

# GENERAL NOTES

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

THE FINAL FINISH FOR THE SURFACES OF THE TYPE 7 BRIDGE RAIL AND TYPE 7 GUARDRAIL SHALL BE CLASS 2.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

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
SPLICE LENGTH FOR CLASS D CONCRETE	1'-3"	1'-6"

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

CERTAIN DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM THE "AS CONSTRUCTED PLANS". THESE DIMENSIONS MAY BE ADJUSTED TO MEET THE EXISTING STRUCTURE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

THE GROUT USED FOR PATCHING COLUMNS SHALL BE A MORTAR MIX, PROPORTIONED BY VOLUME:

- A. ONE PART PORTLAND CEMENT
  - B. TWO TO THREE PARTS FINE AGGREGATE, CONFORMING TO THE REQUIREMENTS OF ASTM C 144.
  - C. A LATEX ADMIXTURE THAT CONFORMS TO THE REQUIREMENTS OF ASTM C 1059, TYPE II (NON-REDISPERSIBLE). A MINIMUM OF 12% LATEX SOLIDS BY WEIGHT OF CEMENT SHALL BE ADDED TO THE MORTAR MIX.
  - D. ENOUGH WATER TO PROVIDE A PLASTIC WORKABLE MIX.
- APPLY CONCRETE SEALER PRIOR TO PATCHING OF COLUMNS.

CONCRETE PATCHING MATERIAL (DECK AND JOINTS)

- 1. DAYTON SUPERIOR HD-50
- 2. SIKASET ROADWAY PATCH, BY SIKA
- 3. MASTER BUILDERS EMOCO T430

APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

RELOCATE STREET LIGHT FEEDS TO ACCOMMODATE NEW CONSTRUCTION.

## DESIGN DATA

AASHTO, 16th EDITION WITH 97 AND 98 INTERIMS

REINFORCED CONCRETE:

CLASS D CONCRETE:  $f'_c = 1,800$  psi  
 $f_c = 4,500$  psi

REINFORCING STEEL:  $f_s = 24,000$  psi  
 $f_y = 60,000$  psi

## SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	F-16-ER	F-16-0	F-16-EP	TOTAL
202	REMOVAL OF ASPHALT MAT (PLANING)(SPECIAL)	SY	1310	2237	2072	5625
202	REMOVAL OF BRIDGE RAILING	LF	411	593	524	1528
210	REBUILD PORTIONS OF PRESENT STRUCTURE	EACH	5			5
403	HOT BITUMINOUS PAVEMENT(GR S)(ASPHALT)(109) (PG 76-28)	TON	144.10	482	220	846.1
420	GEOTEXTILE (PAVING)	SY	1325	2237	2077	5639
515	WATERPROOFING (MEMBRANE)	SY		2237	2077	4314
515	CONCRETE SEALER (CALCIUM NITRITE)	SY	174	614	60	848
518	SAWING AND SEALING BRIDGE JOINTS	LF	192	224	232	648
601	CONCRETE (PATCHING)	SF	125	126	0	251
601	CONCRETE (PATCHING)	CY	4748	2043	4869	8598
601	CONCRETE (PATCHING)	CY	480	0	0	480
601	CONCRETE (PATCHING)	SF	40	50	50	140
606	GUARDRAIL TYPE 7 (STYLE CC)	LF	132	189	170	491
606	BRIDGE RAIL TYPE 7R	LF	264	460	340	1064
607	FENCE CHAIN LINK (SPECIAL)(36 INCH)	LF	264	380	340	984

- ① INCLUDES REMOVAL OF PORTIONS OF EXISTING CURBS
- ② CONCRETE PATCHING FOR DECK
- ③ CONCRETE PATCHING FOR JOINTS (SEE DWG. NO. B2)
- ④ CONCRETE PATCHING FOR COLUMNS
- ⑤ 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 WILL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM NO. 420 GEOTEXTILE (PAVING).

AS CONSTRUCTED		FEDERAL ROAD REGION NO.	DIVISION	PROJECT NUMBER	SHEET NUMBER
NO REVISIONS	REVISED 11/12/01	VOID	III	COLORADO	NH 0062-011
					30

## INDEX OF DRAWINGS

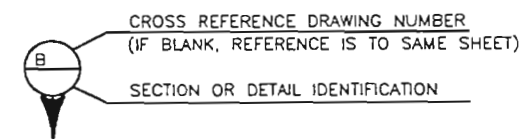
- DWG. NO. B1 GENERAL INFORMATION - SUMMARY OF QUANTITIES
- DWG. NO. B2 REPAIR DETAILS - F-16-ER
- DWG. NO. B3 BEARING REPAIR DETAILS - F-16-ER
- DWG. NO. B4 GENERAL LAYOUT - F-16-ER
- DWG. NO. B5 DETAILS - F-16-0 --- F-16-EP
- DWG. NO. B6 DETAILS
- DWG. NO. B7 BRIDGE RAIL TYPE 7R
- DWG. NO. B8 FENCE CHAIN LINK

## BRIDGE DESCRIPTION

F-16-0, F-16-EP:  
REPLACE RAIL, ASPHALT OVERLAY

F-16-ER:  
REPAIR BEARINGS, REPLACE RAIL, ASPHALT OVERLAY

COLORADO DEPARTMENT OF TRANSPORTATION			
GENERAL INFORMATION SUMMARY OF QUANTITIES			
Station 222+01.5, F-16-EP; 248+63.65, F-17-ER; 301+32.3 bk = 301+30.6 ah, F-16-0			
Near Lakewood		Sec. Varies T 4S	R 69W
Designer G. Davydov	Structure	F-16-ER, F-16-0	
Detailer E. Hadley	Numbers	F-16-EP	
Drawing Number B1		of 8	Drawings



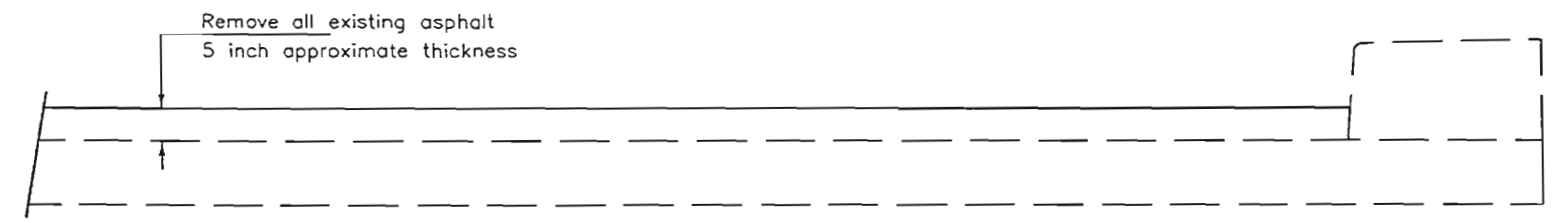
Revision Dates (Preliminary Stage Only)			
7-92	9-93	3-94	12-95

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EHH	8/99	EHH	8/99
Design		DATE	
INITIAL	DATE	INITIAL	DATE
GHD	8/99	GHD	8/99
MAN	10/99	MAN	10/99
Designed By		Detailed By	
GHD	8/99	GHD	8/99
MAN	10/99	MAN	10/99
Checked By		Checked By	
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MAN	10/99	MAN	10/99

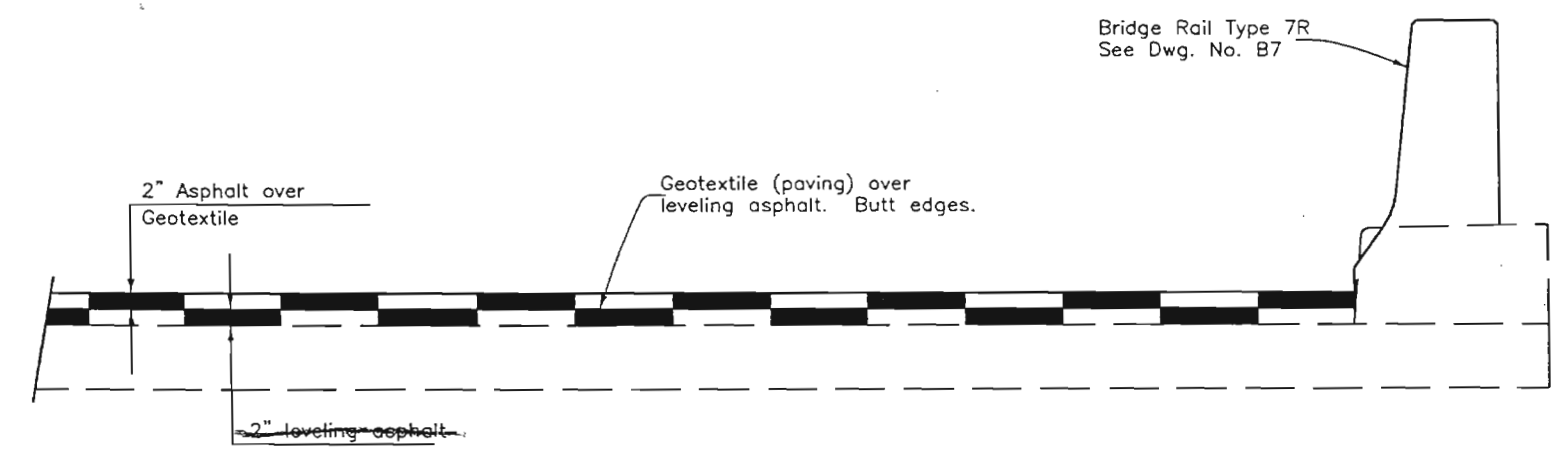
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AS CONSTRUCTED			FEDERAL ROAD REGION NO.	DIVISION	PROJECT NUMBER	SHEET NUMBER
NO REVISIONS	REVISED	VOID	III	COLORADO	NH 0062-011	31

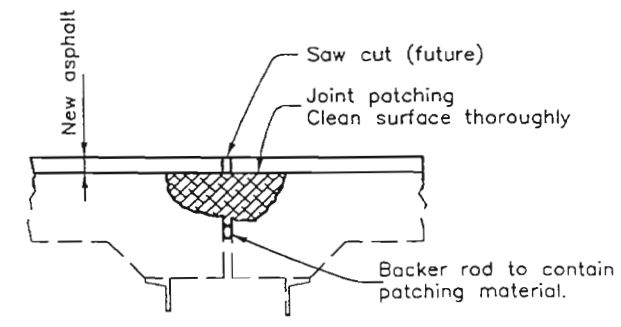
REVISIONS	



**SLAB REMOVAL DETAIL**



**SLAB OVERLAY DETAIL**



**DETAIL AT EXPANSION JOINT**

<b>COLORADO DEPARTMENT OF TRANSPORTATION</b>		
<b>REPAIR DETAILS</b>		
Designer G. Davidov	Structure	F-16-ER
Detailer E. Hadley	Numbers	
Drawing Number B2	of 8	Drawings

Revision Dates	(Preliminary Stage Only)

Design		Quantities	
INITIAL	DATE	INITIAL	DATE
CHD	8/99	GHD	8/99
MAN	10/99	EHH	8/99
Designed By	Detailed By	Quantities By	Checked By
CHD	MAN	EHH	GHD

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AS CONSTRUCTED		
NO REVISIONS	REVISED	VOID
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FEDERAL ROAD REGION NO.	DIVISION	PROJECT NUMBER	SHEET NUMBER
III	COLORADO	NH 0062-011	32

REVISIONS	

**GENERAL NOTES**

NOTE: WHERE REPAIR IS REQUIRED ON BOTH SIDES OF A PIER CAP ALONG A SINGLE GIRDER LINE, PLACE BEARING ASSEMBLY ON BOTH SIDES AS SHOWN IN THE SECTION.

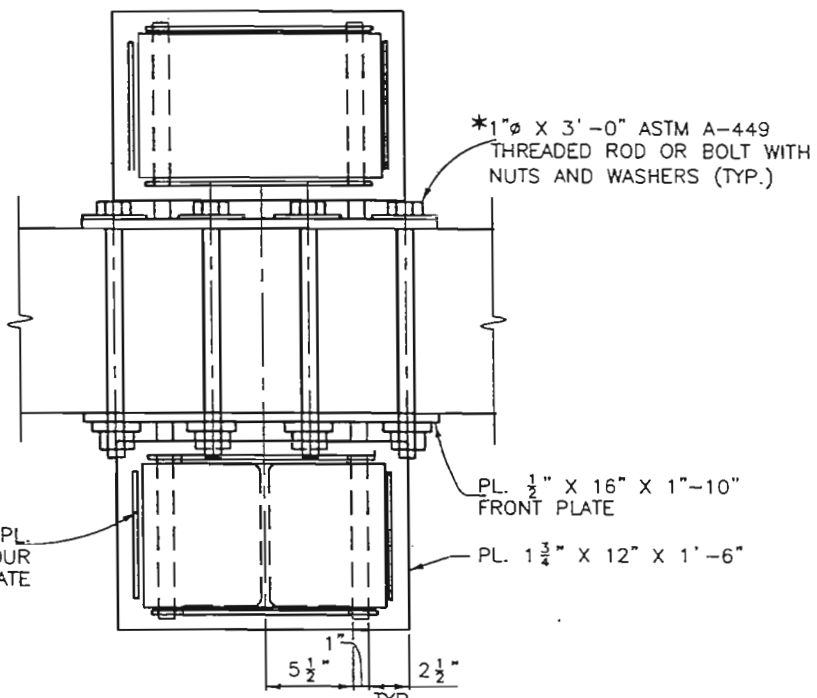
THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS.

\* INDICATED ITEMS SHALL BE SUPPLIED BY THE CONTRACTOR AND PAID FOR IN ITEM NO. 210 REBUILD PORTIONS OF PRESENT STRUCTURE.

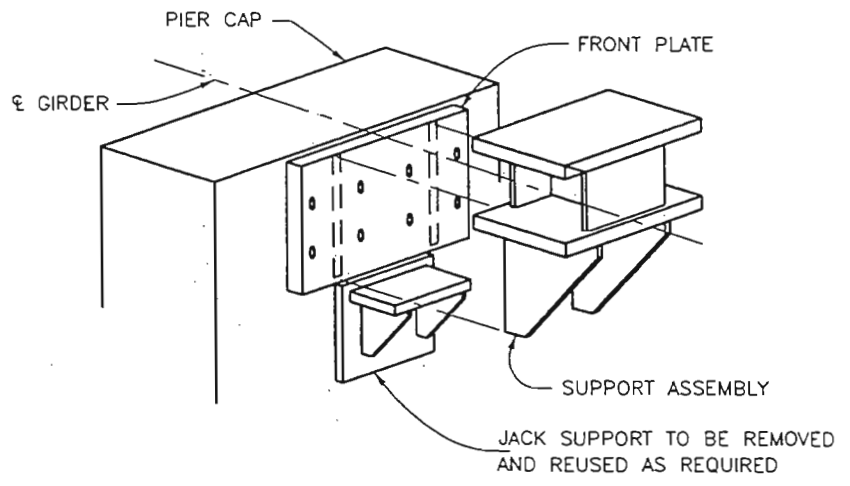
BALANCE OF SUPPORT ASSEMBLY SHALL BE STATE FURNISHED MATERIAL. CDOT WILL DELIVER THESE ITEMS TO THE PROJECT SITE.

**SUGGESTED CONSTRUCTION PROCEDURE**

1. LOCATE AND MARK CENTERLINE OF THE GIRDER ON THE PIER CAP.
2. MARK LOCATION OF BOLT HOLES ON PIER CAP, SEE ELEVATION VIEW AND SECTION.
3. DRILL HOLES IN PIER CAP AND PLACE BOLTS.
4. CUT HOLES IN PLYWOOD FORM TO MATCH BOLT HOLES IN PIER CAP.
5. REMOVE LOOSE CONCRETE AND CLEAN REINFORCING STEEL.
6. BOLT THE FORM IN PLACE AND RESTORE THE PIER CAP TO ITS ORIGINAL SECTION USING AN APPROVED GROUT.
7. ALLOW CURING TIME AS RECOMMENDED BY THE MANUFACTURER BEFORE REMOVING THE FORM.
8. USING THE FORM FOR A PATTERN, CUT THE BOLT HOLES IN THE FRONT PLATE.
9. ATTACH PLATES AND TIGHTEN BOLTS. (100 LB-FT. TORQUE).
10. RAISE THE SUPPORT ASSEMBLY UNTIL THE ELASTOMERIC PAD IS COMPRESSED 1/16" (200 psi x PAD AREA = JACKING FORCE).
11. FIELD WELD THE SUPPORT ASSEMBLY TO THE FRONT PLATE.

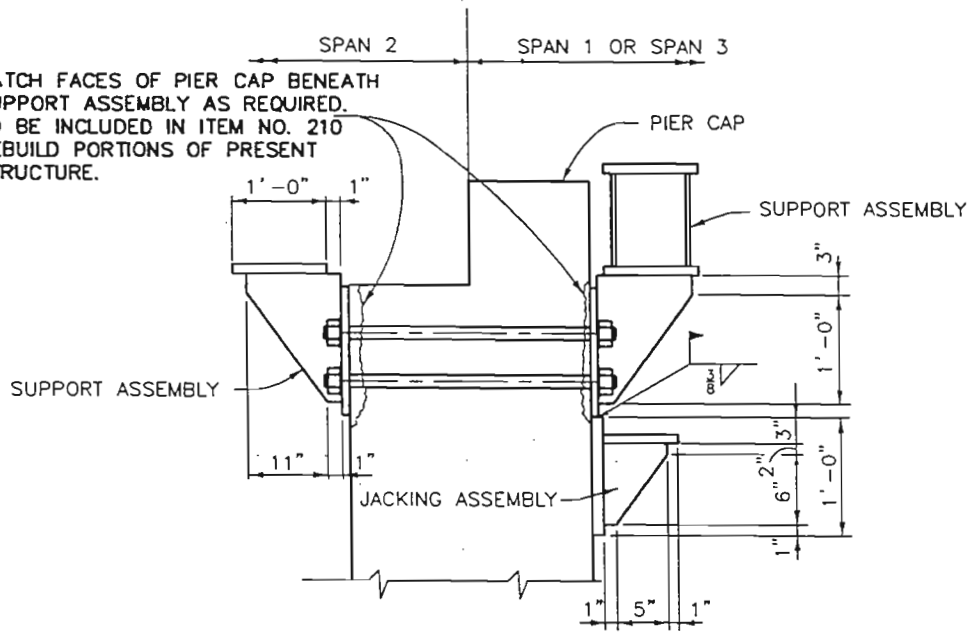


**PLAN**

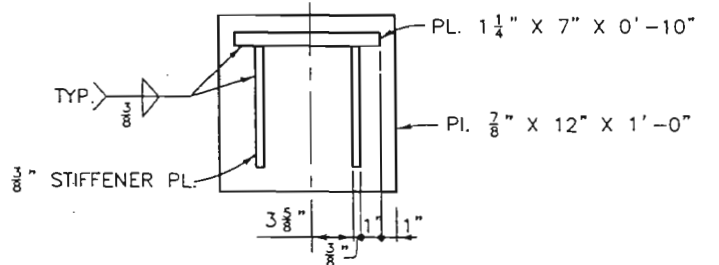


**ISOMETRIC VIEW**

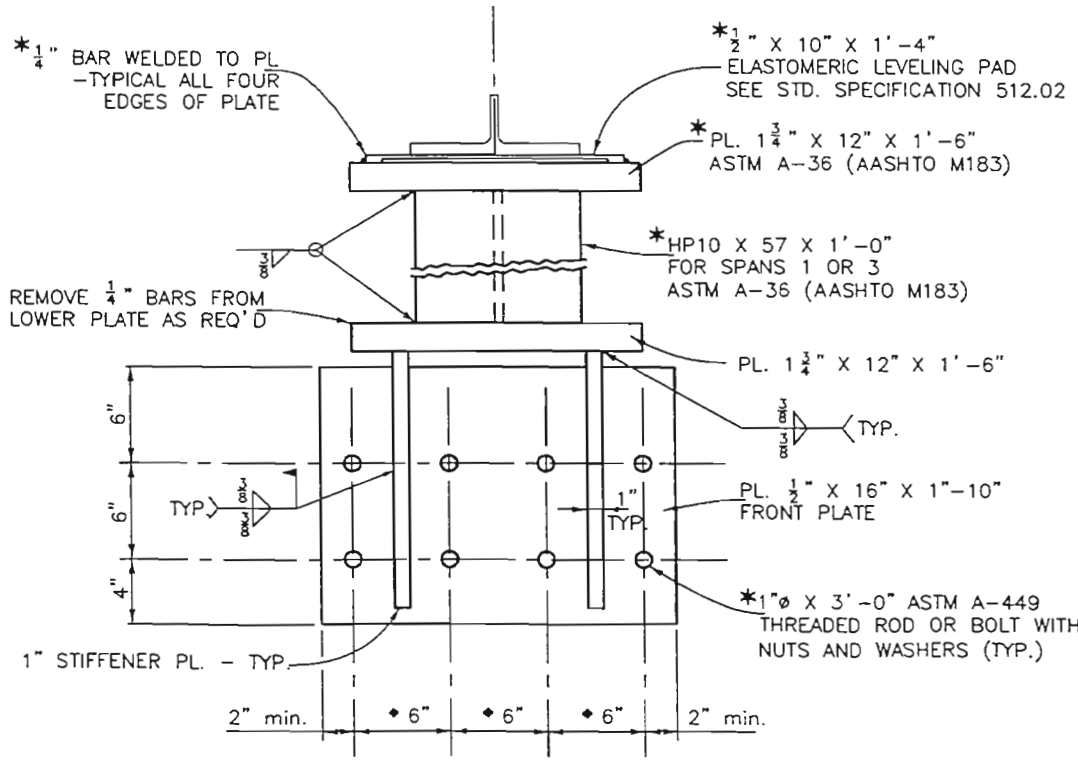
PATCH FACES OF PIER CAP BENEATH SUPPORT ASSEMBLY AS REQUIRED. TO BE INCLUDED IN ITEM NO. 210 REBUILD PORTIONS OF PRESENT STRUCTURE.



**SECTION**



**JACKING SUPPORT**



**ELEVATION VIEW**  
(FRONT VIEW SUPPORT ASSEMBLY)

♦ Adjust dimensions to avoid existing reinforcing steel and anchor bolts as approved by the Engineer.

Quantities		DATE	
INITIAL	DATE	INITIAL	DATE
GHD	8/99	GHD	8/99
EHH	8/99	EHH	8/99

Design		DATE	
INITIAL	DATE	INITIAL	DATE
GHD	8/99	GHD	8/99
MAN	10/99	MAN	10/99

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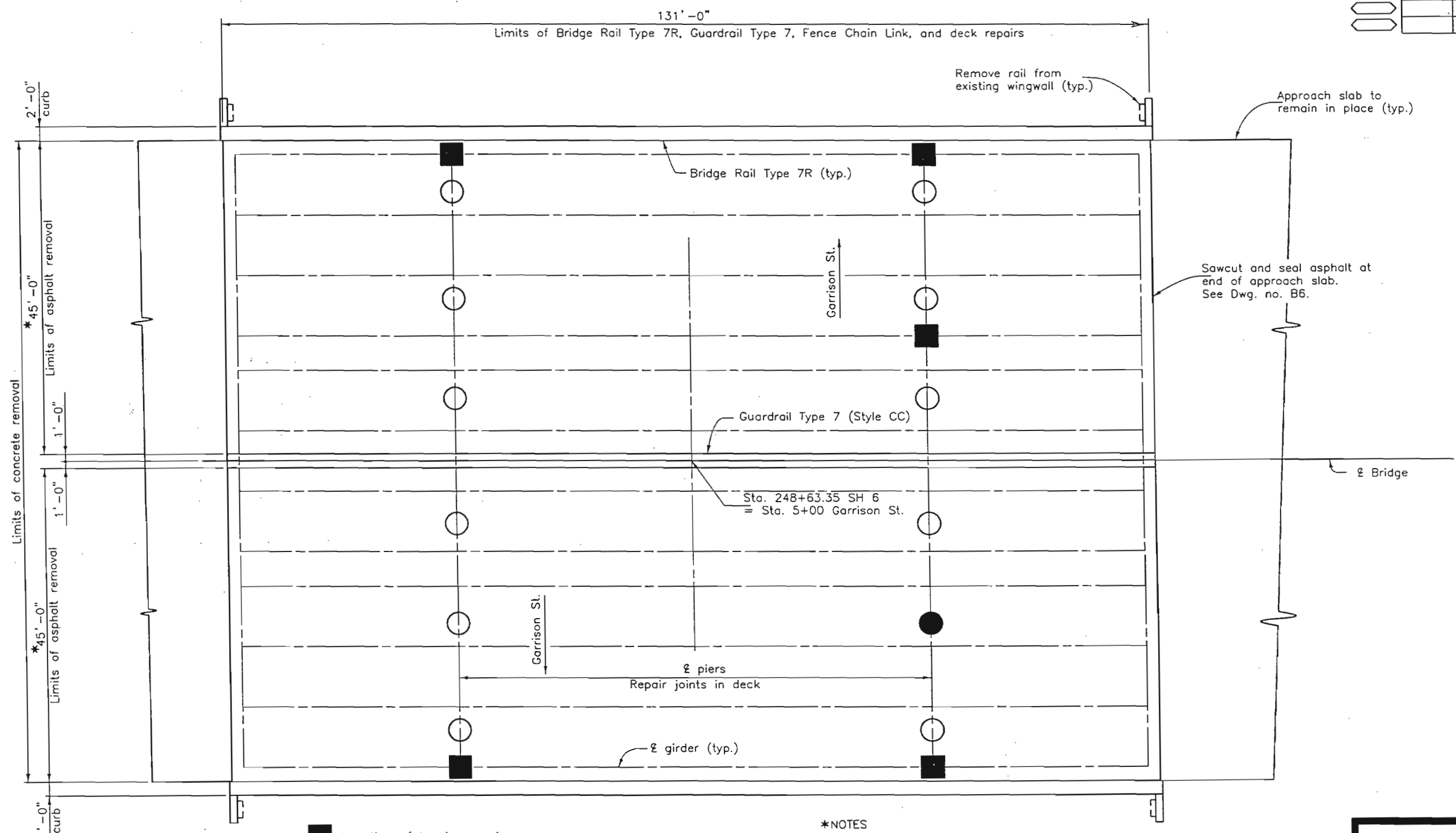
<b>COLORADO DEPARTMENT OF TRANSPORTATION</b>		
<b>BEARING REPAIR DETAILS</b>		
Designer G. DAVYDOV	Structure	F-16-ER
Detailer E. HADLEY	Numbers	
Drawing Number B3	of 8	Drawings

Revision Dates	(Preliminary Stage Only)
B-95 3-99	

REVISIONS	

Design		Quantity	
INITIAL	DATE	INITIAL	DATE

11/02/1999  
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- Location of bearing repairs
- Location of columns
- Location of columns requiring repair

- \*NOTES**
1. Remove all existing asphalt (approximately 5 inches) by milling.
  2. Sandblast the area.
  3. Patch all potholes.
  4. Place 2 inches leveling asphalt.
  5. Place geotextile on entire deck, and 3 inches up face of rails, Butt (do not overlap) edges.
  6. Place 2 inches of additional asphalt on top of geotextile.

**GENERAL LAYOUT**

<b>COLORADO DEPARTMENT OF TRANSPORTATION</b>		
<b>GENERAL LAYOUT F-16-ER</b>		
Designer G. Davydov	Structure	F-16-ER
Detailer G. Davydov	Numbers	
Drawing Number B4	of 8	Drawings
Revision Dates (Preliminary Stage Only)		

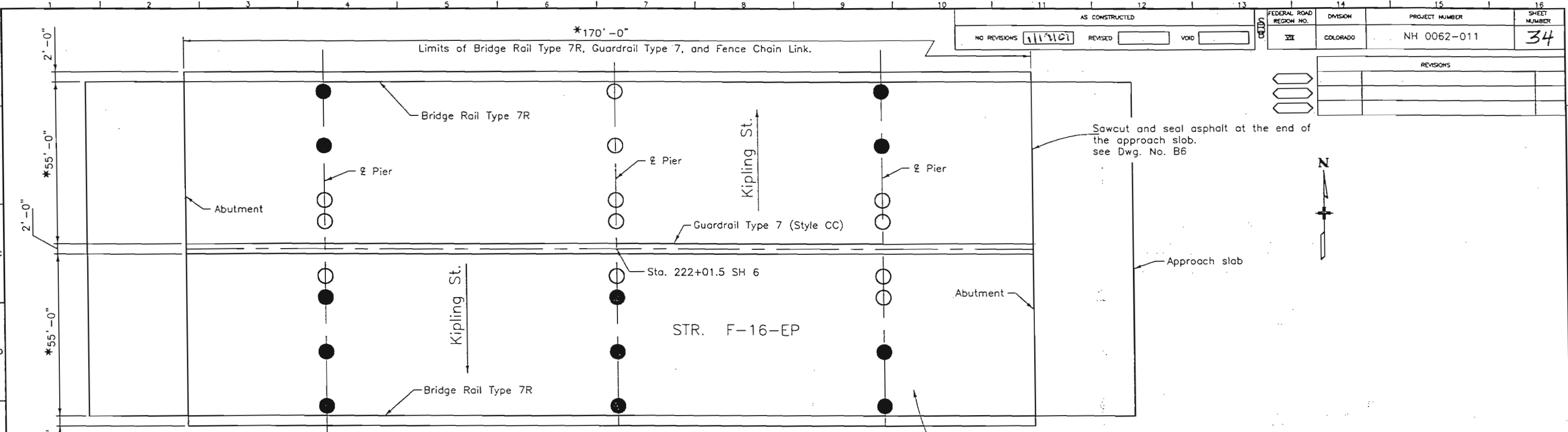
Design		Quantities	
INITIAL	DATE	INITIAL	DATE
CHD	8/99	CHD	8/99
MAN	10/99	CHD	8/99
Checked By	Checked By	Checked By	Checked By

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NO REVISIONS	11/9/01	REVISED	VOID
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FEDERAL ROAD REGION NO.	DIVISION	PROJECT NUMBER	SHEET NUMBER
XII	COLORADO	NH 0062-011	34

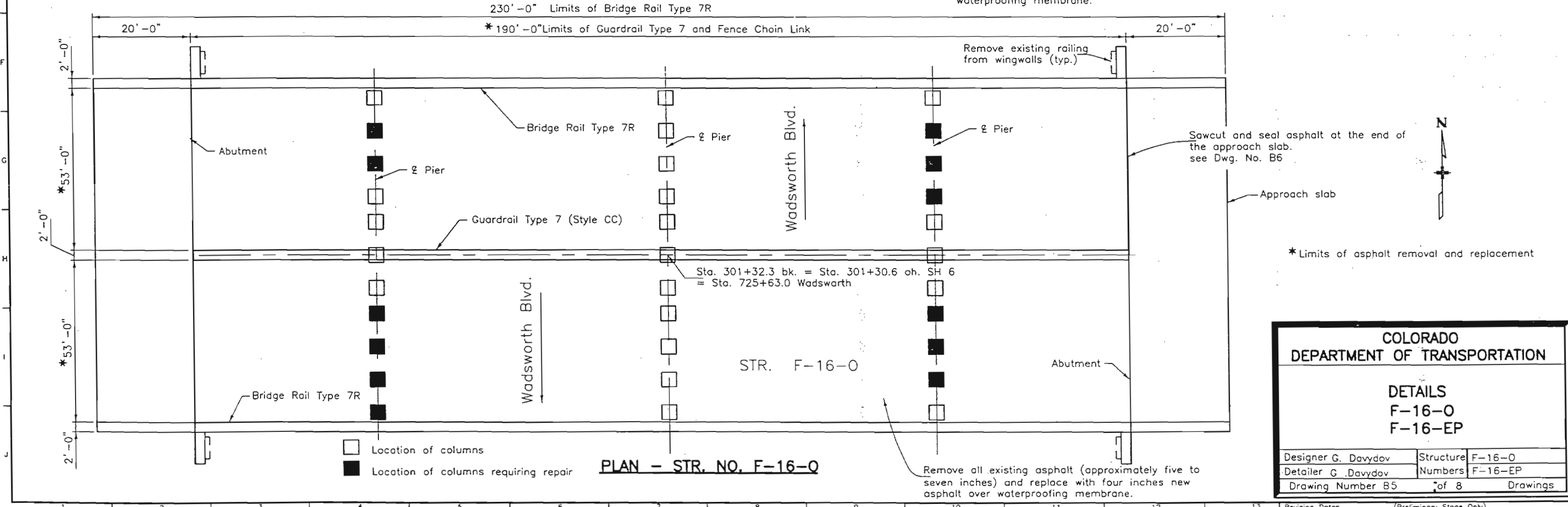
REVISIONS	



○ Location of columns  
● Location of columns requiring repair

**PLAN - STR. NO. F-16-EP**

Remove all existing asphalt (approximately two to three inches) and replace with two inches new asphalt over waterproofing membrane.



□ Location of columns  
■ Location of columns requiring repair

**PLAN - STR. NO. F-16-Q**

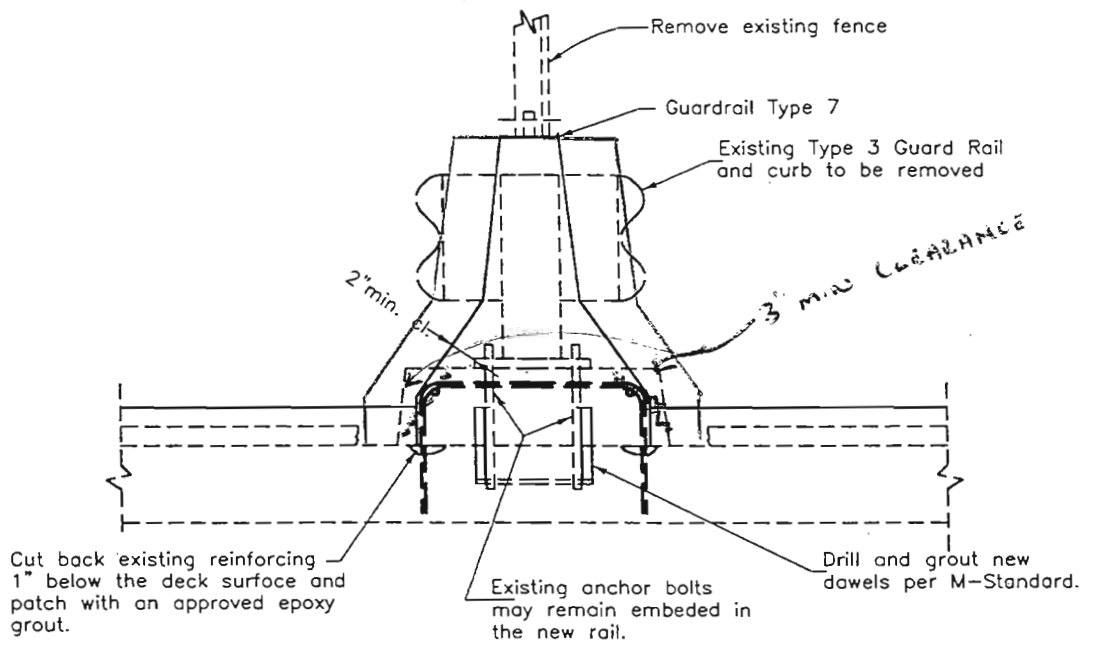
Remove all existing asphalt (approximately five to seven inches) and replace with four inches new asphalt over waterproofing membrane.

\* Limits of asphalt removal and replacement

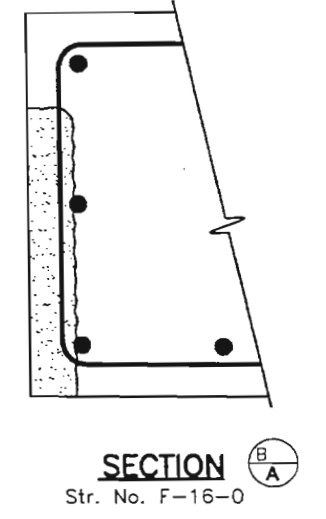
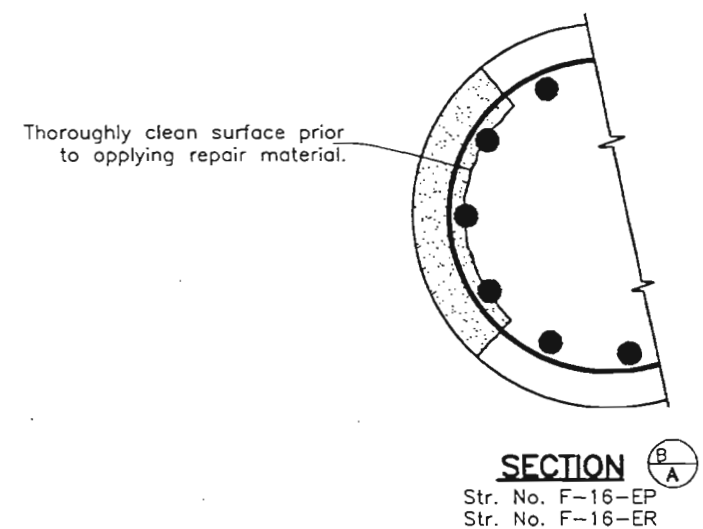
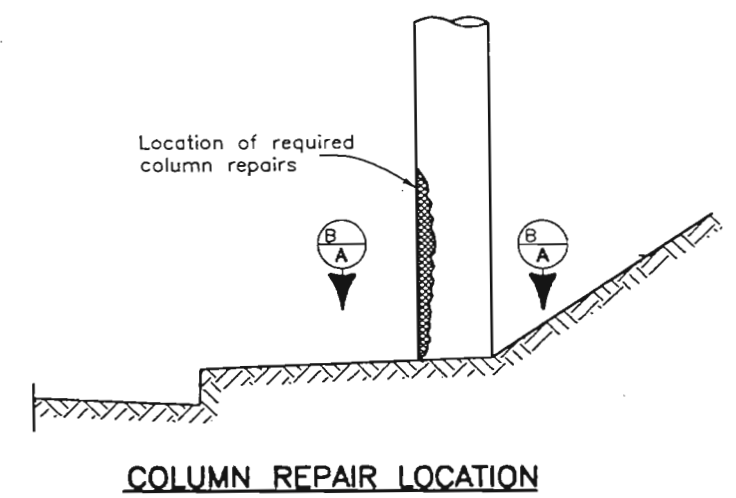
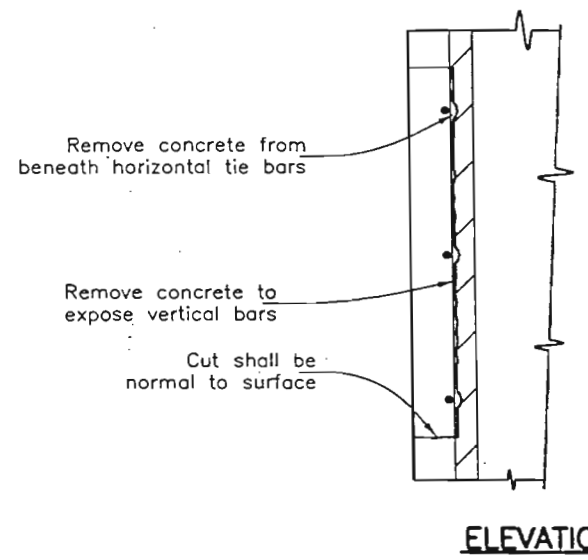
COLORADO DEPARTMENT OF TRANSPORTATION	
DETAILS	
F-16-0	
F-16-EP	
Designer G. Davydov	Structure F-16-0
Detailer G. Davydov	Numbers F-16-EP
Drawing Number B5	of 8 Drawings

Revision Dates	(Preliminary Stage Only)
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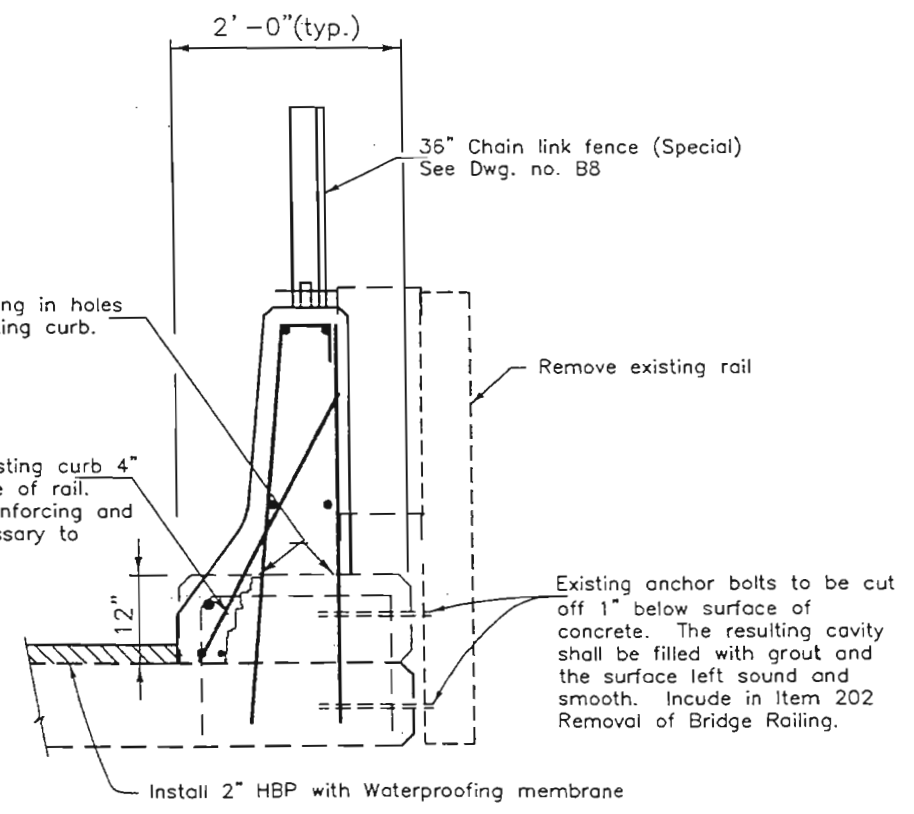
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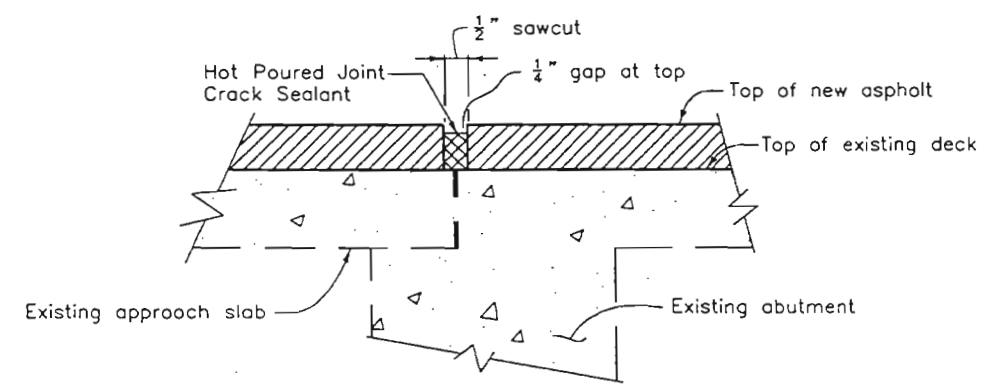
**GUARDRAIL TYPE 7**  
For more details see Standard M-606-13



**COLUMN REPAIR DETAILS**  
General details only shown.  
Extent of repair to be determined by the Engineer.  
To be paid as Item No. 601 Concrete. (Patching.)



**BRIDGE RAIL TYPE 7R**  
Remove existing asphalt mat



**DETAIL AT BACKFACE OF ABUTMENT**

COLORADO DEPARTMENT OF TRANSPORTATION		
DETAILS		
Designer G. Davydov	Structure	F-16-EP, F-16-0
Detailer G. Davydov	Numbers	F-16-ER
Drawing Number B6	of 8	Drawings

Quantities		DATE	
INITIAL	DATE	INITIAL	DATE
GHD	8/99	GHD	8/99
EHH	8/99	EHH	8/99

Design		DATE	
INITIAL	DATE	INITIAL	DATE
GHD	8/99	GHD	8/99
MAN	10/99	EHH	8/99

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REVISIONS		

**NOTES:**

All bridge rail concrete shall be Class D.

Longitudinal reinforcement shall stop at all expansion joints unless noted otherwise.

Bridge rail shall be constructed plumb.

Bridge rail concrete (Class D) and bridge rail reinforcement shall be included in Item No. 606, Bridge Rail Type 7R.

For Guardrail Type 7, see Std. M-606-13 for details.

For Guardrail Type 3, see Std. M-606-1 and M-601-13 for details of transition and attachment to concrete barrier. See Std. M-606-1 for details of Guardrail.

The surface of the rail shall be tested with a 10 foot straightedge laid along the surface in the longitudinal direction. Deviation of the concrete surface from the straightedge shall be less than  $\frac{1}{4}$ " plus allowance for roadway horizontal and vertical curvature, if any.

**DESIGN DATA**

Reinforced Concrete:

Class D Concrete:  $f_c = 1,800$  psi,  $n = 8$

Reinforcing Steel:  $f_s = 24,000$  psi

**INFORMATION ONLY**

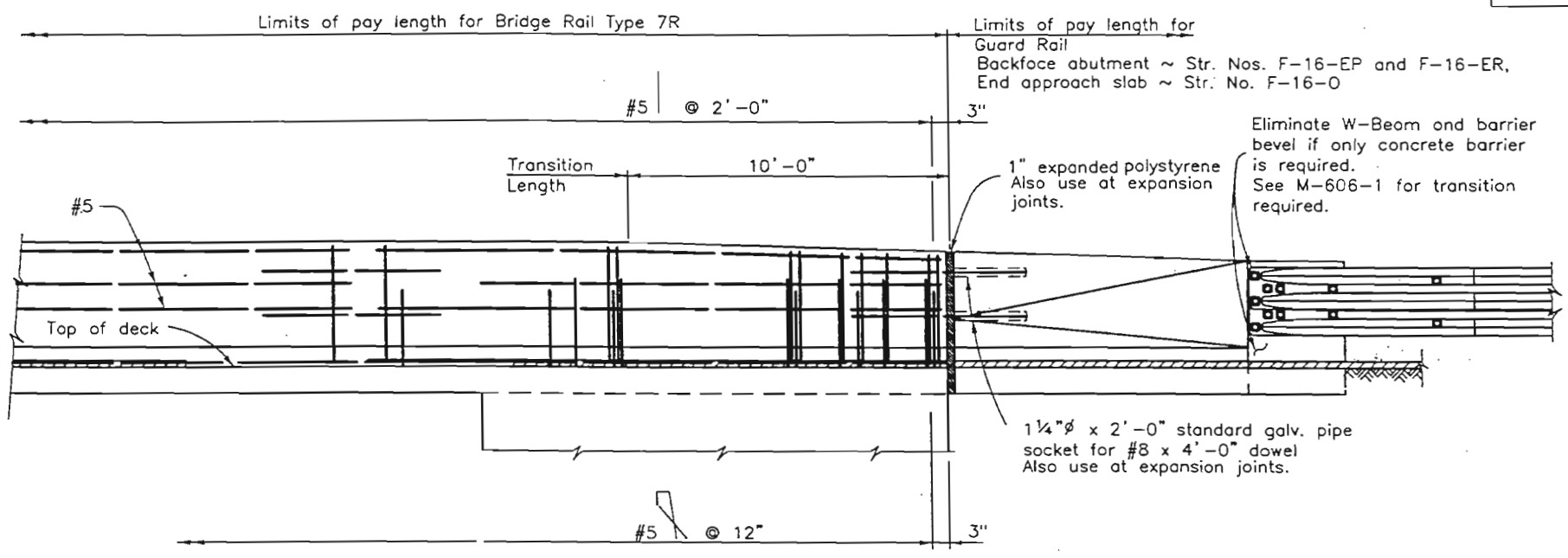
Description	Unit	Per Lin. Ft.
Concrete Class D	Cu. Yd.	0.08
Reinforcing Steel (Epoxy)	Lb.	16.5

**COLORADO  
DEPARTMENT OF TRANSPORTATION**

**BRIDGE RAIL TYPE 7R**

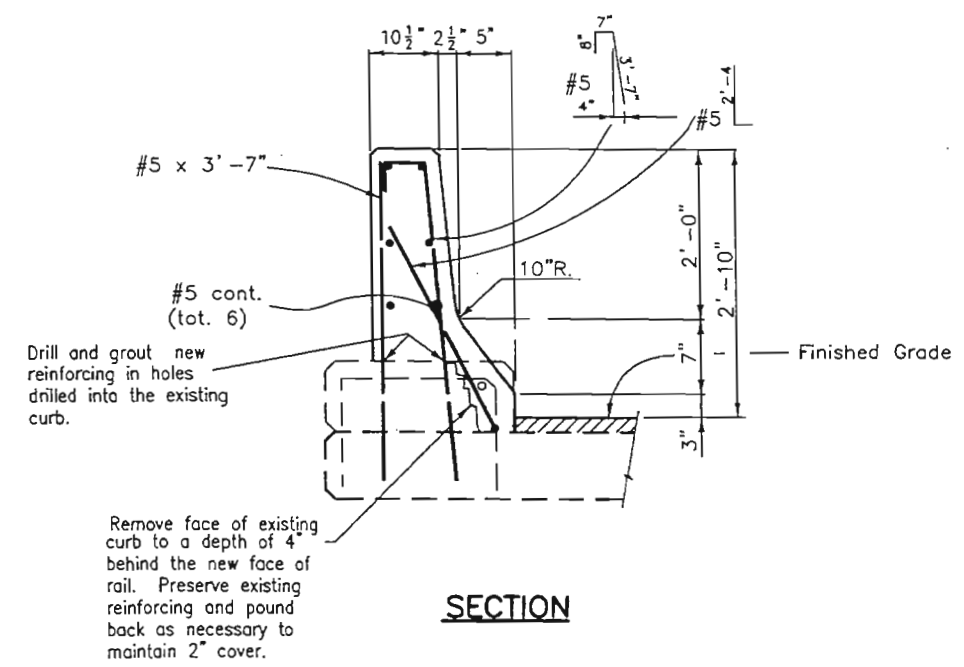
Designer G.DAVYDOV	Structure F-16-0,F-16-ER
Detailer G.DAVYDOV	Numbers F-16-EP
Drawing Number B 7	of 8 Drawings

Revision	Date	Description



**ELEVATION**

**TRANSITION TO CONNECT  
BRIDGE RAIL TYPE 7R  
TO GUARD RAIL**

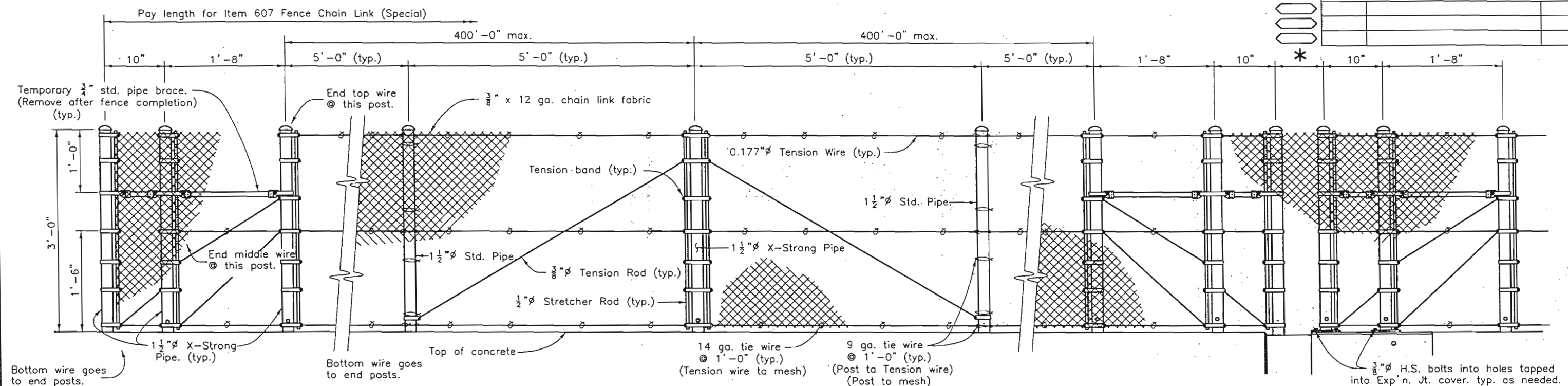


**SECTION**

Design		Date		Checked By	

11/02/1999 HADLEY:D:\GARRISON\FROM FIELD\07RAIL7R.DWG

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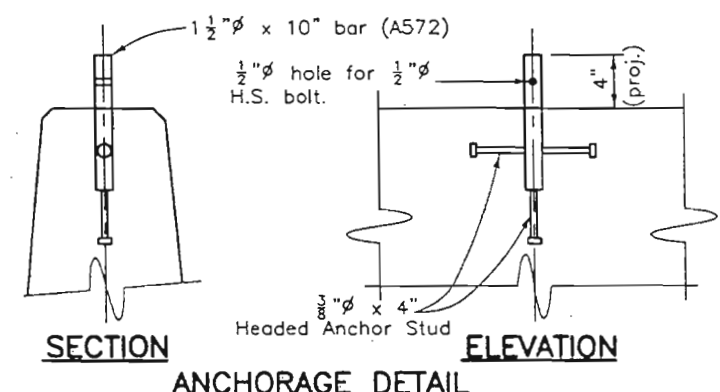
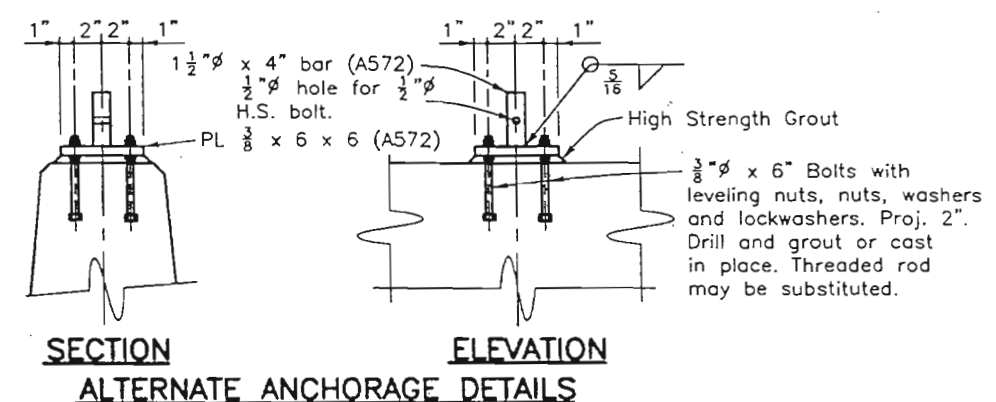
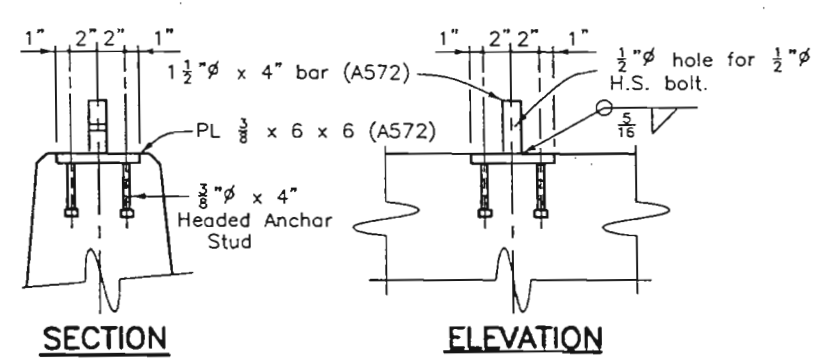
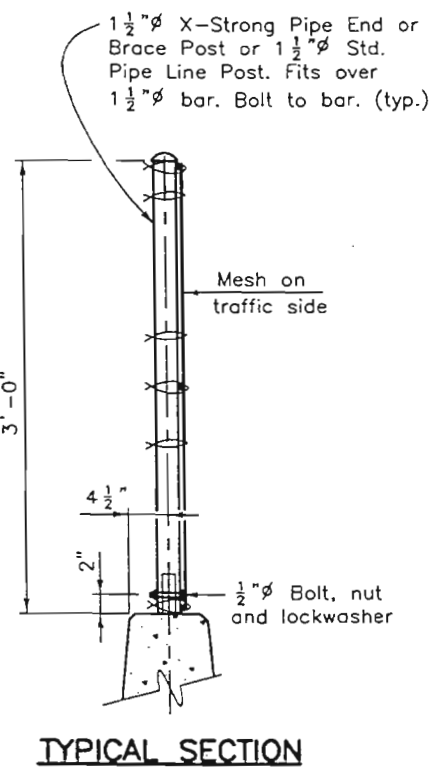
Quantities		DATE	
INITIAL	DATE	INITIAL	DATE

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**END POSTS      LINE POST      BRACE POST (spa. @ 400' max.)      LINE POST      END POSTS AT EXPANSION DEVICE**

- NOTES**
- \* For Steel Bridges: Use 1/2 of rated joint motion +6", 8" min. If not known, rated motion may be assumed to be 1 1/4" per 100' contributing to motion.
  - \* For Concrete Bridges: Use 1/4 of rated joint motion +6", 8" min. If not known, rated motion may be assumed to be 1 1/4" per 100' contributing to motion.
  - \* \* exceeds 10" run mesh over gap with enough slack for 1/2 rated expansion motion.

Anchorage assembly shall be galvanized after fabrication. If Vinyl Coating is specified, the fence assembly shall be Galvanized and Vinyl Coated after fabrication. Anchorage shall only be galvanized after fabrication. Tension Rods and Wires shall have turnbuckles. Post shall be vertical. Pipe shall conform to ASTM A53 Type E or S, Grade B.



Standard Color Vinyl Coatings over Galvanized Wire	Munsell Color System No. (as per ASTM)
Black	1.8PB 1.26/0.5

**DESIGN DATA**

Total Tension = 5400 lbs.  
 Test with: Max. Midbay deflection = 1 1/4" for Lateral Load of 160 lbs. on 1 ft<sup>2</sup>, 1'-6" up @ center of bay.  
 Live Load: wind load = 32 psf or snow impact load = 96 plf @ 1'-6" up  
 Structural Steel: Pipe f<sub>y</sub> = 35,000 psi  
 ASTM A572 (GR 50) f<sub>y</sub> = 50,000 psi

**COLORADO DEPARTMENT OF TRANSPORTATION**

**FENCE CHAIN LINK (SPECIAL) (36 INCH)**

Designer G.Davydov	Structure F-16-0,F-16-EF
Detailer G.Davydov	Numbers F-16-ER
Drawing Number B8	of 8 Drawings

Revision Dates	(Preliminary Stage Only)
8-99	