

Colorado Department of Transportation
Structure Inspection and Inventory Report (English Units)

Highway Number (ON) 5D: 006G

Mile Post (ON)11: **284.345 mi**

Bridge Key: F-16-EF Inspection Date: **12/19/2011** Sufficiency Rating: **42.8** **SD**

Rgn/Sectn 2E/2M:	68
Trans Region 2T:	02
County Code 3:	031
DENVER	
Place Code 4:	20000
DENVER	
Rte.(On/Under)5A:	1
Signing Prefix 5B:	2
Level of Service 5C:	1
Directional Suffix 5E:	0
Feature Intersected 6:	
SOUTH PLATTE RIVER	
Facility Carried 7:	
US 6 ML	
Alias Str No.8A:	
BRIDGE ENTERPRISE LIST	
Pril Str No. 8P	
F-16-EE	
Location 9:	328.05117409
W SIDE OF I-25 INT. DENVR	
Max Clr 10:	99.99
BaseHiway Net12:	1
IrsinvRout 13A	000000006G
IrsSubRout No13B:	00
Latitude 16:	39d 43' 31"
Longitude 17:	105d 00' 58"
Range18A:	68 W
Township18B:	68
Section18C:	5
Detour Length 19:	2.0 mi
Toll Facility 20:	3
Custodian 21:	1
Owner 22:	1
Functional Class 26:	12
Year Built 27:	1956
Lanes on 28A:	9
Lanes Under 28B:	0
ADT 29:	137,000
Year of ADT 30:	2008
Design Load 31:	6
Apr Rdwy Width 32:	162.0 ft
Median 33:	2
Skew 34:	5.00 °
Structure Flared 35:	0
Sfty Rail 36a/b/c/d:	1 1 1 1
Rail ht36h:	36 "in"

Hist Signif 37:	5
Posting status 41:	A
Service on/un 42A/B:	1 5
Main Mat/Desgn 43A/B:	4 2
Appr Mat/Desgn 44A/B:	0 0
Main Spans Unit 45:	3
Approach Spans 46:	0
Horiz Clr 47:	81.0 ft
Max Span 48:	59.0 ft
Str Length 49:	158.4 ft
Curb Wdth L/R 50A/B:	3.0 ft 0.0 ft
Width Curb to Curb 51:	162.0 ft
Width Out to Out 52:	172.5 ft
Deck Area:	27,327. sq. ft
Min Clr Ovr Brgd 53:	99.99
Min Undrclr Ref 54A:	N
Min Undrclr 54B:	0.0 ft
Min Lat Clrnce Ref R 55A:	N
Min Lat Undrclr R 55B:	0.0 ft
Min Lat Undrclr L 56:	0
Deck 58:	5
Super 59:	5
Sub 60:	4
Channel/Protection 61:	7
Culvert 62:	N
Optprtng Rtg Method 63:	1 LF Load Factr
Operating Rating 64:	37.0
Inv Rtgng Method 65:	1
Inventory Rating 66:	22.0
Asph/Fill Thick 66T:	004 "in"
Str. Evaluation 67:	4
Deck Geometry 68:	9
Undrclr Vert/Hor 69:	N
Posting 70:	5
Waterway Adequacy 7:	8
Approach Alignment 72:	8
Type of Work 75A:	31
Work Done By 75B:	
Length of Improvment 76:	157.5 ft
Insp Team Indicator 90B:	WHITE TEAM
Inspector Name 90C:	CHURCHESK
Frequency 91:	24 months
FC Frequency 92A:	-1
UW Frequency 92B:	-1
SI Frequency 92C:	-1
FC Inspection Date 93A:	

UW Inspection Date 93B:	
SI Date 93C:	
Bridge Cost 94:	\$ 5,605,600
Roadway Cost 95:	\$ 560,560
Total Cost 96:	\$ 8,408,400
Year of Cost Estimate 97:	2007
Brdr Brdg Code/% 98A/B:	
Border Bridge Number 99:	
Defense Highway 100:	0
Parallel Structure 101:	N
Direction of Traffic 102:	2
Temporary Structure 103:	
Highway System 104:	1
Fed Lands Hiway 105:	0
Year Reconstructed 106:	1967
Deck Type 107:	1
Wearing Surface 108A:	6
Membrane 108B:	2
Deck Protection 108C:	0
Truck ADT 109:	2 %
Trk Net 110:	1
Pier Protection 111:	#
NBIS Length 112:	Y
Scour Critical 113:	8
Scour Watch 113M:	
Future ADT 114:	154,810
Year of Future ADT 115:	2028
CDOT Str Type 120A:	CIC
CDOT Constr Type 120B:	0.
Inspection Indic 122A:	
Inspection Trip 122AA:	
Scheduling Status 122B:	
Maintenance Patrol 123:	7
Expansion Dev/Type124:	B
Brdg Rail Type/Mod 125A/B:	Y 4
Posting Trucks 129A/B/C:	0 0 0
Str Rating Date 130:	5/1/1996
Special Equip 133:	-1
Vert Clr N/E 134A/B/C:	X 99.99 0.00
Vert Clr S/W 135A/B/C:	X 99.99 0.00
Vertical Clr Date:	1/1/1901
Weight Limit Color: 139:	0
Str Billing Type:	U
Userkey 1 - System:	ONSYS
Userkey 7-Update Indic:	

Inspector Name: CHURCHESK

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Element Inspection Report

Elm/Env	Description	Units	Total Qty	% in 1	CS 1	% in 2	CS 2	% in 3	CS 3	% in 4	CS 4	% in 5	CS 5
14/4	P Conc Deck/AC Ovly	(SF)	27,327	0 %	0	100 %	27,327	0 %	0	0 %	0	0 %	0
107/4	Paint Stl Opn Girder	(LF)	3,611	90 %	3,246	5 %	167	5 %	171	1 %	25	0 %	2
205/4	R/Conc Column	(EA)	22	91 %	20	9 %	2	0 %	0	0 %	0	0 %	0
215/4	R/Conc Abutment	(LF)	348	70 %	242	20 %	70	10 %	36	0 %	0	0 %	0
234/4	R/Conc Cap	(LF)	304	29 %	89	12 %	35	43 %	130	16 %	50	0 %	0
302/4	Compressn Joint Seal	(LF)	173	0 %	0	42 %	73	58 %	100	0 %	0	0 %	0
308/4	Constr Non Exp Jt	(LF)	346	88 %	306	12 %	40	0 %	0	0 %	0	0 %	0
311/4	Moveable Bearing	(EA)	69	0 %	0	94 %	65	6 %	4	0 %	0	0 %	0
313/4	Fixed Bearing	(EA)	23	100 %	23	0 %	0	0 %	0	0 %	0	0 %	0
321/4	R/Conc Approach Slab	(EA)	2	100 %	2	0 %	0	0 %	0	0 %	0	0 %	0
326/4	Bridge Wingwalls	(EA)	4	100 %	4	0 %	0	0 %	0	0 %	0	0 %	0
331/4	Conc Bridge Railing	(LF)	318	100 %	318	0 %	0	0 %	0	0 %	0	0 %	0
334/4	Metal Rail Coated	(LF)	318	47 %	149	50 %	159	3 %	10	0 %	0	0 %	0
338/4	Conc Curbs/SW	(LF)	477	58 %	277	10 %	50	31 %	150	0 %	0	0 %	0
359/4	Soffit Smart Flag	(EA)	1	0 %	0	100 %	0	0 %	1	0 %	0	0 %	0
501/4	Channel Cond	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0
502/4	ChannProtMatCond	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0
504/4	BankCond	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0
505/4	Debris Smart Flag	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0

Elem/Env	Description	Element Notes
14/4	P Conc Deck/AC Ovly	3 - 4 Inches of asphalt. Light raveling in wheel lines & along seams. Some dishing with allig. cracking, and some asphalt patches in WBnd accel./decel. lanes above Spans 1 & 2. (About 50 SF total) Couple of potholes in #1 EBnd lane above Pier 2.
107/4	Paint Stl Opn Girder	Exterior web of Girder 1W (and bottom flange) has R2 to R3 corrosion especially at deck drain. Heavy flaking rust (R2 corrosion) on Girders 2B, 2F, 2K, and 2L. Some R2 to R3 corr. at base of webs on Girders B, C, D, L, and V at Pier 2. R3 corr. on Girders K and L at Pier 2, and on Girder L at Pier 3. Some R3 corrosion at base of web and top flange of Girders A, I, L, T, U, V, and W at Pier 2, and on top flange of Girder W at Pier 2. R4 corr. on ends of Girders 3V, & 3W at Abutment 4 has been repaired. (See 2011 Photo) Heavy corrosion (R3), on diaphragm at Bays K & L at both piers. (See 2008 Photos) See Notes & Sketch for info on 1977 FIRE & replacement of girders. There are short (less than 2 ft. long) cover plates welded on bottom of Girders 1T through 1W at midspan. (See 2009 Photo) Holes still exist through webs of Girders T & U at Abutment 4. (See 2011 Photo)

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205/4	R/Conc Column	Hairline to light vertical and random cracks in some. Minor stream abrasion on debris walls between columns. Moderate stream abrasion on Pier 3 below Girders 3F and 3G. Some delamination at nose of Pier 3, and on Columns 2A, 2C, and 3C.
215/4	R/Conc Abutment	Retaining wall abutments. Horizontal delam cracks along seats. Some vertical cracks at construction joints with seepage. Some vertical cracks in backwalls with efflor. and rust stains. Moderate random cracks (½ inch wide) with spalls, delamination, and efflor. in Bay 1S. Some trans. and shrinkage cracks between Bays M - S at Abutment 1. Horizontal crack (1/8 inch wide) 4 - 5 ft. below the seat of Abutment 1 between Bays D & J. (It was patched, but ineffective.) Abutment 4 spalled below Bay A with active leakage during 2008 inspection. (See 2008 Photo) Both abutments are badly stained from leaking deck joints.
234/4	R/Conc Cap	Original (1956) portions of piers (below the riveted girders) are generally the worst. PIER 2 - Horiz. delam. cracking below edge of seat, (some spalled with rebar exposed) at Girders 1A to 1B, 1D, 1G, 1H, 1I, 1M, 1N, 1Q, 1R, & 1S; then forward face at 2A to 2D, 2E, 2F, 2J (10 s.f face spalling with exposed rebar), 2K to 2M, 2O, 2Q (forward face completely spalled Bays 2Q to 2S, full height of most stirrups with R2 & R3 corrosion, & Top & Bottom main reinf. seen corroding too 12-2009 PHOTO) Bad rust stains (badly infiltrated) left end of Pier 2. (See 2009 Photo) Bottom of Pier 2 cap has delam. cracks with rust stains, pulled some off / spalled 2 inches deep to the main reinf. below Bay F. (See 2009 Photos) PIER 3 - Horiz. delam. cracking below edge of seat (or spalled) at Girders 2R to 2S; forward face - 3K to 3M, (spalling), 3N, 3O, 3R to 3U. Rt. end & Bay V has been patched. (See 2011 Photo)
302/4	Compressn Joint Seal	Compression seal below the asphalt cover along Abutment 4. Asphalt is D-cracking and starting to break up in WBnd lanes.
308/4	Constr Non Exp Jt	Along Abutment 1 & at piers. Asphalt cover - there is a light crack along Abutment 1. Signs of leakage below, worst at Bays K & L at both piers. See 2008 Photo)
311/4	Moveable Bearing	Rockers at both piers, and at Abutment 4. Heavy rust and R2 corrosion on rockers and plates at Pier 3 & Abutment 4. Some R2 corrosion at 2F, 3L and 3W, and some R3 corr. with section loss at Bearings A, K, L and W at Pier 2.
313/4	Fixed Bearing	At Abutment 1. Some R1 corrosion on plates.
321/4	R/Conc Approach Slab	Overlaid. Some longit. cracks, along with raveling & rutting wheel lines.
326/4	Bridge Wingwalls	Flared. Some map cracks. Efflorescence at cold joints. Small chip #1 right. Joint at #4 Rt. wingwall is open about ½ inch. #4 Lt. is spalled on top adjacent to joint.
331/4	Conc Bridge Railing	Portable Jersey barrier (Type R bridge rail) along median, and on top of right curb (in front of old Type U steel rail left in place). (See 2009 Photos) Corner broken off 2nd barrier on top of right curb. Some scuff marks along them.

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Elem/Env	Description	Element Notes
334/4	Metal Rail Coated	Galvanized square tube rails (Type Y bridge rail) on left side. Looks good. The right side has concrete Jersey barriers in front of the original Valley Highway rail, old style with multiple pipe posts (Type U). This old-style rail painted, but there is some R3 corrosion at base of pipe posts. (See 2009 Photos) This rail was left in-place rather than removed when the portable Jersey barrier was placed in front of it - old rail is not being effective, OK.
338/4	Conc Curbs/SW	Includes exterior curbs & WBL lane divider. Right side with jersey barrier on top now, has horizontal cracks, rust stains, and delamination on gutter face, exposed rebar @ Pier 2. (See 2009 Photo) Some horiz. cracks in exterior side of right curb. Some horiz. cracks with light scale on exterior side of left curb above Span 1. Section of left curb is spalled above Span 3.
359/4	Soffit Smart Flag	Light random cracks scattered throughout. Many trans. cracks with efflorescence in all spans. Some areas of map cracking & scale with efflor., Bays 1A, 1B (12-2009 PHOTO including longit. cracking), 1C, K & L the worse and with rust stains and active leaking. Deterioration, spalling & seepage, around old deck drains, 12-2009 PHOTOS, in bays, both sides of Gir. D & F, right side of Girder L. Spall in Bay 2F. Spalls with exposed rebar in Bays 1E, 1H and at A1 left edge.
501/4	Channel Cond	South Platte River. There is a reservoir about 15 miles upstream. Year-round flow. Good alignment. Sand and silt bed. Gentle low flow at this time.
502/4	ChannProtMatCond	Bike path along Abutment 4. Shallow sheet piling in front of Abutment 1 retaining wall, up to about waterline. Some loosely scattered riprap on banks. Some large concrete rubble placed along #1 Lt. and #1 Rt. wingwalls. Up to 2 ft. Ø rock riprap placed in channel below Span 3 (between bike path and Pier 3).
504/4	BankCond	Steep. Built up. Lined with rocks, dirt, grass, and bushes.
505/4	Debris Smart Flag	A little drift wood and trash in channel.

Maintenance Activity Summary

MMS Activity	Description	Recommended	Status	Target Year	Est Cost
356.02	Curb & RI	1/3/2002	-1	2014	5000

Consider repairing the right curb, where it has cracked, delaminated & spalling exposing rebar. However, it is under the temporary Jersey barrier in front of the old 'valley highway' steel rail.

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Maintenance Activity Summary

MMS Activity	Description	Recommended	Status	Target Year	Est Cost
355.02	Cln & Pnt	1/3/2002	-1	2014	5000

Clean and spot paint the ends of the steel girders, at the supports, and their bearings.

353.08	Br Dk Rpr	1/3/2002	-1	2014	20000
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Abut. 4 should have a real expansion joint installed to protect the bearings and abutment as well as have a smooth surface.

Seal asphalt cracks above the Piers, the piers are spalling.

*354.02	Supstr	2/4/2008	-1	2014	1000
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Repair Abutment 4 end of Girders 3T and 3U which still have R4 corrosion holes.

358.05	Substr	1/3/2002	-1	2014	10000
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Remove and replace delaminating and spalled concrete at pier caps.

353.04	Br Dk Rpr	12/19/2011		2014	500
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Patch potholes in #1 Eastbound lane above Pier 2.

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Bridge Notes

Utilities - 2½ inch Ø metal conduit attached to face of Abutment 4 full width.

Platte River bike path along Abutment 4.

Tanker Fire on bridge in 1977 - Replaced 11 lines (A through K) Girders from Abutment 4 to 1st splice plate in Span 2 & deck above these girders & rehabbed left half of Pier 3.

EBnd & WBnd bridges were widened & combined at median in 1967, 4 girders on both sides & 3 along median. Widening girders are welded, but originals were riveted.

Inspection Notes

Temperature: 30°
Time: 8:30
Weather: Overcast

Scope:

NBI: Element: Underwater: Fracture Critical: Other: Type: Regular NBI

Inspector: CHURCHESK

Inspection Team:

Inspection Date: 12/19/2011

Inspector

Inspector