

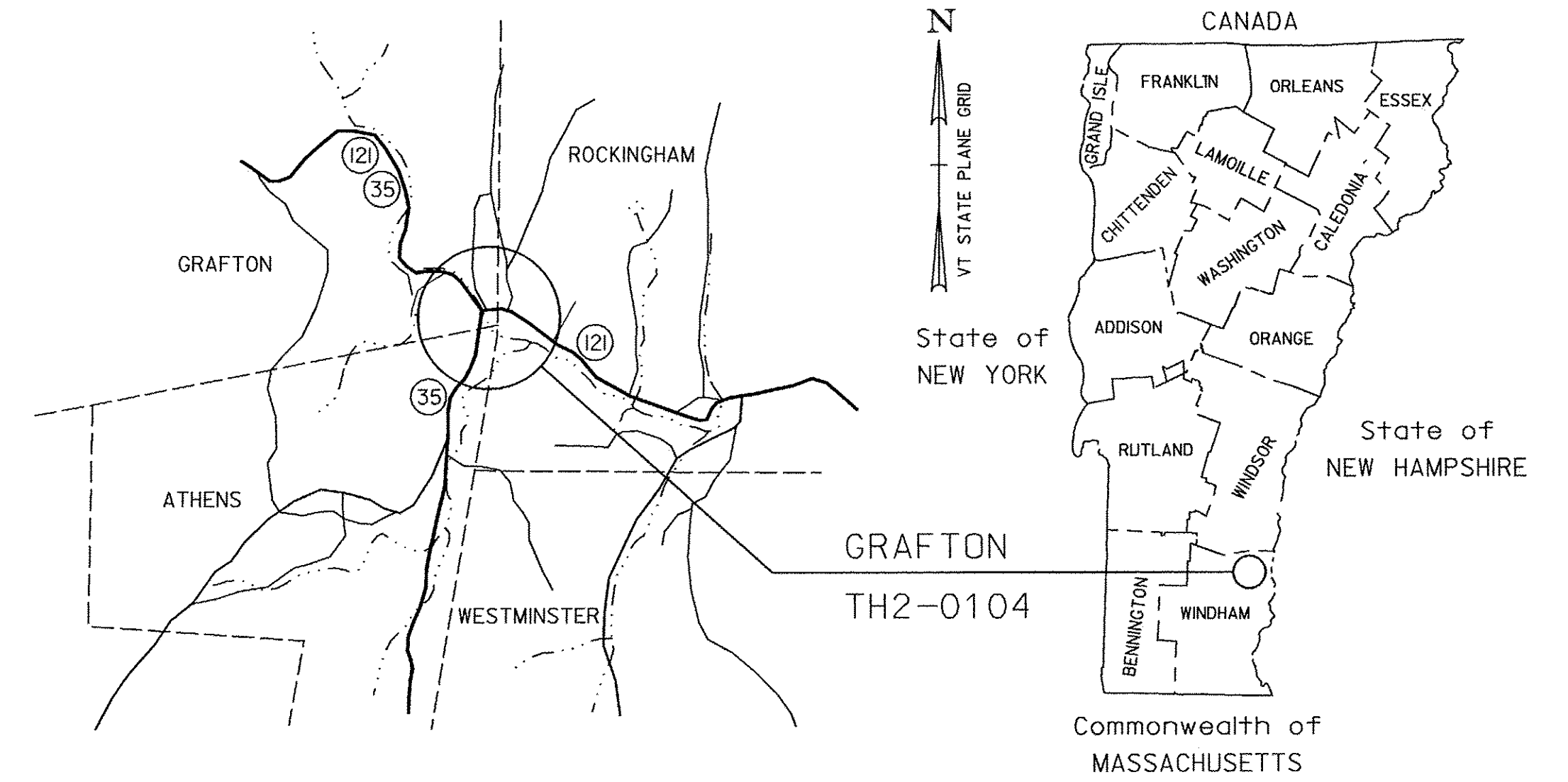
INDEX OF SHEETS

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- 37-39 ROADWAY CROSS SECTIONS
- 40-42 CHANNEL CROSS SECTIONS

TOWN OF GRAFTON, VT CAMBRIDGEPORT BRIDGE



PROPOSED IMPROVEMENT BRIDGE PROJECT COUNTY OF WINDHAM VT ROUTE 121, BRIDGE NO. 16G



RECORD PLANS	
CONTRACTOR:	F.W. WHITCOMB CONSTRUCTION CORP. - WALPOLE, NH
RESIDENT ENGINEER:	CHAD GREENWOOD
CONSTRUCTION BEGAN:	APRIL 11, 2006
CONSTRUCTION COMPLETE:	MAY 11, 2007
RECORD PLANS BY:	CHAD GREENWOOD & AMOS KEMPTON
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.	
BY:	RESIDENT ENGINEER
DATE:	1/23/12
NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.	

PROJECT LOCATION: BEGINNING AT A POINT 600.0' WESTERLY OF THE GRAFTON/ROCKINGHAM TOWN LINE AND EXTENDING EASTERLY 98.0'.

PROJECT DESCRIPTION: REMOVAL OF THE EXISTING SUPERSTRUCTURE, CONSTRUCTION OF A STEEL BEAM, CONCRETE DECK SUPERSTRUCTURE, REHABILITATION OF ABUTMENTS, REMOVAL OF PIER, AND RELATED ROADWAY APPROACHES.

LENGTH OF STRUCTURE: 98.0'

LENGTH OF ROADWAY: 54.0'

LENGTH OF PROJECT: 152.0'

STANDARD SHEETS

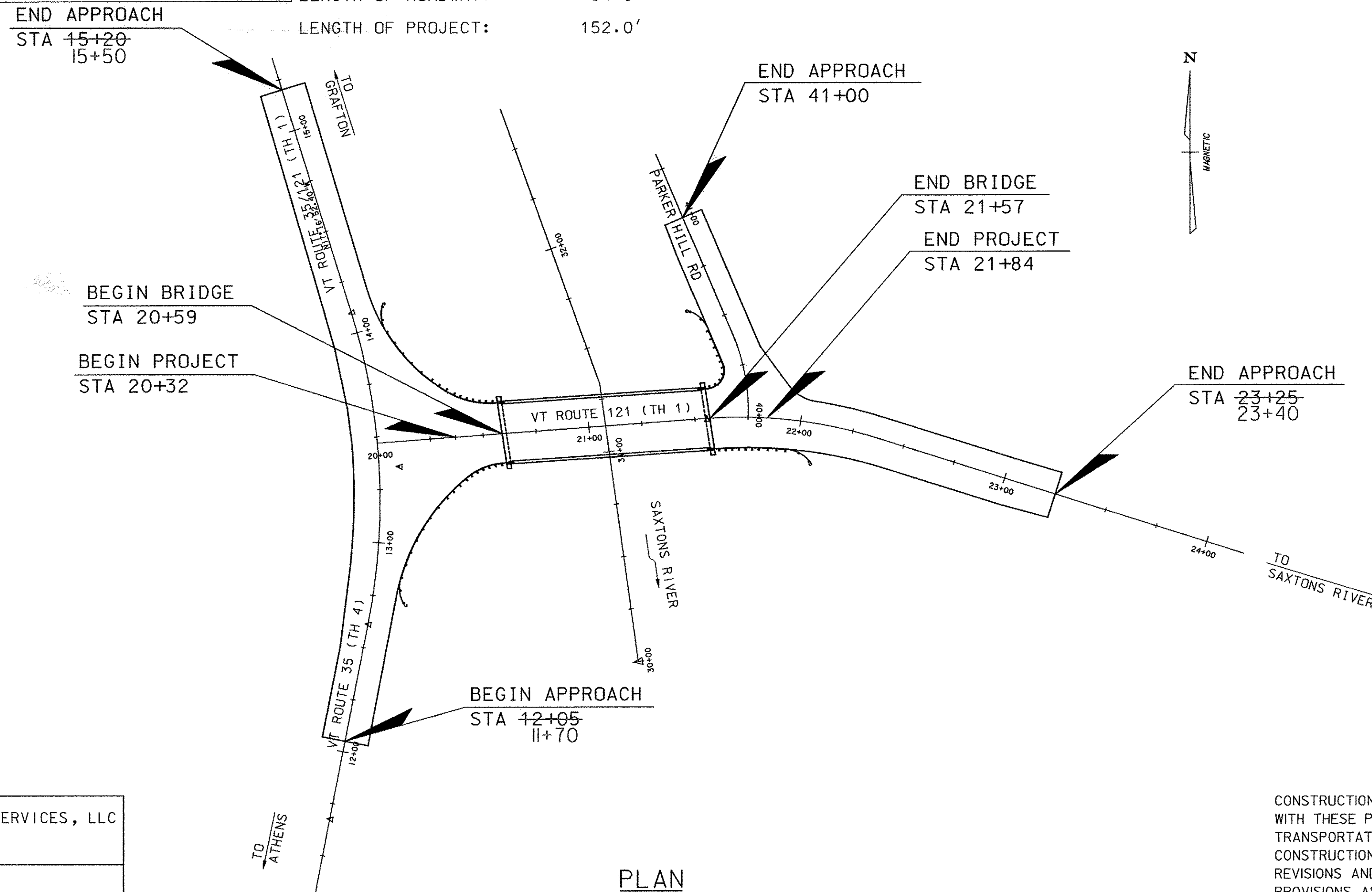
E-100	01-02-04	E-151	05-01-04
E-100A	01-02-04	E-152	05-01-04
E-101	05-30-03	E-160	05-20-99
E-102	06-30-03	E-163	05-20-99
E-102A	05-01-04	E-164	05-20-99
E-106	03-01-04	E-171A	08-09-95
E-107	06-30-03	E-171B	08-09-95
E-108	08-18-95	E-172	08-09-95
E-110	08-08-95	E-175	11-17-93
E-121	08-08-95	E-180A	08-09-95
E-123	03-16-04	E-193	08-18-95
E-127	08-08-95	G-1	01-03-00
E-136C	08-08-95	G-1D	01-03-00
E-140	08-30-96	G-18	06-01-94
E-142	09-20-95	G-19	11-15-02
E-143	06-15-04	J-3	08-07-95
E-144	03-29-99	SB-R4A-82	09-19-89
		SB-R6-82	01-06-95

CONVENTIONAL SYMBOLS

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

SURVEYED BY : EIV TECHNICAL SERVICES, LLC
SURVEYED DATE : JUNE 2002

DATUM
VERTICAL : NAVD 88
HORIZONTAL : ASSUMED



PLAN
SCALE: 1" = 40'

ROUTE 121 TRAFFIC DATA *

2000 ADT = 2200	2000-2020 ESAL'S 881,000
2000 DHV = 310	2000-2040 ESAL'S 2,198,000
2000 ADTT = 110	DESIGN SPEED = 35 mph
2020 ADT = 3000	
2020 DHV = 420	
2020 ADTT = 100	
% D = 50	
% T = 2.0	

* TRAFFIC DATA PROVIDED BY THE TOWN OF ROCKINGHAM FROM THE GRAFTON-ROCKINGHAM, ROUTE 121 PROJECT (STP 0126(4) S).

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 1 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

VHB Vanasse Hangen Brustlin, Inc.

DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED _____	DATE _____
PROJECT MANAGER : WARREN TRIPP	
PROJECT NAME : GRAFTON	
PROJECT NUMBER : TH2-0104	
SHEET 1R OF 42 SHEETS	

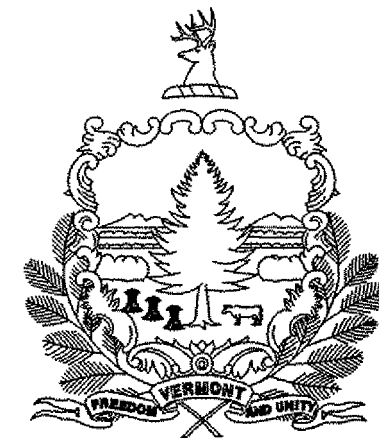
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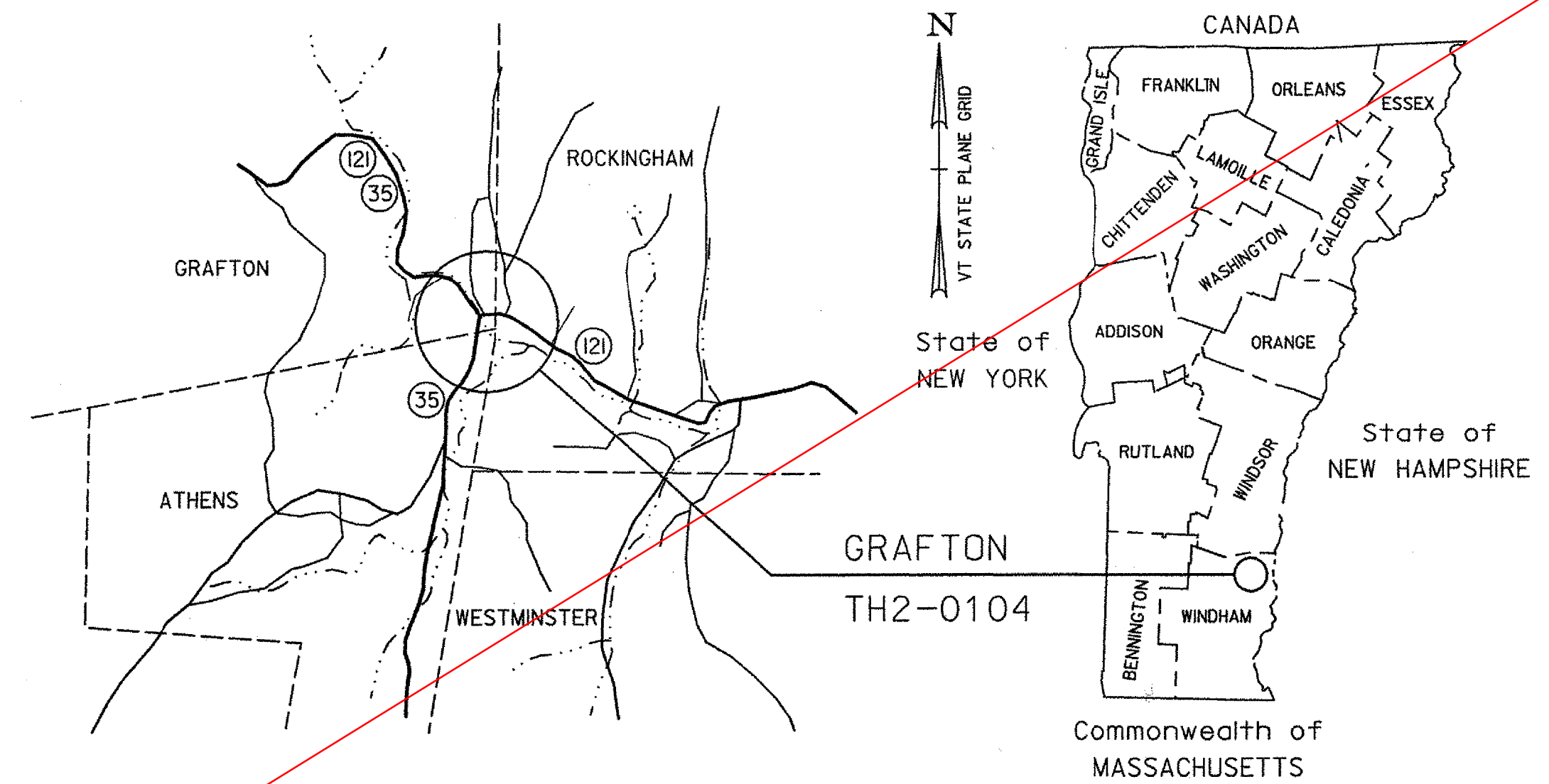
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		SB-R6-82	01-06-95

TOWN OF GRAFTON, VT CAMBRIDGEPORT BRIDGE



PROPOSED IMPROVEMENT BRIDGE PROJECT COUNTY OF WINDHAM VT ROUTE 121, BRIDGE NO. 16G



PROJECT LOCATION: BEGINNING AT A POINT 600.0' WESTERLY OF THE GRAFTON/ROCKINGHAM TOWN LINE AND EXTENDING EASTERLY 98.0'.

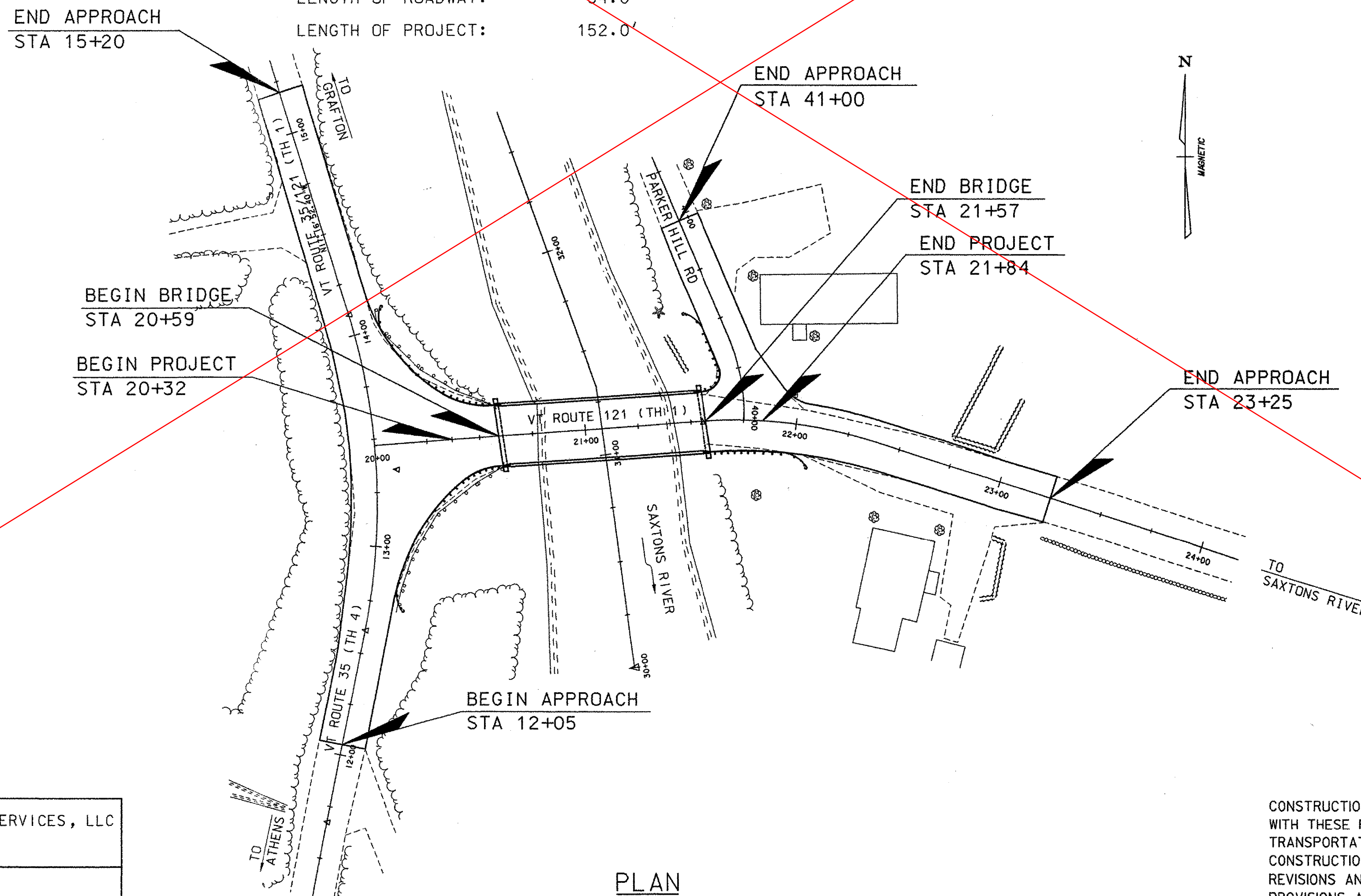
PROJECT DESCRIPTION: REMOVAL OF THE EXISTING SUPERSTRUCTURE, CONSTRUCTION OF A STEEL BEAM, CONCRETE DECK SUPERSTRUCTURE, REHABILITATION OF ABUTMENTS, REMOVAL OF PIER, AND RELATED ROADWAY APPROACHES.

LENGTH OF STRUCTURE: 98.0'
 LENGTH OF ROADWAY: 54.0'
 LENGTH OF PROJECT: 152.0'

ROUTE 121 TRAFFIC DATA *

2000 ADT = 2200	2000-2020 ESAL'S 881,000
2000 DHV = 310	2000-2040 ESAL'S 2,198,000
2000 ADTT = 110	DESIGN SPEED = 35 mph
2020 ADT = 3000	
2020 DHV = 420	
2020 ADTT = 100	
% D = 50	
% T = 2.0	

* TRAFFIC DATA PROVIDED BY THE TOWN OF ROCKINGHAM FROM THE GRAFTON-ROCKINGHAM, ROUTE 121 PROJECT (STP 0126(4) S).



PLAN
SCALE: 1" = 40'

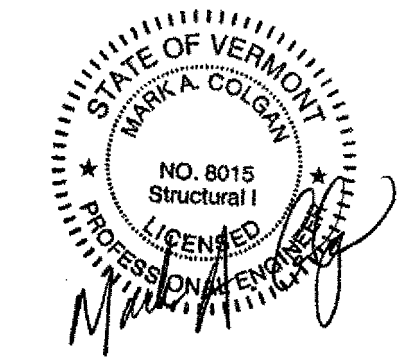
CONVENTIONAL SYMBOLS

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

SURVEYED BY : EIV TECHNICAL SERVICES, LLC
 SURVEYED DATE : JUNE 2002

DATUM
 VERTICAL NAVD 88
 HORIZONTAL ASSUMED

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.



SEE SHEET IR

DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED <i>Richard J. ...</i>	DATE 5/31/05
PROJECT MANAGER : WARREN TRIPP	
PROJECT NAME : GRAFTON	
PROJECT NUMBER : TH2-0104	
SHEET 1 OF 42 SHEETS	

VHB Vanasse Hangen Brustlin, Inc.

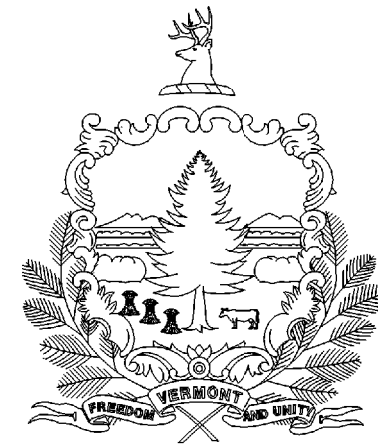
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TOWN OF GRAFTON, VT CAMBRIDGEPORT BRIDGE



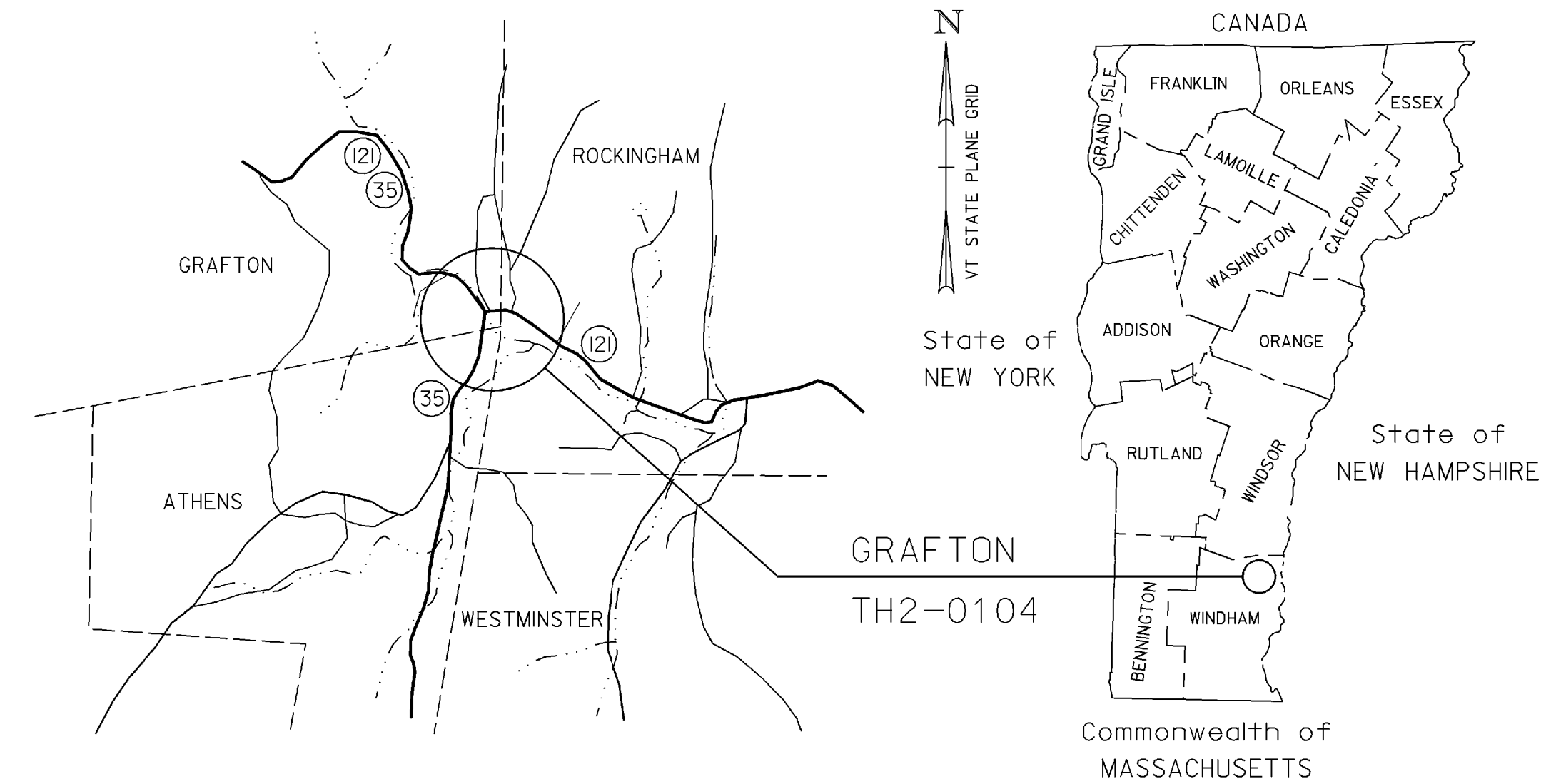
PROPOSED IMPROVEMENT BRIDGE PROJECT COUNTY OF WINDHAM

VT ROUTE 121, BRIDGE NO. 16G

PROJECT LOCATION: BEGINNING AT A POINT 600.0' WESTERLY OF THE GRAFTON/ROCKINGHAM TOWN LINE AND EXTENDING EASTERLY 98.0'.

PROJECT DESCRIPTION: REMOVAL OF THE EXISTING SUPERSTRUCTURE, CONSTRUCTION OF A STEEL BEAM, CONCRETE DECK SUPERSTRUCTURE, REHABILITATION OF ABUTMENTS, REMOVAL OF PIER, AND RELATED ROADWAY APPROACHES.

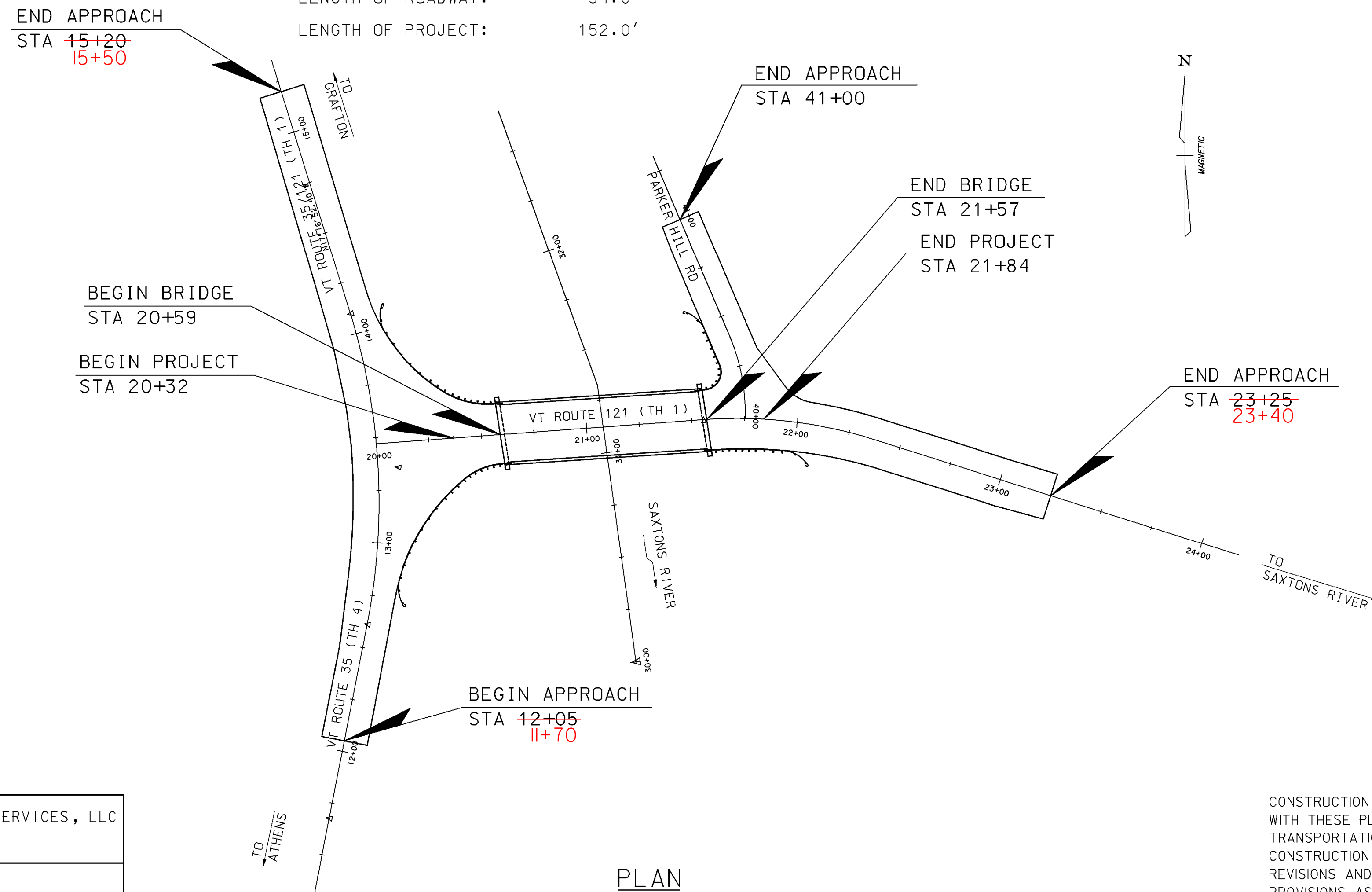
LENGTH OF STRUCTURE: 98.0'
 LENGTH OF ROADWAY: 54.0'
 LENGTH OF PROJECT: 152.0'



ROUTE 121 TRAFFIC DATA *

2000 ADT = 2200	2000-2020 ESAL'S 881,000
2000 DHV = 310	2000-2040 ESAL'S 2,198,000
2000 ADTT = 110	DESIGN SPEED = 35 mph
2020 ADT = 3000	
2020 DHV = 420	
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% D = 50	
% T = 2.0	

* TRAFFIC DATA PROVIDED BY THE TOWN OF ROCKINGHAM FROM THE GRAFTON-ROCKINGHAM, ROUTE 121 PROJECT (STP 0126(4) S).



CONVENTIONAL SYMBOLS

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

SURVEYED BY : EIV TECHNICAL SERVICES, LLC
 SURVEYED DATE : JUNE 2002

DATUM
 VERTICAL NAVD 88
 HORIZONTAL ASSUMED

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 1 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

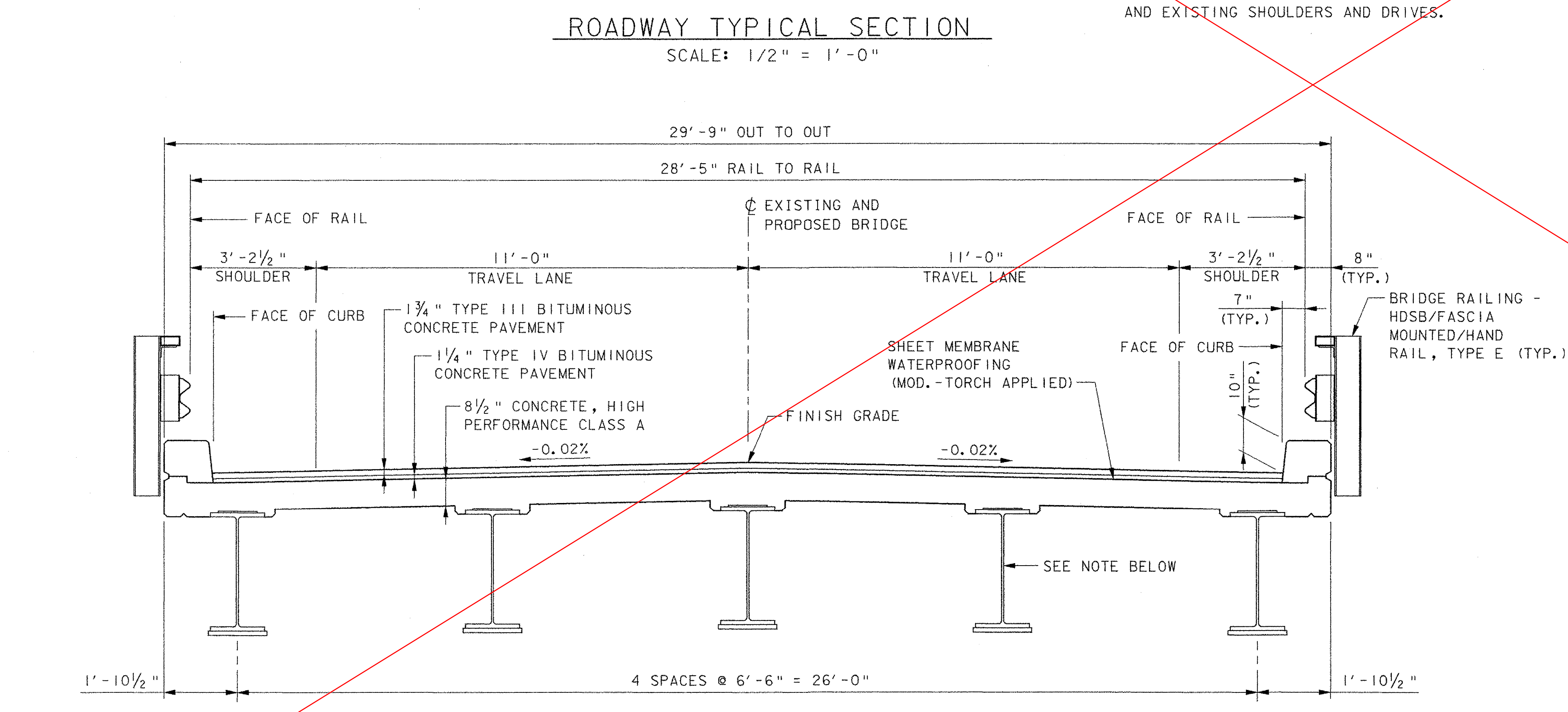
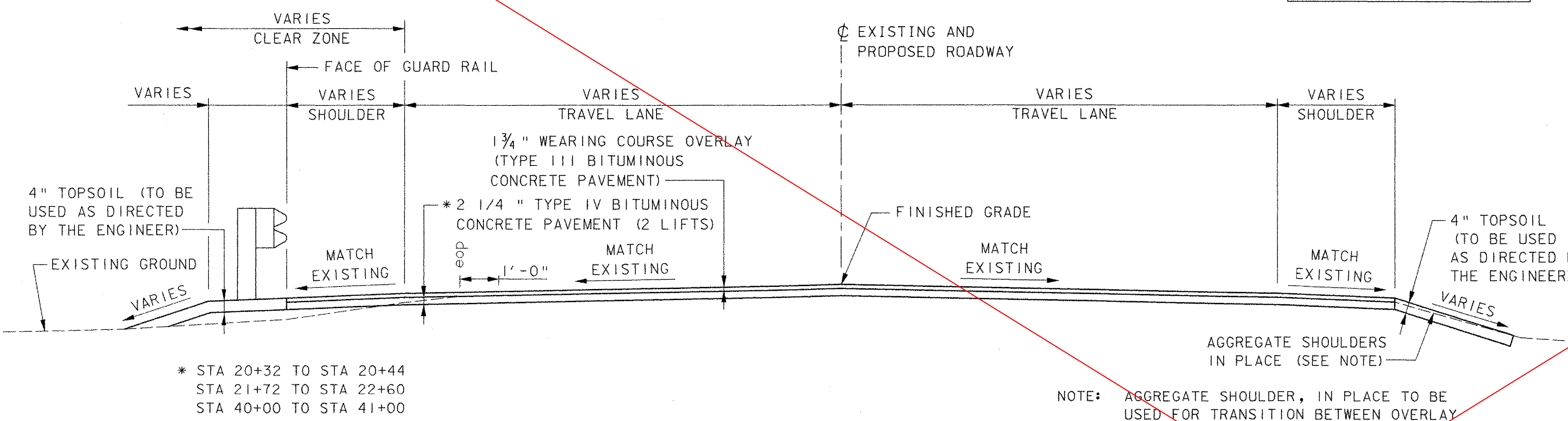
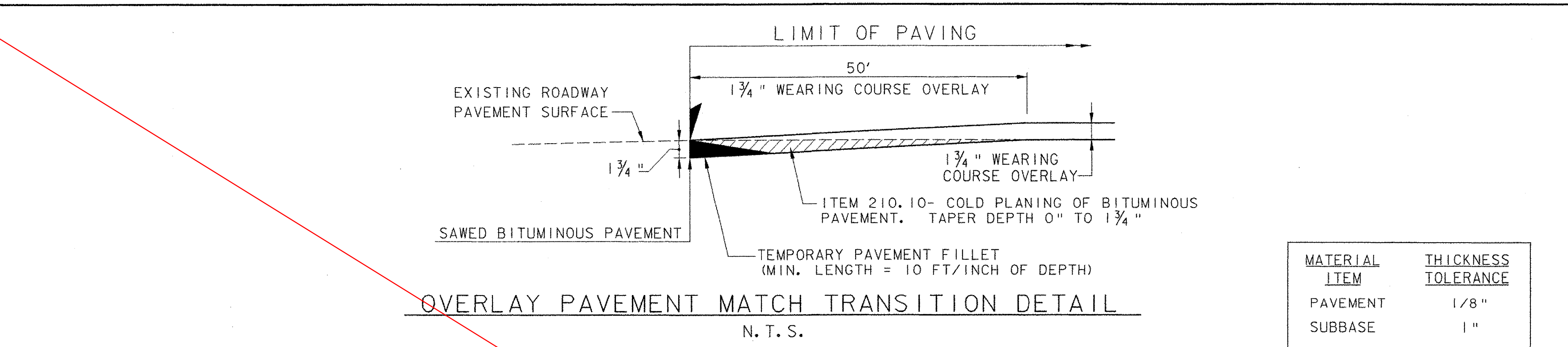
VHB Vanasse Hangen Brustlin, Inc.

DIRECTOR OF PROGRAM DEVELOPMENT
 APPROVED _____ DATE _____

PROJECT MANAGER : WARREN TRIPP

PROJECT NAME : GRAFTON
 PROJECT NUMBER : TH2-0104

SHEET 1R OF 42 SHEETS



NOTE: THE BEAMS THAT ARE CURRENTLY STOCKPILED FOR USE ON THIS PROJECT ARE W36x300 BEAMS WITH 1 5/16"x18" BOTTOM COVER PLATES AND 1/2"x12" TOP COVER PLATES. THE BEAMS ARE PAINTED. REPAINTING OF BEAMS IS REQUIRED (SEE SPECIAL PROVISIONS).

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA (SEE NOTE 1)

DRAINAGE AREA= _____

CHARACTER OF TERRAIN= _____

CHARACTER & TYPE OF STREAM= _____

NATURE OF STREAMBED= _____

02.33= _____ 050= _____

010= _____ 0100= _____

025= _____ 0500= _____

DATE OF FLOOD OF RECORD= _____

WATER SURFACE ELEV. 1= _____ ESTIMATED DISCHARGE= _____

NATURAL STREAM VELOCITY @ 0= _____

ICE CONDITIONS= _____ DEBRIS= _____

DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? _____

IS ORDINARY RISE RAPID? _____

IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? _____

IF YES, DESCRIBE. _____

WATERSHED STORAGE= _____ HEADWATERS= _____ UNIFORM THROUGHOUT WATERSHED _____

IMMEDIATELY ABOVE SITE

PROPOSED STRUCTURE
(SUPERSTRUCTURE REPLACEMENT)

STRUCTURE TYPE: STEEL BEAMS, CONCRETE DECK

CLEAR SPAN (NORMAL TO STREAM): 44.8 FT - 44.8 FT

VERTICAL CLEARANCE ABOVE STREAMBED: 12.5 FT

WATERWAY OF FULL OPENING: 1138 SF

WATER SURFACE ELEV. @ 02.33= _____ VELOCITY= _____

010= _____ " = _____

025= _____ " = _____

050= _____ " = _____

0100= _____ " = _____

IS THE ROADWAY OVERTOPPED BELOW THE Q100? _____ FREQUENCY= _____

RELIEF ELEVATION= _____ DISCHARGE OVER ROAD @ Q100= _____

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE= _____

VERTICAL CLEARANCE @ 0= _____

SCOUR= _____

REQUIRED CHANNEL PROTECTION= _____

EXISTING STRUCTURE

STRUCTURE TYPE: STEEL BEAMS, CONCRETE DECK YEAR BUILT: 1941

CLEAR SPAN (NORMAL TO STREAM): 44.8 FT - 44.8 FT

VERTICAL CLEARANCE ABOVE STREAMBED: 12.5 FT

WATERWAY OF FULL OPENING: 1120 SF

DISPOSITION OF STRUCTURE: SUPERSTRUCTURE TO BE REPLACED, PIER TO BE REMOVED

TYPE OF MATERIAL UNDER SUBSTRUCTURE: UNKNOWN

WATER SURFACE ELEV. @ 02.33= _____ VELOCITY= _____

010= _____ " = _____

025= _____ " = _____

050= _____ " = _____

0100= _____ " = _____

LONG TERM STREAM BED CHANGES: _____

IS THE ROADWAY OVERTOPPED BELOW THE Q100? _____ FREQUENCY= _____

RELIEF ELEVATION= _____ DISCHARGE OVER ROAD @ Q100= _____

UPSTREAM STRUCTURE: TOWN= _____ DISTANCE= _____

HIGHWAY NO. 1= _____ STRUCTURE NO. 1= _____

STRUCTURE TYPE: _____

CLEAR SPAN: _____ CLEAR HEIGHT: _____

YEAR BUILT: _____ FULL WATERWAY: _____

DOWNSTREAM STRUCTURE: TOWN= _____ DISTANCE= _____

HIGHWAY NO. 2= _____ STRUCTURE NO. 2= _____

STRUCTURE TYPE: _____

CLEAR SPAN: _____ CLEAR HEIGHT: _____

YEAR BUILT: _____ FULL WATERWAY: _____

PERMIT INFORMATION

AVERAGE DAILY FLOW: _____

ORDINARY LOW WATER: _____ DEPTH: _____

ORDINARY HIGH WATER: _____ DEPTH: _____

ADDITIONAL COMMENTS

NOTE: 1. THE PROPOSED BRIDGE REHABILITATION DOES NOT INCLUDE ANY WORK IN THE CHANNEL OTHER THAN EXISTING PIER REMOVAL, THEREFORE NO HYDROLOGIC DATA IS REQUIRED OR PROVIDED.

DESIGN CRITERIA:

- DESIGN LIVE LOAD AASHTO HS20
- DESIGN SPAN 48.0 FT - 48.0 FT
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE N/A
- ALLOWABLE LOAD FOR PILING N/A TYPE N/A ESTIMATED LENGTH N/A
- STRUCTURAL STEEL F_y = 33,000 PSI (ASSUMED)
- REINFORCING STEEL AASHTO M31 GR. 60
- CONCRETE, HIGH PERFORMANCE CLASS A F_c 4000 PSI

TRAFFIC MAINTENANCE:

- IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE _____ OR ON TEMPORARY BRIDGE _____ YES
- TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY ONE TRAFFIC CONTROL SIGNALS REQUIRED YES

MINIMUM CLEAR SPAN (NORMAL TO STREAM): 90 FT VERTICAL CLEARANCE ABOVE STREAMBED: 13'-10"

WATERWAY OF FULL OPENING: 1138 SF

ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? _____

STRUCTURE TYPE: UNKNOWN - SEE SHEET 12 FOR REQUIREMENTS

LOADING LEVELS (LOAD FACTOR)	LOAD FACTOR LOAD RATING (TONS)						
	H	HS	3S2	6 AXLE	3A, STR.	4A, STR.	5A, SERV.
INVENTORY A=2.17 B=1.00	31	56					
POSTED A=1.55 B=1.40	46	79	123		88	100	114
OPERATING A=1.30 B=1.67		95	147	168	105	120	
GOVERNING FACTOR D=DECK; S=SERVICEABILITY	D	D	S	S	D	S	S

STRENGTH R_F = $\frac{0.95 M_N - 1.3 M_{DL}}{A \times M_{LL+1}}$ SERVICEABILITY R_F = $\frac{0.95 F_y S_{LL+1} - M_{DL} \frac{S_{LL+1}}{S_{DL}} - M_{SPR} \frac{S_{LL+1}}{S_{SPR}}}{1.67 M_{LL+1}}$

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of GRAFTON Bridge No. 16G

Highway No. TH 1 Log Sta. _____

Surv. Sta. _____

TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER

PRELIMINARY INFORMATION SHEET

Designed By J. T. KLEIN Drawn By B. J. MASSE

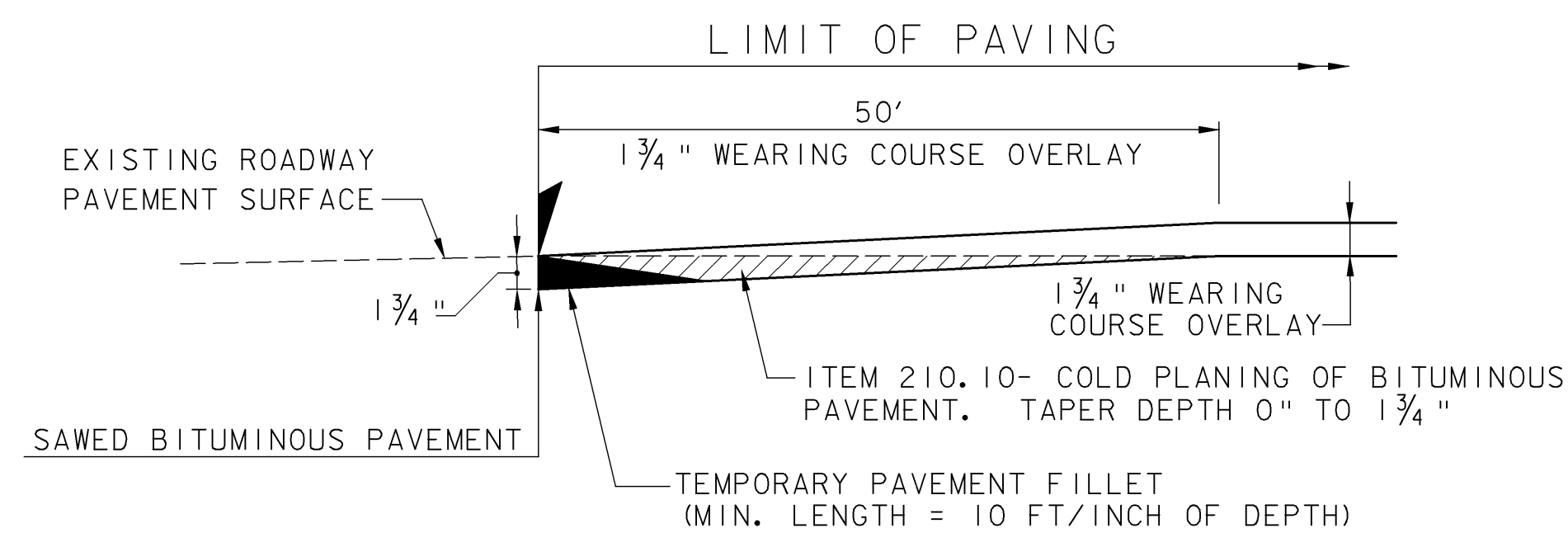
Checked By _____ Date _____ Bridge Design Supervisor

M. A. COLGAN 5/05 M. A. COLGAN Date 5/05

PROJECT GRAFTON PROJECT NO. TH2-0104

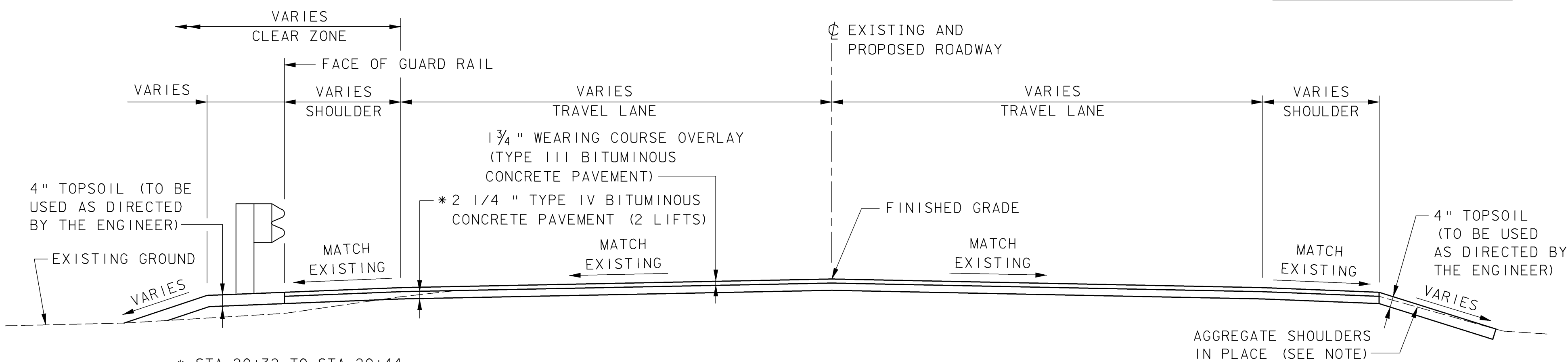
I.G.C. Info. _____

File No. 51335P1 Sheet 2 of 42



OVERLAY PAVEMENT MATCH TRANSITION DETAIL
N. T. S.

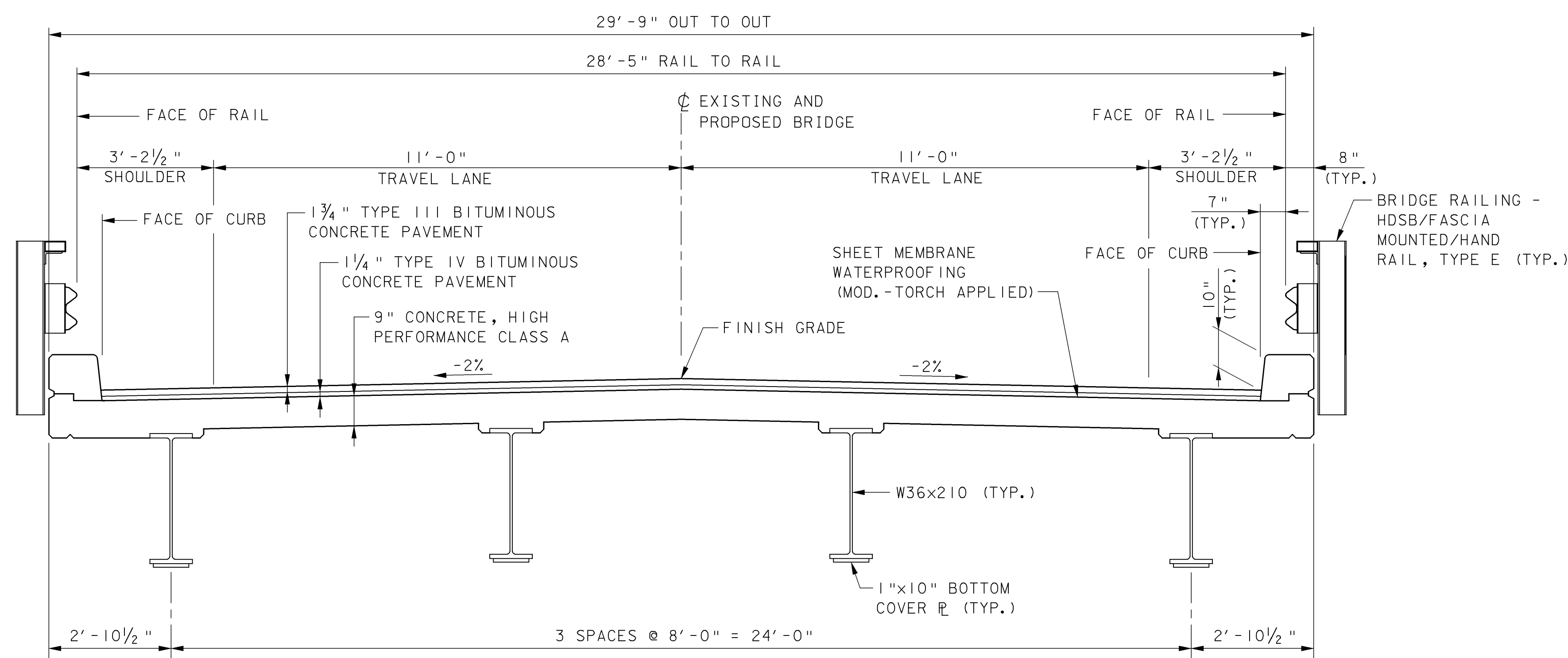
MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT	1/8"
SUBBASE	1"



* STA 20+32 TO STA 20+44
STA 21+72 TO STA 22+60
STA 40+00 TO STA 41+00

NOTE: AGGREGATE SHOULDER, IN PLACE TO BE USED FOR TRANSITION BETWEEN OVERLAY AND EXISTING SHOULDERS AND DRIVES.

ROADWAY TYPICAL SECTION
SCALE: 1/2" = 1'-0"



BRIDGE TYPICAL SECTION
SCALE: 1/2" = 1'-0"

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA (SEE NOTE 1)

DRAINAGE AREA= _____
 CHARACTER OF TERRAIN: _____
 CHARACTER & TYPE OF STREAM: _____
 NATURE OF STREAMBED: _____
 Q2,33= _____ Q50= _____
 Q10= _____ Q100= _____
 Q25= _____ Q500= _____
 DATE OF FLOOD OF RECORD: _____
 WATER SURFACE ELEV.: _____ ESTIMATED DISCHARGE: _____
 NATURAL STREAM VELOCITY @ Q: _____
 ICE CONDITIONS: _____ DEBRIS: _____
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY?
 IS ORDINARY RISE RAPID?
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS?
 IF YES, DESCRIBE. _____
 WATERSHED STORAGE: _____ HEADWATERS: _____ UNIFORM THROUGHOUT WATERSHED: _____ IMMEDIATELY ABOVE SITE: _____

EXISTING STRUCTURE

STRUCTURE TYPE: STEEL BEAMS, CONCRETE DECK YEAR BUILT: 1941
 CLEAR SPAN (NORMAL TO STREAM): 44.8 FT - 44.8 FT
 VERTICAL CLEARANCE ABOVE STREAMBED: 12.5 FT
 WATERWAY OF FULL OPENING: 1120 SF
 DISPOSITION OF STRUCTURE: SUPERSTRUCTURE TO BE REPLACED, PIER TO BE REMOVED
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: UNKNOWN
 WATER SURFACE ELEV. @ Q2,33= _____ VELOCITY= _____
 Q10= _____ " _____
 Q25= _____ " _____
 Q50= _____ " _____
 Q100= _____ " _____
 LONG TERM STREAM BED CHANGES: _____
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? _____ FREQUENCY: _____
 RELIEF ELEVATION: _____ DISCHARGE OVER ROAD @ Q100: _____
 UPSTREAM STRUCTURE: TOWN: _____ DISTANCE: _____
 HIGHWAY NO.: _____ STRUCTURE NO.: _____
 STRUCTURE TYPE: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 DOWNSTREAM STRUCTURE: TOWN: _____ DISTANCE: _____
 HIGHWAY NO.: _____ STRUCTURE NO.: _____
 STRUCTURE TYPE: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____

PROPOSED STRUCTURE

(SUPERSTRUCTURE REPLACEMENT)
 STRUCTURE TYPE: STEEL BEAMS, CONCRETE DECK
 CLEAR SPAN (NORMAL TO STREAM): 96 FT
 VERTICAL CLEARANCE ABOVE STREAMBED: 12.5 FT
 WATERWAY OF FULL OPENING: 1138 SF
 WATER SURFACE ELEV. @ Q2,33= _____ VELOCITY= _____
 Q10= _____ " _____
 Q25= _____ " _____
 Q50= _____ " _____
 Q100= _____ " _____
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? _____ FREQUENCY: _____
 RELIEF ELEVATION: _____ DISCHARGE OVER ROAD @ Q100: _____
 AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: _____
 VERTICAL CLEARANCE @ Q: _____
 SCOUR: _____
 REQUIRED CHANNEL PROTECTION: _____

PERMIT INFORMATION

AVERAGE DAILY FLOW: _____ DEPTH: _____
 ORDINARY LOW WATER: _____ DEPTH: _____
 ORDINARY HIGH WATER: _____ DEPTH: _____

ADDITIONAL COMMENTS

NOTE:
 1. THE PROPOSED BRIDGE REHABILITATION DOES NOT INCLUDE ANY WORK IN THE CHANNEL OTHER THAN EXISTING PIER REMOVAL, THEREFORE NO HYDROLOGIC DATA IS REQUIRED OR PROVIDED.

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 2 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2. SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

DESIGN CRITERIA:

- DESIGN LIVE LOAD AASHTO HS25
- DESIGN SPAN 96 FT
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL _____ N/A ON LEDGE _____ N/A
- ALLOWABLE LOAD FOR PILING _____ N/A TYPE _____ N/A ESTIMATED LENGTH _____ N/A
- STRUCTURAL STEEL AASHTO M270, GR. 50W
- REINFORCING STEEL AASHTO M31 GR. 60
- CONCRETE, HIGH PERFORMANCE CLASS A F_c 4000 PSI
- CONCRETE, HIGH PERFORMANCE CLASS B F_c 3500 PSI

TRAFFIC MAINTENANCE:

- IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE _____ OR ON TEMPORARY BRIDGE YES
- TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY ONE TRAFFIC CONTROL SIGNALS REQUIRED YES
 MINIMUM CLEAR SPAN (NORMAL TO STREAM): 90 FT VERTICAL CLEARANCE ABOVE STREAMBED: 13'-10"
 WATERWAY OF FULL OPENING: 1138 SF
 ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? _____
 STRUCTURE TYPE: UNKNOWN - SEE SHEET 12 FOR REQUIREMENTS

LOADING LEVELS (LOAD FACTOR)	LOAD FACTOR LOAD RATING (TONS)						
	H	HS	3S2	6 AXLE	3A.STR.	4A.STR.	5A. SEMI
INVENTORY A=2.17; B=1.00	34	50					
POSTED A=1.55; B=1.40	48	70	81		64	66	75
OPERATING A=1.30; B=1.67		88	96	110	77	79	
GOVERNING FACTOR D=DECK; S=SERVICEABILITY	S	S	S	S	S	S	S

STRENGTH $RF = \frac{\phi M_N - 1.3 M_{DL}}{A \times M_{LL+1}}$ SERVICEABILITY $RF = B \left[\frac{.95 F_y S_{LL+1} - M_{DL} \frac{S_{LL+1}}{S_{DL}} - M_{SD} \frac{S_{LL+1}}{S_{SD}}}{1.67 M_{LL+1}} \right]$

TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE

Town Of GRAFTON Bridge No. 16G
 Highway No. TH 1 Log Sta. _____
 Surv. Sta. _____

TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER

PRELIMINARY INFORMATION SHEET

Designed By J. T. KLEIN Drawn By B. J. MASSE
 Checked By _____ Date _____ Bridge Design Supervisor
 M. A. COLGAN 12/05 M. A. COLGAN Date 12/05

PROJECT GRAFTON PROJECT NO. TH2-0104

ITEM NO.	ITEM DESCRIPTION	UNIT	CHANNEL	SUPER-STRUCTURE	APPROACH SLAB 1	ABUTMENT 1	PIER	ABUTMENT 2	APPROACH SLAB 2	BRIDGE SUBTOTAL	ROADWAY	EROSION CONTROL	FULL E & C	TOTAL	FINAL	REMARKS
201.10	CLEARING AND GRUBBING (INCL. INDIV. TREES AND STUMPS)	LS									1			1		
203.15	COMMON EXCAVATION	CY									190			190		
204.20	TRENCH EXCAVATION OF EARTH	CY										20		20		
204.25	STRUCTURE EXCAVATION	CY				15		15		30				30		
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY				15		15		30				30		
210.10	COLD PLANING - BITUMINOUS PAVEMENT	SY									360			360		
301.35	SUBBASE OF DENSE GRADED CRUSHED STONE	CY				70		54		124		90		214		
402.10	AGGREGATE SHOULDERS, IN PLACE	CY									10			10		ESTIMATED QUANTITY
* 404.65	EMULSIFIED ASPHALT	CWT		1	1				1	3	4			* 7		
* 406.25	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	TON		50	10				8	68	280			* 348		
501.33	CONCRETE, HIGH PERFORMANCE CLASS A	CY		102						102				102		
501.34	CONCRETE, HIGH PERFORMANCE CLASS B	CY			24	3		3	21	51				51		
506.60	STRUCTURAL STEEL	LB		6510						6510				6510		
506.75	STRUCTURAL STEEL (MOD.-RECYCLED BEAMS)	LS		1						1				1		
507.15	REINFORCING STEEL	LB				180		180		360				360		
507.16	DRILLING & GROUTING DOWELS (MOD.)	LF				43		43		86				86		
507.17	EPOXY COATED REINFORCING STEEL	LB		23,260	2140	660		660	1830	28,550				28,550		
513.25	STRUCTURAL PAINTING, SHOP APPLIED	LS		1						1				1		
513.30	STRUCTURAL PAINTING, FIELD APPLIED	LS		1						1				1		
513.35	CONTAINMENT AND ENVIRONMENTAL PROTECTION, SHOP	LS		1						1				1		
513.36	CONTAINMENT AND ENVIRONMENTAL PROTECTION, FIELD	LS		1						1				1		
513.40	SURFACE PREPARATION, SHOP	LS		1						1				1		
513.41	SURFACE PREPARATION, FIELD	LS		1						1				1		
514.10	WATER REPELLENT (MOD.-SILANE)	GAL		8		2		2		12				12		
516.10	BRIDGE EXPANSION JOINT (ASPHALTIC PLUG)	LF		56						56				56		
519.20	SHEET MEMBRANE WATERPROOFING (MOD. - TORCH APPLIED)	SY		297	4					301				301		
525.43	BRIDGE RAILING - HDSB/FASCIA MOUNTED/HANDRAIL (GALVANIZED)	LF		205						205				205		
528.10	ONE-WAY TEMPORARY BRIDGE (MOD.) (1260 SF - EST.)	LS								1				1		
529.10	REMOVAL OF BRIDGE PAVEMENT	SY		262						262				262		
529.20	PARTIAL REMOVAL OF STRUCTURE	EA		0.5		0.1	0.3	0.1		1				1		
531.10	BEARING DEVICE ASSEMBLY	EA		10						10				10		

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

* THESE QUANTITIES ARE BASED ON SURVEY INFORMATION PRIOR TO THE VT 121 RECONSTRUCTION PROJECT. SEE GENERAL NOTE 5 ON SHEET 26.

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	

TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER

QUANTITY SHEET (1 OF 3)

Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
J. A. MERCER	6/05	M. A. COLGAN	Date 6/05

PROJECT	GRAFTON	PROJECT NO.	TH2-0104
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I.G.C. Info.	File No. 51335QNT1	Sheet	3 of 42
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VHB Vanasse Hangen Brustlin, Inc.

ITEM NO.	ITEM DESCRIPTION	UNIT	CHANNEL	SUPER-STRUCTURE	APPROACH SLAB 1	ABUTMENT 1	PIER	ABUTMENT 2	APPROACH SLAB 2	BRIDGE SUBTOTAL	ROADWAY	EROSION CONTROL	FULL E & C	TOTAL	FINAL	REMARKS
580.13	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I	SY				5		5		10				10		ESTIMATED QUANTITY
580.14	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II	SY				5		5		10				10		ESTIMATED QUANTITY
580.15	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III	CY				1		1		2				2		ESTIMATED QUANTITY
608.25	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	HR										2		2		
613.10	STONE FILL, TYPE I	CY										10		10		
613.10	STONE FILL, TYPE I (MOD. I-CHECK DAMS)	CY										5		5		
613.10	STONE FILL, TYPE I (MOD. II-TRACKING PAD)	CY										20		20		
613.11	STONE FILL, TYPE II	CY				40		20		60				60		
617.10	RELOCATE MAILBOX, SINGLE SUPPORT	EA									1			1		
620.70	SNOW FENCE (MOD. - PDF)	LF										1190		1190		
621.21	HEAVY DUTY STEEL BEAM GUARD RAIL (GALVANIZED)	LF									214			214		
621.60	ANCHOR FOR STEEL BEAM RAIL	EA									4			4		
621.80	REMOVAL AND DISPOSAL OF GUARD RAIL	LF									185			185		
621.90	TEMPORARY TRAFFIC BARRIER	LF									130			130		
630.15	FLAGGERS	HR									100			100		
631.10	FIELD OFFICE - ENGINEERS	LS											1	1		
631.16	TESTING EQUIPMENT - CONCRETE	LS											1	1		
631.17	TESTING EQUIPMENT - BITUMINOUS	LS											1	1		
631.18	TESTING EQUIPMENT - PROTECTIVE COATINGS	LS											1	1		
631.25	FIELD OFFICE - TELEPHONE (N.A.B.I.)	LU											1	1		
635.11	MOBILIZATION / DEMOBILIZATION	LS								1				1		
641.10	TRAFFIC CONTROL	LS									1			1		
646.20	4 INCH WHITE LINE	LF									1160			1160		
646.41	DURABLE 4 INCH YELLOW LINE (THERMOPLASTIC)	LF									1040			1040		
646.60	TEMPORARY 4 INCH WHITE LINE	LF									1370			1370		
646.61	TEMPORARY 4 INCH YELLOW LINE	LF									200			200		
646.66	TEMPORARY 24 INCH STOP BAR	LF									50			50		
646.76	LINE STRIPING TARGETS	EA									26			26		

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

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
QUANTITY SHEET (2 OF 3)			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
J. A. MERCER	6/05	M. A. COLGAN	Date 6/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104

VHB Vanasse Hangen Brustlin, Inc.

I.G.C. Info.
File No. 51335QNT2
Sheet 4 of 42

VHB NO. 51335

plot date: 6/13/2005

ITEM NO.	ITEM DESCRIPTION	UNIT	CHANNEL	SUPER-STRUCTURE	APPROACH SLAB 1	ABUTMENT 1	PIER	ABUTMENT 2	APPROACH SLAB 2	BRIDGE SUBTOTAL	ROADWAY	EROSION CONTROL	FULL E & C	TOTAL	FINAL	REMARKS
649.51	GEOTEXTILE FOR SILT FENCE	SY										670		670		
649.61	GEOTEXTILE FOR FILTER CURTAIN	SY										230		230		
651.15	SEED	LB									10	10		20		
651.18	FERTILIZER	LB									90	10		100		
651.20	AGRICULTURAL LIMESTONE	TON									1			1		
651.25	HAY MULCH	TON									1			1		
651.26	HAY BALES FOR EROSION CONTROL	EA										20		20		
651.35	TOPSOIL	CY									20			20		
652.10	EROSION PREVENTION & SEDIMENT CONTROL PLAN	LS										1		1		
652.20	MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN	HR										160		160		
652.30	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I.)	LU										1		1		
654.10	EROSION MATTING	SY										160		160		
675.20	TRAFFIC SIGNS, TYPE A	SF									223.6			223.6		
	** BEGIN SIGN POST OPTIONS **															
675.301	FLANGED CHANNEL SIGN POSTS	LF									315			315		
675.341	SQUARE TUBE SIGN POSTS AND ANCHOR	LF									315			315		
	** END SIGN POST OPTIONS **															
675.50	REMOVING SIGNS	EA									34			34		
678.40	TEMPORARY TRAFFIC SIGNAL SYSTEM	EA									1			1		
678.41	TEMPORARY FLASHING BEACON	EA									3			3		
678.42	TEMPORARY DETECTOR	EA									4			4		

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

TEMPORARY EROSION CONTROL (INCLUDED UNDER EROSION CONTROL)			
ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
204.20	TRENCH EXCAVATION OF EARTH	CY	20
301.35	SUBBASE OF DENSE GRADED CRUSHED STONE	CY	90
608.25	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	HR	2
613.10	STONE FILL, TYPE I	CY	10
613.10	STONE FILL, TYPE I (MOD. I-CHECK DAMS)	CY	5
613.10	STONE FILL, TYPE I (MOD. II-STABILIZED CONSTRUCTION ENTERANCE)	CY	20
620.70	SNOW FENCE (MOD. - PDF)	LF	1190
649.51	GEOTEXTILE FOR SILT FENCE	SY	670
651.15	SEED	LB	10
651.26	HAY BALES FOR EROSION CONTROL	EA	20
654.10	EROSION MATTING	SY	160

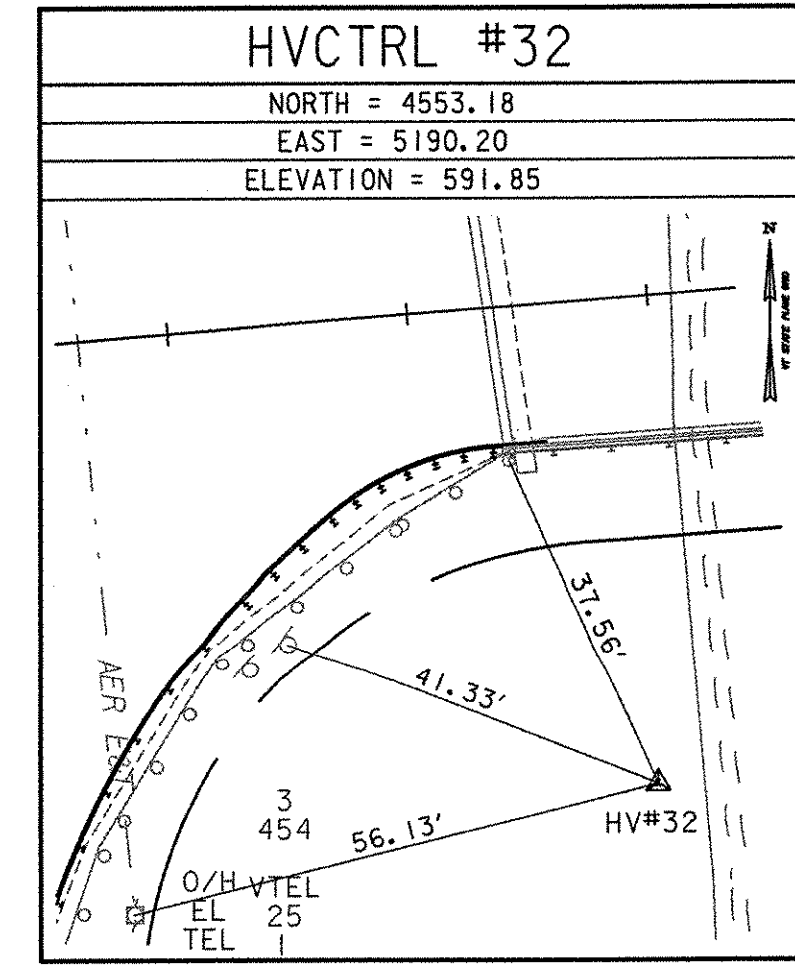
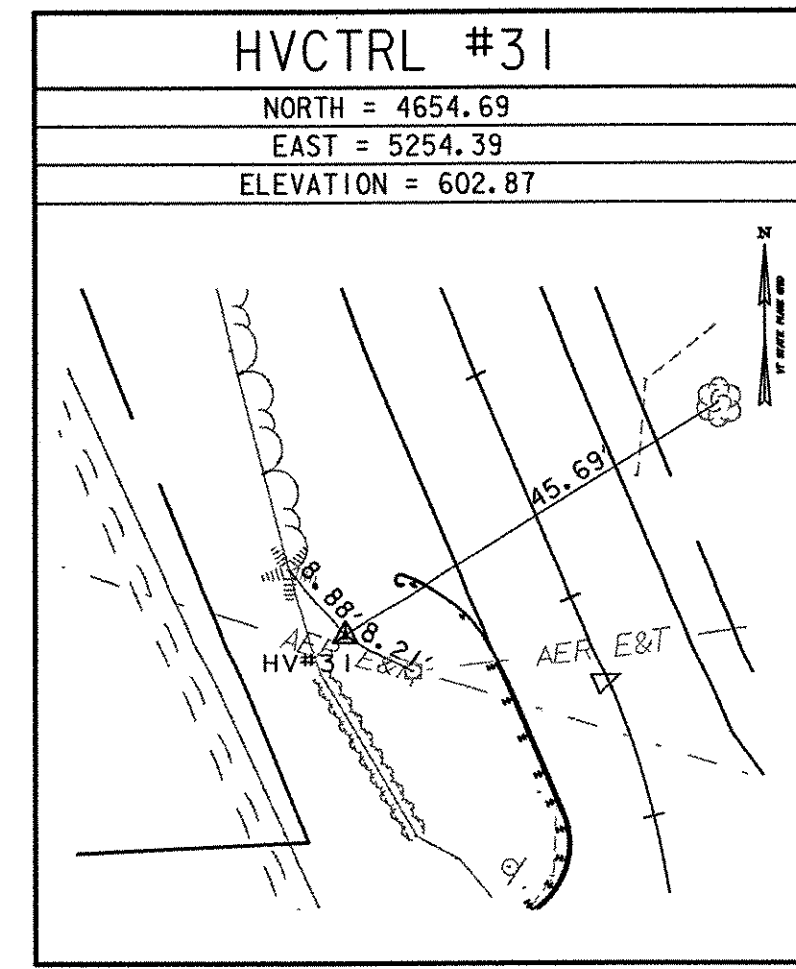
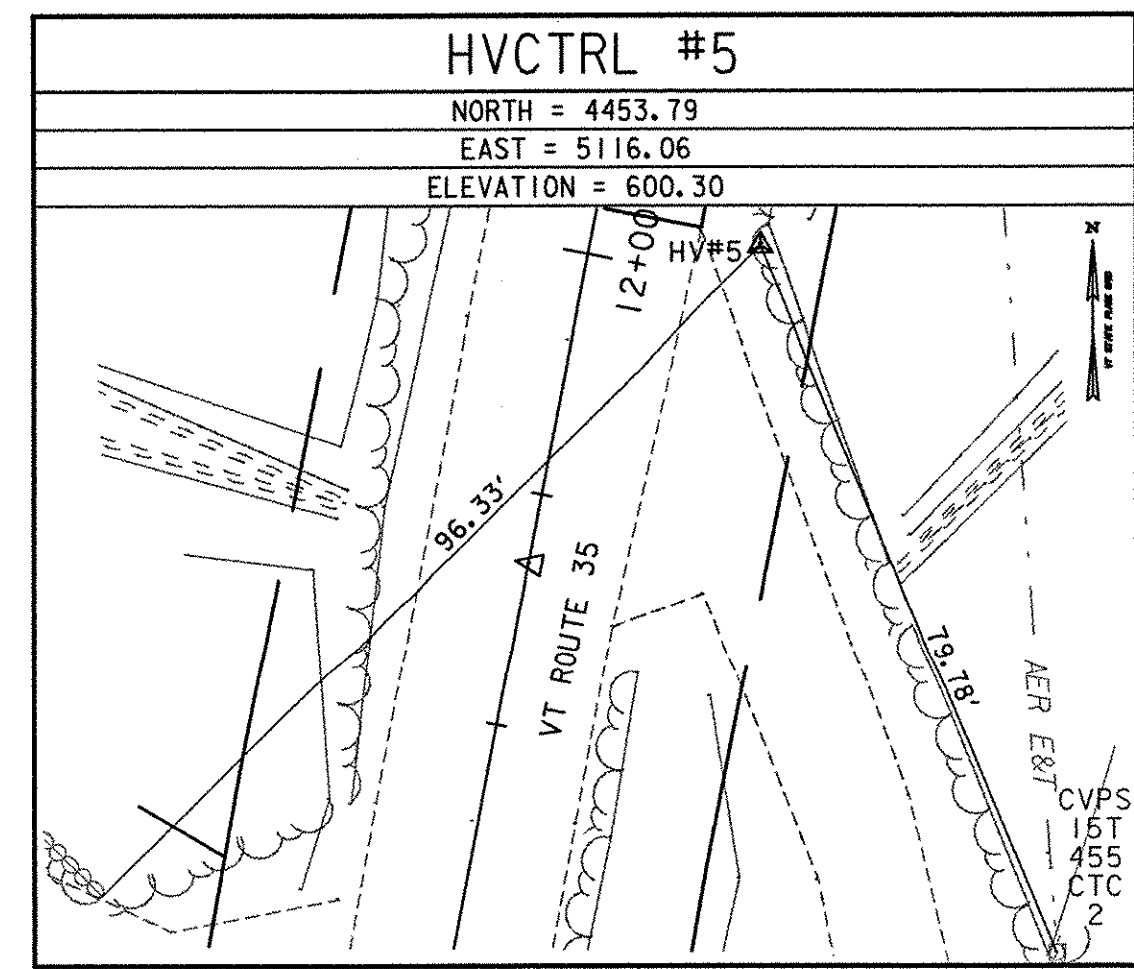
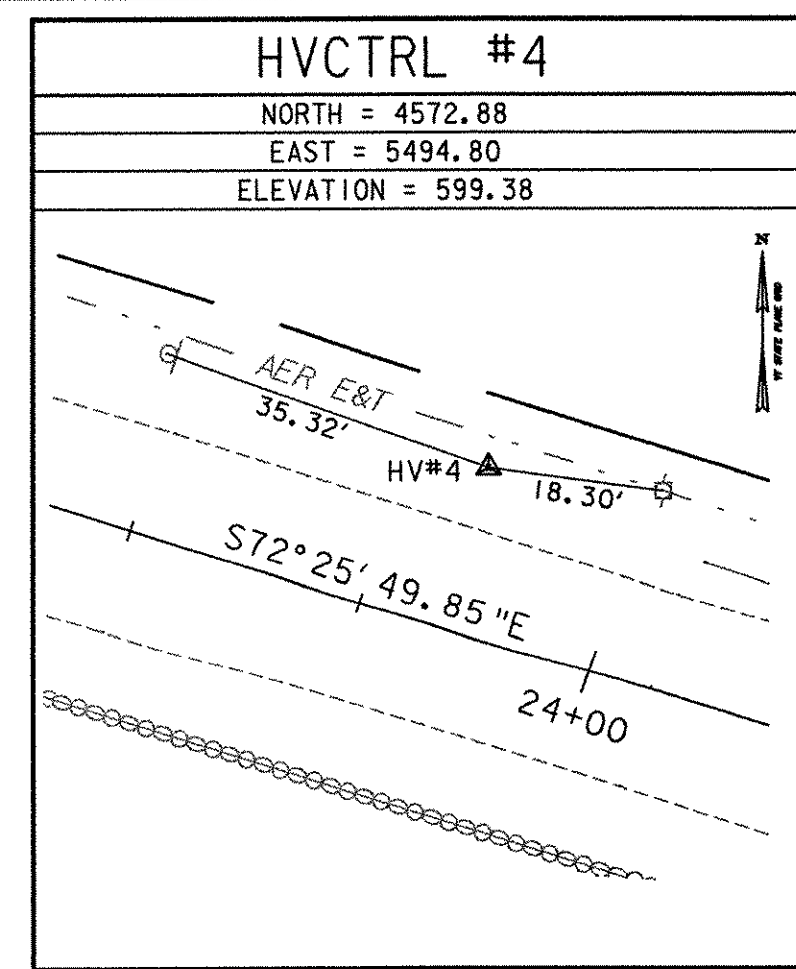
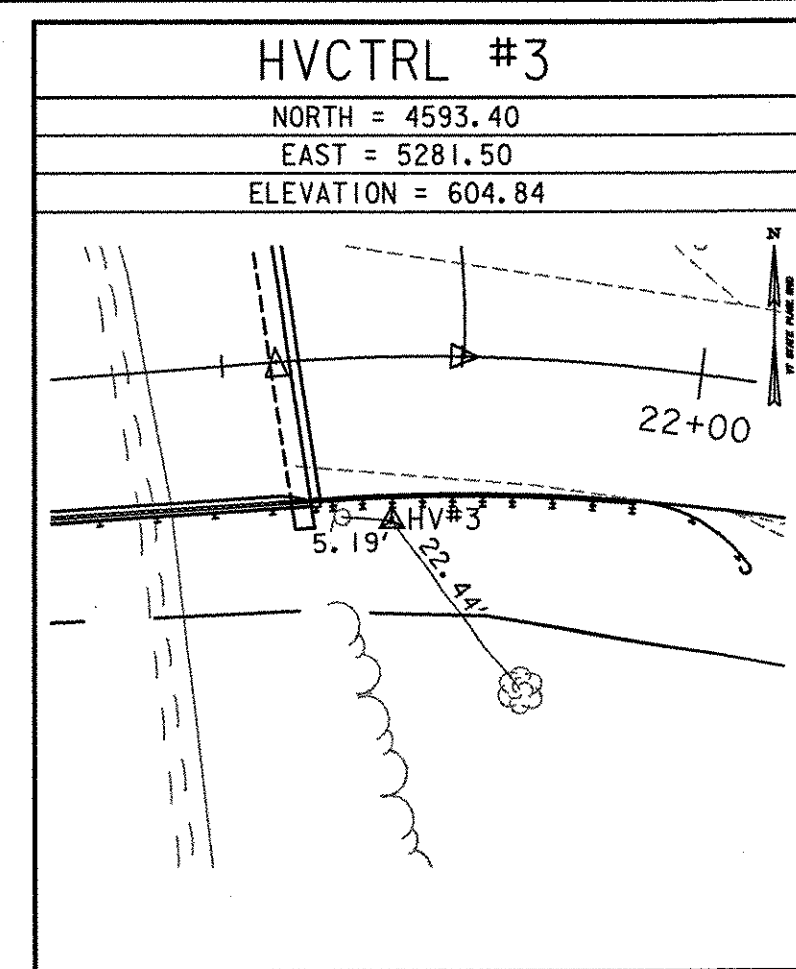
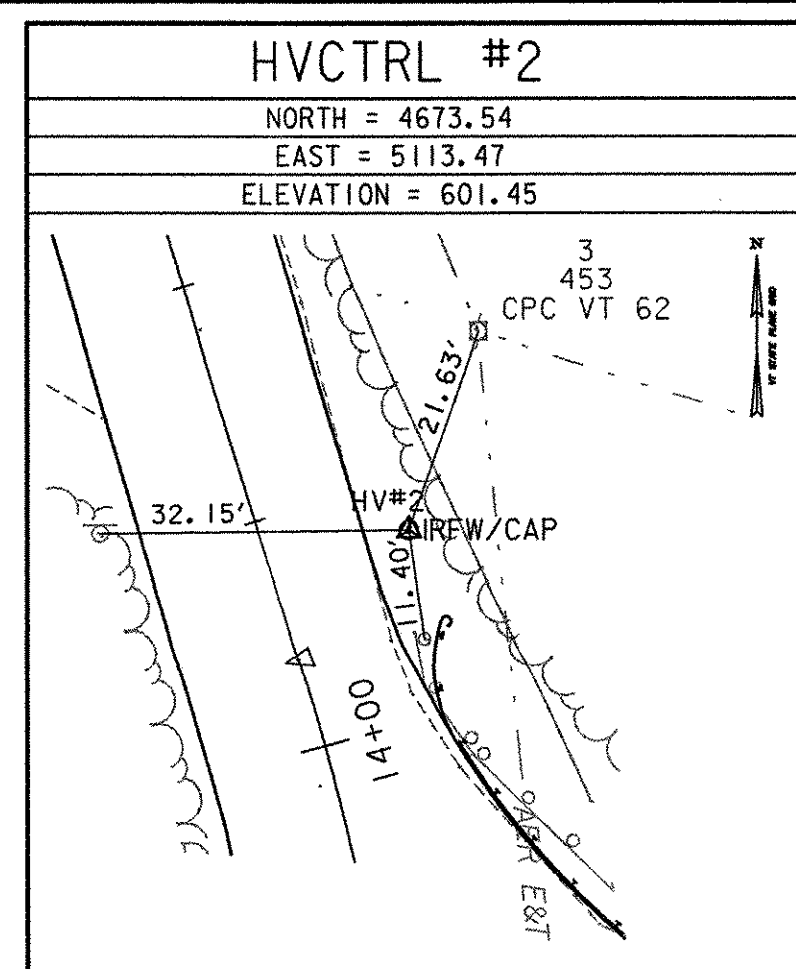
**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
QUANTITY SHEET (3 OF 3)			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	J. A. MERCER	Bridge Design Supervisor	M. A. COLGAN
	Date 5/05	Date	5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104

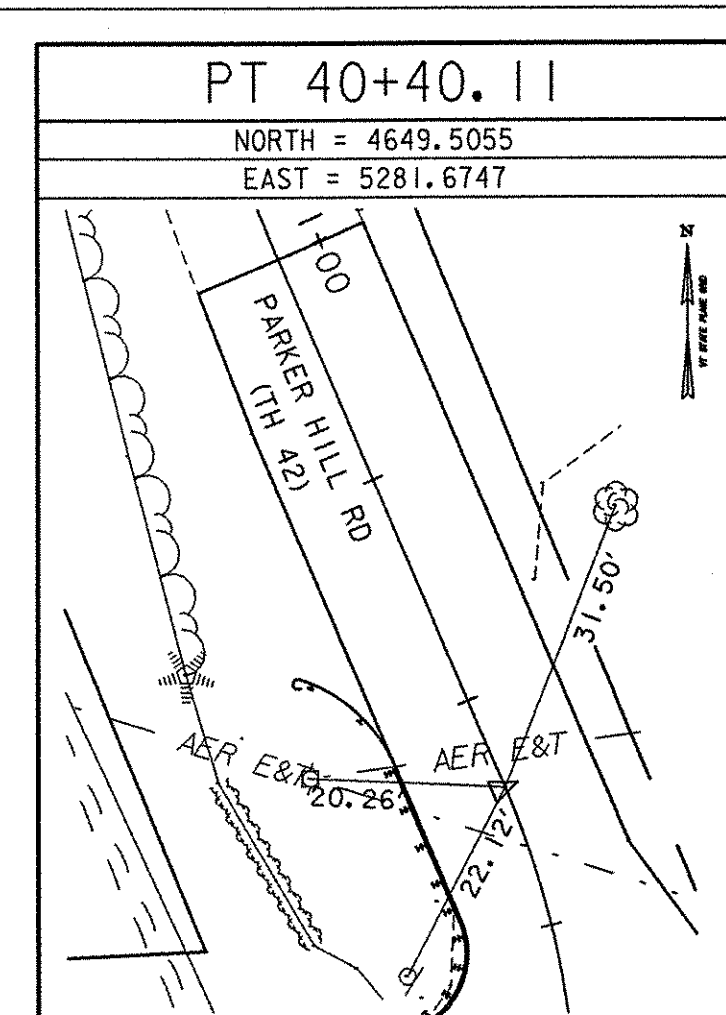
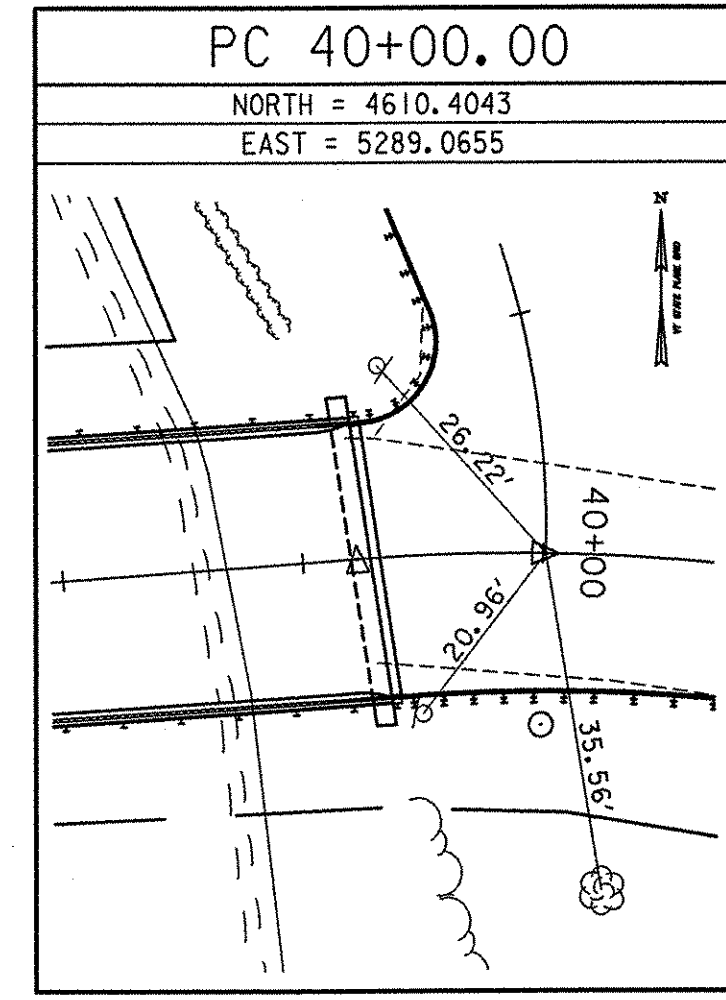
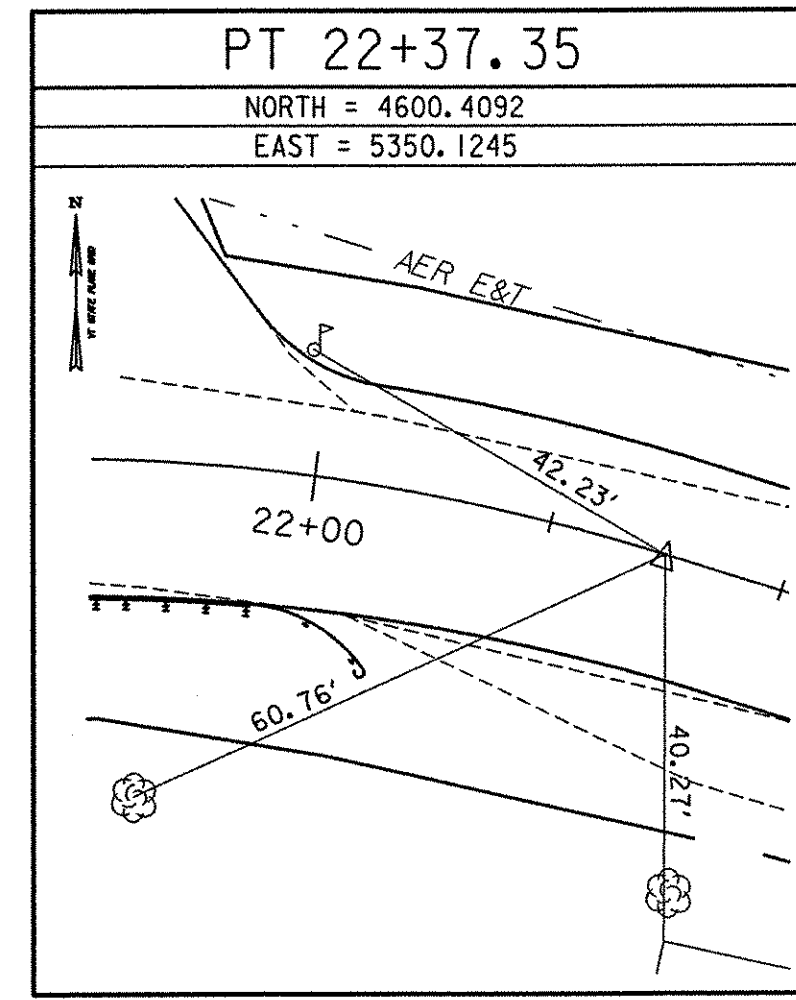
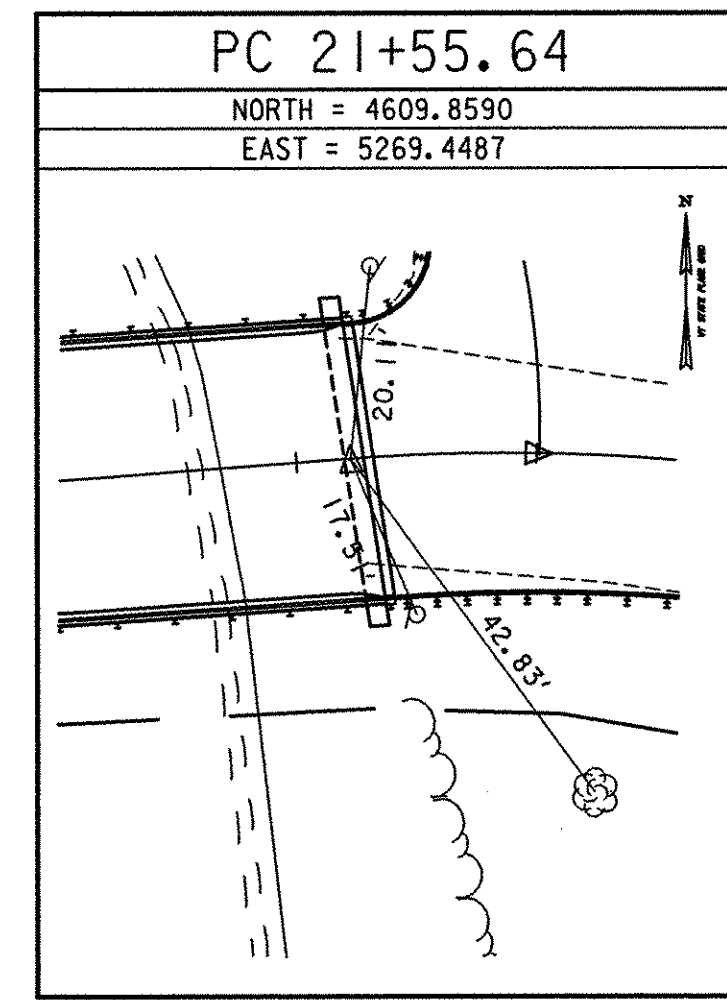
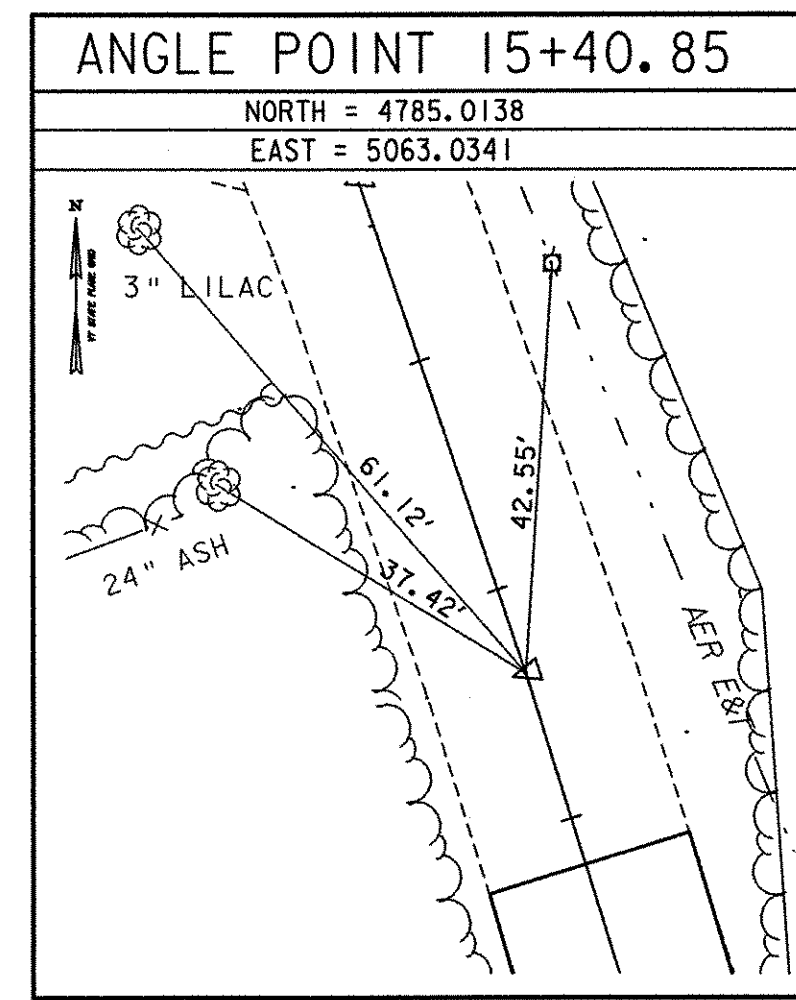
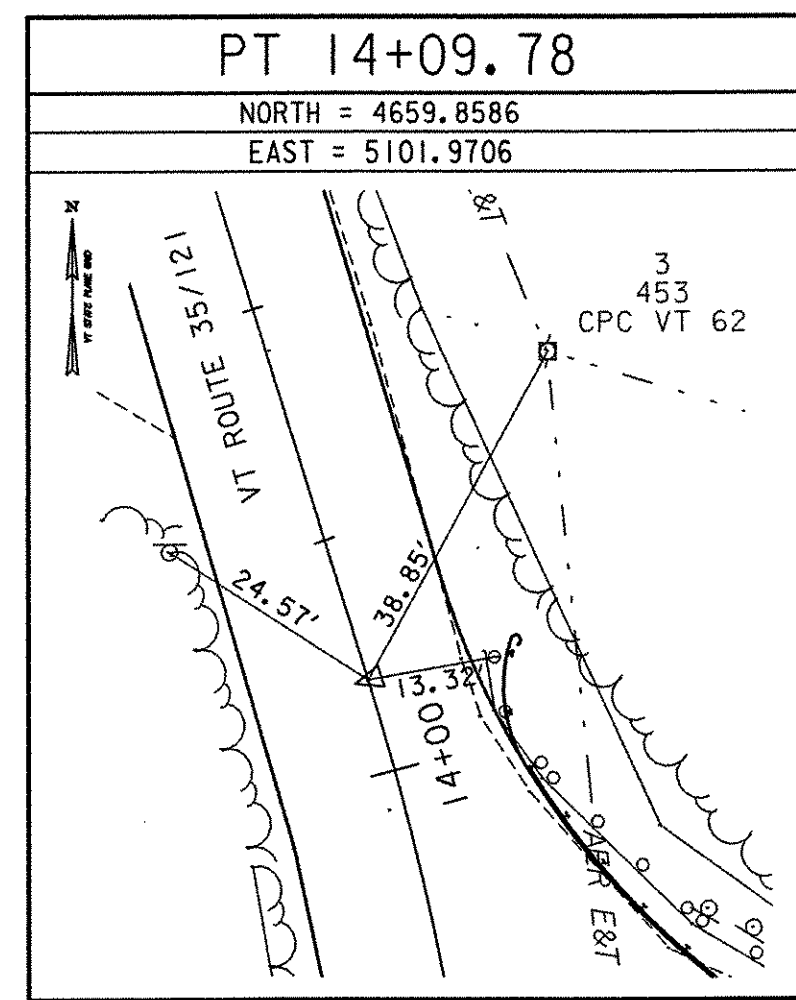
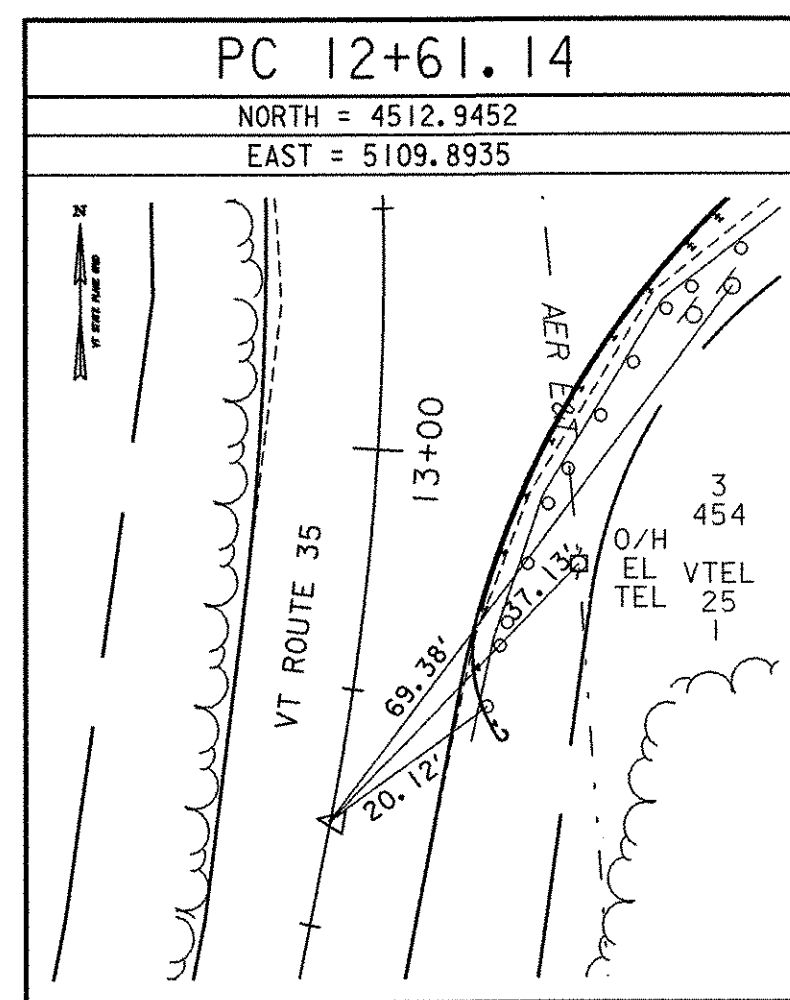
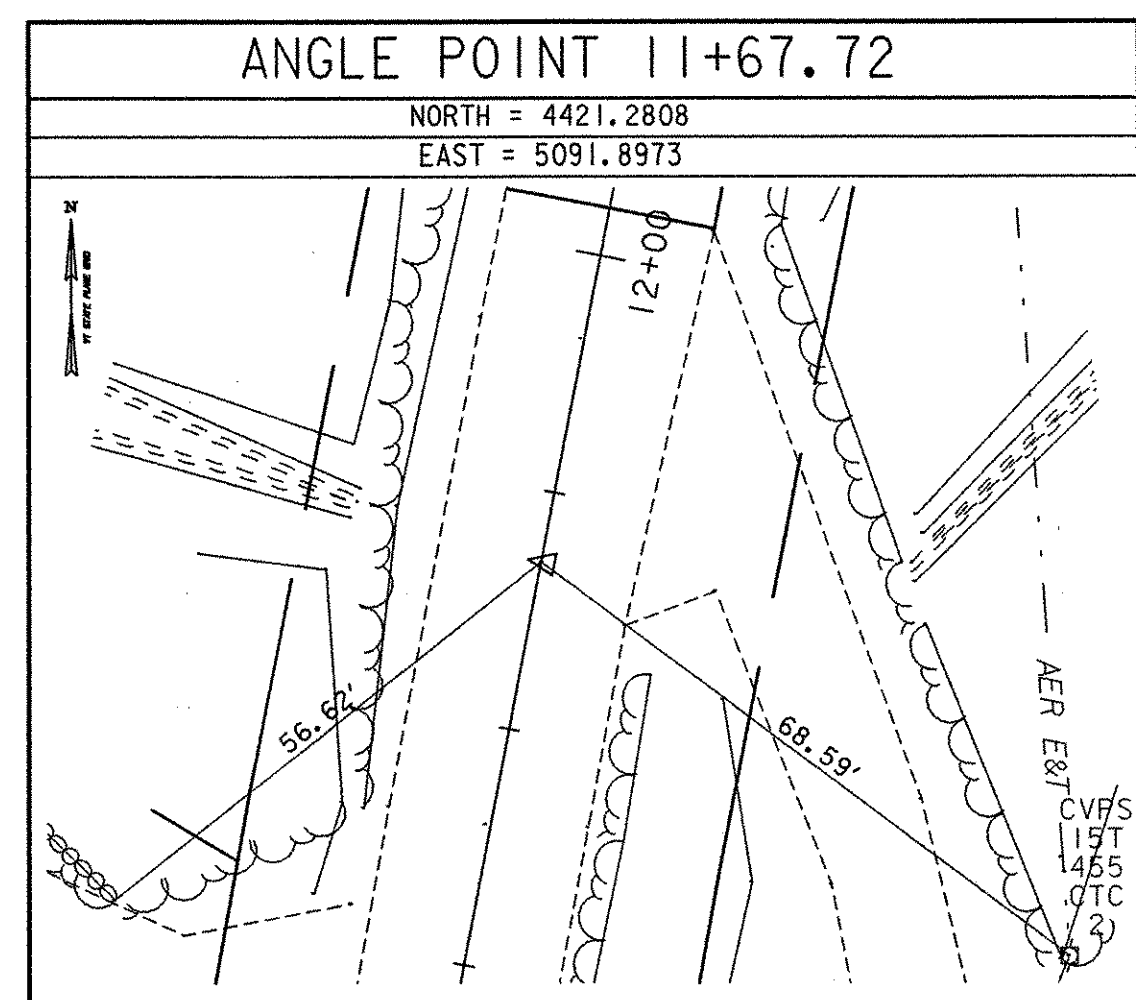
VHB Vanasse Hangen Brustlin, Inc.

LG.C. Info. File No. 51335QNT3 Sheet 5 of 42

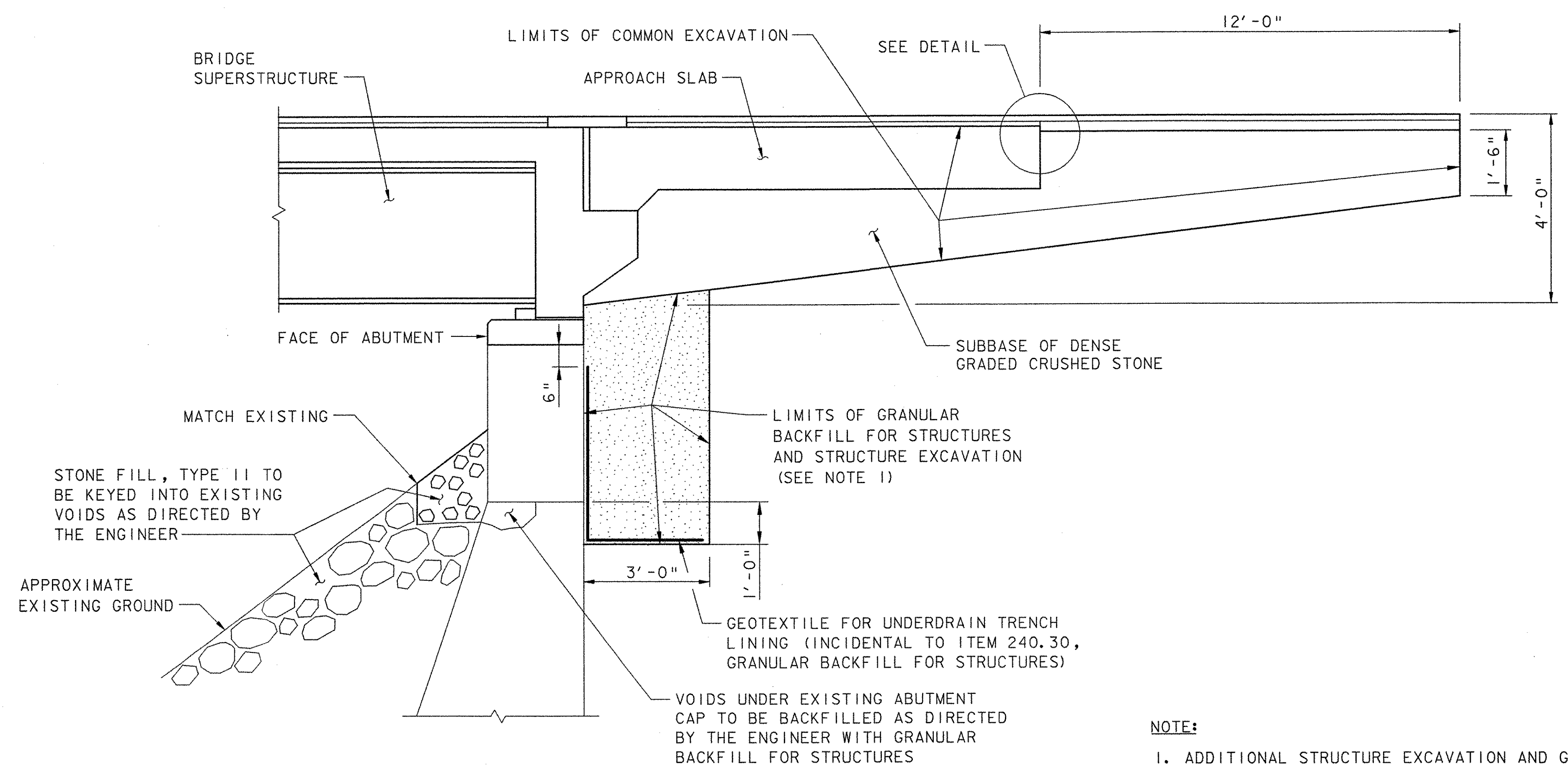
TRAVERSE TIES



ALIGNMENT TIES

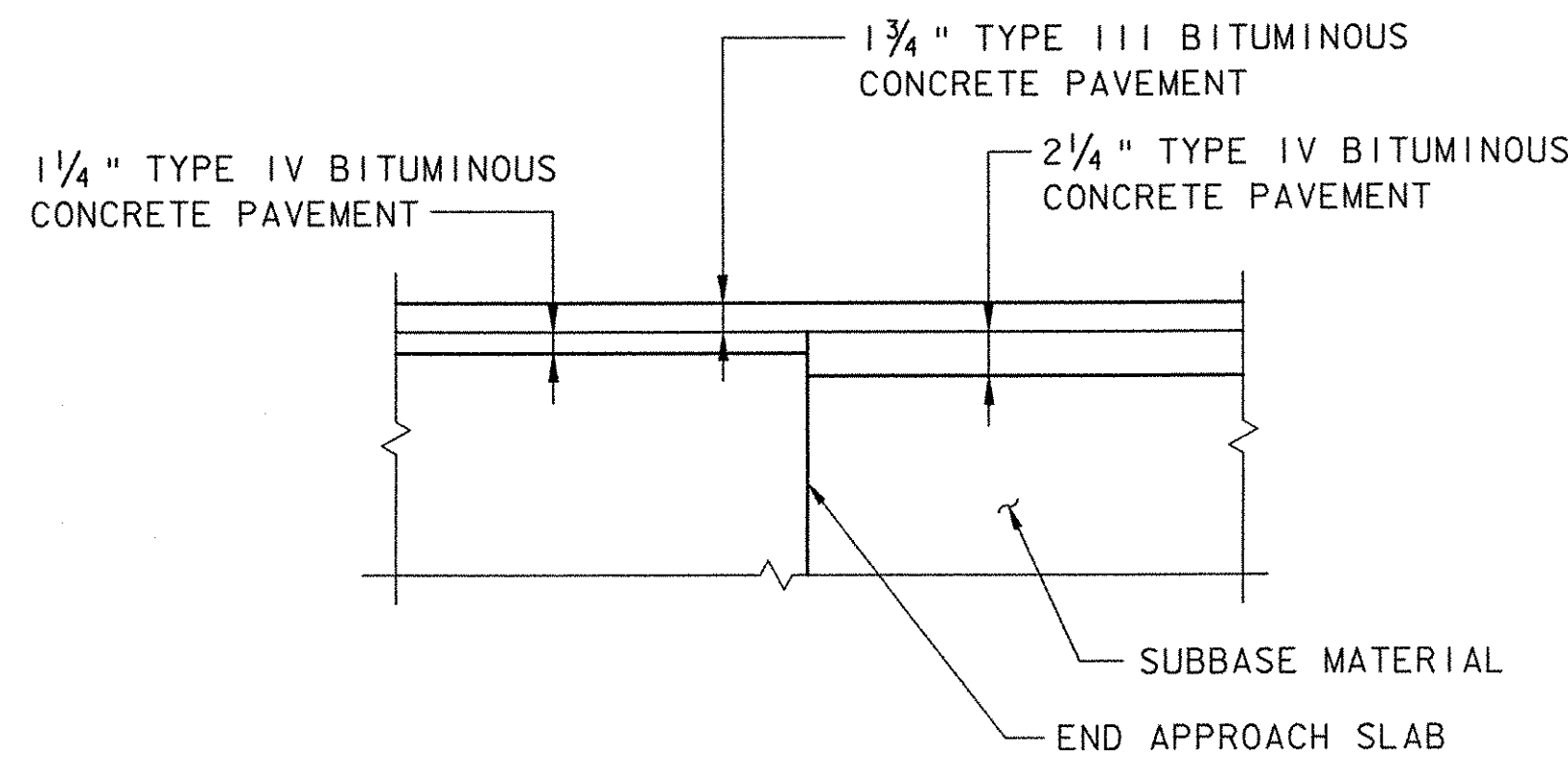


ALIGNMENT TIES



EARTHWORK TYPICAL
NOT TO SCALE

NOTE:
1. ADDITIONAL STRUCTURE EXCAVATION AND GRANULAR BACKFILL FOR STRUCTURES MAY BE REQUIRED TO ACCESS REPAIR AREAS AT THE BACK OF THE ABUTMENT AND SHALL BE PAID UNDER ITEMS 204.25 AND 204.30.



**BITUMINOUS CONCRETE PAVEMENT
DETAIL AT APPROACH SLAB ENDS**
NOT TO SCALE

NO.	DESCRIPTION	BY	DATE
1	ADDITIONAL ALIGNMENT TIES AND SURVEY COORDINATES	BJM	6/05

VHB Vanasse Hangen Brustlin, Inc.

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
TIE SHEET & TYPICAL DETAILS			
Designed By	J. A. MERCER	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
M. A. COLGAN	6/05	M. A. COLGAN	Date 6/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
File No. 51335T1E		Sheet 6 of 42	

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

END APPROACH
STA 15+20 15+50
MATCH EXISTING

CURVE 1
Δ = 28°23' 19.15"
R = 300.00'
T = 75.88'
L = 148.64'
E = 9.45'

CURVE 2
Δ = 21°46' 38.33"
R = 215.00'
T = 41.36'
L = 81.72'
E = 3.94'

CURVE 3
Δ = 24°47' 20.01"
R = 92.70'
T = 20.37'
L = 40.11'
E = 2.21'

N/F CHRISTOPHER & LESLIE JONES 38/511

N/F MARY & CARL WOODARD 37/129

N/F JUNE LESCORD 38/509

N/F JAMES & DIANNE SMITH 30/427

N/F CRAIG & INEZ MOORE 26/499

N/F KENNETH & BERNADETTE WHITCOMB 31/152

STA 20+00.00 (TH 1) =
STA 13+47.03 (TH 4)
N 4598.4393
E 5114.2317

ATHENS LEFT 1 MILE
TOWNSHEND LEFT 10 MILES
SOUTH 35 LEFT
GRAFTON RIGHT 4 MILES
WEST 121 RIGHT

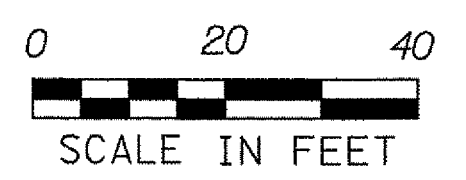
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N/F RICHARD STEELE 28/143

N/F ELWYN & NANCY MILLETT 30/449

N/F E. R. E. ASSOCIATES, LTD 36/583

PLAN
SCALE: 1" = 20'



CONSTRUCTION NOTES

HEAVY DUTY STEEL BEAM GUARDRAIL
12+75 STA 12+72.9 - STA 13+34.3, RT 20+58
20+58 STA 13+58.5 - STA 14+10.1, RT 13+85
21+56 STA 21+60.8 - STA 22+07.9, RT 22+00
21+56 STA 40+16.1 - STA 40+58.6, LT 40+65

REMOVE EXISTING GUARDRAIL
STA 12+70 - STA 13+34, RT
STA 13+58 - STA 14+09, RT
STA 21+56 - STA 21+65, LT
STA 21+59 - STA 21+75, RT

ANCHOR FOR STEEL BEAM RAIL
STA 13+96.6, RT 13+80
STA 12+84.9, RT 12+80
STA 21+94.3, RT 21+95
STA 40+46.2, LT 40+60

RELOCATE SINGLE MAILBOX SUPPORT
STA 21+98, LT

COLD PLANING - BITUMINOUS PAVEMENT
11+70 STA 11+30 - STA 11+80 12+20
15+00 STA 14+70 - STA 15+20 15+50
22+90 STA 23+80 - STA 24+30 23+40

NOTE:

1. PROPOSED CROWNLINE AND EDGE OF PAVEMENT LOCATIONS EAST OF THE BRIDGE MAY NOT MATCH EXISTING CROWNLINE AND EDGE OF PAVEMENT LOCATIONS (SEE GENERAL NOTE 5 SHEET 26).

NO.	DESCRIPTION	BY	DATE
1	ADDITIONAL ALIGNMENT TIES AND SURVEY COORDINATES	BJM	6/05

VHB Vanasse Hangen Brustlin, Inc.

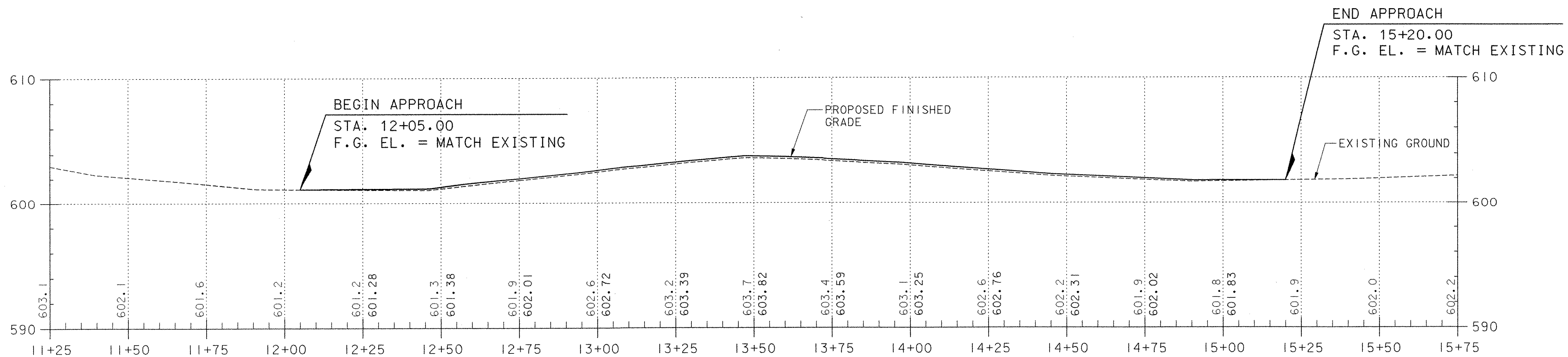
TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	

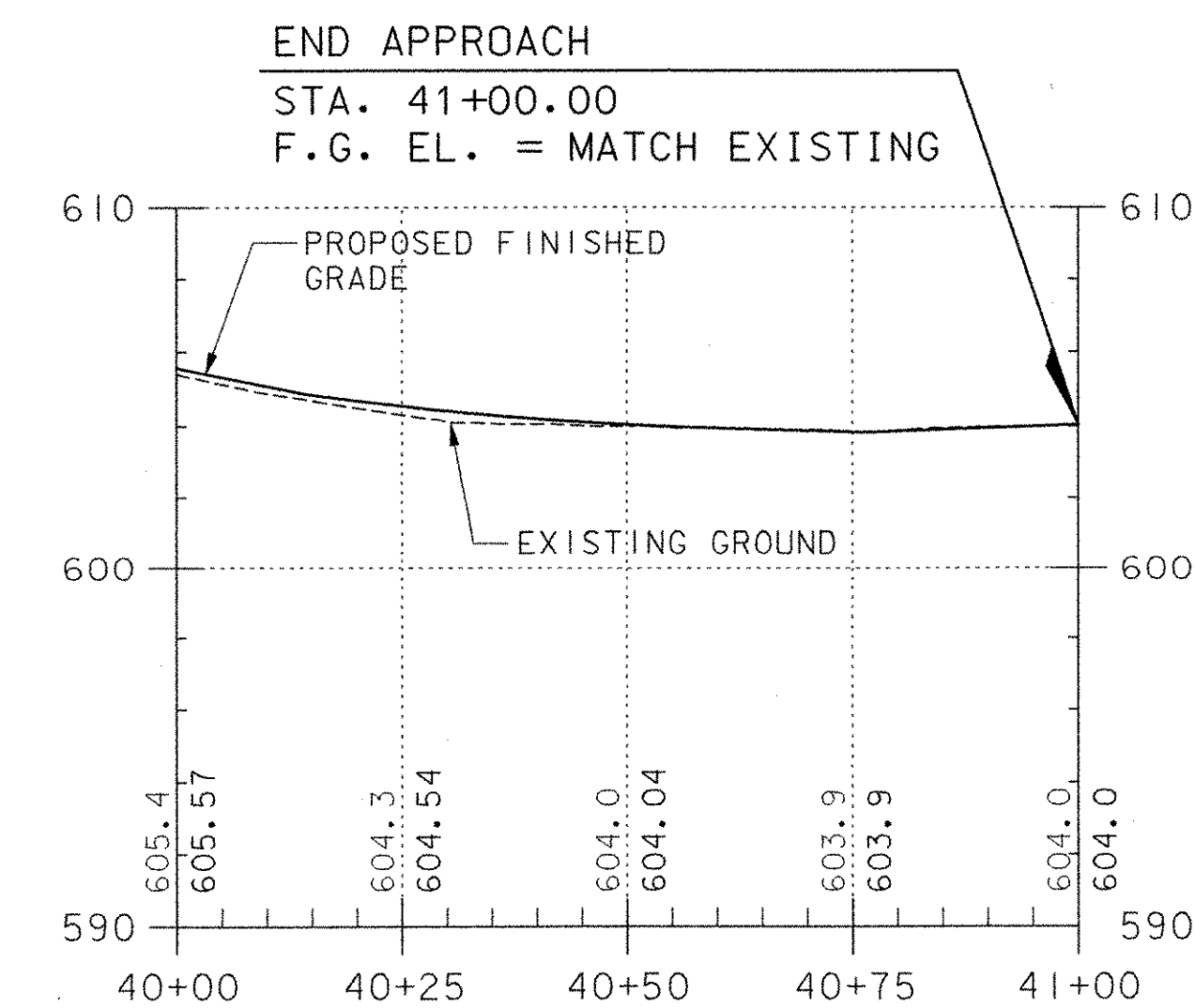
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER

ROADWAY PLAN			
Designed By	J. A. MERCER	Drawn By	B. J. MASSE
Checked By	M. A. COLGAN	Date	6/05
		Bridge Design Supervisor	M. A. COLGAN Date 6/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104

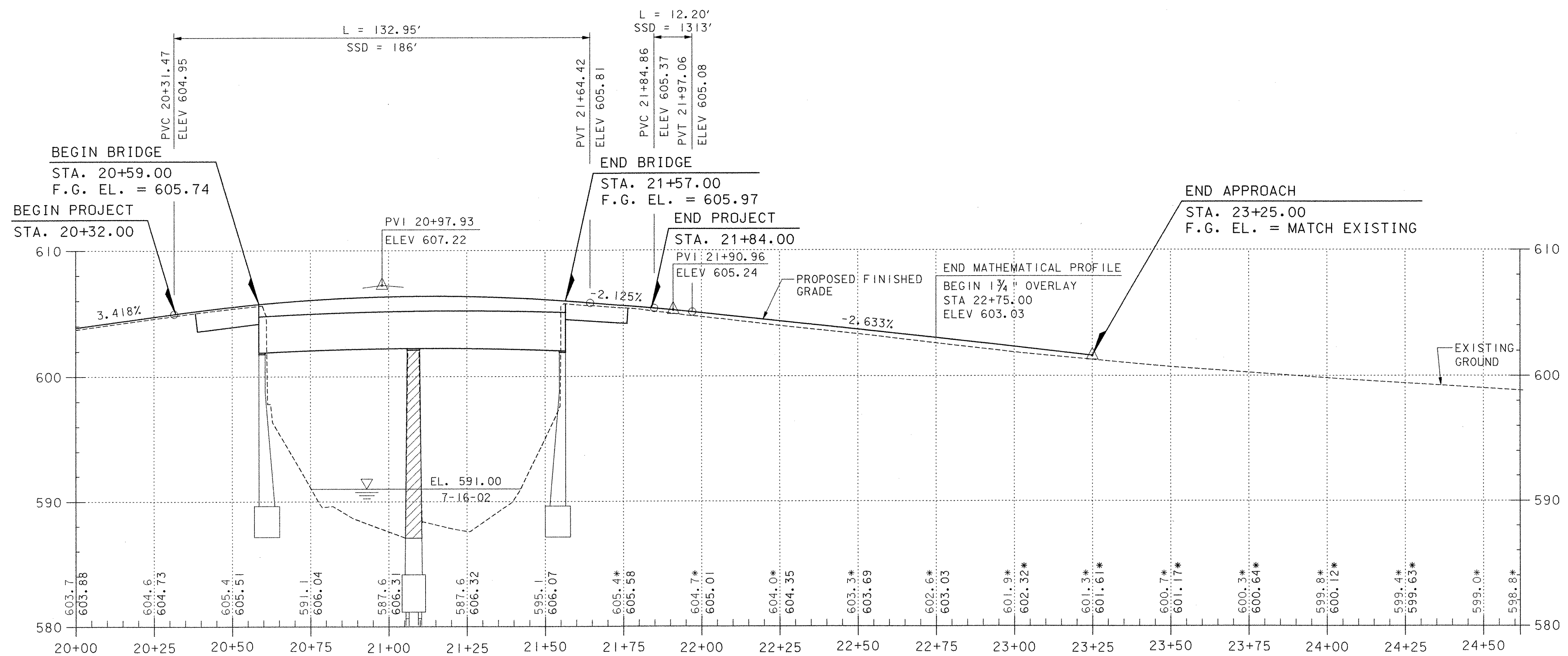
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File No. 51335PLN
Sheet 7 of 42



VT ROUTE 35/121 PROFILE



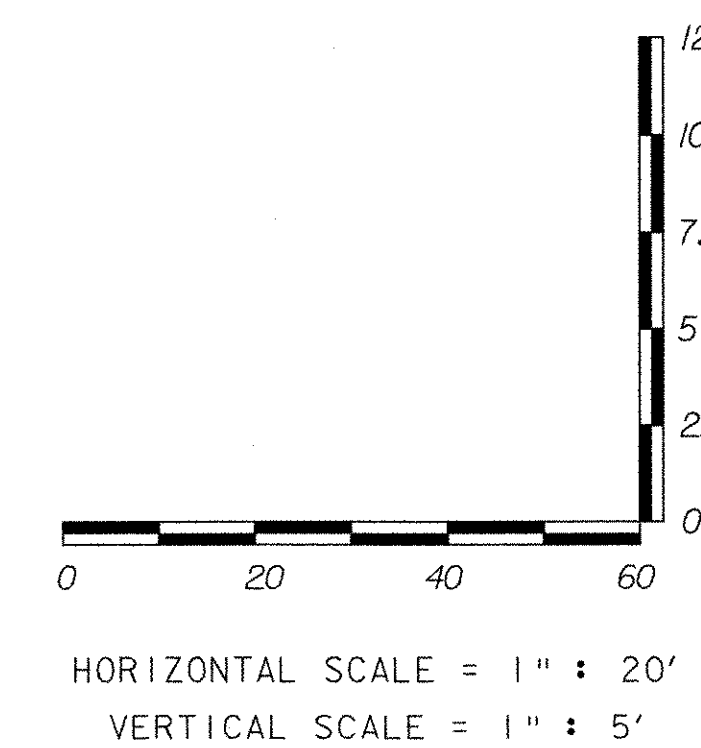
PARKER HILL ROAD PROFILE



VT ROUTE 121 PROFILE

▨ DENOTES APPROXIMATE LIMITS OF PIER REMOVAL

* EXISTING ELEVATIONS SHOWN MAY NOT MATCH EXISTING CONDITIONS (SEE GENERAL NOTE 5 SHEET 26). THE INTENT OF THE PROPOSED ELEVATIONS IS TO SHOW A 1 3/4" OVERLAY



**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
PROFILES			
Designed By	C. S. MERCER	Drawn By	C. S. MERCER
Checked By	Date	Bridge Design Supervisor	
J. A. MERCER	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.	File No. 51335PRF	Sheet	8 of 42

VHB Vanasse Hangen Brustlin, Inc.

CONSTRUCTION NOTES

DURABLE 4" WHITE LINE
 STA 12+05 LT - STA 15+20 LT
 STA 12+05 RT - STA 23+25 RT
 STA 13+71 RT - STA 15+20 RT
 STA 20+25 LT - STA 21+60 LT
 STA 22+00 LT - STA 23+25 LT

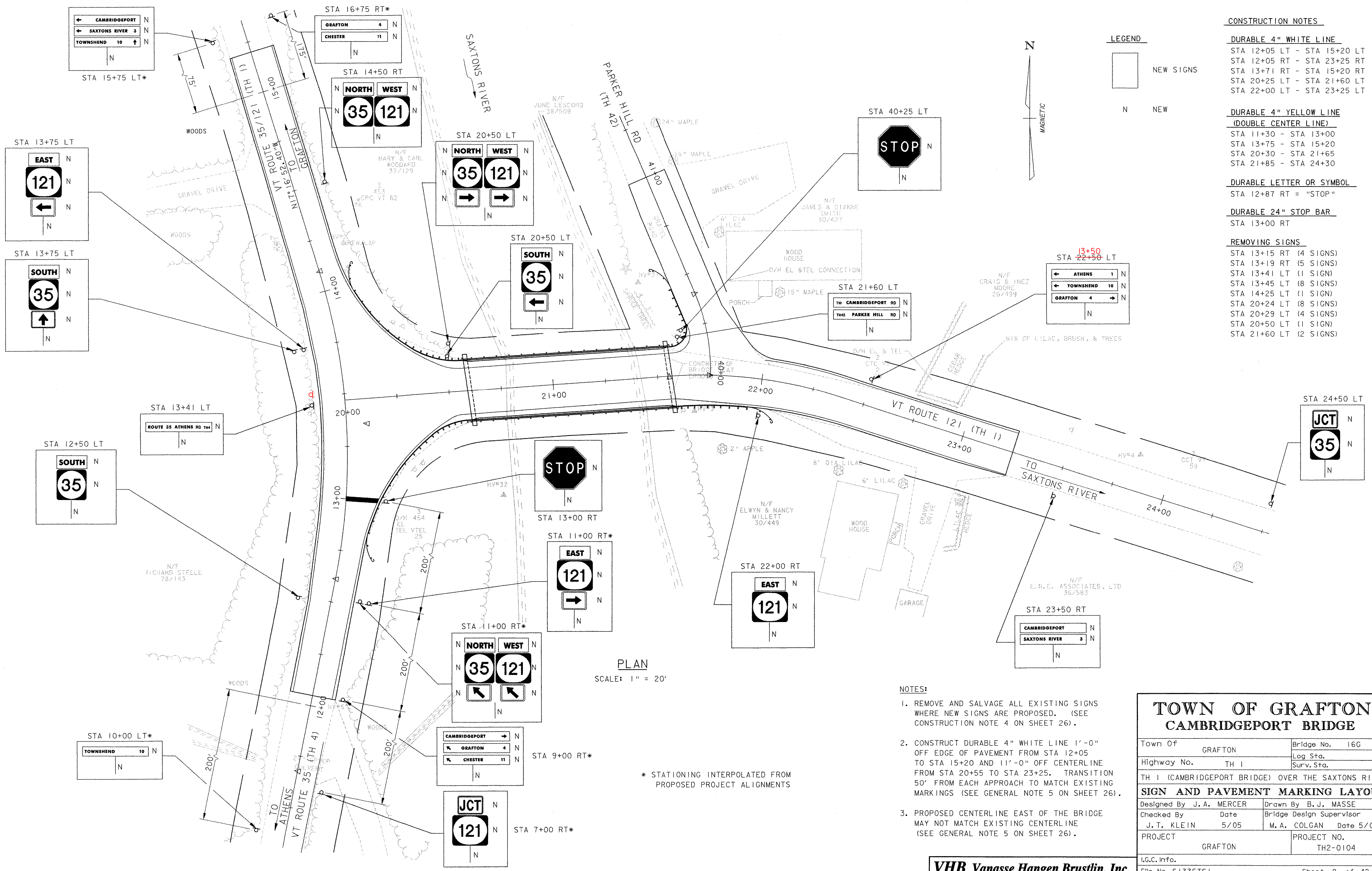
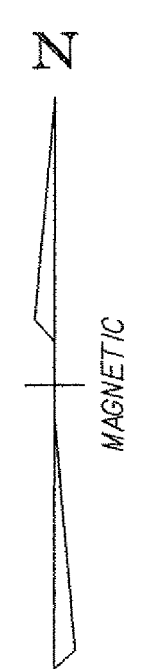
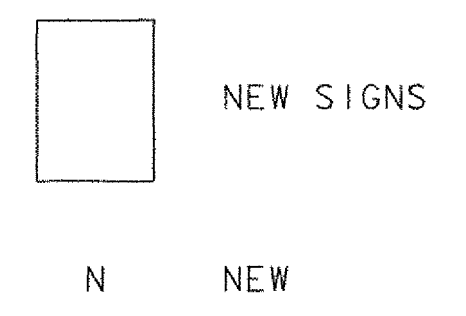
DURABLE 4" YELLOW LINE (DOUBLE CENTER LINE)
 STA 11+30 - STA 13+00
 STA 13+75 - STA 15+20
 STA 20+30 - STA 21+65
 STA 21+85 - STA 24+30

DURABLE LETTER OR SYMBOL
 STA 12+87 RT = "STOP"

DURABLE 24" STOP BAR
 STA 13+00 RT

REMOVING SIGNS
 STA 13+15 RT (4 SIGNS)
 STA 13+19 RT (5 SIGNS)
 STA 13+41 LT (1 SIGN)
 STA 13+45 LT (8 SIGNS)
 STA 14+25 LT (1 SIGN)
 STA 20+24 LT (8 SIGNS)
 STA 20+29 LT (4 SIGNS)
 STA 20+50 LT (1 SIGN)
 STA 21+60 LT (2 SIGNS)

LEGEND



PLAN
 SCALE: 1" = 20'

* STATIONING INTERPOLATED FROM PROPOSED PROJECT ALIGNMENTS

NOTES:

1. REMOVE AND SALVAGE ALL EXISTING SIGNS WHERE NEW SIGNS ARE PROPOSED. (SEE CONSTRUCTION NOTE 4 ON SHEET 26).
2. CONSTRUCT DURABLE 4" WHITE LINE 1'-0" OFF EDGE OF PAVEMENT FROM STA 12+05 TO STA 15+20 AND 11'-0" OFF CENTERLINE FROM STA 20+55 TO STA 23+25. TRANSITION 50' FROM EACH APPROACH TO MATCH EXISTING MARKINGS (SEE GENERAL NOTE 5 ON SHEET 26).
3. PROPOSED CENTERLINE EAST OF THE BRIDGE MAY NOT MATCH EXISTING CENTERLINE (SEE GENERAL NOTE 5 ON SHEET 26).

**TOWN OF GRAFTON
 CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
SIGN AND PAVEMENT MARKING LAYOUT			
Designed By	J. A. MERCER	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
J. T. KLEIN	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
File No.	51335TS1	Sheet	9 of 42

VHB Vanasse Hangen Brustlin, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS		NEW & SALVAGED SIGNS				EXIST. POST NO. OF POSTS	NEW SIGN POSTS																REMARKS	SIGN DETAIL					
		EA	WIDTH (IN)	HEIGHT (IN)	"A"	"B"	SALV SIGN		SALV TIS	FLANGED CHANNEL				SQUARE STEEL (IN)			TUBULAR ALUMINUM (IN)			TUBULAR STEEL (IN)				W-SHAPE STEEL		SIGN NAME	TYPE	COUNT	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER	
										LB/FT				LB/FT			LB/FT			LB/FT				FTG. SIZE							
										1.12	2.0	3.0	1.75	2.0	2.5	3.0	4.0	4.0 MOD	FOUND-ATION	3.0	3.5	4.0	5.0	24"							30"
OPTION ITEMS																															
VT ROUTE 35																															
7+00 RT*		1	21	15	2.2			1																				E-136C			
9+00 RT*		1	72	12	6.0			2+																				E-123			
		1	72	12	6.0					14 X 16																			E-123		
		1	72	12	6.0																									E-123	
10+00 LT*		1	72	12	6.0			1																					E-123		
11+00 RT*		1	24	12	2.0			2+																					E-136C		
		1	24	12	2.0																									E-136C	
		1	24	24	4.0																										E-136C
		1	30	24	5.0																										E-136C
		1	21	15	2.2																										
11+00 RT*		1	24	12	2.0			1																						E-136C	
		1	30	24	5.0																									E-136C	
		1	21	15	2.2																									E-136C	
12+50 LT		1	24	12	2.0			1																						E-136C	
		1	24	24	4.0																									E-136C	
13+00 RT		1	30	30	6.3			1																					E-143		
13+41 LT		1	72	12	6.0			2+																					E-123		

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

		SF					FT	FT	FT	FT	FT		LB	LB	LB	LB	LB	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.
		76.1					120	168 +20	120	120	120		-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS		SF	SF	EA.	SF	FT	FT	FT	FT	FT		LB	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	
		76.1	-	-	-	120	120	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-		

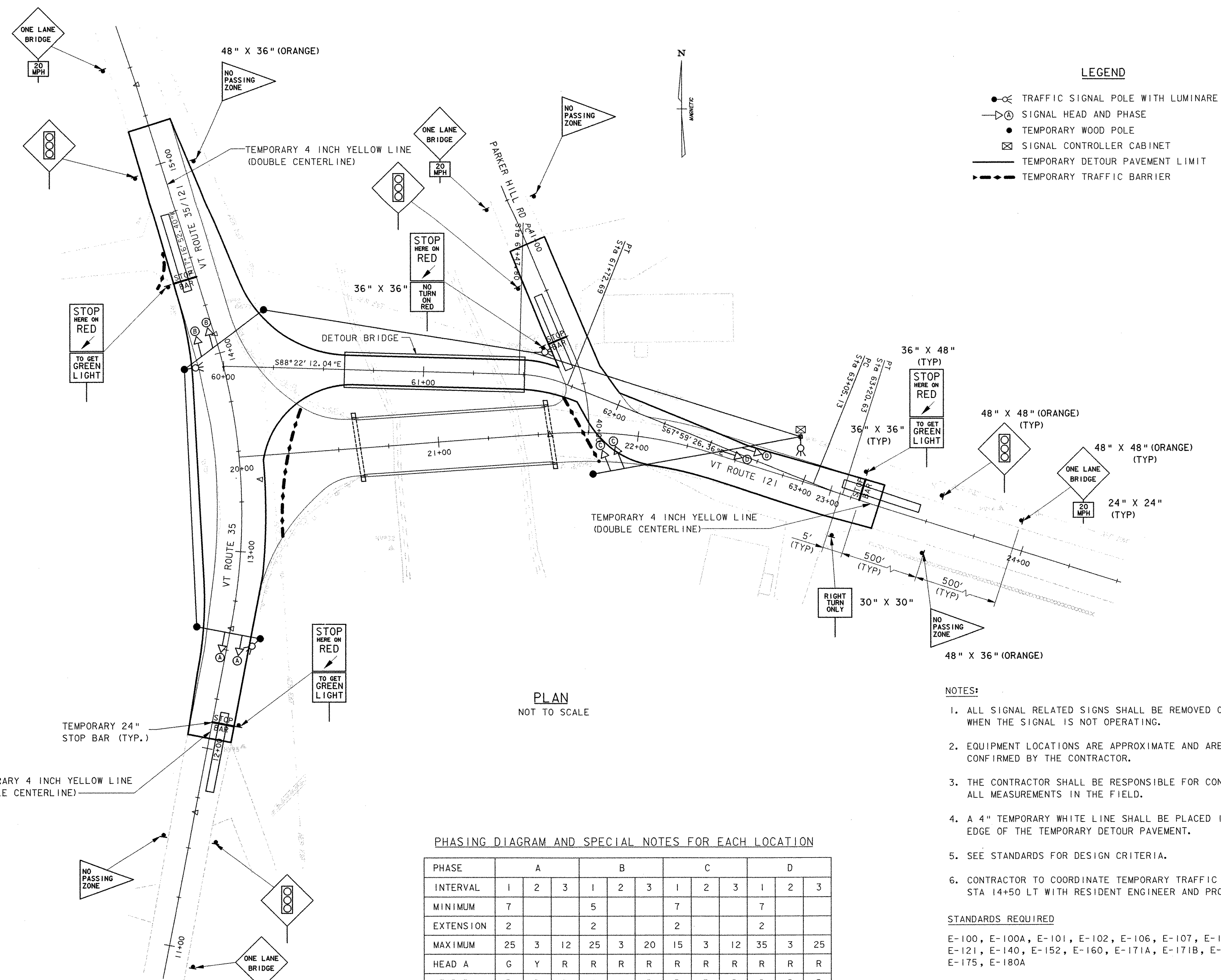
FLANGED CHANNEL OR SQUARE STEEL LENGTH = 15 FT
* STATIONING INTERPOLATED FROM PROPOSED PROJECT ALIGNMENTS

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	166
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
TRAFFIC SIGN SUMMARY SHEET (1 OF 3)			
Designed By	J. A. MERCER	Drawn By	B. J. MASSE
Checked By	J. T. KLEIN	Bridge Design Supervisor	M. A. COLGAN
Date	5/05	Date	5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104

**GENERAL
TEMPORARY TRAFFIC SIGNAL NOTES**

- DESIGN OF THE SIGNAL SUPPORT(S) AND ANY REQUIRED GUYING IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE APPROVED BY VTRANS IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 105.03.
- 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 15mph, THE RESIDENT ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.
- SIGNAL FACES SHALL CONSIST OF 12 INCH LENSES (RED, YELLOW, AND GREEN).
- THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16.5 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 ENSURE COMPLIANCE WITH THE HEIGHT REQUIREMENTS IN THE EVENT THE NEW APPROACH GRADES DIFFER SIGNIFICANTLY FROM THE OLD ROAD GRADE.
- SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER OF FACES.
- SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE. 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 UPON THE DISCRETION OF THE CONTRACTOR AND APPROVAL BY THE ENGINEER AND LOCATED AT A DISTANCE NO GREATER THAN 14.5 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.
- THE SIGNAL SYSTEM SHALL CONSIST OF POLES, SIGNS AND POSTS, WARNING SIGN, LUMINAIRES, FLASHING BEACONS, AND SIGNAL EQUIPMENT TO PROVIDE FOR AN ADEQUATE DESIGN AND SHALL BE APPROVED BY VTRANS IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 105.03. IT ALSO INCLUDES PERMITS AND COST ASSOCIATED WITH PROVIDING ELECTRICAL POWER.
- THE CONTRACTOR SHALL PROVIDE AN ACTUATED CONTROLLER. THE APPROACHES NOTED SHALL HAVE A TEMPORARY VEHICLE DETECTOR. THE TYPE OF DETECTION SHALL BE AT THE OPTION OF THE CONTRACTOR. LOOPS ARE SHOWN FOR PLACEMENT PURPOSES ONLY. THE CONTROLLER, DETECTOR AND ALL OTHER SIGNAL EQUIPMENT SHALL MEET OR EXCEED ALL NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION STANDARDS.
- THE NEAR PORTION OF VEHICLE DETECTOR LOOPS FOR PRESENCE DETECTION SHALL BE LOCATED 5 FEET BEYOND THE STOP BAR.
- INTERVAL TIMING SHOWN IN SECONDS.
- INTERCONNECT BETWEEN SIGNAL POLES BY WHATEVER MEANS POSSIBLE OR CONVENIENT TO PROVIDE FOR A SAFE INSTALLATION.
- PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE PRACTICAL.
- 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 TRAVELLING PUBLIC.
- ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC., SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL, INCLUDING ANY UTILITY POLES, WIRES, ETC.
- A 250 WATT MER/150 WATT HPS LUMINAIRE AND MAST ARM SHALL BE PROVIDED ON A POLE AT BOTH INTERSECTIONS AT A MOUNTING HEIGHT OF 30 FEET ABOVE ROADWAY CENTERLINE. THE INTENT IS 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.
- UNLESS SPECIFICALLY SHOWN STOP BARS SHALL BE LOCATED A MINIMUM OF 40 FEET AND A MAXIMUM OF 120 FEET FROM THE NEAREST SIGNAL HEAD.
- PAYMENT FOR THE TEMPORARY DETECTORS SHALL BE FOR EACH UNIT INSTALLED, UNDER ITEM 678.42.
- SIGNS AND POSTS AS NOTED BELOW ARE SUBSIDIARY TO THE TEMPORARY TRAFFIC SIGNAL SYSTEM ITEM 678.40: "STOP HERE ON RED"; "SIGNAL AHEAD"; "NO TURN ON RED"; "TO GET GREEN LIGHT"; "ONE LANE BRIDGE"; "RIGHT TURN ONLY"; AND "20MPH."
- THE TEMPORARY PAVEMENT MARKERS SHALL BE PAID UNDER ITEM. 646.60 - TEMPORARY 4 INCH WHITE LINE, ITEM 646.61 - TEMPORARY 4 INCH YELLOW LINE (DOUBLE CENTER LINE), AND ITEM 646.66 - TEMPORARY 24 INCH STOP BAR.
- A "SIGNAL AHEAD" SIGN SHALL BE PLACED AT LEAST 500 FEET FROM THE SIGNAL OR AT A POSITION TO BE DETERMINED BY THE ENGINEER.
- ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND STATE INSPECTOR.
- TRAFFIC CONTROL WARNING SIGNS SHALL BE PROVIDED ON EACH APPROACH PER STANDARD E-107. ADDITIONAL PROJECT CONSTRUCTION SIGNS SHALL BE INSTALLED AS REQUIRED BY THE RESIDENT ENGINEER PER STANDARD E-100, E-101, E-102 & E-102A. PAYMENT FOR THESE SIGNS, THE REFLECTORIZED PLASTIC DRUMS, ETC, SHALL BE INCIDENTAL TO ITEM 641.10, TRAFFIC CONTROL.
- THE "TO GET GREEN LIGHT" SIGN IS TO BE USED ONLY ON APPROACHES WHERE RIGHT TURNS ARE NOT POSSIBLE.
- IF BRIDGE WORK REQUIRES LANE CLOSURE REFER TO STANDARD E-110 FOR TRAFFIC CONTROL DETAILS. PAYMENT SHALL BE INCIDENTAL TO ITEM 641.10, TRAFFIC CONTROL.
- PAYMENT FOR TEMPORARY TRAFFIC BARRIER USED SHALL BE MADE UNDER ITEM 621.90.
- IF TEMPORARY BARRIER BLOCKS THE VISIBILITY OF EXISTING ROUTE MARKER AND DESTINATION SIGNS, THEN THESE SIGNS SHALL BE RELOCATED OR RAISED TO RETAIN VISIBILITY. ALL COSTS FOR RELOCATING SIGNS SHALL BE INCIDENTAL TO ITEM 641.10, TRAFFIC CONTROL.
- PAYMENT FOR "ONE LANE BRIDGE" (CONSTRUCTION WARNING SIGN) AND "20 MPH" (ADVISORY SIGN) SHALL BE INCIDENTAL TO ITEM 641.10, TRAFFIC CONTROL.



- LEGEND**
- ⊗ TRAFFIC SIGNAL POLE WITH LUMINAIRE
 - ⊕ SIGNAL HEAD AND PHASE
 - TEMPORARY WOOD POLE
 - ⊠ SIGNAL CONTROLLER CABINET
 - TEMPORARY DETOUR PAVEMENT LIMIT
 - TEMPORARY TRAFFIC BARRIER

PLAN
NOT TO SCALE

- NOTES:**
- ALL SIGNAL RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN THE SIGNAL IS NOT OPERATING.
 - EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE TO BE CONFIRMED BY THE CONTRACTOR.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING ALL MEASUREMENTS IN THE FIELD.
 - A 4" TEMPORARY WHITE LINE SHALL BE PLACED 1' OFF THE EDGE OF THE TEMPORARY DETOUR PAVEMENT.
 - SEE STANDARDS FOR DESIGN CRITERIA.
 - CONTRACTOR TO COORDINATE TEMPORARY TRAFFIC BARRIER AT STA 14+50 LT WITH RESIDENT ENGINEER AND PROPERTY OWNER.

PHASING DIAGRAM AND SPECIAL NOTES FOR EACH LOCATION

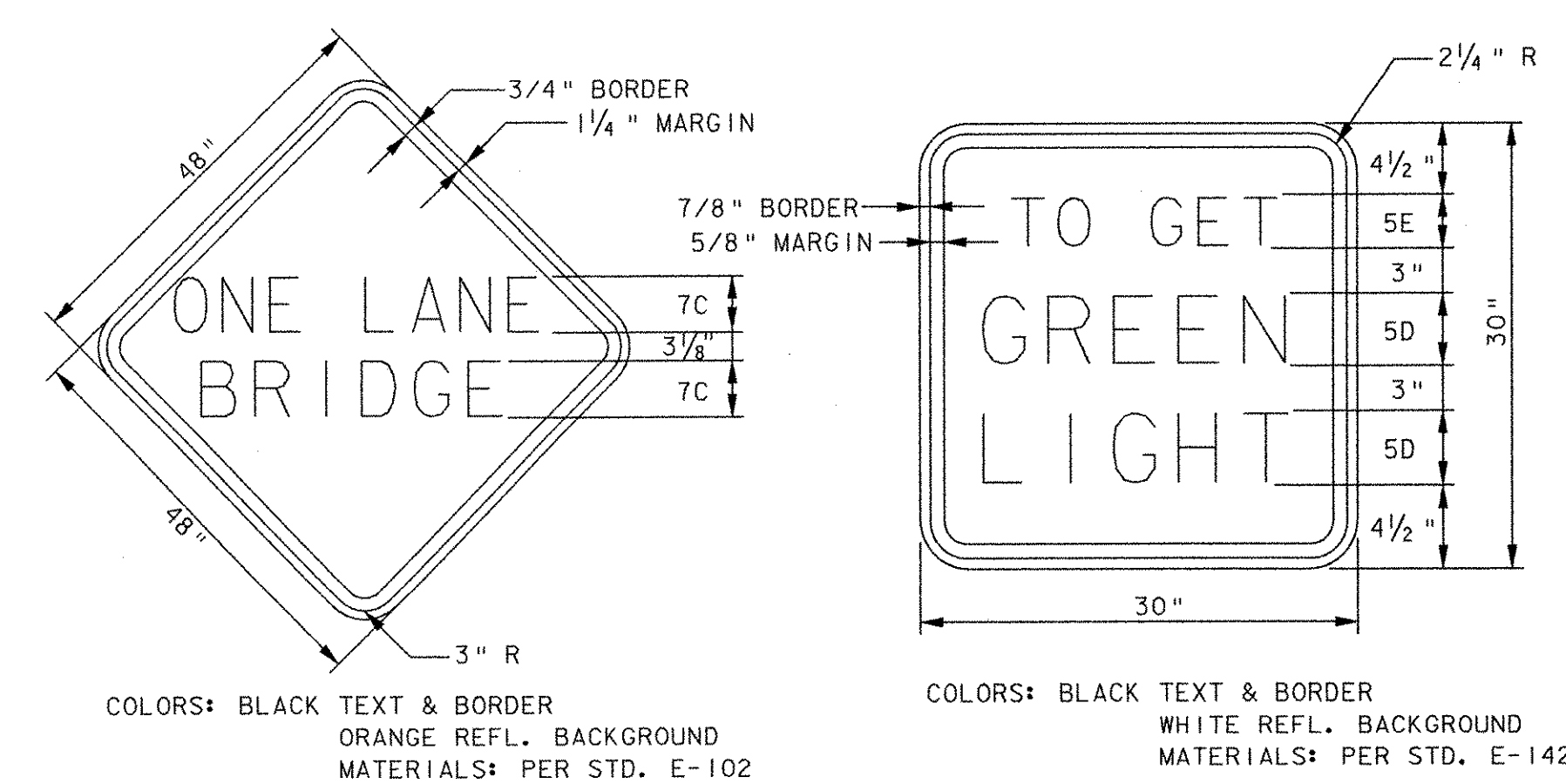
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	1	2	3	1	2	3	1	2	3	1	2	3
INTERVAL	7			5			7			7		
EXTENSION	2			2			2			2		
MAXIMUM	25	3	12	25	3	20	15	3	12	35	3	25
HEAD A	G	Y	R	R	R	R	R	R	R	R	R	R
HEAD B	R	R	R	G	Y	R	R	R	R	R	R	R
HEAD C	R	R	R	R	R	R	G	Y	R	R	R	R
HEAD D	R	R	R	R	R	R	R	R	R	G	Y	R

⊕	⊕	⊕	⊕
⊕	⊕	⊕	⊕
⊕	⊕	⊕	⊕
⊕	⊕	⊕	⊕

- CONTROLLER SHALL BE PROGRAMMED FOR 4 PHASE SEQUENTIAL OPERATION.
- PHASE 'B' SHALL BE PROGRAMMED FOR MINIMUM RECALL ON 24 HOURS A DAY / 7 DAYS A WEEK TO MAXIMIZE GREEN TIME ALLOCATION. IF PHASE 'B' IS NOT SET FOR MINIMUM RECALL, PHASE 'A' ALL RED CLEARANCE MUST BE CHANGED FROM 12 SECONDS TO 25 SECONDS AND PHASE 'C' ALL RED CLEARANCE MUST BE CHANGED FROM 12 TO 18 SECONDS.

SPECIAL REQUIREMENTS

APPROACH	TEMPORARY VEHICLE DETECTOR	SIGNS MOUNTED AT STOP LINE		
		STOP HERE ON RED	TO GET GREEN LIGHT	NO TURN ON RED
ROUTE 121 WB	40'	X	X	
ROUTE 35 NB	40'	X	X	
ROUTE 35/121 SB	40'	X	X	
PARKER HILL RD	40'	X		X



**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
TRAFFIC CONTROL PLAN			
Designed By	C.M. BOBAY	Drawn By	B.J. MASSE
Checked By	Date	Bridge Design Supervisor	
M.A. COLGAN	5/05	M.A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
File No.	51335TCP	Sheet	13 of 42

VHB Vanasse Hangen Brustlin, Inc.

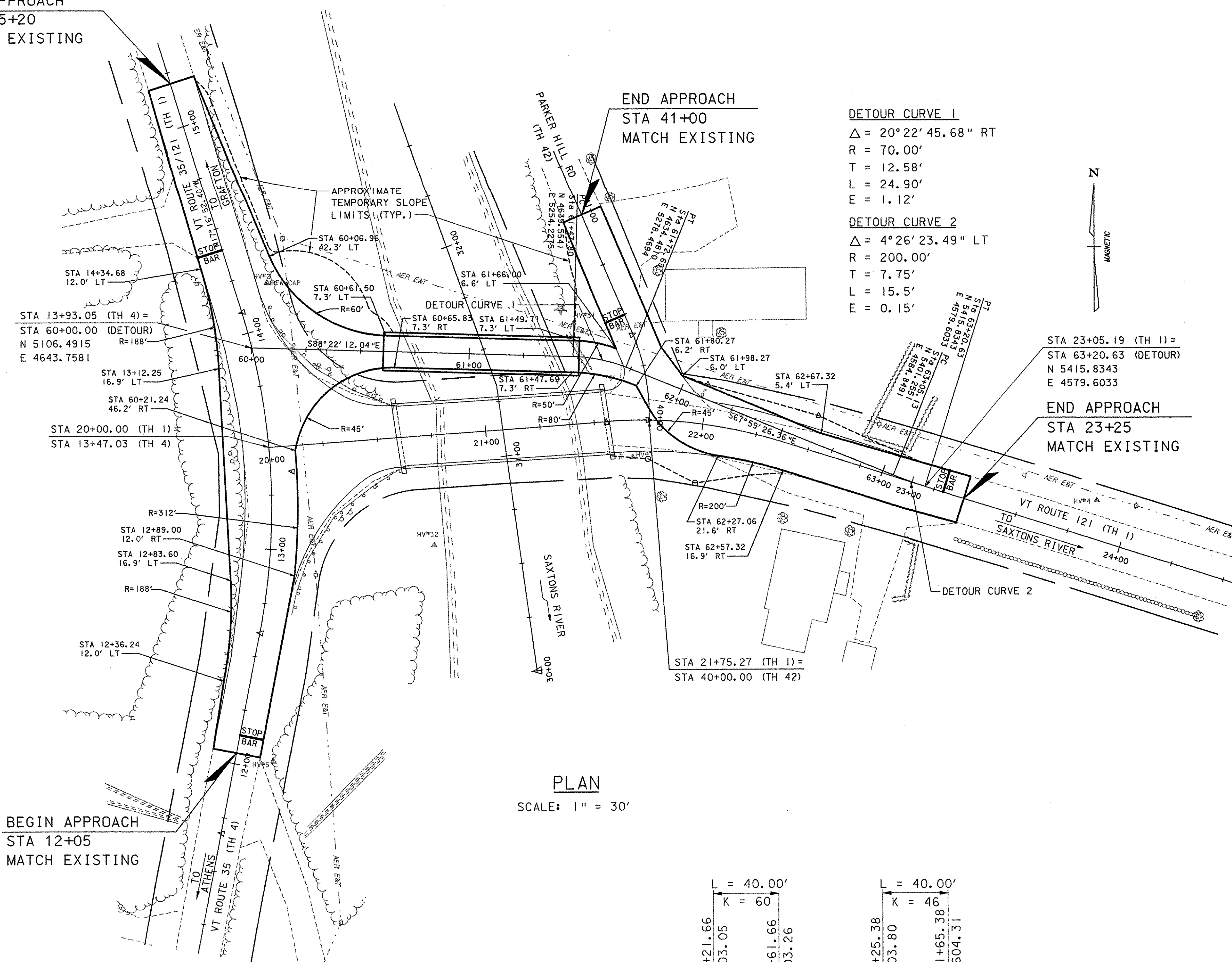
END APPROACH
STA 15+20
MATCH EXISTING

END APPROACH
STA 41+00
MATCH EXISTING

DETOUR CURVE 1
 $\Delta = 20^\circ 22' 45.68''$ RT
R = 70.00'
T = 12.58'
L = 24.90'
E = 1.12'

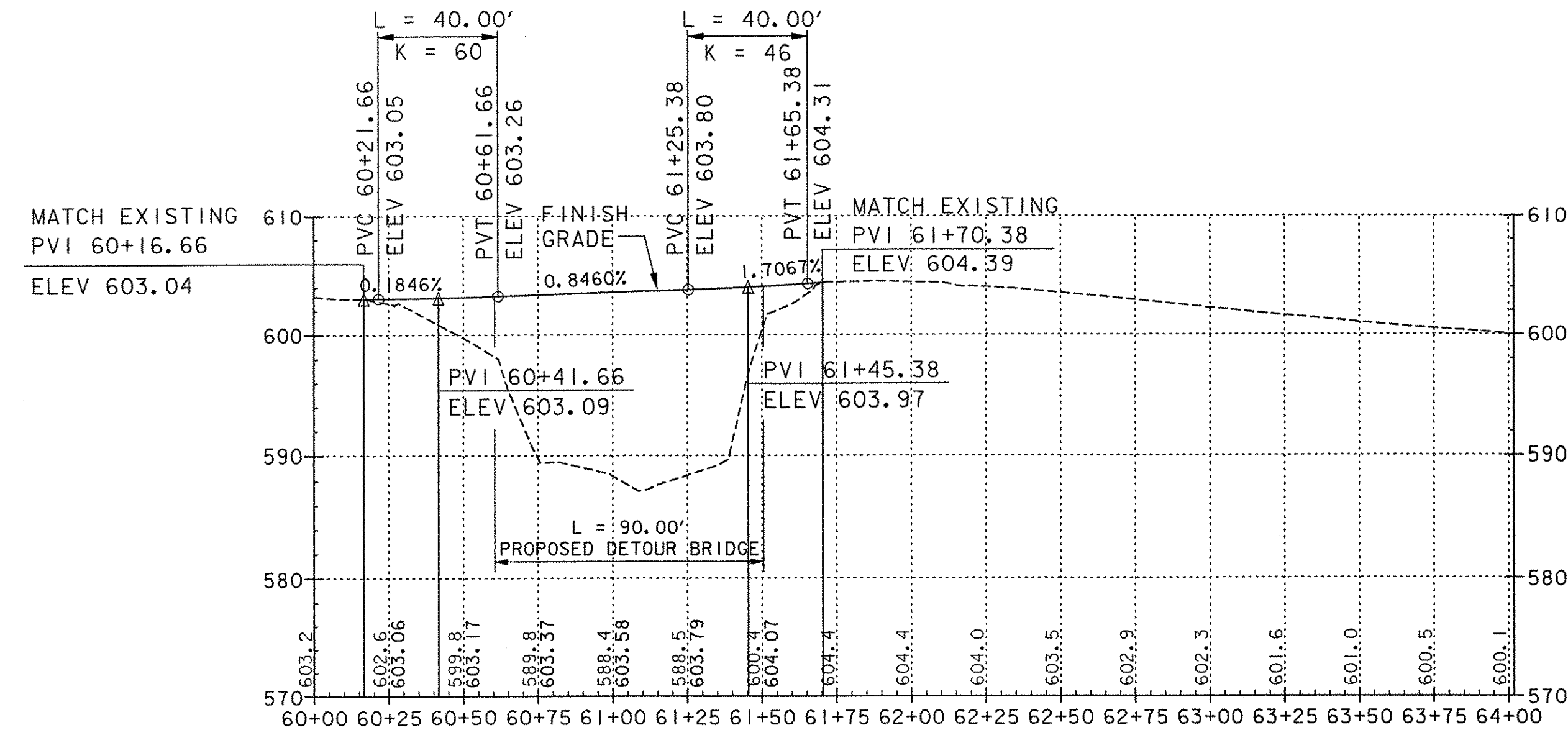
DETOUR CURVE 2
 $\Delta = 4^\circ 26' 23.49''$ LT
R = 200.00'
T = 7.75'
L = 15.5'
E = 0.15'

END APPROACH
STA 23+25
MATCH EXISTING



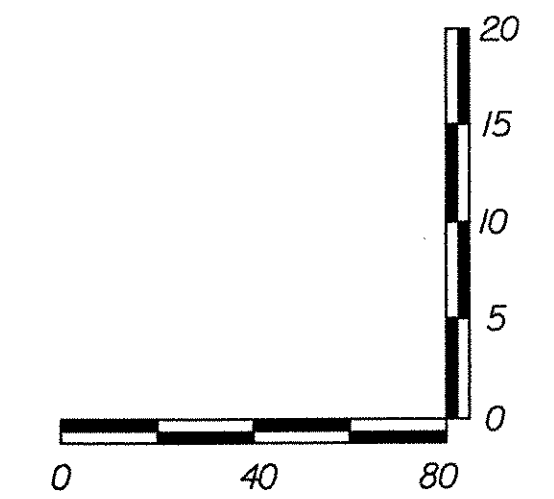
BEGIN APPROACH
STA 12+05
MATCH EXISTING

PLAN
SCALE: 1" = 30'



GENERAL NOTES:

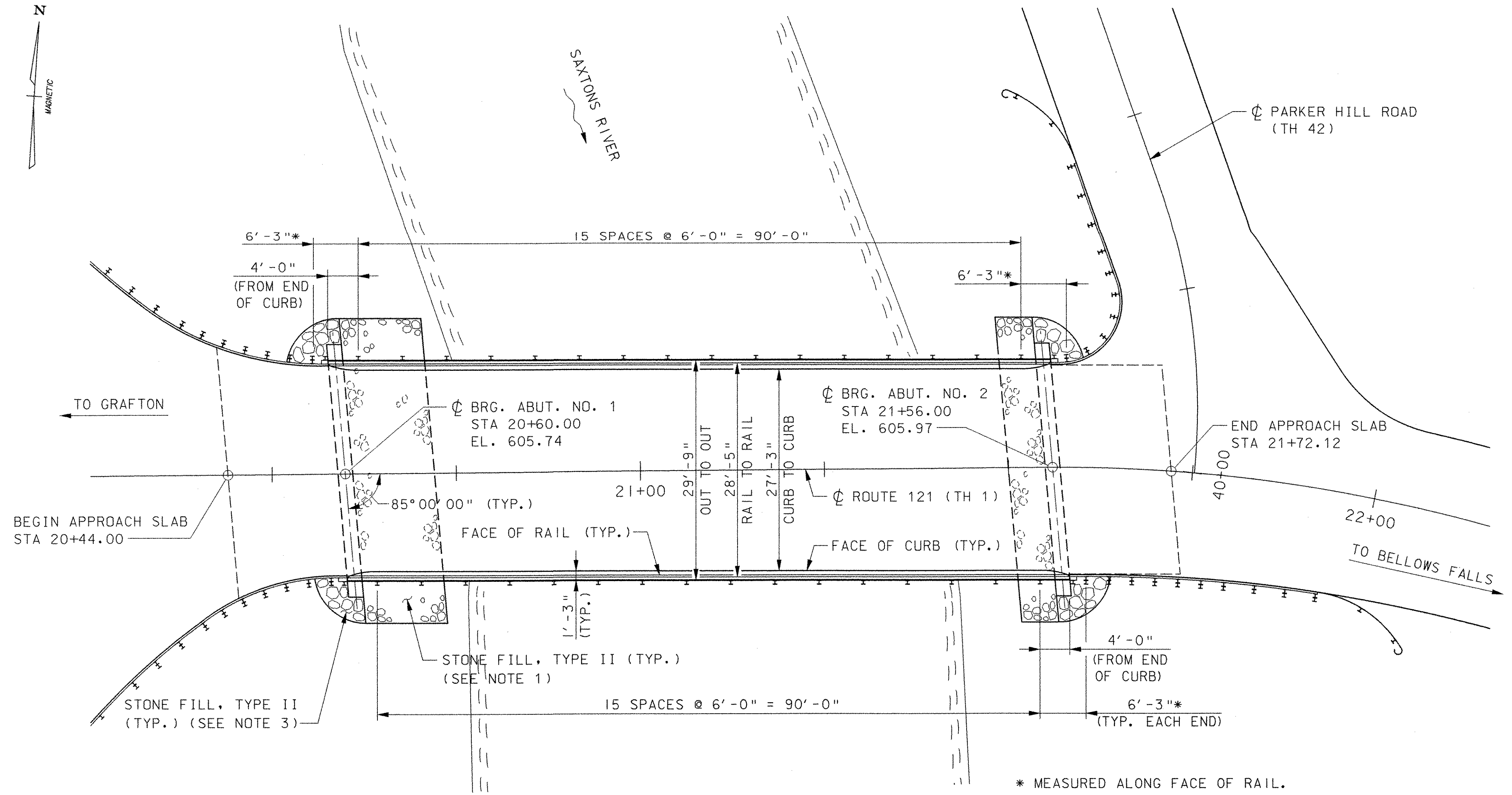
- TRAFFIC SHALL BE MAINTAINED DURING CONSTRUCTION WITH A DETOUR AND TEMPORARY BRIDGE. THE DETOUR AND BRIDGE SHALL BE IN ACCORDANCE WITH AND PAID AS ITEM 528.10, ONE-WAY TEMPORARY BRIDGE. THE CONTRACTOR SHALL SUBMIT THE DETOUR SIGNAGE AND ALIGNMENT PACKAGE TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.
- THE PURPOSE OF THE DETOUR PLAN AND PROFILE IS TO DEFINE APPROXIMATE SLOPE LIMITS. APPROXIMATE SLOPE LIMITS ARE BASED ON A 14 FOOT WIDE TRAVELED WAY WITH 1:2 SIDESLOPES. THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE ALIGNMENT FOR THE ENGINEER'S APPROVAL. THE DETOUR SHALL MEET THE REQUIREMENTS OF AASHTO POLICY ON GEOMETRIC DESIGN, THE MUTCD, VERMONT SPECIFICATION 528 AND STANDARD E-107M. ADDITIONAL PERMITS OR RIGHT-OF-WAY REQUIRED FOR AN ALTERNATIVE DETOUR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- DETOUR DESIGN SPEED IS 35 MPH AND POSTED SPEED IS 20 MPH.
- THE TEMPORARY DETOUR SHALL BE PAVED TO A DEPTH OF 2 INCHES. THE PAVEMENT SHALL BE PAID UNDER ITEM 406.25, BITUMINOUS CONCRETE PAVEMENT. SAMPLING AND MIX DESIGN REQUIREMENTS DO NOT APPLY TO TEMPORARY PAVEMENT. ALL OTHER COSTS ASSOCIATED WITH THE TEMPORARY BRIDGE, DETOUR SHALL BE PAID FOR UNDER ITEM 528.10, ONE WAY TEMPORARY BRIDGE. SEE PLAN SHEET 7 FOR FINAL LAYOUT.
- THE DETOUR SHALL BE REMOVED AS PER SPECIFICATION 528.
- PERMIT REQUIREMENTS:
ALL TEMPORARY FILLS WILL BE PLACED ON A GEOTEXTILE MAT. UPON COMPLETION OF THE NEW STRUCTURE, THE TEMPORARY BRIDGE AND FILLS FOR THE DETOUR WILL BE REMOVED DOWN TO THE ORIGINAL GRADE. ALL AREAS OF DISTURBANCE WILL BE IMMEDIATELY SEEDED AND MULCHED UPON COMPLETION OF THE FINAL GRADE TO PREVENT SOIL EROSION.
TEMPORARY ABUTMENTS SHALL BE NO CLOSER TO THE CHANNEL THAN THE TOP OF BANK. (ELEV. 598' WEST ABUT., ELEV. 602' EAST ABUT.).
- SEE SHEET 13 FOR TRAFFIC CONTROL PLAN.
- SEQUENCE OF WORK:
A. PLACE ALL REQUIRED PAVEMENT FOR THE DETOUR WORK.
B. COMPLETE NEW BRIDGE AND PAVE APPROACHES.
C. REMOVE ANY TEMPORARY PAVEMENT THAT IS NOT TO BE INCORPORATED INTO THE FINAL PROJECT.
SAW CUTS SHALL BE USED BETWEEN PAVEMENT TO BE REMOVED AND PAVEMENT TO BE RETAINED.



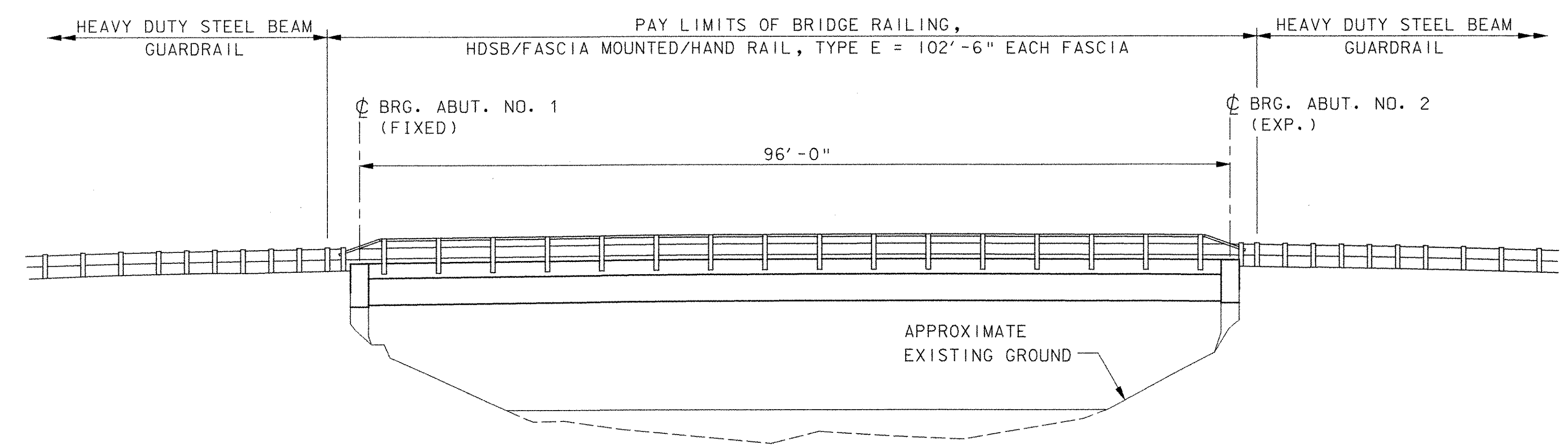
TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
DETOUR PLAN & PROFILE			
Designed By	C.L. CILLEY	Drawn By	B.J. MASSE
Checked By	Date	Bridge Design Supervisor	Date
M.A. COLGAN	6/05	M.A. COLGAN	Date 6/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.		File No. 51335DETPLN	
		Sheet 14 of 42	

VHB Vanasse Hangen Brustlin, Inc.



PLAN
SCALE: 1" = 10'



ELEVATION
SCALE: 1" = 10'

- NOTES:**
- EXISTING RIP RAP AROUND THE ABUTMENTS SHALL BE RETAINED AND CHINKED WHERE NECESSARY WITH STONE FILL, TYPE II.
 - SEE SHEET 7 FOR DETAILS OF CURVATURE OF HEAVY DUTY STEEL BEAM GUARDRAIL.
 - NEW STONE FILL, TYPE II SHALL BE PLACED AROUND ENDS OF WINGWALLS AS DIRECTED BY THE RESIDENT ENGINEER.

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
PLAN & ELEVATION		
Designed By	J. T. KLEIN	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
M. A. COLGAN	5/05	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.		
File No. 51335GPE		Sheet 15 of 42

VHB Vanasse Hangen Brustlin, Inc.

EROSION CONTROL NARRATIVE

DESCRIPTION OF PROJECT

This project involves the rehabilitation of a two span bridge carrying VT Route 121 over the Saxtons River in the Town of Grafton. The existing bridge is approximately 98 feet long and 27.2 feet wide. The superstructure (steel beams, railings, and concrete deck) will be completely replaced and the abutments will be reconfigured to fit a wider roadway. The pier in the center of the river will be removed to an elevation level with the bottom of the channel. The alignment for Route 121 will not be changed and the bridge will be widened 4.08 feet to both the north and the south. One lane of traffic will be maintained at all times on a temporary bridge to be constructed to the north of the existing bridge. It is anticipated that this project will last one construction season. The total length of roadway approach work is approximately 768 feet. The site is located at Latitude N 43 degrees 9 minutes, Longitude W 72 degrees 34 minutes.

Total disturbed area (excluding waste, borrow and staging areas): 0.72 ac.

No "Threatened & Endangered Species" or Historic Resources have been identified in the project area.

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The roadway in the project area is generally built up above the surrounding ground with steep slopes along the Saxtons River. The bridge itself is on a crest vertical curve centered on the pier. The roadway along VT 121 is on a horizontal and vertical curve through out the project limits and is super-elevated with the high point at the center line of roadway. Roadway surface drainage will generally be towards the northern and southern shoulders. The roadway along VT 35/121 is also on both a horizontal and vertical curve. Roadway surface drainage will generally be toward the eastern and western shoulders.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Saxtons River is located in the project area. There are no other water bodies or wetlands that are located in the impact area of the project. The drainage basin for the Saxtons River is characterized by a narrow river valley within steeply sloped hills. This character also causes the river to rise rapidly and flow swiftly as evidenced by the rocky/cobbly bottom and the bank erosion observed along the river. The contributing drainage area at the downstream corporate limits is 43.4 sq. miles as taken from the 1987 FEMA FIS.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is generally flat along each side of VT Route 121, gently sloping towards the Saxtons River. Along VT 35/121, the topography slopes steeply towards the Saxtons River to the east. Parker Hill Road forms a T intersection with VT 121 in the northeast quadrant of the project, just to the east of the bridge. VT 121 forms a Tee intersection with VT 35 at the west end of the bridge. Development along this portion of VT 121 and VT 35 consists of permanent residences with lawns, woods, and open fields abutting the project.

Overhead utility service will not need to be relocated. The overhead utilities follow VT 121, crossing the river north of the bridge, and run adjacent to VT 35 along the east side of the road.

VEGETATION:

There are several small hardwood and softwood trees located along VT Route 121 and along the river banks. The residences near the bridge site have small areas of lawn adjacent to the roadway. Impacts to vegetation will be limited to that which is affected by the widening of the bridge and roadway approaches, and the construction of the temporary bridge north of the existing bridge. Some immature 2-6 inch diameter trees will be removed. Following the construction of the bridge superstructure and substructures, the existing slopes will be stabilized with stone fill and/or vegetation will be reestablished with standard seed & mulch practices.

SOILS:

The Soil Conservation Service has mapped the soils throughout Windham County. The soil types identified within the project area are Quonset and Warwick soils (3B) on the east bank of the river, and Adams loamy fine sand (16B) along the west bank of the river. The Quonset and Warwick soils are described as excessively drained "gravelly sandy loam" to "very gravelly loamy sand". Permeability is moderately rapid or rapid in the subsoil and very rapid in the substratum for both Quonset and Warwick soils. "These soils are suited to cultivated crops. Erosion is a hazard, and the low available water capacity, or droughtiness, is a management concern." Adams loamy fine sand is "a very deep, gently sloping, well drained to excessively drained soil on terraces, knolls, and ridges." Permeability is rapid in the surface and subsoil layers, and very rapid in the substratum.

The listed soil erodability coefficient (K-value) is 0.20 for Quonset and Warwick soils and 0.17 for Adams loamy fine sand. Generally, K-value indicates the following: 0.0 - 0.23 = low erodability; 0.24 - 0.36 = moderate erodability; 0.37 and higher = higher erodability.

The majority of the roadway is "in a fill typical", meaning the roadway is higher than the surrounding mean ground elevation. Due to engineering requirements for selective fill material for the widening of the roadway, much of this fill material will need to be brought in from an outside source. Since we do not know where this source pit will be, we can not provide erodability properties for the fill. See the roadway cross sections for fill areas.

SENSITIVE RESOURCE AREAS:

No specific "Threatened & Endangered Species" have been identified within the project limits and there will be no adverse effect to Historic or Archaeological features. The Saxtons River has been identified as a sensitive fish habitat by the Army Corps of Engineers. All work in, above, and around the river shall be completed in accordance with the environmental permit requirements for this project.

The limits of the Riparian Buffer for the Saxtons River are identified on the following sheets. All work proposed within these limits shall be completed with extreme care so as to minimize impacts to this buffer zone.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

Disturbance of soils near natural or man-made waterways consists of that which is necessary to construct the temporary detour bridge and to remove the pier. Stabilization of disturbances to the river banks will be accomplished with cofferdams and Stone Fill, Type IV.

All pier removal shall be completed from above through the use of lifting devices. No machinery or haul road access will be allowed in the Saxtons River. Special attention shall be paid to the Army Corps of Engineers' water quality control procedures.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

Temporary erosion prevention measures to be utilized include:

"Project Demarcation Fencing," denoted -PDF- on the plans, to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding, mulching and biodegradable erosion control matting, or an equivalent product, will be utilized on all slopes steeper than 3:1 that are not lined with stone fill. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for several days prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes.

Temporary measures to control sediment transport include:

Silt fence will be installed to prevent sediment transport to down gradient areas. Each line of silt fence shall be placed along the contour with ends turned slightly uphill to create a ponding effect should water try to run along the fencing and around the ends. Silt fence shall be installed prior to any upslope earthwork.

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

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

Temporary sediment settling basins will be utilized on this project for dewatering cofferdams.

PERMANENT EROSION CONTROL MEASURES

Several permanent erosion control measures will be utilized:

Chinking of the existing heavy stone fill that lines the river banks with Stone Fill, Type II is specified. This stone protects from river bank erosion during design storm events.

Grass or other suitable ground cover will be established outside of the roadway limits where stone lining has not been specified. These areas shall be seeded and mulched promptly upon achieving final grade.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

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

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed by the Engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2001.

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

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Temporary vegetation shall be established if the area is to be without construction activity for a period of 14 days. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds.

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

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

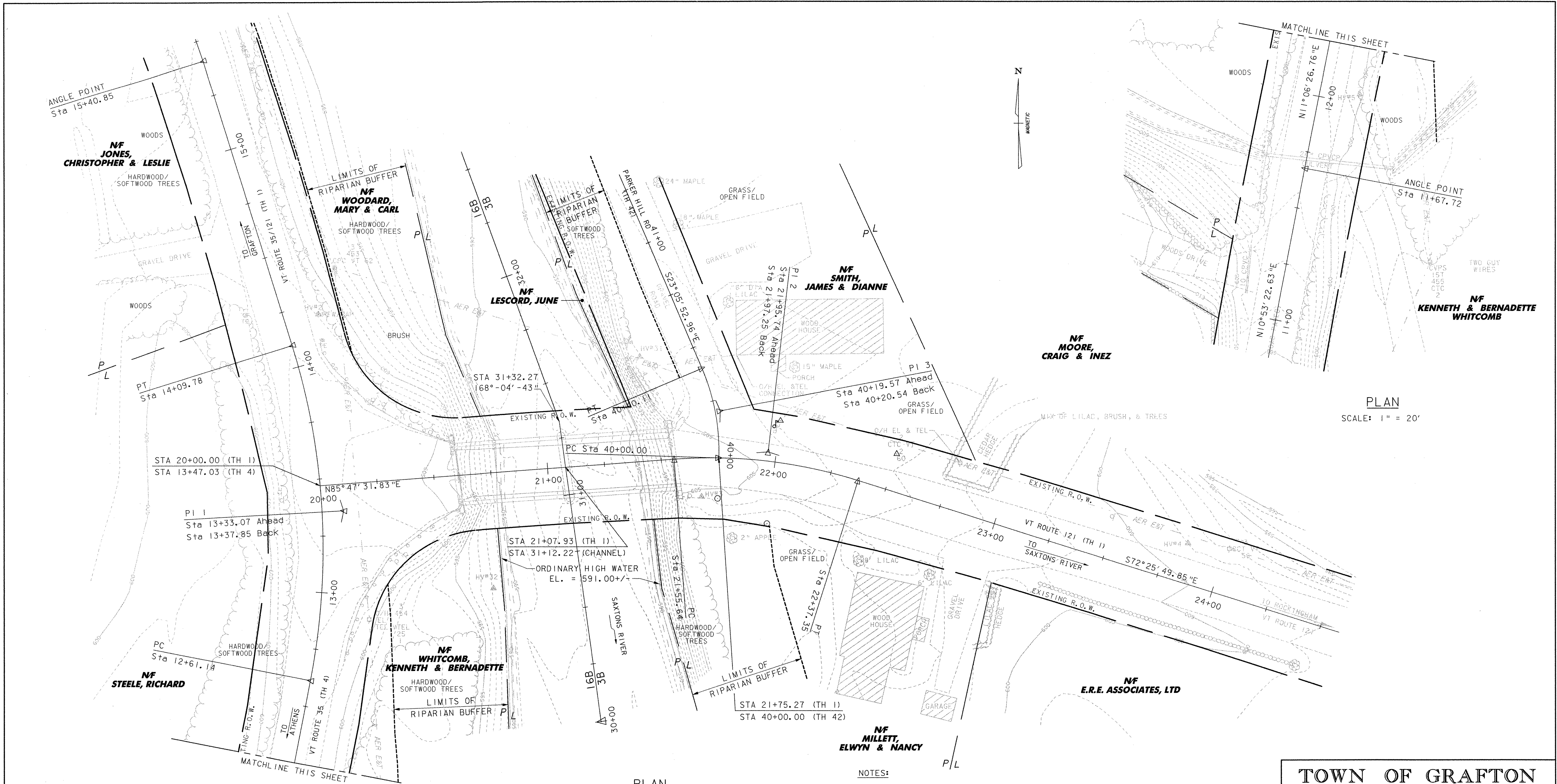
Do not allow construction equipment to operate on the down slope side of perimeter control measures.

SEDIMENT SETTLING BASIN SIZING CRITERIA

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

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE

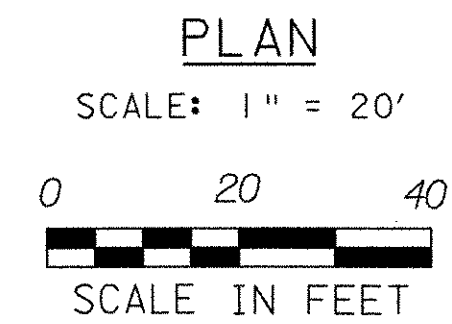
Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
EROSION CONTROL NARRATIVE			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
M. A. COLGAN	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
File No.	51335ECNAR	Sheet	16 of 42



PLAN
SCALE: 1" = 20'

LEGEND

16B	EXISTING SOIL TYPE BOUNDARY (APPROX.)
3B	(ALONG CENTERLINE CHANNEL)
---AER E&T---	EXISTING OVERHEAD ELECTRIC & TELEPHONE LINE
MB	MAILBOX
UP	UTILITY POLE
S	SIGNS



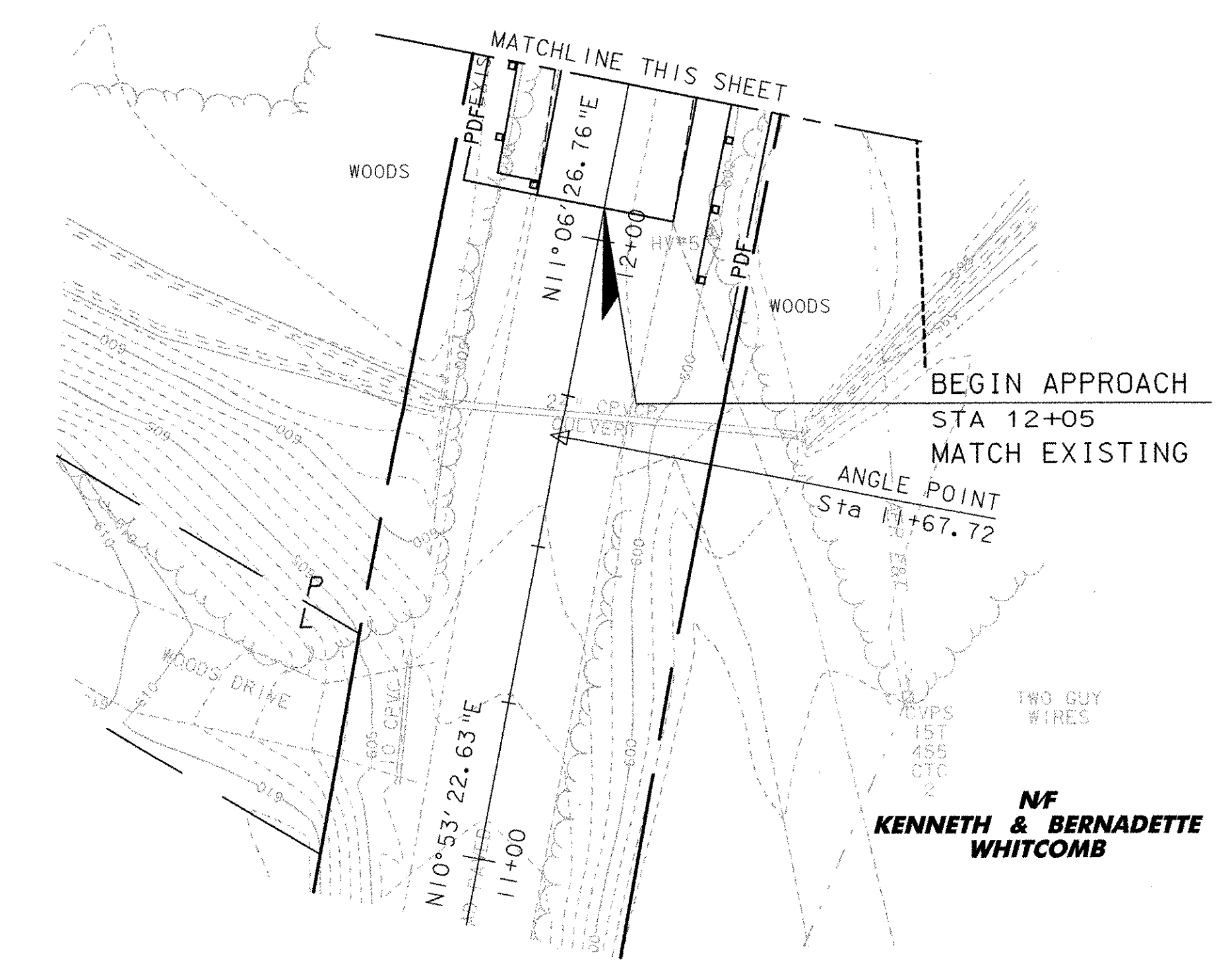
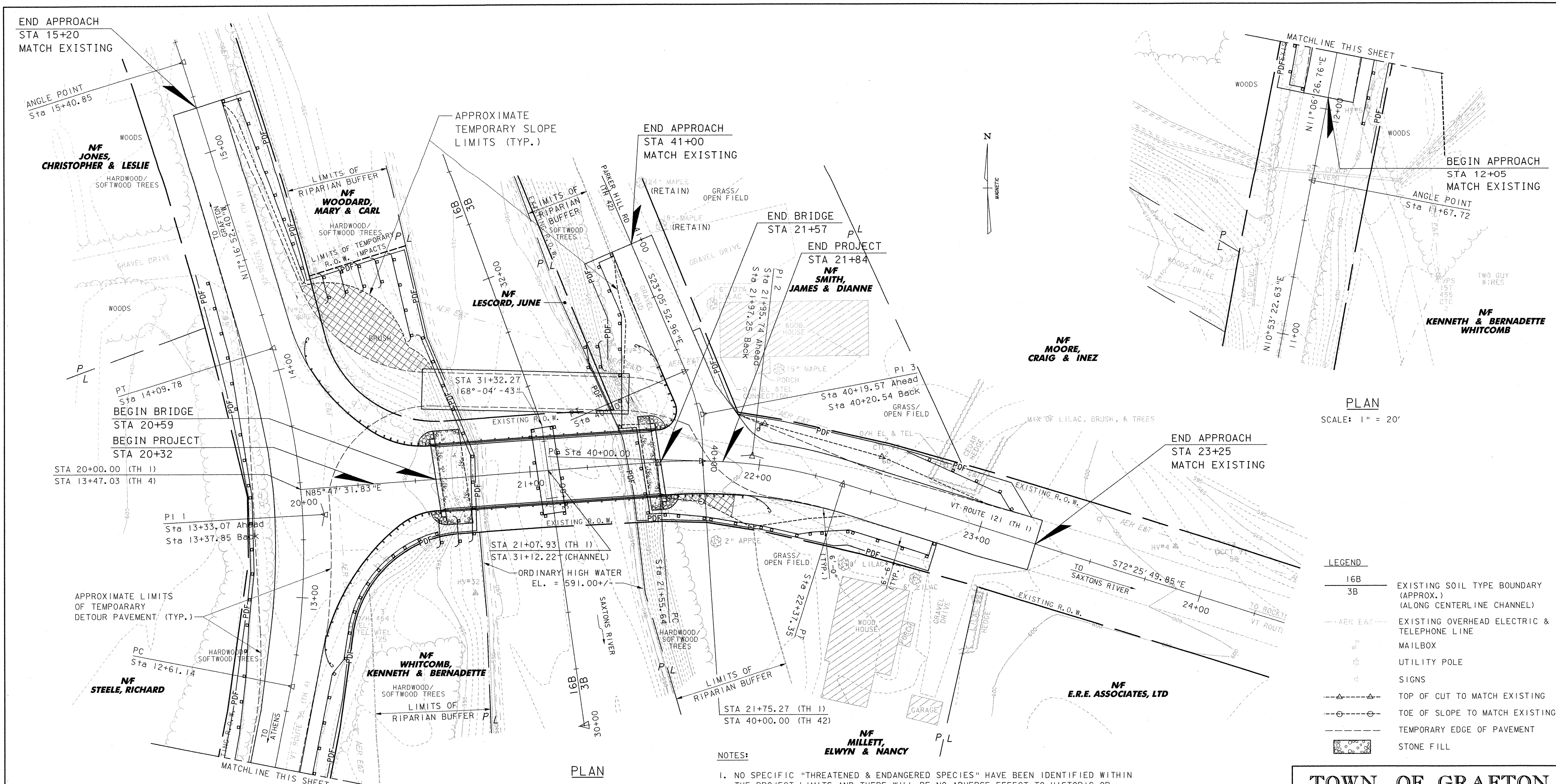
- NOTES:**
1. NO SPECIFIC "THREATENED & ENDANGERED SPECIES" HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS AND THERE WILL BE NO ADVERSE EFFECT TO HISTORIC OR ARCHAEOLOGICAL FEATURES. THE SAXTONS RIVER HAS BEEN IDENTIFIED AS A SENSITIVE FISH HABITAT BY THE ARMY CORPS OF ENGINEERS. ALL WORK IN, ABOVE, AND AROUND THE RIVER SHALL BE COMPLETED IN ACCORDANCE WITH THE ENVIRONMENTAL PERMIT REQUIREMENTS FOR THIS PROJECT.
 2. THE LIMITS OF THE RIPARIAN BUFFER FOR THE SAXTONS RIVER ARE IDENTIFIED ON THE FOLLOWING SHEETS. ALL WORK PROPOSED WITHIN THESE LIMITS SHALL BE COMPLETED WITH EXTREME CARE SO AS TO MINIMIZE IMPACTS TO THIS BUFFER ZONE.
 3. SOIL BOUNDARIES ARE APPROXIMATE AND ARE TAKEN FROM WINDHAM COUNTY, VT. SOIL SURVEY BOOK. SEE SHEET 16 FOR SOIL DESCRIPTIONS.

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
EXISTING CONDITIONS SITE PLAN			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	M. A. COLGAN	Date	5/05
		Bridge Design Supervisor	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.	File No. 51335EC1	Sheet	17 of 42

VHB Vanasse Hangen Brustlin, Inc.



PLAN
SCALE: 1" = 20'

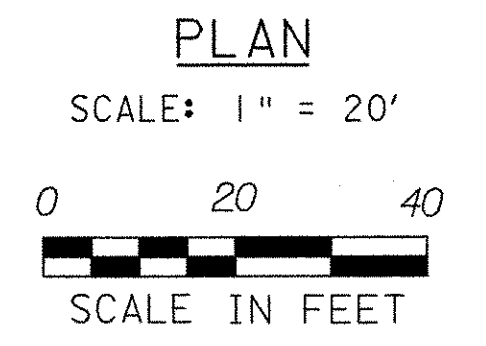
LEGEND

16B	EXISTING SOIL TYPE BOUNDARY (APPROX.) (ALONG CENTERLINE CHANNEL)
3B	EXISTING OVERHEAD ELECTRIC & TELEPHONE LINE
AER E&T	EXISTING OVERHEAD ELECTRIC & TELEPHONE LINE
MB	MAILBOX
U	UTILITY POLE
S	SIGNS
---▲---	TOP OF CUT TO MATCH EXISTING
---○---	TOE OF SLOPE TO MATCH EXISTING
---	TEMPORARY EDGE OF PAVEMENT
■	STONE FILL

EPSC LEGEND

—■—	SILT FENCE
—PDF—	PROJECT DEMARCATION FENCE DEFINING LIMITS OF DISTURBANCE (SNOW FENCE (MOD.-PDF))
■	EROSION CONTROL MATTING

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED



NOTES:

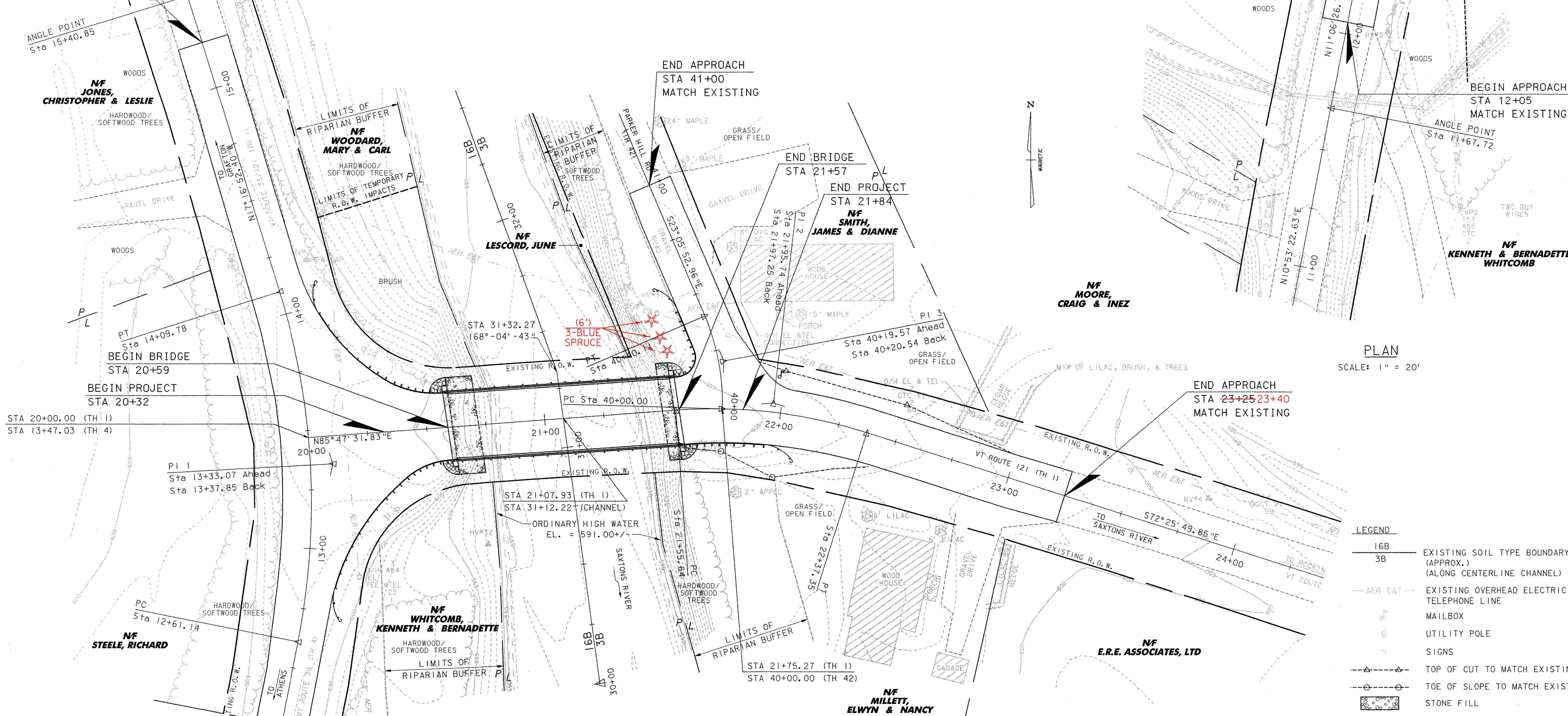
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2. THE LIMITS OF THE RIPARIAN BUFFER FOR THE SAXTONS RIVER ARE IDENTIFIED ON THE FOLLOWING SHEETS. ALL WORK PROPOSED WITHIN THESE LIMITS SHALL BE COMPLETED WITH EXTREME CARE SO AS TO MINIMIZE IMPACTS TO THIS BUFFER ZONE.
3. SOIL BOUNDARIES ARE APPROXIMATE AND ARE TAKEN FROM WINDHAM COUNTY, VT. SOIL SURVEY BOOK. SEE SHEET 16 FOR SOIL DESCRIPTIONS.
4. ALL PIER REMOVAL SHALL BE COMPLETED FROM ABOVE THROUGH THE USE OF LIFTING DEVICES. NO MACHINERY OR HAUL ROAD ACCESS WILL BE ALLOWED IN THE SAXTONS RIVER. SPECIAL ATTENTION SHALL BE PAID TO THE ARMY CORPS OF ENGINEERS' WATER QUALITY CONTROL PROCEDURES.

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
EPSC PLAN			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
M. A. COLGAN	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.	File No. 51335EC2	Sheet	18 of 42

VHB Vanasse Hangen Brustlin, Inc.

END APPROACH
STA 15+20 15+50
MATCH EXISTING



PLAN
SCALE: 1" = 20'

STA 20+00.00 (TH 1)
STA 13+47.03 (TH 4)

END APPROACH
STA 23+25 23+40
MATCH EXISTING

LEGEND

16B	EXISTING SOIL TYPE BOUNDARY (APPROX.)
3B	(ALONG CENTERLINE CHANNEL)
---	EXISTING OVERHEAD ELECTRIC & TELEPHONE LINE
⊕	MAILBOX
⊕	UTILITY POLE
⊕	SIGNS
---▲---	TOP OF CUT TO MATCH EXISTING
---○---	TOE OF SLOPE TO MATCH EXISTING
▨	STONE FILL

PLAN
SCALE: 1" = 20'

SCALE IN FEET

NOTES:

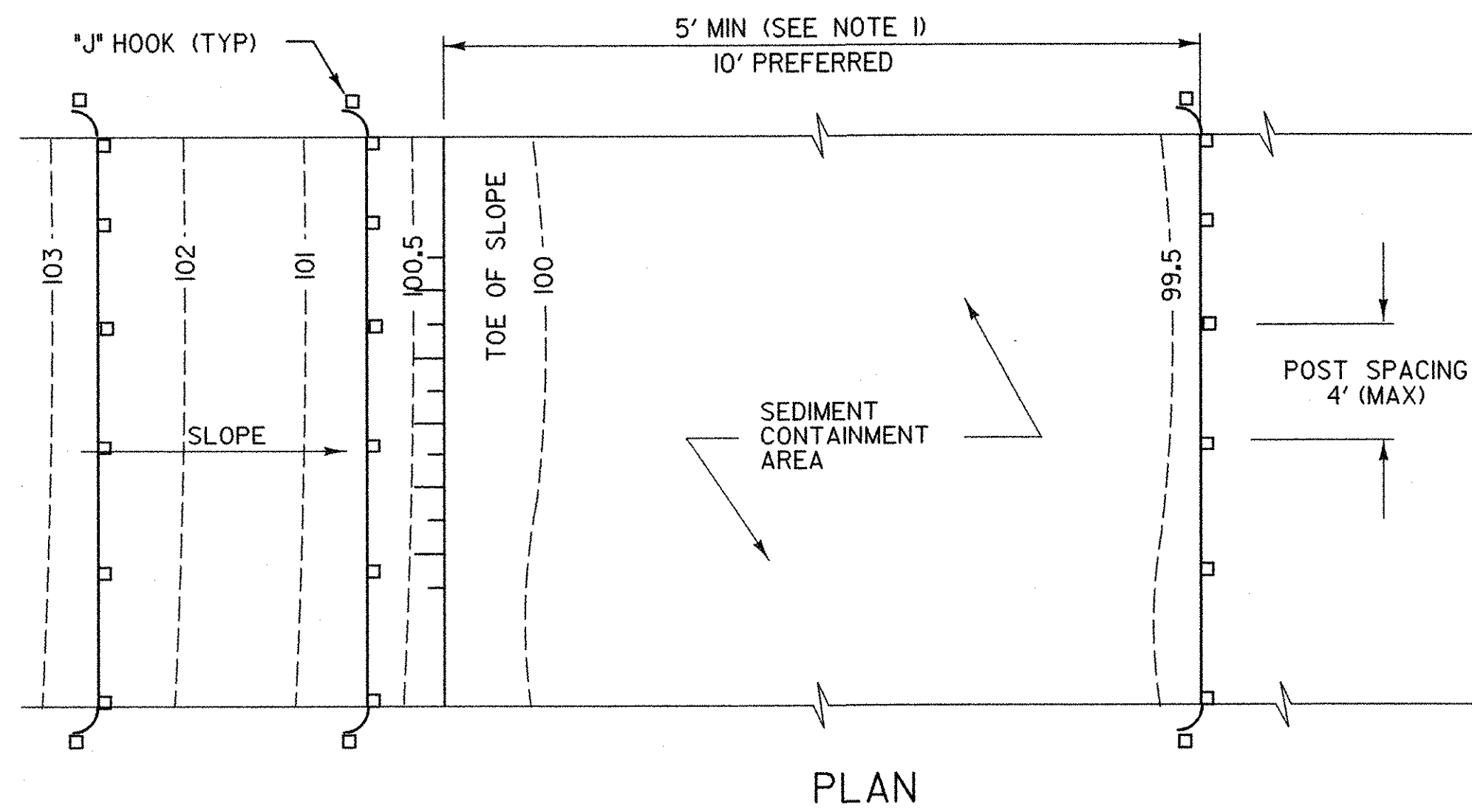
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- THE LIMITS OF THE RIPARIAN BUFFER FOR THE SAXTONS RIVER ARE IDENTIFIED ON THE FOLLOWING SHEETS. ALL WORK PROPOSED WITHIN THESE LIMITS SHALL BE COMPLETED WITH EXTREME CARE SO AS TO MINIMIZE IMPACTS TO THIS BUFFER ZONE.
- SOIL BOUNDARIES ARE APPROXIMATE AND ARE TAKEN FROM WINDHAM COUNTY, VT. SOIL SURVEY BOOK. SEE SHEET 16 FOR SOIL DESCRIPTIONS.
- CONTOURS SHOWN ARE EXISTING CONDITIONS. SEE CROSS SECTIONS FOR PROPOSED GRADING.

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

VHB Vanasse Hangen Brustlin, Inc.

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
FINAL CONDITIONS SITE PLAN		
Designed By	J. T. KLEIN	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
M. A. COLGAN	5/05	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.	File No. 51335EC3	Sheet 19 of 42

SILT FENCE



APPLICATION NOTES:

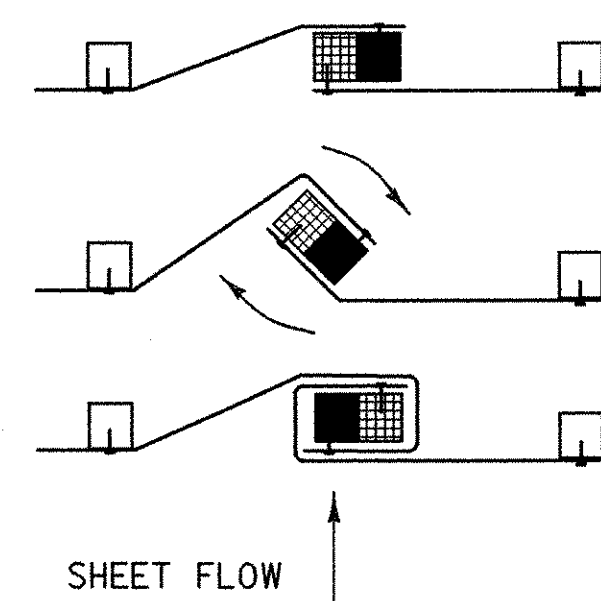
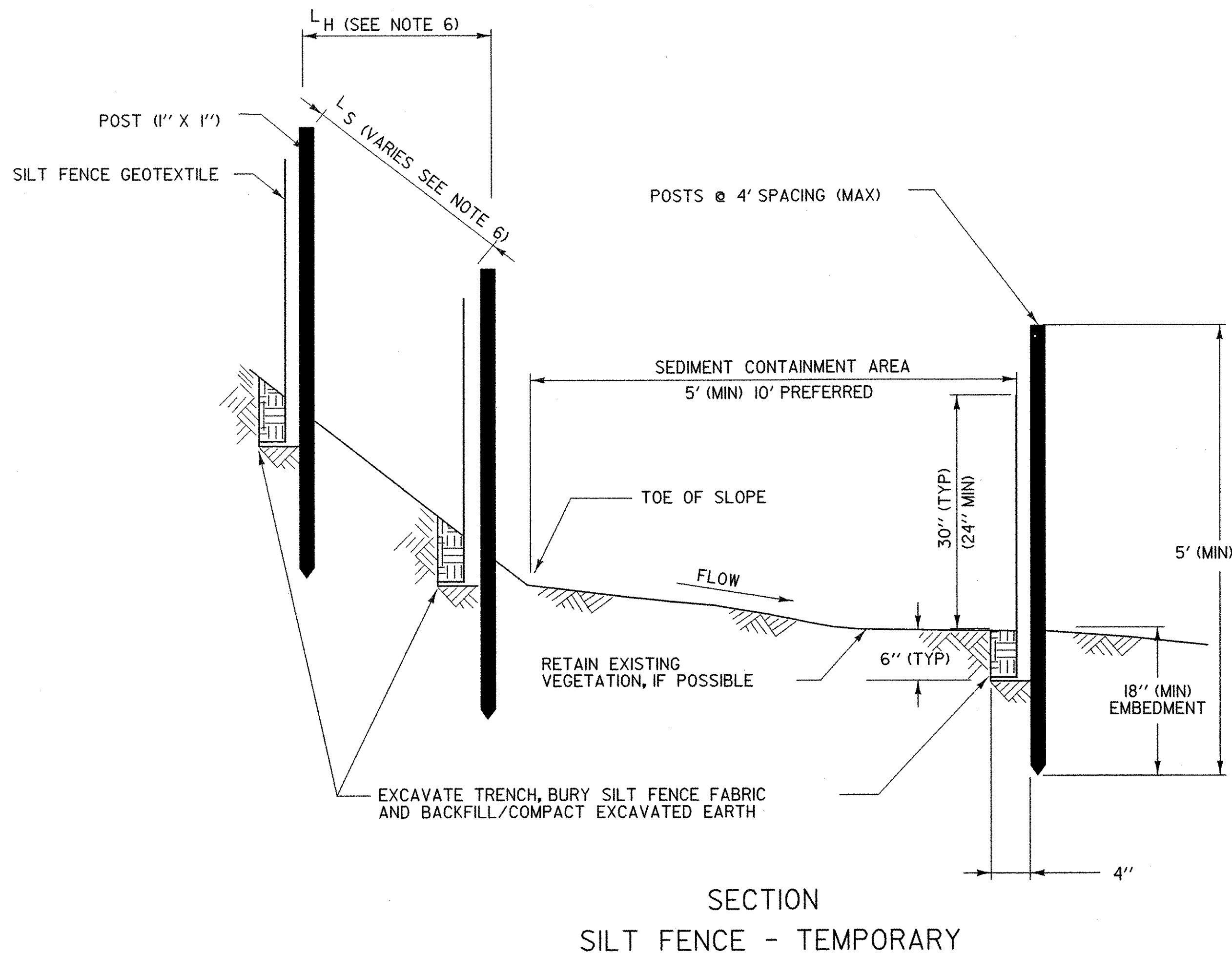
- A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.
- B. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
- C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

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

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

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



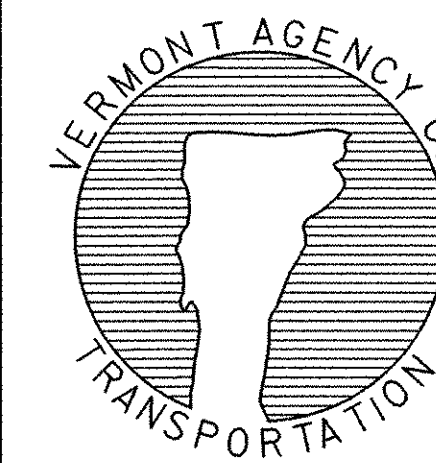
1. PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

SPlicing DETAIL

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACK

DETAIL
EPSC-1

EROSION PREVENTION & SEDIMENT CONTROL DETAILS SILT FENCE



STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
EPSC-1			
Designed By	VTRANS	Drawn By	B. J. MASSE
Checked By	VTRANS	Date	5/04
		Bridge Design Supervisor	M. A. COLGAN
		Date	5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
Bridge Sheet No. 51335EPSC-1 Sheet 20 of 42			

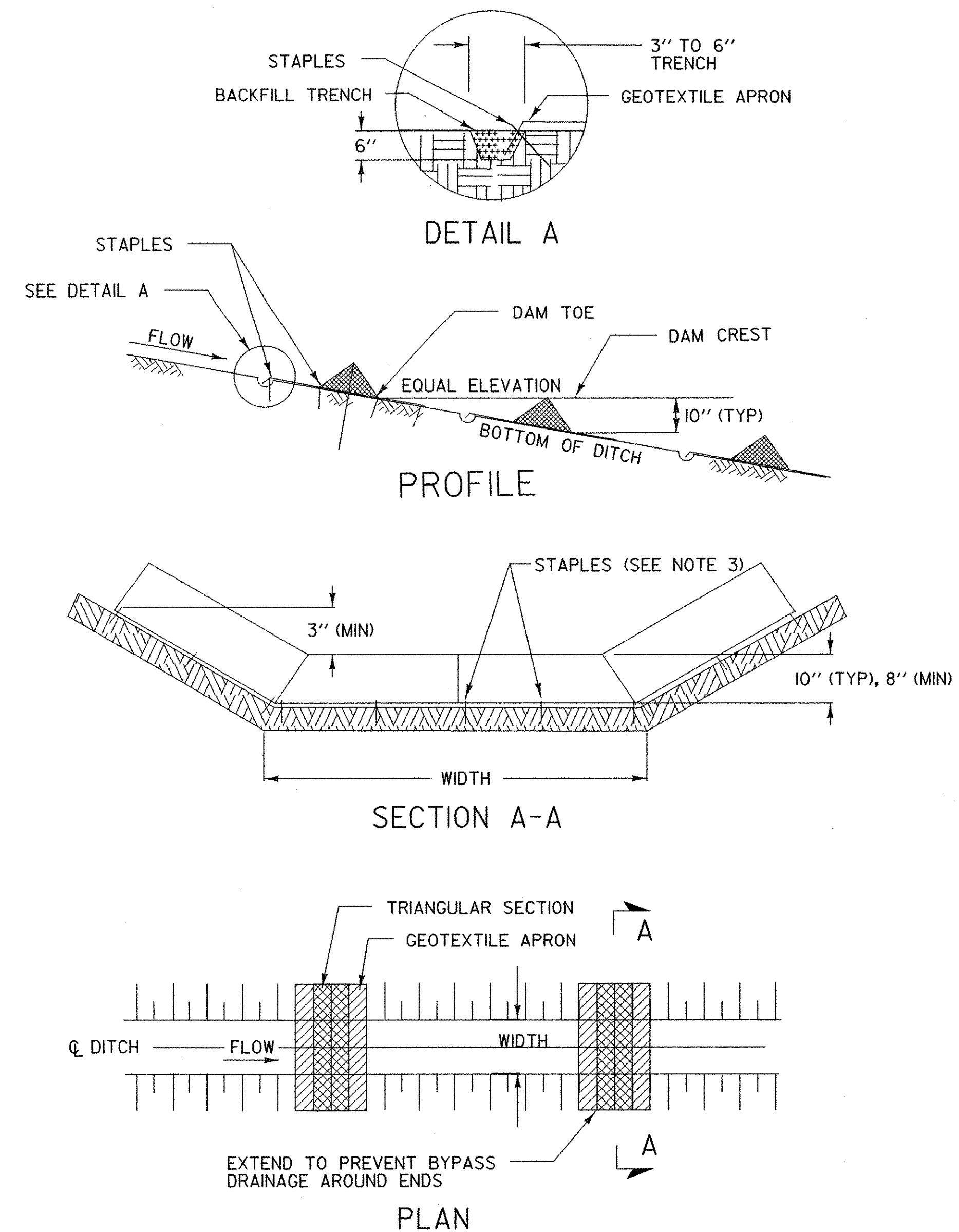
CHECK DAMS

APPLICATION NOTES:

- A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY.
- B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CHECK DAM DUE TO DECREASED VELOCITY.
- C. CHECK DAMS ARE NOT INTENDED TO FILTER SEDIMENT FROM TURBID WATER.
- D. DETAILS SHOWN SHALL BE USED FOR TEMPORARY INSTALLATION ONLY.
- E. PREFABRICATED DAMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5% OR PER MANUFACTURER'S SPECIFICATIONS.
- F. PREFABRICATED DAM SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

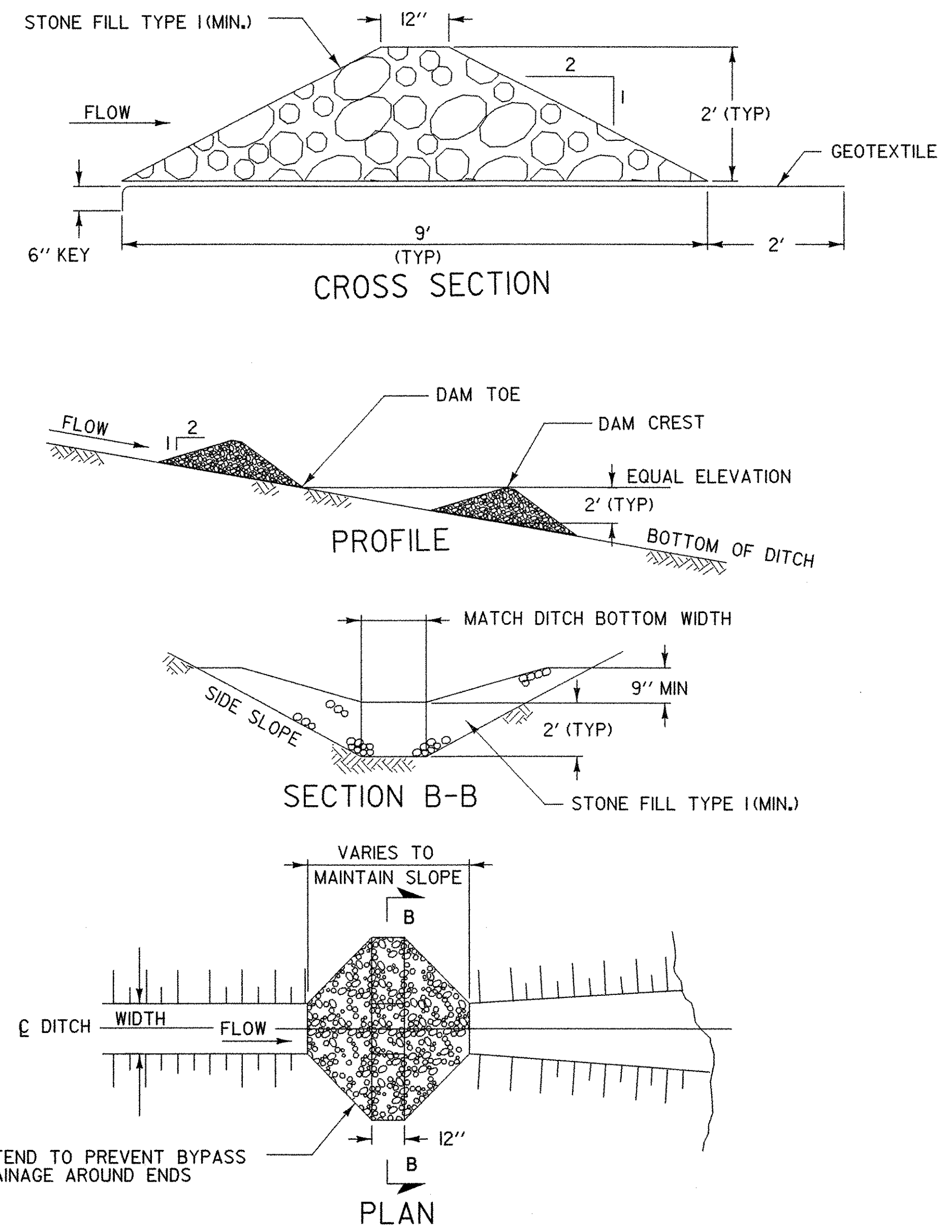
1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL, IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.
2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.
3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL 'A' OR AS RECOMMENDED BY THE MANUFACTURER'S LITERATURE.
4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



CHECK DAM - TEMPORARY
(PREFABRICATED)

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

** BASED ON 10" TYPICAL HEIGHT



CHECK DAM - TEMPORARY
(STONE)

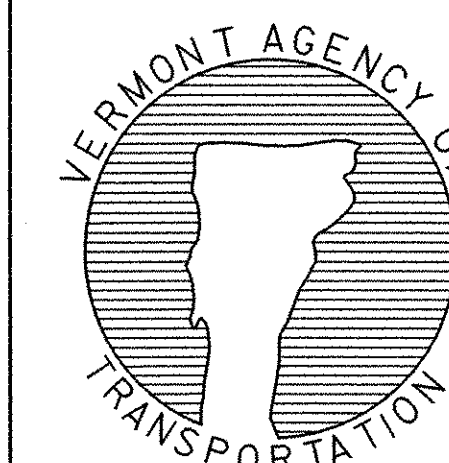
STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1 %	200 FT
2 %	100 FT
3 %	65 FT
4 %	50 FT
5 %	40 FT
6 %	30 FT
8 %	25 FT
10 %	20 FT

** BASED ON 2' TYPICAL HEIGHT

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACK

DETAIL EPSC-2

EROSION PREVENTION & SEDIMENT CONTROL DETAILS CHECK DAMS



STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of GRAFTON	Bridge No. 16G
Highway No. TH 1	Log Sta. Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER	
EPSC-2	
Designed By VTRANS	Drawn By B. J. MASSE
Checked By VTRANS	Bridge Design Supervisor M. A. COLGAN Date 5/05
PROJECT GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.	
Bridge Sheet No. 51335EPSC-2 Sheet 21 of 42	

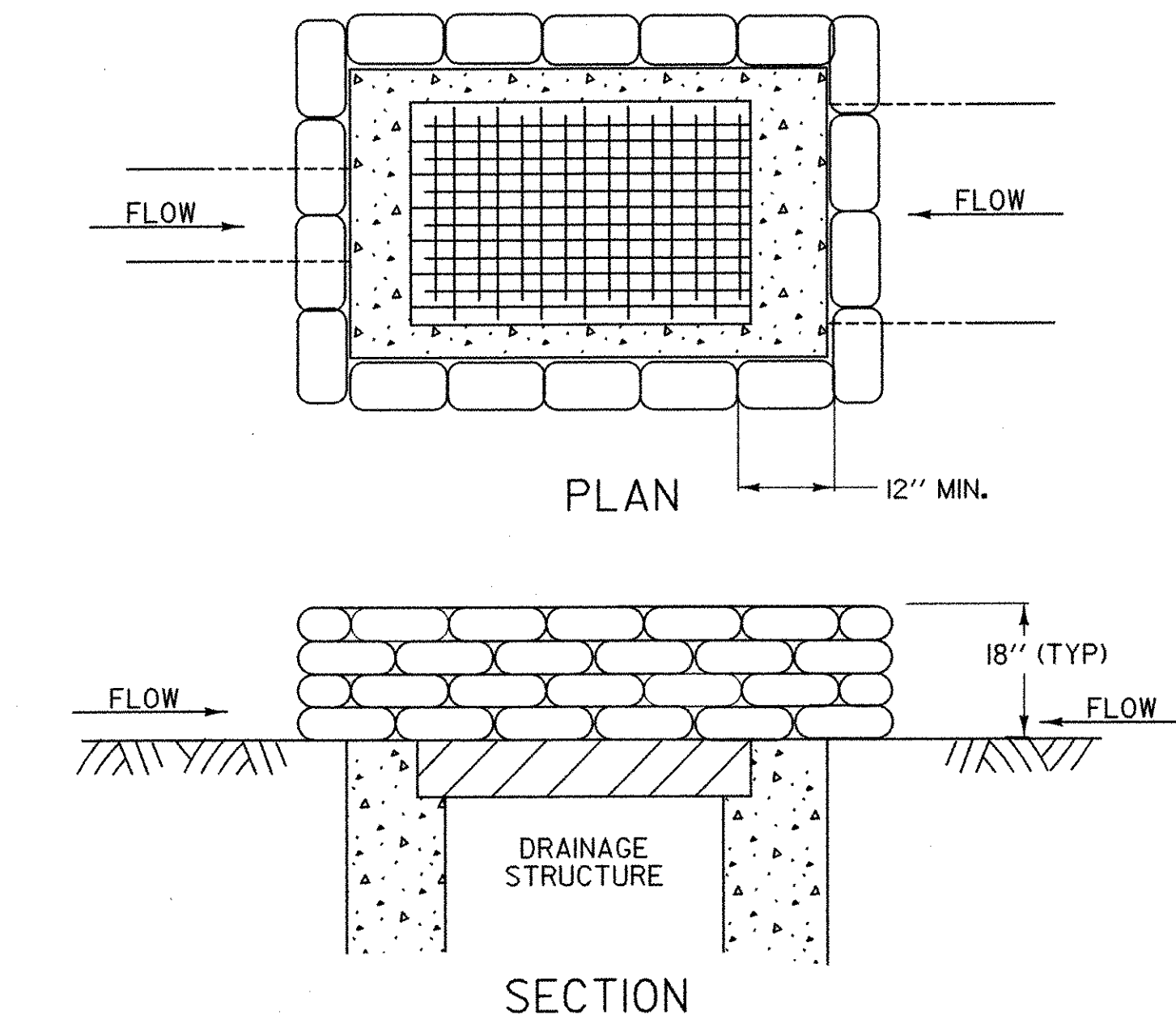
DROP INLET PROTECTION

APPLICATION NOTES:

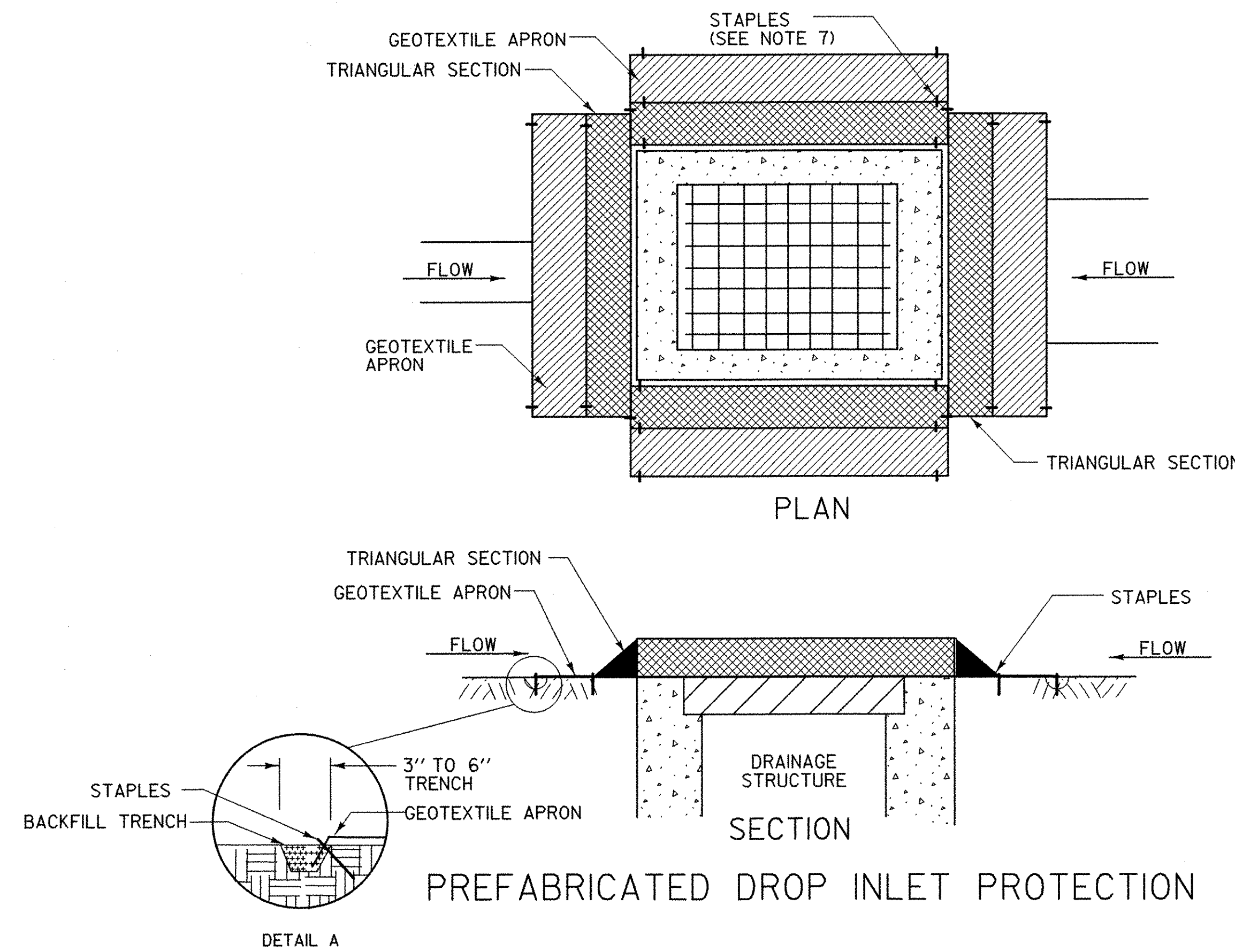
- THE PRIMARY PURPOSE OF DRAINAGE STRUCTURE INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM BY PONDING WATER WHICH ALLOWS SEDIMENT TO FALL OUT OF SUSPENSION.
- THESE EXAMPLES OF DROP INLET PROTECTION ARE NOT INTENDED FOR USE ON GRADES. ON GRADE THEY MAY CAUSE WATER TO BYPASS THE STRUCTURE, CREATING ADDITIONAL EROSION OR FLOODING.
- POSSIBLE MODIFICATIONS FOR USE ON GRADE INCLUDE ADDING A BERM DOWNSTREAM OF THE INLET TO CREATE PONDING. CHECK DAMS MAY ALSO BE USED UPSTREAM OF THE INLET TO SLOW VELOCITIES.
- PREFABRICATED DROP INLET PROTECTION SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

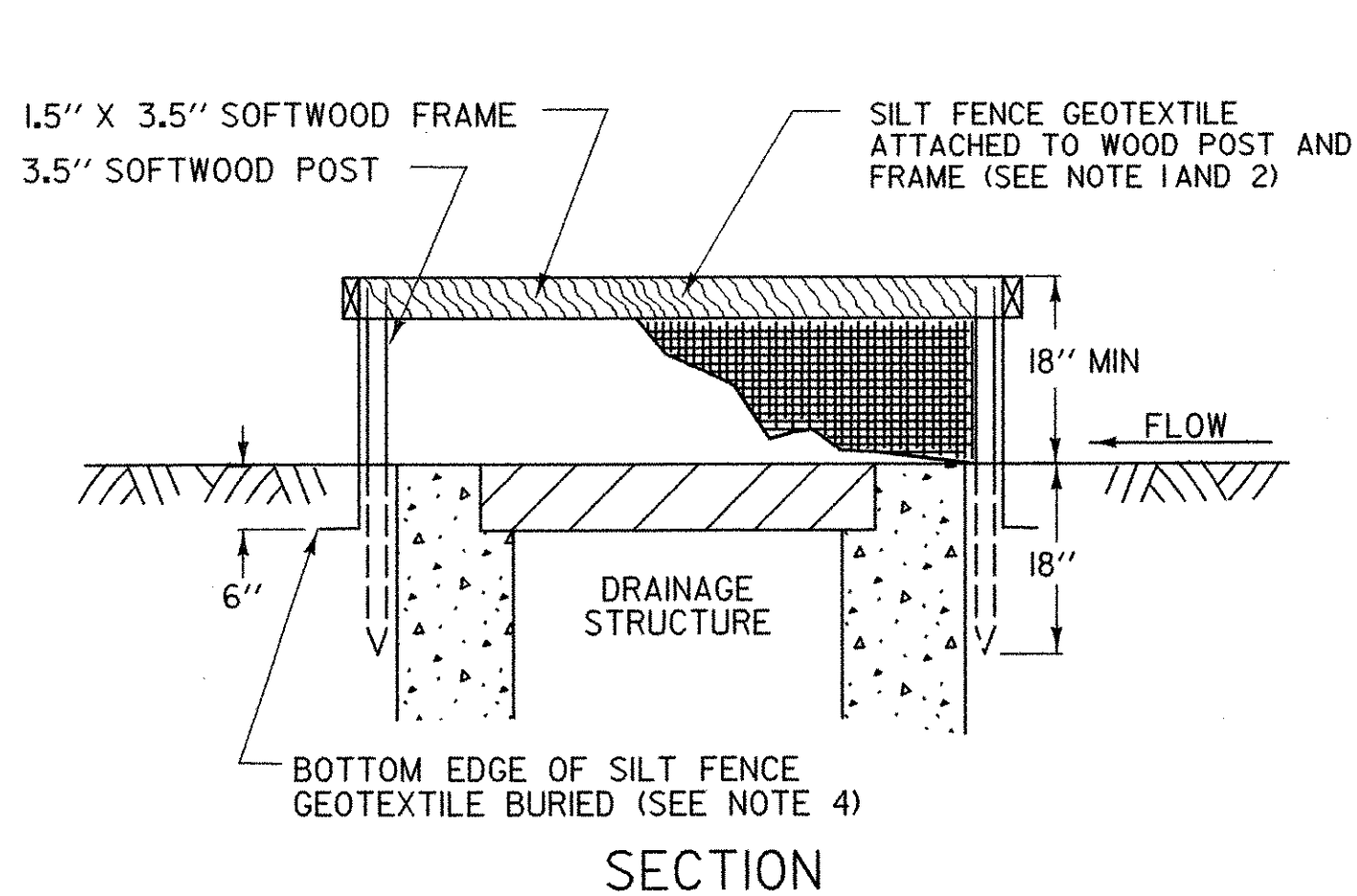
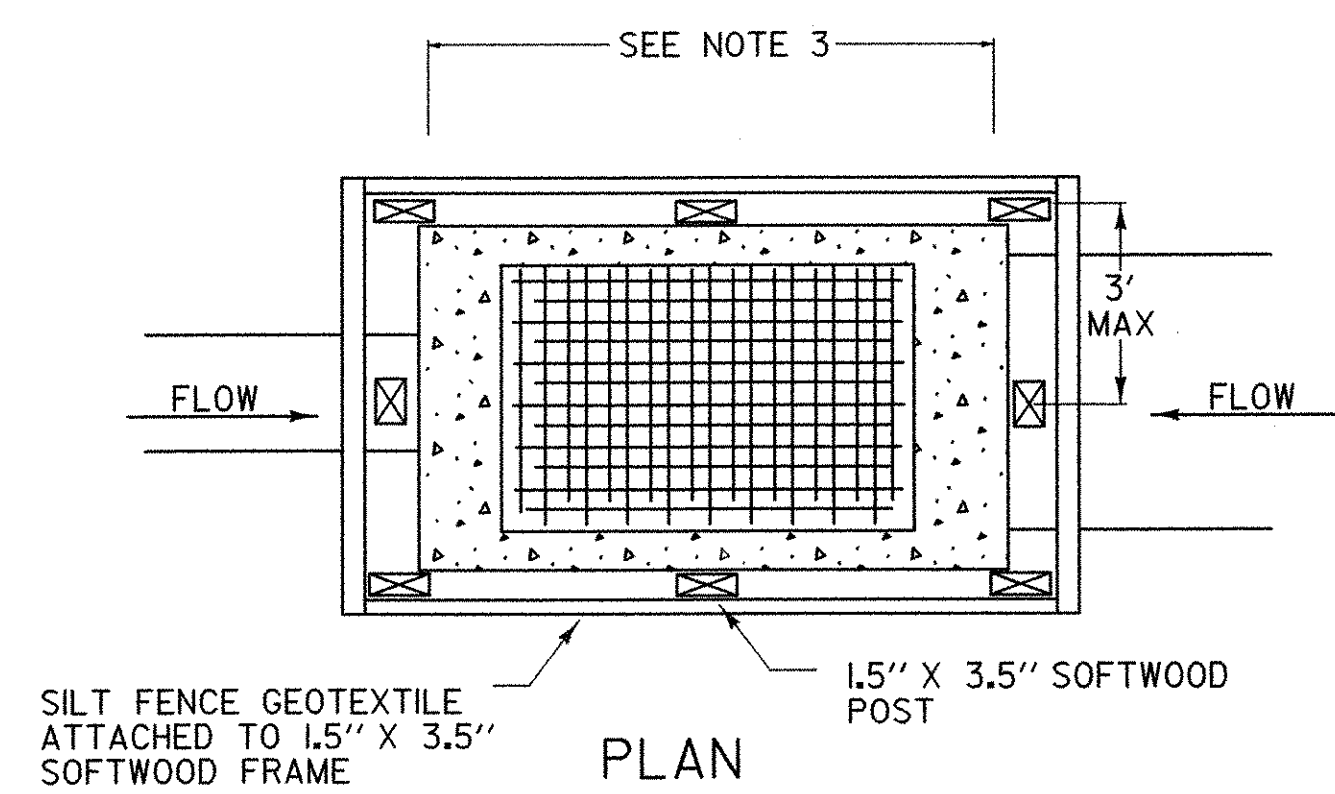
- THE TOP OF THE INLET PROTECTION SHALL BE SET AT THE MAXIMUM DESIRED WATER LEVEL, BASED ON FIELD LOCATION AND CONDITIONS.
- SILT FENCE GEOTEXTILE SHALL BE A SINGLE CONTINUOUS PIECE TO ELIMINATE JOINTS.
- SPACE SILT FENCE POSTS EVENLY AROUND INLET WITH A MAXIMUM SPACING OF 3 FEET. DRIVE POSTS A MINIMUM OF 18 INCHES INTO GROUND. WIRE MESH MAY BE REQUIRED BEHIND GEOTEXTILE TO PROVIDE SUPPORT.
- SILT FENCE GEOTEXTILE SHALL BE EMBEDDED A MINIMUM OF 6 INCHES AND BACKFILLED. GEOTEXTILE SHALL BE SECURELY FASTENED TO POSTS AND FRAME.
- GRAVEL BAGS SHALL BE FILLED WITH CLEAN STONE, RATHER THAN SAND, TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM IF BAGS ARE DAMAGED DURING USE.
- GRAVEL BAGS SHALL BE INDIVIDUALLY TIED, DOUBLE BAGGED AND INVERSELY INSERTED. GRAVEL BAGS SHALL LAP THE JOINTS BETWEEN THE BAGS IN THE LAYER BELOW.
- SECURE THE ENDS OF THE APRON FOR THE PREFABRICATED DRAINAGE STRUCTURE INLET PROTECTION WITH STAPLES AS DETAILED IN THE PLAN VIEW OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.
- MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
- MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED, SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
- PAYMENT OF INLET PROTECTION SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
- PAYMENT FOR MONITORING INLET PROTECTION SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
- PAYMENT FOR MAINTAINING INLET PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



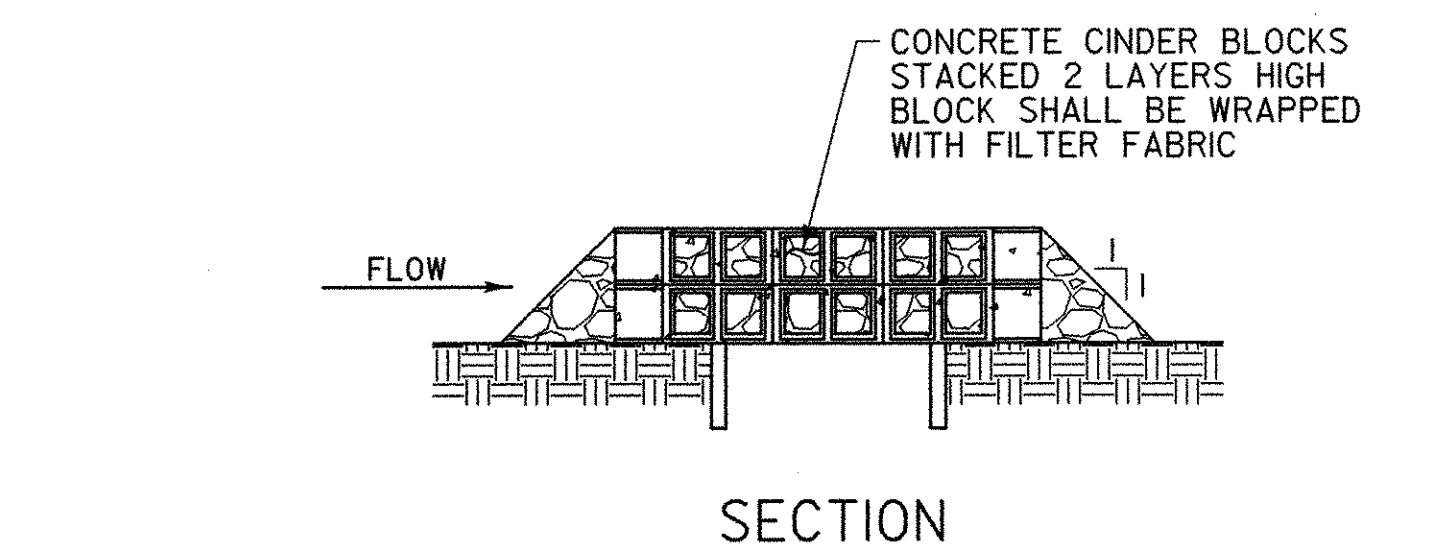
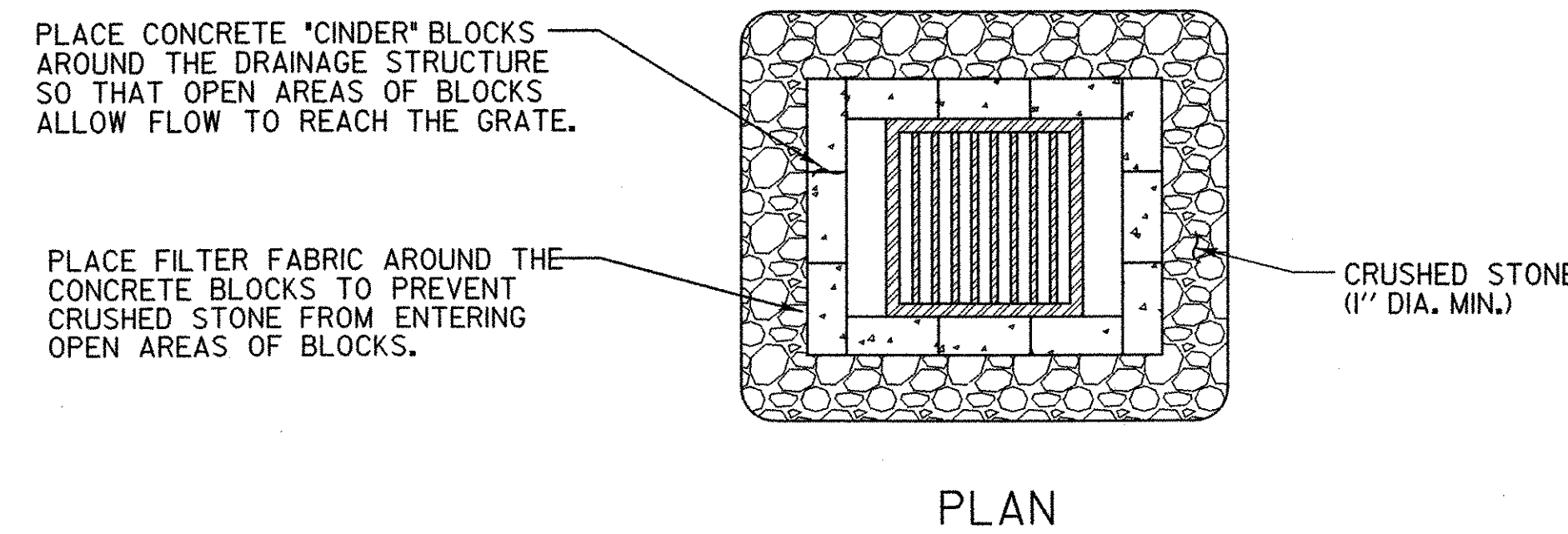
GRAVEL BAG DROP INLET PROTECTION



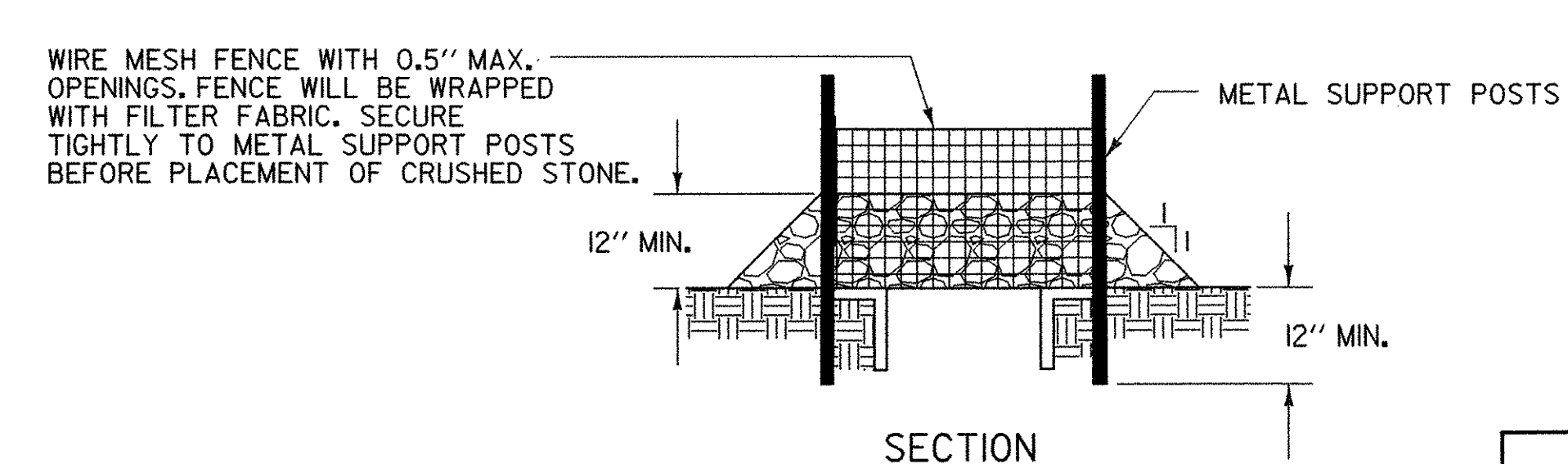
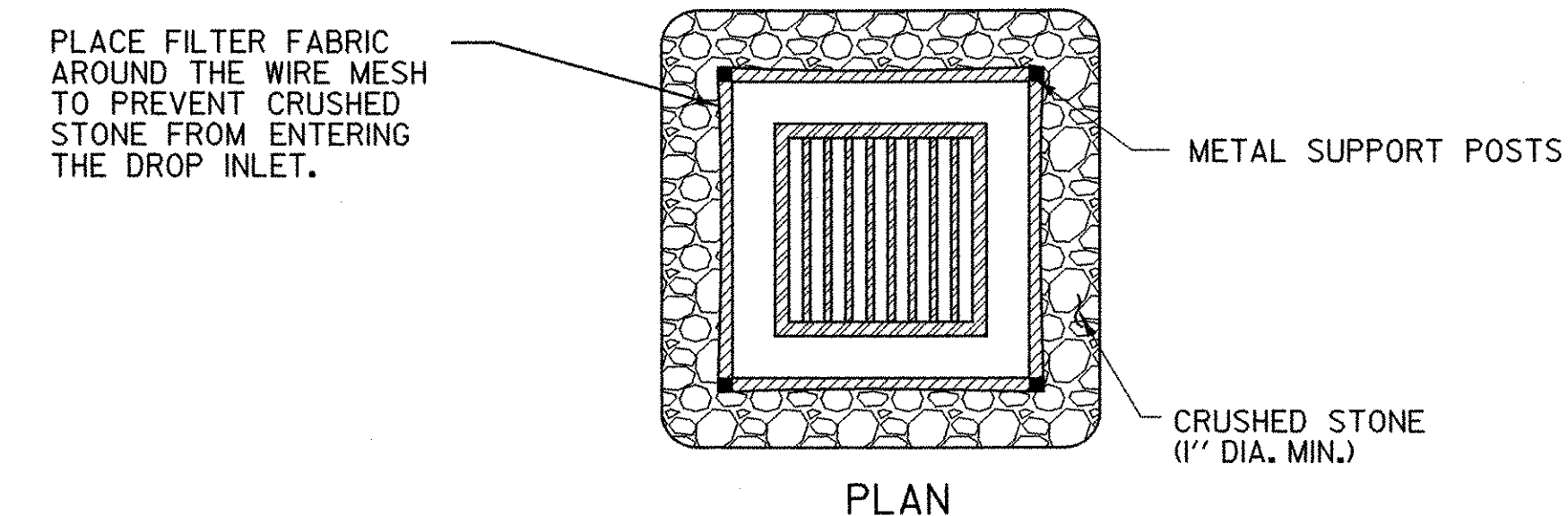
PREFABRICATED DROP INLET PROTECTION



SILT FENCE DROP INLET PROTECTION



ROCK BARRIER DROP INLET PROTECTION
TEMPORARY PAVED AREAS

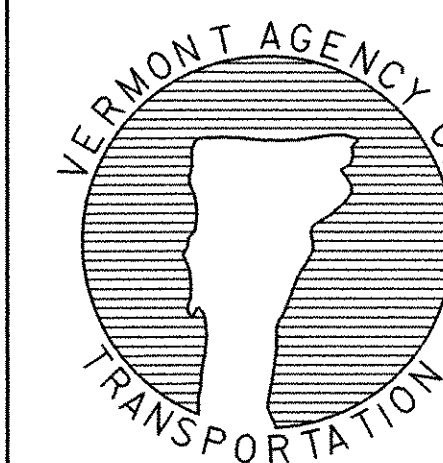


ROCK BARRIER INLET PROTECTION
TEMPORARY UNPAVED AREAS

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACK

DETAIL
EPSC-3

EROSION PREVENTION &
SEDIMENT CONTROL DETAILS
DROP INLET PROTECTION

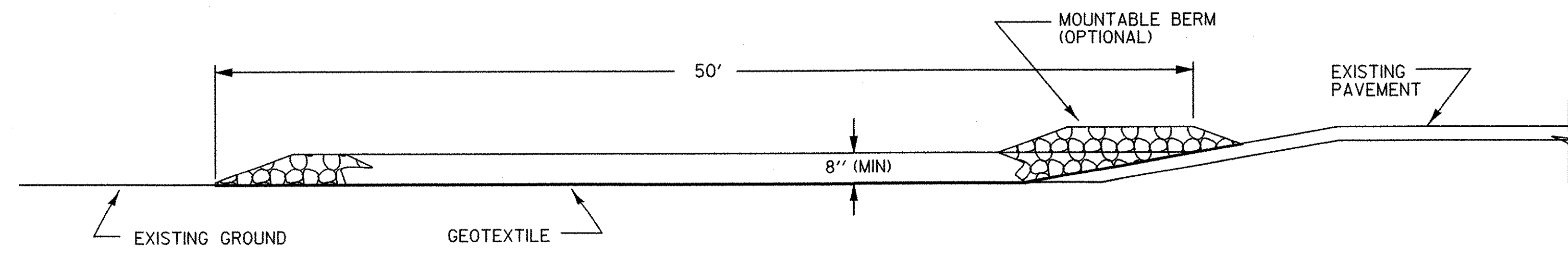


STATE OF VERMONT
AGENCY OF TRANSPORTATION

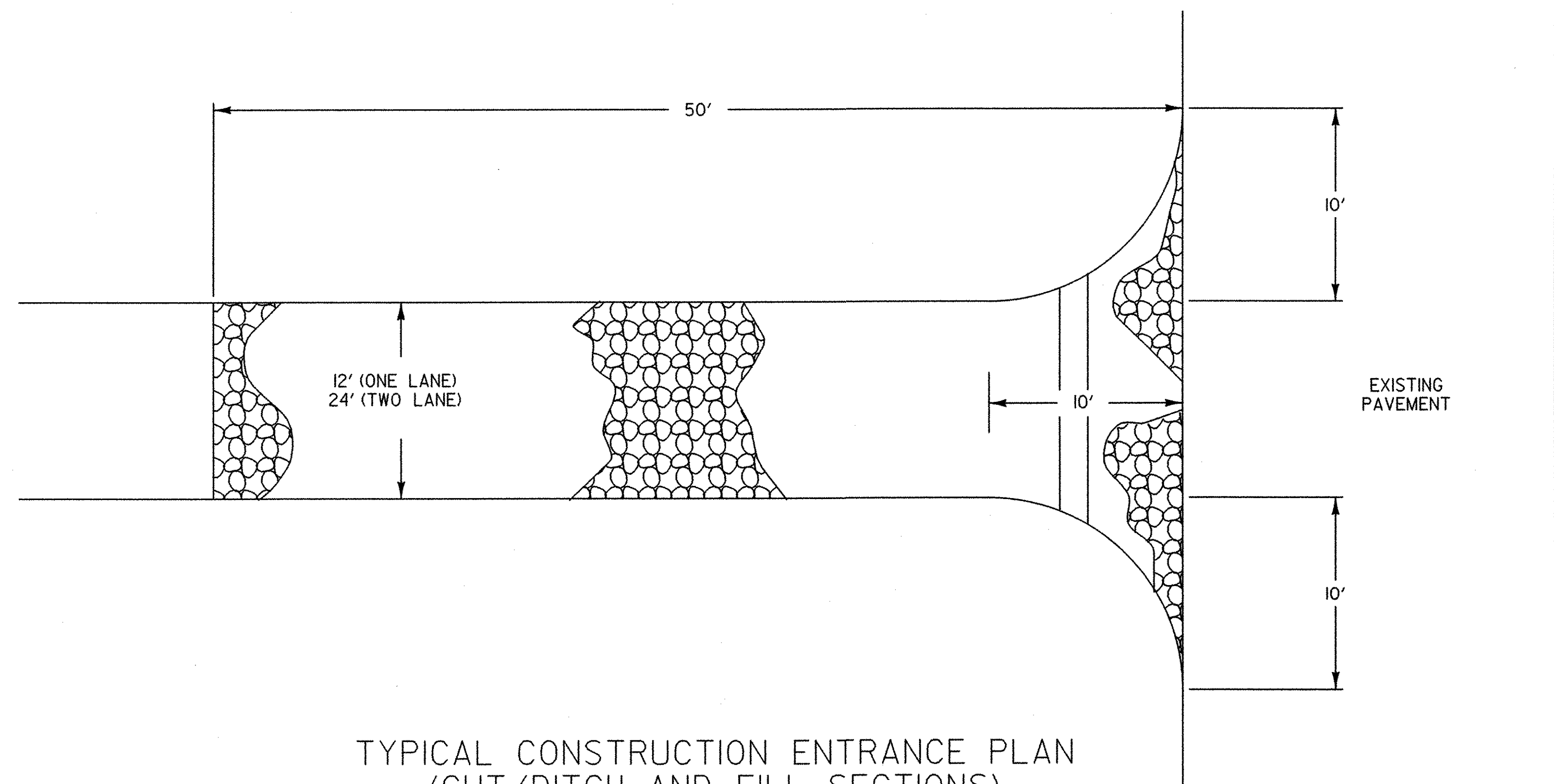
Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			

EPSC-3			
Designed By	VTRANS	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
	VTRANS	5/04	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
Bridge Sheet No. 51335EPSC-3 Sheet 22 of 42			

STABILIZED CONSTRUCTION ENTRANCE



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



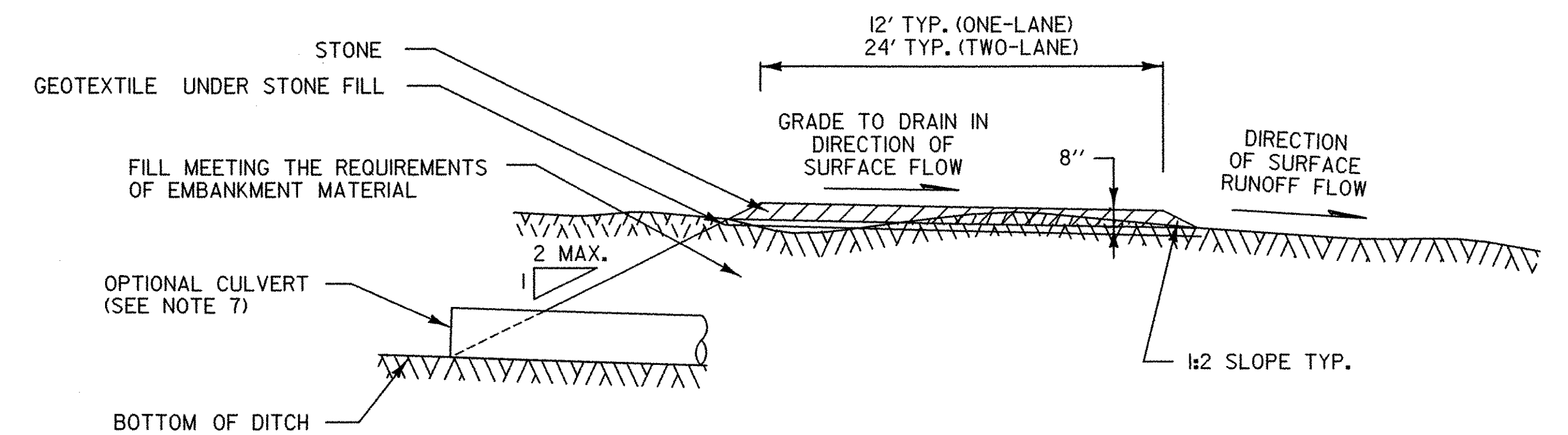
TYPICAL CONSTRUCTION ENTRANCE PLAN
(CUT/DITCH AND FILL SECTIONS)

APPLICATION NOTES:

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

GENERAL NOTES:

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

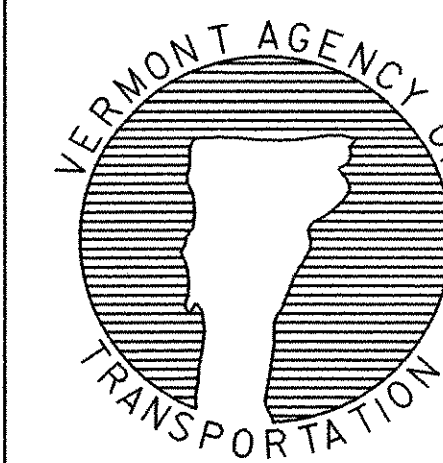


TYPICAL CONSTRUCTION ENTRANCE SECTION

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACK

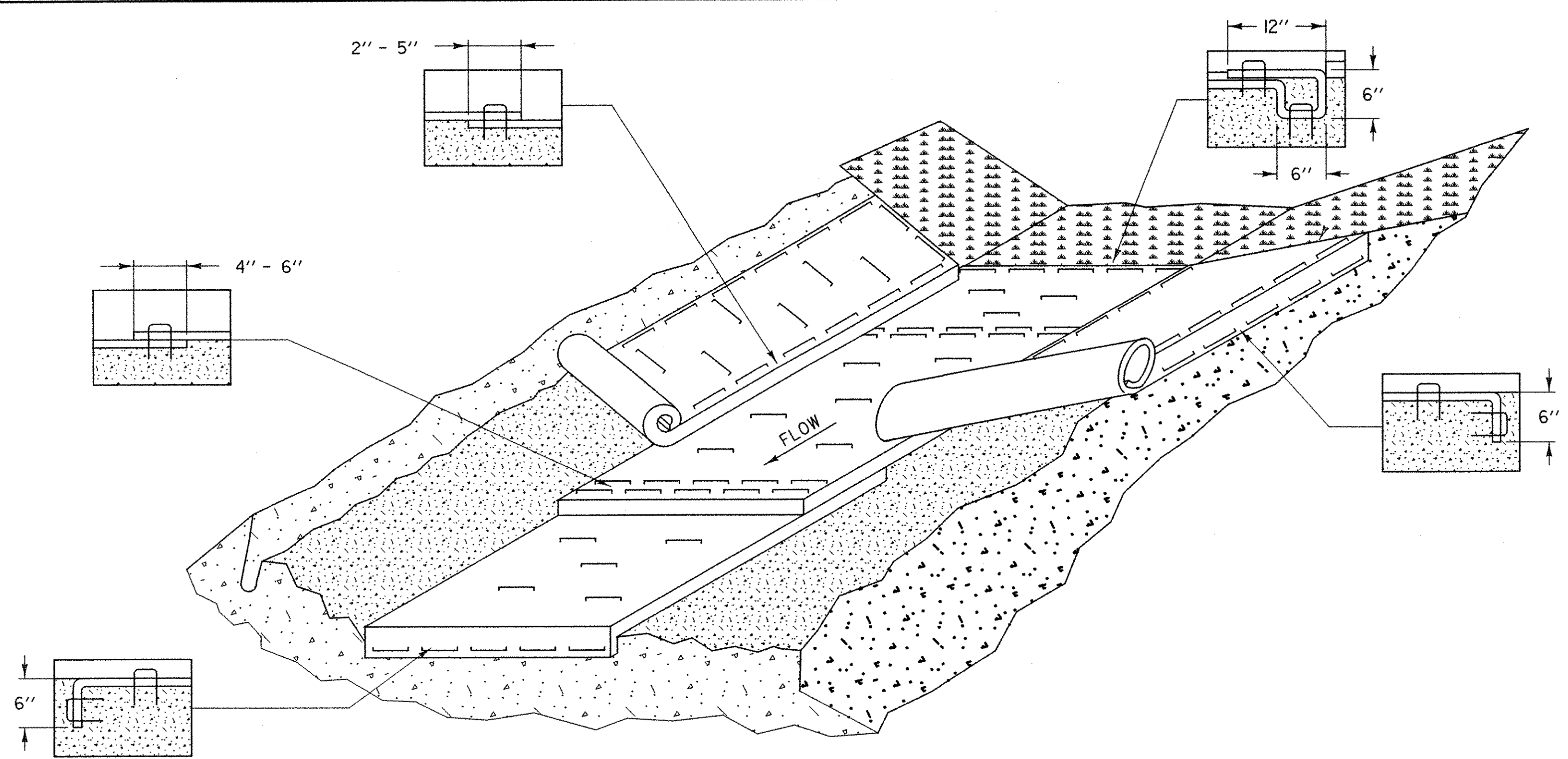
DETAIL
EPSC-4

EROSION PREVENTION &
SEDIMENT CONTROL DETAILS
CONSTRUCTION ENTRANCE



STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of	GRAFTON	Bridge No.	166
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
EPSC-4			
Designed By	VTRANS	Drawn By	B. J. MASSE
Checked By	VTRANS	Date	5/04
		Bridge Design Supervisor	M. A. COLGAN
		Date	5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
Bridge Sheet No. 51335EPSC-4 Sheet 23 of 42			



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

- A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.
- B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

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

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

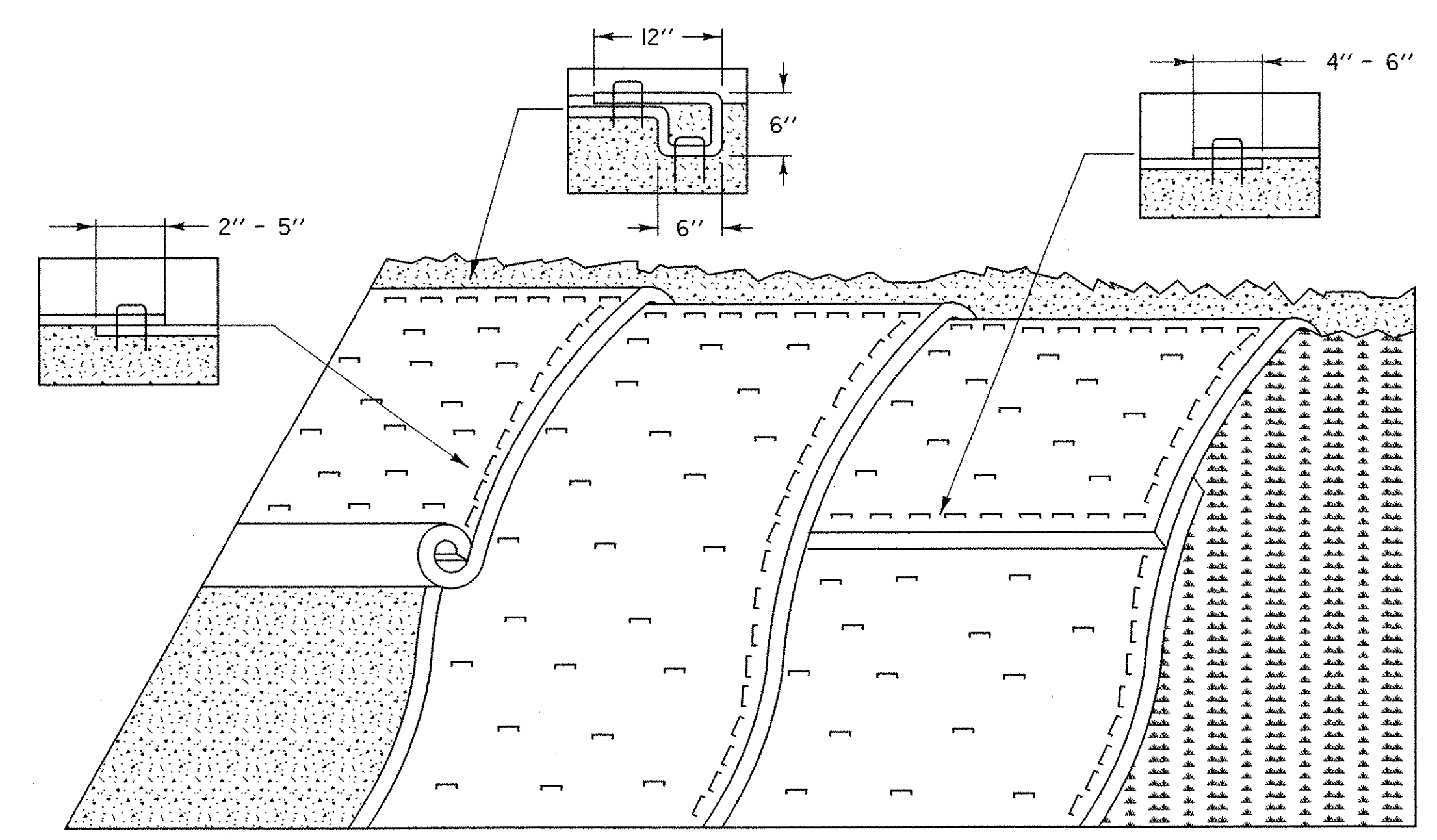
GENERAL NOTES:

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

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACK

DETAIL
EPSC-5

**EROSION PREVENTION & SEDIMENT CONTROL DETAILS
DITCH & SLOPE PROTECTION**



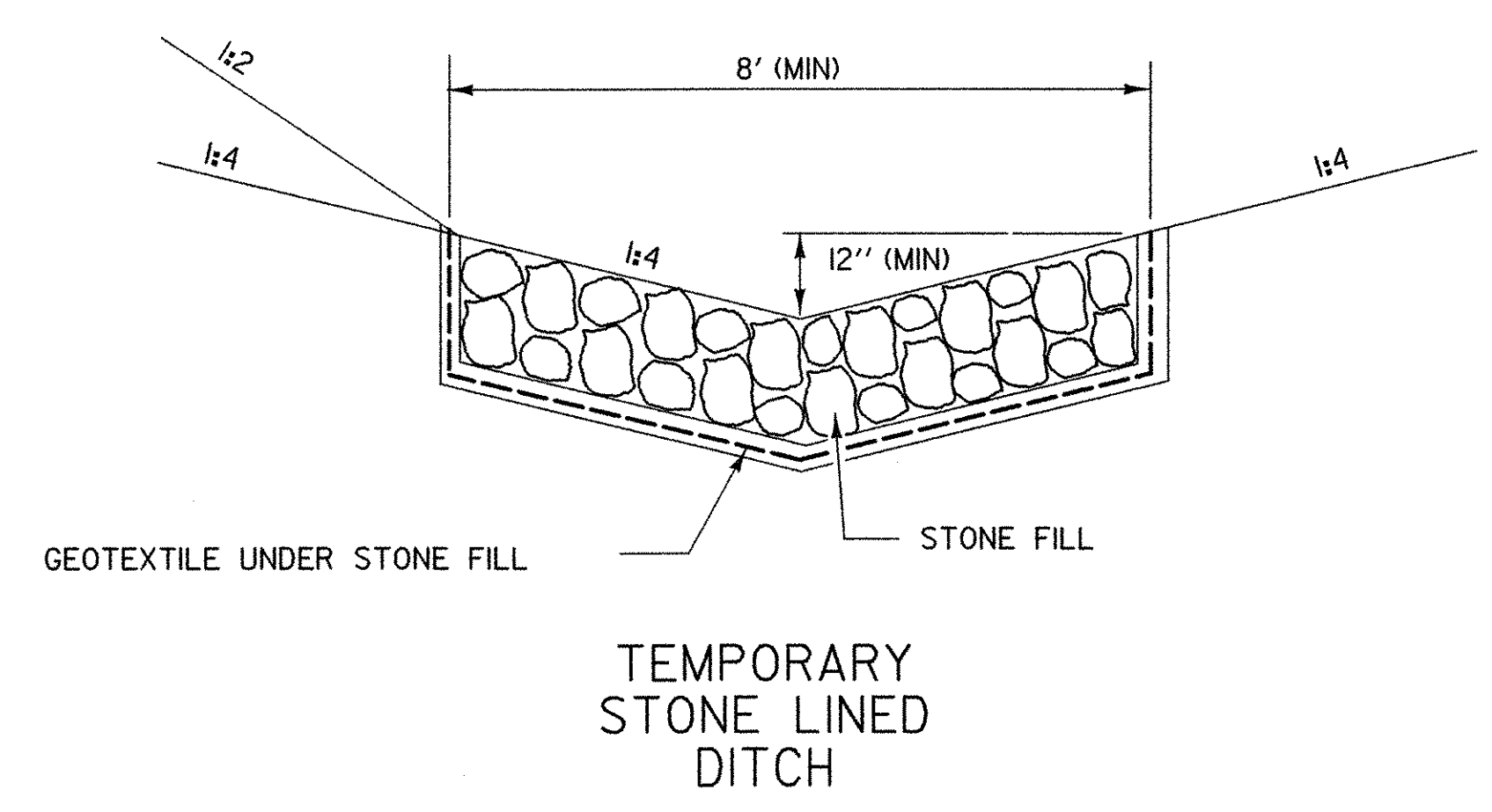
EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

- A. THE PURPOSE OF MATTING ON SIDE SLOPES IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION
- B. EROSION CONTROL MATTING SHALL BE USED FOR THE FOLLOWING REASONS:
 - SIDE SLOPES > 3:1 (H:V)
 - AREAS WHERE SEED AND MULCH WILL NOT STAY IN PLACE ALONE
 - WHERE SEEDING IS OUTSIDE THE GROWING SEASON.

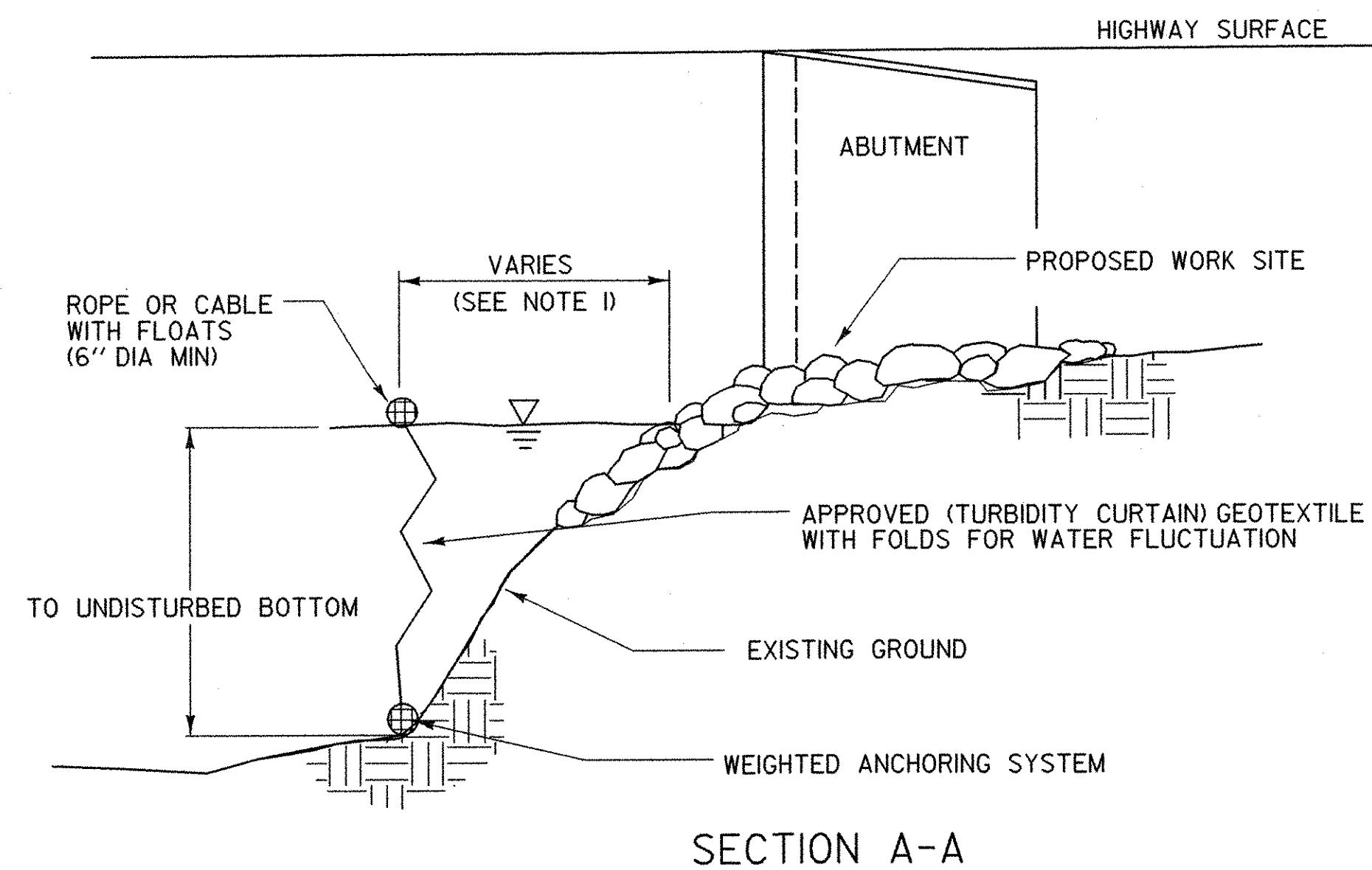
GENERAL NOTES:

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

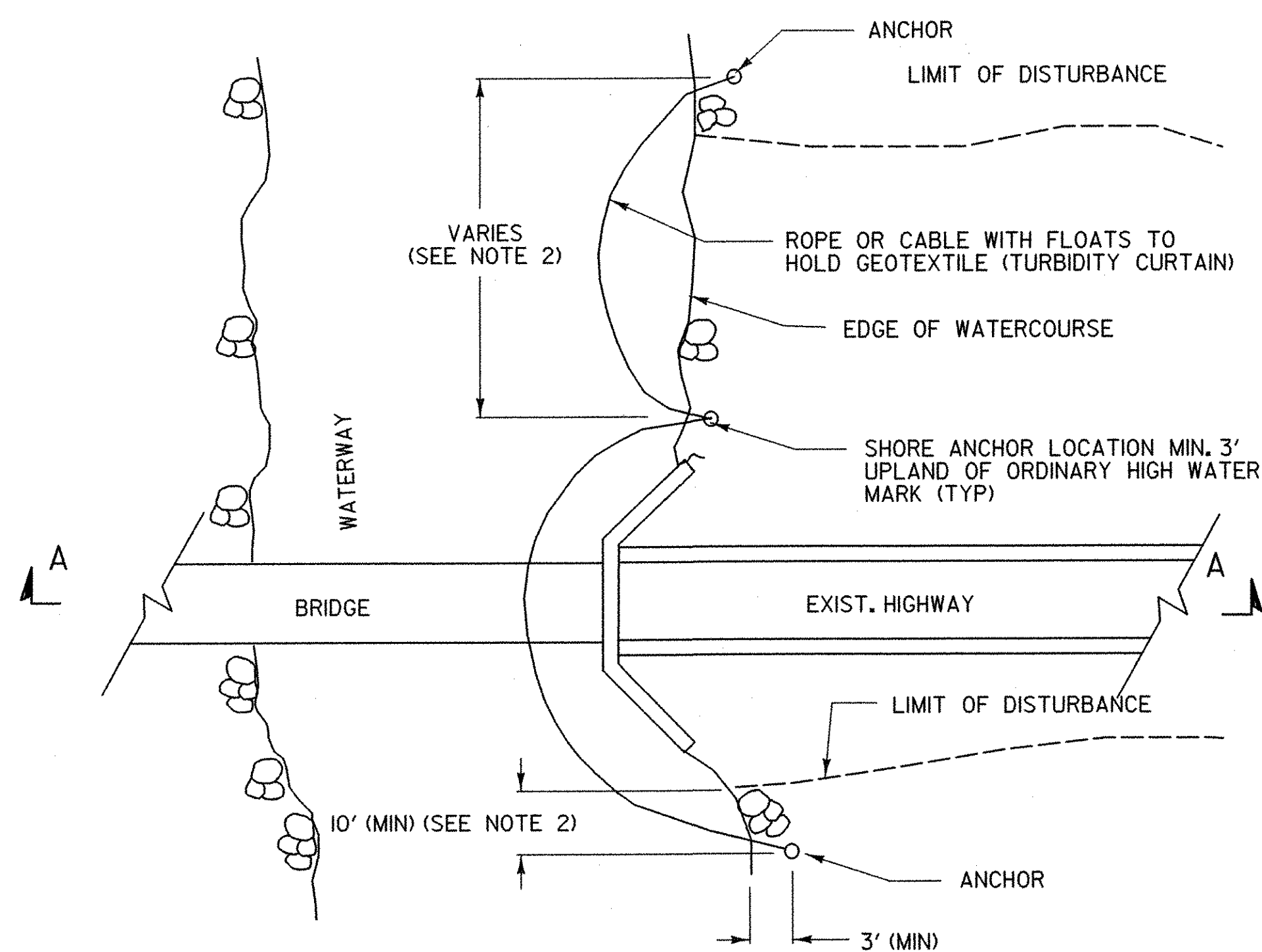


TEMPORARY
STONE LINED
DITCH

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of GRAFTON	Bridge No. 166
Highway No. TH 1	Log Sta. Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER	
EPSC-5	
Designed By VTRANS	Drawn By B. J. MASSE
Checked By VTRANS	Bridge Design Supervisor M. A. COLGAN Date 5/05
PROJECT GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.	
Bridge Sheet No. 51335EPSC-5 Sheet 24 of 42	



SECTION A-A



PLAN

TURBIDITY CURTAIN - TEMPORARY

TURBIDITY CURTAIN

APPLICATION NOTES:

- A. THE PURPOSE OF A TURBIDITY CURTAIN IS TO SEPARATE WORK AREAS IN OR ADJACENT TO WATERS, TO PREVENT SEDIMENT FROM ENTERING THE WATERS.
- B. TURBIDITY CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FT/SEC.
- C. TURBIDITY CURTAIN SHALL NOT BE PLACED AT THE OUTLET OF A CULVERT OR DITCH UNLESS THE VELOCITY DOES NOT EXCEED 1.5 FT/SEC.
- D. THE DETAIL DEPICTS WORK AT A BRIDGE LOCATION, BUT TURBIDITY CURTAIN MAY BE APPLIED AT OTHER LOCATIONS.

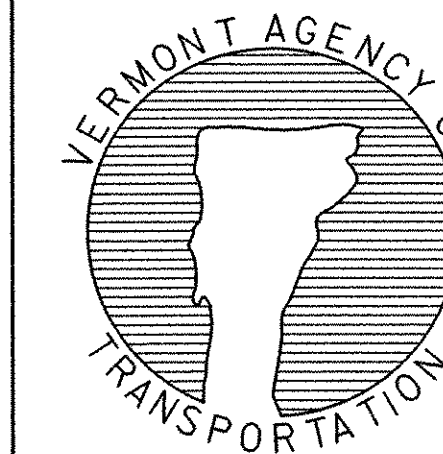
GENERAL NOTES:

1. THE TURBIDITY CURTAIN SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.
2. THE TURBIDITY CURTAIN SHALL BE A MAXIMUM OF 100 FEET LONG BETWEEN ANCHORS. LAST SECTION SHALL TERMINATE A MINIMUM OF 10 FEET BEYOND THE LIMIT OF DISTURBANCE.
3. THE CONTRACTOR SHALL MONITOR THE TURBIDITY CURTAIN, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE TURBIDITY CURTAIN.
4. THE TURBIDITY CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.
5. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE THAT ALLOWS THE CURTAIN TO CONFORM TO THE CONTOUR ON THE BOTTOM OF THE WATERWAY.
6. PAYMENT FOR INSTALLATION AND REMOVAL OF THE TURBIDITY CURTAIN SHALL BE MADE UNDER THE GEOTEXTILE FOR FILTER CURTAIN ITEM.
7. PAYMENT FOR MONITORING TURBIDITY CURTAIN SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
8. PAYMENT FOR MAINTAINING TURBIDITY CURTAIN SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACK

DETAIL
EPSC-6

EROSION PREVENTION &
SEDIMENT CONTROL DETAILS
TURBIDITY CURTAIN



STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
EPSC-6			
Designed By	VTRANS	Drawn By	B. J. MASSE
Checked By	VTRANS	Date	5/04
		Bridge Design Supervisor	M. A. COLGAN
		Date	5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
Bridge Sheet No. 51335EPSC-6 Sheet 25 of 42			

GENERAL NOTES:

- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, GENERAL SPECIAL PROVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION, DATED 2002, AND ITS LATEST REVISIONS.
- DESIGN LIVE LOAD FOR NEW SUPERSTRUCTURE, INCLUDING THE RE-USED BEAMS: HS20
- THE FOLLOWING MATERIAL CRITERIA APPLIES TO THESE PLANS FOR DESIGN PURPOSES:
 CONCRETE: HIGH PERFORMANCE CLASS A $f'c = 4000$ PSI
 REINFORCING STEEL: AASHTO M 31 GRADE 60
- FEATURES OF THE EXISTING BRIDGE SHOWN ON THESE PLANS HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND LIMITED FIELD INVESTIGATION AND MAY NOT ACCURATELY REFLECT ACTUAL FIELD CONDITIONS. ACCORDINGLY THE CONTRACTOR IS RESPONSIBLE FOR TAKING SUFFICIENT FIELD MEASUREMENTS OF EXISTING COMPONENTS TO VERIFY THE DIMENSIONS OF THE PROPOSED COMPONENTS. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER, OR EXTENT OF THE EXISTING STRUCTURE SHALL BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER BEFORE ADVANCING THE WORK OR BEGINNING FABRICATION OF PROPOSED COMPONENTS. IN PARTICULAR, ONCE THE EXISTING SUPERSTRUCTURE IS REMOVED THE CONTRACTOR MUST PROVIDE THE MEASUREMENTS TO ENSURE PROPER FIT OF THE RE-USED BEAMS.
- VT ROUTE 121 WAS RECONSTRUCTED FROM THE END OF THE BRIDGE (STA. 21+57) TO THE EAST AFTER THIS PROJECT'S ORIGINAL SURVEY. VTRANS WILL RESURVEY THIS PORTION OF THE ROADWAY AND PROVIDE UPDATED INFORMATION TO THE CONTRACTOR PRIOR TO ISSUING A NOTICE TO PROCEED. FINAL OVERLAY AND PAVEMENT MARKINGS EAST OF THE BRIDGE SHALL MATCH THE NEW SURVEYED CROWN LINE, EDGE OF PAVEMENT, AND PAVEMENT MARKINGS.
- PARTIAL PLANS OF THE EXISTING BRIDGE ARE AVAILABLE FOR REVIEW DURING THE BIDDING PERIOD AT THE VTRANS OFFICE OF CONTRACT ADMINISTRATION.
- ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
- ALTERNATING ONE LANE TRAFFIC WILL BE MAINTAINED DURING CONSTRUCTION WITH TRAFFIC LIGHTS.
- UTILITY RELOCATION IS NOT ANTICIPATED.

CONSTRUCTION NOTES:

- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION, POLLUTION, AND DISCHARGE OF RAW CONCRETE INTO SAXTONS RIVER AS DIRECTED BY THE RESIDENT ENGINEER.
- ITEM 203.15, COMMON EXCAVATION AND ITEM 204.25, STRUCTURE EXCAVATION SHALL BE USED TO EXCAVATE TO THE LIMITS SHOWN ON THE PLANS. SEE EARTHWORK TYPICAL ON SHEET 5.
- THE CONTRACTOR SHALL ERECT, MAINTAIN, REMOVE, AND/OR RESET AS REQUIRED ALL ON-PROJECT SIGNS AND BARRICADES. ALL SIGNS AND BARRICADES SHALL BE INSPECTED AND REPAIRED DAILY. ALL SIGNS AND BARRICADES SHALL BE CLEANED OF DUST AND DEBRIS WEEKLY. THE COST OF ALL CONSTRUCTION SIGNS AND BARRICADES SHALL BE INCLUDED IN ITEM 641.10, TRAFFIC CONTROL.
- ANY EXISTING SIGNS NOT REUSED SHALL REMAIN THE PROPERTY OF THE TOWN OF GRAFTON. THESE SIGNS SHALL BE REMOVED BY THE CONTRACTOR AND STOCKPILED AS DIRECTED BY THE RESIDENT ENGINEER FOR REMOVAL BY THE TOWN AND SHALL BE PAID AS ITEM 675.50, REMOVING SIGNS.
- GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE.
- FULL ACCESS TO ALL DRIVES WITHIN THE PROJECT/APPROACH LIMITS SHALL BE MAINTAINED AT ALL TIMES.
- THE STONE FILL UNDER THE BRIDGE SHALL BE PLACED BEFORE THE BEAMS ARE SET.
- CONCRETE PORTIONS OF THE WINGWALLS SHALL NOT BE PLACED UNTIL THE FINISH GRADE HAS BEEN DETERMINED BY THE RESIDENT ENGINEER.
- THE DESIGN OF THE FLEMING BRACKET OR SIMILAR FALSEWORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE SPACED AT A MAXIMUM OF 4'-0".
- AN ESTIMATED QUANTITY FOR ITEM 649.61, GEOTEXTILE FOR FILTER CURTAIN HAS BEEN ADDED TO THE QUANTITY SUMMARY IN THE EVENT IT IS REQUIRED DURING CONSTRUCTION. THIS ITEM IS NOT CURRENTLY SHOWN ANYWHERE ON THE PLANS.

REINFORCING STEEL NOTES:

- ALL REINFORCING STEEL SHALL BE EPOXY COATED AND PAID AS ITEM 507.17, EPOXY COATED REINFORCING STEEL.
- MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
 ALONG BACK FACES OF WALLS AGAINST EARTH: 2"
 ALONG TOP SURFACE OF DECK: 2 1/2"
 ALONG BOTTOM SURFACE OF DECK: 1 1/2"
 ELSEWHERE UNLESS OTHERWISE INDICATED: 3"
- REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
 SPACING: ± 1 "
 CLEARANCE: $\pm 3/16$ "
- WHEN EPOXY COATED REINFORCING STEEL IS CUT, THE UNCOATED ENDS SHALL BE REPAIRED WITH MATERIALS AND PROCEDURES APPROVED BY THE COATING MANUFACTURER. FLAME CUTTING OF EPOXY COATED REINFORCING STEEL WILL NOT BE PERMITTED.

CONCRETE NOTES:

- CONCRETE SHALL BE AS FOLLOWS:
 ITEM 501.33, CONCRETE, HIGH PERFORMANCE CLASS A: DECK AND CURBS
 ITEM 501.34, CONCRETE, HIGH PERFORMANCE CLASS B: APPROACH SLABS AND ABUTMENTS
- ITEM 514.10, WATER REPELLENT (MOD. - SILANE), SHALL BE APPLIED TO:
 ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE EXCEPT THE BOTTOM OF THE DECK BETWEEN DRIP NOTCHES.
 ALL EXPOSED SURFACES ON ABUTMENTS AND WINGWALLS
- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" BY 1", UNLESS OTHERWISE NOTED.
- JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.
- SURFACES OF THE BRIDGE SEATS UNDER THE BEARING DEVICE SHALL BE LEVEL. OTHER BRIDGE SEAT AREAS SHALL BE SLOPED 1/4" PER FOOT.
- THE KEY ON CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT UNLESS OTHERWISE INDICATED. ANY UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.
- THE DECK SHALL BE PLACED IN A SINGLE POUR.

STRUCTURAL STEEL NOTES:

- ALL NEW STRUCTURAL STEEL COMPONENTS SHALL BE AASHTO M 270, GRADE 50 UNLESS OTHERWISE NOTED.
- ALL BOLTED FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH BOLTS IN 15/16" DIAMETER HOLES UNLESS OTHERWISE NOTED.
- CONNECTIONS NOT DESIGNED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE RESIDENT ENGINEER FOR APPROVAL.
- AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF BEAM WILL BE TAKEN BY THE RESIDENT ENGINEER FOR USE IN DETERMINING THE FINAL GRADE AND HAUNCH DEPTHS.
- ANY HOLES IN BEAM WEBS NOT OTHERWISE FILLED SHALL BE FITTED WITH GALVANIZED BUTTON HEAD OR HEX HEAD BOLTS CONFORMING TO AASHTO M 164, TYPE 1.
- ITEM 506.60, STRUCTURAL STEEL SHALL INCLUDE ALL NEW DIAPHRAGMS, CONNECTION PLATES, BEARING BLOCKOUT PLATES, AND ALL NEW CONNECTIONS.
- ITEM 506.75, STRUCTURAL STEEL (MOD. - RECYCLED BEAMS) SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE PREPARATION, TRANSPORTATION, AND ERECTION OF THE RECYCLED BEAMS. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
- ALL NEW STRUCTURAL STEEL COMPONENTS SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATION ITEMS 513.25, STRUCTURAL PAINTING, SHOP APPLIED; 513.35, CONTAINMENT AND ENVIRONMENTAL PROTECTION, SHOP; AND 513.40, SURFACE PREPARATION, SHOP.
- THE EXISTING STEEL BEAMS TO BE RECYCLED SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH SPECIFICATION ITEMS 513.30, STRUCTURAL PAINTING, FIELD APPLIED; 513.36, CONTAINMENT AND ENVIRONMENTAL PROTECTION, FIELD; AND 513.41, SURFACE PREPARATION, FIELD. THE FIELD PREPARATION SHALL BE AS SPECIFIED IN SECTION 513.04(E), FIELD ENVIRONMENT, PARAGRAPH TWO. THE CONTRACTOR WILL BE RESPONSIBLE FOR ESTIMATING THE EXTENT OF CLEANING THAT WILL BE REQUIRED BASED ON VISUAL EXAMINATION OF THE BEAMS. NO APPROXIMATE AMOUNT OF REMOVAL WILL BE DETAILED IN THE PLANS.
- IN ADDITION TO THE CLEANING SPECIFIED IN SECTION 513.04(E), PARAGRAPH TWO, ALL EXISTING PAINT WITHIN FOUR INCHES EITHER SIDE OF NEW CONNECTION PLATES SHALL BE REMOVED PRIOR TO WELDING THE NEW PLATES INTO POSITION.

REMOVAL AND REPAIR NOTES:

- REMOVAL OF EXISTING BRIDGE PAVEMENT SHALL BE PAID AS 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.
- ITEM 529.20, PARTIAL REMOVAL OF STRUCTURE SHALL INCLUDE:
 - REMOVAL OF THE EXISTING BRIDGE RAILING, CONCRETE CURBS, CONCRETE BRIDGE DECK, AND CURTAIN WALLS.
 - REMOVAL OF THE EXISTING PIER TO TOP OF STREAMBED. ALL PIER REMOVAL SHALL BE COMPLETED "FROM ABOVE" THROUGH THE USE OF LIFTING DEVICES. NO MACHINERY OR HAUL ROAD ACCESS WILL BE ALLOWED IN THE SAXTONS RIVER. SPECIAL ATTENTION SHALL BE PAID TO THE ARMY CORPS OF ENGINEERS' WATER QUALITY CONTROL PROCEDURES.
 - REMOVAL OF THE EXISTING STRUCTURAL STEEL BEAMS AND DIAPHRAGMS. THE STRUCTURAL STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD PAINT. THE STRUCTURAL STEEL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND THE CONTRACTOR MAY DISPOSE OF IT OR RETAIN IT FOR FUTURE USE. THE CONTRACTOR SHALL SUBMIT A DISPOSAL OR SALVAGE PLAN TO THE RESIDENT ENGINEER FOR APPROVAL PRIOR TO REMOVAL.
 - REMOVAL OF ALL THE BEARING DEVICES.
 - REMOVAL OF PORTIONS OF THE EXISTING ABUTMENTS AND WINGWALLS AS SHOWN ON THE PLANS AND DIRECTED BY THE RESIDENT ENGINEER.
 - ERECTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURES TO PREVENT DEBRIS FROM FALLING INTO THE SAXTONS RIVER.
- THE CONTRACTOR'S METHODS FOR PARTIAL REMOVAL OF THE EXISTING STRUCTURES SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO ANY REMOVAL WORK.
- LIMITS OF REMOVAL ARE APPROXIMATE. THE ACTUAL LIMITS OF CONCRETE REPAIR ARE NOT SHOWN. THE ENGINEER SHALL ESTABLISH ACTUAL LIMITS AFTER A JOINT INSPECTION BY THE CONTRACTOR AND THE RESIDENT ENGINEER. EXISTING ELEVATIONS SHALL BE FIELD VERIFIED TO ENSURE THE REMOVAL LIMITS ARE ADEQUATE TO OBTAIN THE REQUIRED DIMENSIONS AND ELEVATIONS OF THE NEW CONSTRUCTION. ALL COSTS OF THIS INSPECTION, INCLUDING FURNISHING ANY EQUIPMENT NEEDED TO ACCESS AREAS, SHALL BE INCLUDED UNDER ITEM 635.11, MOBILIZATION/DEMobilIZATION.
- SAWCUTS SHALL BE 1 INCH DEEP ALONG ALL EXPOSED REMOVAL LINES WHERE NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE. ALL COSTS SHALL BE INCLUDED IN ITEM 529.20, PARTIAL REMOVAL OF STRUCTURE.
- EXISTING REINFORCING STEEL EXPOSED DURING REMOVAL OPERATIONS, WITHIN THE LIMITS OF THE NEW MASONRY, SHALL BE RETAINED AND INCORPORATED INTO THE NEW MASONRY. EXISTING REINFORCING STEEL TO BE RETAINED SHALL BE CLEANED OF ALL CONCRETE, DIRT, SCALE, PAINT, OIL AND OTHER FOREIGN SUBSTANCES. ALL COST SHALL BE INCLUDED IN ITEM 529.20, PARTIAL REMOVAL OF STRUCTURE.
- EXISTING REINFORCING STEEL THAT WILL NOT BE INCORPORATED INTO THE NEW MASONRY SHALL BE REMOVED A MINIMUM OF 1 INCH BEYOND THE MASONRY SURFACE. CAVITIES PRODUCED BY REMOVAL SHALL BE REPAIRED IN ACCORDANCE WITH REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS 1. ALL COSTS SHALL BE INCLUDED IN ITEM 529.20, PARTIAL REMOVAL OF STRUCTURE.
- EXISTING ANCHOR BOLTS SHALL BE PARTIALLY REMOVED OR INCORPORATED INTO THE NEW WORK AS DIRECTED BY THE RESIDENT ENGINEER. PARTIAL REMOVAL DETAILS FOR OR INCORPORATION INTO THE NEW WORK SHALL BE SIMILAR AS REQUIRED FOR REINFORCING STEEL (SEE NOTE 7).
- THE ENGINEER SHALL ORDER REPLACEMENT OF ANY EXISTING SUBSTRUCTURE REINFORCING STEEL THAT IS DETERIORATED (WITH MORE THAN 25% SECTION LOSS) WITH NEW REINFORCING STEEL OF THE SAME SIZE. ALL REINFORCING STEEL SHALL HAVE A MINIMUM 2'-0" LAP SPLICE. ALL NEW REINFORCING STEEL SHALL BE PAID UNDER ITEM 507.15, REINFORCING STEEL.
- ABUTMENT REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 580.
- AN ESTIMATED QUANTITY FOR ITEM 580.15, REMOVAL OF CONCRETE SUBSTRUCTURE SURFACE CLASS III HAS BEEN ADDED TO THE QUANTITY SUMMARY IF IT IS REQUIRED DURING CONSTRUCTION. THIS ITEM IS NOT CURRENTLY SHOWN ON THE PLANS.

SEE SHEET 26R

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

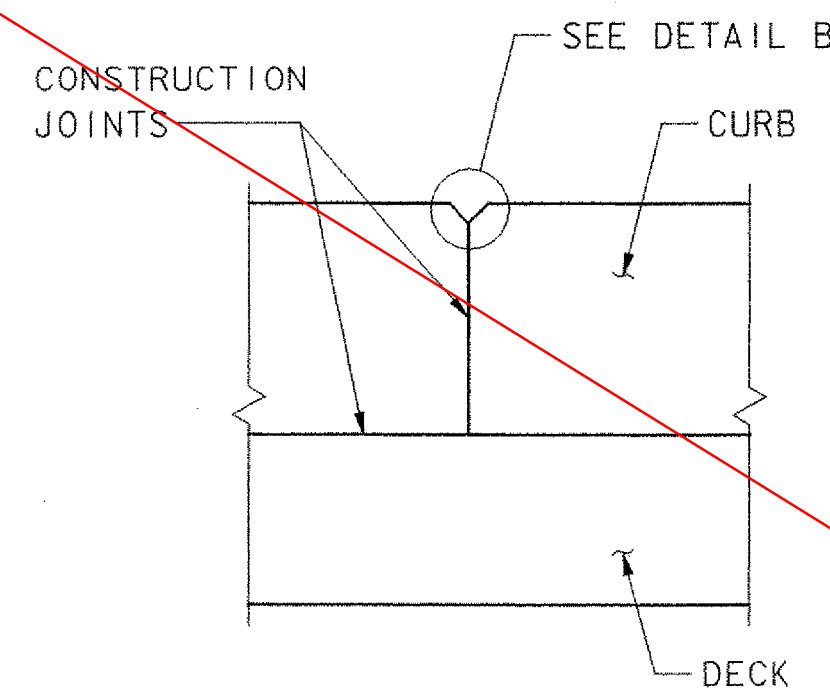
Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			

CONSTRUCTION NOTES

Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
M. A. COLGAN	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104

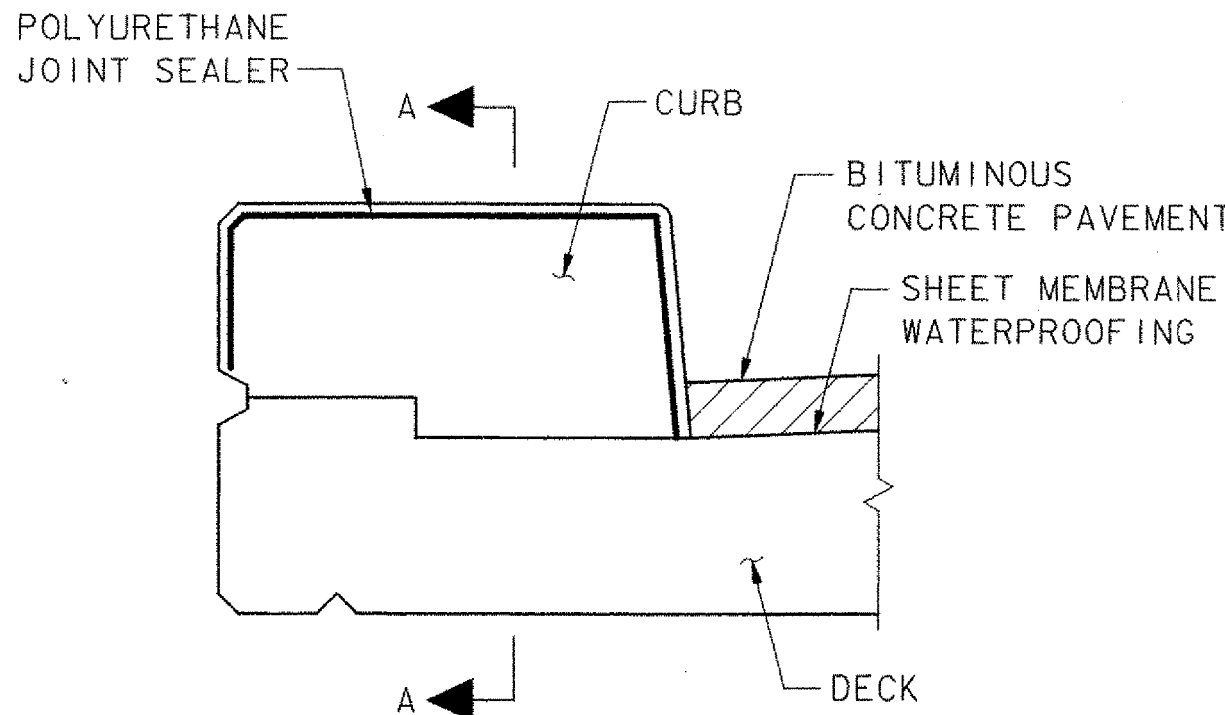
I.G.C. Info.	File No. 51335NOT	Sheet 26 of 42
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VHB Vanasse Hangen Brustlin, Inc.

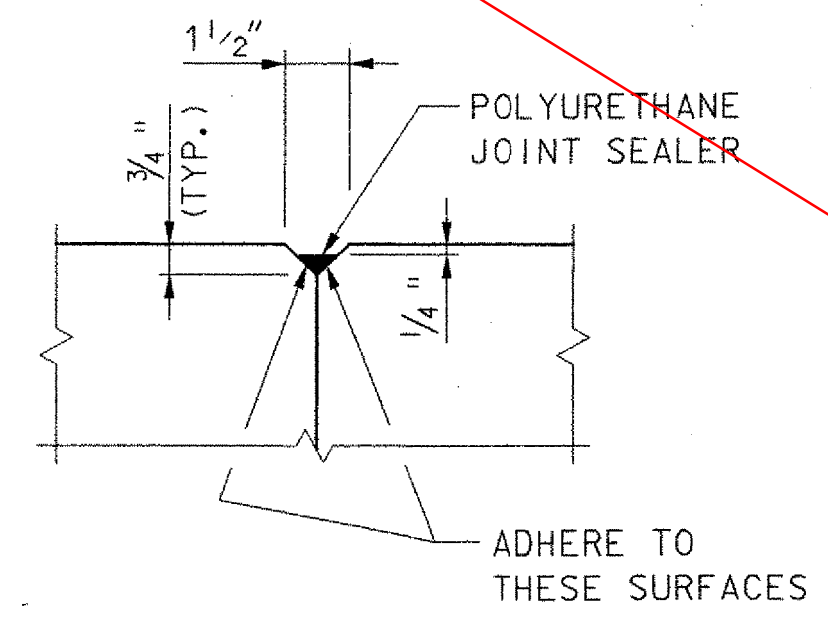


SECTION A-A

- CURB CONSTRUCTION JOINT NOTES:**
1. CONCRETE CURB CONSTRUCTION JOINTS SHALL BE SPACED A MAXIMUM OF 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 BETWEEN ADJACENT POURS.
 2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS UNLESS OTHERWISE SHOWN.
 3. POLYURETHANE JOINT SEALER, PER SUBSECTION 524.06 (c), SHALL MATCH THE CONCRETE COLOR. COST TO BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE

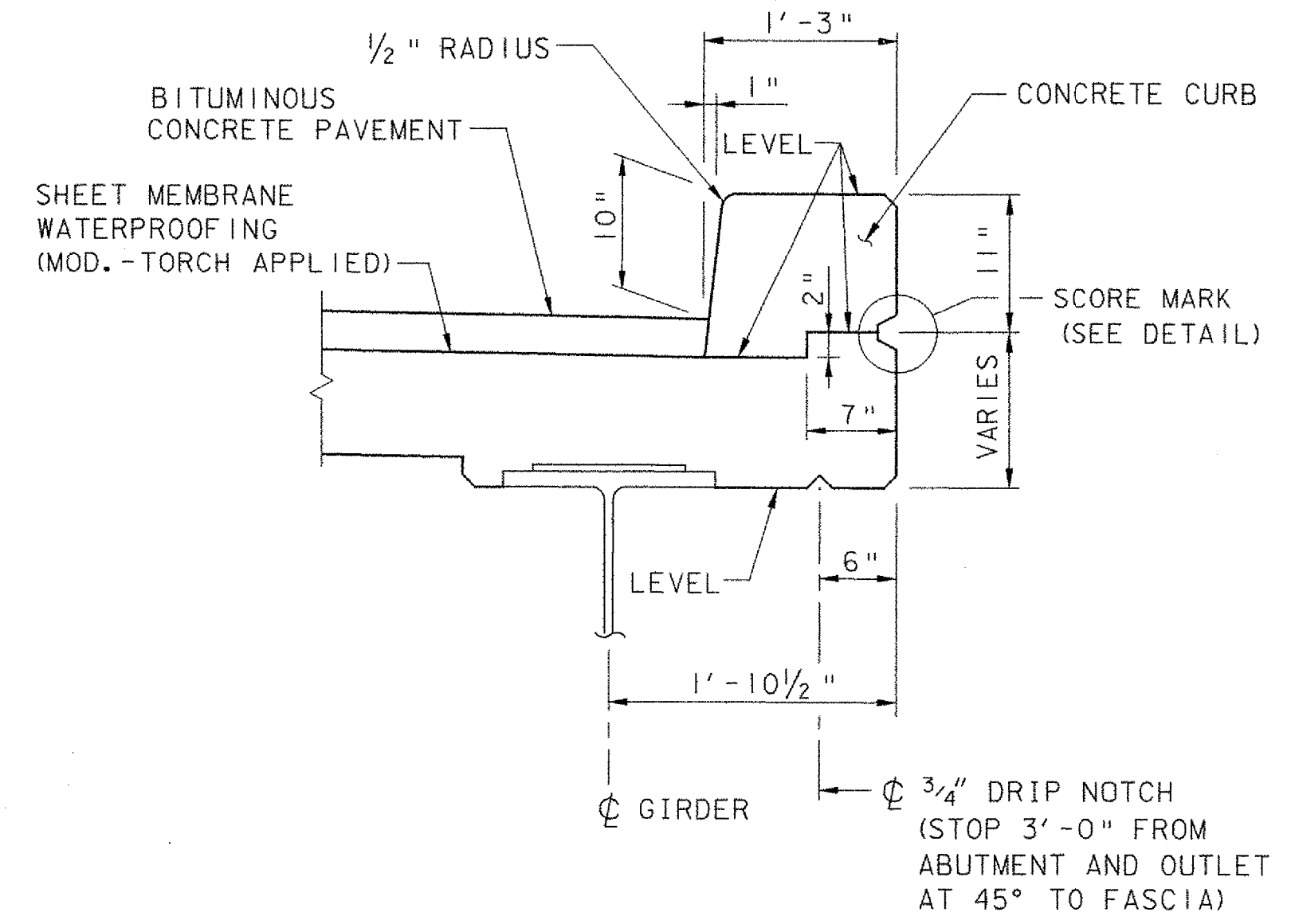


TYPICAL SECTION

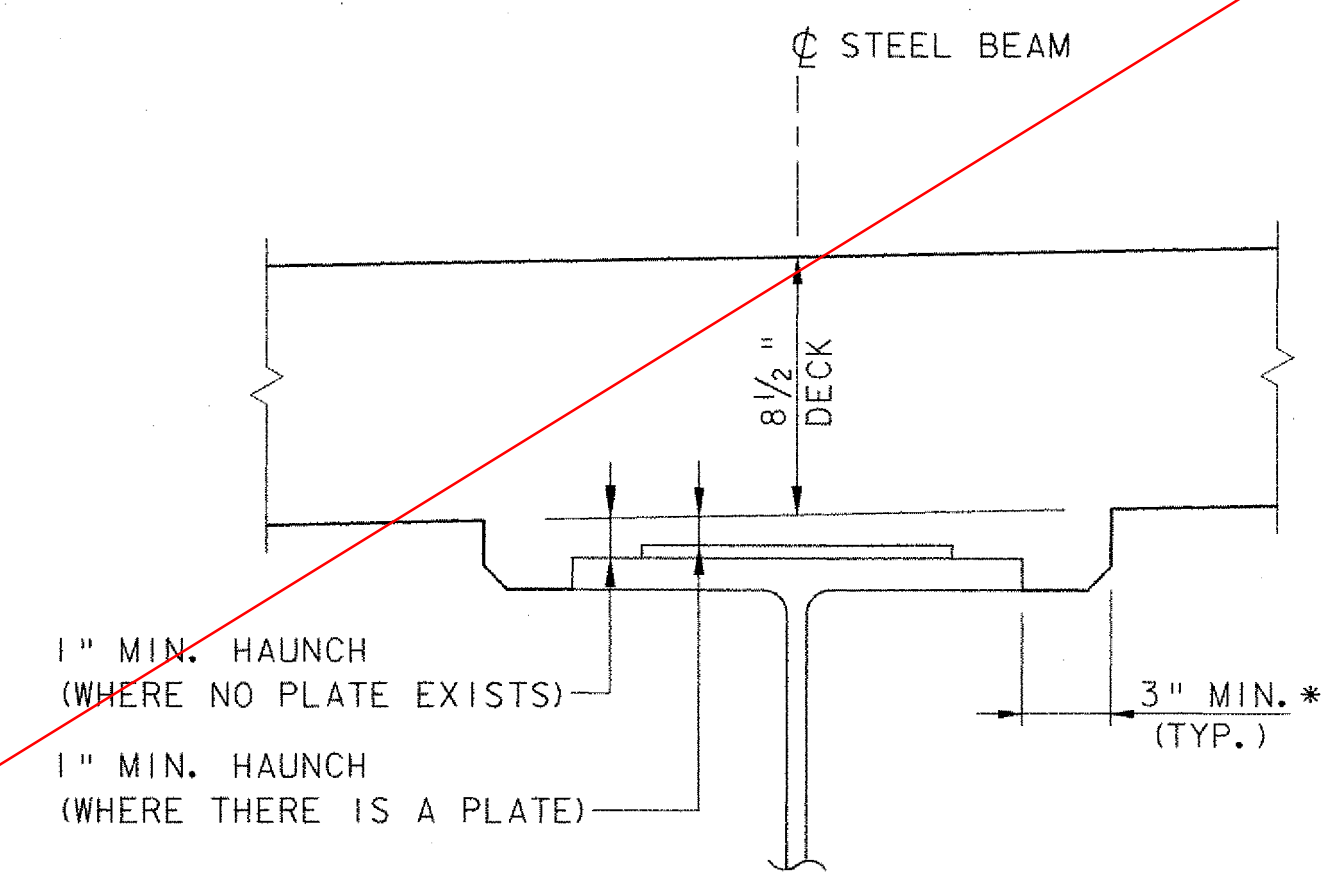


DETAIL B

CONCRETE CURB CONSTRUCTION JOINT
NOT TO SCALE

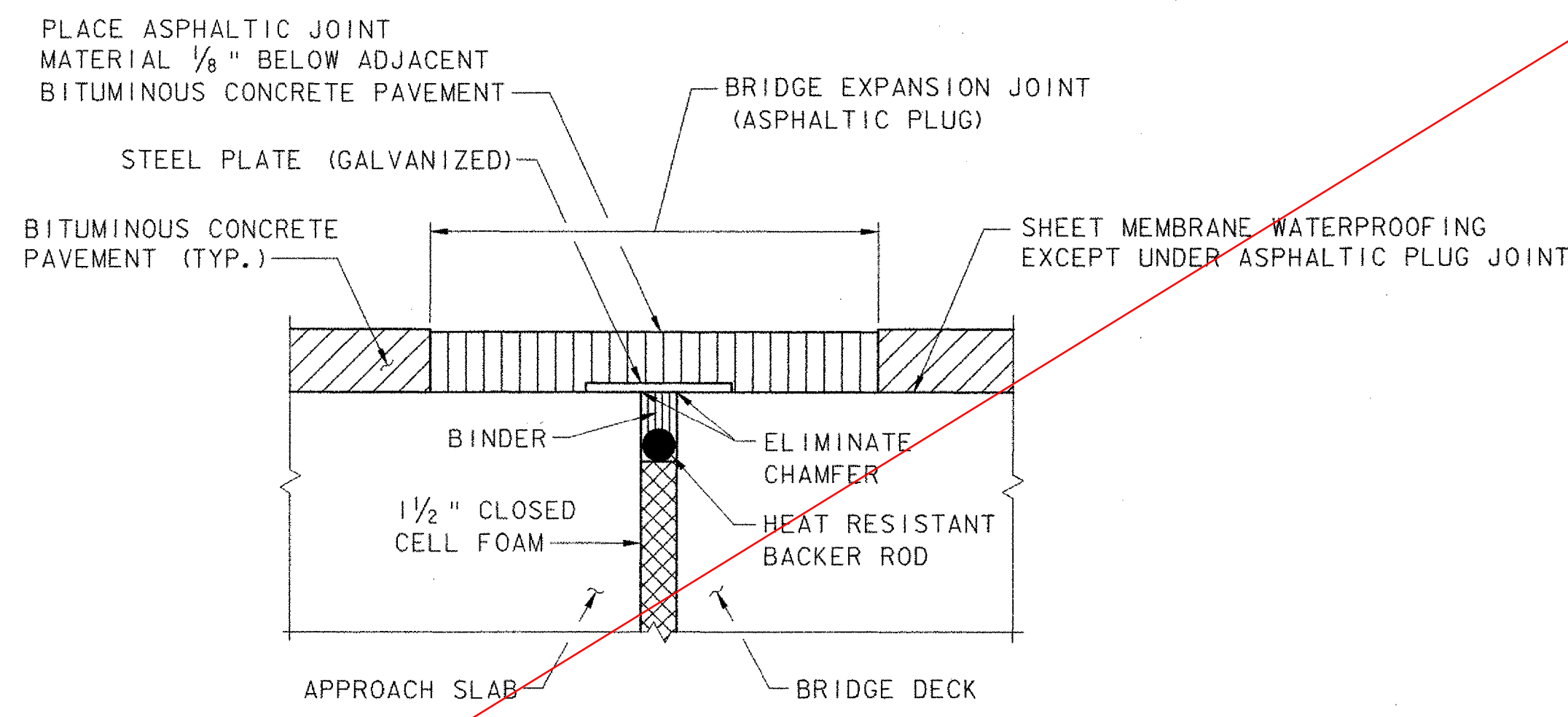


TYPICAL CURB DETAIL
(BRIDGE RAIL NOT SHOWN)
SCALE: 1" = 1'-0"

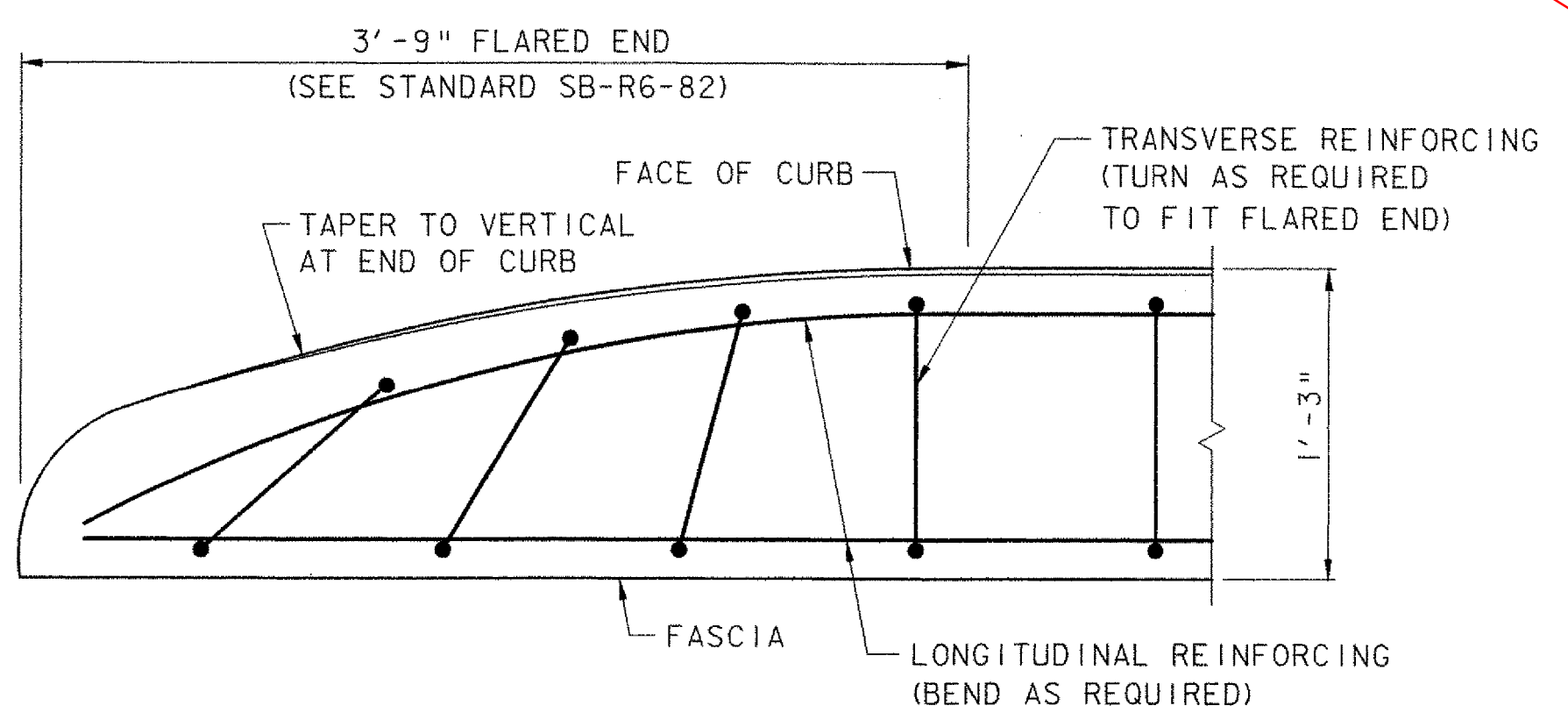


TYPICAL HAUNCH DETAIL
NOT TO SCALE

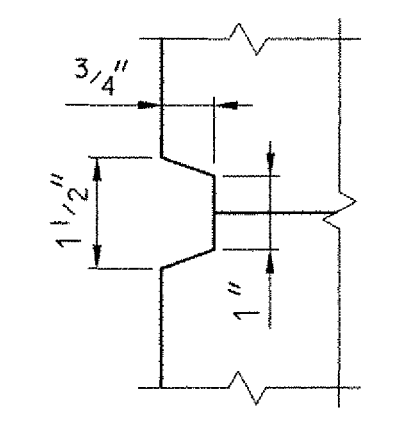
* THE 3" HORIZONTAL EXTENSION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR VERTICAL HAUNCHES IF APPROVED BY THE STRUCTURES ENGINEER. ANY HOLES RESULTING FROM THIS FORMING SYSTEM SHALL BE FILLED WITH MORATR, TYPE IV. ALL COSTS SHALL BE INCIDENTAL TO CONCRETE PAY ITEM.



ASPHALTIC PLUG TYPE JOINT DETAIL
(TO BE USED AT EACH END OF BRIDGE)
NOT TO SCALE



TYPICAL CURB FLARED END DETAIL
NOT TO SCALE

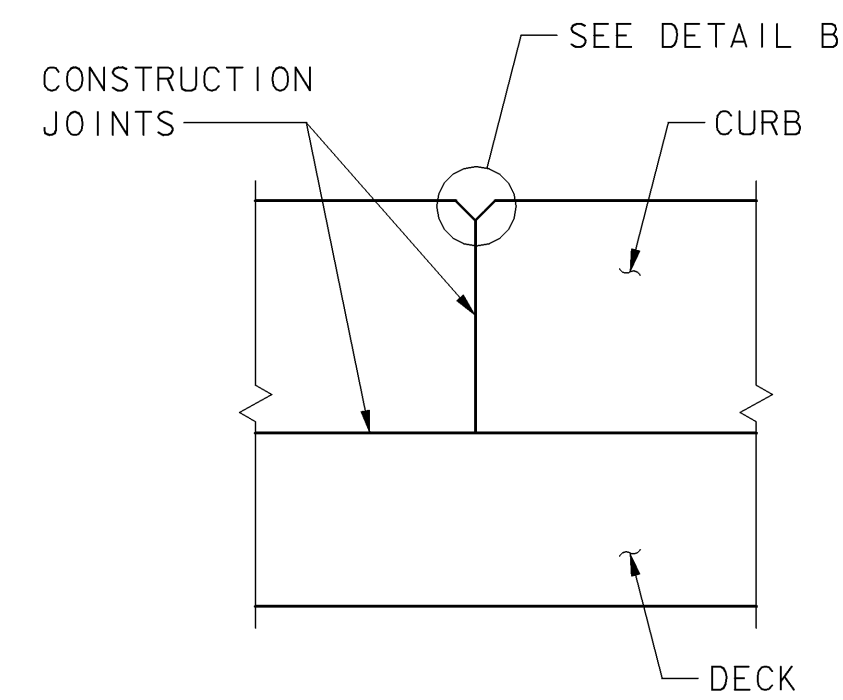


SCORE MARK DETAIL
NOT TO SCALE

- DECK POUR NOTES:**
1. CONCRETE DECK POUR SHALL BE PLACED CONTINUOUSLY WITHIN ONE EIGHT HOUR WORKING DAY.
 2. THE DECK CONCRETE SHALL BE RETARDED SUFFICIENTLY TO REMAIN FLUID UNTIL POUR IS COMPLETE. THE QUALITY OF RETARDANT SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT. ANY DEVIATIONS FROM THIS PROCEDURE MUST BE APPROVED BY THE ENGINEER IN WRITING BEFORE THE POUR BEGINS.

SEE SHEET 27R

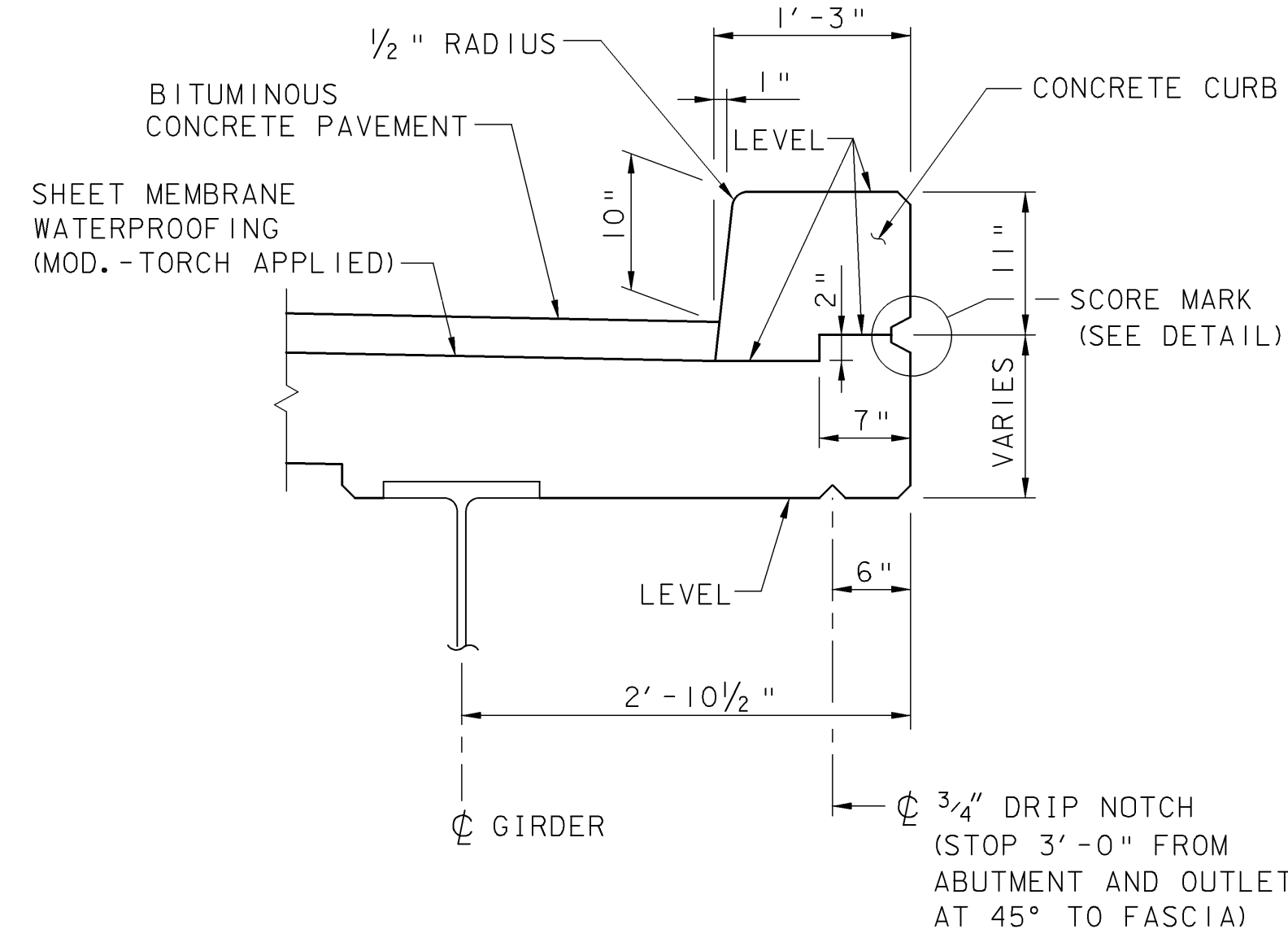
TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
DECK DETAILS		
Designed By	J. T. KLEIN	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
K. R. CRAWFORD	5/05	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO. TH2-0104
L.G.C. Info.	File No. 51335DT2	Sheet 27 of 42



SECTION A-A

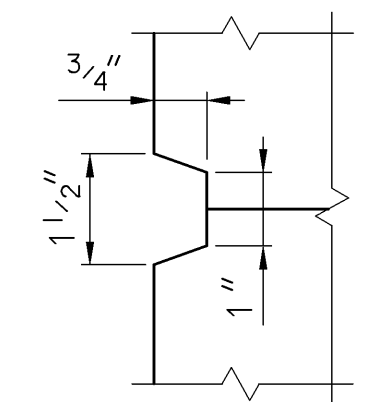
CURB CONSTRUCTION JOINT NOTES:

1. CONCRETE CURB CONSTRUCTION JOINTS SHALL BE SPACED A MAXIMUM OF 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 BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS UNLESS OTHERWISE SHOWN.
3. POLYURETHANE JOINT SEALER, PER SUBSECTION 524.06 (c), SHALL MATCH THE CONCRETE COLOR. COST TO BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE



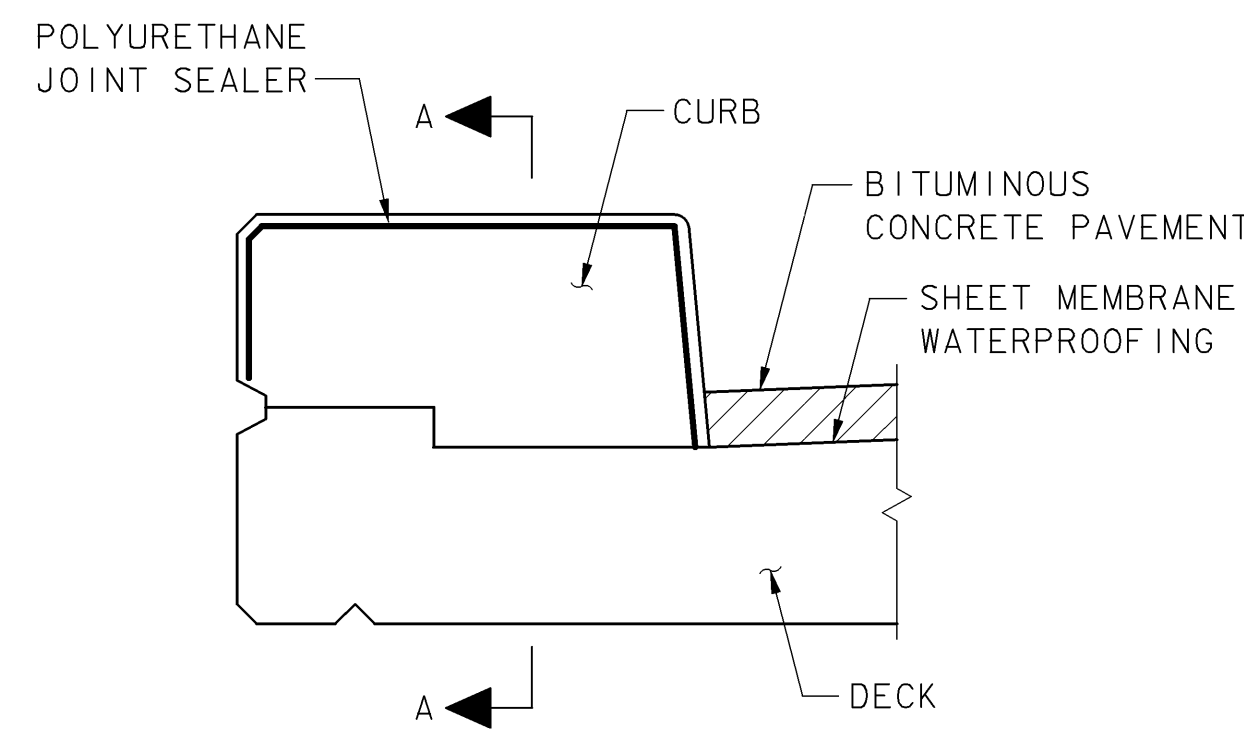
TYPICAL CURB DETAIL

(BRIDGE RAIL NOT SHOWN)
SCALE: 1" = 1'-0"

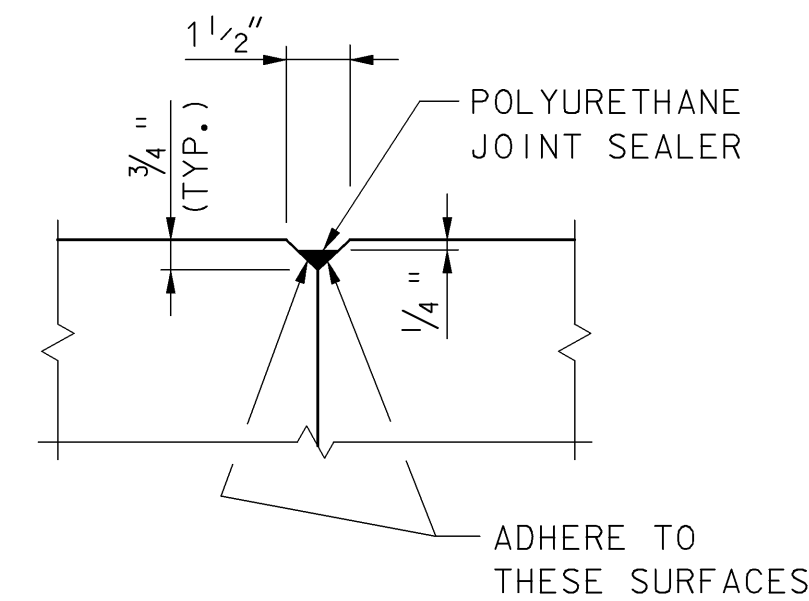


SCORE MARK DETAIL

NOT TO SCALE



TYPICAL SECTION

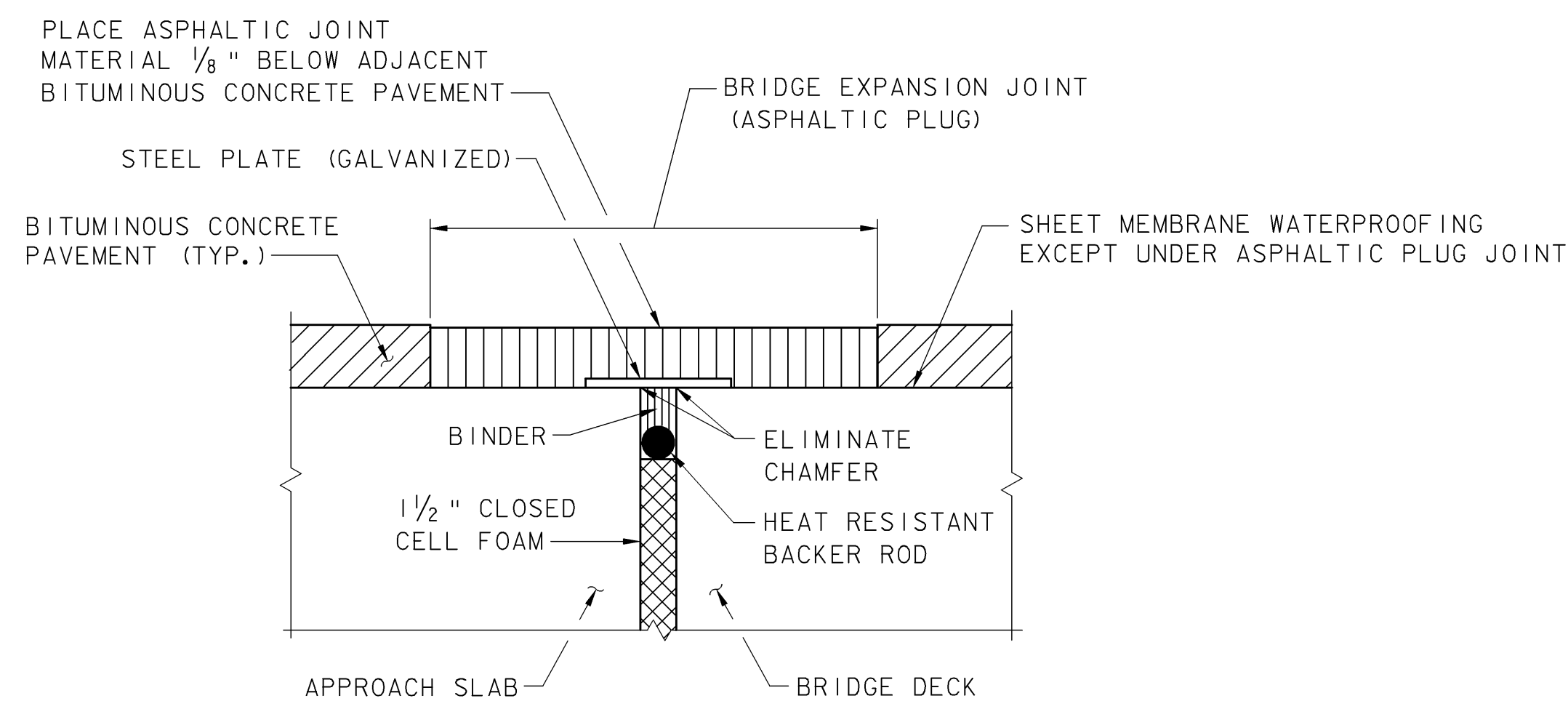


DETAIL B

CONCRETE CURB CONSTRUCTION JOINT

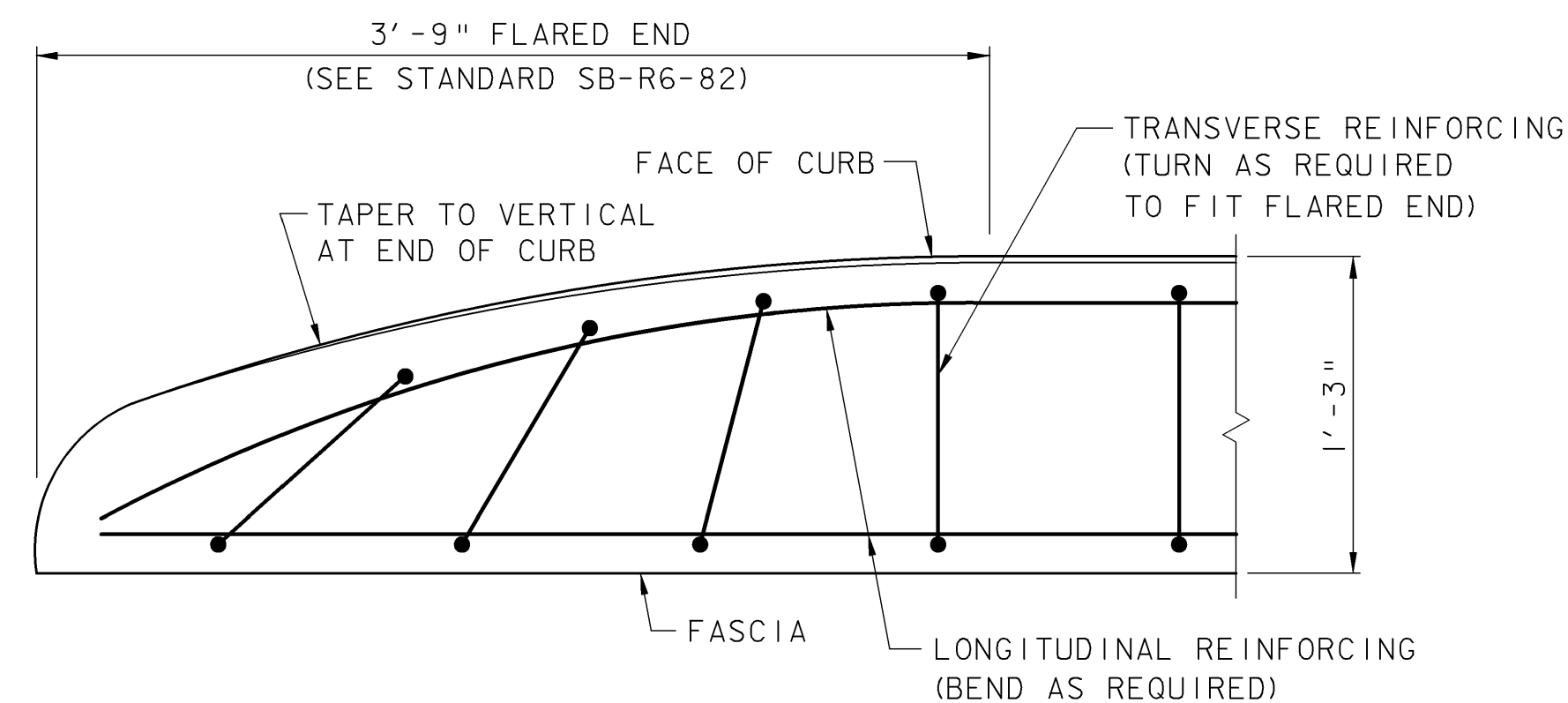
NOT TO SCALE

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 27 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.



ASPHALTIC PLUG TYPE JOINT DETAIL

(TO BE USED AT EACH END OF BRIDGE)
NOT TO SCALE



TYPICAL CURB FLARED END DETAIL

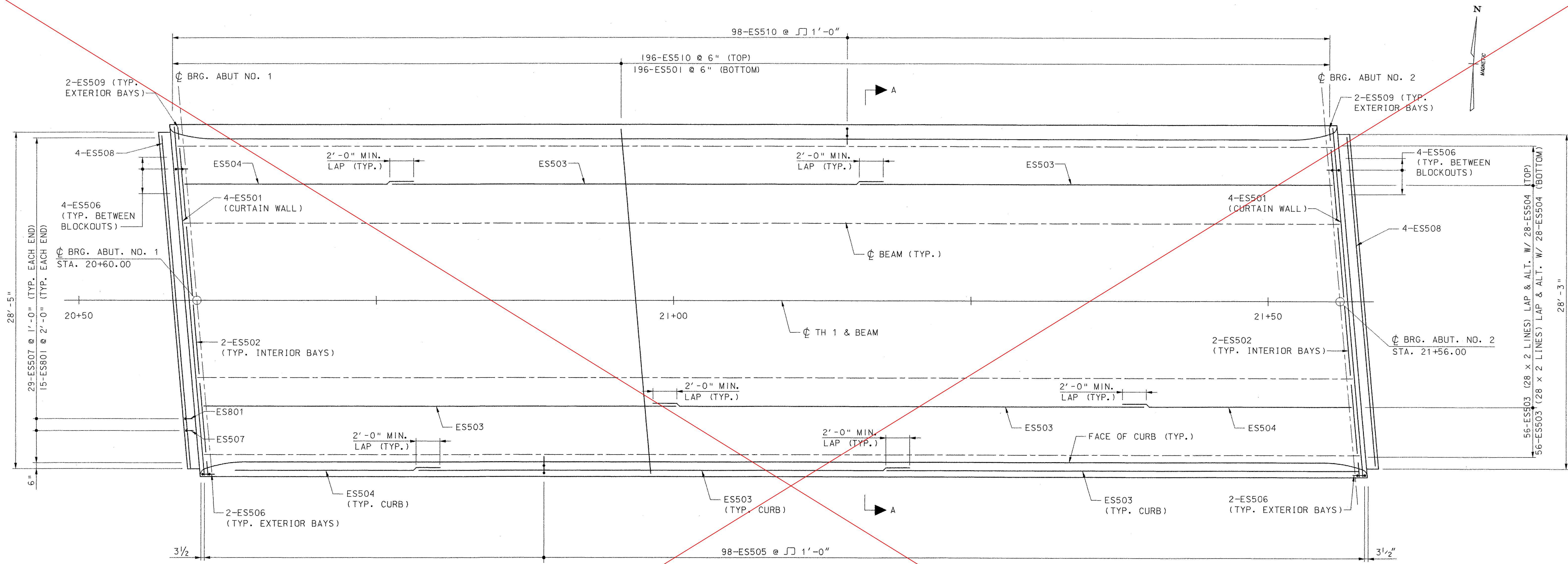
NOT TO SCALE

DECK POUR NOTES:

1. CONCRETE DECK POUR SHALL BE PLACED CONTINUOUSLY WITHIN ONE EIGHT HOUR WORKING DAY.
2. THE DECK CONCRETE SHALL BE RETARDED SUFFICIENTLY TO REMAIN FLUID UNTIL POUR IS COMPLETE. THE QUALITY OF RETARDANT SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT. ANY DEVIATIONS FROM THIS PROCEDURE MUST BE APPROVED BY THE ENGINEER IN WRITING BEFORE THE POUR BEGINS.

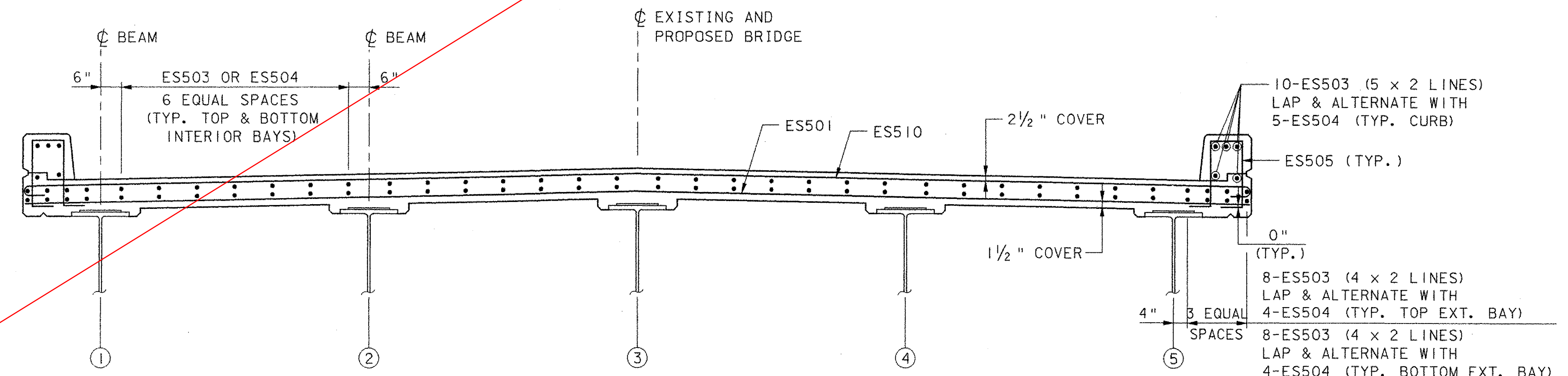
**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
DECK DETAILS			
Designed By	L. S. GARDNER	Drawn By	B. J. MASSE
Checked By	J. T. KLEIN	Date	12/05
		Bridge Design Supervisor	M. A. COLGAN Date 12/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.	File No. 51335DT2	Sheet	27R of 42



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

SEE SHEET
28R

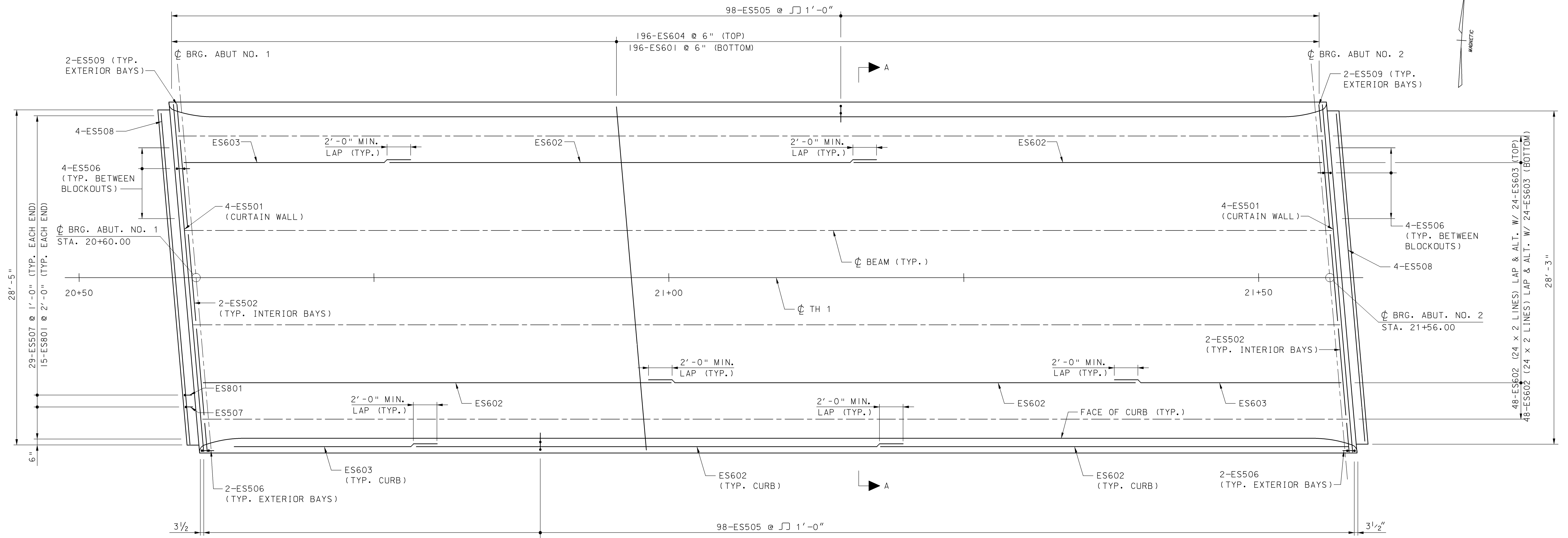


SECTION A-A
SCALE: 1/2" = 1'-0"

KEY
N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE
▲ = CUT TO FIT IN FIELD

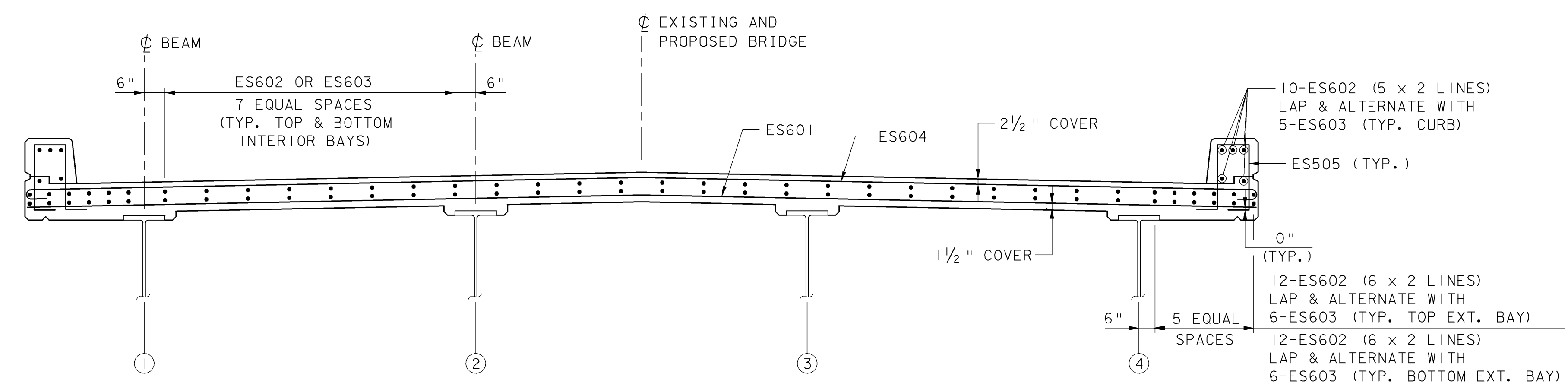
TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.
DECK REINFORCEMENT		
Designed By	J. T. KLEIN	Drawn By
Checked By	K. R. CRAWFORD	Date
PROJECT		PROJECT NO.
GRAFTON		TH2-0104
I.G.C. Info.		File No. 51335DRF
		Sheet 28 of 42

VHB Vanasse Hangen Brustlin, Inc.



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

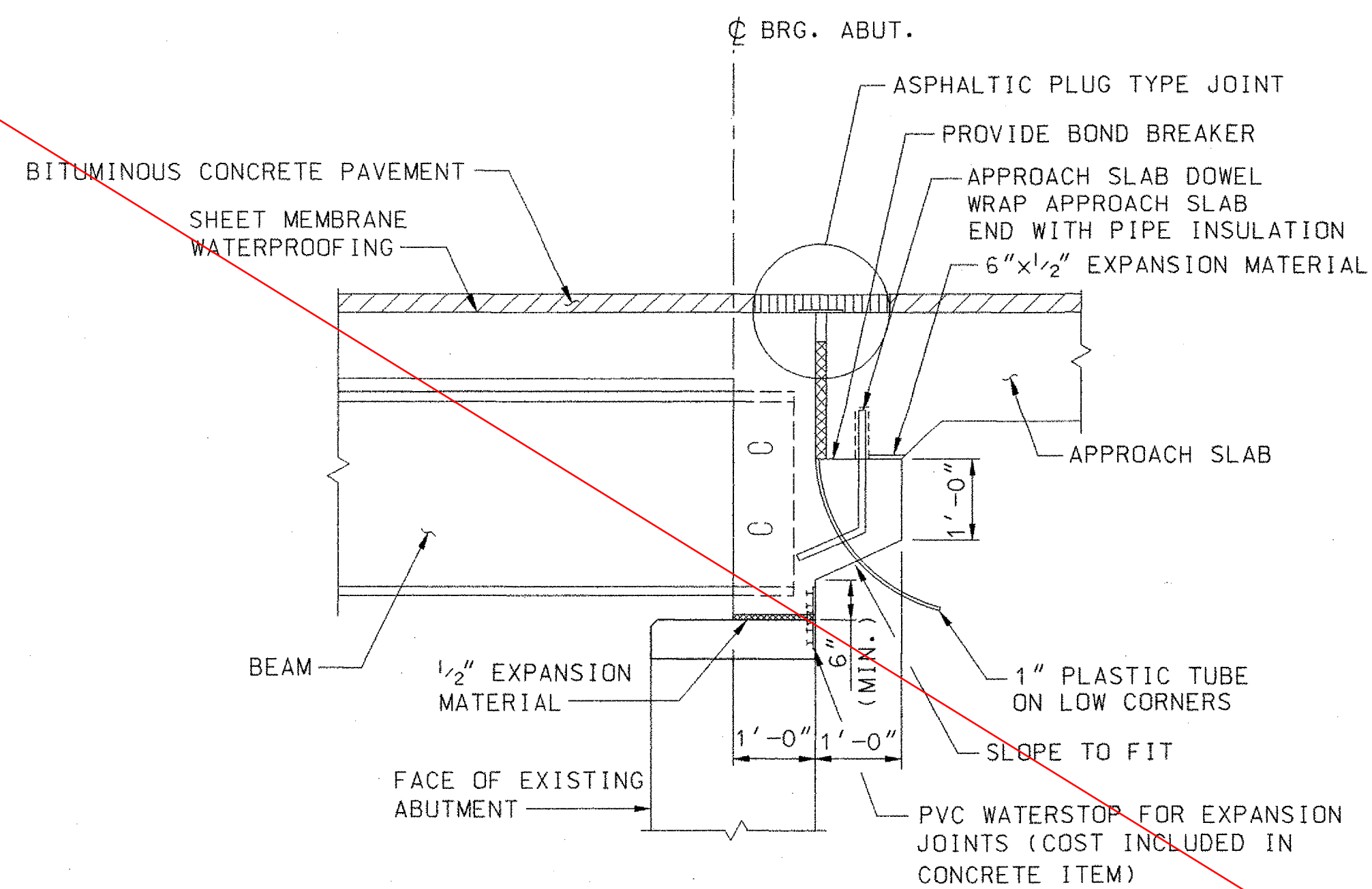
THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 28 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2. SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.



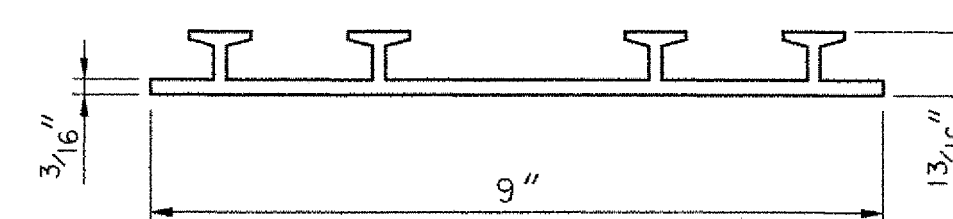
SECTION A-A
SCALE: 1/2" = 1'-0"

KEY
N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE
▲ = CUT TO FIT IN FIELD

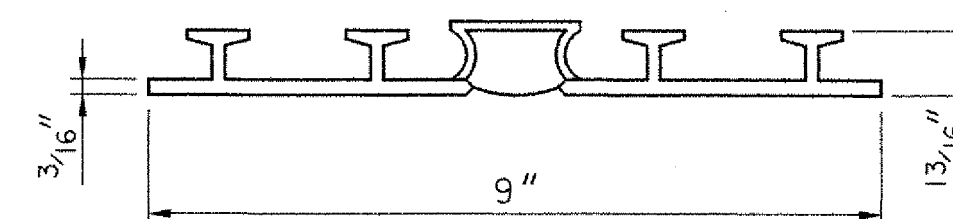
TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
DECK REINFORCEMENT		
Designed By	L. S. GARDNER	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
J. T. KLEIN	12/05	M. A. COLGAN Date 12/05
PROJECT	GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.	File No. 51335DRF	Sheet 28R of 42
	VHB NO. 51335	plot date: 2/3/2006



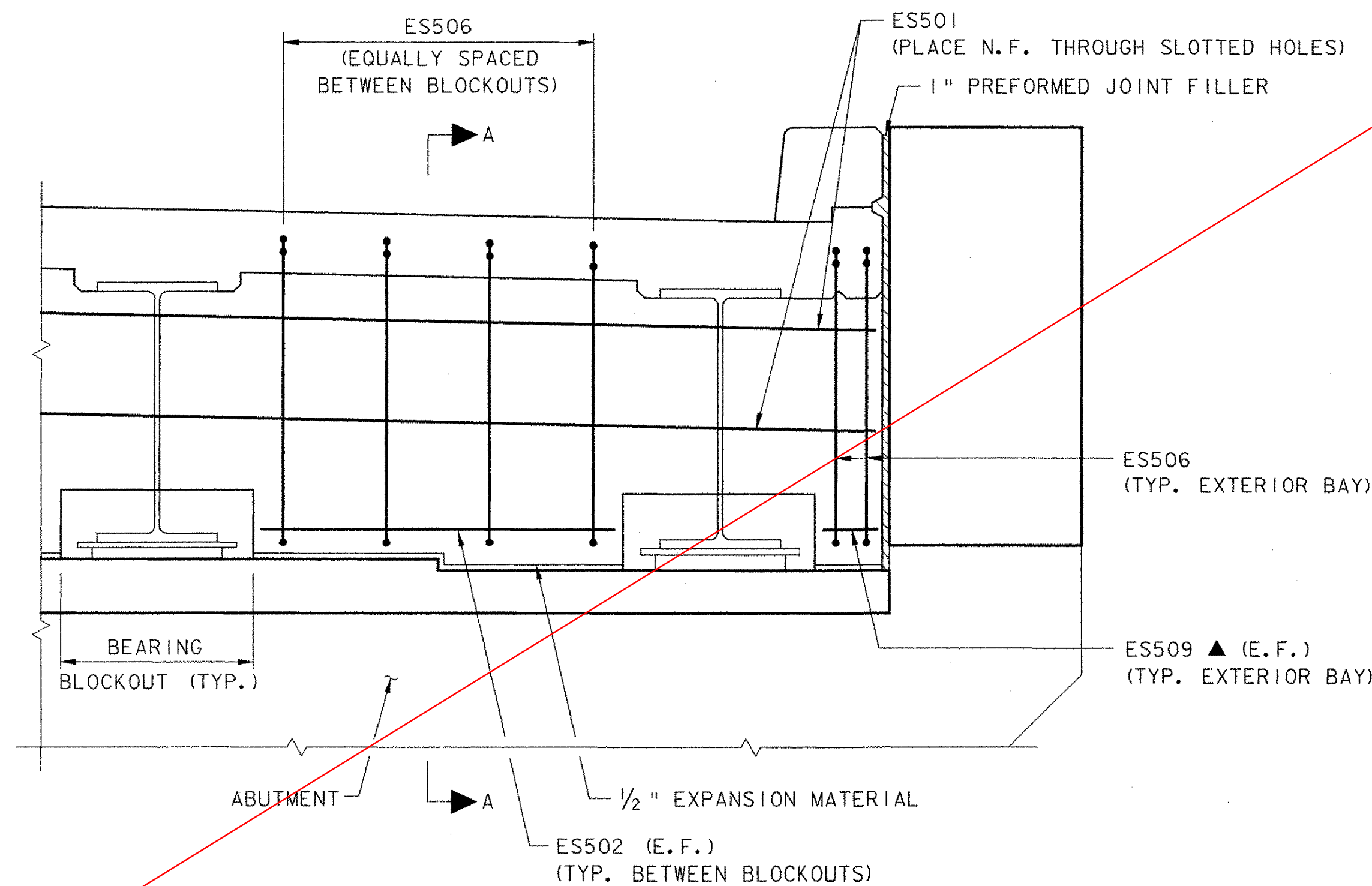
CURTAIN WALL DETAIL AT ABUTMENTS
(PERPENDICULAR TO CENTERLINE BEARING)
NOT TO SCALE



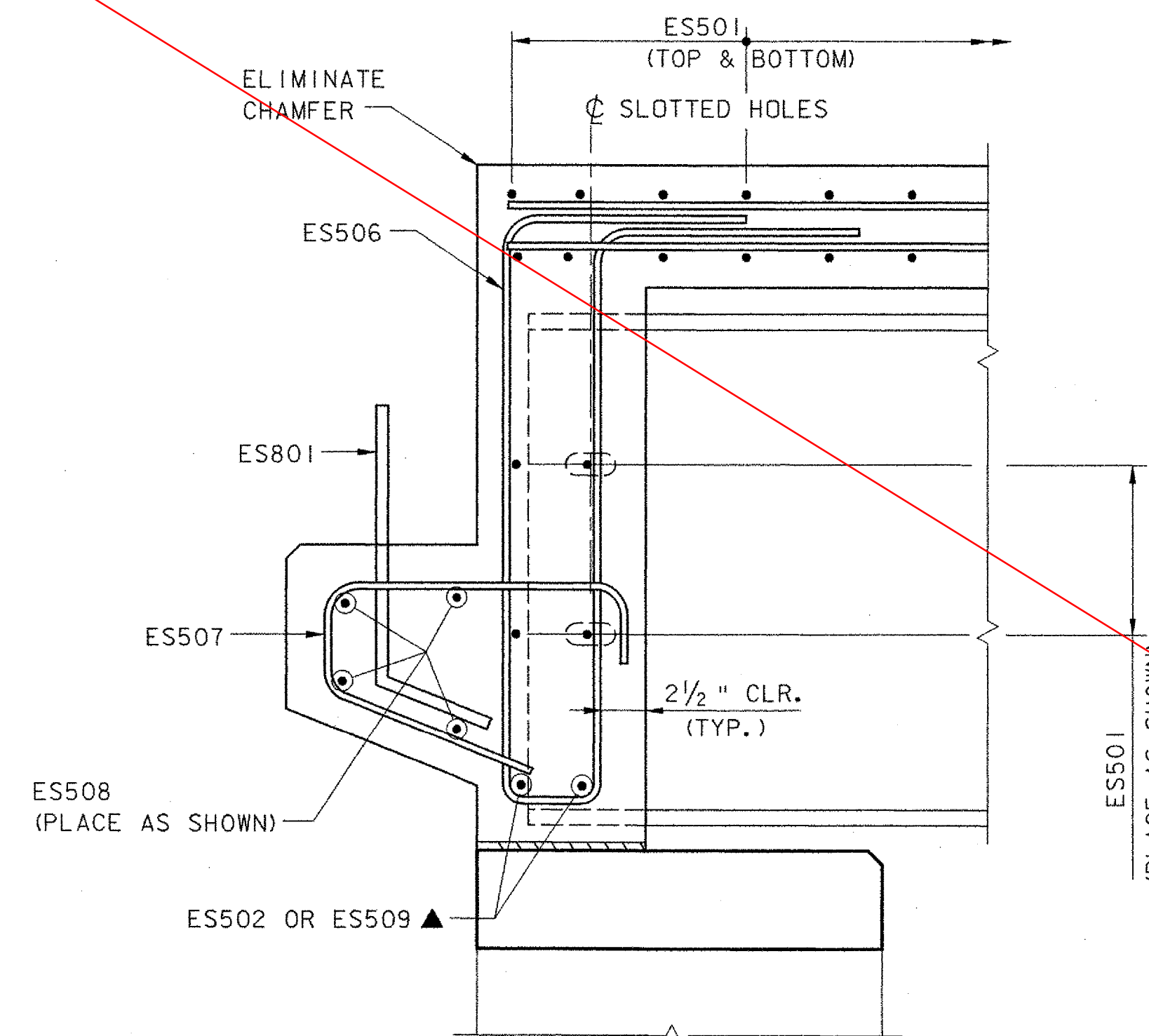
P.V.C. WATERSTOP
NOT TO SCALE



P.V.C. WATERSTOP FOR EXPANSION JOINTS
NOT TO SCALE



ELEVATION
(PERPENDICULAR TO CENTERLINE BEAMS)
NOT TO SCALE



SECTION A-A
(PERPENDICULAR TO CENTERLINE BEARING)
NOT TO SCALE

SEE SHEET
29R

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	166
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
CURTAIN WALL			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
K. R. CRAWFORD	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104

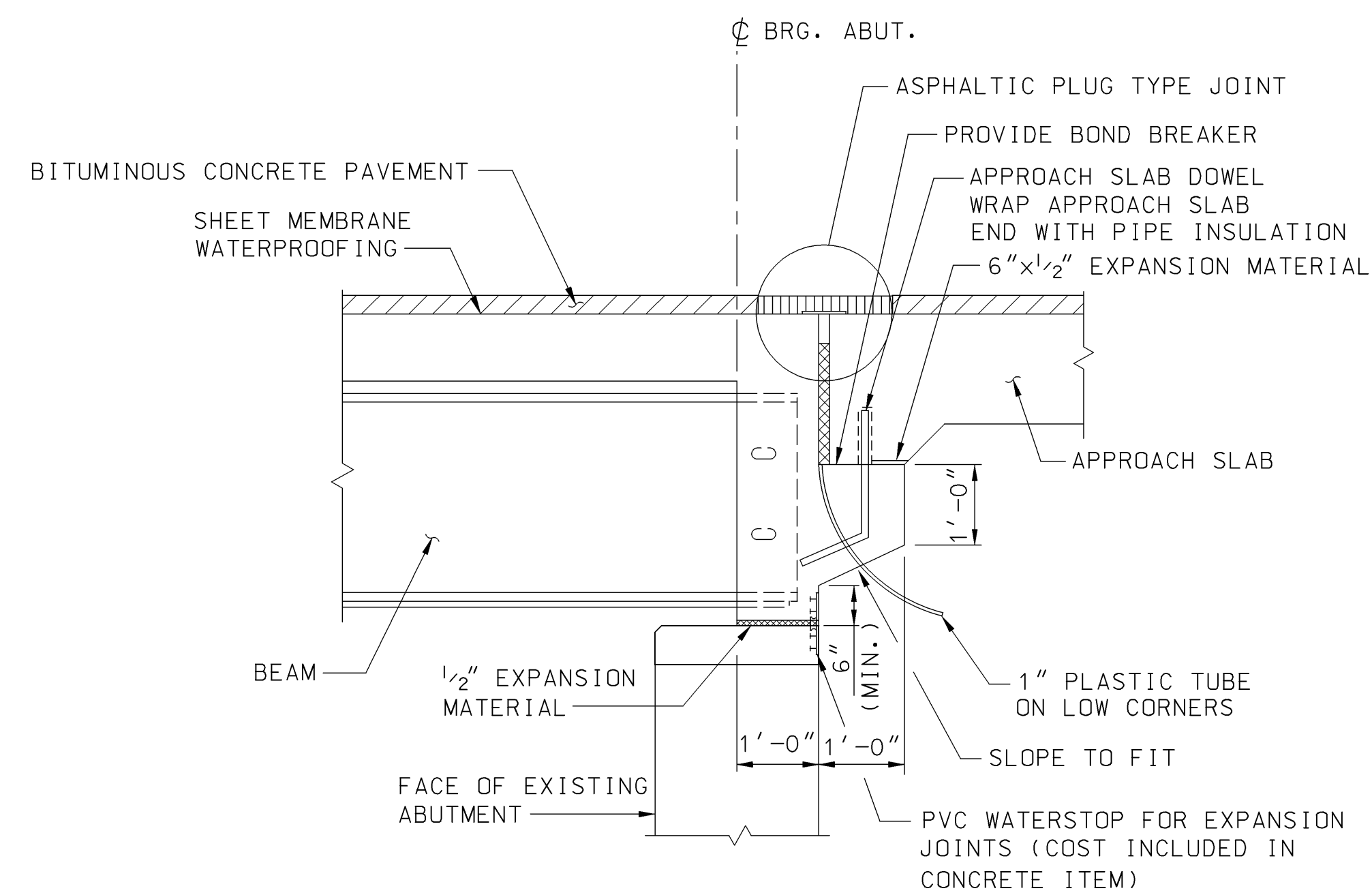
I.G.C. Info.
File No. 51335DT1

Sheet 29 of 42

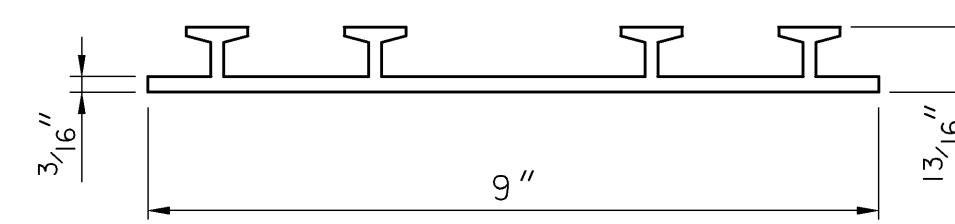
VHB Vanasse Hangen Brustlin, Inc.

VHB NO. 51335

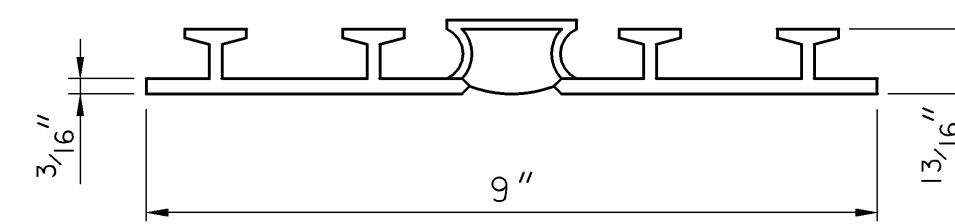
plot date: 5/27/2005



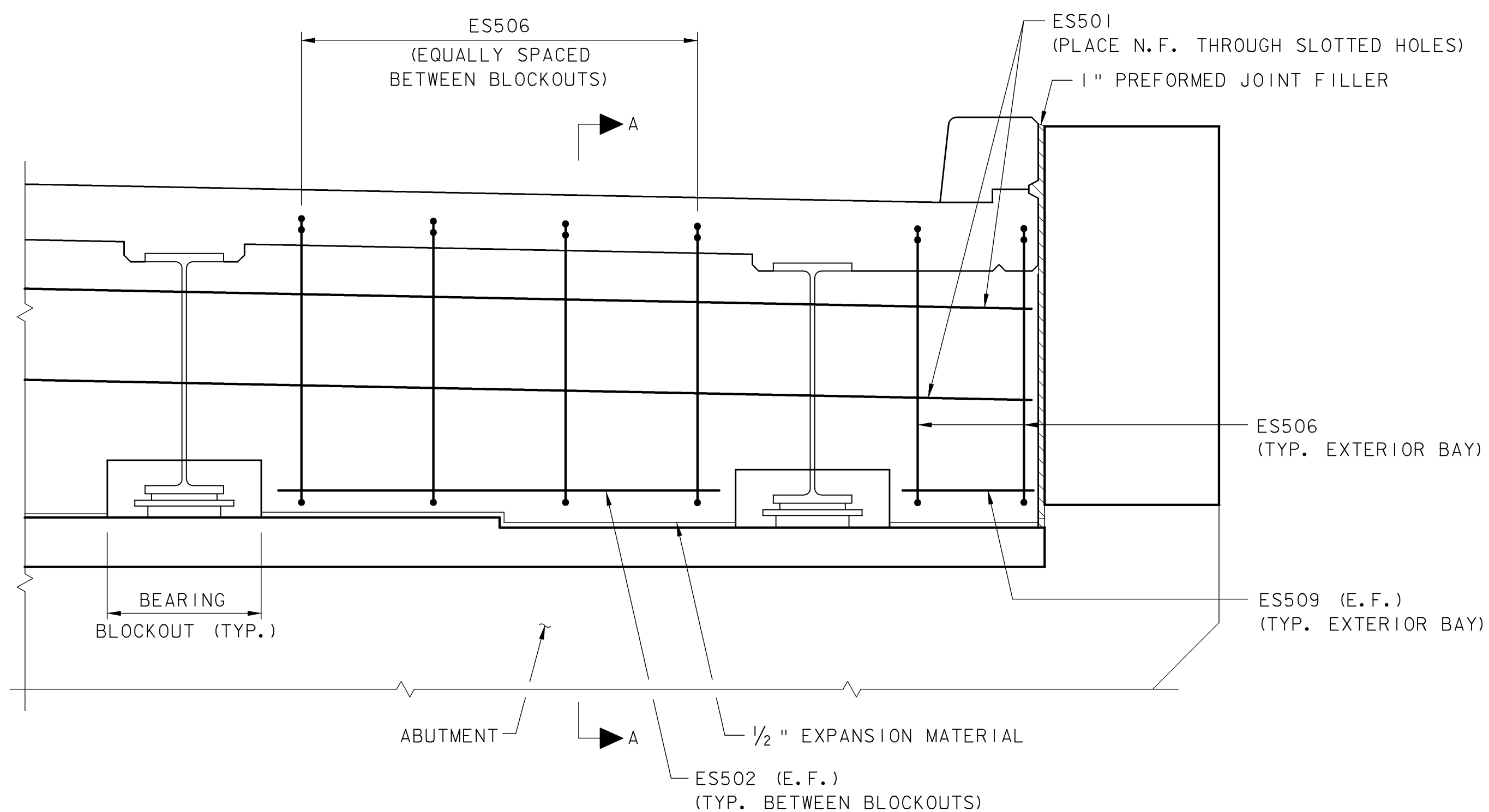
CURTAIN WALL DETAIL AT ABUTMENTS
(PERPENDICULAR TO CENTERLINE BEARING)
NOT TO SCALE



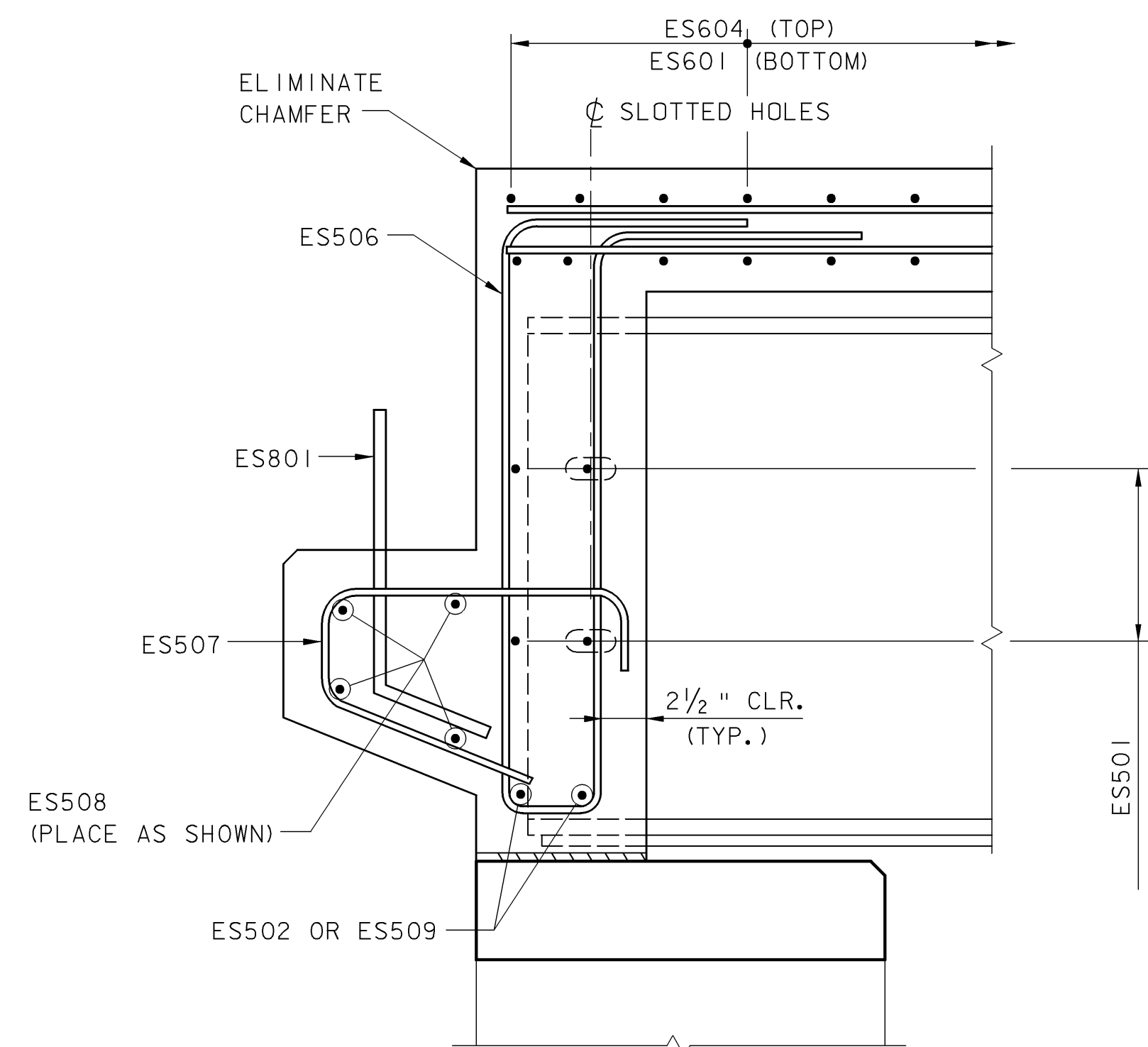
P.V.C. WATERSTOP
NOT TO SCALE



P.V.C. WATERSTOP FOR EXPANSION JOINTS
NOT TO SCALE



ELEVATION
(PERPENDICULAR TO CENTERLINE BEAMS)
NOT TO SCALE

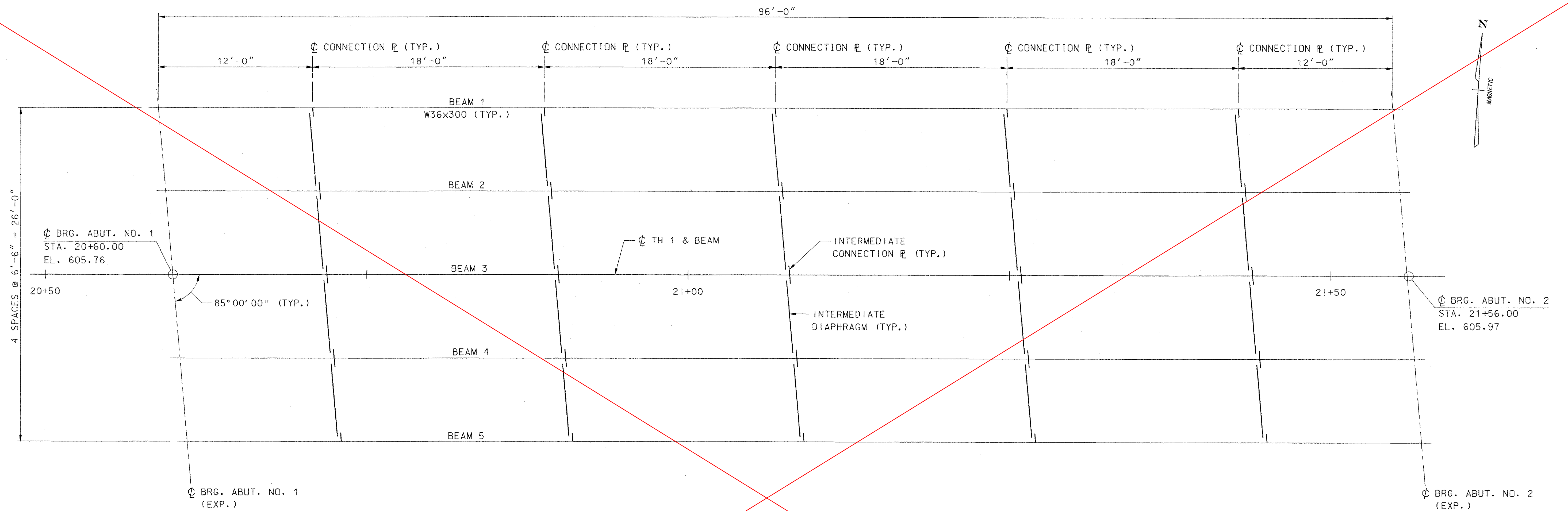


SECTION A-A
(PERPENDICULAR TO CENTERLINE BEARING)
NOT TO SCALE

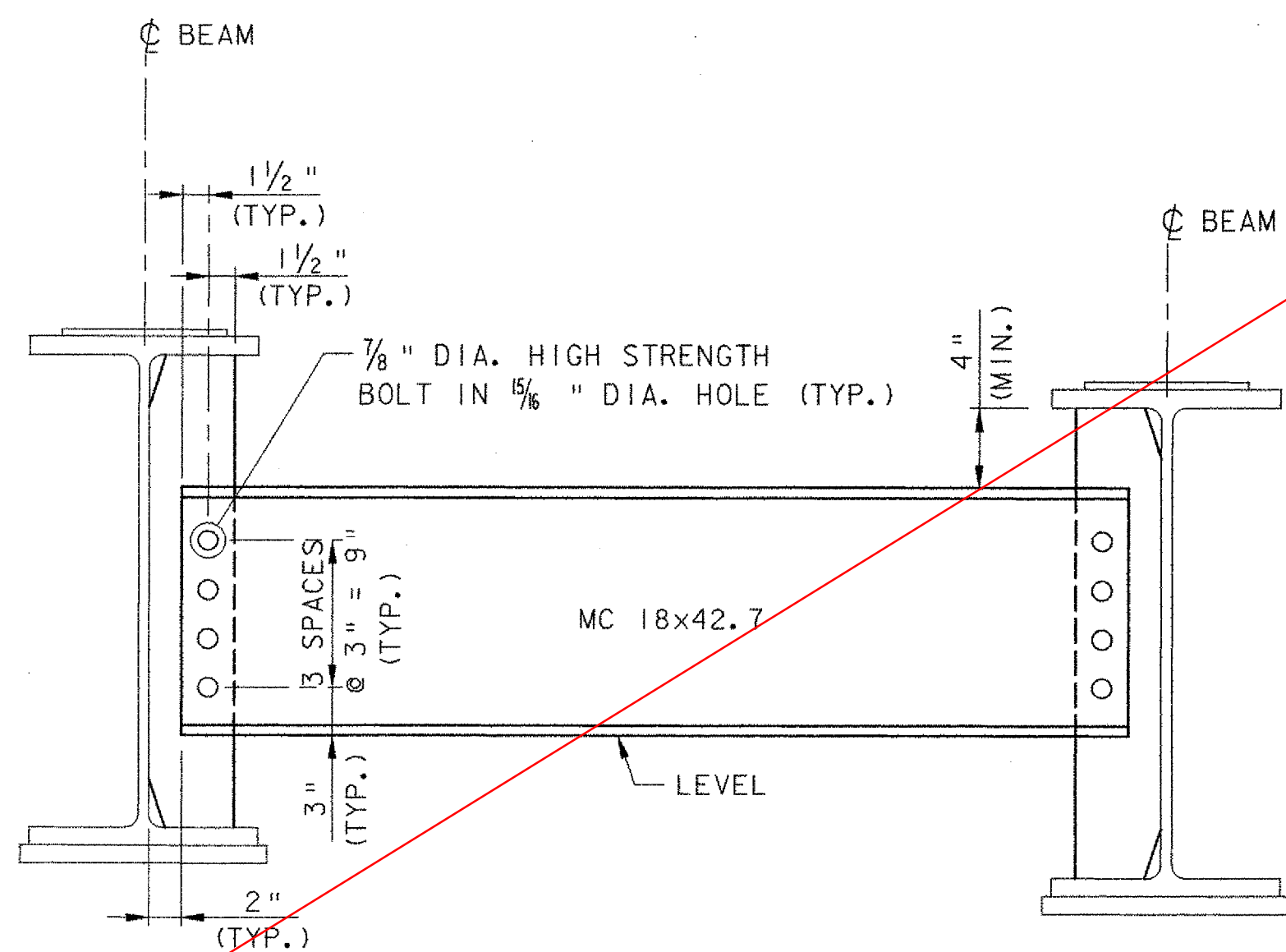
THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 29 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
CURTAIN WALL		
Designed By	L. S. GARDNER	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
J. T. KLEIN	12/05	M. A. COLGAN Date 12/05
PROJECT	GRAFTON	PROJECT NO.
		TH2-0104
I.G.C. Info.		
File No. 51335DT1		Sheet 29R of 42

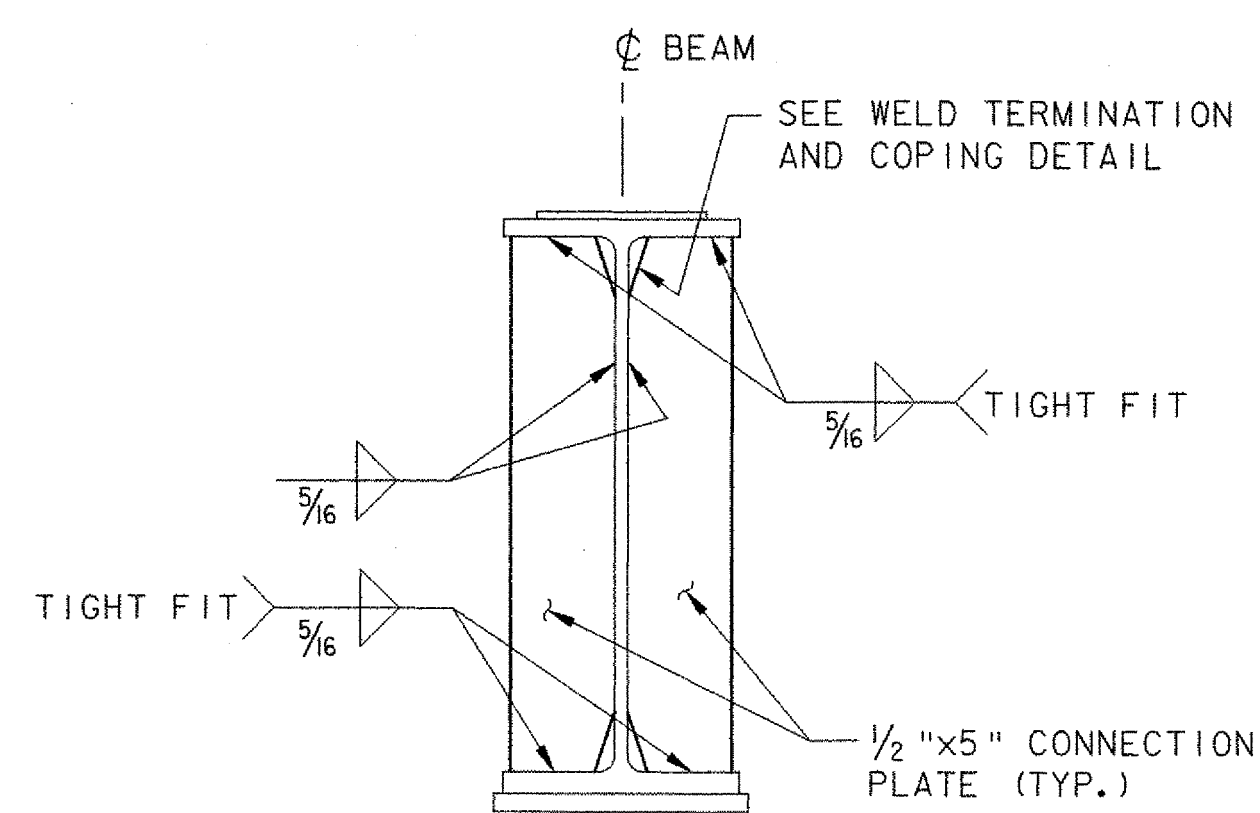
VHB Vanasse Hangen Brustlin, Inc.



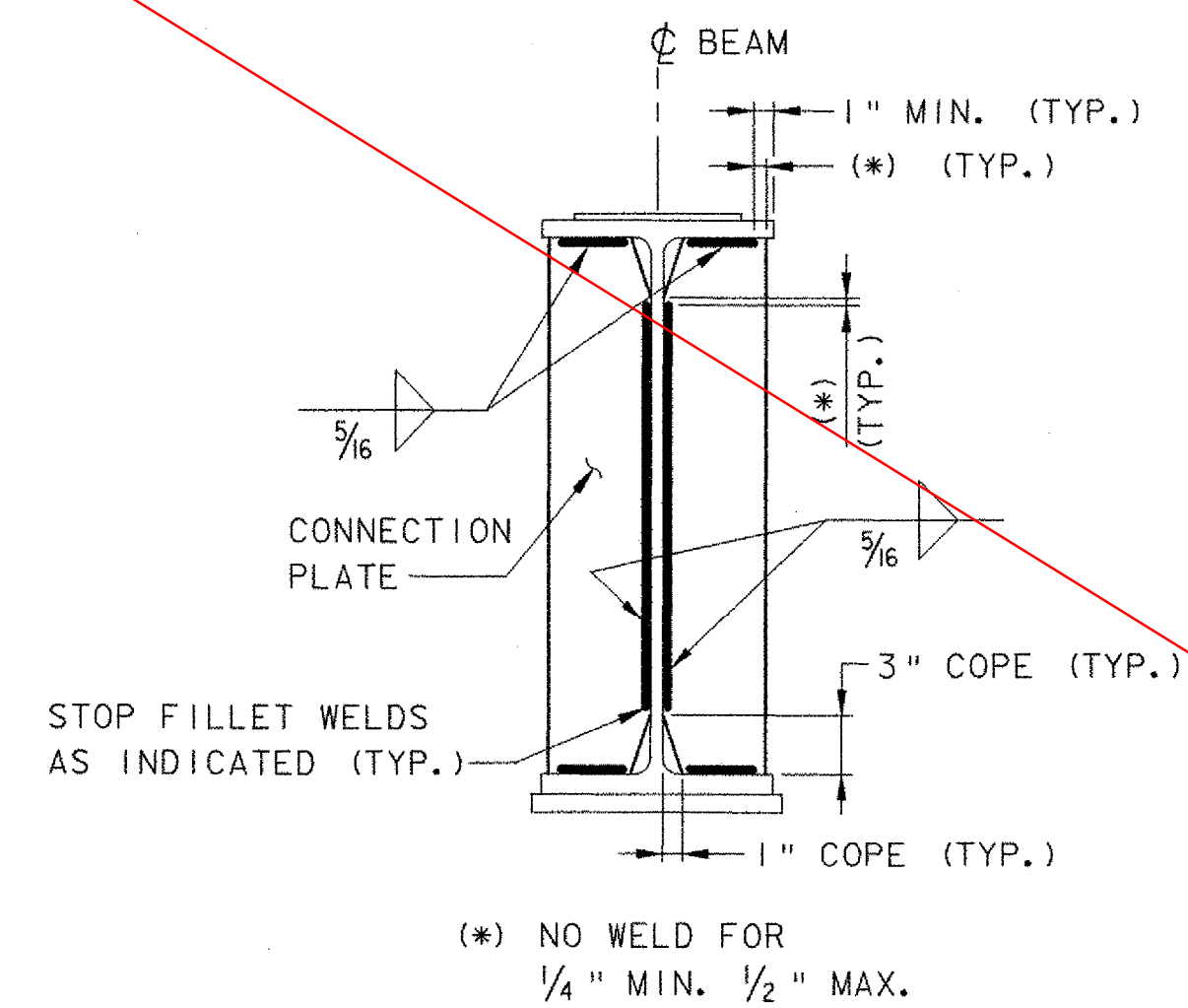
FRAMING PLAN
SCALE: 1/4" = 1'-0"



INTERMEDIATE DIAPHRAGM
NOT TO SCALE



INTERMEDIATE CONNECTION PLATE DETAIL
NOT TO SCALE



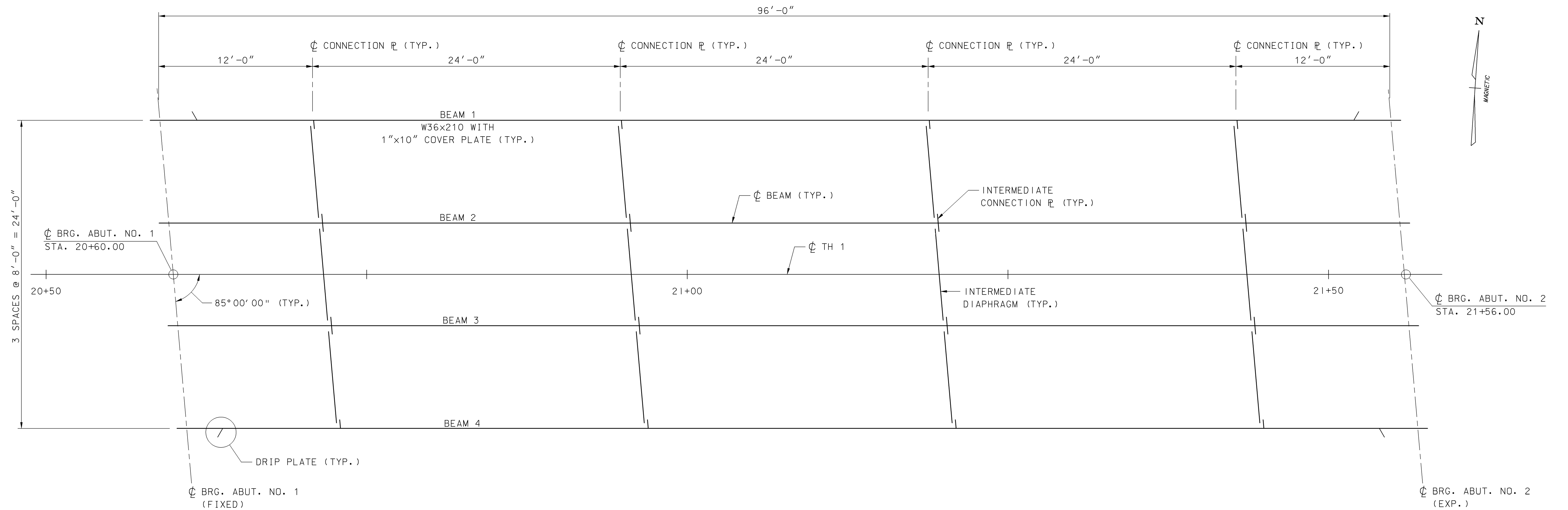
WELD TERMINATION AND COPING DETAIL
NOT TO SCALE

SEE SHEET 30R

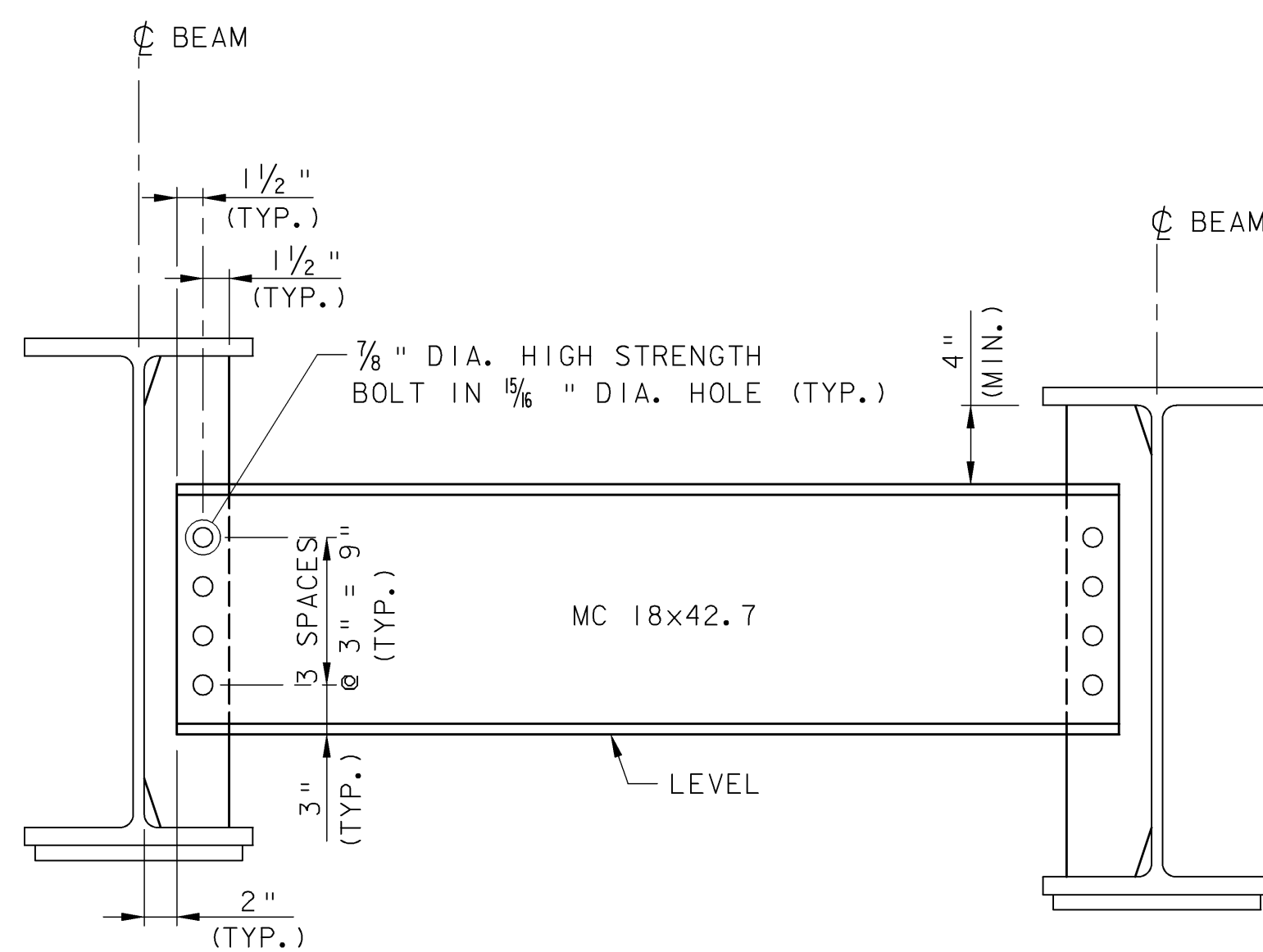
**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
FRAMING PLAN			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
K. R. CRAWFORD	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.	File No. 51335FRM	Sheet 30 of 42	

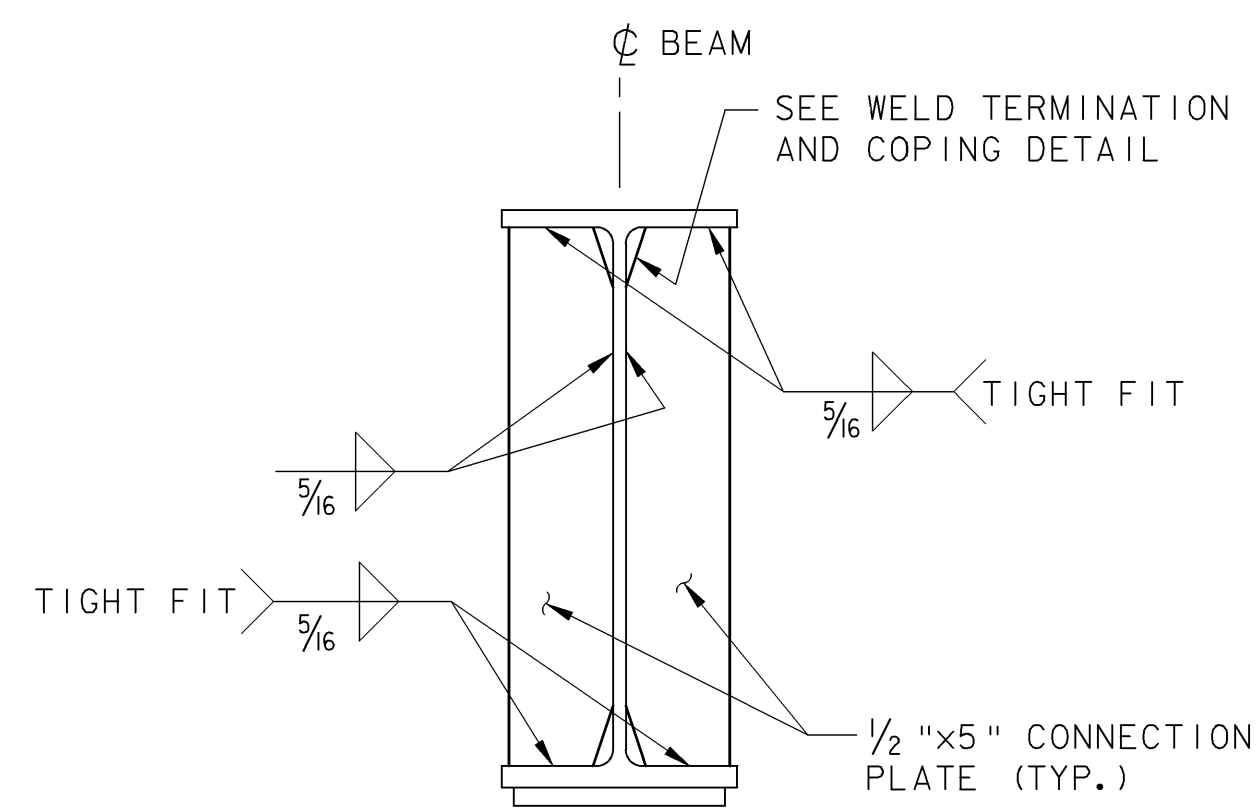
VHB Vanasse Hangen Brustlin, Inc.



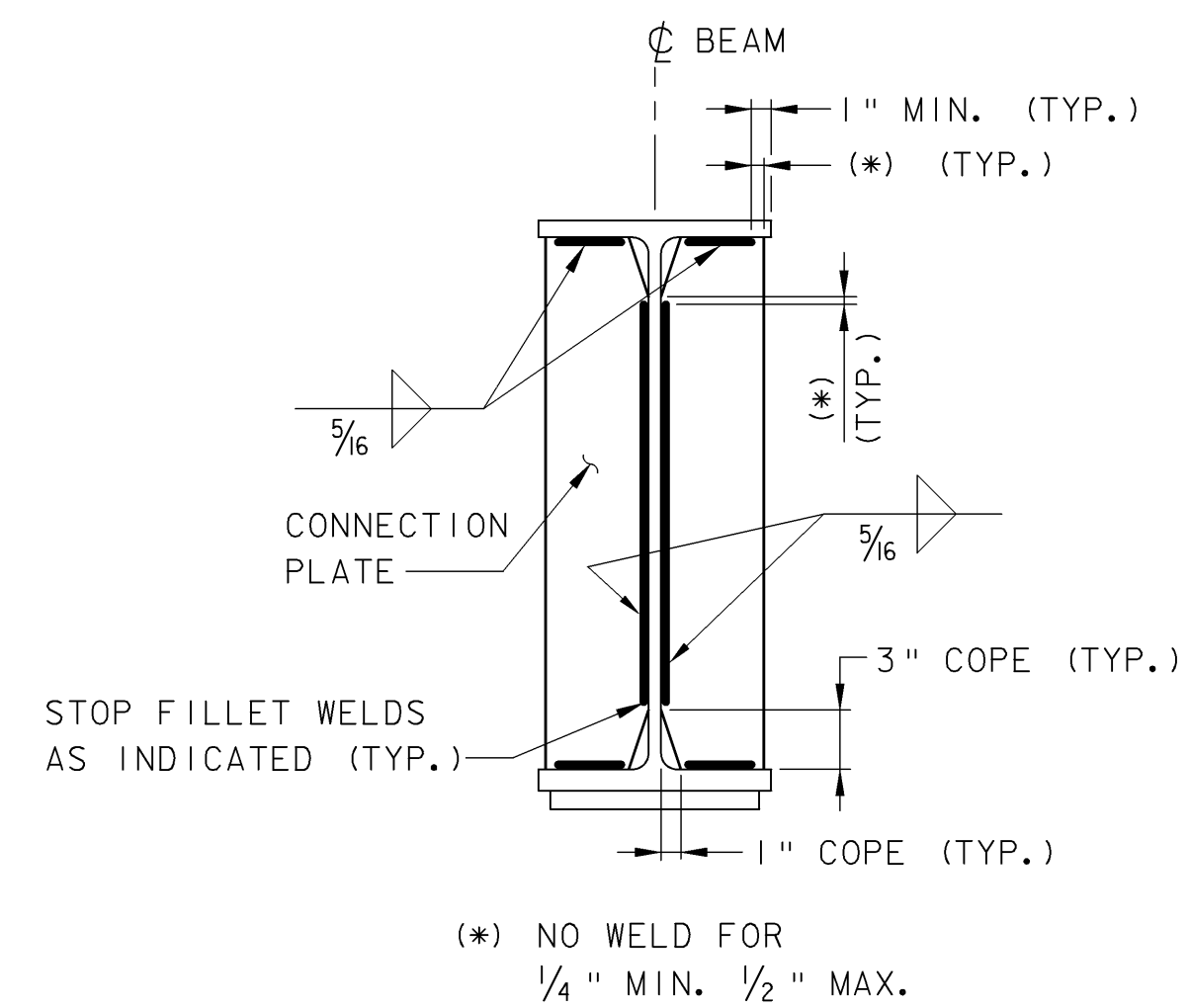
FRAMING PLAN
SCALE: 1/4" = 1'-0"



INTERMEDIATE DIAPHRAGM
NOT TO SCALE



INTERMEDIATE CONNECTION PLATE DETAIL
NOT TO SCALE

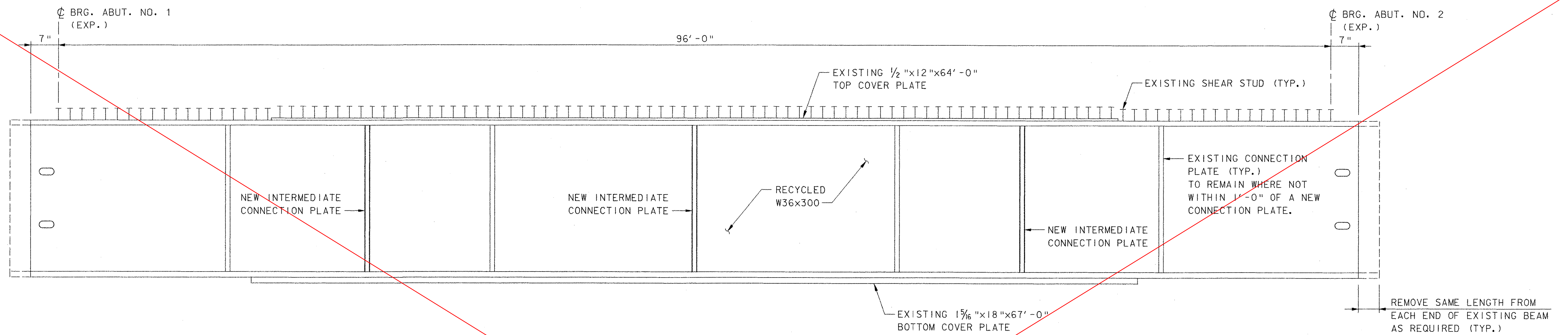


WELD TERMINATION AND COPING DETAIL
(COVER PLATE WELD NOT SHOWN)
NOT TO SCALE

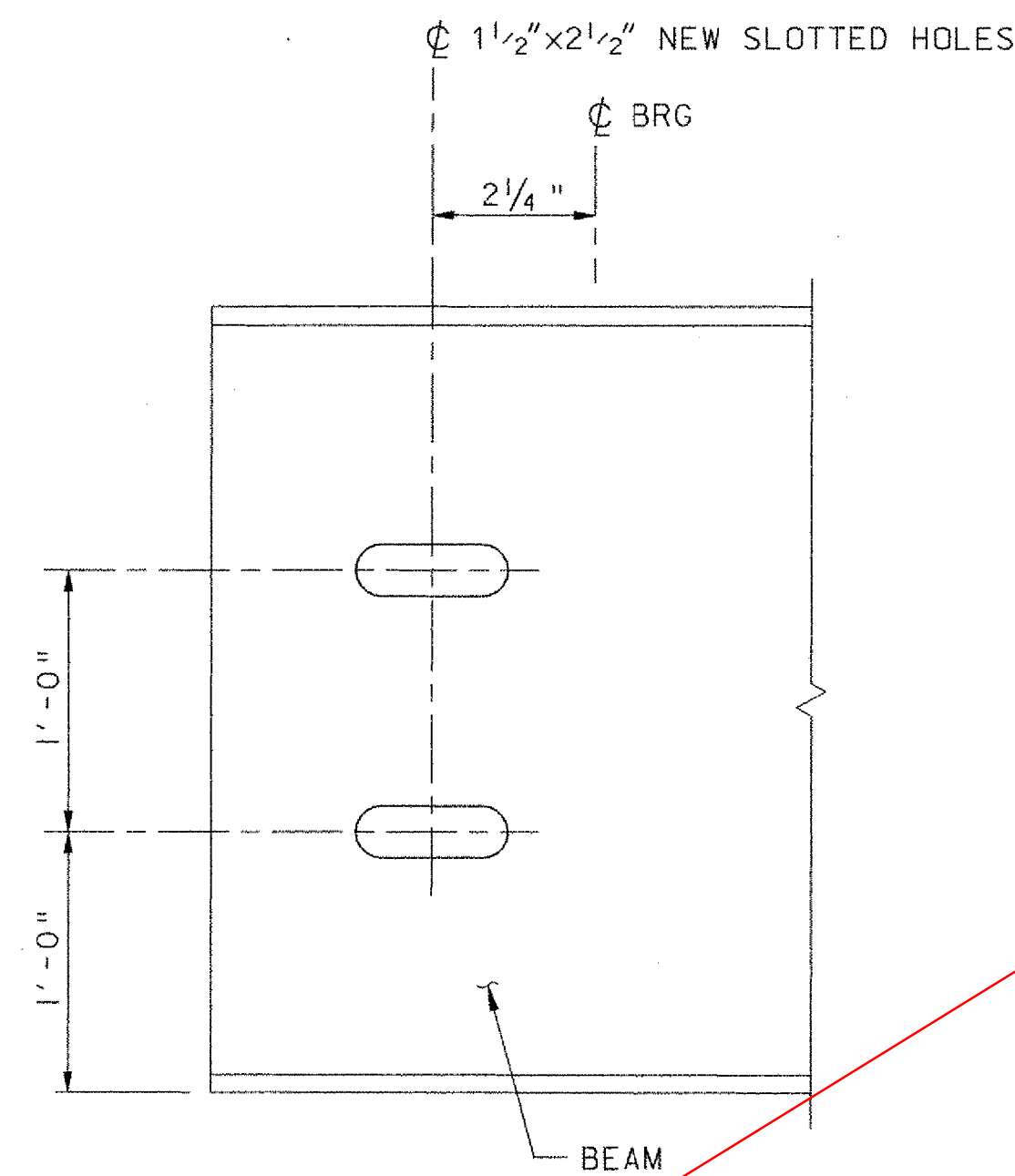
THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 30 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

- NOTE:**
- THE CENTERLINE TO CENTERLINE OF BEARING SHALL BE FIELD VERIFIED BEFORE SHOP DRAWINGS ARE COMPLETED.

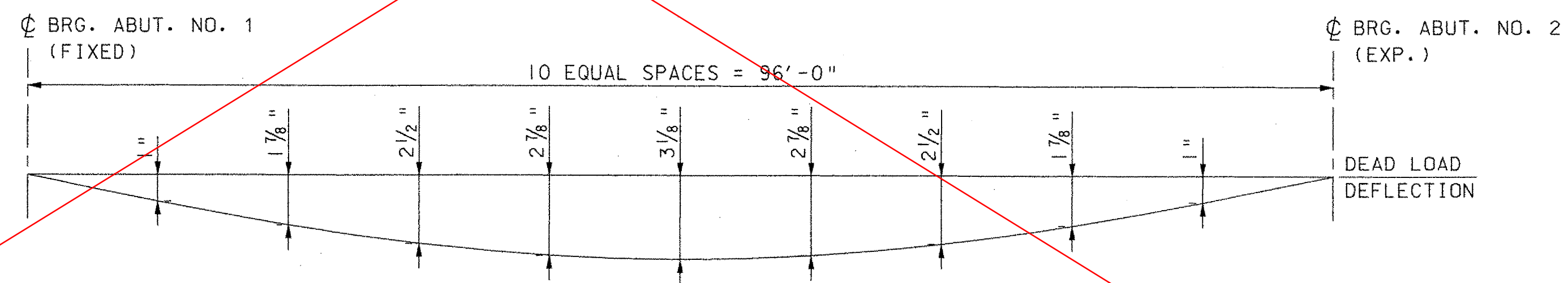
TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.
FRAMING PLAN		
Designed By	L. S. GARDNER	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
J. T. KLEIN	12/05	M. A. COLGAN Date 12/05
PROJECT	GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.	File No. 51335FRM	Sheet 30R of 42



BEAM ELEVATION
NOT TO SCALE



SLOTTED HOLE DETAIL
NOT TO SCALE



DEAD LOAD DEFLECTION DIAGRAM
NOT TO SCALE

SEE SHEET
31R

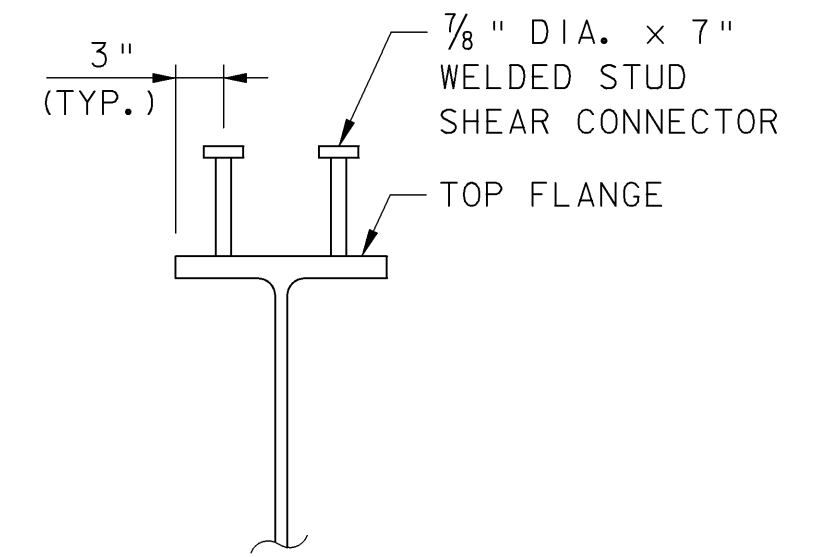
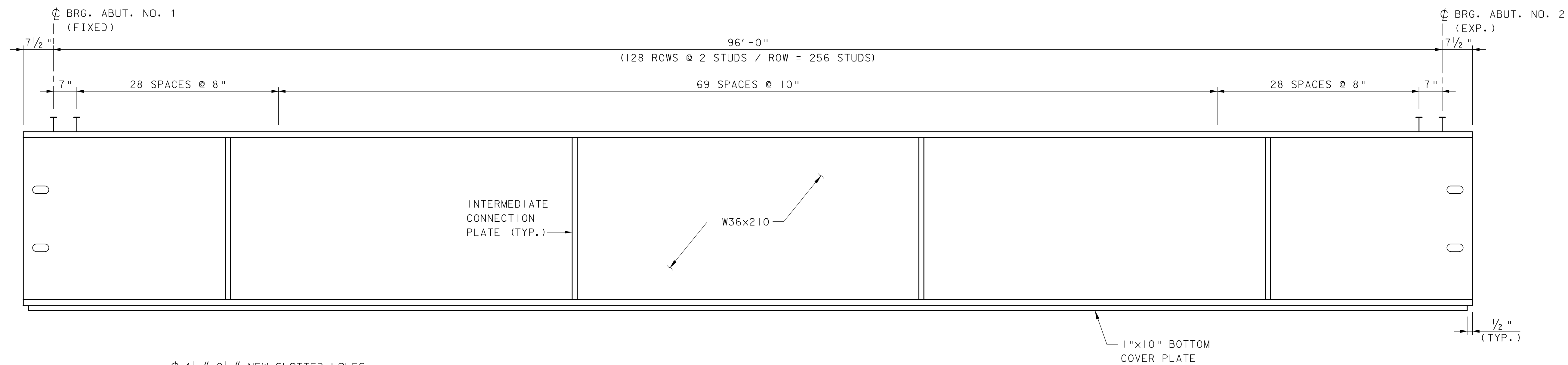
NOTES:

1. THE BEAMS FOR THIS PROJECT ARE "RECYCLED". SEE STRUCTURAL STEEL NOTES ON SHEET 26 AND SPECIAL PROVISIONS.
2. THE INFORMATION REGARDING THE BEAMS IS TAKEN FROM ORIGINAL PLANS. SEE GENERAL NOTE NO. 4 AND 6 ON SHEET 26.
3. ANY ONE LINE OF DIAPHRAGMS MAY BE SHIFTED BY UP TO TWO FEET IF THAT SHIFT WILL ELIMINATE THE NEED TO REMOVE EXISTING CONNECTION PLATES.
4. ACTUAL CAMBER OF THE BEAMS TO BE REUSED IS UNKNOWN.

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

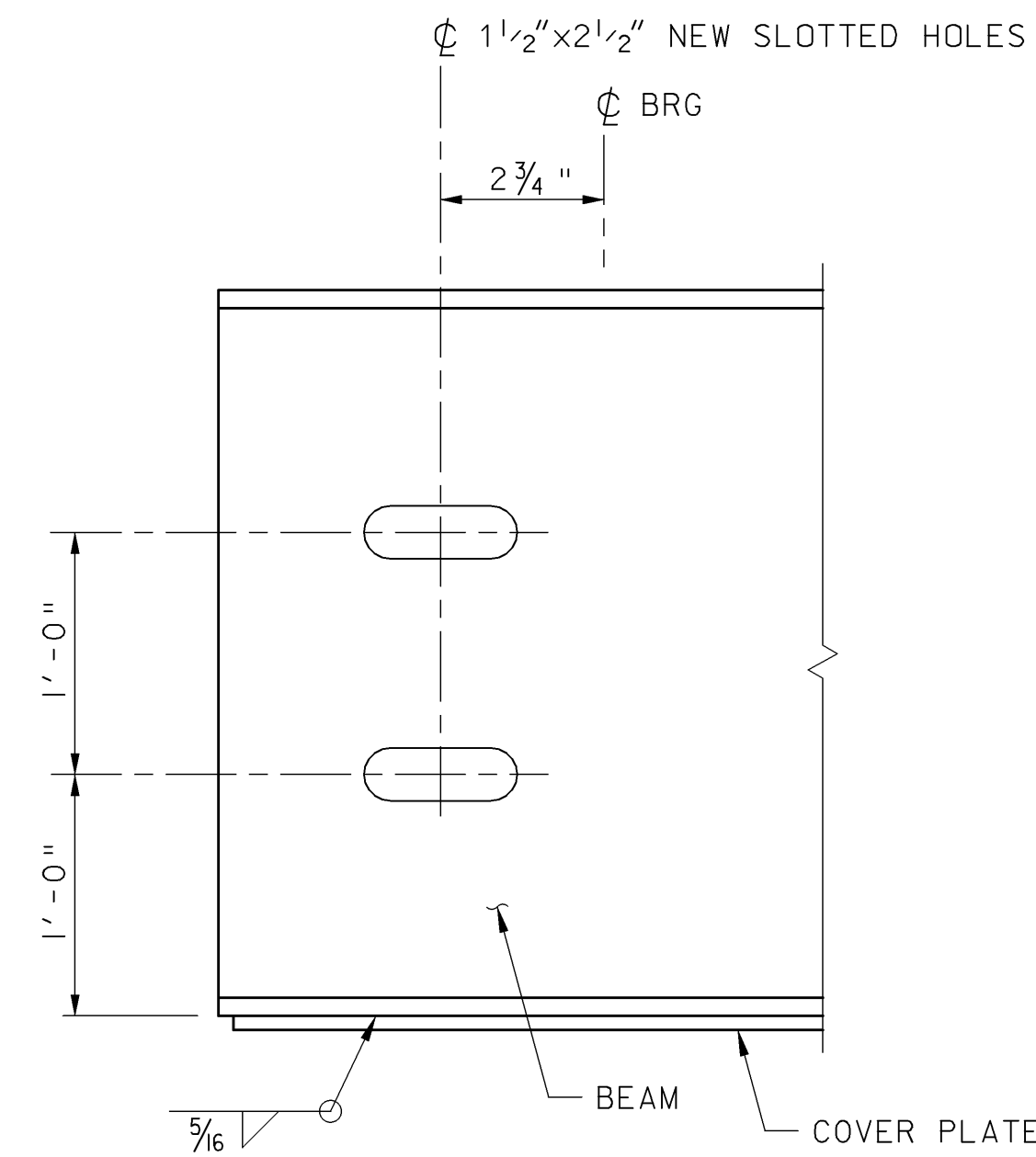
Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
BEAM ELEVATION			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
K. R. CRAWFORD	5/05	M. A. COLGAN	Date 5/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.			
File No.	51335BE	Sheet	31 of 42

VHB Vanasse Hangen Brustlin, Inc.



BEAM ELEVATION
NOT TO SCALE

SHEAR CONNECTOR DETAIL
NOT TO SCALE

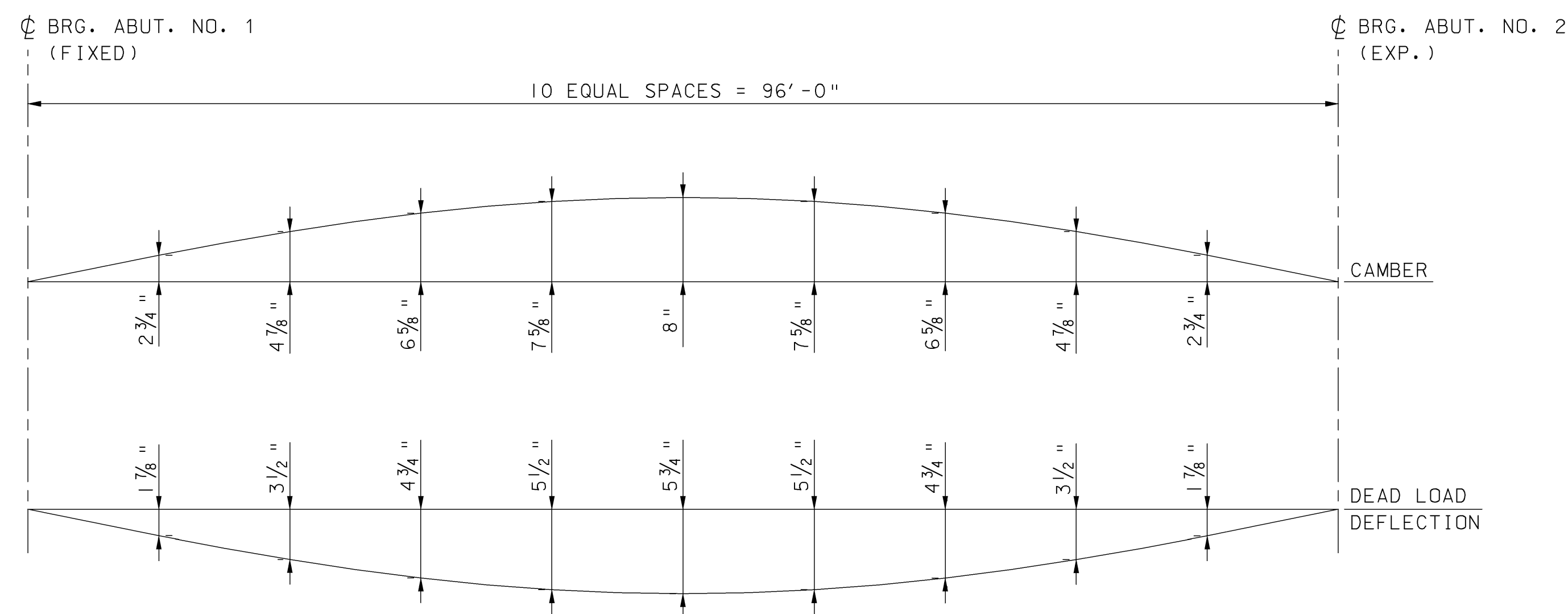


BEAM END DETAIL
NOT TO SCALE

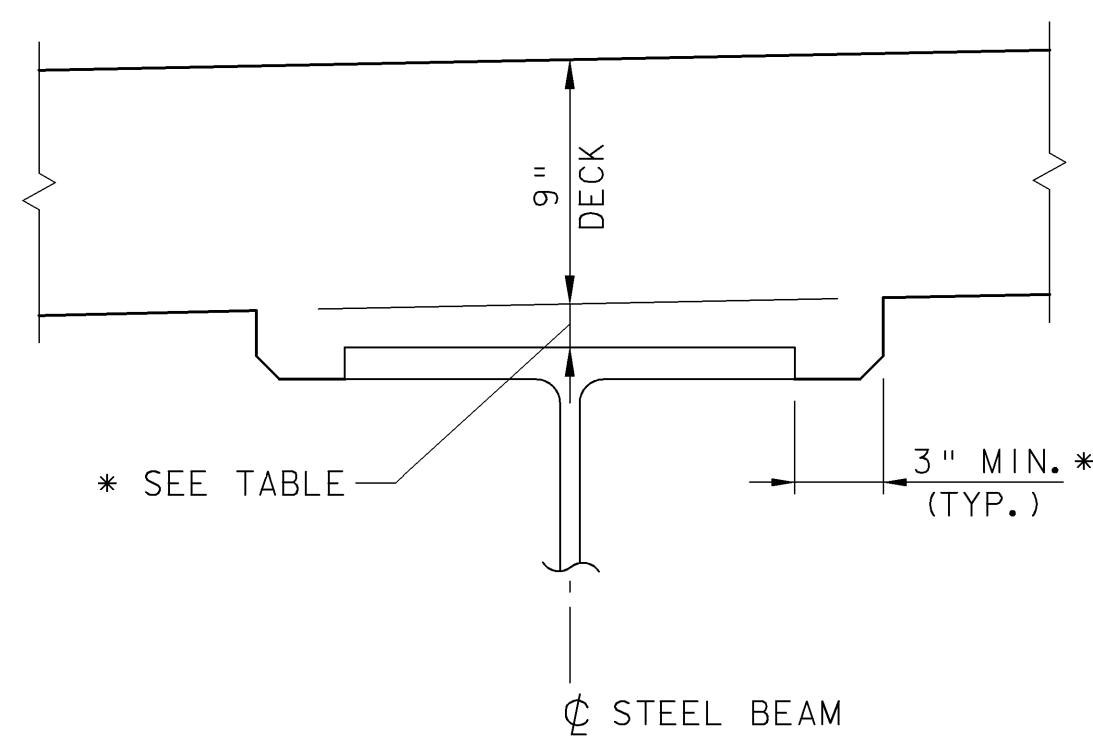
BEAM TENTH POINTS										
0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1"	2 1/8"	3 1/8"	3 7/8"	4 3/8"	4 1/2"	4 3/8"	3 7/8"	3 1/8"	2 1/8"	1"

**** ANTICIPATED HAUNCH DEPTHS**

** TABLE INDICATES ANTICIPATED HAUNCH DEPTHS REQUIRED TO REDUCE BEAM CAMBER AS REQUESTED BY THE CONTRACTOR FOR CHANGE ORDER NO. 2. ACTUAL HAUNCH DEPTHS SHALL BE DETERMINED IN THE FIELD AS APPROVED BY THE RESIDENT ENGINEER.



DEAD LOAD DEFLECTION AND CAMBER DIAGRAM
NOT TO SCALE



TYPICAL HAUNCH DETAIL
NOT TO SCALE

STRUCTURAL STEEL NOTES:

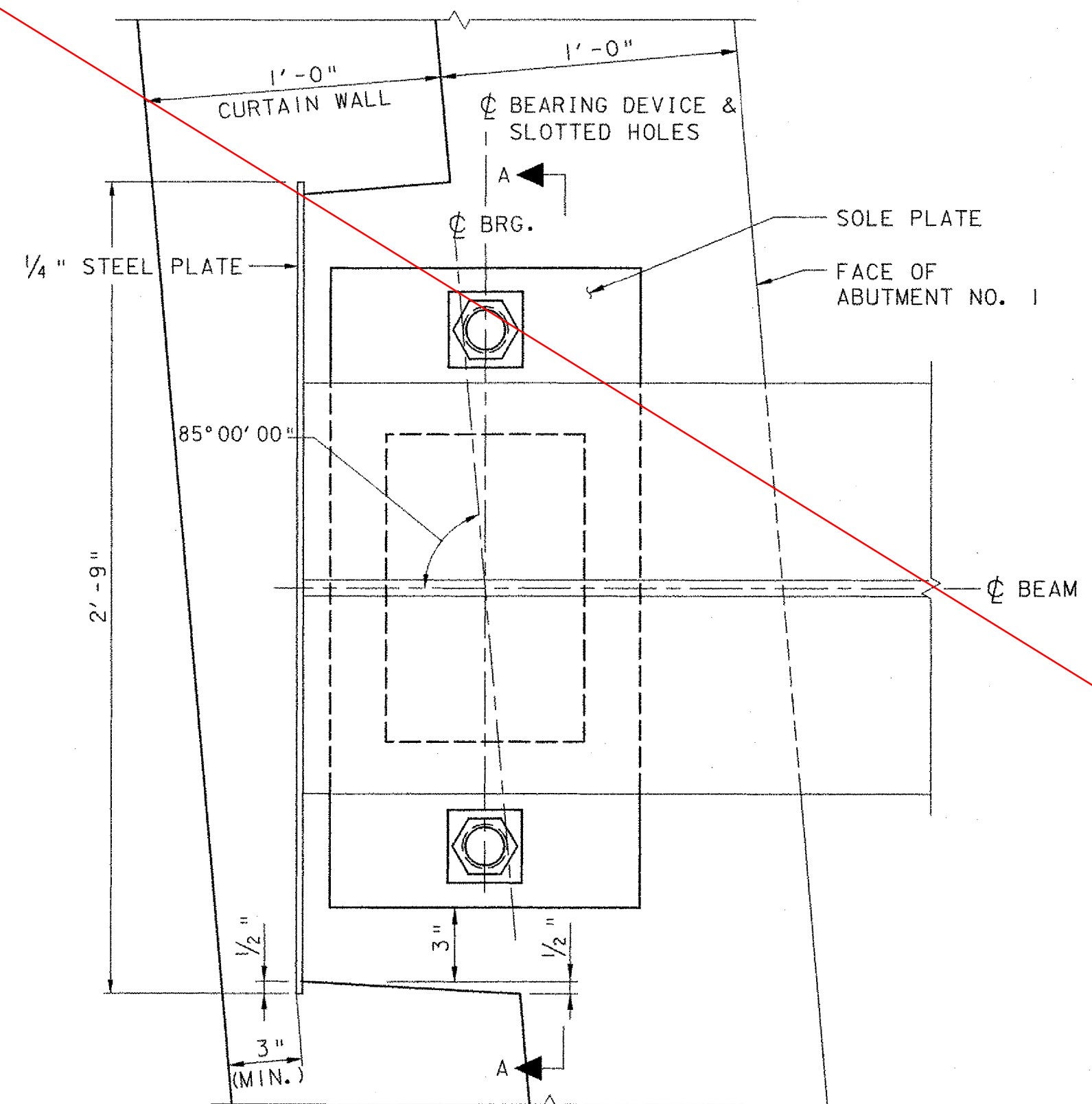
- ALL STRUCTURAL STEEL COMPONENTS SHALL BE AASHTO M 270, GRADE 50W UNLESS OTHERWISE NOTED.
- ALL BOLTED FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH BOLTS IN 15/16" DIAMETER HOLES UNLESS OTHERWISE NOTED.
- CONNECTIONS NOT DESIGNED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE RESIDENT ENGINEER FOR APPROVAL.
- AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF BEAM WILL BE TAKEN BY THE RESIDENT ENGINEER FOR USE IN DETERMINING THE FINAL GRADE AND HAUNCH DEPTHS.
- ANY HOLES IN BEAM WEBS NOT OTHERWISE FILLED SHALL BE FITTED WITH BUTTON HEAD OR HEX HEAD BOLTS CONFORMING TO AASHTO M 164, TYPE 3.
- CHANGE ORDER NO. 2, ITEM 900.545, SUPPLEMENTAL AGREEMENT (506.75, STRUCTURAL STEEL (NEW STEEL)) SHALL INCLUDE ALL NEW BEAMS, COVER PLATES, DIAPHRAGMS, CONNECTION PLATES, BEARING BLOCKOUT PLATES, AND ALL NEW CONNECTIONS.
- THE CENTERLINE TO CENTERLINE OF BEARINGS SHALL BE FIELD VERIFIED BEFORE SHOP DRAWINGS ARE COMPLETED.
- THE ENDS OF THE BEAMS SHALL BE VERTICAL UNDER DEAD LOAD.
- SHEAR STUDS SHALL BE FIELD WELDED USING AUTOMATICALLY TIMED STUD WELDING EQUIPMENT.

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

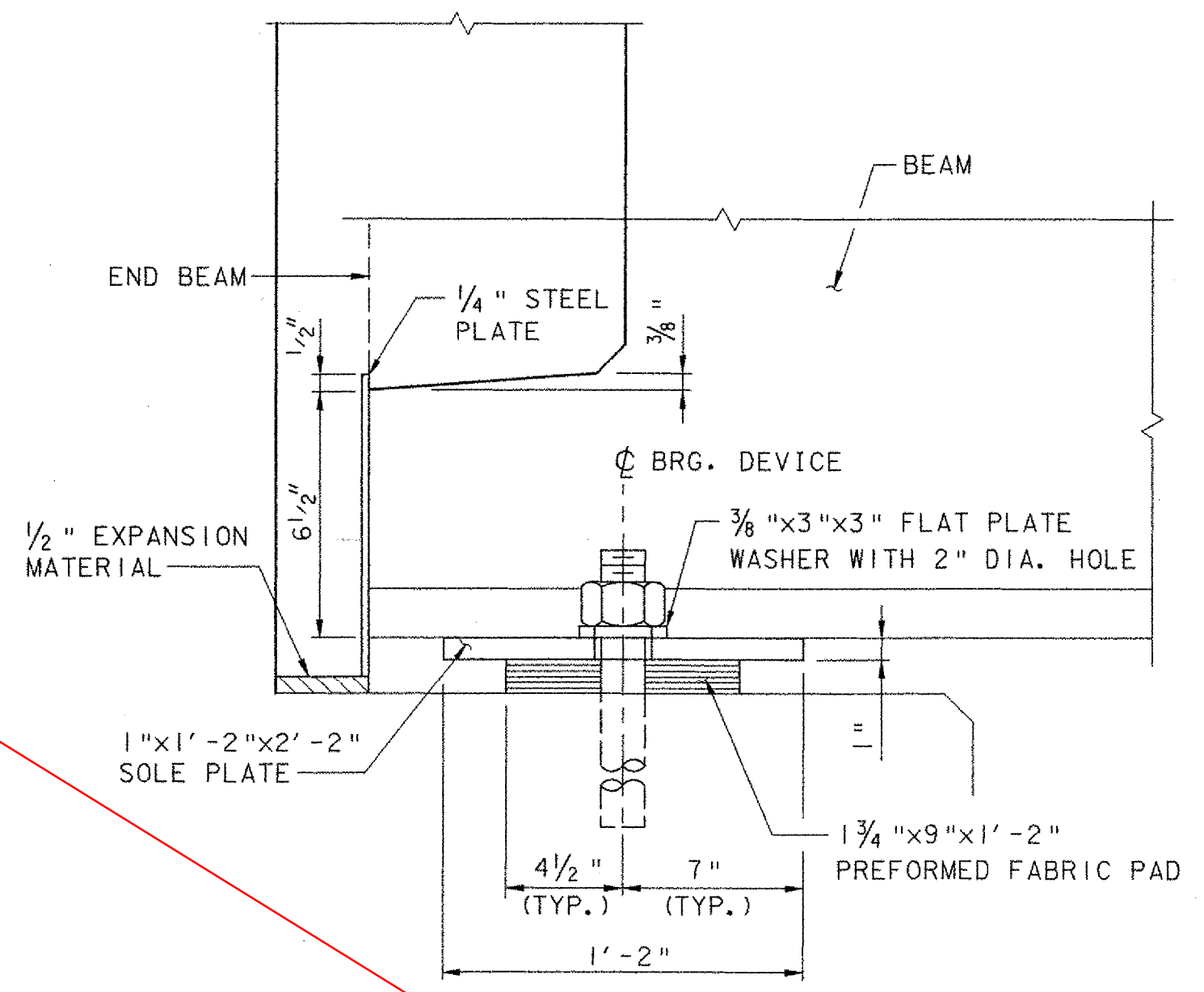
Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER			
BEAM ELEVATION			
Designed By	L. S. GARDNER	Drawn By	B. J. MASSE
Checked By	J. T. KLEIN	Date	12/05
		Bridge Design Supervisor	M. A. COLGAN Date 12/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.	File No. 51335BE	Sheet	31R of 42

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 31 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2. SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

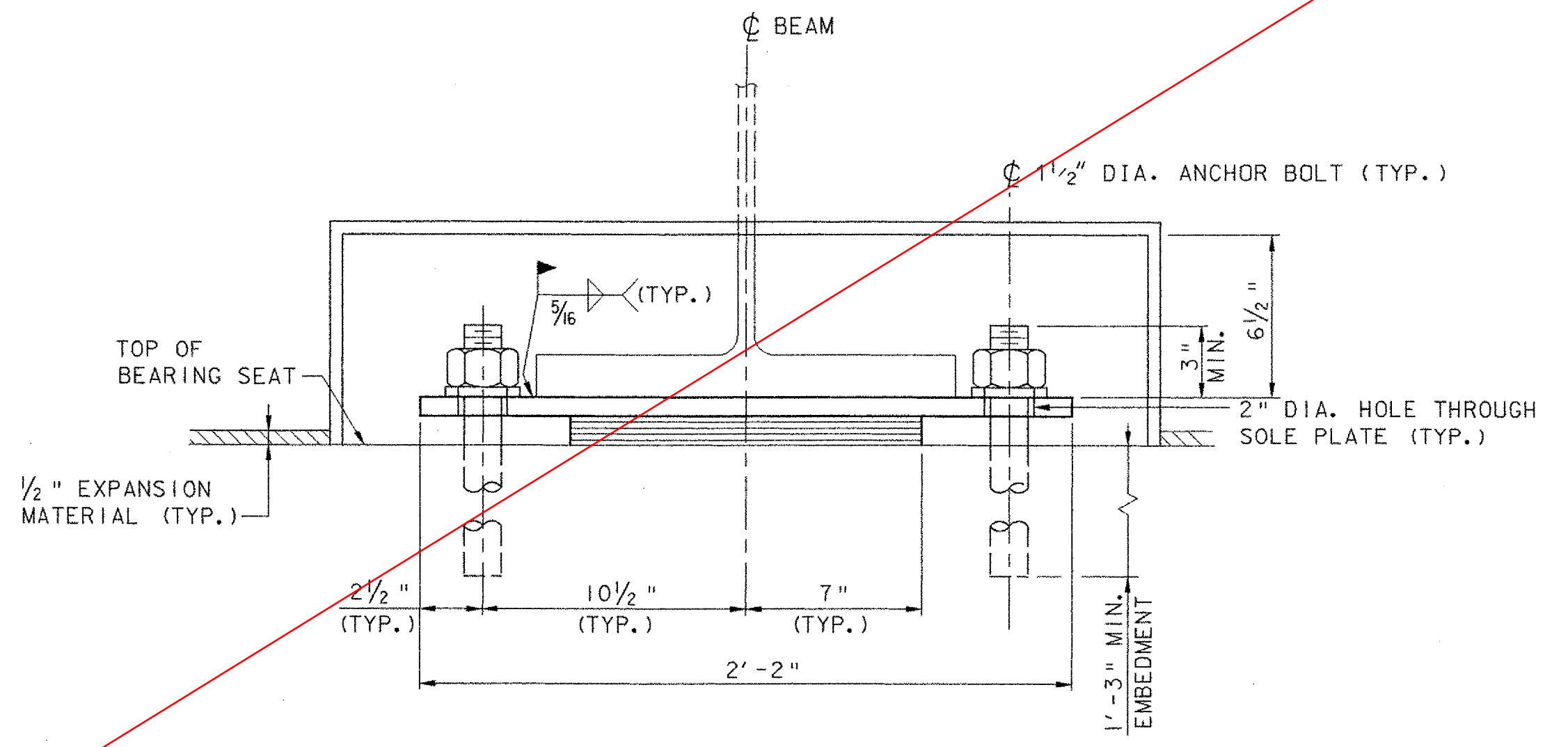
* THE 3" HORIZONTAL EXTENSION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR VERTICAL HAUNCHES IF APPROVED BY THE STRUCTURES ENGINEER. ANY HOLES RESULTING FROM THIS FORMING SYSTEM SHALL BE FILLED WITH MORATR, TYPE IV. ALL COSTS SHALL BE INCIDENTAL TO CONCRETE PAY ITEM.



PLAN



ELEVATION



SECTION A-A

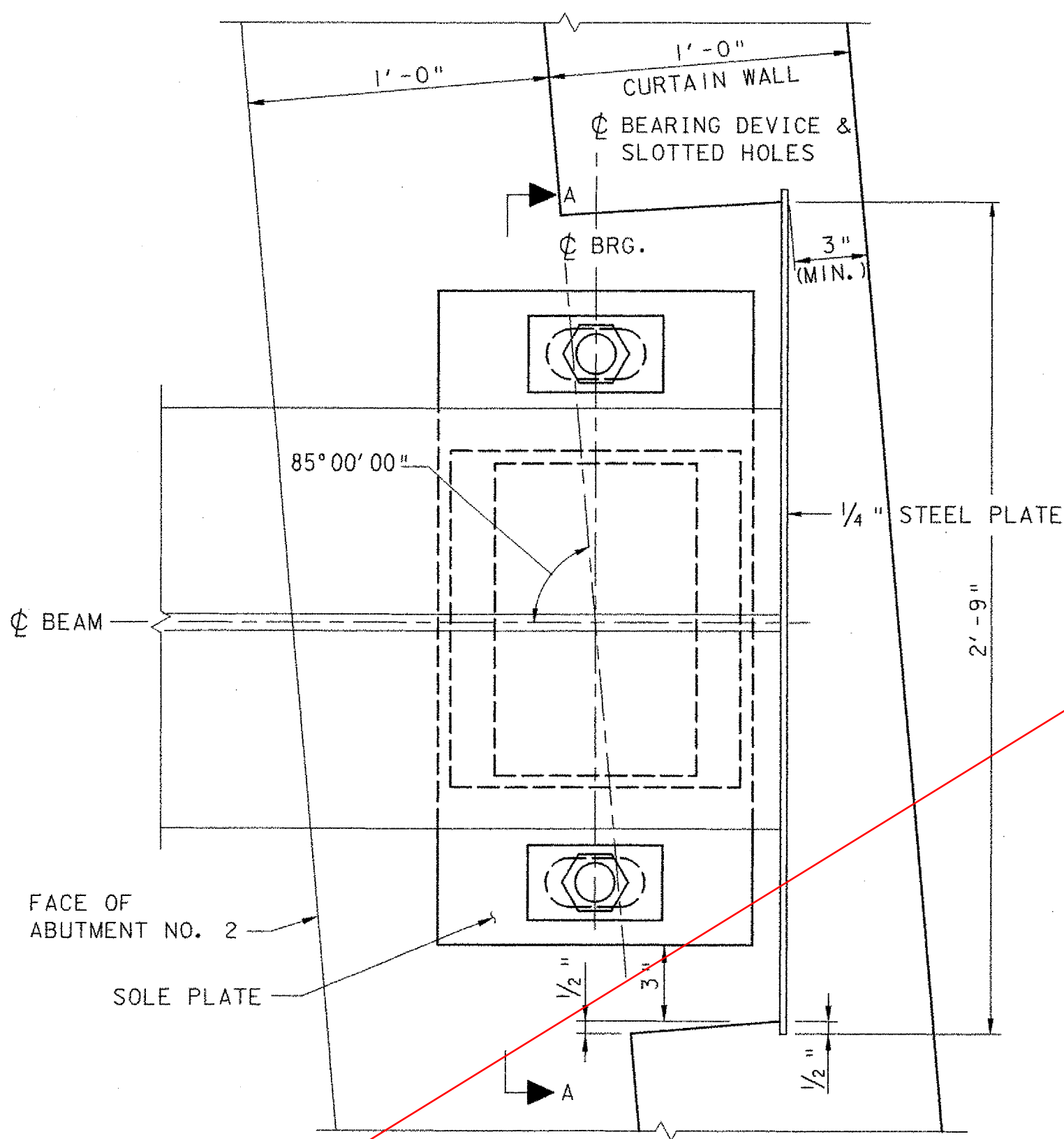
FIXED BEARING (ABUTMENT NO. 1)

NOT TO SCALE

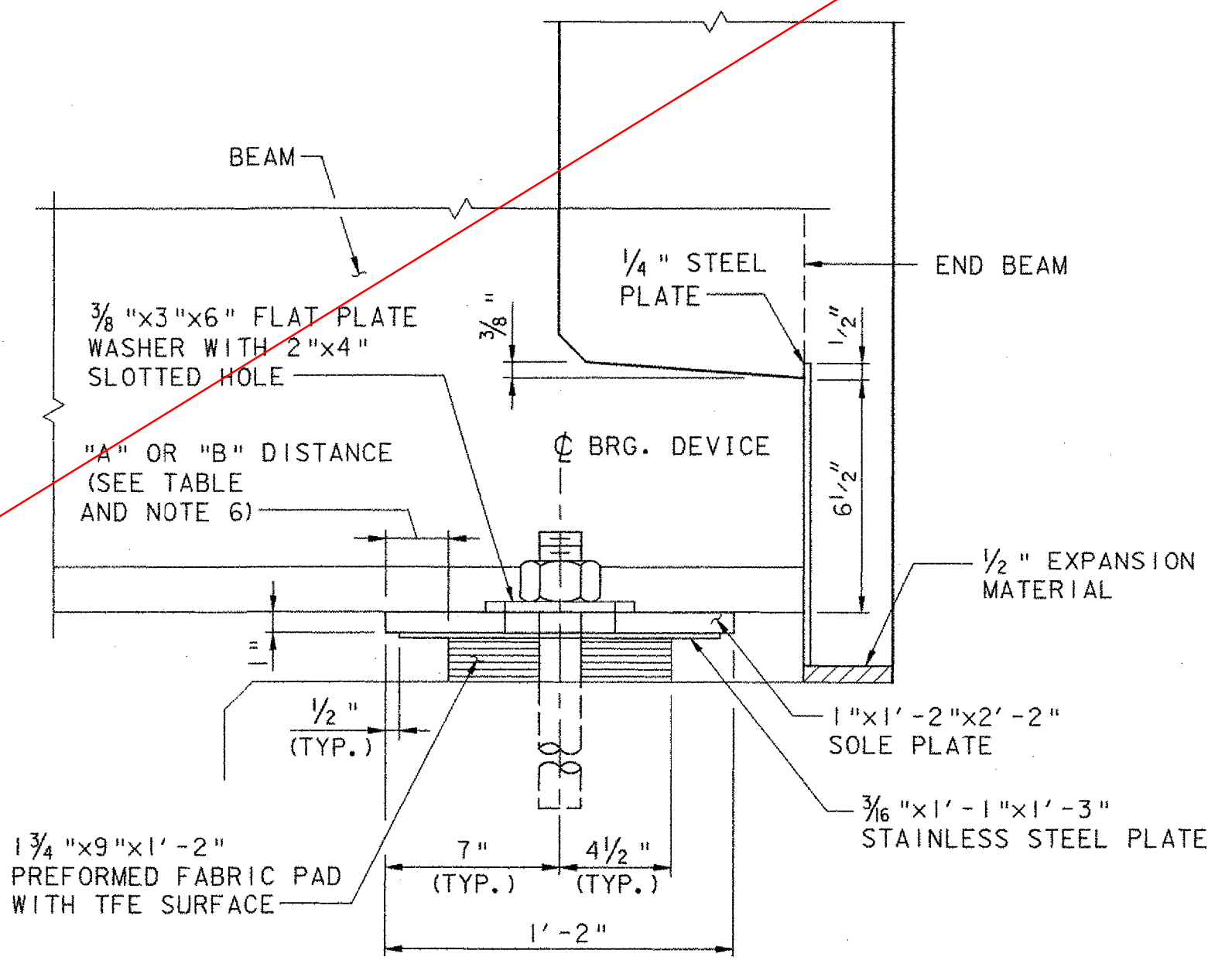
TEMPERATURE ADJUSTMENT TABLE		
TEMPERATURE	"A"	"B"
-30°F	3"	3 1/4"
-15°F	3"	3 1/4"
0°F	2 7/8"	3 1/8"
15°F	2 3/4"	3"
30°F	2 3/8"	2 7/8"
45°F	2 1/2"	2 3/4"
60°F	2 3/8"	2 5/8"
75°F	2 1/4"	2 1/2"
90°F	2 1/8"	2 3/8"
105°F	2"	2 1/4"
120°F	2"	2 1/4"

BEARING NOTES:

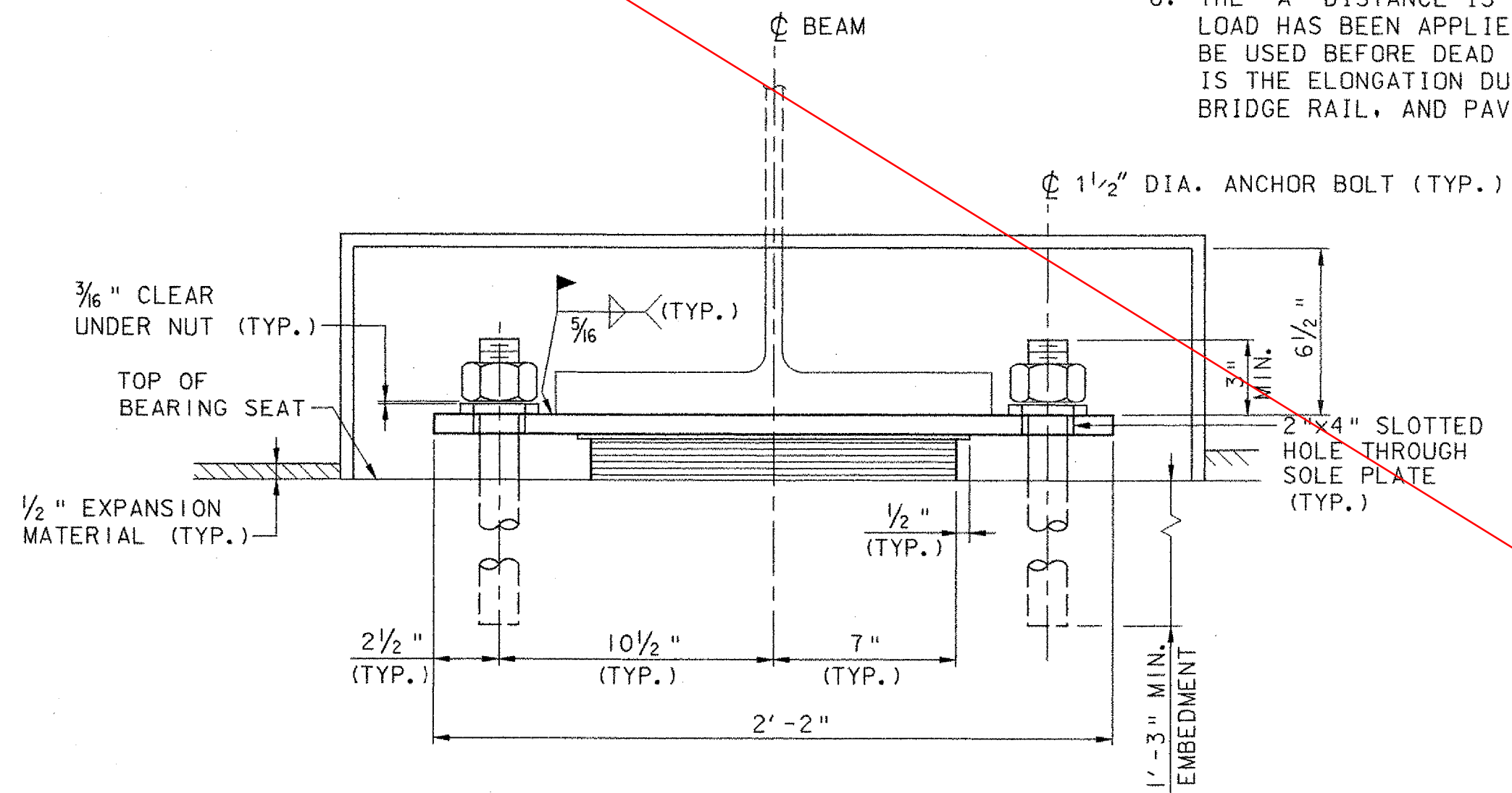
1. PREFORMED FABRIC PAD DESIGN CRITERIA:
 MAXIMUM ALLOWABLE BEARING PRESSURE ON CONCRETE = 1000 PSI
 MINIMUM ALLOWABLE DESIGN ROTATION = 0.015 RADIAN.
 HORIZONTAL CAPACITY SHALL BE A MINIMUM OF 6% VERTICAL LOAD
 DESIGN LOAD PER BEARING: ABUTMENTS: 120 KIPS
2. BEARINGS SHALL BE PAID AS ITEM 531.10, BEARING DEVICE ASSEMBLY.
3. ALL STEEL IN BEARING DEVICES (EXCEPT STAINLESS) SHALL BE AASHTO M 270, GRADE 36.
4. ANCHOR BOLTS SHALL BE DRILLED AND SET WITH A MINIMUM OF 1'-3" EMBEDMENT INTO CONCRETE. HOLES SHALL BE 2 3/4" IN DIAMETER AND BOLTS SHALL BE SET IN TYPE IV MORTAR. ALL COSTS TO BE INCLUDED UNDER ITEM 531.10, BEARING DEVICE ASSEMBLY.
5. ANCHOR BOLTS SHALL BE SWEDGED WITH 5" OF THREAD. EXPANSION BEARING NUTS ARE TO BE DRAWN UP FINGER TIGHT AND THEN BACKED OFF 1/8". THREADS SHALL BE BURRED ABOVE NUT TO PREVENT NUT REMOVAL.
6. THE "A" DISTANCE IS THE SOLE PLATE ADJUSTMENT TO BE USED AFTER THE DEAD LOAD HAS BEEN APPLIED. THE "B" DISTANCE IS THE SOLE PLATE ADJUSTMENT TO BE USED BEFORE DEAD LOAD IS ADDED TO THE BEAM SELFWEIGHT. THE DIFFERENCE IS THE ELONGATION DUE TO DEAD LOAD DEFLECTION OF THE SLAB, BRUSH CURB, BRIDGE RAIL, AND PAVEMENT.



PLAN



ELEVATION



SECTION A-A

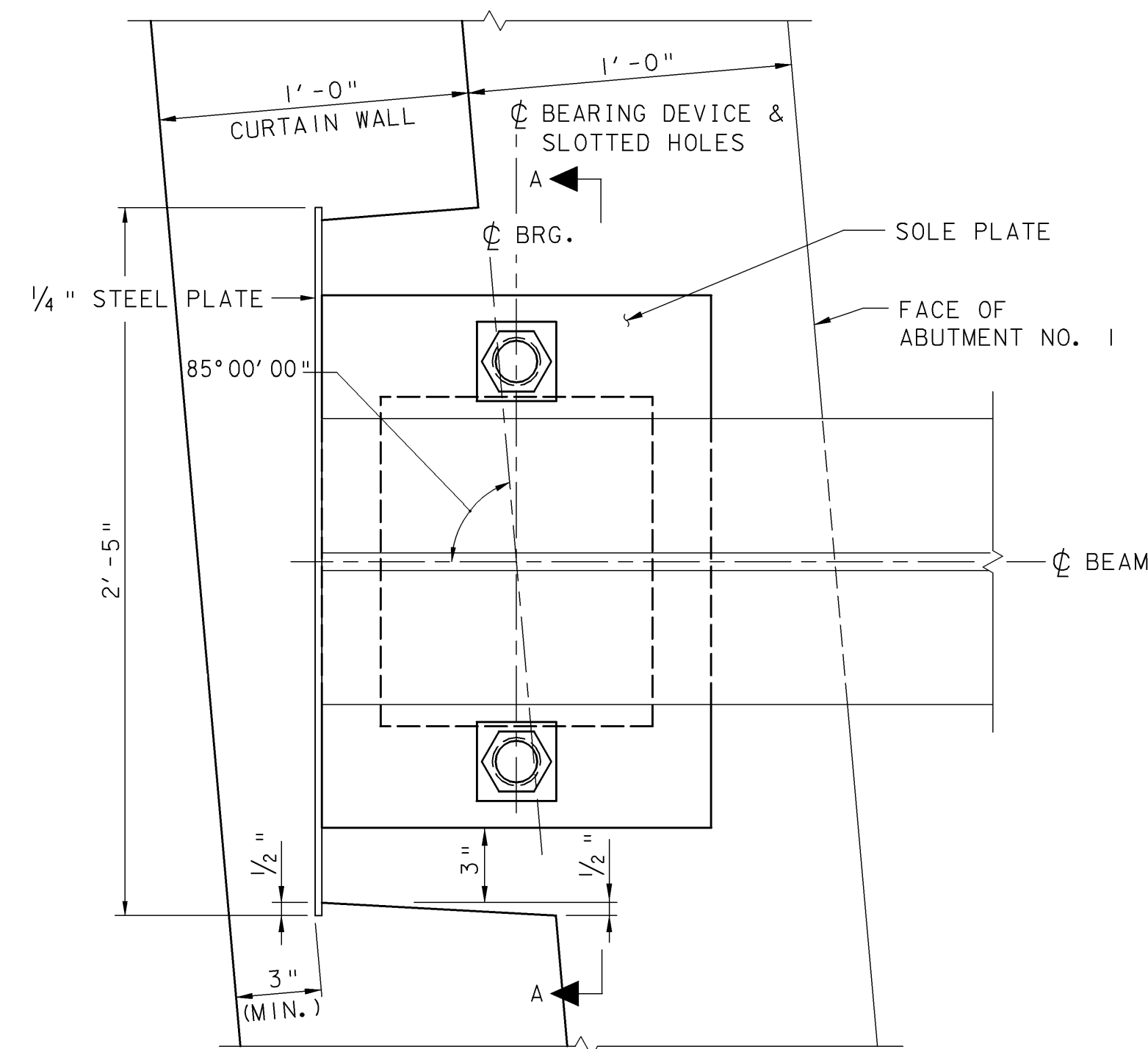
EXPANSION BEARING (ABUTMENT NO. 2)

NOT TO SCALE

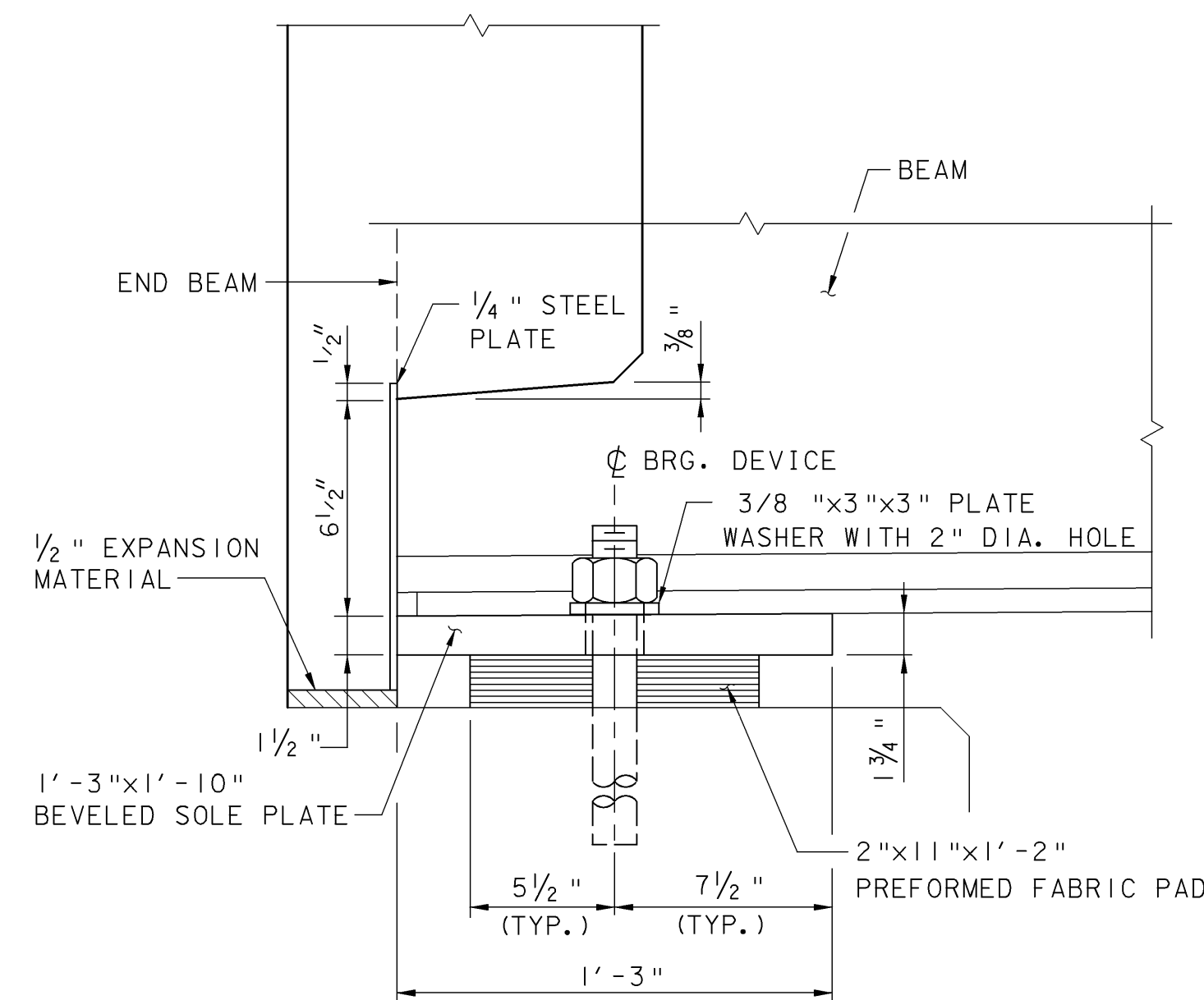
SEE SHEET 32R

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
BEARING DETAILS		
Designed By	J. T. KLEIN	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
K. G. KRETSCH	5/05	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.		
File No. 51335BRG		Sheet 32 of 42

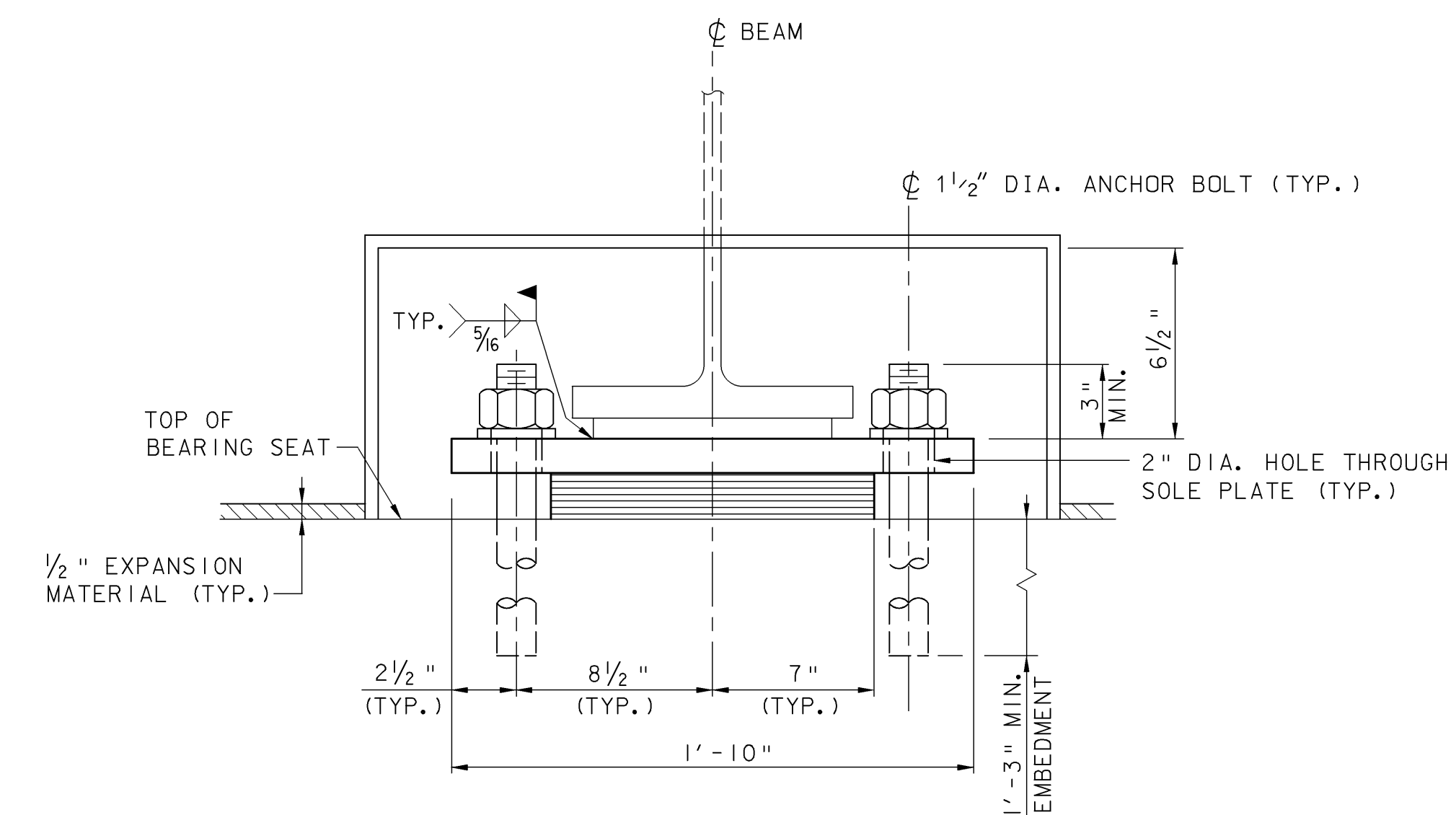
VHB Vanasse Hangen Brustlin, Inc.



PLAN



ELEVATION



SECTION A-A

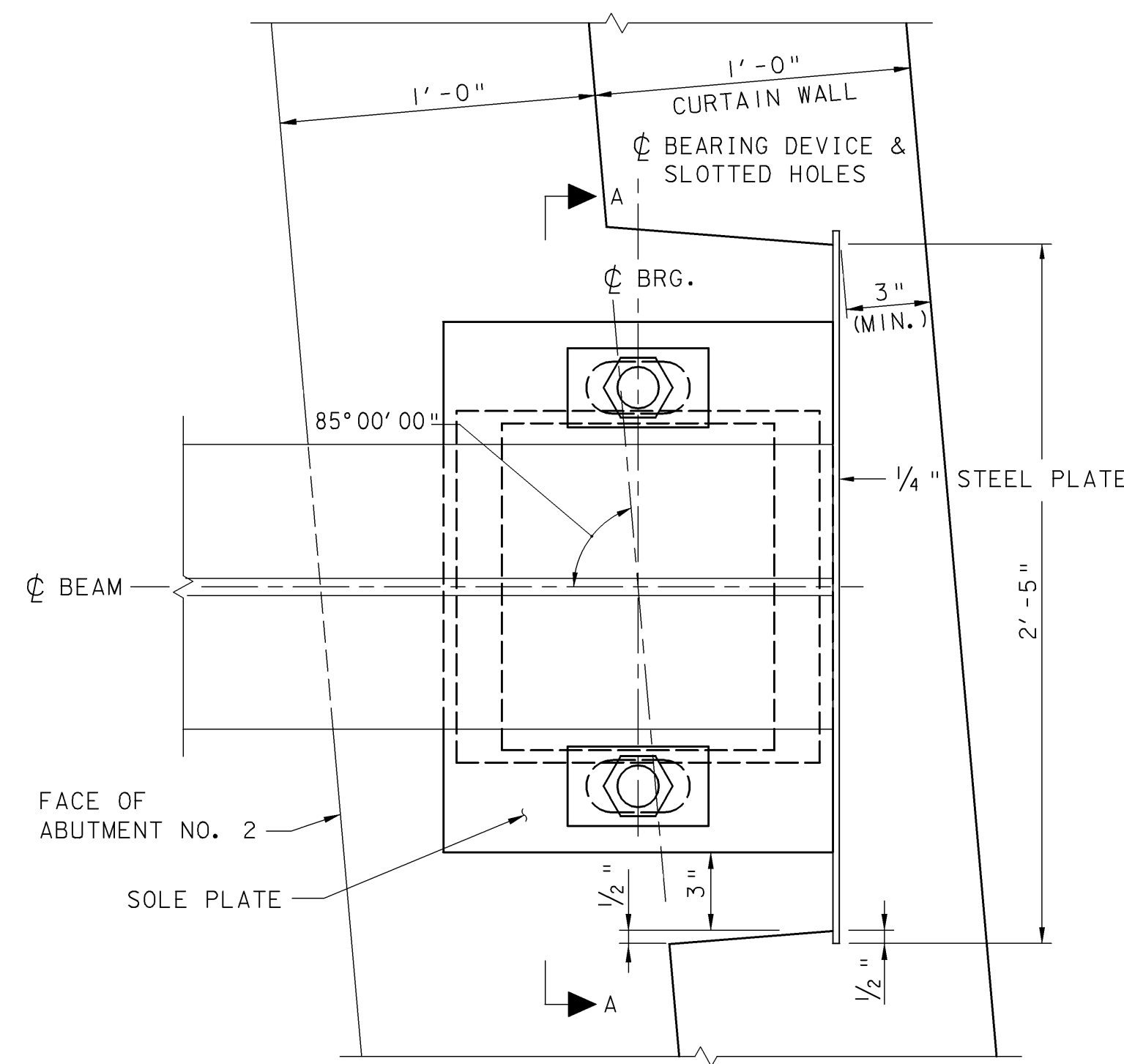
FIXED BEARING (ABUTMENT NO. 1)

NOT TO SCALE

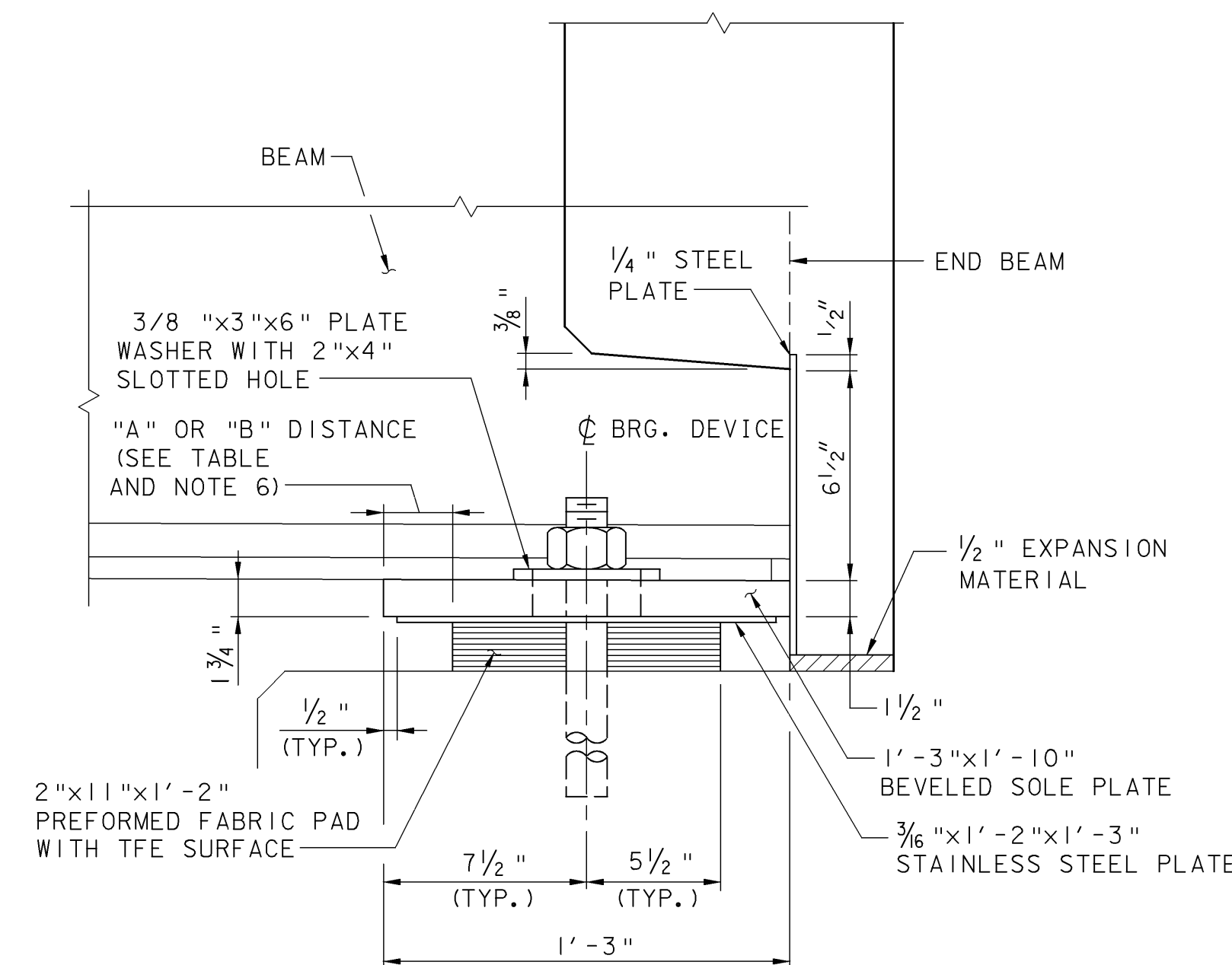
TEMPERATURE ADJUSTMENT TABLE		
TEMPERATURE	"A"	"B"
-30°F	3"	3 3/8"
-15°F	3"	3 5/8"
0°F	2 7/8"	3 1/2"
15°F	2 3/4"	3 3/8"
30°F	2 5/8"	3 1/4"
45°F	2 1/2"	3 1/8"
60°F	2 3/8"	3"
75°F	2 1/4"	2 7/8"
90°F	2 1/8"	2 3/4"
105°F	2"	2 5/8"
120°F	2"	2 3/8"

BEARING NOTES:

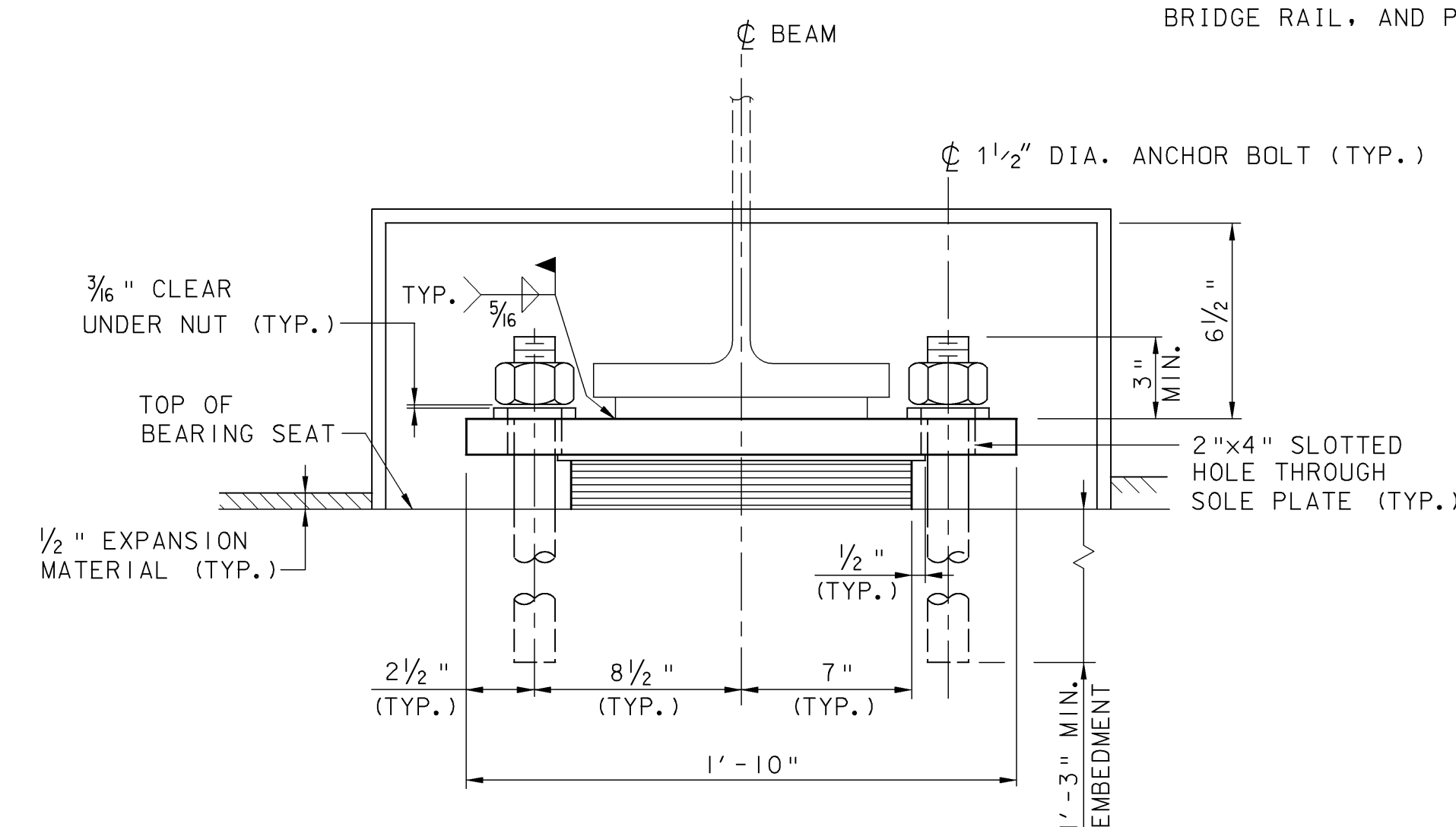
- PREFORMED FABRIC PAD DESIGN CRITERIA:
 MAXIMUM ALLOWABLE BEARING PRESSURE ON CONCRETE = 1000 PSI
 MINIMUM ALLOWABLE DESIGN ROTATION = 0.015 RADIAN.
 HORIZONTAL CAPACITY SHALL BE A MINIMUM OF 6% VERTICAL LOAD
 DESIGN LOAD PER BEARING: 150 KIPS
- BEARINGS SHALL BE PAID AS ITEM 531.10, BEARING DEVICE ASSEMBLY.
- ALL STEEL IN BEARING DEVICES (EXCEPT STAINLESS) SHALL BE AASHTO M 270, GRADE 36.
- ANCHOR BOLTS SHALL BE DRILLED AND SET WITH A MINIMUM OF 1'-3" EMBEDMENT INTO CONCRETE. HOLES SHALL BE 2 3/4" IN DIAMETER AND BOLTS SHALL BE SET IN TYPE IV MORTAR. ALL COSTS TO BE INCLUDED UNDER ITEM 531.10, BEARING DEVICE ASSEMBLY.
- ANCHOR BOLTS SHALL BE SWEDGED WITH 5" OF THREAD. EXPANSION BEARING NUTS ARE TO BE DRAWN UP FINGER TIGHT AND THEN BACKED OFF 1/8". THREADS SHALL BE BURRED ABOVE NUT TO PREVENT NUT REMOVAL.
- THE "A" DISTANCE IS THE SOLE PLATE ADJUSTMENT TO BE USED AFTER THE DEAD LOAD HAS BEEN APPLIED. THE "B" DISTANCE IS THE SOLE PLATE ADJUSTMENT TO BE USED BEFORE DEAD LOAD IS ADDED TO THE BEAM SELFWEIGHT. THE DIFFERENCE IS THE ELONGATION DUE TO DEAD LOAD DEFLECTION OF THE SLAB, BRUSH CURB, BRIDGE RAIL, AND PAVEMENT.



PLAN



ELEVATION



SECTION A-A

EXPANSION BEARING (ABUTMENT NO. 2)

NOT TO SCALE

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 32 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

**TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE**

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
		Surv. Sta.	

TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER

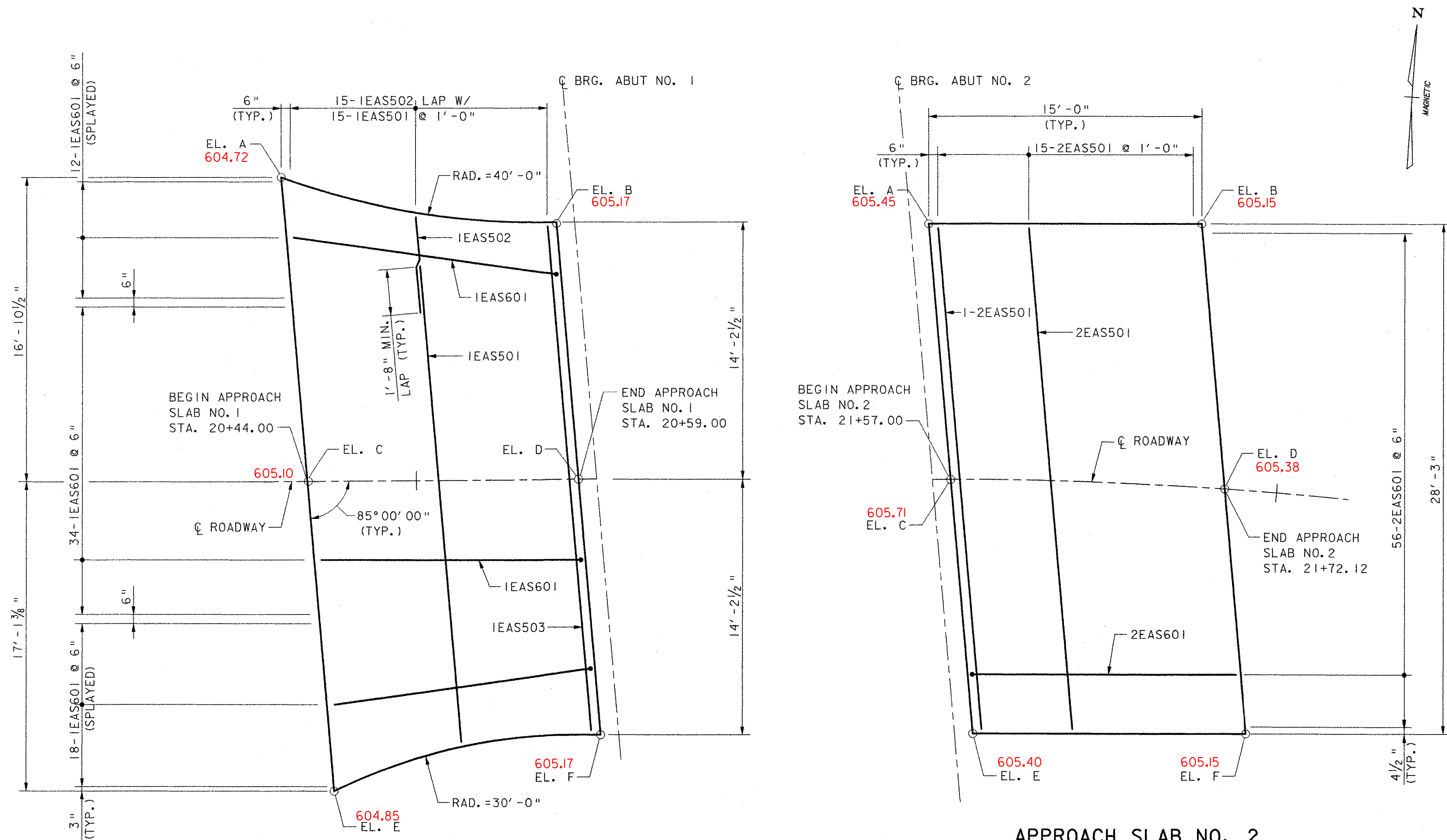
BEARING DETAILS

Designed By	L. S. GARDNER	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
J. T. KLEIN	12/05	M. A. COLGAN	Date 12/05

PROJECT	GRAFTON	PROJECT NO.	TH2-0104
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I.G.C. Info.		Sheet	32R of 42
File No.	51335BRG		

VHB Vanasse Hangen Brustlin, Inc.

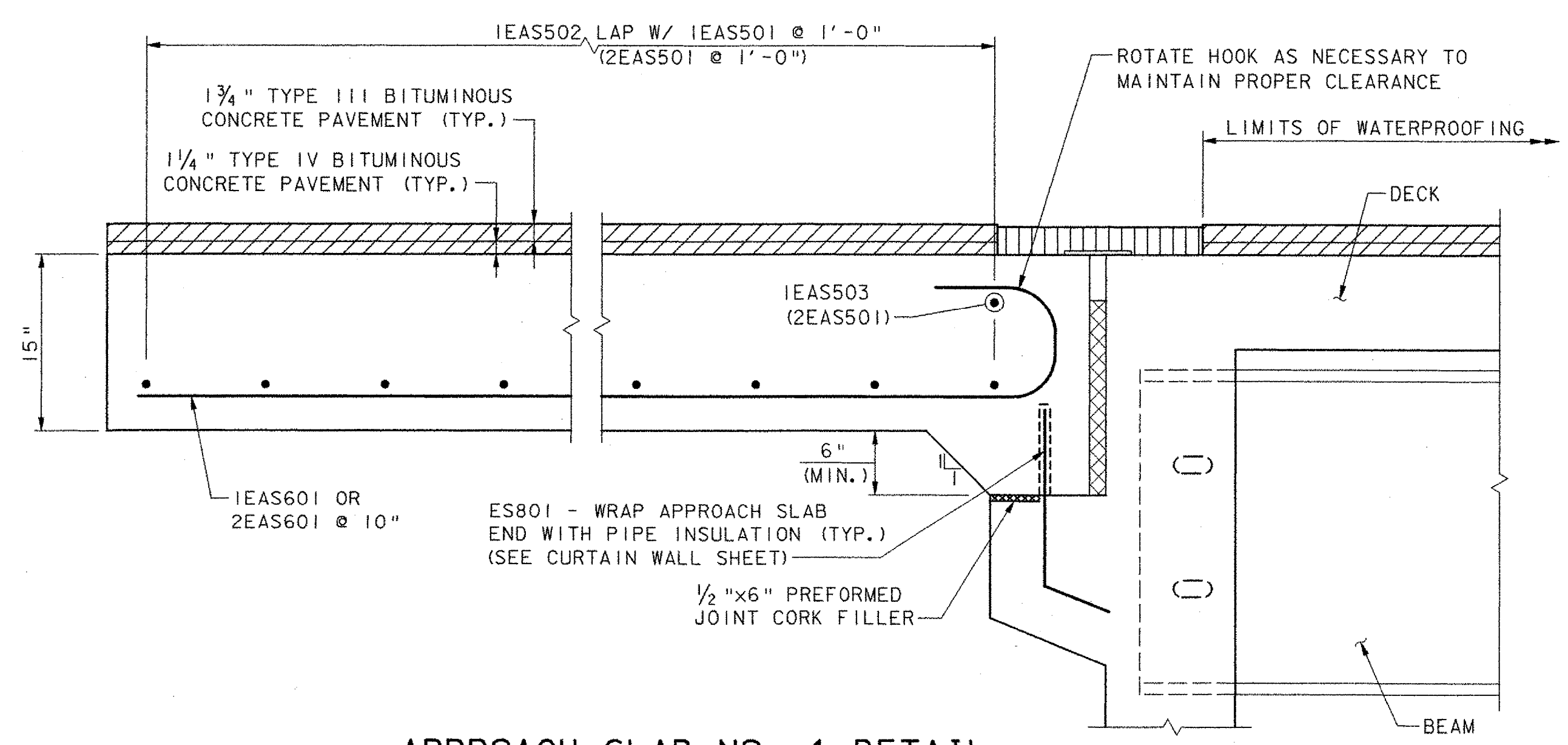


TOP OF APPROACH SLAB ELEVATIONS		
EL.	SLAB NO. 1	SLAB NO. 2
A	604.72	605.45
B	605.17	605.15
C	605.10	605.71
D	605.48	605.38
E	605.17	605.40
F	604.85	605.37
	605.17	605.15

APPROACH SLAB NO. 1
SCALE: 1/4" = 1'-0"

APPROACH SLAB NO. 2
SCALE: 1/4" = 1'-0"

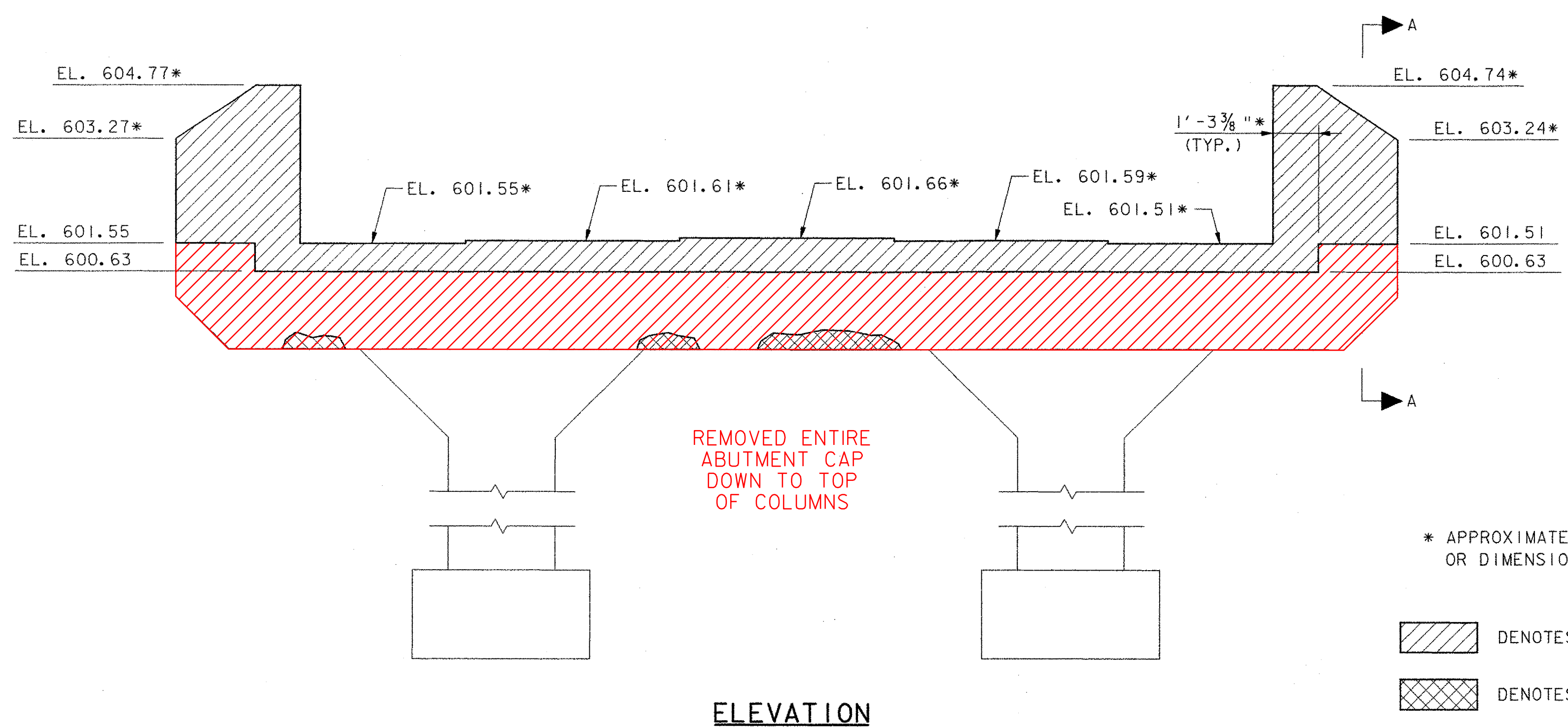
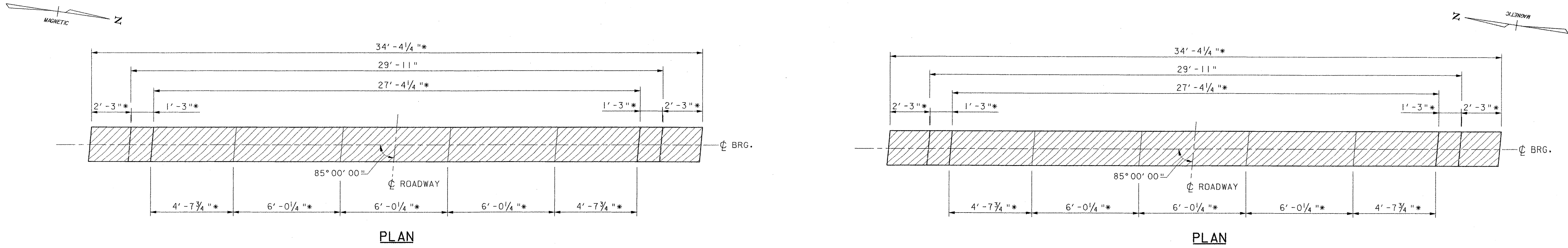
KEY
 N.F. = NEAR FACE
 F.F. = FAR FACE
 E.F. = EACH FACE
 ▲ = CUT TO FIT IN FIELD



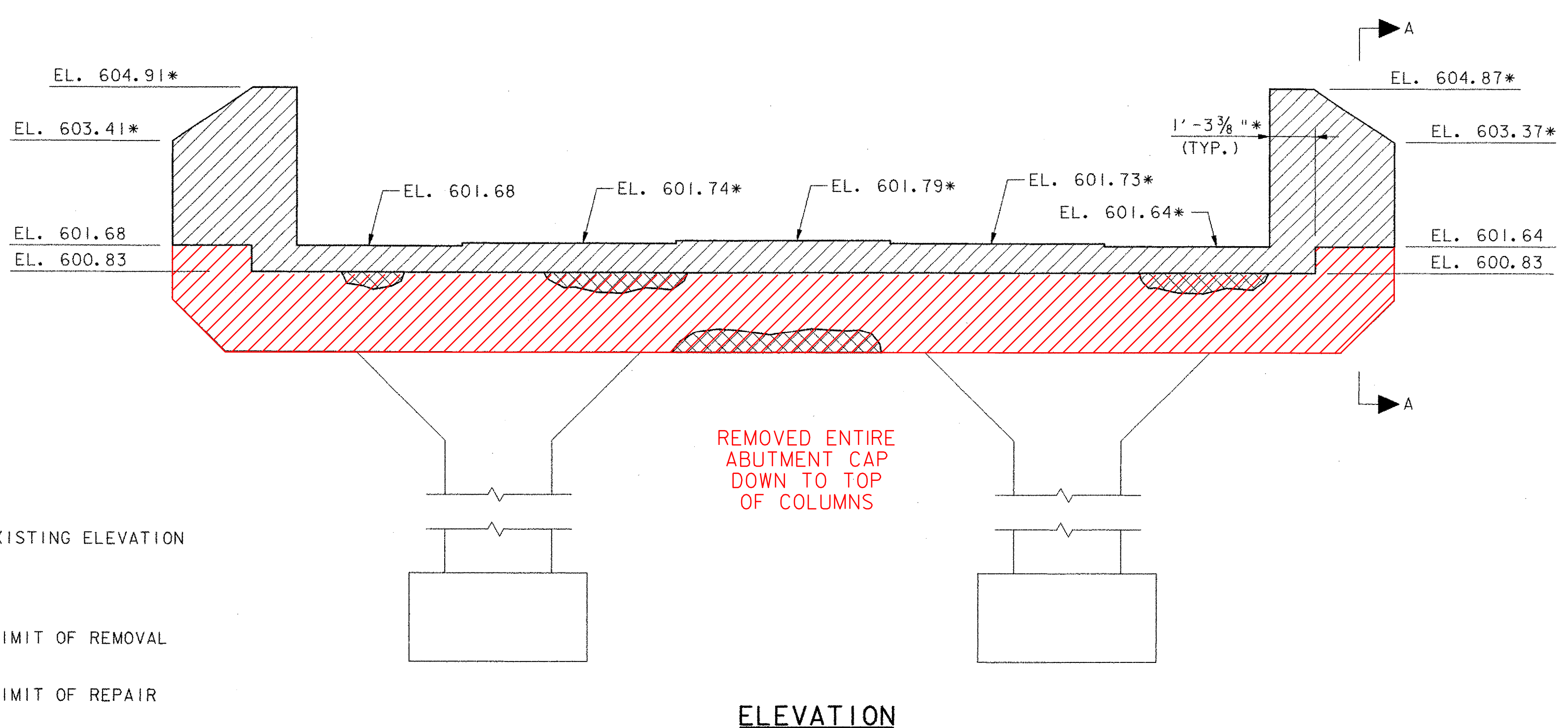
APPROACH SLAB NO. 1 DETAIL
(APPROACH SLAB NO. 2 SIMILAR)
N. T. S.

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
APPROACH SLAB DETAILS		
Designed By	J. T. KLEIN	Drawn By
Checked By	Date	Bridge Design Supervisor
M. A. COLGAN	5/05	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO.
		TH2-0104
I.G.C. Info.		
File No.	51335AS1	Sheet 33 of 42

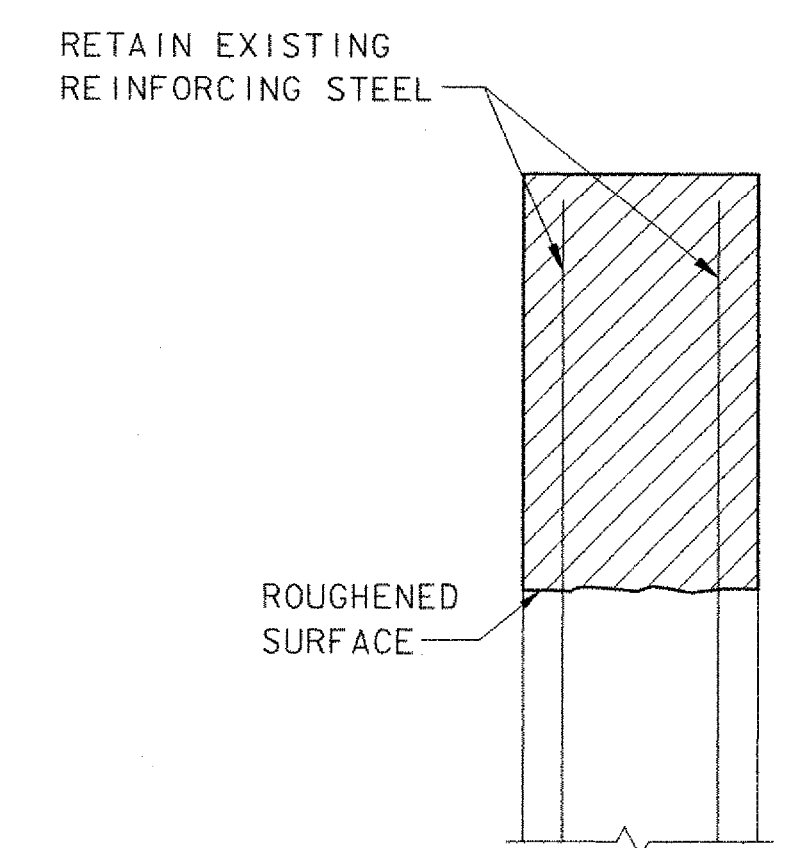
VHB Vanasse Hangen Brustlin, Inc.



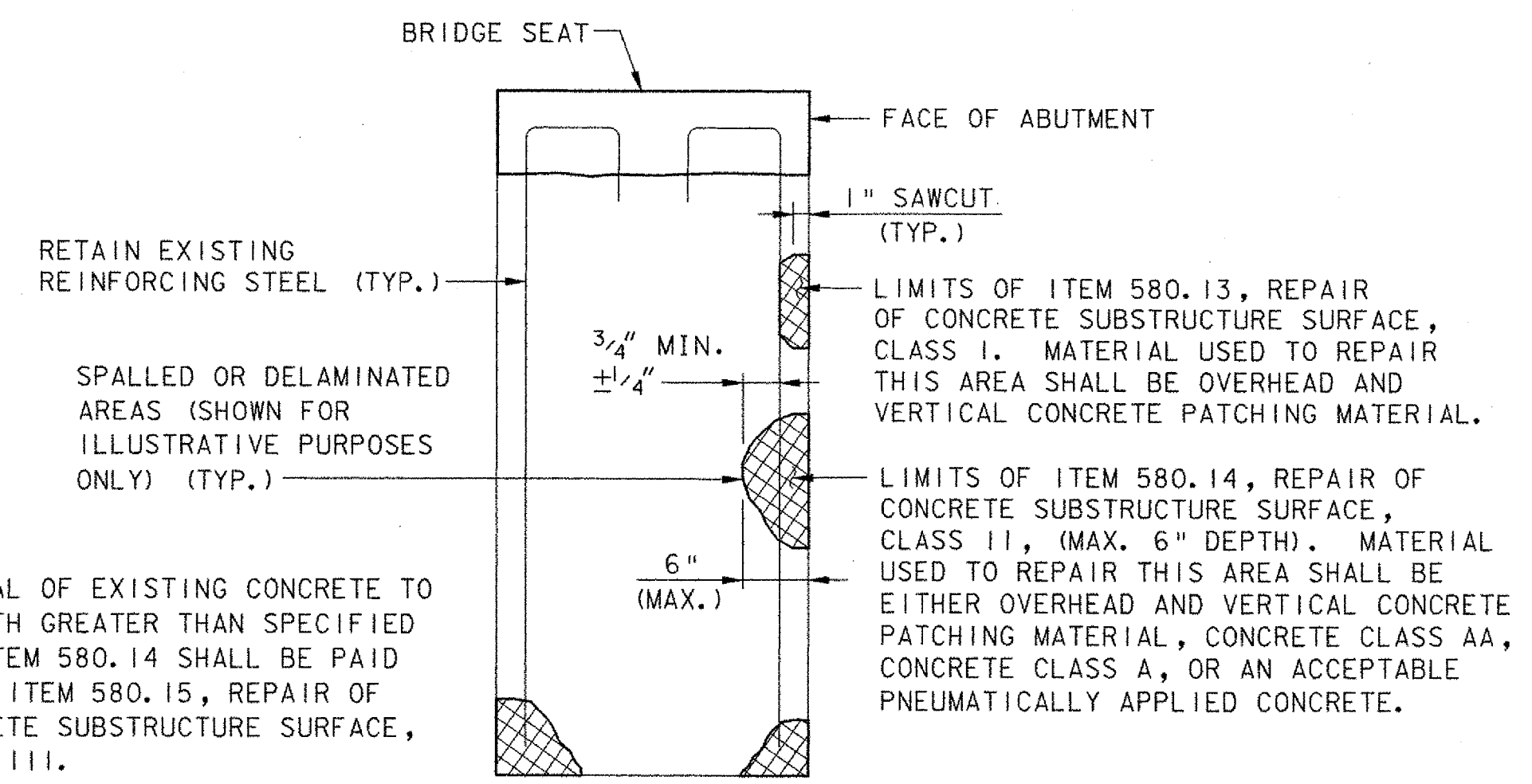
ABUTMENT NO. 1
SCALE: 3/8" = 1'-0"



ABUTMENT NO. 2
SCALE: 3/8" = 1'-0"



SECTION A-A
NOT TO SCALE

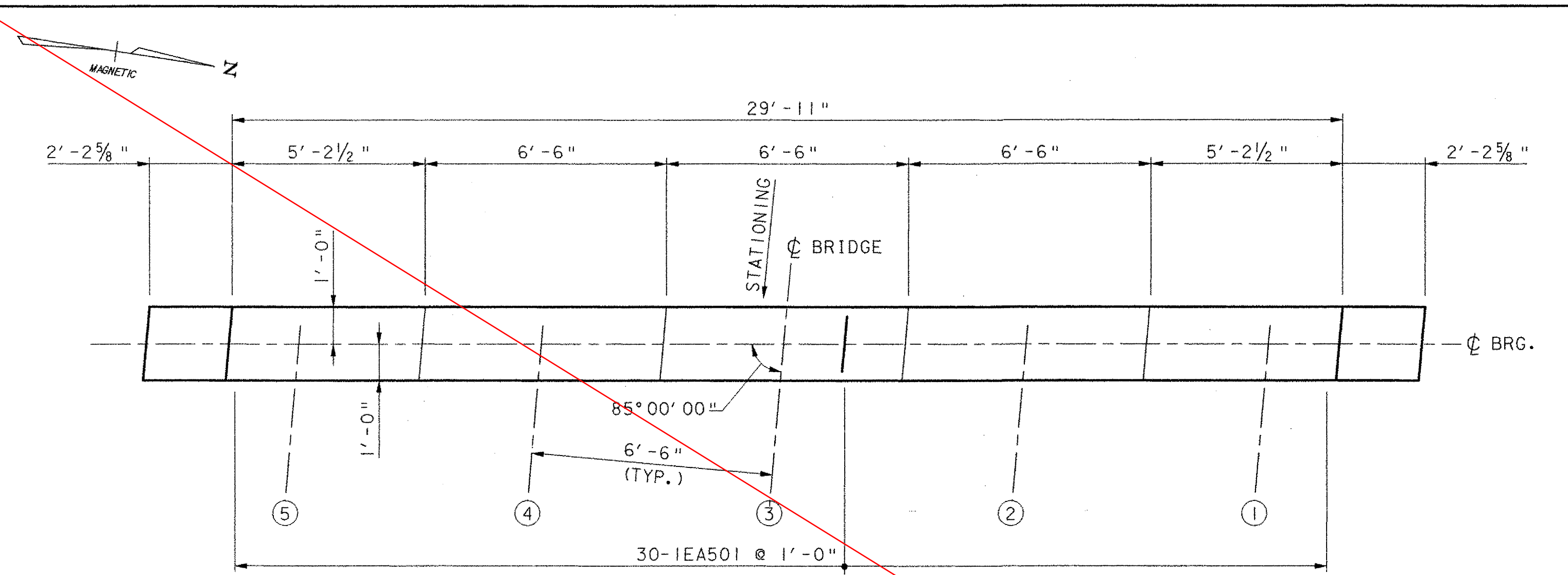


REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS I OR CLASS II
NOT TO SCALE

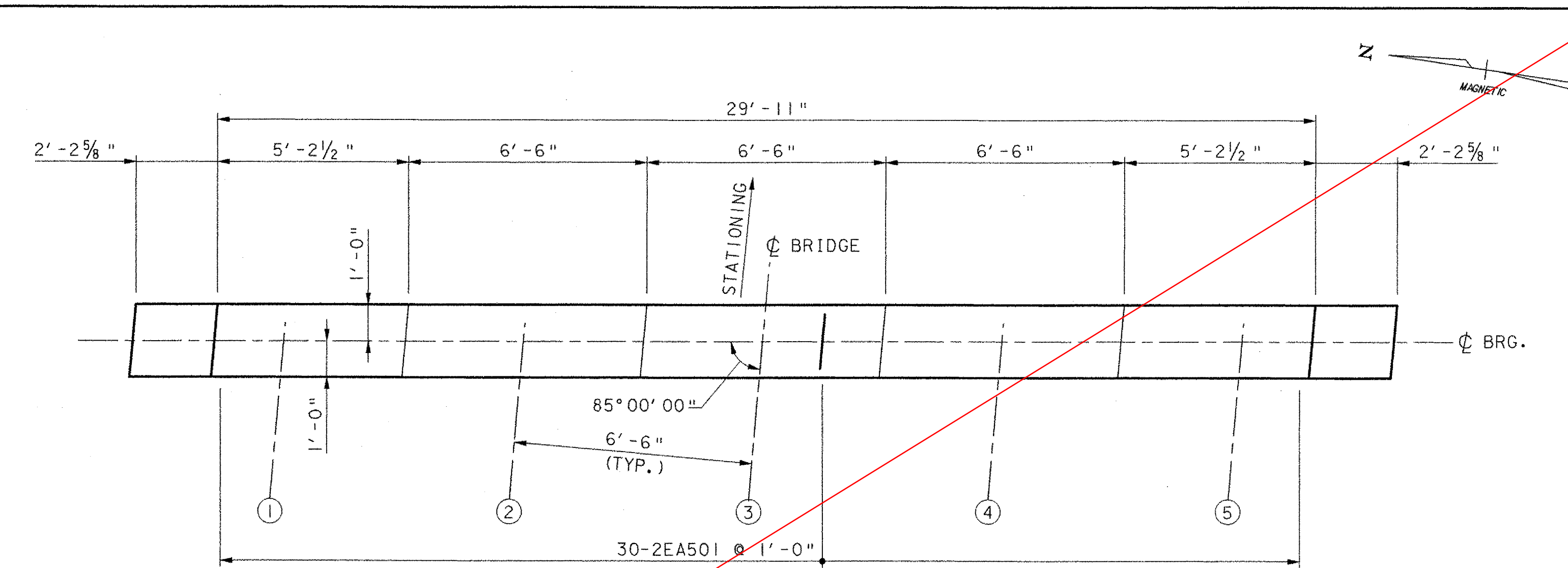
NOTE:
1. SEE SHEET 26 FOR REMOVAL AND REPAIR NOTES.

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town Of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
ABUTMENT REMOVAL AND REPAIR		
Designed By	J. T. KLEIN	Drawn By B. J. MASSE
Checked By	Date	Bridge Design Supervisor
M. A. COLGAN	5/05	M. A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO. TH2-0104
I.G.C. Info.	File No. 51335ARM	Sheet 34 of 42

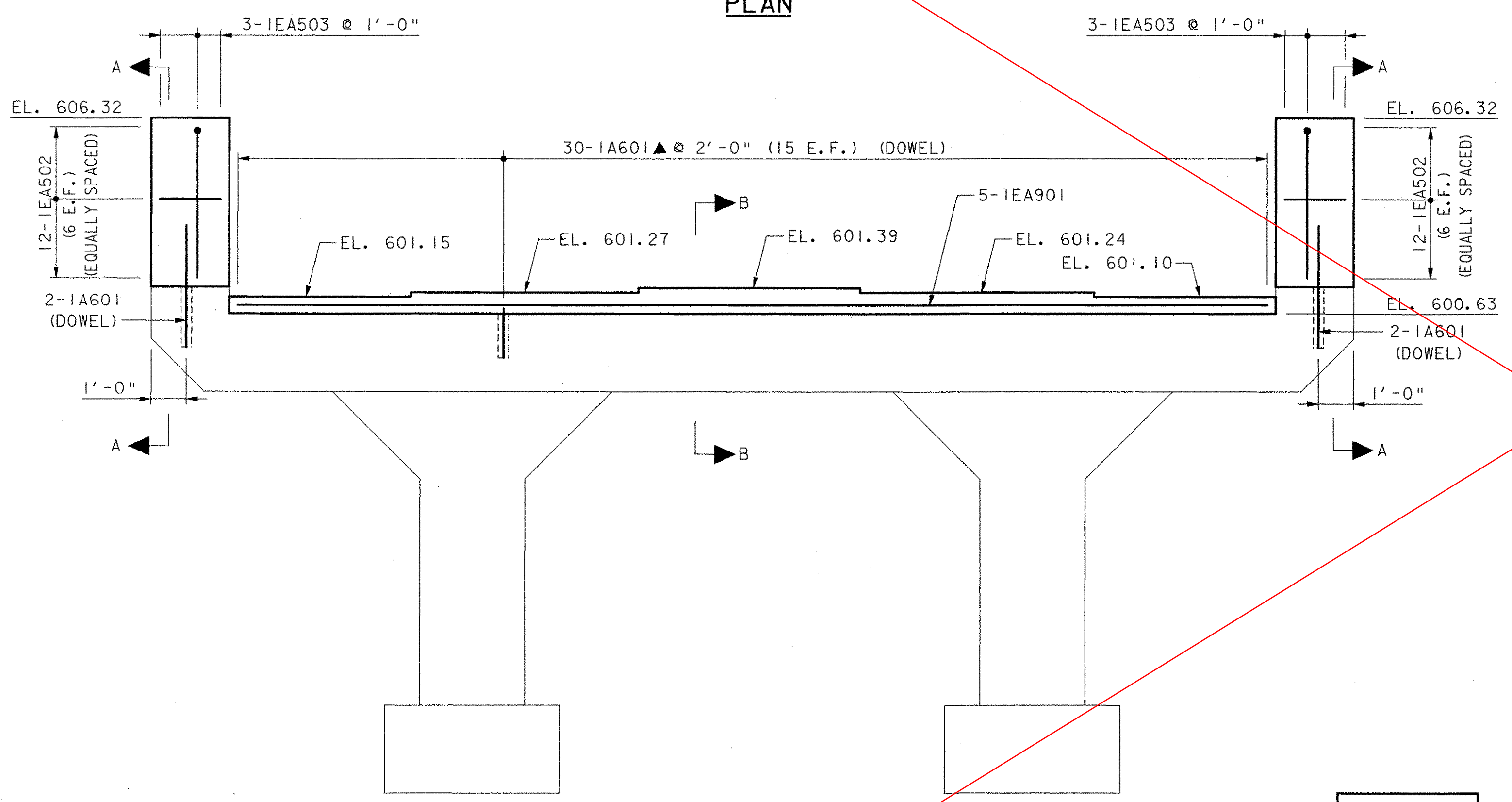
VHB Vanasse Hangen Brustlin, Inc.



PLAN



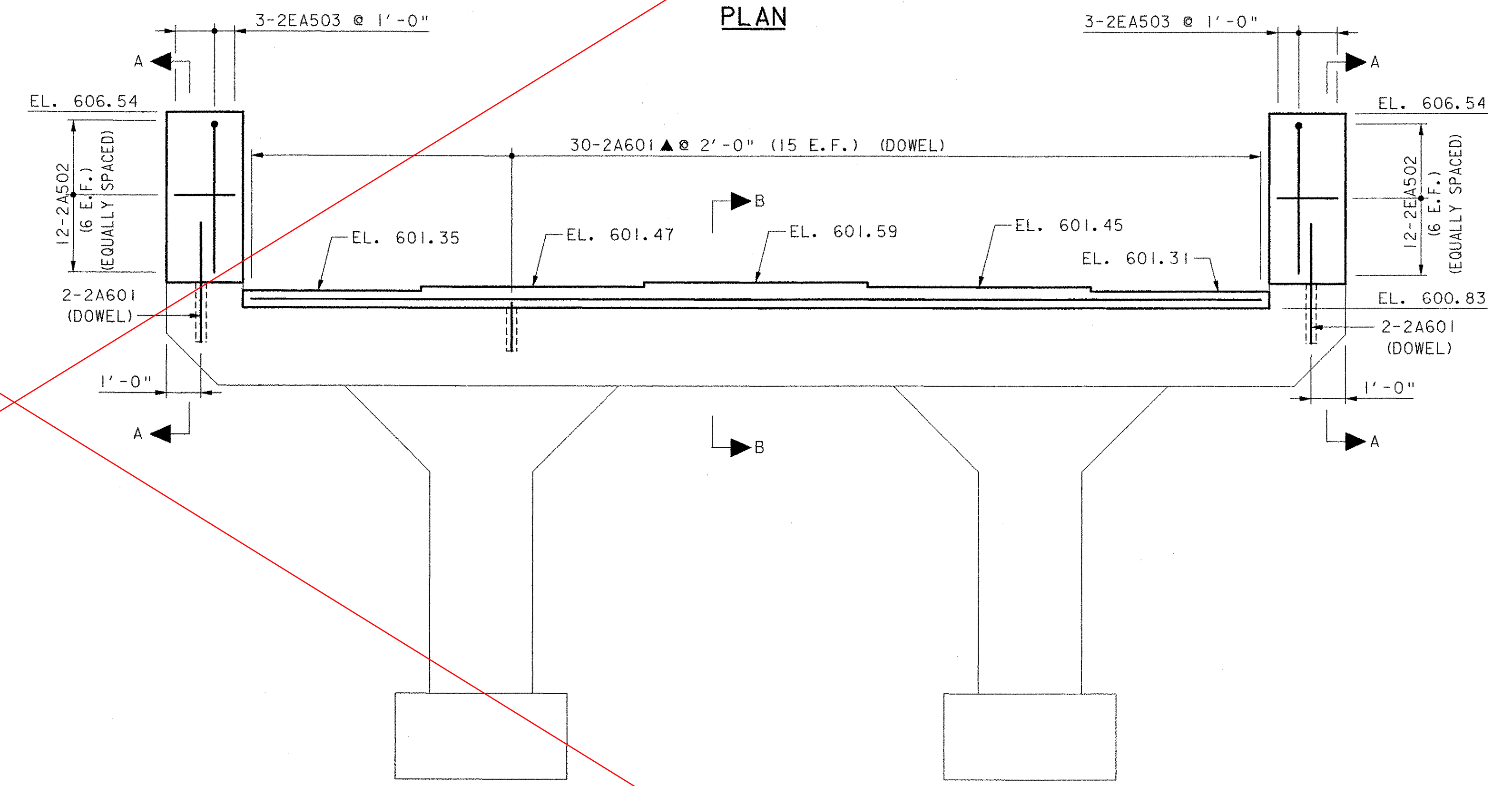
PLAN



ELEVATION

ABUTMENT NO. 1

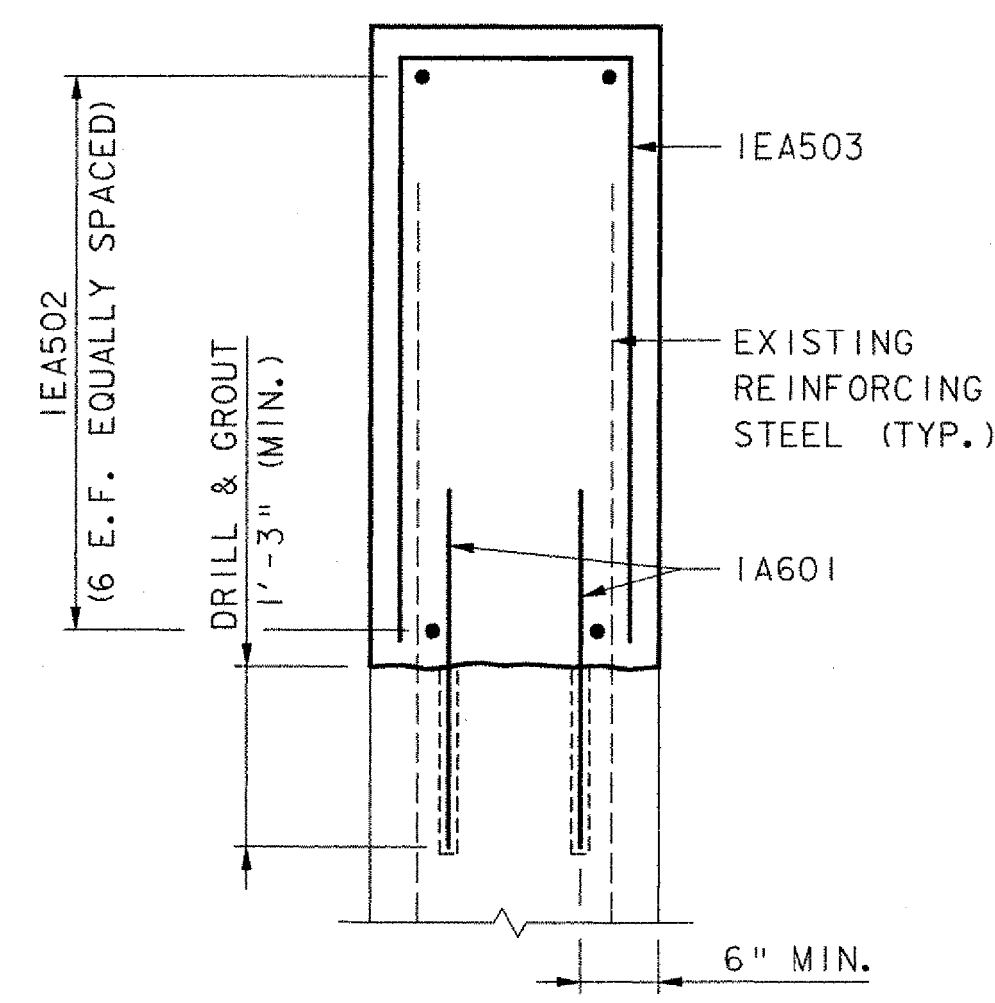
SCALE: 3/8" = 1'-0"



ELEVATION

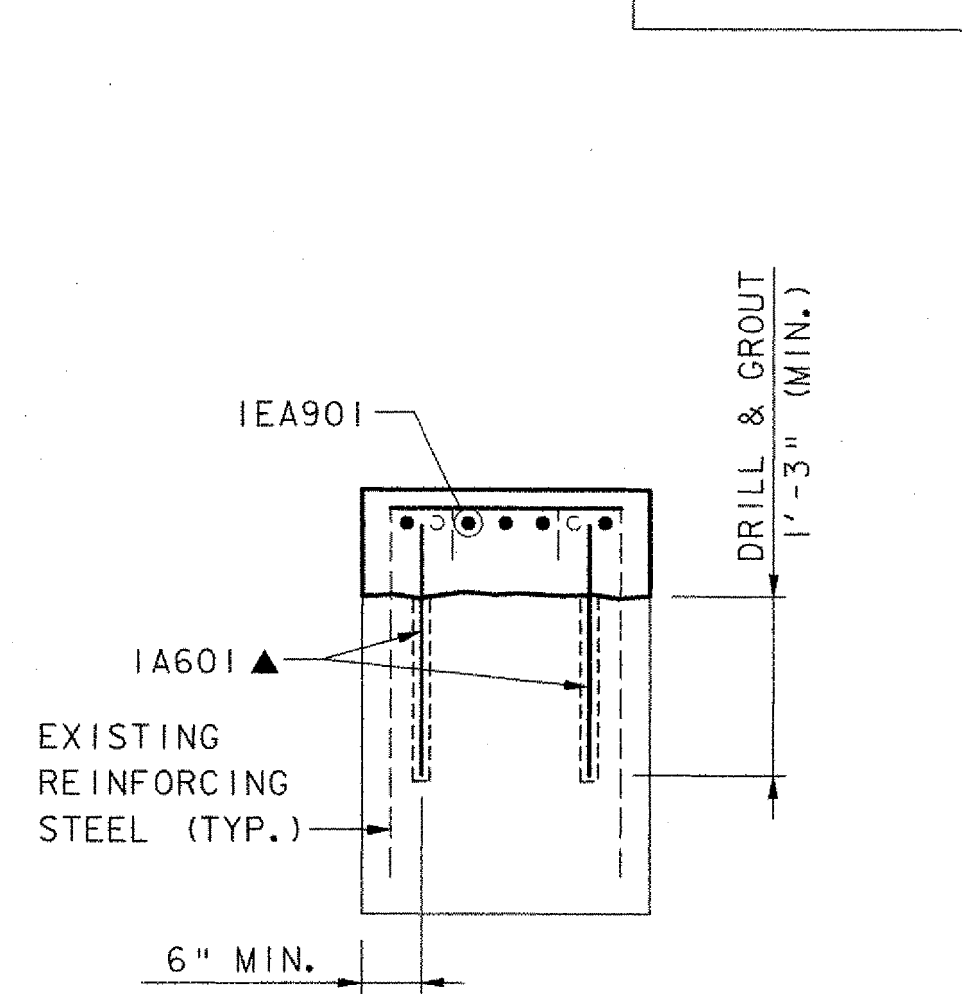
ABUTMENT NO. 2

SCALE: 3/8" = 1'-0"



SECTION A-A

(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)
SCALE: 3/4" = 1'-0"



SECTION B-B

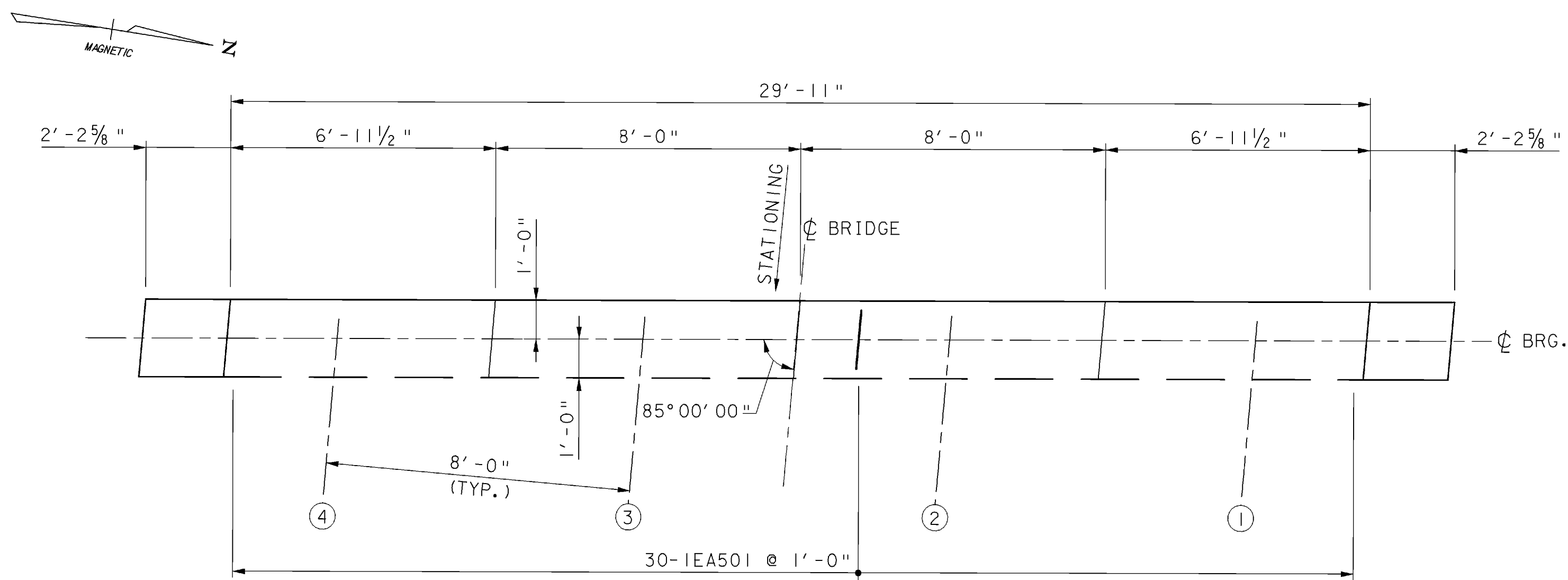
(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)
SCALE: 3/4" = 1'-0"

KEY
E.F. = EACH FACE
▲ = BARS TO BE CUT IN FIELD

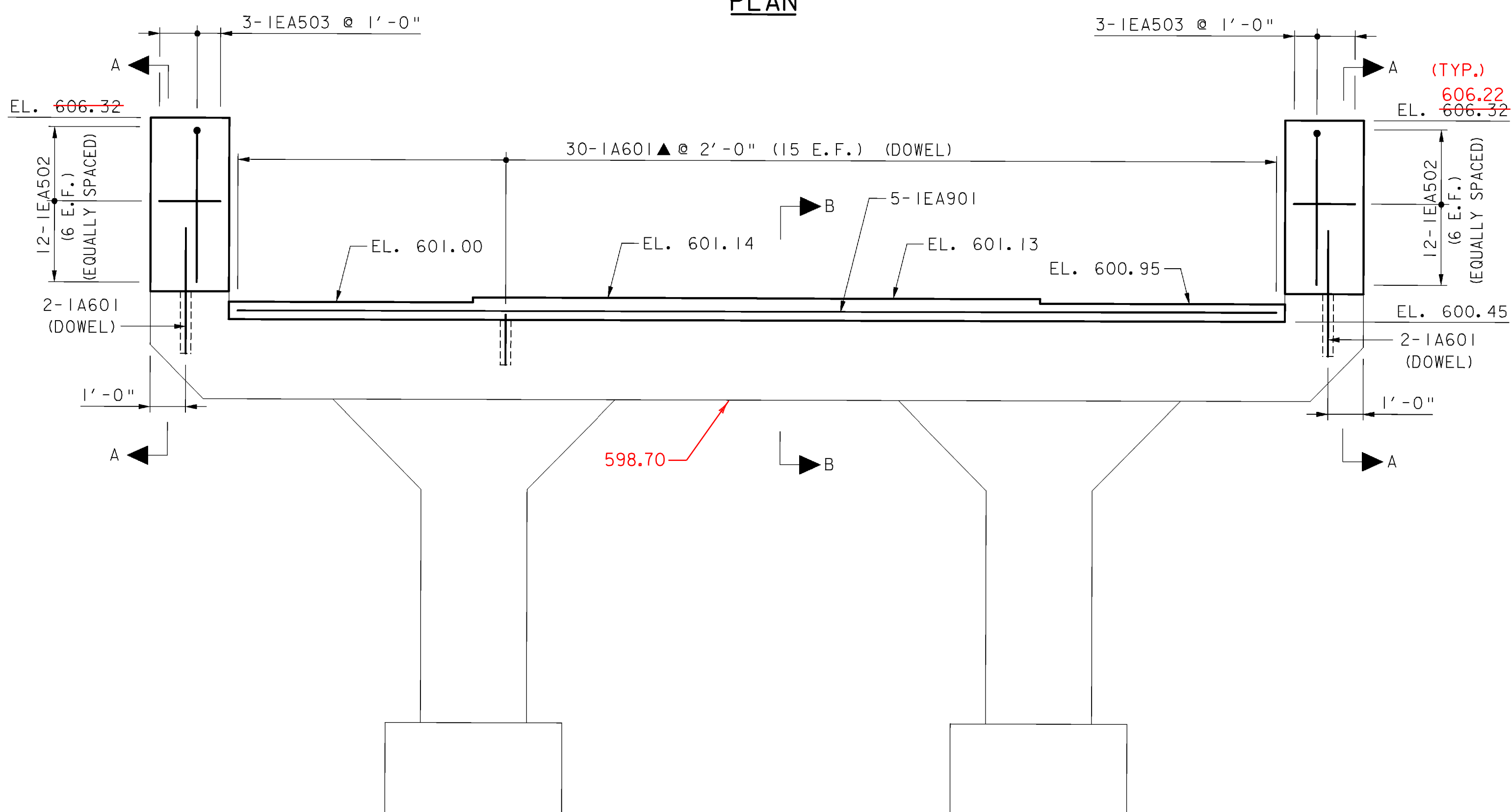
SEE SHEET
35R

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE		
Town of	GRAFTON	Bridge No. 16G
Highway No.	TH 1	Log Sta.
		Surv. Sta.
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		
ABUTMENT DETAILS		
Designed By	J.T. KLEIN	Drawn By B.J. MASSE
Checked By	Date	Bridge Design Supervisor
K.G. KRETSCH	5/05	M.A. COLGAN Date 5/05
PROJECT	GRAFTON	PROJECT NO.
		TH2-0104
I.G.C. Info.		File No. 51335AM1
		Sheet 35 of 42

VHB Vanasse Hangen Brustlin, Inc.



PLAN

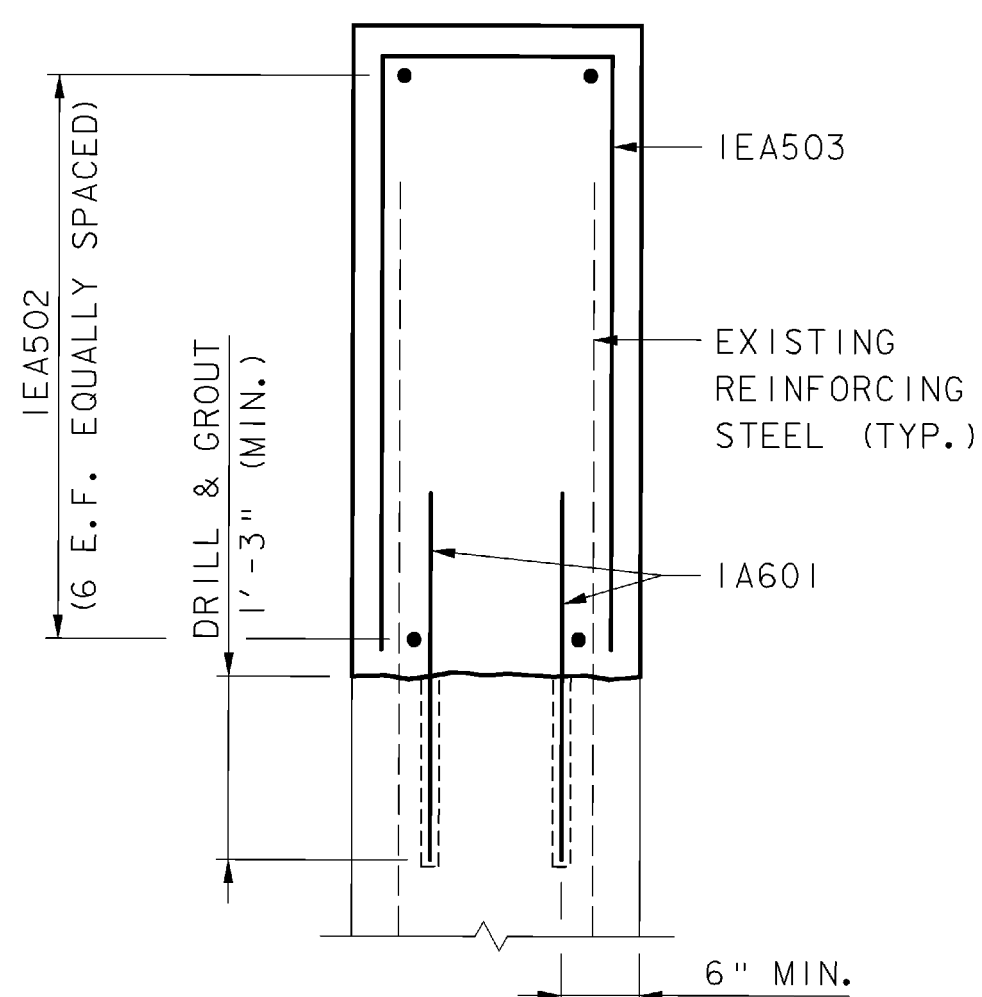


ELEVATION

ABUTMENT NO. 1

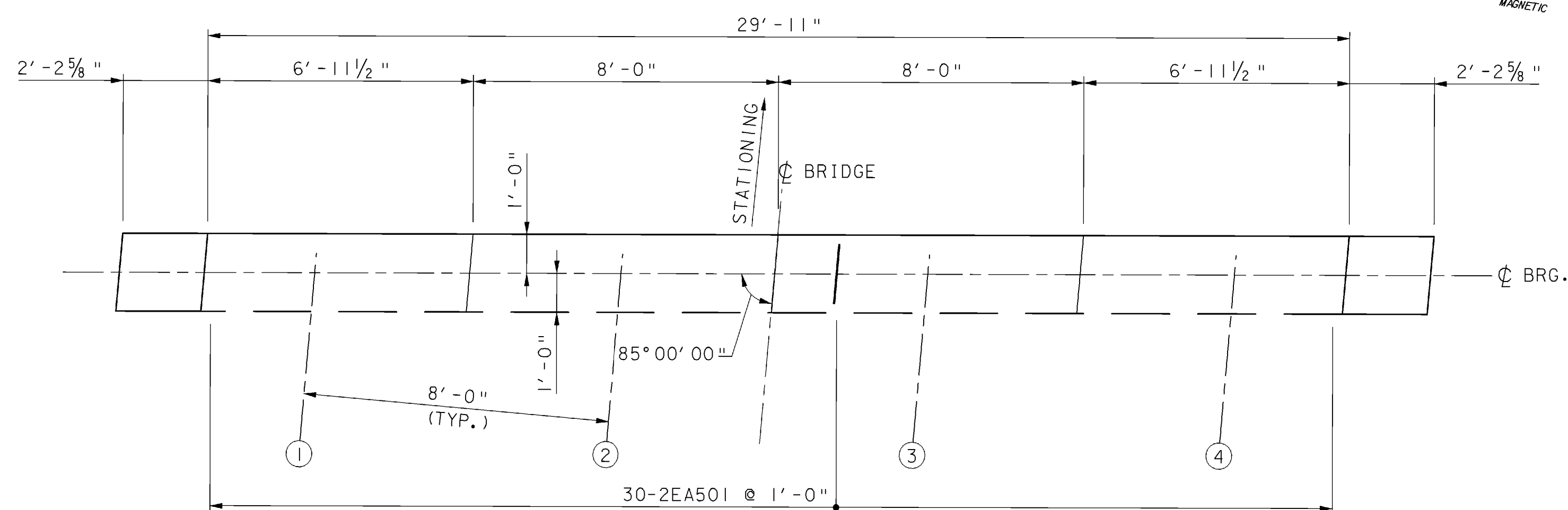
SCALE: 3/8" = 1'-0"

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 35 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

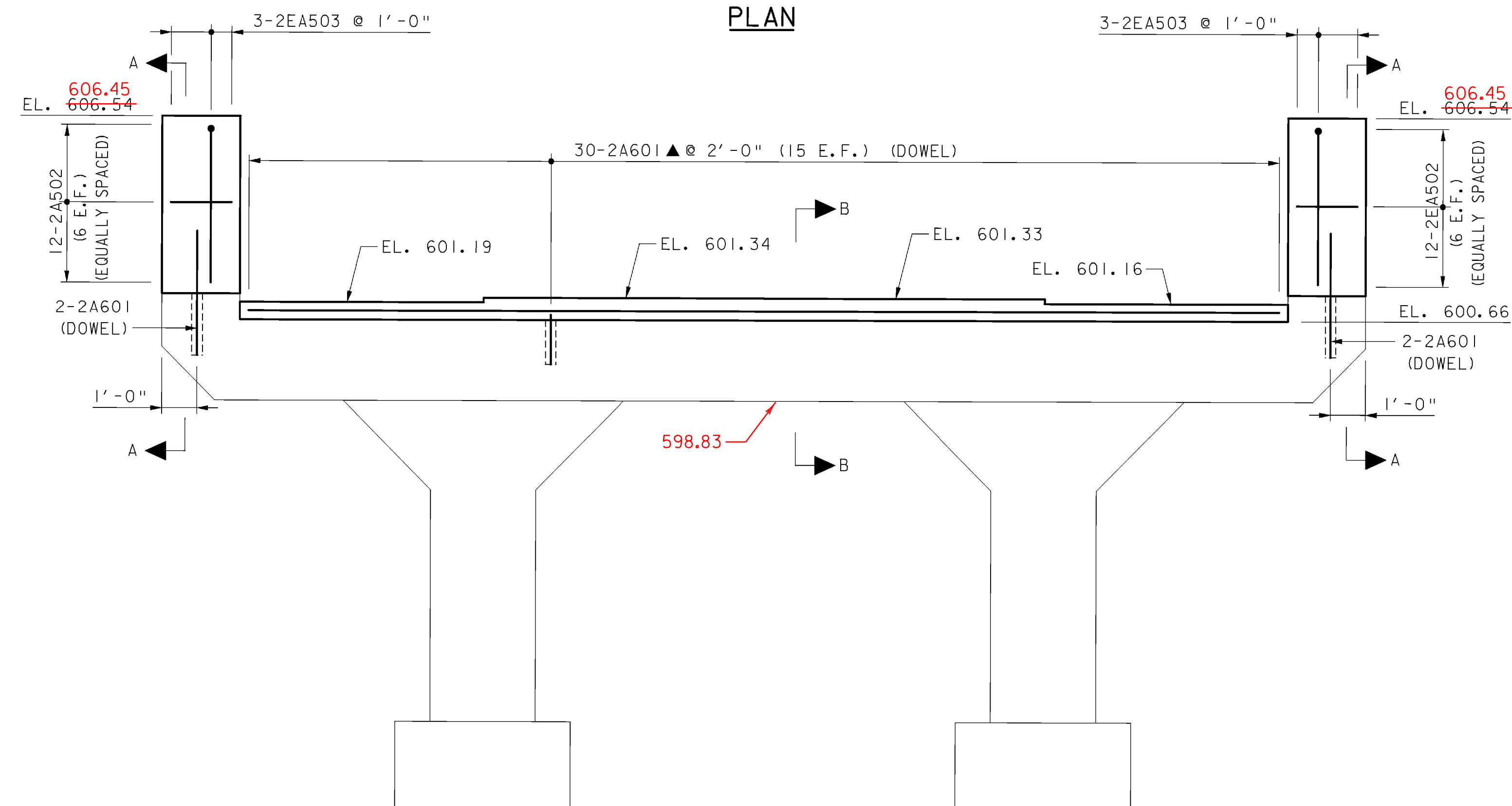


SECTION A-A

(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)
SCALE: 3/4" = 1'-0"



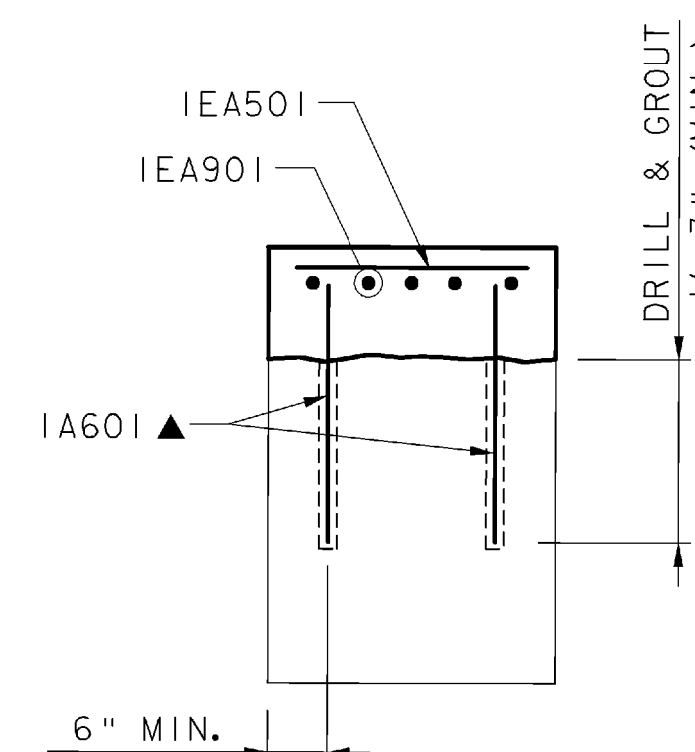
PLAN



ELEVATION

ABUTMENT NO. 2

SCALE: 3/8" = 1'-0"



SECTION B-B

(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)
SCALE: 3/4" = 1'-0"

KEY

- E.F. = EACH FACE
- ▲ = BARS TO BE CUT IN FIELD

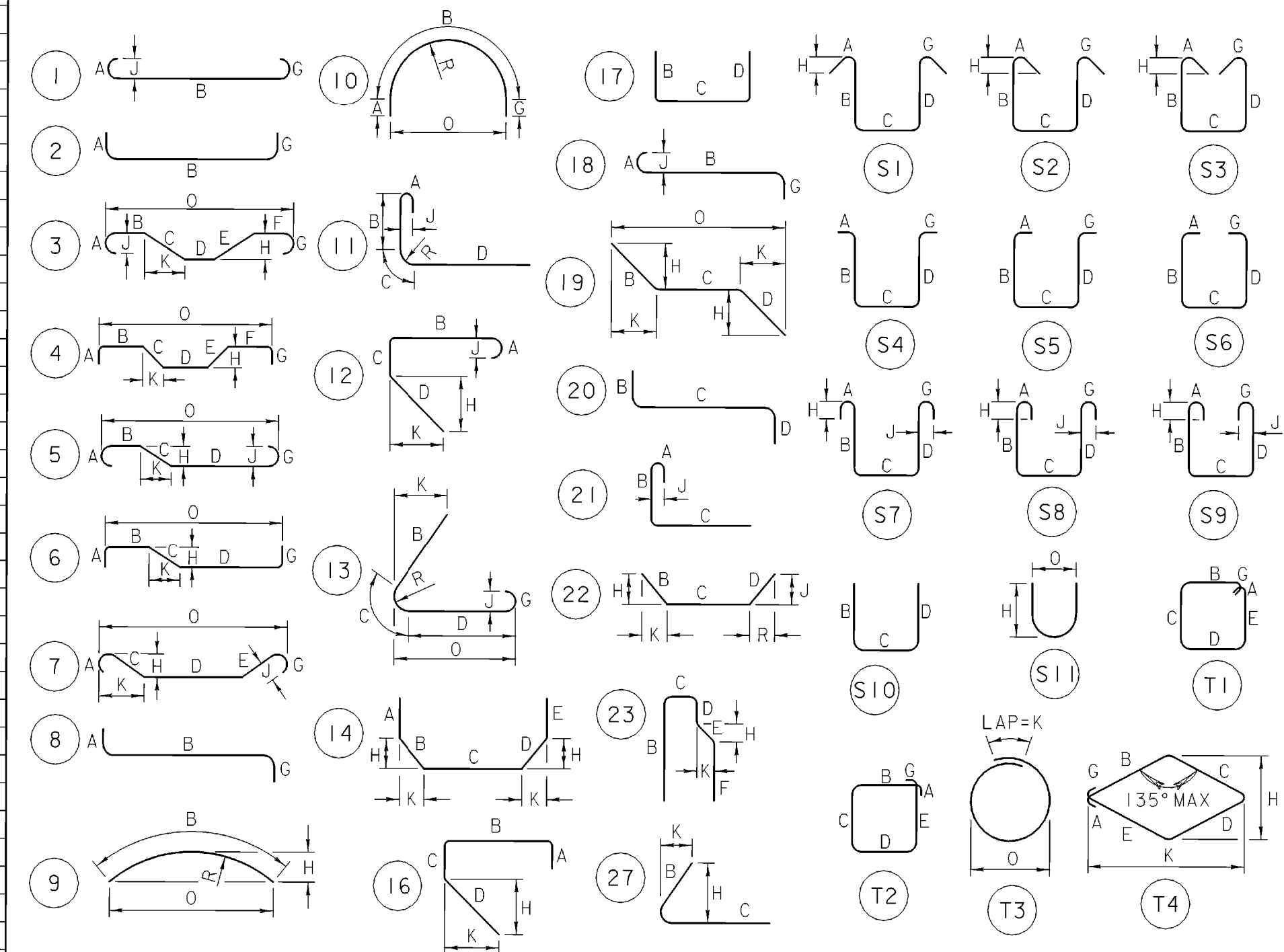
TOWN OF GRAFTON
CAMBRIDGEPORT BRIDGE

Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
ABUTMENT DETAILS			
Designed By	J. T. KLEIN	Drawn By	B. J. MASSE
Checked By	K. G. KRETSCH	Date	12/05
		Bridge Design Supervisor	M. A. COLGAN
PROJECT	GRAFTON	PROJECT NO.	TH2-0104
I.G.C. Info.	File No. 51335AMI		

VHB Vanasse Hangen Brustlin, Inc.

NOTES

- UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENT OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-S1). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
- 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".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS ARE TO BE SHOWN ONLY WHEN NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS ARE TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
- △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
- "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

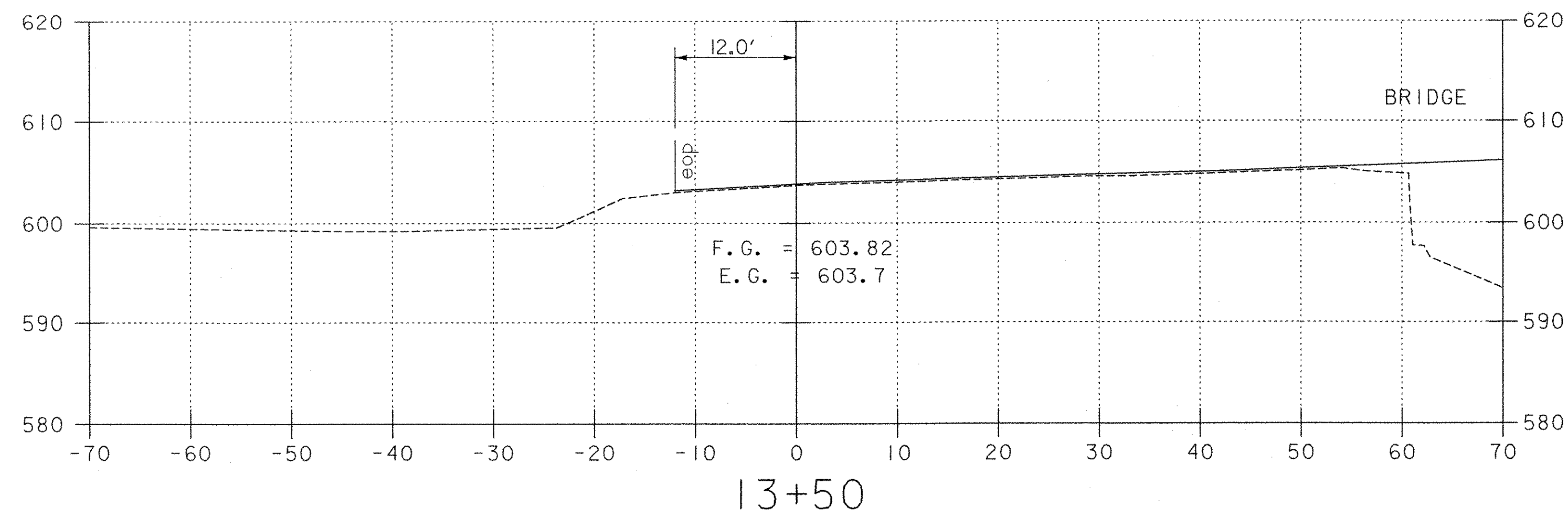
BAR SIZE DESIGNATION	NOMINAL MASS lb/ft	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER inches	CROSS SECTIONAL AREA sq. inches	PERIMETER inches
3	0.376	0.375	0.11	1.178
4	0.668	0.500	0.20	1.571
5	1.043	0.625	0.31	1.963
6	1.502	0.750	0.44	2.356
7	2.044	0.875	0.60	2.749
8	2.670	1.000	0.79	3.142
9	3.400	1.128	1.00	3.544
10	4.303	1.270	1.27	3.990
11	5.313	1.410	1.56	4.430
14	7.650	1.693	2.25	5.320
18	13.600	2.257	4.00	7.090

TOWN OF GRAFTON CAMBRIDGEPORT BRIDGE

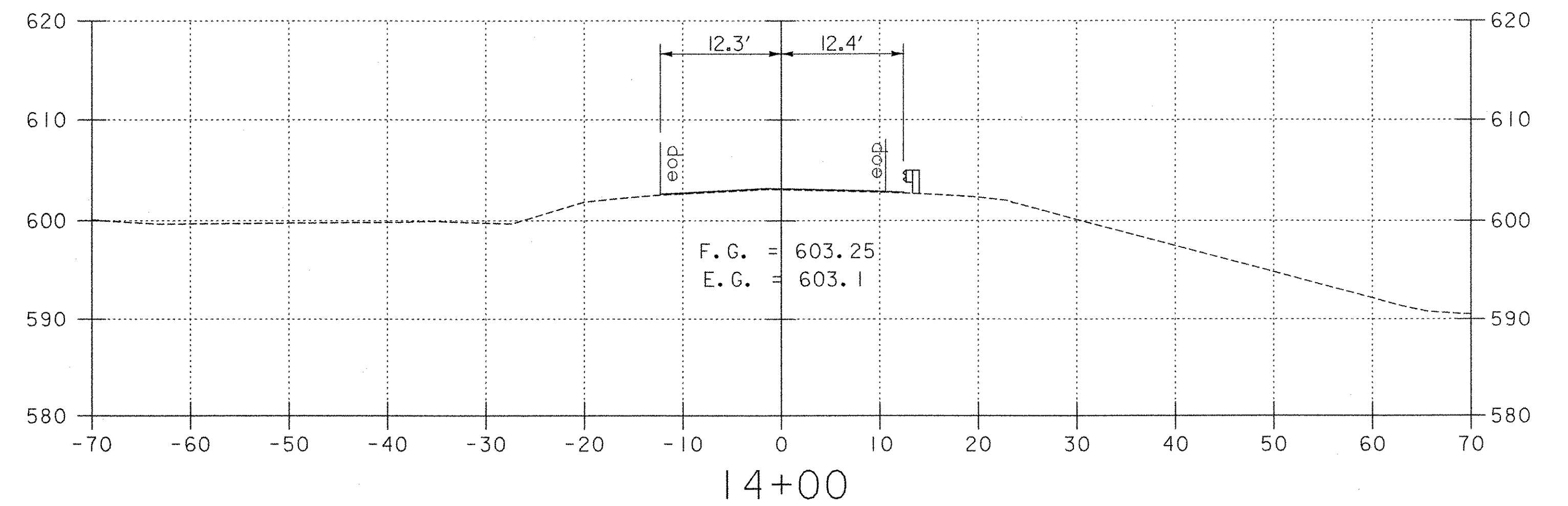
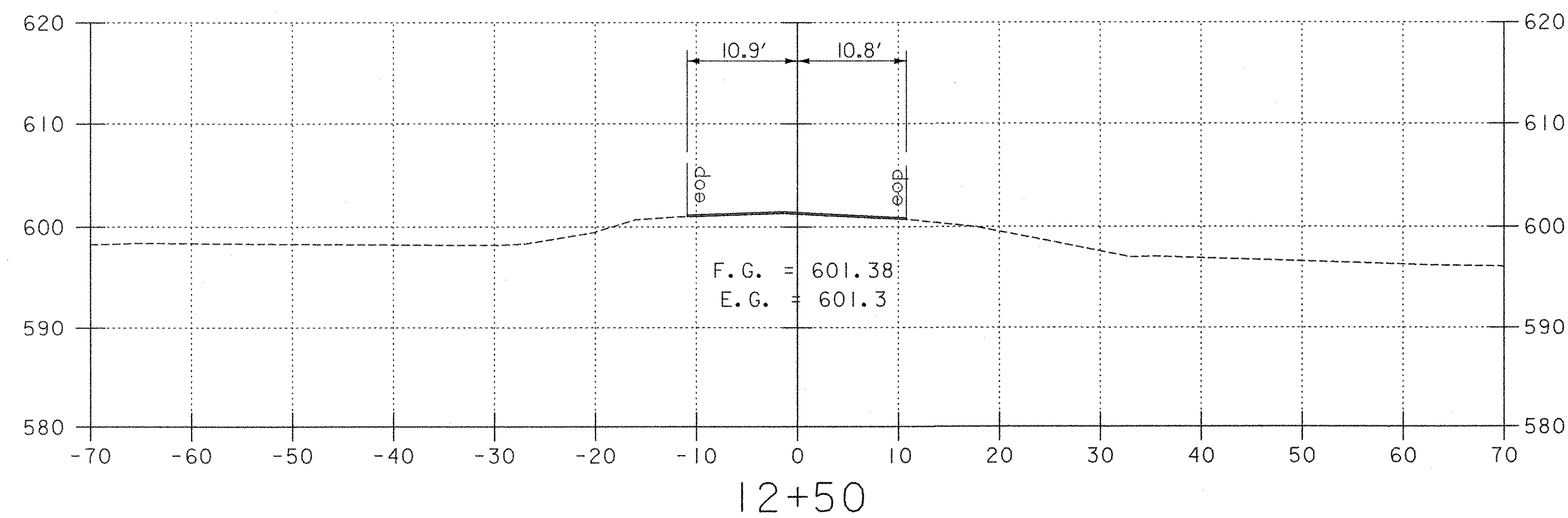
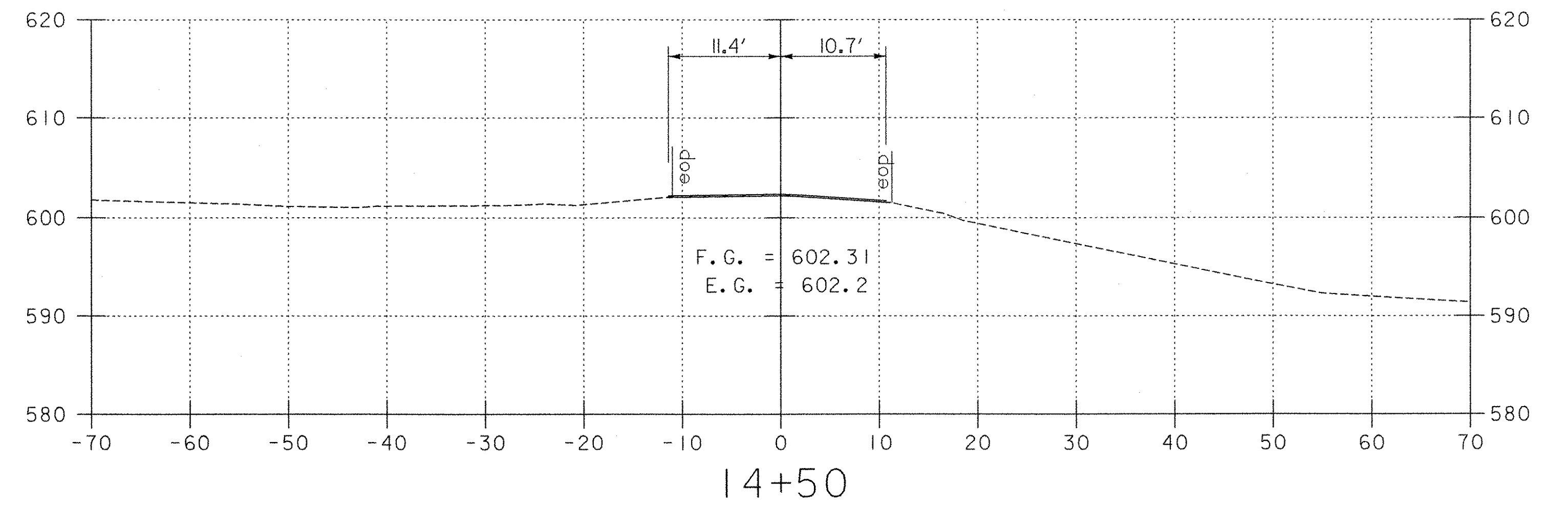
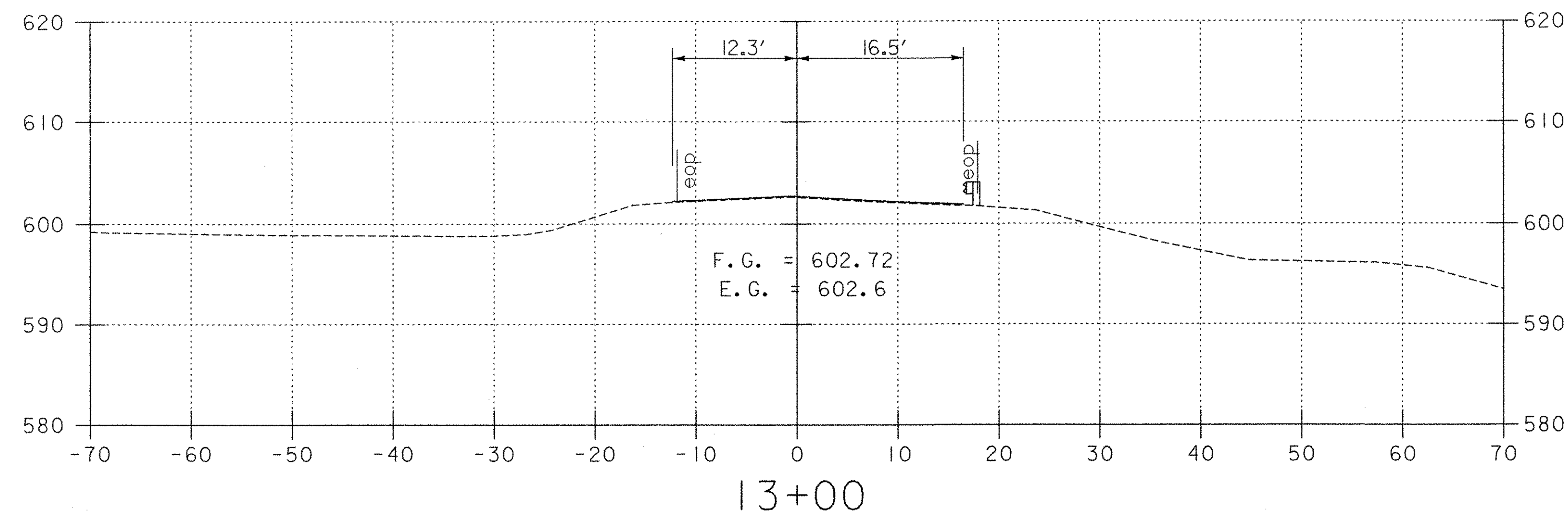
Town Of	GRAFTON	Bridge No.	16G
Highway No.	TH 1	Log Sta.	
TH 1 (CAMBRIDGEPORT BRIDGE) OVER THE SAXTONS RIVER		Surv. Sta.	
REINFORCING STEEL SCHEDULE			
Designed By	B. J. MASSE	Drawn By	B. J. MASSE
Checked By	Date	Bridge Design Supervisor	
J. T. KLEIN	12/05	M. A. COLGAN	Date 12/05
PROJECT	GRAFTON	PROJECT NO.	TH2-0104

THIS SHEET SUPERSEDES CONTRACT PLAN SHEET 36 DATED 6/05. REVISIONS ON THIS SHEET REFLECT CHANGES IN DESIGN AND DETAILS AS PER CHANGE ORDER NO. 2, SUBSTITUTING NEW STEEL BEAMS FOR RECYCLED BEAMS.

VHB Vanasse Hangen Brustlin, Inc.



END APPROACH
STA. 15+20
MATCH EXISTING

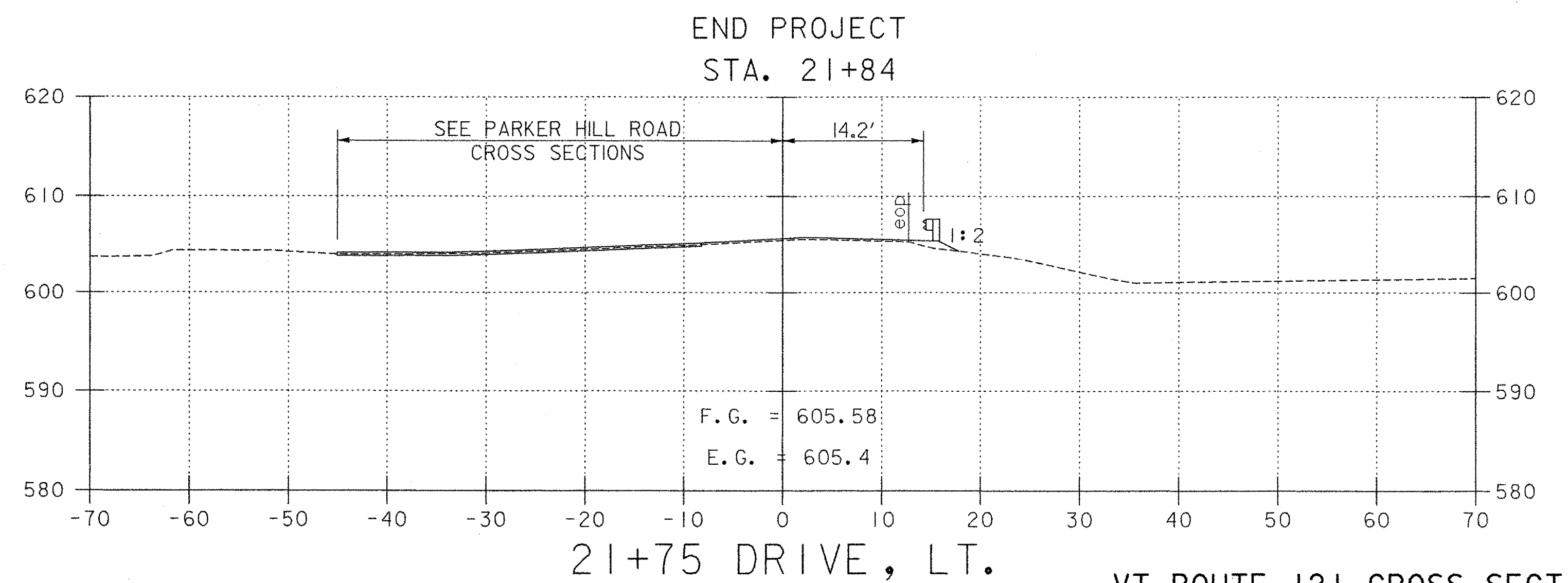
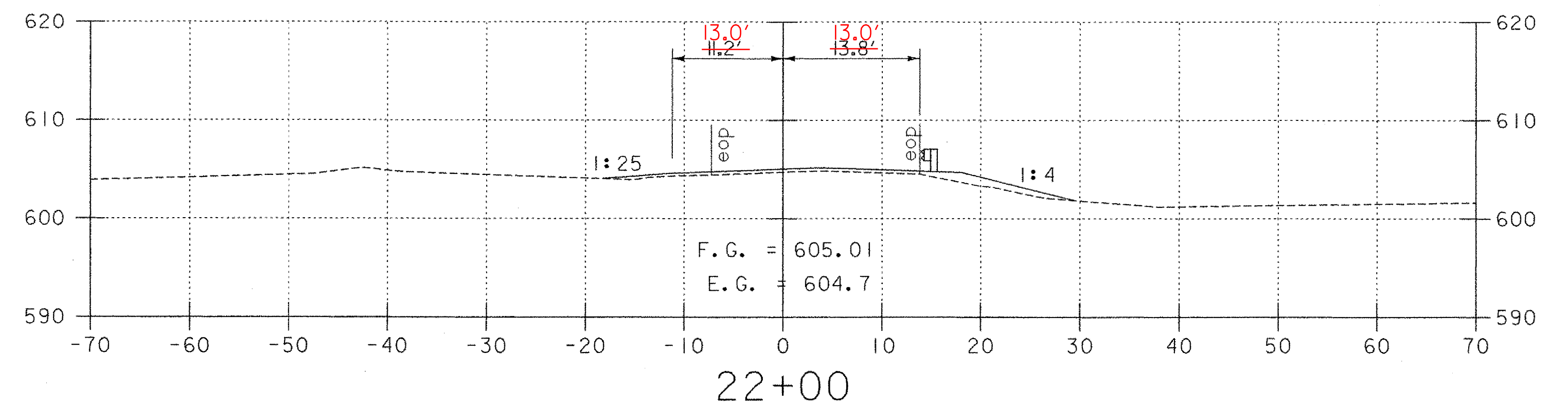
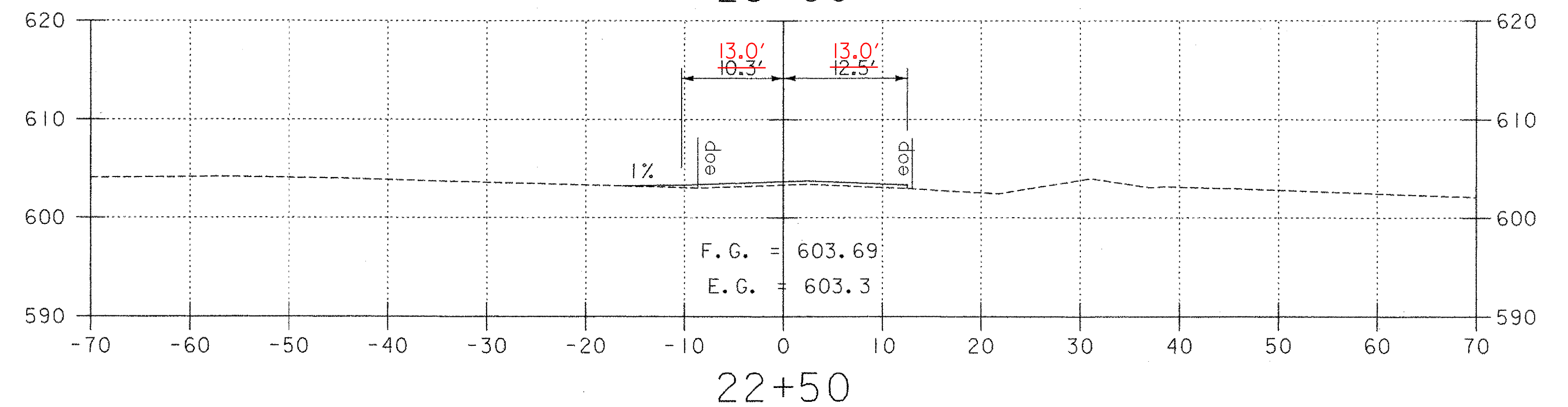
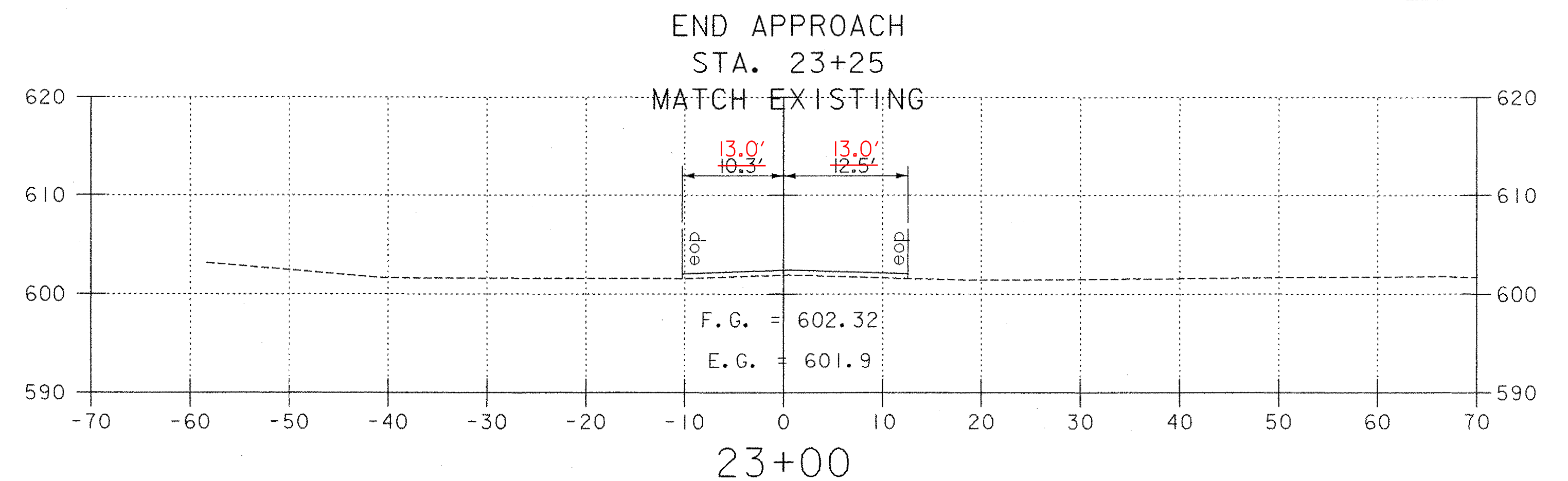
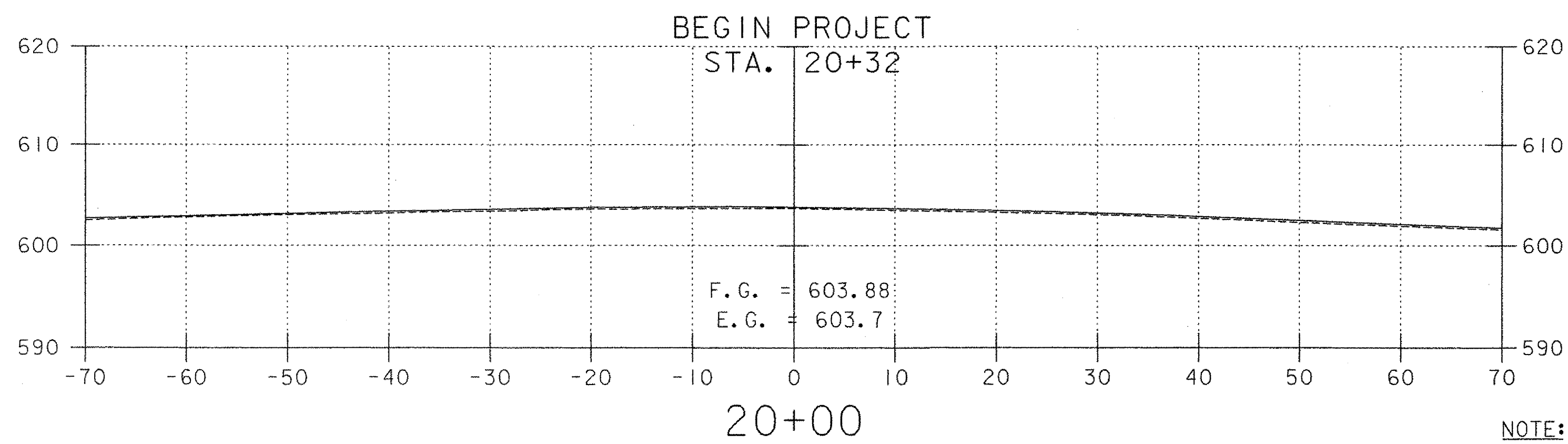
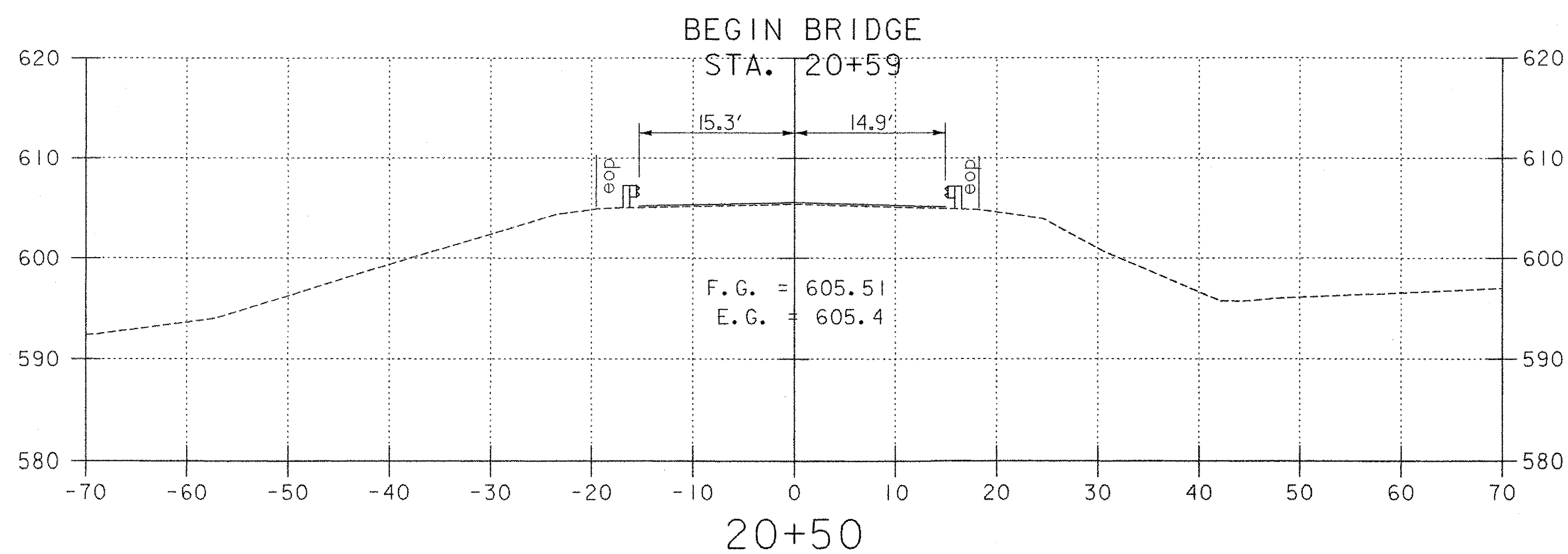
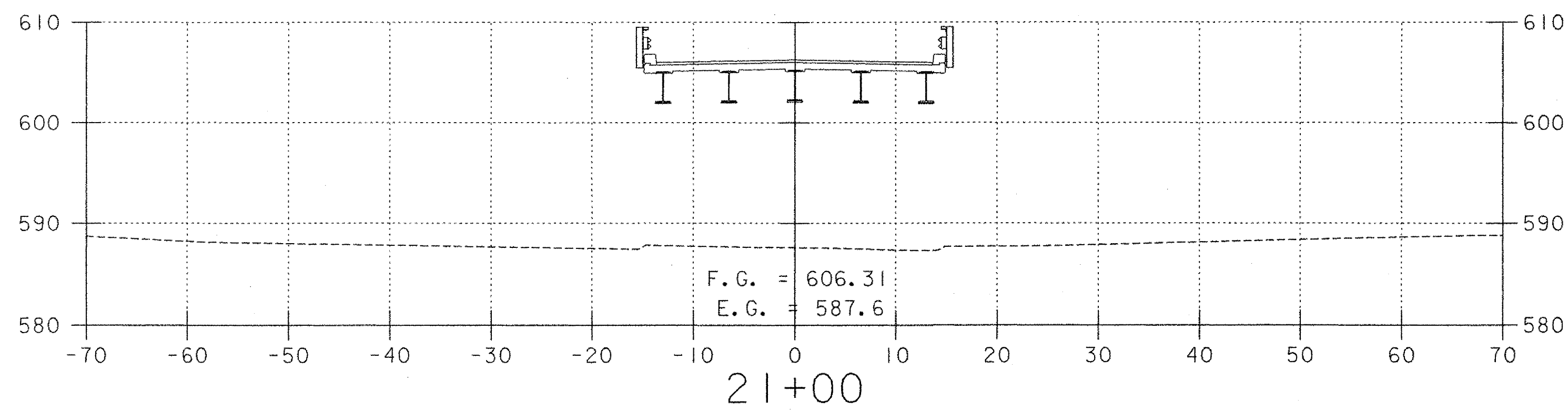
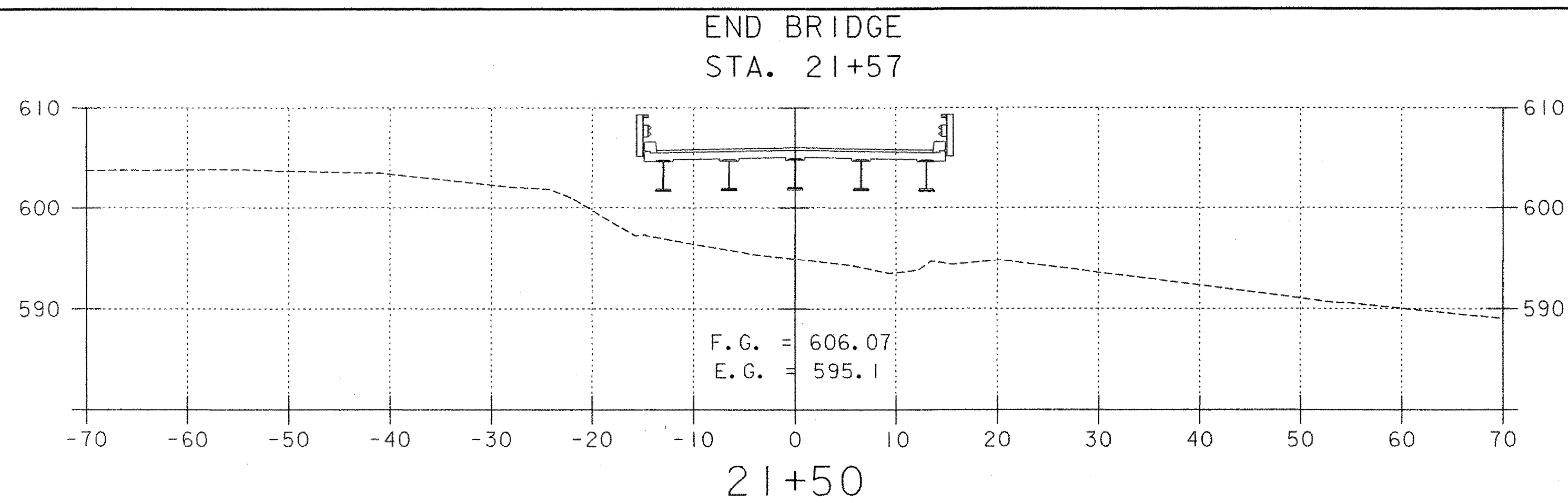


BEGIN APPROACH
STA. 12+05
MATCH EXISTING

VT ROUTE 35/121 CROSS SECTIONS

VANASSE HANGEN BRUSTLIN, INC.

FROM STA 12+50 TO STA 14+50
PROJECT NAME GRAFTON
PROJECT NO. TH2-0104
SURVEYED BY EIV TECH. SERVICES, LLC 6/02
SHEET 37 OF 42



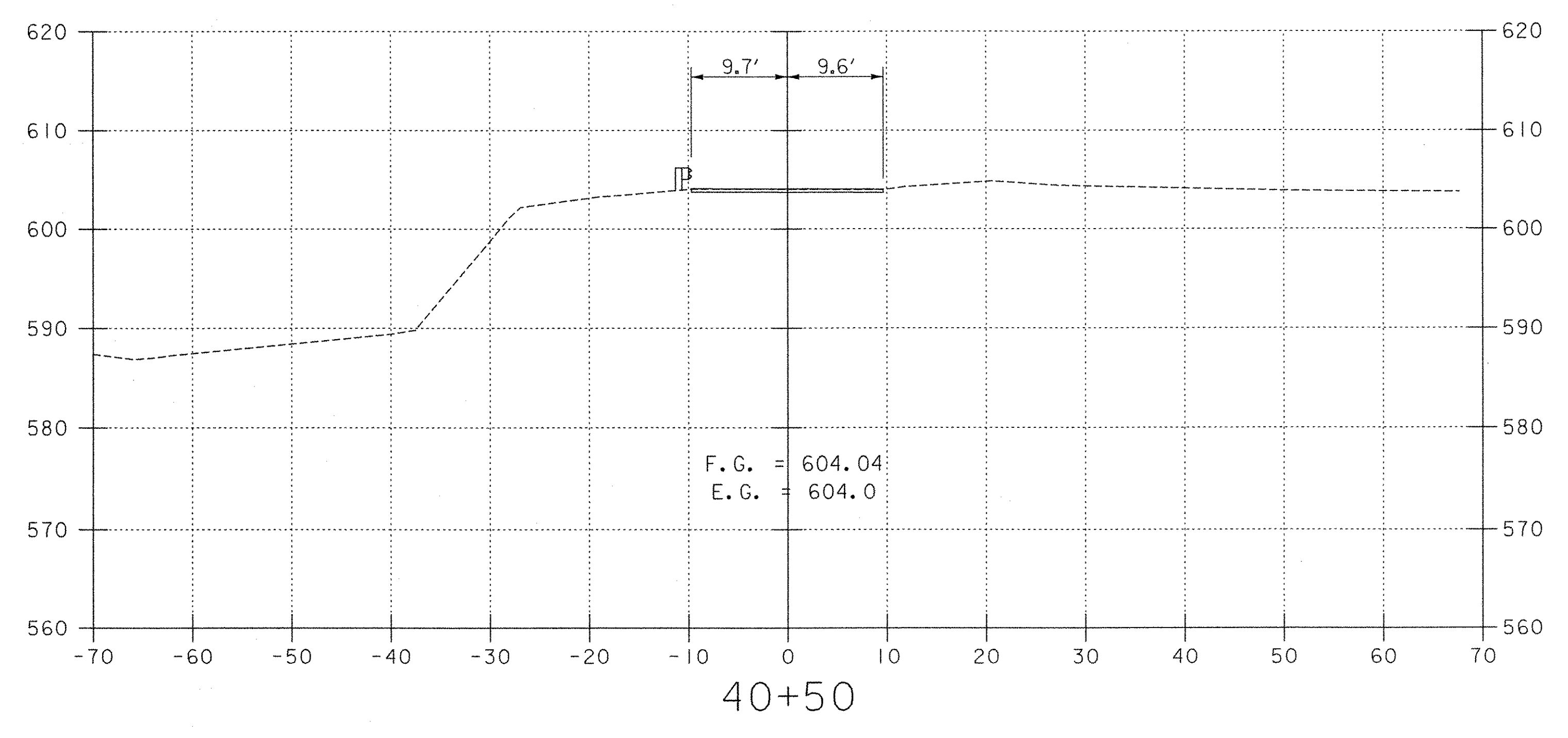
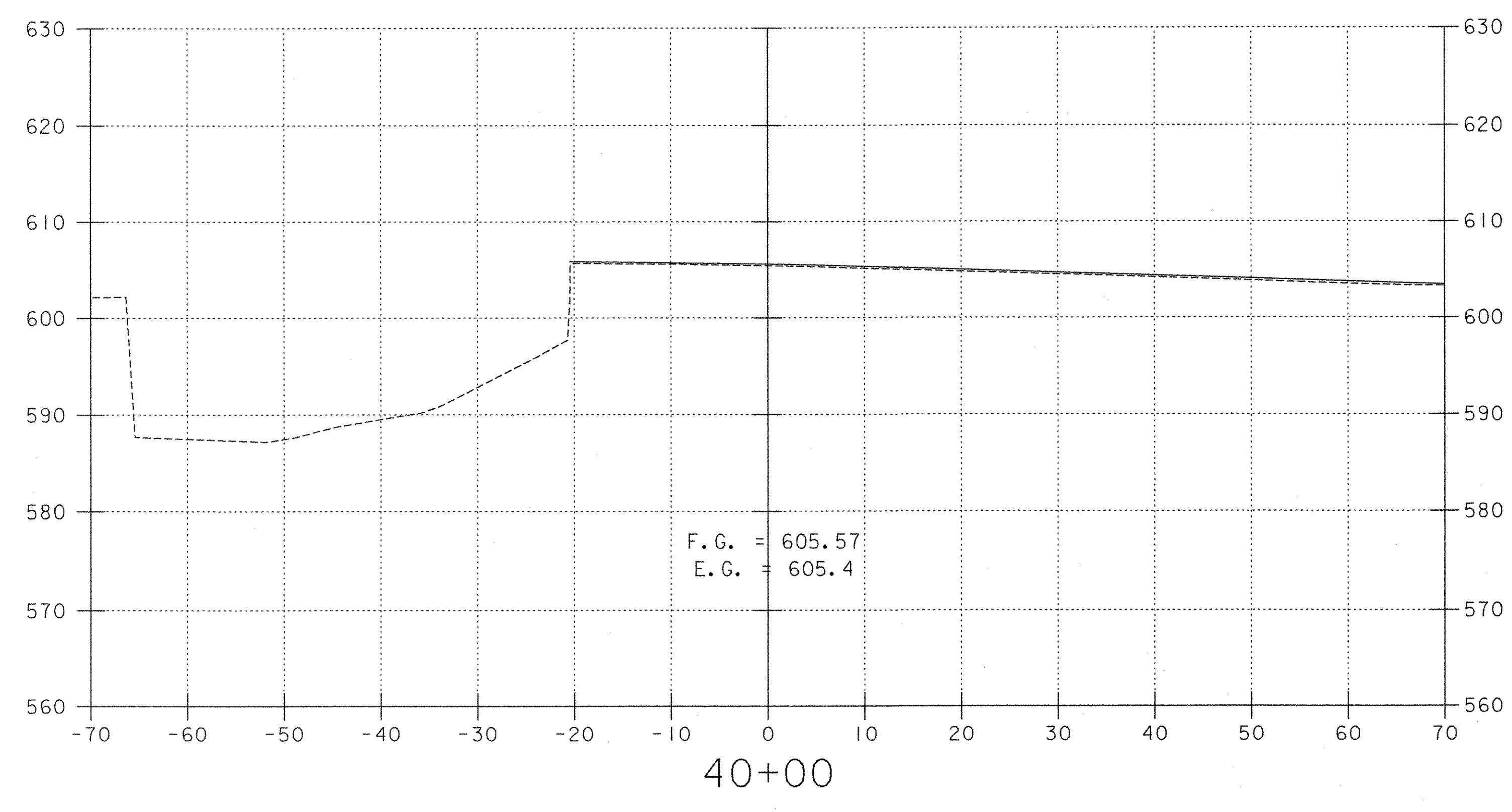
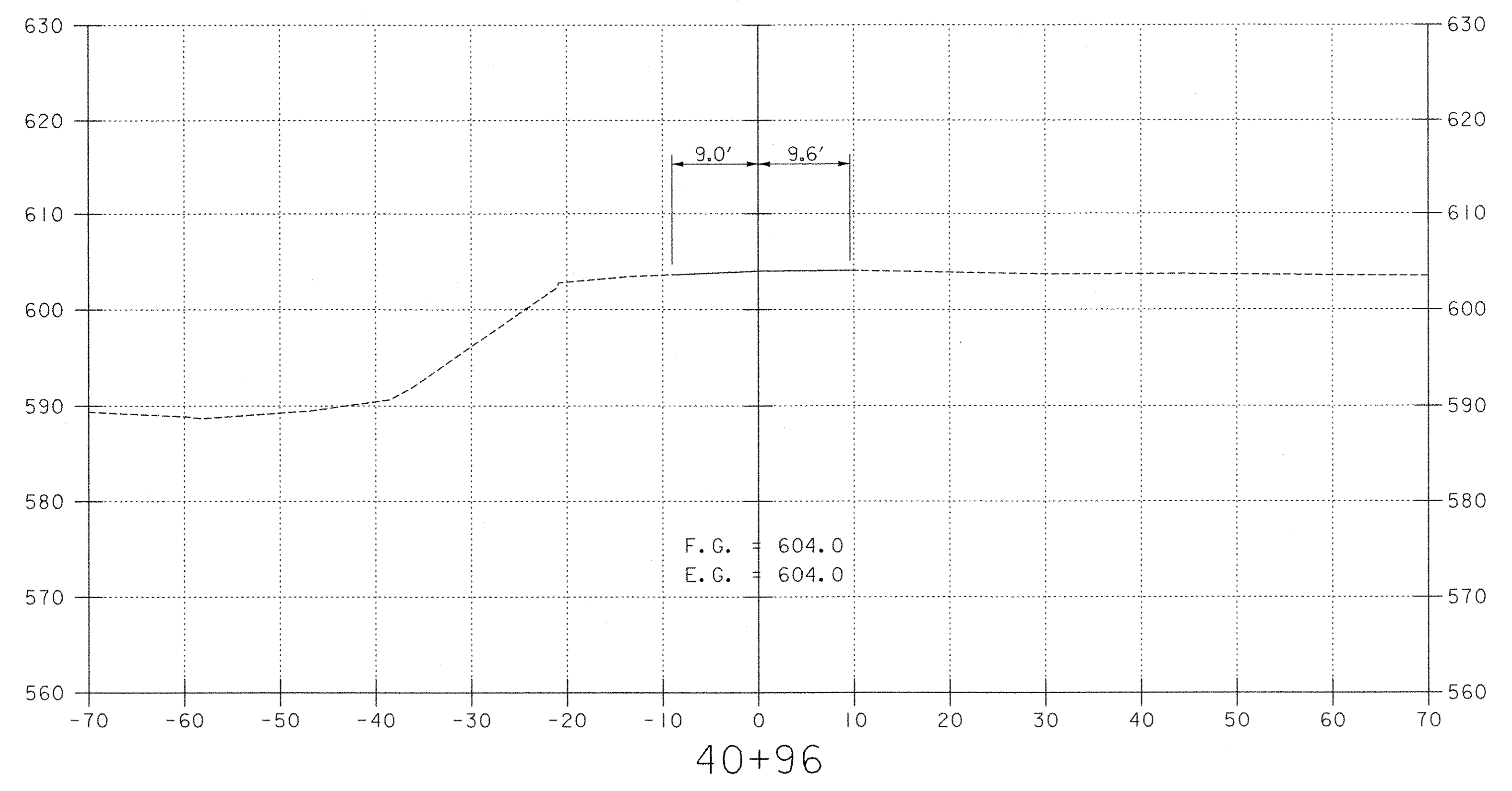
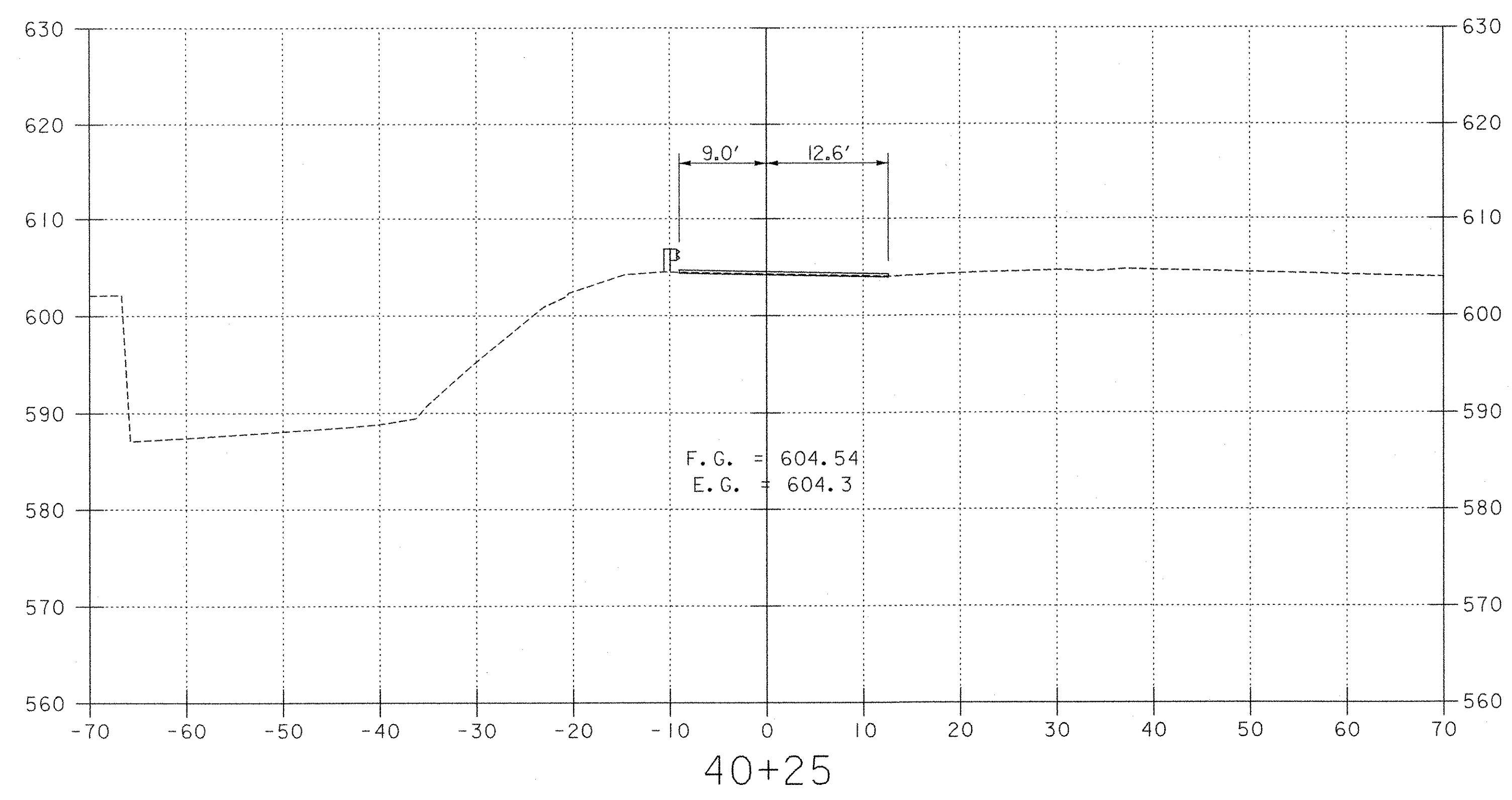
NOTE:
PROPOSED CROWNLINE AND EDGE OF PAVEMENT LOCATIONS EAST OF THE BRIDGE MAY NOT MATCH EXISTING CROWNLINE AND EDGE OF PAVEMENT LOCATIONS. SEE GENERAL NOTE 5 SHEET 26 AND NOTE ON SHEET 8. PROPOSED DIMENSIONS ARE SHOWN FOR ESTIMATING PURPOSES ONLY.

VANASSE HANGEN BRUSTLIN, INC.

VT ROUTE 121 CROSS SECTIONS

FROM STA 20+00	TO STA 23+00
PROJECT NAME	GRAFTON
PROJECT NO.	TH2-0104
SURVEYED BY	EIV TECH. SERVICES, LLC 6/02
SHEET 38 OF 42	

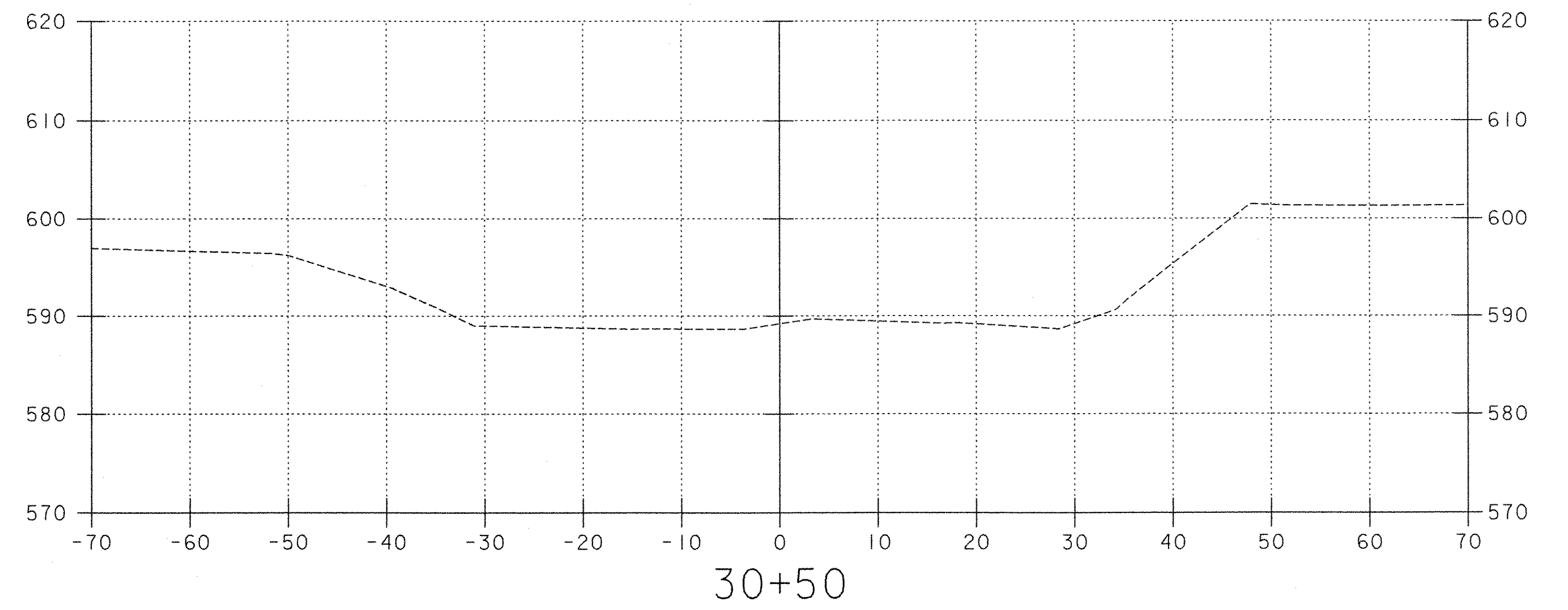
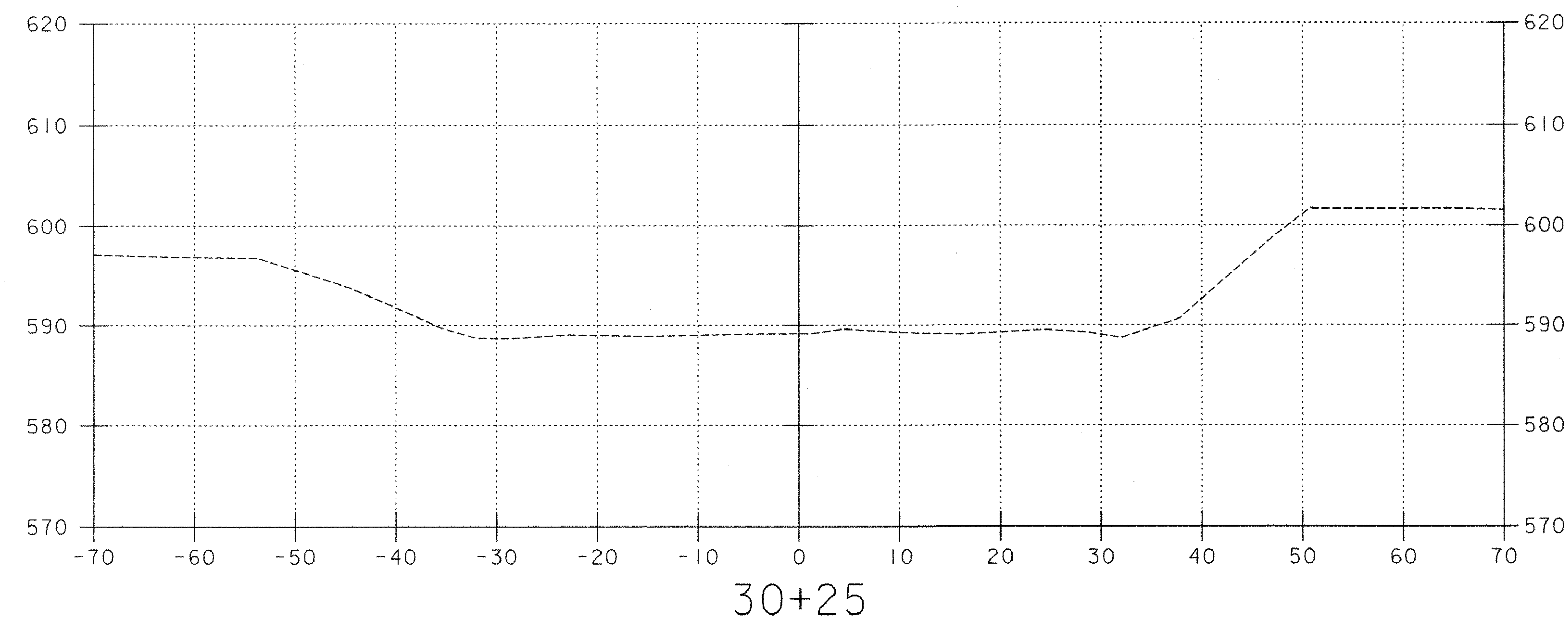
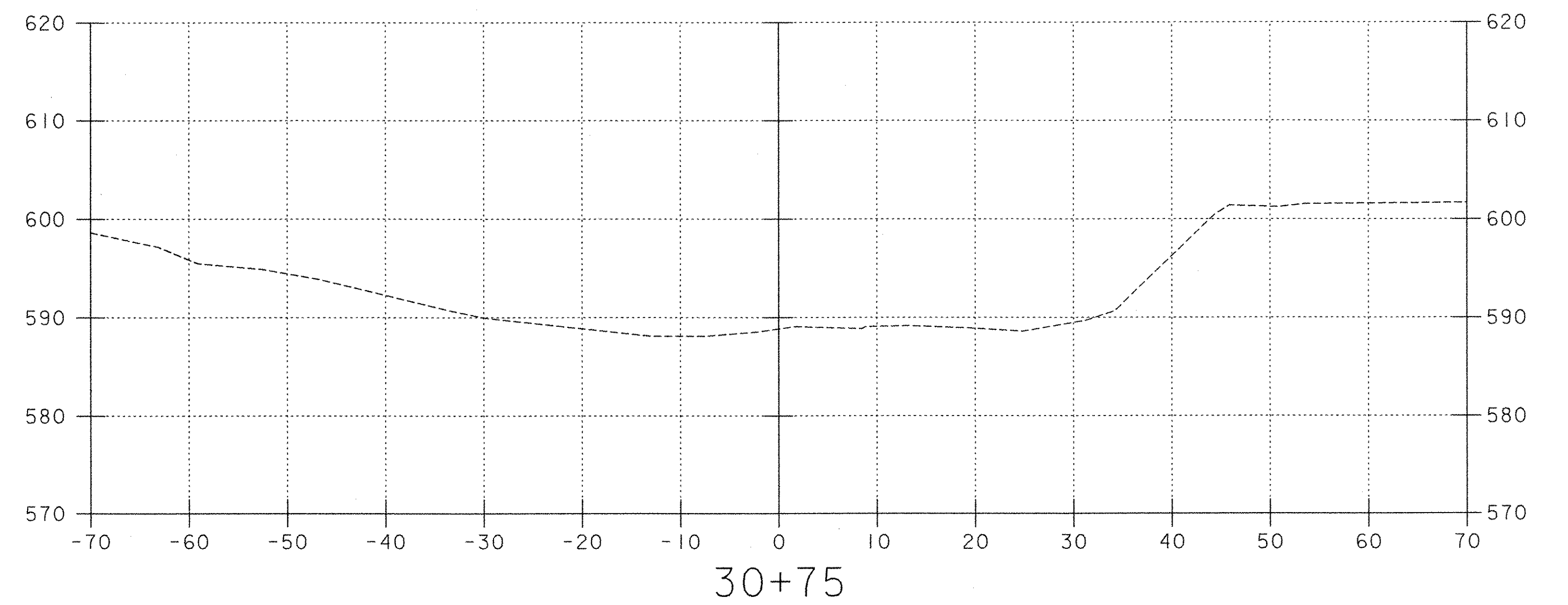
END APPROACH
 STA. 41+00
 MATCH EXISTING



PARKER HILL RD CROSS SECTIONS

FROM STA 40+00	TO STA 40+96
PROJECT NAME	GRAFTON
PROJECT NO.	TH2-0104
SURVEYED BY	EIV TECH. SERVICES, LLC 6/02
SHEET 39 OF 42	

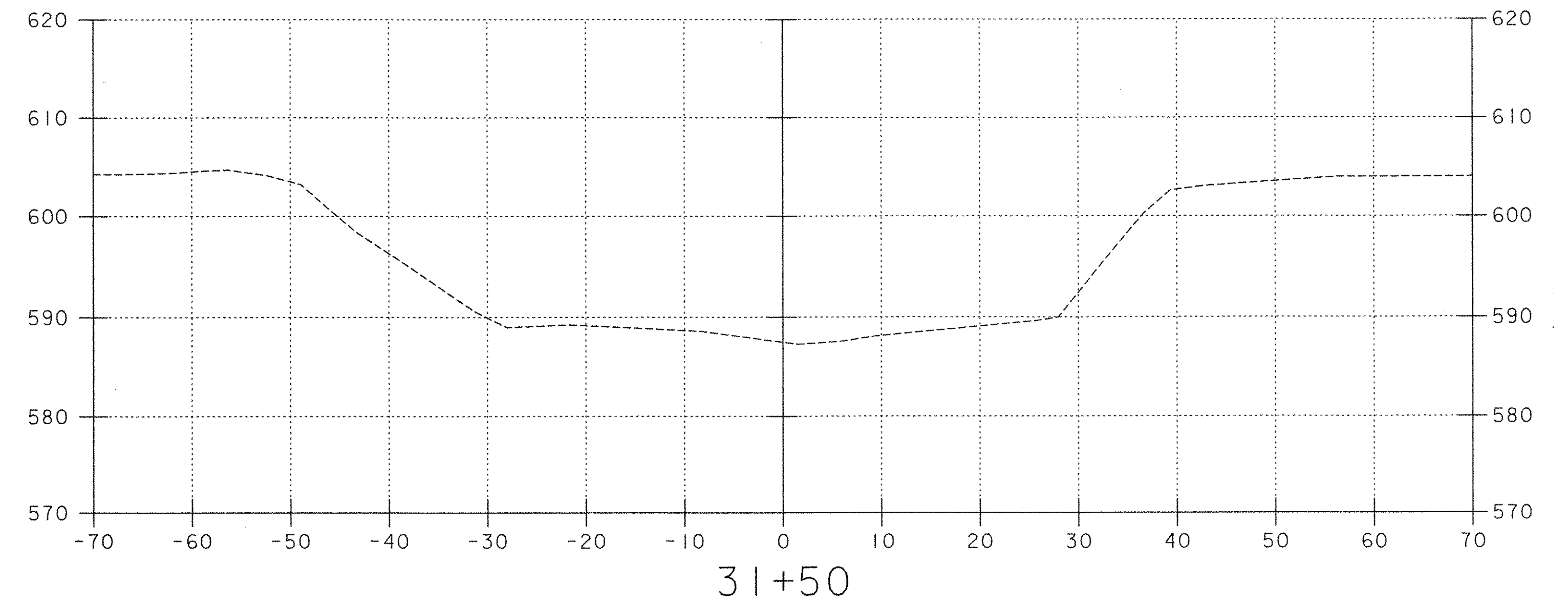
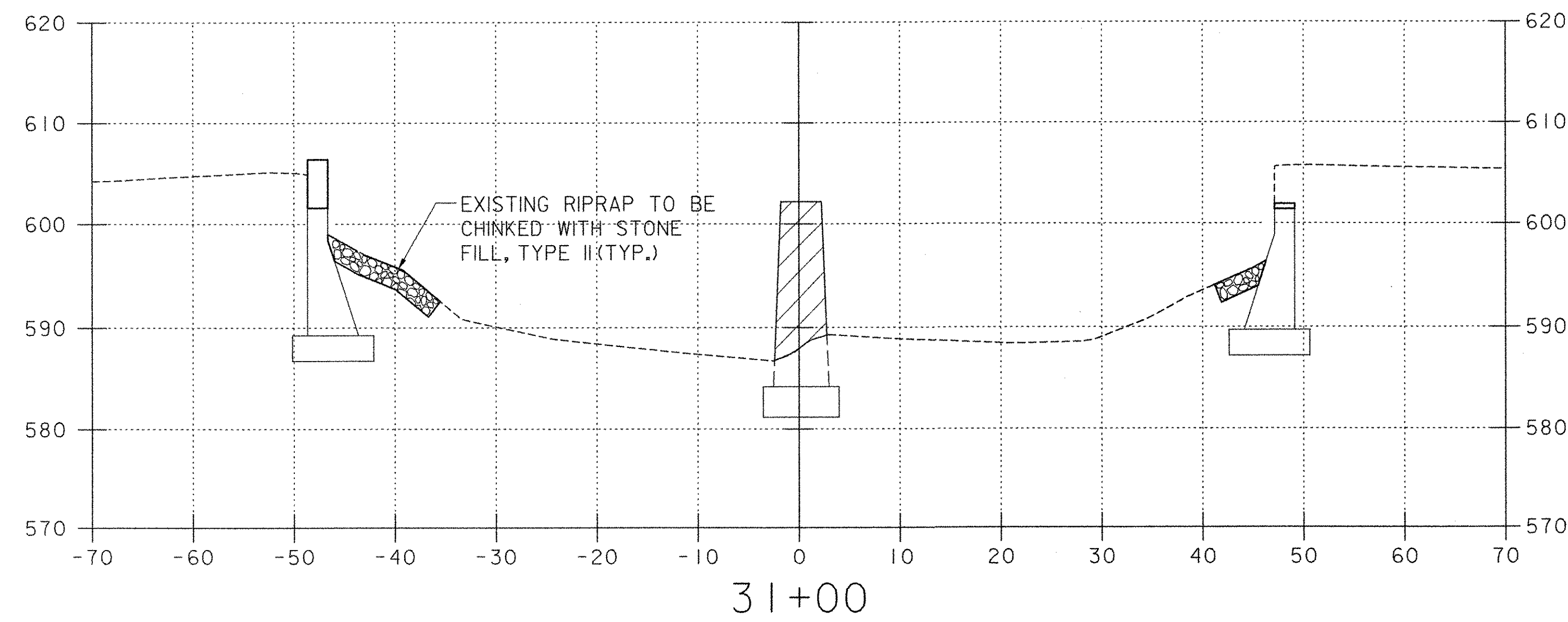
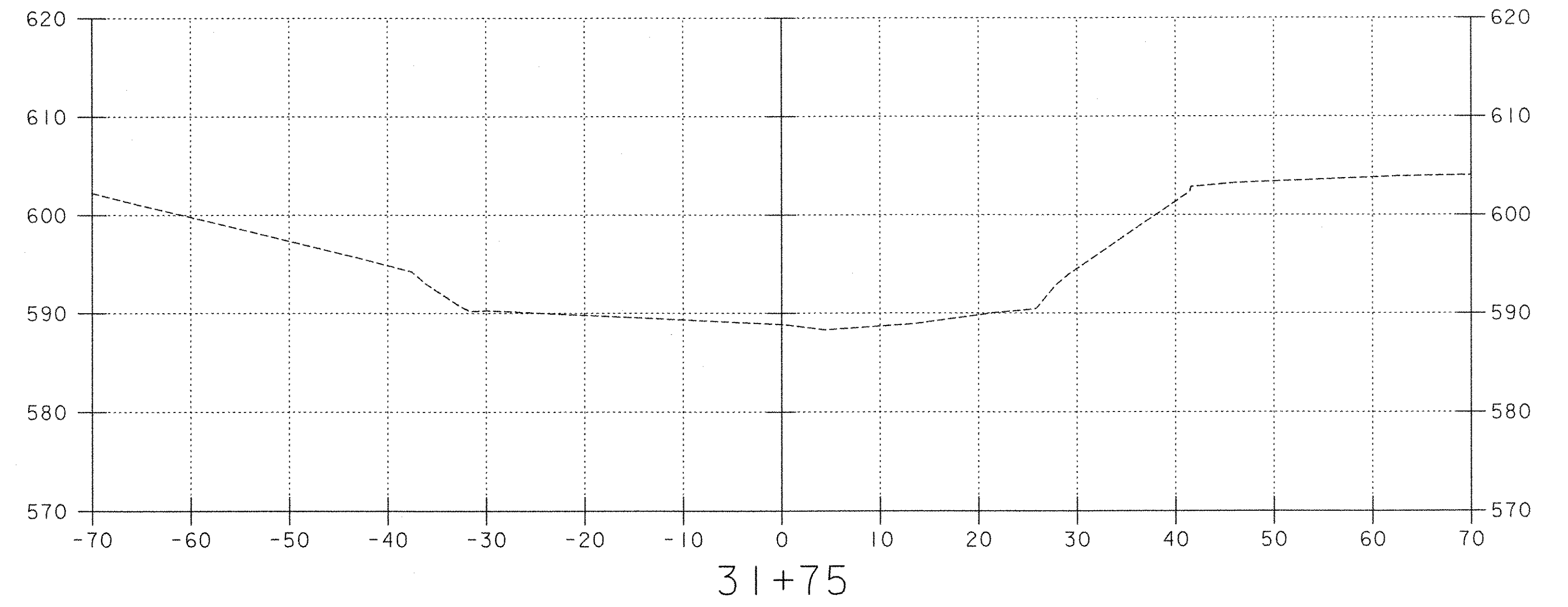
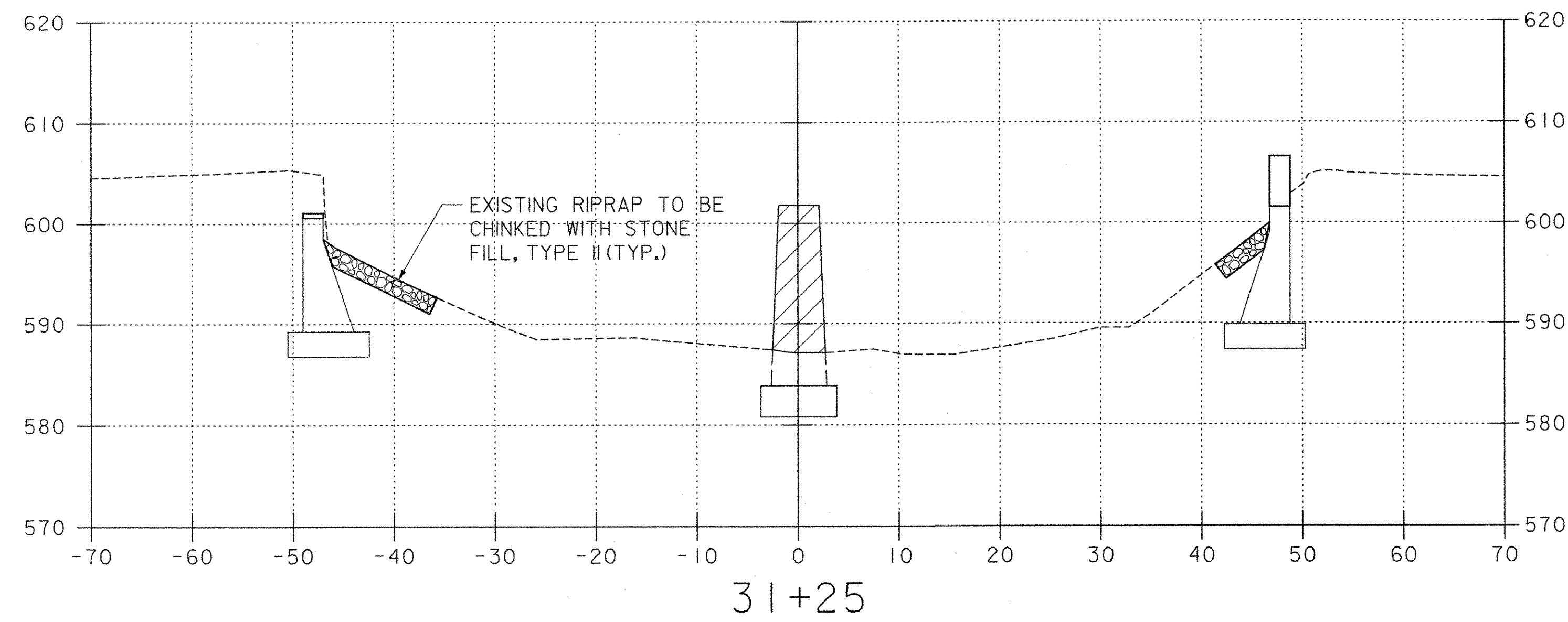
VANASSE HANGEN BRUSTLIN, INC.



CHANNEL CROSS SECTIONS

FROM STA 30+25	TO STA 30+75
PROJECT NAME	GRAFTON
PROJECT NO.	TH2-0104
SURVEYED BY	EIV TECH. SERVICES, LLC 6/02
SHEET 40 OF 42	

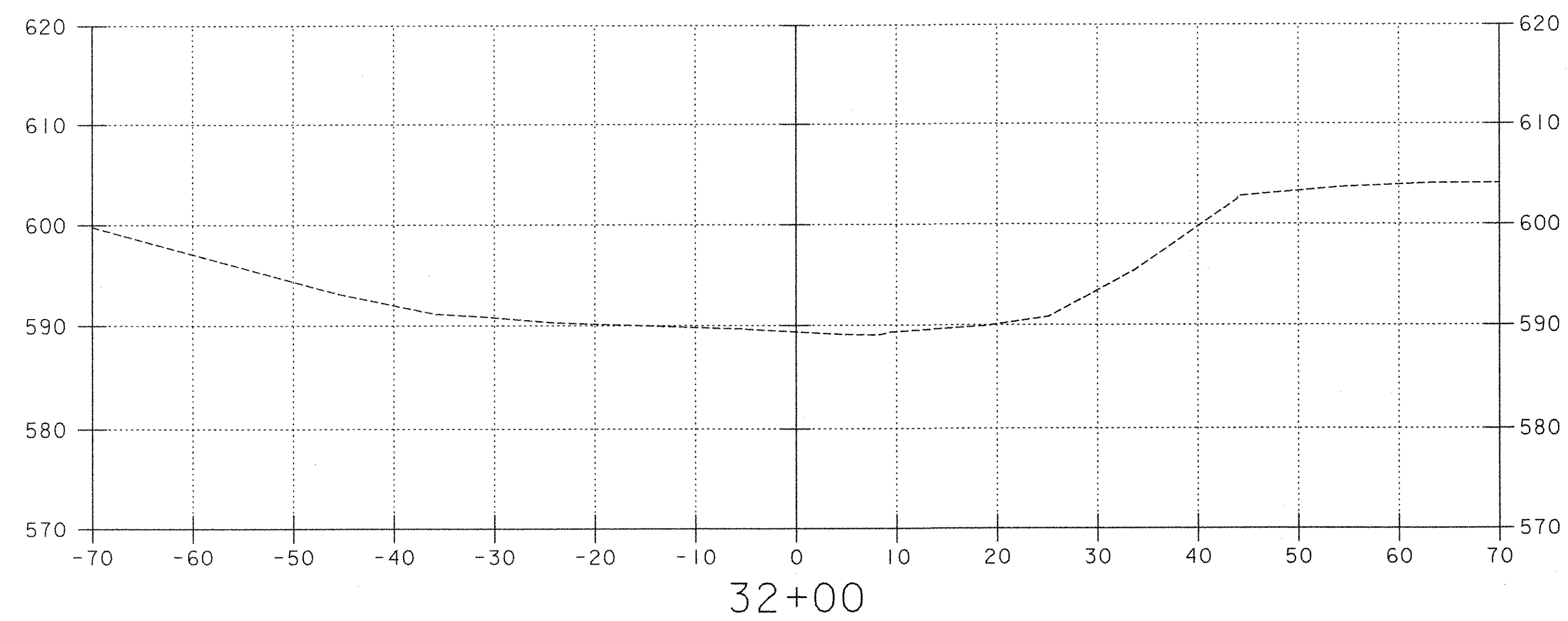
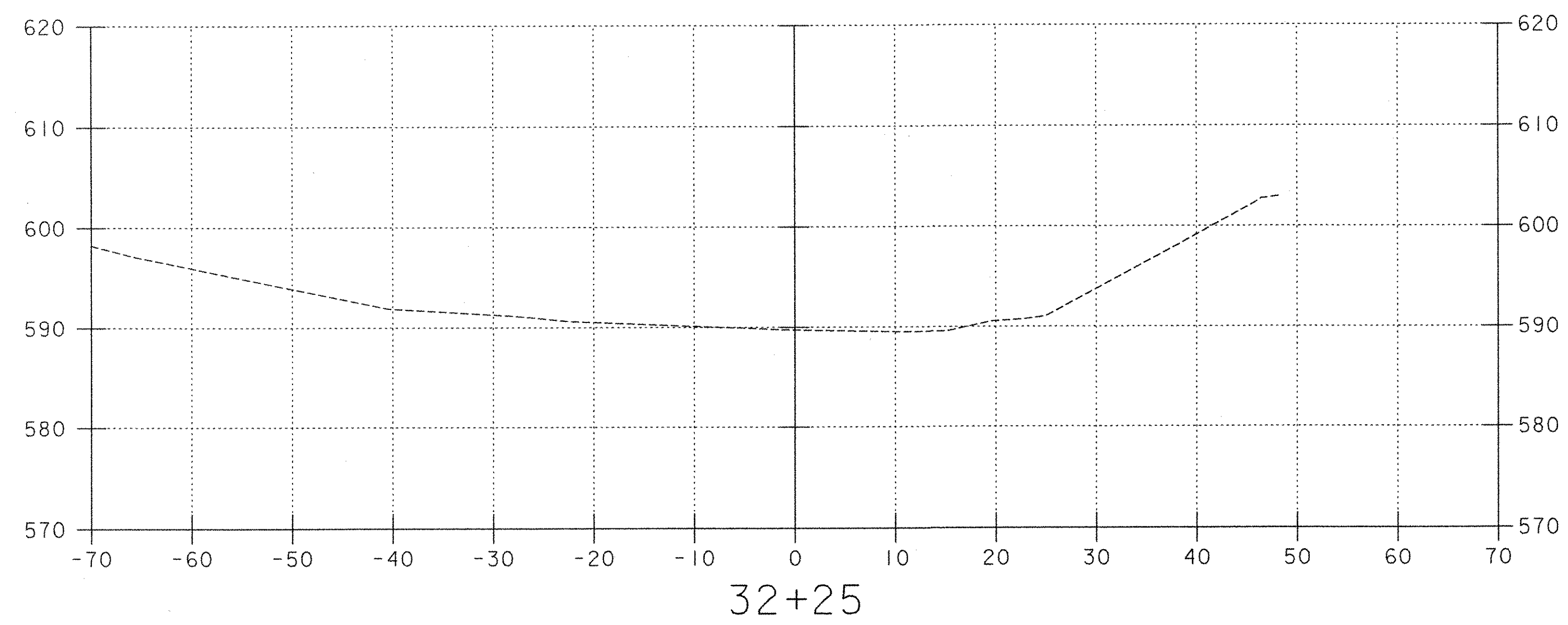
VANASSE HANGEN BRUSTLIN, INC.



CHANNEL CROSS SECTIONS

FROM STA 31+00	TO STA 31+75
PROJECT NAME	GRAFTON
PROJECT NO.	TH2-0104
SURVEYED BY	EIV TECH. SERVICES, LLC 6/02
SHEET 41 OF 42	

VANASSE HANGEN BRUSTLIN, INC.



CHANNEL CROSS SECTIONS

FROM STA	32+00	TO STA	32+25
PROJECT NAME	GRAFTON		
PROJECT NO.	TH2-0104		
SURVEYED BY	EIV TECH. SERVICES, LLC 6/02		
SHEET	42	OF	42

VANASSE HANGEN BRUSTLIN, INC.

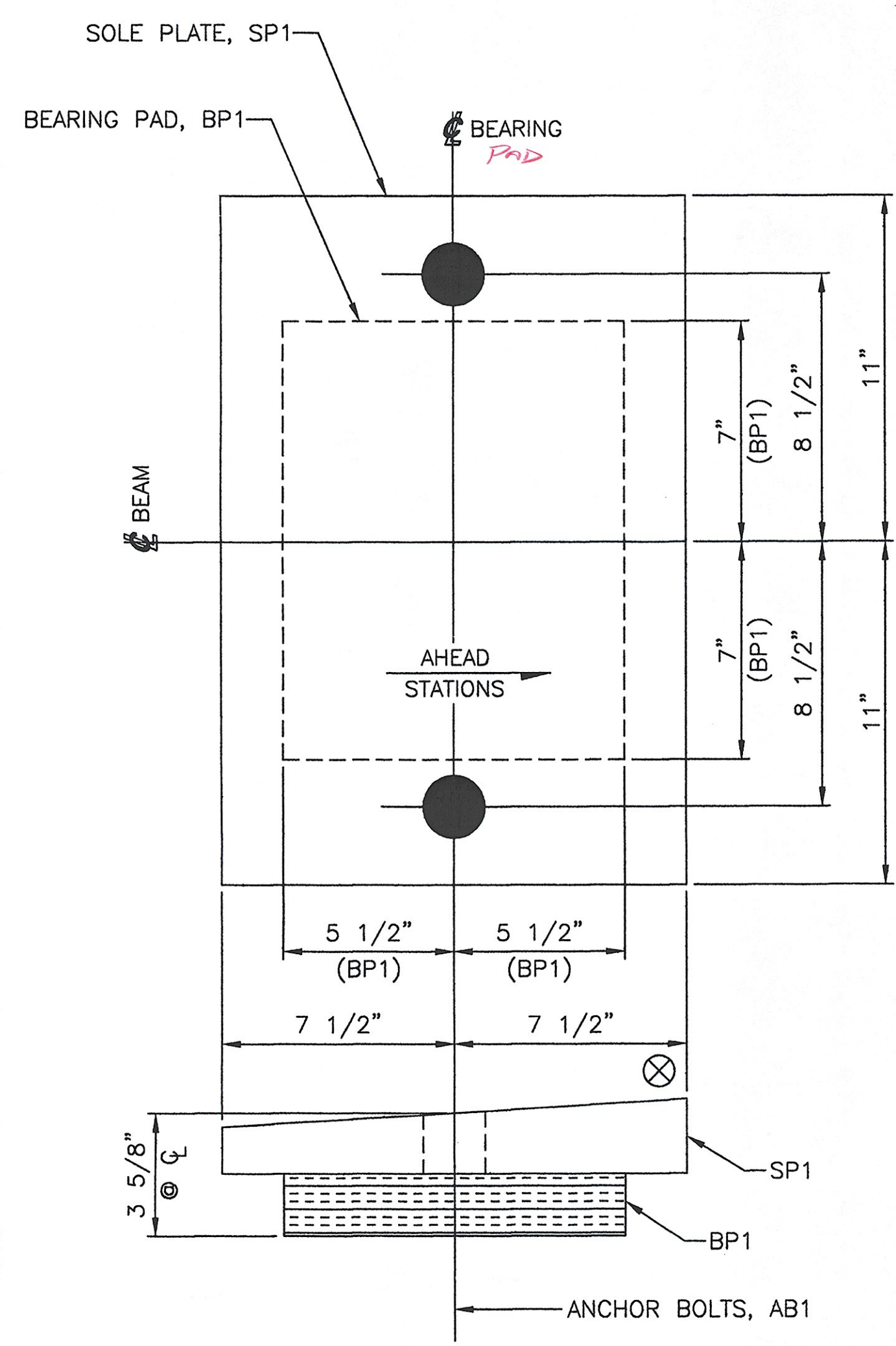
MARK	QTY	DESCRIPTION	IN	16ths	FAB MARK	MILL MARK	WEIGHT
SP1	4	PL 1 3/4" x 15"	22	0		METALIZED	655
BP1	4	PREF. PAD 2" x 11"	14	0		AASHTO 18.4.9.1	64
TOTAL =							719

SHOP NOTES:

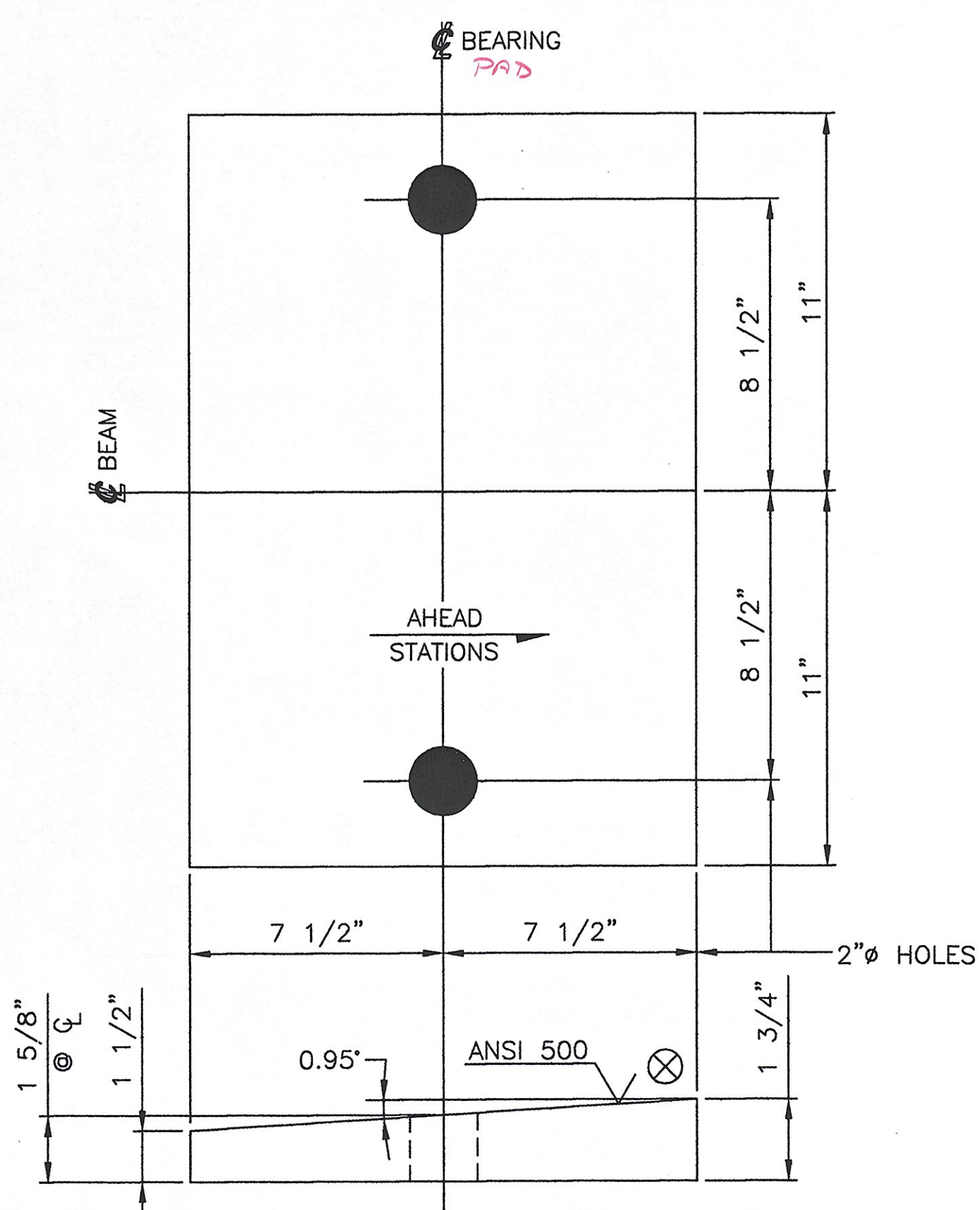
- SOLE PLATES: AASHTO M270, GR. 36.
- PREFORMED FABRIC PADS: IN ACCORDANCE WITH AASHTO DIVISION II, SECTION 18.4.9.1.
- STAINLESS STEEL: ASTM A240, TYPE 304, WITH A 20 RMS OR BETTER FINISH ON SLIDING SURFACE.
- PTFE: ASTM D1457, VIRGIN, UNFILLED.
- ANCHOR BOLTS: F1554, GR. 55, GALVANIZED.
- PLATE WASHERS: ASTM A36 OR EQUIVALENT, GALVANIZED.
- MATERIAL NOTED AS M270, GR. 36 MAY BE AASHTO M270, GR. 36, ASTM A709, GR. 36 OR ASTM A36.
- FABRICATION TOLERANCES SHALL BE IN ACCORDANCE WITH SECTION 531.04.d OF THE STATE STANDARDS.
- ALL FREE EDGES OF PLATES TO BE METALIZED SHALL BE ROUNDED TO 1/16" RADIUS.
- SOLE PLATES SHALL BE BLAST CLEANED TO SSPC-SP5, "WHITE METAL" AND METALIZED IN ACCORDANCE WITH AWS C 2.18, TO A MINIMUM THICKNESS OF 6 MILS WITH 99.9% PURE ZINC AND SEALED WITH #90290 METCO ALS.
- COSMEC, INC. WILL BLAST THE MATERIAL AND APPLY THE REQUIRED COATING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND IN ACCORDANCE WITH ALL APPLICABLE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS. COSMEC, INC. WILL PACKAGE AND LOAD THE BEARINGS FOR SHIPMENT IN SUCH A MANNER AS TO INSURE NO DAMAGE IS DONE TO THE COATING. ANY DAMAGE TO THE COATING IN THE FIELD IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- MATERIAL NOTED AS GALVANIZED SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123) OR AASHTO M232 (ASTM A153) AS APPLICABLE.
- ALL SURFACES OF PLATES SHALL BE SMOOTH AND STRAIGHT.
- ⊗ SHOP TO MARK HIGH SIDE OF PLATE.
- COSMEC, INC. REPRESENTATIVE: MR. MATT McANDREWS (508) 668-6600

SHALL HAVE A MIRROR FINISH OF LESS THAN ~~0.25~~ RMS
10 micro inches

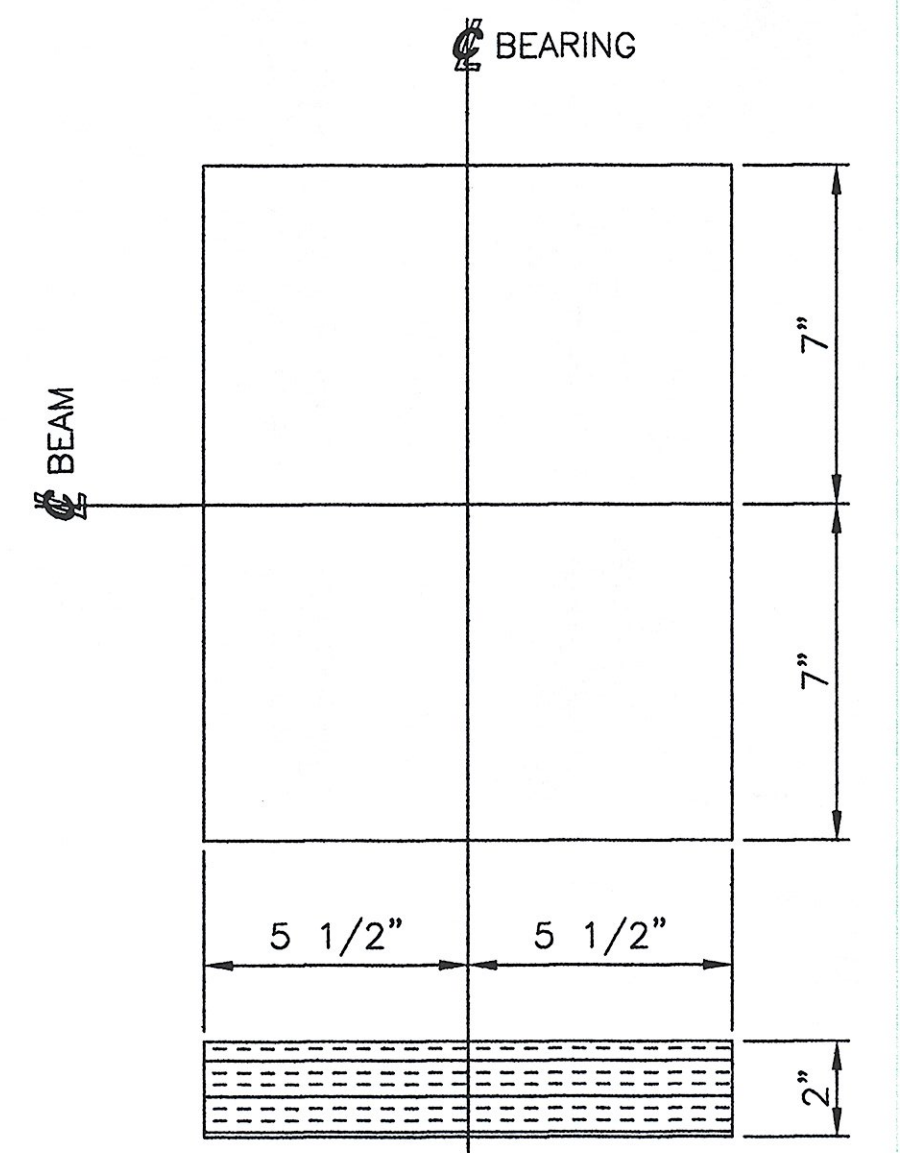
ASTM 4894
New # Spec
I followed to draft 8/15 loc McAndrews



4 FIXED BEARING ASSEMBLIES, FBA-1
LOCATE AT ABUTMENT 1 BEAMS 1 THRU 4



4 FIXED SOLE PLATES, SP1
PL 1 3/4" X 15" X 22" (METALIZED)
USE WITH FIXED BEARING ASSEMBLY, FBA-1



4 BEARING PADS, BP1
PREFORMED FABRIC PAD 2" X 11" X 14"
FABRICATED IN ACCORDANCE WITH AASHTO 18.4.9.1
USE WITH FIXED BEARING ASSEMBLY, FBA-1

SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS CORRECTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

VHB Vanesse Hungen Brustlin, Inc.
Engineers, Planners, and Scientists
Six Bedford Farms, Kilton Rd.
Bedford, NH 05110 603 644 0888

Job Number: 51335
Reviewed By: MAC/LSL
Date: 3/24/06

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TH 1 (CAMBRIDGEPORT BRIDGE)
OVER THE SAXTONS RIVER
TOWN OF GRAFTON, VERMONT
PROJECT NO. TH2-0104
BRIDGE NO. 16G

COSMEC, INC. 70 SOUTH STREET WALPOLE, MA 02081

SCALE: NONE DRAWN BY: JEP CHECKED BY: PJM
SHEET 1 OF 3 DATE: 02/06 DATE: 02/06

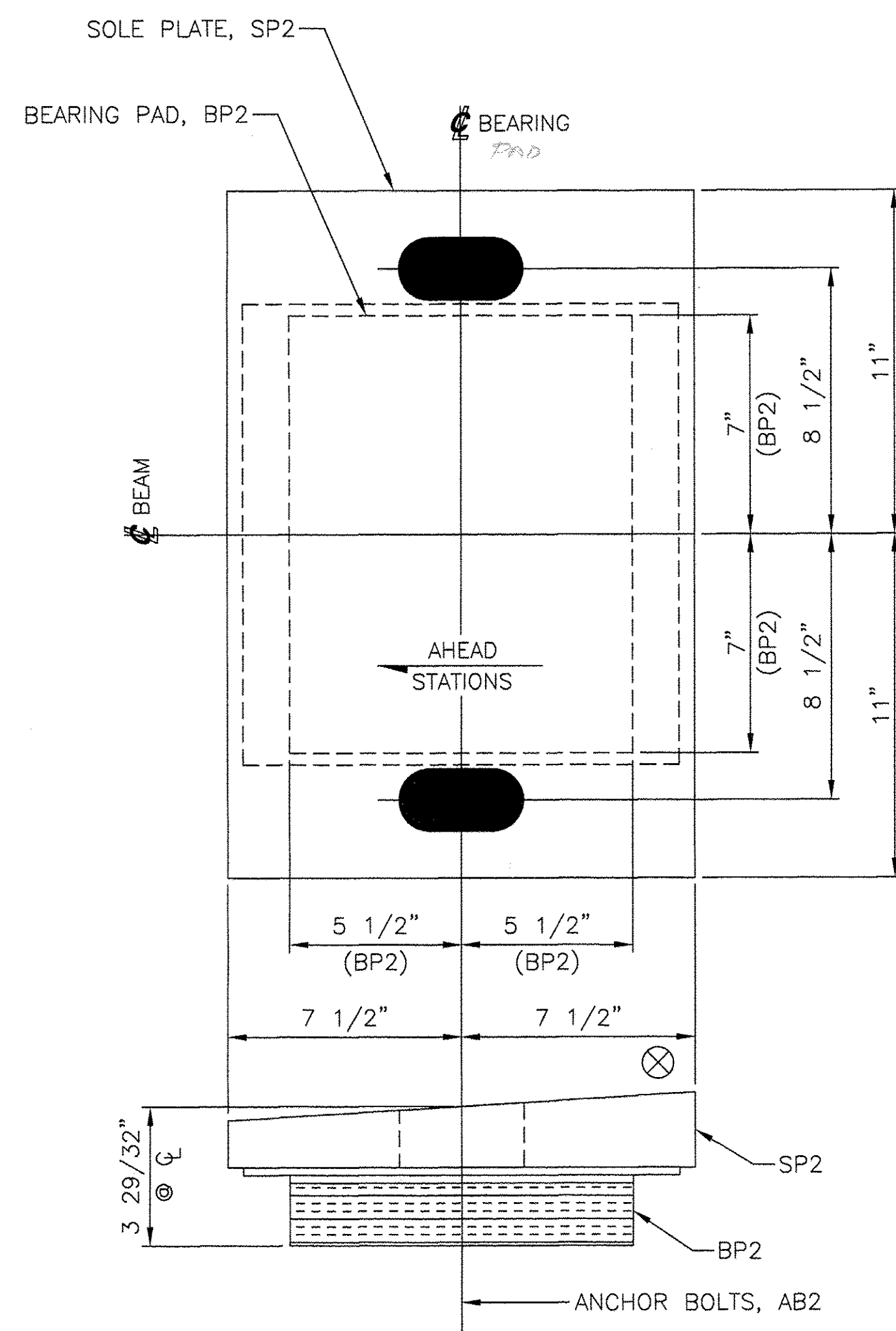
COSMEC BEARING

CUSTOMER: FRANK W. WHITCOMB CONSTRUCTION CORPORATION S.D. NUMBER: 60519 DRAWING NUMBER: 4677 REV: 0

REV.	BY:	DATE	CHK'D BY:	DATE
---	---	---	---	---

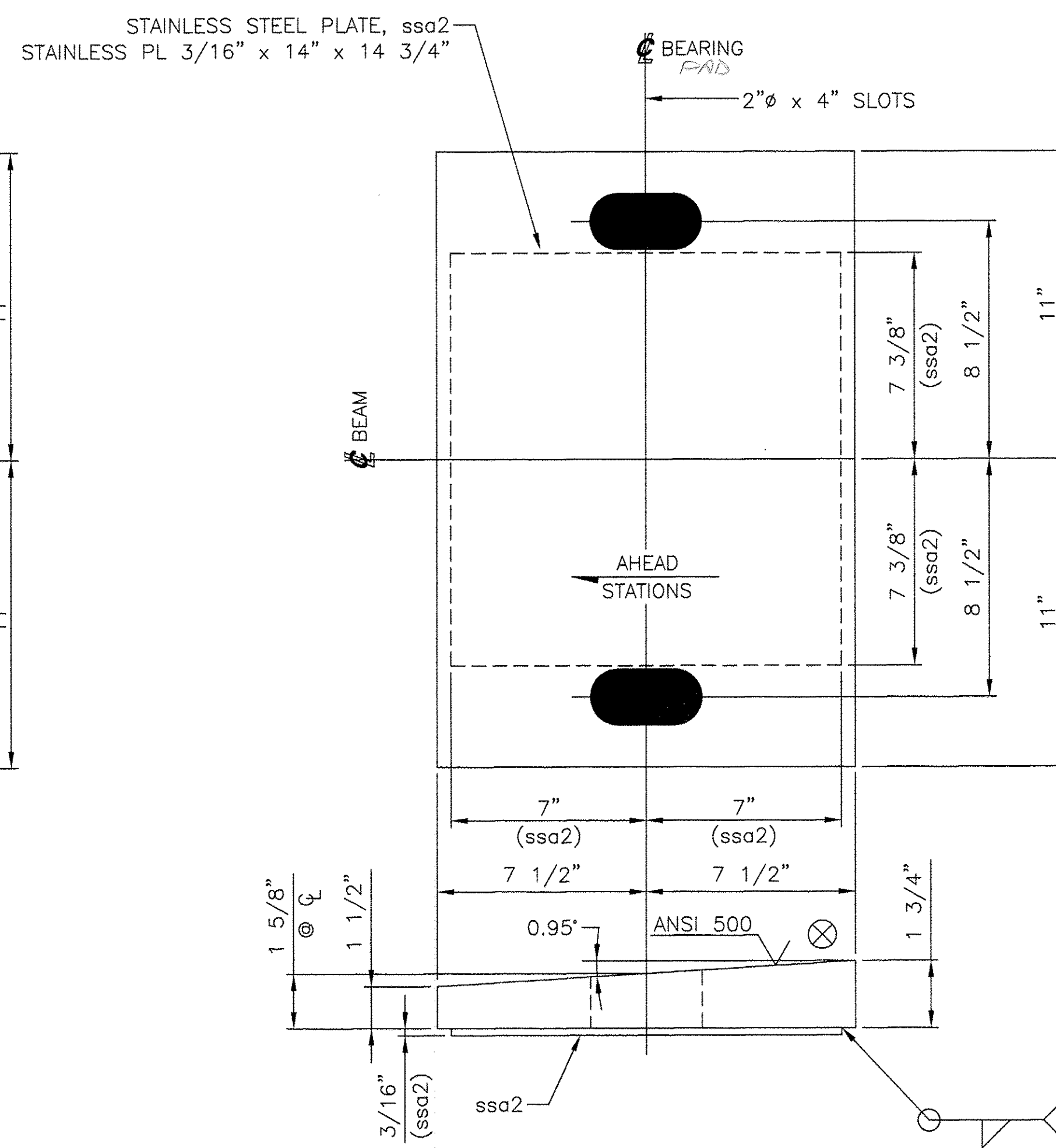
MARK	QTY	DESCRIPTION	IN	16ths	FAB MARK	MILL MARK	WEIGHT
SP2	4	PL 1 3/4" x 15"	22	0	.	METALIZED	655
.	4	STAINLESS PL 3/16" x 14"	14	12	ssa2	A240 TYPE 304	48
BP2	4	PREF. PAD 2" x 11"	14	0	.	AASHTO 18.4.9.1	64
.	4	UNFILLED PTFE 3/32" x 11"	14	0	tfe2	D1457	5

TOTAL = 772



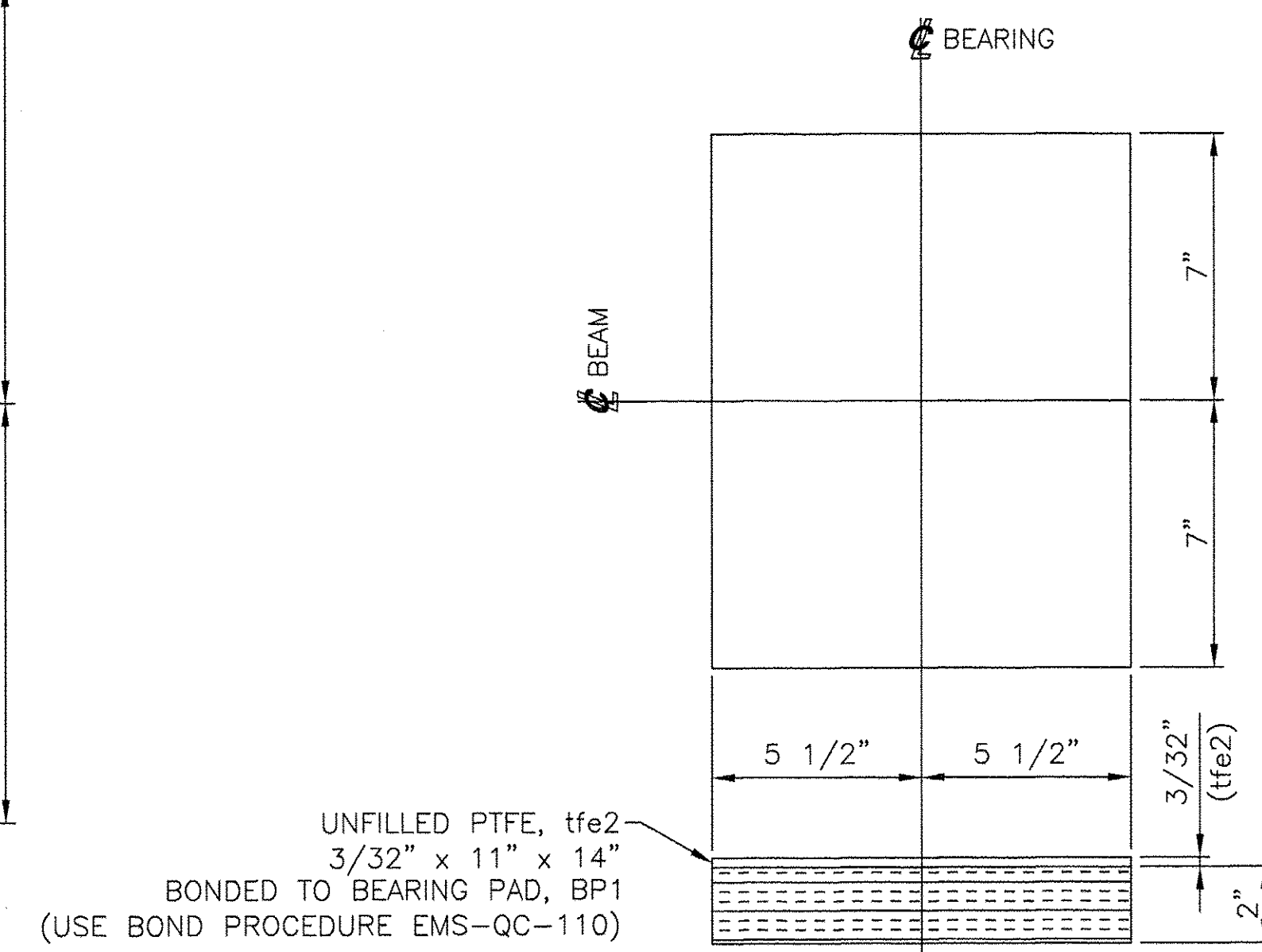
4 EXPANSION BEARING ASSEMBLIES, EBA-1

LOCATE AT
ABUTMENT 2
BEAMS 1 THRU 4



4 EXPANSION SOLE PLATES, SP2

PL 1 3/4" X 15" X 22"
(METALIZED)
USE WITH
EXPANSION BEARING ASSEMBLY, EBA-1



4 BEARING PADS, BP2
PREFORMED FABRIC PAD 2" X 11" X 14"
FABRICATED IN ACCORDANCE WITH AASHTO 18.4.9.1
USE WITH
EXPANSION BEARING ASSEMBLY, EBA-1

SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS CORRECTED

CONVECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

VHB Vanasse Hangen Brustlin, Inc.
Engineers, Planners, and Scientists
Six Bedford Farms, Kilton Rd.
Bedford, NH 03110 603 844 0800

Job Number: 51235
Reviewed By: MAC/L56
Date: 3/24/06

SEE SHEET 1 FOR SHOP NOTES.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TH 1 (CAMBRIDGEPORT BRIDGE)
OVER THE SAXTONS RIVER
TOWN OF GRAFTON, VERMONT
PROJECT NO. TH2-0104
BRIDGE NO. 16G

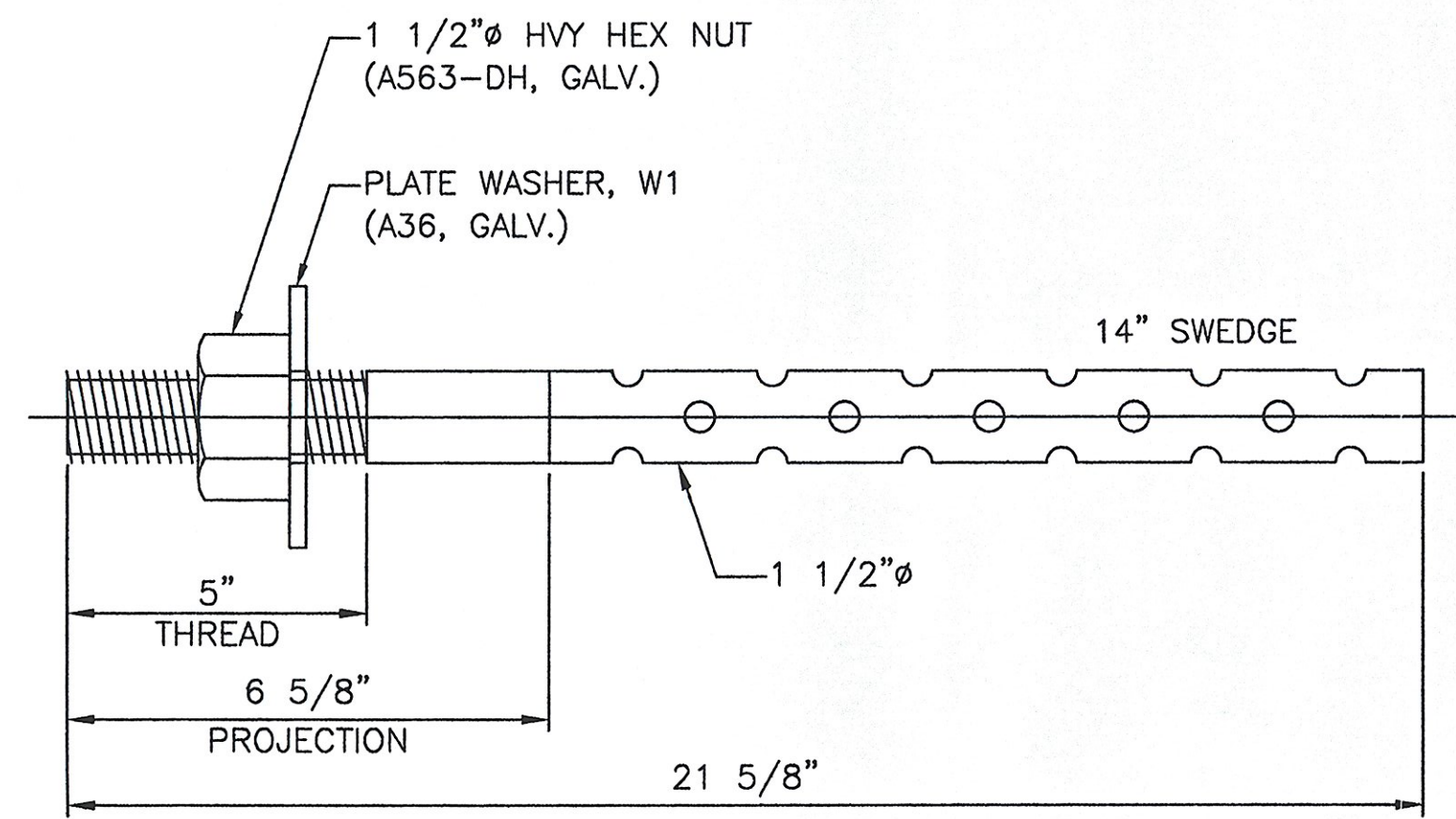
COSMEC, INC. 70 SOUTH STREET
WALPOLE, MA. 02081

SCALE: NONE DRAWN BY: JEP CHECKED BY: PJM
SHEET 2 OF 3 DATE: 02/06 DATE: 02/06

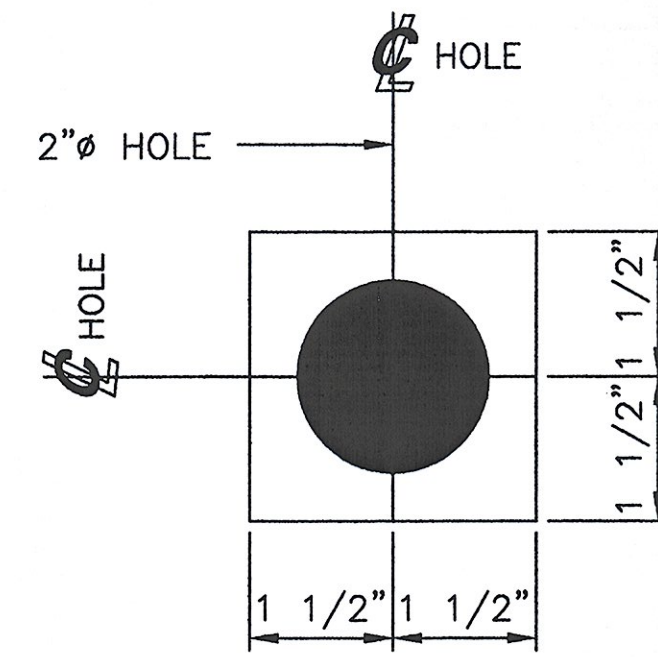
COSMEC BEARING

CUSTOMER: FRANK W. WHITCOMB CONSTRUCTION CORPORATION S.O. NUMBER: 60519 DRAWING NUMBER: 4678 REV: 0

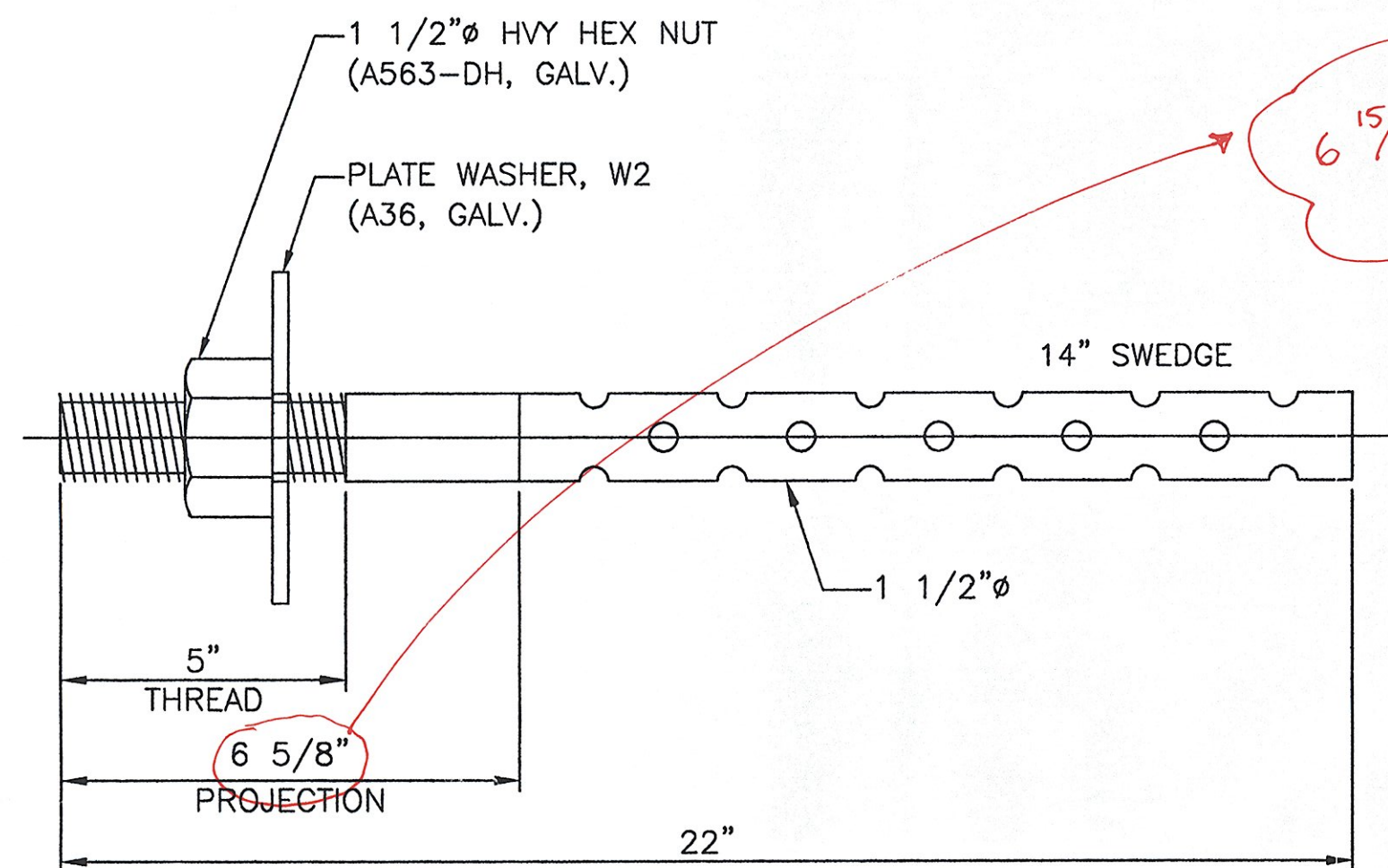
REV.	BY:	DATE	CK'D BY:	DATE



8 ANCHOR BOLTS, AB1
 RD 1 1/2" ϕ x 21 5/8"
 F1554 GR. 55 (GALV.)
 MIN. EMBED: 15"
 LOCATE AT
 ABUTMENT 1

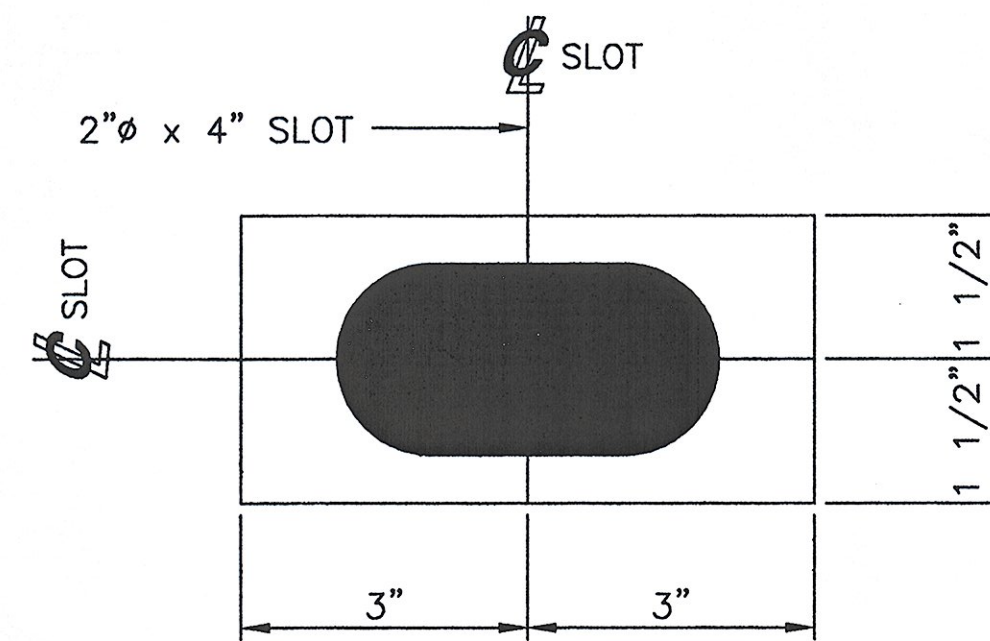


8 PLATE WASHERS, W1
 PL 3/8" x 3" x 3"
 (GALV.)
 USE WITH
 ANCHOR BOLT, AB1



8 ANCHOR BOLTS, AB2
 RD 1 1/2" ϕ x 22"
 F1554 GR. 55 (GALV.)
 MIN. EMBED: 15"
 LOCATE AT
 ABUTMENT 2

6 15/16" -> TO ACCOUNT FOR S.S PL AND PTFE



8 PLATE WASHERS, W2
 PL 3/8" x 3" x 6"
 (GALV.)
 USE WITH
 ANCHOR BOLT, AB2

MARK	QTY	DESCRIPTION	IN	16ths	FAB MARK	MILL MARK	WEIGHT
AB1	8	RD 1 1/2" ϕ	21	10	GALV.	F1554 GR. 55	87
W1	8	PL 3/8" x 3"	3	0	GALV.	.	8
AB2	8	RD 1 1/2" ϕ	22	0	GALV.	F1554 GR. 55	88
W2	8	PL 3/8" x 3"	6	0	GALV.	.	15
.	16	1 1/2" ϕ HVY HEX NUTS	.	.	GALV.	A563-DH	15

TOTAL WEIGHT IN LBS = 213

SEE SHEET 1 FOR SHOP NOTES.

SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS CORRECTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

VHB Vanesse Hanger Brustlin, Inc.
 Engineers, Planners, and Scientists
 Six Bedford Farms, Kilton Rd.
 Bedford, NH 03110 603 844 0888

Job Number: 51335
 Reviewed By: Mac/LSL
 Date: 3/27/06

STATE OF VERMONT
 AGENCY OF TRANSPORTATION
 TH 1 (CAMBRIDGEPORT BRIDGE)
 OVER THE SAXTONS RIVER
 TOWN OF GRAFTON, VERMONT
 PROJECT NO. TH2-0104
 BRIDGE NO. 16G

COSMEC, INC. 70 SOUTH STREET
 WALPOLE, MA 02081

SCALE: NONE DRAWN BY: JEP CHECKED BY: PJM
 SHEET 3 OF 3 DATE: 02/06 DATE: 02/06

COSMEC BEARING

CUSTOMER: FRANK W. WHITCOMB S.O. NUMBER DRAWING NUMBER REV.
 CONSTRUCTION CORPORATION 60519 4679 0

REV.	BY:	DATE	CK'D BY:	DATE
-	-	-	-	-

GENERAL SHOP NOTES

SPECIFICATIONS

- 1. MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT, AGENCY OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, GENERAL SPECIAL PROVISIONS, AND THE LATEST EDITION OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

MATERIAL

- 1. MATERIAL SHALL CONFORM TO AASHTO M270, GRADE 50W (UN).
- 2. MATERIAL NOTED (M270-50WT2) ON DETAIL DRAWINGS SHALL REQUIRE CHARPY V-NOTCH TESTING (ZONE 2).
- 3. HIGH STRENGTH BOLTS SHALL CONFORM TO AASHTO M164 TYPE 3 WITH ONE AASHTO M291 HVY. HEX NUT & ONE AASHTO M293 TYPE 3 WASHER.

FABRICATION & WORKMANSHIP

- 1. "BEARING AREA" AS NOTED ON STRINGER DETAILS, INDICATES AREA THAT MUST BE FLAT AND TRUE TO RECEIVE SOLE PLATE.
- 2. RE-ENTRANT CUTS TO HAVE A 1" MIN. RADIUS (2" ON MAIN MEMBERS).

SHOP WELDING AND TESTING NOTES:

- 1. WELDING AND NON-DESTRUCTIVE TESTING SHALL BE IN ACCORDANCE WITH ANSI/AASHTO/AWS BRIDGE WELDING CODE, D1.5.
- 2. FOR WELDING CONNECTION PLATES TO BEAMS SEE "TYP. WELD TERMINATION DETAIL".

DRAWING REFERENCE:

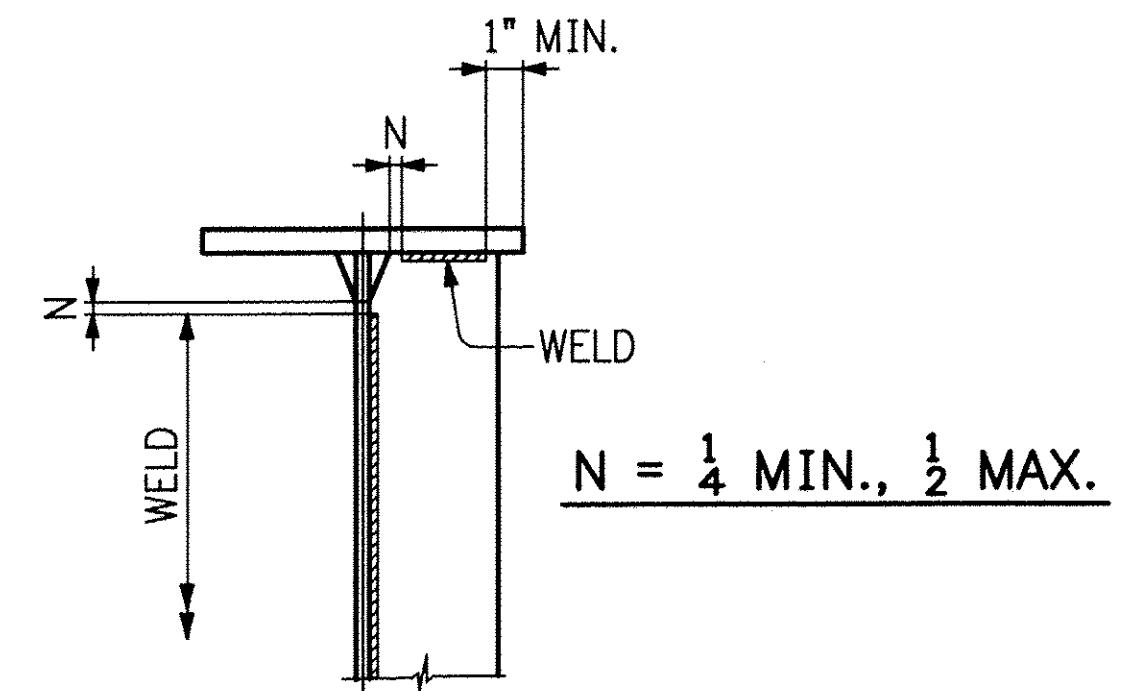
GIRDER JOB STANDARDS - PREFIXED "X"

SHOP CLEANING NOTES:

- 1. BLAST CLEAN ALL STEEL TO SSPC-SP10 (NEAR WHITE) AFTER FABRICATION.

SHOP PAINTING NOTES:

- 1. NO PAINT



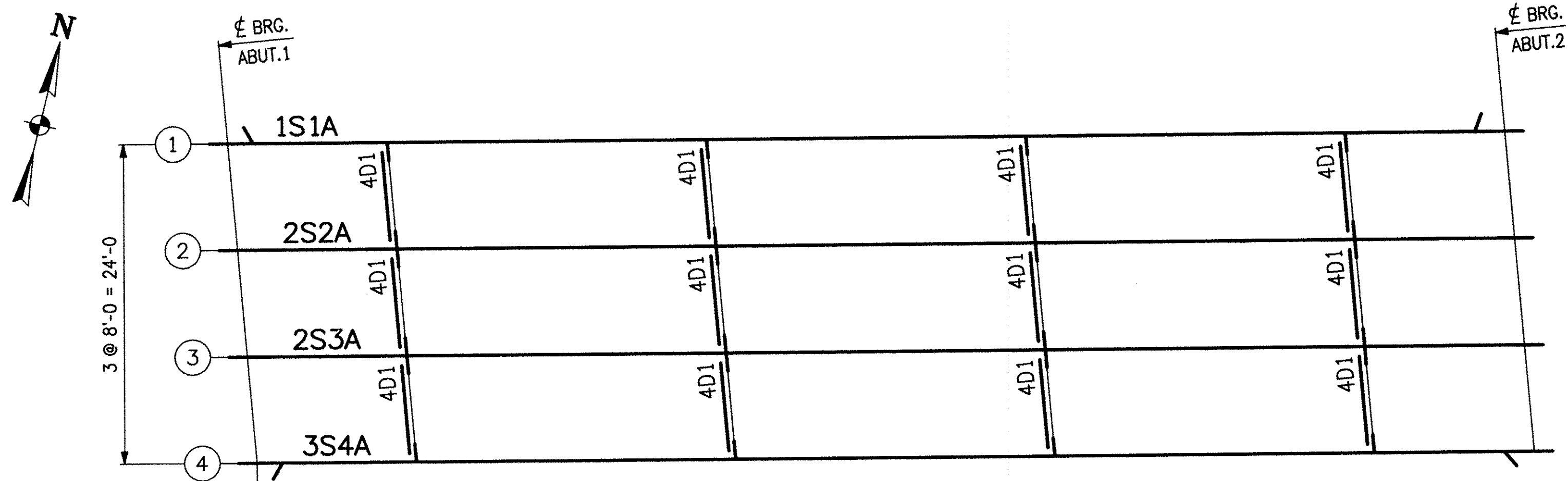
TYP. WELD TERMINATION DETAIL

REV.	DATE	DESCRIPTION	QTY.	DATE	ISSUED TO	FOR
8	3/9/06	F W Whitcomb			Approval	

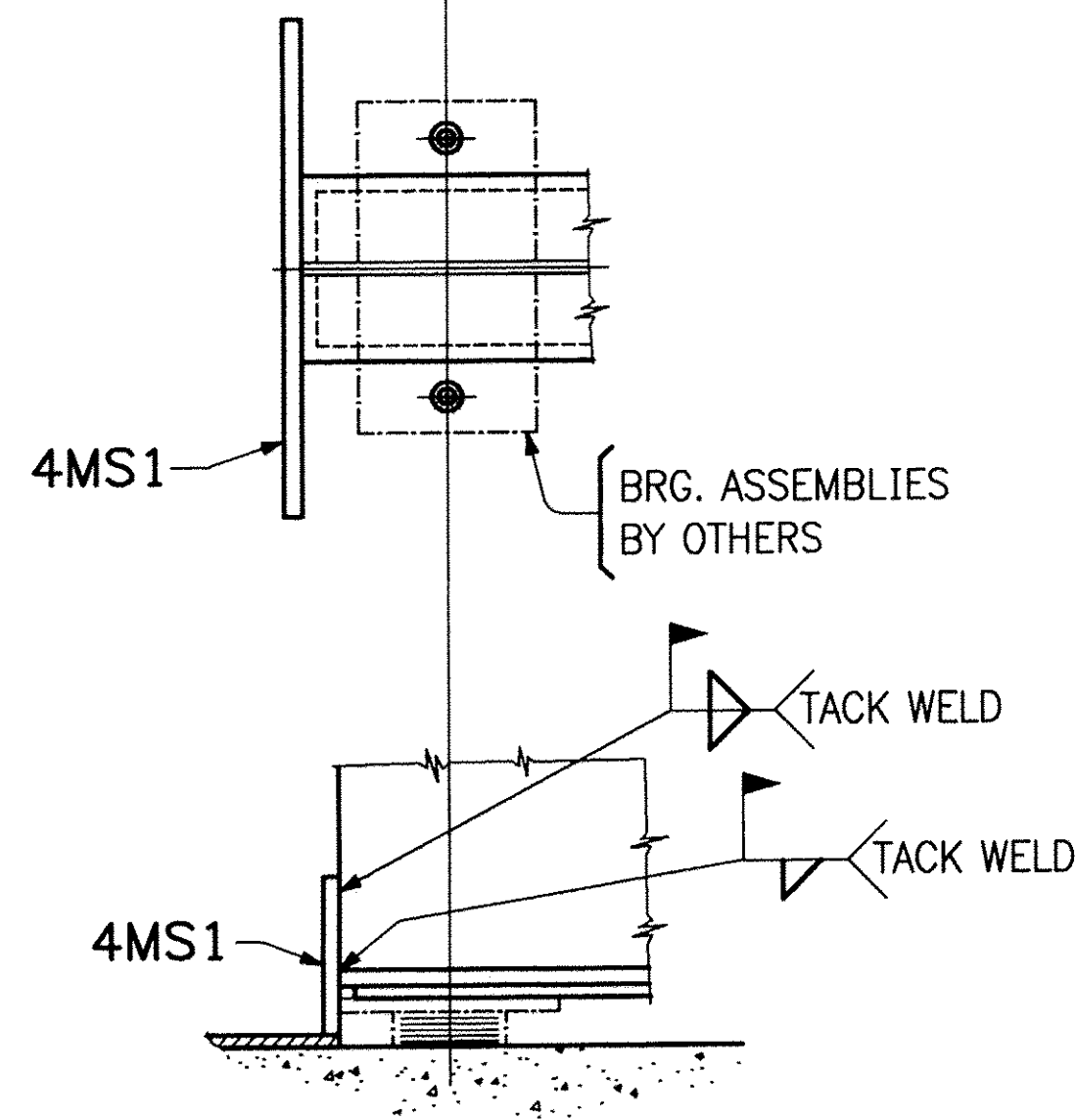
PROJECT:	T.H. NO. 1 OVER SXTONS RIVER (BRIDGE NO. 16C)				
LOCATION:	PROJ. NO. TH2-0104 GRAFTON, VERMONT				
ENGINEER:	VANASSE HANGEN BRUSTLIN, INC.				
CUSTOMER:	FRANK W. WHITCOMB CONST.				
DRAWING TITLE:	GENERAL NOTES				
DRAWN BY:	CPM 3-3-06	JOB NUMBER:	6065	SHEET NUMBER:	GN1
CHECKED BY:	[Signature] 3-6-06				

EBLLC
EASTERN BRIDGE LLC
RURAL RTE 2, BOX 302
CLAREMONT, NH 03743
603-542-5202

Sheet GN1 - Plotted: 03/07/2006 @ 14:15 (HEATHER)



ERECTION PLAN



BLOCK OUT PL LOCATION
(ABUT. 1 - SHOWN)
(ABUT. 2 - ROTATE 180°)

FIELD BOLT SUMMARY					2% ADDED, MIN 2 EXTRA	
LINE	NO. OF BOLTS	BOLT DIAM.	TYPE	BOLT LENGTH	ACTUAL COUNT	REMARKS
1	98	7/8	AASHTO M164-3	2 1/4	96	w/1 M291-3 GR. C3 HVY. HEX NUT
2						
3						
4	98		HARD, FLAT WASHERS FOR 7/8" BOLT			M293-3
5						
6						
7						
8						
9						
10						

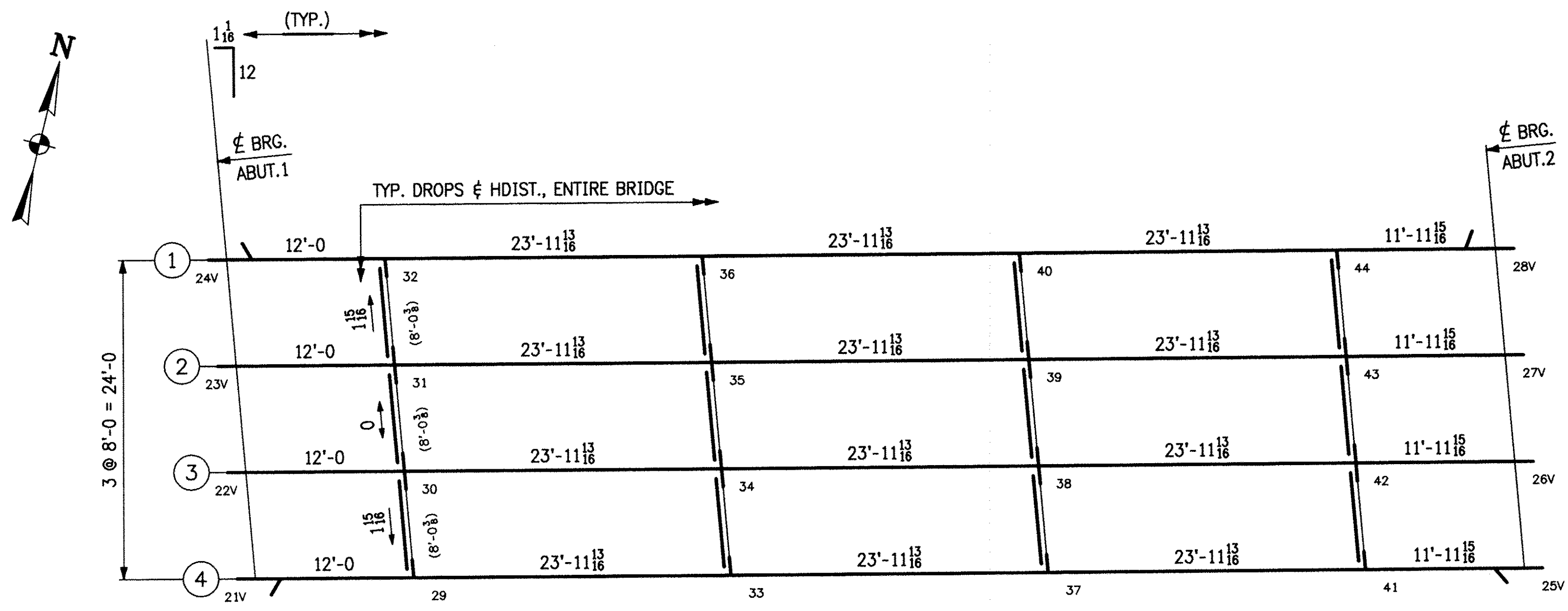
FIELD BOLT LIST						M164 TYPE 3 BOLTS				PIECES CONNECTED AND REMARKS
LINE	ACTUAL No. REQ'D.	BOLT DIAM.	BOLT LENGTH /CONN.	BOLTS /CONN.	# OF CONNS.	GRIP	THICKNESS OF PCS. CONNECTED		WASHER CODE	
1										
2										
3	96	7/8	2 1/4	8	12	1 1/8	1/2	7/16	1	DIAPHRAGMS TO STRINGERS
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
WASHER CODES										
1: 1 HARD FLAT WASHER										

REV.	DATE	DESCRIPTION	QTY.	DATE	ISSUED TO	FOR
			8	3/9/06	F W Whitcomb	Approval

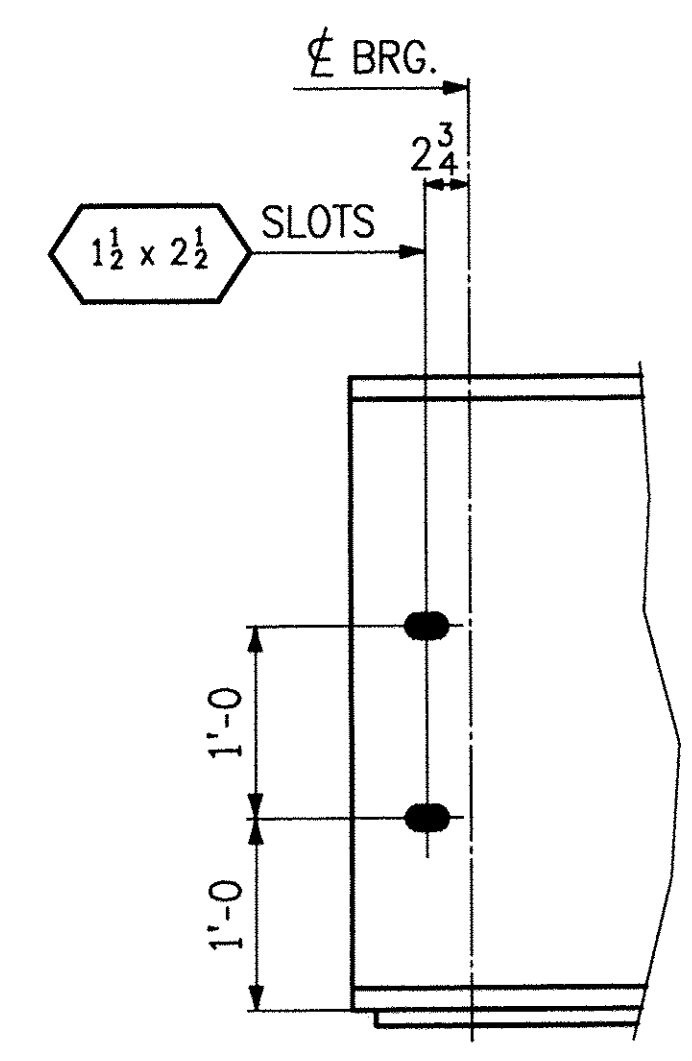
EASTERN BRIDGE LLC
RURAL RTE 2, BOX 302
CLAREMONT, NH 03743
603-542-5202

PROJECT: T.H. NO. 1 OVER SAXTONS RIVER (BRIDGE NO. 16G)
LOCATION: PROJ. NO. TH2-0104 GRAFTON, VERMONT
ENGINEER: VANASSE HANGEN BRUSTLIN, INC.
CUSTOMER: FRANK W. WHITCOMB CONST.

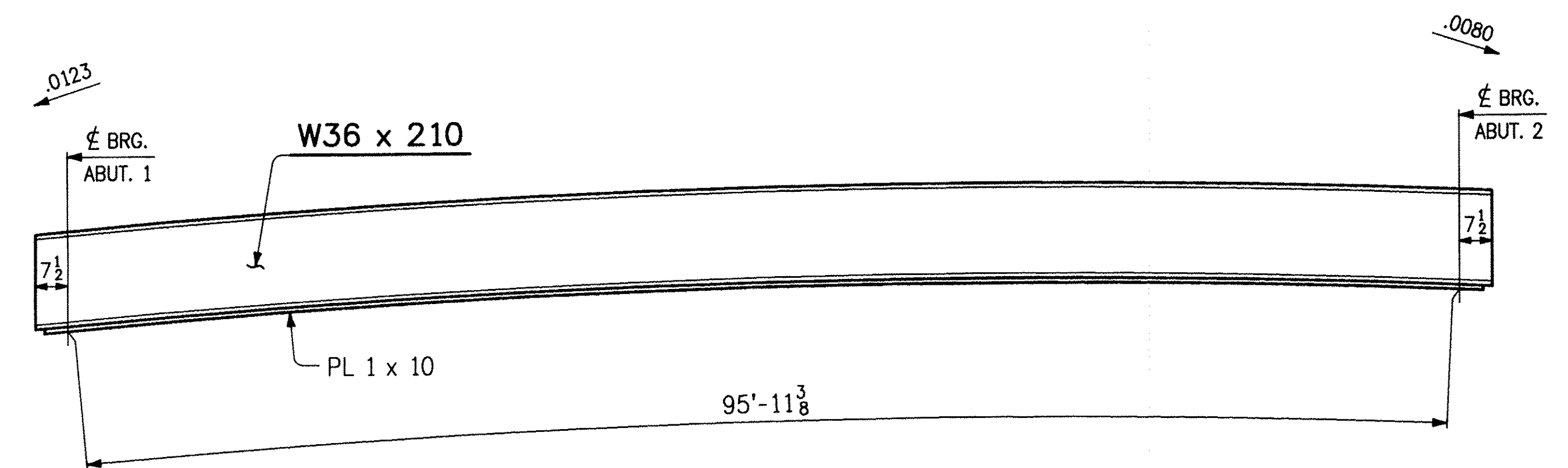
DRAWING TITLE: ERECTION PLAN
DRAWN BY: CPM 3-3-06
CHECKED BY: [Signature] 3-6-06
JOB NUMBER: 6065
SHEET NUMBER: E1



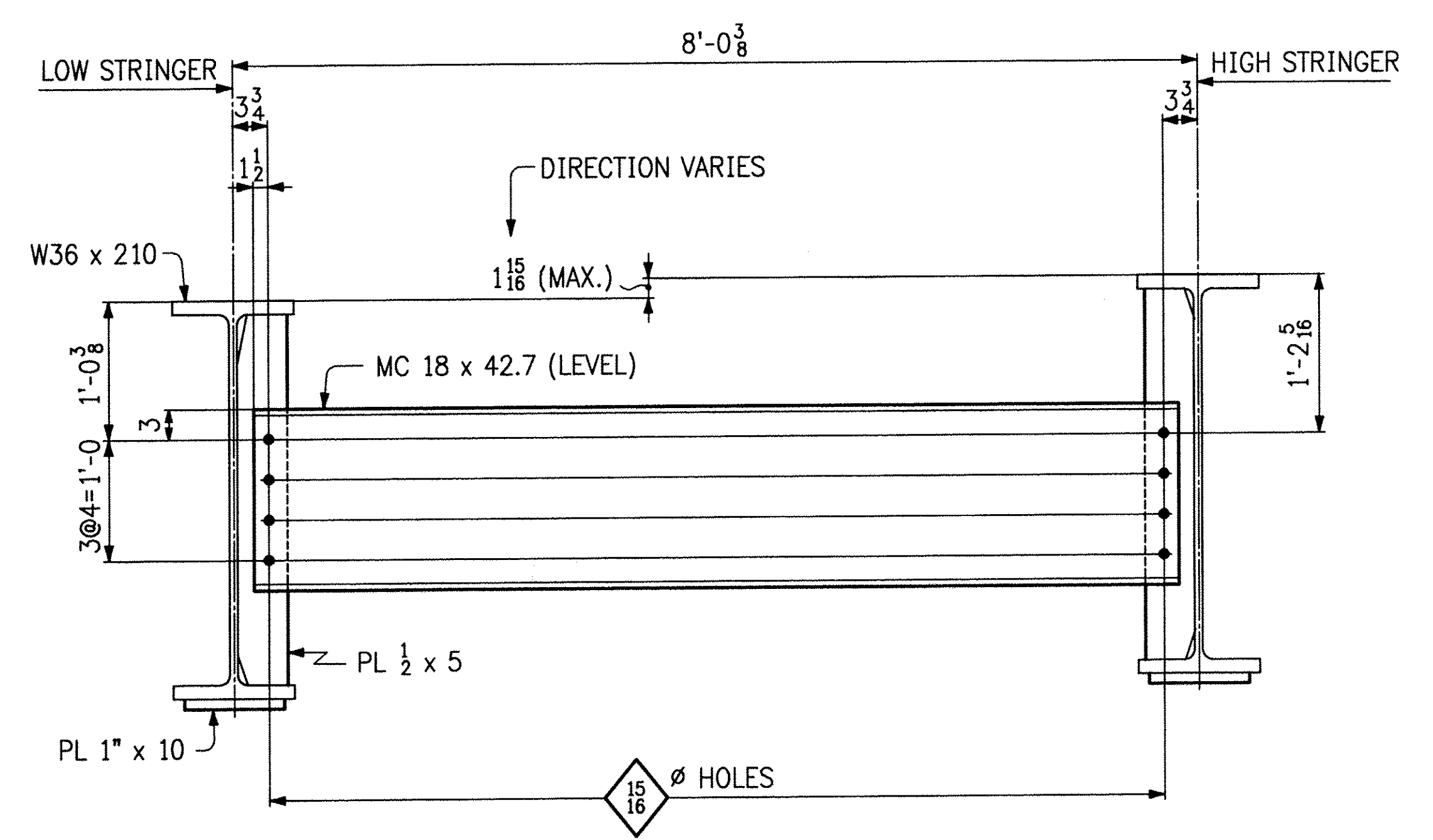
CALC. PLAN



GIRDER END DETAIL
(ABUT. 1, SHOWN)
(ABUT. 2, OPP. HAND)



TYP. ELEVATION



TYP. DIAPHRAGM

NOTES:

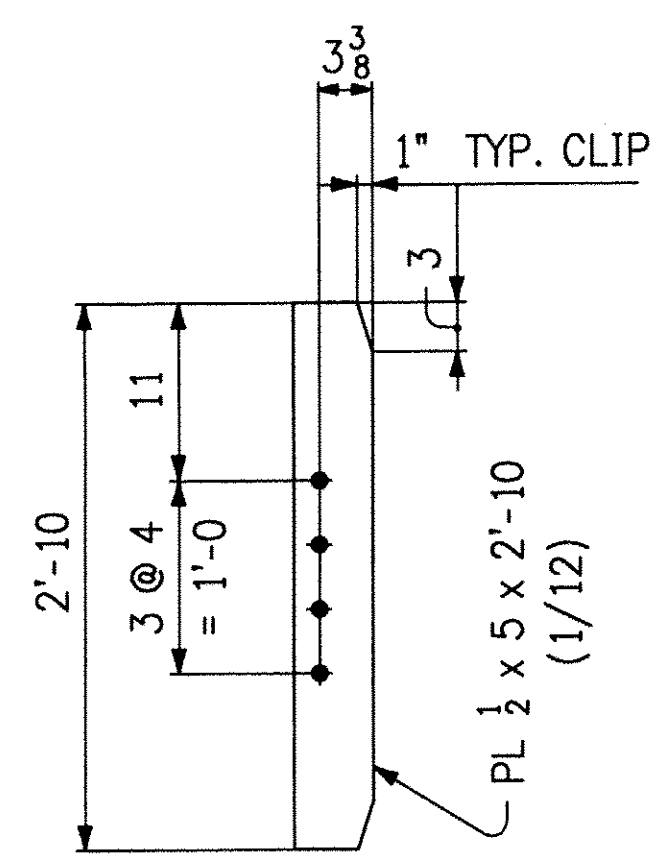
1. LONGITUDINAL DIMS. ARE SLOPING ALONG BOTTOM OF STRINGER IN CAMBERED POSITION.
2. TRANSVERSE DIMS. ARE HORIZONTAL.
3. → DENOTES DROP (FINAL). ARROW POINTS TO LOW END.
4. INT. CONN. PLATES ARE NORMAL TO BOTTOM FLANGE.

REV.	DATE	DESCRIPTION	QTY.	DATE	ISSUED TO	FOR
8	3/9/06	F W Whitcomb			Approval	

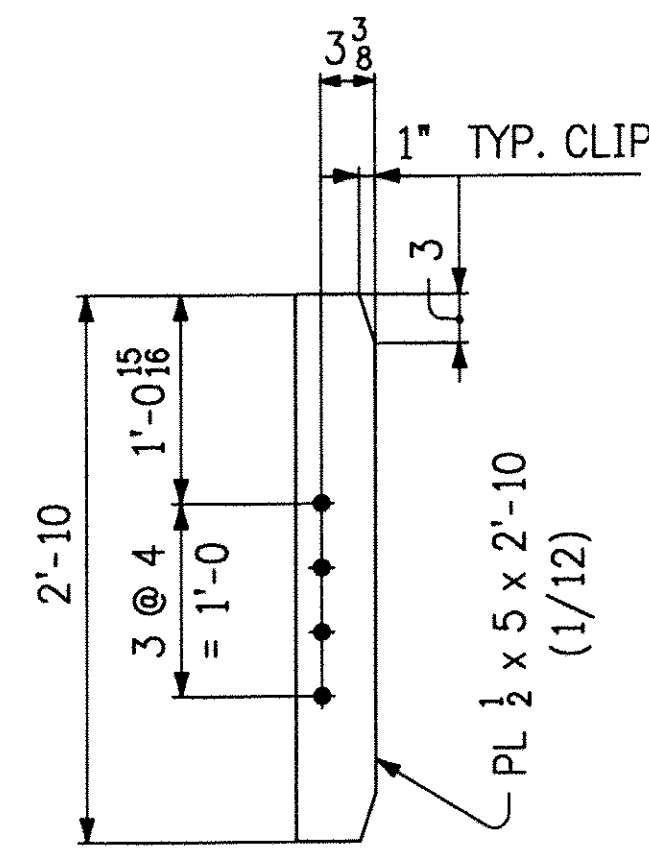
PROJECT: T.H. NO. 1 OVER SAXTONS RIVER (BRIDGE NO. 16C)	
LOCATION: PROJ. NO. TH2-0104	GRAFTON, VERMONT
ENGINEER: VANASSE HANGEN BRUSTLIN, INC.	
CUSTOMER: FRANK W. WHITCOMB CONST.	
DRAWING TITLE: CALC. PLAN / LAYOUTS	
DRAWN BY: CPM 2-17-06	JOB NUMBER: 6065
CHECKED BY: Z 2-24-06	SHEET NUMBER: WS1

EB LLC
EASTERN BRIDGE LLC
RURAL RTE 2, BOX 302
CLAREMONT, NH 03743
603-542-5202

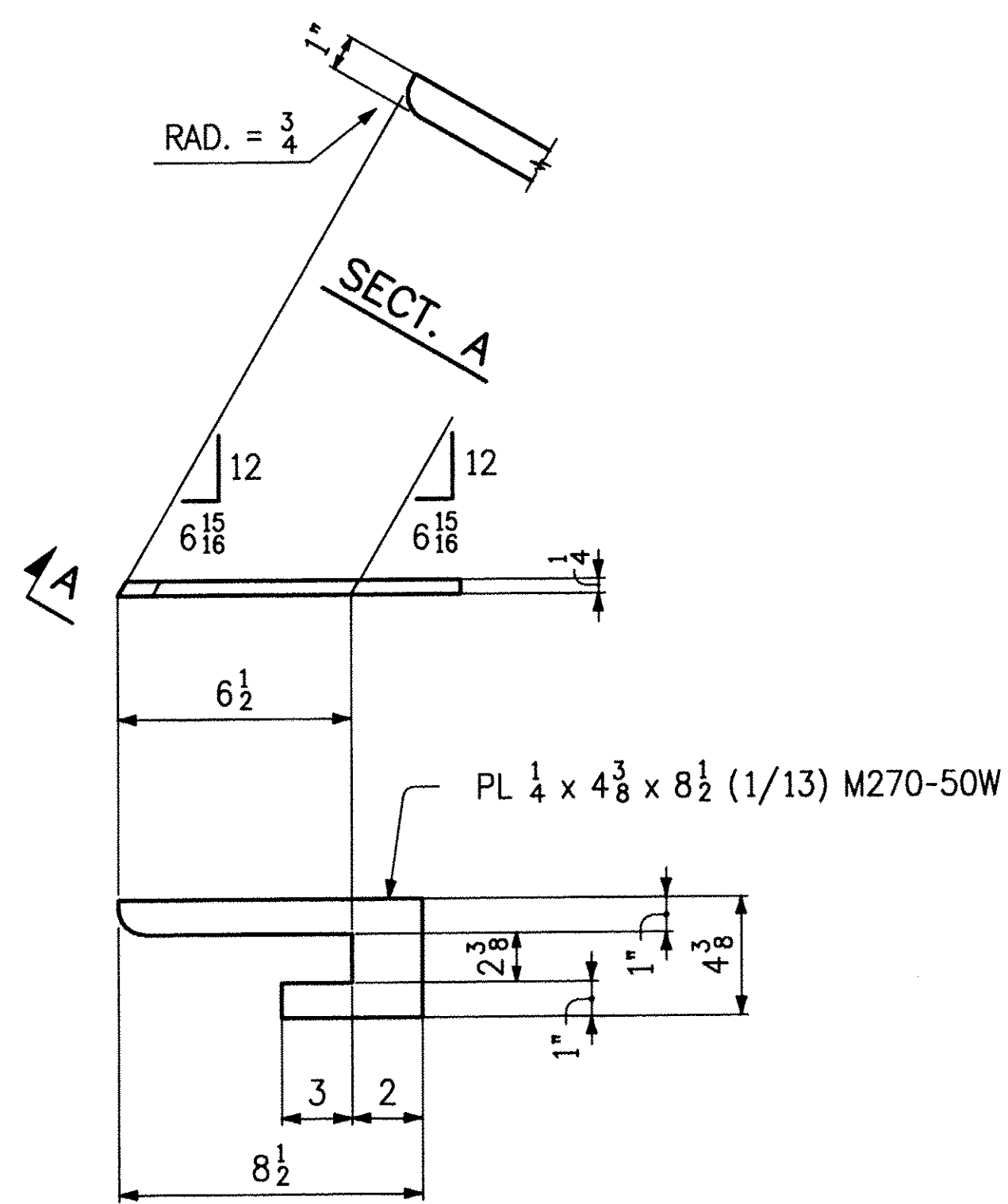
THIS IS A WORK DRAWING. ITS FUNCTION IS TO PROVIDE BASIC DIMENSIONS AND CONCEPTS FOR USE IN THE PREPARATION OF THE SHOP DETAILS. IT IS NOT INTENDED TO BE USED FOR ERECTION OR FABRICATION.



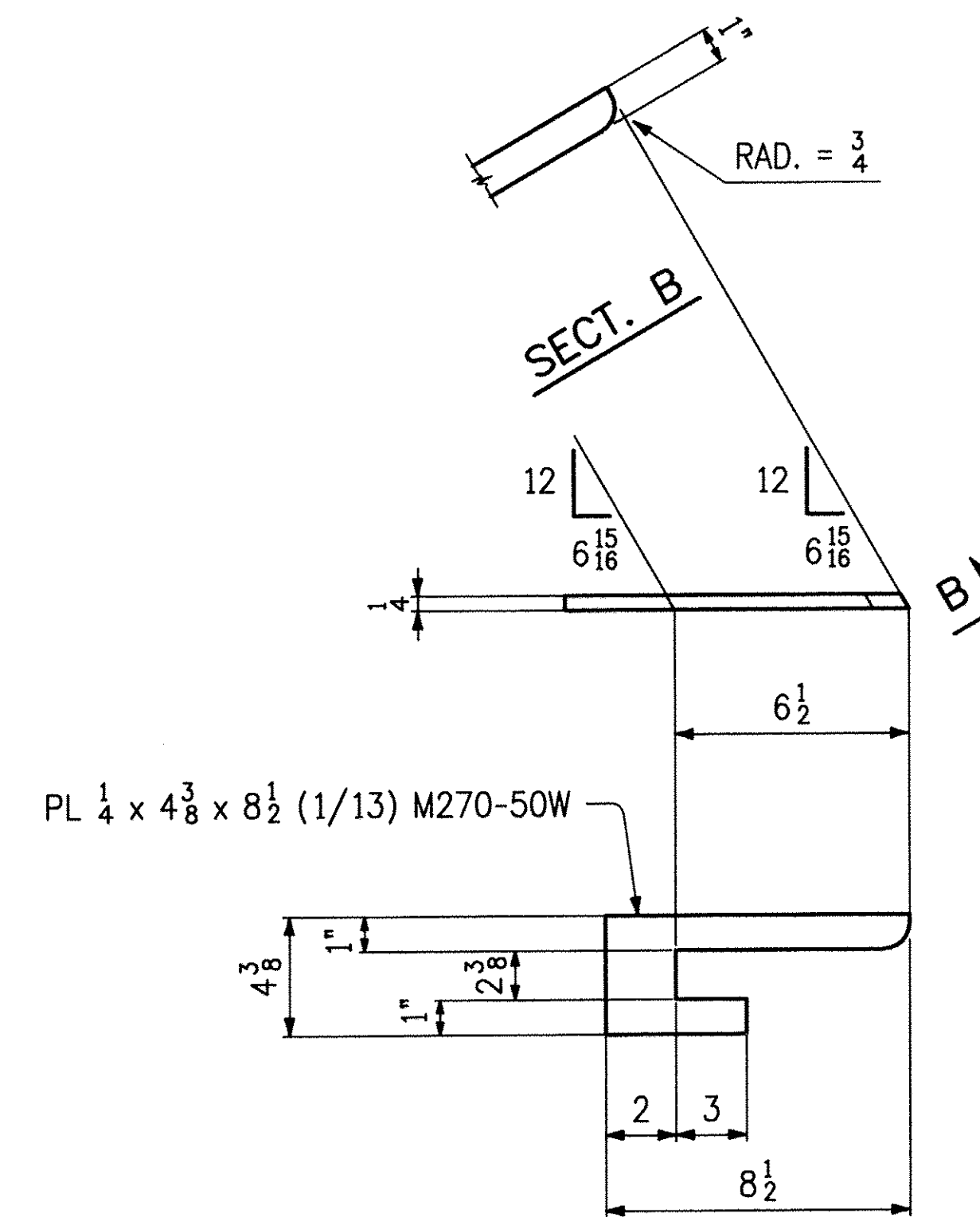
8 ~ x1a
(INT. LOW)



16 ~ x1b
(INT. HIGH)



2 ~ x1c



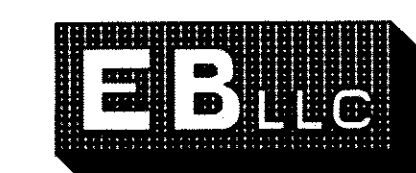
2 ~ x1d

NOTES:

- HOLES: $\frac{15}{16}$ \varnothing
- BOLTS: NONE
- MAT'L: M270-50W
- PAINT: NONE

REV.	DATE	DESCRIPTION

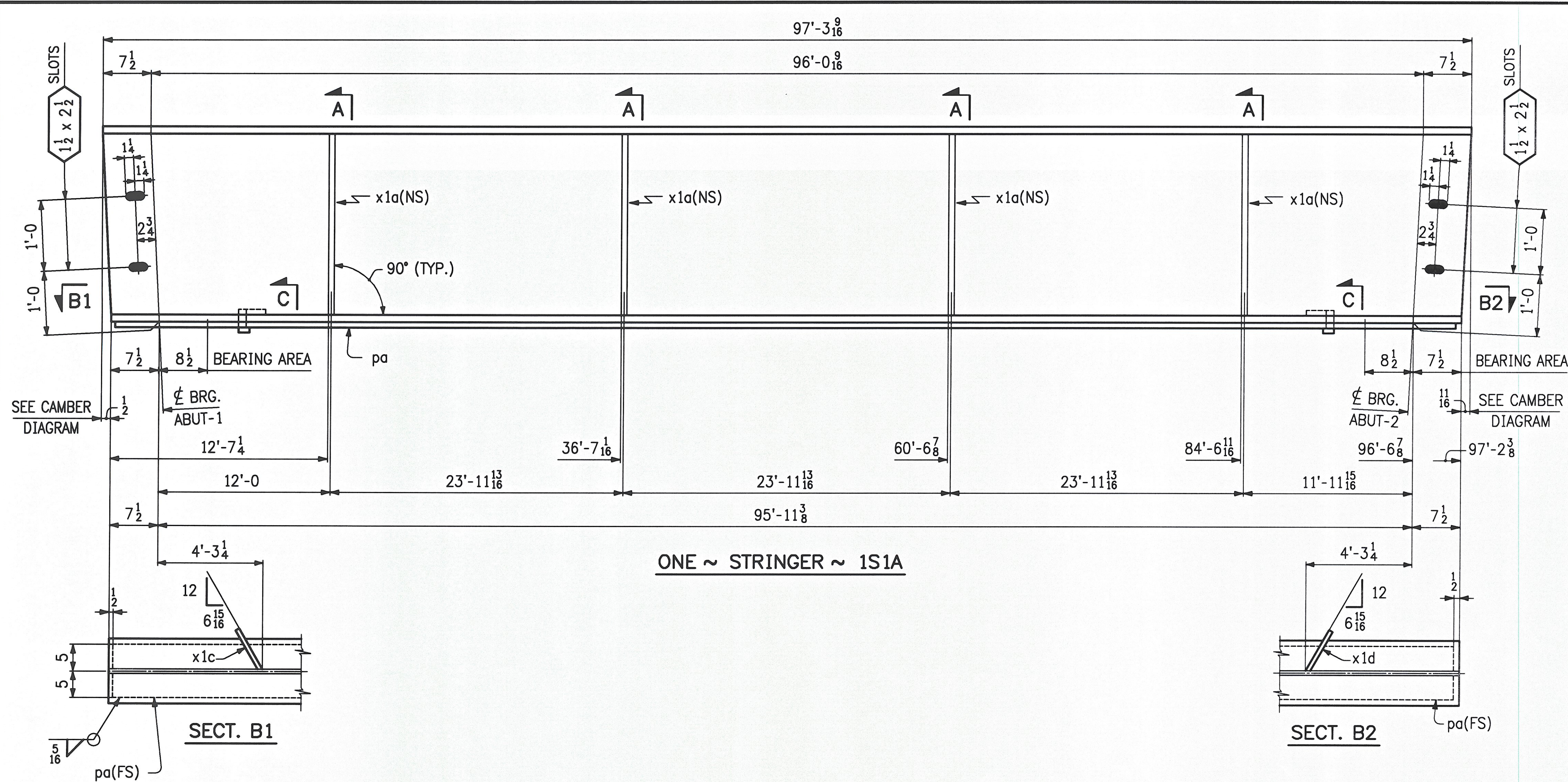
QTY.	DATE	ISSUED TO	FOR
8	3/9/06	F.W. Whitcomb	Approval



EASTERN BRIDGE LLC
RURAL RTE 2, BOX 302
CLAREMONT, NH 03743
603-542-5202

PROJECT:	T.H. NO. 1 OVER SAXTONS RIVER (BRIDGE NO. 16G)
LOCATION:	PROJ. NO. TH2-0104 GRAFTON, VERMONT
ENGINEER:	VANASSE HANGEN BRUSTLIN, INC.
CUSTOMER:	FRANK W. WHITCOMB CONST.
DRAWING TITLE:	STRINGER STANDARDS
DRAWN BY:	CPM 3-2-06
CHECKED BY:	3-6-06
JOB NUMBER:	6065
SHEET NUMBER:	X1

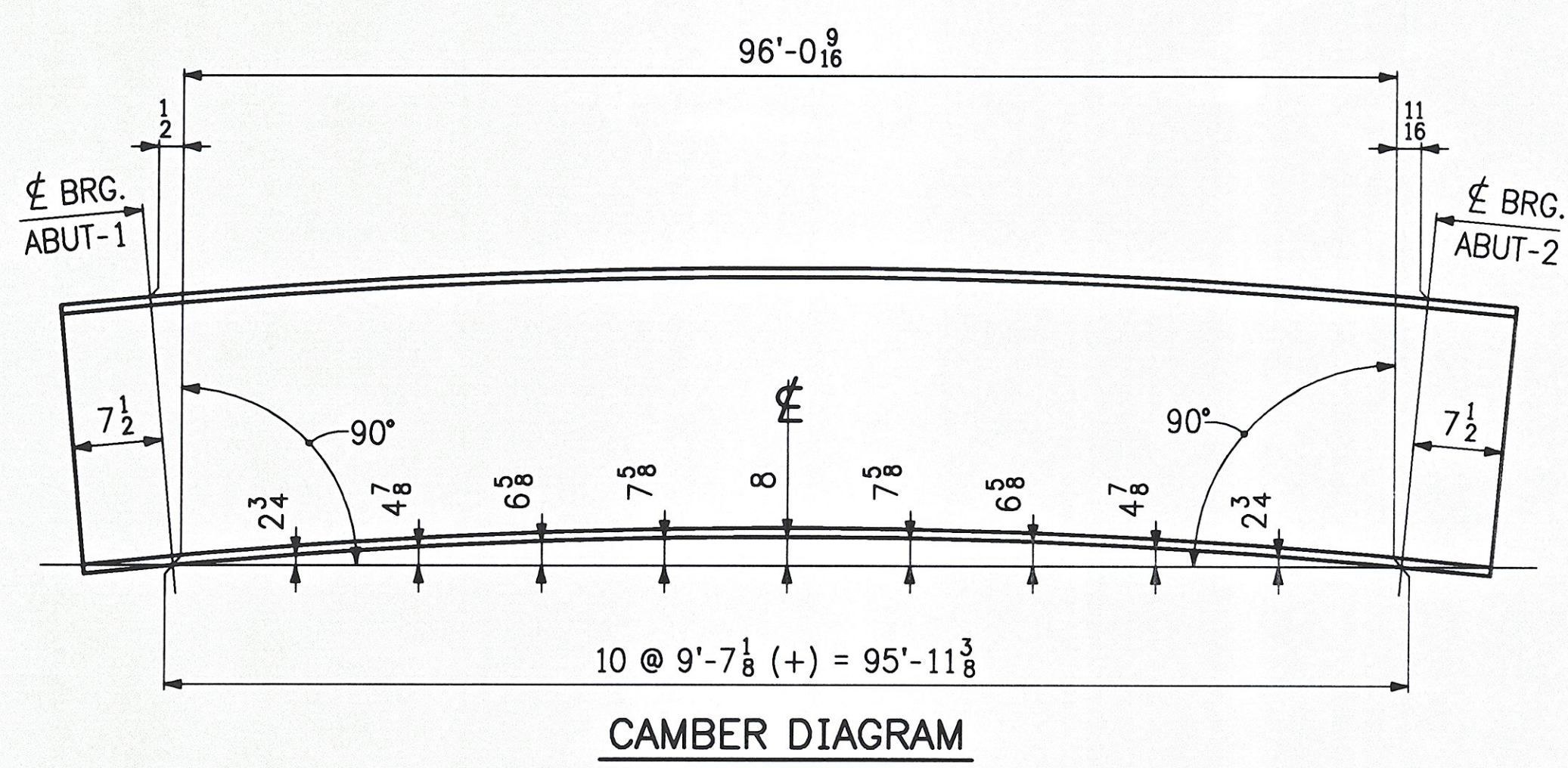
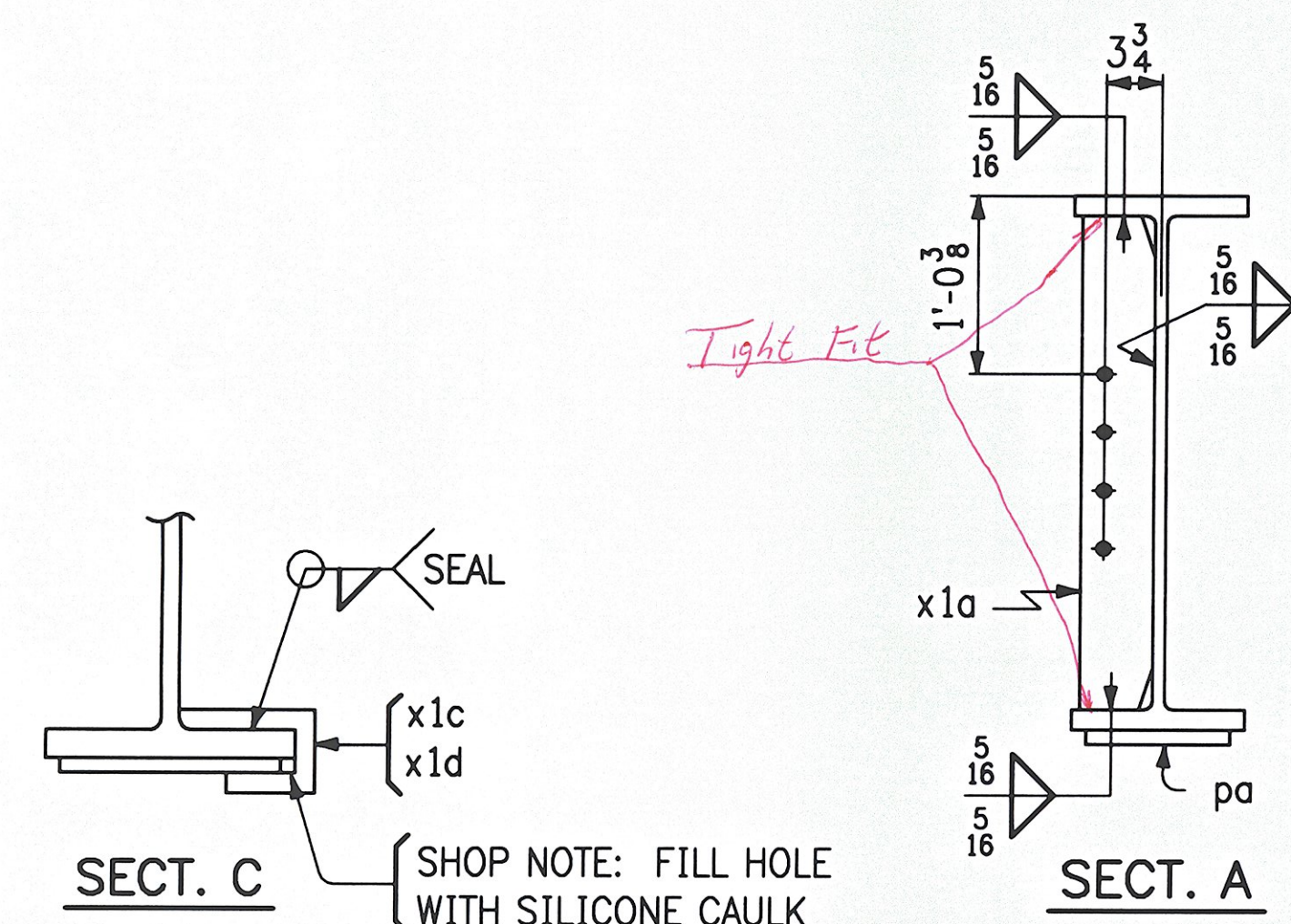
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PAGE	LINE	MARK	QTY.	MARK	MATERIAL	LENGTH FT. IN.	REMARKS	WEIGHT	PROCUREMENT NOTES
		1S1A	ONE		STRINGER			23 839 lbs.	
1	10		1		W36 x 210	97 3 ¹¹ / ₁₆	M270-50WT2		
1	11		1	pa	PL 1 x 10	97 1 ³ / ₈	M270-50WT2		
1	12		4	x1a	PL 1/2 x 5	2 10			
1	13		1	x1c	PL 1/4 x 4 3/8	0 8 1/2			
1	13		1	x1d	PL 1/4 x 4 3/8	0 8 1/2			



ONE ~ STRINGER ~ 1S1A

NOTES:

- HOLES: 15/16" (UN.).
- BOLTS: NONE
- MAT'L: M270-50W (UN.).
- PAINT: NONE
- FOR STRINGER STANDARD DETAILS SEE SHT. X1
- FOR GENERAL NOTES & TYPICAL DETAILS SEE SHT. GN1



REV.	DATE	DESCRIPTION	QTY.	DATE	ISSUED TO	FOR

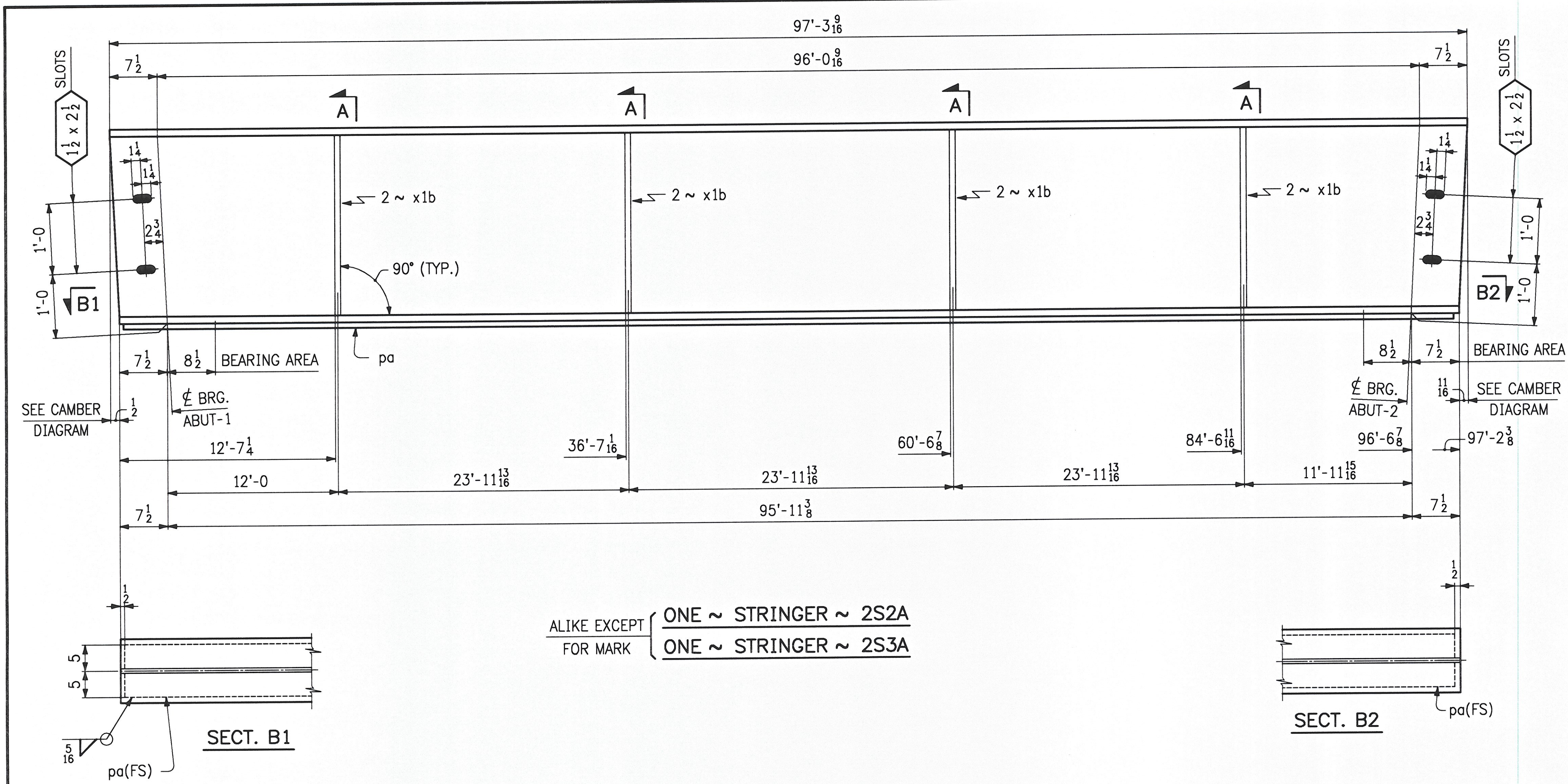
PROJECT: T.H. NO. 1 OVER SAXTONS RIVER (BRIDGE NO. 16G)
 LOCATION: PROJ. NO. TH2-0104 GRAFTON, VERMONT
 ENGINEER: VANASSE HANGEN BRUSTLIN, INC.
 CUSTOMER: FRANK W. WHITCOMB CONST.

EB LLC
 EASTERN BRIDGE LLC
 RURAL RTE 2, BOX 302
 CLAREMONT, NH 03743
 603-542-5202

DRAWING TITLE: STRINGER ~ 1S1A
 DRAWN BY: CPM 3-2-06
 CHECKED BY: 3-6-06

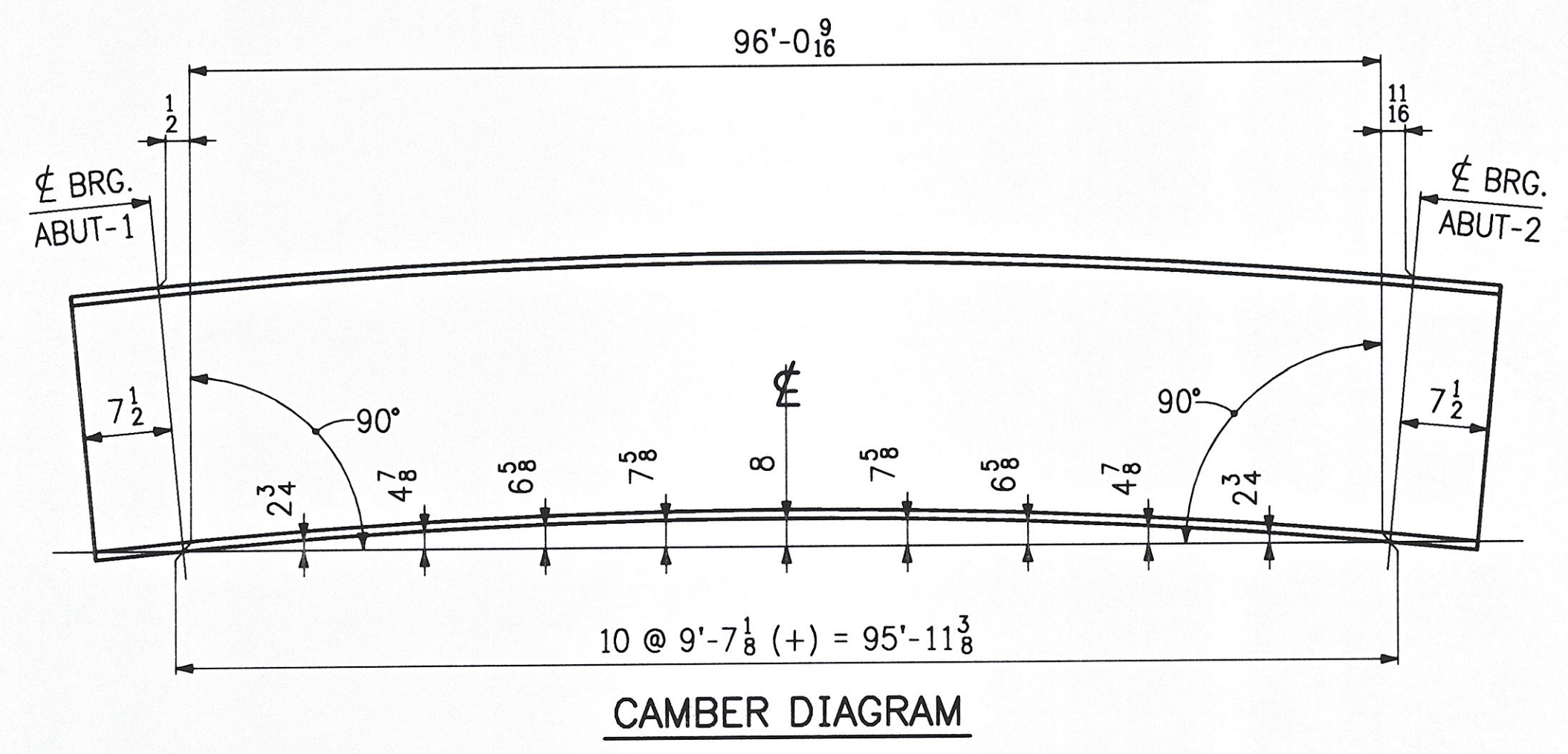
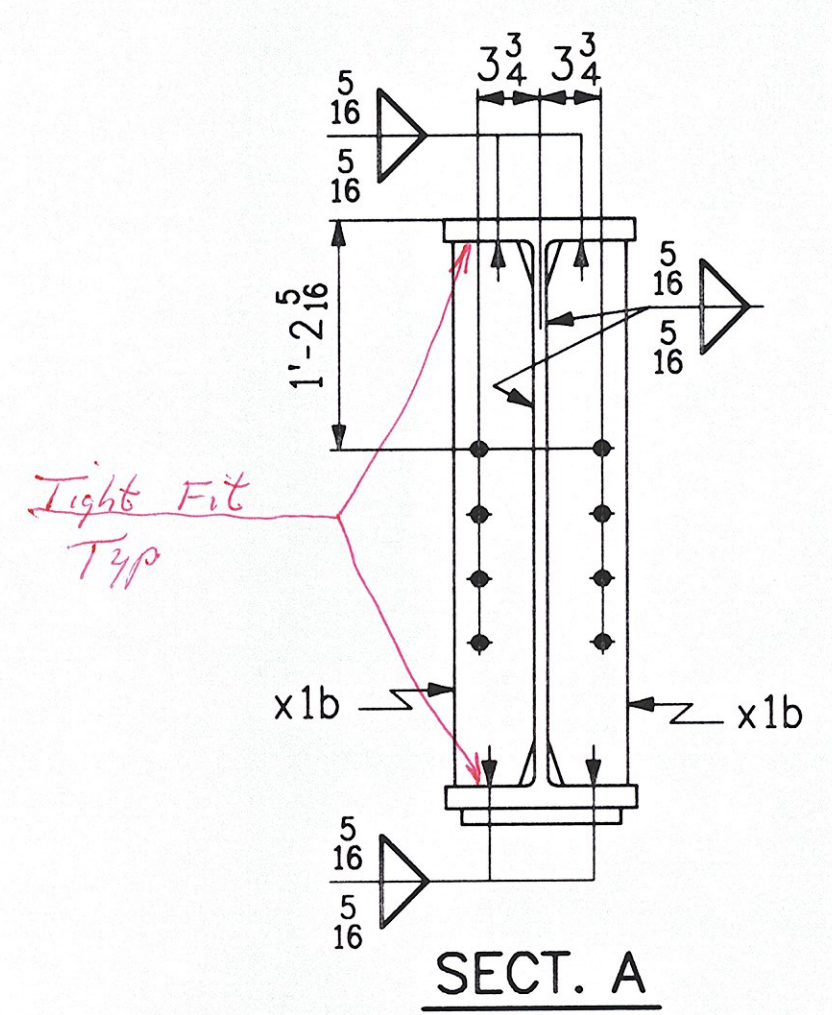
JOB NUMBER: 6065
 SHEET NUMBER: 1

Sheet 1 - Plotter: 03/07/2006 @ 14:16 (REANHER)



ALIKE EXCEPT
FOR MARK

ONE ~ STRINGER ~ 2S2A
ONE ~ STRINGER ~ 2S3A



ABM INFO		SHIP		BILL OF MATERIAL				JOB No.	REV.
PAGE	LINE	MARK	QTY.	MARK	MATERIAL	LENGTH FT. IN.	REMARKS	WEIGHT	PROCUREMENT NOTES
		2S2A	ONE		STRINGER			23 930 lbs.	
1	10		1		W36 x 210	97 3 ⁹ / ₁₆	M270-50WT2		
1	11		1	pa	PL 1 x 10	97 1 ³ / ₈	M270-50WT2		
1	12		8	x1b	PL 1/2 x 5	2 10			
		2S3A	ONE		STRINGER			23 930 lbs.	
1	10		1		W36 x 210	97 3 ⁹ / ₁₆	M270-50WT2		
1	11		1	pa	PL 1 x 10	97 1 ³ / ₈	M270-50WT2		
1	12		8	x1b	PL 1/2 x 5	2 10			

NOTES:

- HOLES: 1⁵/₈ ∅ (UN).
- BOLTS: NONE
- MAT'L: M270-50W (UN).
- PAINT: NONE
- FOR STRINGER STANDARD DETAILS SEE SHT. X1
- FOR GENERAL NOTES & TYPICAL DETAILS SEE SHT. GN1

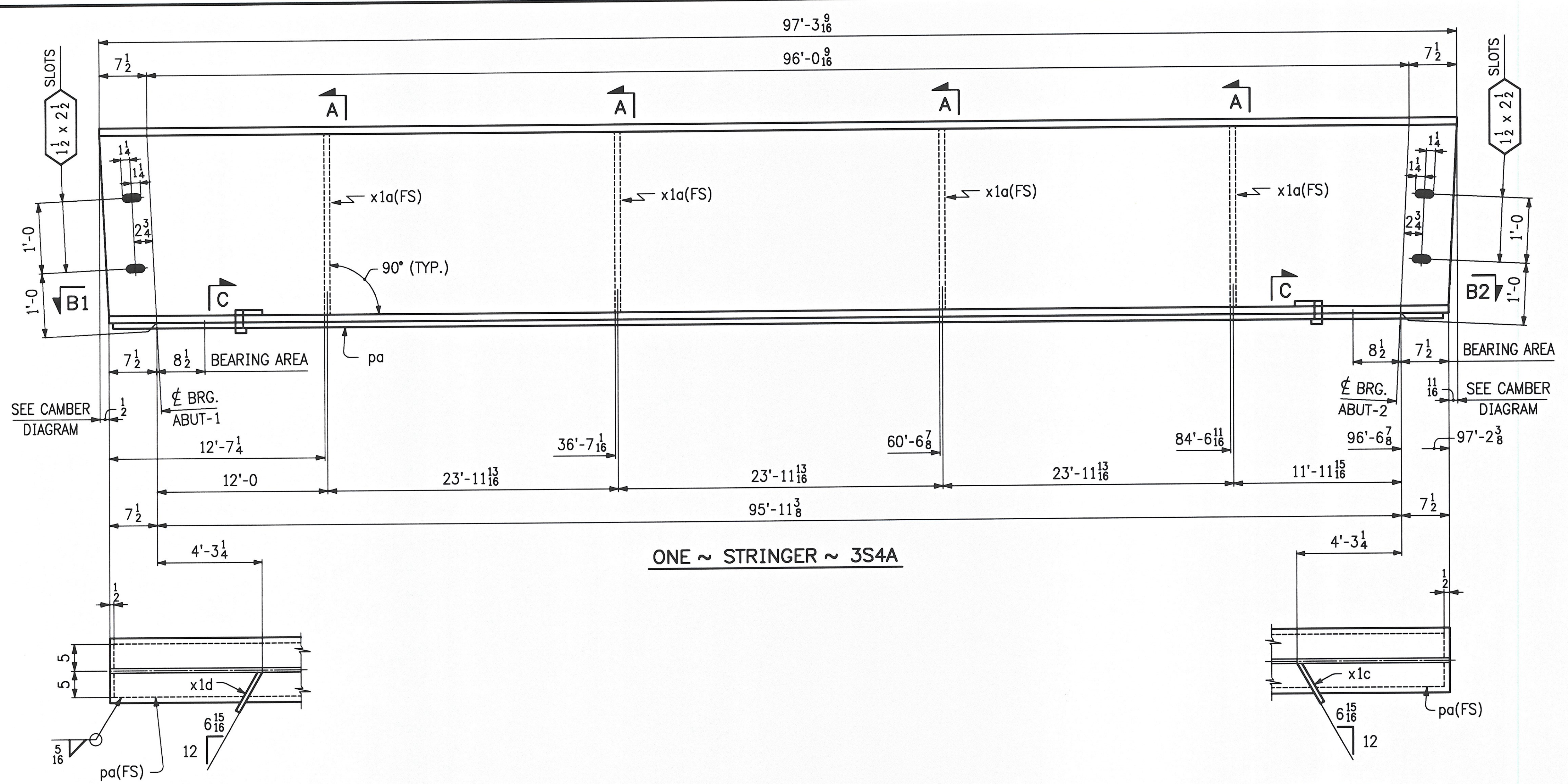
REV.	DATE	DESCRIPTION

QTY.	DATE	ISSUED TO	FOR
8	3/9/06	F W Whitcomb	Approval

EBlc

EASTERN BRIDGE LLC
RURAL RTE 2, BOX 302
CLAREMONT, NH 03743
603-542-5202

PROJECT:	T.H. NO. 1 OVER SAXTONS RIVER (BRIDGE NO. 16G)
LOCATION:	PROJ. NO. TH2-0104 GRAFTON, VERMONT
ENGINEER:	VANASSE HANGEN BRUSTLIN, INC.
CUSTOMER:	FRANK W. WHITCOMB CONST.
DRAWING TITLE:	STRINGERS ~ 2S2A & 2S3A
DRAWN BY:	CPM 3-3-06
CHECKED BY:	3-6-06
JOB NUMBER:	6065
SHEET NUMBER:	2



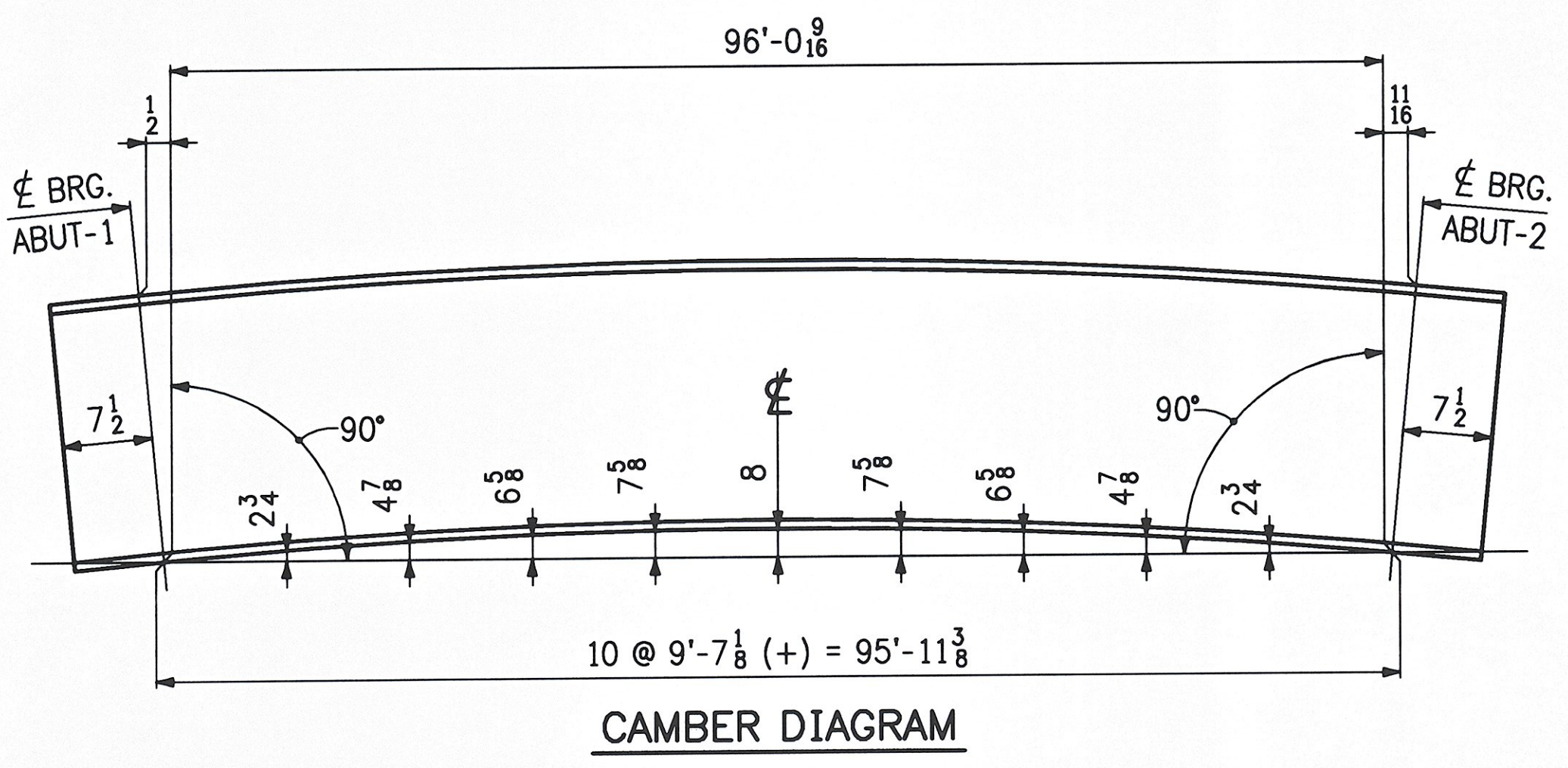
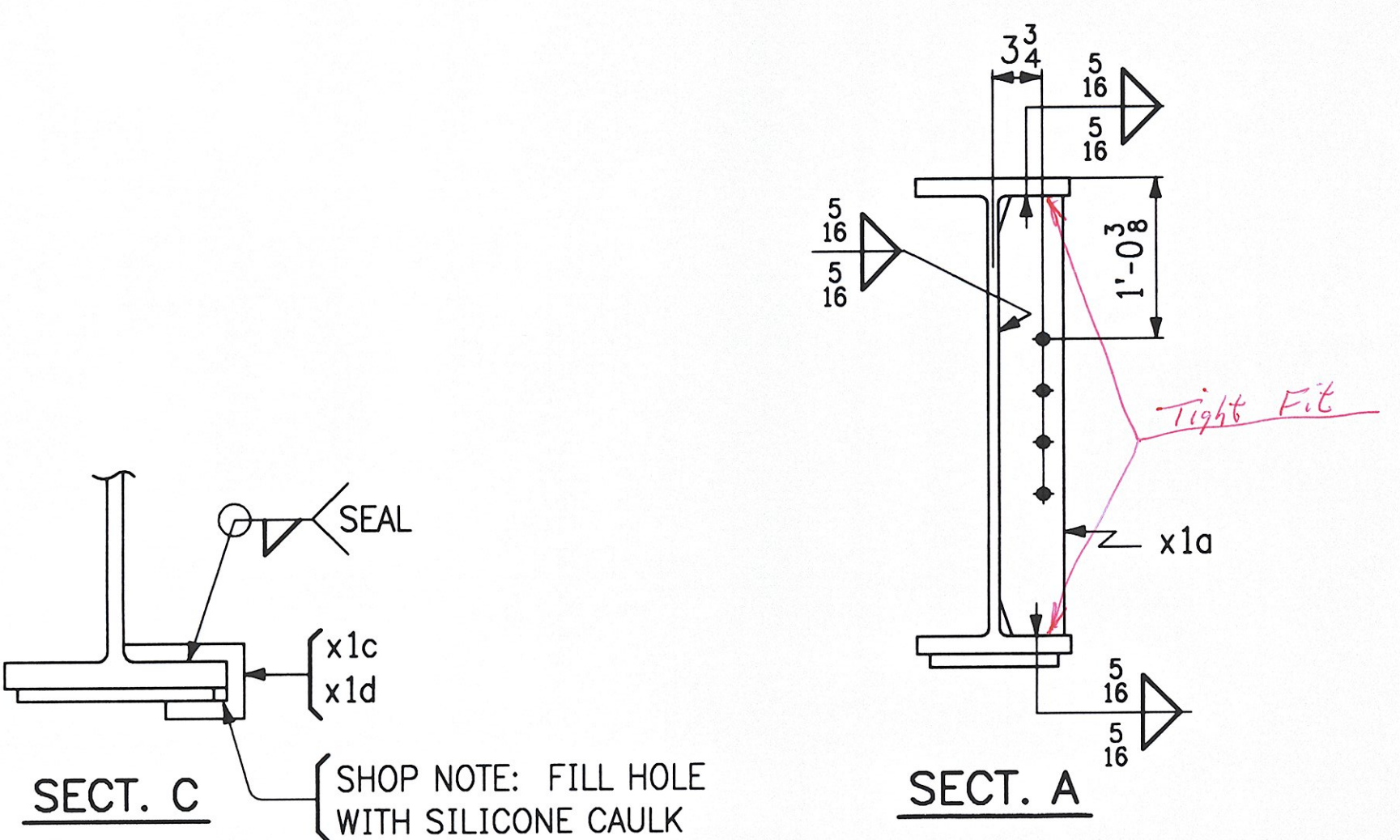
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PAGE	LINE	MARK	QTY.	MARK	MATERIAL	LENGTH FT. IN.	REMARKS	WEIGHT	PROCUREMENT	NOTES	
		3S4A	ONE		STRINGER			23 839 lbs.			
1	10		1		W36 x 210	97 3 8/16	M270-50WT2				
1	11		1	pa	PL 1 x 10	97 1 3/8	M270-50WT2				
1	12		4	x1a	PL 1/2 x 5	2 10					
1	13		1	x1c	PL 1/4 x 4 3/8	0 8 1/2					
1	13		1	x1d	PL 1/4 x 4 3/8	0 8 1/2					

SECT. B1

SECT. B2

NOTES:

- HOLES: 13/16 Ø (UN.)
- BOLTS: NONE
- MAT'L: M270-50W (UN.)
- PAINT: NONE
- FOR STRINGER STANDARD DETAILS SEE SHT. X1
- FOR GENERAL NOTES & TYPICAL DETAILS SEE SHT. GN1

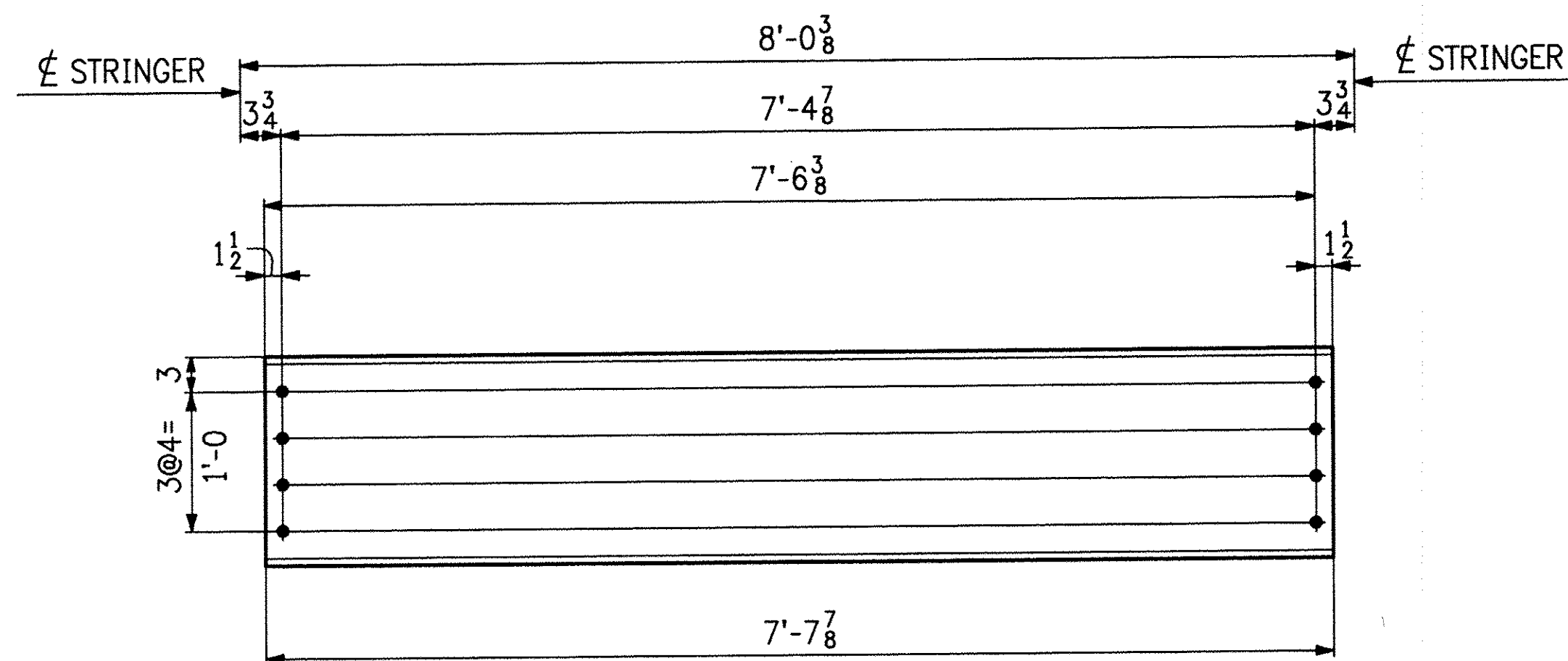


CAMBER DIAGRAM

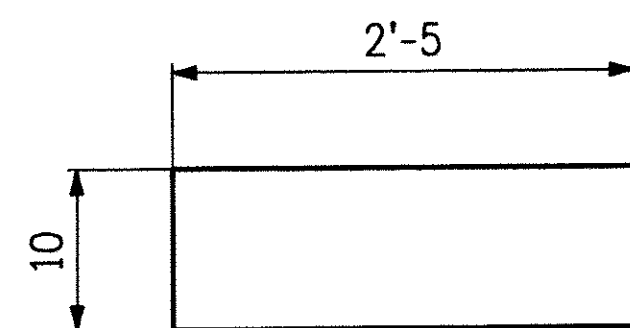
REV.	DATE	DESCRIPTION	QTY.	DATE	ISSUED TO	FOR
			8	3/9/06	F.W. Whitcomb	Approval

PROJECT: T.H. NO. 1 OVER SAXTONS RIVER (BRIDGE NO. 16G)
 LOCATION: PROJ. NO. TH2-0104 GRAFTON, VERMONT
 ENGINEER: VANASSE HANGEN BRUSTLIN, INC.
 CUSTOMER: FRANK W. WHITCOMB CONST.
 DRAWING TITLE: STRINGER ~ 3S4A
 DRAWN BY: CPM 3-3-06 JOB NUMBER: 6065 SHEET NUMBER: 3
 CHECKED BY: [Signature] 3-6-06

EB LLC
 EASTERN BRIDGE LLC
 RURAL RTE 2, BOX 302
 CLAREMONT, NH 03743
 603-542-5202



12 ~ DIAPHRAGMS ~ 4D1



8 ~ BLOCKOUT PLATES ~ 4MS1

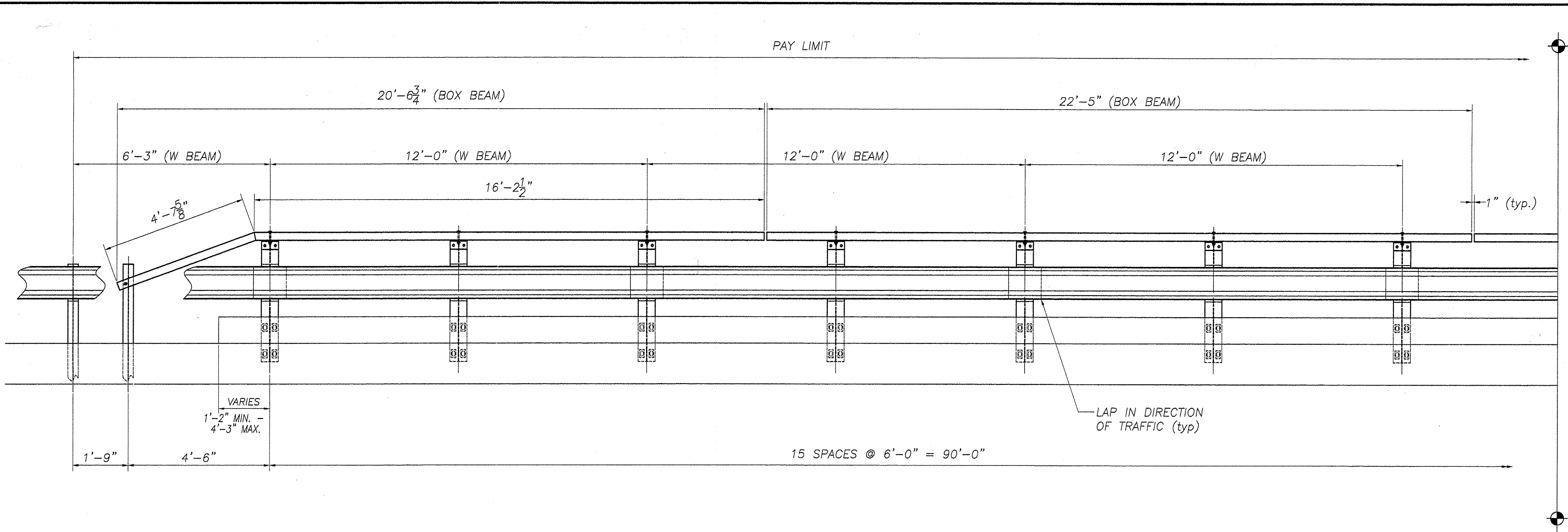
NOTES:

HOLES: 1/8"
 BOLTS: NONE
 MAT'L: M270-50W
 PAINT: NONE
 FOR GENERAL NOTES & TYPICAL DETAILS SEE SHT. GN1

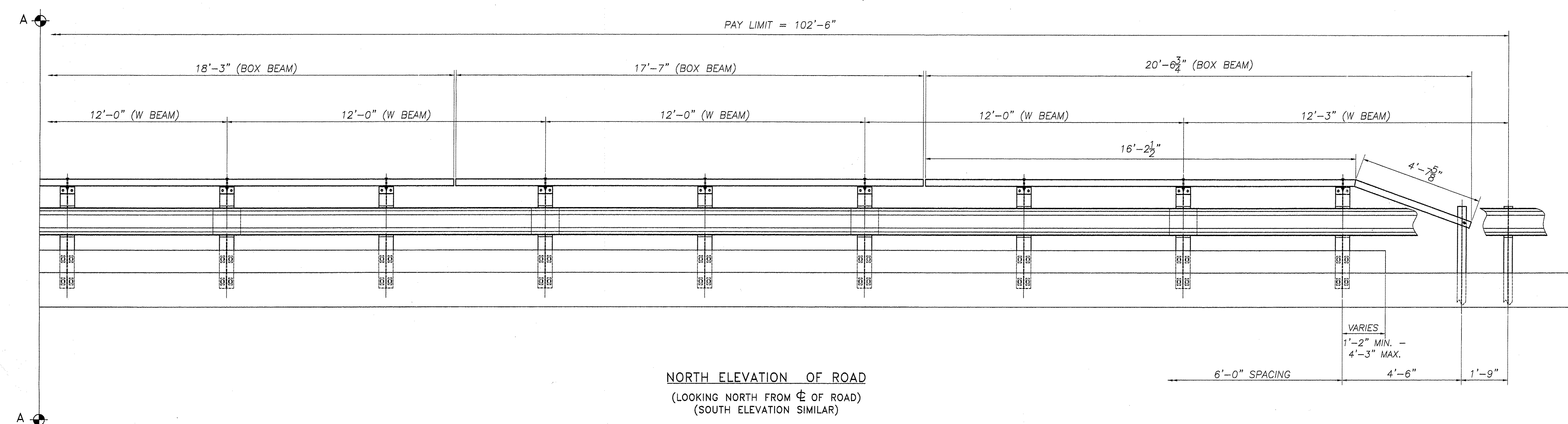
ABM INFO		SHIP		BILL OF MATERIAL				JOB No.	REV.	
PAGE	LINE	MARK	QTY.	MARK	MATERIAL	LENGTH FT. IN.		REMARKS	WEIGHT	PROCUREMENT NOTES
					DIAPHRAGMS					
1	17	4D1	12		MC18 42.7	7	7 7/8	M270-50W	326.9 lbs.	
					BLOCKOUT PLATES					
1	14	4MS1	8		PL 1/4 x 10	2	5	M270-50W	20.6 lbs.	

REV.	DATE	DESCRIPTION	QTY.	DATE	ISSUED TO	FOR
			8	3/9/06	F W Whitcomb	Approval
EASTERN BRIDGE LLC RURAL RTE 2, BOX 302 CLAREMONT, NH 03743 603-542-5202						
PROJECT: T.H. NO. 1 OVER SAXTONS RIVER (BRIDGE NO. 16G) LOCATION: PROJ. NO. TH2-0104 GRAFTON, VERMONT ENGINEER: VANASSE HANGEN BRUSTLIN, INC. CUSTOMER: FRANK W. WHITCOMB CONST. DRAWING TITLE: STRINGER ~ 3S4A DRAWN BY: CPM 3-3-06 CHECKED BY: 3-6-06 JOB NUMBER: 6065 SHEET NUMBER: 4						

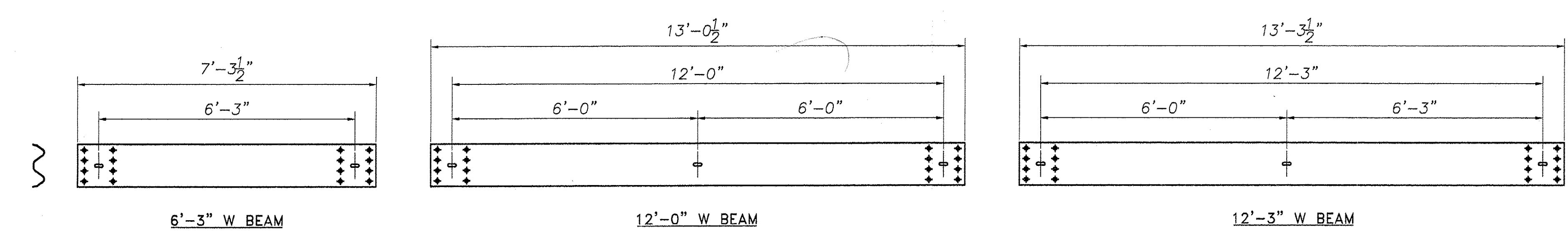
Sheet 4 - Plotted: 03/07/2006 @ 14:16 (HEATHER)



BILL OF MATERIAL				
Qty.	Description	Size/Shape	Length	Material
POST				
32	fascia mounted post	W8 x 24	4'-1"	A572 gr 50
36	steel blockout	W8 x 24	14"	A572 gr 50
100	hex bolt w/ 2 flat washers & hex nut	5/8"	2"	A307
136	post bolt w/ flat washer & hex nut	5/8"	1 1/2"	A307
4	post bolt w/ flat washer & hex nut	5/8"	7 1/2"	A307
8	rec. washer with 11/16" hole	3/16"x1 3/4"	3"	A36
32	rec. washer with slot	3/16"x1 3/4"	3"	A572 gr 50
32	hand rail attachment angle	L5"x3 1/2"x3/8"	6 1/2"	A36
8	driven post	W6 x 8.5	6'-0"	A36
W BEAM				
2	w beam	6'-3"		M180 b2
14	w beam	12'-0"		M180 b2
2	w beam	12'-3"		M180 b2
144	w beam splice bolt w/ DR nut	5/8"	1 1/4"	A307
HAND RAIL				
4	hand rail tube w/ drop end	TS 6"x3"x1/4"	20'-6 3/4"	A500 gr B
2	hand rail tube	TS 6"x3"x1/4"	17'-4"	A500 gr B
2	hand rail tube	TS 6"x3"x1/4"	18'-3"	A500 gr B
2	hand rail tube	TS 6"x3"x1/4"	22'-5"	A500 gr B
32	hex bolt w/2 flat washer & heavy hex nut	5/8"	4 1/2"	A307
16	splice plate	PL 3/4" x 5"	2'-7"	A36
32	hex bolt w/ flat washer & heavy hex nut	3/4"	4 1/2"	A307
ANCHORS (by others)				
64	anchor u bolt w/ 4 hex nuts and 2 flat washers	1" x 10"	12"	A449
128	plate washer	PL 3/16"x1 3/4"	3"	A36



NORTH ELEVATION OF ROAD
(LOOKING NORTH FROM Φ OF ROAD)
(SOUTH ELEVATION SIMILAR)



REVISIONS		
No.	Remarks	Date
0	Initial submittal	7-13-06

SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS CORRECTED

CONNECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS OTHERWISE THIS REVIEW DOES NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONSIDERING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

VHB Vermont Highway Consultants, Inc.
Engineers, Planners, and Scientists
Six Bedford Farms, Keenon Rd.
Burlington, NH 05410 802 644 0089

Job Number: 51335
Reviewed By: J.S.D.
Date: 7/31/06

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM # 525.43 FASCIA MOUNTED HDSB WITH HANDRAIL
PROJECT NUMBER: TH2-0104
TOWN OF GRAFTON, VT
COUNTY OF WINDHAM
VT ROUTE 121, BRIDGE NO. 16G

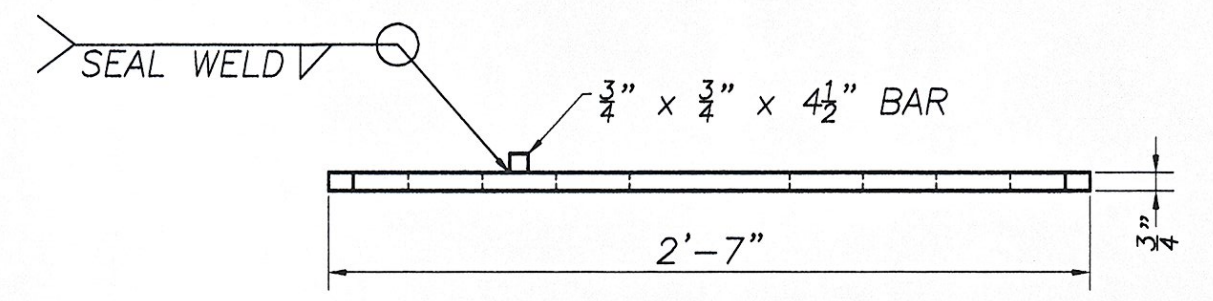
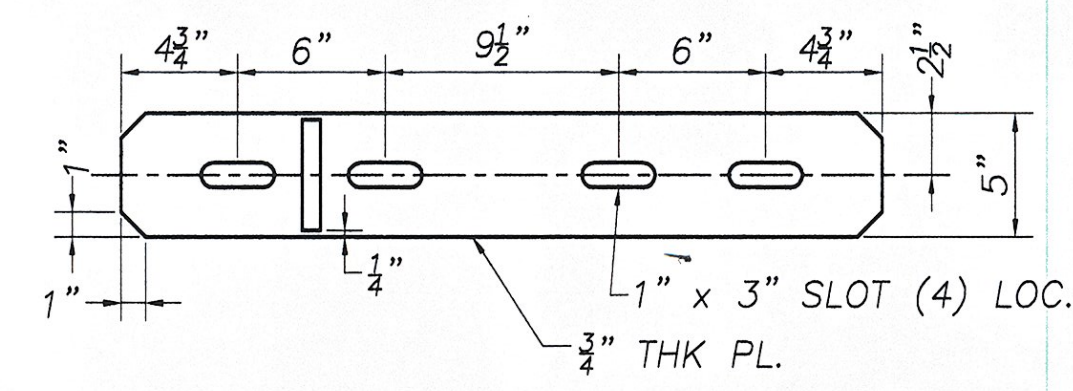
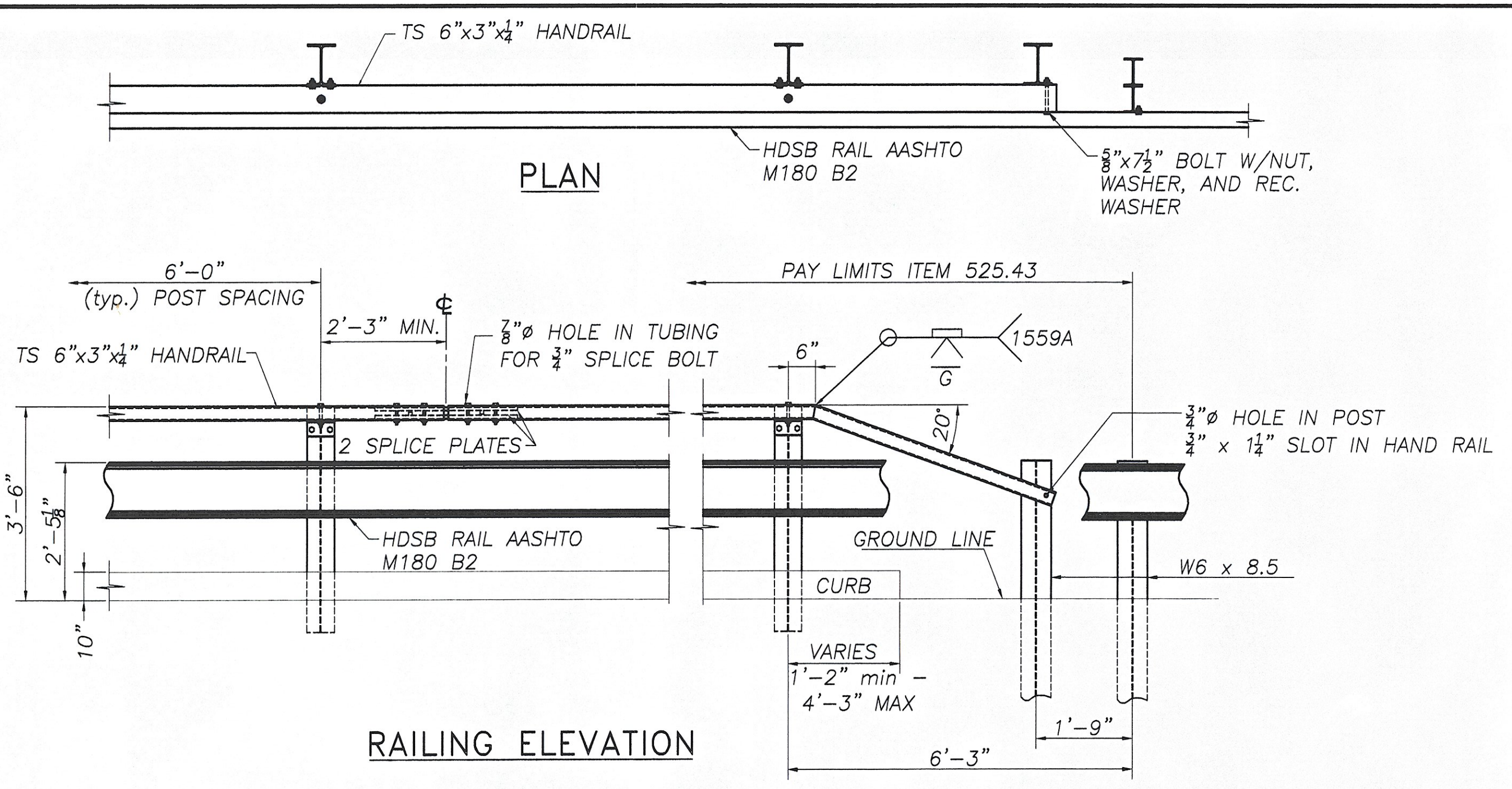
GENERAL CONTRACTOR: F.R. LAFAYETTE INC.

DRAWN: MHM
CHECKED: [Signature]
DATE: 7/11/06
SCALE: NTS
HSC REFERENCE NO.: 1559
SHEET NO.: 1 of 2

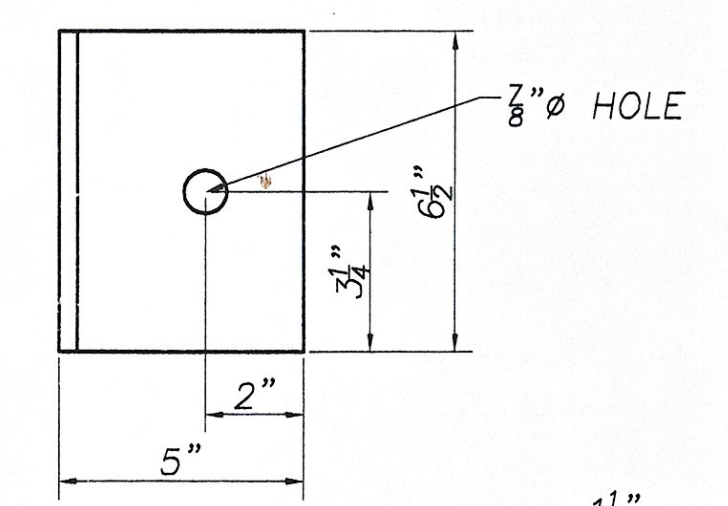


NOTES

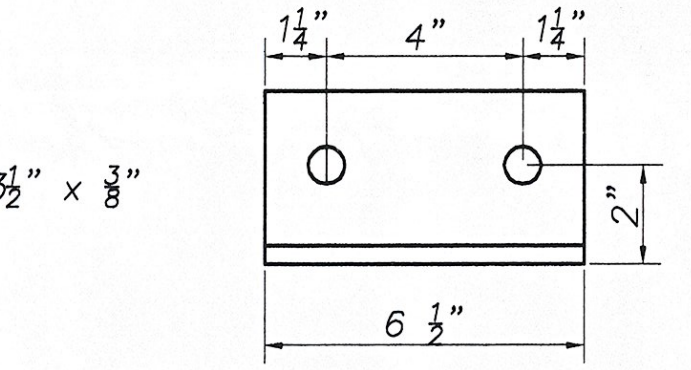
- SEE STANDARD G-1 & G-1d FOR ADDITIONAL DETAILS OF STEEL BEAM GUARD RAIL AND STANDARD SB-R4c-82 FOR ADDITIONAL DETAILS OF BOX BEAM GUARD RAIL
- ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AND CONFORM TO SECCION 714.07
- BRIDGE RAIL TYPES A, C & E: HEAVY DUTY STEEL BEAM RAIL SHALL BE AASHTO M180, CLASS B TYPE-II. POST AND BRACKETS, AS WELL AS PLATE AND SPECIAL WASHERS, SHALL BE AASHTO M223/M223M STEEL. BOLTS SHALL BE ASTM A307. ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION TO AASHTO M111 OR M232 (HARDWARE)
- PRIOR TO GALVANIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES ETC SHALL BE GROUNDED TO $\frac{1}{16}$ " MINIMUM RADIUS.
- ALL POSTS SHALL BE SET TO NORMAL GRADE.
- BRIDGE APPROACH RAIL HEIGHT SHALL BE TRANSITIONED TO NORMAL ROADWAY HEIGHT IN 25 FEET.
- APPROACH RAILING SHALL BE HEAVY DUTY STEEL BEAM FOR 50 FEET FROM THE END OF THE BRIDGE.
- FOR THE TYPE A,B,C, OR D BRIDGE RAILING, THE TRANSITION POST SHALL HAVE AN OFFSET BLOCK AND BE LOCATED AS CLOSE AS PRACTICAL TO THE MID POINT BETWEEN THE BRIDGE END POST AND APPROACH RAIL POST I.
- SPLICES SHALL LAP IN DIRECTION OF TRAFFIC FLOW
- SEE STANDARD SHEET G-1 FOR DELINEATOR DETAILS AND PLACEMENT.
- ERECT DELINEATOR ON EVERY FIFTH POST OR APPROXIMATELY 30 FEET APART. PAYMENT SHALL BE SUBSIDIARY TO OTHER ITEMS.
- THE DROP WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING.



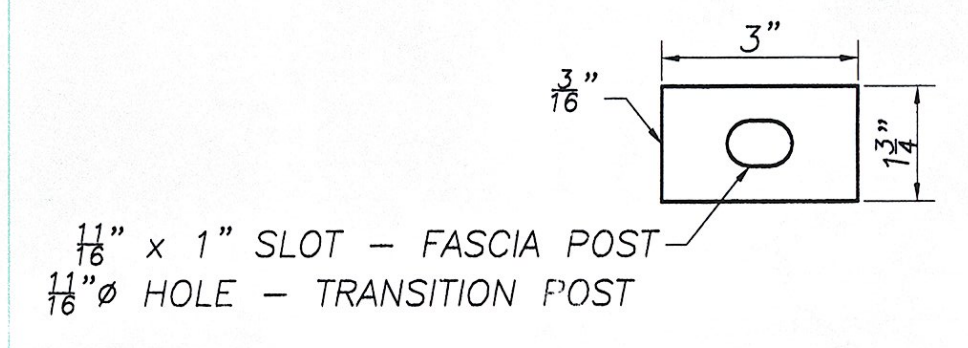
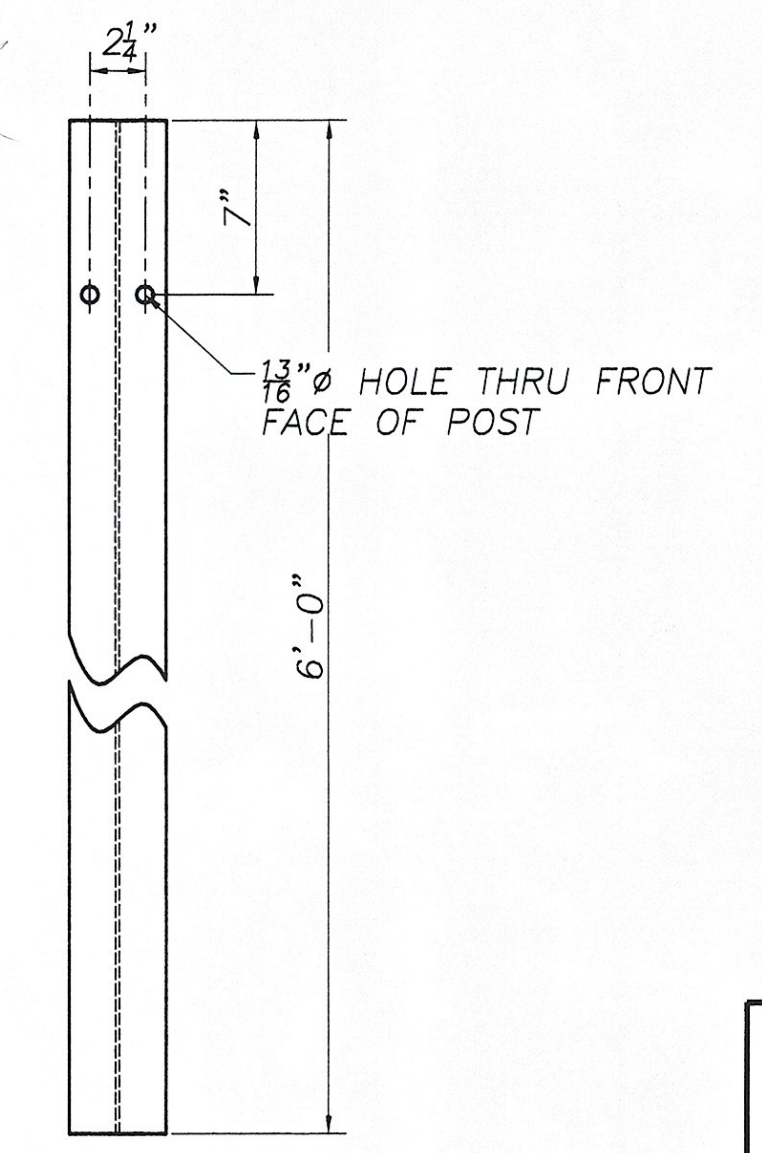
SPLICE PLATE DETAILS



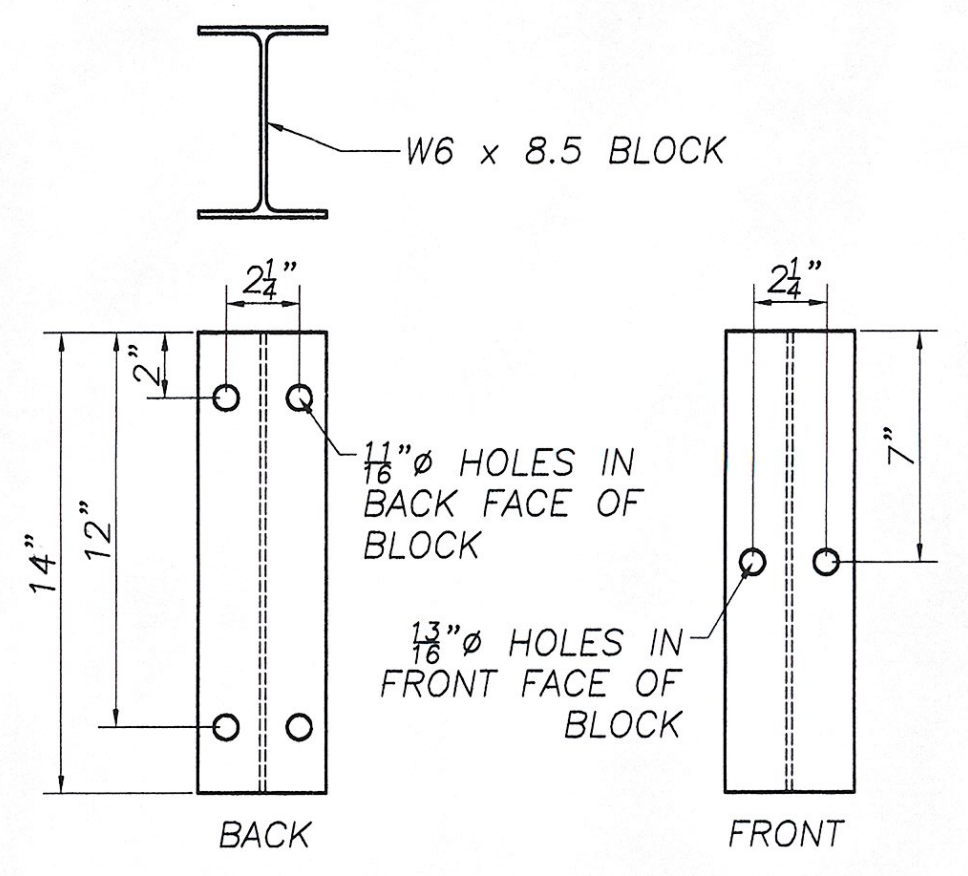
SHELF BRACKET



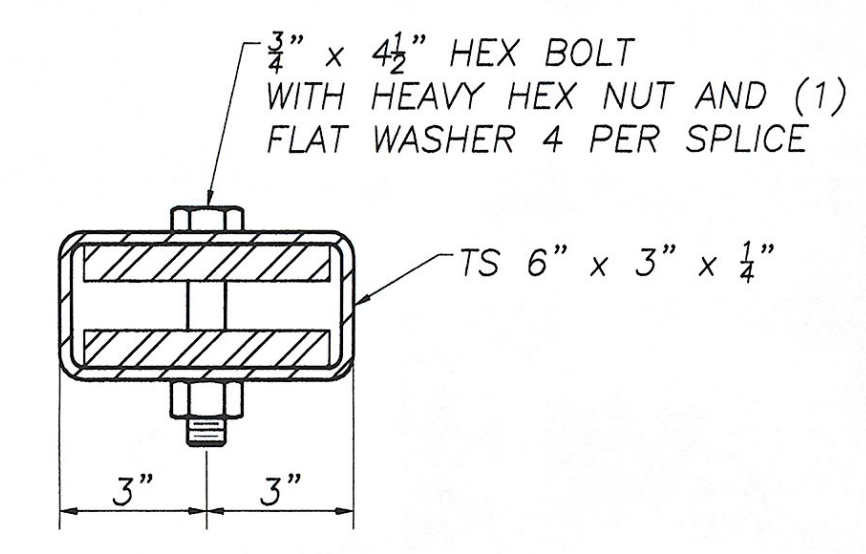
DRIVEN POST
W6 x 8.5



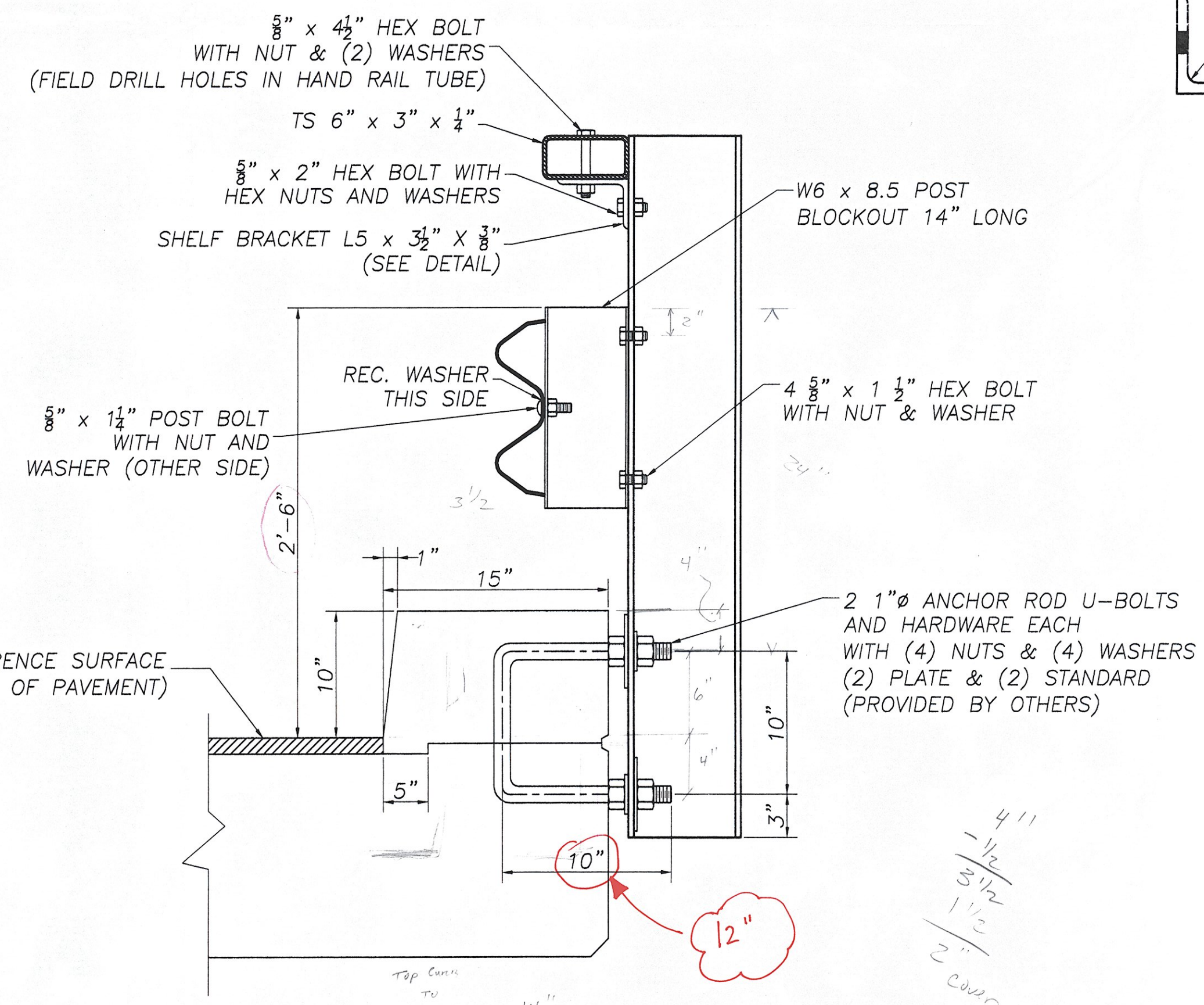
RECTANGULAR WASHER
A572 Gr 50



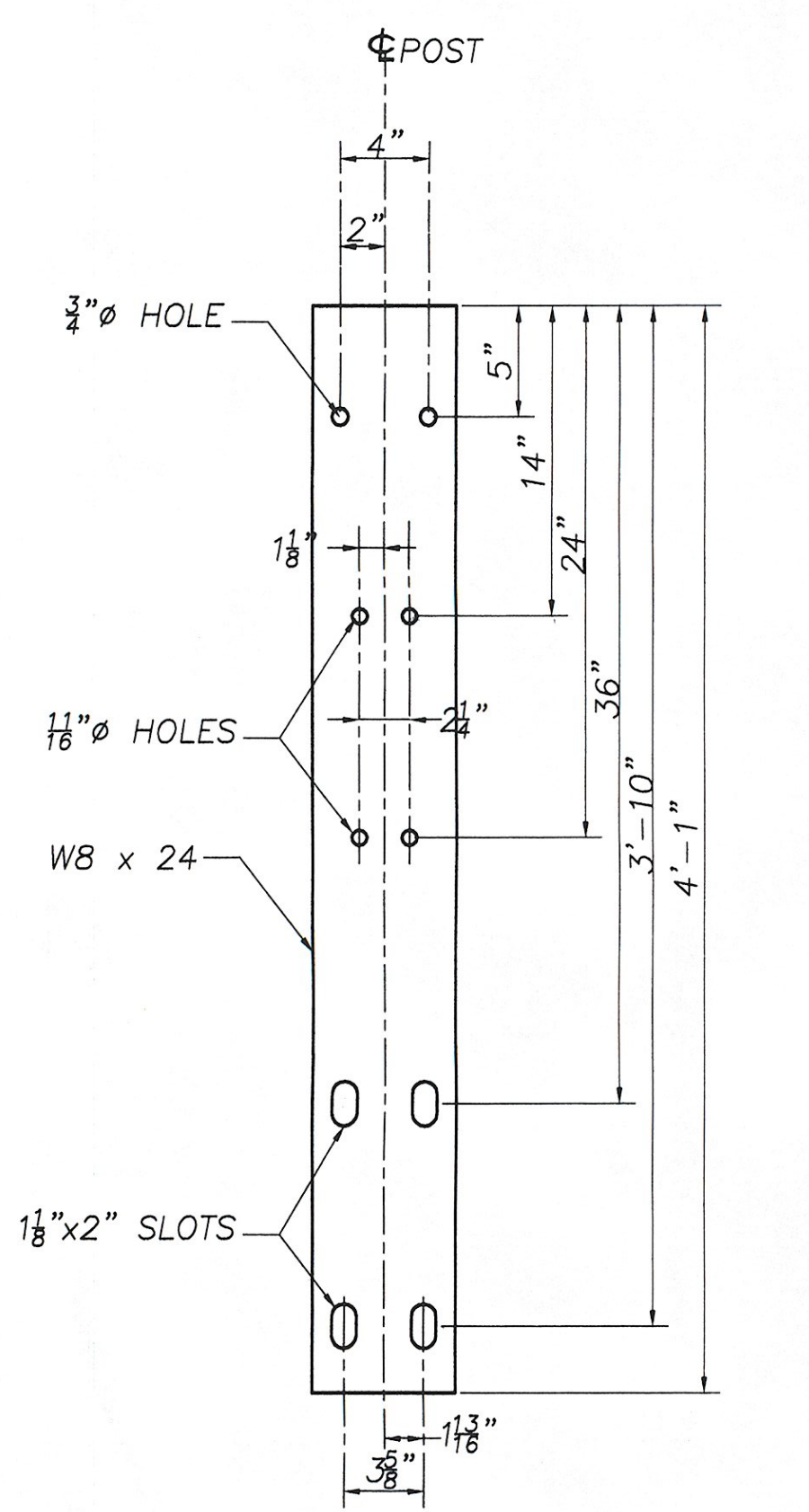
OFFSET BLOCK DETAIL



SPLICE SECTION



TYPICAL SECTION



FASCIA MOUNTED POST

SHOP DRAWING REVIEW

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VHB Vanesse Hanger Brustlin, Inc.
Engineers, Planners, and Scientists
Six Bedford Farms, Milton Rd.
Bedford, NH 02811 603 664 0889

Job Number: 51335
Reviewed By: LSG
Date: 7/31/06

REVISIONS		
No.	Remarks	Date
0	Initial submittal	7-13-06



HIGHWAY SAFETY CORP.
GLASTONBURY, CT

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PROJECT NUMBER: TH2-0104
TOWN OF GRAFTON, VT
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GENERAL CONTRACTOR: F.R. LAFAYETTE INC.

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CHECKED: [Signature]
DATE: 7/11/06
SCALE: NTS
HSC REFERENCE NO.: 1559
SIZE: D
REVISION: 0
SHEET NO.: 2 of 2