Municipal Supplemental Worksheet - Sizing & Setting Bridges, Arches and Culverts

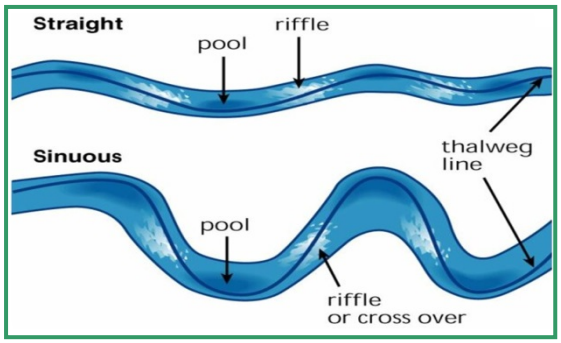
(All measurements in feet to the nearest 0.1 feet)

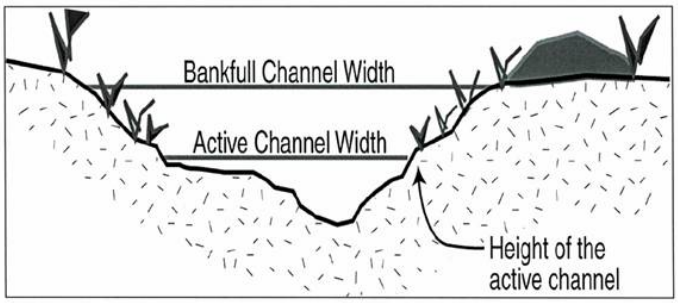
General Information			
Stream Name		**Road Name**	
Name of Applicant		**Date**	

Road Information			
Existing road width at culvert		**Proposed road width at culvert**	

Current Crossing Information		
Crossing type *Example: culvert (multiple, box or elliptical), arch, bridge:*		
Substrate in structure (circle all that apply): None Cobble Gravel Sand Organics Clay Bedrock Silt Mixture		
Structure Length :	**Structure Width :**	**Structure Height :**

Natural Stream Channel (Riffle) Information, typically found downstream of the culvert		
Water Depth:	**Bankfull Channel Width:**	**Active Channel Width:**
Dominant Substrate (circle all that apply)	Cobble Gravel Sand Organics Clay Bedrock Silt	





Identifying natural stream channel – beyond the influence of the culvert

Field Survey Data

Station	Rod Reading (Backsight)		Assigned Elevation		Height of Instrument (HI)	Location
Benchmark		+	100.00	=		

Survey Point	Distance from Centerline (feet)	Height of Instrument (HI) (*from above*)	-	Rod Reading (Foresight)	=	Elevation	+	Water Depth Rod Reading	=	Water Surface Elevation
Invert elevation (inlet)										
Invert elevation (outlet)										
Top of culvert (inlet)										
Top of culvert (outlet)										
Centerline over culvert										
Edge of pavement (inlet)										
Edge of pavement (outlet)										

Upstream Field Survey Data

Survey Point	Distance from Centerline (feet)	Height of Instrument (HI) (*from above*)	-	Rod Reading (Foresight)	=	Streambed Elevation	+	Water Depth Rod Reading	=	Water Surface Elevation
10 feet										
20 feet										
30 feet										
40 feet										
50 feet										
60 feet										
70 feet										
80 feet										
90 feet										
100 feet										
Attach more survey data, if necessary, to get measurements beyond the influence of the culvert										

Downstream Field Survey Data

Survey Point	Distance from Centerline (feet)	Height of Instrument (HI) (*from above*)	-	Rod Reading (Foresight)	=	Streambed Elevation	+	Water Depth Rod Reading	=	Water Surface Elevation
10 feet										
20 feet										
30 feet										
40 feet										
50 feet										
60 feet										
70 feet										
80 feet										
90 feet										
100 feet										
Attach more survey data, if necessary, to get measurements beyond the influence of the culvert (i.e., scour hole)										

Use stream and survey data recorded above to design a road-stream crossing that provides stream connectivity, reduces maintenance, increases safety and the longevity of the structure.

1. *The proposed structure should be as wide as bankfull width.*
2. *The crossing needs to be sized and set at an elevation so that water depths, widths, and velocities in the culvert match the natural stream channel.*
3. *The inlet and outlet invert elevations of the culvert need to be set below the natural stream bottom flow line elevation. The structure needs to be set flat for low gradient streams (less than 1% gradient).*

Summary			
Bankfull Width (feet):		**Proposed Structure Width (feet):**	
Proposed Invert Elevation Upstream (feet):		***Proposed Invert Elevation Downstream (feet):***	