

# BIM INSPECTION FORMS



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

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

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 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:  
<http://www.transportation.alberta.ca/4738.htm>



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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.



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Chapter 1 - Bridge Inspection And Maintenance System

March 3, 2008

FORM TYPE	DESCRIPTION	SPAN TYPE
TH	Through Trusses	TH
PT	Pony Truss	PT
SG	Rolled Beams	RB RC
	Riveted Plate Girders	RG
	Welded Girders	WG
SS	Steel Rigid Frames	FR
	Other Trusses & Arches	SS SSB SSA SSS SSF SSC
DT	Deck Trusses	DT
TT	All Timber Bridges	TT UT XT TP
PCS	Standard Precast Bridges (Except Which Are Major)	HH HC VH PG GR PE PA PS MM HCO PGO HHO PX PES PEF VS SM SMCSC SCC SMO YSD SCM SS SLC
		RD FC VF FM VM PB DBT PQ PD PMD OM LF FM RM PJ NU CBT DBC CBC FCO FAD
PSR	Regular Prestress Bridge	CA CB CF CV CX CC CXP CT CS
CON	All Cast in Place Concrete Bridge Concrete Tee Girder Bridges Concrete Flat Slab Bridges	RP SP FP MP WP CP BP AP BPR RPB CPA CPE SFE PCB RPA RPE RPP MPB SCA SCR SSP CPP SPP SRA MPE
CUL1	Single Culverts	
CULM	Multiple Culverts	
CULE	Culverts extended with different material and/or size	
SIGN	Sign Structures	Z
THTT	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	
THPT	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 on form itself.
- How do you know what span type it is?
  - Look on 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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FORM SECTIONS



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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 Identical	Similar Identical
Maintenance	Similar	Similar
AT Management	Identical	Identical



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Inventory (Similar)

- Bridges

- Culverts



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Signing (Bridges Only)

- Bridges Only

Posting Information					
Required Load Posting (t)	Single	Semi	Truck Train	Truck Train	Truck Train
Posted Loading (t)	Single	10.0	Semi	10.0	Truck Train
Posted: Lane	SP	NB	At Junction (Y/N)	Yes	In Advance (Y/N)
Posted: Lane	SB	EB	At Junction (Y/N)	Yes	In Advance (Y/N)
Remarks	Signs are leaning at W junction & E side of bridge.				
Hazard Marker At Bridge (Y/N)	Yes				
Other Sign Types	Bump signs in advance, Max 50km/h				



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# Utility Section (Identical)

Utilities (Located at)			
Utility Attachments	TELEPHONE UTILITIES-PHONE LINE		
Telephone	South curb and ROW.	Gas	
Power	North ROW.	Municipal	
Others		Problem (Y/N)	No
Remarks			



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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
- 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, STEEL, Others, None)			
Headwall	X	X	
Collar	X	X	
Wingwalls	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 RAP)	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



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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 <sup>2</sup> Potential erosion, inlet end, bare fill slope, 6m <sup>2</sup> , intact silt fence protecting stream
IHW (m below Top of Culvert)			No IHW 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

Structure Usage		
Last	Now	Explanation of Condition
Channel		
Curb Direction: N		R x R crossing 50m DLS.
UDS Direction: S		
Alignment	7	7
Bank Stability	6	4 Active erosion at SW bank of inlet and SW change. Total erosion from both slopes at SW inlet. Note (12-Apr-2009) No visible HMM.
HMM (in below Top of Curb)	2.5	
Drift (Y/N)	No	
Drain Protection	6	6
Type	NATURAL	NATURAL
Substrate/Clapnet	X	X
Adequacy of Opening	7	7
(Fish Compartment Measure 1)	NONE	
(Fish Compartment Measure 2)	NONE	
Channel General Rating	6	4



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## Bridge and Culvert Channel Section

- Refer to 2017 BIM Bulletin 5 regarding Erosion and Sedimentation of Channel Banks
- 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).
- Bank stability still rated Section 9.2 or Section 13.7.2 of the BIM Inspection Manual.



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## Maintenance (Similar)

- Bridges

Maintenance Recommendations						
Completed Work	Work Type	Status	Rate	Target	Inspector Comments	Department Comments
	CONCRETE BRIDGE INSPECTION					
	PREPARED AND BRIDGE PAINT					
	BRIDGE CLEANING					
	PATCH BRIDGE					
	BRIDGE DECK					
	OVERLAY BRIDGE					
	REPAIR AND BRIDGE JOINTS					
	STRONG FLOOR AND JOINTS					
	PAINT					
	BRIDGE TIMBER CAPS					
	REPAIR AND BRIDGE JOINTS					
	BRIDGE JOINT ACCUMULATION					
	BRIDGE JOINT ACCUMULATION					
	INSTALL BRIDGE					

- Culverts

Maintenance Recommendations						
Completed Work	Work Type	Status	Rate	Target	Inspector Comments	Department Comments
	PLACE ADDITIONAL RIP RAP					
	REMOVE DRIFT ACCUMULATION					



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## AT Management Section (Identical)

Structural Condition Rating (Last/Now)	SE 8.15.6	Sufficiency Rating (Last/Now)	SE 8.16.4	Est. Resp. Yr.	2030	Mark. Resp. (Y/N)	Yes
Special Comments for Next Inspection	About assets require cleaning / meeting to allow for inspection of abutts and bearings. Department Comments						
Previous Inspector's Name	Chris Roberts	Previous Assessor's Name	Jim Chapp				
Next Inspection Date	20-Mar-2018	Previous Inspection Date	11-Sep-2014				
Inspection Cycle (Default: monthly)	21						
Comment							



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## 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.

## 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.
- Provides for 2 levels of inspection.

## 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.

## 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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## 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
Slipoff		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 WSM	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. (RHF)	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, or reduced cycle
  - 2 = Minor or routine maintenance
  - 3 = All structures not managed by AT
  - 4 = No action or Monitoring
- Lot number is assigned by Reviewer
- Certification status of inspector checked by system.



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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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