STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF SUNDERLAND

COUNTY OF BENNINGTON

ROUTE NO : TH-1, CL. 2, MINOR COLLECTOR
BRIDGE NO : BR2

PROJECT LOCATION : BEGINNING AT A POINT ON TH-1, APPROXIMATELY 0.65 MILES NORTHEASTERLY FROM ITS INTERSECTION WITH TH-2 AND EXTENDING 0.04 MILES NORTHEASTERLY ALONG TH-1.

PROJECT DESCRIPTION : REHABILITATION AND WIDENING OF THE EXISTING STRUCTURE WITH MINIMAL APPROACH WORK.

LENGTH OF STRUCTURE :	43 FEET.
LENGTH OF ROADWAY :	157 FEET.
LENGTH OF PROJECT :	200 FEET.

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RECORD PLANS

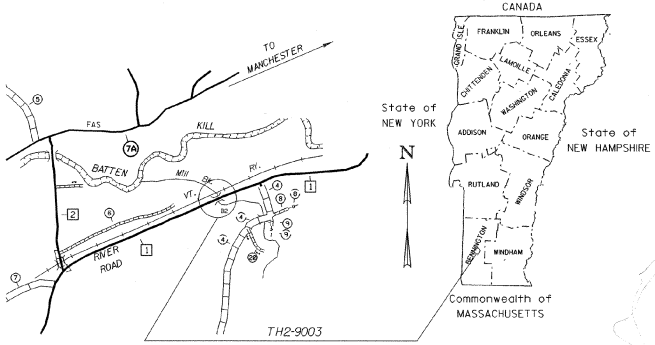
CONTRACTOR: Miller Const. — Windsor, VT
RESIDENT ENGINEER: L. Grunewald
CONSTRUCTION BEGAN: May 4, 1998
CONSTRUCTION COMPLETE: August 31, 1999
RECORD PLANS BY: CADD FINALS

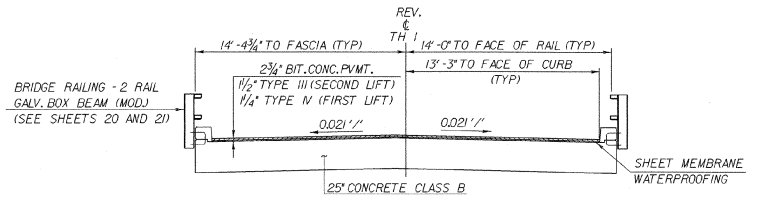
I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY _____ RESIDENT ENGINEER

DATE 03-07-03

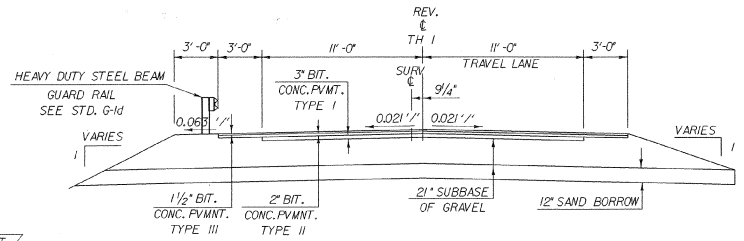
NOTE: Any futher information concerning final quantities, amounts or other details relative to this project may be found on micrfilm in Central Files.





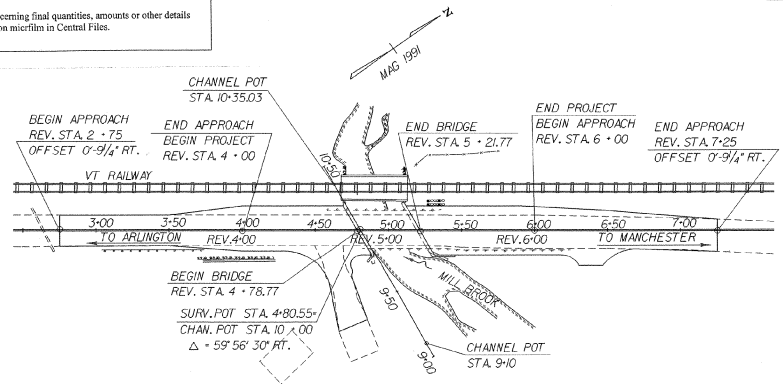
TYPICAL BRIDGE SECTION

SCALE 1/4" = 1'-0



TYPICAL ROADWAY SECTION

SCALE 1/4" = 1'-0



CONVENTIONAL SIGNS

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

DATUM
VERTICAL NGVD 1929
HORIZONTAL ASSUMED

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

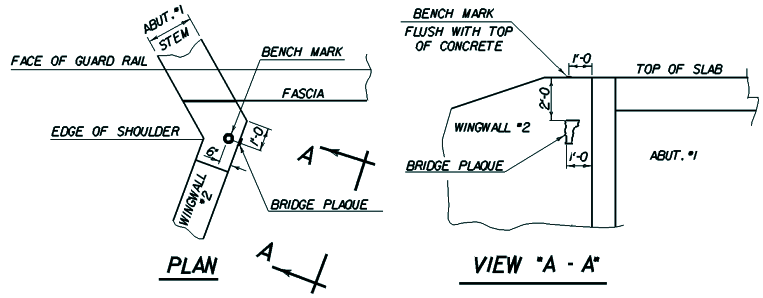
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON MARCH 15, 1990 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

APPROVED _____ DATE 6/26/97
DIRECTOR OF ENGINEERING

PROJECT SUNDERLAND TH2-9003
PROJECT NO. TH2-9003
SHEET 1 OF 37 SHEETS

PLOTTED 26-JUN-1997 /str1/89j090/sj090t1.dgn sj090t1.1

ARCHIVED IN DPR

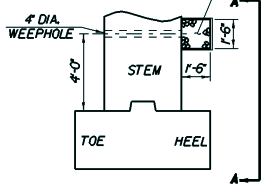


LOCATE BENCH MARK AND BRIDGE PLAQUE

THE BRIDGE PLAQUE AND BENCH MARK 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.

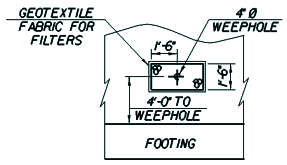
(DETAILS ABOVE ARE NOT MEANT TO BE SITE SPECIFIC)

1'-6" x 1'-6" x 3'-0" GRANULAR BACKFILL FOR STRUCTURES WRAPPED WITH GEOTEXTILE FABRIC FOR FILTERS AT EACH WEEPHOLE LOCATION. THIS WILL BE PAID FOR BY THEIR RESPECTIVE PAY ITEMS.



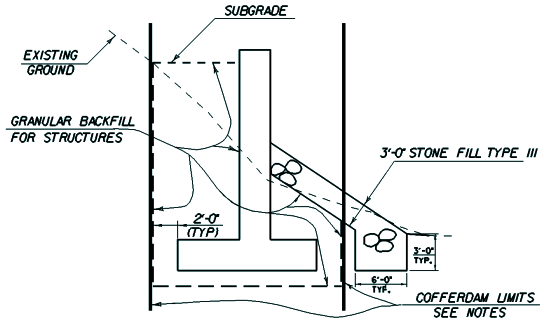
TYPICAL WEEPHOLE DETAIL

SCALE : NTS



SECTION A-A

NTS



WINGWALL EARTHWORK TYPICAL

NOT TO SCALE

SEEDING FORMULA RURAL AREAS

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

GENERAL NOTES

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

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

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

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

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

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

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

COFFERDAM NOTES

1. *COFFERDAM LIMITS ARE TO BE DETERMINED BY THE CONTRACTOR.*
2. *IF A COFFERDAM IS CONSTRUCTED WHICH IS MORE THAN THE INDICATED MINIMUM DISTANCE OUTSIDE THE FOOTING LIMITS (SEE NOTE 3), PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION INCLUDING THAT PORTION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE MINIMUM COFFERDAM LIMITS SHOWN ABOVE WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION.*
3. *FOR PURPOSES OF ESTIMATED EARTHWORK QUANTITIES, THE LIMITS OF THE COFFERDAM HAVE BEEN ASSUMED TO BE 2'-0" OUTSIDE THE PERIMETER OF THE WINGWALL FOOTINGS (SEE DRAWING ABOVE).*
4. *1'-0" OF GRANULAR BACKFILL FOR STRUCTURES SHALL BE PLACED BELOW THE BOTTOM OF EACH WINGWALL.*
5. *ALL IN STREAM CHANNEL WORK WILL TAKE PLACE IN A DRY CHANNEL. THIS MAY BE ACCOMPLISHED BY DIRECTING THE STREAM FLOW THROUGH A TEMPORARY CHANNEL - THROUGH TEMPORARY CULVERTS OR BY THE USE OF A COFFERDAM AND PUMPS. ABSOLUTELY NO GREEN CONCRETE CAN BE ALLOWED TO MIX WITH THE STREAM FLOW. PUMPING FROM EXCAVATION FOR FOOTINGS WILL BE CLARIFIED BEFORE BEING ALLOWED TO MIX WITH THE STREAM FLOW.*

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA

DRAINAGE AREA= 4.8 sq. mi. (12.4 sq. km)
CHARACTER OF TERRAIN= Hilly to mountainous, mostly forested.
CHARACTER & TYPE OF STREAM= Small, straight stream with narrow flood plain, locally braided and/or anabranched.
NATURE OF STREAMBED= Gravel, cobbles, and boulders.

Q2.33= 310 cfs (8.8 cms) Q50= 1220 cfs (34.5 cms)
Q10= 700 cfs (19.8 cms) Q100= 1440 cfs (40.8 cms)
Q25= 1000 cfs (28.3 cms) Q500= 2200 cfs (62.3 cms)

DATE OF FLOOD OF RECORD= Unknown
WATER SURFACE ELEV.= Unknown ESTIMATED DISCHARGE= Unknown
NATURAL STREAM VELOCITY @ Q25= 8.2 fps (2.5 mps)
ICE CONDITIONS= Moderate DEBRIS= Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
IF YES, DESCRIBE. Railroad bridge downstream < 10 ft. (3.0 m). Confluence with Batten Kill downstream 1300 ft. (400 m).
WATERSHED STORAGE 1% HEADWATERS UNIFORM THROUGHOUT WATERSHED x IMMEDIATELY ABOVE SITE

EXISTING STRUCTURE

STRUCTURE TYPE= Single span concrete T-beam bridge. YEAR BUILT= 1948
CLEAR SPAN (NORMAL TO STREAM)= 33 ft. (10.1 m)
VERTICAL CLEARANCE ABOVE STREAMBED= 3.5 ft. (1.07 m) average
WATERWAY OF FULL OPENING= 100 sq. ft. (9.3 sq. m)
DISPOSITION OF STRUCTURE= Remove Superstructure.

TYPE OF MATERIAL UNDER SUBSTRUCTURE= Unknown

WATER SURFACE ELEV. @ Q2.33= 652.5 VELOCITY= 7.8 fps (2.38 mps)
Q10= 652.7 " = 8.8 fps (2.68 mps)
Q25= 653.3 " = 8.2 fps (2.50 mps)
Q50= 654.0 " = 8.7 fps (2.65 mps)
Q100= 654.7 " = 9.3 fps (2.83 mps)

LONG TERM STREAM BED CHANGES= None noted.

IS THE ROADWAY OVERTOPPED BELOW THE Q100? Yes FREQUENCY= Q80
RELIEF ELEVATION= 654.5 DISCHARGE OVER ROAD @ Q100= 80 cfs (2.3 cms)

UPSTREAM STRUCTURE: TOWN= Sunderland DISTANCE= 1400 ft. (427 m)
HIGHWAY NO.= T.H. 4 STRUCTURE NO.= 11
STRUCTURE TYPE= Concrete T-beam bridge
CLEAR SPAN= 28 ft. (8.5 m) CLEAR HEIGHT= 7 ft. (2.1 m)
YEAR BUILT= 1961 FULL WATERWAY= 190 sq. ft. (18 sq. m)

DOWNSTREAM STRUCTURE: TOWN= N. A. DISTANCE=
HIGHWAY NO.= STRUCTURE NO.=
STRUCTURE TYPE=
CLEAR SPAN= CLEAR HEIGHT=
YEAR BUILT= FULL WATERWAY=

PROPOSED STRUCTURE

STRUCTURE TYPE= New Concrete Slab Bridge on Existing Substructure

CLEAR SPAN (NORMAL TO STREAM)= 33 ft. (10.1 m)
VERTICAL CLEARANCE ABOVE STREAMBED= 4.5 ft. (1.4 m) average
WATERWAY OF FULL OPENING= 140 sq. ft. (13.0 sq. m)

WATER SURFACE ELEV. @ Q2.33= 650.3 VELOCITY= 7.6 fps (2.32 mps)
Q10= 651.4 " = 9.1 fps (2.77 mps)
Q25= 652.6 " = 8.0 fps (2.44 mps)
Q50= 653.7 " = 8.7 fps (2.65 mps)
Q100= 654.7 " = 9.7 fps (2.96 mps)

IS THE ROADWAY OVERTOPPED BELOW THE Q100? Yes FREQUENCY= Q90+-
RELIEF ELEVATION= 654.5 DISCHARGE OVER ROAD @ Q100= 40 cfs (1.0 cms)

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE= 652.4
VERTICAL CLEARANCE @ Q Water up to slab below @ Q25.

SCOUR= 1 ft. (0.3 m) of contraction scour at Q100.
REQUIRED CHANNEL PROTECTION= Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW= 10 cfs (0.3 cms)
ORDINARY LOW WATER= 5 cfs (0.1 cms) DEPTH= 1 ft. (0.3 m)
ORDINARY HIGH WATER= 130 cfs (3.7 cms) DEPTH= 2 ft. (0.6 m)

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE= Use stage construction on existing and new bridge.

CLEAR SPAN (NORMAL TO STREAM)=
VERTICAL CLEARANCE ABOVE STREAMBED=
WATERWAY OF FULL OPENING=

DESIGN CRITERIA:
1. DESIGN LIVE LOAD AASHTO HS25
2. DESIGN SPAN 40'-6" (43'-0" BACK TO BACK)
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 4 KSF ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING N/A TYPE N/A ESTIMATED LENGTH N/A
5. STRUCTURAL STEEL AASHTO GRADE N/A
6. REINFORCING STEEL GRADE 60 24 KSI
7. CONCRETE CLASS A f'_c = 4000 PSI
   CONCRETE CLASS B f'_c = 3500 PSI
   SILICA-FUME CONCRETE f'_c = 5000 PSI

TRAFFIC MAINTENANCE:
1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES OR ON TEMPORARY BRIDGE N/A
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY ONE-WAY TRAFFIC CONTROL SIGNALS REQUIRED YES

LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK H	HS	3S2	6 AXLE	3A, STR.	4A, STR.	5A, SEMI
INVENTORY A = 2.17	36	50					
POSTED A = 1.55	51	70	98		57	60	88
OPERATING A = 1.30		84	117	111	68	72	

$RF = \frac{\phi M_n - 1.3\, M_{DL}}{A \times M_{LL+I}}$

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1996	1060	145	—	5	20
2016	1430	200	74	6	30

18 kip ESAL for flexible pavement from 1996 to 2016: 175,000
18 kip ESAL for flexible pavement from N/A to N/A : N/A
Design speed: 35 mph

PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta. Surv. Sta. 5+00
TH 1 OVER THE MILL BROOK	
PRELIMINARY INFORMATION SHEET	
Designed By P.M.THURBER	Drawn By C.C.RICE
Checked By C.W.MEUWIER Date 2/97	Bridge Design Supervisor G.S.ROGERS Date 2/97
PROJECT SUNDERLAND	PROJECT NO. TH2-9003
U.C.C. Info. /grl/89j090/sj090pl.dgn	sj090plparm
Bridge Sheet No.	Sheet 2 of 37

Sheet Number: 2

BRIDGE QUANTITY SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION
STRUCTURES DIVISION

ITEM NO.	ITEM	UNIT	QUANTITY BREAKDOWN: ROADWAY	CHANNEL	SUPER-STRUCTUR	ABUTMENT NO. 1	ABUTMENT NO. 2	EROSION CONTROL			TOTAL	FINAL
203.15	COMMON EXCAVATION	CY	1080								1080	1131
203.27	UNCLASSIFIED CHANNEL EXCAVATION	CY		60							60	47
203.31	SAND BORROW	CY	230								230	0
204.20	MOD. TRENCH EXCAVATION OF EARTH	CY						10			10	341.1 0
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY				40	40				80	72.8
204.40	COFFERDAM (REV STA 4+88 RT)	LS				1					1	1
204.40	COFFERDAM (REV STA 5+37 RT)	LS					1				1	1
210.10	COLD PLANING-BITUMINOUS PAVEMENT	SY	242	PIKE							242	
301.15	SUBBASE OF GRAVEL	CY	670					40			710	650.3
404.65	EMULSIFIED ASPHALT	CWT	3								3	3
406.25	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	TON	357	WILK	18						375	354.19
501.25	CONCRETE, CLASS B	CY			99	16	27				142	40.70
501.60	SILICA-FUME CONCRETE	CY			4						4	2.69
501.60	MOD.										0	0.67
507.15	REINFORCING STEEL	LB				1900	2700				4600	4468
507.16	DRILLING AND GROUTING DOWELS	LF				135	135				270	207
507.17	EPOXY COATED REINFORCING STEEL	LB			15820	220	220				16260	1055
507.19	MECHANICAL BAR CONNECTOR (#5 BARS)	EA				4	4				8	8
507.19	MECHANICAL BAR CONNECTOR (#6 EPOXY COATED) (3 ADDED FOR TESTING)	EA			46						46	0
514.10	WATER REPELLENT	GAL			4	2	2				8	10
519.20	SHEET MEMBRANE WATERPROOFING	SY	ROSS		140						140	134
525.31	BRIDGE RAILING-2 RAIL GALV. BOX BEAM (MOD)	LF	X		92						92	92
527.10	MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS	LS			1						1	1
529.10	REMOVAL OF BRIDGE PAVEMENT	SY			115						115	115
529.20	PARTIAL REMOVAL OF STRUCTURE	EA			0.8	0.1	0.1				1	1
580.13	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS I	SY				3	3				6	0
580.14	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS II	SY				3	3				6	0
608.25	ALL PURPOSE EXCAVATOR RENTAL, TYPE I * (NABI)	HR						1			1	0
608.45	TRUCK-MOUNTED ATTENUATOR	HR	4500	NOT USED							4500	0
613.10	STONE FILL, TYPE I	CY	10					10			20	2.5
613.12	STONE FILL, TYPE III	CY		70							70	108.7
617.10	RELOCATE MAILBOX, SINGLE SUPPORT	EA	X 1								1	1
621.21	HEAVY DUTY STEEL BEAM GUARD RAIL	LF	X 65								65	52
621.505	MANUFACTURED TERMINAL SECTION	EA	X 2								2	2
621.57	ENERGY ABSORPTION ATTENUATOR	EA	3								3	3
621.60	ANCHOR FOR STEEL BEAM GUARD RAIL	EA	X 2								2	1
621.70	GUARD RAIL APPROACH SECTION, TYPE I	EA	X 1								1	1
621.70	GUARD RAIL APPROACH SECTION, TYPE I (MOD)	EA	X 2								2	2
621.71	GUARD RAIL APPROACH SECTION, TYPE II (MOD)	EA	X 1								1	1

ITEM NO.	ITEM	UNIT	QUANTITY BREAKDOWN: ROADWAY	CHANNEL	SUPER-STRUCTUR	ABUTMENT NO. 1	ABUTMENT NO. 2	EROSION CONTROL			TOTAL	FINAL
621.80	REMOVAL AND DISPOSAL OF GUARD RAIL	LF	205								205	205
621.90	TEMPORARY TRAFFIC BARRIER	LF	870								870	353
631.10	FIELD OFFICE-ENGINEERS	LS	1								1	0.98
631.16	TESTING EQUIPMENT - CONCRETE	LS			0.8	0.1	0.1				1	1
631.17	TESTING EQUIPMENT - BITUMINOUS	LS	0.9		0.1						1	1
631.25	FIELD OFFICE TELEPHONE * (NABI)	LS	1								1	0.423
635.10	MOBILIZATION	LS	1								1	1
646.40	DURABLE 4" WHITE LINE X	LF	1200								1200	0
646.41	DURABLE 4" YELLOW LINE X	LF	1200								1200	0
646.61	TEMPORARY 4" YELLOW LINE X	LF	2000								2000	1178
646.82	REMOVAL OF EXISTING PAVEMENT MARKINGS	SY	X 115								115	0
649.31	GEOTEXTILE UNDER STONE FILL	SY		60							60	132
649.51	GEOTEXTILE FOR SILT FENCE	SY						420			420	72
649.61	GEOTEXTILE FOR FILTER CURTAIN	SY						100			100	0
651.15	SEED	LB						10			10	10
651.17	SEED - WINTER RYE	LB						10			10	0
651.18	FERTILIZER	LB						100			100	20
651.20	AGRICULTURAL LIMESTONE	TON						0.25			0.25	0.05
651.25	HAY MULCH	TON						0.25			0.25	0.32
651.26	HAY BALES FOR EROSION CONTROL	EA						100			100	0
651.35	TOPSOIL	CY	20					30			50	31
651.40	GRUBBING MATERIAL	SY		40							40	65
654.10	EROSION MATTING	SY						20			20	0
656.50	TRANSPLANTING SHRUBS	EA	1								1	0
678.40	TEMPORARY TRAFFIC SIGNAL SYSTEM X	EA	1								1	1
678.42	TEMPORARY DETECTOR X	EA	2								2	2
	* NABI = NOT A BID ITEM											
900.06	EXTRA WORK ORDER NO.6 C.O. #1	LS	0								0	1
900.07	EXTRA WORK ORDER NO.7 C.O. #1	LS	0								0	1

~~TEMPORARY EROSION CONTROL ITEMS:~~

(QUANTITIES INCLUDED UNDER EROSION CONTROL)

204.20	TRENCH EXCAVATION OF EARTH	CY	10
301.15	SUBBASE OF GRAVEL	CY	40
608.25	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	HR	1
613.10	STONE FILL, TYPE I	CY	10
649.51	GEOTEXTILE FOR SILT FENCE	SY	40
651.17	SEED - WINTER RYE	LB	10
651.26	HAY BALES FOR EROSION CONTROL	EA	10
654.10	EROSION MATTING	SY	20

EARTHWORKS SUMMARY:

PLANIMETERED FILL:			0 CY
MATERIAL AVAILABLE FOR FILL:			
COMMON EXCAVATION:	1077	CY X 1.0 =	1077 CY
UNCLASSIFIED CHANNEL EXCAVATION:	58	CY X 0.3 =	17 CY
EXCAVATION WITHIN COFFERDAMS:	130	CY X 0.3 =	39 CY
TOTAL MATERIAL AVAILABLE FOR FILL:			1133 CY
LESS FACTORED FILL:			0 CY
WASTE:			1133 CY

ARCHIVED IN DPR

X = F.R. LAFAYETTE

/stc1/891090/s1090qua.dgn s1090qua.i 6-OCT-1997

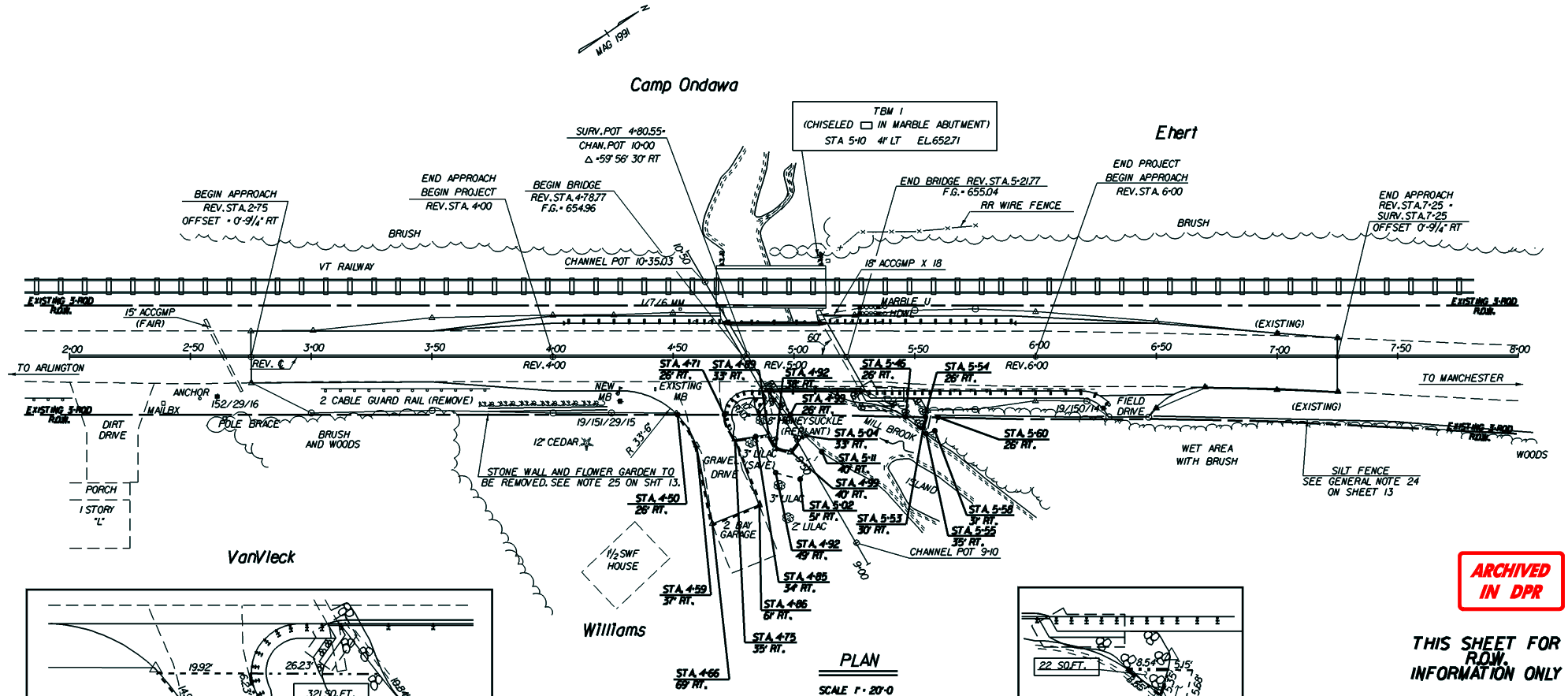
REVISED OCTOBER 6, 1997 BY P.T. LONSDALE
ITEM 678.42
CHANGED QUANTITY FROM 136 LF TO 2 EA

BRIDGE AT STATION 5+00
LOCATION TH 1 OVER THE MILL BROOK

PREPARED BY: C.C. RICE
CHECKED BY: C.W. MEUNIER
SUPERVISOR: G.S. ROGERS

PROJECT: SUNDERLAND
BR OF
PROJECT NO: TH2-9003
SHEET NO: 3 OF 37

Sheet Number: 3



NOTE:
ALL STATIONS AND OFFSETS ARE GIVEN FROM THE ORIGINAL SURVEY LINE.

PLOTTED 26-JUN-1997

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THIS SHEET FOR R.O.W. INFORMATION ONLY

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta.
	Surv. Sta. 5+00

TH 1 OVER THE MILL BROOK

ROW SHEET

Designed By P.T.LONSDALE	Drawn By P.T.LONSDALE
Checked By C.MEUMER Date 11/94	Bridge Design Supervisor G.S.ROGERS Date 11/94
PROJECT SUNDERLAND	PROJECT NO. TH2 -9003
I.G.C. Info. /str1/89j090/sj090row.dgn	SJ090ROW
Bridge Sheet No.	Sheet 4 of 37

Sheet Number: 4

617.10, RELOCATE MAILBOX, SINGLE SUPPORT
REV. STA. 4+27 OFFSET = 15' RT

621.505, MANUFACTURED TERMINAL SECTION
REV. STA. 4+07 ~ REV. STA. 4+57 LT.
REV. STA. 5+40 ~ REV. STA. 5+90 LT.

621.60, ANCHOR FOR STEEL BEAM RAIL
~~REV. STA. 4+72 RT.~~
REV. STA. 6+24 RT.

621.21, HEAVY DUTY STEEL BEAM GUARD RAIL
REV. STA. 5+81 ~ REV. STA. 6+31 RT.

621.80, REMOVAL AND DISPOSAL OF GUARD RAIL
REV. STA. 4+57 ~ 4+71 LT   REV. STA. 5+14 ~ 5+36 LT
REV. STA. 3+04 ~ 3+74 RT
REV. STA. 4+82 ~ 4+86 RT   REV. STA. 5+30 ~ 6+25 RT

656.50, TRANSPLANTING SHRUBS
REV. STA. 4+86 OFFSET = 26' RT

CONSTRUCT PAVED DRIVE
REV. STA. ~~4+64~~ RT 4+50

525.31, BRIDGE RAILING - 2 RAIL GALV. BOX BEAM (MOD.)
REV. STA. 4+69 ~ REV. STA. 5+15 LT
REV. STA. 4+86 ~ REV. STA. 5+31 RT.

621.70 GUARD RAIL APPROACH SECTION, TYPE I
REV. STA. 5+31 ~ REV. STA. 5+81 RT.

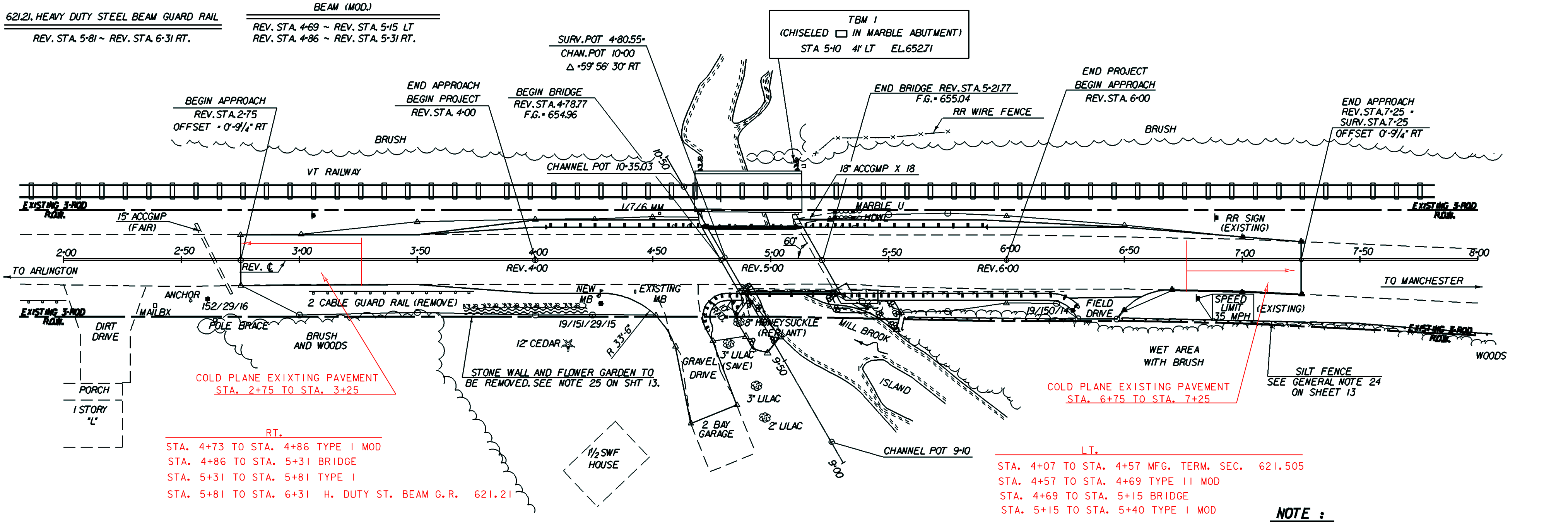
621.70 GUARD RAIL APPROACH SECTION, TYPE I, MOD.
4+79 REV. STA. ~~4+73~~ ~ REV. STA. 4+86 RT.
REV. STA. 5+15 ~ REV. STA. 5+40 LT.

621.71 GUARD RAIL APPROACH SECTION, TYPE II (MOD)
REV. STA. 4+57 ~ REV. STA. 4+69 LT.

DURABLE 4" YELLOW LINE
~~REV. STA. 2+00 ~ REV. STA. 8+00~~

DURABLE 4" WHITE LINE
~~REV. STA. 2+00 LT. ~ REV. STA. 8+00 LT.~~
~~REV. STA. 2+00 RT. ~ REV. STA. 8+00 RT.~~

CONSTRUCT FIELD DRIVE
REV. STA. 6+40 RT.



NOTE :

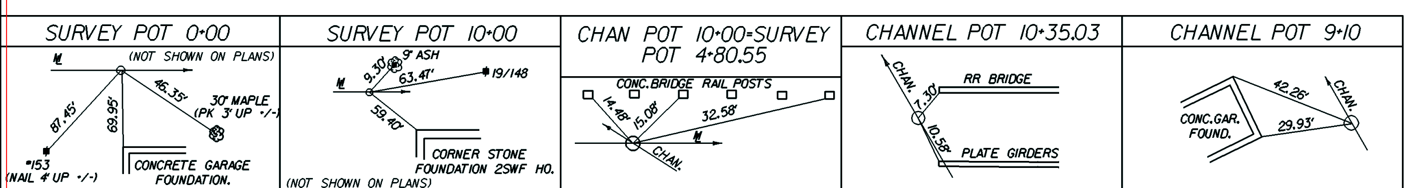
THE 8" HONEYSUCKLE AT STA. 4+85 SHALL BE REPLANTED. SEE NOTE 26 ON PAGE 13.

EXISTING BRIDGE DATA

EXISTING CONCRETE ABUTMENTS
EXISTING BRIDGE: 5 CONCRETE T-BEAMS
OVERALL LENGTH OF STRUCTURE = 43.0'
MAXIMUM SPAN LENGTH = 40'
ROADWAY WIDTH = 24.2'
BRIDGE WIDTH = 27.6'

PLAN

SCALE 1" = 20'-0



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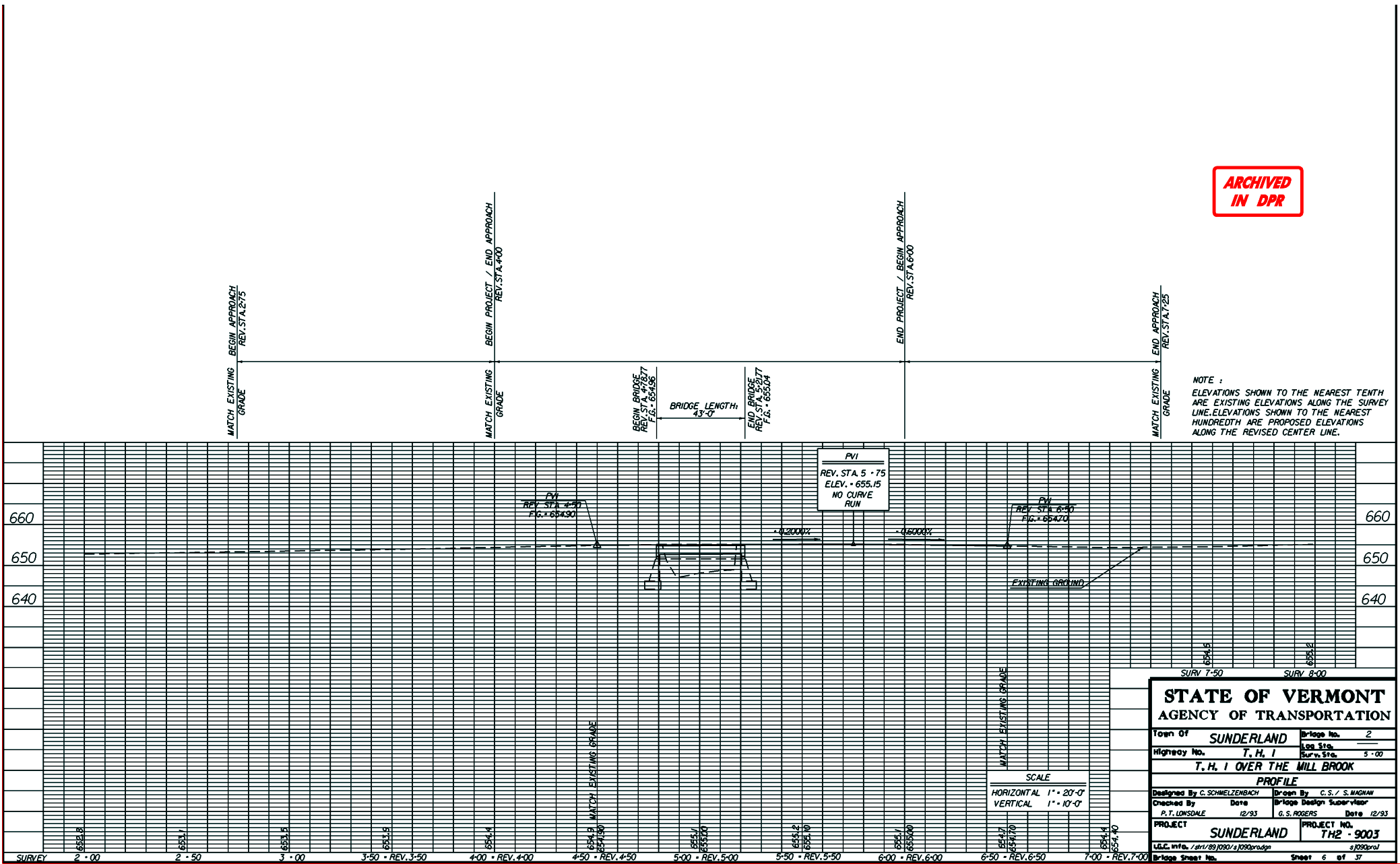
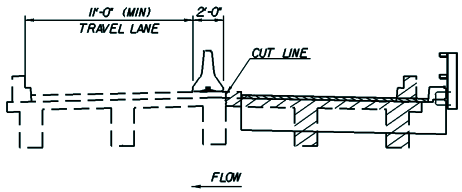
STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SUNDERLAND	Bridge No. 2
	Log Sta. —
Highway No. T.H. 1	Surv. Sta. 5+00
T.H. 1 OVER THE MILL BROOK	
PLAN SHEET	
Designed By C. SCHWELZENBACH	Drawn By C.S. / S. VAUGHAN
Checked By P.T. LONSDALE Date 12/93	Bridge Design Supervisor G.S. ROGERS Date 12/93
PROJECT SUNDERLAND	PROJECT NO. TH2 - 9003
I.G.C. Info. /girl/89j090/sj090.dgn	sj090LJ
Bridge Sheet No.	Sheet 5 of 37

: Sheet Number: 5

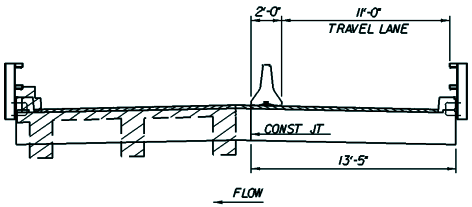


Sheet Number: 6



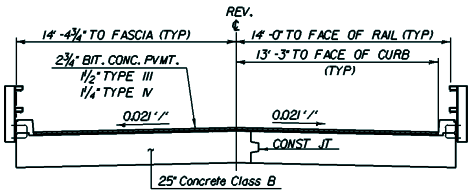
CONSTRUCTION PHASE ONE

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



CONSTRUCTION PHASE TWO

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



CONSTRUCTION PHASE THREE

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

NOTES :

1. TRAFFIC SHALL BE MAINTAINED USING A ONE-WAY DETOUR WITH A TEMPORARY TRAFFIC CONTROL SIGNAL.
2. THE ADVISORY SPEED LIMIT SHALL BE NO MORE THAN 25 MPH.
3. REMOVAL, RESETTING, OR REPLACING OF SIGNS, DELINEATORS, AND/OR REFLECTORS AND/OR THEIR POSTS ASSOCIATED WITH THE TRAFFIC CONTROL SHALL BE DONE AS PER SECTION 676. PAYMENT FOR THIS WORK SHALL BE SUBSIDIARY TO THE ITEM "MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS."

PHASE ONE :

1. INSTALL TRAFFIC CONTROL PACKAGE AND RE-ROUTE TRAFFIC ONTO DETOUR
2. REMOVE EXISTING PAVEMENT ON CLOSED PORTION OF BRIDGE AND ROADWAY (SEE COLD PLANING LIMITS SHEET 29)
3. REMOVE EXISTING T-BEAM, DECK AND PORTIONS OF ABUTMENTS
4. REMOVE UPSTREAM WINGWALLS
5. REPAIR ANY CRACKED AND/OR SPALLED AREAS ON THE RETAINED PORTION OF THE SUBSTRUCTURE
6. EXCAVATE CLOSED PORTION OF ROADWAY AND APPROACHES TO SUBGRADE
7. CONSTRUCT NEW UPSTREAM WINGWALLS AND BRIDGE SEATS
8. CONSTRUCT NEW UPSTREAM SLAB
9. CONSTRUCT NEW ROADWAY AND APPROACHES (SHOULDERS WILL REQUIRE WIDENING TO INSURE THAT A 11'-0" MINIMUM ROADWAY IS MAINTAINED IN THE AREAS WHERE RAIL DOES NOT EXIST)
10. PLACE SHEET MEMBRANE ON NEW PORTION OF SLAB
11. PAVE NEW PORTION OF ROADWAY AND SLAB. THE LIMITS SHALL BE AS DIRECTED BY THE RESIDENT ENGINEER.
12. INSTALL RAIL AND ANCHORS AND PLACE STONE FILL AROUND NEW UPSTREAM WINGWALLS
13. CONSTRUCT PHASE TWO TRAFFIC CONTROL PACKAGE

PHASE TWO :

1. COMPLETE PHASE TWO TRAFFIC CONTROL PACKAGE AND RE-ROUTE TRAFFIC ONTO DETOUR
2. REMOVE EXISTING PAVEMENT ON REMAINING PORTION OF BRIDGE AND ROADWAY (SEE COLD PLANING LIMITS SHEET 31)
3. REMOVE EXISTING DOWNSTREAM T-BEAMS, DECK AND PORTIONS OF EXISTING ABUTMENT
4. EXCAVATE REMAINING PORTION OF ROADWAY AND APPROACHES TO SUBGRADE
5. REPAIR ANY CRACKED AND/OR SPALLED AREAS ON THE RETAINED PORTION OF THE SUBSTRUCTURE
6. CONSTRUCT NEW BRIDGE SEATS
7. CONSTRUCT NEW DOWNSTREAM SLAB
8. CONSTRUCT NEW ROADWAY AND APPROACHES
9. PLACE SHEET MEMBRANE ON REMAINING PORTION OF NEW SLAB
10. INSTALL RAIL AND MANUFACTURED TERMINAL SECTIONS
11. PAVE REMAINING PORTION OF NEW ROADWAY AND SLAB. THE LIMITS SHALL BE AS DIRECTED BY THE RESIDENT ENGINEER.

PHASE THREE :

1. COMPLETE SLOPE, ROADWAY AND CHANNEL WORK
2. TRAFFIC CONTROL REQUIRED DURING THIS PHASE SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
3. COSTS FOR PHASE THREE TRAFFIC CONTROL SHALL BE SUBSIDIARY THE ITEM MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS, EXCEPT IF TEMPORARY TRAFFIC BARRIER IS REQUIRED, WHICH SHALL BE PAID FOR AS PER ITEM 621.90.

PLOTTED 26-JUN-1997

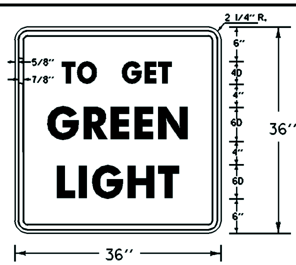
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta. N/A
	Surv. Sta. 5-00

TH 1 OVER THE WILL BROOK

TRAFFIC CONTROL TYPICALS

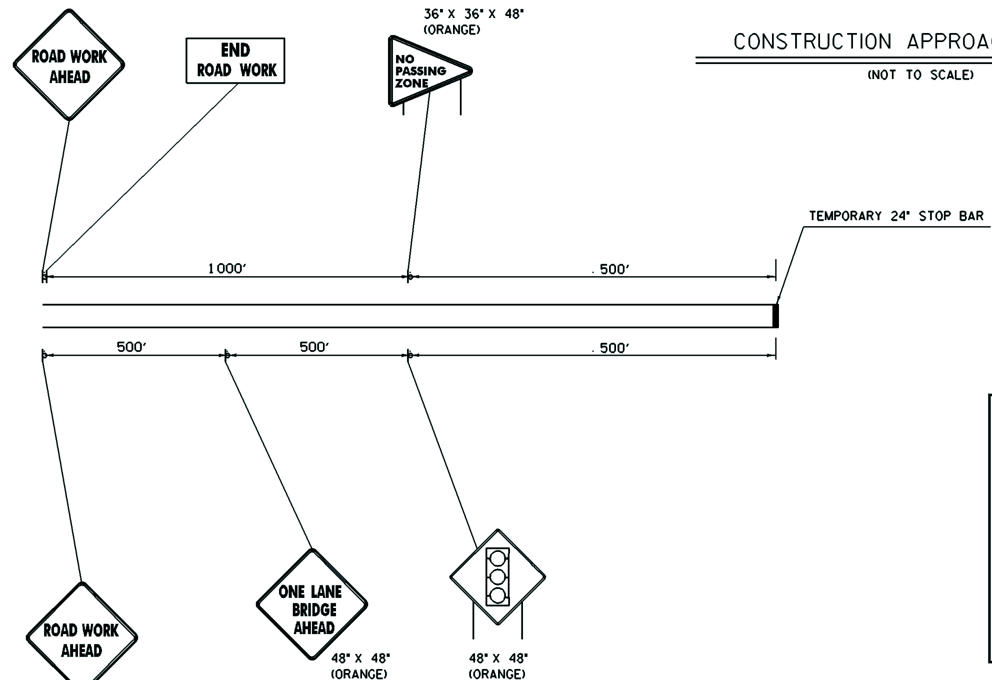
Designed By P. M. THURBER	Drawn By P. M. THURBER
Checked By C. W. MEUWIER Date 08/94	Bridge Design Supervisor G. S. ROGERS Date 08/94
PROJECT SUNDERLAND	PROJECT NO. TH2 - 9003
I.G.C. Info. /src1/89j090/s1090mp.dgn	s1090tc21parm
Bridge Sheet No.	Sheet 7 of 37



COLORS: BLACK TEXT & BORDER
WHITE REFL. BACKGROUND
MATERIALS: PER STD. E-142

CONSTRUCTION APPROACH SIGNING

(NOT TO SCALE)



STANDARD SHEETS REQUIRED FOR USE WITH TEMPORARY DETOUR SHEETS INCLUDE:

E-100	E-150
E-101	E-160
E-102	E-170
E-102A	E-171A
E-106	E-171B
E-107	E-171C
E-107A	E-172
E-121	E-173
E-140	G-18

PHASING DIAGRAM AND SPECIAL NOTES FOR EACH LOCATION

PHASE	A			B			C		
INTERVAL	1	2	3	4	5	6			
MINIMUM	10						5		
EXTENSION	2						2		
MAXIMUM	18	3	24	18	3	24	7	3	24
HEAD A	G	Y	R	R	R	R	R	R	R
HEAD B	R	R	R	G	Y	R	R	R	R
HEAD C	R	R	R	R	R	R	G	Y	R

SPECIAL REQUIREMENTS

APPROACH	TEMPORARY VEHICLE DETECTOR	DILEMMA ZONE LOOP	FLASHING BEACON ON ADVANCED WARNING SIGN
A	X		
B			
C	X		

ENTER CHECK MARK IN APPROPRIATE BOX WHEN REQUIRED ON THIS PROJECT

ATTENUATOR NOTES

AN ENERGY ABSORPTION ATTENUATOR WILL BE PLACED AS SHOWN ON THE TRAFFIC CONTROL PLAN SHEET TO ALLOW THE CONTRACTOR ACCESS TO THE WORK AREA. THIS ATTENUATOR WILL BE A TRUCK-MOUNTED ATTENUATOR AND WILL BE PAID FOR UNDER ITEM 608.45 "TRUCK-MOUNTED ATTENUATOR". SEE SPECIAL PROVISIONS. THE ENERGY ABSORPTION ATTENUATOR LOCATED @ REV STA 4+40 RT (±) SHALL BE SUITABLE FOR A NARROW WIDTH APPLICATION AND SHALL BE INSTALLED AS SHOWN ON THE TRAFFIC CONTROL PLAN SHEET. THIS ATTENUATOR WILL BE PAID FOR UNDER ITEM 621.57 "ENERGY ABSORPTION ATTENUATOR".

THE ATTENUATOR SHALL MEET THE REQUIREMENTS OF THE 1989 AASHTO "ROADSIDE DESIGN GUIDE", AND SHALL BE DESIGNED FOR A 4500 LB VEHICLE TRAVELING A 35 MPH.

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

GENERAL

1. THE CONTRACTOR SHALL INSURE THAT THE SIGNAL INSTALLATION CONFORMS TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" WITH THE SUPPORTING STRUCTURES AS PER AASHTO'S STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS. CERTIFICATION SHALL NOT BE NECESSARY FOR TEMPORARY TRAFFIC SIGNAL EQUIPMENT.

2. SIGNAL TIMING/TIMING ADJUSTMENTS REQUESTED BY THE RESIDENT ENGINEER SHALL BE ACCOMPLISHED WITHIN A 48 HOUR PERIOD AND PAYMENT SHALL BE SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM. THE ALL-RED CLEARANCE INTERVAL IS BASED ON AN ASSUMED SPEED OF 15 MPH. THE RESIDENT ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.

3. SIGNAL FACES SHALL CONSIST OF 12" LENSES. (RED, YELLOW, AND GREEN).

4. THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16 1/2 FEET NOR MORE THAN 19 FEET ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF A SIGNAL FACE NOT MOUNTED OVER A ROADWAY SHALL NOT BE LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE GROUND. CAUTION SHOULD BE USED TO INSURE COMPLIANCE WITH THE HEIGHT REQUIREMENTS IN THE EVENT THE NEW APPROACH GRADES DIFFER SIGNIFICANTLY FROM THE OLD ROAD GRADE.

5. SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER OF FACES.

6. SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. AT LEAST ONE SIGNAL HEAD SHALL BE UNMISTAKABLY IN LINE WITH THE CENTER OF APPROACHING TRAFFIC AT ALL TIMES. THE SECOND SIGNAL HEAD MAY BE POST MOUNTED, LOCATED AT A DISTANCE NO GREATER THAN 14 1/2 FEET FROM THE CENTER OF THE APPROACH LANE WHEN THE STOP BAR IS 40 FEET FROM THE SIGNAL HEAD. CONSULT THE M.U.T.C.D. FOR ADDITIONAL INFORMATION CONCERNING SIGNAL PLACEMENT.

7. SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES.

8. THE SIGNAL SYSTEM SHALL CONSIST OF POLES, SIGNS AND POSTS, TEMPORARY PAVEMENT MARKINGS (AND REMOVALS), LUMINARES, AND SIGNAL EQUIPMENT TO PROVIDE FOR AN ADEQUATE DESIGN. IT ALSO INCLUDES PERMITS AND COST ASSOCIATED WITH PROVIDING ELECTRICAL POWER.

9. THE CONTRACTOR SHALL PROVIDE AN ACTUATED CONTROLLER. THE APPROACHES NOTED SHALL HAVE A TEMPORARY VEHICLE DETECTOR. THE TYPE OF DETECTION SHALL BE INDUCTANCE. THE CONTROLLER, VEHICLE DETECTORS AND ALL OTHER SIGNAL EQUIPMENT SHALL MEET OR EXCEED ALL NEMA STANDARDS.

10. VEHICLE DETECTOR LOOPS SHALL BE 4' X 40' FOR PRESENCE DETECTION AT THE STOP BAR WITH THE NEAR PORTION LOCATED 5 FEET BEYOND THE STOP BAR. EXCEPT AT THE DRIVE AT REV STA 4+64 RT WHICH SHALL HAVE A 4' X 20' VEHICLE DETECTOR LOOP.

11. ON SEMI-ACTUATED SIGNALS, PARTICULARLY WITH LONG BRIDGES, THE CONTROLLER SHOULD BE LOCATED ON THE SAME SIDE OF THE BRIDGE AS THE LOOP (HEAD "A" SIDE).

12. INTERVAL TIMING SHOWN IN SECONDS.

13. INTERCONNECT BETWEEN SIGNAL POLES BY WHATEVER MEANS POSSIBLE OR CONVENIENT TO PROVIDE FOR A SAFE INSTALLATION.

14. PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE POSSIBLE.

15. POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL NOT BE PLACED SO AS TO CREATE A HAZARD TO THE TRAVELING PUBLIC.

16. ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC., SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND HE SHALL BE RESPONSIBLE FOR THEIR REMOVAL, INCLUDING ANY TEMPORARY PAVEMENT MARKINGS, UTILITY POLES, WIRES, ETC..

17. A 400 FOOT WATT MERCURY OR 200 WATT HPS LUMINAIRE AND MAST ARM SHALL BE PROVIDED ON A POLE ON EACH APPROACH AT A MOUNTING HEIGHT OF 30' ABOVE ROADWAY CENTERLINE TO LIGHT UP THE AREA AROUND THE SIGNAL HEADS AND STOP BAR FOR INCREASED VISIBILITY. THE RESIDENT ENGINEER SHALL DETERMINE THE ADEQUACY OF THE LIGHTING AND DIRECT CHANGES IF THE LIGHTING IS INSUFFICIENT.

18. STOP BARS SHALL BE LOCATED A MINIMUM OF 40' AND A MAXIMUM OF 120' FROM THE NEAREST SIGNAL HEAD.

19. PAYMENT FOR THE VEHICLE LOOP DETECTOR ITEM SHALL BE LINEAR FOOT OF SAWSLOT IN THE PAVEMENT, OR LOOP BURIED IN PVC CONDUIT ON A NON-PAVED APPROACH.

20. THE SIGNS AND ASSOCIATED POSTS NOTED BELOW ARE SUBSIDIARY TO THE TRAFFIC CONTROL SIGNAL SYSTEM - INTERSECTION (MOD) ITEM. (STOP BARS, "STOP HERE ON RED", "SIGNAL AHEAD", "NO PASSING ZONE", AND "TO GET GREEN LIGHT").

21. SEE STD. E-140 FOR "STOP HERE ON RED" SIGN DETAIL AND E-102 FOR "SIGNAL AHEAD" SYMBOL SIGN. THE "SIGNAL AHEAD" SIGN SHALL HAVE AN ORANGE BACKGROUND (REFLECTORIZED). SEE STD. E-121 FOR SIGN PLACEMENT. SEE STDS. E-170 THROUGH E-172 FOR ADDITIONAL INFORMATION ON SIGNALS AND DETECTORS.

22. A "SIGNAL AHEAD" SIGN SHOULD BE PLACED 500' FROM THE SIGNAL OR AT A POSITION TO BE DETERMINED BY THE ENGINEER. ALL POSTS SHALL BE CONSIDERED AS SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM.

23. THE "NO PASSING" SIGN SHALL BE USED TO PREVENT PASSING FOR 750' IN ADVANCE OF THE STOP BAR. THE SIGN SHALL BE PER STANDARD E-102 , EXCEPT THE COLOR SHALL BE A BLACK TEXT AND BORDER ON A REFLECTORIZED ORANGE BACKGROUND.

24. ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND STATE INSPECTOR.

25. ALL SIGNAL RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN THE SIGNALS ARE NOT OPERATING.

26. THE "TO GET GREEN LIGHT" SIGN IS TO BE USED ONLY ON APPROACHES WITH VEHICLE DETECTOR LOOPS.

27. REMOVE EXISTING CENTERLINE PAVEMENT MARKINGS FROM THE STOP BAR TO THE BRIDGE DECK ON THE APPROACHES. THIS SHALL BE PAID AS "REMOVAL OF EXISTING PAVEMENT MARKINGS". REPLACEMENT OF THE LINE WILL BE PAID FOR UNDER THE ITEM 646.21 "4" YELLOW LINE".

28. IN SITUATIONS WHERE EXISTING PASSING ZONES EXTEND THROUGH THE AREA BETWEEN THE STOP BAR AND THE "NO PASSING ZONE" SIGN, THEN TEMPORARY DOUBLE YELLOW LINES SHALL BE INSTALLED FROM THE STOP BAR TO THE "NO PASSING ZONE" SIGN. THESE MARKINGS SHALL BE PAID UNDER THE "TEMPORARY 4" YELLOW LINE" ITEM.

29. THE PAVEMENT MARKING REMOVALS AND TEMPORARY EDGELINES AS NOTED ABOVE SHALL BE PAID SEPERATELY UNDER THE APPROPRIATE BID ITEMS.

PLOTTED 26-JUN-1997

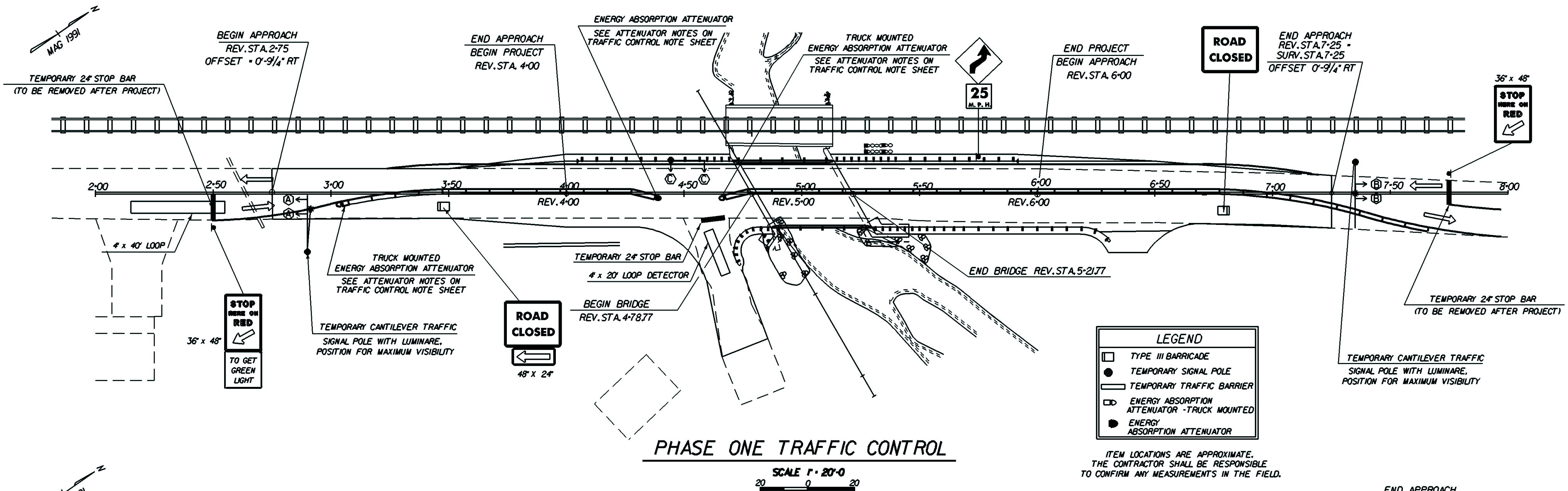
TDI04.DGN

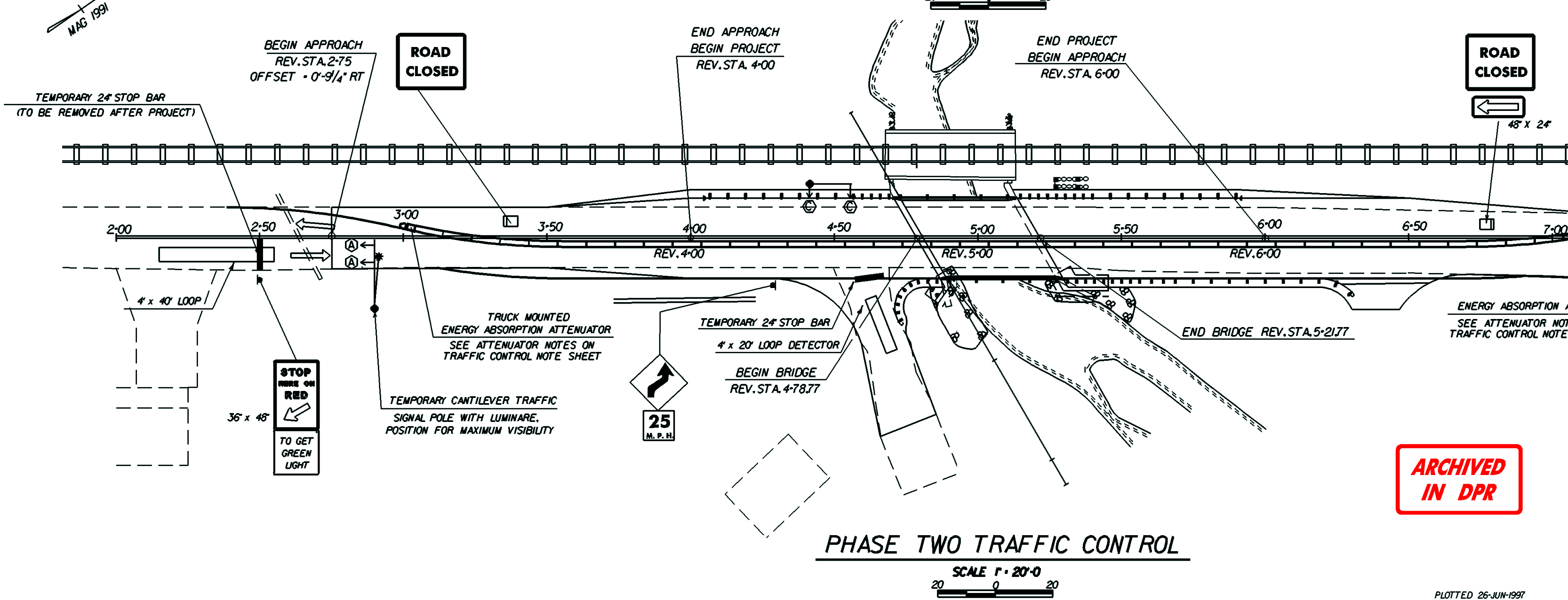
ORIGINAL PREPARED NOV. 1986		
DATE	REVISIONS	BY
6/87	DELETE FTM	LSW
6/87	CHANGE RPD	LSW
5/88	LENGTHEN LOOPS, ADDED "GREEN LIGHT" SIGN, UPDATE STD.'S	DSP
3/91	ADD PAVEMENT MARKING NOTES & PHASE DIAGRAM	DSP

ONE-WAY DETOUR WITH TEMPORARY TRAFFIC SIGNAL

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	SUNDERLAND	Bridge No.	2
		Log Sta.	N/A
Highway No.	TH 1	Surv. Sta.	5 + 00
TH 1 OVER THE MILL BROOK			
TRAFFIC CONTROL NOTES			
Designed By	P. M. THURBER	Drawn By	P. M. THURBER
Checked By C. W. MEUNIER	Date 08/94	Bridge Design Supervisor G. S. ROGERS	Date 08/94
PROJECT	SUNDERLAND	PROJECT NO.	TH2 - 9003
I.G.C. Info. /strl/89j090/sj090tmp.dgn		sj090tcl.lparm	
Bridge Sheet No.		Sheet 8 of 37	





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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	SUNDERLAND	Bridge No.	2
		Log Sta.	N/A
Highway No.	TH 1	Surv. Sta.	5+00

TH 1 OVER THE MILL BROOK

TRAFFIC CONTROL PLAN

Designed By	P.M. THURBER	Drawn By	P.M. THURBER
Checked By	Date	Bridge Design Supervisor	
C.W. MEUNIER	2/97	G.S. ROGERS	Date 2/97
PROJECT	SUNDERLAND	PROJECT NO.	TH2 - 9003

I.G.C. Info. s/str1/89j090/sj090tmp.dgn sj090tcp.parm

Bridge Sheet No. Sheet 9 of 37

: Sheet Number: 9

SOIL CLASSIFICATION

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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

COMMONLY USED SYMBOLS

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

COLOR

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

DEFINITIONS (AASHTO)

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

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

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

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

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

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

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

VARVED - Alternate layers of silt and clay.

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

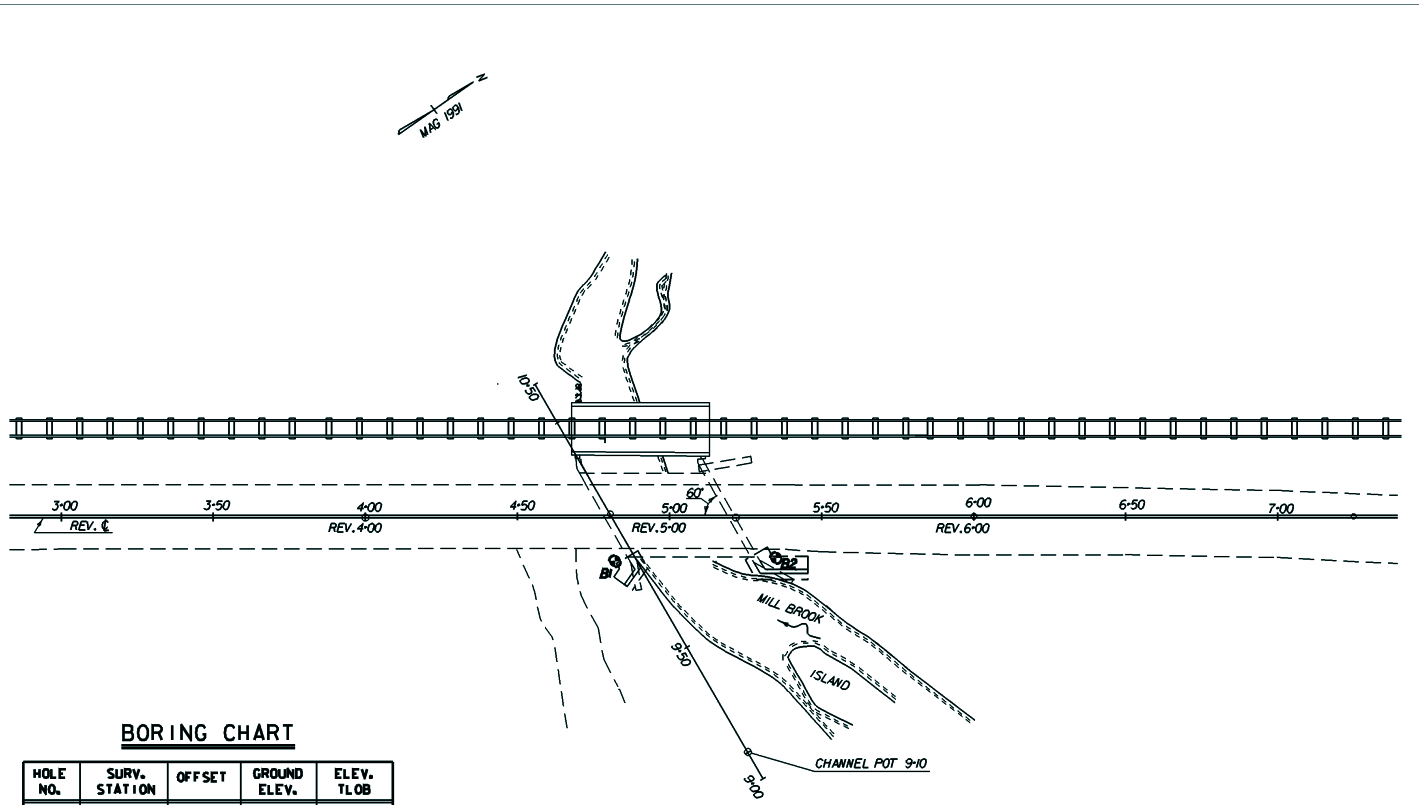
MUCK - Soft organic soil (containing > 10% organic material.

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

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

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

DIP - Inclination of bed with a horizontal plane.



BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B1	4+82	15' RT.	655.01	
B2	5+35	14' RT.	654.94	

PLAN

SCALE 1" = 20'-0"

20 0 20

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GENERAL NOTES

1. The subsurface explorations shown herein were made between March 24 and April 4, 1996 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.

PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	SUNDERLAND	Bridge No.	2
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	5+00

TH 1 OVER THE MILL BROOK

BORING INFORMATION SHEET

Designed By	P.T. LOWSDALE	Drawn By	J.P. SPILAK
Checked By	Date	Bridge Design Supervisor	
C.W. MEUNIER	5/96	G.S. ROGERS	Date 5/96
PROJECT	SUNDERLAND	PROJECT NO.	TH2-9003
L.G.C. Info.	/srv1/89/1090/s1090bor.dgn		s1090bd1
Bridge Sheet No.		Sheet	10 of 37

Sheet Number: 10

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

HOLE NO.: B-1
SHEET 1 OF 1
DATE STARTED: 4/3/96
DATE COMPLETED: 4/4/96

PROJECT NAME: SUNDERLAND
SITE NAME: TH I
STATION: 4+82.00
GROUND EL.: 655.01

PROJECT NUMBER: TH2 9003
SITE NO.: BRIDGE 2
OFFSET: 15.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: WILLIS
DRILLER: CHABOT
LOGGER:

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

BOTTOM OF WW2 FOOTING
ELEVATION = 643.00

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		Pavement							
		Boulders, no sample.							
		No recovery.	12						
5		A-1-a, Gr, moist, brn, Rec. = 0.8'	R	8.2	69.2	19.4	11.4		
		BXMDC 7.4' - 10.5' Concrete							
10		No recovery, boulders.	R						
		No sample, boulders.							
15		A-1-b, SiGrSa, sat., brn, Rec. = 0.3'	7	11.2	33.4	46.4	20.2		
		A-2-4, Sa, wet, brn, Rec. = 0.3'	II	29.7	2	80.6	17.4		
20		A-2-4, Sa, MTW, brn, Rec. = 0.5'	21	23.4	1.8	79.9	18.3		
25		No recovery	14						
30		A-1-a, SaGr, moist, brn, Rec. = 0.1'	19	7.9	74.2	21.6	4.2		
35		A-1-a, SaGr, MTW, brn, Rec. = 0.5'	31	13.9	60.3	26.3	13.4		
40		A-1-a, Gr, MTW, brn, Rec. = 0.6'	38	11.6	78.3	13.4	8.3		
				Hole stopped @ 42'					
45									

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

HOLE NO.: B-2
SHEET 1 OF 1
DATE STARTED: 3/24/96
DATE COMPLETED: 4/3/96

PROJECT NAME: SUNDERLAND
SITE NAME: TH I
STATION: 5+35.00
GROUND EL.: 654.94

PROJECT NUMBER: TH2 9003
SITE NO.: BRIDGE 2
OFFSET: 14.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: WILLIS
DRILLER: CHABOT
LOGGER:

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

BOTTOM OF WW4 FOOTING
ELEVATION = 643.00

DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		Pavement							
5		No recovery	24						
10		No sample, boulders. BXMDC 9.0' - 11.0'							
15		No recovery, boulders.							
20		A-1-a, SaGr, Moist, brn, Rec. = 0.5'	21	12.5	66.2	26.4	7.4		
25		A-2-4, SiSa, MTW, brn, Rec. = 0.8'	II	29.2	0	75.3	24.7		
30		A-2-4, SiSa, Moist, brn, Rec. = 1.2'	23	16	0	74.4	25.6		
35		A-4, SiSa, Moist, brn, Rec. = 0.6'	II	25.8	0	50.4	49.6		
40		A-2-4, Sa, Moist, brn, Rec. = 1.3'	20	24.4	8	75.3	16.7		
				Hole stopped @ 42'					
45									

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PLOTTED 26-JUN-1997

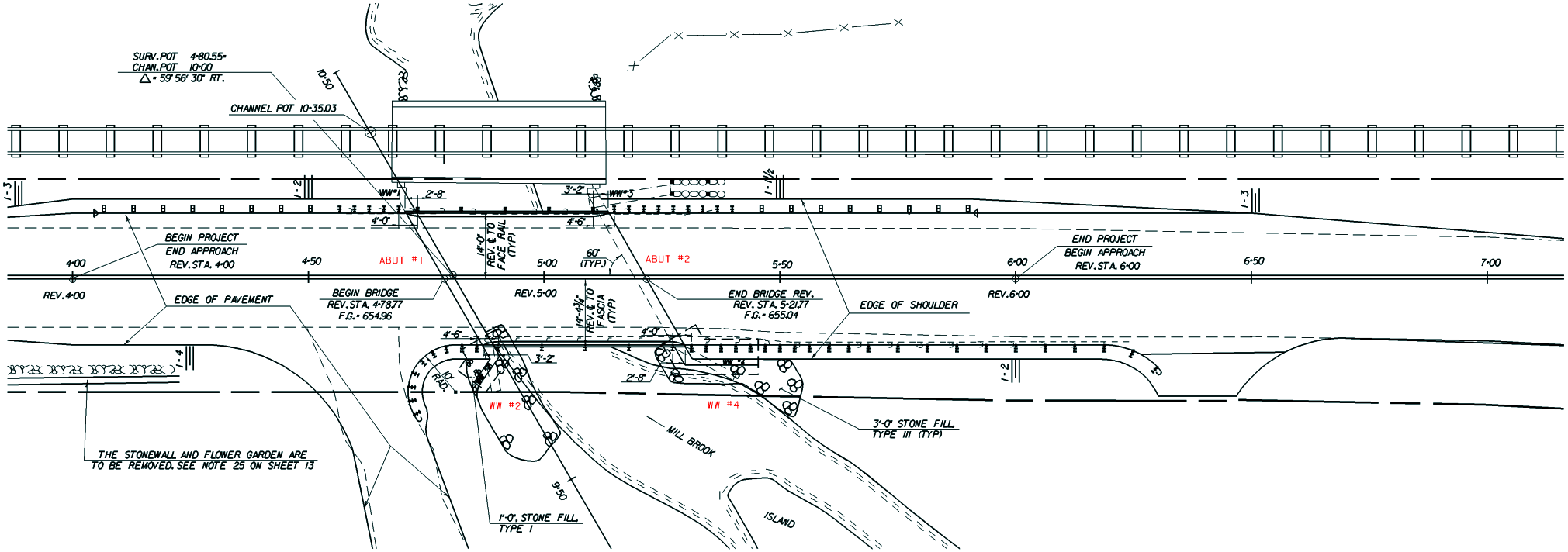
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of SUNDERLAND	Bridge No. 2
Highway No. TH I	Log Sta.
	Surv. Sta. 5+00

TH I OVER THE WILL BROOK
BORING LOG SHEET

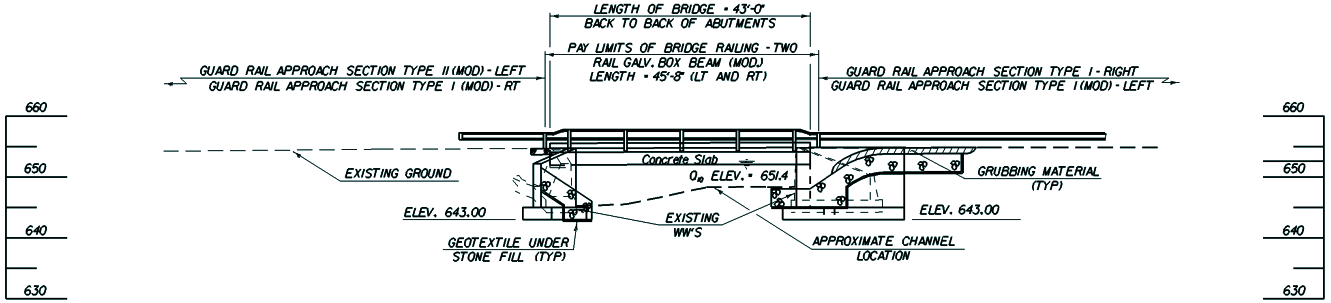
Designed By P.T. LOWSDALE	Drawn By J.P. SPILAK
Checked By C.W. MEUNIER Date 5/96	Bridge Design Supervisor G.S. ROGERS Date 5/96
PROJECT SUNDERLAND	PROJECT NO. TH2-9003
I.G.C. Info. /str1/89J090/sJ090bor.dgn	sJ090b021
Bridge Sheet No.	Sheet 11 of 37

Sheet Number: 11



PLAN

SCALE 1" = 10'-0



ELEVATION VIEW AT UPSTREAM FASCIA

SCALE 1" = 10'-0

PLOTTED 26-JUN-1997

ARCHIVED IN DPR

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	SUNDERLAND	Bridge No.	2
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	5+00

TH 1 OVER THE MILL BROOK

PLAN AND ELEVATION

Designed By C.SCHMELZENBACH		Drawn By C.SCHMELZENBACH	
Checked By	Date	Bridge Design Supervisor	
P.T. LOWSDALE	11/93	G.S. ROGERS	Date 11/93
PROJECT	SUNDERLAND	PROJECT NO.	TH2 - 9003
L.G.C. Info. /str1/89/1090/sj1090pa.dgn			sj1090pa/parm
Bridge Sheet No.		Sheet 12 of 37	

Sheet Number: 12

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION, 1990 STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, AND IT'S LATEST REVISIONS, AND THE AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1992, AND IT'S LATEST REVISIONS.

2. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, ESPECIALLY THE DISCHARGE OF RAW CONCRETE, INTO THE MILL BROOK, AS DIRECTED BY THE RESIDENT ENGINEER AND STANDARD SPECIFICATION, SECTION 105.

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

4. ALLOWABLE SOIL PRESSURE: 4 KSF
   DESIGN SOIL PRESSURE: WINGWALL NO.2 2.5 KSF
   WINGWALL NO.4 2.5 KSF

5. THE BRIDGE SEATS SHALL BE POURED LEVEL FROM FRONT TO BACK OF ABUTMENT.

6. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" BY 1".

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

8. THE KEY ON CONCRETE 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.

9. REINFORCING PLACEMENT TOLERANCES SHALL BE:
   SPACING: ±1"
   CLEARANCE: ±1/4"

10. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF "CONCRETE REINFORCING STEEL INSTITUTE".

11. MINIMUM COVER FOR REINFORCING STEEL IN SUBSTRUCTURES SHALL BE THREE (3) INCHES, UNLESS DETAILED OTHERWISE.

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

13. ALL DIMENSIONS ARE EITHER HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68°F.

14. THE ITEM "PARTIAL REMOVAL OF STRUCTURE" SHALL INCLUDE THE REMOVAL OF THE EXISTING SUPERSTRUCTURE, EXISTING ABUTMENTS TO THE ELEVATION SHOWN ON THE PLANS, AND ANY PORTION OF THE EXISTING WINGWALLS THAT FALL OUTSIDE THE LIMITS OF THE COFFERDAMS.

15. THE ITEM 204.40 "COFFERDAM" SHALL BE USED AT REV STA 4+88 RT (WINGWALL NO.2) AND REV STA 5+37 RT (WINGWALL NO.4). SEE SHEET NO. 2 FOR COFFERDAM NOTES AND DETAIL.

16. THE EXISTING ABUTMENTS AND WINGWALLS THAT FALL INSIDE THE COFFERDAM SHALL BE REMOVED UNDER THE ITEMS "COFFERDAM (REV STA 4+88 RT)" AND "COFFERDAM (REV STA 5+37 RT)".

17. THE COST OF ANY ON-PROJECT SIGNS AND BARRICADES SHALL BE SUBSIDIARY TO ITEM 635.10 "MOBILIZATION." ANY OFF-PROJECT SIGNING SHALL BE THE RESPONSIBILITY OF THE TOWN OF SUNDERLAND, IN PARTICULAR A SIGN AT THE INTERSECTION OF TH 1 AND TH 2 WARNING OF THE CONSTRUCTION AND ONE LANE ROAD AHEAD.

18. TRAFFIC SHALL BE MAINTAINED ON TH 1 (ONE) DURING THE CONSTRUCTION OF THE NEW BRIDGE. THIS WORK SHALL BE PAID FOR UNDER ITEM "MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS".

19. ACCESS TO THE DRIVES AT REV STA 2+20 RT AND REV STA 4+64 RT SHALL BE MAINTAINED. ALL WORK NECESSARY TO MAINTAIN ACCESS SHALL BE PAID FOR UNDER THE ITEM "MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS".

20. PAYMENT FOR REMOVAL OF EXISTING BITMUMINOUS CONCRETE PAVEMENT ON THE BRIDGE SHALL BE MADE UNDER ITEM 529.10 "REMOVAL OF BRIDGE PAVEMENT". THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY AT AN OFF-SITE LOCATION.

21. ALL CONCRETE SHALL BE 501.25 "CONCRETE, CLASS B" EXCEPT FOR THE CONCRETE CURBS, WHICH WILL BE 501.60 "SILICA FUME CONCRETE".

22. THE REINFORCING STEEL DETAILS CONTAINED IN THESE PLANS WHICH REQUIRE MECHANICAL BAR CONNECTORS ARE DETAILED BASED UPON USING THE TYPE OF MECHANICAL BAR CONNECTOR AS SHOWN ON SHEET 14. IF THE CONTRACTOR ELECTS TO USE ANOTHER TYPE OF CONNECTOR, THE LENGTHS OF THE AFFECTED REINFORCING STEEL BARS MAY CHANGE.

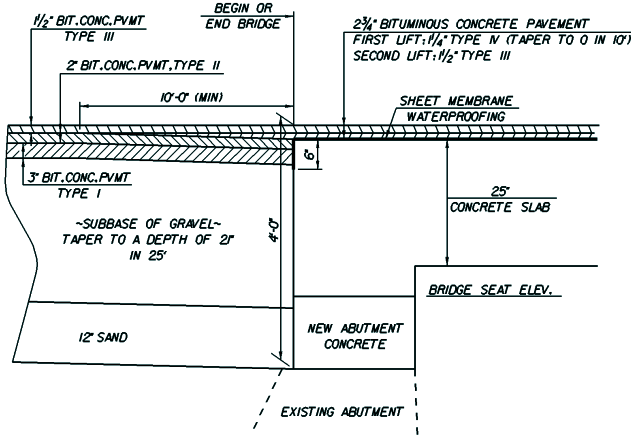
23. THERE SHALL BE NO DISTURBANCES WITHIN ANY WETLAND AREA, EITHER ON THE WEST SIDE OF THE RAILROAD BED OR IN THE FORESTED WETLAND ON THE EAST SIDE OF TH 1. NO MACHINERY SHALL OPERATE IN EITHER OF THE WETLAND AREAS.

24. A SILT FENCE SHALL BE INSTALLED IN THE AREA SHOWN ON SHEET 5 AND REMAIN IN PLACE DURING CONSTRUCTION IN ORDER TO PROTECT THE WETLANDS THAT ARE LOCATED IN THIS AREA. THIS SHALL BE PAID AS ITEM 649.51 "GEOTEXTILE FOR SILT FENCE".

25. PORTIONS OF THE THE STONEWALL AND FLOWER GARDEN IN THE AREA OF REV STA 3+69 RT ~ REV STA 4+22 RT ARE TO BE REMOVED BY THE PROPERTY OWNER PRIOR TO CONSTRUCTION. THE RESIDENT ENGINEER SHALL ENSURE THAT THE PROPERTY OWNER HAS COMPLETED ANY AND ALL WORK THAT THEY WISH TO DO THEMSELVES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF THE REMAINING PORTIONS.

26. THE 8" HONEYSUCKLE LOCATED AT REV STA 4+86 - 26' RT SHALL BE TRANSPLANTED BY THE CONTRACTOR TO A LOCATION AS DETERMINED BY THE RESIDENT ENGINEER, IN CONSULTATION WITH THE PROPERTY OWNER. THIS WORK SHALL BE PAID AS ITEM 656.50 "TRANSPLANTING SHRUBS".

27. ALL WORK AND STAGING SHALL BE DONE FROM THE ROADWAY. SPECIAL CARE SHALL BE TAKEN IN THE LAWN AREA OF REV STA 3+50 RT ~ REV STA 4+60 RT AS IT CONTAINS THE SEPTIC SYSTEM AND LEACH FIELD FOR THE 1½ STORY WOOD FRAMED HOUSE ON THIS PROPERTY.



MATERIAL TRANSITION BEHIND ABUTMENTS

NTS

28. ITEM 621.90, TEMPORARY TRAFFIC BARRIER, SHALL BE PAID ONLY ONCE PER PHASE OF CONSTRUCTION.

28. THE SHORING FOR THE PLACEMENT OF PHASE I OF THE SLAB SHALL BE LEFT IN PLACE DURING THE FORMING AND PLACEMENT OF PHASE II.

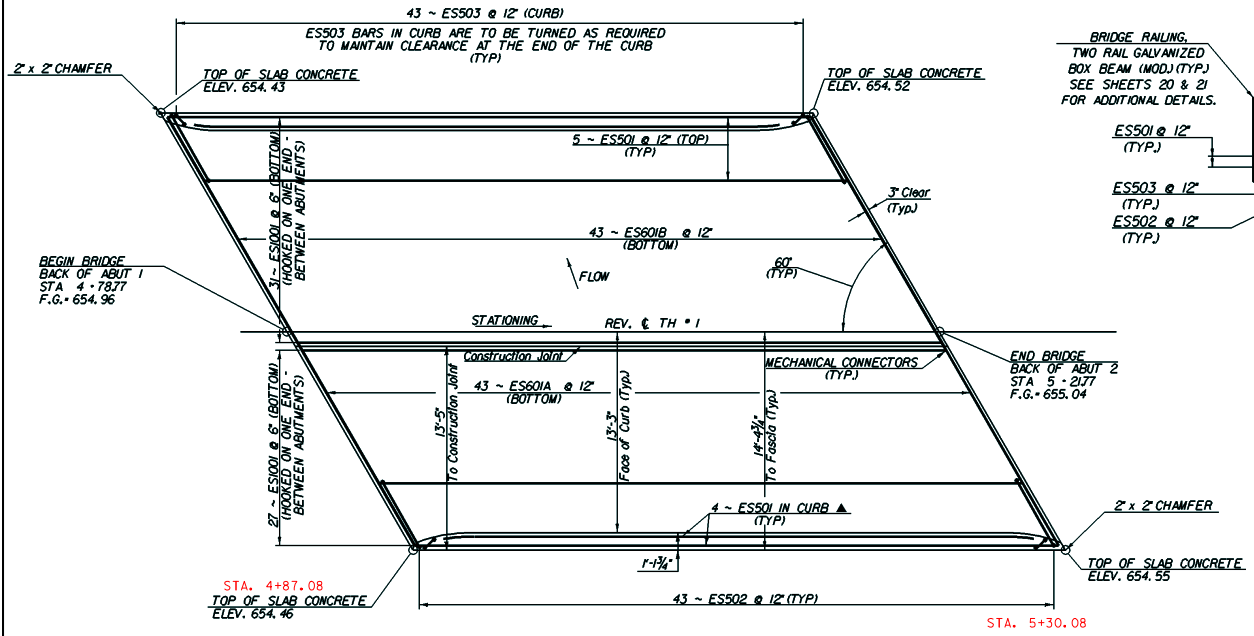
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta.
	Surv. Sta. 5+00

TH 1 OVER THE MILL BROOK

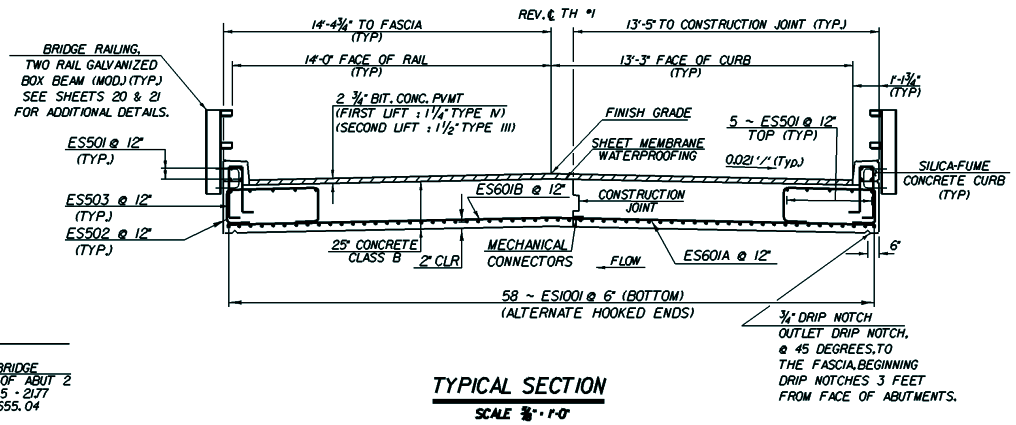
GENERAL NOTES AND MATERIAL TRANS. DETAIL

Designed By C.W. MEUNIER	Drawn By C.C. RICE
Checked By C.W. MEUNIER Date 12/96	Bridge Design Supervisor G.S. ROGERS Date 12/96
PROJECT SUNDERLAND	PROJECT NO. TH2-9003
I.G.C. Info. /str1/89j090/s1090gen.dgn	s1090gen1
Bridge Sheet No.	Sheet 13 of 37



SLAB REINFORCING PLAN

SCALE ¼" = 1'-0"

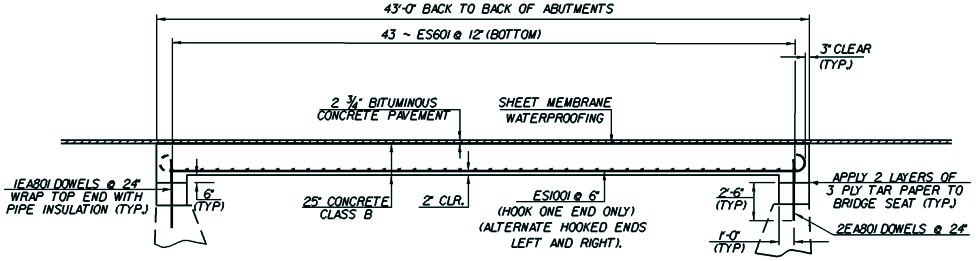


TYPICAL SECTION

SCALE ⅜" = 1'-0"

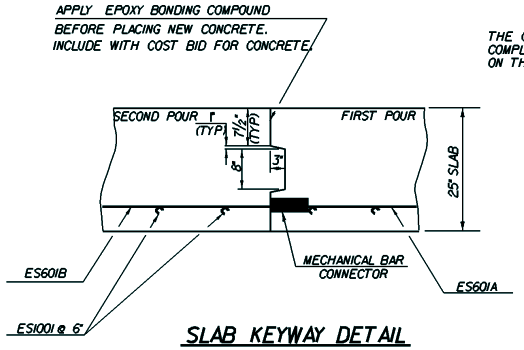
NOTES:

1. THE SLAB SHALL BE CAMBERED A TOTAL OF 3¼" AT MIDSPAN. THIS CAMBER SHALL APPROXIMATE A CIRCULAR CURVE.
2. THE SHORING FOR PHASE I SHALL BE LEFT IN PLACE DURING THE FORMING AND PLACEMENT OF PHASE II.
3. ▲ = CUT TO FIT IN THE FIELD.
4. COST OF TAR PAPER AND PIPE INSULATION AND ITS APPLICATION SHALL BE SUBSIDIARY TO CONCRETE, CLASS B.



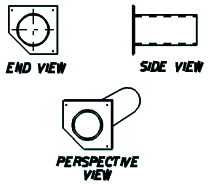
ELEVATION ALONG ℄ OF ROADWAY

SCALE ¼" = 1'-0"



SLAB KEYWAY DETAIL

N.T.S.



MECHANICAL BAR CONNECTOR DETAILS

NTS

NOTE :

THE CONTRACTOR SHOULD NOTE THAT THERE MAY BE SOME COMPLICATIONS WITH FORMING THE MECHANICAL BAR CONNECTORS ON THE SKEW.

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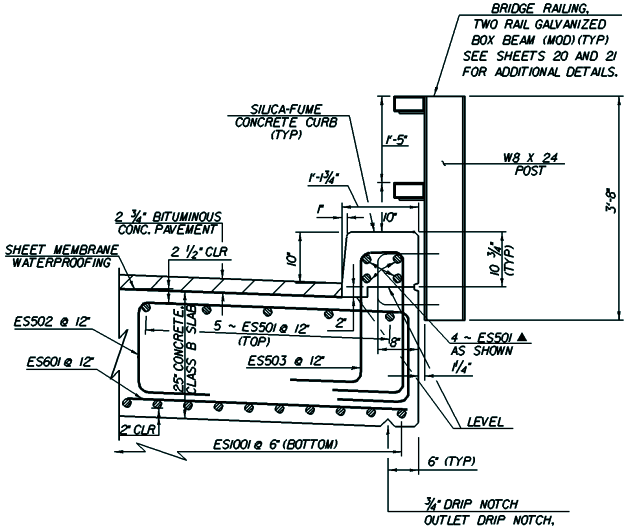
PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	SUNDERLAND	Bridge No.	2
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 OVER THE MILL BROOK			
SLAB DETAILS			
Designed By J.P. Spitak		Drawn By J.P. Spitak	
Checked By C.W. MEUNIER	Date 11/96	Bridge Design Supervisor G.S. ROGERS	Date 12/96
PROJECT SUNDERLAND		PROJECT NO. TH2 9003	
I.G.C. Info. /str1/89j090/sj090slab.dgn			sj090slbj
Bridge Sheet No.		Sheet 14 of 37	

Sheet Number: 14



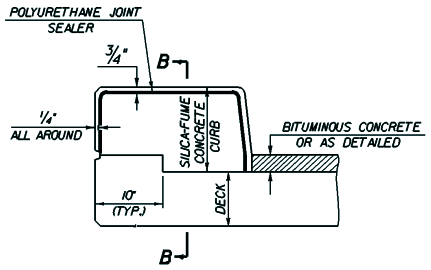
CURB AND RAIL DETAIL

SCALE 1" = 1'-0"

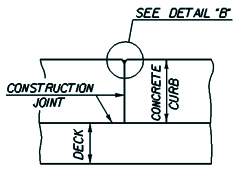
NOTE:
SEE STD. DWG. SB-R6-82 FOR POST ANCHORAGE DETAILS

NOTES

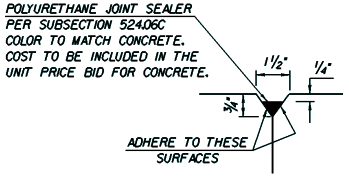
1. SHEET MEMBRANE WATERPROOFING SHALL EXTEND TO FACE OF CURB AS DETAILED.
2. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 15'-0" CENTER TO CENTER AND SHALL BE 1'-6" MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
3. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.
4. CURB REINFORCING STIRRUP BARS SHALL BE TURNED AS REQUIRED TO FIT TAPERED ENDS.



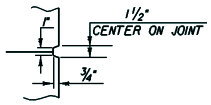
TYPICAL SECTION THROUGH CONCRETE CURB CONSTRUCTION JOINT



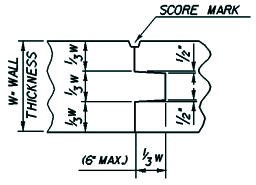
SECTION B - B



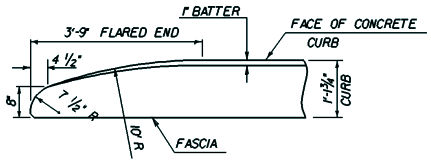
DETAIL "B"



SCORE MARK DETAIL



TYPICAL CONCRETE CONSTRUCTION JOINT



FLARED END DETAIL FOR 1'-1¾" CURB

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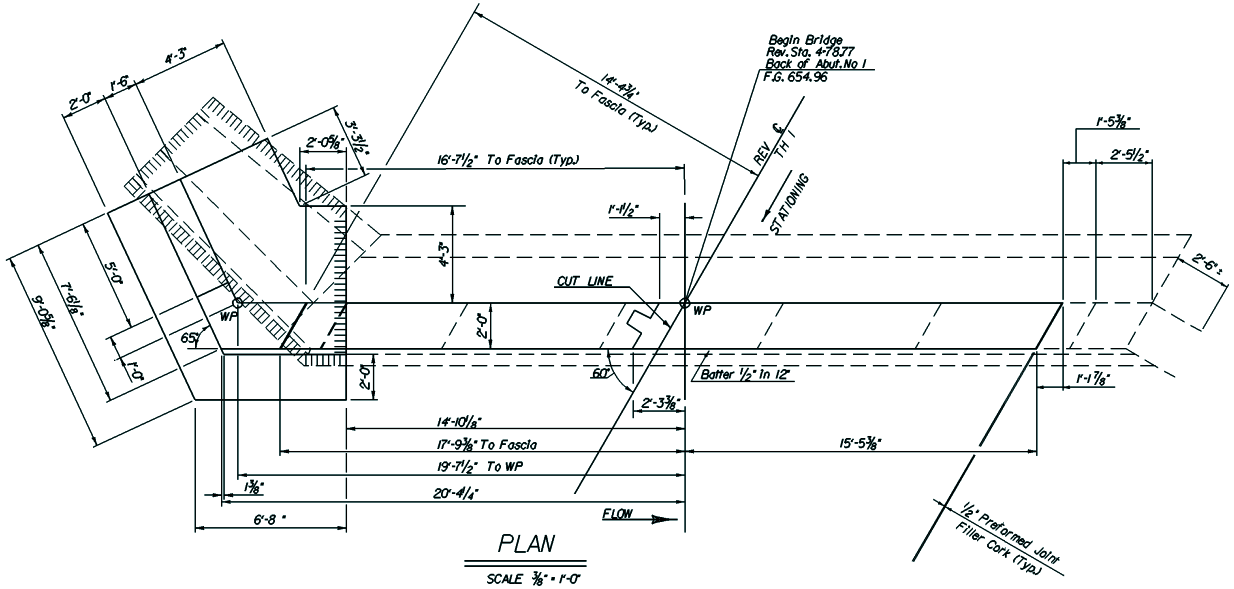
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of Sunderland	Bridge No. 20
Highway No. TH 1	Log Sta. / Surv. Sta. 5-00
TH 1 OVER THE MILL BROOK	
CURB AND RAIL DETAILS	
Designed By OW MEUNIER	Drawn By JP Splat/ CC. RICE
Checked By OW MEUNIER Date 12-96	Bridge Design Supervisor GS Rogers Date 1-97
PROJECT Sunderland	PROJECT NO. TH2 9003
I.G.C. Info. /usr/str1/89j090/sj090det.dgn	sj090det1
Bridge Sheet No.	Sheet 15 of 17

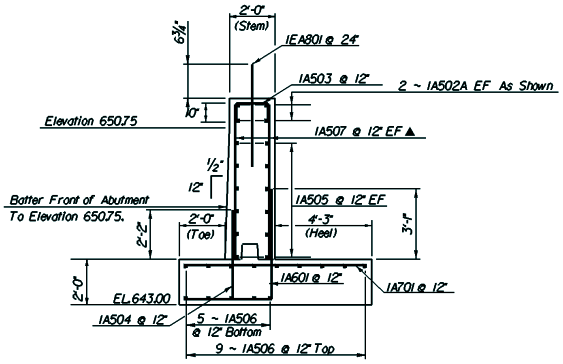
PLOTTED: 26-JUN-1997

Sheet Number: 15



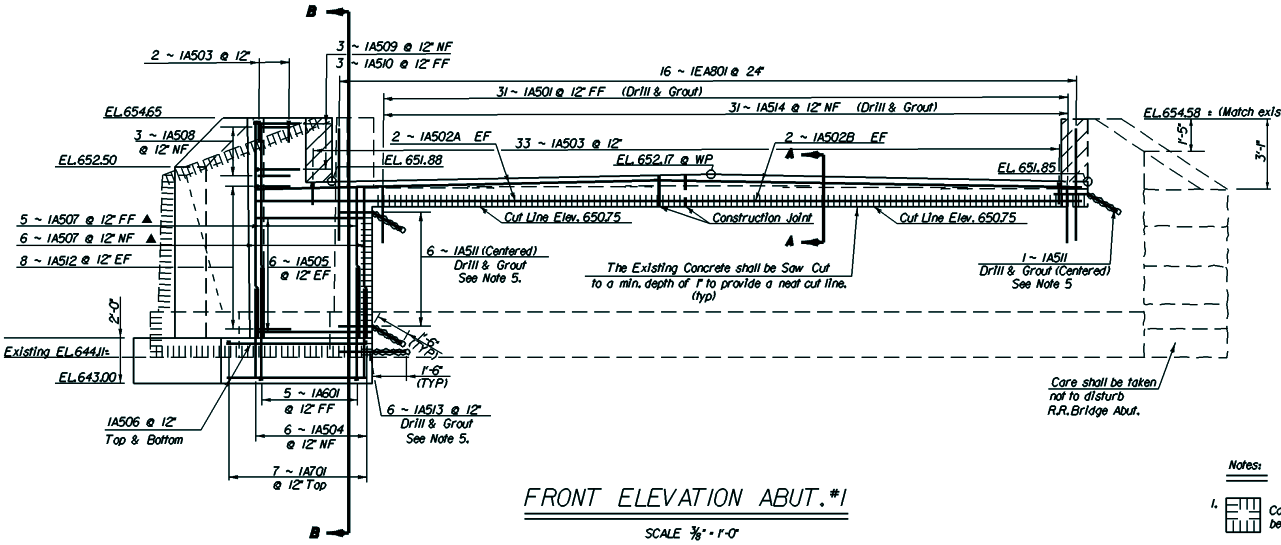
PLAN

SCALE ⅜" = 1'-0"



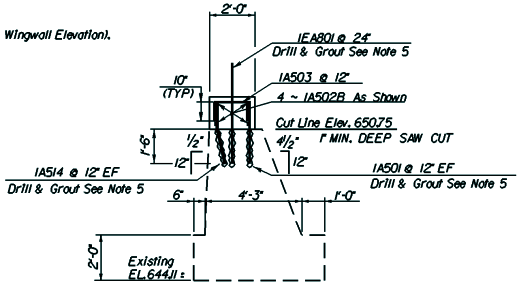
Section B-B

SCALE ⅜" = 1'-0"



FRONT ELEVATION ABUT. #1

SCALE ⅜" = 1'-0"



Section A-A

SCALE ⅜" = 1'-0"

Notes:

1. Concrete to be Removed
2. 3" Clear Unless Otherwise Noted
3. NF = Near Face
   FF = Far Face
   EF = Each Face
4. ▲ = Cut to Fit in the Field
5. Drill and Grout Dowels a Minimum of 1'-6" into Existing Concrete.

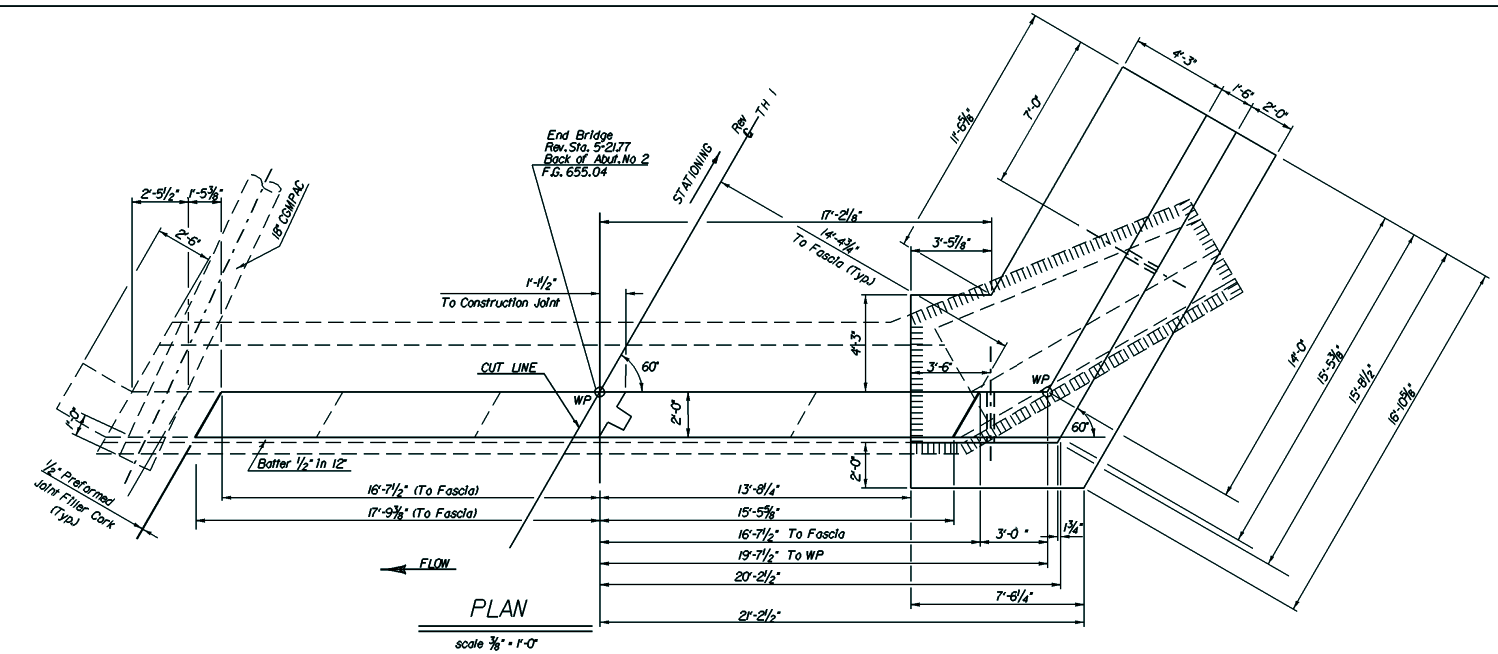
PLOTTED 26-JUN-1997

ARCHIVED IN DPR

STATE OF VERMONT
AGENCY OF TRANSPORTATION

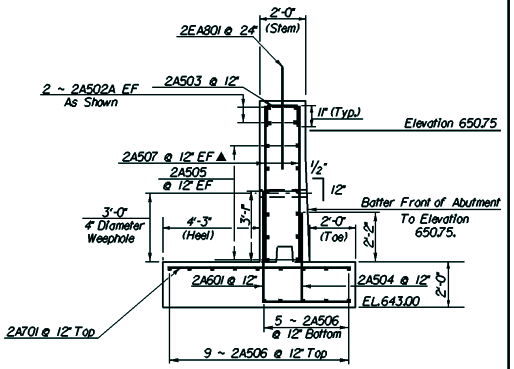
Town Of Sunderland	Bridge No. 2
Highway No. TH 1	Log Sta. / Surv. Sta.
TH #1 over the Mill Brook	
Abutment #1 Details	
Designed By JP Split	Drawn By JP Split
Checked By C.W. Maurier Date 1/97	Bridge Design Supervisor G.S. Rogers Date 1/97
PROJECT Sunderland	PROJECT NO. TH2 9003
L.G.C. Info. /str1/89j090/sj090abt1dgn	sj090abt1
Bridge Sheet No.	Sheet 16 of 37

Sheet Number: 16



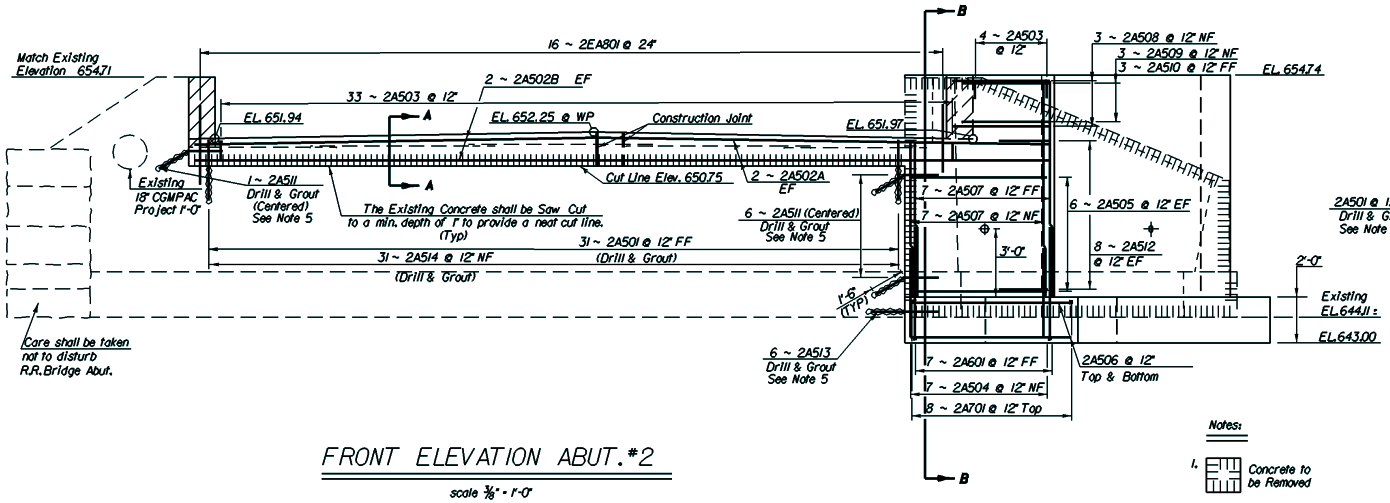
PLAN

scale 3/8" = 1'-0"



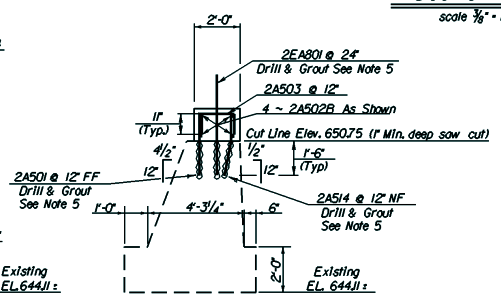
Section B-B

scale 3/8" = 1'-0"



FRONT ELEVATION ABUT. #2

scale 3/8" = 1'-0"



Section A-A

scale 3/8" = 1'-0"

Notes:

1. Concrete to be Removed
2. 3" Clear Unless Otherwise Noted
3. NF = Near Face
   FF = Far Face
   EF = Each Face
4. ▲ = Cut to Fit in the Field
5. Drill & Grout Dowels a Minimum of 1'-6" into the Existing Concrete

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PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

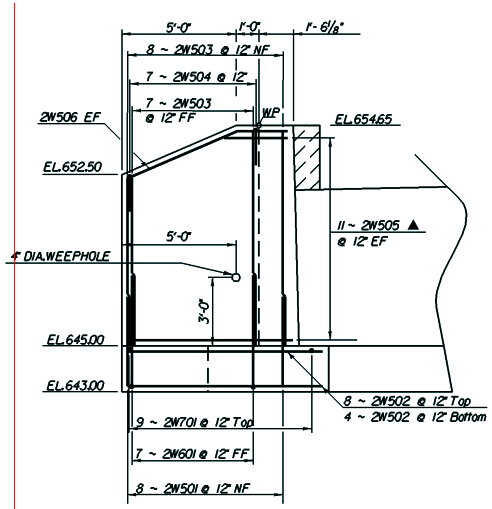
Town Of Sunderland	Bridge No. 2
Highway No. TH 1	Log Sta.
	Surv. Sta.

TH #1 over the Mill Brook

Abutment #2 Details

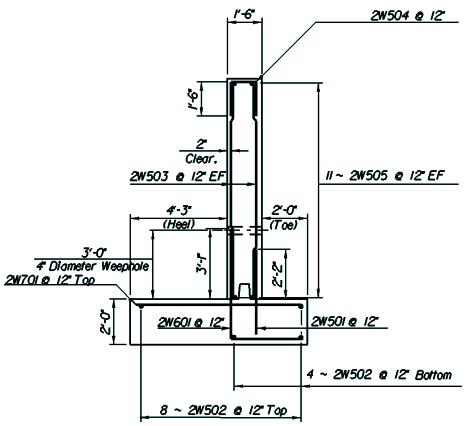
Designed By JP Splat	Drawn By JP Splat
Checked By C.W. Maurer Date 1/97	Bridge Design Supervisor GS Rogers Date 1-97
PROJECT Sunderland	PROJECT NO. TH2 9003
I.G.C. Info. /srv1/89/090/s1090ab2.dgn	s1090ab21
Bridge Sheet No.	Sheet 17 of 37

Sheet Number: 17



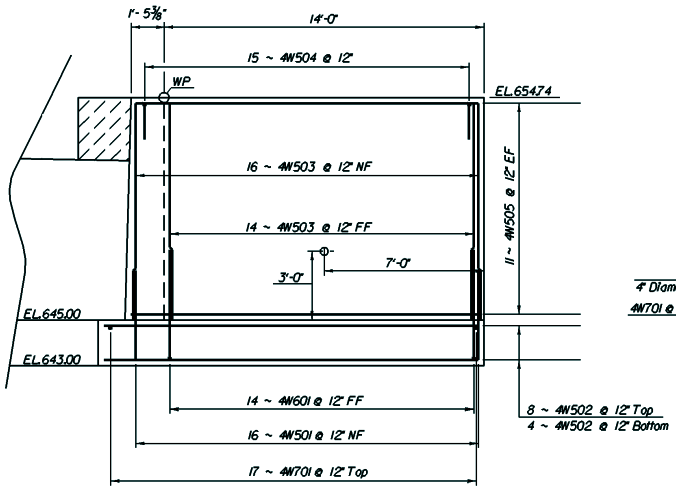
WINGWALL *2 ELEVATION

SCALE 3/8" = 1'-0"



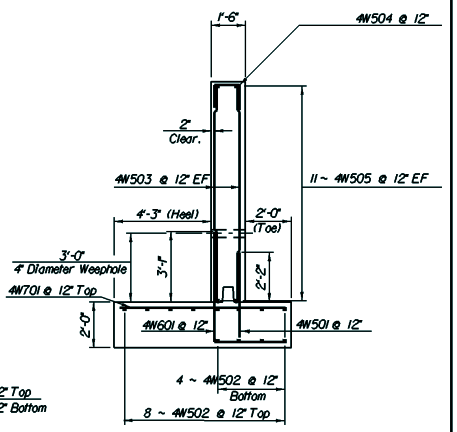
WINGWALL * 2 TYPICAL SECTION

SCALE 3/8" = 1'-0"



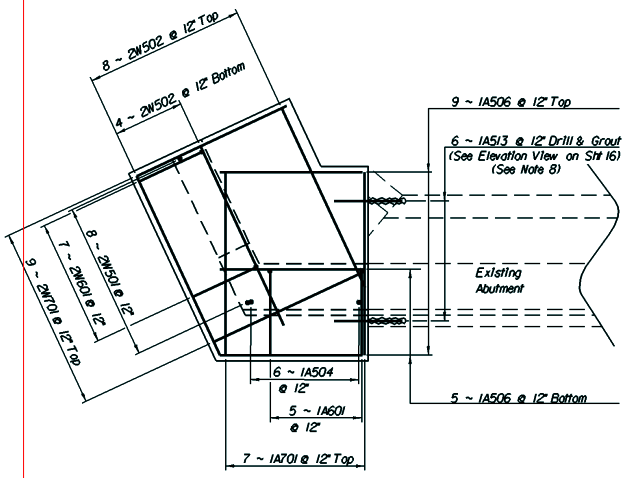
WINGWALL *4 ELEVATION

SCALE 3/8" = 1'-0"



WINGWALL * 4 TYPICAL SECTION

SCALE 3/8" = 1'-0"

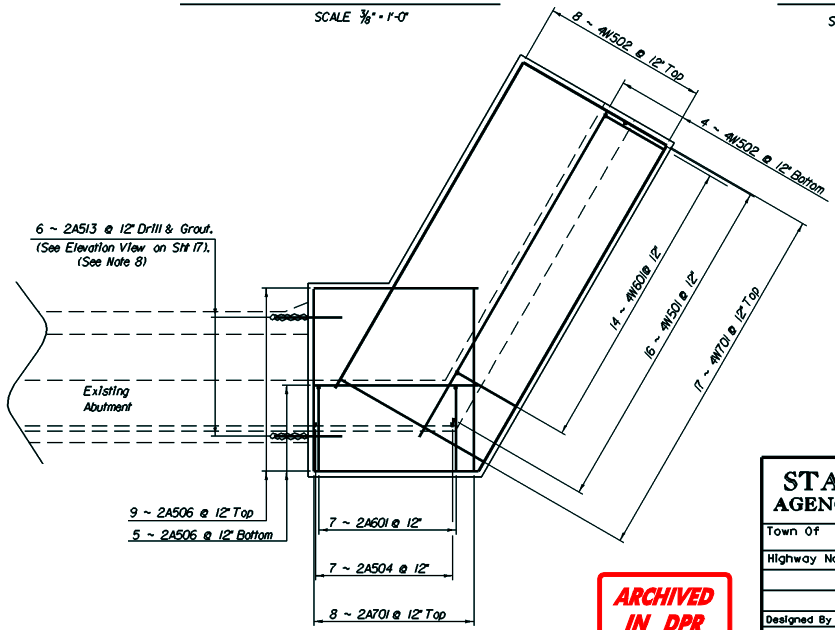


FOOTING REINFORCEMENT ABUT.*1.

SCALE 3/8" = 1'-0"

NOTE:

1. NF = Near Face
2. FF = Far Face
3. EF = Each Face
4. ▲ = Cut To Fit In The Field.
5. 3" Clear Unless Otherwise Specified.
6. See Sheet 19 For Corner Details.
7. See Sheet 2 For Weephole Details.
8. Drill & Grout Dowels a Minimum of 1'-6" Into Existing Concrete



FOOTING REINFORCEMENT ABUT.*2.

SCALE 3/8" = 1'-0"

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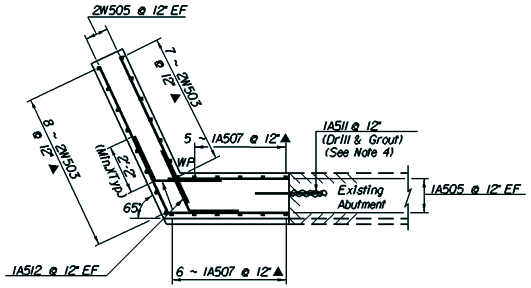
PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

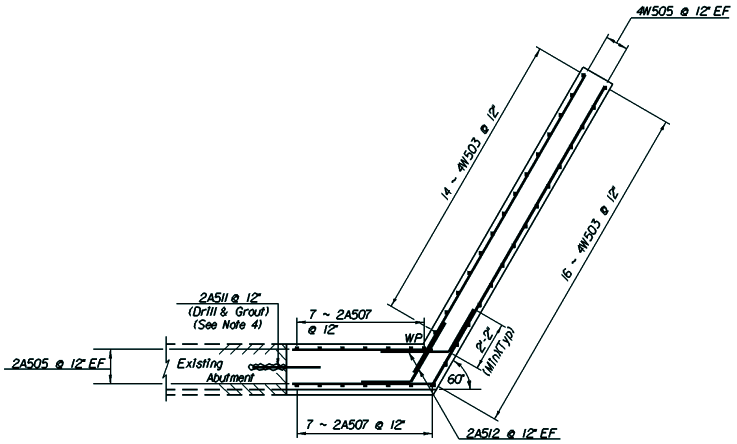
Town Of Sunderland	Bridge No. 2
Highway No. TH 1	Log Sta. / Surv. Sta.
TH #1 over the Mill Brook	
Wingwall Details	
Designed By JP Splist	Drawn By JP Splist
Checked By CM Meunier Date 10/96	Bridge Design Supervisor GS Rogers Date 1/97
PROJECT Sunderland	PROJECT NO. TH2 9003
I.G.C. Info. /str1/89j090/sj090ww.dgn	sj090ww1
Bridge Sheet No.	Sheet 18 of 37

Sheet Number: 18



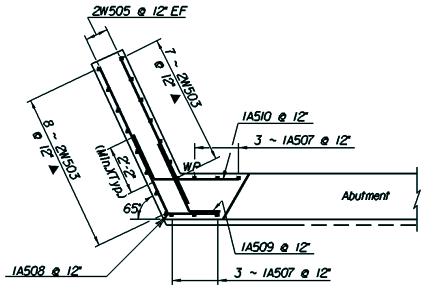
Corner Detail Abutment Number 1

Below Bridge Seat Elevation.
Scale: ⅜" = 1'-0"



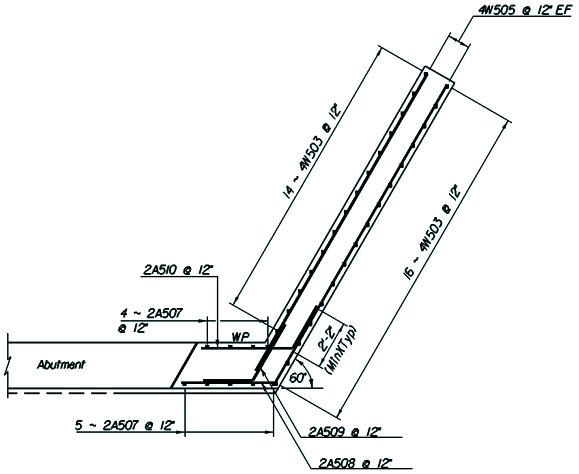
Corner Detail Abutment Number 2

Below Bridge Seat Elevation.
Scale: ⅜" = 1'-0"



Corner Detail Abutment Number 1

Above Bridge Seat Elevation.
Scale: ⅜" = 1'-0"



Corner Detail Abutment Number 2

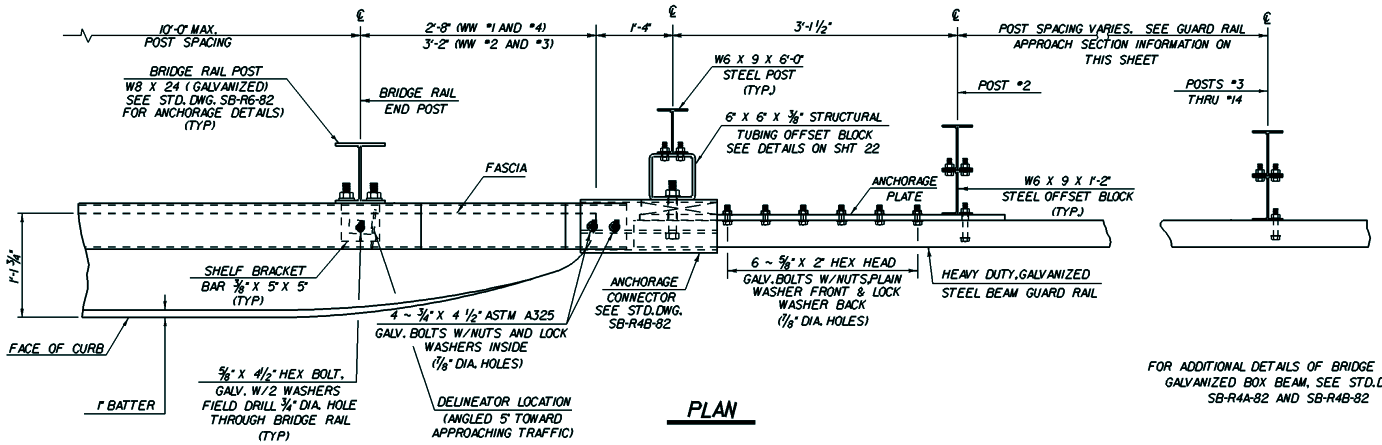
Above Bridge Seat Elevation.
Scale: ⅜" = 1'-0"

1. NF = Near Face
   FF = Far Face
   EF = Each Face
2. ▲ = Cut to Fit in the Field
3. 3" Clear Unless Otherwise Noted
4. Drill and Grout Dowels a Minimum of 1'-6" into Existing Concrete.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of: Sunderland	Bridge No. 2
Highway No.: TH 1	Log Sta.
	Surv. Sta.
TH "I over the Mill Brook	
Corner Details	
Designed By: CW Meunier	Drawn By: JP Splat
Checked By: CW Meunier Date: 10/96	Bridge Design Supervisor: GS Rogers Date: 12/96
PROJECT: Sunderland	PROJECT NO.: TH2 9003
I.G.C. Info.: /str1/89j090/sj090cor.dgn	sj090cor1
Bridge Sheet No.	Sheet 19 of 37

Sheet Number: 19



PLAN

FOR ADDITIONAL DETAILS OF BRIDGE RAILING, GALVANIZED BOX BEAM, SEE STD. DWGS. SB-R4A-82 AND SB-R4B-82

GUARD RAIL APPROACH SECTION TYPE I

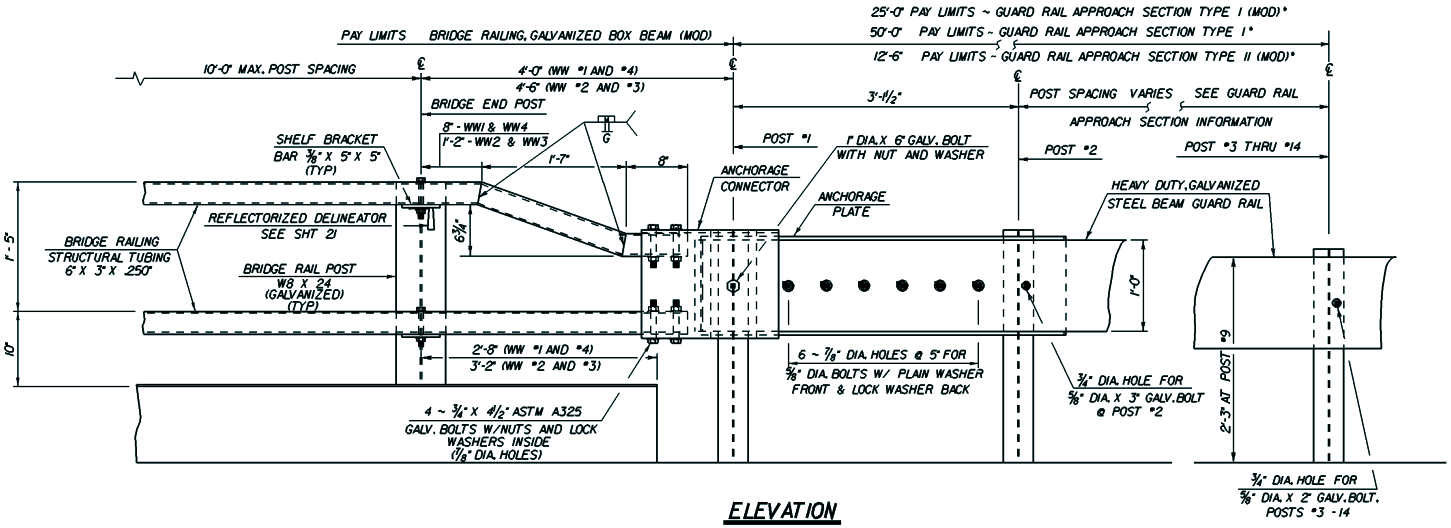
POST NO.	SPACING
1	
2	3'-1 1/2"
3	3'-1 1/2"
4	3'-1 1/2"
5	3'-1 1/2"
6	3'-1 1/2"
7	3'-1 1/2"
8	3'-1 1/2"
9	3'-1 1/2"
10	4'-2"
11	4'-2"
12	4'-2"
13	6'-3"
14	6'-3"

50'-0" PAY LENGTH GUARD RAIL APPROACH SECTION, TYPE I

GUARD RAIL APPROACH SECTION TYPE I (MOD)

POST NO.	SPACING
1	
2	3'-1 1/2"
3	3'-1 1/2"
4	3'-1 1/2"
5	3'-1 1/2"
6	3'-1 1/2"
7	3'-1 1/2"
8	3'-1 1/2"
9	

25'-0" PAY LENGTH GUARD RAIL APPROACH SECTION, TYPE I (MOD)



ELEVATION

GUARD RAIL APPROACH SECTION TYPE II (MOD)

POST NO.	SPACING
1	
2	3'-1 1/2"
3	3'-1 1/2"
4	3'-1 1/2"
5	3'-1 1/2"

12'-6" PAY LENGTH GUARD RAIL APPROACH SECTION TYPE II (MOD)

FOR ADDITIONAL INFORMATION ON THE CONNECTION/TRANSITION DETAILS AT POST NO. 1, SEE SHT 21.

* FOR LOCATIONS SEE SHEET 12.

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PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

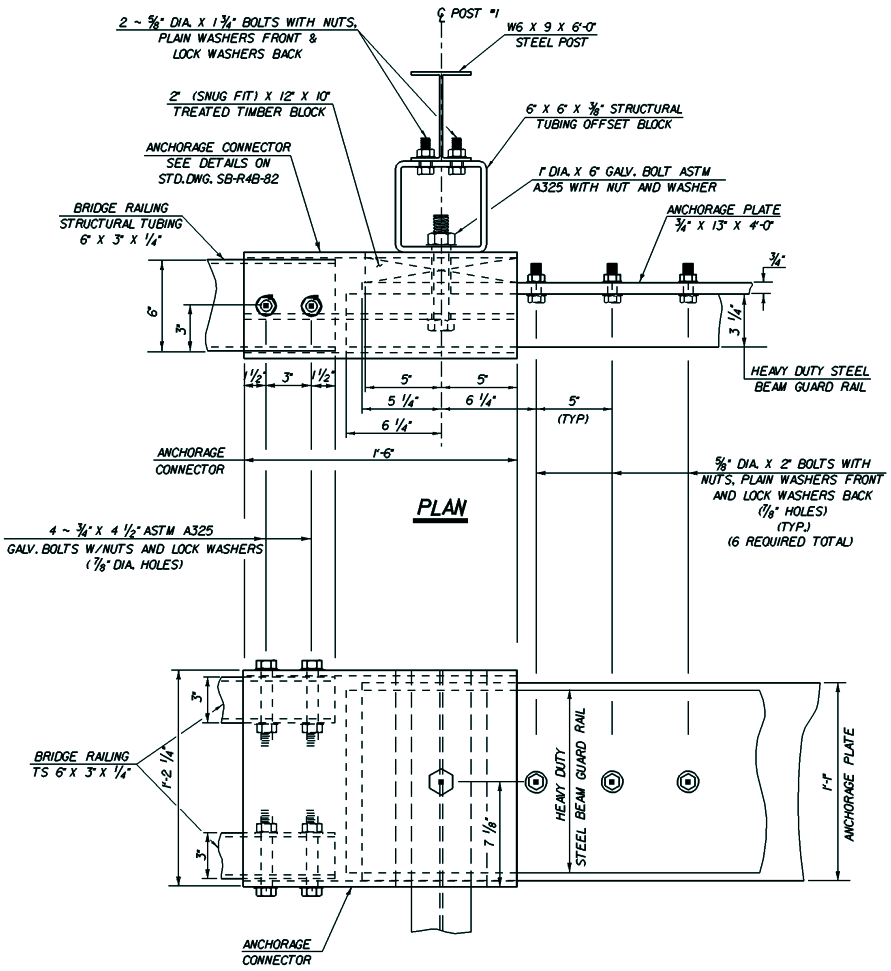
Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta. Surv. Sta. 5-00

TH 1 OVER THE MILL BROOK

GALVANIZED BOX BEAM BRIDGE RAIL DETAILS

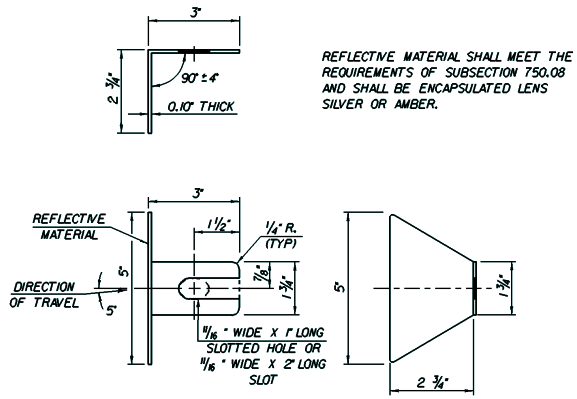
Designed By C.W. MEUNIER	Drawn By C.C. RICE
Checked By C.W. MEUNIER Date 11/96	Bridge Design Supervisor G.S. ROGERS Date 11/96
PROJECT SUNDERLAND	PROJECT NO. TH2-9003
I.G.C. Info. /str1/89j090/sj090r1.dgn	sj090gdb1
Bridge Sheet No.	Sheet 20 of 37

Sheet Number: 20



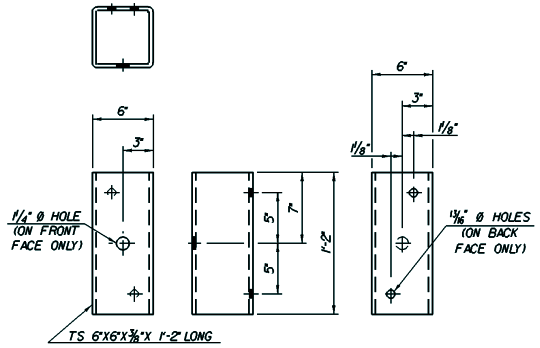
ELEVATION
CONNECTION/TRANSITION DETAILS AT POST NO.1

SCALE: 3" = 1'-0"



DELINEATOR DETAILS

THIS REFLECTORIZED ALUMINUM DELINEATOR IS TO BE ERECTED EVERY 30 FEET OR CLOSEST POST. DELINEATOR SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052 - H32.



STRUCTURAL TUBING OFFSET BLOCK DETAILS

(OCCURS AT POST NO.1 WHEN USING APPROACH RAIL UTILIZING STEEL POSTS)

BOX BEAM BRIDGE RAIL NOTES

1. BRIDGE RAILING AND GUARD RAIL APPROACH SECTIONS ARE DESIGNED IN ACCORDANCE WITH THE LATEST AASHTO SPECIFICATIONS.
2. ALL PLATES, BARS, AND ANGLES SHALL BE ASTM A36 STEEL. UNLESS OTHERWISE SPECIFIED, ALL BOLTS SHALL BE ASTM A307. STRUCTURAL STEEL TUBING SHALL BE ASTM A500 COLD-FORMED GRADE B AS MODIFIED IN SECTION 732.03(a).
3. ALL BOX BEAM BRIDGE RAILING, AND COMPONENTS SHALL CONFORM TO SECTION 525 OF THE STANDARD SPECIFICATIONS. ALL OTHER SLEEVES, ANCHOR BOLTS, AND ATTACHMENT HARDWARE SHALL BE A325 STEEL AND GALVANIZED TO ASTM A153 AFTER FABRICATION.
4. THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS, INCLUDING WELDING PROCEDURES TO THE STRUCTURES DIVISION, FOR APPROVAL IN ACCORDANCE WITH THE PROVISIONS OF SECTION 506.04 - SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.
5. THE RAIL SYSTEM SHALL BE CONTINUOUS WITH EACH TUBE SECTION ATTACHED TO A MINIMUM OF TWO POSTS. JOINTS SHALL BE SPLICED AS SHOWN, WITH CONNECTIONS LOCATED ONE DIRECTLY ABOVE THE OTHER.
6. A BRIDGE RAILING JOINT SPLICE SHALL BE PROVIDED AT EACH SUPERSTRUCTURE EXPANSION JOINT. THE RAIL JOINT OPENING SHALL BE 1 INCH UNLESS OTHERWISE NOTED.
7. THE BOX BEAM RAIL SHALL BE SHOP BENT TO MATCH RADII LESS THAN 950 FEET.
8. DELINEATORS SHALL BE MOUNTED AS SHOWN ON SB-R4a-82. PAYMENT FOR DELINEATORS SHALL BE SUBSIDIARY TO OTHER ITEMS.
9. SEE STD. SB-R6-82 FOR POST ANCHORAGE DETAILS WHEN USING FASCIA MOUNTED BRIDGE RAIL POSTS.
10. PROCEDURE QUALIFICATION FOR ALL WELDS SHALL BE PERFORMED AND APPROVED PRIOR TO FABRICATION. WELDER QUALIFICATION WILL BE REQUIRED FOR EACH PROCEDURE. PROCEDURE AND WELDER QUALIFICATION ACCEPTANCE SHALL BE APPROVED BY RADIOGRAPHIC TESTING.

APPROACH RAIL NOTES

1. REFER TO STANDARD G-1 OR G-1d FOR ADDITIONAL APPROACH RAIL DETAILS.
2. ALL POSTS FOR HEAVY DUTY STEEL BEAM GUARD RAIL SHALL BE STEEL, IN ACCORDANCE WITH SECTION 728 "GUARD RAIL, GUIDE POST AND BARRIERS" UNLESS OTHERWISE SPECIFIED IN THE CONTRACT.
3. APPROACH RAIL SPLICES SHALL LAP IN DIRECTION OF TRAFFIC FLOW.
4. ANCHORAGE CONNECTOR AND ANCHORAGE PLATE SHALL BE ASTM A36 STEEL GALVANIZED TO ASTM A123 AFTER FABRICATION.
5. APPROACH RAILING SHALL BE HEAVY DUTY STEEL BEAM FOR EITHER TYPE OF GUARD RAIL APPROACH SECTION.
6. ALLOWABLE DIMENSIONAL TOLERANCE FOR BENT SECTIONS IS +/- 1/16 OF AN INCH.
7. THE UNIT PRICES BID FOR EITHER TYPE OF GUARD RAIL APPROACH SECTION, SHALL INCLUDE ANCHORAGE CONNECTOR, ANCHORAGE PLATE, HEAVY DUTY STEEL BEAM GUARD RAIL, POSTS, OFFSET BLOCKS, BLOCKING, BOLTS, AND ALL NECESSARY HARDWARE.

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PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

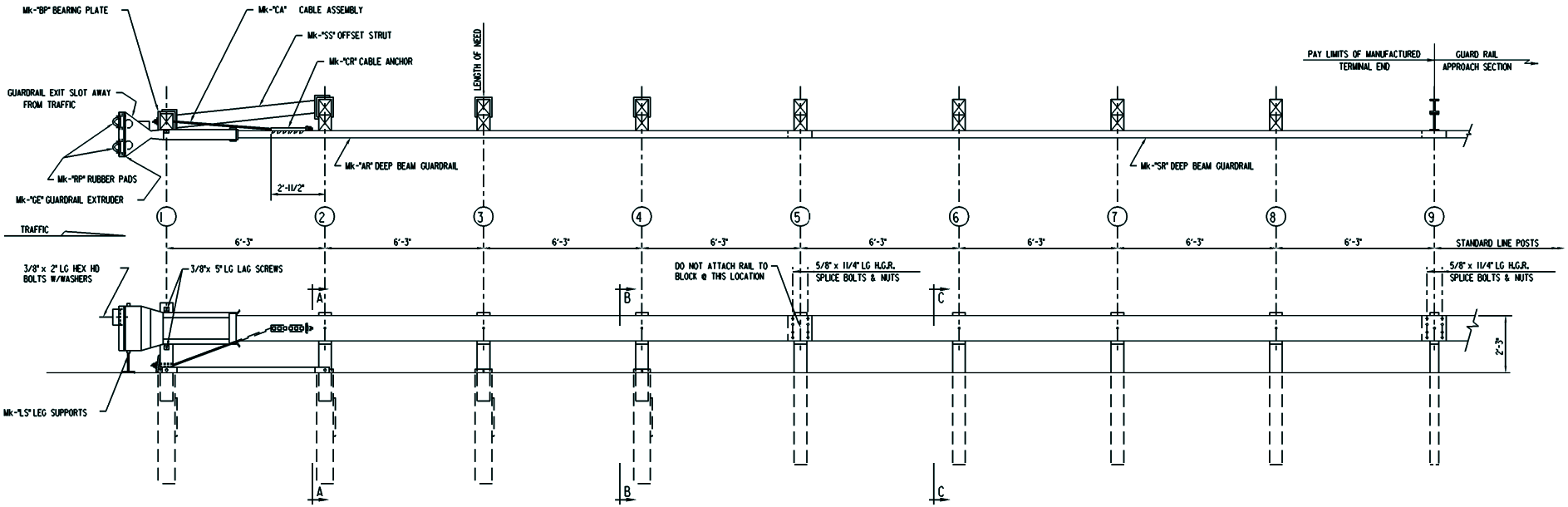
Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta.
	Surv. Sta. 5+00

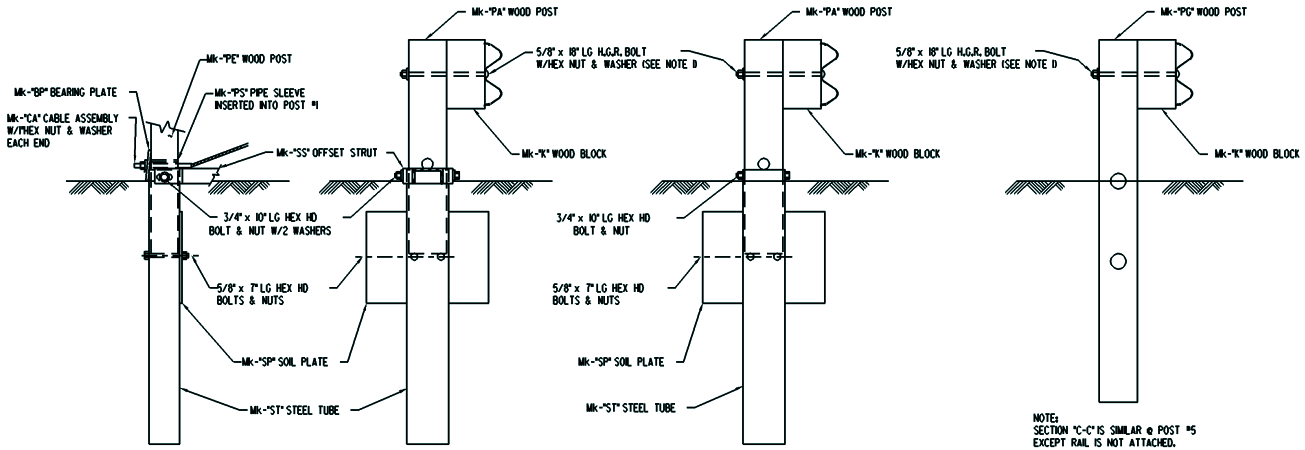
TH 1 OVER THE MILL BROOK

BRIDGE RAIL CONNECTION/TRANSITION DETAILS

Designed By C.W. MEUNIER	Drawn By C.C. RICE
Checked By C.W. MEUNIER Date 11/96	Bridge Design Supervisor G.S. ROGERS Date 11/96
PROJECT SUNDERLAND	PROJECT NO. TH2-9003
I.G.C. Info. /str1/89j090/sj090ri.dgn	sj090brc1
Bridge Sheet No.	Sheet 21 of 37

Sheet Number: 21





MATERIAL REQUIRED FOR EACH END SECTION (2 REQUIRED)

MK	QTY	DESCRIPTION
PE	1	WOOD POST
LS	2	LEG SUPPORT
RP	2	RUBBER PAD
SR	1	DEEP BEAM GUARD RAIL (12GA)
AR	1	DEEP BEAM GUARD RAIL (12GA)
PS	1	PIPE SLEEVE
SP	4	SOIL PLATE
K	7	WOOD BLOCK
PG	4	WOOD POST
PA	3	WOOD POST
ST	4	STEEL TUBE
BP	1	BEARING PLATE
CR	1	CABLE ANCHOR
CA	1	CABLE ASSEMBLY
SS	1	OFFSET STRUT (LEFT OR RIGHT)
GE	1	GUARDRAIL EXTRUDER
		HARDWARE
	4	3/4" x 10" HEX HD BOLT
	4	3/4" HEX NUT
	4	3/4" WASHER
	7	5/8" x 18" H.G.R. POST BOLT
	16	5/8" x 11/4" H.G.R. SPLICE BOLT
	8	5/8" x 1" HEX HD BOLT
	16	5/8" H.G.R. NUT
	15	5/8" HEX NUT
	7	5/8" WASHER
	2	3/8" x 5" LAG SCREW
	4	3/8" x 2" HEX HD BOLT
	4	3/8" WASHER
	2	1" HEX NUT
	2	1" WASHER

NOTES:
1.) THE 5/8" FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
2.) THE BREAKAWAY POSTS @ LOCATIONS #5, 6, 7 & 8 MAY BE AS SHOWN OR MAY UTILIZE POSTS AS SHOWN IN OPTION "A" WITH FOUNDATION TUBES.
3.) THE ET-2000 WAS TESTED ON FLAT & LEVEL TERRAIN. IT IS NOT RECOMMENDED ON SLOPES.
4.) MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE RETLECTORIZATION OF TERMINAL.

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta.
	Surv. Sta. 5-00

TH 1 OVER THE MILL BROOK

MANUFACTURED TERMINAL END DETAIL SHEET

Designed By C.W. MEUNIER	Drawn By C.C. RICE
Checked By Date	Bridge Design Supervisor
C.W. MEUNIER 11/96	G.S. ROGERS Date 11/96
PROJECT SUNDERLAND	PROJECT NO. TH2-9003
I.G.C. Info. /srv1/89/090/s1090rl.dgn	s1090sht1
Bridge Sheet No.	Sheet 22 of 37

PLOTTED 26-JUN-1997

: Sheet Number: 22

SLAB

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
*	19	5	42-5	ES501	STR	▲											
*	44	6	15-0	ES601A	STR												
*	44	6	17-7	ES601B	STR												
*	87	5	9-8	ES502	S6	1-0	1-6	4-8	1-6			1-0					
	86	5	7-9	ES503	S5	1-0	2-7	0-7	2-7			1-0					
△	60	10	43-10	ES1001	1	1-5	42-5										

ABUTMENT NO. 1

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	31	5	2-4	1A501	STR												
	4	5	17-9	1A502A	STR												
	4	5	17-6	1A502B	STR												
	6	5	3-11	1A504	STR												
*	13	5	5-3	1A505	STR												
	14	5	6-2	1A506	STR												
	11	5	9-3	1A507	STR	▲											
	3	5	2-1	1A508	STR												
	6	5	3-0	1A513	STR												
*	8	7	8-0	1A701	STR												
△	18	8	4-5	1EA801	STR												
	35	5	3-2	1A503	17		0-10	1-6	0-10								
	3	5	4-0	1A509	19		1-4	2-8					1-3		0-7		
	3	5	5-11	1A510	19		2-2	3-9					1-11		0-11		
	7	5	3-0	1A511	19		1-6	1-6									
	16	5	5-1	1A512	19		2-2	2-11					1-11		0-11		
	31	5	2-4	1A514	19		0-10	1-6					0-4		1-6		
*	6	6	8-7	1A601	17			3-9	4-10								

WINGWALL NO. 2

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	8	5	3-11	2W501	STR												
	12	5	8-6	2W502	STR												
	15	5	9-5	2W503	STR												
*	23	5	7-0	2W505	STR	▲											
*	10	7	7-3	2W701	STR												
	7	5	4-1	2W504	17		1-6	1-1	1-6								
	2	5	7-5	2W506	19		2-3	5-2					0-10		2-1		
*	8	6	7-11	2W601	17		4-10	3-1									

ABUTMENT NO. 2

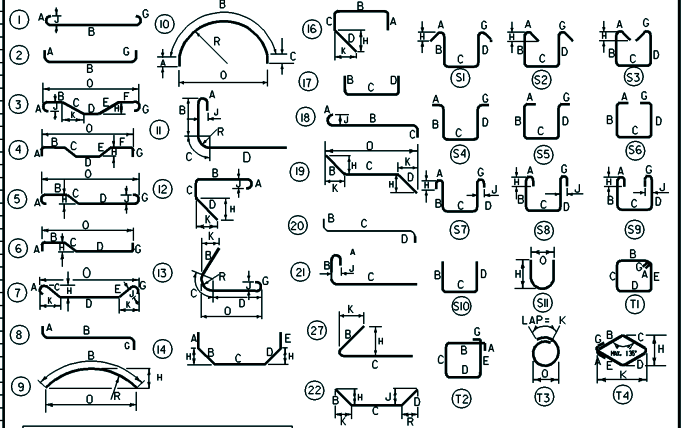
ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	31	5	2-5	2A501	STR												
	4	5	19-11	2A502A	STR												
	4	5	17-6	2A502B	STR												
	7	5	3-11	2A504	STR												
	12	5	6-2	2A505	STR												
*	15	5	7-0	2A506	STR												
	14	5	9-6	2A507	STR												
	3	5	4-2	2A508	STR												
	6	5	3-0	2A513	STR												
*	9	7	8-0	2A701	STR												
△	18	8	4-6	2EA801	STR												
	37	5	3-4	2A503	17		0-11	1-6	0-11								
	3	5	5-0	2A509	19		2-2	2-10					1-10		1-1		
	3	5	6-2	2A510	19		2-2	4-0					1-10		1-1		
	7	5	3-0	2A511	19		1-6	1-6									
	16	5	5-2	2A512	19		2-2	3-0					1-10		1-1		
	31	5	2-5	2A514	19		0-11	1-6					0-4		1-6		
*	8	6	8-7	2A601	17			3-9	4-10								

WINGWALL NO. 4

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	16	5	3-11	4W501	STR												
	12	5	16-4	4W502	STR												
	31	5	9-6	4W503	STR												
	22	5	14-11	4W505	STR												
*	18	7	7-3	4W701	STR												
	15	5	4-1	4W504	17		1-6	1-1	1-6								
*	15	6	7-11	4W601	17		4-10	3-1									

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31(ASTM A 615-91). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	CROSS SECTIONAL AREA SQ. INCHES	PERIMETER INCHES
#3	.376	.375	.11	1.178
#4	.668	.500	.20	1.571
#5	1.043	.625	.31	1.963
#6	1.502	.750	.44	2.356
#7	2.044	.875	.60	2.749
#8	2.670	1.000	.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

ARCHIVED IN DPR

PLOTTED 26-JUN-1997

STATE OF VERMONT
AGENCY OF TRANSPORTATION

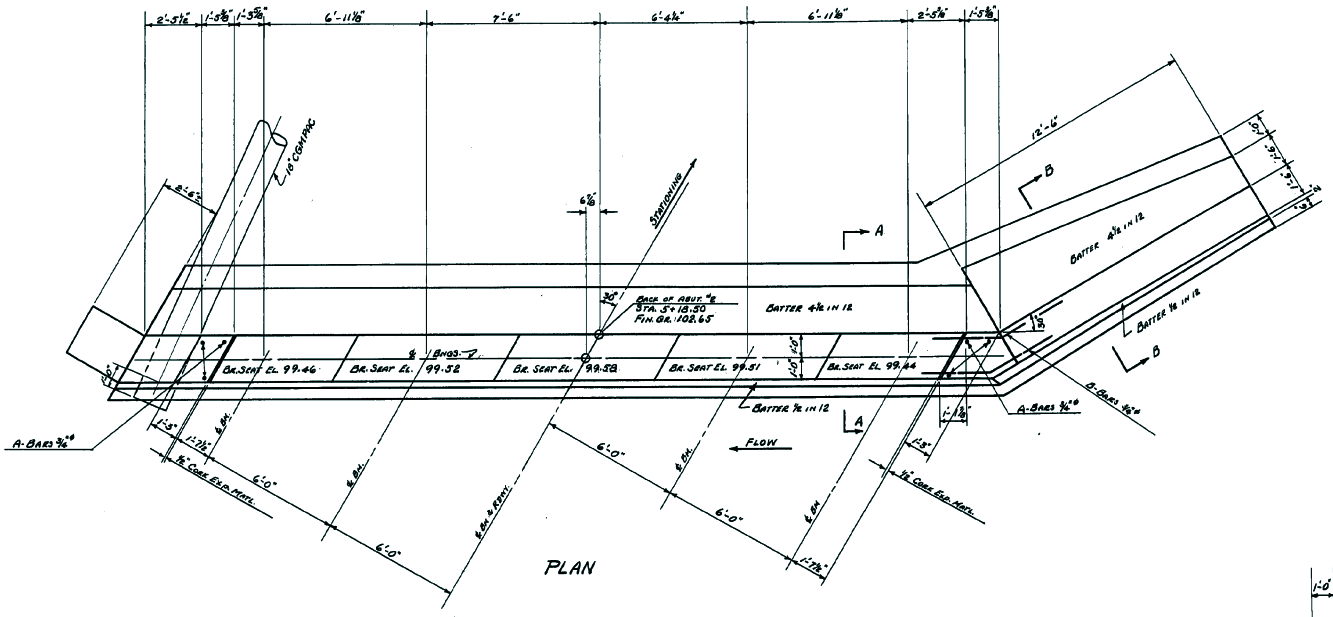
Town Of SUNDERLAND	Bridge No. 2
Highway No. TH 1	Log Sta.
	Surv. Sta. 5+00

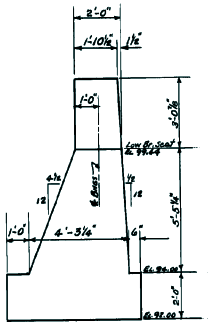
TH 1 OVER THE MILL BROOK

REINFORCING STEEL SCHEDULE

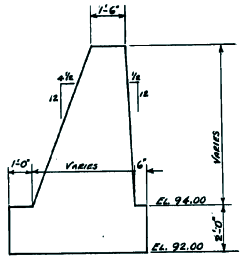
Designed By C.W. MEUNIER	Drawn By C.C. RICE
Checked By P.T. LOWSDALE Date 2/97	Bridge Design Supervisor G.S. ROGERS Date 2/97
PROJECT SUNDERLAND	PROJECT NO. TH2-9003
I.G.C. Info. /srv1/89j090/s j090rsf.dgn	s j090rsf j
Bridge Sheet No.	Sheet 23 of 37

Sheet Number: 23

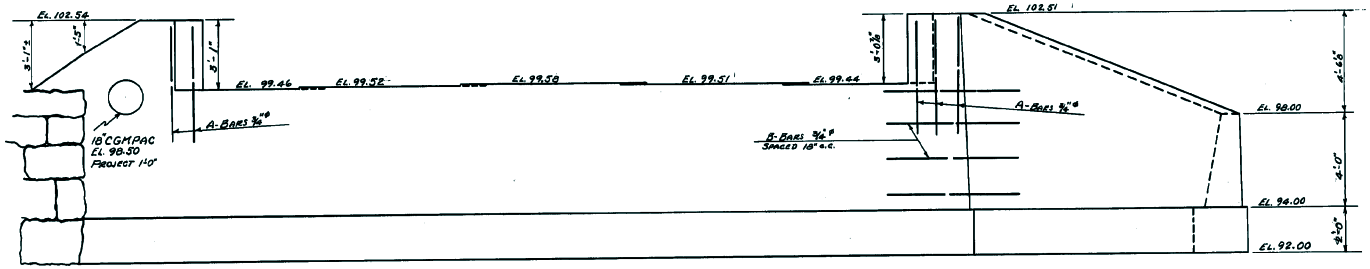




SECTION A-A



SECTION B-B



FRONT ELEVATION ABUT #2

CARE SHALL BE TAKEN NOT TO DISTURB R.R. BRIDGE & ABUTMENT.

REINFORCING STEEL

BAR	SIZE	No. REQD.	TOT. LGTH.	DETAIL
A	¾"ø	6	5'-0"	STRAIGHT
B	¾"ø	8	6'-0"	3'-0" 3'-0"

THIS SHEET FOR INFORMATION PURPOSES ONLY

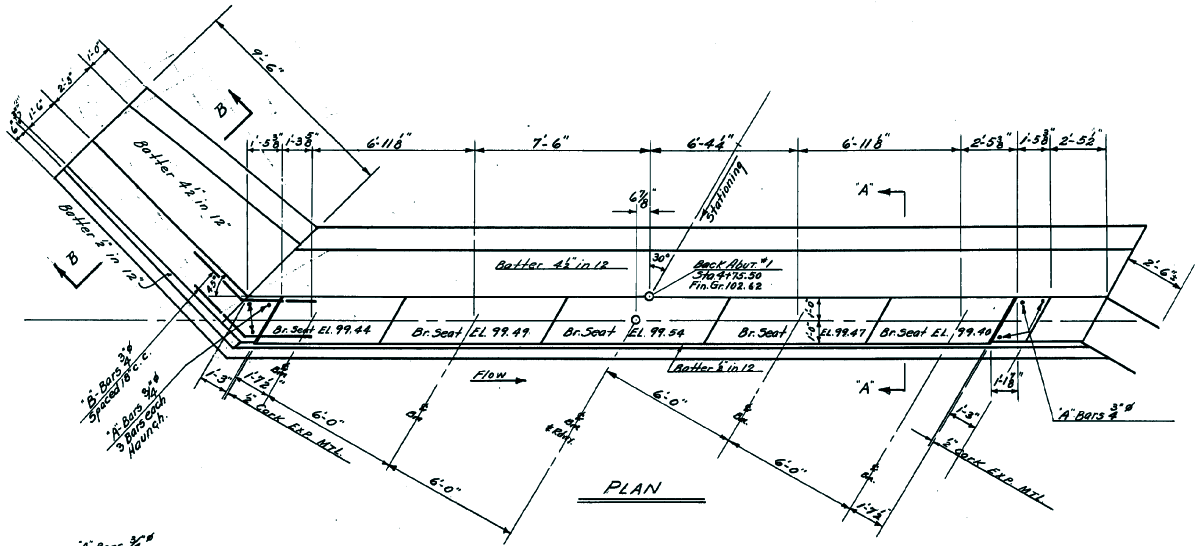
SUNDERLAND MILL BROOK DETAILS OF ABUT. #2

SCALE ½" = 1'-0"

ESTIMATED QUANTITIES

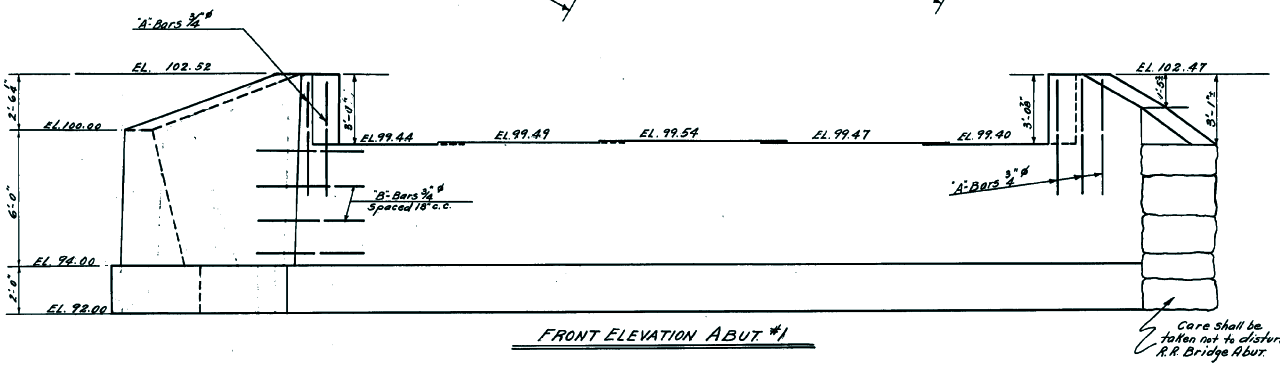
STRUCTURE EXCAVATION	75 C.Y.
CONCRETE CLASS 'B'	54 C.Y.
REINFORCING STEEL	117 LBS.

Surveyed by
Designed by J.L.H.
Drawn by J.L.H
Traced by D.W.P. 4/07
Checked by I.M.R. 7/1/47
Series S.A. No. 18-1946 Filed
Sheet 24 of 37 Sheets

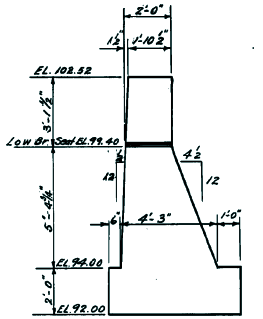


REINFORCING STEEL

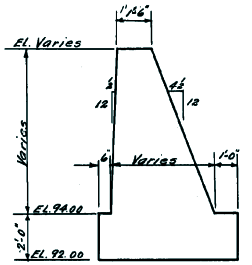
BAR	SIZE	No. Req.	T. LENG.	DETAIL
A	¾"ø	6	5'-0"	Straight
B	¾"ø	8	6'-0"	3'-0" + 1'-6" + 1'-6"



FRONT ELEVATION ABUT. #1



SECTION "A-A"



SECTION "B-B"

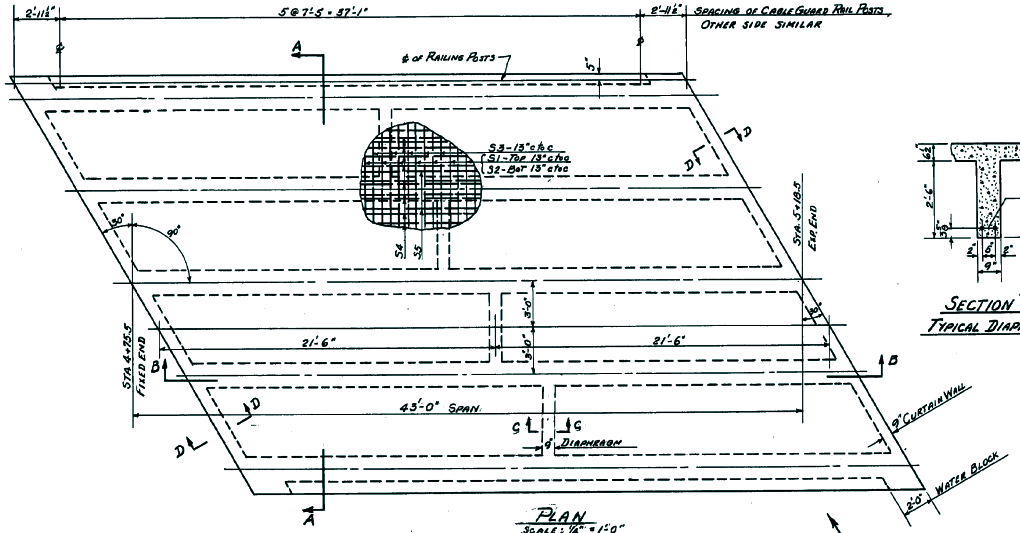
THIS SHEET FOR INFORMATION PURPOSES ONLY

SUNDERLAND MILL BROOK
DETAIL OF ABUT. #1
SCALE ⅜"=1'-0"

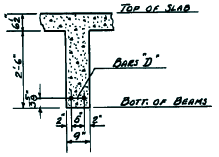
ESTIMATED QUANTITIES

Structure Excavation	30	C.Y.
Concrete Class "B"	52	C.Y.
Reinforcing Steel	117	Lbs.

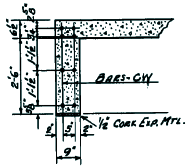
Surveyed by
Designed by J. L.H.
Drawn by J. L.H.
Traced by H.R.C. 4-14-47
Checked by L.K.B. 7/1/47
Series S-19 No. 18-46 Filed
Sheet 25 of 37 Sheets



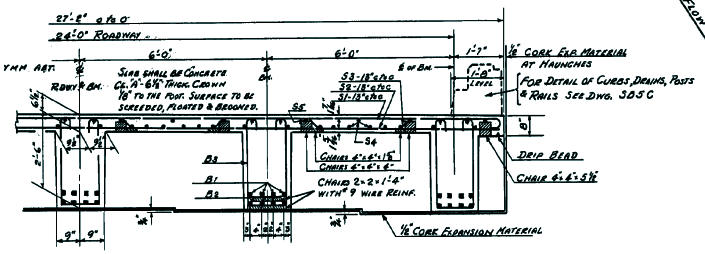
PLAN
Scale: 1/4" = 1'-0"



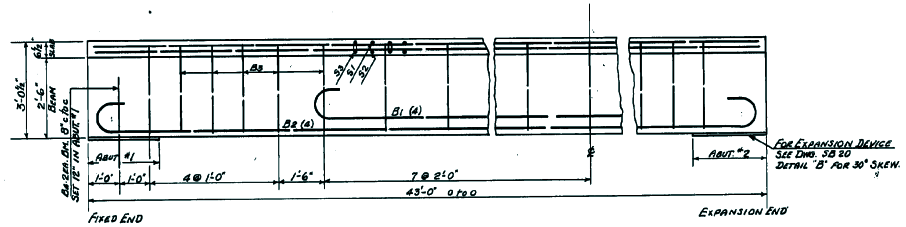
SECTION "C-C"
TYPICAL DIAPHRAGM



SECTION "D-D"
TYPICAL CURTAIN WALL

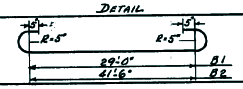
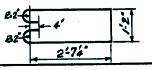
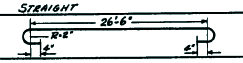
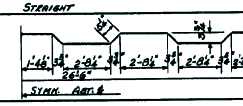
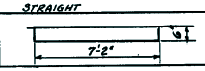


TYPICAL HALF SECTION "A-A"



TYPICAL SECTION B-B

Reinforcing Steel Schedule

Mark	No. Prod.	Size	Tot. Length	Detail
B1	20	1¼" ℄	32'-6"	
B2	20	1¼" ℄	45'-0"	
B3	125	½" ℄	6'-1"	
B4	10	1¼" ℄	3'-0"	Straight
S1	40	⅞" ℄	26'-5"	
S2	40	⅞" ℄	26'-8"	Straight
S3	40	⅞" ℄	29'-5"	
S4	96	⅝" ℄	22'-5"	Straight
S5	20	⅝" ℄	22'-5"	Straight
CW	32	⅝" ℄	16'-10"	Straight
D	8	¾" ℄	8'-2"	

Notes

All Bar Dimensions are to ℄ of Bars.
All Reinforcing Steel to be intermediate grade, deformed bars.
All Concrete to be Class "A".
Quantities for Curbs and Guard Rail Posts are included in the Estimated Quantities on this Drawing.
Bridge Designed in accordance with AASHO Specifications 1944 and Standard Road & Bridge Specifications, State of Vermont, Dept. of Highways 1936, for H15(44) Live Load ℄ 25"/sh Paving Allowance.

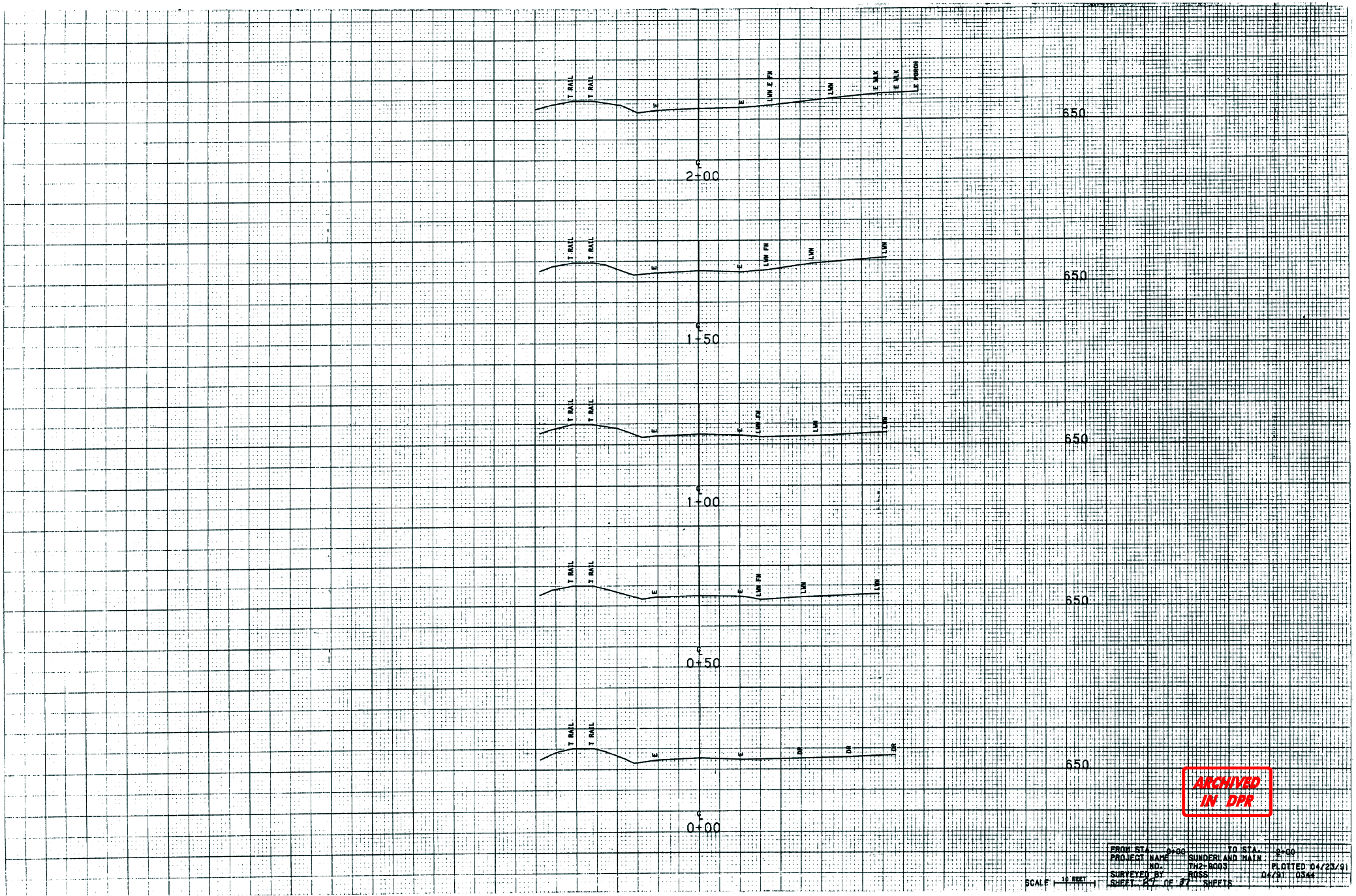
THIS SHEET FOR INFORMATION PURPOSES ONLY

SUNDERLAND
SUPERSTRUCTURE DETAILS
BRIDGE OVER MILL BROOK

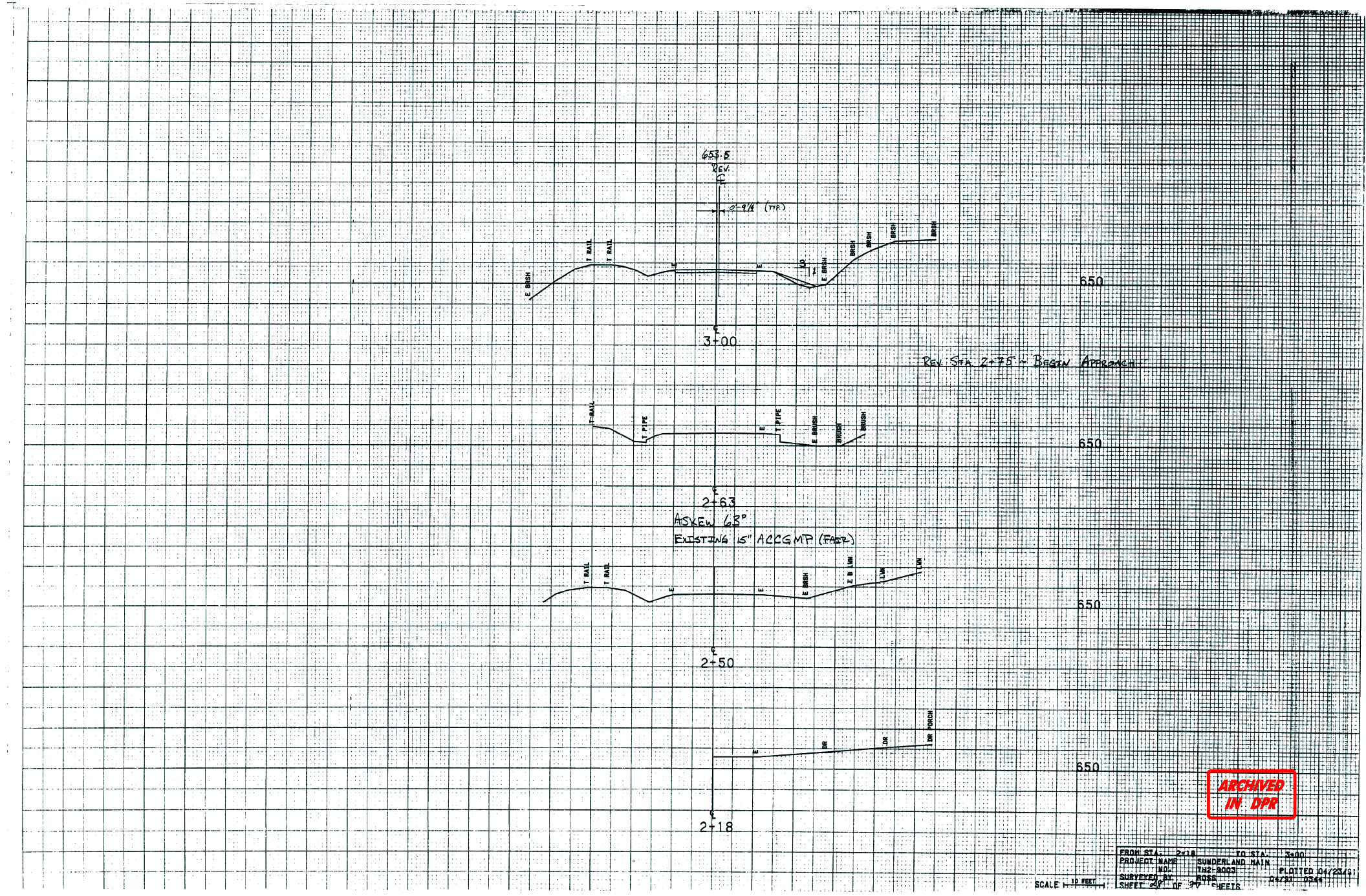
ESTIMATED QUANTITIES

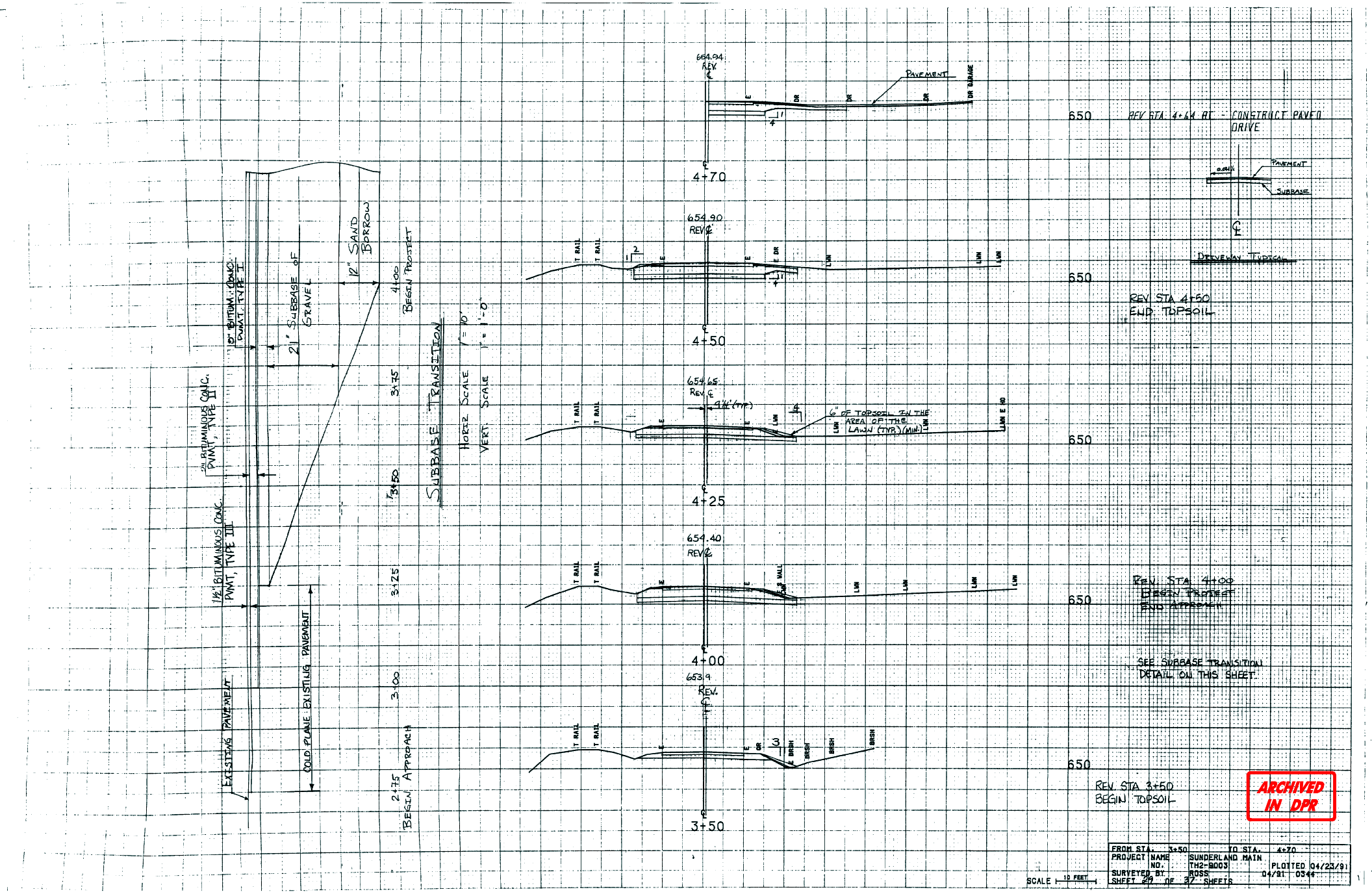
Concrete Class "A"	65 c.y.
Reinforcing Steel	18,126 Lbs.

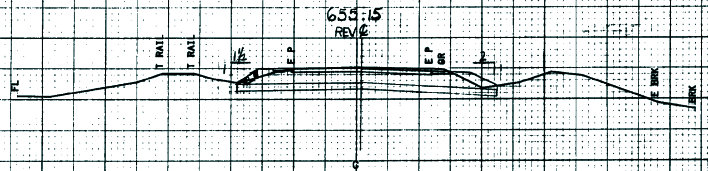
Surveyed by
Designed by M.E.S. 5/1947
Drawn by M.E.S. 5/1947
Traced by D.W.P. 6/1947
Checked by A.N.B. 7/9/47
Series S.A. No. 18-1946 Filed
Sheet 26 of 37 Sheets

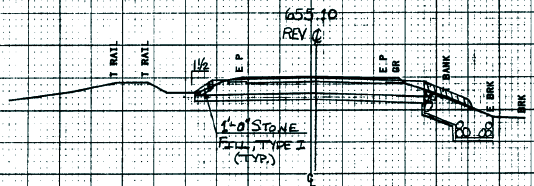


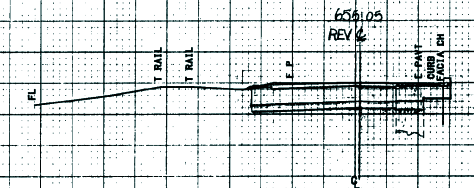
FROM STA. 0+00 TO STA. 2+00
PROJECT NAME SUNDERLAND MAIN
NO. TH2-9003
SURVEYED BY ROSS 04/91 0544
SHEET 87 OF 87 SHEETS
PLOTTED: 04/23/91
SCALE 10 FEET


653.5
REV.
0-9¼ (TYP.)
T RAIL
T RAIL
E BRSH
E
E
LD
E BRSH
BRSH
BRSH
BRSH
650
℄
3+00
REV STA 2+75 = BEGIN APPROACH
T RAIL
T PIPE
E
T PIPE
E BRSH
BRUSH
BRUSH
650
℄
2+63
ASKEW 63°
EXISTING 15" ACCG MP (FAIR)
T RAIL
T RAIL
E
E
E BRSH
E B LIN
LIN
LIN
650
℄
2+50
E
DR
DR
DR PORCH
650
℄
2+18
ARCHIVED
IN DPR
FROM STA. 2+18 TO STA. 3+00
PROJECT NAME SUNDERLAND MAIN
NO. TH2-9003 PLOTTED 04/29/93
SURVEYED BY ROSS 04/91 0344
SHEET 20 OF 39 SHEETS
SCALE 10 FEET

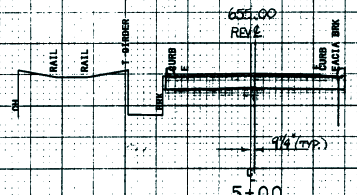

SUBBASE TRANSITION
HORIZ SCALE 1"=10'
VERT SCALE 1"=1'-0"
12" SAND BORROW
21" SUBBASE OF GRAVEL
8" BITUMINOUS CONC. PVMT. TYPE II
2½" BITUMINOUS CONC. PVMT. TYPE III
EXISTING PAVEMENT
COLD PLANE EXISTING PAVEMENT
4100 BEGIN PROFFET
3175
3150
3125
3100
2175 BEGIN APPROACH
654.94 REV.
4+70
654.90 REV.
4+50
654.65 REV.
4+25
654.40 REV.
4+00
653.9 REV.
3+50
PAVEMENT
DR
DR BARAGE
REV STA 4+44 AT CONSTRUCT PAVED DRIVE
650
PAVEMENT
SUBBASE
DRIVEWAY TYPICAL
REV STA 4+50 END TOPSOIL
T RAIL
LAW
6" OF TOPSOIL IN THE AREA OF THE LAWN (TYP.) (MIN.)
REV STA 4+00 BEGIN PROFFET END APPROACH
SEE SUBBASE TRANSITION DETAIL ON THIS SHEET
BRSH
REV STA 3+50 BEGIN TOPSOIL
ARCHIVED IN DPR
FROM STA. 3+50 TO STA. 4+70
PROJECT NAME SUNDERLAND MAIN
NO. TH2-9003
SURVEYED BY ROSS
SHEET #9 OF 37 SHEETS
PLOTTED 04/23/91
04/91 0344
SCALE 10 FEET



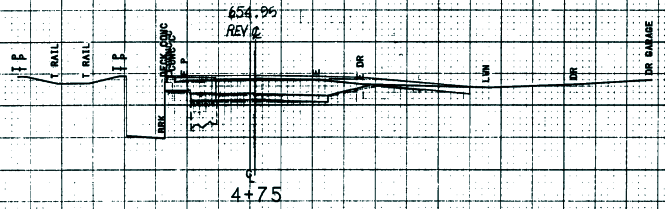




REV STA 5+21.77 - END BRIDGE



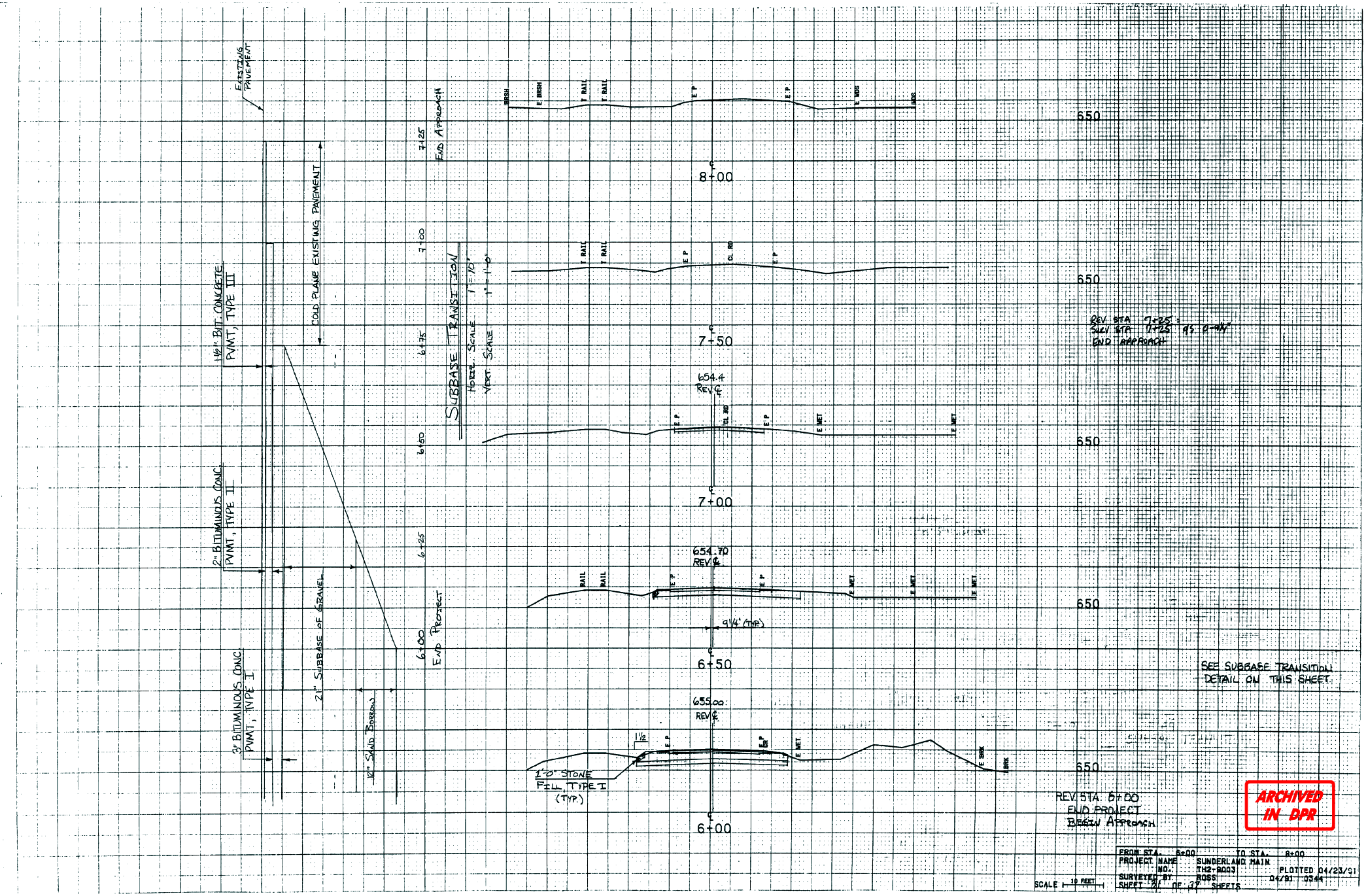
REV STA 4+78.77 - BEGIN BRIDGE

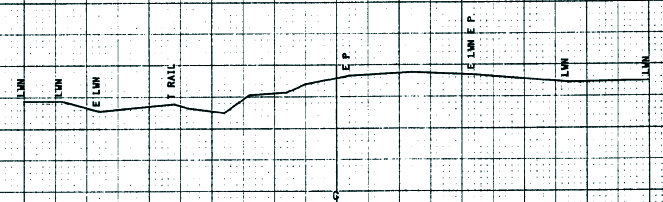


ARCHIVED IN DPR

SCALE 10 FEET

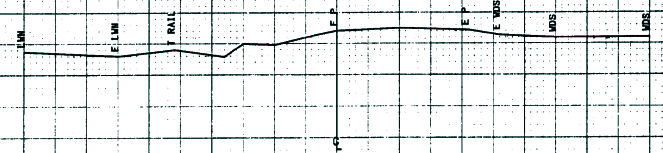
FROM STA. 4+75	TO STA. 5+75
PROJECT NAME	SUNDERLAND MAIN
NO.	TH2-8003
SURVEYED BY:	ROSS
SHEET 30 OF 37 SHEETS	
PLOTTED 04/25/91	
04/91 0344	


EXISTING PAVEMENT
COLD PLANE EXISTING PAVEMENT
1½" BIT. CONCRETE PVMT, TYPE III
2" BITUMINOUS CONC. PVMT, TYPE II
3" BITUMINOUS CONC. PVMT, TYPE I
2" SUBBASE OF GRAVEL
12" SAND BORROW
SUBBASE TRANSITION
HORIZ. SCALE 1"=10'
VERT. SCALE 1"=1.0"
7+25 END APPROACH
7+00
6+50 END PROJECT
6+00
8+00
7+50
7+00
6+50
6+00
654.4 REV. ℄
654.70 REV. ℄
655.00 REV. ℄
9¼" (TYP.)
1½
1'-0" STONE FILL, TYPE I (TYP.)
E BRSH
T RAIL
E P
CL RD
E WDS
E MET
E BRK
RAIL
650
REV STA 7+25 = SLEV STA 7+25 AS 0-4¼" END APPROACH
SEE SUBBASE TRANSITION DETAIL ON THIS SHEET.
REV STA 6+00 END PROJECT BEGIN APPROACH
ARCHIVED IN DPR
FROM STA. 6+00 TO STA. 8+00
PROJECT NAME SUNDERLAND MAIN
NO. TH2-8003
SURVEYED BY ROSS
SHEET 34 OF 42 SHEETS
PLOTTED 04/23/91
04/91 0344
SCALE 10 FEET



9+50

650

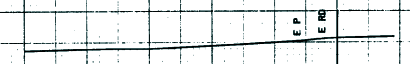


9+00

650

8+50

650

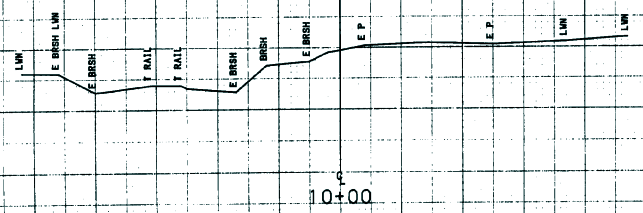


8+26

650

FROM STA. 9+26 TO STA. 9+50
PROJECT NAME SUNDERLAND MAIN
NO. TH2-9003 PLOTTED 04/23/91
SURVEYED BY ROSS 04/91 0344
SHEET 5/ OF 27 SHEETS

SCALE 10 FEET

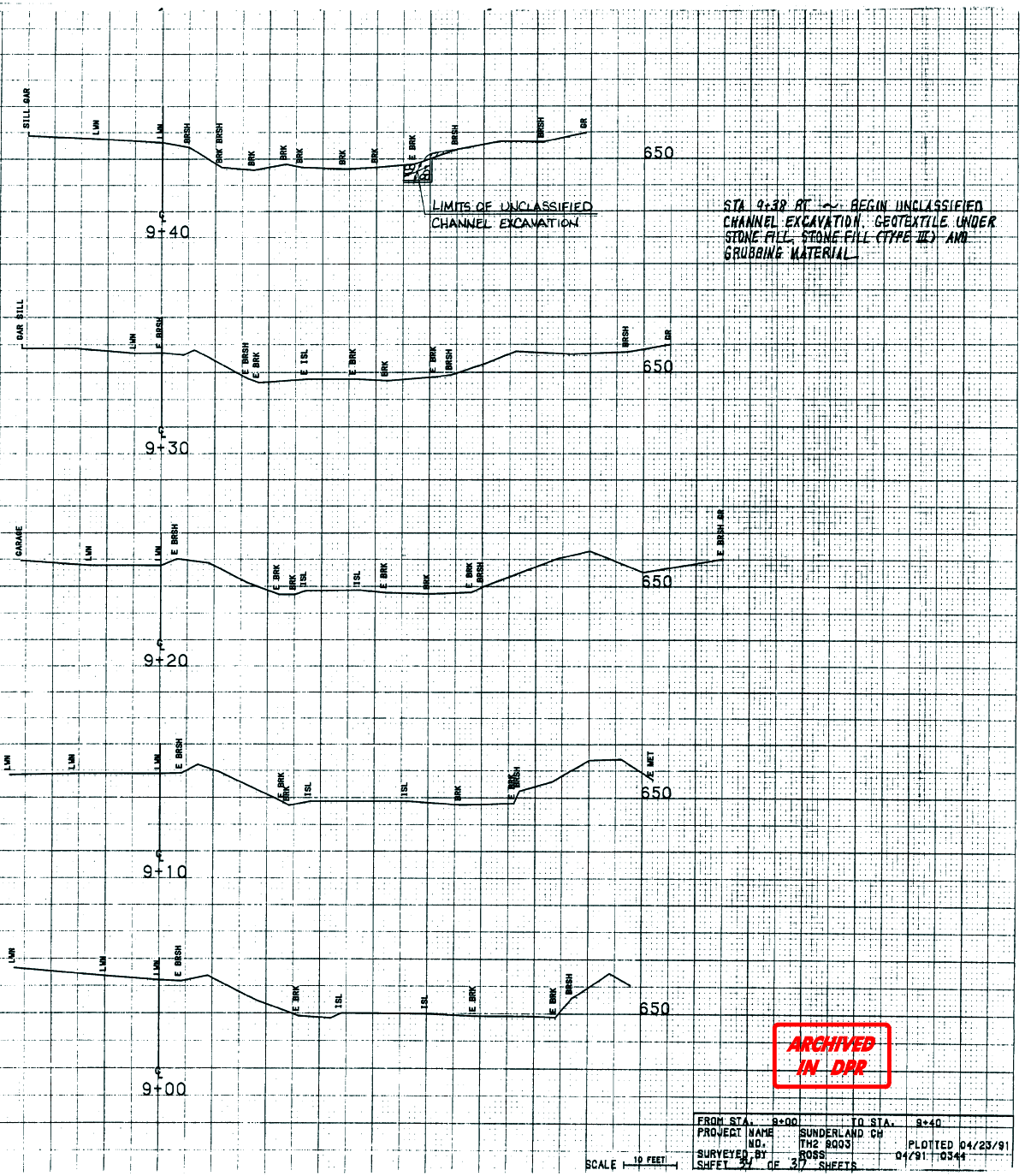


10+00

650

FROM STA. 10+00 TO STA. 10+00
PROJECT NAME SUNDERLAND MAIN
NO. TH2-9003 PLOTTED 04/23/91
SURVEYED BY ROSS 04/91 0344
SHEET 28 OF 37 SHEETS

SCALE 10 FEET



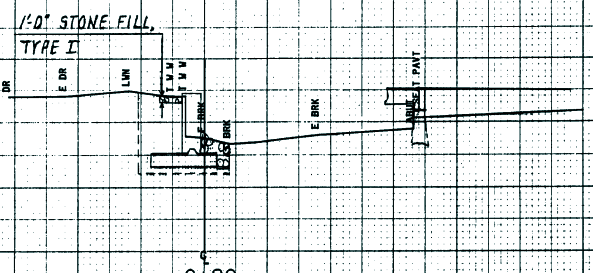
ARCHIVED IN DPR

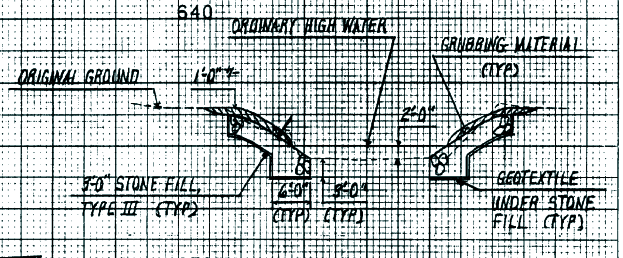
FROM STA. 9+00		TO STA. 9+40	
PROJECT NAME	SUNDERLAND CH		
NO.	TH2 8003		PLOTTED 04/23/91
SURVEYED BY	ROSS	04/91	0344
SHEET 37 OF 37 SHEETS			

SCALE 10 FEET

STA 9+86 LT ~ END GRANULAR BACKFILL FOR STRUCTURES; END STONE FILL, TYPE III; END GEOTEXTILE UNDER STONE FILL.

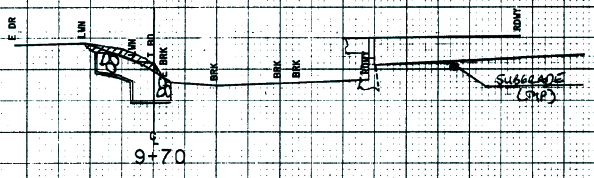
STA 9+82 LT ~ END GRUBBING MATERIAL



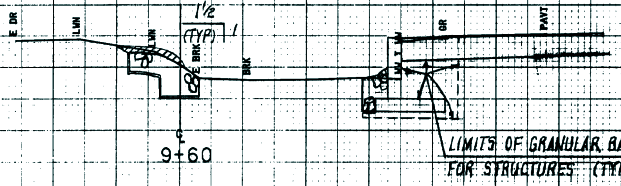


STA 9+77 LT. ~ END UNCLASSIFIED CHANNEL EXCAVATION

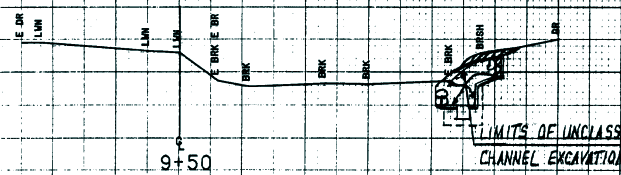
STA 9+72 LT ~ BEGIN GRANULAR BACKFILL FOR STRUCTURES



STA 9+66 RT ~ END GRANULAR BACKFILL FOR STRUCTURES; END STONE FILL, TYPE III; END GEOTEXTILE UNDER STONE FILL, END GRUBBING MATERIAL



STA 9+57 LT ~ BEGIN UNCLASSIFIED CHANNEL EXCAVATION, GEOTEXTILE UNDER STONE FILL, STONE FILL (TYPE III) AND GRUBBING MATERIAL



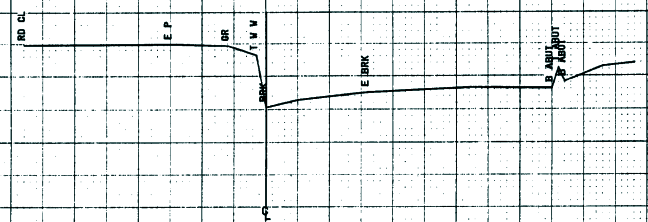
STA 9+51 RT ~ END UNCLASSIFIED CHANNEL EXCAVATION

STA 9+47 RT ~ BEGIN GRANULAR BACKFILL FOR STRUCTURES

ARCHIVED IN DPR

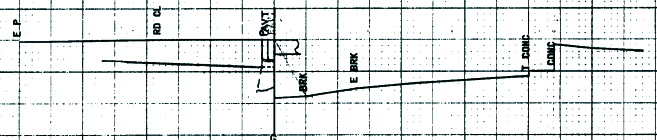
SCALE 10 FEET

FROM STA. 9+50	TO STA. 9+80
PROJECT NAME SUNDERLAND CH	PLOTTED 04/23/91
NO. TH2 9003	
SURVEYED BY ROSS	04/91 0344
SHEET 39 OF 39 SHEETS	



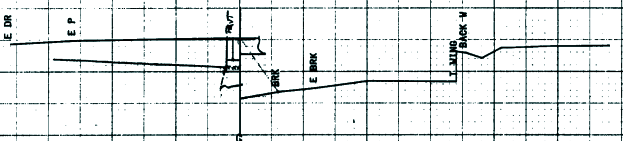
640

10+20



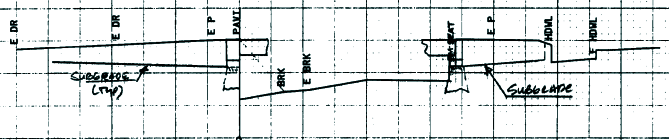
650

10+10



650

10+00



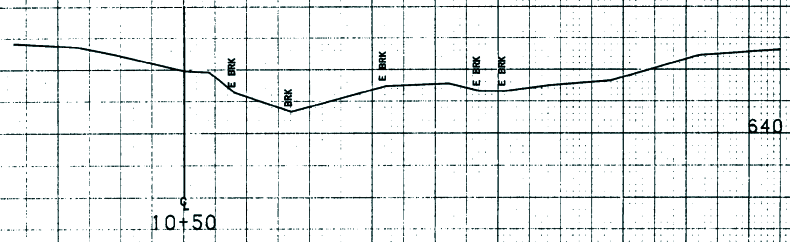
650

9+90

ARCHIVED IN DPR

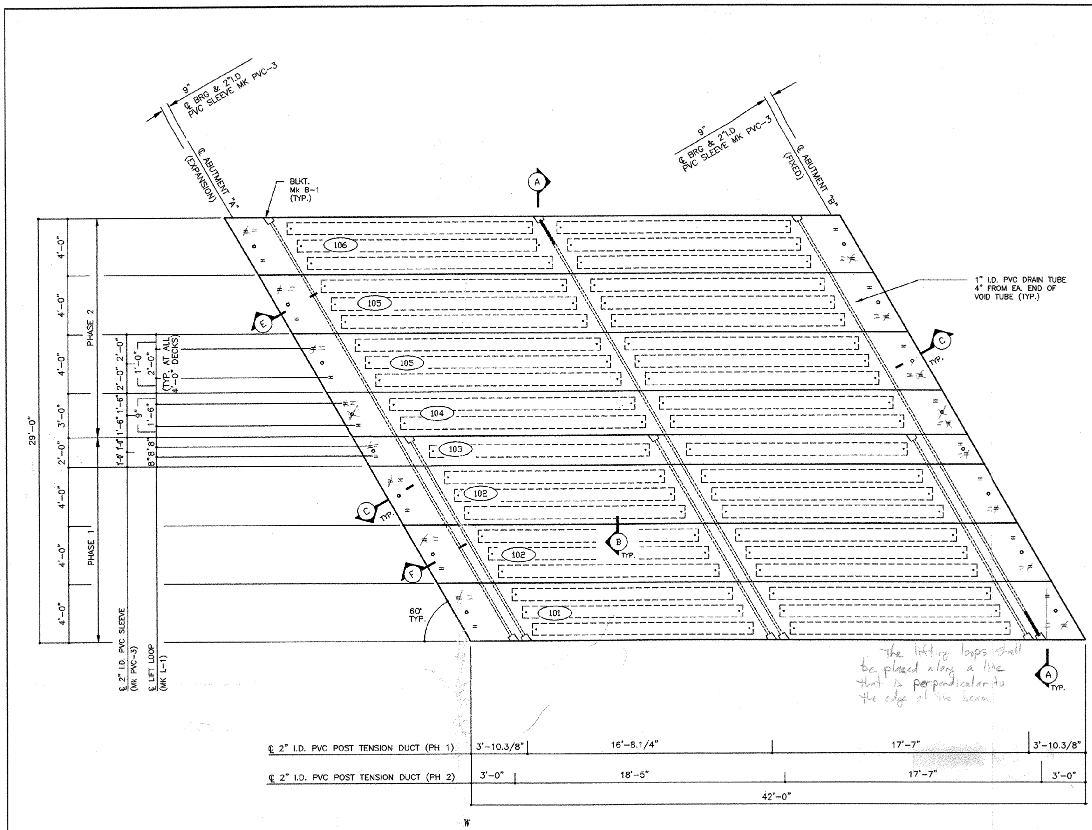
FROM STA. 9+90		TO STA. 10+20	
PROJECT NAME NO.	SUNDERLAND CH TM2 9003		PLOTTED 04/23/91
SURVEYED BY	ROSS		04/91 0344
SHEET 36 OF 37 SHEETS			

SCALE 10 FEET

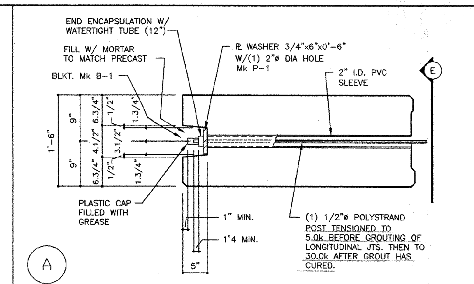


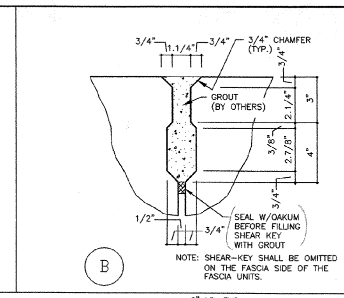
FROM STA. 10+50 TO STA. 10+50
PROJECT NAME SUNDERLAND CM
NO. TH2 8003 PLOTTED 04/23/91
SURVEYED BY BOSS 04791 0344
SHEET 37 OF 37 SHEETS

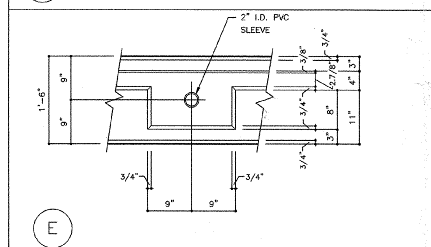
SCALE 10 FEET

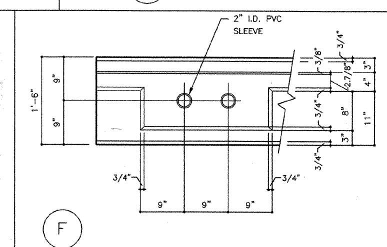


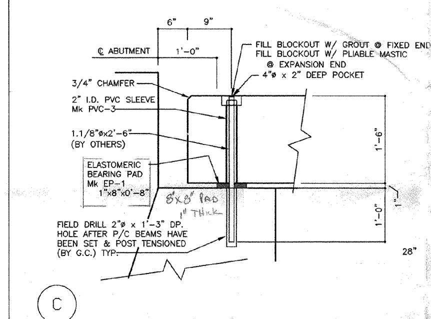
BRIDGE PLAN

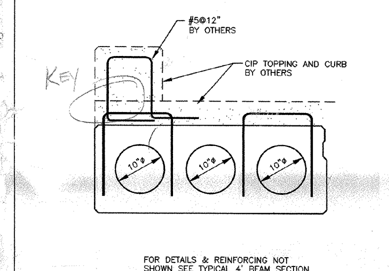




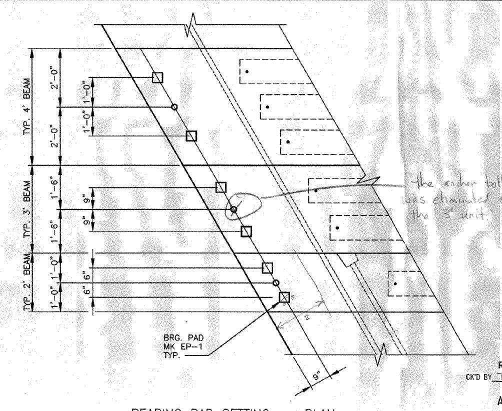






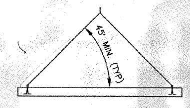


TYP. SECTION AT CURB



BEARING PAD SETTING - PLAN

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



FIELD HANDLING ELEVATION

NOT TO SCALE

The strands shall be detensioned in an order that is designed to minimize the eccentricity of the prestressing force.

GENERAL NOTES:

1) MINIMUM CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS SHALL BE 5,000 P.S.I.

2) MINIMUM CONCRETE COMPRESSIVE STRENGTH BEFORE PRESTRESS TRANSFER SHALL BE 4,000 P.S.I. AND SHALL BE VERIFIED BY CYLINDER TEST BEFORE TRANSFER.

3) PRESTRESSING STRANDS SHALL BE HIGH STRENGTH 7-WIRE UNCOATED LOW RELAXATION STRANDS 1/2"ø - GRADE 270, CONFORMING TO ASTM A416. THE INITIAL TENSILE FORCE OF EACH STRAND IS 31.0k.

4) DRILLING OF HOLES OR USE OF POWER ACTIVATED TOOLS ON PRESTRESSED DECK UNITS WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE ENGINEER.

5) ALL NON-PRESTRESSED REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND SHALL BE EPOXY COATED.

6) ALL P/C DECK UNITS SHALL BE ERECTED AS INDICATED ON THE CONTRACT DRAWINGS. THEY SHALL BE SET TO THE SPECIFIED (NOMINAL) DIMENSIONS AND WITH THE SPECIFIED (NOMINAL) 1/2" SPACING BETWEEN UNITS. THE LATERAL POST-TENSIONING STRANDS SHALL BE TENSIONED INITIALLY TO 5,000 Lbs., SAID LATERAL POST-TENSIONING IS NOT EXPECTED TO DRAW THE UNITS TOGETHER. AFTER THE UNITS ARE IN PLACE, THE FOAM JOINT FILLER SHALL BE PLACED AT THE BOTTOM OF THE SHEAR KEYS. APPROVED NON-SHRINK GROUT SHALL THEN BE PLACED INTO THE SHEAR KEYS AND ALLOWED TO CURE, AFTER WHICH THE STRANDS SHALL BE STRESSED TO THE FULL 30,000 Lbs.

7) NO SUPERIMPOSED LIVE OR DEAD LOADS SHALL BE APPLIED TO DECK UNITS UNTIL TRANSVERSE STRANDS HAVE BEEN TENSIONED TO 30,000 Lbs.

8) EXCESS TRANSVERSE STRAND MATERIAL TO BE BURNED OFF WITH A MINIMUM OF 1.1/4" REMAINING FROM THE END OF THE CHUCK. EXTERIOR TIE POCKETS TO BE DRY PACKED FLUSH WITH THE EXTERIOR SURFACE AFTER TRANSVERSE TENSIONING HAS BEEN COMPLETED.

9) TRANSVERSE STRAND SHALL BE 1/2"ø COATED, LOW RELAXATION, 7-WIRE STRAND, GRADE 270. CONFORMING TO ASTM A416.

10) THE TOPS OF P/C DECK UNITS SHALL HAVE A 1/4" RAKE FINISH.

11) ALL ELASTOMERIC BEARING PADS SHALL BE 50 DUROMETER HARDNESS. PER AASHTO M-251, & AASHTO DIV. II SECTION 18.

12) POST-TENSIONING STRAND ANCHORAGE SYSTEM SHALL BE WATER TIGHT AND CORROSION PROOF.

RECEIVED AUG 10 1998

MOHLIN & COMPANY HAS PROVIDED DRAFTING SERVICES ONLY. DESIGN BY SIRKO ASSOCIATES, DENVER CO.

DATE	REV	REVISIONS	BY
8/7/98	0	ISSUED FOR CONSTRUCTION	SP
7/20/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY
Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

SHEET TITLE: BRIDGE PLAN

PROJECT: TH 1 OVER MILL BROOK

LOCATION: SUNDERLAND, VERMONT

Customer: VERMONT AGENCY OF TRANSPORTATION

G.C.: MILLER CONSTRUCTION

Engineer: VERMONT AGENCY OF TRANSPORTATION

Job No: 600 - 355

SCALE: NOT TO SCALE

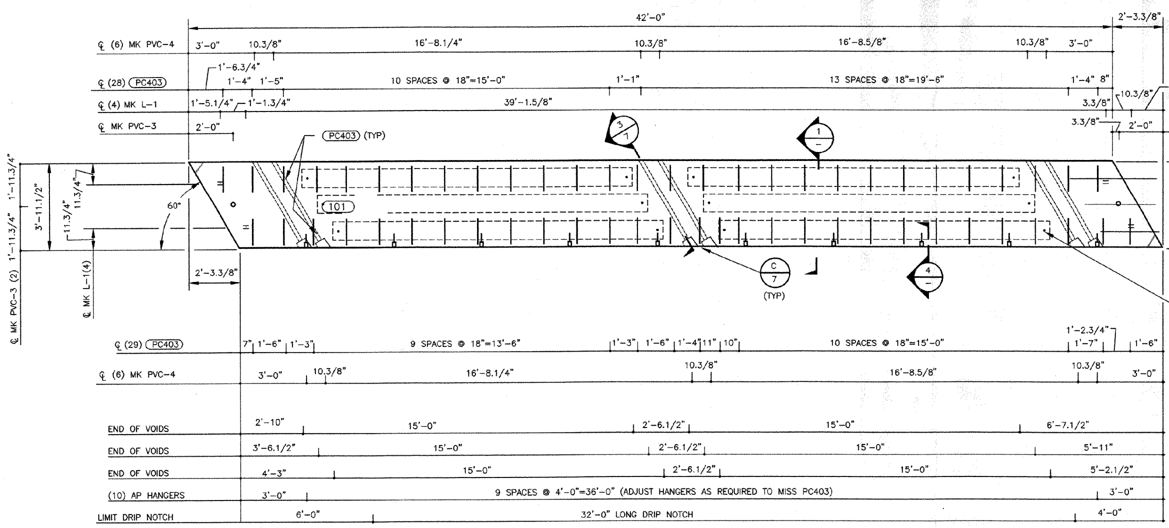
DRAWN BY: EP

BRIDGE NO. TH 1

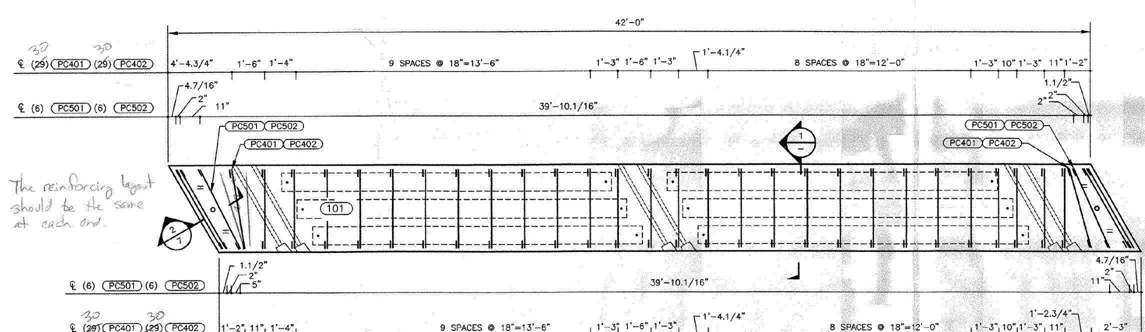
STATE NO. TH2-9003

SHEET NO. 1 OF 1

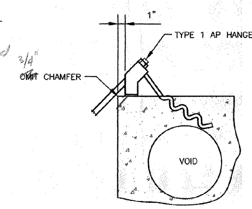
98/214 Plotted: 08-07-98 E1.dwg SF = 48.0



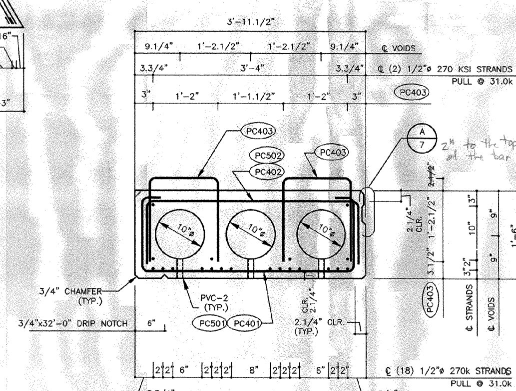
TOP IN FORM
SCALE 3/8" = 1'-0"



REINFORCING PLAN
SCALE 3/8" = 1'-0"



SECTION 4



SECTION 1
20 TOTAL STRAND @ 31.0K

See detensioning note on sheet 1 of 1

RECEIVED
CK'D BY PTL
AUG 10 1998
RESUBMIT ___ Approved as noted
BY GSR DATE 8/12/98

BILL OF MATERIAL

CAST IN PRODUCTS

DESCRIPTION	QTY.	TOTAL
2" I.D.x3'-11.3/8" PVC-4	6	6
1" I.D.x4" PVC-2	12	12
10"ø VOID TUBE x 15'-0"	6	6
LIFT LOOP MK L-1	4	4
2" I.D.x1'-4" PVC-3	2	2
BLOCKOUT B-1	6	6
PLATE P-1	6	6
TYPE 1 AP HANGER BY DAYTON	10	10

REINFORCING STEEL

PC401	~~29~~ 30	~~29~~ 30
PC402	~~29~~ 30	~~29~~ 30
PC403	57	57
PC501	6	6
PC502	6	6

PRODUCT DATA

CAMBER AT RELEASE	CAMBER FINAL

WT: 30,450 LBS EACH — VOL.: 7.6 CY EACH

1. RELEASE STRENGTH – 4,000 PSI.
2. 28 DAY STRENGTH – 5,000 PSI
3. REINF. STEEL GRADE 60

GENERAL NOTES

1. CLOUDED AREAS REFLECT LATEST REVISION.
2. TOP FINISH – RAKED TO 1/4" AMPLITUDE.
3. 3/4" CHAMFER ON ALL CORNERS.

STATE	TOWN	FED. AID PROJ. NO.

FISCAL YR.	SHEET. NO.	TOTAL SHEETS

PROJECT FILE NO.

NO. REQUIRED	MARK NO.
1	101

SEAL

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DATE	REV	REVISIONS	BY
8/7/98	0	ISSUED FOR CONSTRUCTION	SP
7/XX/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY
CONSULTING ENGINEERS
90 BEACH STREET, SACO, MAINE
PHONE: (207) 283-9151

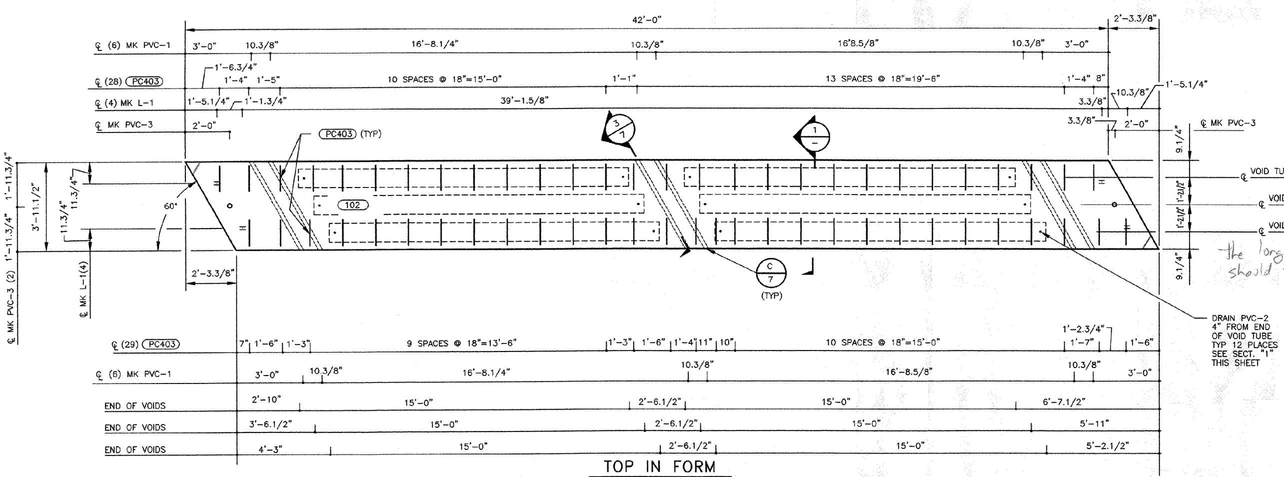
SHEET TITLE: BRIDGE PLAN
SCALE NOT TO SCALE CHECKED
DATE DESIGNED
DRAWN BY WCD APPROVED

PROJECT TH 1 OVER MILL BROOK
LOCATION SUNDERLAND VERMONT
Job No. 600 - 355
Customer VERMONT AGENCY OF TRANSPORTATION
G.C. MILLER CONSTRUCTION
Engineer VERMONT AGENCY OF TRANSPORTATION

Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

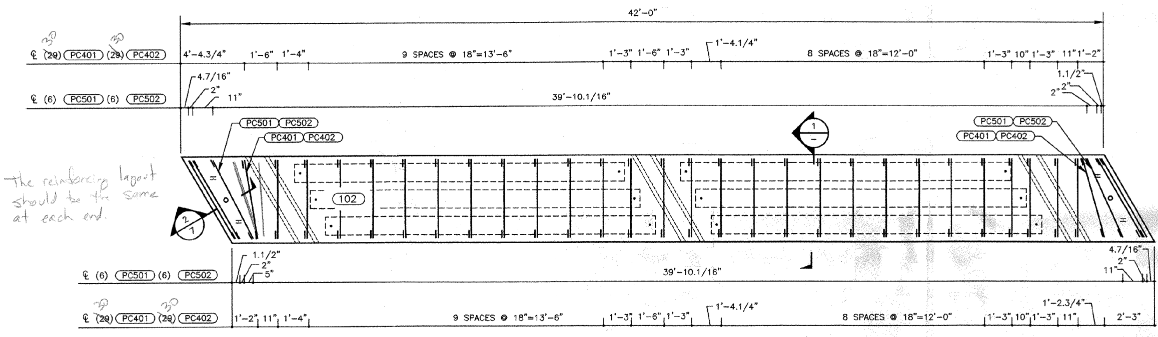
BRIDGE NO. TH 1
STATE NO. TH2-9003
SHEET NO. 1 OF 8

98/214 Plotted: 08-07-98 MK101.dwg SF = 32.0



TOP IN FORM

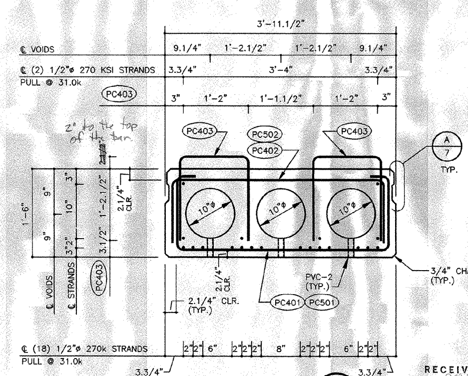
SCALE 3/8" = 1'-0"



REINFORCING PLAN

SCALE 3/8" = 1'-0"

See the dimensioning note on Sheet 1 of 1



SECTION 1

20 TOTAL STRAND @ 31.0K

RECEIVED AUG 10 1998

BILL OF MATERIAL

CAST IN PRODUCTS

DESCRIPTION	QTY.	TOTAL
2" I.D.x4'-6.1/2" PVC-1	6	12
1" I.D.x4" PVC-2	12	24
10"ø VOID TUBE x 15'-0"	6	12
LIFT LOOP MK L-1	4	8
2" I.D.x1'-4" PVC-3	2	4

REINFORCING STEEL

PC401	~~29~~ 30	~~58~~ 60
PC402	~~29~~ 30	~~58~~ 60
PC403	57	114
PC501	6	12
PC502	6	12

PRODUCT DATA

CAMBER AT RELEASE	CAMBER FINAL

WT: 30,450 LBS EACH VOL.: 7.6 CY EACH

1. RELEASE STRENGTH – 4,000 PSI.
2. 28 DAY STRENGTH – 5,000 PSI
3. REINF. STEEL GRADE 60

GENERAL NOTES

1. CLOUDED AREAS REFLECT LATEST REVISION.
2. TOP FINISH – RAKED TO 1/4" AMPLITUDE.
3. 3/4" CHAMFER ON ALL CORNERS.

STATE	TOWN	FED. AID PROJ. NO.

FISCAL YR.	SHEET NO.	TOTAL SHEETS

PROJECT FILE NO.

NO. REQUIRED	MARK NO.
2	102

SEAL

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DATE	REV	REVISIONS	BY
7/XX/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY CONSULTING ENGINEERS
90 BEACH STREET, SACO, MAINE PHONE: (207) 283-9151

SHEET TITLE: BRIDGE PLAN

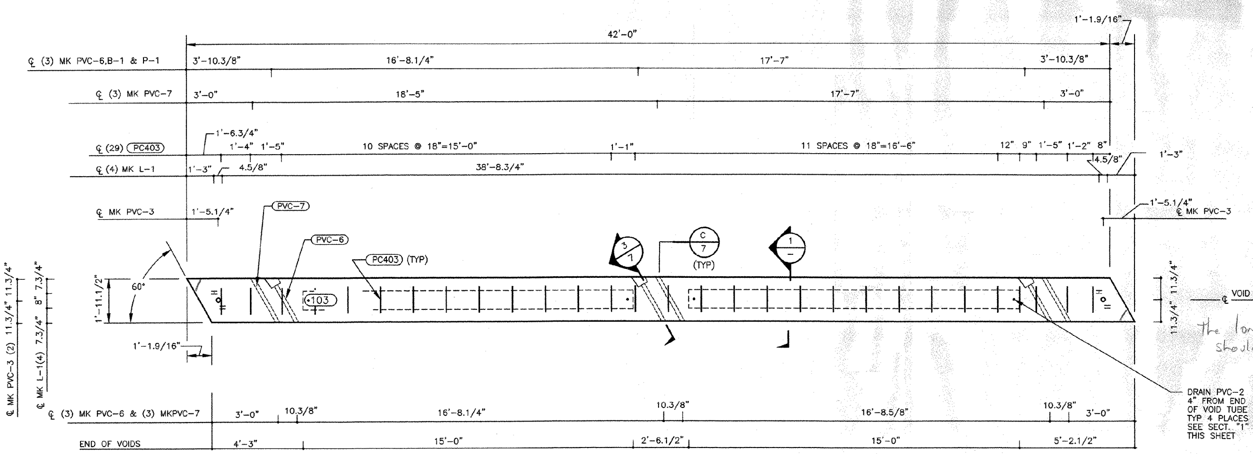
SCALE NOT TO SCALE CHECKED
DATE DESIGNED
DRAWN BY WCD APPROVED

PROJECT TH 1 OVER MILL BROOK
LOCATION SUNDERLAND VERMONT
Job No. 600 – 355
Customer VERMONT AGENCY OF TRANSPORTATION
G.C. MILLER CONSTRUCTION
Engineer VERMONT AGENCY OF TRANSPORTATION

Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

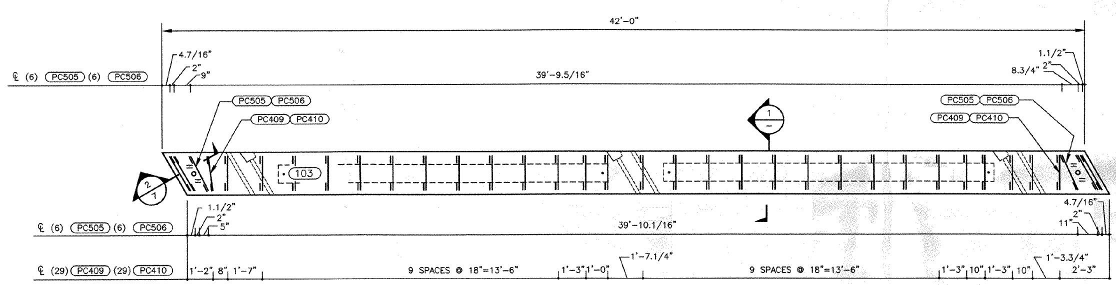
BRIDGE NO. TH 1
STATE NO. TH2-9003
SHEET NO. 2 OF 8

98/214 Plotted: 08-07-98 MK102.dwg SF = 32.0



TOP IN FORM

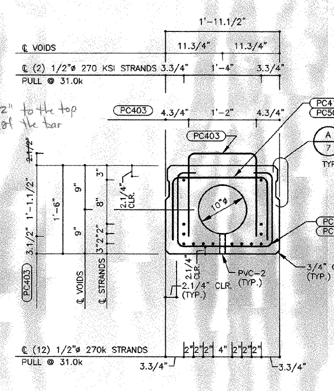
SCALE 3/8" = 1'-0"



REINFORCING PLAN

SCALE 3/8" = 1'-0"

See the detensioning note on sheet 1of1.



SECTION 1

14 TOTAL STRAND @ 31.0K

RECEIVED
CK'D BY PTL CHK'D BY CWN
AUG 10 1998
RESUBMIT ___ APPROVED Noted
BY GSR DATE 8/12/98

MOHLIN & COMPANY HAS PROVIDED DRAFTING SERVICES ONLY. DESIGN BY SIRKO ASSOCIATES, DENVER CO.

BILL OF MATERIAL

CAST IN PRODUCTS

DESCRIPTION	QTY.	TOTAL
2" I.D.x1'-7.5/8" PVC-6	3	3
1" I.D.x4" PVC-2	4	4
10"φ VOID TUBE x 15'-0"	2	2
LIFT LOOP MK L-1	4	4
2" I.D.x1'-4" PVC-3	2	2
2" I.D.x2'-2.3/4" PVC-7	3	3
BLOCKOUT B-1	3	3
PLATE P-1	3	3

REINFORCING STEEL

PC403	29	29
PC409	29	29
PC410	29	29
PC505	6	6
PC506	6	6

PRODUCT DATA

CAMBER AT RELEASE	CAMBER FINAL

WT: 16,530 LBS EACH VOL.: 4.1 CY EACH

1. RELEASE STRENGTH – 4,000 PSI.
2. 28 DAY STRENGTH – 5,000 PSI
3. REINF. STEEL GRADE 60

GENERAL NOTES

1. CLOUDED AREAS REFLECT LATEST REVISION.
2. TOP FINISH – RAKED TO 1/4" AMPLITUDE.
3. 3/4" CHAMFER ON ALL CORNERS.

STATE	TOWN	FED. AID PROJ. NO.

FISCAL YR.	SHEET NO.	TOTAL SHEETS

PROJECT FILE NO.

NO. REQUIRED	MARK NO.
1	103

SEAL

DATE	REV	REVISIONS	BY
8/7/98	0	ISSUED FOR CONSTRUCTION	SP
7/XX/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY
90 BEACH STREET, SACO, MAINE
PHONE: (207) 283-9151

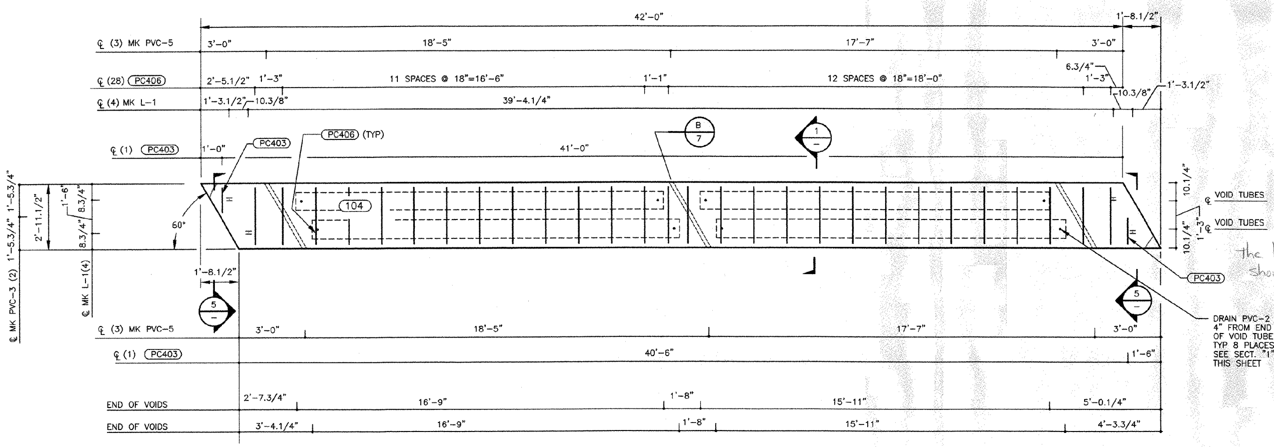
SHEET TITLE: BRIDGE PLAN
SCALE: NOT TO SCALE CHECKED
DATE DESIGNED
DRAWN BY: WCD APPROVED

PROJECT: TH 1 OVER MILL BROOK
LOCATION: SUNDERLAND VERMONT Job No. 600 - 355
Customer: VERMONT AGENCY OF TRANSPORTATION
G.C.: MILLER CONSTRUCTION
Engineer: VERMONT AGENCY OF TRANSPORTATION

Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

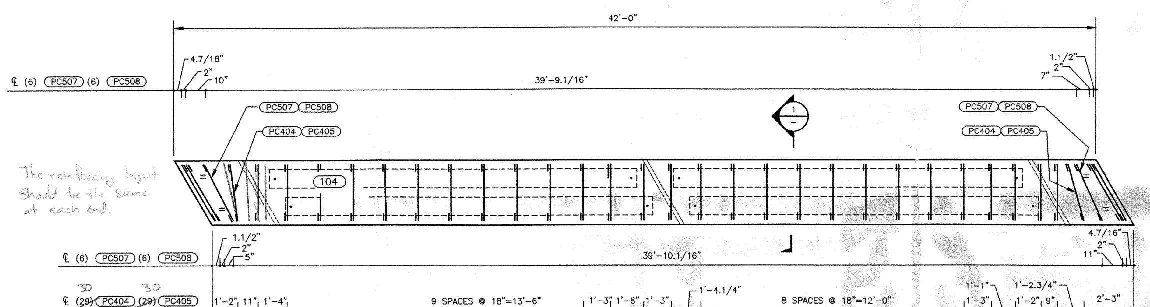
BRIDGE NO. TH 1
STATE NO. TH2-9003
SHEET NO. 3 OF 8

98/214 Plotted: 08-07-98 MK103.dwg SF = 32.0



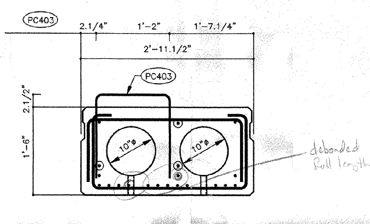
TOP IN FORM

SCALE 3/8" = 1'-0"



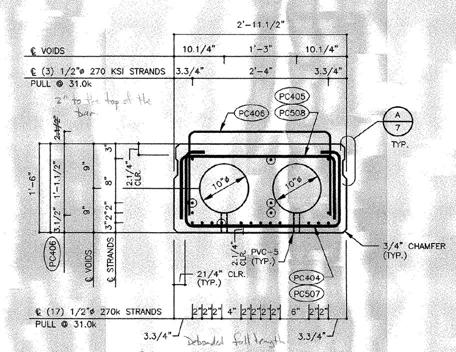
REINFORCING PLAN

SCALE 3/8" = 1'-0"



SECTION 5

SEE SECTION "1" THIS SHEET FOR TYPICAL REINF. AND STRAND INFO.



SECTION 1

20 TOTAL STRAND @ 31.0K

(5 STRAND DEBONDED FULL LENGTH)

RECEIVED

CK'D BY _______ CK'D BY _______

AUG 10 1998

RESUBMIT _______ APPROVED as noted

BY GSR DATE 8/12/98

MOHLIN & COMPANY HAS PROVIDED DRAFTING SERVICES ONLY. DESIGN BY SIRKO ASSOCIATES, DENVER CO.

BILL OF MATERIAL

CAST IN PRODUCTS

DESCRIPTION	QTY.	TOTAL
2" I.D.x3'-6.1/2" PVC-5	3	3
1" I.D.x4" PVC-2	8	8
10"ø VOID TUBE x 15'-11"	2	2
10"ø VOID TUBE x 16'-9"	2	2
LIFT LOOP MK L-1	4	4

REINFORCING STEEL

PC403	2	2
PC404 30	~~29~~	~~29~~
PC405 30	~~29~~	~~29~~
PC406	28	28
PC507	6	6
PC508	6	6

PRODUCT DATA

CAMBER AT RELEASE	CAMBER FINAL

WT: 25,670 LBS EACH VOL.: 6.4 CY EACH

1. RELEASE STRENGTH – 4,000 PSI.
2. 28 DAY STRENGTH – 5,000 PSI
3. REINF. STEEL GRADE 60

GENERAL NOTES

1. CLOUDED AREAS REFLECT LATEST REVISION.
2. TOP FINISH – RAKED TO 1/4" AMPLITUDE.
3. 3/4" CHAMFER ON ALL CORNERS.

STATE	TOWN	FED. AID PROJ. NO.

FISCAL YR.	SHEET. NO.	TOTAL SHEETS

PROJECT FILE NO.

NO. REQUIRED	MARK NO.
1	104

SEAL

REVISIONS

DATE	REV	REVISIONS	BY
8/7/98	0	ISSUED FOR CONSTRUCTION	SP
7/XX/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY CONSULTING ENGINEERS
90 BEACH STREET, SACO, MAINE
PHONE: (207) 283-9151

SHEET TITLE BRIDGE PLAN

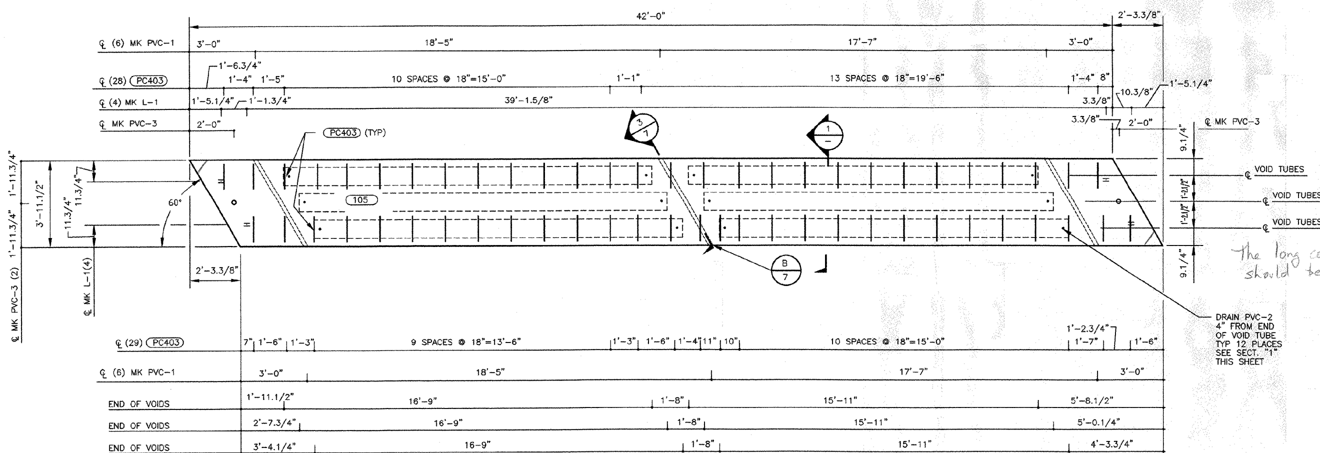
SCALE NOT TO SCALE CHECKED
DATE DESIGNED
DRAWN BY WCD APPROVED

PROJECT TH 1 OVER MILL BROOK
LOCATION SUNDERLAND VERMONT Job No. 600 - 355
Customer VERMONT AGENCY OF TRANSPORTATION
G.C. MILLER CONSTRUCTION
Engineer VERMONT AGENCY OF TRANSPORTATION

Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0561

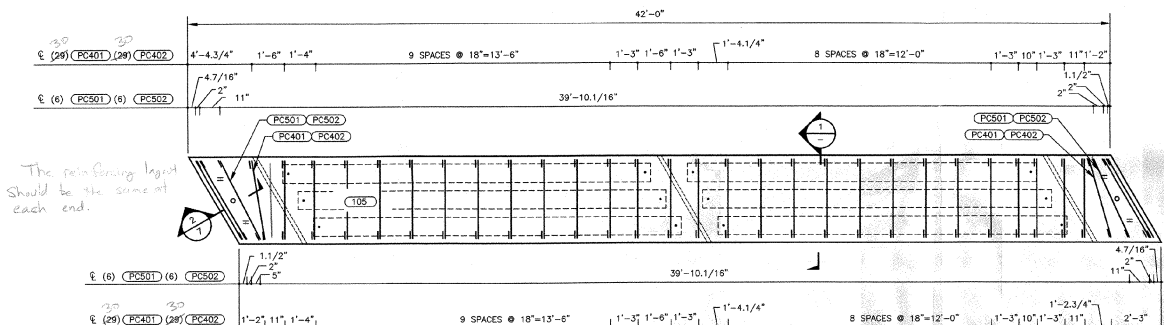
BRIDGE NO. TH 1
STATE NO. TH2-9003
SHEET NO. 4 OF 8

98/214 Plotted: 08-07-98 MK104.dwg SF = 32.0



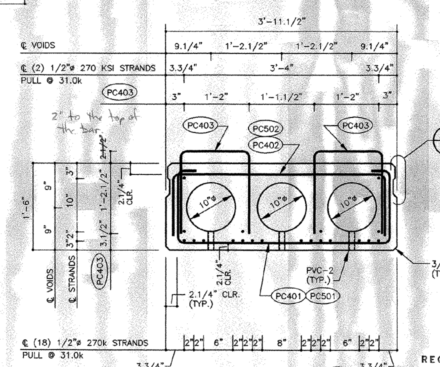
TOP IN FORM

SCALE 3/8" = 1'-0"



REINFORCING PLAN

SCALE 3/8" = 1'-0"



SECTION 1

20 TOTAL STRAND @ 31.0K

See detensioning note on sheet 1 of 8.

RECEIVED

AUG 10 1998

BILL OF MATERIAL

CAST IN PRODUCTS

DESCRIPTION	QTY.	TOTAL
2" I.D.x4'-6.1/2" PVC-1	3	6
1" I.D.x4" PVC-2	12	24
10"ø VOID TUBE x 15'-11"	3	6
10"ø VOID TUBE x 16'-9"	3	6
LIFT LOOP MK L-1	4	8
2" I.D.x1'-4" PVC-3	2	4

REINFORCING STEEL

PC401 30	~~29~~	~~58~~ 60
PC402 30	~~29~~	~~58~~ 60
PC403	57	114
PC501	6	12
PC502	6	12

PRODUCT DATA

CAMBER AT RELEASE	CAMBER FINAL

WT: 30,450 LBS EACH — VOL.: 7.6 CY EACH

1. RELEASE STRENGTH – 4,000 PSI.
2. 28 DAY STRENGTH – 5,000 PSI
3. REINF. STEEL GRADE 60

GENERAL NOTES

1. CLOUDED AREAS REFLECT LATEST REVISION.
2. TOP FINISH – RAKED TO 1/4" AMPLITUDE.
3. 3/4" CHAMFER ON ALL CORNERS.

STATE	TOWN	FED. AID PROJ. NO.

FISCAL YR.	SHEET. NO.	TOTAL SHEETS

PROJECT FILE NO.

NO. REQUIRED	MARK NO.
2	105

SEAL

REVISIONS

DATE	REV		BY
8/7/98	0	ISSUED FOR CONSTRUCTION	SP
7/XX/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY CONSULTING ENGINEERS
90 BEACH STREET, SACO, MAINE
PHONE: (207) 283-9151

SHEET TITLE: BRIDGE PLAN

SCALE NOT TO SCALE — CHECKED — DATE — DESIGNED — DRAWN BY WCD — APPROVED

PROJECT: TH 1 OVER MILL BROOK
LOCATION: SUNDERLAND — VERMONT — Job No. 600 - 355
Customer: VERMONT AGENCY OF TRANSPORTATION
G.C. MILLER CONSTRUCTION
Engineer: VERMONT AGENCY OF TRANSPORTATION

Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

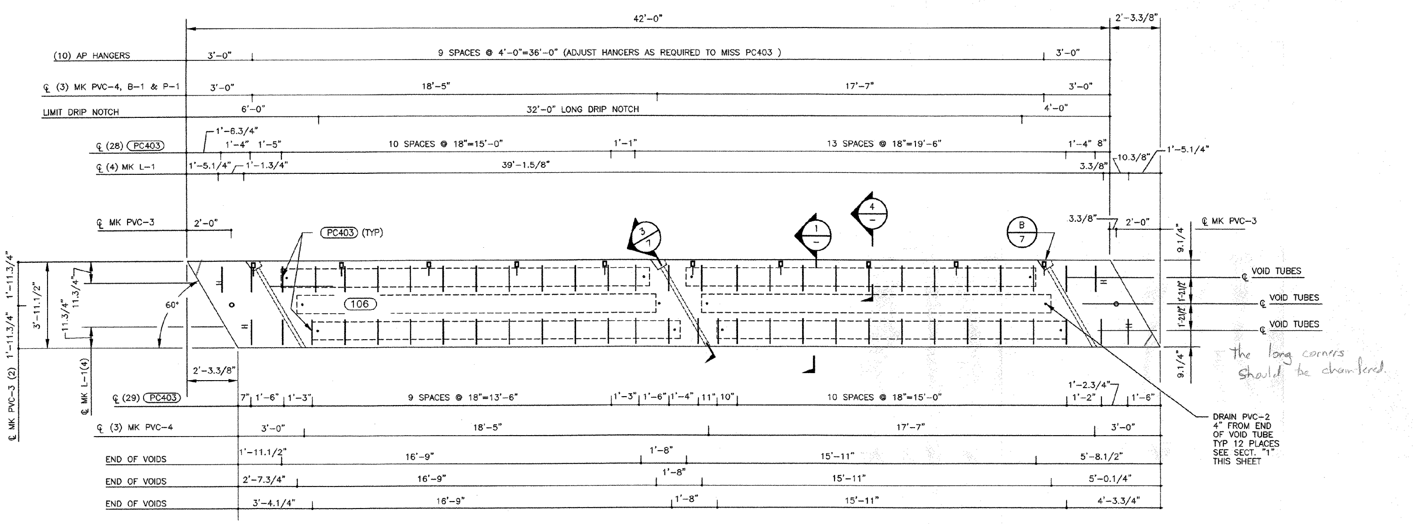
BRIDGE NO. TH 1

STATE NO. TH2-9003

SHEET NO. 5 OF 8

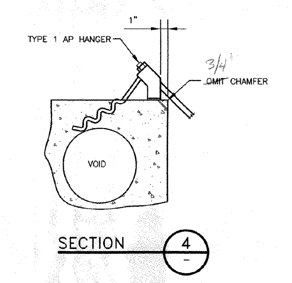
MOHLIN & COMPANY HAS PROVIDED DRAFTING SERVICES ONLY. DESIGN BY SIRKO ASSOCIATES, DENVER CO.

98/214 Plotted: 08-07-98 MK105.dwg SF = 32.0

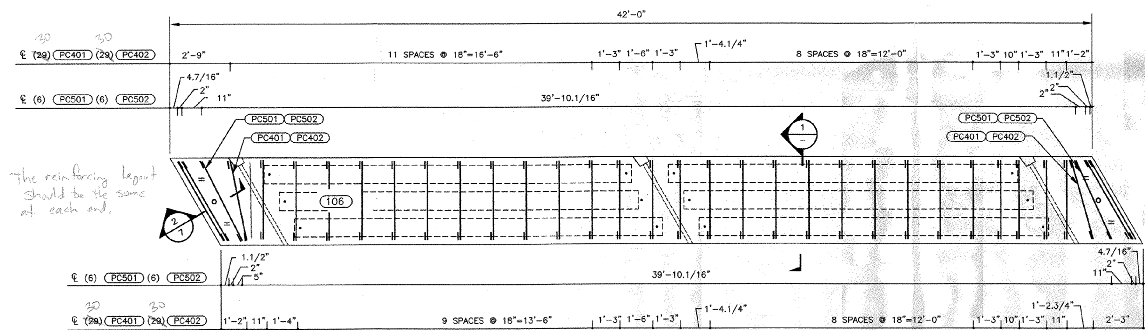


TOP IN FORM

SCALE 3/8" = 1'-0"



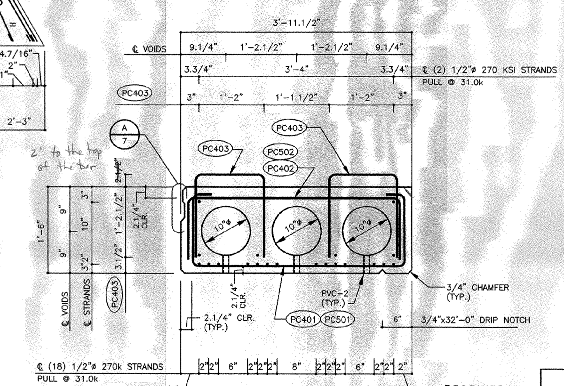
SECTION 4



REINFORCING PLAN

SCALE 3/8" = 1'-0"

See the detensioning note on Sheet 1 of 1.



SECTION 1

20 TOTAL STRAND @ 31.0K

RECEIVED
CK'D BY
AUG 10 1998
RESUBMIT ___ APPROVED as noted
BY GSL DATE 8/17/98

BILL OF MATERIAL

CAST IN PRODUCTS

DESCRIPTION	QTY.	TOTAL
2" I.D.x3'-11.3/8" PVC-4	3	3
1" I.D.x4" PVC-2	12	12
10"ø VOID TUBE x 15'-11"	3	3
10"ø VOID TUBE x 16'-9"	3	3
LIFT LOOP MK L-1	4	4
2" I.D.x1'-4" PVC-3	2	2
BLOCKOUT B-1	3	3
PLATE P-1	3	3
TYPE 1 AP HANGER BY DAYTON	10	10

REINFORCING STEEL

PC401 30	~~29~~ 30	~~29~~ 30
PC402 30	~~29~~ 30	~~29~~ 30
PC403	57	57
PC501	6	6
PC502	6	6

PRODUCT DATA

CAMBER AT RELEASE	CAMBER FINAL

WT: 30,450 LBS EACH VOL.: 7.6 CY EACH

1. RELEASE STRENGTH – 4,000 PSI.
2. 28 DAY STRENGTH – 5,000 PSI
3. REINF. STEEL GRADE 60

GENERAL NOTES

1. CLOUDED AREAS REFLECT LATEST REVISION.
2. TOP FINISH – RAKED TO 1/4" AMPLITUDE.
3. 3/4" CHAMFER ON ALL CORNERS.

STATE	TOWN	FED. AID PROJ. NO.

FISCAL YR.	SHEET. NO.	TOTAL SHEETS

PROJECT FILE NO.

NO. REQUIRED	MARK NO.
1	106

SEAL

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REVISIONS

DATE	REV	REVISIONS	BY
8/7/98	0	ISSUED FOR APPROVAL	SP
7/XX/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY CONSULTING ENGINEERS
90 BEACH STREET, SACO, MAINE PHONE: (207) 283-9151

SHEET TITLE: BRIDGE PLAN

SCALE NOT TO SCALE CHECKED
DATE DESIGNED
DRAWN BY WCD APPROVED

PROJECT TH 1 OVER MILL BROOK
LOCATION SUNDERLAND VERMONT
Job No. 600 - 355
Customer VERMONT AGENCY OF TRANSPORTATION
G.C. MILLER CONSTRUCTION
Engineer VERMONT AGENCY OF TRANSPORTATION

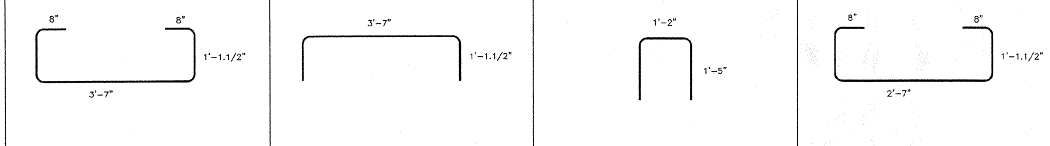
Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

BRIDGE NO. TH 1

STATE NO. TH2-9003

SHEET NO. 6 OF 8

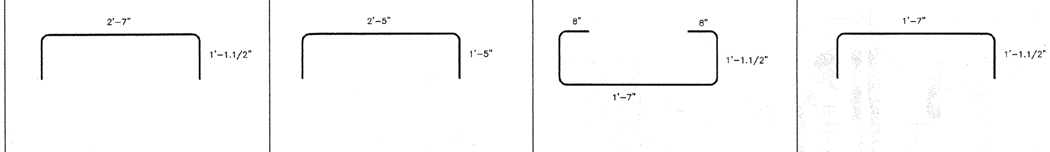
98/214 Plotted: 08-07-98 MK106.dwg SF = 32.0



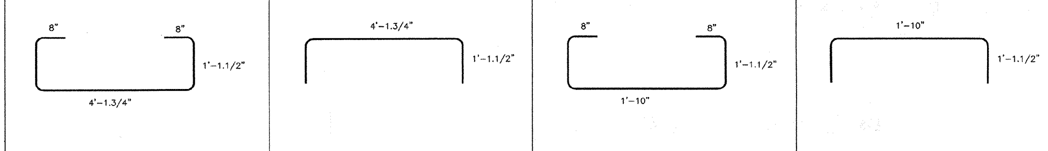
MARK	SIZE	GRADE	QTY
PC401	#4	60	~~174~~ 180
PC402	#4	60	~~174~~ 180
PC403	#4	60	373
PC404	#4	60	29

UNLESS OTHERWISE NOTED:

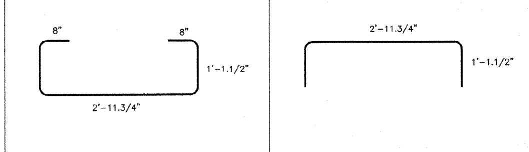
1. DIMENSIONS ARE OUT TO OUT (O.T.O.).
2. NON-CRITICAL DIMENSIONS ARE MARKED ±.
3. ALL REBAR ARE SPEC. ASTM A615.
4. ALL REBAR IS EPOXY COATED.



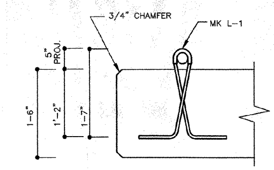
MARK	SIZE	GRADE	QTY
PC405	#4	60	29
PC406	#4	60	28
PC409	#4	60	29
PC410	#4	60	29



MARK	SIZE	GRADE	QTY
PC501	#5	60	36
PC502	#5	60	36
PC505	#5	60	6
PC506	#5	60	6

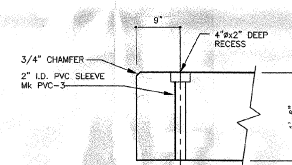


MARK	SIZE	GRADE	QTY
PC507	#5	60	6
PC508	#5	60	6

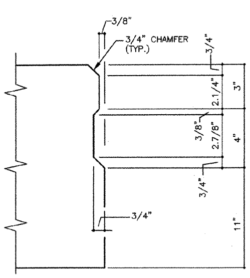


TYPICAL LIFT LOOP DETAIL

DETAIL L-1
SCALE NTS

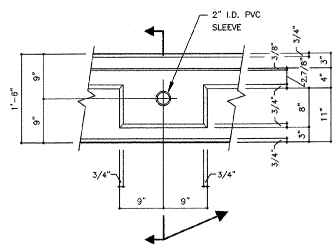


SECTION 2
SCALE 1" = 1'-0"
(TYPICAL EACH BEAM END)

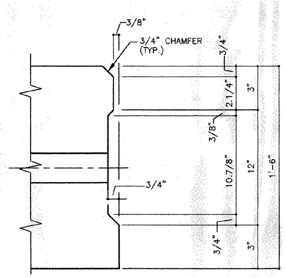


TYPICAL PARTIAL DEPTH SHEAR KEY

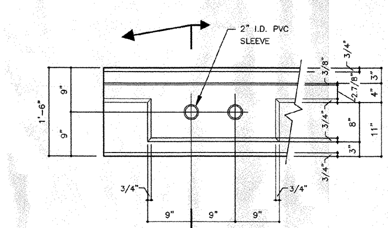
DETAIL A
SCALE NTS
(TYPICAL EACH SIDE)



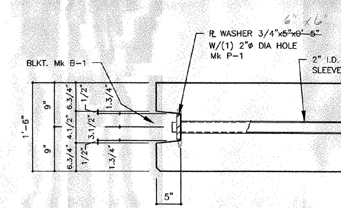
DETAIL B
SCALE NTS
(TYPICAL EACH SIDE)



TYPICAL FULL DEPTH SHEAR KEY



DETAIL C
SCALE NTS
(TYPICAL EACH SIDE)



TRANSFER TIE POCKET DETAIL

SECTION 3
SCALE 1" = 1'-0"
(TYPICAL)

RECEIVED
CK'D BY PTL CK'D BY [illegible]
AUG 10 1998
RESUBMIT ______ APPROVED as noted
BY @SR DATE 8/14/98

MOHLIN & COMPANY HAS PROVIDED DRAFTING SERVICES ONLY. DESIGN BY SIRKO ASSOCIATES, DENVER CO.

DATE	REV	REVISIONS	BY
8/7/98	0	ISSUED FOR CONSTRUCTION	SP
7/XX/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY
30 BEACH STREET, SACO, MAINE
PHONE: (207) 283-9151

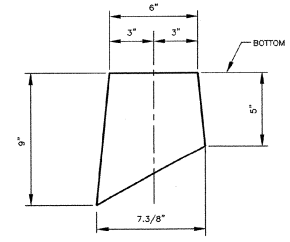
SHEET TITLE: BRIDGE PLAN
SCALE: NOT TO SCALE CHECKED
DATE / DESIGNED
DRAWN BY WCD / APPROVED

PROJECT: TH 1 OVER MILL BROOK
LOCATION: SUNDERLAND, VERMONT
Job No. 600 - 355
Customer: VERMONT AGENCY OF TRANSPORTATION
G.C.: MILLER CONSTRUCTION
Engineer: VERMONT AGENCY OF TRANSPORTATION

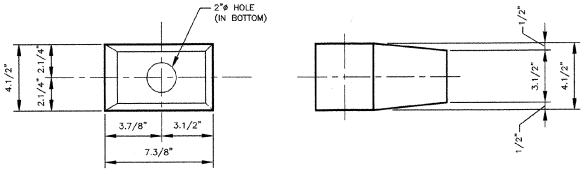
Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

BRIDGE NO. TH 1
STATE NO. TH2-9003
SHEET NO. 7 OF 8

98/214 Plotted: 08-07-98 SECTIONS.dwg SF = 32.0



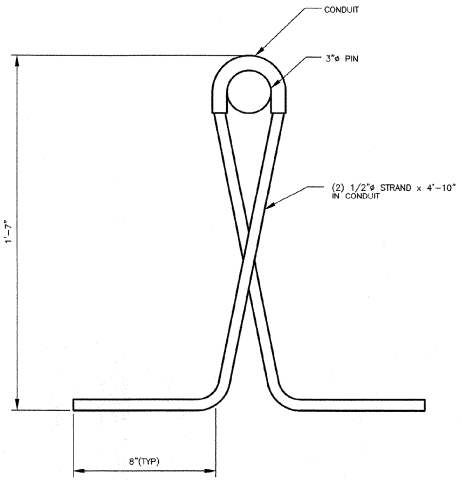
PLAN VIEW



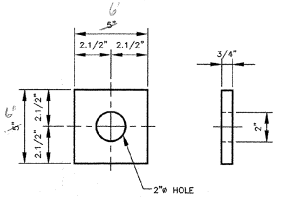
FRONT VIEW

SIDE VIEW

BLOCKOUT B–1
SCALE 3"=1'–0"



DETAIL LIFT LOOP L–1
SCALE NOT TO SCALE



FRONT VIEW

SIDE VIEW

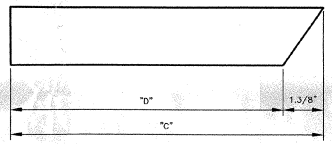
PLATE P–1
SCALE 3"=1'–0"

MISCELLANEOUS MATERIALS

MARK #	ITEM DESCRIPTION	FINISH	QUANTITY	REMARKS
	10"ø VOID TUBE 15'–0"		20	
	10"ø VOID TUBE 15'–11"		11	
	10"ø VOID TUBE 16'–9"		11	
PVC–1	2" I.D. PVC P.T. TUBE 4'–6.1/2"		18	SEE DETAIL THIS SHEET
PVC–2	1" I.D. PVC VOID DRAIN 4"		84	
PVC–3	2" I.D. PVC 1'–4"		14	
PVC–4	2" I.D. PVC PT TUBE 3'–11.3/8"		9	SEE DETAIL THIS SHEET
L–1	DOUBLE 1/2" DIA. STRAND LIFT LOOP IN CONDUIT		32	SEE DETAIL THIS SHEET
B–1	STRAND ANCHORAGE RECESS		12	SEE DETAIL THIS SHEET
P–1	3/4"x6"x6"=5" PLATE 6" x 6"		12	SEE DETAIL THIS SHEET
PVC–5	2" I.D. PVC P.T. TUBE 3'–4.5/8"		3	SEE DETAIL THIS SHEET
PVC–6	2" I.D. PVC 1'–7.5/8"		3	SEE DETAIL THIS SHEET
PVC–7	2" I.D. PVC 2'–2.3/4"		3	SEE DETAIL THIS SHEET

ERECTION MATERIALS

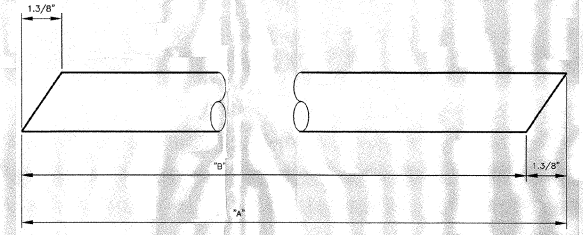
MARK #	ITEM DECSRIPTION	FINISH	QUANTITY	REMARKS
EP–1	ELASTMERIC PAD 1"x8"x0'–8"		32	
EP–2	1/2" DIA. 270K POLYSTRAND x40'–0"		3	
EP–3	1/2" DIA. 270K POLYSTRAND x24'–0"		3	



PVC DETAIL
SCALE NOT TO SCALE

DIMENSION SCHEDULE

MARK #	DIM "C"	DIM "D"
PVC–4	3'–11.3/8	3'–10"
PVC–6	1'–7.5/8"	1'–6.1/4"



PVC DETAIL
SCALE NOT TO SCALE

DIMENSION SCHEDULE

MARK #	DIM "A"	DIM "B"
PVC–1	4'–6.1/2"	4'–5.1/8"
PVC–5	3'–4.5/8"	3'–3.1/4"
PVC–7	2'–2.3/4"	2'–1.3/8"

RECEIVED
CK'D BY PTL CK'D BY
AUG 10 1998
RESUBMIT APPROVED
BY DSR DATE 8/12/98

MOHLIN & COMPANY HAS PROVIDED DRAFTING SERVICES ONLY. DESIGN BY SIRKO ASSOCIATES, DENVER CO.

DATE	REV	REVISIONS	BY
8/7/98	0	ISSUED FOR CONSTRUCTION	SP
7/28/98		ISSUED FOR APPROVAL	SP

MOHLIN & COMPANY
CIVIL ENGINEERS
89 BEACH STREET, SACO, MAINE
PHONE (207) 283-4101

SHEET TITLE: BRIDGE DETAILS

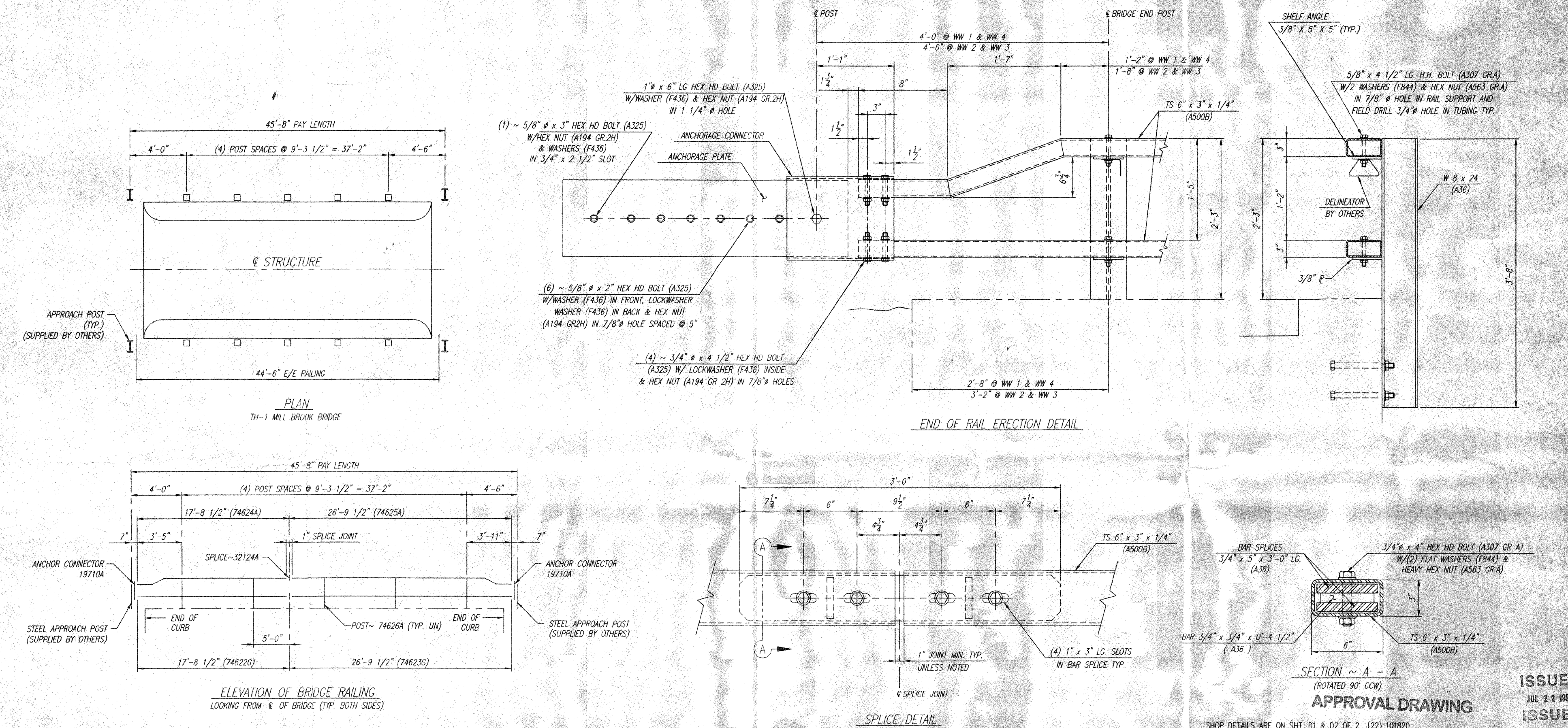
PROJECT TH 1 OVER MILL BROOK
LOCATION SUNDERLAND VERMONT
Job No. 600 – 355
Surveyor VERMONT AGENCY OF TRANSPORTATION
Etc. MILLER CONSTRUCTION
Engineer VERMONT AGENCY OF TRANSPORTATION

SCALE NOT TO SCALE CHECKED
DATE DESIGNED
DRAWN BY VCD APPROVED

Precast Structures, Inc.
P.O. BOX 1347 • AUBURN, MAINE 04210 • (207) 786-0661

BRIDGE NO. TH 1
STATE NO. TH2-9003
SHEET NO. 8 OF 8

98/214 Plotted: 08-07-98 DETAILS.dwg SF = 4.0



ISSUED JUL 22 1998 ISSUED

APPROVAL DRAWING

SHOP DETAILS ARE ON SHT. D1 & D2 OF 2 (22) 101820

REV.	CHK'D	BY	DATE	REMARKS
1	T.P.	S.H.	7/21/98	CHANGED PER APPROVAL COMMENTS

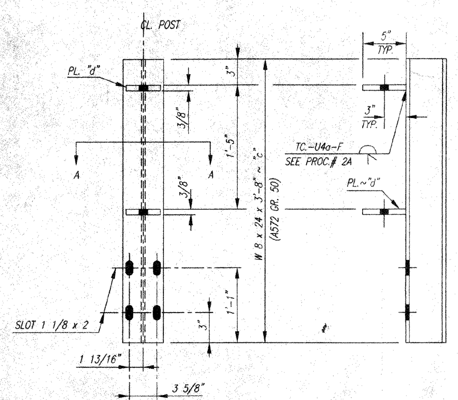
92 LF BRIDGE RAIL-2 RAIL

VERMONT AGENCY OF TRANSPORTATION
HIGHWAY NO. TH1
TOWN OF SUNDERLAND
STATE PROJECT NO. TH 2-9003 BRIDGE OVER MILL BROOK

CUSTOMER	F. R. LAFAYETTE INC.
P.O. No.	12785
DRAWN	W.B.
CHECKED	R.M.H.
APPROVED	
DATE	6-18-98
ENG. FILE #	101820E1
SHT.No.	E1 OF 1
DRAWING No.	(22) 101820
REV.	1

TRINITY INDUSTRIES, INC. SYRO
DALLAS, TX · CENTERVILLE, UT · GIRARD, OH · LIMA, OH · FORT WORTH, TX · ELIZABETHTOWN, KY

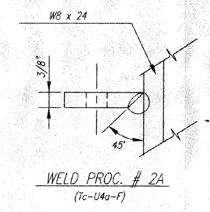
RECEIVED
CK'D BY PTL CK'D BY
JUL 28 1998
RESUBMIT____ APPROVED ✓
BY GSR DATE 7/31/98



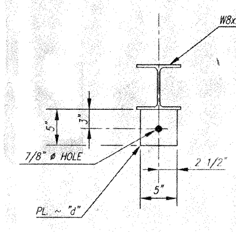
10 ~ 74626A POST

EACH POST 74626A CONSISTING OF:

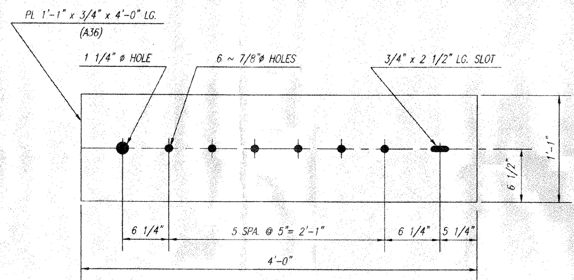
SUB MK	QUAN.	DESCRIPTION
c	1	W 8 x 24 x 3'-8" (A572 GR. 50)
d	2	PL. 5" x 3/8" x 5" LG. (A36)



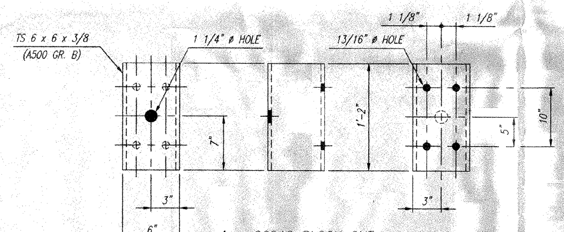
WELD PROC. # 2A
(Tc-U4a-F)



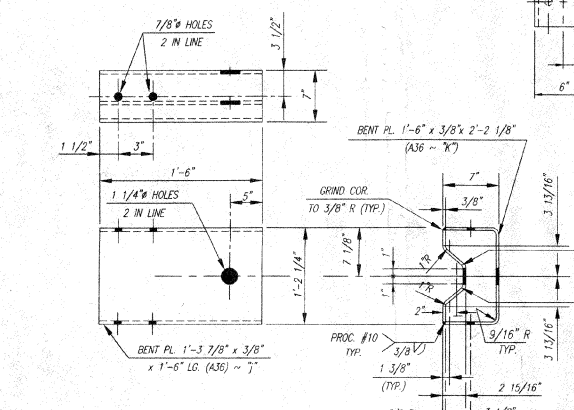
SECTION A-A



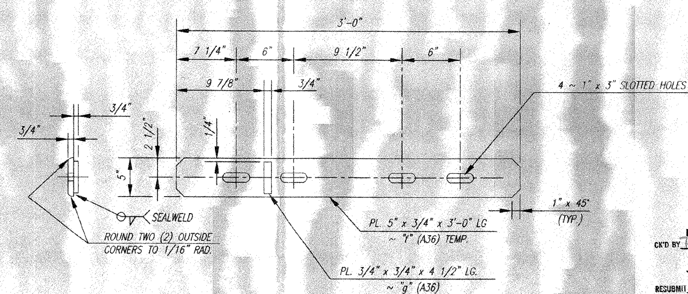
4 ~ 811G ANCHOR PLATE



4 ~ 9624G BLOCK OUT



4 ~ 19710A ANCHOR CONN.



8 ~ 32124A SPLICE

BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION	WT	REMARKS
74626A	10	2 RAIL POST	99#	
32124A	8	SPLICE	37#	
19710A	4	ANCHOR CONN.	83#	
811G	4	ANCHOR PLATE	133#	
9624G	4	BLOCK OUT	34#	
		HARDWARE		
3706G	16	3/4 ø x 4" HEX HD. BOLT		A307 GR.A A153
3700G	32	3/4 ø FLAT WASHER		F844 A123
3704G	16	3/4 ø HEX NUT (HVY)		A307 GR.A A153
4433G	20	5/8 ø x 4 1/2" HEX HD. BOLT		A307 GR.A A153
3300G	40	5/8 ø FLAT WASHER		F844 A123
3350G	20	5/8 ø HEX NUT		A563 GR.A A153
3917G	4	1" ø x 6" HEX HD. BOLT		A325 A153
4902G	4	1" ø FLAT WASHER		F436 A123
4903G	4	1" ø HEX NUT		A194 Gr.2H A153
4421G	4	5/8 ø x 3" HEX HD. BOLT		A325 A153
3404G	24	5/8 ø x 2" HEX HD. BOLT		A325 A153
4372G	32	5/8 ø FLAT WASHER		F436 A123
3310G	24	5/8 ø LOCK WASHER		F436 A123
3351G	28	5/8 ø HEX NUT		A194 Gr.2H A153
4779G	16	3/4 ø x 4 1/2" HEX HD. BOLT		A325 A123
4699G	16	3/4 ø LOCK WASHER		F436 A123
3711G	16	3/4 ø HEX NUT		A194 Gr.2H A153
		PAY QUANTITIES		
92'-0" LIN FT.		ITEM NO. 525.31	2-RAIL GALV. BOX BEAM BRIDGE RAILING	

HARDWARE NOTE:

VERMONT DEPT. OF HIGHWAYS HIGH STRENGTH HARDWARE A325 OR A449 REQUIRES MANUFACTURER'S CERTIFICATE SHOWING HEAT NO, PHYSICAL PROPERTIES AND CHEMICAL ANALYSIS.

CARBON A307 HARDWARE REQUIRES THE MANUFACTURER'S CERTIFICATE OF COMPLIANCE.

NOTES:

1. ALL POSTS TO BE CHARPY V NOTCH TESTED
2. INSPECTED BY CONWELL
3. FINISH: GALV A123
4. W8 x 24 POST SHALL MEET MINIMUM CHARPY TOUGHNESS REQUIREMENTS.
5. ALL WELDING SHALL CONFORM WITH VERMONT STANDARD SPECIFICATIONS SECTION 506.10

APPROVAL DRAWING

ISSUED
JUL 22 1998
ISSUED

ERECTION DETAILS ARE ON SHEETS E1 OF 1 (22) 101820

REV.	CHK'D	BY	DATE	REMARKS
1	D.D.	S.H.	7/21/98	CHANGED PER APPROVAL COMMENTS

RECEIVED
CK'D BY PIC OK'D BY [illegible]
JUL 28 1998
RESUBMIT ____ APPROVED ✓
BY GSR DATE 7/31/98

92 LF BRIDGE RAIL-2 RAIL

VERMONT AGENCY OF TRANSPORTATION
HIGHWAY NO. TH1
TOWN OF SUNDERLAND
STATE PROJECT NO. TH 2-9003 BRIDGE OVER MILL BROOK

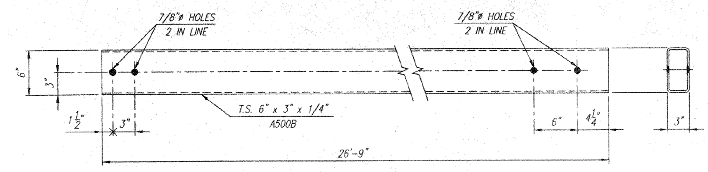
CUSTOMER: F. R. LAFAYETTE INC. P.O. No. 12785

TRINITY INDUSTRIES, INC. SYRO
DALLAS, TX GIRARD, OH FORT WORTH, TX
CENTERVILLE, UT LIMA, OH ELIZABETHTOWN, KY

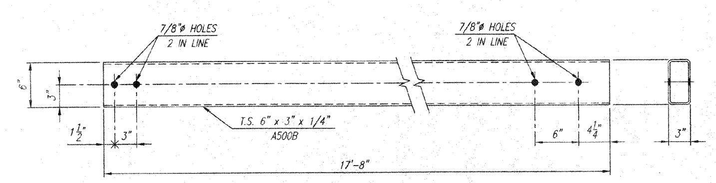
DRAWN	W.B.
CHECKED	R.M.H.
APPROVED	
DATE	6-18-98
ENG. FILE #	101820D1
SHT.No.	D1 of 2
DRAWING No.	(22) 101820
REV	1

L:\DWG\WIP\V101820\101820D1 Tue JUL 21 11:21:58 1998 Plot by Samuel Howard

BILL OF MATERIAL				
PRODUCT CODE	QTY	DESCRIPTION	WT	REMARKS
		RAILS		
74622G	2	TS 6 x 3 x 1/4 x 17'-8"	260#	
74623G	2	TS 6 x 3 x 1/4 x 26'-9"	393#	
74624A	2	TS 6 x 3 x 1/4 x 17'-10 3/16"	263#	
74625A	2	TS 6 x 3 x 1/4 x 26'-11 3/16"	396#	

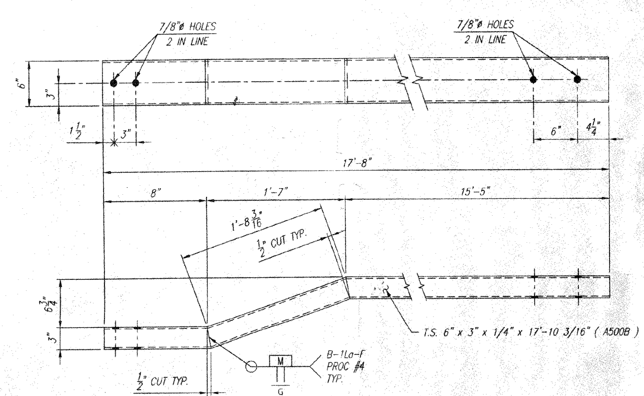


2 ~ END RAILS ~ 74623G

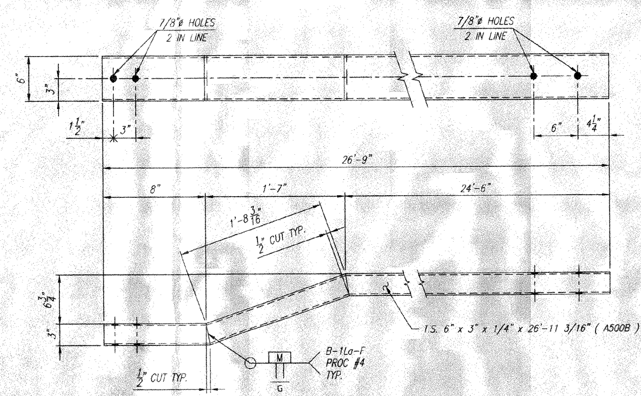


2 ~ END RAILS ~ 74622G

NOTES:
1. ALL POSTS TO BE CHARPY V-NOTCH TESTED.
2. INSPECTED BY CONWELL.
3. FINISH: GALV. A123
4. W8 x 24 POSTS SHALL MEET MINIMUM CHARPY V-NOTCH TOUGHNESS REQUIREMENTS.
5. ALL WELDING SHALL CONFORM WITH VERMONT STANDARD SPECIFICATIONS SECTION 506.10.



2 ~ END RAILS ~ 74624A



2 ~ END RAILS ~ 74625A

APPROVAL DRAWING

ISSUED JUL 22 1998 ISSUED

ERECTION DETAILS ARE ON SHT. E1 OF 1 (22) 101820

RECEIVED
JUL 28 1998

REV.	CHK'D	BY	DATE	REMARKS
1	T.P.	S.H.	7/21/98	CHANGED PER APPROVAL COMMENTS

92 LF BRIDGE RAIL-2 RAIL

VERMONT AGENCY OF TRANSPORTATION
HIGHWAY NO. TH1
TOWN OF SUNDERLAND
STATE PROJECT NO. TH 2-9003 BRIDGE OVER MILL BROOK

CUSTOMER: F. R. LAFAYETTE INC. P.O. No. 12785

DRAWN	W.B.
CHECKED	R.M.H.
APPROVED	
DATE	6-18-98
ENG. FILE #	10182002
SHT.No.	D2 OF 2
DRAWING No.	(22) 101820
REV.	1

TRINITY INDUSTRIES, INC. SYRO
DALLAS, TX · GIRARD, OH · FORT WORTH, TX · CENTERVILLE, UT · LIMA, OH · ELIZABETHTOWN, KY