 100 &
															T.H. #35 (4,076 S.F.±)

REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY
1	12	PARCEL NO. 1 HARDIN & BAUER. CHANGE THE DIT. (P) ON THE LAYOUT TO A DITCH & DRAINAGE (P). PER C.O. 9234.	05-08-02	M. J. R.	R. P. D.
2	10, 12	PARCEL NO. 2 STARCK. CHANGE THE DITCH (P) TO DITCH & DRAINAGE (P) ON BOTH THE DETAIL SHEET AND LAYOUT. PER C.O. 9235.	05-08-02	M. J. R.	R. P. D.
3	12	PARCEL NO. 3 ADAMS. CHANGE THE DITCH (P) TO A DITCH & DRAINAGE (P) ON THE DETAIL SHEET ONLY. PER C.O. 9236.	05-08-02	M. J. R.	R. P. D.
4	10, 12	PARCEL NO. 2 STARK. REMOVE HEBERT FROM TITLE. PER C.O. 9278.	02-11-03	M. J. R.	R. P. D.
5	12, 13	PARCEL NO. 4C PIAZZA. EXTEND PARCEL 4C TO INCLUDE ALL R.T.& I. OF PROPERTY OWNER IN AND TO THE REMAINING PORTION OF HIS PROPERTY LYING WITHIN THE EXISTING HIGHWAY RIGHT-OF-WAY. SHOW APPROXIMATE LOCATION OF SLEEVE TO BE INSTALLED WITHIN THE EXISTING HIGHWAY RIGHT-OF-WAY. PER C.O. 9304.	07-15-03	G. J. F.	R. P. D.
		ELECTRONIC FILES TO STRUCTURES 08-06-04			

ACCT. mcassidy
IP_PWP:dms04933\re059d.dgn
DATE PLOTTED 20-OCT-2005

DR. (P)- DRAINAGE RIGHT
DIT. (P)- DITCHING RIGHT
CH. (P)- CHANNEL RT.
DRIVE (T)- DRIVE RIGHT
CUL. (P)- CULVERT RIGHT
W- WATER SOURCES

PRESENT R.O.W.
TAKING WITHOUT ACCESS
TAKING WITHOUT ACCESS ALONG PROPERTY LINE
TAKING WITH ACCESS
(P) PERMANENT EASEMENT
(T) TEMPORARY EASEMENT

LEGEND
C&T (P) CLEARING & TRIMMING
CZ (P) CLEAR ZONE
CONST. (T) CONSTRUCTION EASEMENT
SR SLOPE RIGHTS
P PROPERTY LINE
L TOP OF CUT
TOE OF SLOPE
UE (P) PERMANENT UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 11-30-01
CHIEF, PLANS & TITLES

R. O. W. PLANS
DUXBURY
STP 013-4(24)
R.O.W. SHEET 10 OF 13 SHEETS
SHEET 7 OF 62

Metric

STATE OF VERMONT
AGENCY OF TRANSPORTATION
RIGHT OF WAY PLANS
DETAIL SHEET

TABLE OF PROJECT PROPERTY ACQUISITION

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS	TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS
4A	PIAZZA, FRANK	12,13	0+256.6 LT.	0+263.3 LT.			CHANNEL (P) 9.0 SM±						96.9 S.F.±
			0+260.0 LT.	0+313.0 LT.			INSTALL (T) 104.4 SM±						EROSION CONTROL DEVICES
													1,123.5 S.F.±
			0+263.3 LT.	0+282.3 LT.			SLOPE (P) 28.8 SM±						309.5 S.F.±
			0+298.6 LT.	0+301.3 LT.			SLOPE (T) 0.6 SM±						6.5 S.F.±
4B			0+246.0 RT.	0+307.7 RT.			DETOUR (T) 0.07 HA±						TWO WAY VEHICULAR 0.17A±;
													INCLUDES EROSION CONTROL
			0+255.3 RT.	0+262.6 RT.			CHANNEL (P) 6.3 SM±						67.3 S.F.±
			0+262.6 RT.	0+270.0 RT.			SLOPE (P) 4.8 SM±						51.7 S.F.±
			0+328.0 RT.				ALL R.T. & I.						LEACHFIELD ONLY
4C			0+250.2 RT.	0+361.6 RT.	0.21 HA±		ALL R. T. & I.						HWY. EASE. VT. RTE. 100
													(0.51A±)
5A	TOWN OF DUXBURY	12	0+220 LT.				APPROACH (T)	QCD	07-31-03	DUXBURY	88	520-521	T.H. #35
5B		12	0+212.5 LT.	0+228.0 LT.	156.6 SM±		ALL R. T. & I.						HWY. EASE. VT. RTE. 100
													(1,685.1 S.F.±)
6	WAITSFIELD & CHAMPLAIN VALLEY TELECOM												UTILITY
7	WASHINGTON ELECTRIC CO-OP												UTILITY
	MAINTENANCE AGREEMENT ZONE NO. 1	12	T.H. #35 5+003.6 CL	T.H. #35 5+010.1 CL									LENGTH 6.5M (21') T.H. 35

REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY

ACCT. mcassidy
IP_PWP:dms04933\re059d.dgn
DATE PLOTTED 20-OCT-2005

DR. (P)- DRAINAGE RIGHT
DIT. (P)- DITCHING RIGHT
CH. (P)- CHANNEL RT.
DRIVE (T)- DRIVE RIGHT
CUL. (P)- CULVERT RIGHT
[W]- WATER SOURCES

PRESENT R.O.W.
TAKING WITHOUT ACCESS
TAKING WITHOUT ACCESS ALONG PROPERTY LINE
TAKING WITH ACCESS
(P) PERMANENT EASEMENT
(T) TEMPORARY EASEMENT

LEGEND
C&T (P) CLEARING & TRIMMING
CZ (P) CLEAR ZONE
CONST. (T) CONSTRUCTION EASEMENT
SR SR SLOPE RIGHTS
P L PROPERTY LINE
TOP OF CUT
TOE OF SLOPE
UE (P) PERMANENT UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 11-30-01
CHIEF, PLANS & TITLES

R. O. W. PLANS
DUXBURY
STP 013-4(24)
R.O.W. SHEET 11 OF 13 SHEETS
SHEET 8 OF 62

END MAINTENANCE AGREEMENT ZONE NO. 1

T. H. #35 5+010.1 CL.

BEGIN MAINTENANCE AGREEMENT ZONE NO. 1

T. H. #35 5+003.6 CL

[LENGTH 6.5M (21')]

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES (P/L) ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

VT STATE PLANE GRID

N

WARD HILL ROAD 5+035.000
END SIDE ROAD CONSTRUCTION

TOWN OF DUXBURY

Ward Hill Road APPROACH (T)

POT 5+050.09

CONSTRUCT DRIVE
WARD HILL 5+017.400 RT

N/F PRATT

CURVE DATA
△ = 21°25' 48.8" Lt.
R = 225.00 m
T = 42.58 m
L = 84.16 m
E = 3.99 m
MAX. BANK = 0.060
PC 0+135.271

WARD HILL ROAD
CURVE DATA
△ = 15° 45' 23.5" Rt.
R = 25.00 m
T = 3.459 m
L = 6.875 m
E = 0.238 m
VARIES

HARDIN, SUSAN G. & BAUER, ERIC C.

ADAMS, ROBERT D.

PIAZZA, FRANK

0+340.000
END APPROACH

PT 5+021.41
PC 5+014.53
BEGIN BRIDGE
STA 0+239.550
FG 218.953

END BRIDGE
STA 0+260.450
FG = 218.476

0+252.6
10.1M (33') LT.

0+280.000
END PROJECT

0+228.0
10.1M (33') LT.

0+170.000
BEGIN APPROACH

0+186.3
10.1M (33') LT.

PI 5+017.99 =
5+017.95

HARDIN, SUSAN C. & BAUER, ERIC G.

R=7000

UTILITY R.O.W.

DRIVE (T)

INSTALL (P) DITCH & DRAINAGE CHANNEL (P)

INSTALL (T)

SR(T)

CH (P) SR (P) [98.3M] (322.5') SR (P)

[109.7M] (359.9')

ALL RT&I

"D" BOX

EXISTING LEACHFIELD & SEPTIC TANK

REMNANTS OF BUILDING

PROPOSED LEACHFIELD

SOUTH DUXBURY CEMETERY

STARCK, JOAN B.

25.1M (82.3')

20.2M (66.3')

10.1M (33')

9.5M (31.0')

9.3M (21.6')

22M (73')

15.5M (51')

0+212.5
10.1M (33')

0+212.5

0+228.0

0+250.2
10.1M (33') RT.

0+250.2

N. 3°12' 06.6" E.

N. 18°13' 42.2" W.

S. 89°43' 18.8" W.

S. 6°57' 55.3" W.

PI 0+177.85 =
0+176.85

PT 0+219.43

0+220.000
BEGIN PROJECT
Mainline POT 0+220.00=
Ward Hill Road POT 5+000.00
Delta = 87°48' 17.2" Lt.

Mainline POT 0+245.00=
Chan. POT 10+000.00
Delta = 80 Deg. Lt.

LIMITS OF TEMPORARY DETOUR

DETOUR (T)

1 2A 2B 2C 3A 3B 4A 4B 4C 5A 5B

MATCH TO ROW SHEET 13 OF 13

0F 13

BEGIN R.O.W. PROJECT

STP 013-4(24) STA. 0+186.3 10.1M (33') RT.

Existing Bridge Data

Bridge Width = 20'-0"
Roadway Width = 17'-0"
Bridge Length = 63'
Clear Span = 58'

The existing structure is a concrete deck on rolled beam stringers. The existing abutments are poured in-place concrete.

ALL UTILITIES CURRENTLY ON THE EXISTING BRIDGE WILL BE ABANDONED. THESE UTILITIES WILL BE MOVED TO THE EXISTING AERIAL UTILITY LINE JUST WEST OF THE BRIDGE.

0 10 20 30
SCALE (1:250) IN METERS

FOR R.O.W. USE ONLY

PLAN SHEET

PROJECT NAME: DUXBURY	
PROJECT NUMBER: STP 013-4(24)	
FILE NAME: /str5/86e059/se059br2.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: Graw
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
R. O. W. SHEET 12 OF 13	SHEET 9 OF 62

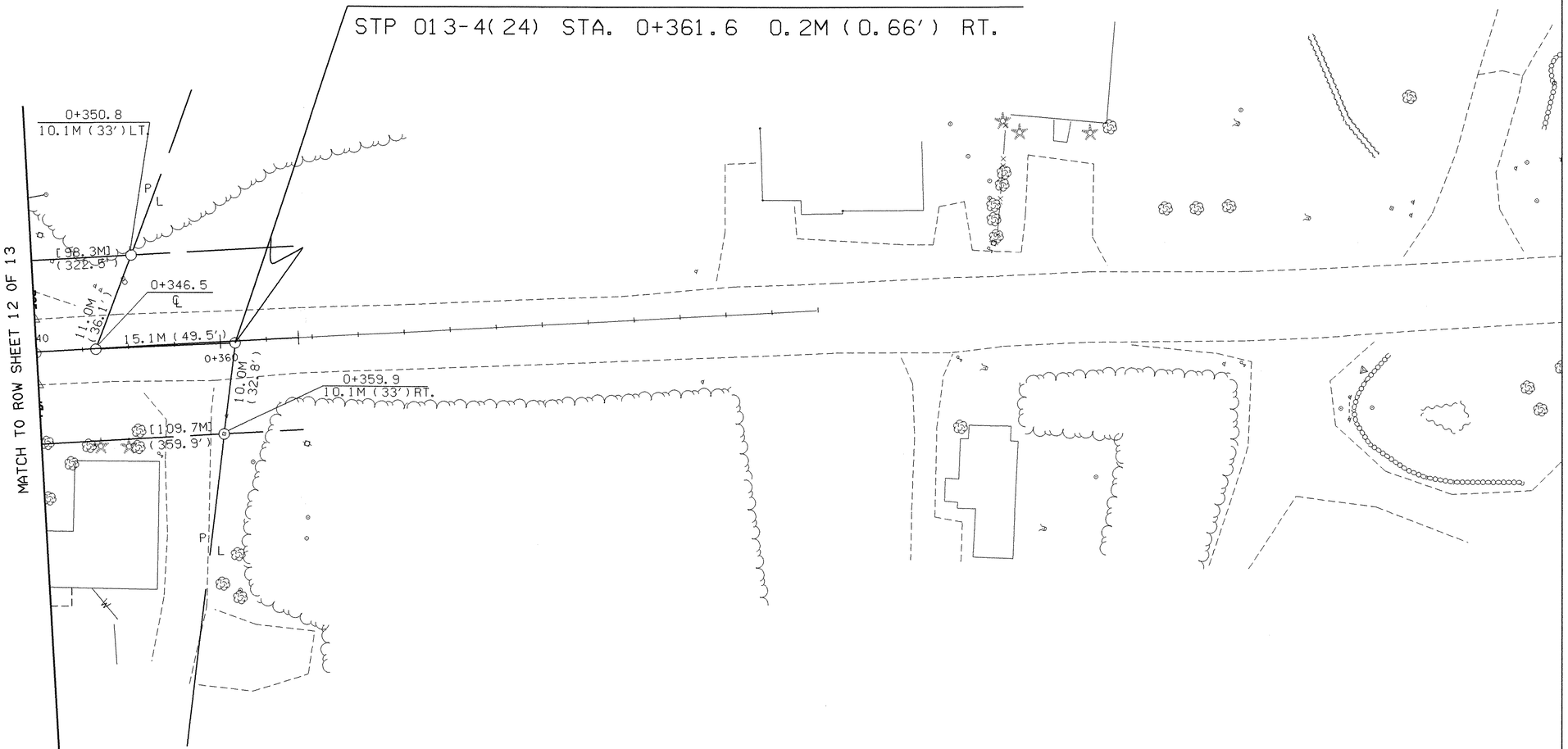
VT STATE PLANE GRID

N

VAOT Metric

END R.O.W. PROJECT

STP 013-4(24) STA. 0+361.6 0.2M (0.66') RT.



LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES (P/L) ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

FOR R.O.W. USE ONLY

PLAN SHEET

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (1992)

PROJECT:	PROJECT NO.:
DUXBURY	STP 013-4(24)

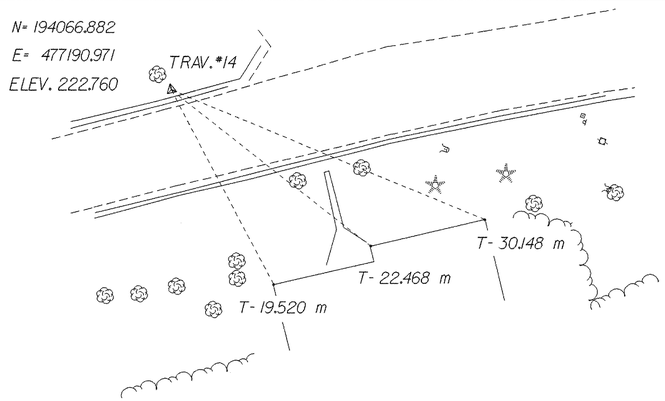
DESIGN FILE NAME: /str5/86e059/se059bdr.dgn
IPARM FILE NAME: se059LI.i
SURVEYED BY: L. ORVIS — SURVEY DATE: 5/9/97
SQUAD LEADER: C. KELLER — DRAWN BY: G. Shangraw
R.O.W. SHEET 13 OF 13 — PLOT DATE: 20-OCT-2005
SHEET 10 OF 62

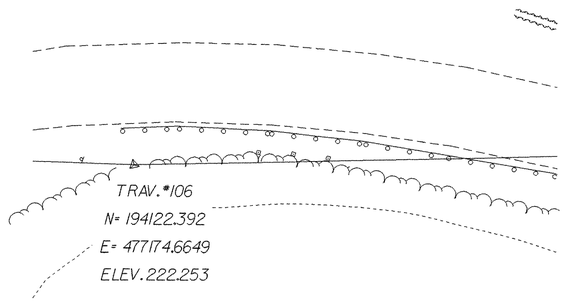
"GOODWIN"
N= 192066.061
E= 477279.311
ELEV. 195.540

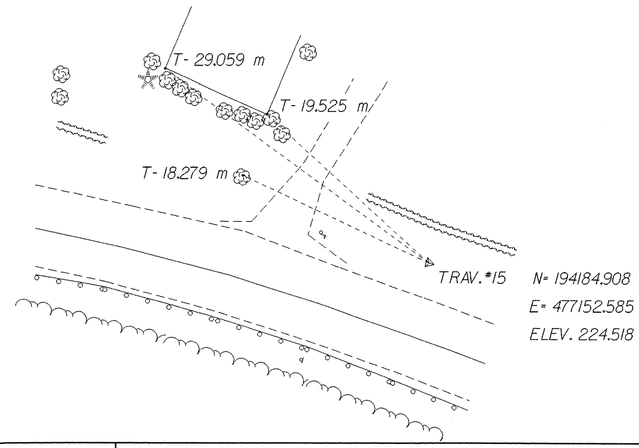
"GOODWIN AZ"
N= 193208.537
E= 477990.216
ELEV. 199.700

CONTROL POINTS ARE FOUND IN SURVEY
FOR DUXBURY STP F 013-4(11)S

"MINI GOLF"
N= 198219.397
E= 477480.715
ELEV. 320.050

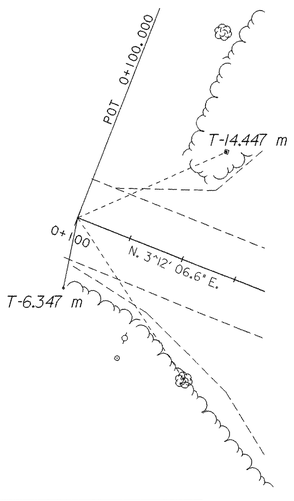






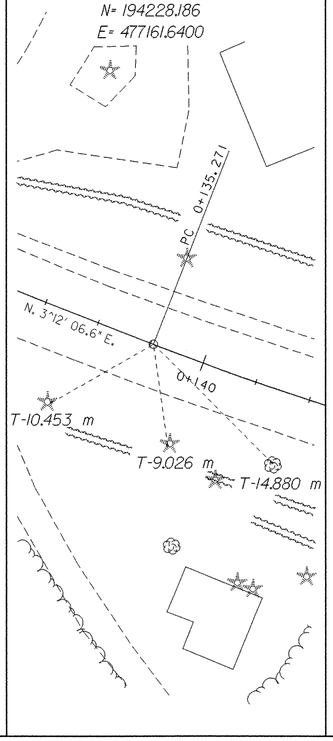
P.O.T. 0+100.00

N= 194192.970
E=477159.670



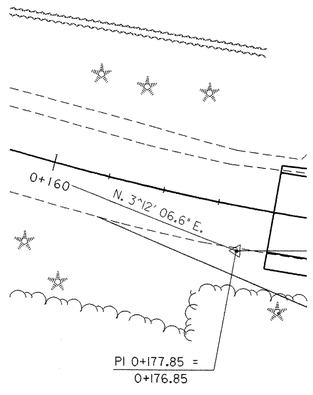
PC 0+135.271

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E= 477161.6400



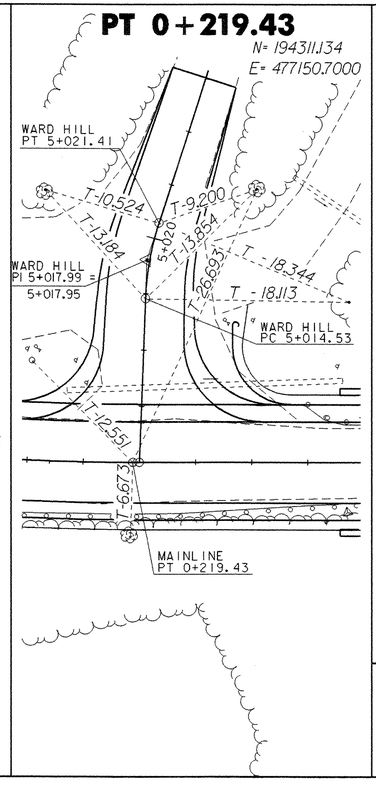
PI 0+177.85bk = 0+176.85ahd

N= 194270.6950
E= 477164.0180



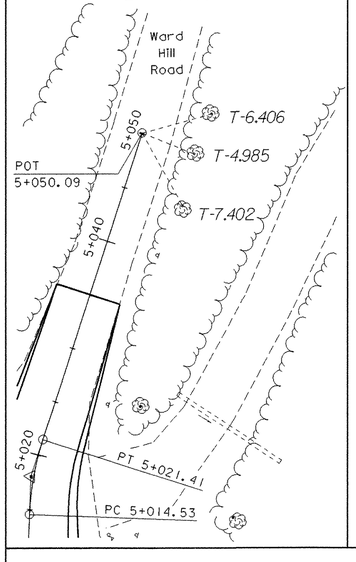
PT 0+219.43

N= 194311.34
E= 477150.7000



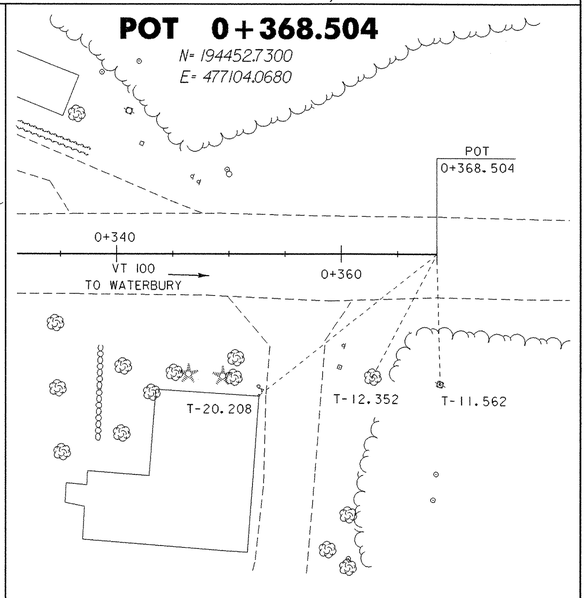
WARD HILL ROAD POT 5+050.09

N= 194306.5540
E= 477101.0860



POT 0+368.504

N= 194452.7300
E= 477104.0680



DATUM
VERTICAL NAVD88
HORIZONTAL NAD 83 (1992)

NOT TO SCALE

TIE SHEET

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059tie.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059tie.i

PLOT DATE: 20-OCT-2005
DRAWN BY: R. H. PELLETT
CHECKED BY: B. NYQUIST
SHEET II OF 62

Metric

BRIDGE RAILING - NETC 2 RAIL
0+236.470 RT - 0+263.530 RT
0+236.470 LT - 0+263.530 LT

GUARDRAIL APPROACH SECTION, NETC RAIL
0+228.850 - 0+236.470 LT.
0+229.445 - 0+236.470 RT.
0+263.530 - 0+271.150 LT.
0+263.530 - 0+271.150 RT.

VT STATE PLANE GRID

STEEL BEAM GUARDRAIL
0+209.800 - 0+228.850 RT.
WARD 5+011.025 RT. - ML. 0+229.554 LT.
0+271.150 - 0+286.390 LT.
0+271.150 - 0+309.250 RT.

STONE FILL FOR SLOPE STABILIZATION (TYPE II)
0+210 RT - 0+238 RT
0+263 RT - 0+310 RT

CONSTRUCT SPECIAL DITCH
5+019.556 - 5+035.00 LT
5+021.330 - 5+035.000 RT

NOTE: PAY ITEMS FOR NEW SIGNS AND PAVEMENT MARKINGS ARE SHOWN ON SHEET 43.

MANUFACTURED TERMINAL SECTION
0+198.843 - 0+209.800 RT.
0+286.390 - 0+297.820 LT.
0+309.250 - 0+320.680 RT.

REMOVAL OF EXISTING GUARDRAIL
0+196.294 - 0+279.333 RT
0+234.728 - 0+283.732 LT

ANCHOR FOR STEEL BEAM GUARDRAIL
WARD 5+090.0 RT.

RELOCATE MAILBOX, SINGLE SUPPORT
5+022 RT.

CONSTRUCT DRIVE
0+189.267 RT
0+303.435 LT
5+017.400 RT

GRAVEL SCHOOL BUS TURN AROUND
150mm OF SUBASE OF CRUSHED GRAVEL

WARD HILL ROAD 5+035.000
END SIDE ROAD CONSTRUCTION

CURVE DATA
Δ = 21°25' 48.8" Lt.
R = 225.00 m
T = 42.58 m
L = 84.16 m
E = 3.99 m
MAX. BANK = 0.060
PC 0+135.271

WARD HILL ROAD CURVE DATA
Δ = 15° 45' 23.5" Rt.
R = 25.00 m
T = 3.459 m
L = 6.875 m
E = 0.238 m
VARIES

POT 5+050.09
PT 5+021.41
PC 5+014.53
BEGIN BRIDGE
STA 0+239.550
FG. 218.953
END BRIDGE
STA 0+260.450
FG = 218.476
PI 5+017.93 = 5+017.95
0+340.000
END APPROACH
0+280.000
END PROJECT
0+170.000
BEGIN APPROACH
PI 0+177.85 = 0+176.85
PT 0+219.43
0+220.000
BEGIN PROJECT

Approximate location of sleeve for utilities. Final location of sleeve to be mutually agreed upon by Project Manager, Resident Engineer and Property Owner. Sleeve ends are to be capped.

Ward Hill Road
Dowsville Brook
VT 100 TO MORETOWN
VT 100 TO WATERBURY
R=7000
R=6000
R=6000
ABANDON TV CABLE IN PLACE
LIMITS OF TEMPORARY DETOUR
Mainline POT 0+220.00=
Ward Hill Road POT 5+000.00
Delta = 87° 48' 17.2" Lt.
Mainline POT 0+245.00=
Chan. POT 10+000.00
Delta = 80 Deg. Lt.
N. 3°12' 06.6" E.
N. 88°13' 42.2" W.
S. 39°43' 18.8" W.
S. 73°57' 55.3" W.

BM 9
SPIKE IN TREE
ELEV. 223.075

BM 10
CHISEL SQ TOP
SEAT XAT
ELEV. 218.938

BM 11
CHISEL SQ SE CO
CONC SIGN BASE
ELEV. 218.817

Existing Bridge Data
Bridge Width = 20'-0"
Roadway Width = 17'-0"
Bridge Length = 63'
Clear Span = 58'

The existing structure is a concrete deck on rolled beam stringers. The existing abutments are poured in-place concrete.

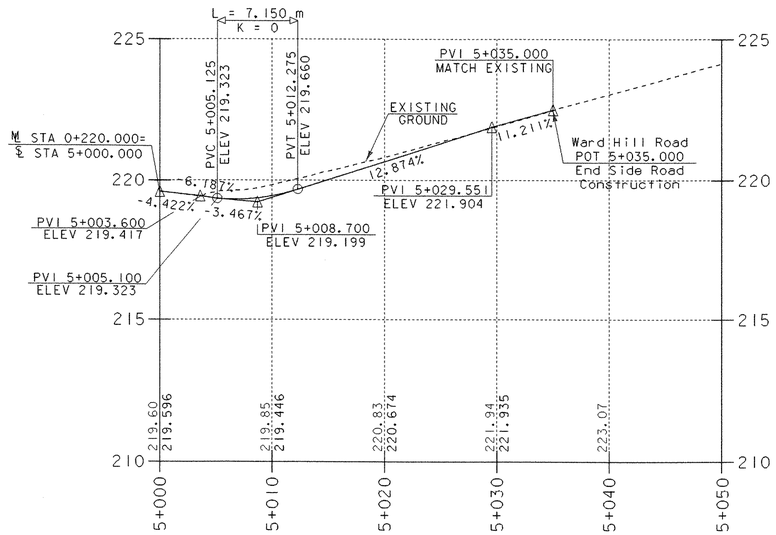
ALL UTILITIES CURRENTLY ON THE EXISTING BRIDGE WILL BE ABANDONED. THESE UTILITIES WILL BE MOVED TO THE EXISTING AERIAL UTILITY LINE JUST WEST OF THE BRIDGE.

0 10 20 30
SCALE (1:250) IN METERS

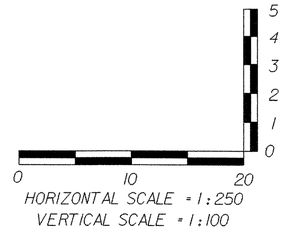
PLAN SHEET

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059br2.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059pll.t
PLOT DATE: 20-OCT-2005
DRAWN BY: Graw
CHECKED BY: T. SUMNER
SHEET 12 OF 62



Ward Hill Road Profile



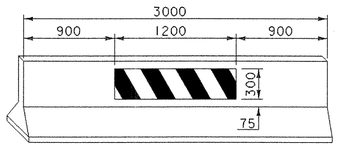
THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST THOUSANDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.

Mainline Profile

MAINLINE & SIDELINE PROFILES

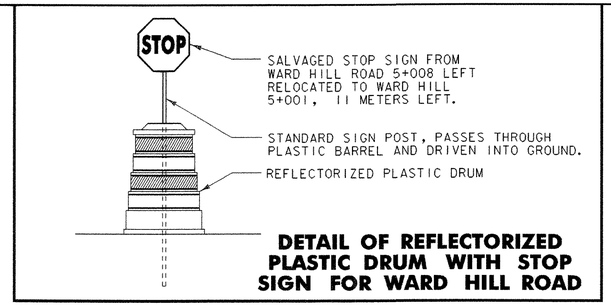
PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059xsl.dgn	PLOT DATE: 20-OCT-2005
PROJECT MANAGER: C. KELLER	DRAWN BY: G. SHANGRAW
DESIGNED BY: G. SHANGRAW	CHECKED BY: T. SUMNER
se059pro.i	SHEET 13 OF 62

IF CONCRETE BARRIER IS USED FOR TEMPORARY TRAFFIC BARRIER, THEN THE FOLLOWING DETAIL AND NOTES WILL BE APPLICABLE.



TEMPOROARY TRAFFIC BARRIER NOTES

1. THE PANEL SHOWN IS ORIENTATED FOR TRAFFIC PASSING TO THE RIGHT.
2. THE PANEL SHALL BE ATTACHED TO THE CONCRETE MEDIAN BARRIER IN A SECURE FASHION.
3. ALL BARRIER PLACED IN TAPERS SHALL BE PROVIDED WITH A REFLECTORIZED PANEL AS SHOWN. THE PANEL SHALL BE ORIENTATED IN THE PROPER DIRECTION (RIGHT OR LEFT) BASED ON THE APPROACHING TRAFFIC.
4. BARRIER SECTIONS MAY BE MOVED DURING WORKING HOURS TO PROVIDE ACCESS TO THE WORKSITE. HOWEVER, THEY MUST BE REPLACED FOR NON- WORK PERIODS.



DETAIL OF REFLECTORIZED PLASTIC DRUM WITH STOP SIGN FOR WARD HILL ROAD

EAST Metric

TEMPORARY 100 YELLOW LINE (DOUBLE)
℄ 2+175.000 - ℄ 2+215.000
℄ 2+226.000 - ℄ 2+335.000
℄ 4+993.000 - ℄ 5+004.000

TEMPORARY LETTERS OR SYMBOLS
℄ 4+999 "STOP"

TEMPORARY 600 STOP BAR
℄ 4+993.000

TEMPORARY 100 WHITE LINE
℄ 2+175.000 RT. - ℄ 2+335.000 RT.
℄ 2+175.000 LT. - ℄ 5+003.000 LT.
℄ 5+004.000 RT. - ℄ 2+335.000 LT.

VT STATE PLANE GRID N

Ward Hill Road

POT 5+050.09

PT 5+021.41

PC 5+014.53

AERIAL E&T

Dowsville Brook

ROAD CLOSED

W-24-1(L)

25 MPH

Mainline 0+175.50 = Detour 2+175.50 Begin Detour Construction

NOTE: THIS GRAVEL AREA SERVES AS A TURN-AROUND FOR SCHOOL BUSES. IT CANNOT BE BLOCKED AT ANY TIME DURING CONSTRUCTION.

Detour PI 2+194.349 = 2+194.933

Detour PI 2+317.237 = 2+316.314

Mainline 0+326.67 = Detour 2+334.07 End Detour Construction

VT 100 TO MORETOWN

VT 100 TO WATERBURY

STOP

TEMP BRIDGE

N16°00'33.3"E

N16°59'51.9"W

N49°15'37.6"W

PT 0+219.43

Mainline POT 0+220.00= Ward Hill Road POT 5+000.00 Delta = 87°48'17.2" Lt.

Mainline POT 0+245.00= Chan. POT 10+000.00 Delta = 80 Deg. Lt.

LIMITS OF TEMPORARY DETOUR

Detour PI 2+225.931= 2+224.942

Detour PI 2+281.723 = 2+280.891

DETOUR CURVE DATA
Delta: 24°51'11.6" Right
Radius: 60.000
Tangent: 13.221
Length: 26.026
External: 1.439

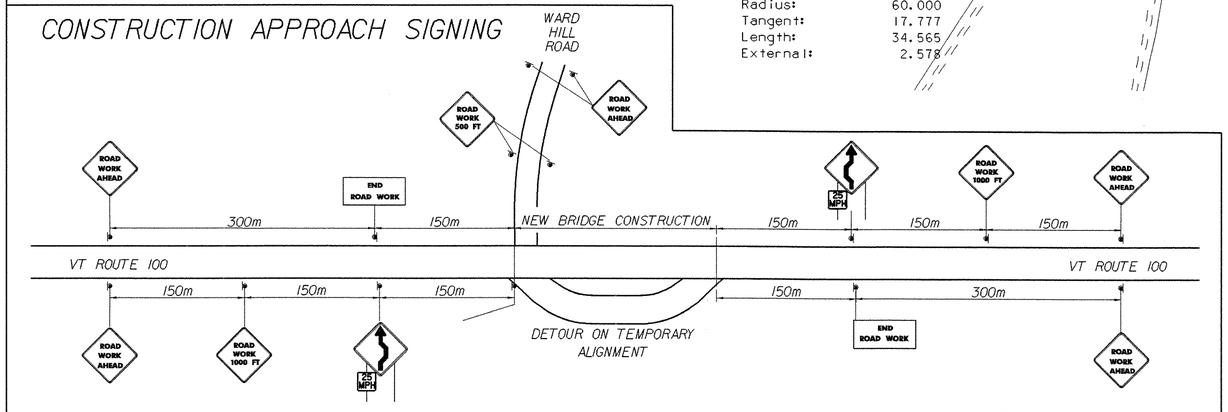
DETOUR CURVE DATA
Delta: 33°00'25.2" Left
Radius: 60.000
Tangent: 17.777
Length: 34.565
External: 2.578

DETOUR CURVE DATA
Delta: 32°15'45.7" Left
Radius: 60.000
Tangent: 17.354
Length: 33.785
External: 2.459

DETOUR CURVE DATA
Delta: 31°12'41.76" Right
Radius: 60.000
Tangent: 16.755
Length: 32.685
External: 2.304

W-24-1(R)

CONSTRUCTION APPROACH SIGNING



(NOT TO SCALE)

LEGEND	
⊕	PLASTIC REFLECTORIZED BARRELS
⊕	BARREL WITH STOP SIGN SEE DETAIL THIS SHEET
▭	TEMPORARY TRAFFIC BARRIER
☒	TYPE III BARRICADE (MOD.) SEE STD. E-107AM

STANDARDS REQUIRED	
E-100	E-102A
E-101	E-107
E-102	E-107A

0 10 20 30

SCALE (1:250) IN METERS

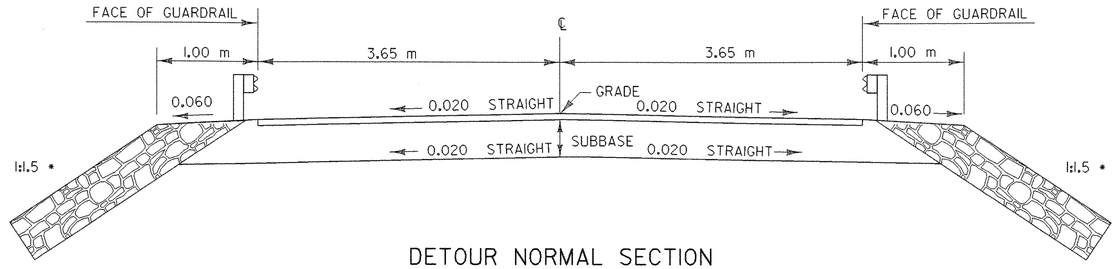
THIS TRAFFIC CONTROL SHEET REPRESENTS THE MINIMUM REQUIREMENTS WITHOUT TRAFFIC SIGNAL CONTROL. MODIFICATION OF OR ADDITIONS TO THE TRAFFIC CONTROL DEVICES SHOWN HERE MAY BE REQUIRED BY THE RESIDENT ENGINEER BASED ON FIELD CONDITIONS.

DETOUR PLAN AND TRAFFIC CONTROL SHEET

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

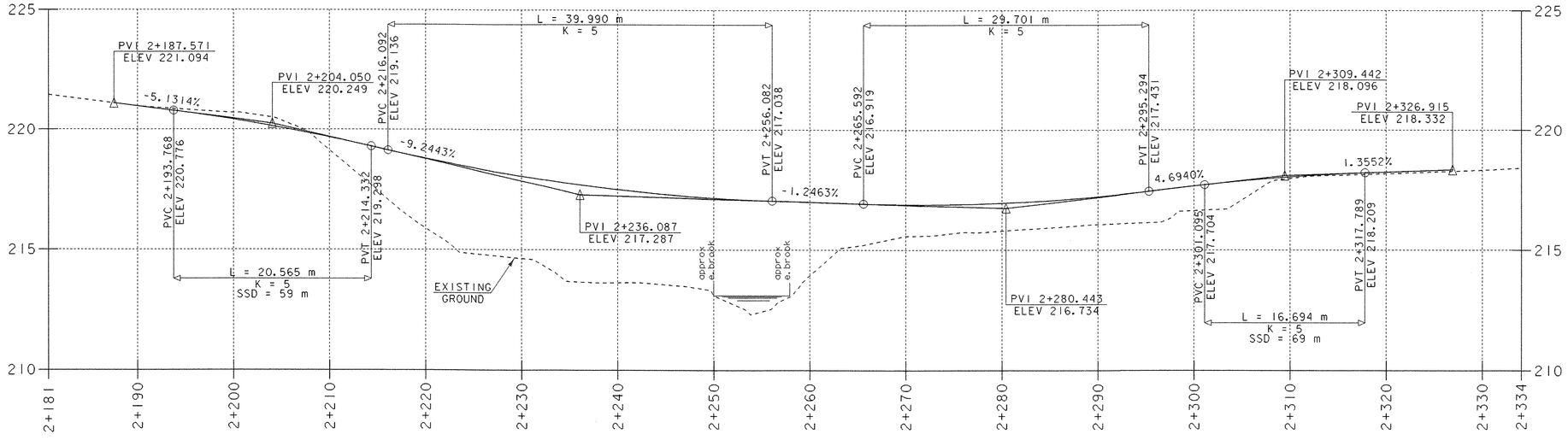
FILE NAME: /str5/86e059/se059tcs.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059tcs.i
PLOT DATE: 20-OCT-2005
DRAWN BY: J. GILMORE
CHECKED BY: T. SUMNER
SHEET 14 OF 62

75 - BITUMINOUS CONCRETE PAVEMENT
380 - SUBBASE OF CRUSHED GRAVEL (COARSE GRADED)

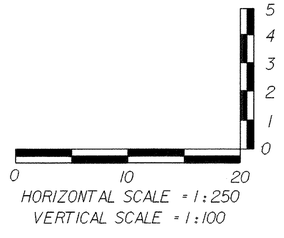


* Note: Any slopes steeper than 1:2 shall be blanketed with 600 mm stone fill, type II.

DETOUR NORMAL SECTION
WITH GUARDRAIL
NOT TO SCALE



THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST THOUSANDTH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT.



HORIZONTAL SCALE = 1:250
VERTICAL SCALE = 1:100

DETOUR PROFILE (40 KPH)

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059xsl.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059dpr.i
PLOT DATE: 20-OCT-2005
DRAWN BY: Graw
CHECKED BY: T. SUMNER
SHEET 15 OF 62

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 kPa	CONSISTENCY
<12	Very Soft
12-24	Soft
24-48	Med. Stiff
48-96	Stiff
96-192	Very Stiff
>192	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 300 mm For: 50.8 mm O.D. Sampler 35.0 mm I.D. Sampler Hammer Weight Of 63.5 kg. Hammer Fall Of 762 mm
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 30.1mm
BX	Core Size 42.0 mm
NX	Core Size 54.7 mm
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 > 304.8 mm.

COBBLE - Rock fragments with an average dimension between 76.2 and 304.8 mm.

GRAVEL - Rounded particles of rock < 76.2 mm and > 2 mm (#10 sieve).

SAND - Particles of rock < 2 mm (#10 sieve) and > 75 μm (#200 sieve).

SILT - Soil < 75 μm (#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.

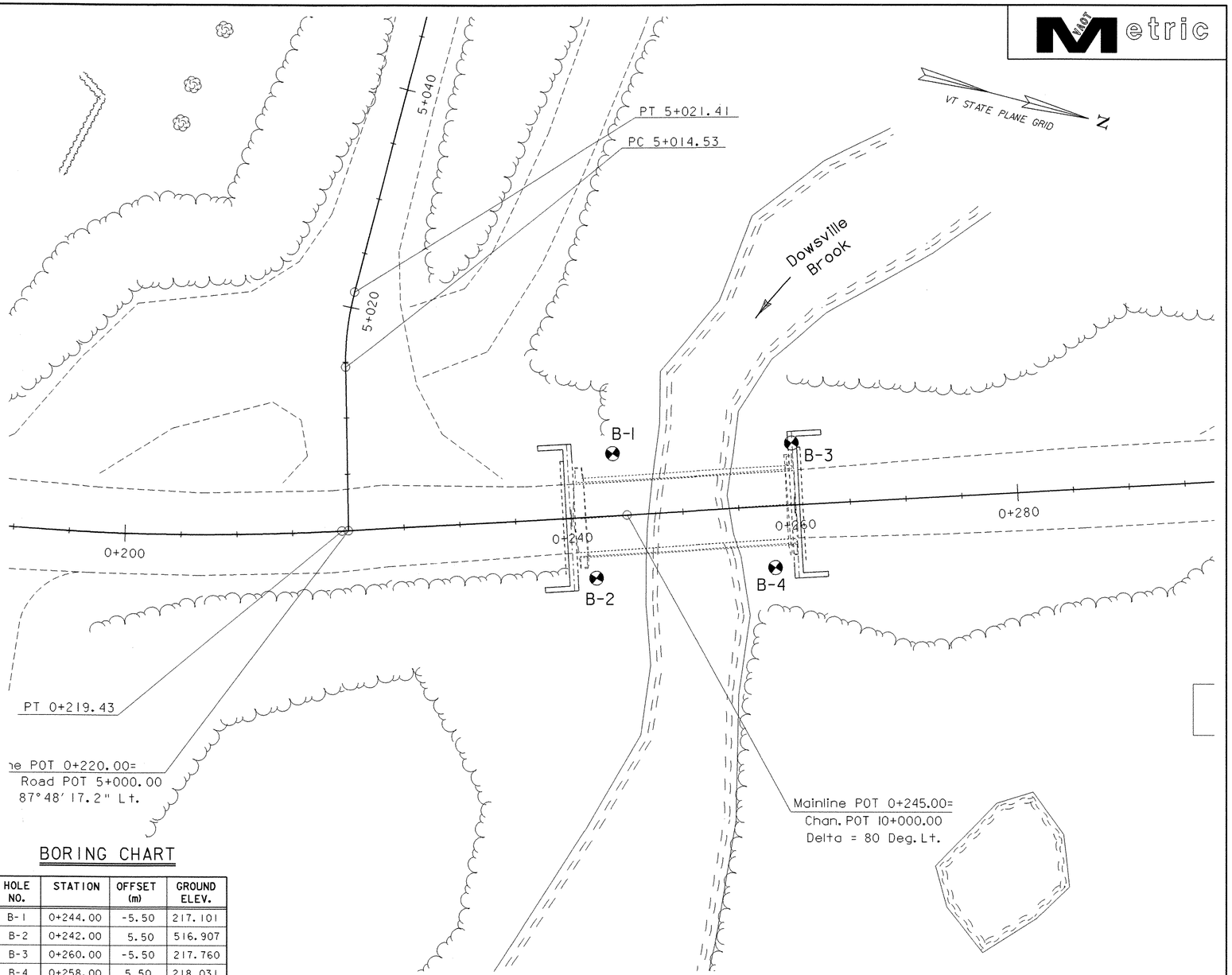
MUCK - Soft organic soil (containing > 10% organic material.

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

HOLE NO.	STATION	OFFSET (m)	GROUND ELEV.
B-1	0+244.00	-5.50	217.101
B-2	0+242.00	5.50	516.907
B-3	0+260.00	-5.50	217.760
B-4	0+258.00	5.50	218.031

GENERAL NOTES

1. The subsurface explorations shown herein were made between 9-20-1999 and 10-26-1999 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available 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 SHEET

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059bor.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059bri.i

PLOT DATE: 20-OCT-2005
DRAWN BY: Graw
CHECKED BY: T. SUMNER
SHEET 16 OF 62

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

HOLE NO.: B-1
SHEET 1 OF 1
DATE STARTED: 9/20/99
DATE COMPLETED: 9/23/99

PROJECT NAME: DUXBURY
SITE NAME: BR 187
STATION: 0+244.00
GROUND EL.: ~~217.101~~ 217.101
PROJECT NUMBER: STP 013-4 (24)
SITE NO.: VT 100
OFFSET: -5.50
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: TALLMAN
LOGGER: YOUNG
ADDITIONAL CREW:
BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

BOTTOM OF ABUTMENT 1 ELEV. 215.643

ELEV. 205.721 TOP OF BEDROCK

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		A-2-4, SiGrSa, brn, MTW, Rec. = 0.09m	19	22.6	25.5	51.2	23.3		
		BXDC, 1.80m-3.60m, Boulders, No sample							
		A-4, GrSiSa, gry, Moist, Rec. = 0.15m	10	17.5	21.7	40.8	37.5		
5		A-4, SiSa, gry, Moist, Rec. = 0.30m	7	15.5	15.2	48.5	36.3		
		A-2-4, SiSa, gry, Moist, Rec. = 0.44m	17	15.3	19.8	46.4	33.8		
		A-2-4, SiSaGr HP, gry, Moist, Rec. = 0.38m	R	10.1	37.8	32.8	29.4		
		A-2-4, GrSiSa HP, gry, Moist, Rec. = 0.42m	R	11.3	26.9	38.9	34.2		
		BXDC, 8.43m-9.00m, Boulder, Rec. = 0.45m							
		A-1-b, SiSaGr HP, gry, Moist, Rec. = 0.30m	R	10.4	40.5	34.7	24.8		
10		A-4, GrSiSa HP, gry, Dry, Rec. = 0.49m	R	8.8	21	42.9	36.1		
		A-1-b, SiSaGr HP, gry, Moist, Rec. = 1.48m	R	10.7	44.2	30.6	25.2		
				Top of bedrock @ 11.38m					
		Run #1: BXDC, 11.38m-12.90m, Rec. = 1.45m, See Geologist's Report.	RUN 1	REC% 95	RQD% 66	Dip° 80			
		Run #2: BXDC, 12.90m-14.42m, Rec. = 1.48m, See Geologist's Report.	2	97	97	80			
		Hole stopped @ 14.42m							

GEOLOGISTS REPORT:

Run #1: Gray graywacke, Hard Unweathered, Competent.

Run #2: Same as Run #1, Competent.

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

HOLE NO.: B-2
SHEET 1 OF 1
DATE STARTED: 9/28/99
DATE COMPLETED: 10/5/99

PROJECT NAME: DUXBURY
SITE NAME: BR 187
STATION: 0+242.00
GROUND EL.: ~~216.907~~ 216.907
PROJECT NUMBER: STP 013-4 (24)
SITE NO.: VT 100
OFFSET: 5.50
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: CHABOT
LOGGER:
ADDITIONAL CREW:
BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

BOTTOM OF ABUTMENT 1 ELEV. 215.643

ELEV 195.507 TOP OF BEDROCK

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		Boulder, No sample							
		BXDC, 2.55m-3.00m, Rec. = 0.08m, Boulder							
		Visual classification: A-1-a, Gr, brn, Wet, Rec. = 0.04m, Insufficient sample for testing.	10						
5		A-4, SaGrSi, gry, MTW, Rec. = 0.37m	8	32.9	27.9	26.8	45.3		
		A-1-b, SaGr, gry, Moist, Rec. = 0.33m	17	12.9	4.6	38.9	14.5		
		A-2-4, GrSiSa HP, gry, Moist, Rec. = 0.43m	R	10.2	30	39.3	30.7		
		A-4, GrSaSi HP, gry, Moist, Rec. = 0.48m	57	13.7	29	30.9	40.1		
			Top of bedrock @ 10.4m						
10		Run #1: BXDC, 10.40m-11.35m, Rec. = 0.96m, See Geologist's Report.	RUN 1	REC% 100	RQD% 68	Dip° 80			
		Run #2: BXDC, 11.35m-12.87m, Rec. = 1.43m, See Geologist's Report.	2	94	90	80			
		Run #3: BXDC, 12.87m-13.45m, Rec. = 0.60m, See Geologist's Report.	3	100	100	80			
		Hole stopped @ 13.45m							

GEOLOGISTS REPORT:

Run #1: Dark gray to black phyllite, Tightly folded, Moderately hard, Unweathered, Competent.

Run #2: Same as Run #1, Competent.

Run #3: Same as Run #1, Competent.

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

HOLE NO.: B-3
SHEET 1 OF 1
DATE STARTED: 10/7/99
DATE COMPLETED: 10/12/99

PROJECT NAME: DUXBURY
SITE NAME: BR 187
STATION: 0+260.00
GROUND EL.: ~~217.760~~ 217.760
PROJECT NUMBER: STP 013-4 (24)
SITE NO.: VT 100
OFFSET: -5.50
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: HOLT
LOGGER:
ADDITIONAL CREW:
BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

BOTTOM OF ABUTMENT 2 ELEV. 215.231

ELEV. 205.700 TOP OF BEDROCK

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		No Rec., Advanced casing through gravelly material and boulders.	R						
		A-1-a, SaGr, brn, Moist, Rec. = 0.23m	10	11.6	53.2	40	6.8		
		BXDC, 4.44m-4.70m, Boulder							
5		A-1-b, SiSaGr HP, gry, Moist, Rec. = 0.18m	46	11.3	47.1	32.1	20.8		
		A-1-b, SaGr HP, gry, Dry, Rec. = 0.27m	R	8.6	45.8	35.6	18.6		
		A-1-b, SaGr HP, gry, Dry, Rec. = 0.14m	80	8.9	56	25.9	18.1		
		A-4, SaSi HP, gry, Moist, Rec. = 0.47m	46	15.2	9.4	37.3	53.3		
10		A-4, SaSi HP, gry, Moist, Rec. = 0.44m	48	15.2	5	33.2	61.8		
			R	Top of bedrock @ 12.06m					
		No Rec.	RUN	REC%	RQD%	Dip°			
		Run #1: BXGDC, 12.06m-13.56m, Rec. = 1.45m, See Geologist's Report.	1	97	87	80			
		Run #2: BXGDC, 13.56m-15.06m, Rec. = 1.55m, See Geologist's Report.	2	100	100	80			
15.06		Hole stopped @ 15.06m							

GEOLOGISTS REPORT:

Run #1: Dark gray to black phyllite, Tightly folded, Moderately hard, Unweathered, Competent.

Run #2: Same as Run #1, Competent.

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

HOLE NO.: B-4
SHEET 1 OF 1
DATE STARTED: 10/22/99
DATE COMPLETED: 10/26/99

PROJECT NAME: DUXBURY
SITE NAME: BR 187
STATION: 0+258.00
GROUND EL.: ~~218.031~~ 218.031
PROJECT NUMBER: STP 013-4 (24)
SITE NO.: VT 100
OFFSET: 5.50
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: CHABOT
LOGGER: HOLT
ADDITIONAL CREW:
BORING RIG: SKID RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

BOTTOM OF ABUTMENT 2 ELEV. 215.231

ELEV. 205.891 TOP OF BEDROCK

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		No Rec.	15						
		A-1-a, SaGr, brn, Dry, Rec. = 0.27m	52	5.6	63.9	28.6	7.5		
		A-1-a, SaGr, brn, Moist, Rec. = 0.45m	13	10.5	56.9	35.1	8		
5		A-2-4, GrSiSa, gry, Moist, Rec. = 0.48m	10	14.2	26	42.9	31.1		
		A-4, SaSi HP, gry, Moist, Rec. = 0.48m	72	13.6	18.9	39.8	41.3		
		A-2-4, GrSiSa HP, gry, Moist, Rec. = 0.41m	84	11.1	29.6	35.8	34.6		
10		A-4, GrSaSi HP, gry, Moist, Rec. = 0.23m	R	14.7	23.4	26.9	49.7		
				Top of bedrock @ 12.14m					
		Run #1: 12.14m-13.35m, BXDC, Rec. = 1.10m, See Geologist's Report.	RUN 1	REC% 91	RQD% 70	Dip° 80			
		Run #2: 13.35m-14.89m, BXDC, Rec. = 1.50m, See Geologist's Report.	2	97	90	80			
		Hole stopped @ 14.89m							

GEOLOGISTS REPORT:

Run #1: Gray graywacke, Hard, Unweathered, Competent.

Run #2: Same as Run #1, Competent.

BORING LOGS

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059bor.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059br2.i
PLOT DATE: 20-OCT-2005
DRAWN BY: J. TOUCHETTE
CHECKED BY: T. SUMNER
SHEET 17 OF 62

EAST Metric

Metric

BEGIN BRIDGE
STA 0+239.55
FG = 218.953

END BRIDGE
STA 0+260.45
FG = 218.476

0+280.00
END PROJECT

VT STATE PLANE GRID

N

Dawsville Brook

Stone Fill Type II

Stone Fill Type IV

STONE FILL TYP IV (TYP)

1:2 TYP

10+010

9+990

WW1

WW2

WW3

WW4

90°

90°

0+240

0+260

0+280

2400 (MAX)

980 (TYP.)

850 (TYP.)

1:1 1/2 TYP

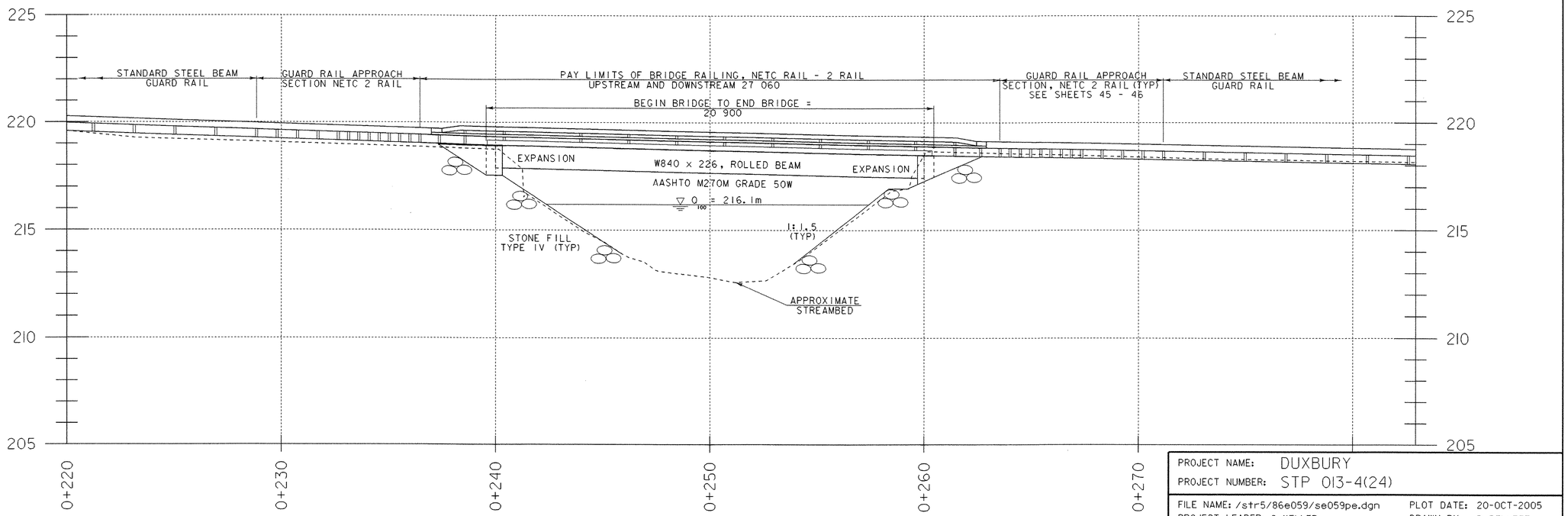
0+220.00
BEGIN PROJECT

Mainline POT 0+220.00=
Ward Hill Road POT 5+000.00
Delta = 87° 48' 7.2" Lt.

Mainline POT 0+245.00=
Chan. POT 10+000.00
Delta = 80 Deg. Lt.

PLAN

0 2 4 6 8 10
SCALE 1:100



ELEVATION (LOOKING UP STREAM)

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059pe.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: R. PELLETT
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059pe.1	SHEET 18 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EROSION CONTROL NARRATIVE

Metric

DESCRIPTION OF PROJECT

THIS PROJECT INVOLVES THE RECONSTRUCTION OF A BRIDGE OVER THE DOWSVILLE BROOK. THE PROJECT IS ON VT ROUTE 100, A MINOR ARTERIAL, STATE ROUTE, IN THE TOWN OF DUXBURY. A NEW, SINGLE SPAN, INTEGRAL ABUTMENT, STEEL GIRDER BRIDGE WILL BE CONSTRUCTED ON THE EXISTING ALIGNMENT. A TEMPORARY DETOUR WILL BE CONSTRUCTED TO MAINTAIN TRAFFIC WHILE THE NEW BRIDGE IS UNDER CONSTRUCTION. TOTAL ROADWAY APPROACH WORK, INCLUDING BOTH APPROACHES, IS APPROXIMATELY 139.1 METERS. THE LIMITS OF CONSTRUCTION DO NOT APPROACH ANY BUILDING OR OTHER STRUCTURES. NO THREATENED & ENDANGERED SPECIES, WETLANDS, OR HISTORIC RESOURCES HAVE BEEN IDENTIFIED IN THE PROJECT AREA. THE SITE IS LOCATED UPON NAD 83/92 AT 192066.061N, 477279.311E.

IN THE NE QUADRANT OF THE PROJECT THERE IS A PRIVATE POND AND IN THE NW QUADRANT THERE IS A CLASS III WETLANDS.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW AND STAGING AREAS): 0.34 ha (0.84 ac.)

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:
THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION, MODERATE TO STEEPLY SLOPING, MIXED SOFTWOOD AND HARDWOOD FOREST. THE DRAINAGE WAYS ARE WELL DEFINED AND RUNOFF WATER ENTERING THE PROJECT SITE WILL BE PRIMARILY LIMITED TO THAT WHICH IS CONVEYED ALONG ROADWAY DITCHES, AND THAT WHICH FOLLOWS ROUTE 100 ALONG THE 5.24% GRADE AT THE BEGINNING OF THE PROJECT LIMITS. THE CURRENT DITCHES ARE NOT WELL DEFINED AND ARE NOT LINED WITH STONE.

DRAINAGE, WATERWAYS, BODIES OF WATER:
DOWSVILLE BROOK IS LOCATED IN THE PROJECT AREA. THE DOWSVILLE BROOK IS CHARACTERIZED AS A SMALL TO MEDIUM, STABLE, PERENIAL AND STRAIGHT RIVER WITH A STREAMBED OF COBBLES TO LARGE BOULDERS. THE AREA SURROUNDING DOWSVILLE BROOK IS CONSIDERED FORESTED, WITH HILLY TO MOUNTAINOUS TERRAIN. DOWSVILLE BROOK HAS A DRAINAGE AREA OF 18.62 SQUARE KILOMETERS (7.19 SQUARE MILES).

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:
THE TOPOGRAPHY OF THE PROJECT SITE IS MOUNTAINOUS AND WOODED WITH VT ROUTE 100 RUNNING PERPENDICULAR TO DOWSVILLE BROOK WHICH IS CONTAINED BY STEEP RIVER BANKS ALONG EACH SIDE. DEVELOPMENT ALONG VT ROUTE 100 CONSISTS OF THREE RESIDENCES THAT EXIST NEAR THE PROJECT LIMITS. THERE ARE NO OVERHEAD UTILITIES IN THE VICINITY OF THE PROJECT LIMITS.

VEGETATION:
A MIX OF HARDWOOD AND SOFTWOOD TRESS OF ALL SIZES EXIST ALONG VT ROUTE 100. THE THREE RESIDENCES NEAR THE BRIDGE SITE HAVE SMALL AREAS OF LAWN AND LANDSCAPE PLANTINGS. NO AGRICULTURAL CROPS EXIST NEAR THE PROJECT. IMPACTS TO VEGETATION WILL BE LIMITED TO THAT WHICH ARE EFFECTED BY THE CONSTRUCTION OF THE NEW BRIDGE ALONG THE EXISTING ALIGNMENT AND THE TEMPORARY DETOUR. THE TEMPORARY DETOUR CUTS THROUGH THE ADJACENT WOODS, SO A SIGNIFICANT AMOUNT OF TREES WILL NEED TO BE REMOVED.

SOILS:

SOIL NAME	DEPTH	ERODABILITY	K-VALUE
GRANGE SILT LOAM	0"-65"	HIGHLY ERODABLE	0.43

GRANGE SOILS FORMED IN LOAMY OVER SANDY GLACIOFLUVIAL DEPOSITS ON TERRACES. THEY ARE VERY DEEP TO BEDROCK AND POORLY AND SOMEWHAT POORLY DRAINED. THESE SOILS HAVE A WATER TABLE AT DEPTHS OF 0 TO 455mm BELOW THE SURFACE FROM LATE FALL THROUGH LATE SPRING. PERMEABILITY IS MODERATE IN SOLUM AND MODERATELY RAPID TO PERMEABILITY IN THE SUBSTRATUM.

THE MAJORITY OF THIS PROJECT IS CONSIDERED TO BE "IN A FILL TYPICAL," MEANING THE ROADWAY IS HIGHER THAN THE SURROUNDING MEAN GROUND ELEVATION. DUE TO ENGINEERING REQUIREMENTS FOR SELECTIVE FILL MATERIAL DEPTHS, MUCH OF THIS FILL MATERIAL WILL NEED TO BE BROUGHT IN FROM AN OUTSIDE SOURCE. SINCE WE DO NOT KNOW WHERE THIS SOURCE PIT WILL BE, WE CAN NOT PROVIDE ITS ERODABILITY PROPERTIES.

SENSITIVE RESOURCE AREAS:
NO "THREATENED & ENDANGERED SPECIES" HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS AND THERE WILL BE NO ADVERSE EFFECT TO HISTORIC OR ARCHAEOLOGICAL FEATURES. SENSITIVE AREAS INCLUDE DOWSVILLE BROOK, A CLAS III WETLAND, AND A PRIVATE POND.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:
DISTURBANCE OF SOILS NEAR NATURAL OR MAN-MADE WATERWAYS CONSISTS OF THAT WHICH IS NECESSARY TO CONSTRUCT TWO NEW INTEGRAL ABUTMENTS AND A TEMPORARY DETOUR. STABILIZATION OF DISTURBANCES TO STREAM BANKS WILL BE ACCOMPLISHED WITH STONE FILL, TYPE IV.

DESCRIPTION OF SLOPES:
THE EXISTING SHAPE OF THE PROJECT AREA CAN BE SEEN BY LOOKING AT THE "EXISTING EROSION CONTROL" SHEET, WHERE THE EXISTING CONTOURS ARE SHOWN. THE CONTOURS ARE SHOWN IN TWO LINE STYLES. THE MAJOR CONTOUR LINES ARE SOLID LINES (WITH ELEVATIONS) AT ONE METER INTERVALS, WHILE THE MINOR CONTOUR LINES ARE DASHED AND DEPICT THE HALF METER INTERVAL BETWEEN TWO MAJOR CONTOUR LINES.

EXISTING SLOPES:
GENERALLY SPEAKING THE PROJECT IMPACTS MODERATELY STEEP AND STEEP AREAS. BEGINNING AT THE PROPOSED BEGIN APPROACH THE WEST SIDE OF VT 100, THE SLOPES ARE VERY MODERATE FROM THE TURNAROUND AND WARD HILL ROAD TO THE BEGINNING OF THE PROPOSED ABUTMENT #1. AFTER DOWSVILLE BROOK THE SLOPES STEEPEN FOR 20m AND THEN FLATTEN OUT FOR THE REMAINDER OF THE PROJECT.

THE SLOPES ON THE EAST SIDE OF US#2 FROM THE BEGIN APPROACH TO PROPOSED STA. 0+210 ARE MODERATELY FLAT AND THE STEEPEN UNTIL DOWSVILLE BROOK. AFTER DOWSVILLE BROOK THE SLOPES ARE STILL RELATIVELY STEEP AND CONTINUE UNTIL THE PROPOSED END APPROACH.

PROPOSED SLOPES:
THE PROPOSED ROADWAY EMBANKMENTS WILL HAVE MODERATELY STEEP TO STEEP SLOPES. THE ROADWAY FILL SLOPES ON THE EAST SIDE OF VT 100 FROM STA. 0+210 TO DOWSVILLE BROOK ARE ALL A SLOPE OF 1-1.5 (67%). EMBANKMENTS WITH A SLOPE STEEPER THAN 1-2 (50%) REQUIRE GUARDRAIL AND ARE LINED WITH STONE. AFTER DOWSVILLE BROOK, THE EMBANKMENTS REMAIN AT 1-1.5 FOR SLOPE UNTIL STA. 0+310 SLOPES OF 1-2 (50%) AND 1-3 (33%) TO THE END OF THE APPROACH.

THE SLOPES ON THE WEST SIDE OF US#2 ARE GRADUAL FROM THE TURNAROUND AND WARD HILL ROAD FROM THE BEGINNING OF THE PROJECT TO STA. 0+239.54 WHICH HAS A SLOPE 1-4 (25%). A SLOPE OF 1-4 IS CONTINUED ONTO DOWSVILLE BROOK. AFTER DOWSVILLE BROOK THE SLOPE BECOMES 1-2 UNTIL THE END OF THE PROJECT STA 0+280. THE SLOPES AT 1-1.5 REQUIRE GUARDRAIL AND STONE LINING. THE SLOPE THEN FLATTENS OUT TO THE END OF THE APPROACH.

THE SLOPES ALONG CHANNEL BANKS ARE LINED WITH HEAVY STONE AND ARE AT 1-1.5 (67%).

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.

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING, OR AN EQUIVALENT PRODUCT, WILL BE UTILIZED ON ALL SLOPES STEEPER THAN 3:1 THAT ARE NOT LINED WITH STONE FILL. AREAS AT STATIONS 1+125 - 1+135 RT AND 1+147 - 1+160 LT WILL REQUIRE THIS TECHNIQUE. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE OR DURING INTERMITTENT PHASES OF CONSTRUCTION ACTIVITY.

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. THE FORECAST OF RAINFALL EVENTS SHALL ALSO TRIGGER PROTECTION OF EXPOSED SLOPES.

TEMPORARY STONE CHECK DAMS WILL BE PLACED IN DITCHES TO REDUCE FLOW VELOCITIES AND THUS REDUCE THE POTENTIAL FOR EROSION. CHECK DAMS WILL BE PLACED ALONG THE DITCHES SUCH THAT THE ELEVATION OF THE TOP OF EACH CHECK DAM CORRESPONDS WITH THE ELEVATION OF THE TOE OF THE PRECEDING UPSLOPE CHECK DAM. SEE 'EROSION CONTROLS DETAILS' SHEET. THE CHECK DAMS MAY BE REMOVED ONCE THE STONE LINING OF THE DITCHES IS COMPLETE AND THE SURROUNDING AREA STABILIZED.

TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:

SILT FENCE WILL BE PLACED ALONG THE CONTOUR WITH ENDS TURNED SLIGHTLY UPHILL TO CREATE A PONDING EFFECT SHOULD WATER TRY TO RUN ALONG THE FENCING AND AROUND THE ENDS. THE MAXIMUM SLOPE LENGTH BETWEEN SEPARATE RUNS OF SILT FENCE IS 30 000 (100'). SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UPSLOPE EARTHWORK.

INLET PROTECTION WILL BE UTILIZED AROUND DROP INLETS TO CREATE A TEMPORARY PONDING AREA FOR PARTICLES TO SETTLE OUT AS WATER DRAINS THROUGH THE BARRIER. INLET PROTECTION SHALL BE INSTALLED AS SOON AS THERE IS THE POSSIBILITY OF WATER FLOWING TO THE STRUCTURE. THE HEIGHT OF THE BARRIER SHALL BE LIMITED SUCH THAT THE PONDING AREA DOES NOT PRESENT A HAZARD TO THE TRAVELING PUBLIC. ALTERNATIVE INLET CONTROL MEASURES SHALL BE APPROVED BY THE ENGINEER AND ON-SITE COORDINATOR PRIOR TO IMPLEMENTATION.

ALL EROSION CONTROL MEASURES THAT TRAP SEDIMENT SUCH AS TEMPORARY STONE CHECK DAMS, SILT FENCE, SEDIMENT BASINS, AND INLET PROTECTION SHALL BE CHECKED REGULARLY FOR ACCUMULATION OF SEDIMENT. SEDIMENT BUILD-UP SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT REACHES ONE-HALF THE HEIGHT OF THE CONTROL MEASURE. SEDIMENTS SHALL BE DISPOSED OF IN AN APPROVED AREA SUCH THAT THEY 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. COARSE STONE FILL OVER THE FILTER FABRIC SHOULD BE UTILIZED WHERE AN ALL READY ESTABLISHED STABLE ENTRANCE DOES NOT EXIST. THE CRUSHED STONE PRODUCT USED FOR THE CONSTRUCTION OF THE STABILIZED ENTRANCES SHALL BE MONITORED FOR SEDIMENT ACCUMULATION AND REPLACED AS NECESSARY AS DIRECTED BY THE RESIDENT ENGINEER. THE MINIMUM SIZE OF A STABILIZED CONSTRUCTION ENTRANCE IS 3700 x 15 000 (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 150mm DIAMETER SHALL BE USED. SEE TYPICAL DETAIL ON 'EROSION AND SEDIMENT CONTROL PLAN' SHEET FOR MATERIALS AND CONSTUCTION METHOD TO BE UTILIZED WHEN CONSTRUCTING A STABILIZED ENTRANCE.

AFTER THE CLEARING OF TREES AND SHRUBS, BUT PRIOR TO ANY GRUBBING AND EXCAVATION, CONSTRUCT PERIMETER CONTROLS TO ENSURE THAT ANY DISTRUBED SEDIMENT DOES NOT LEAVE THE SITE. SEDIMENT TRAPS/BASINS, WHERE WATER HAS BEEN ADEQUATELY TREATED, MAY BE DIRECTED TO NEARBY UNDISTURBED STREAMS OR SWALES.

INSTALL PERIMETER SILT FENCE IN AREAS OF PROPOSED WORK AS SHOWN ON THE PLANS PRIOR TO GRUBBING AND FILLING ACTIVITIES. IN AREAS OF HIGH EXPOSURE, IT MAY BE NECESSARY TO DOUBLE UP PROTECTION WITH ADDITIONAL SILT FENCING. IN AREAS OF EXPOSED LEDGE, STONE CHECK DAMS WILL BE UTILIZED.

DURING GRUBBING OPERATIONS, STONE CHECK DAM BARRIERS SHALL BE INSTALLED AT ANY OBVIOUS CONCENTRATED FLOW DISCHARGE POINTS, OR AS DIRECTED BY THE RESIDENT ENGINEER AND ON-SITE COORDINATOR.

ALL AREAS OF EXPOSED SOILS AFTER THE GRUBBING ACTIVITY SHALL BE TEMPORARILY STABILIZED WITH MULCHING AND SEEDING, EROSION MATTING, OR STRAW MATTING AS SOON AS PRACTICABLE AND BEFORE ANY PREDICTED RAINFALL EVENT. THESE TEMPORARY EROSION MEASURES CAN BE PLACED IN ANY COMBINATION IN AREAS OF POTENTIAL EROSION AS DEEMED NECESSARY BY THE RESIDENT ENGINEER AND ON-SITE COORDINATOR.

AFTER PERIMETER CONTROLS ARE IN PLACE, AND PRIOR TO GRADING OPERATIONS, CONSTRUCT TEMPORARY ONSITE SEDIMENT TRAPS WHERE NECESSARY. GRADE DISTURBED AREAS TO DRAIN TOWARDS SEDIMENT TRAP WHERE POSSIBLE.

ANY MATERIAL STOCKPILES, INCLUDING BUT NOT LIMITED TO, GRUBBING MATERIAL, SAND BORROW, EARTH BORROW, GRANULAR BORROW, TOPSOIL, AND ANY EXCAVATED WASTE PILES SHALL BE MULCHED AND SHALL ALSO HAVE SILT FENCE INSTALLED AROUND THE BASE OF THE STOCKPILE. REMOVAL OF THE SILT FENCES AROUND THE WASTE AREAS AND STOCKPILES SHALL BE PERFORMED ONLY AFTER THE APPROVAL OF THE RESIDENT ENGINEER AND ON-SITE COORDINATOR.

STONE FILL FOR CHANNEL AND SLOPE STABILIZATION AT THE OUTLET END OF CULVERTS IS TO BE PLACED PRIOR TO INSTALLATION OF CULVERTS. ALL WORK ON NEW CULVERTS SHOULD PROCEED FROM THE OUTLET TOWARDS THE INLET. SILT FENCE AND/OR CRUSHED STONE CHECK DAMS ARE TO BE INSTALLED ON UNDISTURBED GROUND AND DOWNSTREAM OF THE STONE FILL PADS AT OUTLETS. STONE FILL FOR DITCH STABILIZATION SHALL BE PLACED DURING THE SAME WORKING DAY THAT THE DITCH EXCAVATION WAS PERFORMED, UNLESS DIRECTED OTHERWISE BY THE RESIDENT ENGINEER AND ON-SITE COORDINATOR.

ON ANY PARTIALLY COMPLETED TEMPORARY OR PERMANENT CUT AND FILL SLOPES, ALL EXPOSED SOILS WIL BE STABILIZED WITH STRAW MATTING OR SEEDED AND MULCHED. IN AREAS OF CONCENTRATED RUNOFF AVOVE NEWLY CONSTRUCTED FILL SLOPES, FLEXIBLE SLOPE PIPES OR OTHER APPROVED DIVERSION METHODS WILL BE USED TO TRANSPORT RUNOFF DOWN THE FILL SLOPES TO SEDIMENT TRAPS OR SETTLING BASINS.

ANY NEW FILL SLOPES THAT ARE DESIGNED WITH STONE FILL BLANKETS FOR SLOPE STABILIZATION SHALL BE CONSTRUCTED WITH THE STONE FILL BEING PLACED AS THE FILL SLOPE EMBANKMENT CONSTRUCTION PROGRESSES.

THE SUBBASE MATERIAL SHOULD BE PLACED AS SOON AS THE SUBGRADE HAS REACHED ITS FINAL GRADE AND SLOPE. THE TEMPORARY TRAVELING SURFACE WILL BE GRADED TO PROMOTE SHEET FLOW OFF THE SURFACE ONTO SLOPES.

PROJECT NAME:	**DUXBURY**
PROJECT NUMBER:	**STP 013-4(24)**
FILE NAME:	/PW/86e059/se059ec.xls
PROJECT LEADER:	C. KELLER
DESIGNED BY:	B. NYQUIST
EROSION CONTROL NARRATIVE #1	
PLOT DATE:	10/4/2004
DRAWN BY:	J. GILMORE
CHECKED BY:	T. SUMNER
SHEET	19 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EROSION CONTROL NARRATIVE

Metric

DETOUR REMOVAL AND FINAL EROSION CONTROLS

REMOVE TEMPORARY DETOUR FILL MATERIAL TO ORIGINAL GROUND.

AS THE TEMPORARY DETOUR FILLS ARE REMOVED, ALL EXPOSED SOIL SURFACES WILL BE STABILIZED WITH STRAW MATTING AND/OR SEED AND MULCH.

THE NEWLY PLACED GRUBBING MATERIAL SHALL BE STABILIZED WITH STRAW MATTING AND/OR SEED AND MULCH AS DIRECTED BY THE RESIDENT ENGINEER AND ON-SITE COORDINATOR.

REMOVAL OF SILT FENCE SHALL COMMENCE ONLY AFTER ALL UPSLOPE AREAS ARE STABILIZED AND WELL ESTABLISHED, AND THE RESIDENT ENGINEER HAS APPROVED THE REMOVAL.

REMOVE PERIMETER SILT FENCE AND SEDIMENT TRAPS ONLY AFTER ANY TOE-OF-FILL DITCHES HAVE BEEN STABILIZED AND VEGETATION IS WELL ESTABLISHED.

REMOVE ALL REMAINING TEMPORARY EROSION CONTROL MEASURES. REGRADE ANY AREAS IF NECESSARY, TREAT ALL REGRADED AREAS WITH STRAW MATTING AND/OR MULCH AND SEED, AND ESTABLISH ANY FINAL EROSION CONTROL DEVICES AS DEEMED NECESSARY BY THE RESIDENT ENGINEER AND ON-SITE COORDINATOR.

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:

STONE LINING OF ROADWAY DITCHES WITH CLEAN, ANGULAR STONE FILL, TYPE I WILL BE USED TO PREVENT EROSION DURING STORM EVENTS. SEE 'EROSION CONTROL DETAILS' SHEET FOR TYPICAL DITCH SECTION. ROADWAY EMBANKMENTS WITH SLOPES GREATER THAN 1 ON 2 (50% +) WILL BE LINED WITH STONE FILL, TYPE II.

STONE LINING OF THE STREAM BANKS WITH STONE FILL, TYPE IV AS SPECIFIED BY VTRANS HYDRAULICS PERSONNEL IS SPECIFIED. THIS STONE WILL PROTECT FROM STREAM BANK EROSION DURING DESIGN STORM EVENTS.

STONE FILL, TYPE II WILL BE UTILIZED AT CULVERT OUTLETS TO DISSIPATE WATER VELOCITIES AND REDUCE EROSION POTENTIAL.

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, STORMWATER 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 AND ON-SITE COORDINATOR. 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. THE CONTRACTOR SHALL REPAIR ALL DAMAGED EROSION CONTROL MEASURES IMMEDIATELY.

PREVENTING INITIAL SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. THEREFORE, STABILIZE ALL DISTURBED AREAS PROMPTLY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY VEGETATION SHALL BE ESTABLISHED IF THE AREA IS TO BE WITHOUT CONSTRUCTION ACTIVITY FOR A PERIOD OF 14 DAYS. PERIMETER CONTROL MEASURES SHALL BE INSTALLED FOLLOWING CLEARING, BUT PRIOR TO THE START OF ANY GRUBBING OR GRADING ACTIVITY, INSTALL OTHER TEMPORARY CONTROLS IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

CONTROL ONLY SEDIMENT-LADEN RUNOFF GENERATED BY THE PROJECT SITE. 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 DOWNSLOPE SIDE OF PERIMETER CONTROL MEASURES.

WINTER STABILIZATION METHODS WILL NOT BE SHOWN ON THE PLANS OR DESCRIBED IN THE NARRATIVE AS THE PROJECT IS EXPECTED TO BE COMPLETED DURING THE GROWING SEASON. THE GROWING SEASON IS MAY 1ST TO OCTOBER 15TH. VIGOROUS GROWTH SHOULD BE ESTABLISHED BY SEPTEMBER 15TH.

THE RESIDENT ENGINEER'S APPROVAL SHALL BE OBTAINED PRIOR TO INSTALLING ANY EROSION CONTROL NOT SPECIFIED IN THE EROSION CONTROL PLANS. HOWEVER, IN EMERGENCY SITUATIONS WHERE THE RESIDENT ENGINEER IS NOT IMMEDIATELY AVAILABLE, THE CONTRACTOR SHOULD REPAIR OR INSTALL THE EROSION CONTROLS AS THEY DEEM NECESSARY AND REPORT THE INCIDENT TO THE RESIDENT ENGINEER AS SOON AS PRACTICAL.

AN ALTERNATE TEMPORARY EROSION CONTROL PLAN MAY BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE AGENCY OF TRANSPORTATION.

THE RESIDENT ENGINEER MAY DIRECT THE INSTALLATION OF CERTAIN EROSION CONTROL MEASURES IN ORDER TO AVOID POTENTIAL EROSION PROBLEMS, OR TO RESPOND TO STORM EVENTS OR DAMAGE BY CONSTRUCTION OPERATIONS.

AS CONSTRUCTION PROGRESSES, IMPLEMENTATION OF ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY THE ON-SITE COORDINATOR AND AS APPROVED BY THE RESIDENT ENGINEER.

CONSTRUCTION EQUIPMENT WILL NOT BE ALLOWED TO CROSS A FLOWING STREAM, OR DISTURB THE EXISTING STREAM BANKS, UNLESS AUTHORIZED BY THE RESIDENT ENGINEER.

PROJECT NAME:	**DUXBURY**		
PROJECT NUMBER:	**STP 013-4(24)**		
FILE NAME:	**/PW/86e059/se059ec.xls**	PLOT DATE:	**10/4/2004**
PROJECT LEADER:	**C. KELLER**	DRAWN BY:	**J. GILMORE**
DESIGNED BY:	**B. NYQUIST**	CHECKED BY:	**T. SUMNER**
EROSION CONTROL NARRATIVE #2		SHEET **20** OF **62**	

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES (P/L) ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

VT STATE PLANE GRID N

LEGEND

P/L — PROPERTY LINE

EXISTING ROW — EXISTING ROW LINE

Ward Hill Road

MIXED HARDWOOD AND SOFTWOOD

gravel drive

ROADWAY DRAINAGE

BUFFER ZONE

gravel road

Dowsville Brook

SMALL WATER COURSE

CLASS III WETLAND

GRASS

gravel driveway

VT 100 TO MORETOWN

VT 100 TO WATERBURY

pond

ARCH

THE ARCHAEOLOGY AREAS SHOWN ON THIS SHEET ARE FOR RESOURCE INFORMATION ONLY. THEY DO NOT NEED TO BE COVERED OR FENCED OFF.

FOR INFORMATION OF SOIL TYPE, SEE EROSION CONTROL NARRATIVE, SHEET 19.

IMPACTS WITHIN THE BUFFER ZONE SHALL BE MINIMIZED.

EXISTING CONDITIONS SITE PLAN

DATUM

VERTICAL NAVD88

HORIZONTAL NAD 83 (1992)

0 10 20 30

SCALE (1:250) IN METERS

PROJECT NAME: DUXBURY

PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059ec.dgn

PROJECT LEADER: C. KELLER

DESIGNED BY: B. NYQUIST

se059ec3.i

PLOT DATE: 20-OCT-2005

DRAWN BY: J. GILMORE

CHECKED BY: T. SUMNER

SHEET 21 OF 62

Metric

LEGEND

- SILT FENCE
- PDF —— PROJECT BOUNDARY DEMARCATION FENCE (SNOW FENCE (MOD.-PDF))
- STONE CHECK DAM
- INLET PROTECTION
- EROSION MATTING
- STONE FILL, TYPE II FOR TEMPORARY DETOUR ON SIDE SLOPES

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES APPEAR BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

VT STATE PLANE GRID N

SEDIMENT SETTLING BASIN SIZING CRITERIA

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

Ward Hill Road

gravel drive

BUFFER ZONE

gravel road

Dowsville Brook

CLASS III WETLAND

gravel driveway

VT 100 TO MORETOWN

VT 100 TO WATERBURY

Possible site for Sediment Basin

TEMP. DETOUR

LIMITS OF TEMPORARY DETOUR

pond

THE ARCHAEOLOGY AREAS SHOWN ON THIS SHEET ARE FOR RESOURCE INFORMATION ONLY. THEY DO NOT NEED TO BE COVERED OR FENCED OFF.

IMPACTS WITHIN THE BUFFER ZONE SHALL BE MINIMIZED.

0 10 20 30

SCALE (1:250) IN METERS

DATUM

VERTICAL NAVD88

HORIZONTAL NAD 83 (1992)

EROSION & SEDIMENT CONTROL PLAN

PROJECT NAME: DUXBURY

PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059ec.dgn

PROJECT LEADER: C. KELLER

DESIGNED BY: B. NYQUIST

se059ec4.i

PLOT DATE: 20-OCT-2005

DRAWN BY: J. GILMORE

CHECKED BY: T. SUMNER

SHEET 22 OF 62

EAST Metric

VT STATE PLANE GRID N

WARD HILL ROAD 5+035.000
END SIDE ROAD CONSTRUCTION

Ward Hill Road

POT 5+050.09

5+050

5+040

5+020

BUFFER ZONE

gravel drive

PT 5+021.41

PC 5+014.53

BEGIN BRIDGE
STA 0+239.550
FG 218.953

4M

2.5M

TYPE I

7.25M

20.3M

gravel road

0+170.000
BEGIN APPROACH

TYPE I
9M

TYPE I
4.8

VT 100
TO MORETOWN

0+160

0+200

gravel drive

PT 0+219.43

0+220.000
BEGIN PROJECT
Mainline POT 0+220.00=
Ward Hill Road POT 5+000.00
Delta = 87°48'17.2" Lt.

TYPE II

TYPE IV

TYPE II

TYPE IV

10+020

10+040

10+060

9+380

Dewsville Brook

END BRIDGE
STA 0+260.450
FG = 218.476

0+280.000
END PROJECT

0+340.000
END APPROACH

gravel driveway

0+240

0+260

0+280

0+300

0+340

VT 100
TO WATERBURY

TYPE IV

TYPE IV

TYPE II

FIELD MEASURED
NICK VANDENBURG
VIA DWANE

Mainline POT 0+245.00=
Chain. POT 10+000.00
Delta = 80 Deg. Lt.

pond

BUFFER ZONE

IMPACTS WITHIN THE BUFFER ZONE SHALL BE MINIMIZED.

In Leiu of Final Contours, Slope indicators have been included on this sheet. Examples are as follows; "I-4 >" & "< I-2"

DATUM

VERTICAL NAVD88
HORIZONTAL NAD 83 (1992)

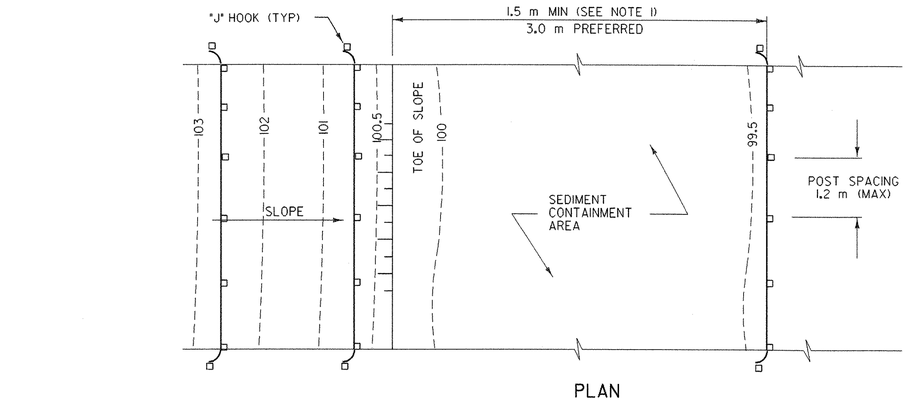
0 10 20 30
SCALE (1:250) IN METERS

FINAL CONDITIONS SITE PLAN

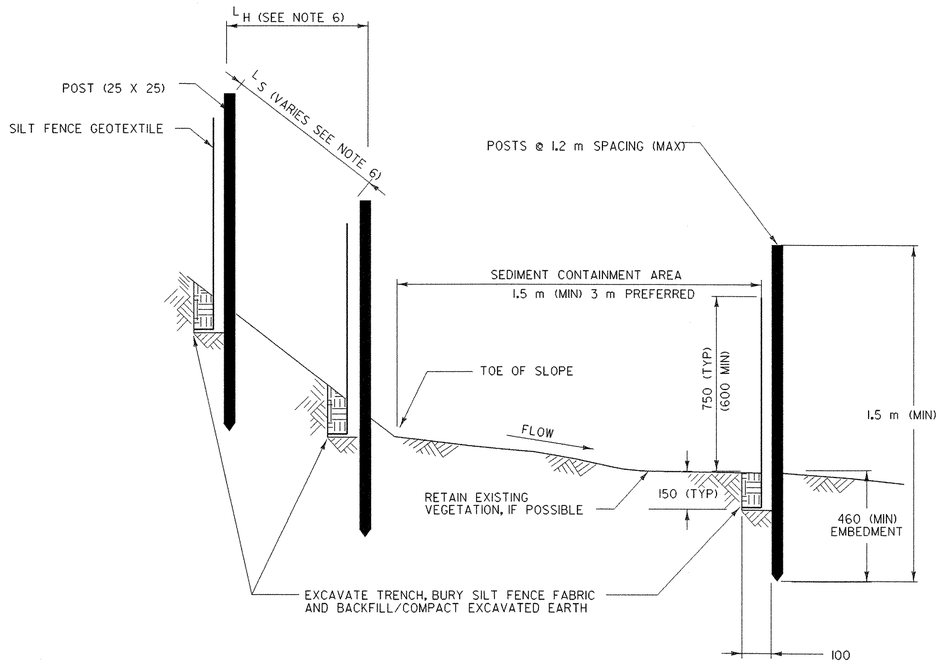
PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059ec.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059ec5.i

PLOT DATE: 20-OCT-2005
DRAWN BY: J. GILMORE
CHECKED BY: T. SUMNER
SHEET 23 OF 62

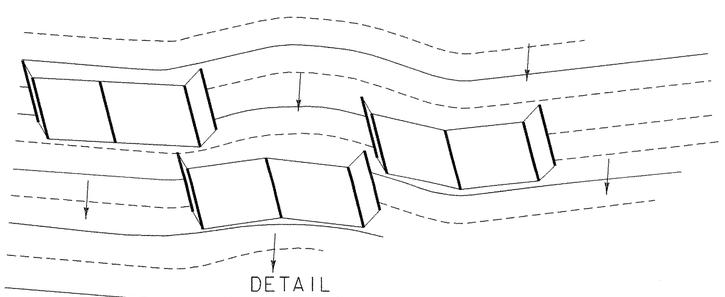


PLAN



SECTION

SILT FENCE - TEMPORARY



DETAIL
SILT FENCE

NOTES :
1. DO NOT USE SILT FENCE IN STREAMS, DRAINAGE DITCHES, OR AREAS OF CONCENTRATED FLOW.
2. BACK WITH STAKED-IN-PLACE HAY BALES OR WIRE FENCE IF ADDITIONAL SUPPORT IS NEEDED.
3. MUST BE REMOVED WHEN SOIL IS STABILIZED.

SILT FENCE

APPLICATION NOTES:

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

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

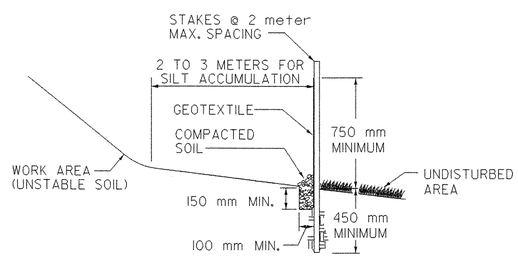
C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 1.5 m BEYOND TOE OF SLOPE, 3 m PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 150 mm BELOW GROUND, AND KEYED IN 100 mm. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 30 m OF SILT FENCE SHALL BE 0.1 Ha.
6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

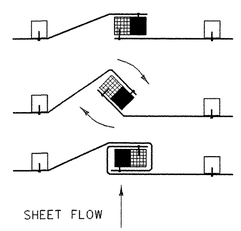
CONSTRUCTED SLOPE	SLOPE LENGTH (LS) m	HORIZONTAL LENGTH (LH) m
1-3	25	24
1-4	40	39
1-5	60	60
flatter than 1-5	80	80

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



SILT FENCE DETAIL AT BOTTOM OF FILL SLOPES

NOTES :
1. DO NOT USE SILT FENCE IN STREAMS, DRAINAGE DITCHES, OR AREAS OF CONCENTRATED FLOW.
2. BACK WITH STAKED-IN-PLACE HAY BALES OR WIRE FENCE IF ADDITIONAL SUPPORT IS NEEDED.
3. MUST BE REMOVED WHEN SOIL IS STABILIZED.



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

SPLICING DETAIL

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

SILT FENCE

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059ecd.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: N. GARBACIK
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059slt.i	SHEET 24 OF 62

CHECK DAMS

APPLICATION NOTES:

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

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

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

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

GENERAL NOTES:

1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 0.6 m BEYOND THE STONE ON THE DOWN HILL END.

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

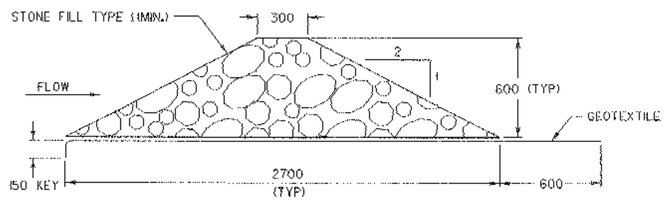
3. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

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

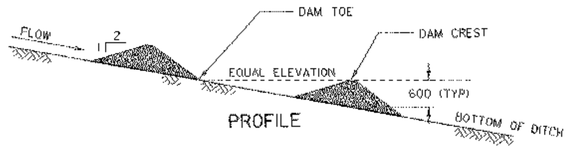
5. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.

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

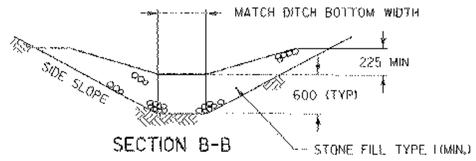
7. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER STONE FILL, TYPE I (MOD.- CHECK DAM)



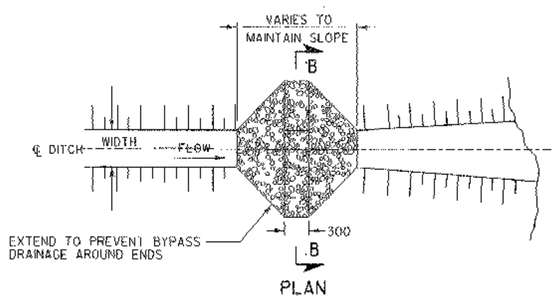
CROSS SECTION



PROFILE



SECTION B-B



PLAN

CHECK DAM - TEMPORARY
(STONE)

STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1%	60 m
2 %	30 m
3 %	20 m
4 %	15 m
5 %	12 m
6 %	10 m
8 %	7.5 m
10 %	6 m

** BASED ON 0.6 m TYPICAL HEIGHT

SEEDING FORMULA
RURAL AREAS

% WT.	kg/ha	NAME	PUR %	GERM %
37.5	26.0	CREEPING RED FESCUE	98	85
37.5	26.0	TALL FESCUE	95	90
5.0	4.0	RED TOP	95	90
15.0	10.0	BIRDSFOOT TREFOIL	98	85
5.0	4.0	ANNUAL RYE GRASS	95	85
100.0	70.0			

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.
FROM STRUCTURES DESIGN MANUAL 70-90KG/HECTAR
FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 560 kg/ha. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

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

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

CHECK DAMS

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4 (24)

FILE NAME: /str5/86e059/se059eckd.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: N. GARBACIK
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059ckd.l	SHEET 25 OF 62

DROP INLET PROTECTION

APPLICATION NOTES:

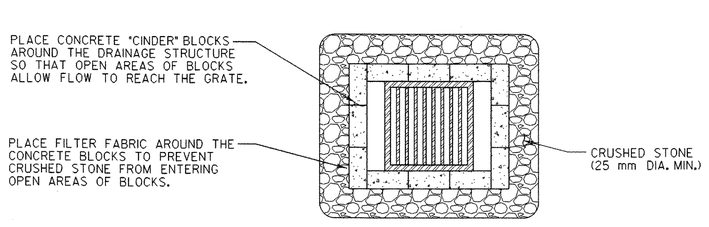
A. THE PRIMARY PURPOSE OF DRAINAGE STRUCTURE INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM BY PONDING WATER WHICH ALLOWS SEDIMENT TO FALL OUT OF SUSPENSION.

B. THESE EXAMPLES OF DROP INLET PROTECTION ARE NOT INTENDED FOR USE ON GRADES. ON GRADE THEY MAY CAUSE WATER TO BYPASS THE STRUCTURE, CREATING ADDITIONAL EROSION OR FLOODING.

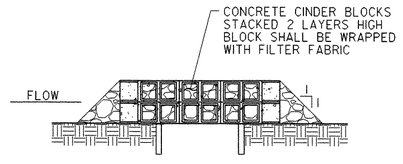
C. POSSIBLE MODIFICATIONS FOR USE ON GRADE INCLUDE ADDING A BERM DOWNSTREAM OF THE INLET TO CREATE PONDING. CHECK DAMS MAY ALSO BE USED UPSTREAM OF THE INLET TO SLOW VELOCITIES.

GENERAL NOTES:

1. THE TOP OF THE INLET PROTECTION SHALL BE SET AT THE MAXIMUM DESIRED WATER LEVEL, BASED ON FIELD LOCATION AND CONDITIONS.
2. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
3. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED, SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
4. PAYMENT OF INLET PROTECTION SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS, ITEM 613.10 (MOD.-INLET PROTECTION)
5. PAYMENT FOR MONITORING INLET PROTECTION SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
6. PAYMENT FOR MAINTAINING INLET PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

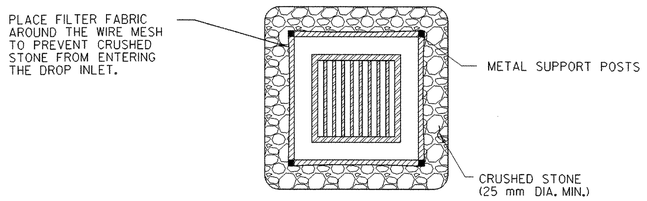


PLAN

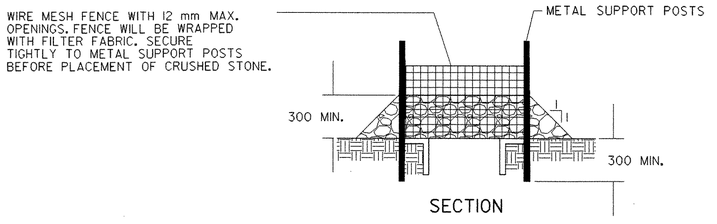


SECTION

ROCK BARRIER DROP INLET PROTECTION
TEMPORARY PAVED AREAS



PLAN



SECTION

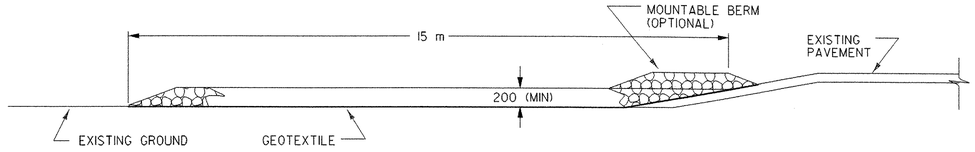
ROCK BARRIER INLET PROTECTION
TEMPORARY UNPAVED AREAS

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

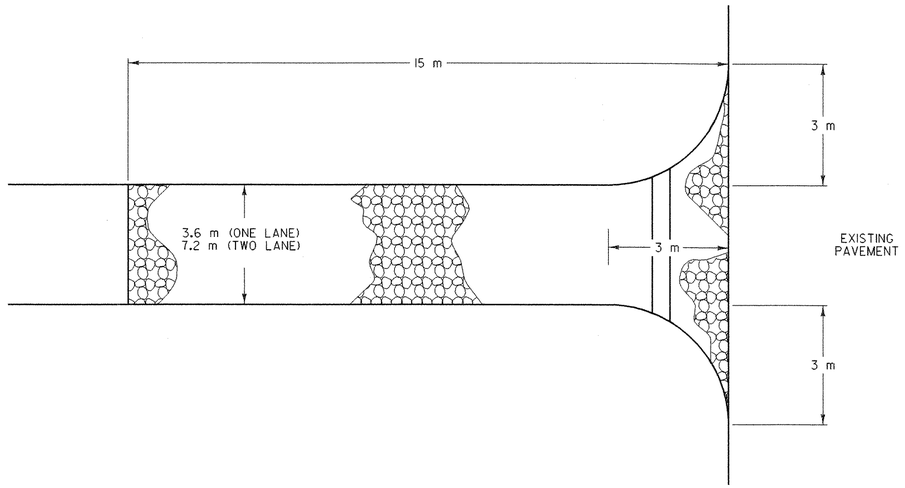
DROP INLET PROTECTION

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

FILE NAME: /str5/86e059/se059ecd.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: N. GARBACIK
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059dip.1	SHEET 26 OF 62



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



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

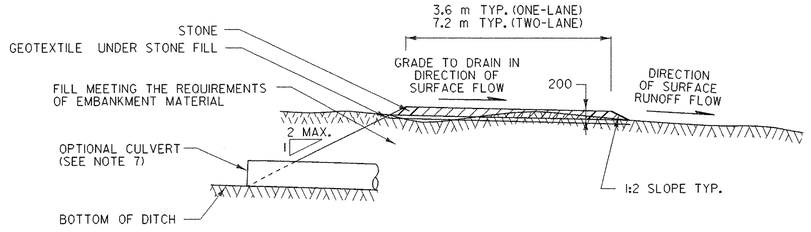
STABILIZED CONSTRUCTION ENTRANCE

APPLICATION NOTES:

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

GENERAL NOTES:

1. STONE SIZE - USE CLEAN STONE WITH GRADATION BETWEEN 50 mm AND 100 mm.
2. LENGTH - 15 m (MIN)
3. THICKNESS - 200 mm (MIN)
4. WIDTH - 3.6 m (MIN)
5. GEOTEXTILE UNDER STONE WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN WASHING OF VEHICLE IS NECESSARY, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. AT THE TIME OF REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
12. PAYMENT OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS, STONE FILL, TYPE I (MOD.-CONSTRUCTION ENTRANCE).
13. PAYMENT FOR MONITORING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
14. PAYMENT FOR MAINTAINING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



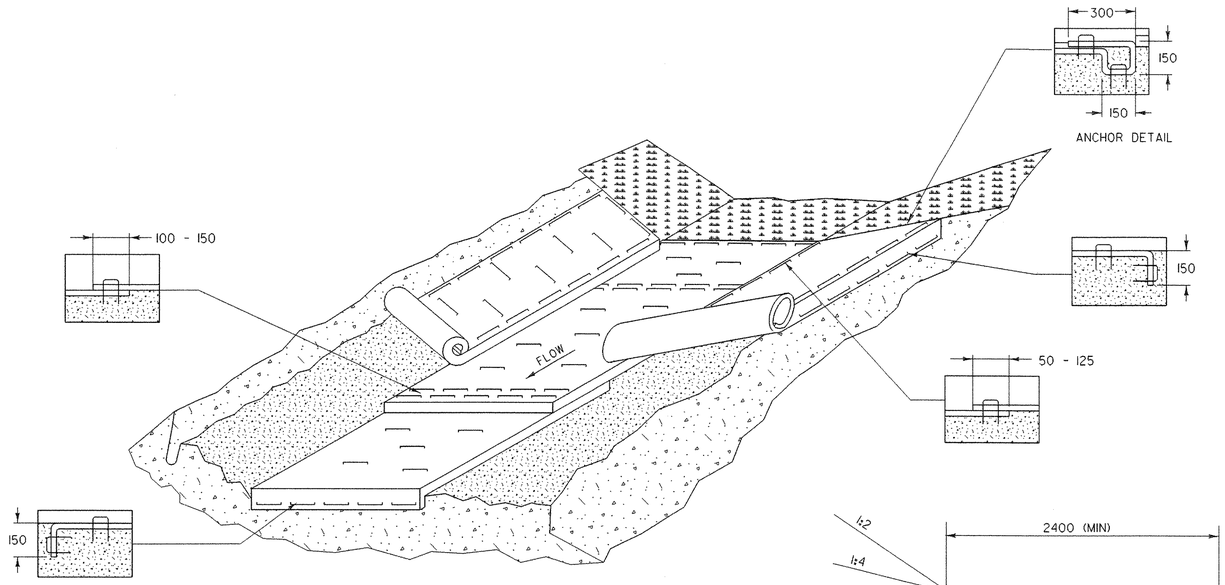
TYPICAL CONSTRUCTION ENTRANCE SECTION

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

CONSTRUCTION ENTRANCE

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

FILE NAME: /str5/86e059/se059ecd.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: N. GARBACIK
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059ce.i	SHEET 27 OF 62



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

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

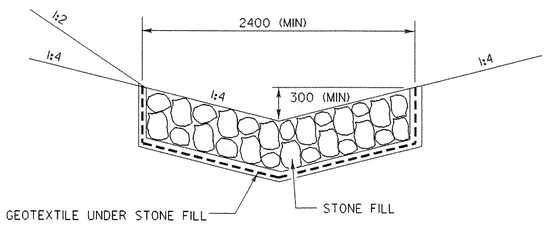
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

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

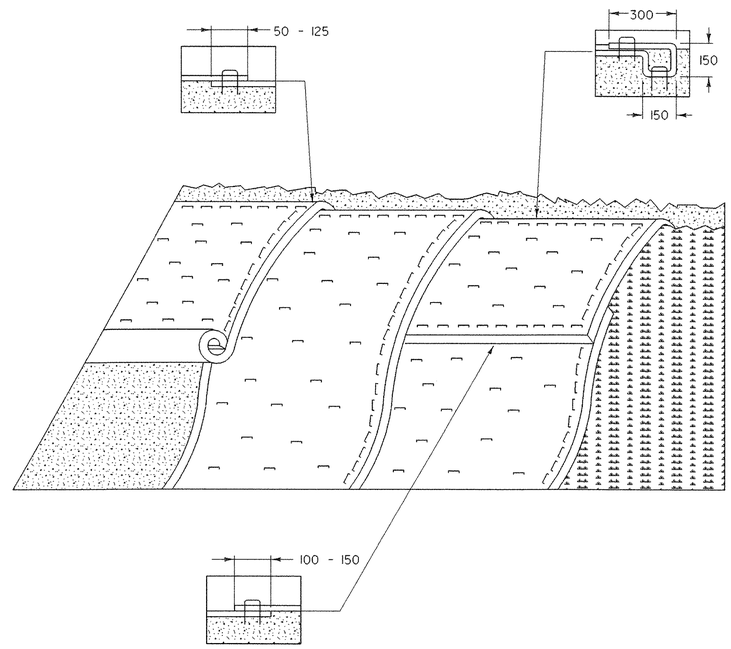
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	0.3 m
TYPE II	0.6 m

GENERAL NOTES:

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



TEMPORARY STONE LINED DITCH



EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

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

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

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

GENERAL NOTES:

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

DITCH & SIDE SLOPE PROTECTION

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

FILE NAME: /str5/86e059/se059ecd.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: N. GARBACIK
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059dsp.i	SHEET 28 OF 62

Metric

DRAINAGE KEYNOTES

①	℄ STA 0+180 LT - ℄ STA 0+212 LT: NEW 450 x 27 000 OPTION PIPE STONE FILL DITCH TYPE I AT INLET AND DROP INLETS TYPE B AT BOTH ENDS
②	℄ STA 5+008 LT - ℄ STA 5+019 LT: NEW 450 x 14 000 OPTION PIPE STONE FILL DITCH TYPE I AT DROP INLET TYPE B
③	℄ STA 5+019 LT - ℄ STA 5+035 LT: CONSTRUCT SPECIAL DITCH
④	℄ STA 5+021 RT - ℄ STA 5+035 RT: CONSTRUCT SPECIAL DITCH
⑤	℄ STA 0+212 LT - ℄ STA 0+233 LT: NEW 600 x 20 000 OPTION PIPE DROP INLET TYPE B AT INLET AND STONE FILL DITCH TYPE I AT OUTLET
⑥	℄ STA 0+182 LT - ℄ STA 0+204 LT: REMOVE PIPE
⑦	℄ STA 0+213 LT - ℄ STA 0+238 LT: REMOVE PIPE
⑧	℄ STA 5+026 RT - ℄ STA 5+029 RT: DO NOT DISTURB PIPE

ALLOWABLE PIPE OPTIONS
CSP 1.63 mm (68 x 12)
RCP CLASS III
CPEP

VT STATE PLANE GRID

N

WARD HILL ROAD 5+035.000
END SIDE ROAD CONSTRUCTION

Ward Hill Road

POT 5+050.09

PT 5+021.41

PC 5+014.53

BEGIN BRIDGE
STA 0+239.550
FG. 218.953

END BRIDGE
STA 0+260.450
FG = 218.476

Dowsville Brook

0+170.000
BEGIN APPROACH

0+220.000
BEGIN PROJECT
Mainline POT 0+220.00=
Ward Hill Road POT 5+000.00
Delta = 87° 48' 17.2" Lt.

PT 0+219.43

0+280.000
END PROJECT

0+340.000
END APPROACH

Mainline POT 0+245.00=
Chan. POT 10+000.00
Delta = 80 Deg. Lt.

VT 100
TO MORETOWN

VT 100
TO WATERBURY

0+160 0+200 0+240 0+260 0+280 0+300 0+340

5+020 5+040 5+050 9+980 9+990 10+000 10+020

woods, house, building, pond, gravel drive, paved driveway, hedge, fence, guy wire, pole, iron pipe, iron pin, well, mile marker, warning sign, speed limit sign, load limit sign, stop sign, sub tv sign, sub tv utility, subt sign, road sign, guide posts, guardrail, drive, TYPE II, TYPE IV, 380 comp, AERIAL E&T

small maple, small birch, small apple, small cherry, small poplar, small spruce, small pine, small willow, small boxelder, boxelder clump, large boxelder, medium boxelder, medium maple, medium cedar, medium pine, medium spruce tie, iliac, shrub, small apple, mm 1000 1206 0020

0 10 20 30
SCALE (1:250) IN METERS

DRAINAGE SHEET

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059drn.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: J. GILMORE
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059drn.i	SHEET 29 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE DETAIL SHEET

Metric

STATION	STATION	POS.	ASKEW	INLET/OUTLET TYPE		DITCH		PIPE ARCH			PIPE		ALLOWABLE OPTIONS						PIPE ELBOW	ES	CB	PROJECT	DEPTH DI	CONC CLASS B	REINF STEEL	DI GRATE	CHAN ELEV	CRM	TRENCH EXCAVATION		COMM EXC	UNC CHAN EXC	STRUCT EXCAV	GRAN BKFILL STRUCT	GRAN BORR	EROS MATT	STONE FILL		MARKER POSTS				REMARKS
km + m	km + m		no. deg.	INLET	OUTLET	IN	OUT	SPAN mm	RISE mm	L m	D mm	L m	PCCSP mm	CAAP mm	RCP CL	CSP mm	CPEP SL mm	PCCSP PI mm	no. deg.	ea	ea		DI mm	m^3	kg	type	ea	m^3	EARTH m^3	ROCK m^3	m^3	m^3	m^3	m^3	m^3	m^2	m^3	type	LT ea	RT ea			
	MAINLINE																																										
0+180	0+186	LT																																				1.9	I					
0+185	0+212	LT		RCDI		X	---				450	27			III	1.63	X						1500	1.9	103	B			41										1				
0+212	0+232	LT		RCDI	---	---	X				600	20			III	1.63	X						1500	1.9	103	B			37										1				
0+232	0+239.55	LT																																				2.3	I					
	WARD HILL RD																																										
5+008	5+018	LT		RCDI		---	---				450	14			III	1.63	X						1500	1.9	103	B			22										1				
5+020	5+035	LT																																				8.6	I					
5+020	5+035	RT																																				10	I					
MAINLINE	SUBTOTAL										450	27			III	1.63	X							3.8	206	2-B			78									4.2	I	2				
											600	20			III	1.63	X																											
WARD HILL	SUBTOTAL										450	14			III	1.63	X							1.9	103	1-B			22									18.6	I	1				
GRAND	TOTAL			3							450	41			III	1.63	X																											
											600	20			III	1.63	X							5.7	309	3-B			100									22.8	I	3				

PROJECT NAME:	**DUXBURY**
PROJECT NUMBER:	**STP 013-4(24)**
FILE NAME:	**/PW/86e059/se059dds.xls**
PROJECT LEADER:	**C. KELLER**
DESIGNED BY:	**B. NYQUIST**
DRAINAGE DETAIL SHEET	
PLOT DATE:	**10/12/2005**
DRAWN BY:	**R. PELLETT**
CHECKED BY:	**T. SUMNER**
SHEET	**30** OF **62**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

GENERAL NOTES

Metric

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SIXTEENTH EDITION, AND ITS LATEST REVISIONS.

2. BRIDGE IS DESIGNED FOR MS 22.5 LIVE LOAD WITH NO ALLOWANCE FOR FUTURE PAVEMENT.

3. IN-STREAM CONSTRUCTION SHALL BE RESTRICTED TO JUNE 1 TO OCTOBER 1, UNLESS THE CONTRACTOR OBTAINS WRITTEN PERMISSION FROM THE AGENCY OF NATURAL RESOURCES TO DO WORK OUTSIDE OF THAT TIME FRAME.

4. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, ESPECIALLY THE DISCHARGE OF RAW CONCRETE, INTO ANY BROOK, STREAM OR RIVER.

5. THE COST OF INSTALLING, MAINTAINING, AND REMOVING SIGNS & BARRICADES NOT SHOWN ON SHEET 14 "DETOUR PLAN & TRAFFIC CONTROL SHEET", OR AS DEEMED NECESSARY BY THE RESIDENT ENGINEER, WILL BE INCIDENTAL TO ITEM 635.11 - MOBILIZATION-DEMOBILIZATION.

6. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 20 DEGREES CELSIUS UNLESS OTHERWISE NOTED.

7. ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL BE USED FOR REMOVAL OF EXISTING STRUCTURE INCLUDING THE SUPERSTRUCTURE AND ANY PORTIONS OF THE SUBSTRUCTURE OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION. THE EXISTING ABUTMENTS SHALL BE REMOVED TO THE GROUND ELEVATION. IF PORTIONS OF THE EXISTING ABUTMENTS (FOOTING, WOOD PILES, ETC.) BELOW THE GROUND SURFACE ARE INTERFERING WITH THE PLACEMENT OF THE INTEGRAL ABUTMENT PILES, THEY SHALL BE REMOVED UNDER ITEM 529.15 "REMOVAL OF STRUCTURE."

8. THE EXISTING STRUCTURAL STEEL ON THIS PROJECT WAS PAINTED WITH A MATERIAL WHICH MAY CONTAIN LEAD. THE REMOVED STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTORS USE OR DISPOSITION OF THE STEEL.

9. EXISTING SIGNS NOT REUSED SHALL REMAIN THE PROPERTY OF THE STATE OF VERMONT. THESE SIGNS SHALL BE STOCKPILED ON THE PROJECT AND THEN LOADED ON A TRUCK SUPPLIED BY THE DISTRICT. CONTACT THE DISTRICT 6 AT 828-2691 TO ARRANGE REMOVAL OF THE SIGNS FROM THE PROJECT.

STONE FILL

10. THE STONE FILL, TYPE IV SHALL BE PLACED IN FRONT OF THE ABUTMENTS BEFORE THE BEAMS ARE SET.

11. UNTIL THE BEAMS ARE SET, THE FILL IN FRONT AND BEHIND THE ABUTMENT WILL BE THE SAME ELEVATION.

12. BACKFILL BEHIND ABUTMENT 1 AND ABUTMENT 2 SHALL BE PLACED AND COMPACTED IN A MANNER TO LIMIT THE DIFFERENCE IN ELEVATION OF FILL BEHIND THE ABUTMENTS TO 600 mm.

13. NOTE NOT USED

14. NOTE NOT USED

15. NOTE NOT USED

CONCRETE

16. THE HEIGHT OF FILL BEHIND ABUTMENTS WILL BE LIMITED TO 600mm BELOW THE THEORETICAL BRIDGE SEAT ELEVATION UNTIL THE DECK HAS BEEN POURED AND THE CURING PERIOD IS COMPLETED.

17. NO TRAFFIC SHALL BE ALLOWED ON THE NEW DECK UNTIL THE CURE PERIOD IS COMPLETED AND THE 28 DAY DESIGN STRENGTH IS ATTAINED, AS EVIDENCED BY TEST CYLINDERS CURED UNDER FIELD CONDITIONS.

18. THE KEY-IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT. ANY UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.

19. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 25 mm BY 25 mm.

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

21. ALL REINFORCING STEEL SHALL BE EPOXY COATED. WHEN EPOXY COATED REINFORCING STEEL IS CUT THE UNCOATED ENDS SHALL BE REPAIRED WITH MATERIALS AND PROCEDURES APPROVED BY THE COATING MANUFACTURER. FLAME CUTTING OF EPOXY COATED REINFORCING STEEL WILL NOT BE PERMITTED.

22. REINFORCING PLACEMENT TOLERANCES SHALL BE:
SPACING + - 25 mm
CLEARANCE + - 5 mm

23. MINIMUM COVER FOR REINFORCING STEEL SHALL BE 50 mm ALONG THE BACK FACES OF WALLS AGAINST EARTH, 60 mm ALONG THE TOP SURFACE OF THE DECK, 40 mm ALONG THE BOTTOM SURFACE OF THE DECK AND 80 mm ELSEWHERE, UNLESS OTHERWISE NOTED.

24. FOR BRIDGE DECK POURS, THE MAXIMUM TIME LIMIT FOR ANY COMBINATION OF POURS DONE IN ANY ONE DAY SHALL BE EIGHT HOURS. THERE SHALL BE A MINIMUM OF 96 HOURS BETWEEN THE COMPLETION OF ONE DAY'S POUR AND THE BEGINNING OF OTHER ADJACENT POURS. ALL INDIVIDUAL DECK POURS SHALL START FROM THE LOW END OF THE BRIDGE. THE POUR SEQUENCE SHALL FOLLOW THAT SHOWN ON SHEET 36.

25. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF THE DECK BETWEEN THE DRIP BEADS.

26. NO CONCRETE IN THE ABUTMENTS OR WINGWALLS SHALL BE PLACED ABOVE THE BRIDGE SEAT ELEVATIONS UNTIL THE BEAMS/GIRDERS HAVE BEEN PROFILED AND THE FINISHED GRADE OF THE DECK HAS BEEN DETERMINED.

27. ALL SUBSTRUCTURE CONCRETE SHALL BE CONCRETE, HIGH PERFORMANCE CLASS B UNLESS OTHERWISE NOTED.

28. THE DECK SHALL BE CONCRETE, HIGH PERFORMANCE CLASS A.

29. THE CURBS SHALL BE CONCRETE, HIGH PERFORMANCE CLASS A.

STRUCTURAL STEEL

30. ANY CONNECTIONS THAT ARE NOT DETAILED ON THE PLANS SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.

31. ANY HOLES IN THE WEBS OF THE FASCIA BEAMS/GIRDERS THAT ARE NOT OTHERWISE FILLED, SHALL BE FILLED WITH EITHER BUTTON HEAD OR HEX HEAD BOLTS. THESE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH VERMONT SPECIFICATION 506.19.

32. ALL FIELD CONNECTIONS SHALL BE MADE WITH 22 mm DIAMETER AASHTO DESIGNATION M 164M TYPE III BOLTS IN 24 mm DIAMETER HOLES.

33. FLEMING BRACKETS OR SIMILAR FALSE WORK SHALL BE PLACED AT A MAXIMUM SPACING OF 1.2 m.

34. AFTER THE SUPERSTRUCTURE HAS BEEN SET ON THE ANCHOR BOLTS, ELEVATIONS SHALL BE TAKEN ALONG THE TOP OF THE BEAMS/GIRDERS, AS DIRECTED BY THE RESIDENT ENGINEER, FOR USE IN DETERMINING THE FINISHED GRADE.

TEMPORARY DETOUR

35. DURING CONSTRUCTION TRAFFIC SHALL BE MAINTAINED ON A TWO-WAY, TWO LANE TEMPORARY BRIDGE LOCATED DOWNSTREAM OF THE EXISTING STRUCTURE. THE CONTRACTOR SHALL NOTIFY THE TOWN OF DUXBURY A MINIMUM OF TWO WEEKS IN ADVANCE OF DIVERTING TRAFFIC TO THE TEMPORARY BRIDGE. THE DUXBURY TOWN OFFICE MAY BE REACHED BY TELEPHONE AT (802) 244-6660.

36. THE ROADWAY APPROACHES TO THE TEMPORARY BRIDGE WILL BE PAVED.

37. THE CONTRACTOR SHALL ERECT, MAINTAIN, AND REMOVE ALL TEMPORARY SIGNS & TEMPORARY BARRICADES AS SHOWN ON SHEET 14 " DETOUR PLAN & TRAFFIC CONTROL SHEET". PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO ITEM 528.11 - TWO-WAY TEMPORARY BRIDGE - 110 SM-EST".

38. WHERE EXISTING PAVEMENT MARKING ARE NOT APPROPRIATE TO THE MOVEMENT OF TRAFFIC THROUGH THE CONSTRUCTION AREA, THEY SHALL BE REMOVED IN A MANNER APPROVED BY THE RESIDENT ENGINEER. TEMPORARY PAVEMENT MARKING SHALL BE APPLIED AS CALLED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

39. THE EXPOSED ENDS OF THE TEMPORARY BARRIERS SHALL BE PLACED BEYOND THE CLEAR ZONE OR PROTECTED BY AN APPROPRIATE CRASH CUSHION OR IMPACT ATTENUATOR AS OUTLINED IN AASHTO'S "ROAD SIDE DESIGN GUIDE."

40. ALL EXISTING SIGNS NOT REUSED SHALL REMAIN THE PROPERTY OF THE TOWN OF DUXBURY. THE CONTRACTOR SHALL STOCKPILE THESE ITEMS AT THE PROJECT SITE FOR REMOVAL BY TOWN FORCES. THE CONTRACTOR SHALL CONTRACT THE TOWN OFFICE WHEN THESE ITEMS ARE READY FOR REMOVAL FROM THE PROJECT SITE.

PILES

41. THE PILES SHALL BE 310 x 125 AASHTO M 223 GRADE 345. NO SUBSTITUTIONS FOR NUMBER, SIZE AND GRADE OF THE PILES WILL BE ALLOWED.

42. THE PILES WILL REQUIRE PILE SHOES. THE SHOES SHALL BE CAST STEEL AND SHALL CONFORM TO VAOT STANDARD SPECIFICATIONS NO. 505.04 AND 730.01

43. THE PILE SPLICING SEQUENCE SHOULD BE ARRANGED TO PRECLUDE SPLICES FROM THE 6 m SECTION BELOW THE FOOTING.

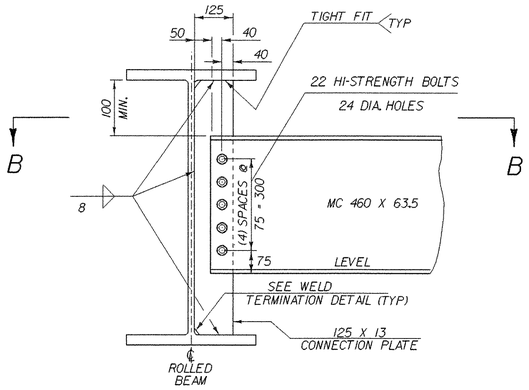
44. TO AID IN THE PROPER PILE PLACEMENT/ALIGNMENT, EACH PILE MAY BE PLACED IN A PRE-EXCAVATED HOLE. THE HOLE WILL BE AUGERED 2.2 METERS BELOW THE BOTTOM OF THE FOOTING PRIOR TO DRIVING THE PILES. AFTER DRIVING THE PILE, THEHOLE WILL BE BACKFILLED WITH MATERIAL MEETING THE REQUIRMENTS FOR PEASTONE, AS INDICATED IN SUBSECTION 704.11 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

45. PILE HEAD CUTOFF ELEVATIONS SHALL BE WITHIN 60MM OF THE ELEVATION DETAILED ON THE CONTRACT PLANS. THE PILE AT THE CUTOFF ELEVATION SHALL BE FREE FROM DRIVING DAMAGE AS DETERMINED BY THE RESIDENT ENGINEER. NO PILE SHALL BE NEARER THAN 150 mm FROM THE FACE OF THE CONCRETE STEM. THE PILES SHALL BE WITHIN 5 DEGREES FROM VERTICAL IN ITS FINAL POSITION. THE RESIDENT ENGINEER MAY REQUIRE THAT THE DRIVING BE STOPPED TO CHECK THE PILE ALIGNMENT. PULLING LATERALLY ON THE PILE TO CORRECT MISALIGNMENT, OR SPLICING A PROPERLY ALIGNED SECTION ON A MISALIGNED SECTION SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL BEAR ALL COSTS, INCLUDING DELAYS, ASSOCIATED WITH NECESSARY CORRECTIVE ACTION TO BRING MISALIGNED PILES INTO THE TOLERANCES DESCRIBED ABOVE.

46. THE PILES SHALL BE DRIVEN TO LEDGE WITH AN ULTIMATE CAPACITY OF 1368 KILONEWTONS AS DETERMINED BY THE RESIDENT ENGINEER.

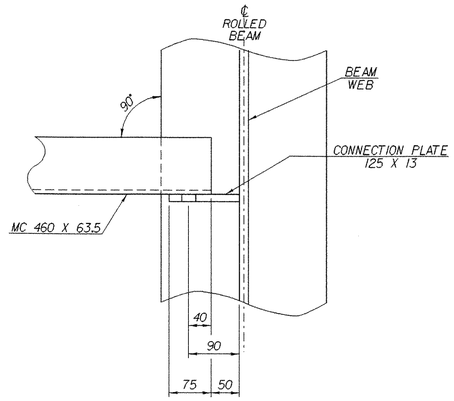
47. FOR ESTIMATING PURPOSES, THE PILE LENGTHS HAVE BEEN ASSUMED TO BE 10.0 METERS. ACTUAL IN PLACE LENGTHS MAY VARY.

PROJECT NAME:	**DUXBURY**		
PROJECT NUMBER:	**STP 013-4(24)**		
FILE NAME:	**/PW/86e059/se059gen.xls**	PLOT DATE:	**10/12/2005**
PROJECT LEADER:	**Craig Keller**	DRAWN BY:	**STR5**
DESIGNED BY:	**Bruce Nyquist**	CHECKED BY:	**Todd Sumner**
GENERAL NOTES SHEET		SHEET **31** OF **62**	



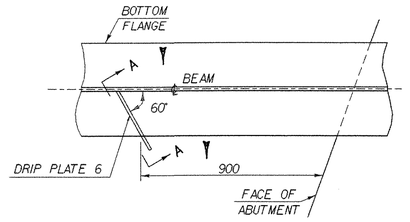
NOTE: HI-STRENGTH BOLTS, NUTS AND WASHERS SHALL CONFORM TO AASHTO DESIGNATION M164.

INTERMEDIATE DIAPHRAGM

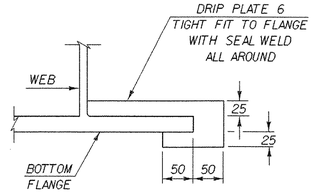


SECTION B-B

ALL CONNECTIONS SHALL BE MADE USING 22 DIAMETER AASHTO M164 BOLTS. ALL HOLES IN THE DIAPHRAGMS SHALL BE 24 DIAMETER. ALL HOLES IN THE CONNECTION PLATES SHALL BE 25 DIAMETER.

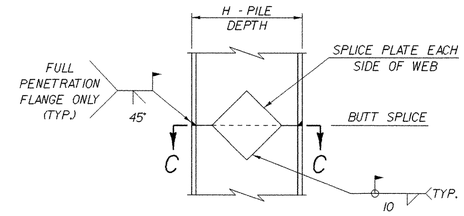


PLAN DRIP PLATE



SECTION A - A

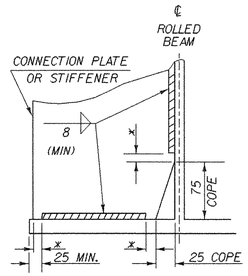
NOTE: DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA GIRDERS ON THE HIGH SIDE OF ALL PIERS AND ABUTMENTS OR AS INDICATED ON PROJECT PLANS.



H-PILES	PL SIZE
HP 310	165 X 165
HP 360	190 X 190

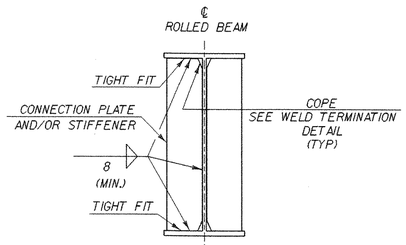
DETAIL OF PILE SPLICE

SEE GENERAL NOTE #43 ON PAGE # 31.

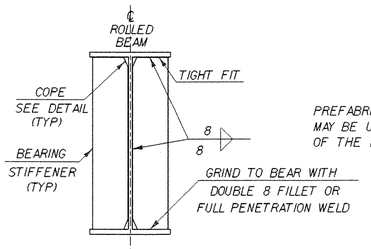


* NO WELD FOR 6 MIN. 13 MAX. (EXCEPT MUST MAINTAIN 25 MINIMUM FROM EDGE OF FLANGE)

WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

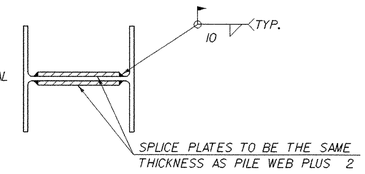


INTERMEDIATE CONNECTION PLATES FOR ROLLED BEAMS



ABUTMENT BEARING STIFFENERS FOR ROLLED BEAMS

PREFABRICATED PILE SPLICE MAY BE USED WITH THE APPROVAL OF THE ENGINEER.



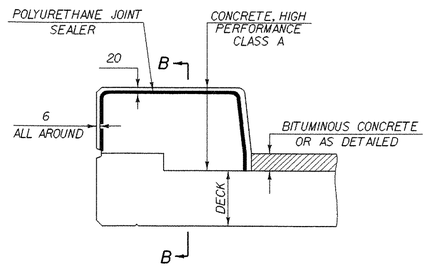
SECTION C-C

STRUCTURAL STEEL DETAILS

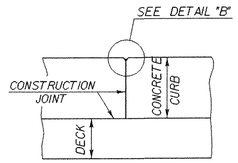
PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059sup.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: W. FARLEY
se059ssd.i

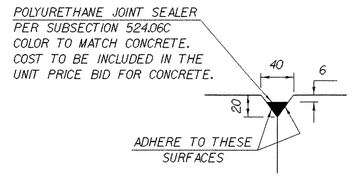
PLOT DATE: 20-OCT-2005
DRAWN BY: R. VANHAMBURG
CHECKED BY: T. SUMNER
SHEET 32 OF 62



TYPICAL SECTION THROUGH
CONCRETE CURB CONSTRUCTION JOINT

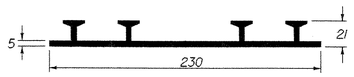


SECTION B - B



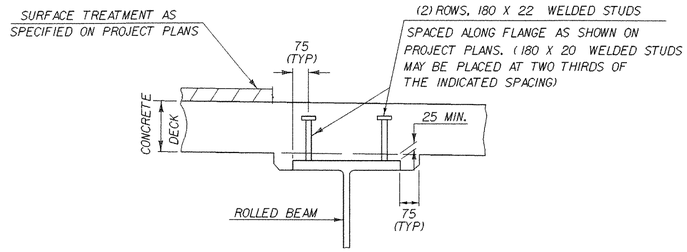
DETAIL "B"

NOTES:
1. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 4500 CENTER TO CENTER AND SHALL BE 450 MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.
3. CONSTRUCTION JOINTS THROUGH SIDEWALKS SHALL BE SIMILAR TO CONCRETE CURB CONSTRUCTION JOINTS.



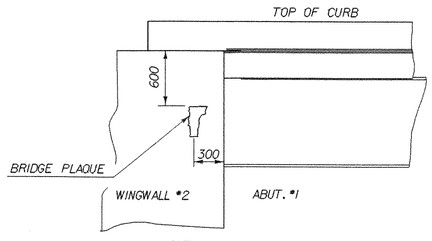
P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS

THE COSTS FOR P.V.C.WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.



HAUNCH AND SHEAR
CONNECTOR DETAILS

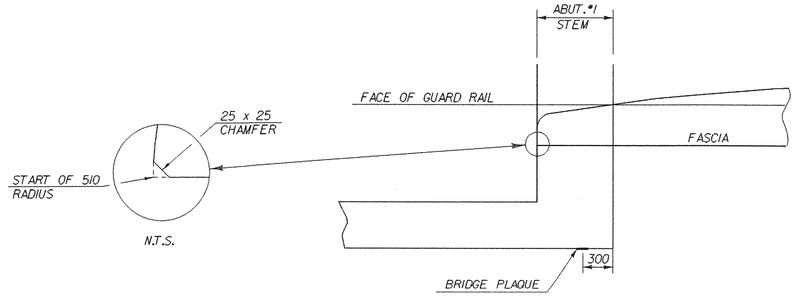
PLAN



VIEW "A - A"

LOCATE BRIDGE PLAQUE

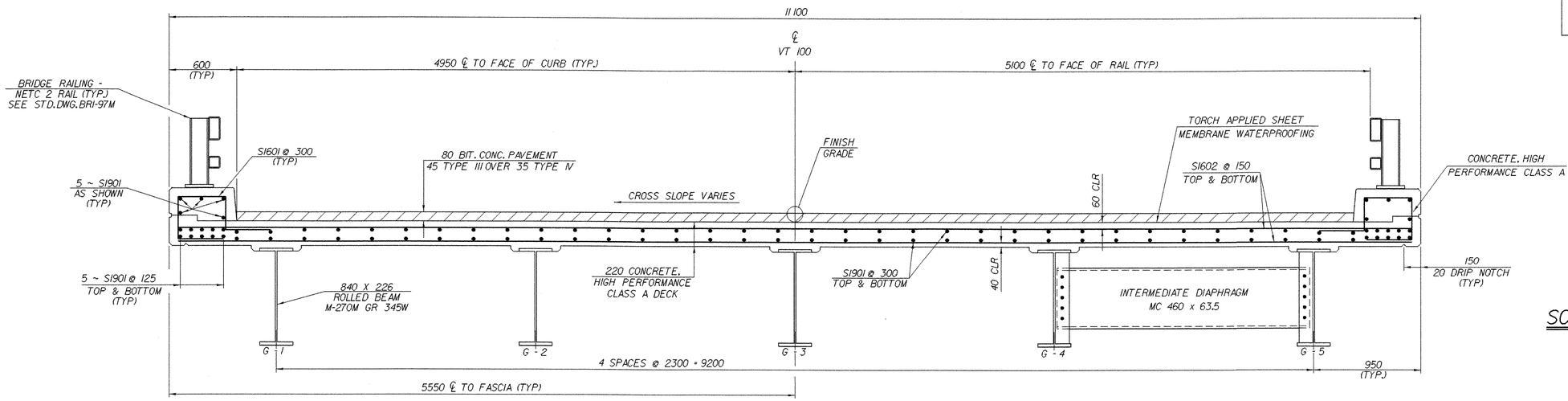
THE BENCH MARK AND BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.



MISCELLANEOUS DETAILS

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

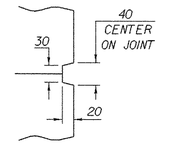
FILE NAME: /str5/86e059/se059sup.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: R. VANHAMBURG
DESIGNED BY: W. FARLEY	CHECKED BY: T. SUMNER
se059msd.i	SHEET 33 OF 62



DECK TYPICAL SECTION

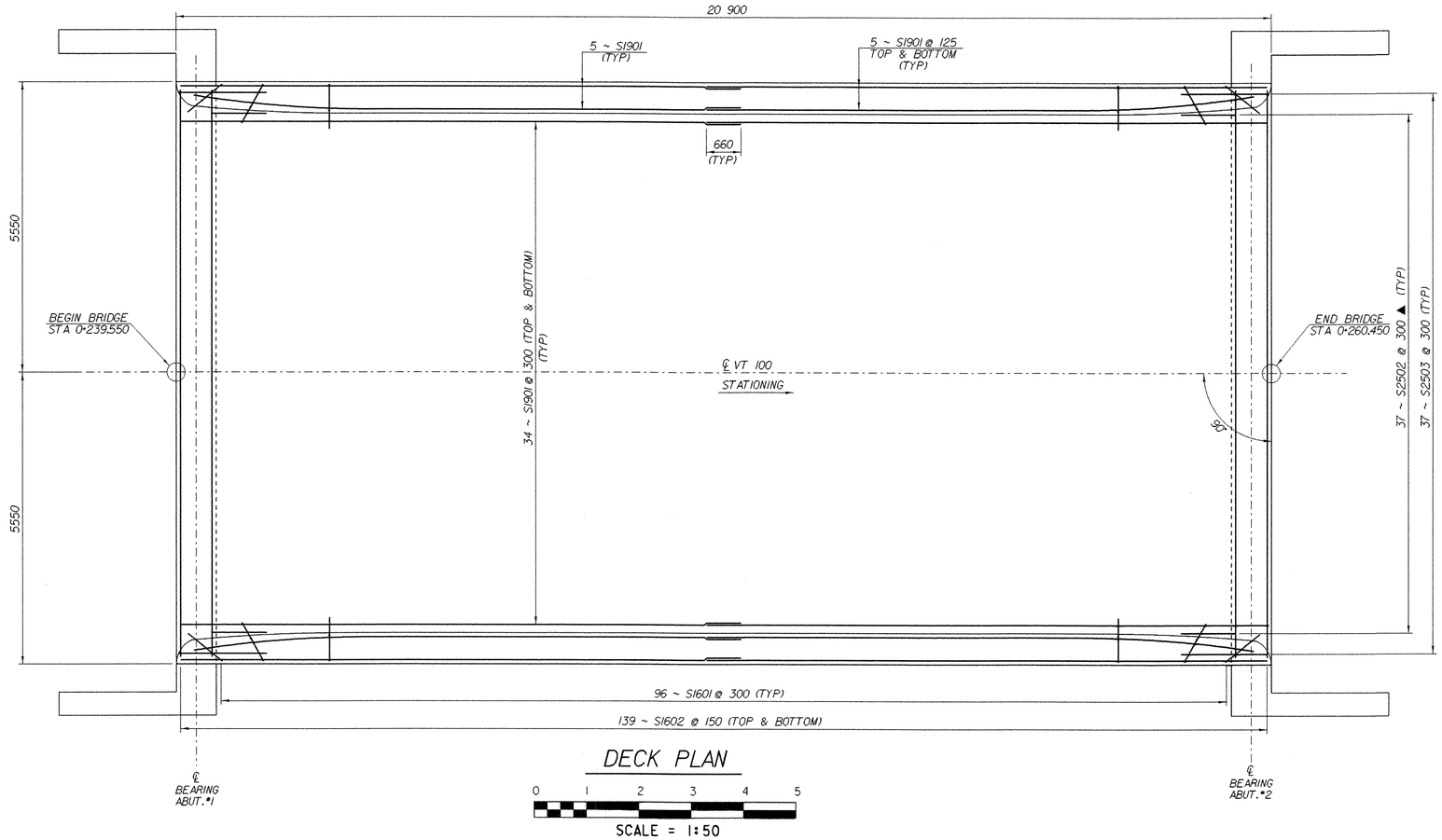
0 1 2

SCALE = 1:20



SCORE MARK DETAIL

NTS

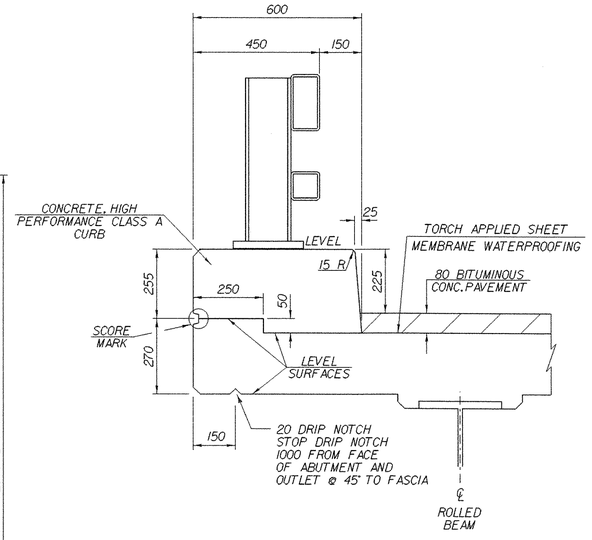


DECK PLAN

0 1 2 3 4 5

SCALE = 1:50

NOTE:
SHEET MEMBRANE WATERPROOFING SHALL EXTEND TO FACE OF CURB AS SHOWN BELOW.



TYPICAL 600 CURB SECTION

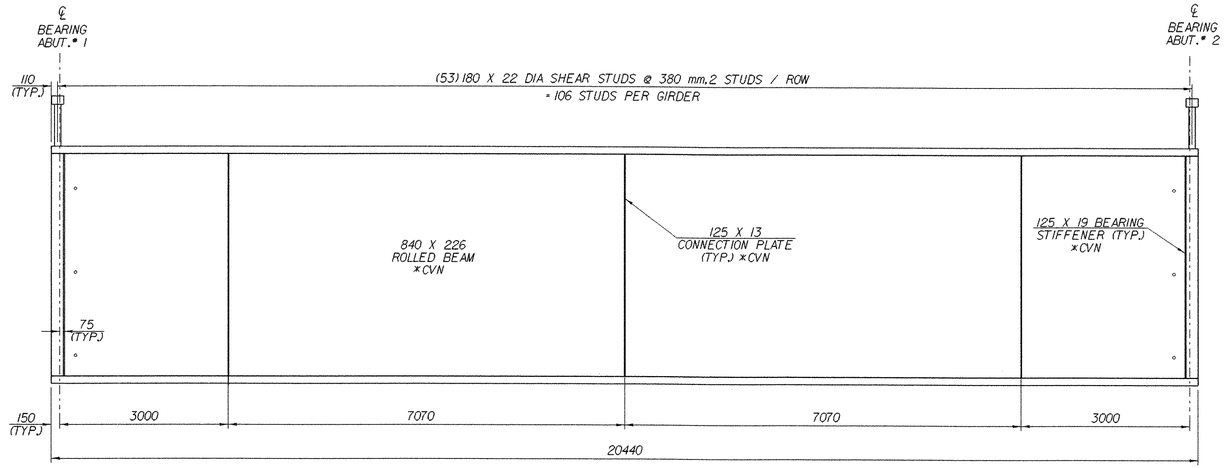
0 0.5 1

SCALE = 1:10

DECK TYPICAL AND DECK PLAN

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

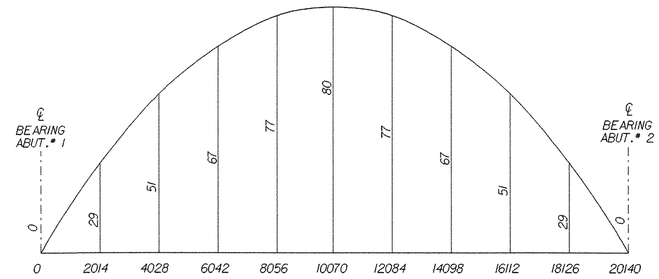
FILE NAME: /str5/86e059/se059sup.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: R. VANHAMBURG
DESIGNED BY: W. FARLEY	CHECKED BY: T. SUMNER
se059dck.i	SHEET 34 OF 62



GIRDER ELEVATION

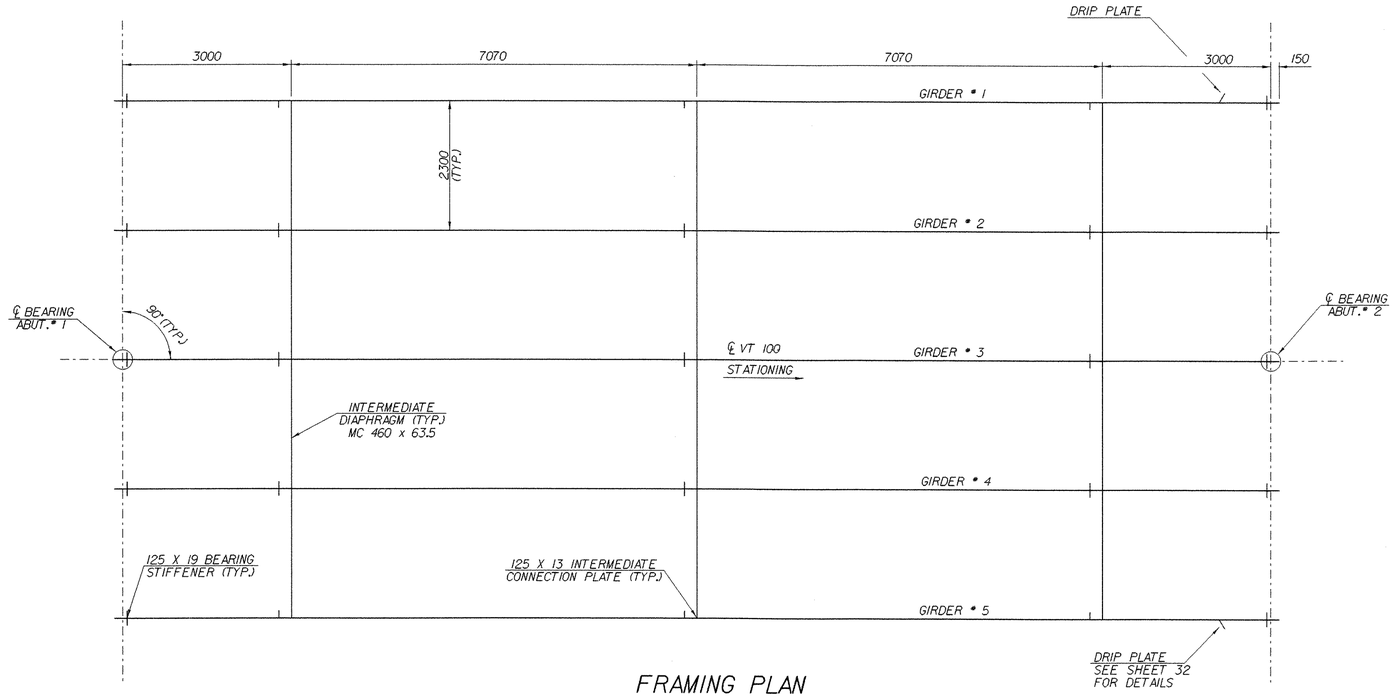
HORIZ. SCALE = 1 : 50
VERT. SCALE = 1 : 10

* DENOTES CHARPY V - NOTCH TEST REQUIRED



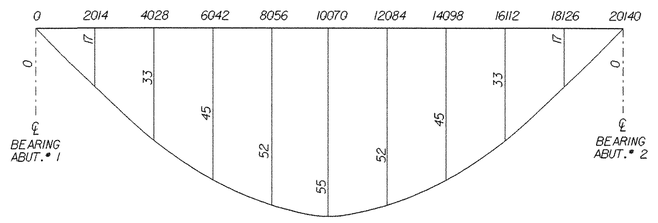
CAMBER DIAGRAM

HORIZ. SCALE = 1 : 100
VERT. SCALE = 1 : 1



FRAMING PLAN

0 1 2 3 4 5
SCALE = 1:50

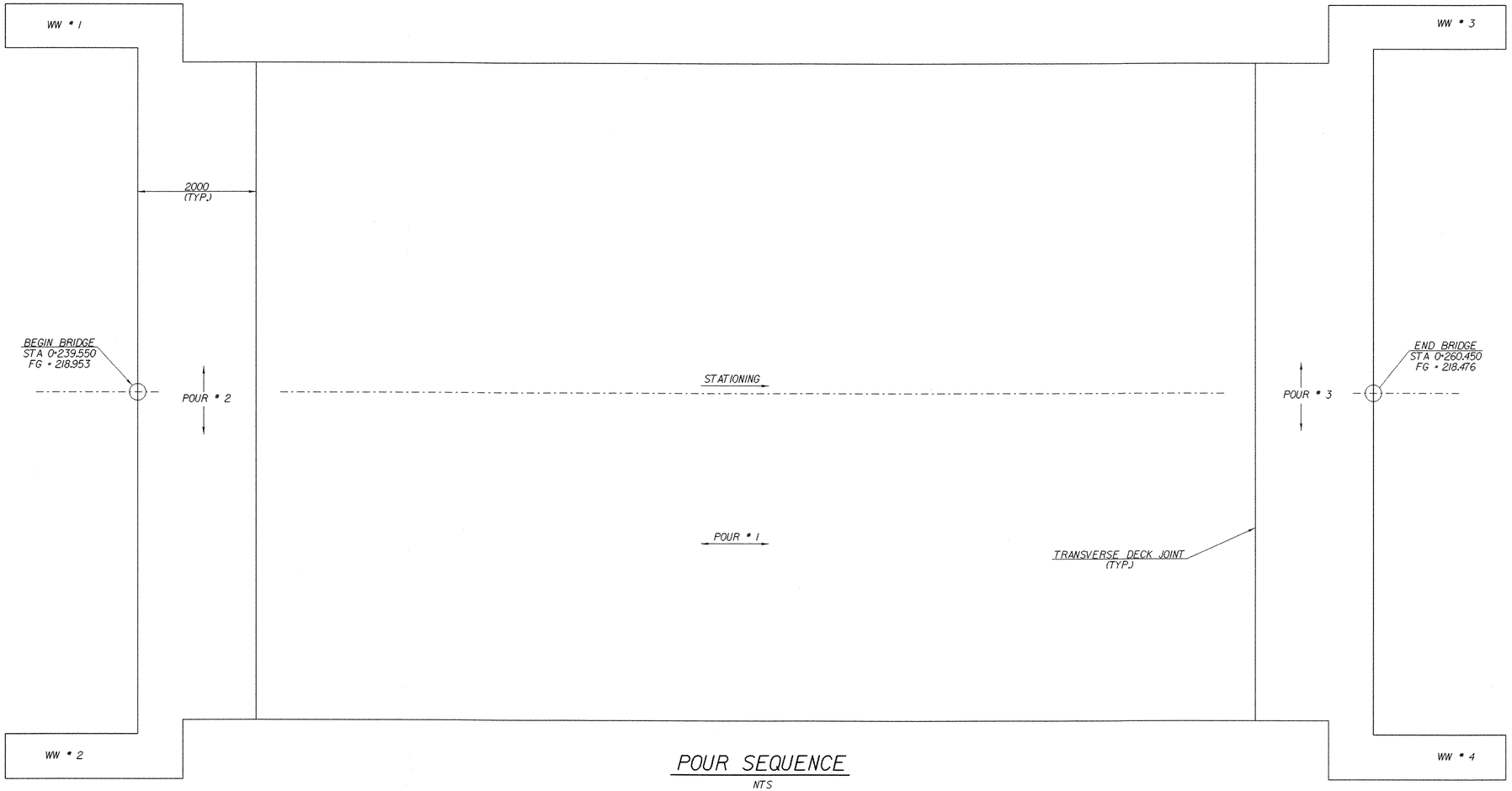


DEAD LOAD DEFLECTION DIAGRAM

HORIZ. SCALE = 1 : 100
VERT. SCALE = 1 : 1

FRAMING PLAN & GIRDER ELEVATION

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059sup.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: R. VANHAMBURG
DESIGNED BY: W. FARLEY	CHECKED BY: T. SUMNER
se059frm.i	SHEET 35 OF 62



POUR SEQUENCE
NTS

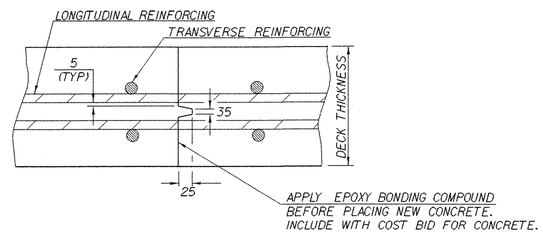
NOTES:

1) THE SEQUENCE OF POURS •2 & •3 MAY BE INTERCHANGED. A MINIMUM OF 96 HOURS BETWEEN POURS SHALL BE OBSERVED.

2) POUR SEGMENTS MAY BE COMBINED IN THE SAME DAY PROVIDED THE SEQUENCE IS FOLLOWED AND THE MAXIMUM TIME SPAN IS EIGHT HOURS AND A RETARDING ADMIXTURE IS USED SO SET UP WILL NOT COMMENCE UNTIL ENTIRE POUR IS MADE. THE CONTRACTOR SHALL SUBMIT THEIR PLAN AND REQUEST APPROVAL TO COMBINE POURS TWO WEEKS PRIOR TO POURING. THE COST OF ANY NECESSARY RETARDING ADMIXTURE WILL BE INCIDENTAL TO ITEM 501.33 "CONCRETE, HIGH PERFORMANCE CLASS A."

3) ALL ABUTMENT CONCRETE ABOVE HORIZONTAL CONSTRUCTION JOINTS SHALL BE POURED MONOLITHICALLY WITH DECK POURS.

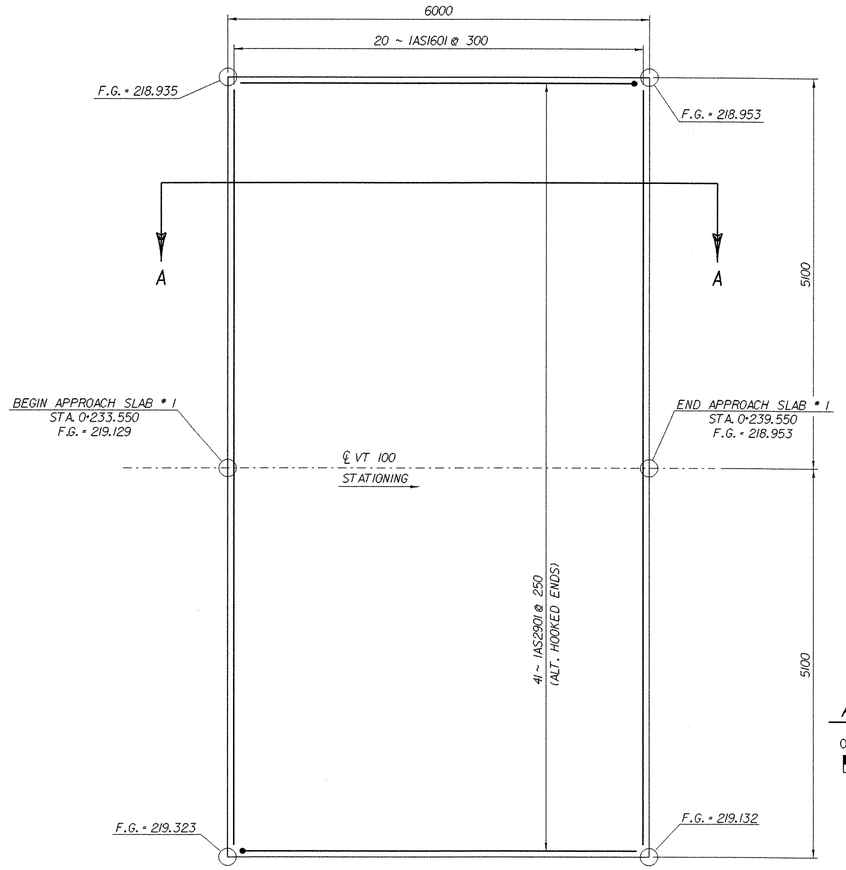
4) POURS •2 & •3 INCLUDE THE TOP SECTIONS OF THE WINGWALLS. SEE PAGE 38 FOR THE LOCATION OF THE VERTICAL CONSTRUCTION JOINTS.



TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
NTS

POUR SEQUENCE

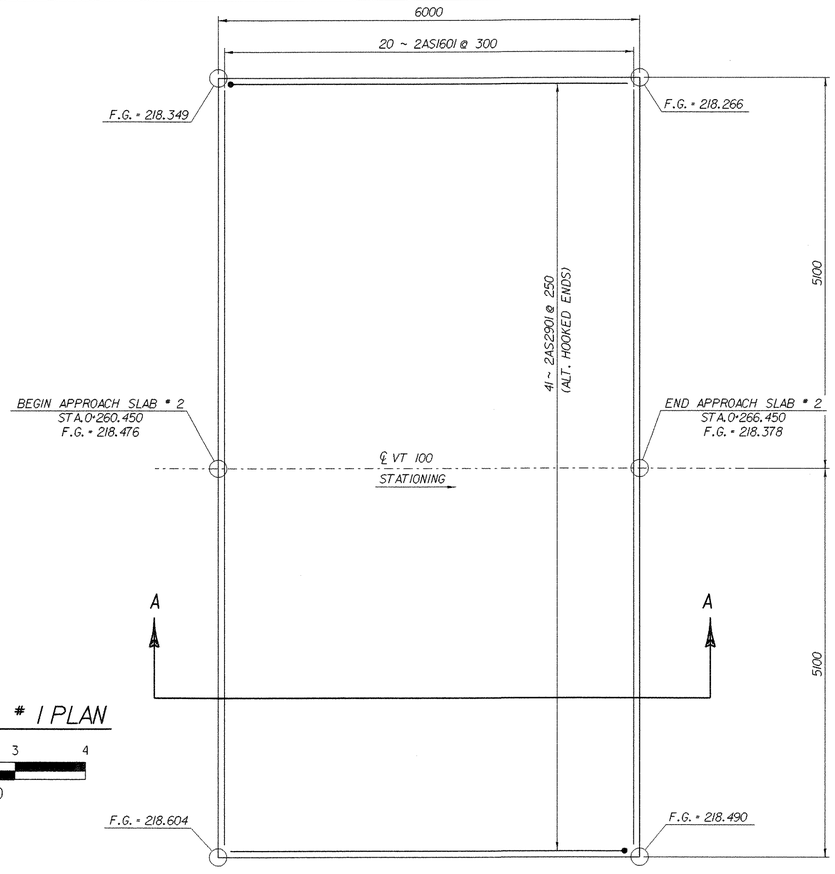
PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059sup.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: R. VANHAMBURG
DESIGNED BY: W. FARLEY	CHECKED BY: T. SUMNER
se059por.i	SHEET 36 OF 62



APPROACH SLAB # 1 PLAN

0 1 2 3 4

SCALE = 1:40

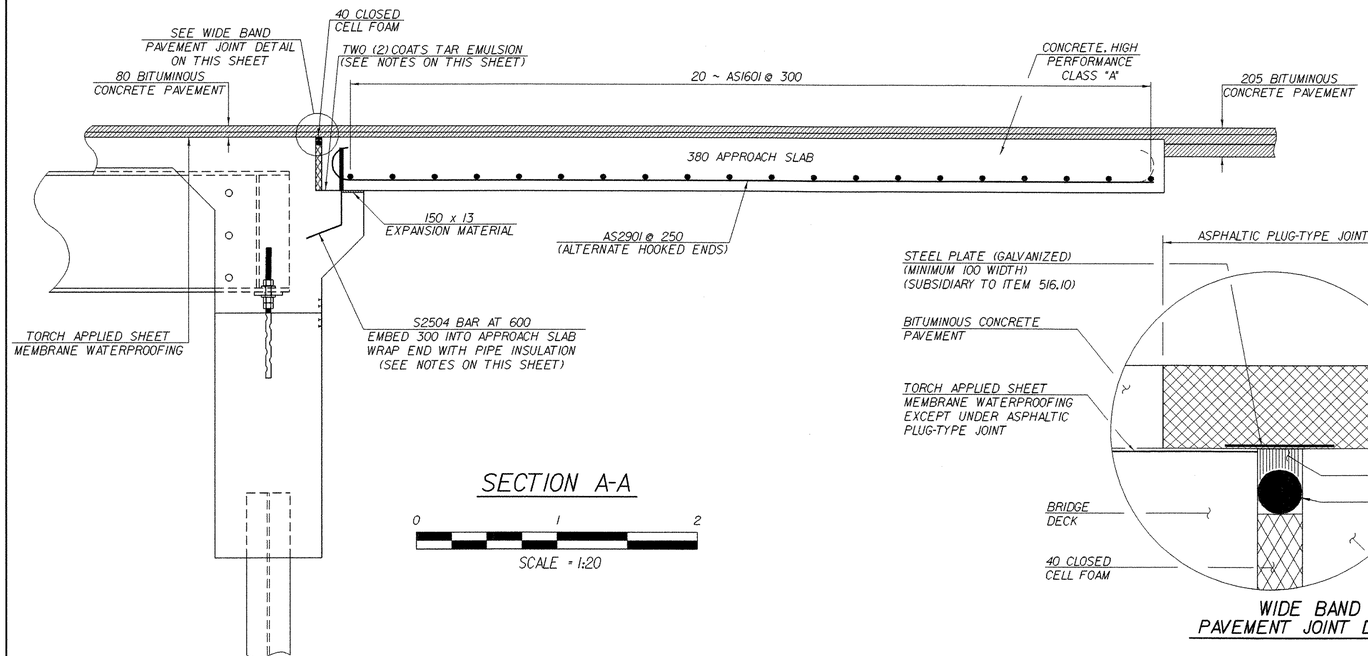


* ALL REINFORCING STEEL WILL BE EPOXY COATED REINFORCING STEEL

APPROACH SLAB # 2 PLAN

0 1 2 3 4

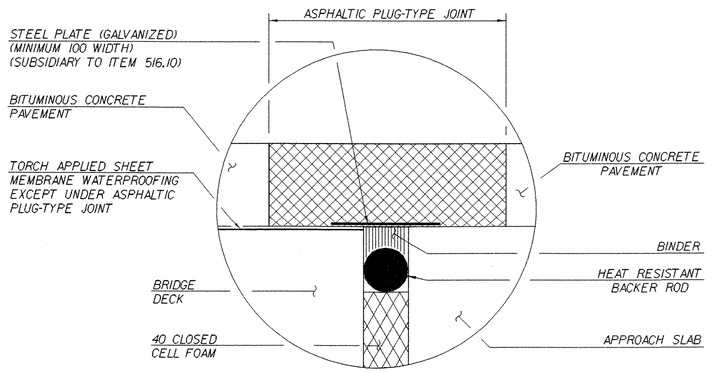
SCALE = 1:40



SECTION A-A

0 1 2

SCALE = 1:20



WIDE BAND PAVEMENT JOINT DETAIL

NOTES:

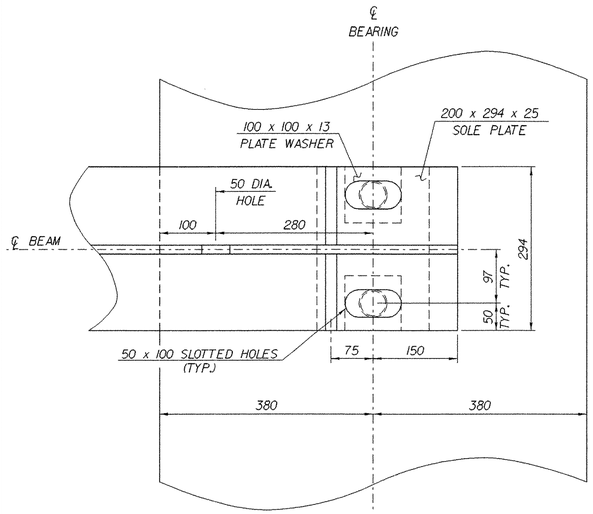
1. PAYMENT FOR TAR EMULSION, PIPE INSULATION AND EXPANSION MATERIAL AND THEIR APPLICATION AND INSTALLATION SHALL BE INCIDENTAL TO ITEM 501.33, "CONCRETE, HIGH PERFORMANCE CLASS A."
2. 75 CLEAR UNLESS OTHERWISE NOTED.

APPROACH SLAB DETAILS

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

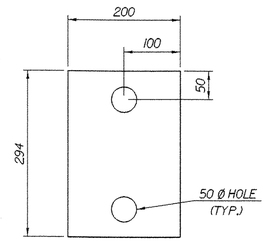
FILE NAME: /str5/86e059/se059sup.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: W. FARLEY
se059apr.i

PLOT DATE: 20-OCT-2005
DRAWN BY: R. VANHAMBURG
CHECKED BY: T. SUMNER
SHEET 37 OF 62



PLAN VIEW - END OF STEEL MEMBER AT ABUTMENT

SCALE = 1:5



SOLE PLATE DETAIL

SCALE = 1:5

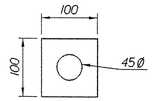
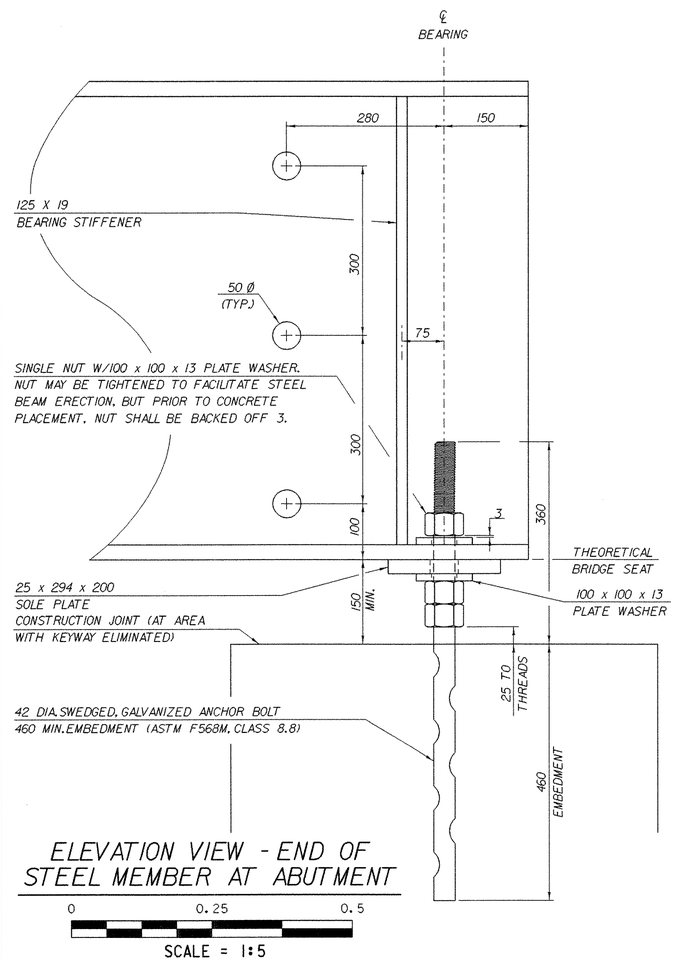


PLATE WASHER DETAIL

SCALE = 1:5

NOTES:

1) THE SOLE PLATES, ANCHOR BOLTS, WASHERS AND NUTS SHALL BE PAID FOR UNDER ITEM 531.10 "BEARING DEVICE ASSEMBLY" AND SHALL CONFORM TO SECTIONS 531 AND 731 OF VAOT STANDARD SPECIFICATIONS.
2) THE SOLE PLATES, ANCHOR BOLTS, WASHERS AND NUTS SHALL BE GALVANIZED OR METALIZED PER VAOT STANDARD SPECIFICATIONS 531.04 AND 506.15 (b) AND (c).
3) ALL STEEL IN BEARING DEVICE ASSEMBLY SHALL BE AASHTO M270 GRADE 50, EXCEPT ANCHOR BOLTS, WHICH SHALL BE ASTM F568M, CLASS 8.8.

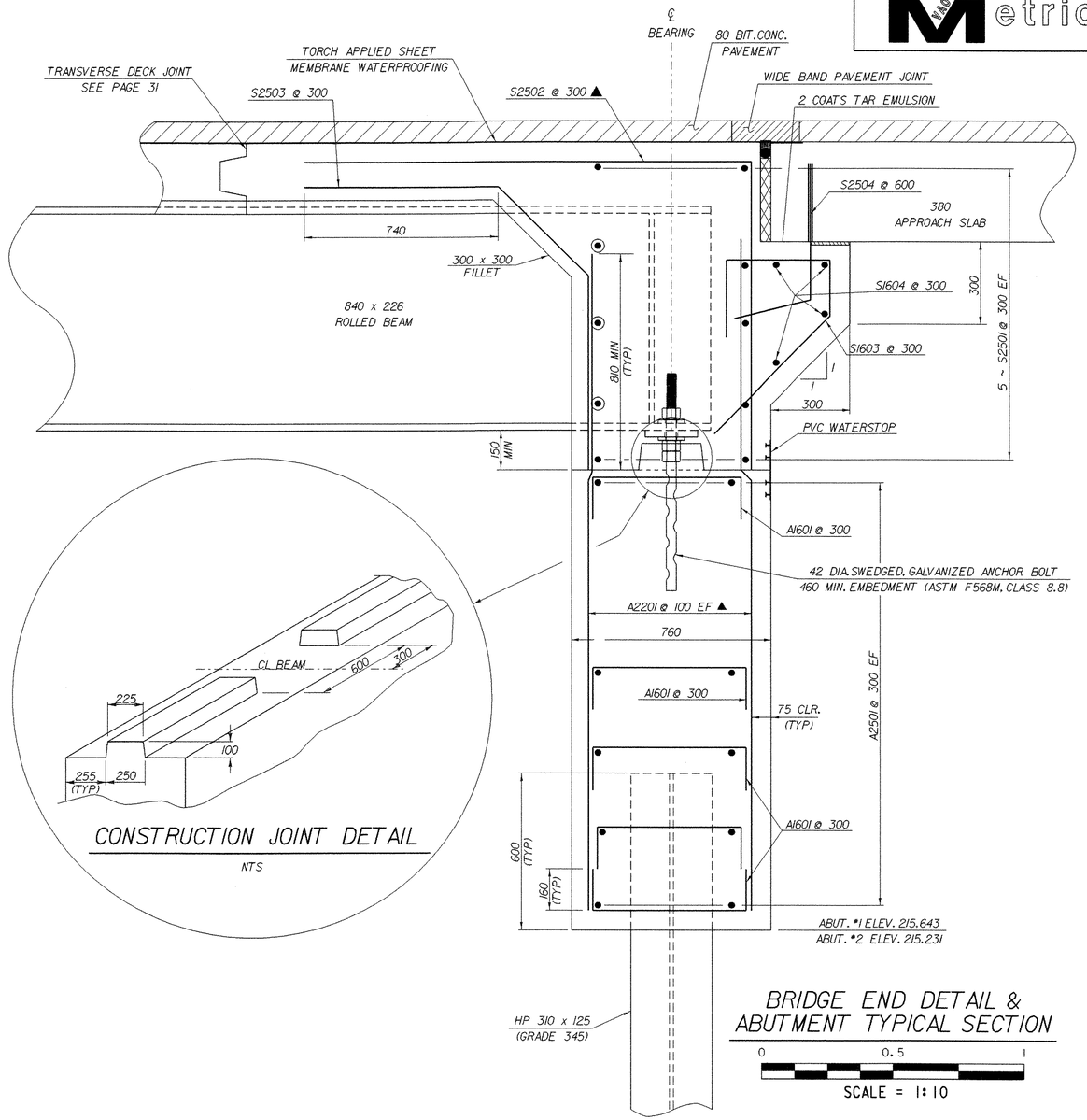


ELEVATION VIEW - END OF STEEL MEMBER AT ABUTMENT

SCALE = 1:5

CONSTRUCTION JOINT DETAIL

NTS



BRIDGE END DETAIL & ABUTMENT TYPICAL SECTION

0 0.5 1

SCALE = 1:10

THEORETICAL BRIDGE SEAT CHART		
	ABUTMENT # 1	ABUTMENT # 2
BEAM 1	217.551	217.137
BEAM 2	217.632	217.195
BEAM 3	217.712	217.252
BEAM 4	217.793	217.310
BEAM 5	217.873	217.367

NOTE:

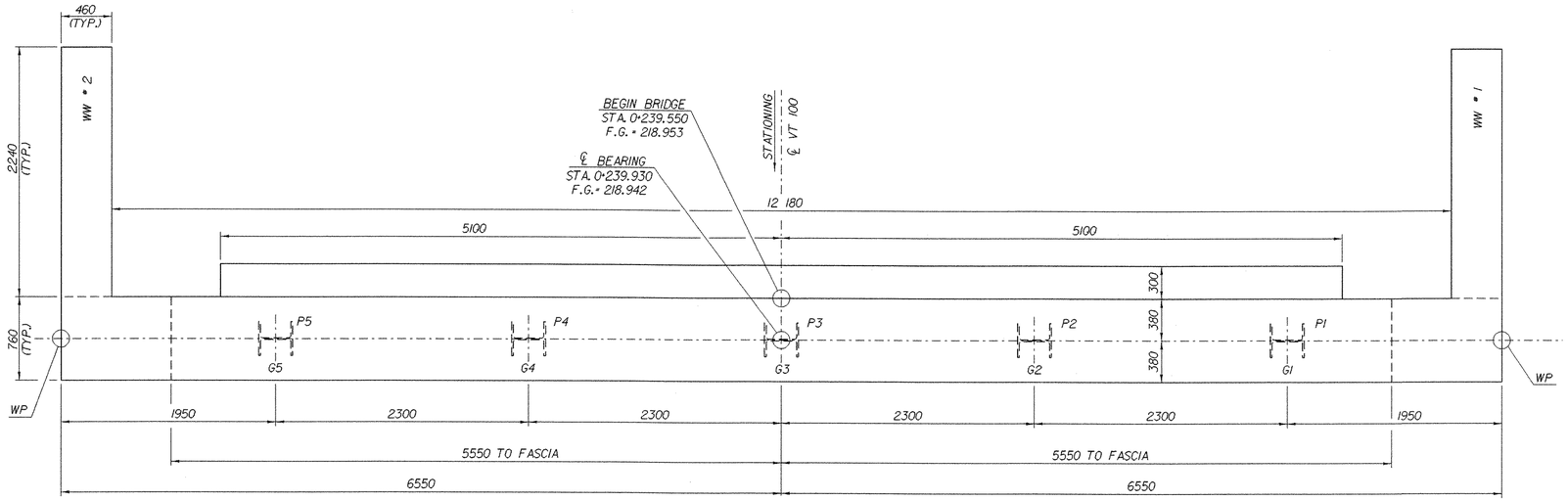
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
75 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ABUTMENT TYPICAL SECTION

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059sub.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: W. FARLEY
se059ats.i

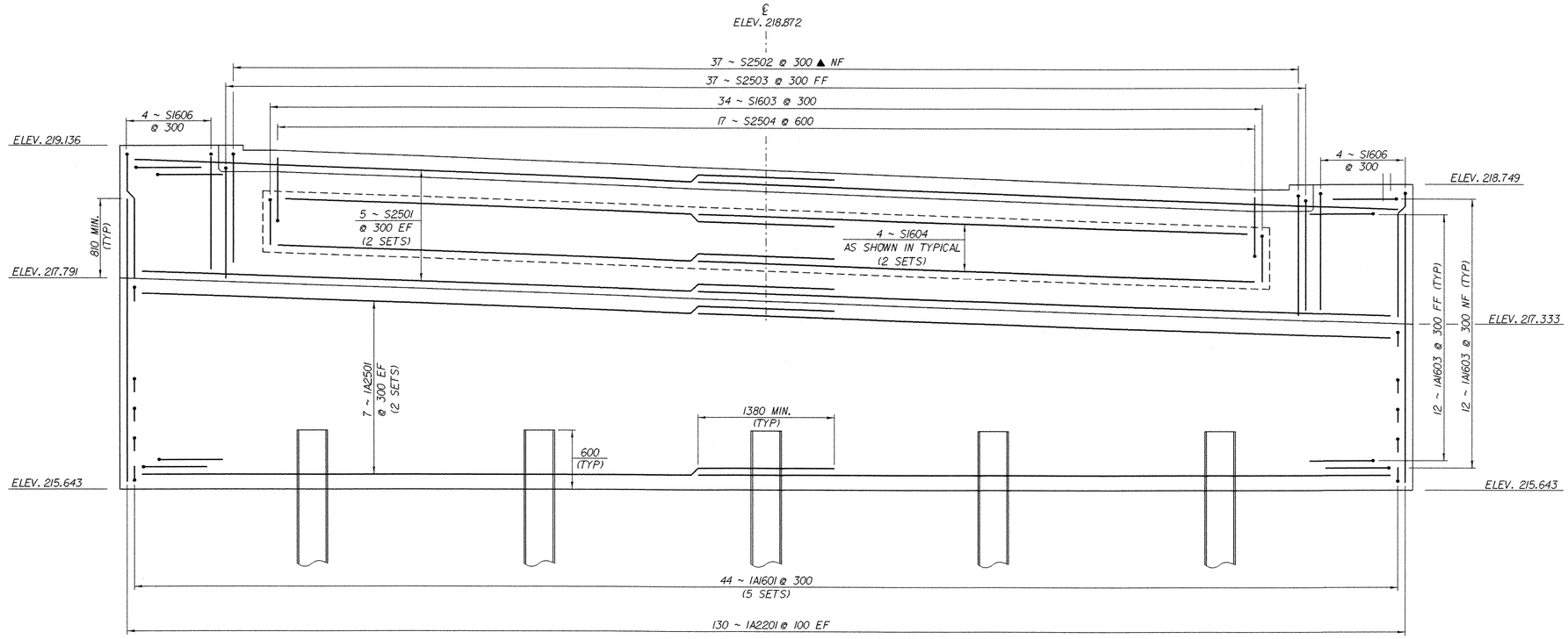
PLOT DATE: 20-OCT-2005
DRAWN BY: R. VANHAMBURG
CHECKED BY: T. SUMNER
SHEET 38 OF 62



ABUTMENT # 1 PLAN

0 0.5 1 1.5 2 2.5

SCALE = 1:25



ABUTMENT # 1 ELEVATION

0 0.5 1 1.5 2 2.5

SCALE = 1:25

NOTE:

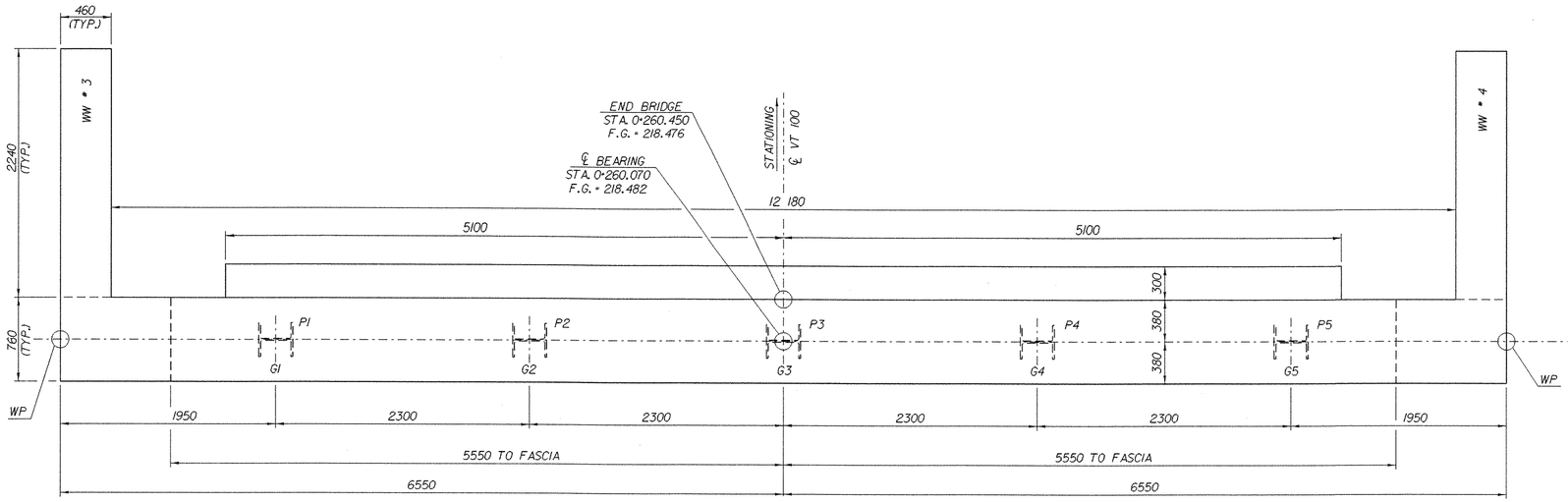
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
75 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ABUTMENT #1 PLAN & ELEVATION

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059sub.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: W. FARLEY
se059ab1.i

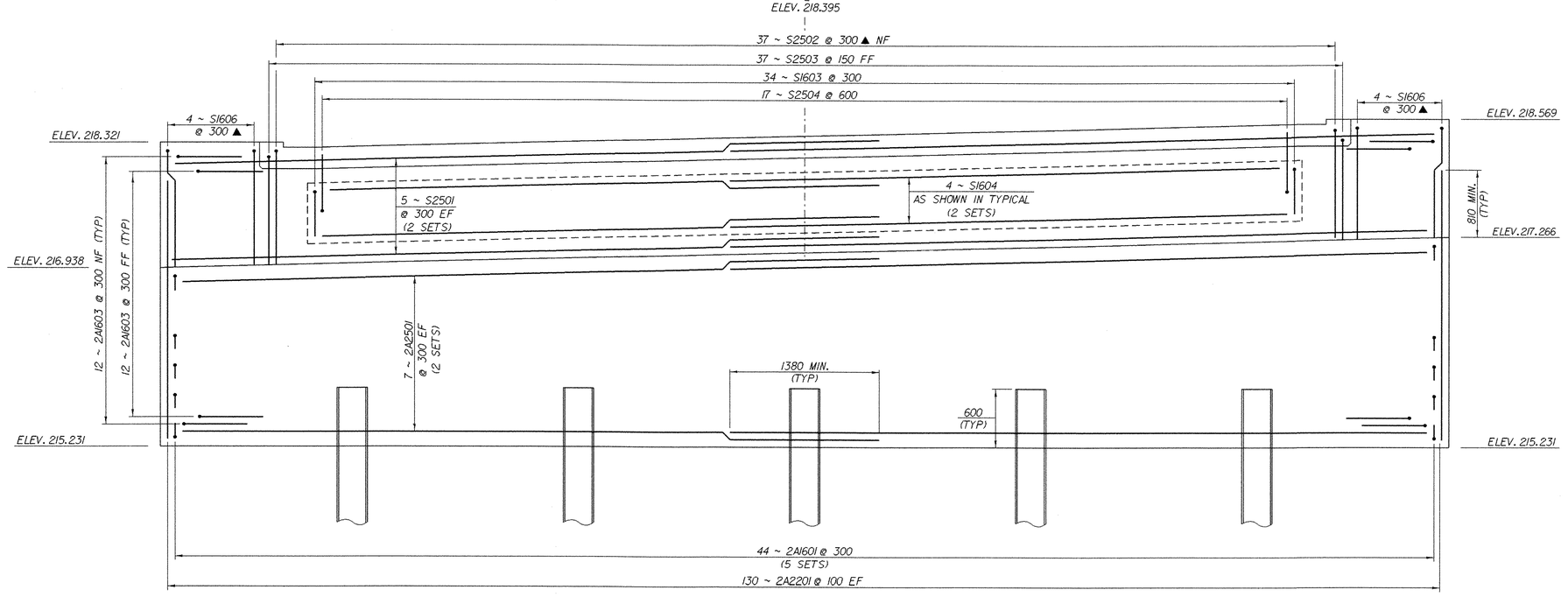
PLOT DATE: 20-OCT-2005
DRAWN BY: R. VANHAMBURG
CHECKED BY: T. SUMNER
SHEET 39 OF 62



ABUTMENT # 2 PLAN

0 0.5 1 1.5 2 2.5

SCALE = 1:25



ABUTMENT # 2 ELEVATION

0 0.5 1 1.5 2 2.5

SCALE = 1:25

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
75 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

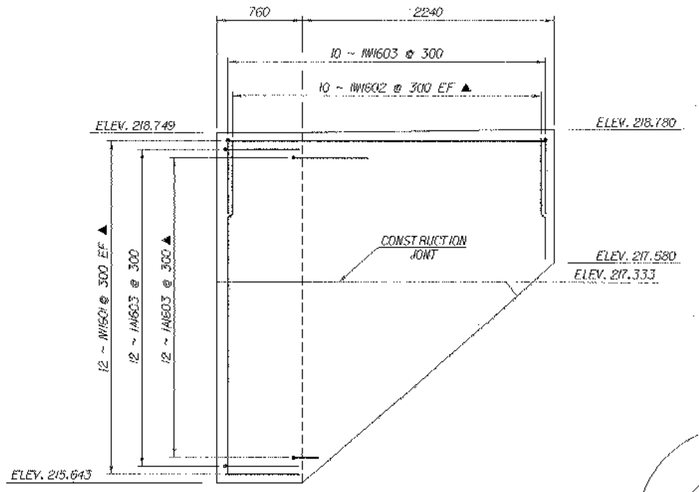
ABUTMENT #2 PLAN & ELEVATION

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059sub.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: W. FARLEY
se059ab2.i

PLOT DATE: 20-OCT-2005
DRAWN BY: R. VANHAMBURG
CHECKED BY: T. SUMNER
SHEET 40 OF 62

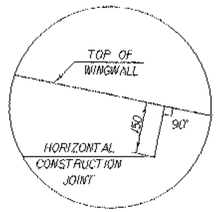
Metric



WINGWALL # 1 ELEVATION

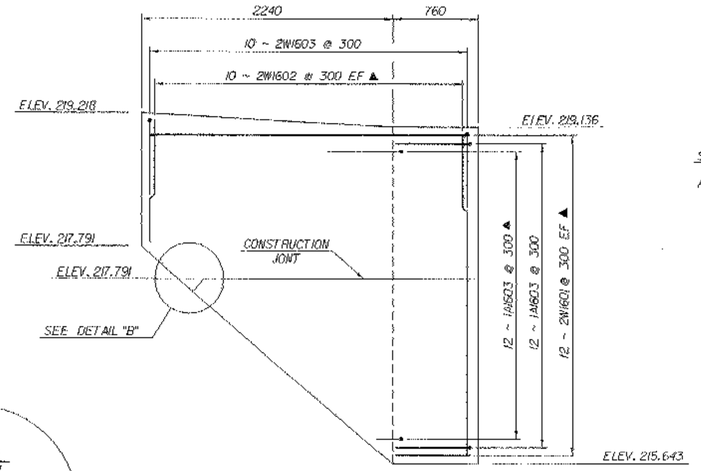
0 0.5 1 1.5 2 2.5

SCALE = 1:25



DETAIL "B"

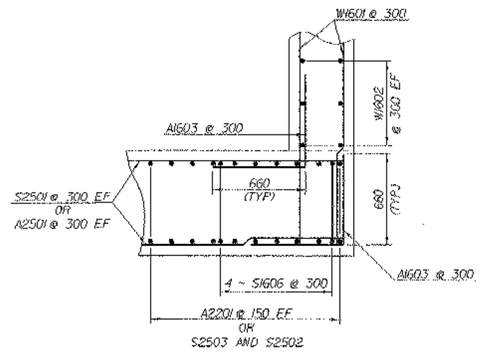
NTS



WINGWALL # 2 ELEVATION

0 0.5 1 1.5 2 2.5

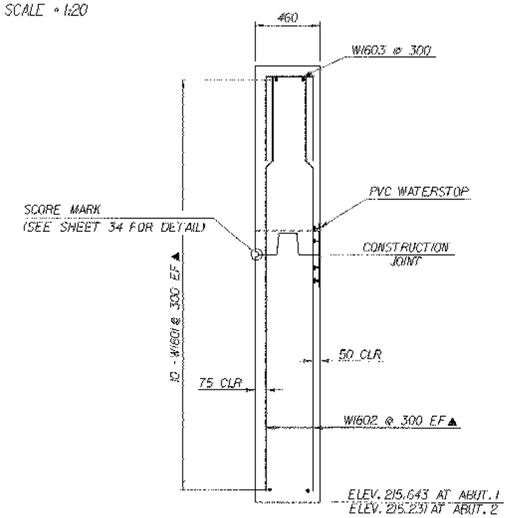
SCALE = 1:25



TYPICAL CORNER DETAIL

0 1 2

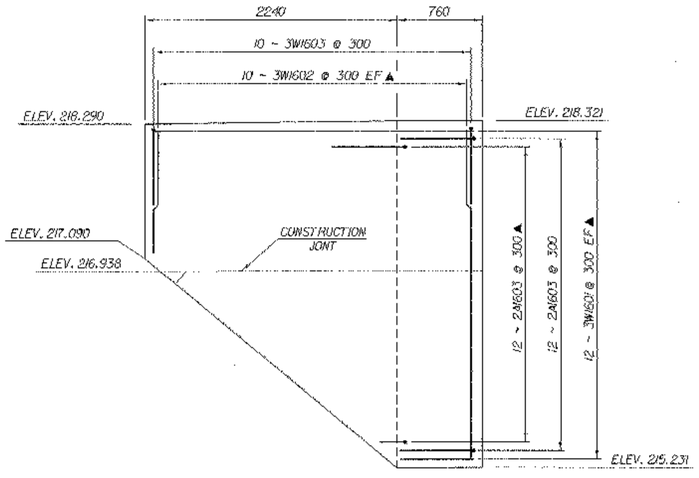
SCALE = 1:20



WINGWALL TYPICAL

0 1 2

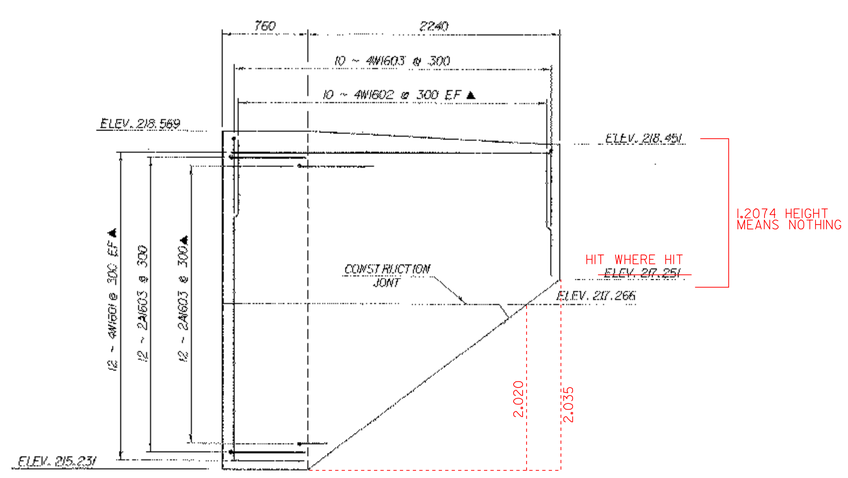
SCALE = 1:20



WINGWALL # 3 ELEVATION

0 0.5 1 1.5 2 2.5

SCALE = 1:25



WINGWALL # 4 ELEVATION

0 0.5 1 1.5 2 2.5

SCALE = 1:25

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
75 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

WINGWALL DETAILS

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059sub.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: W. FARLEY
se059ww1

PLOT DATE: 20-OCT-2005
DRAWN BY: R. VANHAMBURG
CHECKED BY: T. SUMNER
SHEET 41 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

METRIC

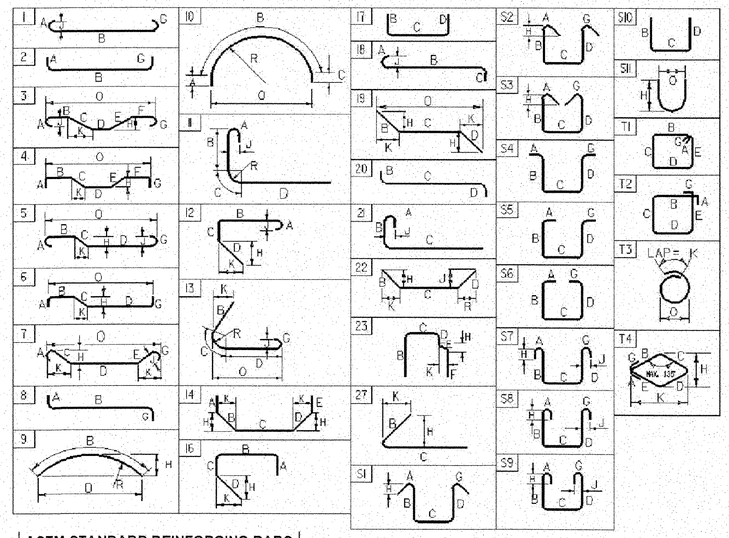
	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	DECK																
	278	16	10940	S1602	STR												
♦	17	16	5710	S1604	STR												
	192	16	2010	S1601	S5	450	380	440	290			450					
	68	16	1310	S1603	16	300	300	185	525				370		370		
▲	16	16	3130	S1606	S10		1265	600	1265								
)	198	19	10700	S1901	STR												
	40	25	7160	S2501	STR												
▲	74	25	2930	S2502	S10		1210	1720	---								
	74	25	1995	S2503	22		740	515	740				525	525	525	525	
	34	25	750	S2504	22		450	300	---				295	---	25	---	
	APPROACH SLAB #1																
	20	16	10040	1AS1601	STR												
♦	43	29	6215	1AS2901	1	375	5840					---		300			
	APPROACH SLAB #2																
	20	16	10040	2AS1601	STR												
♦	43	29	6215	2AS2901	1	375	5840					---		300			
	ABUTMENT #1																
	220	16	920	1A1601	17		160	600	160								
	NOT USED			1A1602													
	48	16	1320	1A1603	S10		660	660	---								
	260	22	2880	1A2201	STR												
♦	29	25	7160	1A2501	STR												
	WINGWALL #1																
▲	24	16	2840	1W1601	STR												
▲	20	16	2945	1W1602	STR												
	10	16	1620	1W1603	S10		660	300	660								
	WINGWALL #2																
▲	24	16	2840	2W1601	STR												
♦ ▲	21	16	3335	2W1602	STR												
	10	16	1620	2W1603	S10		660	300	660								
	ABUTMENT #2																
	220	16	920	2A1601	17		160	600	160								
	NOT USED			2A1602													
	48	16	1320	2A1603	S10		660	660	---								
♦	262	22	2765	2A2201	STR												
	28	25	7160	2A2501	STR												
	WINGWALL #3																
▲	24	16	2840	3W1601	STR												
▲	20	16	2930	3W1602	STR												
	10	16	1620	3W1603	S10		660	300	660								
	WINGWALL #4																
▲	24	16	2840	4W1601	STR												
♦ ▲	21	16	3180	4W1602	STR												
	10	16	1620	4W1603	S10		660	300	660								

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

ALL REINFORCING STEEL IS EPOXY COATED.

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31M (ASTM A 615M-SI). ALL BARS SHALL BE GRADE 420, 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.



ASTM STANDARD REINFORCING BARS

BAR SIZE	NOMINAL MASS (Kg/m)	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER (mm)	CROSS SECTIONAL AREA (mm²)	PERIMETER (mm)
#10	0.560	9.5	71	29.84
#13	0.994	12.7	129	39.90
#16	1.552	15.9	199	49.95
#19	2.235	19.1	284	60.00
#22	3.042	22.2	387	69.74
#25	3.973	25.4	510	79.80
#29	5.060	28.7	645	90.16
#32	6.404	32.3	819	101.47
#36	7.907	35.8	1006	112.47
#43	11.380	43.0	1452	135.09
#57	20.240	57.3	2581	180.01

PROJECT NAME: **DUXBURY**
PROJECT NUMBER: **STP 013-4(24)**

FILE NAME: **PW/86e059/se059rss.xls**
PROJECT LEADER: **C. KELLER**
DESIGNED BY: **B. NYQUEST**
REINFORCING STEEL SCHEDULE

PLOT DATE: **7/16/2004**
DRAWN BY: **STR5**
CHECKED BY: **T. SUMNER**
SHEET **42** OF **62**

VAOT Metric

VT STATE PLANE GRID

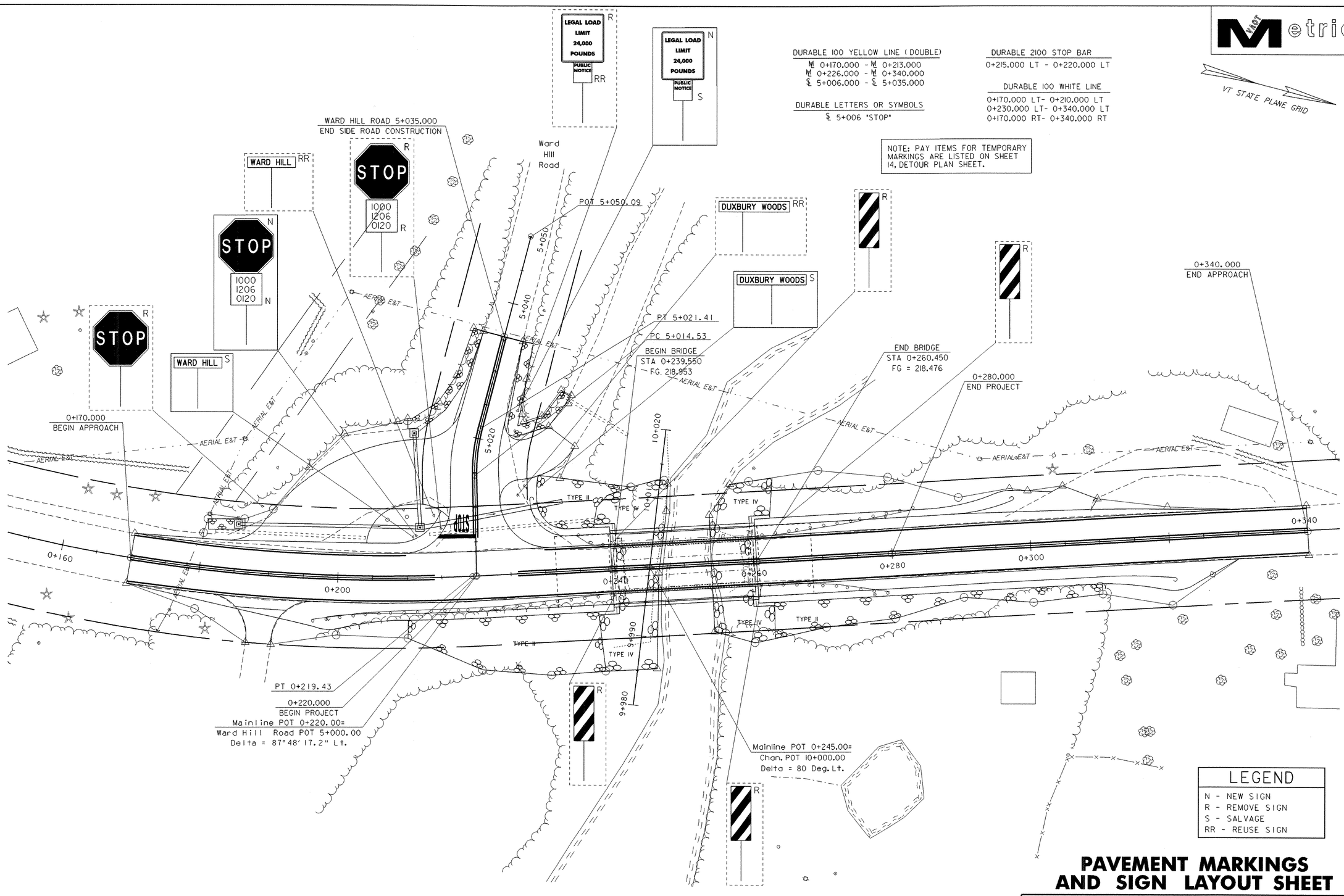
DURABLE 100 YELLOW LINE (DOUBLE)
℄ 0+170.000 - ℄ 0+213.000
℄ 0+226.000 - ℄ 0+340.000
℄ 5+006.000 - ℄ 5+035.000

DURABLE LETTERS OR SYMBOLS
℄ 5+006 "STOP"

DURABLE 2100 STOP BAR
0+215.000 LT - 0+220.000 LT

DURABLE 100 WHITE LINE
0+170.000 LT- 0+210.000 LT
0+230.000 LT- 0+340.000 LT
0+170.000 RT- 0+340.000 RT

NOTE: PAY ITEMS FOR TEMPORARY MARKINGS ARE LISTED ON SHEET 14, DETOUR PLAN SHEET.



LEGEND
N - NEW SIGN
R - REMOVE SIGN
S - SALVAGE
RR - REUSE SIGN

0 10 20 30
SCALE (1:250) IN METERS

PAVEMENT MARKINGS AND SIGN LAYOUT SHEET

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059sgn.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059sgl.i

PLOT DATE: 20-OCT-2005
DRAWN BY: J. GILMORE
CHECKED BY: T. SUMNER
SHEET 43 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

SIGNS & POST INSTALLED 10-20-06

Metric

KILOMETER MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 4.7	3.0	4.5	SQUARE STEEL (mm) kg/m 44 3.4	50 3.9	63 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (mm) kg/m 75 1.9	100 2.5	100 MOD 2.5	FOUNDATION	TUBULAR STEEL Ø (mm) kg/m 75 11.3	89 13.4	100 16.1	125 21.7	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	WEIGHT	POST SIZE	SIGN REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
											OPTION ITEMS																										
℄ STA 0+211.274	STOP	1	750	750	0.563						1		4.26																					RI-1		E-143M
	1000 1206 0120	1	150	250	0.038																															E-138M
℄ STA 5+005.796	WARD HILL						1			1																										
℄ STA 5+011.585	DUXBURY WOODS						1			+			3.66M																					OWNER REMOVED AFTER ERECTION		
℄ STA 5+020.358	LEGAL LOAD LIMIT 36,000 POUNDS	1	600	750	0.450						1		4.26																					VR-017		E-141M
	PUBLIC NOTICE						1			+																									ON LLL SIGN NEW POST		

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."

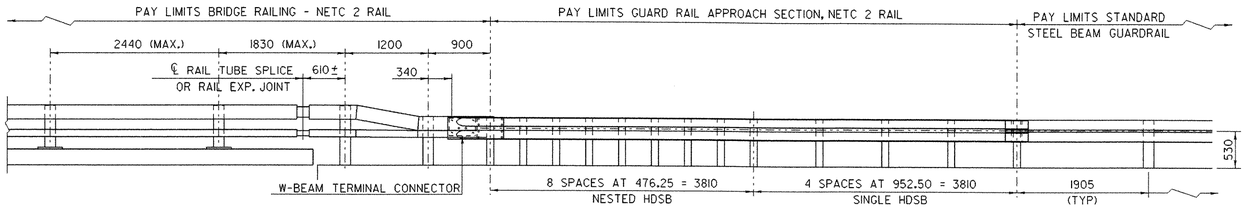
	m	m	m	m	m	m		EA	kg	kg	kg		kg	kg	kg	kg																					
TOTALS	m^2 1.884	m^2	EA.	m^2		m			m			kg		EA.		kg					EA.	EA.	kg														

SIGN SUMMARY SHEET

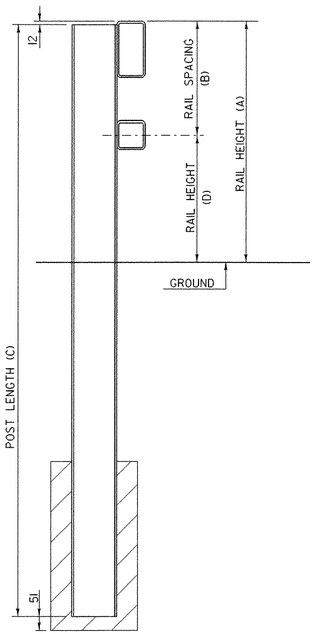
PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059sgn.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059sg2.i

PLOT DATE: 20-OCT-2005
DRAWN BY: J. GILMORE
CHECKED BY: T. SUMNER
SHEET 44 OF 62



RAILING TRANSITION ELEVATION

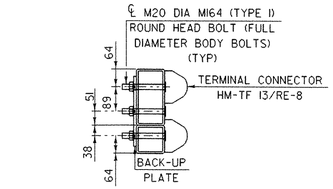


TYPICAL SECTION

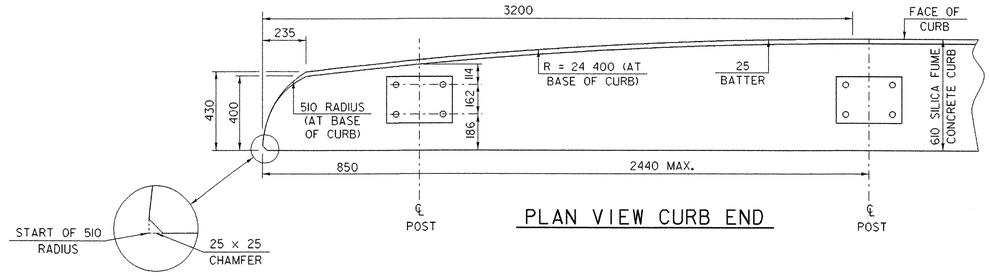
POST NUMBER	RAIL HEIGHT (A)	RAIL SPACING (B)	POST LENGTH (C)	RAIL HEIGHT (D)
1	860	405	2134	455
2	702	254	1956	448

NOTES:

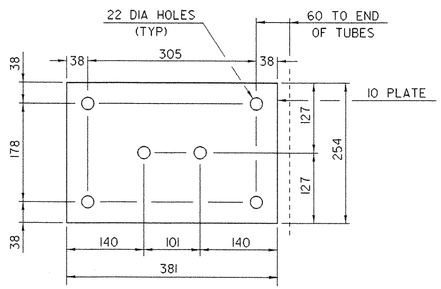
1. NOT USED.
2. TO FACILITATE FIELD FIT - UP OF THE TRANSITION RAILING, POSTS SHALL BE SET LOOSELY INTO FIBER FORM TUBES WHILE TRANSITION PARTS ARE BEING ASSEMBLED. POST HOLES SHALL BE BACKFILLED WITH A CONCRETE MIX APPROVED BY THE ENGINEER. PAYMENT FOR COMPONENTS, INCLUDING BACKUP PLATE AND END TERMINAL CONNECTOR FOR GUARD RAIL, AUGERING, FIBER FORM TUBES AND CONCRETE, AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO BRIDGE RAILING, N.E.TC. 2 RAIL.
3. THE REFLECTORIZED ALUMINUM DELINEATION IS TO BE ERECTED EVERY 9m (OR CLOSEST POST) WITH A M16 BOLT. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052-H32.
4. REFLECTIVE MATERIAL SHALL MEET REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVER'S LEFT AND SILVER ON THEIR RIGHT.
5. ALL APPROACH RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.
6. SEE STANDARD G-1M AND G-1dM FOR ADDITIONAL INFORMATION.



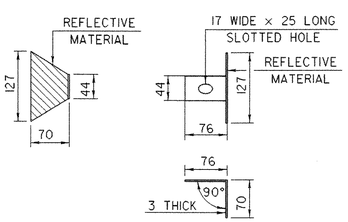
SECTION THROUGH GUARD RAIL CONNECTION AT TERMINAL CONNECTOR



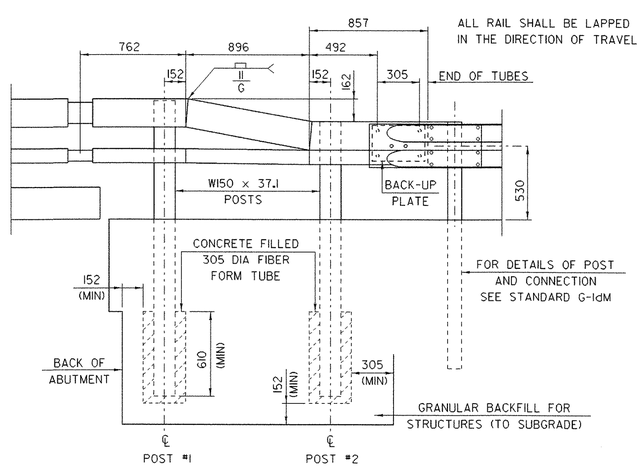
PLAN VIEW CURB END



BACK-UP PLATE



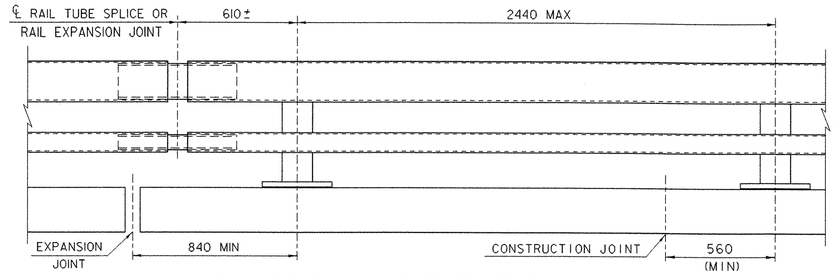
DELINEATION DEVICE DETAILS



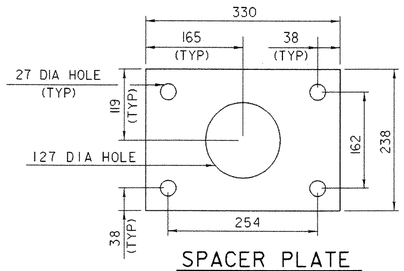
ELEVATION

NETC RAIL PLAN AND ELEVATION

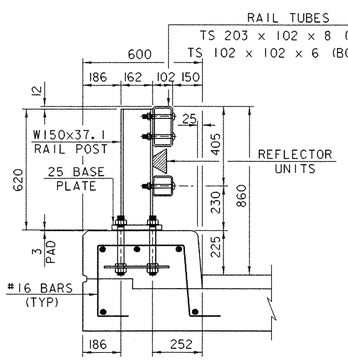
PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059netc.dgn	PLOT DATE: 20-OCT-2005
PROJECT LEADER: C. KELLER	DRAWN BY: Structures
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059nt1.1	SHEET 45 OF 62



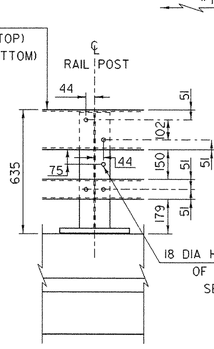
BRIDGE RAILING ELEVATION



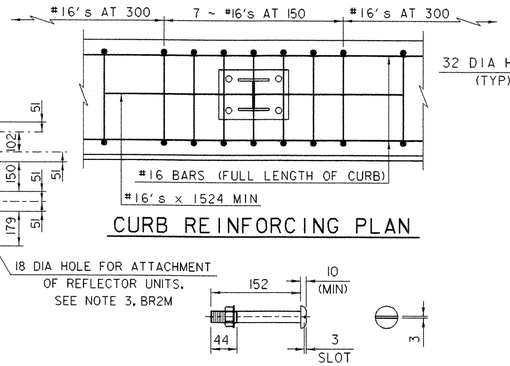
SPACER PLATE



TYPICAL SECTION



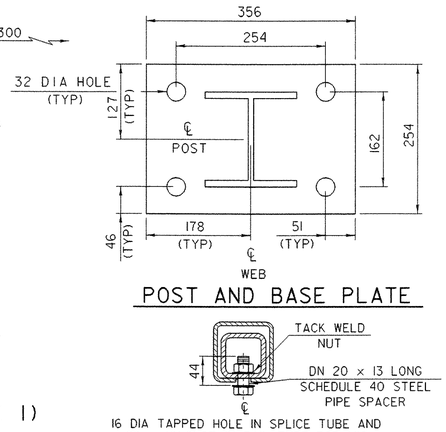
ELEVATION



CURB REINFORCING PLAN

M20 DIA M164M (TYPE 1)
ROUND HEAD BOLT

(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #9)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



POST AND BASE PLATE

16 DIA TAPPED HOLE IN SPLICE TUBE AND
29 x 'C' SLOT IN RAIL TUBE FOR M16
BOLT AND PLAIN HARDENED WASHER

EXPANSION JOINT SECTION

FOR DETAILS NOT SHOWN
SEE "RAIL TUBE SPLICE SECTION"

NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525, "RAILINGS OF THE STANDARD SPECIFICATION FOR CONSTRUCTION."
2. TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732, "RAILING MATERIALS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION," EXCEPT THAT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING IN THIS STANDARD.
3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 2mm RADIUS AND BE FREE OF BURRS.
4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.
5. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
6. RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 7°C AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
7. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232M.
8. RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
9. RAIL TUBES SHALL BE ATTACHED USING M20 FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 2mm LARGER THAN THE BOLT SIZE.
10. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
11. IF THERE IS A CONFLICT BETWEEN THESE DETAILS AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.
12. ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.
13. THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISION OF 506.04, SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.
14. RAIL POST AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A370 CHARPY IMPACT TESTING USING TYPE A SPECIMENS.

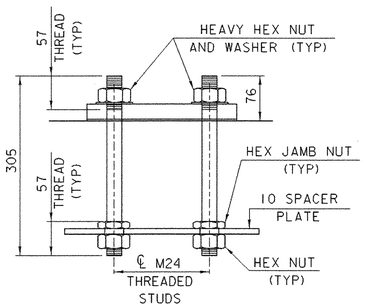
MATERIALS

RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATE.....ASTM A709/A709M, GRADE 345
ALL OTHER SHAPES AND PLATES.....ASTM A709/A709M, GRADE 250
ANCHOR STUDS.....ASTM F568M CLASS 8.8
ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M164M, TYPE 1

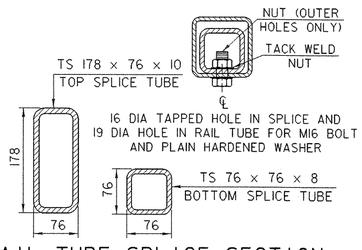
NUTS FOR AASHTO M164M (ASTM A325M) BOLTS AND ANCHOR STUDS SHALL COMPLY WITH AASHTO M291M (ASTM A563M).

WASHERS SHALL COMPLY WITH AASHTO M293M (ASTM F436M) SPECIFICATIONS.

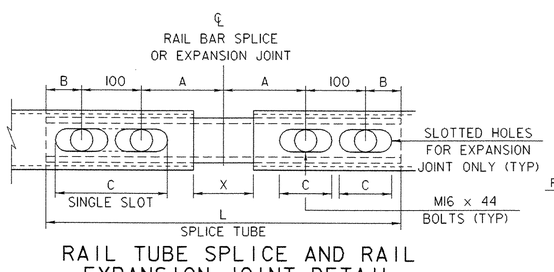
3mm PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.



RAIL POST ANCHORAGE

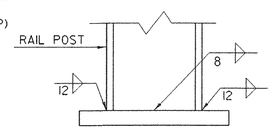


RAIL TUBE SPLICE SECTION



RAIL TUBE SPLICE AND RAIL
EXPANSION JOINT DETAIL

(BOTTOM VIEW)



BASE WELD DETAIL

SPLICE TABLE					
T	A	B	C	L	X
NA	100	50	--	510	20
EXPANSION JOINT TABLE					
<100	100	50	65	510	65
~~>100 <165~~	~~140~~	~~60~~	~~90~~	~~605~~	~~105~~
~~>165 <230~~	~~165~~	~~85~~	~~230*~~	~~705~~	~~130~~
~~>230 <330~~	~~215~~	~~110~~	~~280*~~	~~860~~	~~180~~

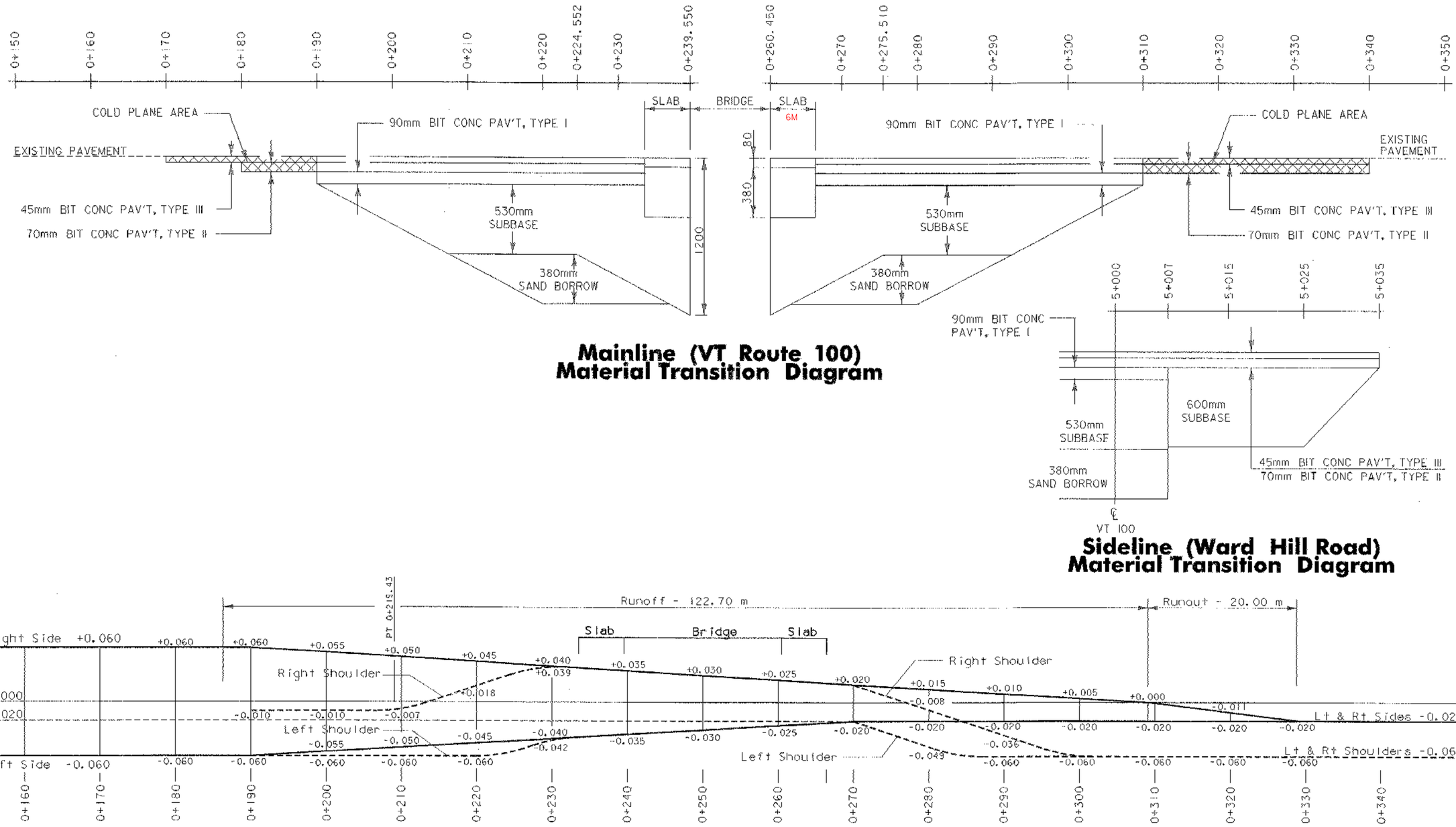
T = TOTAL MOVEMENT BETWEEN BRIDGE EXPANSION JOINTS. SEE NOTE 6
* = SINGLE SLOT

NETC RAIL DETAILS

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059netc.dgn
PROJECT LEADER: C. KELLER
DESIGNED BY: B. NYQUIST
se059nt2.1

PLOT DATE: 20-OCT-2005
DRAWN BY: Structures
CHECKED BY: T. SUMNER
SHEET 46 OF 62



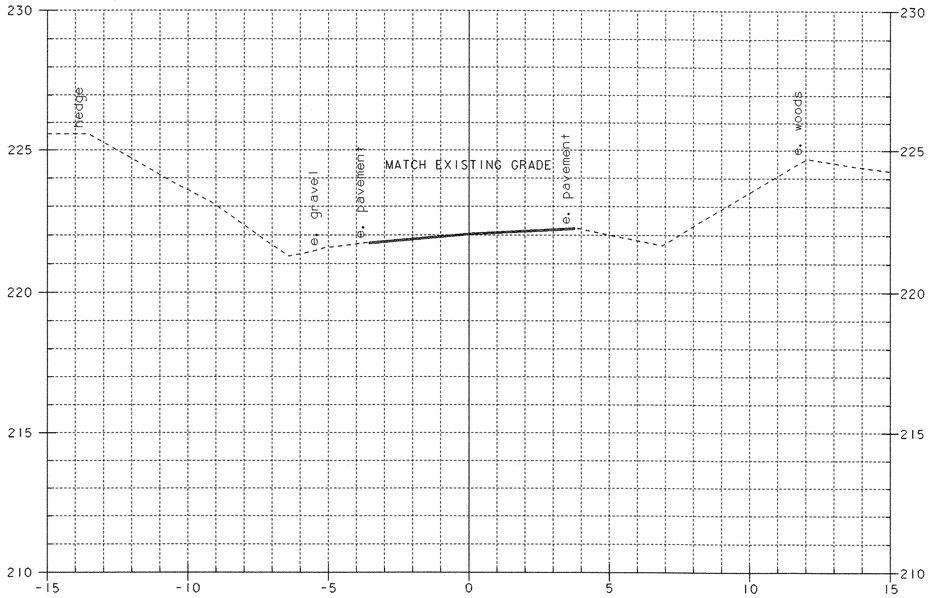
Mainline (VT Route 100)
Material Transition Diagram

Sideline (Ward Hill Road)
Material Transition Diagram

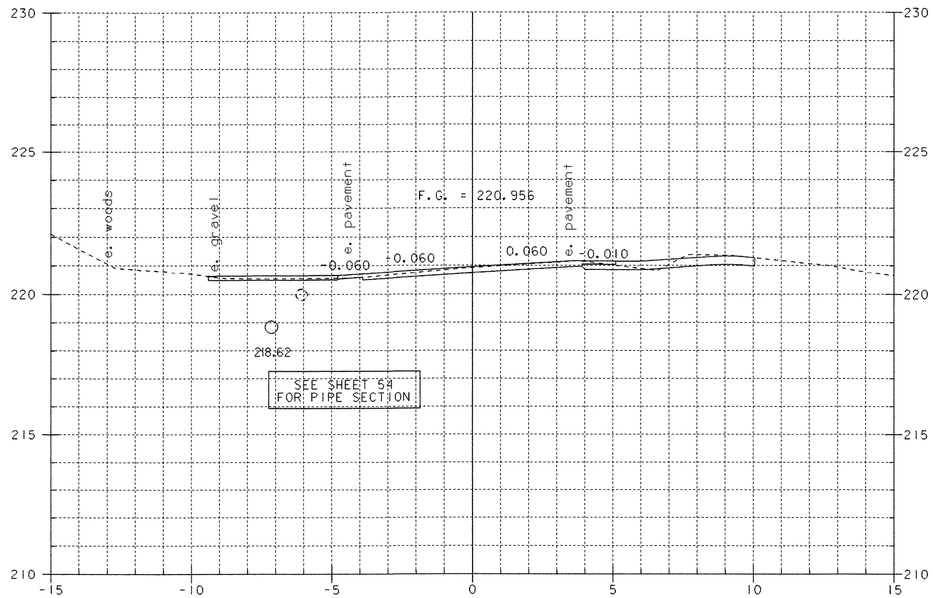
Mainline (VT Route 100)
Superelevation Diagram

MATERIAL TRANSITION DIAGRAM
SUPERELEVATION DIAGRAM

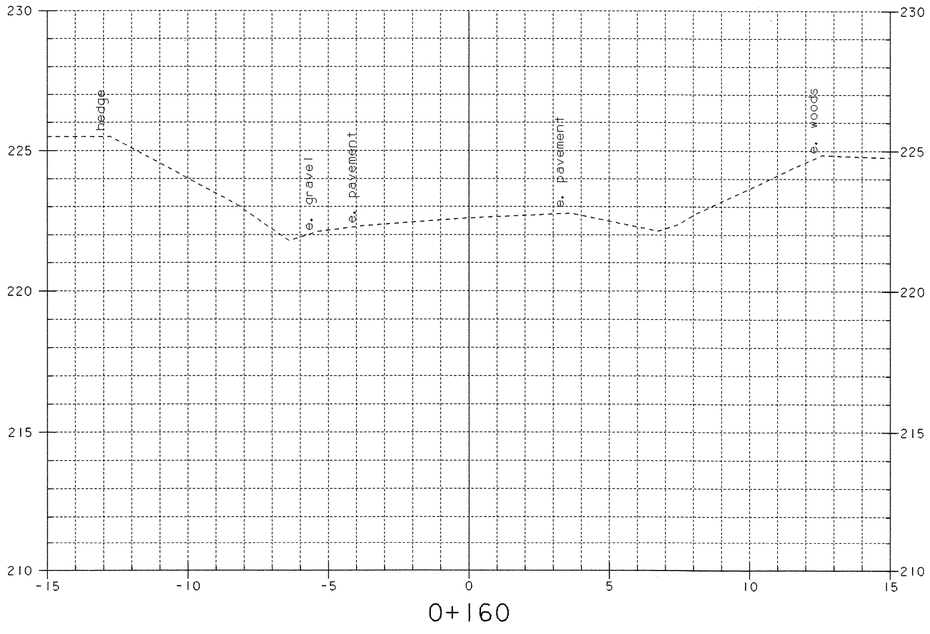
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PROJECT NUMBER: STP 013-4(24)	
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PROJECT LEADER: C. KELLER	DRAWN BY: Graw
DESIGNED BY: B. NYQUIST	CHECKED BY: T. SUMNER
se059mtd.i	SHEET 47 OF 62



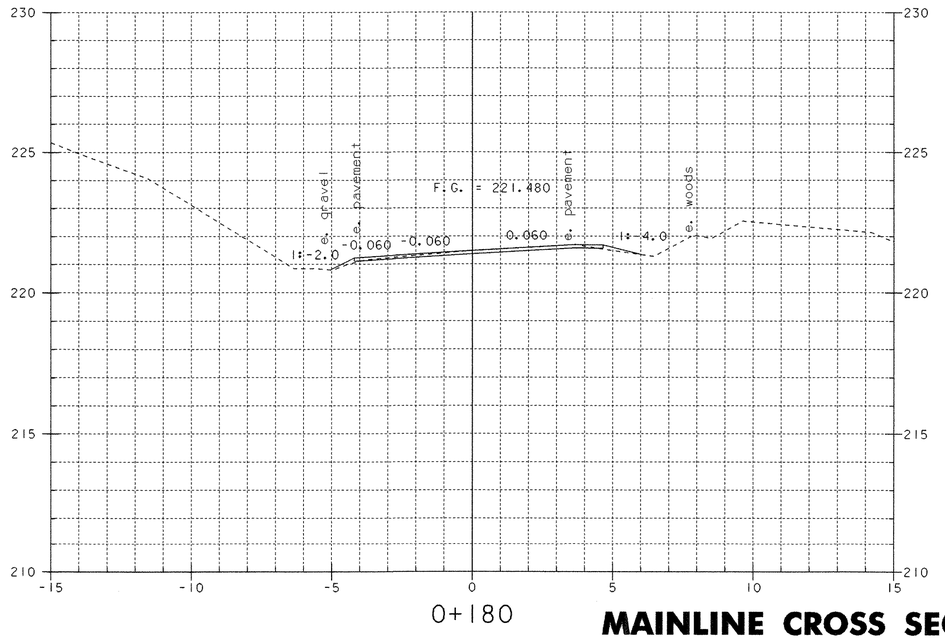
0+170
Begin Approach



0+190



0+160



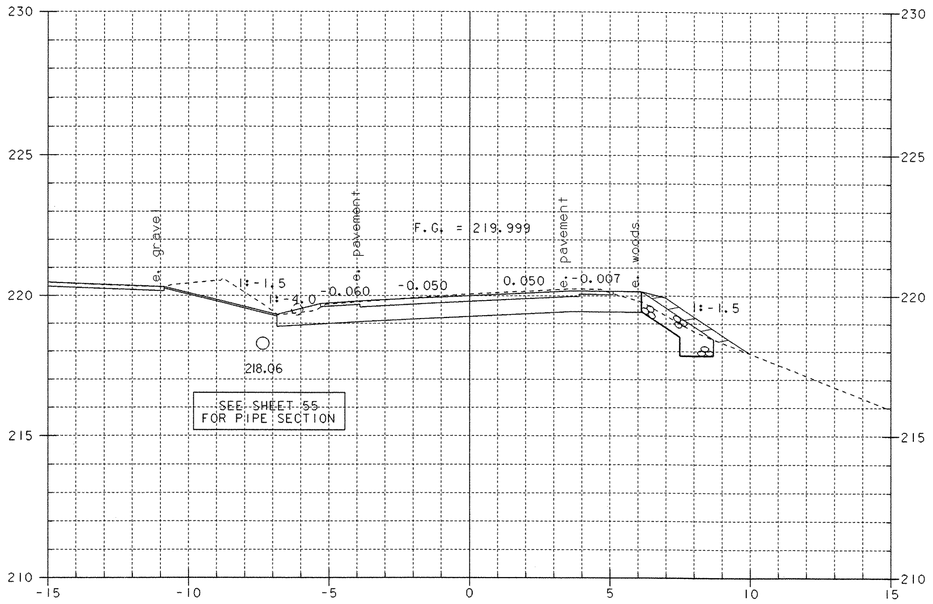
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MAINLINE CROSS SECTIONS

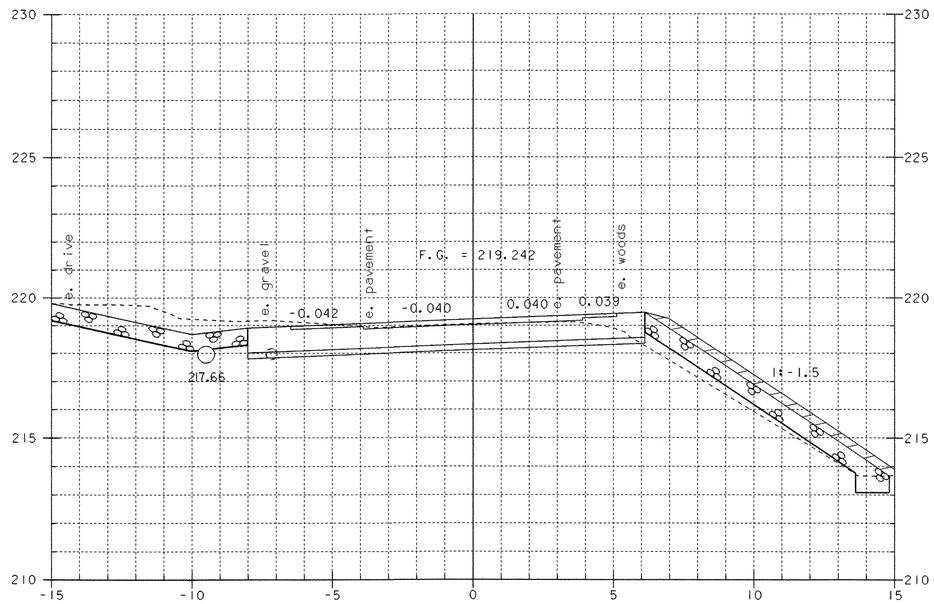
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PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

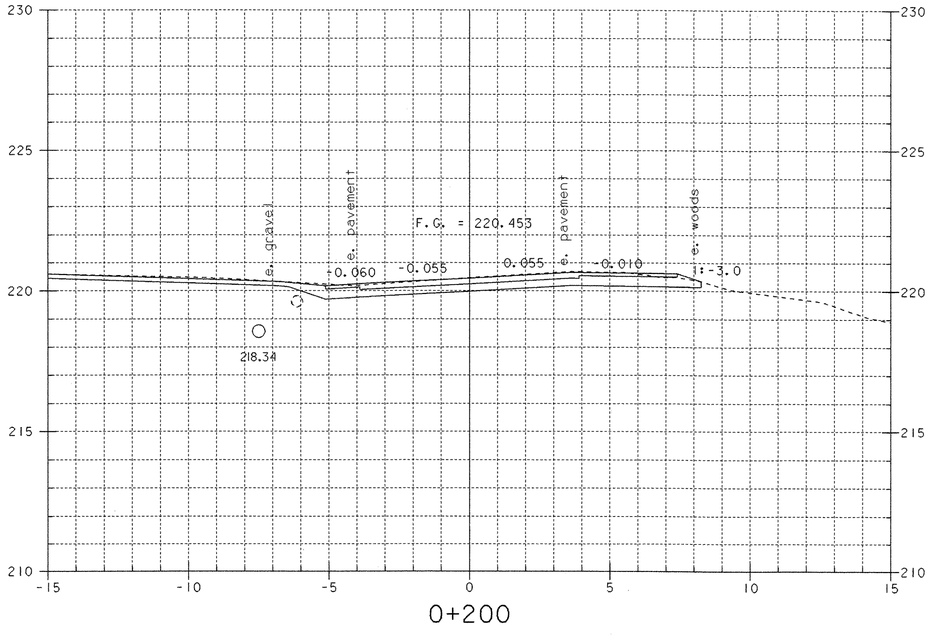
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PROJECT MANAGER: C. KELLER		DRAWN BY:	R.H. PELLETT
DESIGNED BY:	G. SHANGRAW	CHECKED BY:	T. SUMNER
se059mxl.i		SHEET 48	OF 62



0+210 RT.
BEGIN 1-1.5 SLOPE
W/ STONE FILL TYPE II



0+230



0+200



0+220

Begin Project

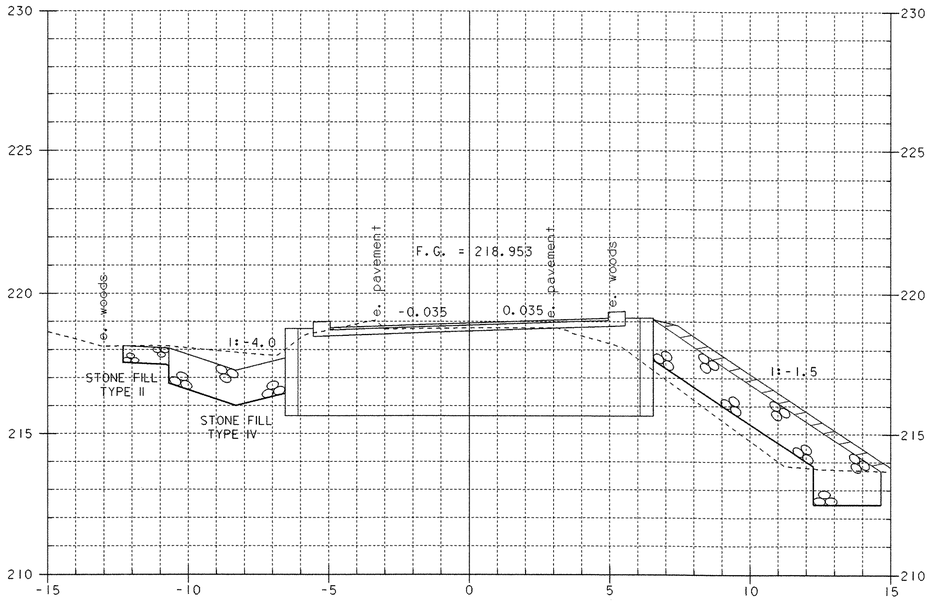
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MAINLINE CROSS SECTIONS

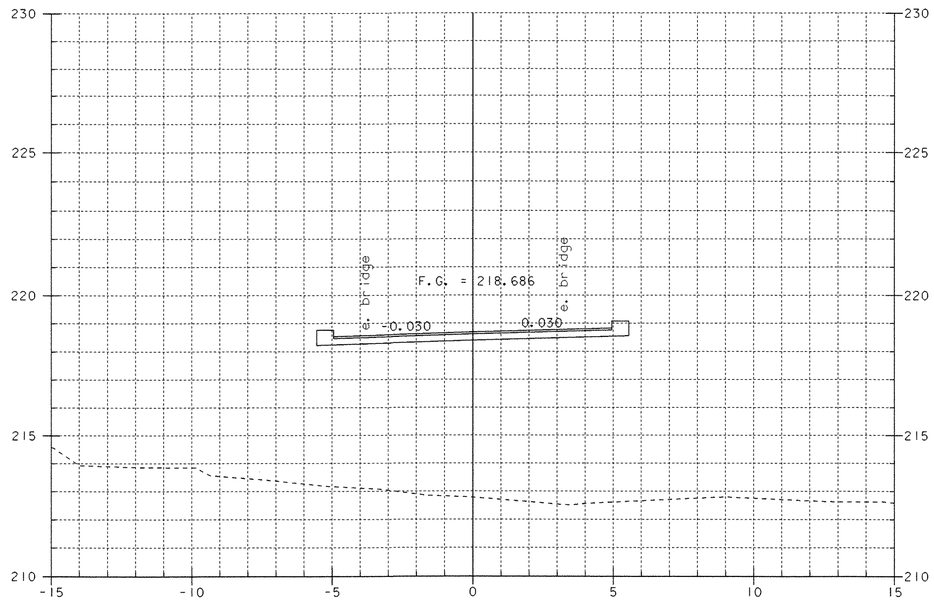
PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059xsl.dgn
PROJECT MANAGER: C. KELLER
DESIGNED BY: G. SHANGRAW
se059mx2.i

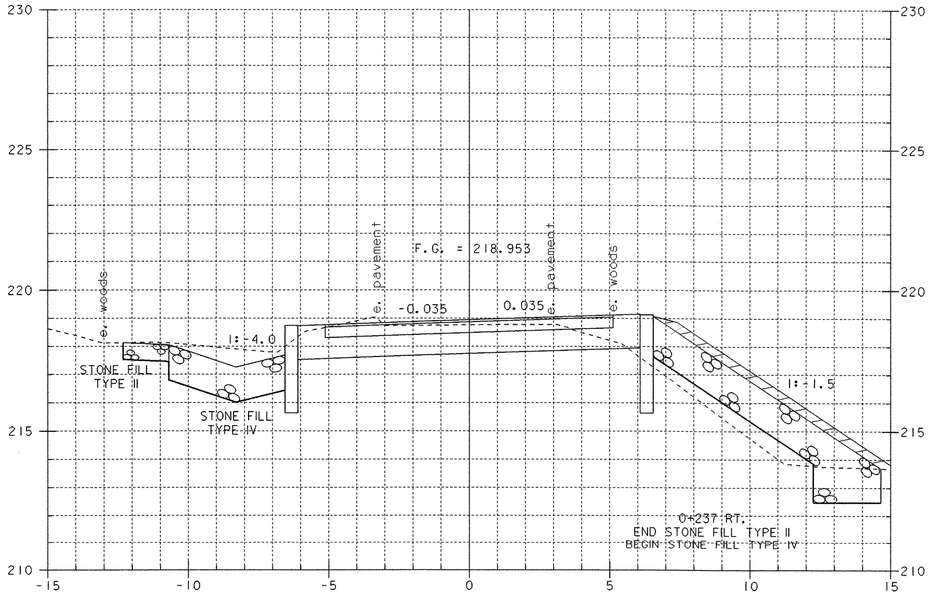
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DRAWN BY: R.H. PELLETT
CHECKED BY: T. SUMNER
SHEET 49 OF 62



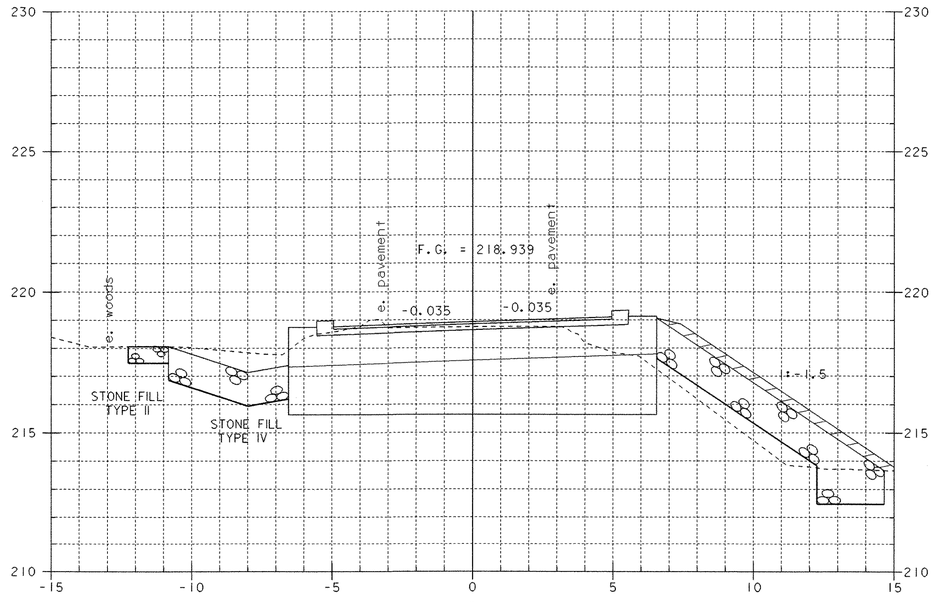
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Begin Bridge



0+250



0+239.54

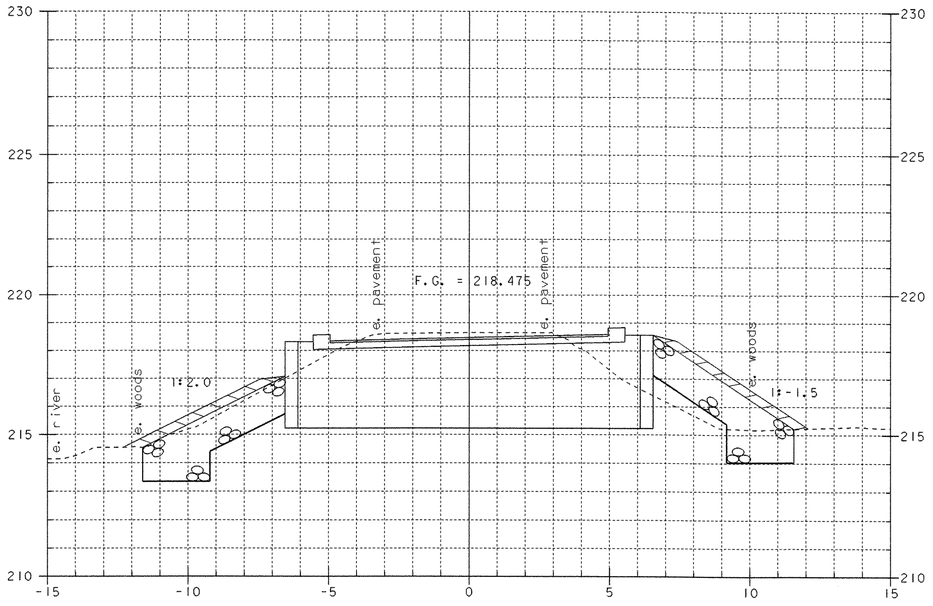


0+240

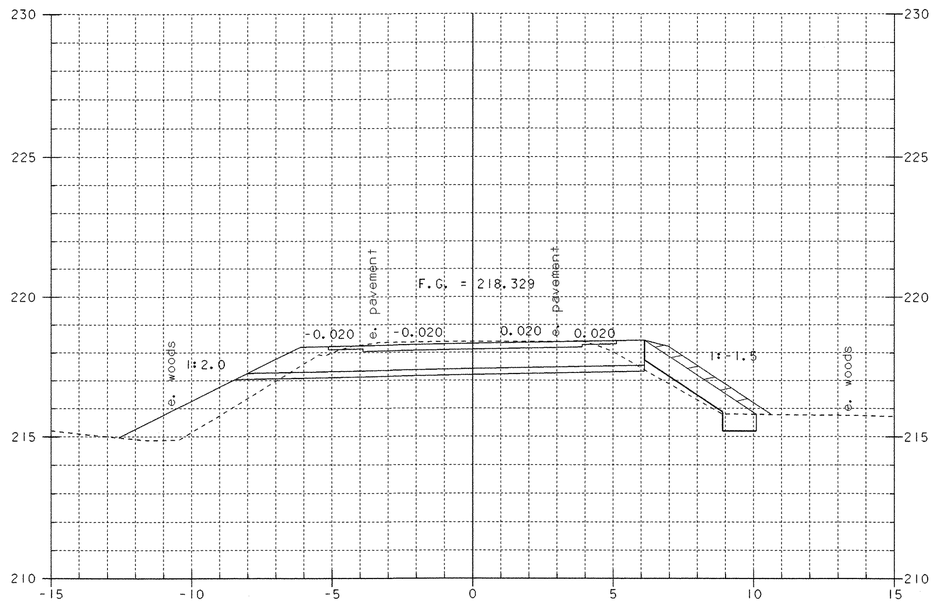
MAINLINE CROSS SECTIONS

0 2 4 6 8 10
SCALE 1:100

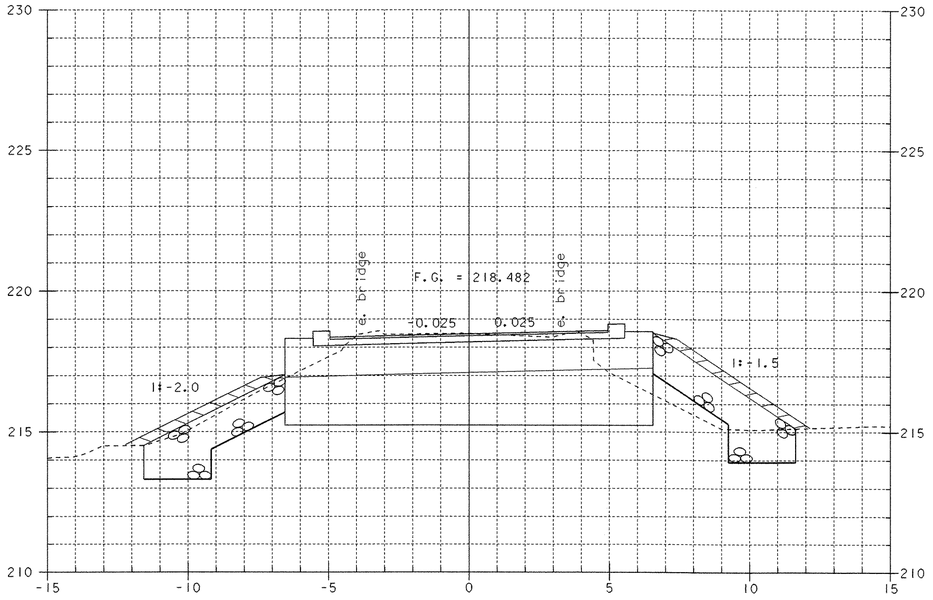
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PROJECT NUMBER: STP 013-4(24)	
FILE NAME: /str5/86e059/se059xsl.dgn	PLOT DATE: 20-OCT-2005
PROJECT MANAGER: C. KELLER	DRAWN BY: R.H. PELLETT
DESIGNED BY: G. SHANGRAW	CHECKED BY: T. SUMNER
se059mx3.1	SHEET 50 OF 62



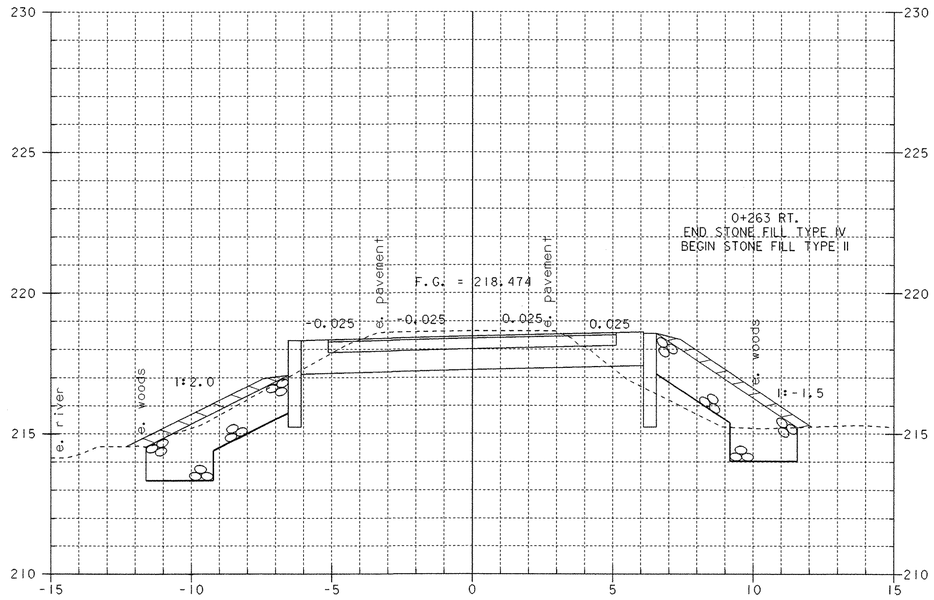
0+260.45
End Bridge



0+270



0+260



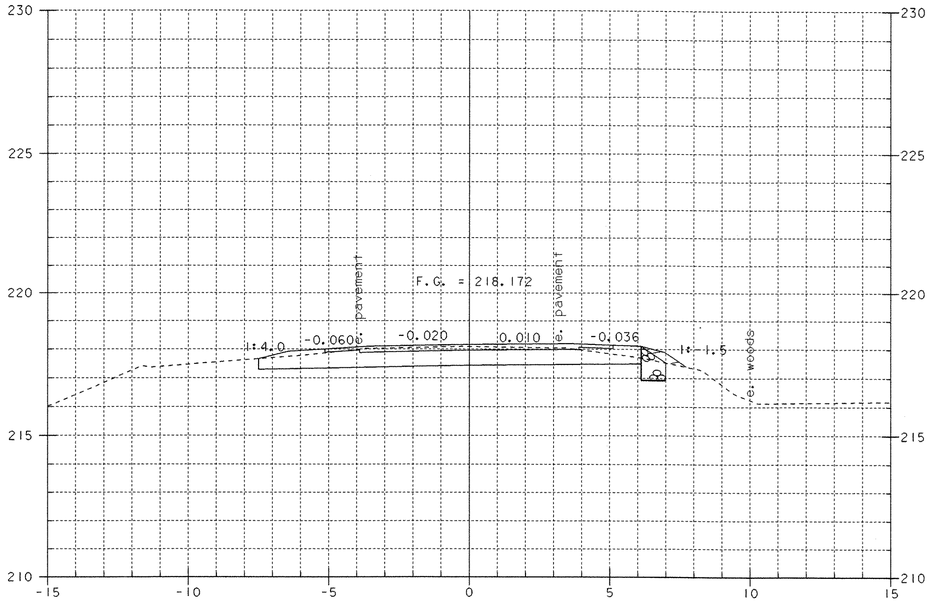
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MAINLINE CROSS SECTIONS

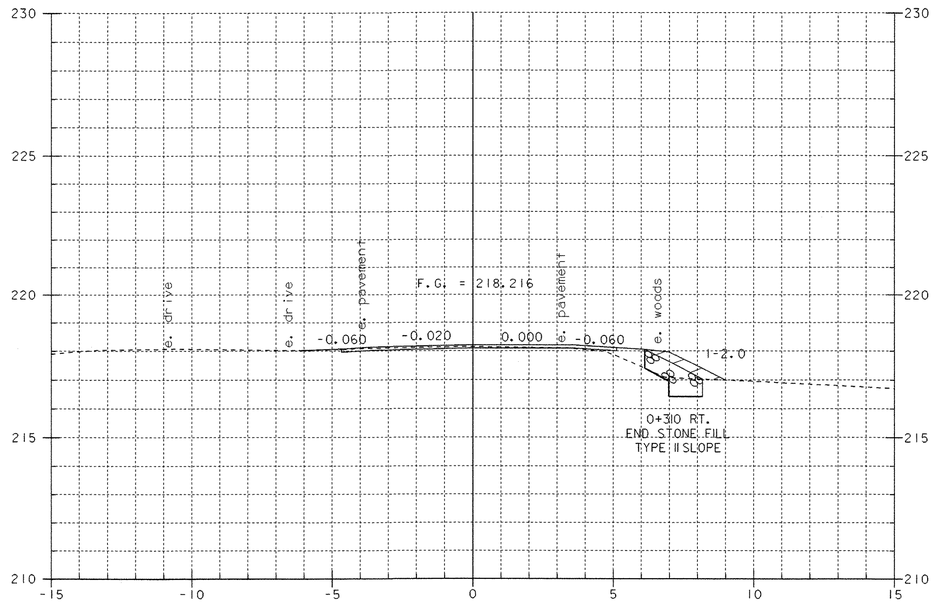
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PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

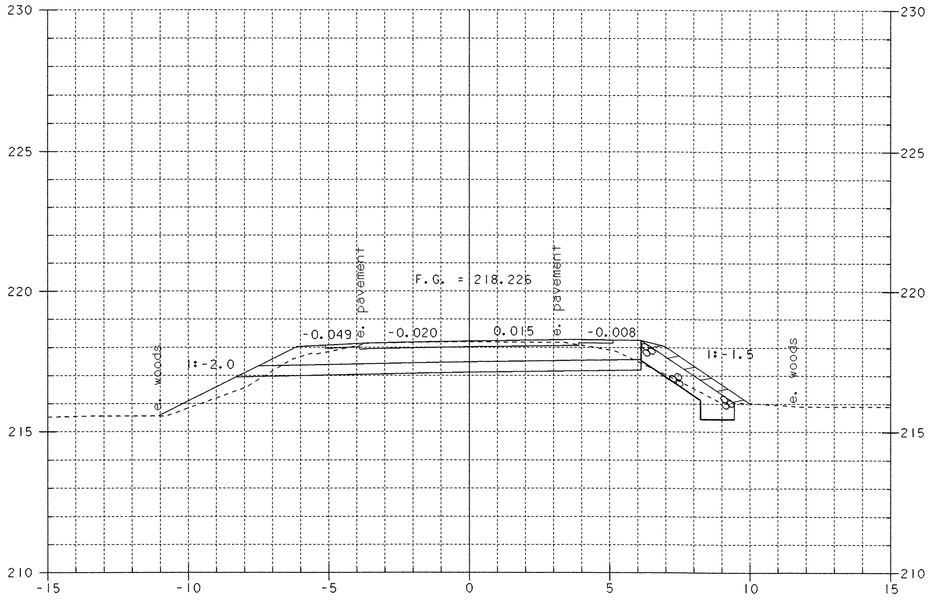
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PROJECT MANAGER: C. KELLER		DRAWN BY:	R.H. PELLETT
DESIGNED BY:	G. SHANGRAW	CHECKED BY:	T. SUMNER
se059mx4.1		SHEET 51	OF 62



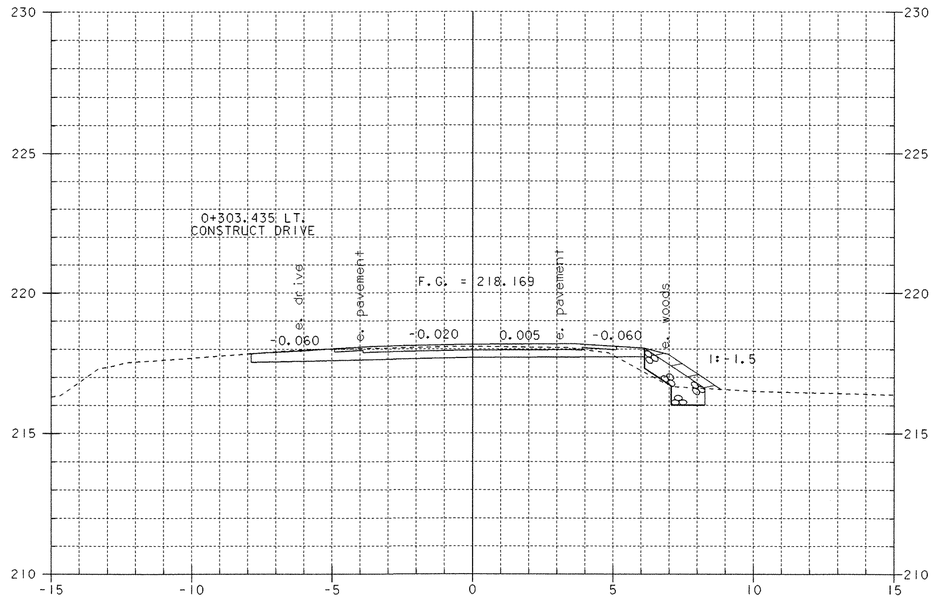
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0+310



0+280
End Project

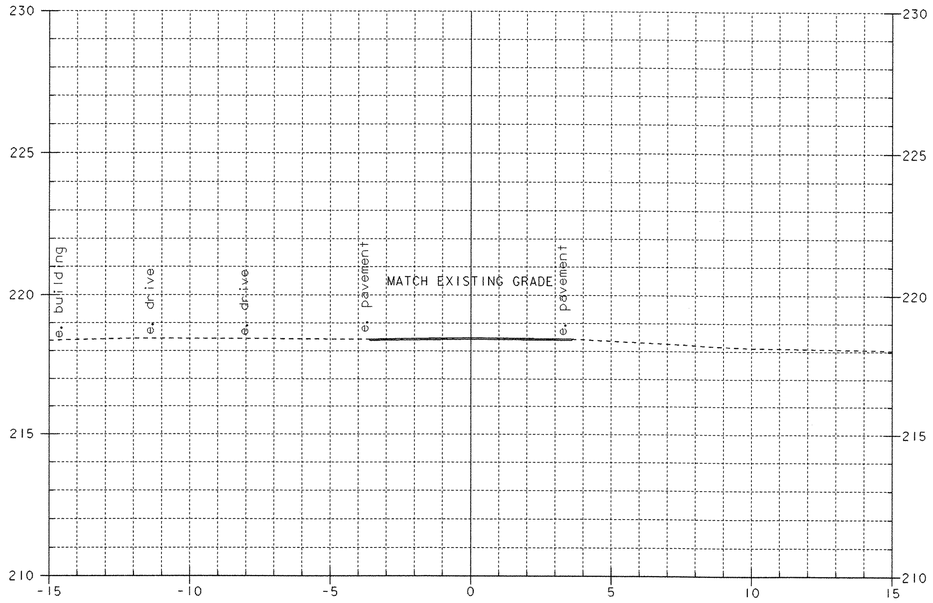


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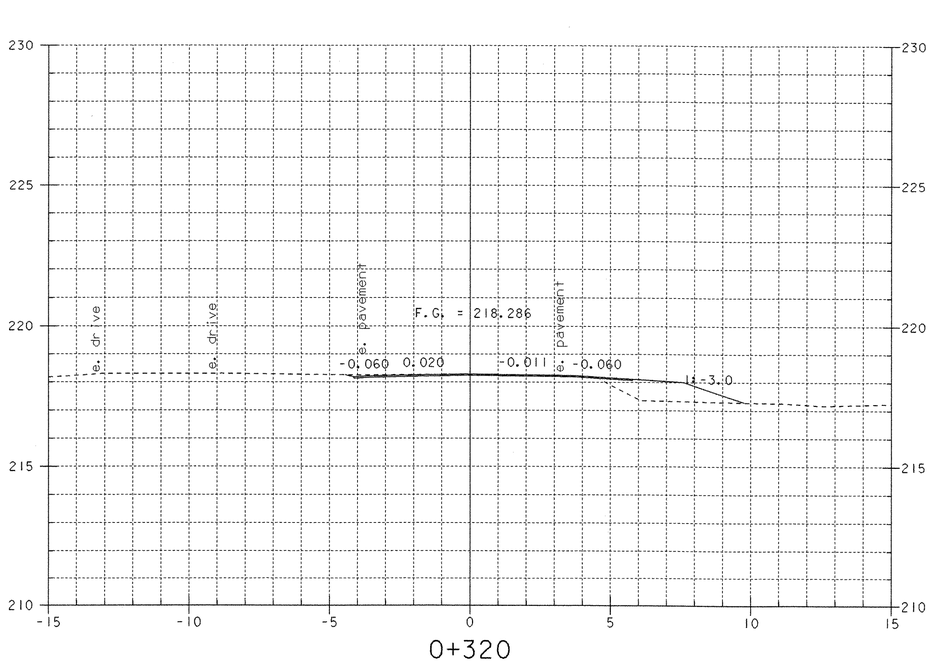
MAINLINE CROSS SECTIONS

0 2 4 6 8 10
SCALE 1:100

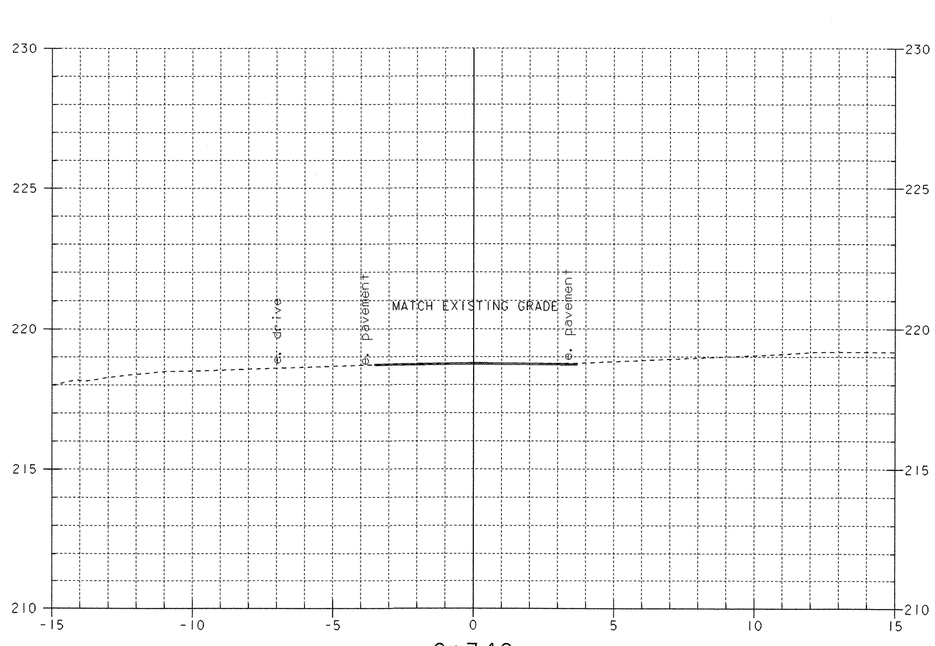
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PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059xsl.dgn	PLOT DATE: 20-OCT-2005
PROJECT MANAGER: C. KELLER	DRAWN BY: R.H. PELLETT
DESIGNED BY: G. SHANGRAW	CHECKED BY: T. SUMNER
se059mx5.1	SHEET 52 OF 62



0+330



0+320



0+340
End Approach

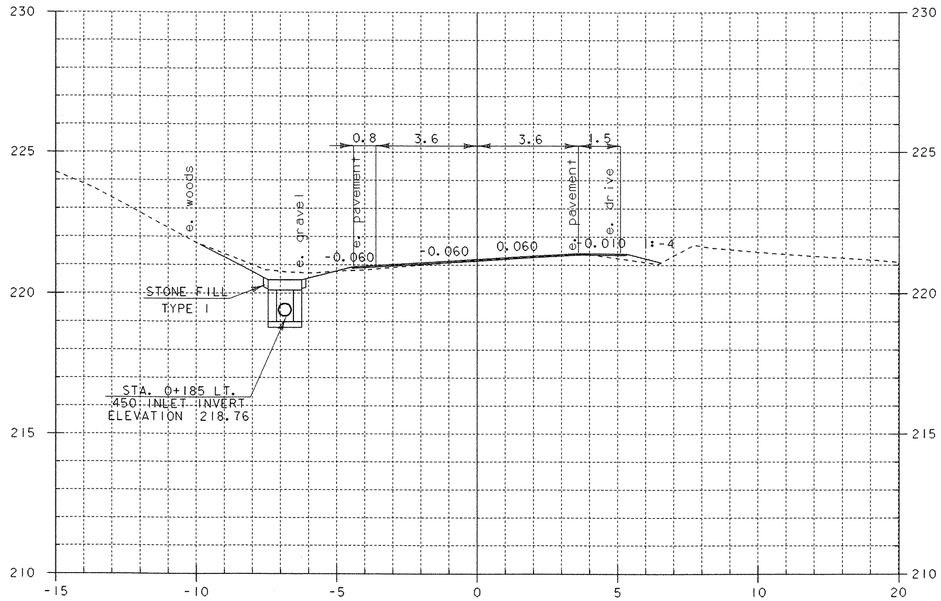
MAINLINE CROSS SECTIONS

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SCALE 1:100

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059xsl.dgn
PROJECT MANAGER: C. KELLER
DESIGNED BY: G. SHANGRAW
se059mx6.1

PLOT DATE: 20-OCT-2005
DRAWN BY: R.H. PELLETT
CHECKED BY: T. SUMNER
SHEET 53 OF 62

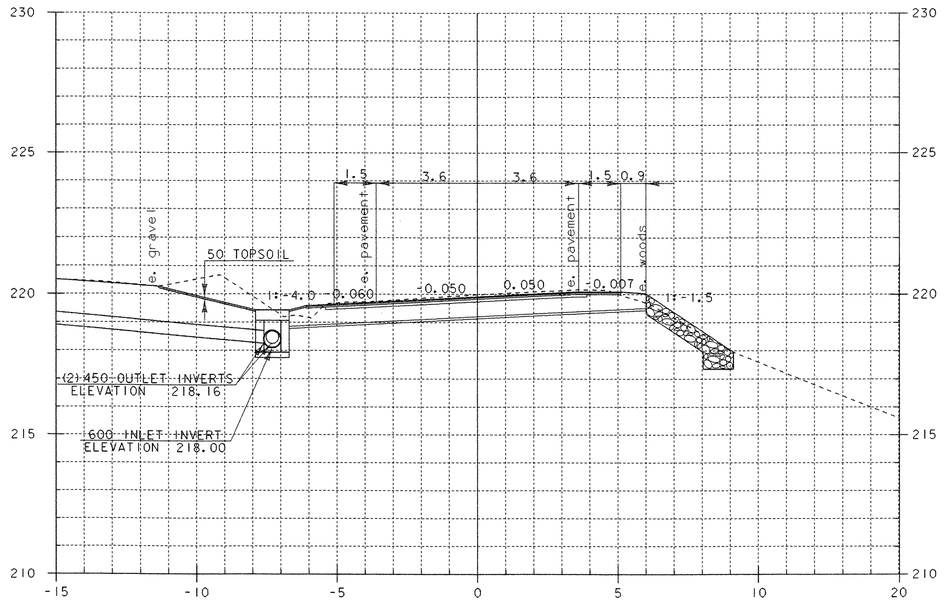


Mainline 0+185.335 Lt
Begin New 450 x 27 m Option Pipe

SCALE = 1:100

PIPE DI SECTION 1

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059xsl.dgn	PLOT DATE: 20-OCT-2005
PROJECT MANAGER: C. KELLER	DRAWN BY: R.H. PELLETT
DESIGNED BY: G. SHANGRAW	CHECKED BY: T. SUMNER
se059dil.1	SHEET 54 OF 62



Mainline 0+212 Lt
End (2) New 450 x 27 m Option Pipes
Begin New 600 x 20 m Option Pipe

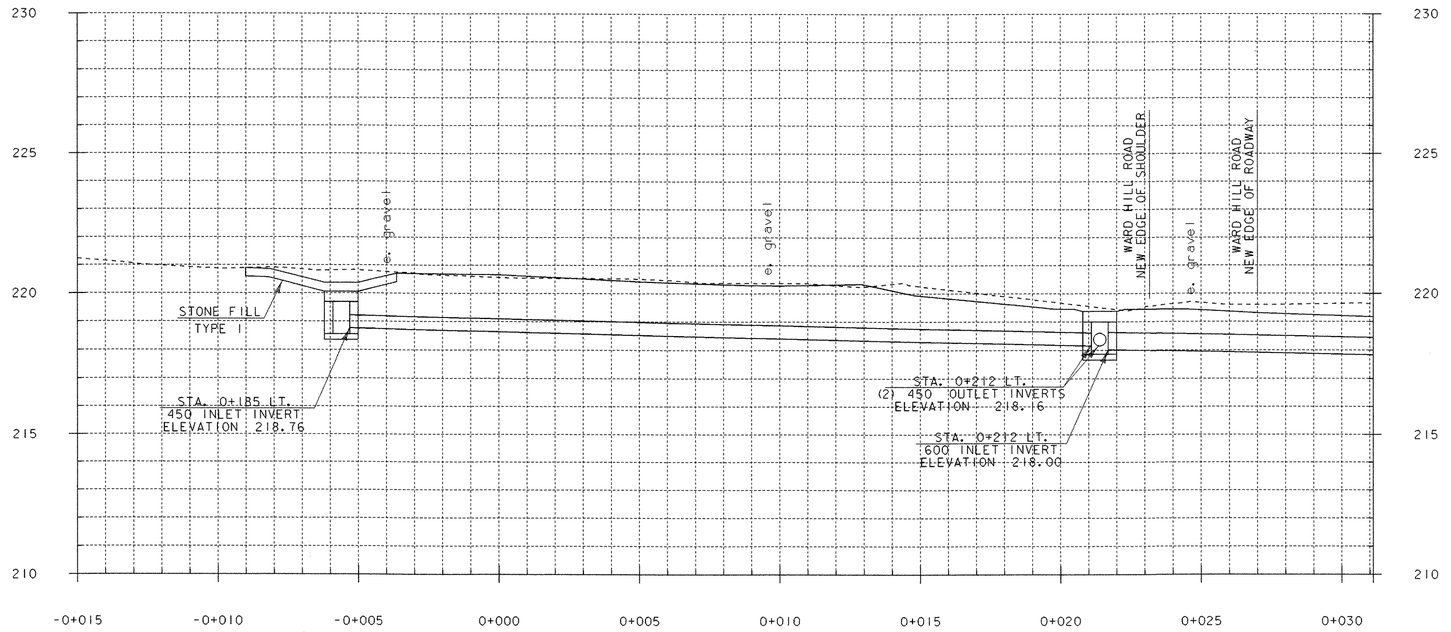
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PIPE DI SECTION 2

PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059xsl.dgn
PROJECT MANAGER: C. KELLER
DESIGNED BY: G. SHANGRAW
se059d12.i

PLOT DATE: 20-OCT-2005
DRAWN BY: R.H. PELLETT
CHECKED BY: T. SUMNER
SHEET 55 OF 62



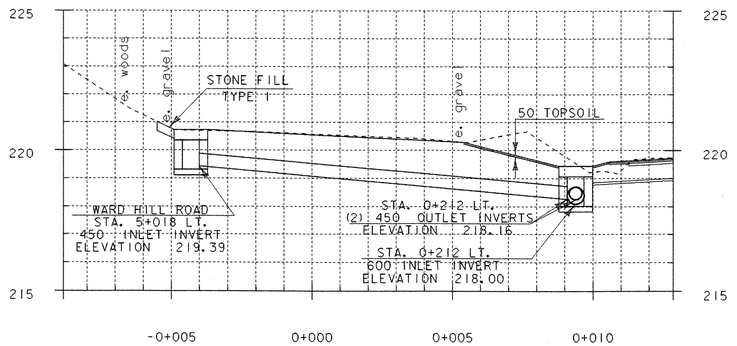
MAINLINE PIPE PROFILE
NEW 450 X 27 M OPTION PIPE

PIPE PROFILE 1

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SCALE = 1:100

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059xsl.dgn	PLOT DATE: 20-OCT-2005
PROJECT MANAGER: C. KELLER	DRAWN BY: R.H. PELLETT
DESIGNED BY: G. SHANGRAW	CHECKED BY: T. SUMNER
se059dl3.i	SHEET 56 OF 62



PIPE PROFILE UNDER TURN AROUND
NEW 450 X 13 M OPTION PIPE

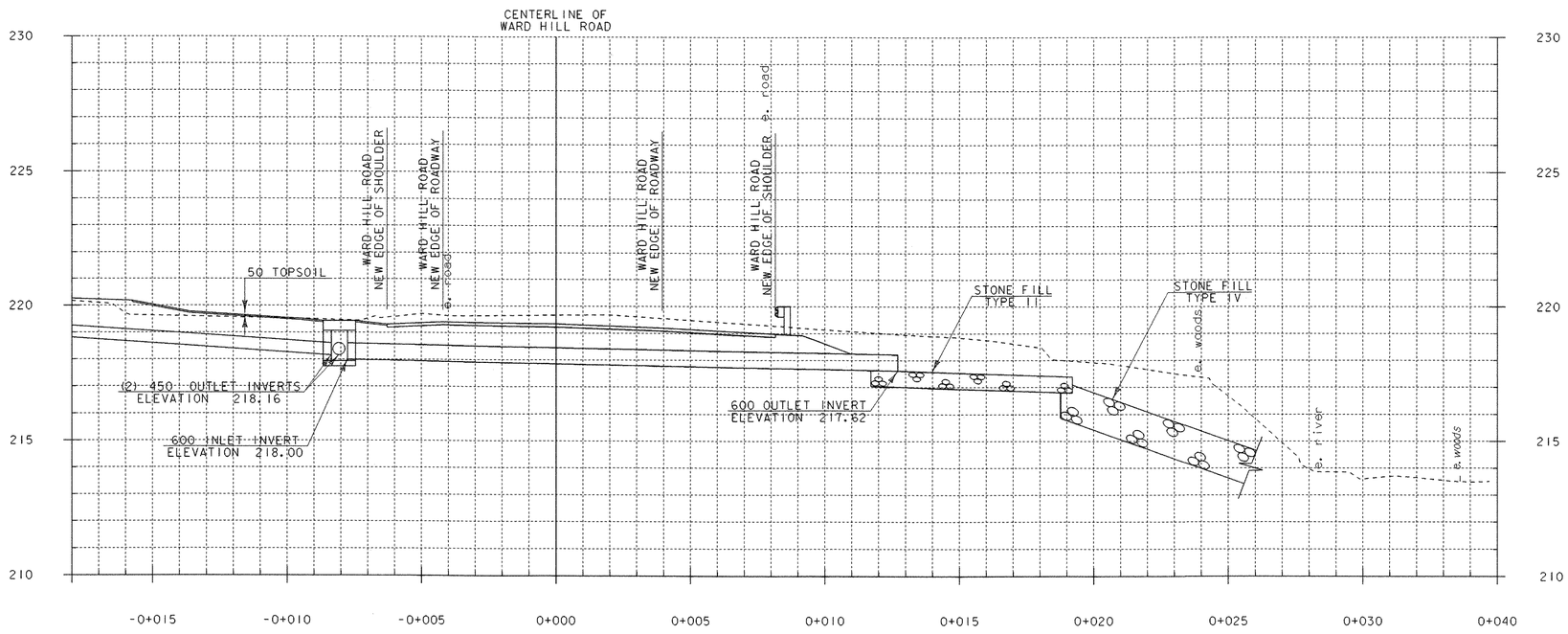
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PIPE PROFILE 2

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)

FILE NAME: /str5/86e059/se059xsl.dgn		PLOT DATE:	20-OCT-2005
PROJECT MANAGER:	C. KELLER	DRAWN BY:	R.H. PELLETT
DESIGNED BY:	G. SHANGRAW	CHECKED BY:	T. SUMNER
se059d14.i		SHEET	57 OF 62

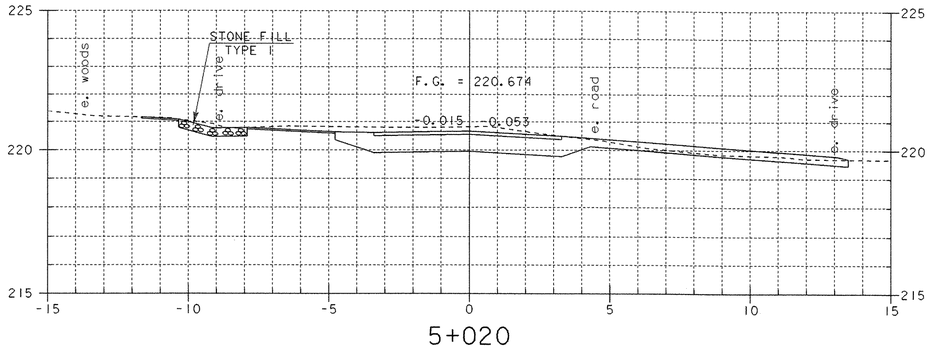


PIPE PROFILE UNDER WARD HILL ROAD
NEW 610 X 20 OPTION PIPE

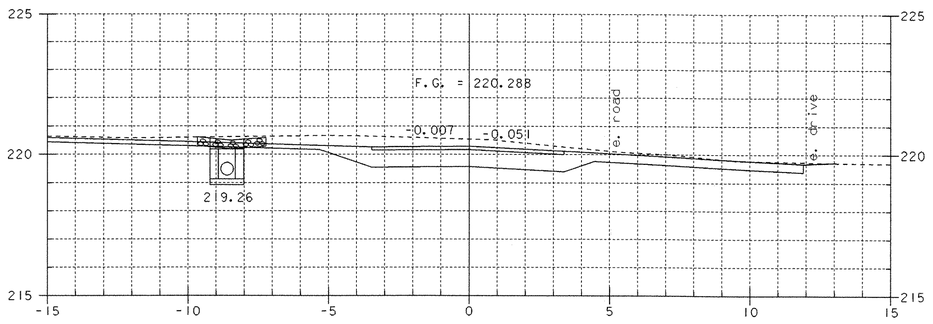
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PIPE PROFILE 3

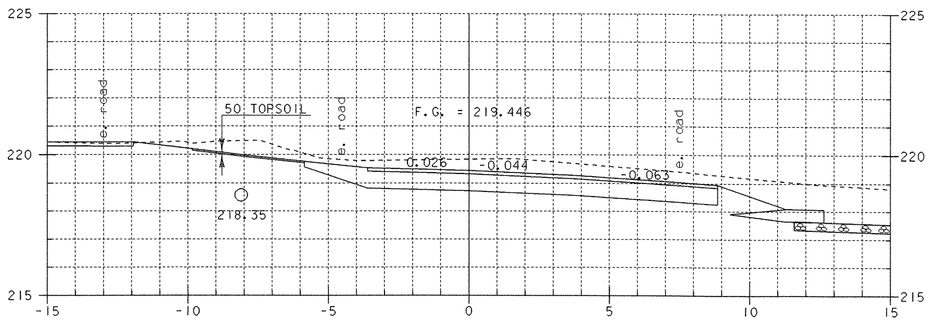
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PROJECT NUMBER: STP 013-4(24)	
FILE NAME: /str5/86e059/se059xsl.dgn	PLOT DATE: 20-OCT-2005
PROJECT MANAGER: C. KELLER	DRAWN BY: R.H. PELLETT
DESIGNED BY: G. SHANGRAW	CHECKED BY: T. SUMNER
se059dl5.i	SHEET 58 OF 62



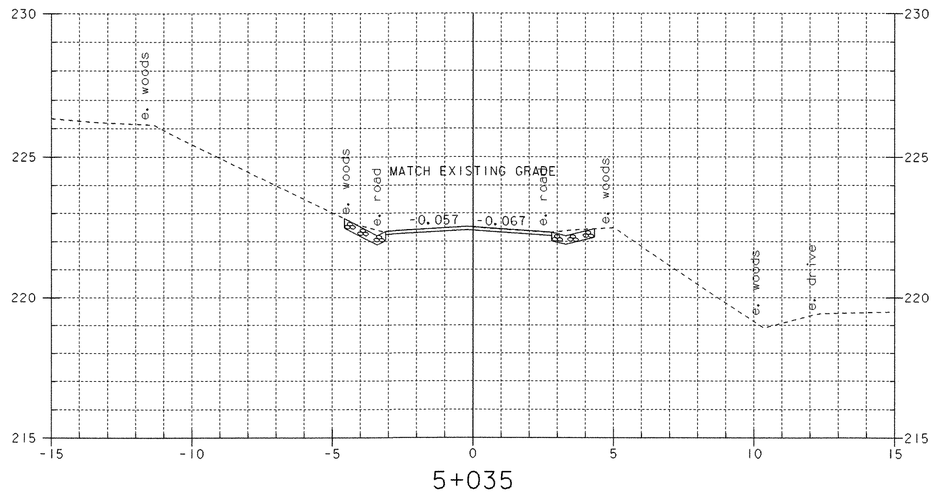
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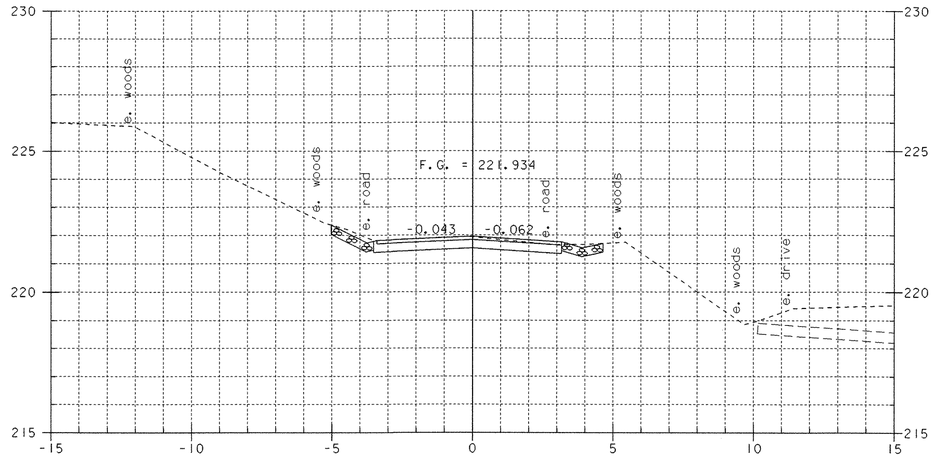
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5+010



5+035



5+030

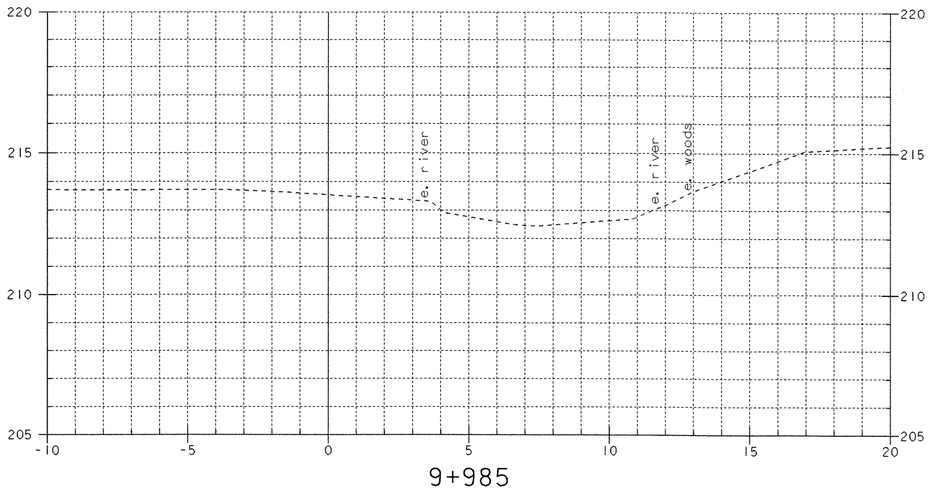
WARD HILL ROAD SECTIONS

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PROJECT NUMBER:	STP 013-4(24)

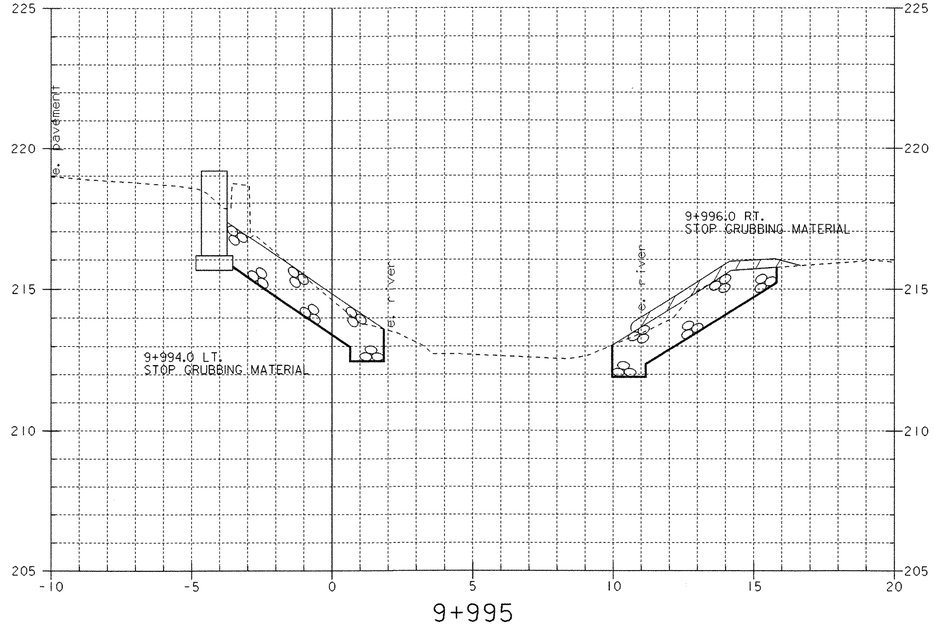
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PROJECT MANAGER: C. KELLER		DRAWN BY:	R.H. PELLETT
DESIGNED BY: se059sxl.i	G. SHANGRAW	CHECKED BY:	T. SUMNER
		SHEET	59 OF 62

0 2 4 6 8 10

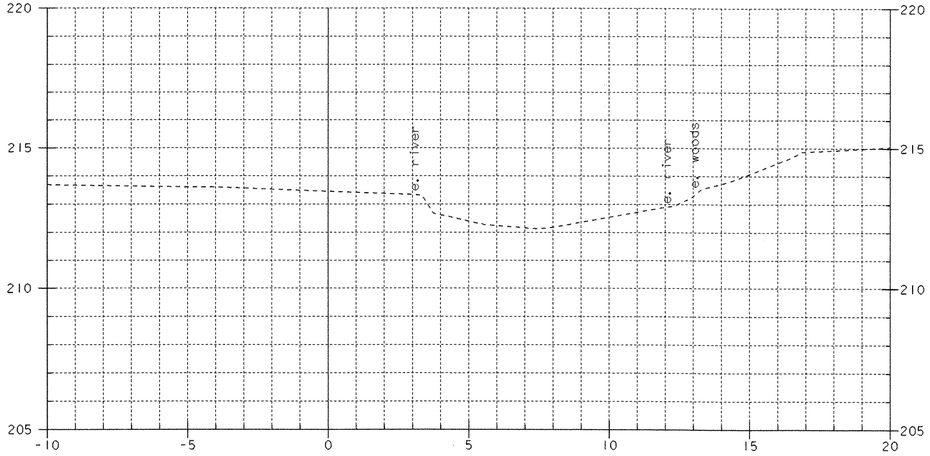
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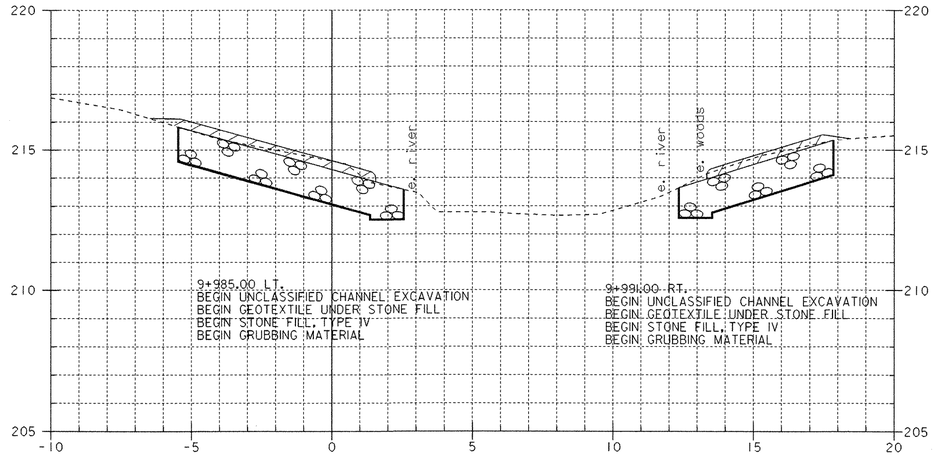
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9+995



9+980



9+990

CHANNEL SECTIONS

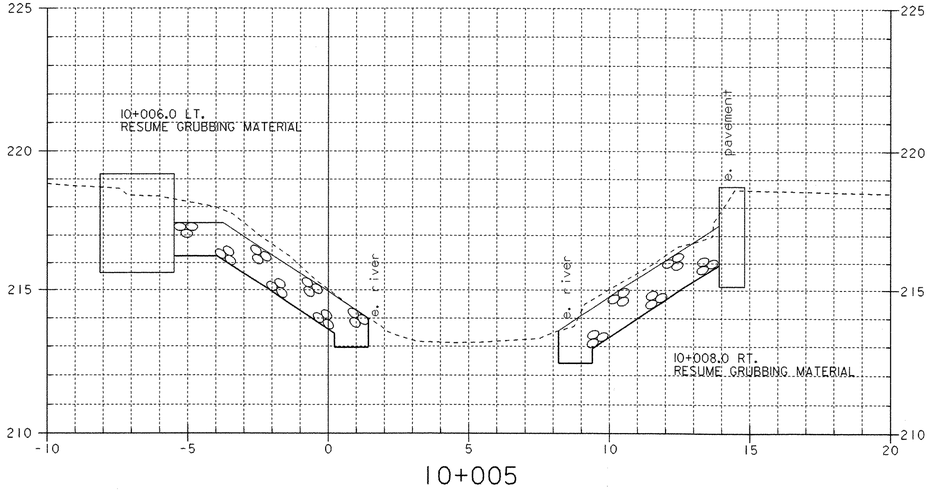
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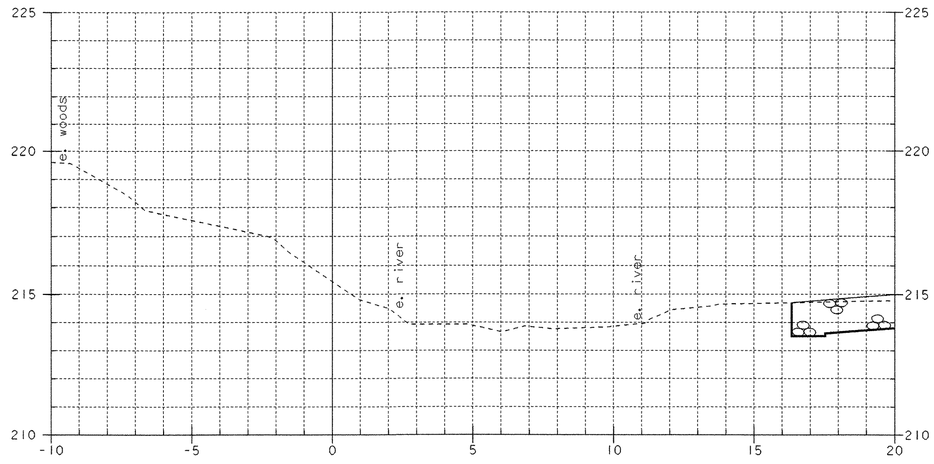
PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059xsl.dgn
PROJECT MANAGER: C. KELLER
DESIGNED BY: G. SHANGRAW
se059cxl.i

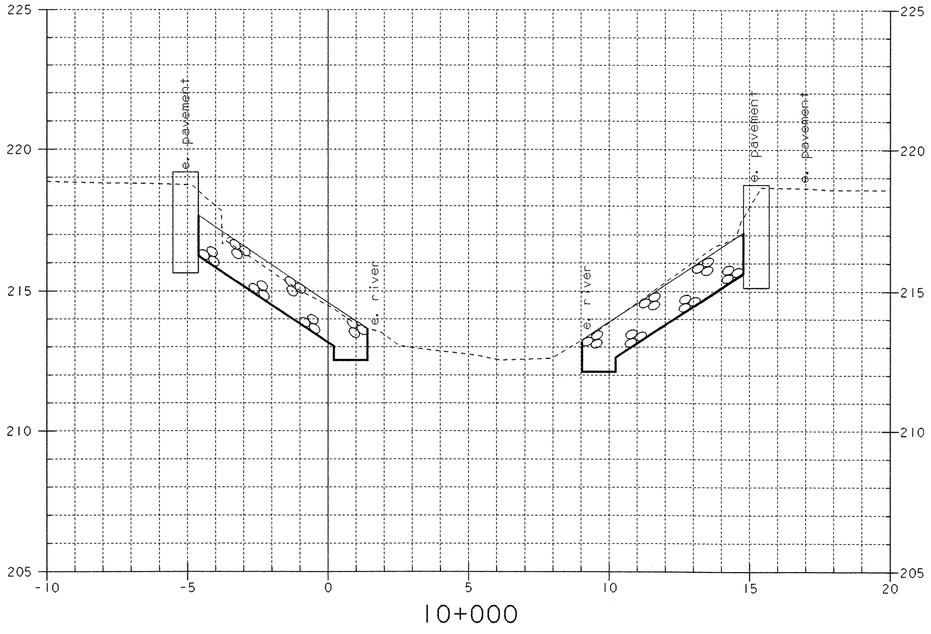
PLOT DATE: 20-OCT-2005
DRAWN BY: R.H. PELLETT
CHECKED BY: T. SUMNER
SHEET 60 OF 62



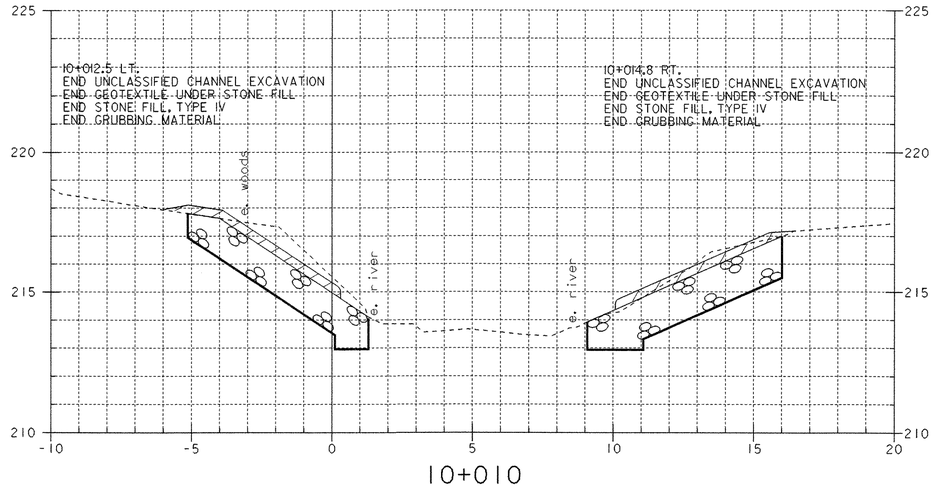
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10+015



10+000



10+010

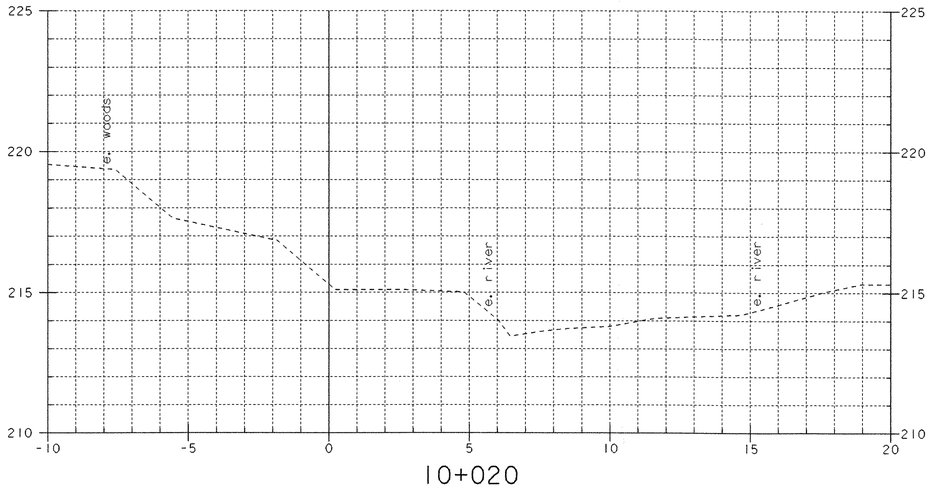
CHANNEL SECTIONS

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PROJECT NAME: DUXBURY
PROJECT NUMBER: STP 013-4(24)

FILE NAME: /str5/86e059/se059xsl.dgn
PROJECT MANAGER: C. KELLER
DESIGNED BY: G. SHANGRAW
se059cx2.1

PLOT DATE: 20-OCT-2005
DRAWN BY: R.H. PELLETT
CHECKED BY: T. SUMNER
SHEET 61 OF 62



10+020

CHANNEL SECTIONS

0 2 4 6 8 10
SCALE 1:100

PROJECT NAME:	DUXBURY
PROJECT NUMBER:	STP 013-4(24)
FILE NAME: /str5/86e059/se059xsl.dgn	PLOT DATE: 20-OCT-2005
PROJECT MANAGER: C. KELLER	DRAWN BY: R.H. PELLETT
DESIGNED BY: G. SHANGRAW	CHECKED BY: T. SUMNER
se059cx3.i	SHEET 62 OF 62

HIGH STEEL STRUCTURES, INC.

Fillet Weld Soundness Test (FWST) Results
AWS D1.5-95 Section 5.10

FWST No: T-TEST-10 **Date Welded:** 09/23/04

Prepared by: Chris Lausch

T1 Thickness 1 INCH

T2 Thickness 1 INCH

Filler Metal Specification AWS A5.17

Filler Metal Classification F7A2-EM12K (LINCOLN L61)

Shielding Gas N/A

Flux Mfg. Designation LINCOLN 761 AND 960(2ND PASS 3/8")

Voltage 32.5V
(use mean voltage of WPS to be qualified)

Amperage/WFS* 400A/129WFS
(use mean amperage/WFS* of WPS to be qualified)

Polarity DCEN

Position of Welding 2F (HORIZONTAL)

* wire feed may be used in lieu of current when a correlation curve is provided for the same electrode diameter and electrode extension.

TEST RESULTS (per 5.19.3.1)

	Maximum Size Single Pass Weld Size 5/16"	Minimum Size Multiple Pass Weld Size 3/8"
Weld Size Acceptable	Yes	Yes
Cracking	No	No
Thorough Fusion	Yes	Yes
Weld Profile per 3.6	Yes	Yes
Undercut > 1/32 inch	No	No

Note: Fillet weld soundness tests are required in addition to groove weld PQRs to qualify fillet welds. A fillet weld macroetch text shall be made for each WPS and position to be used in construction. Test Plate D shown in Figure 5.8 of AWS D1.5-2002 shall be used.

Preparer's Signature: Chris Lausch

Terrence H Parker, CWI
R.W. Hunt Co.

06355

HIGH STEEL STRUCTURES, INC.

Fillet Weld Soundness Test (FWST) Results
AWS D1.5-95 Section 5.10

FWST No: T-TEST-10 Date Welded: 09/23/04

Prepared by: Chris Lausch

T1 Thickness 1 INCH

T2 Thickness 1 INCH

Filler Metal Specification AWS A5.17

Filler Metal Classification F7A2-EM12K (LINCOLN L61)

Shielding Gas N/A

Flux Mfg. Designation LINCOLN 761 AND 960(2ND PASS 3/8")

Voltage 32.5V
(use mean voltage of WPS to be qualified)

Amperage/WFS* 400A/129WFS
(use mean amperage/WFS* of WPS to be qualified)

Polarity DCEN

Position of Welding 2F (HORIZONTAL)

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TEST RESULTS (per 5.19.3.1)

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Weld Size Acceptable	Yes	Yes
Cracking	No	No
Thorough Fusion	Yes	Yes
Weld Profile per 3.6	Yes	Yes
Undercut > 1/32 inch	No	No

Note: Fillet weld soundness tests are required in addition to groove weld PQRs to qualify fillet welds. A fillet weld macroetch text shall be made for each WPS and position to be used in construction. Test Plate D shown in Figure 5.8 of AWS D1.5-2002 shall be used.

Preparer's Signature: Chris Lausch

Terrence H Parkes, CWI
R.W. Hunt Co.

064 SS

VT-05124 Contract # Duxbury STP 013-4(24)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W2 - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS SHIELDED METAL ARC WELDING
MANUAL OR MACHINE MANUAL
POSITION OF WELDING ALL (EXCEPT AS NOTED BELOW)
FILLER METAL SPECIFICATION AWS A5.1 AND A5.5
WELD METAL CLASSIFICATION E7018/E7028 (TACKING ONLY) AND E8018-C3
WIRE/FLUX D.N.A.
POLARITY DC+ OR AC
ROOT TREATMENT MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE SEE PREHEAT CHART
ELECTRICAL STICK-OUT D.N.A.
SHIELDING GAS D.N.A.

REVISED: 7/27/98

ORIGINAL ISSUE: 4/9/96

WELDING PROCEDURE

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE E7018 DC+	CURRENT RANGE E7018 AC	TRAVEL SPEED (mm/min)	JOINT DETAIL
1	3.2	90-150	110-170	152-228	TACK WELDS
1	4.0	120-190	135-225	203-330	GROOVE ROOT PASSES AND TACK WELDS

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE E7028 DC+	CURRENT RANGE E7028 AC	TRAVEL SPEED (mm/min)	JOINT DETAIL (LIMITED TO FLAT AND HORIZONTAL TACK WELDS AND FLAT POSITION GROOVE ROOT PASSES)
1	4.0	170-240	180-270	203-330	GROOVE ROOT PASSES AND TACK WELDS

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE E8018-C3 DC+	CURRENT RANGE E8018-C3 AC	TRAVEL SPEED (mm/min)	JOINT DETAIL
1	4.0	130-190	140-225	203-330	GROOVE ROOT PASSES, REPAIR WELDS AND TACKS
ALL	4.0	130-190	140-225	203-330	FILLET WELDS
ALL	4.8	180-270	210-290	228-381	FILLET WELDS (FLAT AND HORIZONTAL WELDS ONLY)
ALL	4.8	250-330	270-370	228-406	FILLET WELDS (FLAT AND HORIZONTAL WELDS ONLY)

• WELD SIZE DETERMINED BY TRAVEL SPEED

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VTRANS RECEIVED
MAR 09 2006
BY

CK'D BY ____ OK'D BY JWC
RESUBMIT ____ APPROVED ✓
DATE 3/10/06

065 ss

VT-05124 Contract # Duxbury STP 013-4(24)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W34X - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	2F
FILLER METAL SPECIFICATION	AWS A5.17
WELD METAL CLASSIFICATION	F7A2-EM12K
WIRE/FLUX	LINCOLN L61/761
WIRE DIAMETER	2.4mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC-
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4mm
SHIELDING GAS	D.N.A.

VTRANS RECEIVED
MAR 09 2006

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RESUBMIT _____ APPROVED _____
BY _____ DATE 3/10/06

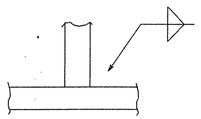
WELDING PROCEDURE

REVISED: 5/5/03

ORIGINAL ISSUE: 3/4/96

PASS NO.	WELDING CURRENT			TRAVEL SPEED (mm/m)	JOINT DETAIL
	AMPS	WIRE FEED SPEED	VOLTS		
1	360-440	2.9-3.7	29.0-36.0	279-686	8mm FILLET WELD

PRIMARY USE:
STIFFENER TO WEB
(AND OTHER APPLICATIONS AS NEEDED)



AWS D1.5 FWST T-TEST-10
PROCEDURE QUALIFICATION RECORD AWS-FCM-02-4 (EXPIRES 6/27/07)
PROCEDURE QUALIFICATION RECORD AWS-FCM-02-5A (EXPIRES 7/16/07)

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VT-05124 Contract # Duxbury STP 013-4(24)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS

W44X - METRIC

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION	ASTM A709 GRADES: 250, 345, 345W
WELDING PROCESS	SUBMERGED ARC WELDING
MANUAL OR MACHINE	SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING	2F
FILLER METAL SPECIFICATION	AWS A5.17
WELD METAL CLASSIFICATION	F7A2-EM12K
WIRE/FLUX	LINCOLN L61/761
WIRE DIAMETER	2.4mm
SINGLE OR MULTIPLE ARC	SINGLE ARC
POLARITY	DC-
ROOT TREATMENT	MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE	SEE PREHEAT CHART
ELECTRICAL STICK-OUT	25.4mm
SHIELDING GAS	D.N.A.

VTRANS RECEIVED
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MAR 09 2006
RESUBMIT _____ APPROVED ✓
BY _____ DATE 3/10/06

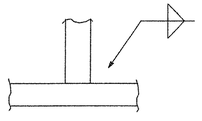
REVISED: 5/5/03

ORIGINAL ISSUE: 3/4/96

WELDING PROCEDURE

PASS NO.	WELDING CURRENT			TRAVEL SPEED (mm/m)	JOINT DETAIL
	AMPS	WIRE FEED SPEED	VOLTS		
1	360-440	2.9-3.7	29.0-36.0	279-686	8mm FILLET WELD

PRIMARY USE:
STIFFENER TO FLANGE
(AND OTHER APPLICATIONS AS NEEDED)



AWS D1.5 FWST T-TEST-10

PROCEDURE QUALIFICATION RECORD AWS-FCM-02-4 (EXPIRES 6/27/07)
PROCEDURE QUALIFICATION RECORD AWS-FCM-02-5A (EXPIRES 7/16/07)

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VT-05124 Contract # Duxbury STP 013-4(24)

VTRANS
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MAR 09 2006
RESUBMIT _____ APPROVED
BY DATE 3/10/06

MINIMUM PREHEAT AND INTERPASS TEMPERATURE

SHIELDED METAL-ARC WELDING WITH LOW HYDROGEN ELECTRODES, OR SUBMERGED ARC WELDING, OR FLUX CORED ARC WELDING

THICKNESS OF THICKEST PART AT POINT OF WELDING - (mm)	ASTM A-36, A-572, AND A-588 M183, M223, AND M222 ASTM A709, GRADE 36 (250) ASTM A709, GRADE 50 (345) ASTM A709, GRADE 50W (345W)
TO 19.1, INCL.	10°C
OVER 19.1 TO 38.1, INCL.	20°C
OVER 38.1 TO 63.5, INCL.	65°C
OVER 63.5	110°C

THE MAXIMUM PREHEAT TEMPERATURE SHALL NOT EXCEED 232°C.
THE MAXIMUM INTERPASS TEMPERATURE SHALL NOT EXCEED 288°C.

REFER TO THE FOLLOWING CHART FOR EQUIVALENT STEEL TYPES.
ASTM A-36 AND A-709 GRADE 36 AND AASHTO M183
ASTM A-572 AND A-709 GRADE 50 AND AASHTO M223
ASTM A-588 AND A-709 GRADE 50W AND AASHTO M222

CONTACT QUALITY CONTROL FOR PREHEAT REQUIREMENTS ON ANY STEEL NOT SPECIFICALLY NOTED ABOVE

REVISED:
ORIGINAL ISSUE: 3/4/96

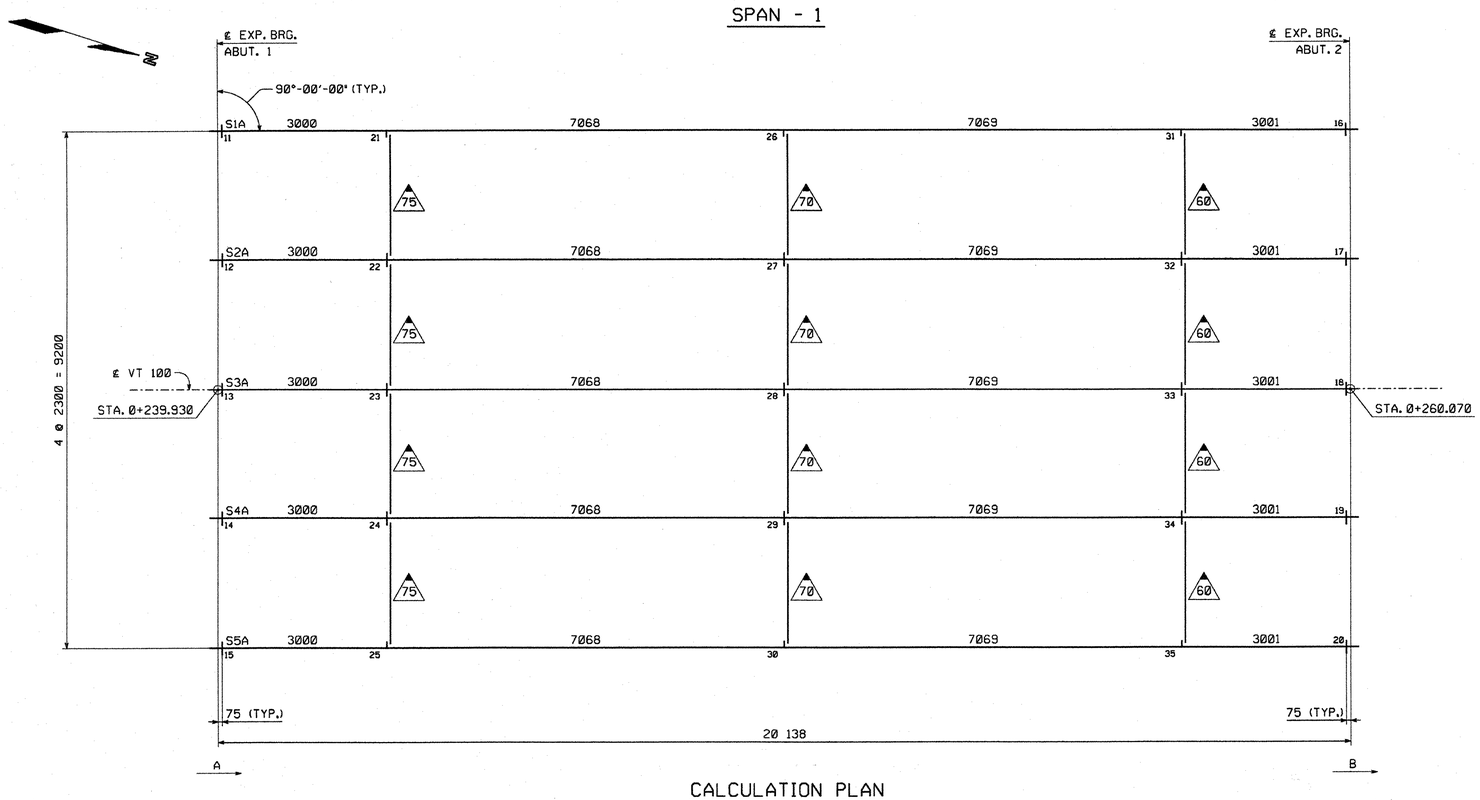
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06855

METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	

SPAN - 1



CALCULATION PLAN

LINE	A	B
S1	.0125	.0287
S2	.0136	.0298
S3	.0147	.0310
S4	.0159	.0321
S5	.0170	.0332

NOTES:

DIMENSIONS ON PLAN ALONG STRINGERS ARE GIVEN TO THE CHORD AT THE BOTTOM OF STRINGER IN FULLY CAMBERED POSITION. ALL OTHER DIMENSIONS ARE GIVEN HORIZONTALLY.
DIMENSIONS PLACED ON THE STRINGER LINES REPRESENT DIAPHRAGM SPACING.
FIGURES GIVEN THUS: .0125► ARE THE GRADES OF THE STRINGERS AT THE BEARINGS IN FINAL POSITION; ARROW POINTS DOWNGRADE.
ALL STIFFENER AND CONNECTION PLATE SPACINGS ARE GIVEN TO ℄ PLATE.
ENDS OF STRINGERS AND ALL BEARING STIFFENERS TO BE VERTICAL IN FINAL POSITION.
ALL STEEL TO BE AASHTO M270M GRADE 345W (U.N.).
ALL FIELD CONNECTIONS TO BE MADE WITH 7/8"ø H.S. (AASHTO M164 TYPE 3) BOLTS IN 15/16"ø HOLES (U.N.).
FIGURES GIVEN THUS: △5 ARE THE DIFFERENCES IN ELEVATIONS OF STRINGERS (IN THE PLANE OF THE DIAPHRAGM IN ERECTED POSITION) AT DIAPHRAGMS; ARROW POINTS TOWARD LOW STRINGER.
ALL STATIONS ARE GIVEN IN METERS.

NOTE
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DRAWING IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION. THIS DRAWING IS FOR REFERENCE ONLY, APPROVAL IS NOT REQUIRED.

STRUCTURE'S COPY

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BY WW SM DATE 3/1/06

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HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

CALCULATION PLAN
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D BY: WBW DATE: 2/3/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: WS1 OF WS1

069 ss

05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

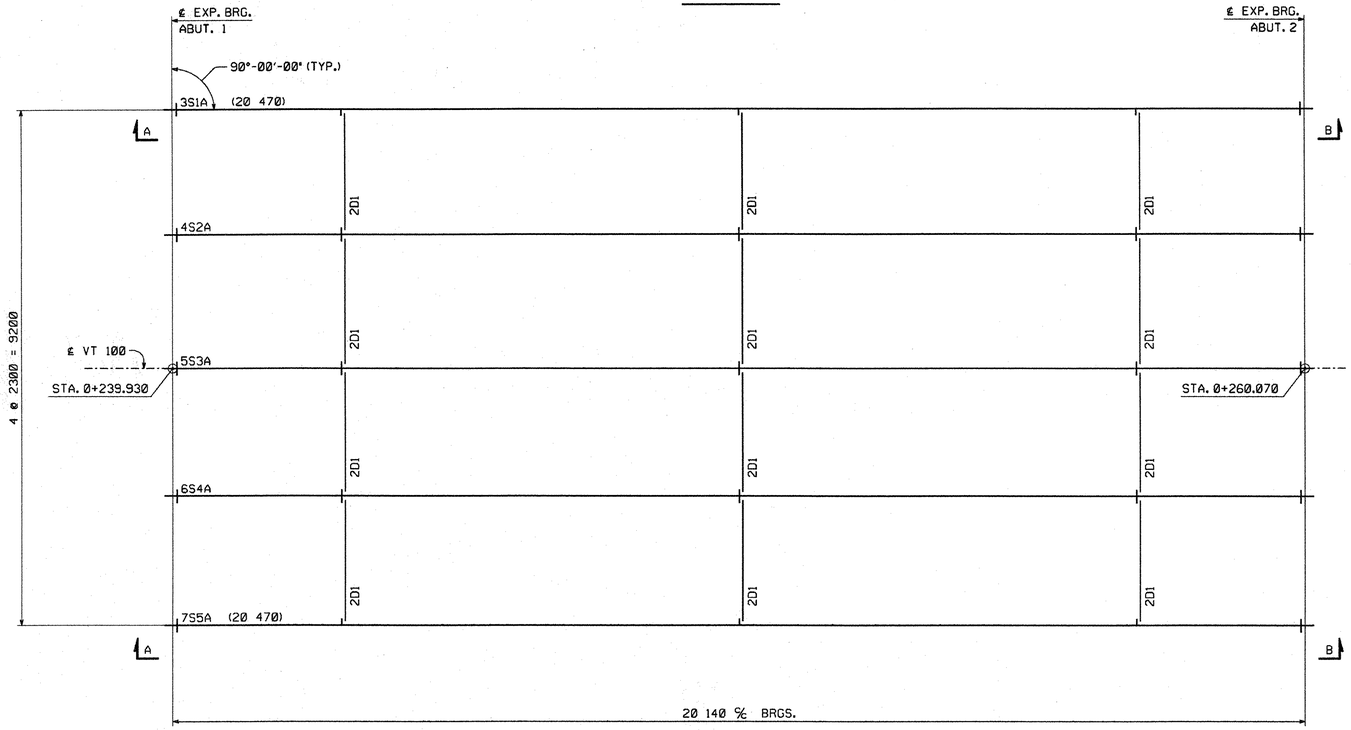
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METRIC

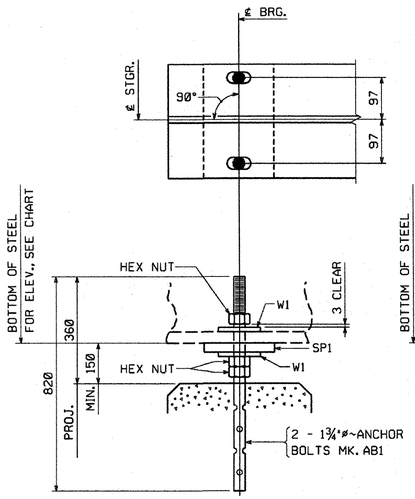
METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	

SHIPPING PIECE MARK	WEIGHT EA. (KG)
S1A	4,715
S2A	4,745
S3A	4,745
S4A	4,746
S5A	4,716

SPAN - 1

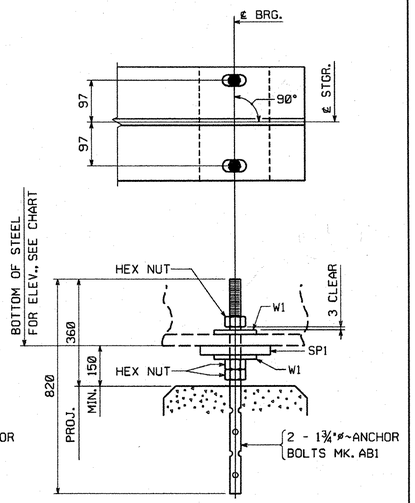


ERECTION FRAMING AND ANCHOR BOLT PLAN



SECTION A

STRINGER LINE	ELEVATION ℄ ABUT. 1
S1	217.551
S2	217.632
S3	217.712
S4	217.793
S5	217.873



SECTION B

STRINGER LINE	ELEVATION ℄ ABUT. 2
S1	217.137
S2	217.195
S3	217.252
S4	217.310
S5	217.367

FIELD BOLT SUMMARY

(2% ADDITIONAL BOLTS ADDED + 3 EA. FOR TESTING) 4 per assembly

AASHTO M164 TYPE 3 BOLTS WITH HVY. HEX HEAD AND AASHTO M291 GRADE DH3 HVY. HEX NUT

125 - ⅞"ø HIGH STRENGTH BOLTS x 0'-2½ } (RCT)

247 HARD. FLAT AASHTO M293 WEATHERING WASHERS FOR ⅞"ø H. S. BOLTS } (RCT)

(RCT) INDICATES ROTATIONAL CAPACITY TESTED BOLTS. DO NOT MIX NUTS, BOLTS AND WASHERS FROM DIFFERENT CONTAINERS UNLESS ALL NUTS, BOLTS AND WASHERS HAVE THE SAME LOT NUMBER.

ERECTOR NOTE: ALL BOLTS MUST BE LOCATED IN ACCORDANCE WITH THIS LIST OF FIELD CONNECTIONS. HIGH STEEL STRUCTURES WILL NOT BE RESPONSIBLE FOR FURNISHING ADDITIONAL BOLTS OR FOR ANY OTHER RELATED COSTS OR DAMAGES RESULTING FROM IMPROPER LOCATIONS OF BOLTS

LIST OF FIELD CONNECTIONS — ONE WASHER PER BOLT UNLESS NOTED OTHERWISE

LINE	ACTUAL NUMBER REQ'D	BOLT DIAM.	BOLT LENGTH	BOLTS PER CONN.	NO. OF CONN	GRIP	THICKNESS OF PIECES JOINED					PIECES CONNECTED AND REMARKS
1	120	7/8 in	2 1/2 in	5	24	30.3	14.3	11	5			INTERMEDIATE DIAPH. TO CONN. PLATE W/2 WASHERS
2												
3												

NOTES:

NO CREDIT WILL BE ALLOWED FOR WORK PERFORMED BY OTHERS IN REPLACING OR CORRECTING MATERIALS OR WORKMANSHIP COVERED BY THIS DRAWING UNLESS EXPRESSLY AUTHORIZED BY HIGH STEEL STRUCTURES, INC.
ALL FIELD CONNECTIONS TO BE MADE WITH ⅞"ø HIGH STRENGTH (AASHTO M164, TYPE 3) BOLTS (U.N.).
ALL DIMENSIONS ARE GIVEN HORIZONTALLY (U.N.).
DIMENSIONS GIVEN THUS: (20 470) ARE THE SHIPPING LENGTHS OUT TO OUT OF FASCIA STRINGERS.
HIGH STEEL STRUCTURES, INC. DOES NOT SUPPLY SHEAR STUDS AND HOLES OR BOLTS FOR FLEMMING BRACKETS.
WORK THIS DRAWING WITH DRAWING E2.
NOTICE: WEIGHTS OF MEMBERS LISTED ON THESE DRAWINGS ARE ESTIMATED WEIGHTS AND ACTUAL WEIGHTS WILL VARY. HIGH STEEL STRUCTURES, INC. WILL NOT BE RESPONSIBLE FOR ANY ERECTION PROCEDURES, SHIPPING PROCEDURES, ETC. DEVELOPED USING ESTIMATED WEIGHTS AS SHOWN.
FOR BOLTED CONNECTIONS WITH OVERSIZED HOLES, A WASHER IS TO USED UNDER BOTH THE HEAD AND THE NUT.
THE SHIPPING MARKS SHOWN CONSIST OF THE PREFIX INDICATING THE SHEET NUMBER UPON WHICH THE PIECE IS DETAILED ALONG WITH THE SHIPPING PIECE MARK.
ALL ELEVATIONS AND STATIONS ARE GIVEN IN METERS.
ELEVATIONS ARE GIVEN TO BOTTOM OF STRINGER FLANGE.
ANCHOR BOLT SETTINGS MUST BE EXACT IN EVERY DETAIL IN ACCORDANCE WITH THIS DRAWING.
ANCHOR BOLTS ARE FURNISHED BY HIGH STEEL STRUCTURES, INC. AND SET BY OTHERS.

RECEIVED
CK'D BY WAS OK'D BY JTR
FEB 14 2006
RESUBMIT APPROVED As Noted
BY Wgr Sgd DATE 2/13/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

ERECTION FRAMING AND ANCHOR BOLT PLAN
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: MGK CHK'D. BY: WBW DATE: 2/6/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: E1 OF E2

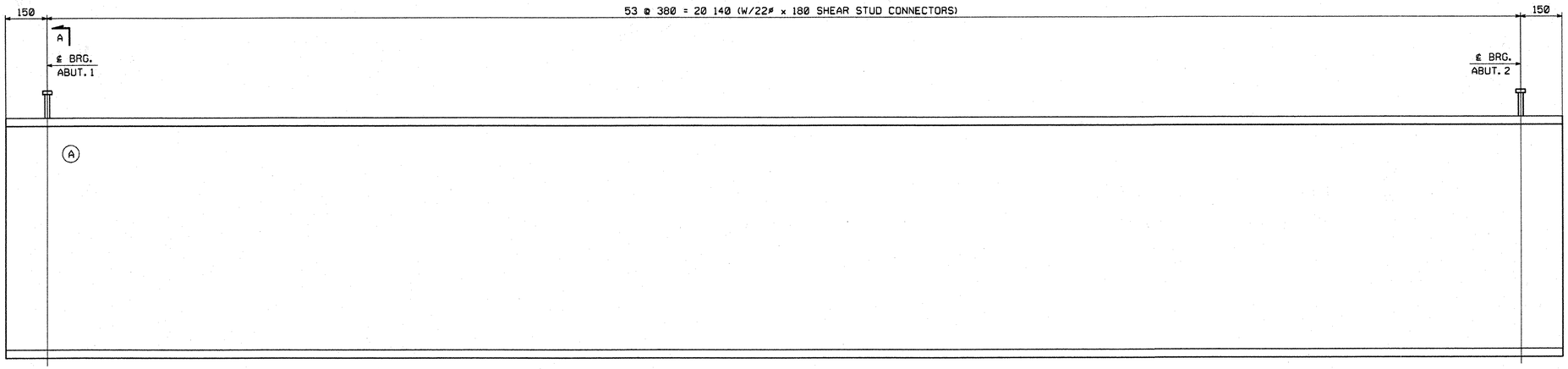
07055

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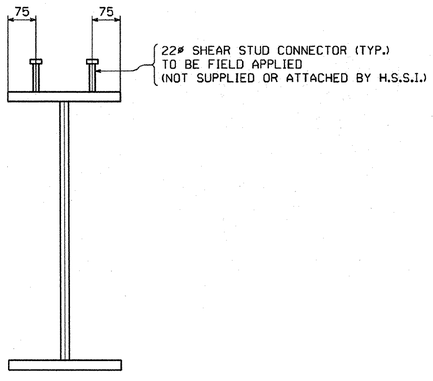
05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	



SHEAR STUD CONNECTOR LOCATION LAYOUT



SECTION A

NOTES:
FOR NOTES, SEE DRAWING E1.
WORK THIS DRAWING WITH DRAWING E1.
(A) INDICATES SUFFIX MARK OF SHIPPING PIECE.

RECEIVED
OK'D BY WBS OK'D BY JTP
FEB 14 2006
RESUBMIT ____ APPROVED ✓
BY WBW SJS DATE 3/14/06

NO.	REVISION	BY	DATE
1			
2			
3			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

ERECTION PLAN - STUD LAYOUTS
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

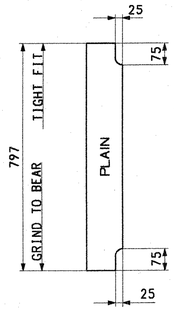
STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: MGK CHK'D. BY: WBW DATE: 2/6/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: E2 OF E2

07155

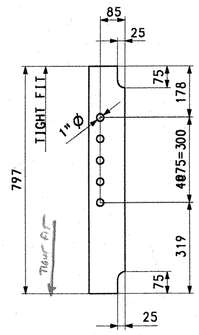
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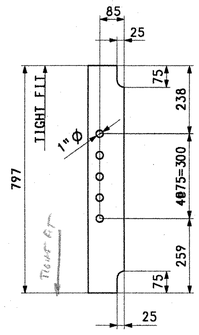
FED.ROAD DIV.NO.	STATE	FED.AID PROJ.NO.
	VT	



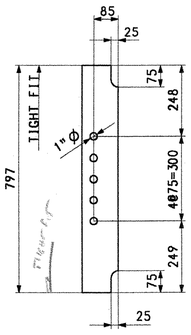
BRG. STIFF. MK. z1a



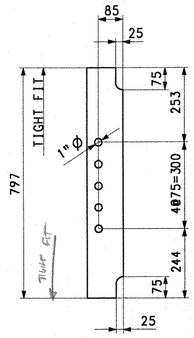
CONN. PLATE MK. z1b



CONN. PLATE MK. z1c



CONN. PLATE MK. z1d



CONN. PLATE MK. z1f

BILL OF MATERIAL

SHIP.	QTY. EA.	MARK	COMM.	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA. (KG)
1	20	z1a	PL	19 x 125	797	M270M	345W	T		8	1	14.86
1	12	z1b	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	4	z1c	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	4	z1d	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	4	z1f	PL	13 x 125	797	M270M	345W	T		8	2	10.17

RECEIVED
CK'D BY WWS CK'D BY JTR
FEB 14 2006
RESUBMIT ____ APPROVED As Noted
BY WWS DATE 3/2/06

NOTES:

HOLES: AS NOTED
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE: 50

NO.	REVISION	BY	DATE
1			
2			
3			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

STRINGER JOB STANDARDS
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO.: BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR: AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D BY: WBW DATE: 2/3/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: Z1 OF Z2

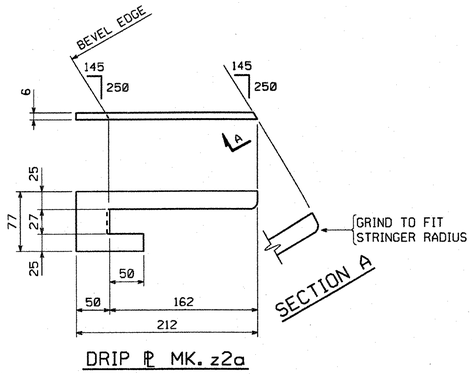
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05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

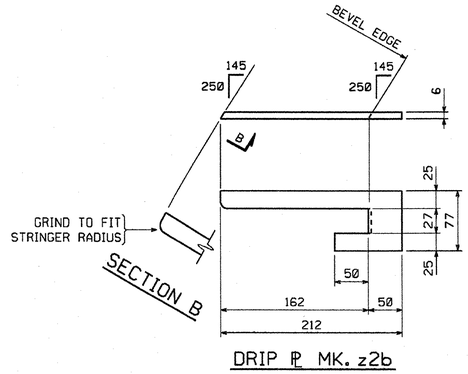
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METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	



DRIP ℄ MK. z2a



DRIP ℄ MK. z2b

BILL OF MATERIAL

SHIP.	QTY	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	WEIGHT EA. (KG)
1	1	z2a	PL	6 x 77	212	M270M	345W			8	3	0.77
1	1	z2b	PL	6 x 77	212	M270M	345W			8	3	0.77

SHOP NOTE

HOLES: NONE
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:50

RECEIVED
CK'D BY [illegible] OK'D BY ITR
FEB 1 4 2006
RESUBMIT ____ APPROVED ✓
BY Wayne Smith DATE 3/13/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

STRINGER JOB STANDARDS
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
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CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D. BY: WBW DATE: 2/3/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: Z2 OF Z2

073 55

05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

PLOTTED: 02/07/06 08:47:20 AM
BY: MKreidel

METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	

GENERAL SHOP NOTES

SPECIFICATIONS:
ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT, AGENCY OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, WITH CURRENT MODIFICATIONS AND ADDITIONS.

MATERIAL:
UNLESS NOTED OTHERWISE, ALL STEEL TO BE AASHTO M270M GRADE 345W.
(T) INDICATES ZONE 2 CHARPY V-NOTCH TESTING REQUIRED.

SHOP PROCEDURE:
CAMBER TOLERANCE: -0 mm TO +19 mm
FOR SOLE PLATE DETAILS, SEE DRAWING 1.
ALL CORNERS OF PLATES SHALL BE GROUND TO 1.6 mm RAD.
ONLY LOW STRESS DIE STAMPS MAY BE USED FOR MARKING IN AREAS NOT EXPOSED ON THE FINISHED STRUCTURE.

INSPECTION:
SHOP INSPECTION BY THE VERMONT AGENCY OF TRANSPORTATION

WELDING:
ALL WELDING IS TO CONFORM TO AWS D1.5-02.
WELDING METHODS, PROCEDURES, AND MATERIALS SHALL COMPLY WITH THE SPECIFIC PROCEDURE DESIGNATED IN THE WELD SYMBOL TAIL.
FOR WELDING STIFFENERS AND CONNECTION PLATES TO STRINGERS, SEE TYPICAL WELDING DETAIL.

IDENTIFICATION OF HOLE PLACEMENT:
UNLESS NOTED OTHERWISE, BOLT HOLES IN MATERIAL 16mm OR LESS IN THICKNESS MAY BE CNC (COMPUTER NUMERICALLY CONTROLLED) PUNCHED OR CNC DRILLED FULL SIZE UNASSEMBLED. ALL MATERIAL THICKER THAN 16mm IS TO BE DRILLED.

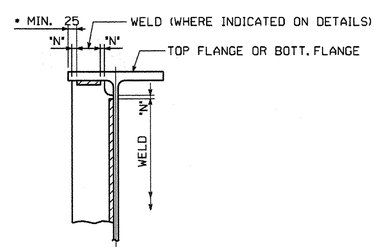
NON-DESTRUCTIVE TESTING:

MAGNETIC PARTICLE INSPECTION IS REQUIRED ON AT LEAST 300 mm OF EVERY 3000 mm LENGTH OF FILLET WELDS AND 300 mm OF SUCH WELDS LESS THAN 3000 mm IN LENGTH ON CONNECTION PLATES TO WEB AND FLANGE WELDS. TESTING PER THE YOKE METHOD, USING DC.

CLEANING:
ALL STEEL TO BE BLAST CLEANED TO SSPC-SP10 (NEAR WHITE).

PAINTING:
NO PAINT

DRAWING REFERENCE:
STRINGER JOB STANDARDS -PREFIXED Z"
WELDING PROCEDURE -PREFIXED "WP"



"N" = 6 MIN., 13 MAX. (U.N.) •

STIFFENER WELDING DETAIL

• WELDS MUST STOP 25 MINIMUM FROM EDGE OF FLANGE

RECEIVED
CK'D BY LWS CK'D BY JTR
FEB 1 4 2006
RESUBMIT ____ APPROVED ✓
BY WP DATE 2/13/06

NO.	REVISION	BY	DATE
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HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
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GENERAL SHOP NOTES
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: KMA CHK'D BY: SJA DATE: 2/3/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: GN1 OF GN1

04955

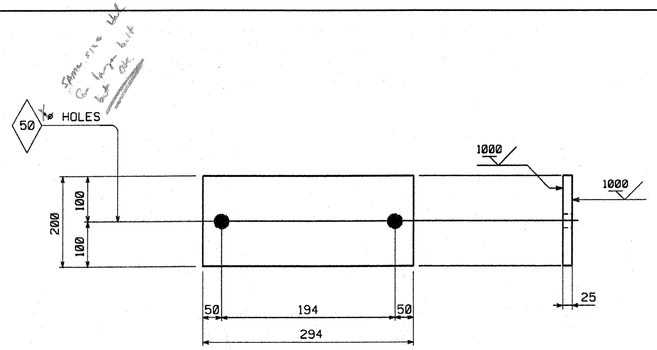
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05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

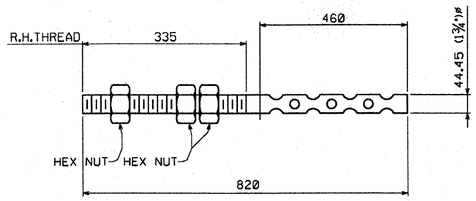
METRIC

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



SOLE ℄ ~ MK. SP1



ANCHOR BOLTS ~ MK. AB1
CODE: P

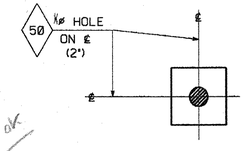


PLATE WASHERS ~ MK. W1
CODE: P

BILL OF MATERIAL

QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
			SOLE PLATE								
10	SP1	PL	25 x 200	294	M270M	345		GALV. M111	2	1	12
			ANCHOR BOLTS								
20	AB1	Anch Bolt	44.45 DIA.	820	A449			ASTM A449 W/3 A563 GR. DH HVY. HEX NUTS; GALV. A153	1	1	11
			WASHERS								
40	W1	PL	13 x 100	100	M270M	345		GALV. M232	1	2	1

TOTAL WEIGHT BID ITEM NO. 0150 531.10 380 kg

SHOP NOTE

HOLES: AS NOTED
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:60 (U.N. P)

RECEIVED
OK'D BY _____ OK'D BY _____
FEB 14 2006
RESUBMIT _____ APPROVED As Noted
BY _____ DATE 2/13/06

NO.	REVISION	BY	DATE
1			
2			
3			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

BEARINGS
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
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CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: MGK CHK'D. BY: WBW DATE: 2/06/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: 1 OF 7

07555

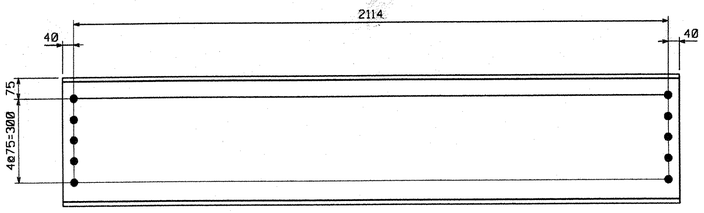
05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

PLOTTED: 02/07/06 08:47:29 AM BY: MKreidel

METRIC

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	



DIAPHRAGM ~ MK. D1

BILL OF MATERIAL

SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
				DIAPHRAGM								
1	12	D1	MC	460 x 63.5	2 194	M270M	345W		(MC18 x 42.7)	10	1	139.32

TOTAL WEIGHT THIS SHEET: 1671.83 kg

SHOP NOTE

HOLES: 15/16"ø
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:56

RECEIVED
OK'D BY WSS OK'D BY JTR
FEB 14 2006
RESUBMIT _____ APPROVED ✓
BY WBW DATE 2/2/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

DIAPHRAGMS D1
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D BY: WBW DATE: 2/3/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: 2 OF 7

076 55

PLOTTED: 02/07/06 08:47:36 AM BY: MKreutzel

05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

METRIC

METRIC

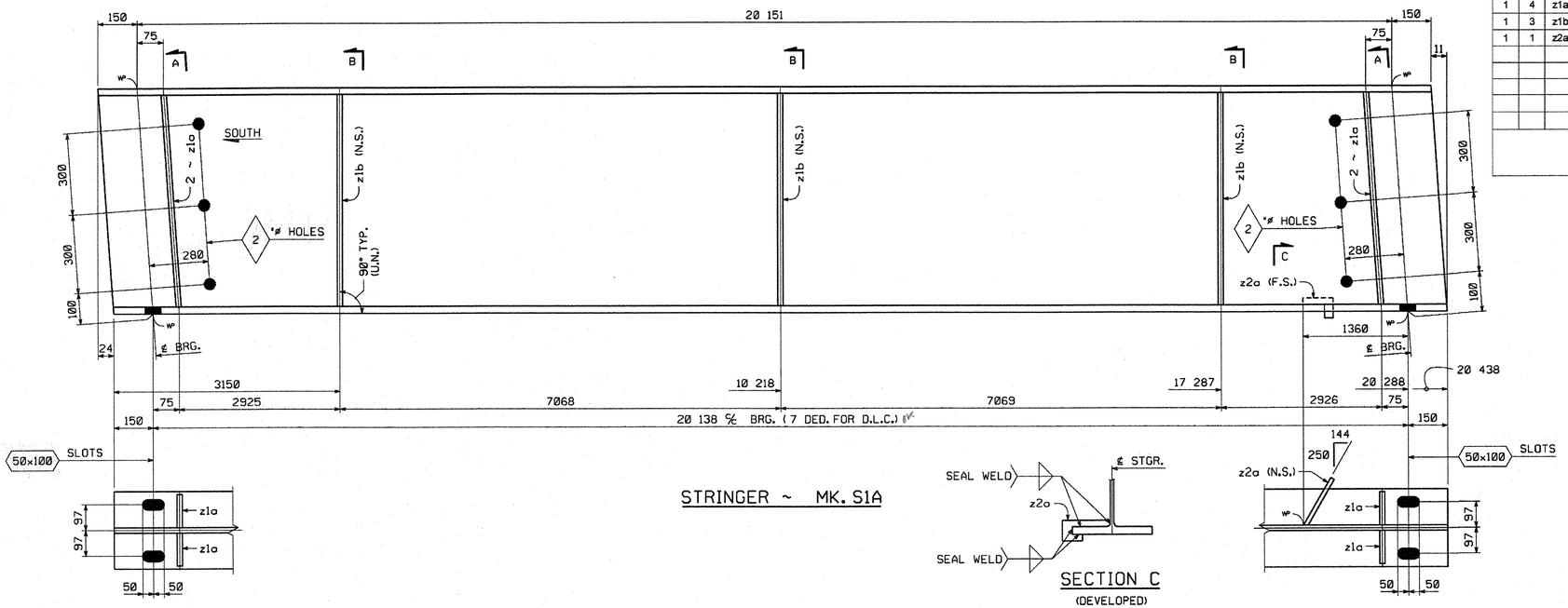
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

BILL OF MATERIAL

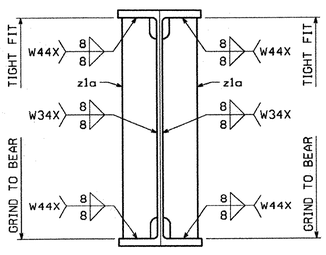
SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
1	1	S1A	STRINGER									4 715.11
1	1		W	840 x 226	20 462	M270M	345W	T	(W33 x 152)	5	1	4 624.41
1	4	z1a	PL	19 x 125	797	M270M	345W	T		8	1	59.43
1	3	z1b	PL	13 x 125	797	M270M	345W	T		8	2	30.50
1	1	z2a	PL	6 x 77	212	M270M	345W			8	3	0.77

TOTAL WEIGHT THIS SHEET: 4 715.11 kg

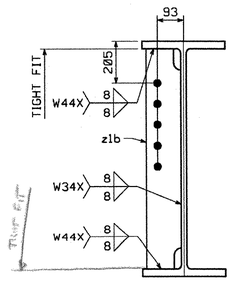


STRINGER ~ MK. S1A

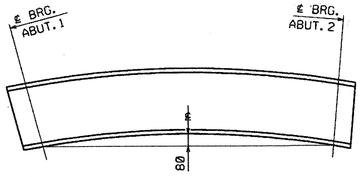
SECTION C
(DEVELOPED)



SECTION A



SECTION B



CAMBER DIAGRAM

SHOP NOTE

HOLES: 1"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:50

Bridge slope = (217.551 − 217.137)/20.19 = .414/20.19 = 2.0506 %
Grade ∠ = .02056 (340) = 17 mm
Abut #1 = 17 mm + 8 = 25 mm
Abut #2 = 17 mm − 8 = 9 mm
Dead load ∠ = E = 460/L
= 4(50)(340)/20 136 = 8 mm OK

RECEIVED
OK'D BY 1st/2nd OK'D BY JTR
FEB 14 2006
RESUBMIT APPROVED As Noted
BY SP DATE 2/7/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

STRINGER	S1A
VERMONT ROUTE 100 OVER DOWSVILLE BROOK	
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070	
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT	
STATE OF VERMONT	
AGENCY OF TRANSPORTATION	
STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)	
CONTRACTOR AUSTIN CONSTRUCTION, INC.	
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D BY: WBW DATE: 2/6/06	
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: 3 OF 7	

077 55

05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

PLOTTED: 02/07/06 08:47:43 AM BY: MKreidel

1 2

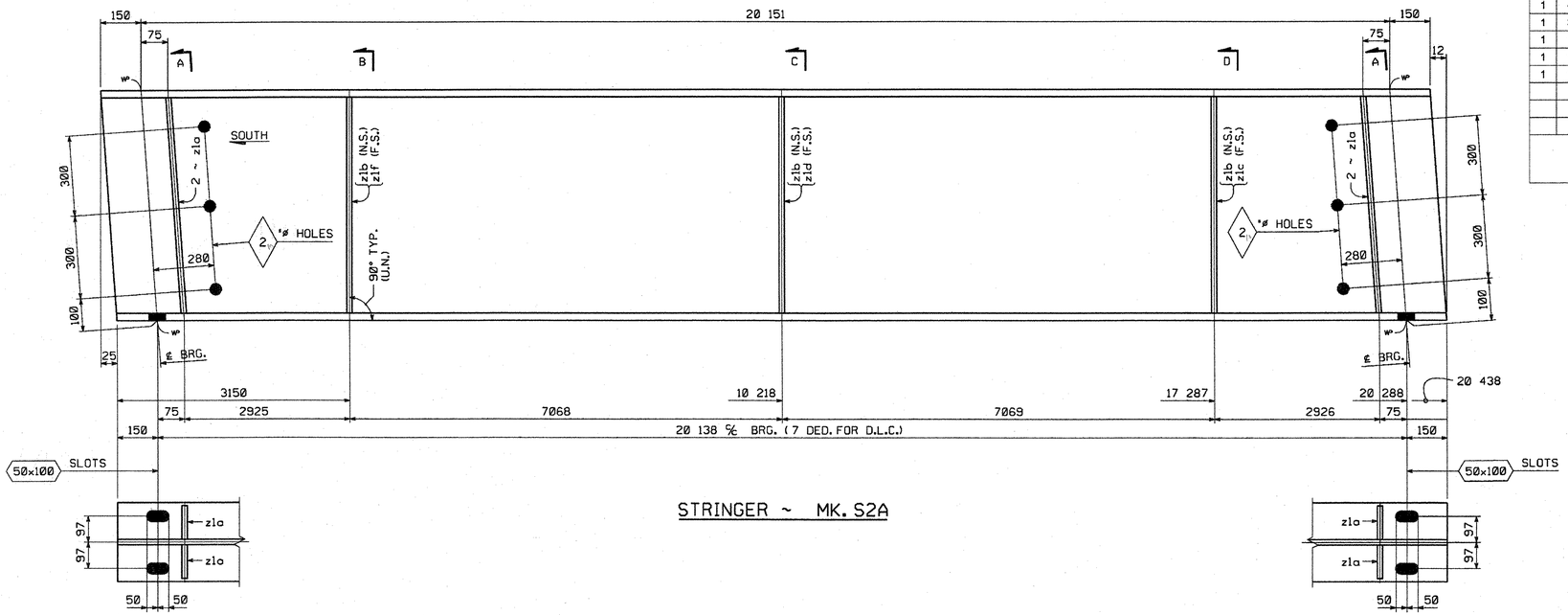
METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE: VT	FED. AID PROJ. NO.

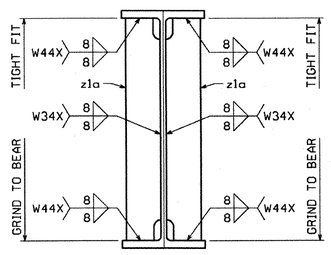
BILL OF MATERIAL

SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
1	1	S2A	STRINGER									4 745.06
1	1		W	840 x 226	20 463	M270M	345W	T	(W33 x 152)	5	1	4 624.64
1	4	z1a	PL	19 x 125	797	M270M	345W	T		8	1	59.43
1	3	z1b	PL	13 x 125	797	M270M	345W	T		8	2	30.50
1	1	z1c	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1d	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1f	PL	13 x 125	797	M270M	345W	T		8	2	10.17

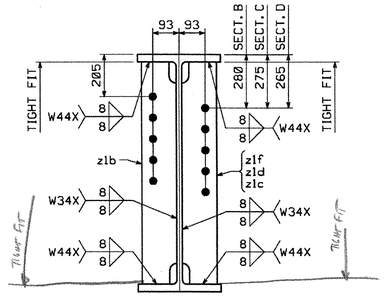
TOTAL WEIGHT THIS SHEET: 4 745.06 kg



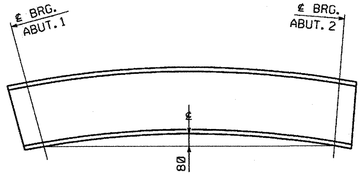
STRINGER ~ MK. S2A



SECTION A



SECTIONS B, C & D



CAMBER DIAGRAM

SHOP NOTE

HOLES: 1"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

RECEIVED
CK'D BY WBW OK'D BY JTR
FEB 14 2006
RESUBMIT APPROVED
BY WY S/I DATE 2/13/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

STRINGER S2A
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D BY: WBW DATE: 2/6/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: 4 OF 7

CODE:50

05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

METRIC
PLOTTED: 02/07/06 08:47:50 AM BY: MKreidel

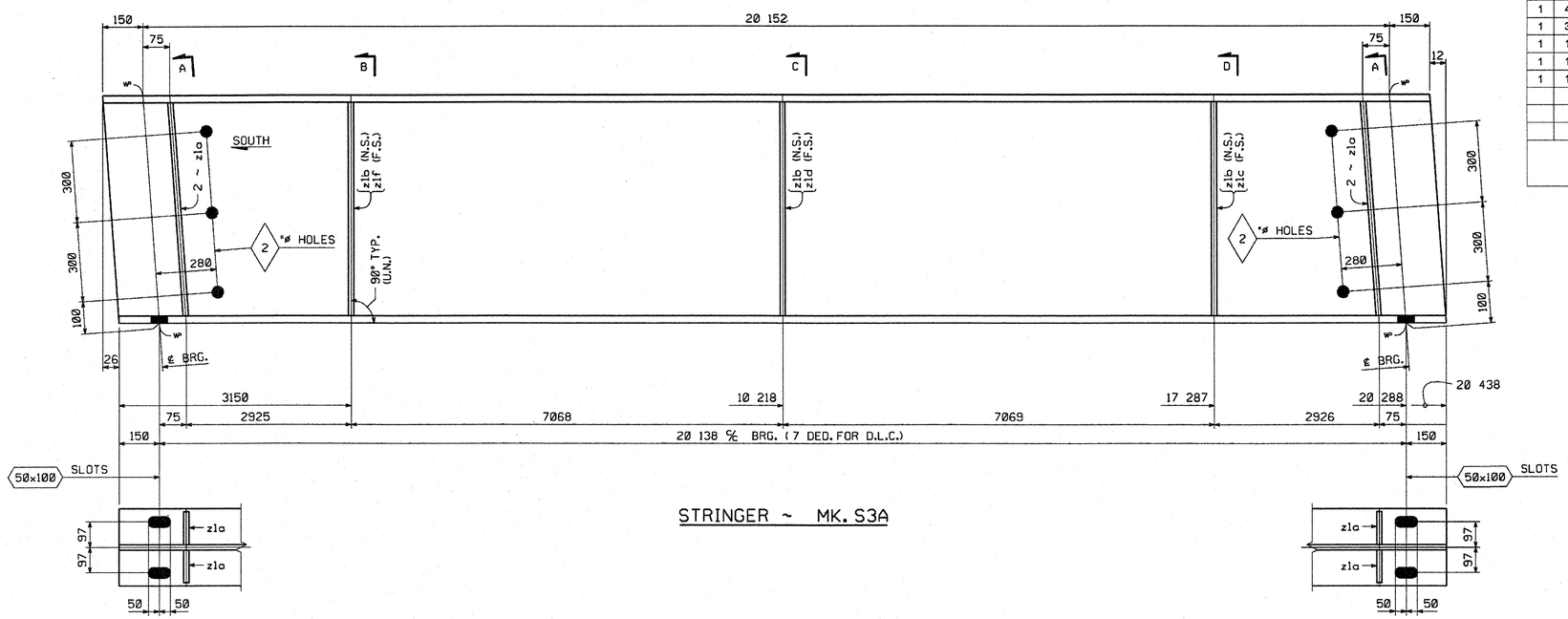
METRIC

METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE VT	FED. AID PROJ. NO.

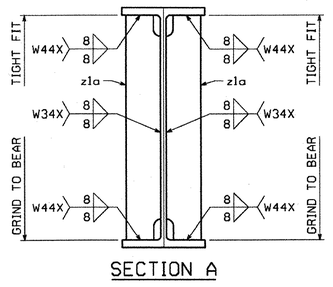
BILL OF MATERIAL

SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
1	1	S3A	STRINGER									4 745.29
1	1		W	840 x 226	20 464	M270M	345W	T	(W33 x 152)	5	1	4 624.86
1	4	z1a	PL	19 x 125	797	M270M	345W	T		8	1	59.43
1	3	z1b	PL	13 x 125	797	M270M	345W	T		8	2	30.50
1	1	z1c	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1d	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1f	PL	13 x 125	797	M270M	345W	T		8	2	10.17

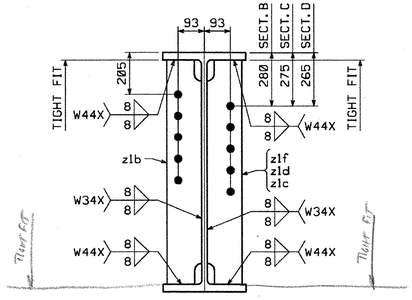
TOTAL WEIGHT THIS SHEET: 4 745.29 kg



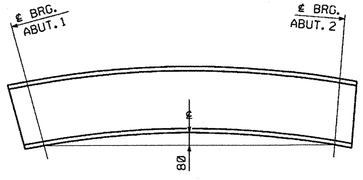
STRINGER ~ MK. S3A



SECTION A



SECTIONS B, C & D



CAMBER DIAGRAM

SHOP NOTE

HOLES: 1"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

RECEIVED
CK'D BY GMS CK'D BY JTK
FEB 1 4 2006
RESUBMIT ____ APPROVED As Noted
BY WY SJ DATE 3/13/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

STRINGER S3A
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D BY: WBW DATE: 2/6/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: 5 OF 7

CODE:50

079 55

05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

PLOTTED: 02/07/06 08:47:57 AM BY: MK-reidel

METRIC

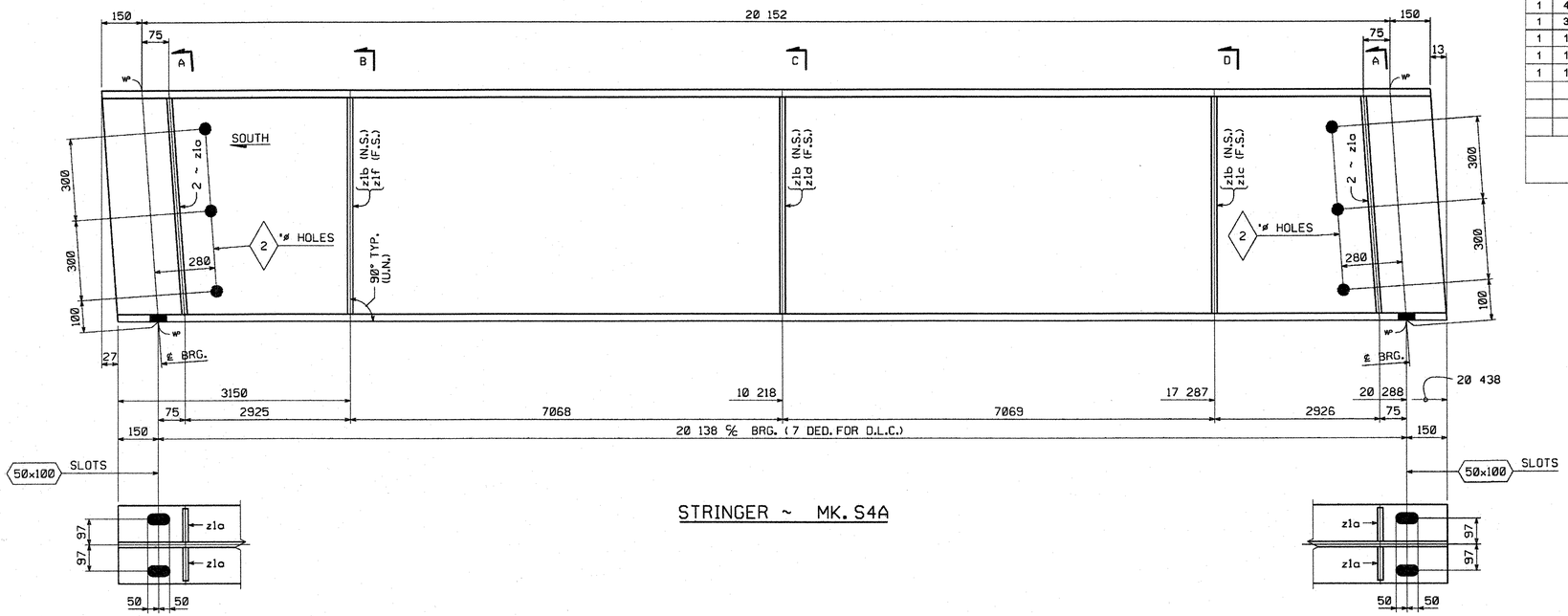
METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

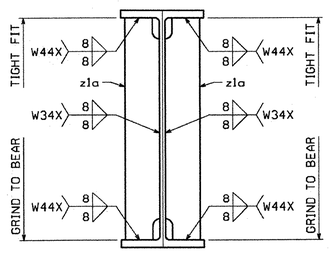
BILL OF MATERIAL

SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
1	1	S4A	STRINGER									4 745.51
1	1		W	840 x 226	20 465	M270M	345W	T	(W33 x 152)	5	1	4 625.09
1	4	z1a	PL	19 x 125	797	M270M	345W	T		8	1	59.43
1	3	z1b	PL	13 x 125	797	M270M	345W	T		8	2	30.50
1	1	z1c	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1d	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1f	PL	13 x 125	797	M270M	345W	T		8	2	10.17

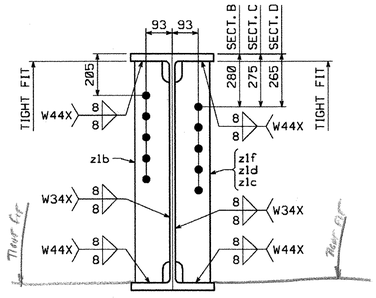
TOTAL WEIGHT THIS SHEET: 4 745.51 kg



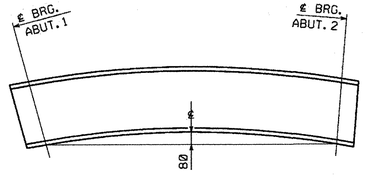
STRINGER ~ MK. S4A



SECTION A



SECTIONS B, C & D



CAMBER DIAGRAM

SHOP NOTE

HOLES: 1"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

RECEIVED
CK'D BY WJ OK'D BY JTR
FEB 14 2006
RESUBMIT ____ APPROVED As Noted
BY WJ DATE 2/13/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

STRINGER S4A
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D BY: WBW DATE: 2/6/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: 6 OF 7

CODE:50

08055

05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

PLOTTED: 02/07/06 08:49:05 AM BY: MKreidel

METRIC

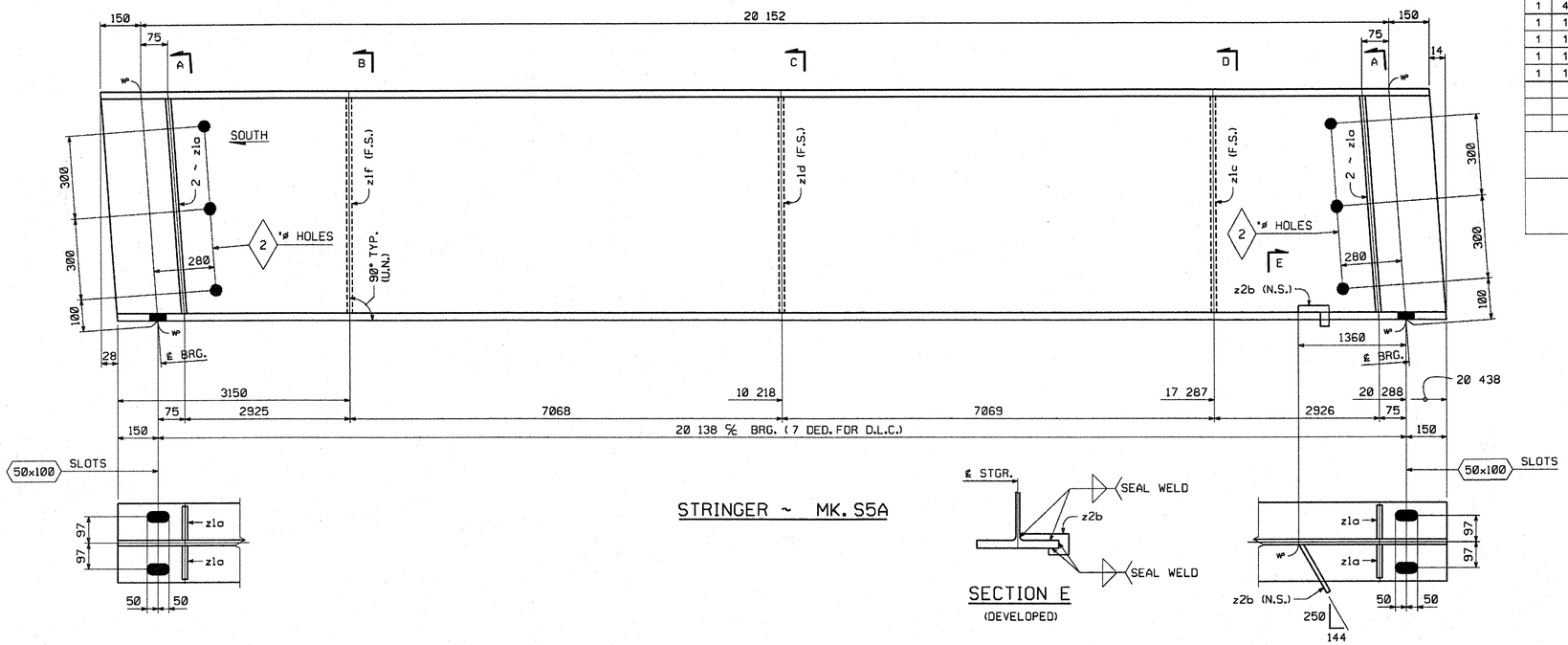
METRIC	1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. 2. ALL WEIGHTS ARE IN KILOGRAMS.	FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
			VT	

BILL OF MATERIAL

SHIP.	QTY EA.	MARK	COMMODITY	DESCRIPTION	LENGTH	SPEC	GRADE	TEST	REMARKS	GRP.	ITEM	SHIP WEIGHT EA.
1	1	S5A	STRINGER									4 716.01
1	1		W	840 x 226	20 486	M270M	345W	T	(W33 x 152)	5	1	4 625.32
1	4	z1a	PL	19 x 125	797	M270M	345W	T		8	1	59.43
1	1	z1c	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1d	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z1f	PL	13 x 125	797	M270M	345W	T		8	2	10.17
1	1	z2b	PL	6 x 77	212	M270M	345W			8	3	0.77

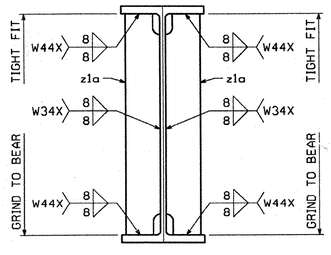
TOTAL WEIGHT THIS SHEET: 4 716.01 kg

TOTAL WEIGHT FOR BID ITEM #506.50: 25383.80 kg

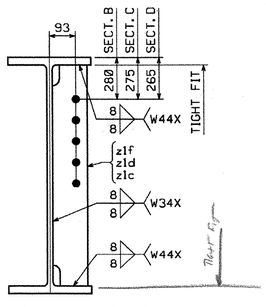


STRINGER ~ MK. S5A

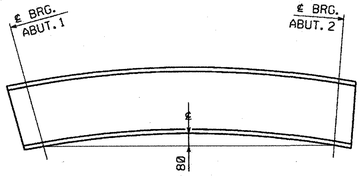
SECTION E
(DEVELOPED)



SECTION A



SECTIONS B, C & D



CAMBER DIAGRAM

SHOP NOTE

HOLES: 1"ø (U.N.)
BOLTS: NONE
PAINT: NONE
FOR GENERAL SHOP NOTES, SEE DWG. GN1.

CODE:50

RECEIVED
CK'D BY WMJ OK'D BY JTR
FEB 14 2006
RESUBMIT APPROVED AS NOTED
BY WJ DATE 2/14/06

NO.	REVISION	BY	DATE
△			
△			
△			

HIGH STEEL STRUCTURES, INC.
1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/299-5211
A Division of High Industries, Inc.

STRINGER S5A
VERMONT ROUTE 100 OVER DOWSVILLE BROOK
VERMONT ROUTE 100 STA. 0+239.930 TO STA. 0+260.070
TOWN OF DUXBURY, WASHINGTON COUNTY, VERMONT
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. BRIDGE NO. 187, DUXBURY STP 013-4 (24)
CONTRACTOR AUSTIN CONSTRUCTION, INC.
IN CHARGE: BRITIGAN (IH) MADE BY: RC CHK'D. BY: WBW DATE: 2/6/06
CONTRACT NUMBER: VT-05124-1 DRAWING NUMBER: 7 OF 7

08155

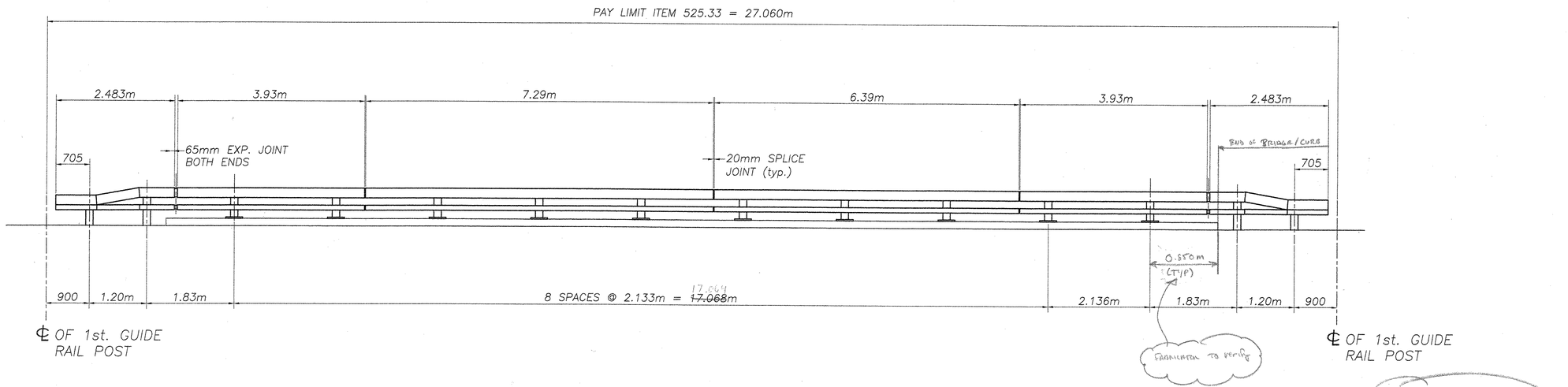
05124 X1 2/7/06 2/7/06Approval TO:Austin Construction,

PLOTTED: 02/07/06 08:48:12 AM BY: MKreidel

BILL OF MATERIAL (BOTH SIDES OF BRIDGE)	
Qty.	Description
20	W150x37.1 POST W/BASEPLATE (620mm) OAL
4	W150x37.1 DRIVEN POST (2.134m) OAL
4	W150x37.1 DRIVEN POST (1.956m) OAL
4	TS 203 x 102 x 8 (3.93m) OAL
2	TS 203 x 102 x 8 (6.39m) OAL
2	TS 203 x 102 x 8 (7.29m) OAL
4	TS 102 x 102 x 6 (3.93m) OAL
2	TS 102 x 102 x 6 (6.39m) OAL
2	TS 102 x 102 x 6 (7.29m) OAL
4	TS 203 x 102 x 8 (2.483m) OAL CUT AND WELD
4	TS 102 x 102 x 6 (2.483m) OAL CUT AND WELD
10	TS 178 x 76 x 10 SPLICE TUBE 510 LG.
10	TS 76 x 76 x 8 SPLICE TUBE 510 LG.
20	3mm BEARING PAD
4	BACK UP PLATE 381x254x10
4	TERMINAL CONNECTOR
136	M20 ROUND HEAD BOLT, 152 LONG W/NUT AND WASHER
80	M16 SPLICE BOLT, 44 LONG W/PLAIN HARDENED WASHER
* 80	M24 ANCHOR STUD, 305 LG. W/(2) HEX NUTS/(1) JAMB NUT/(1) WASHER
* 20	SPACER PLATE 330 x 238 x 10
16	M20 x 13 SCH. 40 PIPE SPACER

ITEMS MARKED "*" ARE NOT SUPPLIED BY HIGHWAY SAFETY CORPORATION, AND THEY ARE SHOWN ONLY FOR REFERENCE.

TOTAL ITEM 525.33 (BOTH SIDES OF BRIDGE) = 54m



RAIL ELEVATION
LOOKING UPSTREAM
DOWNSTREAM SIMILAR

STRUCTURES COPY

RECEIVED
OK'D BY JFK OK'D BY
FEB 22 2006
RESUBMIT APPROVED As Noted
BY Wayne Symonds DATE 3/13/06

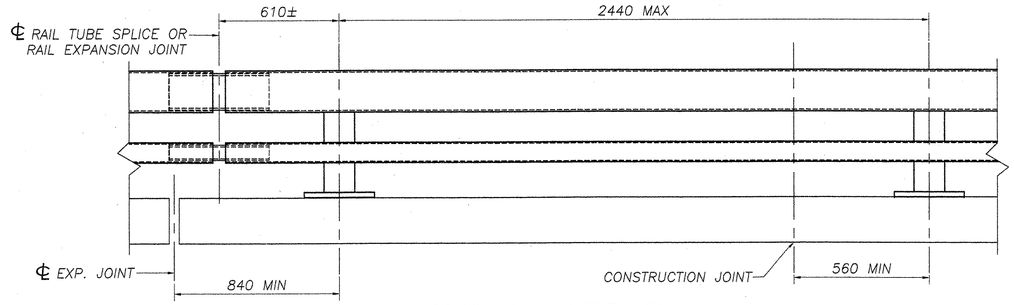
REVISIONS		
No.	Remarks	Date
0	Initial submittal	

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

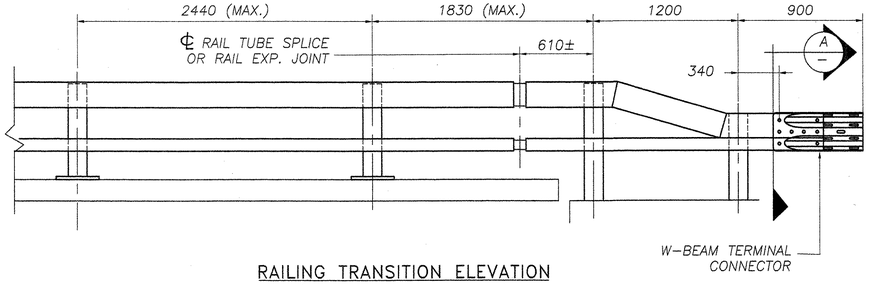
ITEM 525.33 – BRIDGE RAILING–NETC 2 RAIL
PROJECT No. STP 013-4(24)
TOWN OF DUXBURY Br. No. 187
WASHINGTON COUNTY, ROUTE NO: VT 100

GENERAL CONTRACTOR 082 BR
SUB CONTRACTOR F.R. LAFAYETTE, INC.

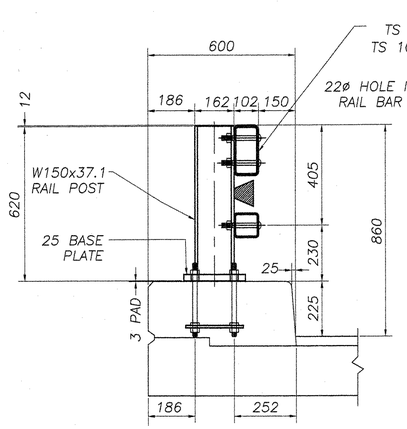
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DATE 1-25-06
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SIZE D REVISION 0
SHEET NO. 1 of 2



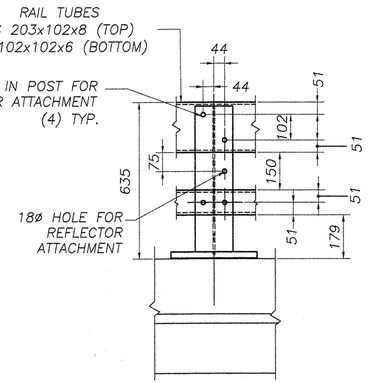
BRIDGE RAILING ELEVATION



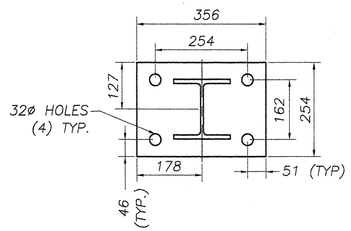
RAILING TRANSITION ELEVATION
(BOTHEND OF BRIDGE)



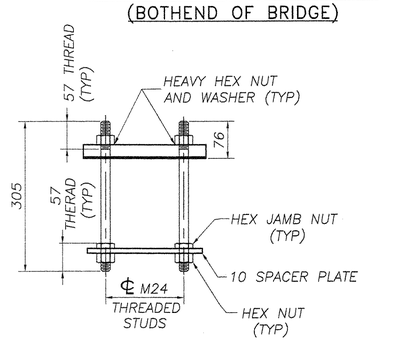
TYPICAL SECTION



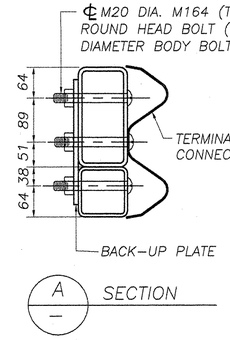
ELEVATION

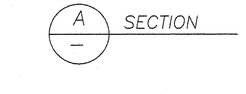


POST AND BASE PLATE



RAIL POST ANCHORAGE
(BY OTHERS)





NOTES:

1. ALL RAILINGS AND MATERIALS SHALL CONFORM TO THE PROVISION OF SECTION 525, "RAILINGS OF THE STANDARD SPECIFICATION FOR CONSTRUCTION".

2. TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732, "RAILING MATERIALS OR THE STANDARD SPECIFICATION FOR CONSTRUCTION," EXCEPT THAT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING SHOWN ON THIS SHEET.

3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 2mm RADIUS AND BE FREE OF BURRS.

4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.

5. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.

6. RAIL TUBE EXPANSION JOINT SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 7°C AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.

7. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT HARDWARE, WHICH SHALL MEET THE REQUIREMENTS OF AASHTO M232M.

8. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.

9. RAIL TUBES SHALL BE ATTACHED USING M20 FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLT INSERTED THOUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 2mm LARGER THAN THE BOLT SIZE.

10. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.

11. IF THERE IS A CONFLICT BETWEEN THE DETAILS SHOWN ON THIS SHEET AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.

12. ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.

13. THE FABICATOR SHALL SUBMIT SHOP DRAWINGS, INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISION OF 506.04, SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.

14. RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A370 CHARPY IMPACT TESTING USING TYPE A SPECIMENS.

15. TO FACILITATE FIELD FIT – UP OF THE TRANSITION RAILING, POSTS SHALL BE SET LOOSELY INTO FIBER FORM TUBES WHILE TRANSITION PARTS ARE BEING ASSEMBLED. POST HOLES SHALL BE BACKED FILLED WITH A CONCRETE MIX APPROVED BY THE ENGINEER. PAYMENT FOR COMPONENTS, INCLUDING BACKUP PLATE AND END TERMINAL CONNECTOR FOR GUARD RAIL, AUGERING, FIBER FORM TUBES AND CONCRETE , AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO ITEM 525.33, "BRIDGE RAILING – NETC 2 RAILING".

16. ALL APPROACH RAIL SPLICES SHALL BE LAPPED ON THE DIRECTION OF TRAFFIC FLOW.

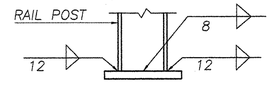
MATERIALS

RAIL TUBES	ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES	ASTM A709/A709M, GRADE 345
AALL OTHER SHAPRE AND PLATES	ASTM A709/A709M, GARDE 250
ANCHOR STUDS	ASTM F568M CLASS 8.8
ALL OTHER BOLTS (UNLESS NOTED)	AASHTO M164M, TYPE1

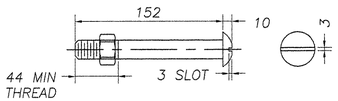
NUTS FOR AASHTO M164M (ASTM A325M) BOLTS AND ANCHOR STUDS SHALL COMPLY WITH AASTHO M291M (ASTM A563M).

WASHERS SHALL COMPLY WITH AASHTO M293M (ASTM F436M) SPECIFCATIONS.

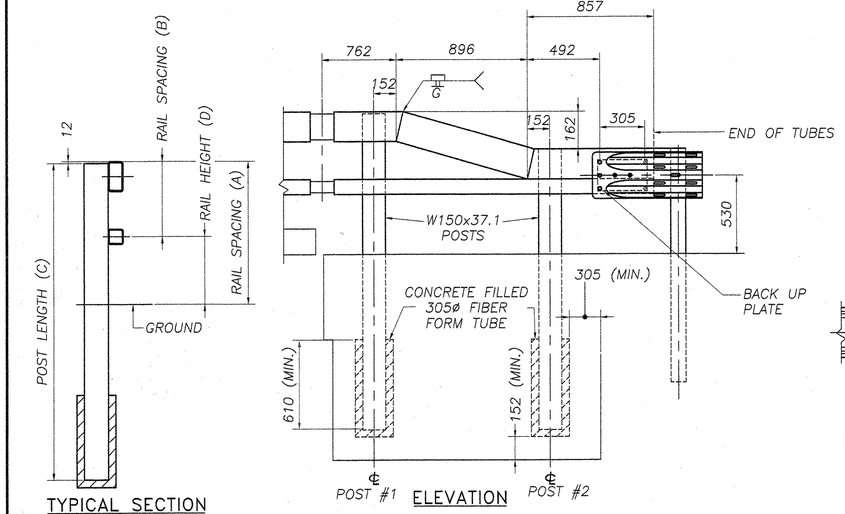
3mm PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.



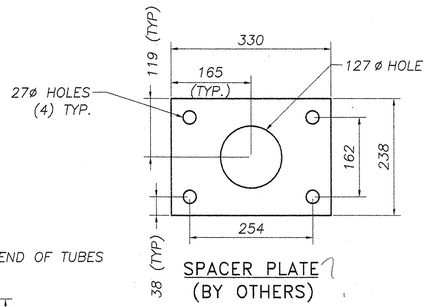
BASE WELD DETAIL



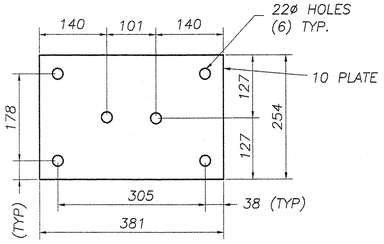
M20 DIA. M164M (TYPE 1)
ROUND HEAD BOLT
(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #9)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



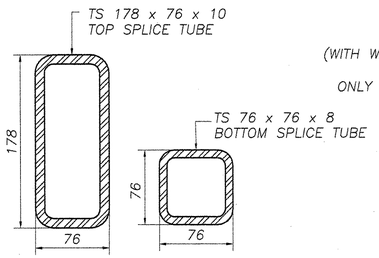
TYPICAL SECTION ELEVATION



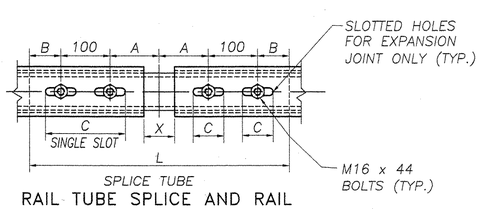
SPACER PLATE
(BY OTHERS)



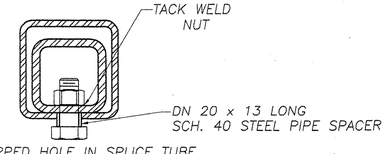
BACK-UP PLATE



RAIL TUBE SPLICE SECTION



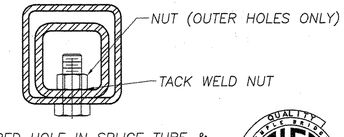
RAIL TUBE SPLICE AND RAIL
EXPANSION JOINT DETAIL



16ø TAPPED HOLE IN SPLICE TUBE
AND 29 x 'C' SLOT IN RAIL TUBE FOR
M16 BOLT AND PLAIN HARDENED WASHER

EXPANSION JOINT SECTION

FOR DETAILS NOT SHOWN,
SEE "RAIL TUBE SPLICE SECTION."



16ø TAPPED HOLE IN SPLICE TUBE &
19ø HOLE IN RAIL TUBE FOR M16
BOLT & PLAIN HARDENED WASHER

POST NUMBER	RAIL HEIGHT (A)	RAIL SPACING (B)	POST LENGTH (C)	RAIL HEIGHT (D)
1	860	405	2134	455
2	702	254	1956	448

SPLICE TABLE					
T	A	B	C	L	X
N/A	100	50	--	510	20
EXPANSION JOINT TABLE					
<100	100	50	65	510	65

T = TOTAL MOVEMENT BETWEEN BRIDGE EXPANSION JOINTS. SEE NOTE 6

* = SINGLE SLOT

REVISIONS		
No.	Remarks	Date
0	initial submittal	

RECEIVED
CK'D BY JTR OK'D BY
FEB 2 2 2006
RESUBMIT APPROVED ✓
BY SJ DATE 3/13/06
WJ

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 – BRIDGE RAILING-NETC 2 RAIL
PROJECT No. STP 013-4(24)
TOWN OF DUXBURY Br. No. 187
WASHINGTON COUNTY, ROUTE NO: VT 100

GENERAL CONTRACTOR 6838R
SUB CONTRACTOR F.R. LAFAYETTE, INC.

DRAWN MHM
CHECKED
DATE 1-25-06
SCALE NONE
HSC REFERENCE NO. 1533
SIZE D REVISION 0
SHEET NO. 2 of 2