

BIM INSPECTION FORMS



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Bridge Types

There are 2 Types of Bridge Inspectors – Class B and Class A

- Class B inspectors can only inspect Standard Bridges, Culverts and WCTS
- Class A Inspectors can inspect Major & Standard Bridges, Culverts, Signs, & WCTS

Definition of a Standard Bridge - Bridges that are built using standard components and Standard Drawings (exception is standard girder bridges with composite decks – SMC, SCC, SLC – which are considered as major bridges)

Definition of a Major Bridge – Bridges that are not built with Standard Drawings

For a listing of all current and archived drawings refer to:

<https://www.alberta.ca/bridges-and-structures-standard-and-typical-detail-drawings.aspx>

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Inspection Form Types

- Each form has a unique form identification
- 10 different inspection report forms for bridges with a single-span type
- 3 different inspection report forms for culverts
- Custom forms generated to suit bridges with multiple form types are unlimited.

FORM TYPE	DESCRIPTION	SPAN TYPE
TH	Through Trusses	TH
PT	Pony Truss	PT
SG	Roller Beams	RB RC
	Riveted Plate Girders	RG
	Welded Girders	WG
	Steel Rigid Frames	FR
SS	Other Trusses & Arches	SSB SSA SSS SSF SSC
DF	Deck Trusses	DT
TF	All Truss Bridges	TT CT ST TP
PCS	Standard Precast Bridges	HR HC VH PG GR PE PA PJ MM HCO PGO PNO PAL PLS PEP VS SM SMO SJC SCC SMO VSO SCM SL SLW SLV SLX
	Standard Prestress Bridges	
PSR	Regular Prestress Bridge	RSO TO VP PMS PPS OBT PQ PG PMO OML LF FM RM RJ RJJ CBT
	Concrete Flat Slab Bridges	CS
CON	All Cast in Place Concrete Bridge	CA CB CF CV CX CC CXP
	Concrete Tee Girder Bridges	CT
CUL1	Single Culverts	RP SP FP RP WP CP BP AP BPR
CULM	Multiple Culverts	RPB CPA CPE CPE
CULE	Culverts extended with different material and/or size	PCB RPA RPE RPP MPB SCA SCR
SGN	Sign Structures	Z
THFT	Through Trusses with Timber Approaches	
THPCS	Through Trusses with Standard Precast Approaches	
THPSR	Through Trusses with Regular Prestress Approaches	
THSG	Through Trusses with Steel Girder Approaches	
PTPT	Through Trusses with Pony Truss Approaches	
PTTT	Pony Trusses with Timber Approaches	
PTPCS	Pony Trusses with Standard Precast Approaches	
SGTT	Steel Beams with Timber Approaches	
SGPCS	Steel Beams with Standard Precast Approaches	
PSRPCS	Regular Prestress with Standard Precast Approaches	
SSSG	Special Steel with Steel Girder Approaches	
DTSG	Deck Truss with Steel Girder Approaches	

Table 1.1 - BIM report index



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Form Verification

- How do you know what the form ID is?
 - Look at the form itself.
- How do you know what span type it is?
 - Look at the form itself.
- What if the form ID or span type do not make sense?
 - Look at resource material to match up the actual in-field structure with drawings.
 - If still in doubt ask a senior inspector or AT representative.



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Sections of Standard Bridge & Culvert Forms

Form Section	Bridge	Culvert
Inventory	Similar	Similar
Signing	Bridges Only	N/A
Utility	Identical	Identical
Approach	Similar	Similar
Superstructure	Bridges Only	N/A
Inlet	N/A	Same as Outlet
Barrel	N/A	Culverts Only
Outlet	N/A	Same as Inlet
Substructure	Bridges Only	N/A
Channel or Grade Separation	Similar	Similar
Maintenance	Similar	Similar
AT Management	Identical	Identical

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Inventory (Similar)

Bridges

Bridge Inspection		Form Type	
Bridge File Number	0568 - 2 Bridge	Form Type	PCB
Year Built/Year Repaired	2004/2004	Lot No.	
Bridge or Town Name	DOG POUND	Inspector Name	Colin Roberts
Located Over	DOG POUND CREEK, 3 99.8, WATERCROSS ST	Inspector Class	A
Located On	LOCAL ROAD	Assistant Name	
Water Body CI/Year		Assistant Class	
Navigable CI/Year		Inspection Date	(Mar Ch. 9/2)
Legal Land Location	NW SEC 18 TWP 29 R1E 3 W04	Arrive Time	12:05
Longitude, Latitude	-112.245, 51.28 16	Depart Time	13:35
Road Authority	MOUNTAIN VIEW COUNTY	Data Entry By	Dianna
Contract Main Area	UNDEFINED CMA	Data Entry Date	01/24/21
Clear Roadway/Shoulder	8.37	Review Name	Mark 12/21
Clear Roadway/Shoulder	8.37	Review Date	
ADOT/Year	38 (2015) (E) (2017)	Dept. Reviewer Name	
Road Classification	RL3-206-100	Dept. Reviewer Date	
Detour Length (m)	3	Follow-Up By	
Allowable Load (t)	Single CS128 Semi CS249 Train CS362		
Design Loading	CS70		

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Culverts

Bridge Culvert Inspection		Form Type	
Bridge File Number	7076 - 1 Bridge Culvert	Form Type	CA 1
Year Built	1953	Lot No.	
Bridge or Town Name	THREES HILLS	Inspector Name	C. Roberts
Located Over	TRIBUTARY TO THREES HILLS CREEK, S SEC 14 WATERCROSS ST	Inspector Class	A
Located On	LOCAL ROAD	Assistant Name	
Water Body CI/Year		Assistant Class	
Navigable CI/Year		Inspection Date	01/21/21
Legal Land Location	SW SEC 25 TWP 32 R1E 25 W04	Arrive Time	5:15 PM
Longitude, Latitude	-112.0545, 51.4811	Depart Time	6:30 PM
Road Authority	KNEEHILL COUNTY	Data Entry By	
Contract Main Area	UNDEFINED CMA	Data Entry Date	
Clear Roadway/Shoulder	18.1 (20 Aug. 2017)	Review Name	
ADOT/Year	200 (2017) (E)	Review Date	
Road Classification	RL3-206-100	Dept. Reviewer Name	
Detour Length (m)	3	Dept. Reviewer Date	
Follow-Up By			

Bridge Culvert Information						
Number of Culverts	1					
Pipe #	Barrel	Span	Rise (or Dia.)	Type	Length	Corr. Profile
1	MAIN	2073	2007	RPP	26.2	152X51
						4.0
						PIPE ARCH
Special Features	VERT TIMBER STRUCTURE					
Special Features Comment						

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Signage (Displayed on Bridges Only)

- Includes Posted Loading, Hazard Markers, Other Sign Types

Posting Information						
Required Load Posting (t)	Single	Semi	Truck Train			
Posted Loading (t)	Single 10.0	Semi 10.0	Truck Train 10.0			
Posted:	Lane	At Junction (Y/N)	In Advance (Y/N)	No	At Bridge (Y/N)	No
Posted:	Lane	At Junction (Y/N)	In Advance (Y/N)	No	At Bridge (Y/N)	No
Remarks	Signs are leaning at W junction & E side of bridge.					
Hazard Marker At Bridge (Y/N)	Yes					
Remarks						
Other Sign Types	Bump signs in advance; Max 50km/h is posted at E					

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Utility Section (Identical)

Bridges

Utilities (Located at)			
Utility Attachments	TELEPHONE UTILITIES		
Telephone	Fibre optics East ROW.	Gas	50m South.
Power	Over A2 and East ROW.	Municipal	
Others	Conduit along E girder & corroding in several spots at Sp3, Sp4.	Problem (Y/N)	Yes
Remarks	Light standard at West curb. Loose cables at old light standard. Lower conduit separated & drooping.		

Culverts

Utilities (Located at)			
Utility Attachments			
Telephone	In area	Gas	In area
Power	North row and loose in barrel.	Municipal	Storm drain at NE
Others	Street lights	Problem (Y/N)	Yes No
Remarks	Power cable from SW streetlight laying loose on West sidewalk supports.		

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Differences between Precast Girder and TT Stringer Superstructures

- PCS has separate rating boxes for both Deck Top and Wear Surface. Combined on TT form
- Adds "Plank Width" to TT Form
- Adds "Lateral Connection Problem Y/N" to PCS Form
- Deck Joints added to PCS Form
- Deck Drainage rated on PCS form only (rated "X" for TT decks)
- Curb component PCS vs Wheelguard component TT Form
- "Girders" on PCS vs "Timber Stringers" on TT Form

The remainder of the form is the same.

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Superstructure (Bridges Only) Precast Girders

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Superstructure (Bridges Only) Treated Timber Stringers

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Substructure (Bridges Only)

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Culvert Inlet (U/S) and Outlet (D/S) (Identical)

Culvert Component	Downstream End		Explanation of Condition
	Last	Now	
Direction	E		
End Treatment (Concrete, Steel, Others, None)		STEEL ✓	
Headwall	X	X	
Collar	X	X	
Wingwalls (Shape :)	X	X	
Cutoff Wall	X	X	
Bevel End	5	6	
Heaving (mm)		70	
Invert Above/Below Stream Bed		BELOW ✓	
Above/Below (mm)		200	
Scour Protection (Type : RIP RALP)	6	6	
(Avg. Rock Size(mm) : 200)			
Scour/Erosion	6	6	Scour hole 10m D/S. not affecting pipe
Beavers (Y/N)	No		
Downstream End General Rating	5	6	

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Culvert Barrel

Culvert Component		Last	Now	Explanation of Condition
Direction	E			
End Treatment (Concrete, Steel, Others, None)		STEEL ✓		
Headwall	X	X		
Collar	X	X		
Wingwalls (Shape :)	X	X		
Cutoff Wall	X	X		
Bevel End	5	6		
Heaving (mm)		70		
Invert Above/Below Stream Bed		BELOW ✓		
Above/Below (mm)		200		
Scour Protection (Type : RIP RALP)	6	6		
(Avg. Rock Size(mm) : 200)				
Scour/Erosion	6	6	Scour hole 10m D/S. not affecting pipe	
Beavers (Y/N)	No			
Downstream End General Rating	5	6		

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Culvert Channel Section

Channel (U/S and D/S)	Structure Usage		Explanation of Condition
	Last	Now	
Alignment	6	6	
Bank Stability	7	5	Active erosion, outlet end, bank slump, 3m ² Potential erosion, inlet end, bare fill slope, 6m ² , intact silt fence protecting stream
HWM (m below Top of Culvert)			No HWM visible
Drift (Y/N)	No		
Channel Bottom Degrading/Aggrading	Degrading		
Beavers (Y/N)	No		
(Fish Compensation Measure 1 : NONE)			
(Fish Compensation Measure 2 : NONE)			
Channel General Rating		6	

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Bridge Channel Section

Channel (U/S and D/S)	Structure Usage		Explanation of Condition
	Last	Now	
Alignment	7	7	
Bank Stability	6	4	Active erosion at SW bank of inlet and SW slump. Potential erosion from bare slope at NW inlet. 10m ² (12-Apr-2009) No visible HWM.
HWM (m below Top of Curb)	2.5		
Drift (Y/N)	No		
Slope Protection	6	6	
(Type : NATURAL, NATURAL)			
Guidebank/Spurs	X	X	
Adequacy of Opening	7	7	
(Fish Compensation Measure 1 : NONE)			
(Fish Compensation Measure 2 : NONE)			
Channel General Rating	6	4	

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Bridge and Culvert Channel Section

- Record and/or confirm U/S & D/S directions
- Note if there is active or potential erosion (no evidence of soil movement, but exposed earth on fill slopes or in ditches leading to stream) in the vicinity of the crossing.
- Note source of the erosion (ditch gully, bank slump, fill slope, road surface, other) and indicate if occurring at the inlet, outlet or both.
- Note any intact erosion control or established vegetation between the erosion area and the stream
- Note the size of the erosion area (m2).
- Refer to Chapter 9 (Bridges) and Section 13.7 (Culverts) for additional information.



Maintenance (Similar)

Bridges

Culverts

AT Management Section (Identical)



Maintenance Work Types

LEVEL 1 INSPECTION	CORE TIMBER CAPS/CORBELS
CONCRETE DECK INSPECTION	REPAIR/REPLACE TIMBER CAPS
CONCRETE GIRDER INSPECTION	REPAIR/REPLACE 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
REPAIR SUPERSTRUCTURE	REPAIR BEARINGS
STRAIGHTEN/REPLACE MEMBERS	CRACK REPAIRS/TREATMENT
WASHING	PATCH CURBS/PARAPETS
FILL BOLT HOLES	REPAIR STRUTS
SHOTCRETE REPAIRS	REPLACE CULVERT

Table 11.1 – Maintenance work types



Culvert Inspection Form Types

- Culvert form types:
 - **CUL1** Form
 - single culverts of all types
 - single culvert extended with same size and material type
 - one barrel section
 - therefore - 1 inlet, 1 barrel and 1 outlet
 - **CULM** Form
 - multiple pipes or cells
 - two cell concrete box extended with steel
 - two or more-barrel sections
 - therefore - multiple inlets, multiple barrels & multiple outlets
 - **CULE** Form
 - single culvert extended with different material or pipe size
 - two or more-barrel sections
 - therefore – 1 inlet, multiple barrels and 1 outlet
 - Custom Forms to suit number & types of barrel sections.



Form Features

- Tailored to the span type or types of the particular structure.
- Contain full descriptions and full comments, no codes are required.
- Shows inventory data needed for a proper inspection.
- Provides the design and allowable loads and critical member.
- Allows for condition rating of elements and explanation.

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Form Features

- Allows for general rating of each major category.
- Provides a list of typical maintenance items.
- Provides for special comments or instructions for the next inspection.
- Provides for programming, scheduling, cost estimation, authorization and tracking of maintenance.
- Repeats previous inspection data for inspector's information.

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Form Features

- Provides sufficiency rating and structural condition ratings based on inspection data.
- Clearly indicates if a bridge element is not accessible or not applicable.
- A logical sequence to facilitate the inspection process.
- Provides for 2 levels of inspection.

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Data Fields

- Shaded Fields
 - Element and data labels
 - Inventory Information (confirm, revise, or add if missing)
 - Element descriptions (type, size, etc.)
- Unshaded Fields
 - Element ratings
 - Inspection measurements
 - Explanations of condition

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The screenshot shows a detailed bridge inspection form with multiple sections. Key sections include:

- Bridge Component:** Includes fields for element name, span number, and description.
- Inventory Information:** Fields for element type, size, and material.
- Inspection Data:** Fields for condition ratings (e.g., 0, 1, 2, 3, 4, 5) and sufficiency ratings.
- Measurements:** Fields for various measurements like depth, width, and height.
- Comments:** A large text area for providing explanations of condition.
- Other Data:** Fields for date, inspector name, and other project details.

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BIM System Fills In Shaded Area Inspector Confirms, Corrects, or Adds

Bridge Inspection	
Bridge File Number	
Year Built	
Bridge or Town Name	
Located Over	
Located On	
Water Body Cl./Year	
Navigabil. Cl./Year	
Legal Land Location	
Longitude, Latitude	Future
Road Authority	
Contract Main Area	
Clear Roadway/Skew	
AADT/Year	
Road Classification	
Detour Length (km)	

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Hi-Lited Section to be Filled in by Inspector

Bridge Inspection			
Bridge File Number	81800 NW-1 Bridge	Form Type	CON
Year Built/Year	1993/1993	Lot No.	2
Slip/yr		Inspector Name	Garry Roberts
Bridge or Town Name	CALGARY BEDD	Inspector Class	BR CLS A
Located Over	2-15 R1 42.207/2-15 L1 42.314	Assistant Name	Jon Davies
Located On	772:01 R1 0.886	Assistant Class	BR CLS B
Water Body Cl./Year		Inspection Date	11-Sep-2014
Navigabil. Cl./Year		Arrive Time	11:20
Legal Land Location	SE SEC 15 TWP 25 RGE 1 W5M	Depart Time	13:15
Longitude, Latitude	-114.02:54, 51:07:34	Data Entry By	Nancy Remus-Eventt
Road Authority	Alberta Transportation (AIT)	Data Entry Date	29-Sep-2014
Contract Main Area	DEERFOOT/STONE	Reviewer Name	Ash Morjaria
Clear Roadway/Skew	12.2 / 5 deg. (RWF)	Review Date	18-Sep-2014
AADT/Year	22,309 / 2001 (E)	Dept. Reviewer Name	Tim Davies
Road Classification	RLU-208-100	Dept. Review Date	03-Oct-2014
Detour Length (km)	999	Follow-Up By	

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Lot Number

- 1 = Major maintenance, Assessments, Critical elements rated 3 or less, Level 2 Inspection or reduced cycle.
- 2 = Minor or routine maintenance
- 3 = All structures not managed by AT (LRA, Irrigation Districts, Towns)
- 4 = No action or Monitoring
- Lot number is assigned by Reviewer
- Certification status of inspector checked by system.

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Example of Y/N Field

Floor		7	7
Bridge (mm)	0		
Measured At Ring No.			
Abutment (Y/N)	No		
Circumferential Seams		8	8
Separation (mm)	60		
Longitudinal Seams		X	X
Total No. of Cracked Rings			
Total No. of Rings with Two Cracked Seams			
Min. Remaining Steel Between Cracks (mm)			
Project Loc (Y/N)			
Longitudinal Spacing (Y/N)			
Coating		7	7
Corrosion By Soil (Y/N)	No		
Corrosion By Water (Y/N)	No		
Camber POSITIVE/NEG	ZERO		
Fondle (Y/N)	No		

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Bridge Culvert Barrel			
Culvert Component	Last	Now	Explanation of Condition
(Ring # 1, Primary Span, Location Code: MAIN, Span (mm) ... (Row Item) 3000, Type: W/P)			
Fish Passage Adequacy	7	7	
Barrel	X	X	
(Type)			
Minimum Adequacy	7	7	Approx. 1.1m deep silt at first 3m of pipe.
Silt (Y/N)	No		
SPM (Y/N)	Yes		
Cracks (Y/N)	No		
Barrel General Rating	8	8	

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Example of Y/N Supporting Comments Required

	Structure Usage		Explanation of Condition
	Last	Now	
Channel (U/S and D/S)			
Alignment	5	5	
Bank Stability	5	5	
HWM (m below Top of Culvert)			(High water is 2m above streambed @ outlet.) No visible HWM.
Drift (Y/N)	Yes		Drift on floor of R1-R3
Channel Bottom Degradation/Aggrading	DEGRADING		At D/S only
Beavers (Y/N)	Yes		Beavers at both U/S and D/S
(Fish Compensation Measure 1 - NONE)			
(Fish Compensation Measure 2 - NONE)			
Channel General Rating	5	5	

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Example of Filling in Data Fields and Detailed Rating Boxes – Superstructure

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Example of Filling in Data Fields and Detailed Rating Boxes – Substructure

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Detail Ratings

Superstructure:

- Wearing surface/deck top
- TT stringers and PCS girders

Substructure:

- Timber caps
- Timber piles

- Provided when ratings are 3, 2, 1, and N
- Record 0 in Detailed Rating boxes if element is rated 4 or more.
- Some Detailed Ratings boxes require % of total area (i.e. Wear Surface/Deck Top)
- Some Detailed Ratings boxes require "Count" of total numbers (i.e. Caps, Piles)

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