

Bridge Inspection							
Bridge File Number	02236 -1 Bridge			Form Type	SG		
Year Built/Year Supstr	1955/1955			Lot No.	1		
Bridge or Town Name	LINDEN			Inspector Name	Dave Lam		
Located Over	KNEEHILLS CREEK, 3.46, WATERCRS-ST			Inspector Class	BR CLS A		
Located On	806:04 C1 9.053			Assistant Name			
Water Body Cl./Year				Assistant Class			
Navigabil. Cl./Year				Inspection Date	16-Jul-2011		
Legal Land Location	SW SEC 20 TWP 30 RGE 25 W4M			Data Entry By	Marcia Chavez		
Longitude, Latitude	-113:29:48, 51:34:60			Data Entry Date	15-Aug-2011		
Road Authority	Alberta Transportation (AIT)			Reviewer Name	John O'Brien		
Contract Main. Area	CMA20			Review Date	27-Jul-2011		
Clear Roadway/Skew	7.3 /			Dept. Reviewer Name	Chris Black		
AADT/Year	1,580 / 2010 (A)			Dept. Review Date	30-Aug-2011		
Road Classification	RCU-210-110			Follow-Up By			
Detour Length (km)	3						
Allowable Load (t):	Single	H 41 GIRDER	Semi	HS 53 GIRDER	Train	CS3 90 GIRDER	---> On Critical Spans --->Critical Member
Design Loading:	HS20						---> Primary Span

Posting Information								
Required Load Posting (t)	Single				Semi		Truck Train	
Posted Loading (t)	Single				Semi		Truck Train	
Posted:	Lane	NB	At Junction (Y/N)	No	In Advance (Y/N)	No	At Bridge (Y/N)	No
Posted:	Lane	SB	At Junction (Y/N)	No	In Advance (Y/N)	No	At Bridge (Y/N)	No
Remarks	Not required.							
Hazard Marker At Bridge (Y/N)	Yes							
Remarks	Too low at SE corner.							
Other Sign Types	75 km/hr, curve.							

Utilities (Located at)			
Utility Attachments			
Telephone	Plowed in E & W ditch.		Gas
Power	2 wire OH 80 m W of c/l.		Municipal
Others	Phone crossing under S headslope.		Problem (Y/N) No
Remarks	1 wire OH crosses road 100m S. Telus tied to W rail on bridge.		

Approach Road				
		Last	Now	Explanation of Condition
Horizontal Alignment		4	4	Sharp curve N. S new approach.
Vertical Alignment		5	5	Max grade of 4% both ways. No passing NB.
Roadway Width (m)	10.700			
Approach Bump		5	5	Bump @ N end has been patched with ACP.
Guardrail (Y/N)	Yes			
Guardrail		8	8	NE - 53.2m, NW - 57.0, SE - 76.0, SW - 30.5m.
Length (m)	30.500			
Current Standard (Y/N)	No			Not thriebeam.
Termination Type	TURNED DOWN ENDS			
Drainage		7	3	Heavy corrosion at all corners; no concrete drain troughs.
Approach Road General Rating		4	4	

Superstructure						
Bridge Component		Last	Now	Explanation of Condition		
(Primary Span : RB, 3 Spans, Lengths(m): 12.2-18.3-12.2, A-Ident Number: A0246-01)						
Special Features						
Special Feature			7	Stirrup strengthening. At girder pin connection locations, typical (photo).		
(Type : UNDERSLUNG DIAPHR)						
Special Feature			X			
(Type :)						
Wearing Surface/Deck Top Detail Ratings						
	N (%)	1 (%)	2 (%)	3 (%)		
Last						
Now	0.0	0.0	0.0	0.0		
Wearing Surface			7	6	Random transverse cracking - photo.	
(Material Type : CONCRETE)						
(Thickness(mm) : 50)						
Deck Top			N	N		
Deck Rideability			8	8		
Deck Joints			4	3	Evidence of leaking @ N abutment, old forms dislodged - photo. Gap at NW corner (photo). KOCH jnts at piers.	
Temperature (deg. C)		13				
(Expansion Type :)						
(Fixed Type : OTHER;BUFFER ANGLES)						
Gap Size (mm)		Gap Location				
Deck Drainage			4	4	(Ponding due to drains plugged by ice windrow - photo. 17Mar2005). Not visible this inspection. Jnt leakage adding rust at girder ends & end diaphragms. Deck drainage eroding hslps at both abuts (photo).	
Drains Clogged (Y/N)		No				
Curbs/Median			6	4	150mm high curb due to O/L. Curb is deteriorating at various local spots (photo).	
(Curb Type : Standard)						
Scaling (Percent Area)		5				
Bridge Rail			7	4	Consists of 2 rows of railing between posts - photo. Temp retrofit thriebeam installed on E side spanning btwn missing concrete posts, but the post over P1 where thriebeam is attached has deteriorated & exposing rusted rebar & is insufficient to resist crash impact (photo). 10% posts cracking - photo. Rusting 30%.	
(Type : GALVANIZED STEEL BRIDGE TUBE)						
Bridge Rail Posts			4	2		
(Type : PRECAST CONCRETE;PRECAST CONCRETE)						
Bridge Rail/Posts Coating			4	3		
(Type : PAINT)						
Sidewalk			X	X		
Girder/Beam						
Cover Plate			7	7	Pin at splice jnt.	
Flange			7	7		
Web			7	7		
Stiffeners			7	7		
Splice			7	X		
Weld			7	7		
Diaphragms/Cross Frame			7	7	Corrosion below N abut jnt.	

Superstructure					
Bridge Component		Last	Now	Explanation of Condition	
(Primary Span : RB, 3 Spans, Lengths(m): 12.2-18.3-12.2, A-Ident Number: A0246-01)					
Paint Condition		4	3	Surface corrosion @ ext bottom flange - 15%. Corrosion with some pitting @ hangers & @ ends of girder & bearings @ abuts - photo.	
(Colour Description : GREEN)					
(Colour Code : 14090)					
Touchup Required (Y/N)	Yes				
Bearings		3	3	N abut G3 bearings have two sheared A/Bs. N pier G2 bearing has one sheared A/B - photos. N abut bearing A/B bent due to expansion (G2). S pier G3 is missing nut on 1 bearing anchor bolt; bolt too short, maybe sheared (photo).	
Temperature (deg. C)	13				
(Expansion Type :)					
(Fixed Type : STEEL SLIDING PLATES WITH BRONZE PLATE IN BETWEEN)					
Coating Adequate (Y/N)	No				
Functioning (Y/N)	Yes				
Deck Underside		4	4	Some stains around joints & under both curbs near exterior girders - efflorescence. Poor cold joint in S1 & S3 cracking across full width deck U/S - photo. S3 between G3/G4 deck U/S honeycombing with bottom rebar exposed (insufficient cover & poor consolidation @ construction).	
Stains (Percent Area)	2				
Span Alignment Problems					
Vertical (Y/N)	No				
Horizontal (Y/N)	No				
Superstructure General Rating		3	3		
Substructure					
Bridge Component		Last	Now	Explanation of Condition	
Abutments					
Bearing Seats/Caps		6	6		
(Type : CONCRETE)					
Backwalls/Breastwalls		6	6		
Wingwalls		4	3	NW exterior deteriorating (photo).	
Piles		N	N		
Paint/Coating		X	X		
Abutment Stability		8	5		
Scour/Erosion		7	4	Hslp erosion & gullies caused from approach run-off & deck drainage.	
Piers/Bents					
(Type : PIER-COLUMN)				Cast in place concrete shaft encasing piles to 3.0 m above SB.	
Bearing Seats/Caps		7	7		
(Type : STEEL)				Steel piles are 250mm diameter. 4 steel pipe columns per pier, but bearing piles unknown.	
(Total Number of Bearing Piles : 0:0)					
Pier Shaft/Piles		6	6		
Bracing/Struts/Sheathing		X	6	Steel channel welded to each column & wrapped around top of columns.	
Nose Plate		X	X		
Paint/Coating		4	4	Medium scaling at inside face of both & at u/s end of N pier. Steel cap/piles rusting.	
(Colour Description : GREEN)					
(Colour Code : 14090)					
Pier Stability		5	5		

Substructure				
Bridge Component		Last	Now	Explanation of Condition
Scour		5	5	Scour E side of S pier - not affecting abut stability.
Debris (Y/N)	No			
Substructure General Rating		6	5	
Structure Usage				
		Last	Now	Explanation of Condition
Channel				
(U/S Direction : W)				NW corner deep erosion due to deck drain - photo.
(D/S Direction : E)				
Alignment		7	7	
Bank Stability		7	7	
HWM (m below Top of Curb)				HWM not visible.
Drift (Y/N)	No			
Slope Protection (Type :)		4	3	Severe erosion gullies at hslp & beside wingwalls.
Guidebank/Spurs		X	X	
Adequacy of Opening		8	8	
(Fish Compensation Measure 1 : NONE)				
(Fish Compensation Measure 2 : NONE)				
Channel General Rating		4	3	

Maintenance Recommendations										
Inspector Recommendations	Year	Inspector Comments	Department Comments	Target Year	Est. Cost	Cat #				
REPAIR/REPLACE BRIDGE RAIL	2011	Recast concrete posts.								
GALVANIZE/PAINT BRIDGE RAIL	2011	Recondition or replace rails.								
RETROFIT BRIDGE RAIL										
SEAL CURBS	2011	Rehab curb.								
PATCH DECK										
SEAL DECK	2011									
OVERLAY DECK	2011	Chipseal.								
REPAIR/REPLACE DECK JOINTS	2011	Seal abutment joints. Repair/seal gap at N jnt.								
RESET/ PAINT BEARINGS	2011	Replace sheared bearing A/Bs (4); reset & paint.								
REPAINT SUPERSTRUCTURE	2011									
STRAIGHTEN/REPLACE MEMBERS										
WASHING	2011									
SHOTCRETE REPAIRS										
REPAIR ABUTMENT SCOUR/EROSION	2011	Install pitrun material - repair both headslope erosion.								
PLACE ADDITIONAL RIP RAP										
REMOVE DRIFT ACCUMULATION										
OTHER ACTION	2011	Rehab NW wingwall & seal all substructure concrete.								
OTHER ACTION	2011	Reinstall hazard markers to meet standard at SE corner.								
OTHER ACTION	2011	Remove silt fences at all corners.								
OTHER ACTION	2011	Program major rehab ASAP.								
OTHER ACTION	2011	Install approach concrete down drains at all corners.								
OTHER ACTION	2011	Upgrade approach guardrail to meet std (thriebeam).								
OTHER ACTION										
Structural Condition Rating (Last/Now) (%)	50.0/44.4	Sufficiency Rating (Last/Now) (%)	51.2/46.5	Est. Repl. Yr	2029	Maint. Req'd. (Y/N)	Yes			
Special Comments for Next Inspection		Department Comments								
Maintenance Reviewed By		Date				Estimated Total	0			
Proposed Long-Term Strategy										
On 3-Year Program (Y/N)										
Proposed Action										

Previous Inspector's Name	Dave Lam	Previous Assistant's Name	
Next Inspection Date	16-Oct-2014	Previous Inspection Date	17-Mar-2005
Inspection Cycle (Default) (months)	39		
Comment			

Maintenance Recommendations

Inspector Recommendations	Year	Inspector Comments	Department Comments	Target Year	Est. Cost	Cat #	
REPAIR/REPLACE BRIDGE RAIL	2011	Recast concrete posts.	Completed 2011				
GALVANIZE/PAINT BRIDGE RAIL	2011	Recondition or replace rails.	Some replaced 2011				
RETROFIT BRIDGE RAIL							
SEAL CURBS	2011	Rehab curb.	Defer until replacement				
PATCH DECK							
SEAL DECK	2011						
OVERLAY DECK	2011	Chipseal.	To operations				
REPAIR/REPLACE DECK JOINTS	2011	Seal abutment joints. Repair/seal gap at N jnt.	South Koch Joint repaired 2011				
RESET/ PAINT BEARINGS	2011	Replace sheared bearing A/Bs (4); reset & paint.	Defer until replacement				
REPAINT SUPERSTRUCTURE	2011						
STRAIGHTEN/REPLACE MEMBERS							
WASHING	2011						
SHOTCRETE REPAIRS							
REPAIR ABUTMENT SCOUR/EROSION	2011	Install pitrun material - repair both headslope erosion.	Defer until replacement				
PLACE ADDITIONAL RIP RAP							
REMOVE DRIFT ACCUMULATION							
OTHER ACTION	2011	Rehab NW wingwall & seal all substructure concrete.	Defer until replacement				
OTHER ACTION	2011	Reinstall hazard markers to meet standard at SE corner.	To operations				
OTHER ACTION	2011	Remove silt fences at all corners.	Next time on site				
OTHER ACTION	2011	Program major rehab ASAP.	Defer until replacement				
OTHER ACTION	2011	Install approach concrete down drains at all corners.	Defer until replacement				
OTHER ACTION	2011	Upgrade approach guardrail to meet std (thriebeam).	To operations				
OTHER ACTION							
Structural Condition Rating (Last/Now) (%)	50.0/44.4	Sufficiency Rating (Last/Now) (%)	51.2/46.5	Est. Repl. Yr	2029	Maint. Req. (Y/N)	Yes
Special Comments for Next Inspection			Department Comments	Tentatively programmed to be replaced in 2022. AS			
Maintenance Reviewed By	Andrew Smikles		Date	22-Aug-2012	Estimated Total	0	

Proposed Long-Term Strategy			
On 3-Year Program (Y/N)			
Proposed Action			
Previous Inspector's Name	Dave Lam	Previous Assistant's Name	
Next Inspection Date	16-Oct-2014	Previous Inspection Date	17-Mar-2005
Inspection Cycle (Default) (months)	39		
Comment			