

**GENERAL NOTES**

STRUCTURE EXCAVATION AND BACKFILL SHALL BE AS SHOWN ON THE PLANS.  
EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

THE FINAL FINISH FOR THE SURFACES OF THE CURBS SHALL BE CLASS 2. ALL OTHER EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS 1 FINAL FINISH TO ONE FOOT BELOW THE GROUND LINE.

LEVELING PADS ARE UNLAMINATED BEARINGS. THEY SHALL BE CUT OR MOLDED FROM AASHTO ELASTOMER GRADE 3, 4, OR 5 AS DESCRIBED IN TABLES 705-1 AND 705-2 WITH A DUROMETER (SHORE "A") HARDNESS OF 60.

GRADE 60 REINFORCING STEEL IS REQUIRED.  
POST-TENSIONING RODS SHALL MEET ASTM-A722.  
SEE DRAWING B4 FOR NOTES ON GROUTING AND POST-TENSIONING.  
ALL REINFORCING STEEL SHALL BE BLACK UNLESS OTHERWISE NOTED.  
EC DENOTES EPOXY COATED REINFORCING STEEL.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPlice LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPlice LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPlice LENGTH FOR CLASS B CONCRETE	1'-3"	1'-6"	2'-0"	2'-8"	4'-8"	5'-8"	7'-3"	8'-11"

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPlice LENGTH FOR CLASS S CONCRETE	1'-3"	1'-6"	1'-10"	2'-2"	3'-8"	4'-8"	5'-11"	7'-3"

WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPlice SHALL BE AS DESCRIBED ABOVE.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPlice LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPlice LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPlice LENGTH FOR CLASS B CONCRETE	1'-0"	1'-4"	1'-8"	2'-3"	3'-0"	3'-10"	4'-10"	5'-11"

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPlice LENGTH FOR CLASS S CONCRETE	1'-0"	1'-4"	1'-7"	1'-10"	2'-5"	3'-1"	3'-11"	4'-10"

THE ABOVE SPlice LENGTHS SHALL BE INCREASED BY 20 PERCENT FOR 3 BAR BUNDLES AND 33 PERCENT FOR 4 BAR BUNDLES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

E.F. = EACH FACE  
F.F. = FAR FACE  
N.F. = NEAR FACE

FOR STRUCTURE NUMBER INSTALLATION, SEE STANDARD S-614-12.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-522-1887 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

**DESIGN DATA**

AASHTO, 16th EDITION STANDARD SPEC. FOR HIGHWAY BRIDGES WITH CURRENT INTERIMS

DESIGN METHOD: LOAD FACTOR DESIGN

LIVE LOAD: HS-20 (DESIGN TRUCK OR TANDEM, AND DESIGN LANE LOAD)

DEAD LOAD: ASSUMES 36 LBS. PER SQ. FT. FOR FUTURE OVERLAY

REINFORCING STEEL:  $f_y = 60,000$  psi

STRUCTURAL STEEL: AASHTO M-183 (ASTM A-36)  $F_y = 36,000$  psi

PRECAST CONCRETE: CLASS S CONCRETE

$f'_c = 6,000$  PSI

$f'_c = 270,000$  psi

$f'_c = 150,000$  psi

POST-TENSION BARS:

**SUMMARY OF QUANTITIES**

ITEM No.	DESCRIPTION	UNIT	SUPER STRUCTURE	ABUT. 1	ABUT. 2	TOTALS
202	REMOVAL OF BRIDGE	EACH				1
206	STRUCTURE EXCAVATION	CY		302	302	604
208	STRUCTURAL BACKFILL (FLOW-FILL)	CY		62	62	124
208	STRUCTURE BACKFILL (CLASS 2)	CY		94	94	188
403	HBP (GRS) (75) (PG 58-28)	TON				
420	GEOTEXTILE (DRAINAGE) (CLASS A)	SY		185	185	370
420	GEOTEXTILE (PAVING)	SY				
501	DRIVE STEEL SHEET PILING	SF				579
502	STEEL PILING (HP 12 x 53)	LF		368	368	736
506	RIPRAP (12 INCH)	CY		94	94	188
507	BITUMINOUS SLOPE AND DITCH PAVING (ASPHALT)	TON				10
601	PRECAST WALL SEGMENT (ABUTMENT)	EACH		1	1	2
601	PRECAST WALL SEGMENT (WINGWALL)	EACH		2	2	4
606	BRIDGE RAIL TYPE 10M	LF		77		77
618	PRESTRESSED CONCRETE SLAB (SPECIAL)	EACH		8		8

- QUANTITY INCLUDED IN ROADWAY QUANTITIES
- ASPHALT CEMENT BINDER SHALL BE EITHER PERFORMANCE GRADED BINDERS 58-22 OR 58-28 IN ACCORDANCE WITH THE REQUIREMENTS OF SUBSECTION 702.01. ASPHALT CEMENT BINDER AND GEOTEXTILE (PAVING) WILL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
- INCLUDES 188 CY OF EXCAVATION FOR VOLUME OF RIPRAP (94 CY EACH ABUT.)
- INCLUDES AREA BELOW RIPRAP. ALSO PROVIDE GEOTEXTILE TO COVER DRAIN HOLES AND JOINTS ON TOP OF DECK AND JOINTS BETWEEN PRECAST PANELS DECK, UPPER AND LOWER ABUT. WALLS AND WINGWALLS ON BACKFILL SIDE. LATER PORTION OF GEOTEXTILE WILL NOT BE MEASURED OR PAID SEPARATELY, BUT SHALL BE INCLUDED IN WORK.

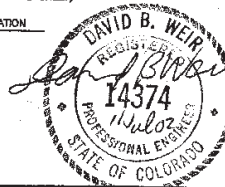
**INDEX OF DRAWINGS**

- B1) GENERAL NOTES
- B2) GENERAL LAYOUT & HYDRAULICS
- B3) ENGINEERING GEDLOGY
- B4) CONST. LAYOUT AND FDN. DETAILS
- B5) ABUTMENT
- B6) WING WALLS
- B7) ABUTMENT DETAILS
- B8) GIRDER LAYOUT
- B9) GIRDER B-1 DETAILS
- B10) GIRDER B-2 DETAILS
- B11) BRIDGE RAIL TYPE 10H
- B12) BRIDGE RAIL TYPE 10M
- B13) BRIDGE RAIL TYPE 10M
- B14) EXCAVATION & BACKFILL FOR BRIDGES
- B15) STRUCTURE BACKFILL (FLOW-FILL)

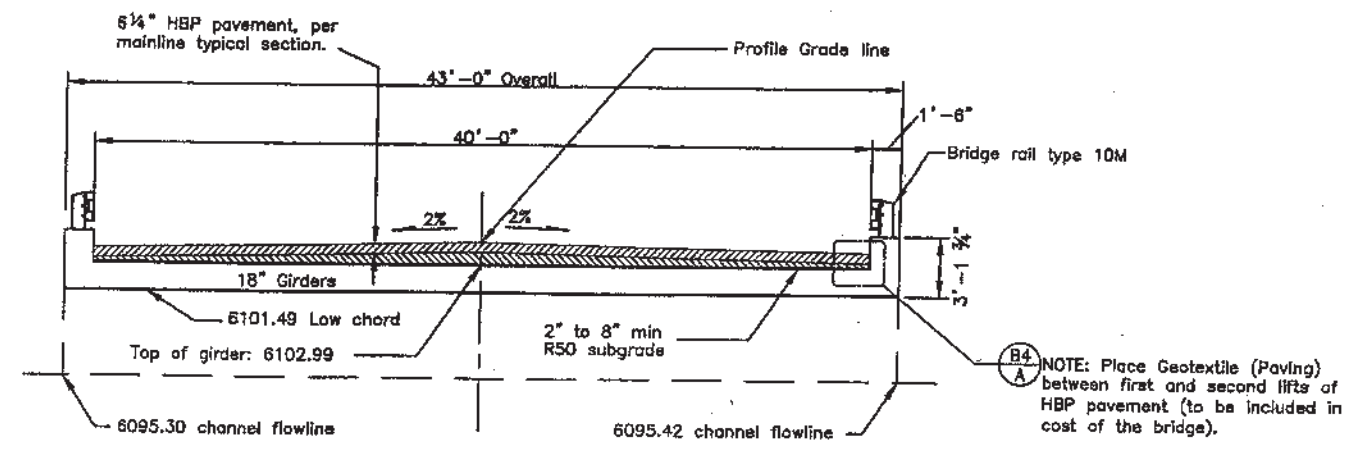
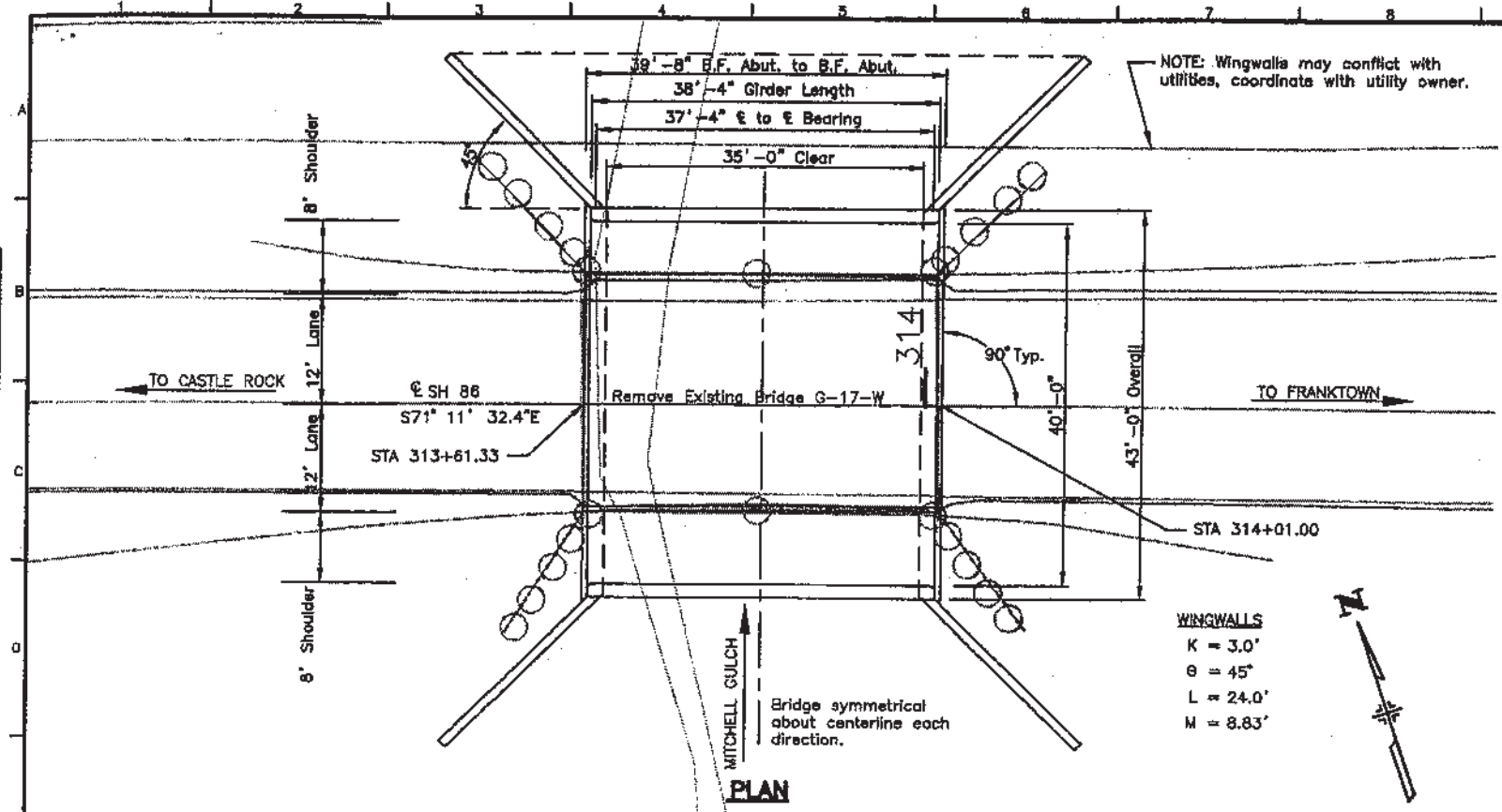
**BRIDGE DESCRIPTION**

1 SIMPLE SPAN (37'-4") BRIDGE  
SOLID PRECAST PRESTRESSED CONG. SLABS  
SKEW 90°00'00"  
PRECAST ABUT. AND WINGWALLS  
NO CAST-IN-PLACE DECK

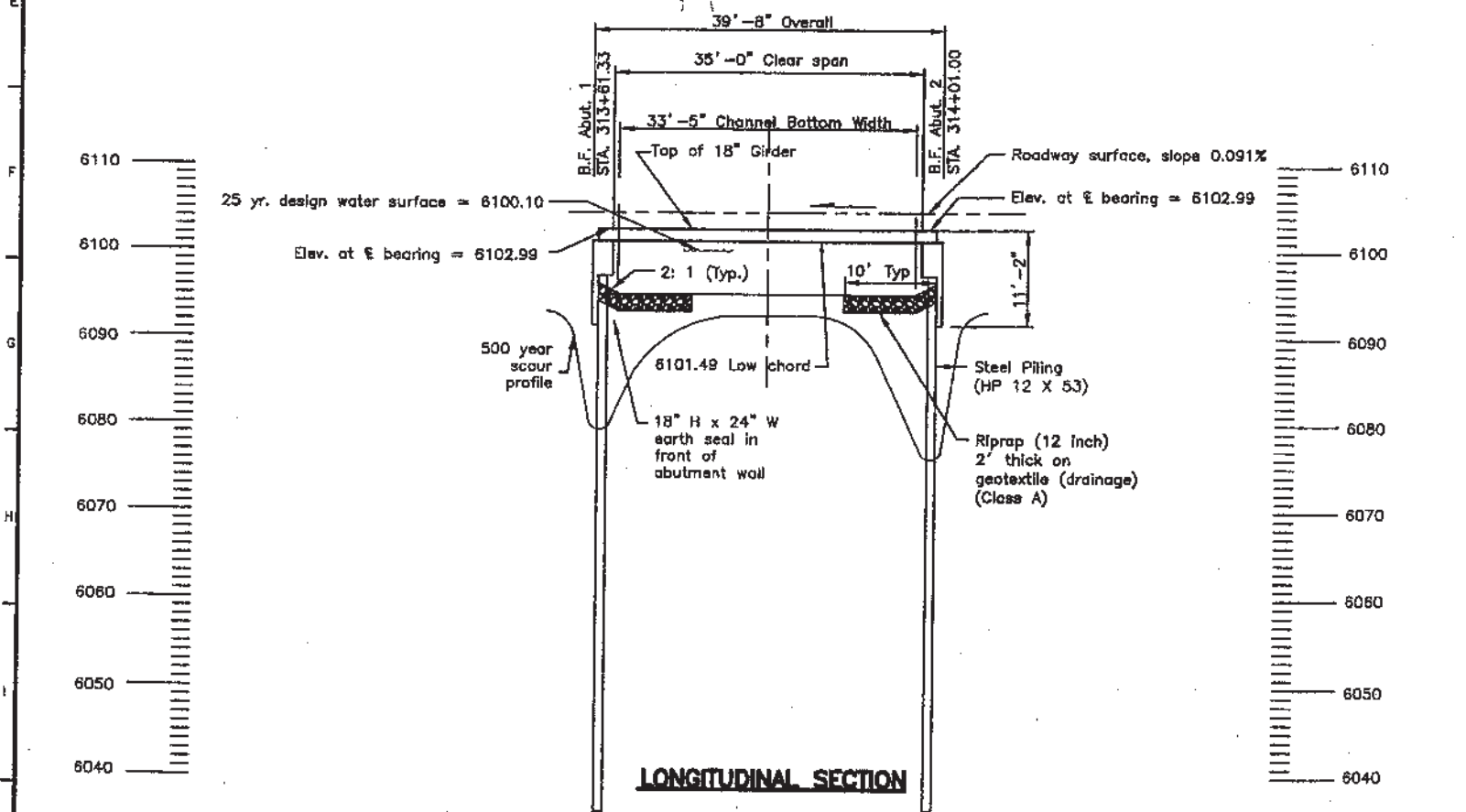
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SECTION OR DETAIL IDENTIFICATION



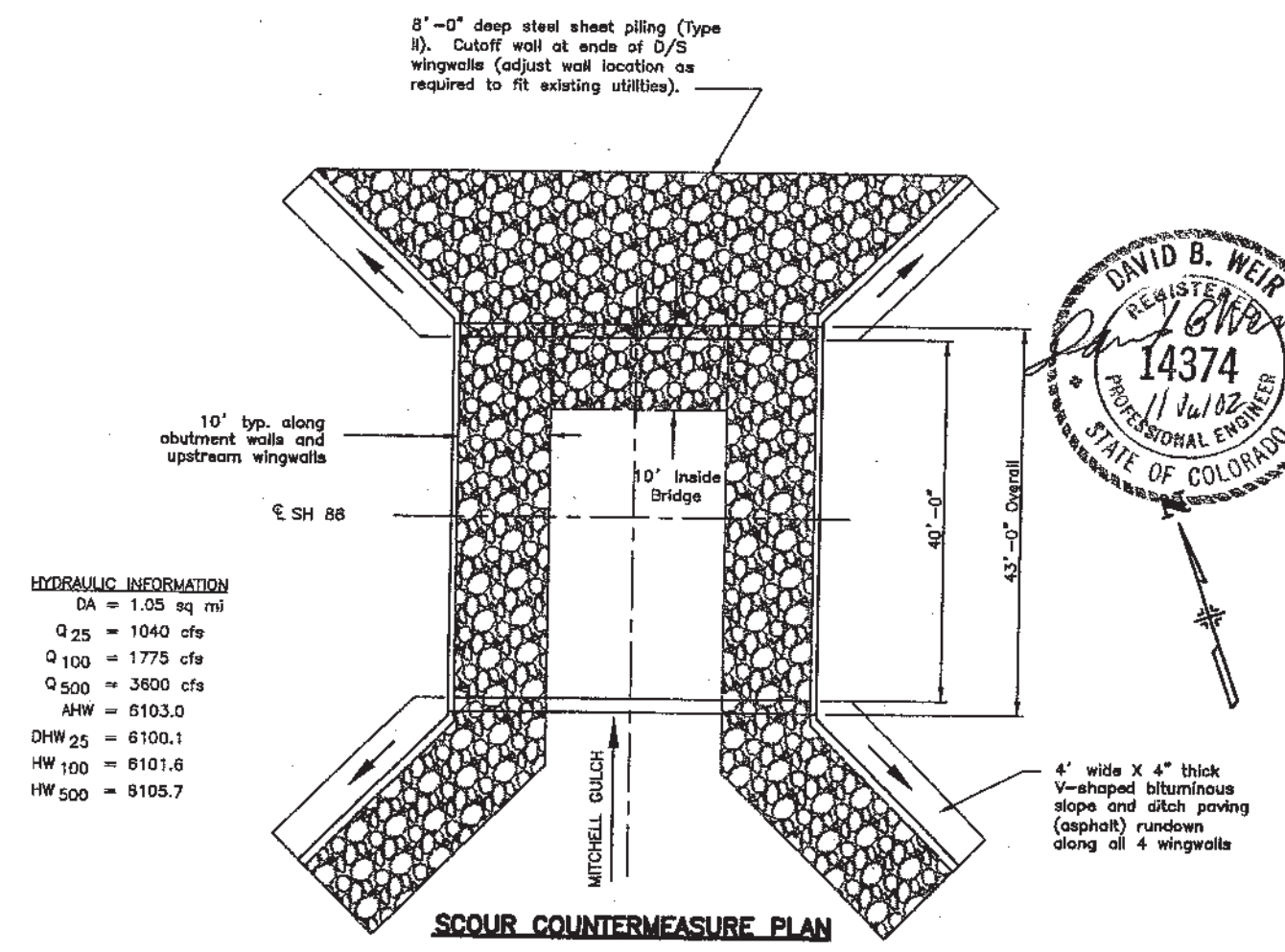
<b>Computer File Information</b>		<b>Sheet Revisions</b>		<b>Colorado</b> Department of Transportation 359 Inverness Drive South Englewood, Co. 80112 Phone 303-790-1020 FAX: 303-790-1037 Region 1 WDS	<b>As Constructed</b> No Revisions: Revised: Void:	SH 86 @ MITCHELL GULCH GENERAL NOTES Designer: DBW Detailer: RPS Sheet Subset: Bridge	BR-086A-037 13380 CODE Sheet Number 25
Creation Date: 5/24/02	Initials: RPS	06/05/02	CMQ#1 (NEW SHEET)				
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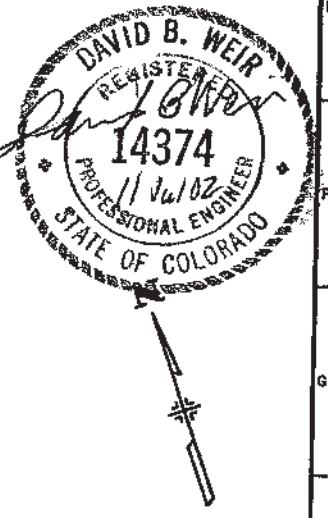
TRANSVERSE SECTION



LONGITUDINAL SECTION



SCOUR COUNTERMEASURE PLAN



Live Load HS-25-44

Computer File Information	
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Last Modification Date:	07/11/02 Initials: DBW
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Sheet Revisions		
06/05/02	CMO#1 (NEW SHEET)	MMS

Colorado Department of Transportation  
 359 Inverness Drive South  
 Englewood, Co. 80112  
 Phone 303-790-1020  
 FAX: 303-790-1037

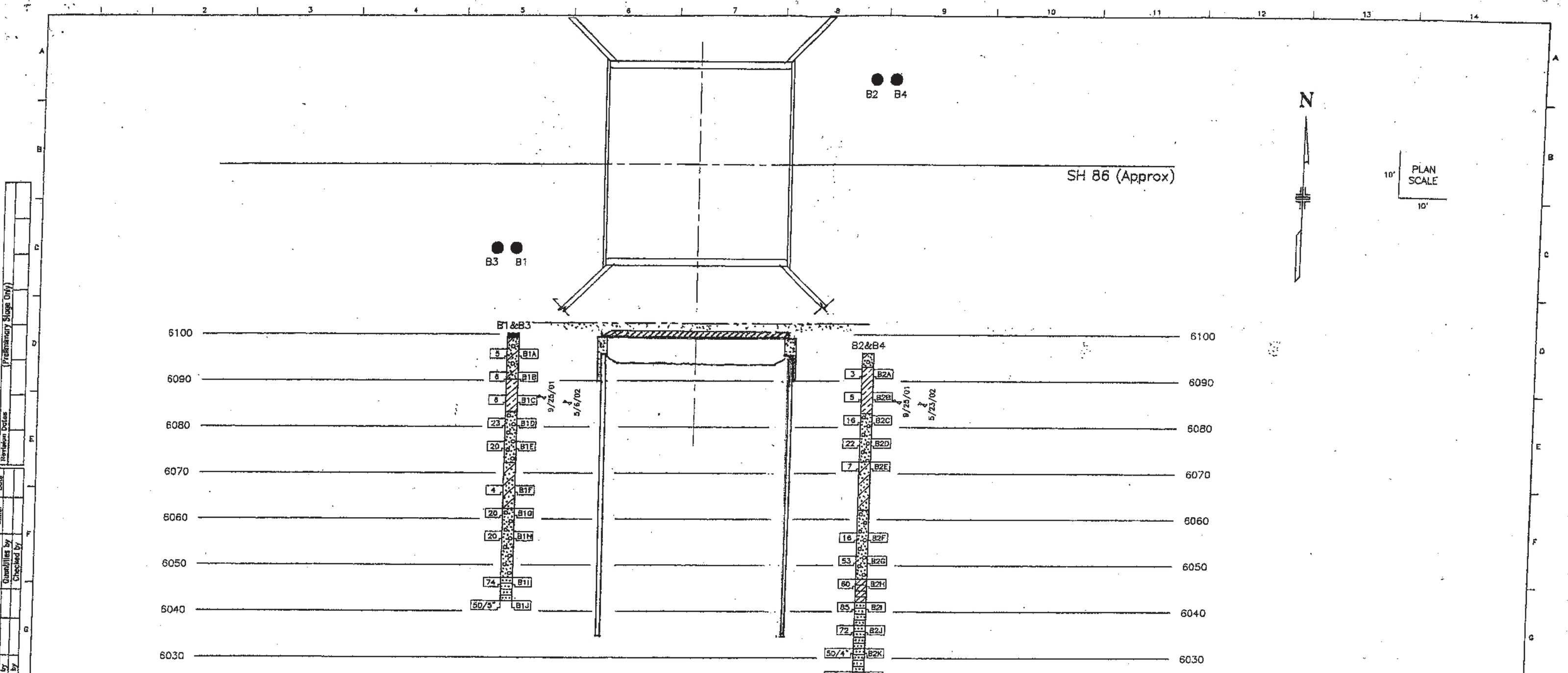
Region 1 WDS

**WILSON & COMPANY**  
 Engineers & Architects  
 A PARTNER OF COOPERATION

As Constructed
No Revisions:
Revised:
Void:

SH 86 @ MITCHELL GULCH GENERAL LAYOUT & HYDRAULICS			
Designer:	DBW	Structure Numbers:	G-17-CE
Detailer:	RPS	Sheet Subset:	Bridge
Sheet Subset:	Bridge	Subset Sheets:	82 of 15

BR-086A-037
13380
CODE
Sheet Number 26



The boring logs of the above test holes are on file in the Geology Program Office, Staff Materials and Geotechnical Branch, (303)757-9274

SUMMARY OF TEST RESULTS										TYPE OF MATERIAL				LEGEND				
Sample Number	Depth (feet)	Classification		Grading Analysis (AASHTO)				Atterberg Limits			Water Content (%)	Gravelly Sand	Sandy Clay to Clayey Sand	Claystone Bedrock	Sandstone Bedrock	TEST BORING	CONTINUOUS PENETRATION TEST	
		USCS	AASHTO	Gravel	Coarse Sand	Fine Sand	Silt and Clay	Liquid Limit (%)	Plasticity Index (%)	Plastic Limit (%)								
B1A	3.5-5.0	Clayey Sand	SC	A-6(4)	8	29	26	37	40	15	25	13.6						
B1B	8.5-10.0	Clayey Gravelly Sand	SC	A-2-B(0)	38	28	20	18	28	13	15	8.9						
B1C	13.5-15.0	Sandy Clay	CL	A-7-B(14)	3	15	20	82	42	15	27	29.3						
B1D	18.5-20.0	Gravelly Sand	SP	A-1-b(0)	33	41	20	8	NV	NP	NP	14.2						
B2B	8.5-10.0	Sandy Clay	CL	A-6(10)	8	18	17	56	38	13	25	20.6						
B2E	23.5-25.0	Sandy Clay	CH	A-7-B(54)	0	0	5	95	89	18	51	39.8						

Note: Boulders may be encountered at any depth

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Sheet Revisions	

Colorado Department of Transportation  
 4201 East Arkansas Avenue  
 Denver, Colorado 80222  
 Phone: 303-757-9274 FAX: 303-757-9242  
 Geotechnical Program

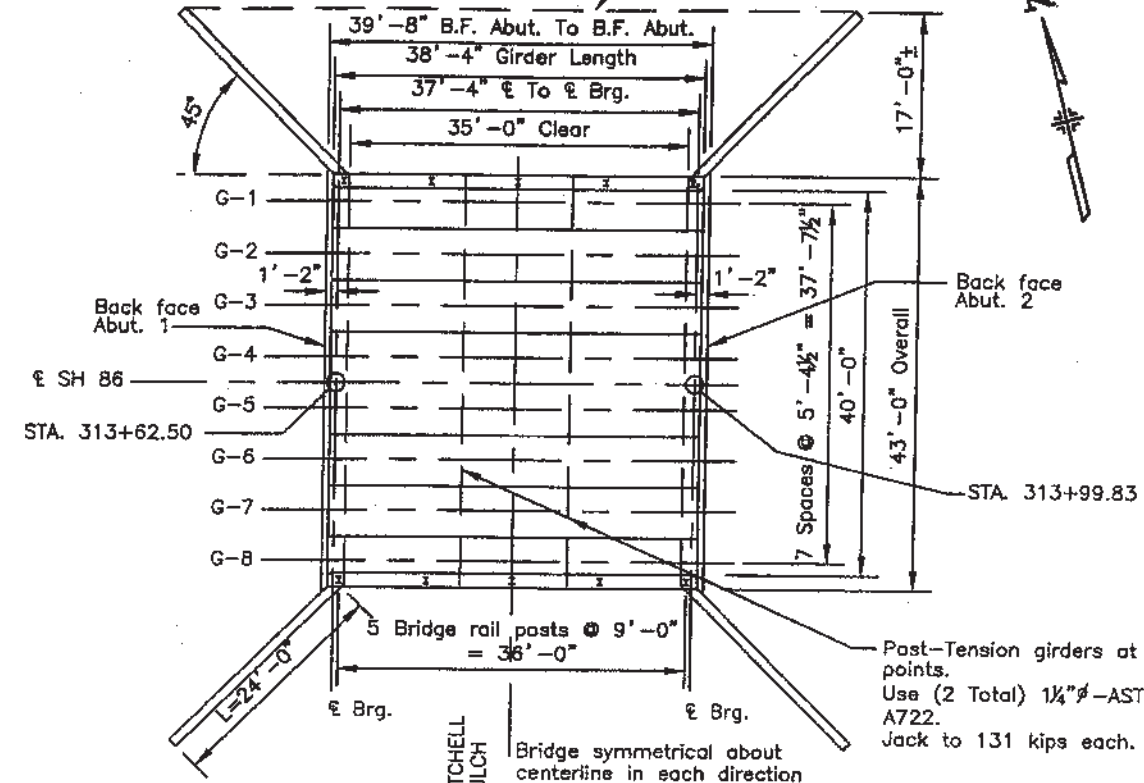
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 Revised:  
 Void:

**ENGINEERING GEOLOGY**  
 SH 86 at Mitchell Gulch  
 Designer: I. Kaouri  
 Detailer: T. McNulty  
 Sheet Subset: Geology

Project No./Code  
 BR 086-A37  
 13380  
 Sheet Number: 27



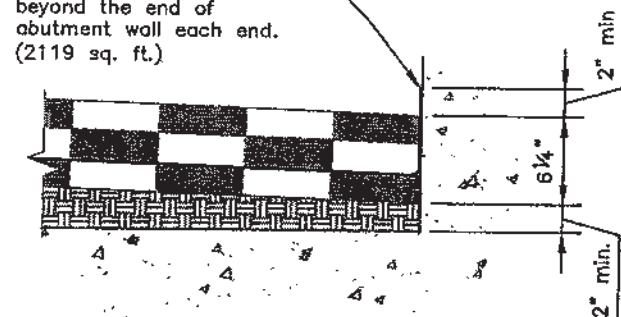
8'-0" Deep steel sheet piling (Type II)  
Cutoff at ends of down stream wingwalls



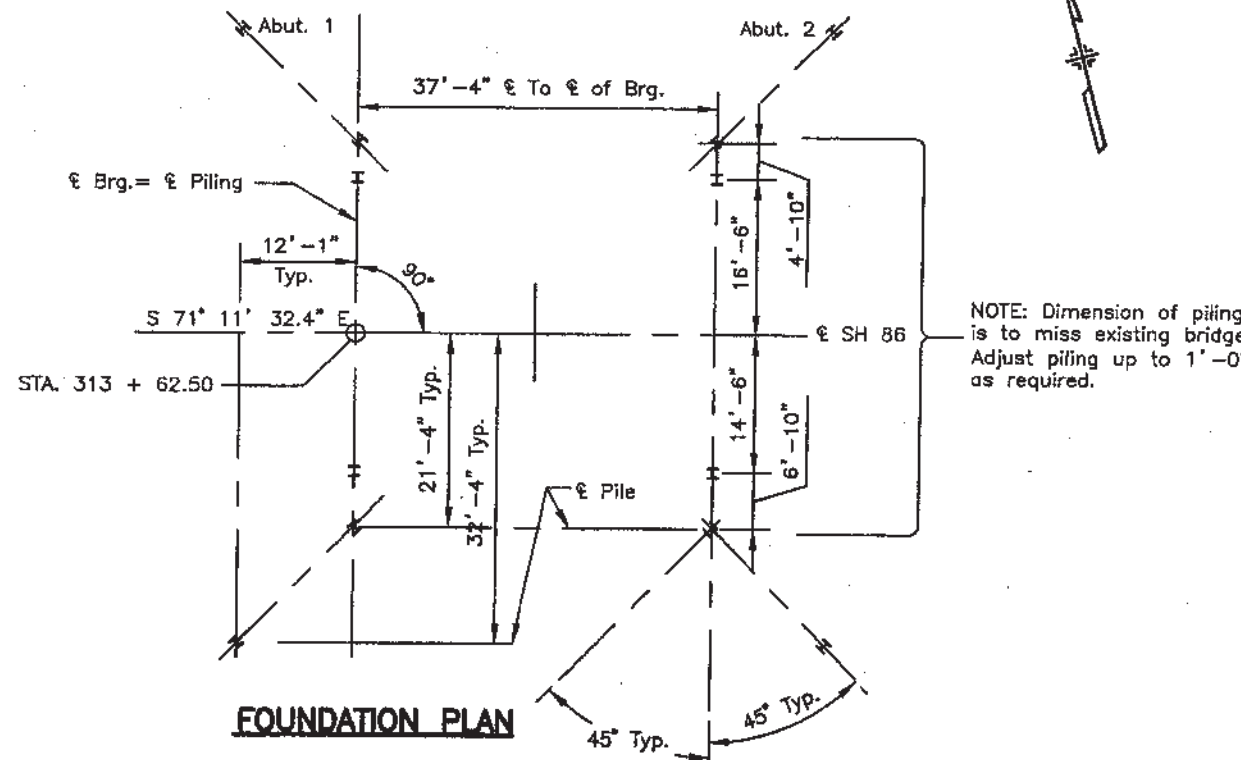
**Notes:**

- 1) Grout is to be placed in keys between girders. Grout is to be a cementitious or epoxy grout that can reach 3000 psi in 12 hours.
- 2) Place 10% of the Post Tension force in the Post-Tensioning rods before grouting.
- 3) Place final Jacking Force of 131 kips in each rod after grout is sufficiently hard to prevent spalling, but not less than 4 hours.
- 4) The center 2 girders may be welded after the 10% of final force is applied. The remaining girders shall not be welded until after the final force in the rods is applied.
- 5) Post-Tensioning rods and associated hardware shall be galv.
- 6) All exposed steel weld plates and welds shall be painted with a zinc rich paint system per 509.24, 507.29 and 708.03 after welding.
- 7) Unless noted otherwise anchor studs shall be 3/4" dia. x 6" long.

Wrap Geotextile (paving) up curb min. 2" above pavement surface. Place Geotextile full width of bridge and for 6 feet beyond the end of abutment wall each end. (2119 sq. ft.)

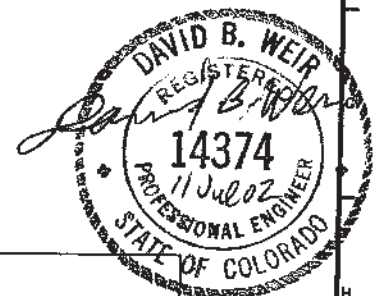


**CONSTRUCTION LAYOUT**



**FOUNDATION PLAN**

**DETAIL B2**



**PILE INFORMATION**

Pile Size	Location	Estimated Tip EL.	Load (Tons)	
			WSD	LFD
HP 12 x 53	Abutment 1	6037	66	112
HP 12 x 53	Abutment 2	6037	66	112

**Computer File Information**

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Last Modification Date:	07/11/02	Initials:	DBW
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Acad Ver.	R2002	Scale:	Units: English

**Sheet Revisions**

Rev.	Date	Description	By
1	06/05/02	CMO#1 (NEW SHEET)	MMS

Colorado Department of Transportation  
 359 Inverness Drive South  
 Englewood, Co. 80112  
 Phone 303-790-1020  
 FAX: 303-790-1037  
 Region 1 WDS

**WILSON & COMPANY**  
 Engineers & Architects  
 A PARTNERSHIP OF CORPORATION

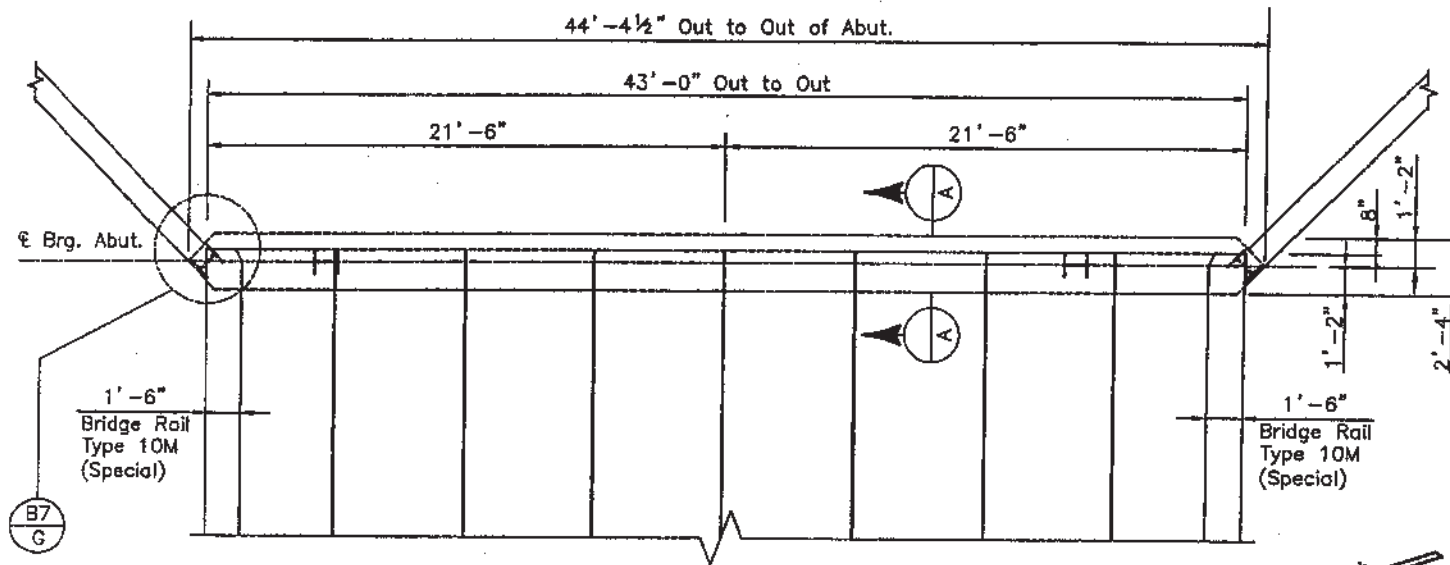
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Revised:	
Void:	

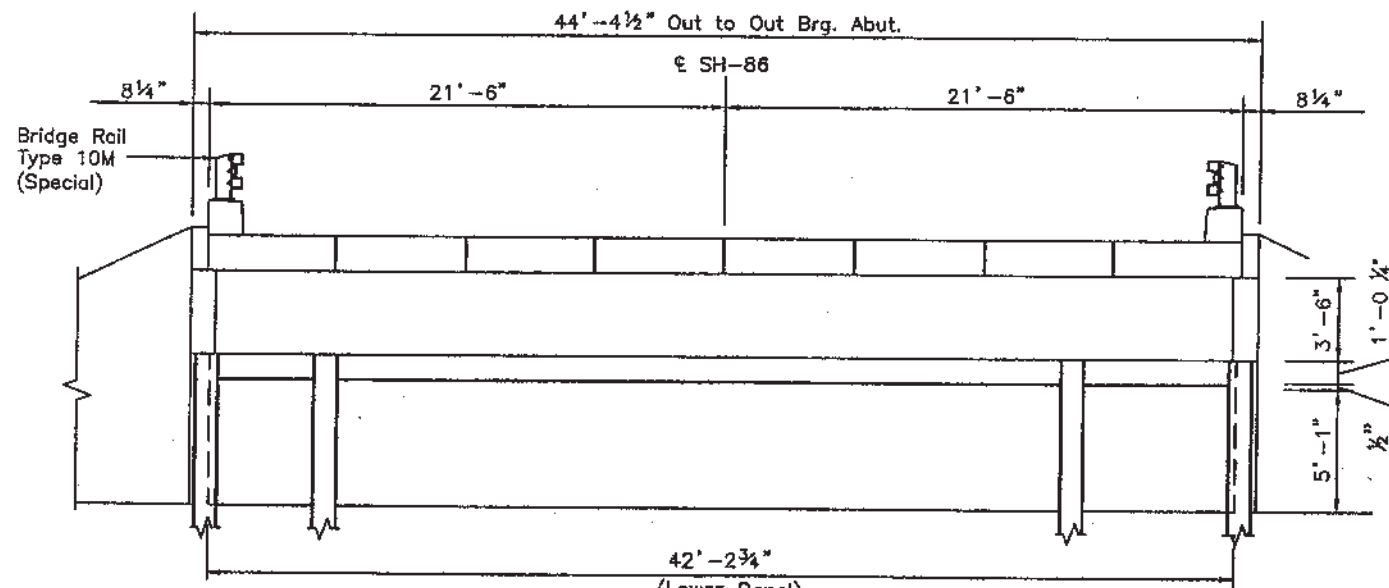
SH 86 @ MITCHELL GULCH CONST. LAYOUT & FDN. DETAILS			
Designer:	DBW	Structure:	G-17-CE
Detailer:	RPS	Sheet Subset:	Bridge
Subset Sheets:		84 of 15	Sheet Number

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13380
CODE
28

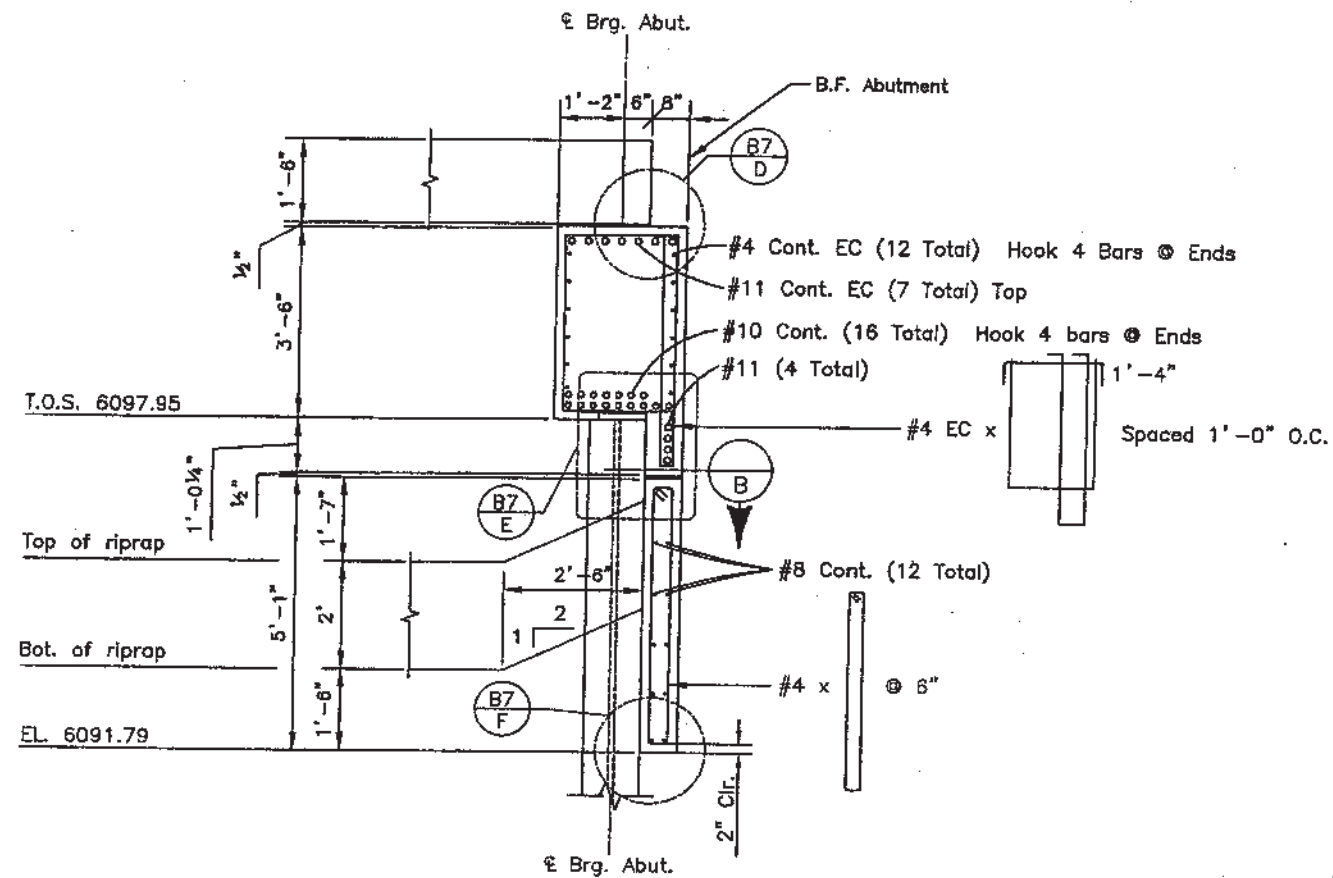
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 Checked By: DBW  
 06/04/02



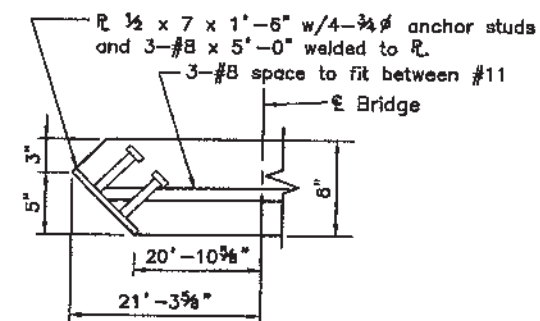
**PLAN**  
 (Abutment 2 shown, Abutment 1 similar)



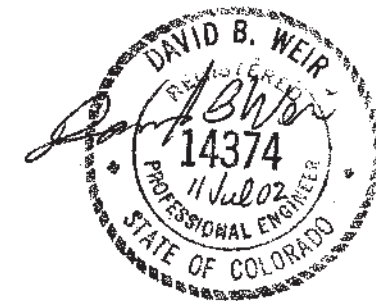
**ELEVATION**  
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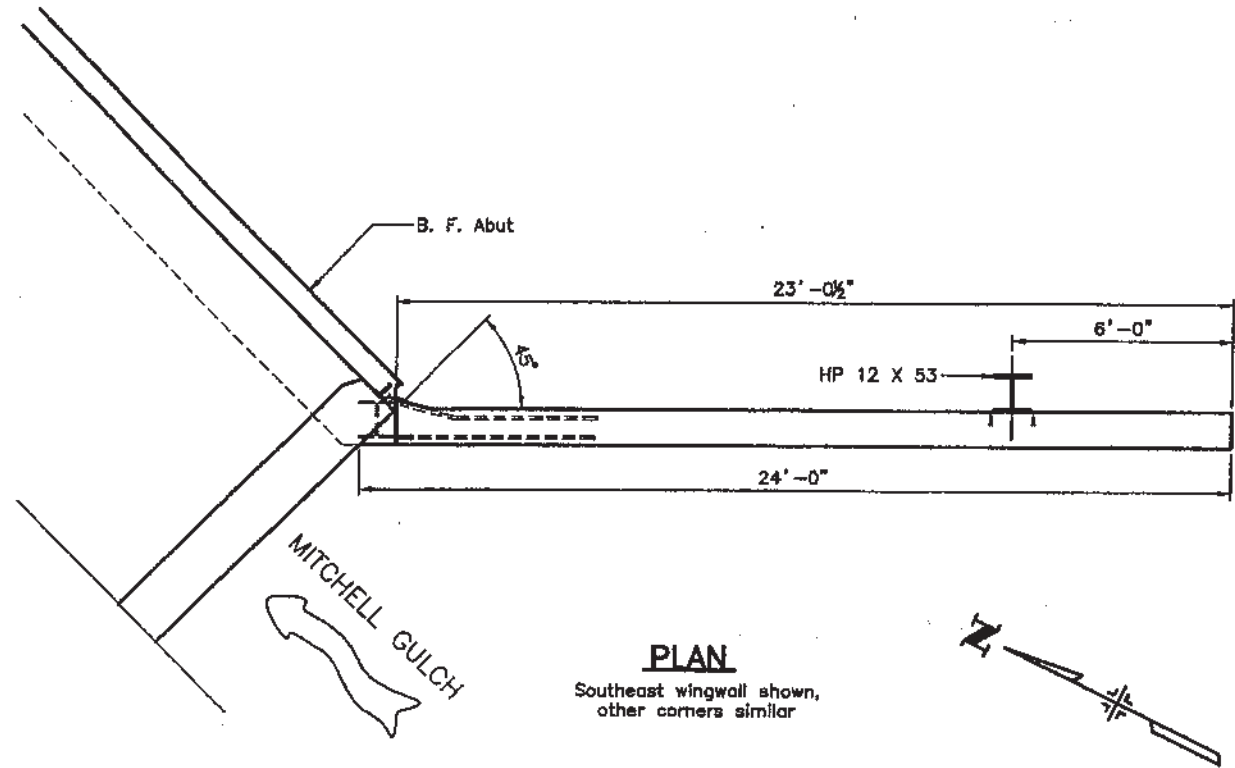
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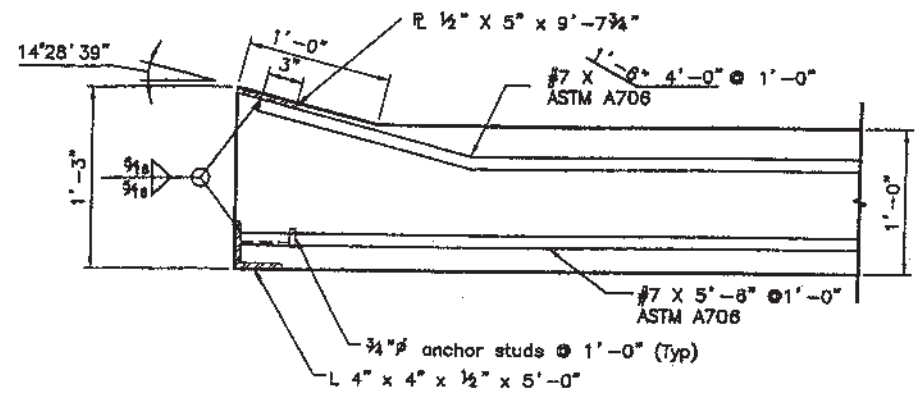
**SECTION B**



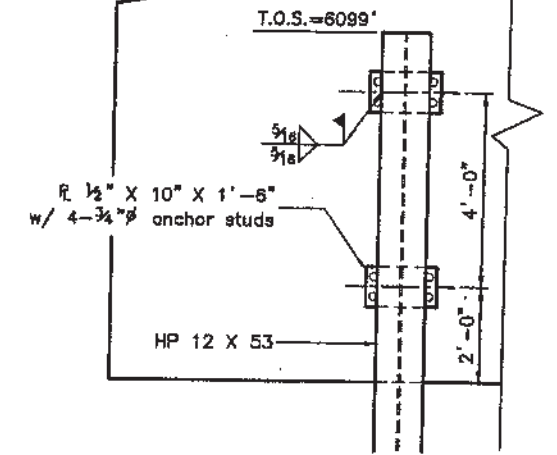
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Last Modification Date:	07/11/02	Initials:	DBW				Revised:	Designer:	DAK	Structure Numbers:	G-17-CE
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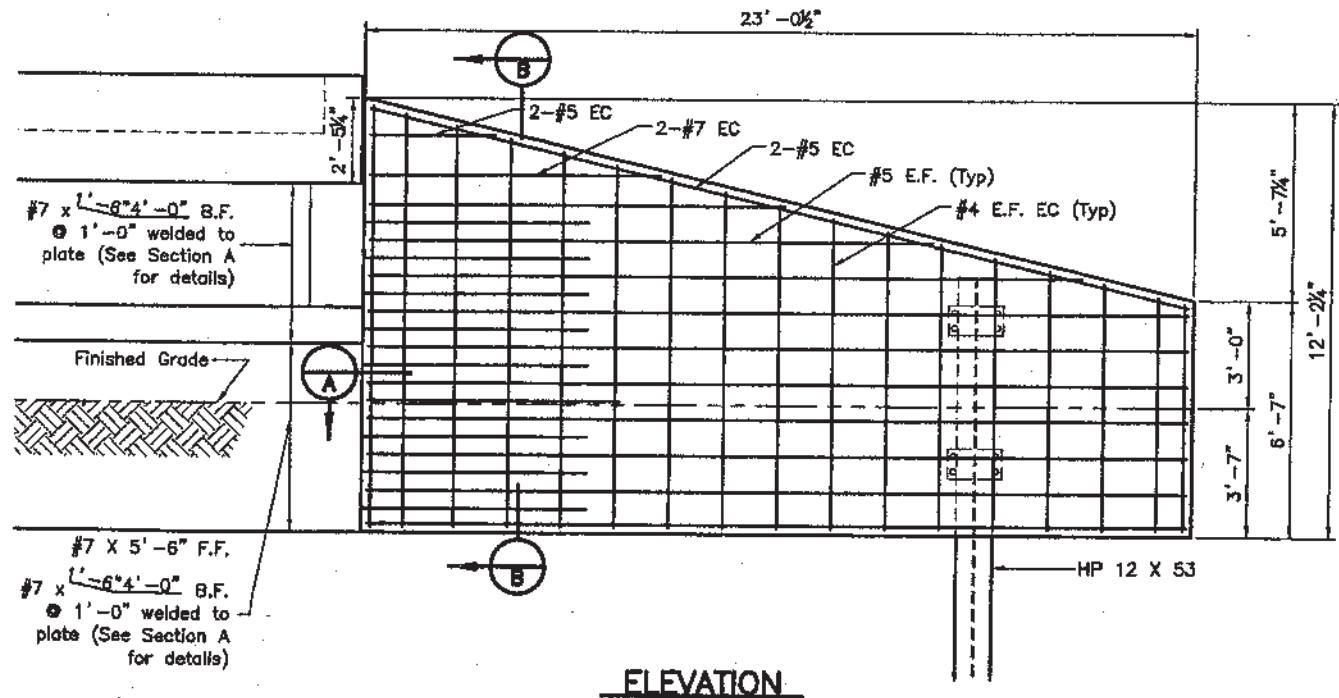
**PLAN**  
Southeast wingwall shown,  
other corners similar



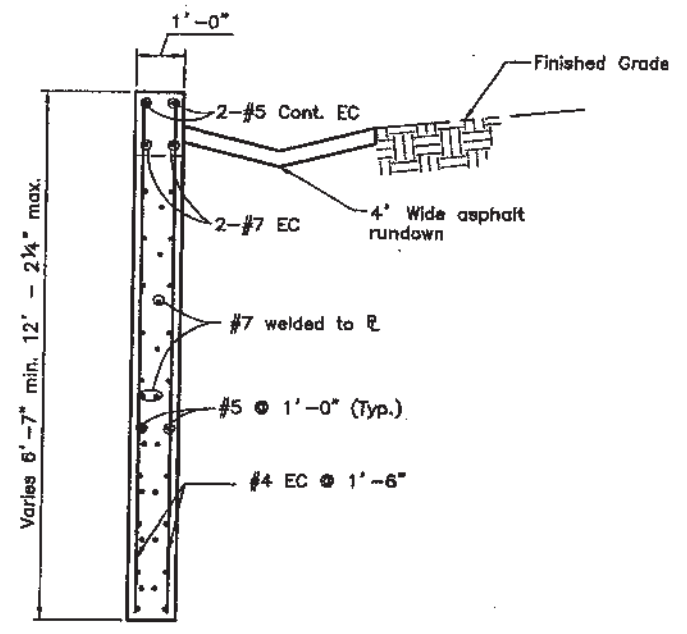
**SECTION A**



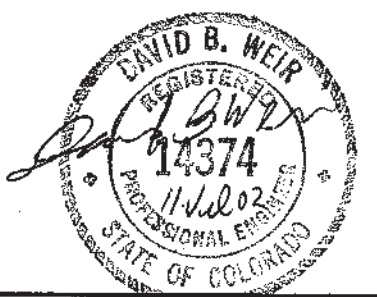
**PARTIAL BACK FACE ELEVATION**



**ELEVATION**



**SECTION B**

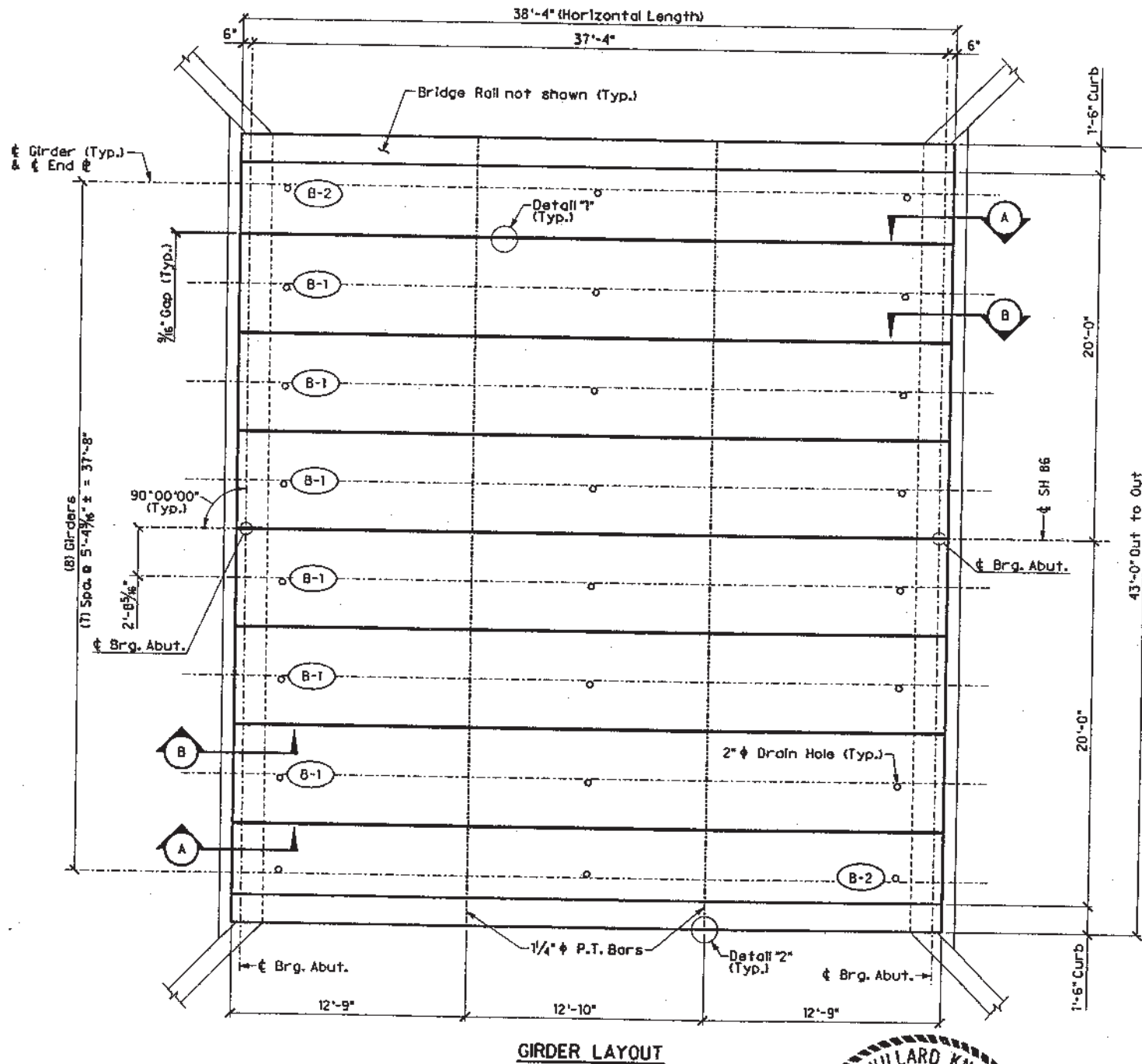
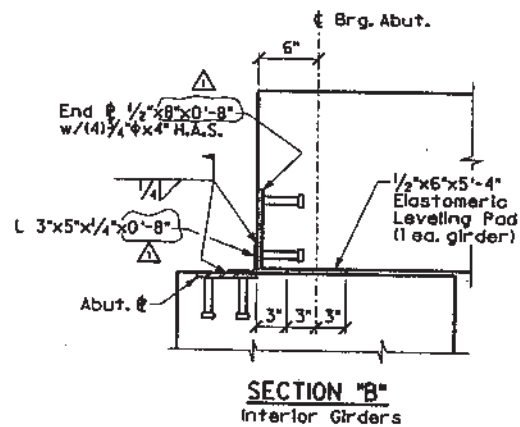
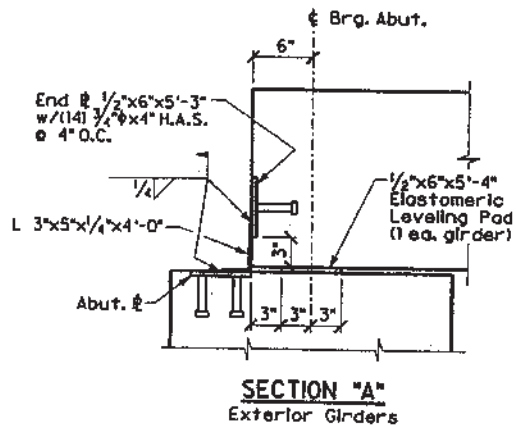
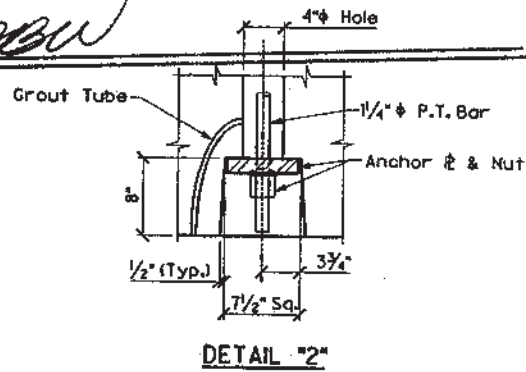


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Creation Date:	5/24/02	Initials:	RPS	06/05/02	CMO#1 (NEW SHEET)	MMS	No Revisions:			13380		
Last Modification Date:	07/11/02	Initials:	RPS				Revised:	Designer:	DBW	Structure:	G-17-CE	
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Drawing File Name:	SX2310006WLLX.DWG							Sheet Subset:	Bridge	Subset Sheets:	86 of 15	
Acad Ver.	R2002	Scale:									Sheet Number	30





<input checked="" type="checkbox"/>	<b>REVIEWED</b>	Shop drawings have been reviewed and do not require resubmittal.
<input type="checkbox"/>	<b>REVIEWED AS NOTED</b>	Shop drawings have been reviewed and the Contractor shall incorporate the comments noted in the shop drawings into the work. The shop drawings do not require resubmittal.
<input type="checkbox"/>	<b>RESUBMIT</b>	Shop drawings require correction or redrawing and shall be resubmitted for review. If shop drawings are returned for correction or redrawing, corrections shall be made and the shop drawings shall be resubmitted by the Contractor in the same manner as the first submittal. Specific notation shall be made on the shop drawings to indicate the revisions.
<input type="checkbox"/>	<b>NO ACTION TAKEN</b>	Submittal either not required for this project or provided for information only. Contract requirements should be followed in all cases.
<b>WILSON &amp; COMPANY</b>		Review/Approval neither extends nor alters any contractual obligations of the Engineer/Architect or Contractor.
DATE: <u>30 Jul 02</u> BY: <u>DBW</u>		



**RECEIVED**  
JUL 19 2002  
STAFF SERVICE BRANCH, CDOT



<b>PLUM CREEK STRUCTURES</b>	
9160 North Moore Road Littleton, Co. 80125 (303) 471-1569	
Architect/Engineer: WILSON & COMPANY Customer: Lawrence Constr. Co.	Checked: B. Barngrover Date: 6/5/02
Drawn: D. Kuraschniak Date: 6/5/02	Revision
No.	By
Date	Date
<b>GIRDER LAYOUT</b>	
Structures SH 86 over Mitchell Gulch Locations: Douglas County, Colorado Structure No. 1 Project No.	
Sheet Number	32 of 39
Drawing No.	B8 of 15
Job Number	0208



Rev.	By	Date
DK	7/12/02	
DK	5/21/02	

Architect:  
 Engineer: WILSON & COMPANY  
 Customer: Lawrence Constr. Co.  
 Drawn: D. Karschinski  
 Date: 6/5/02  
 Checked: B. Bergrover  
 Date: 6/5/02

**GIRDER B-1 DETAILS**

Structure: SH 86 over Mitchell Gulch  
 Location: Douglas County, Colorado  
 Structure No.:  
 Project No.:

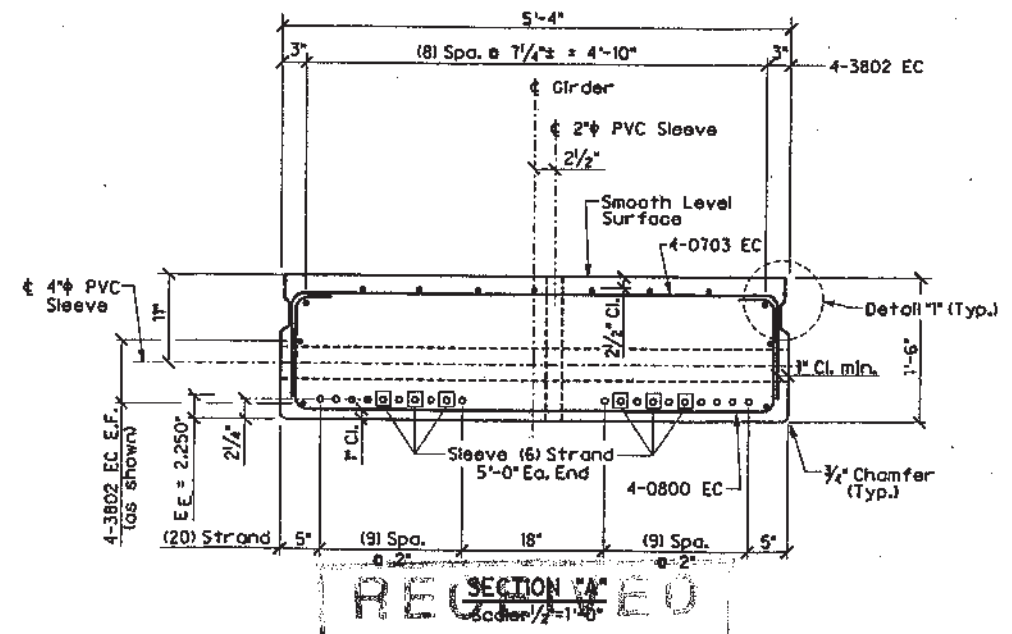
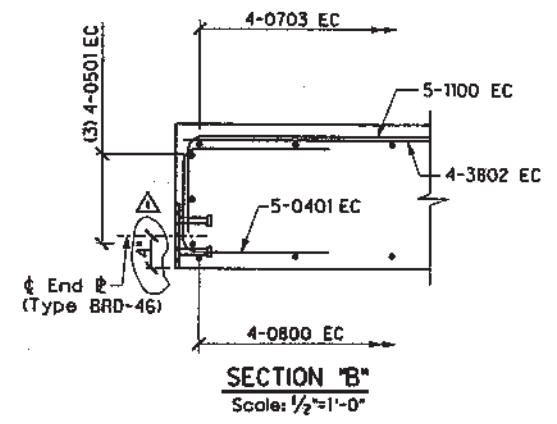
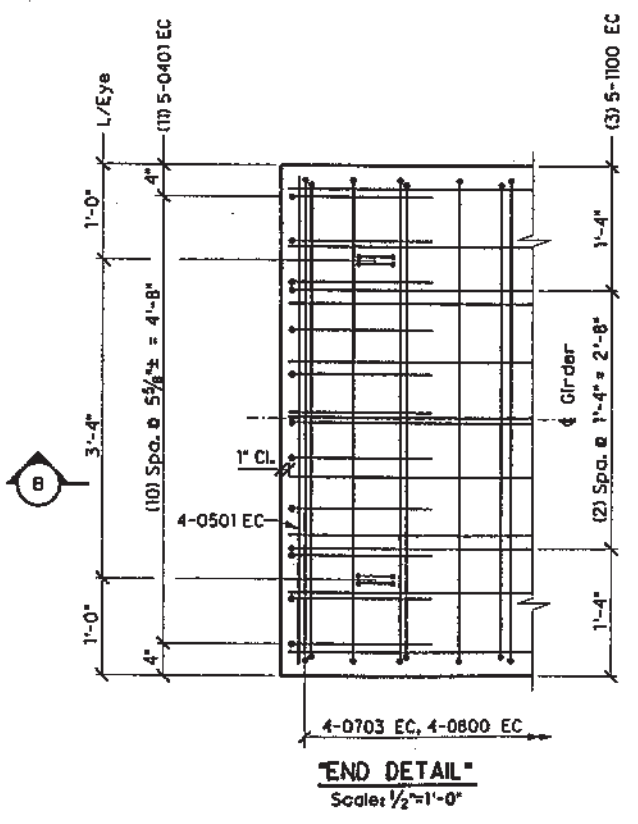
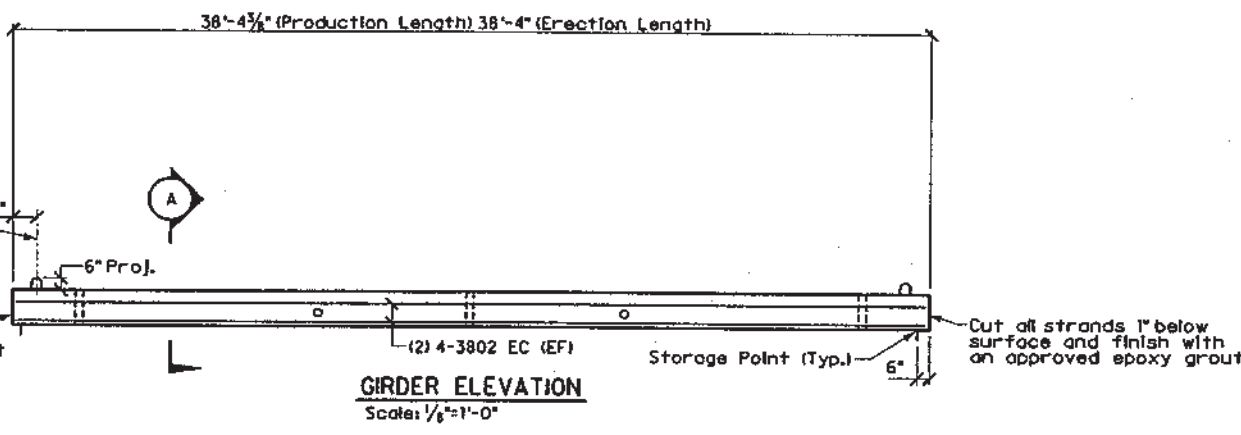
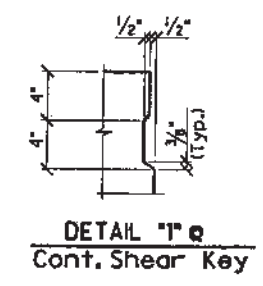
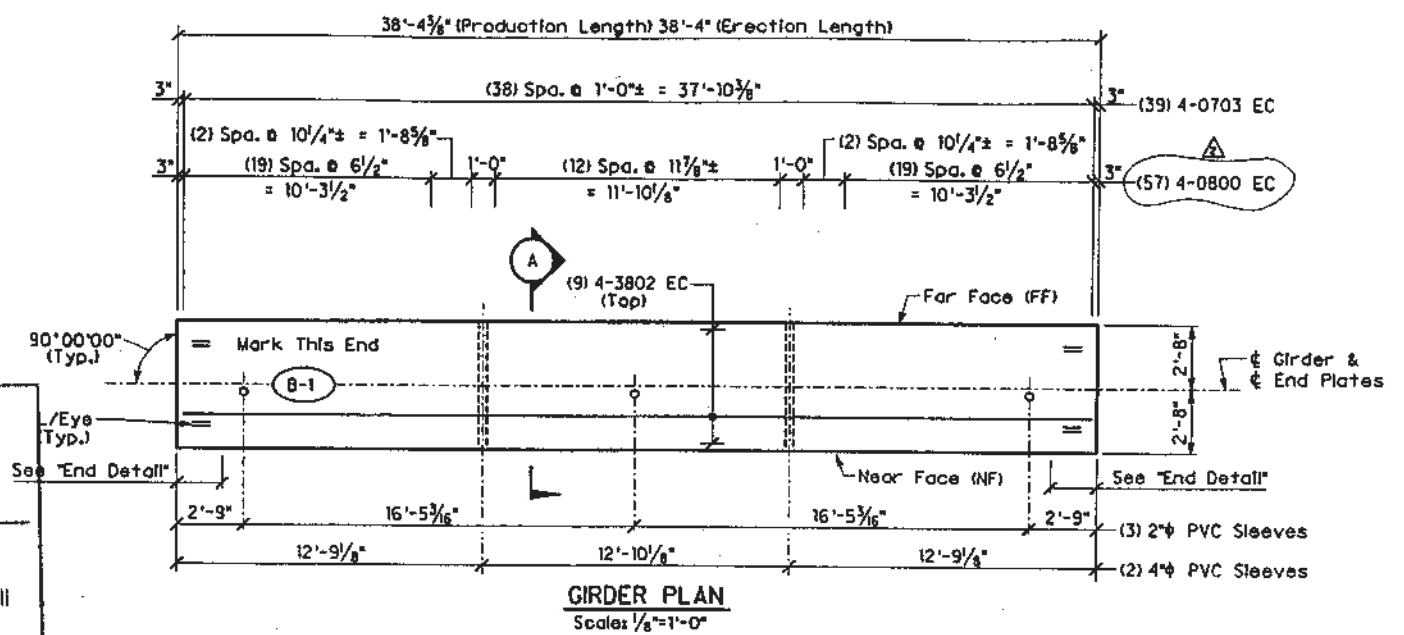
DESCRIPTION	QTY.
4-3802 EC Str.	13
4-0501 EC Str.	6
4-0800 EC 1'-2" [4'-11" 1'-2"]	57
4-0703 EC 1'-2" [5'-7" 1'-7"]	39
5-1100 EC 1'-0" [10'-0"]	6
5-0401 EC 1'-2" [1'-6" 1'-6"]	22
L/Eye (2) 0.6" Strand x Long In Conduit	4
End Plate (Type BRD-46)	2
2" x 1'-6" PVC Sleeves	3
4" x 5'-4" PVC Sleeves	2

Property	Value
Comber @ 1 Day	5/8"
Comber @ 4 Wks	7"
Initial Tension	820 kips
Final Tension	680 kips
Release w/16 kip Preload	—
Release w/o Preload	4.0 ksi
Final Strength	6.0 ksi
Total No. of Strands (0.6" $\phi$ )	20
Max. Overhang (Shipping)	5'-0"
Volume (Stone Concrete)	11.4 cu. yd.
Weight	48.5 kips

<input checked="" type="checkbox"/> REVIEWED	Shop drawings have been reviewed and do not require resubmittal.
<input type="checkbox"/> REVIEWED AS NOTED	Shop drawings have been reviewed and the Contractor shall incorporate the comments noted in the shop drawings into the work. The shop drawings do not require resubmittal.
<input type="checkbox"/> RESUBMIT	Shop drawings require correction or redrawing and shall be resubmitted for review. If shop drawings are returned for correction or redrawing, corrections shall be made and the shop drawings shall be resubmitted by the Contractor in the same manner as the first submittal. Specific notations shall be made on the shop drawings to indicate the revisions.
<input type="checkbox"/> NO ACTION TAKEN	Submittal either not required for this item or provided for information only. Contract requirements should be followed in all cases.

WILSON & COMPANY Review/Approval neither extends nor alters any contractual obligations of the Engineer/Architect or Contractor.

DATE: 30 Jul 02 BY: DBW



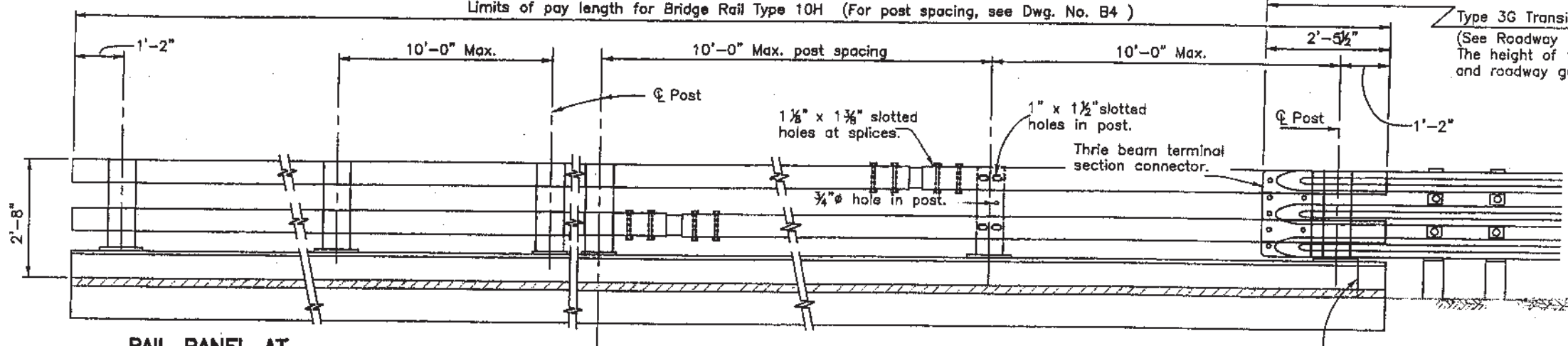
**REVIEWED**  
 JUL 19 2002

Girder Mark No.	No. Req'd.
B-1	6





Limits of pay length for Bridge Rail Type 10H (For post spacing, see Dwg. No. B4)



Type 3G Transition  
(See Roadway Quantities)  
The height of the Transition will vary to match bridge rail and roadway guardrail.

**NOTES:**

- All tubes shall be from ASTM A-500 Grade B. All posts and base plates shall be ASTM A-572 Grade 50. All other steel shall be ASTM A-36 unless otherwise noted.
- The above material and all anchor bolts and miscellaneous bolts, nuts, and washers shall be galvanized after fabrication in accordance with Section 509. Concrete, reinforcing steel, and structural steel elements shall conform to the requirements of Sections 601, 602 and 509, respectively.
- Post anchors, encased in concrete, shall be ASTM A-36 (AASHTO M-183) steel and need not be galvanized.
- The tubes shall be shop bent or fabricated to fit horizontal curve when radius is less than 1,500 feet.
- Tubes shall be continuous over not less than two posts. No welded butt splices will be allowed in the tube sections.
- The centerline of the tube splice shall be 1'-8" minimum and 2'-6" maximum from the centerline of the posts.
- All bolts that have lock washers shall be tightened to snug only.
- Posts shall be perpendicular to the longitudinal roadway grade.
- One or more 10'-0" post spacings may be reduced (6'-8" min.) in order to maintain dimensions from the end of the rail and expansion joints.
- Payment will be made under Item 606, Bridge Rail Type 10M for all posts, post anchors, base plates, backing plates, anchor bolts, miscellaneous bolts, nuts, washers, tubes, tube splices, end plates, and reflector tabs.
- Prior to fabrication of this item, three sets of working drawings which comply with the requirements of Section 105, shall be submitted to the Engineer for information only.

Structural Steel:  
AASHTO M-183 (ASTM A-36)  $f_y=36,000$  psi  
AASHTO M-223 (ASTM A-572)  $f_y=50,000$  psi  
Cold formed ASTM A-500 Grade B  $f_y=48,000$  psi

For additional details see next rail sheets.

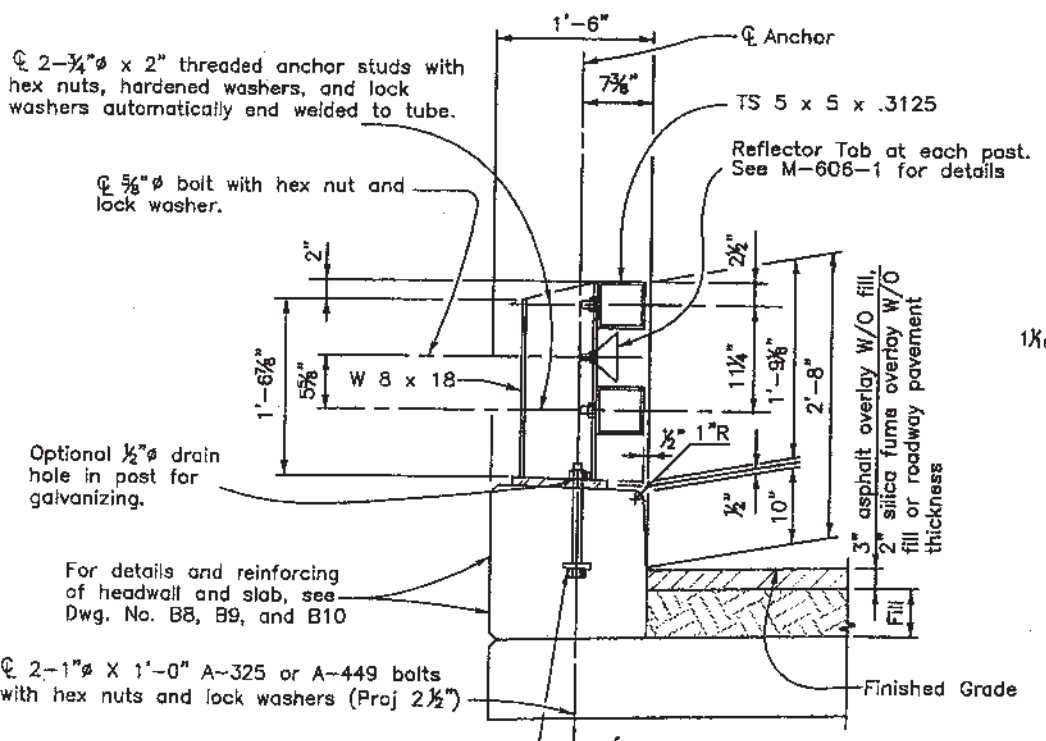
**RAIL PANEL AT TERMINAL SECTION**

(See Roadway plans for ends not attached to Guard Rail.)

**RAIL PANEL AT TRANSITION SECTION**

(See roadway plans for ends requiring attachment to guard rail.)

**ELEVATION - BRIDGE RAIL**



2- $\frac{3}{4}$ "  $\phi$  x 2" threaded anchor studs with hex nuts, hardened washers, and lock washers automatically end welded to tube.

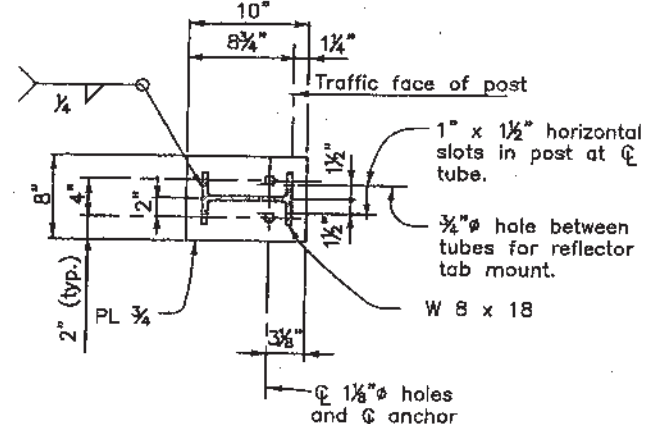
$\frac{5}{8}$ "  $\phi$  bolt with hex nut and lock washer.

Reflector Tab at each post. See M-606-1 for details

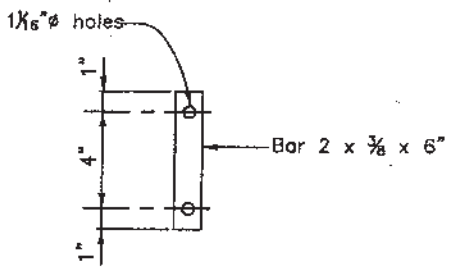
Optional  $\frac{1}{2}$ "  $\phi$  drain hole in post for galvanizing.

For details and reinforcing of headwall and slab, see Dwg. No. B8, B9, and B10

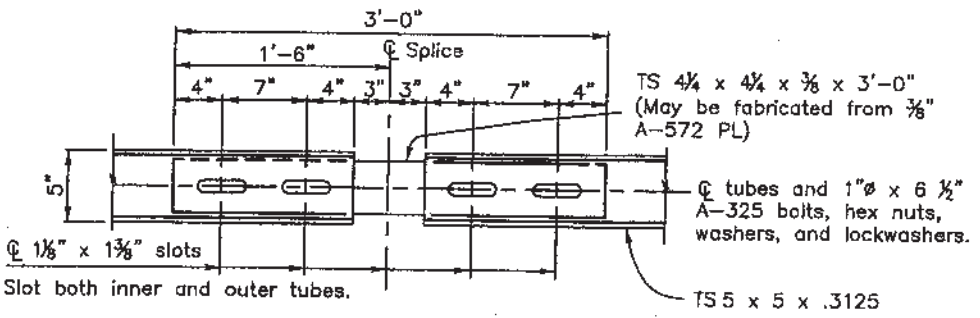
2-1"  $\phi$  x 1'-0" A-325 or A-449 bolts with hex nuts and lock washers (Proj 2 1/2")



**PLAN - POST DETAIL**



**ANCHOR DETAIL**

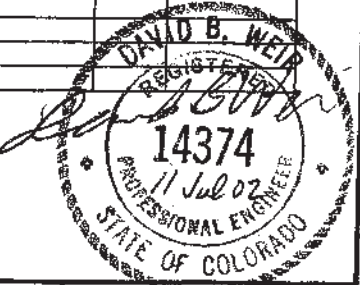


**PLAN - TUBE SPLICE**

Stagger top and bottom splices into different post spacings.

**INFORMATION ONLY**

Description	Unit	Per Lin. Ft.
Structural Steel (Galvanized)	Lb.	45.1



**Computer File Information**

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Last Modification Date:	06/14/02	Initials:	DAK
Full Path:	Q:\SH86\DWGS\STRUCTURES		
Drawing File Name:	B60610H.DWG		
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**Sheet Revisions**

Rev.	Date	Description	By
R-1	06/05/02	CMO#1 (NEW SHEET)	MMS

Colorado Department of Transportation  
359 Inverness Drive South  
Englewood, Co. 80112  
Phone 303-790-1020  
FAX: 303-790-1037

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Region 1 WDS

**As Constructed**

No Revisions:	
Revised:	
Void:	

SH 86 @ MITCHELL GULCH  
BRIDGE RAIL TYPE 10H

Designer:	DBW	Structure:	G-17-CE
Detailer:	RPS	Numbers:	
Sheet Subset:	Bridge	Subset Sheets:	B11 of 15

BR-086A-037

	13380
	CODE
Sheet Number	35

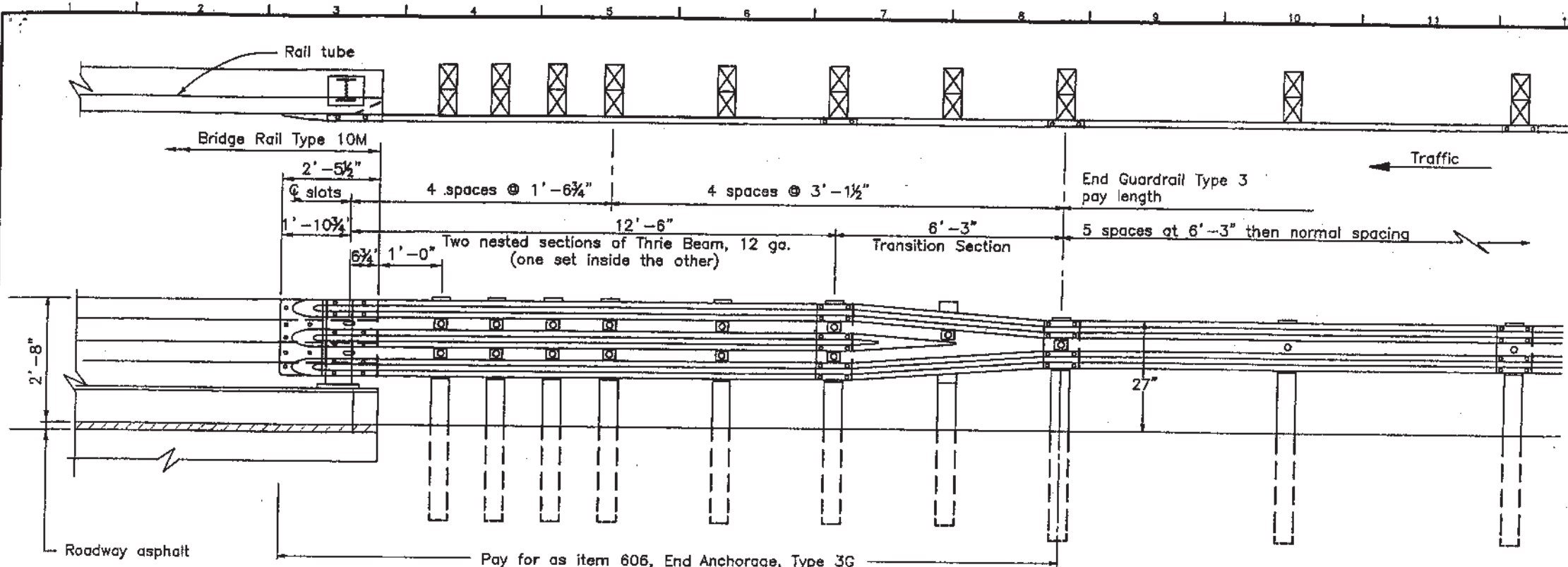


**NOTES:**

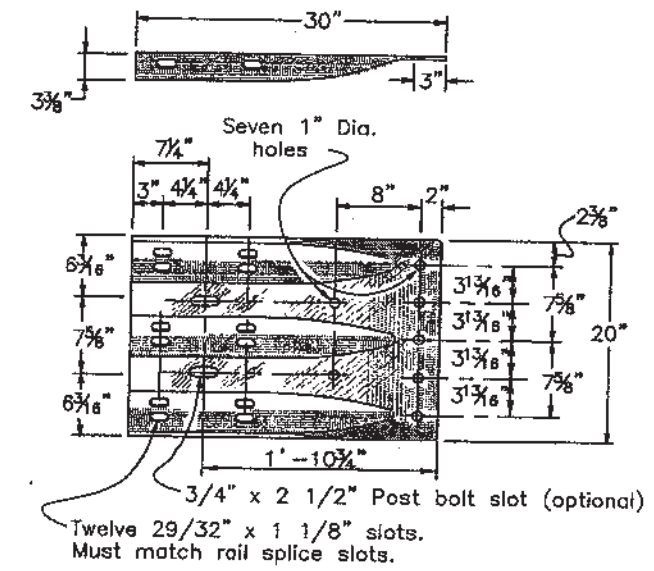
Type 3G End Anchorage is for use at both ends of bridges on two-way roads and the approach end of bridges on one-way roads.

Type 3H End Anchorage is for use at the trailing end of bridges on one-way roads.

See M-606-1 for additional details.



**TYPE 3G END ANCHORAGE**



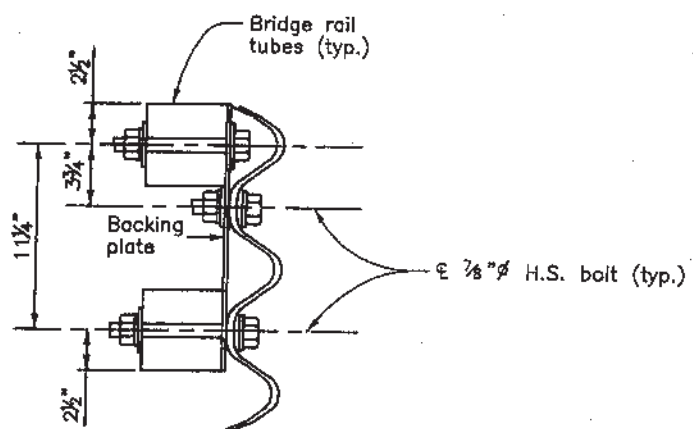
**THRIE BEAM  
TERMINAL SECTION (CONNECTOR)**

**TYPE 3H END ANCHORAGE**

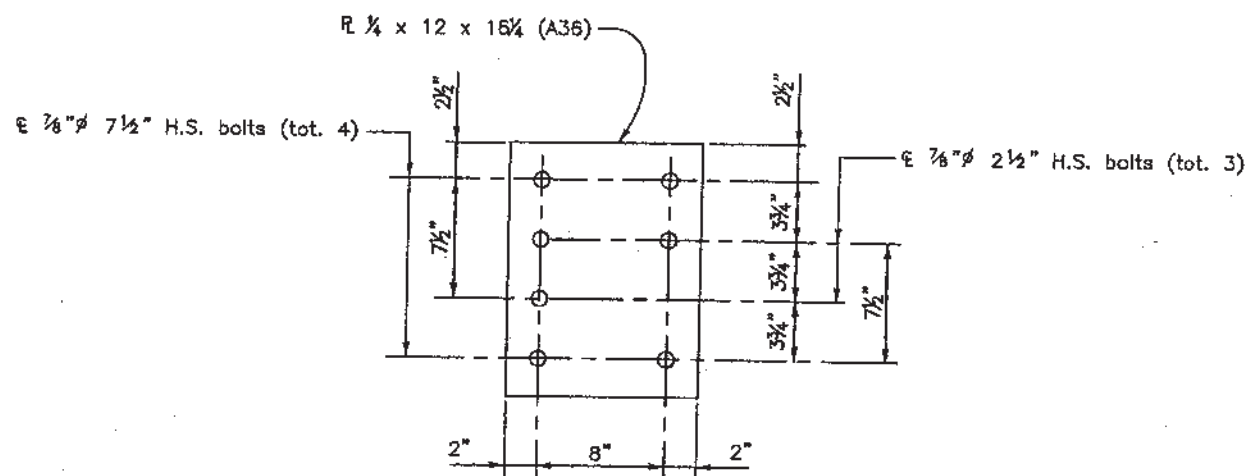


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Acad Ver:	R2002 Scale: Units: English								

Designed By: \_\_\_\_\_  
 Checked By: \_\_\_\_\_  
 Detailed By: \_\_\_\_\_  
 Checked By: \_\_\_\_\_

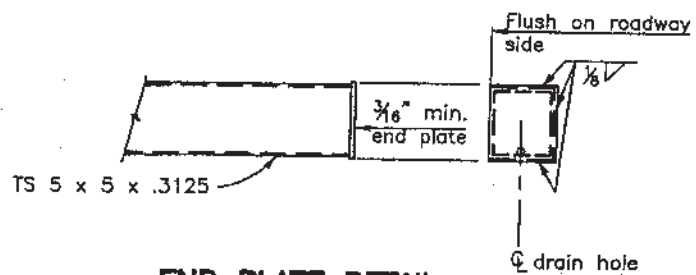


**SECTION A-A**

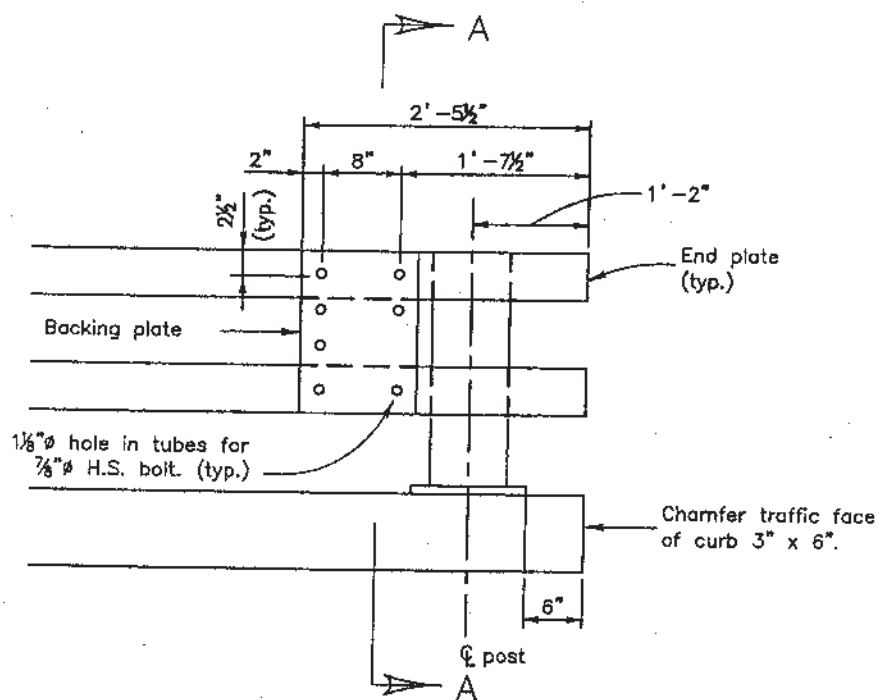


**BACKING PLATE**

Holes are 1 1/8"  $\phi$  for 7/8"  $\phi$  H.S. bolts with hex nuts, 2 PL washers, and 1 lock washer.



**END PLATE DETAIL**



**RAIL TUBE DETAILS**

(Use with Bridge Rail Type 10H or 10R)  
This beam not shown.

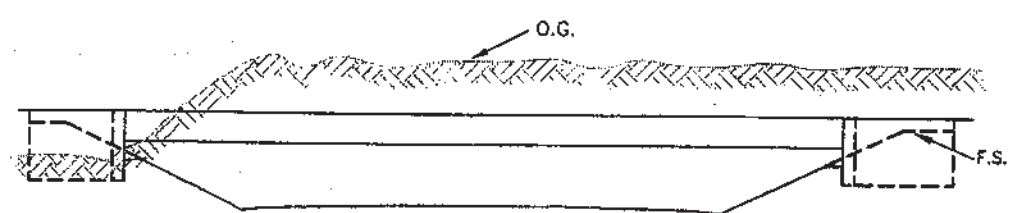


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Last Modification Date:	06/14/02	Initials:	DAK				Revised:		Designer:	DBW	Structure	G-17-CE	
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Acad Ver.	R2002	Scale:	Units: English									Sheet Number	37

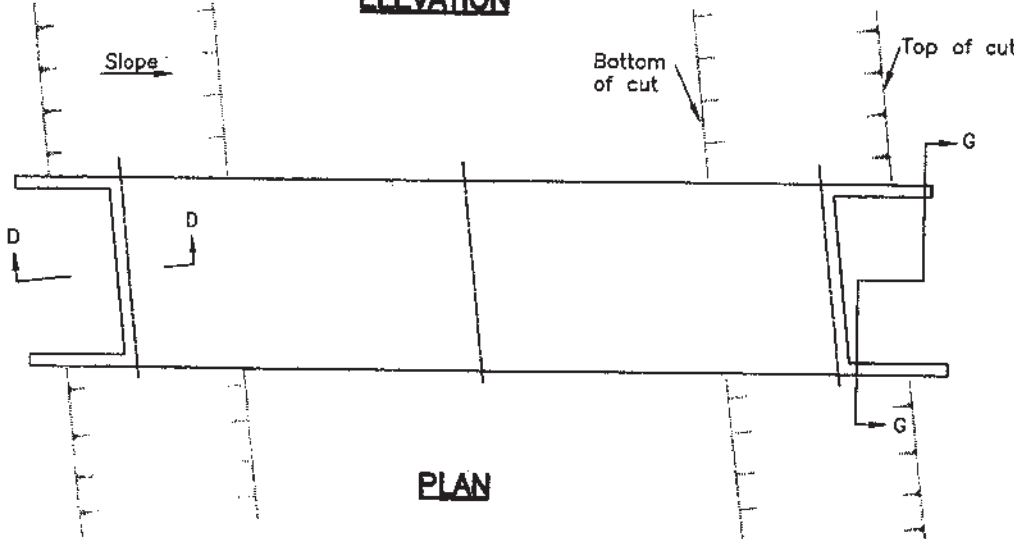

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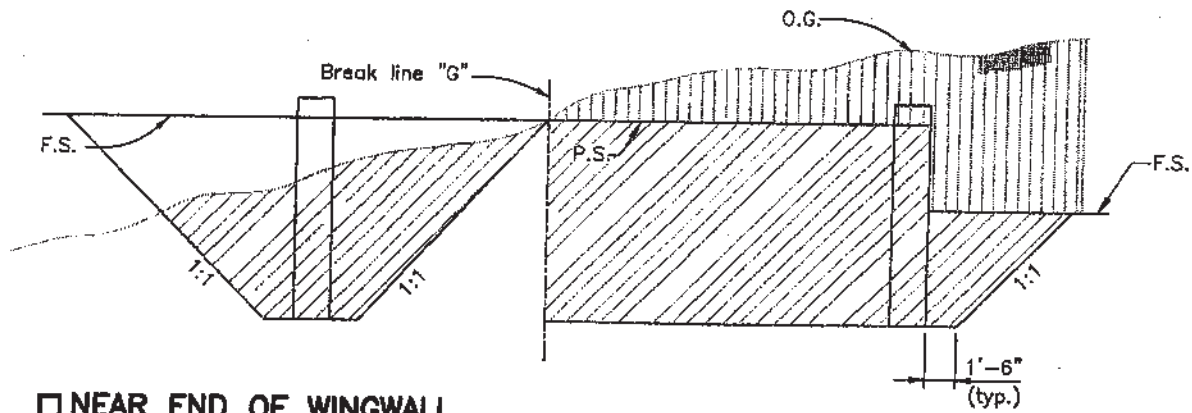
**B-206-3**  
(Use with B-15)



**ELEVATION**



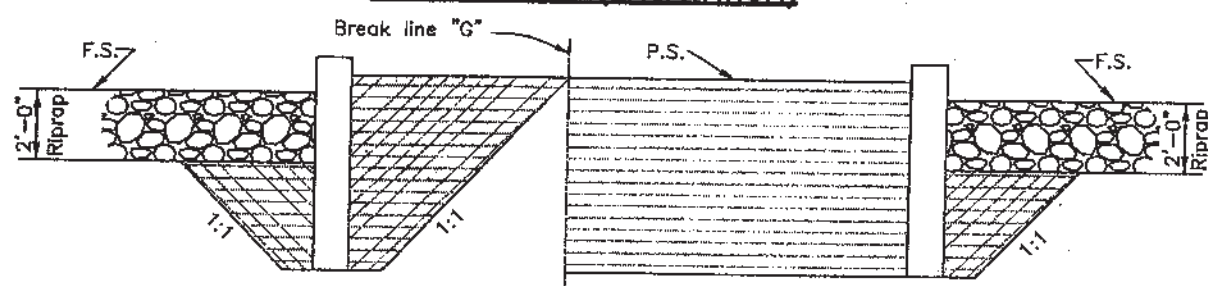
**PLAN**



**NEAR END OF WINGWALL**

**NEAR B.F. OF ABUT.**

**SECTION G-G (EXCAVATION)**



**NEAR END OF WINGWALL**

**NEAR B.F. OF ABUT.**

**SECTION G-G (BACKFILL)**

**GENERAL NOTES**

This drawing gives the extent of Structure Excavation and Structure Backfill for calculations of quantities. The Contractor may elect to alter the Structure Excavation and Structure Backfill beyond the limits shown here. Excavation or Backfill will not be measured, but will be plan quantity.

Structure footings which are located in rock shall be poured out to undisturbed rock, without forming, in conformance with 601.09.

Structure Excavation for riprap not shown.

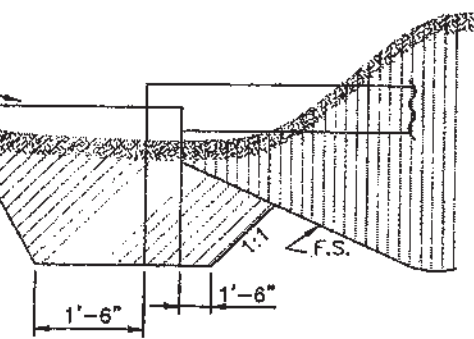
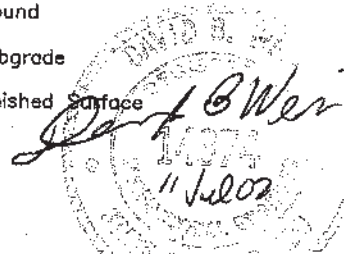
For purposes of quantity calculations this template applies out to end of wingwall.

**LEGEND**

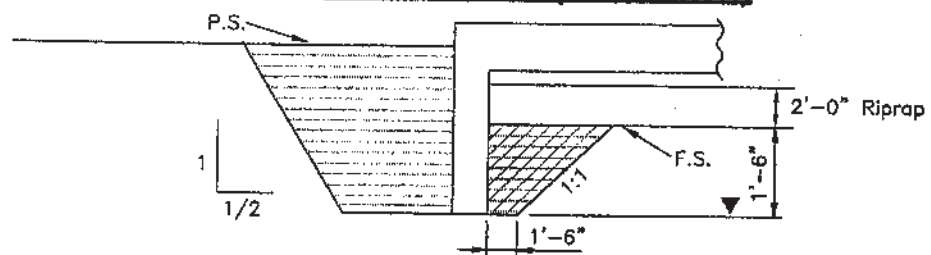
- Roadway Excavation
- Structure Excavation
- Structure Backfill (flowfill)
- Structure Backfill (Class 2)

**ABBREVIATIONS**

- O.G. Original Ground
- P.S. Planned Subgrade
- F.S. Planned Finished Surface



**SECTION D-D (EXCAVATION)**



**SECTION D-D (BACKFILL)**

▼ = Minimum embedment, of abut., in Structure Backfill.

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Last Modification Date:	06/14/02 Initials: DAK
Full Path:	Q:\SH86\DWGS\STRUCTURES
Drawing File Name:	B2063.DWG
Acad Ver.:	R2002 Scale: Units: English

Sheet Revisions		
06/05/02	CMO#1 (NEW SHEET)	WMS

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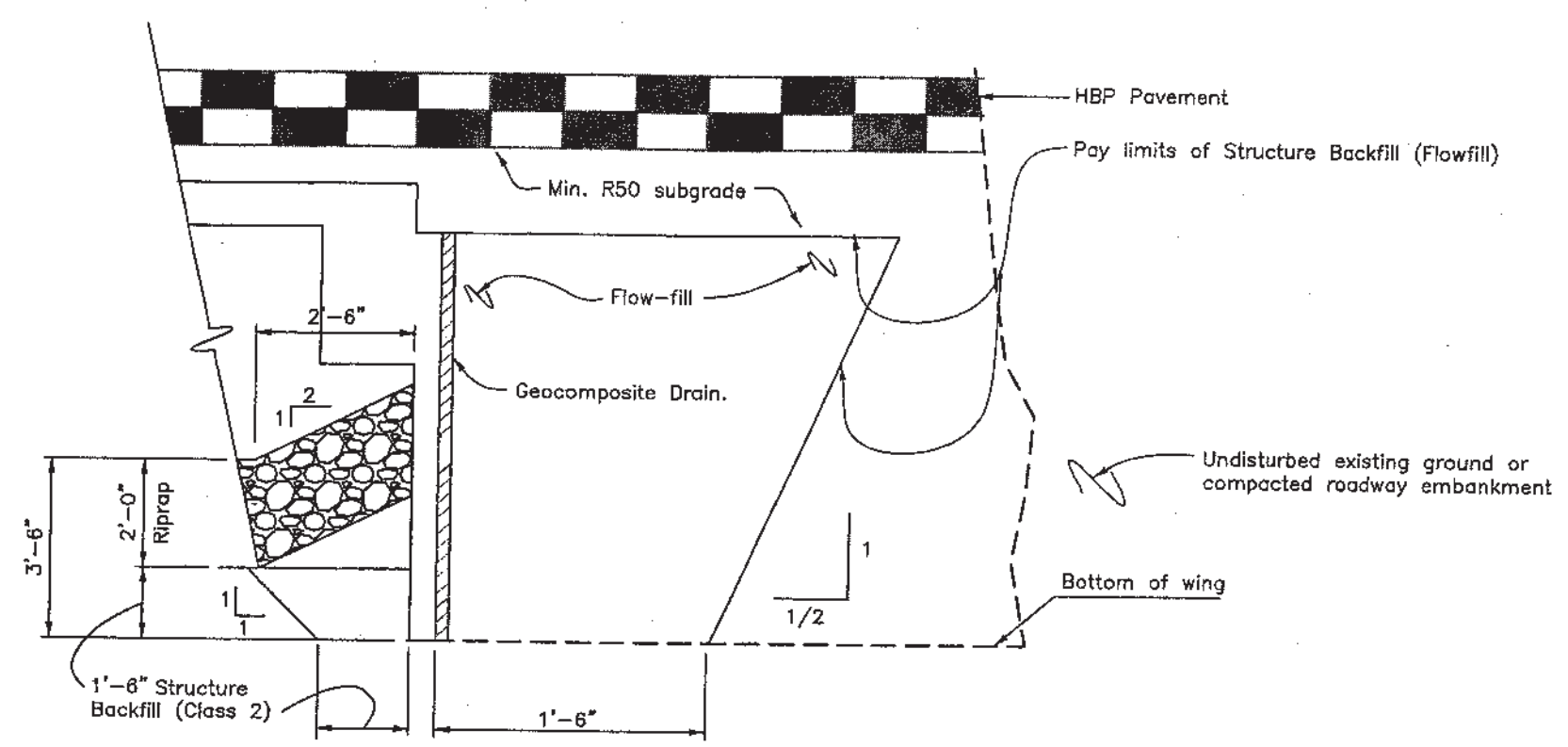
As Constructed	
No Revisions:	
Revised:	
Void:	

SH 86 @ MITCHELL GULCH EXCAVATION & BACKFILL FOR BRIDGES			
Designer:	DBW	Structure Numbers:	G-17-CE
Detailer:	RPS		
Sheet Subset:	Bridge	Subset Sheets:	B14 of 15

BR-086A-037
13380
CODE
Sheet Number 38



REVISION	DATE	INITIAL	DATE	INITIAL	DATE	INITIAL	DATE	INITIAL	DATE	INITIAL	DATE



**SECTION PERPENDICULAR TO ABUTMENT**

*David B. Warren*  
 11 Jul 02

**NOTES:**

The maximum lift thickness for Structure Backfill (Flow-fill) shall be 3 feet. Additional layers shall not be placed until the Structure Backfill (Flow-fill) has lost sufficient moisture to be walked on without indenting more than 2 inches.

Payment will be made under Item 206 Structure Backfill (Flowfill) and shall include the cost for special composite drain.

Dimensions shown for Structure Backfill (Class 2) and Structure Backfill (Flow fill) are for calculation of quantities. Actual dimensions will be as required for construction and will not be measured, but will be paid for as plan quantity.

Computer File Information			Sheet Revisions			Colorado Department of Transportation			As Constructed			SH 86 @ MITCHELL GULCH			BR-086A-037		
Creation Date:	5/24/02	Initials: RPS	06/05/02	CMO#1 (NEW SHEET)	MMS	359 Inverness Drive South Englewood, Co. 80112 Phone 303-790-1020 FAX: 303-790-1037			No Revisions:			STRUCTURE BACKFILL (FLOW-FILL)			13380		
Last Modification Date:	06/14/02	Initials: DAK				Region 1 WDS			Revised:			Designer: DEW			CODE		
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