


INSPECTION FORM COMPLETION

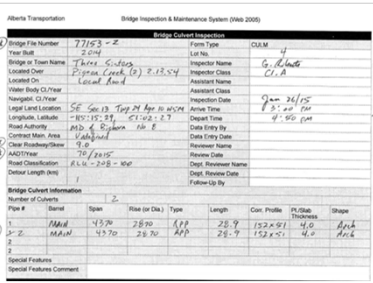


0


- ## Verifying and Updating Inventory Data
- Inventory data is usually found in grey boxes on forms
 - Inspector is responsible for obtaining, verifying and updating inventory data during inspection
 - Check off each inventory item to indicate it was verified
 - If item cannot be confirmed/verified do not check off – make comment why
 - Not necessary to change data if measurement is only slightly different
 - Inventory changes are made directly on the inspection form
- 

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Verifying and Updating Inventory Data

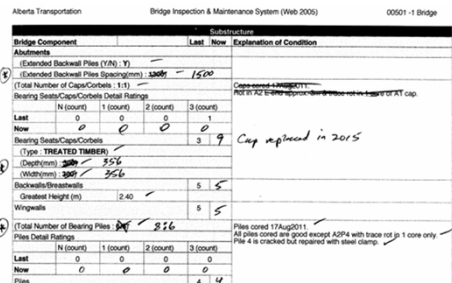


Inventory changes/revisions made directly in the grey fields on the inspection form




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Verifying and Updating Inventory Data



Inventory changes are made directly on the inspection form



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Verifying and Updating Inventory Data

Missing Surface	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Remnants of disposal at W half of deck	<input checked="" type="checkbox"/>
Thickness (mm)	None			
Reinforcement Problem	No	<input checked="" type="checkbox"/>	No connection	
Deck Top	0	5		
Deck Reinforcement	0	6		
Deck joints	Butler angles with section removed at 2 ends - no problems			
Bump (Y/N)	No	2	1	5
Deck Drainage	No	7	1	7
Shape (Correct Y/N)	No	Overhang at corner support on all 4 corners		
Crack Median	4	1	2	2
Crack Type (Standard)	Repaired			
Scaling (Percent Area)	10			
Bridge No.	1000	1	7	1000
Span	1000	1	7	1000
Bridge Rail From	GA	3	7	GA
Span	1000	1	7	1000
Bridge Rail From Coating	4	1	2	2
Span	1000	1	7	1000
Beavers	X	X		

Center Detail Ratings

10 (severe)	1 (severe)	2 (severe)	3 (severe)
0	0	0	0

Notes: Write cracks in round concrete of AZ at 0.3, and 0.4 at 0.4. 1 point increase for type FO grade and 1 point for each.

Inventory changes are made directly on the inspection form



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Verifying and Updating Inventory Data

Culvert Component	Downstream End		Explanation of Condition
	Last	Now	
Direction	W	E	
End Treatment (Concrete, Steel, STEEL)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Others (None)	X	X	
Headwall	X	X	
Collar	X	X	
Wingwalls	X	X	
(Shape)	X	X	
Outlet Wall	X	X	
Bent End	7	7	Rocks in bent
Heaving (mm)	0		
Invert Above/Below Stream Bed	BELOW		
Above/Below (mm)	300		
Scour Protection	7	3	All protection washed out
(Type) (RAP)	None		
(Avg. Rock Size (mm))	300		
Scour/Erosion	7	3	6 x 10 x 1 m deep Scour hole off bent and scoured along both sides
Beavers (Y/N)	No		
Downstream End General Rating	7	3	

Inventory changes are made directly on the inspection form



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Verifying and Updating Inventory Data

- Culvert design dimensions are shown on first page of culvert form
- SPCSP equivalent round should be changed to correct dimensions (e.g. form indicated pipe is round but is clearly 5% vertical ellipse)
- Used to determine sagging and deflecting measurements
- If culvert is not deformed, excessive sag and deflection measurements may indicate wrong design dimensions on the form
 - Take measurements at ends of pipe where typically least deformed from design shape
 - Use average of U/S and D/S measurements to determine design shape



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Verifying and Updating Inventory Data

- Incorrect Inventory data is changed by inspector by crossing out incorrect previously recorded value and writing in new information
- Update and verify Inventory data directly on the form
- Record data only in values that box is asking for (mm, m, %, Y/N)
- Minor changes to things like roadway width are not required



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Supporting Information

- Use ONLY approved abbreviations found in BIM manual Section 16.1 when making comments
- Ratings of **4** must have supporting comment (explanation of condition) and supporting photograph
- Ratings of **3** or less must have 3 things;
 1. Supporting comment
 2. Supporting photograph
 3. Recommendation for action
- Critical or Hazardous ratings of **2** or less require Low Rating Notification sent out to authorities
- Action may be in the form of:
 - Maintenance recommendations
 - Monitoring on regular inspection cycle
 - Monitoring on a shorter inspection cycle if warranted
 - Don't overuse monitoring – must be measurable
- Photographs, quantities, measurements and/or sketches are provided for ratings of 3 or less or any maintenance recommendation regardless of rating

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BIM Y/N Inventory Questions

- Explanation of condition is required when answering YES for certain areas
- Exceptions for Class B inspector are
 - approach guardrail meeting standards
 - Longitudinal seams with proper lap
 - Longitudinal seam stagger (ok to comment "1N or "2N stagger")
- if NO, provide comments explaining why

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Significant Changes From Previous Rating

- Ratings of most elements do not change significantly over an inspection cycle
- Provide an explanation of condition and a photograph if rating has changed significantly
- Required even if rating is 5 or more
- For example:
 - treated timber piles rated 8, then 21 months later piles rated 5 - why the drastic change?

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Significant Changes From Previous Rating

- Sometimes normal for elements to change significantly over an inspection cycle
- For example:
 - Timber strip deck rated 8 and 57 months later, rating reduced to 4
 - Scour protection rated 7 and after flood reduced to 3

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Measurement Based Ratings

- Record the actual measured values in space provided or if space not provided, record in Explanation of Condition
 - e.g. culvert Rise, Span, Sag/mm, %Deflection, in boxes provided
- Record the location of any measurements of defects in space provided or if space not provided, record in the Explanation of Condition
 - 250 x 400 spall in A1 abutment seat under G3
 - wide longitudinal crack in unsound concrete of Sp1-G3 AZ in 1 leg.

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Previous Comments

- Comments from previous inspection which no longer apply must be deleted
- Carry over previous comments if information adds value but cannot be confirmed or denied
 - place brackets around comment and add date the comment originated – if unknown use last inspection date. (e.g. deck ices in WBL, May 3/23)
- If element cannot be seen or is not accessible to confirm comments or data
 - Do not check mark data (don't confirm)
 - Explain why inaccessible or not visible (e.g. snow covered)
 - Retain comment in brackets. Add date comment originated - if known

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Previous Comments

- Types of information retained:
 - measurements that cannot be verified
 - previous high water marks
 - information recorded during particular weather conditions
 - information recorded during particular season

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Sample Completed Form

The image shows a sample completed form for bridge inspection. The form is titled 'Bridge Inspection Form' and contains various sections for recording data. The sections include:

- General Information: Project Name, Location, Date, Inspector, etc.
- Inspection Details: Bridge Name, Span, Sag, Deflection, etc.
- Structural Elements: Deck, Abutments, Piers, etc.
- Weather and Season: Date, Time, Weather, Season, etc.
- Observations: A large section for recording observations and measurements, with handwritten notes and checkmarks.
- Summary: Overall condition, Rating, etc.

 The form is filled with data and includes handwritten notes and checkmarks throughout.

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Photographs and / or Sketches

- Refer to Section 1.12.7 in BIM Manual for additional important information
- Excellent means of providing supporting information
- Photograph required for all ratings of 4 or less
- Required for all maintenance recommendations regardless of rating
- Required for inaccessible culvert barrels
- Not acceptable to say “see photo” on form

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Photographs

- 5 standard photos typically required for a bridge;
 - Road alignment approaching bridge from both directions (2 photos)
 - Profile – normally U/S
 - Channel alignment looking U/S
 - Channel alignment looking D/S

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Photographs

- 7 standard photos typically required for a culvert;
 - Road alignment approaching culvert from both directions (2 photos)
 - Channel alignment looking U/S
 - Channel alignment looking D/S
 - Looking D/S towards inlet area (U/S profile)
 - Looking D/S through the barrel
 - Looking U/S through the barrel

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Photographs


- Submit color photos with inspection form to AT Review & Data Entry consultant
- Taken with a minimum 10 megapixels camera
- Two photos per page (3 ½ x 5 or 4 x 6) with descriptive text, inspector and stream name, date, BF# , Page #.
- Submit electronic copies of photos with inspection reports in pdf file with min. 300 dpi and unlocked for copying in following format;
 - BF12345-01_LVL1_YYYYMMDD_P.pdf
- Also submit one hard copy of all photos – double sided is ok


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Standard Bridge - Photographs and Sketches
BF13808-01_LVL1_20210617_P

Bridge File No.: 13808-1 Date: June 17, 2021 Pictures By: C. Roberts		Highway: Local Road Location: Irricana Stream: Rosebud River
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1. Road alignment looking south.



2. Road alignment looking north.


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Standard Bridge - Photographs and Sketches
BF13808-01_LVL1_20210617_P

Bridge File No.: 13808-1 Date: June 17, 2021 Pictures By: C. Roberts		Highway: Local Road Location: Irricana Stream: Rosebud River
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3. USB photo.



4. Channel alignment looking US west.


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Standard Bridge - Photographs and Sketches
BF13808-01_LVL1_20210617_P

Bridge File No.: 13808-1 Date: June 17, 2021 Pictures By: C. Roberts		Highway: Local Road Location: Irricana Stream: Rosebud River
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5. Channel alignment looking OS east.



6. Raveling ACP and settlement at both approaches.


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Typical Culvert - Photographs and Sketches
BF09411-01_LVL1_20220112_P

Bridge File No.: 09411-1 Date: January 12, 2022 Pictures By: C. Roberts		Highway: 888-01 Location: Manubertles Stream: Kitchum Creek
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1. Road alignment looking South.



2. Road alignment looking North.

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Typical Culvert - Photographs and Sketches
BF09411-01_LVL1_20220112_P

Bridge File No.: 09411-1		Highway: 889-01
Date: January 12, 2022	Location: Manyberries	Katoum Creek
Pictures By: G. Roberts		



3. Channel alignment looking US (East)



4. US profile


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Typical Culvert - Photographs and Sketches
BF09411-01_LVL1_20220112_P

Bridge File No.: 09411-1		Highway: 889-01
Date: January 12, 2022	Location: Manyberries	Katoum Creek
Pictures By: G. Roberts		



5. Channel alignment looking D/S



6. Looking D/S from inlet. Shape is good.


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Typical Culvert - Photographs and Sketches
BF09411-01_LVL1_20220112_P

Bridge File No.: 09411-1		Highway: 889-01
Date: January 12, 2022	Location: Manyberries	Katoum Creek
Pictures By: G. Roberts		



7. Looking US from outlet.

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Estimating Quantities

- Inspectors are to record actual or estimated quantities for recommended repairs and maintenance
- Record in Maintenance Inspector Comments (expandable). Use separate sheet only if necessary
- Use pre-prepared **Maintenance Work Types** (Table 11.1). Avoid "Other Action" – use only as last resort when prepared work types are not suitable
- Examples:
 - **PLACE ADDITIONAL RIPRAP** - 3m³ Class 1 rock at D/S end
 - **PATCH DECK** - 5 timber stripdeck planks, each 75x300x 3 m long

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Inspection Check

- Inspector should do the following checks before leaving the site:
 - all ratings have been entered
 - element condition ratings entered
 - General Rating entered
 - Estimated Replacement Year
 - condition ratings consistent with BIM manual

- 4 ratings are supported by
 - Comment
 - photo
- 3 or less ratings supported by
 - comment
 - photo
 - recommendation for maintenance, monitoring, other appropriate action
- inventory information verified or changed
- maintenance recommendations are appropriate and supported with material dimensions and quantities.
- only approved abbreviations used

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Inspection Checks

- Additional follow-up:
 - Low Rating Notifications sent to Regional Bridge Manager and Bridge Preservation Specialist within **48 hours** of inspection.
 - Photos with descriptive text mounted in a template are to be included with all notifications.
 - If structure on a local road, then notification sent to LRA only.
 - Answer questions raised during the inspection
 - Review previous inspection history in BIS
 - Review standard or site-specific drawings
 - Review for appropriate maintenance, monitoring and timing
 - Load restrictions and other signing
 - Prepare photos in standard format with descriptive comments

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Bridge Maintenance Recommendations

- Use **ONLY** pre-prepared Work Type recommendations selected from Table 11.1
- Use "Other Action" only if pre-prepared maintenance Work Type item is not suitable
- Record "Recommended Year" based on priority levels associated with ratings
- Provide specific comments, material sizes and quantities in "Inspector Comments" area

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Culvert Maintenance Recommendations

- Use **ONLY** pre-prepared Work Type recommendations selected from Table 11.1
- Use "Other Action" only if pre-prepared maintenance Work Type item is not suitable
- Record "Recommended Year" based on priority levels associated with ratings
- Provide specific comments, material sizes and quantities in "Inspector Comments" area

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Table 11.1 – Maintenance Work Types

LEVEL 1 INSPECTION	CORE TIMBER CAPS/CORBELS
CONCRETE DECK INSPECTION	REPAIR/REPLACE TIMBER CAPS
CONCRETE GIRDER INSPECTION	REPAIR ABUTMENT SCOUR/EROSION
VERTICAL CLEARANCE MEASUREMENT	PLACE ADDITIONAL RIP RAP
CHLORIDE TESTING	REMOVE DRIFT ACCUMULATION
COPPER SULPHATE ELECTRODE TESTING	INSTALL CATHODIC PROTECTION
PAINT INSPECTION	INSTALL CONCRETE/STEEL LINING
STEEL CULVERT BARREL MEASUREMENT	INSTALL STRUTS
SPECIAL STRUCTURE MONITOR	INSTALL CONCRETE COLLAR/CUTOFF
ULTRASONIC TRUSS INSPECTION	REPAIR SEAMS
SCOUR SURVEY INSPECTION	OBTAIN CORROSION ANALYSIS DATA
REPAIR/REPLACE BRIDGERAIL	REPAIR/REPLACE SIGNING
GALVANIZE/PAINT BRIDGERAIL	PATCH/REPAIR ACCESS PLATFORM
RETROFIT BRIDGERAIL	ADJUST/PAINT PEDESTAL BEARING AREA
SEAL CURBS	OTHER ACTION
PATCH DECK	REPAIR/REPLACE TIMBER CORBELS
SEAL DECK	REPAIR/REPLACE TIMBER PILES
OVERLAY DECK	LOAD POST BRIDGE
REPAIR/REPLACE DECK JOINTS	REPLACE MEMBERS
REPLACE STRIP DECK	STRAIGHTEN MEMBERS
REPLACE SUB DECK	REPAIR MEMBERS
RESET/PAINT BEARINGS	INSTALL BOLTS
REPAINT SUPERSTRUCTURE	REPAIR BEARINGS
STRAIGHTEN/REPLACE MEMBERS	CRACK REPAIRS/TREATMENT
WASHING	PATCH CURBS/PARPETS
FILL BOLT HOLES	REPAIR STRUTS
SHOTCRETE REPAIRS	REPLACE CULVERT

Table 11.1 – Maintenance work types



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Level II Inspections

- Detailed inspection requiring specialized equipment and/or expertise
- Gathers specific measurements or observations
- Recommended by Level I inspectors
- Reviewed and approved by Bridge Manager or LRA
- Do not proceed until Bridge Manager or LRA has been contacted regarding:
 - technical need
 - funding



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Timber Coring

- Recommended when there is suspicion of rot in structural timber
- Conducted by Class A inspector
- Focus normally on critical structural elements:
 - caps
 - piles
 - stringers



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Level 2 - Culvert Barrel Measurement

- Recommended when critical barrel elements rated 3 or less and safety concerns identified
 - roof rating
 - sidewall rating
 - longitudinal seam rating
- Recommended when two consecutive inspections completed without access to barrel section
 - or
 - schedule Level I inspection during low flow or winter conditions
- Some culverts barrels are inaccessible year round



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Estimated Replacement Year Standard Bridges (Table 11.2)

LIFE EXPECTANCY TABLE FOR STANDARD SPAN TYPE BRIDGES			
TYPE	LIFE EXPECTANCY (YEARS)		
	Low	Average	High
Untreated Timber (UT)	10	15	20
Treated Timber (TT)	35	40	45
Prestressed – Composite (SCC,SMC,SCM,SLC)	55	60	70
Prestressed (SC, SM, SL, SLW, VS)**	40	45	60*
Precast (HC, VH, HH, PG, GR, MM, PES, PE, PEF)**	30	35	50
Precast (PA) & Other (PX)	25	30	45

* Use maximum of 50 years for timber substructure
 ** Add five years if overlaid with concrete

Considerations:

- Traffic characteristics – volume, amount of truck traffic, log haul
- Salt usage – road surfacing, traffic, climatic conditions
- Deck drainage, leakage
- Favourable decay conditions

Table 11.2 – Life expectancy table for standard span type bridges

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Estimated Replacement Year Culverts (Table 13.4)

LIFE EXPECTANCY TABLE FOR CULVERTS			
TYPE	LIFE EXPECTANCY (YEARS)		
	Low	Average	High
Concrete	40	60	80
Corrugated Steel	25	45	60
Timber and Others	20	35	60

Considerations:

- Deformation and cracking (quality installation)
- Corrosive or chemically aggressive environment
- Abrasive bed load
- Favorable decay conditions, preservative treatment

Table 13.4 – Life expectancy table for culverts

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Special Comments

Maintenance Recommendations						
Work Type	Status	Rec. Type	Target Year	Inspector Comments	Department Comments	
PLACE ADDITIONAL RIP RAP	PRIORITY	REQUIRED	2018	Maint. Rec'd not no longer an issue		
INSTALL CONCRETE/STEEL LINING	PRIORITY	REQUIRED	2023	Assess for hydraulic adequacy of liner. High priority.		
OTHER ACTION	PRIORITY	REQUIRED	2018	Maint. Rec'd not no longer an issue		
OTHER ACTION	PRIORITY	REQUIRED	2023	Raise grade of road and extend and add steel flt curb edge.		
NEW			2023	Inspect regularly until resolved		
Structural Condition Rating (Last/Now)	33.922.2	Sufficiency Rating (Last/Now)	104.038.5	Ext. Rept. Yr	2023	Maint. Rept. (Y/N)
Special Comments for Next Inspection	Consider replacement over repairs due to wear from steel condition. Low rating notification sent to county on July 22. Inspect annually until repaired/replaced. May require repair over steel for pipe foundation works.					
Previous Inspector's Name	Chris Sauter	Previous Assessor's Name		PLUCK BOUNDARY: UNARMED; RISK ZONE: WHITE		
Next Inspection Date	04-Apr-2027	Previous Inspection Date	25-Oct-2017			
Inspection Cycle (Default) (months)	12					
Comment						

- Special comments useful for next inspector/inspection
 - Notice to BM or LRA of low structural ratings (Low Rating Notification)
 - Measurements for monitoring purposes and Monitoring locations
 - Recommendation for reduced cycle
 - Draw attention to site hazard (e.g. "steep un-stable slope under A1")
 - Data is not sortable

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Supporting Information

Structural Condition Rating (Last/Now)	55.655.6	Sufficiency Rating (Last/Now)	82.649.4	Ext. Rept. Yr	2020	Maint. Rept. (Y/N)	Yes
Special Comments for Next Inspection	Abut seats require cleaning / washing to allow full inspection of abuts and bearings.						
Previous Inspector's Name	Clary Roberts	Previous Assessor's Name	Jim Davies				
Next Inspection Date	20-Mar-2018	Previous Inspection Date	11-Sep-2014				
Inspection Cycle (Default) (months)	21						
Comment							

- Input from systems data base (SCR, Sufficiency, Previous Inspectors)
- Inspection Cycle shown is normally default but may be reduced
- Reduction to inspection cycle cannot be done by inspector – only recommended by inspector
- Reduced Cycle approved and set by Department

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