12/19

Job No. J1S3414

Replaces Bridge No. N0318

Missouri Department of Transportation

Bridge Survey Location Request

Page 1 to be completed by District staff.

Bridge over: Tom Creek Route: U

County: Caldwell Section: 2 Township: 56N Range: 28W

Latitude: 39°41’5”N Longitude: 94°00’40”W

District Contact: Richard W. Orr Date: March 29, 2023

HIGH WATER ELEVATIONS AT PROPOSED BRIDGE SITE

Recorded high water elevations or elevation of high water marks

Extreme High Water (EHW) (Give date(s) of occurrence)		
Elevations and date(s) of same	Location	Source of information
825.31 (1957)	At Bridge	Bridge plans

Existing Bridge Overtopped ☐ Yes ☒No ☐Unknown	Existing Roadway Overtopped ☐ Yes ☒No ☐Unknown
	Approx. Overtopping Location(s):

LOCATION OF NEW BRIDGE

Replace in Existing Location	☒	Provide details of any proposed changes to profile grade below or as an attachment.
Relocation (near existing Structure)	☐	Provide details of proposed location and grade of the roadway across the floodplain, any proposed/potential channel changes or modifications, etc. below or as an attachment.
New Route	☐	
Other:	☐	

Additional Information: According to Maintenance Supervisor, Neither the bridge or roadway have been overtopped in recent memory. He did mention that the combination of the current structure’s width and location within a curve are a safety concern. Have also included current bridge inspection and Aerial view of the bridge.

Page 2 & subsequent pages to be completed by Bridge Division

Note: Proposed elevations, distances, etc. are based on the best available data at the time the form was completed. Actual field conditions or recently acquired data may require deviation from the proposed values. Please contact the Bridge Division with concerns regarding the proposed values or if large deviations from these values are required.

Note: The information below supplements the survey requirements noted in the EPG, please consult EPG 238 for additional surveying requirements.

Bridge Contact: Garrett Hager (573) 751-7411 Garrett.Hager@modot.mo.gov

Survey Type: **2D Survey**

Stream Crossing Survey Location Details (2D)

Item	Requirement	Standard Guidance		Specific Guidance	
LIDAR Data (EPG 238.3.36.3.5.1)	Elevation	5' min. Above Extreme High Water [on Overbanks Perpendicular (more or less) to Stream Flow]		Minimum Elevation =	840'
	Upstream & Downstream Distance	Contraction and Expansion Limits of Existing/Proposed Crossing		Use Upstream and Downstream Limits shown in Image and kmz files	
Streambed Profiles** (EPG 238.3.36.3.6)	Length	To limits of LIDAR data		Use Standard Guidance	
	Elevation Intervals	Within 500' of Crossing	Natural Stream 25'	Use Standard Guidance	
		Beyond 500' from Crossing	At Vertical and Horizontal Break Points (200' max.)	Use Standard Guidance (see EPG 238.3.36.3.6 if a significant slope change is encountered)	
Bathymetric Channel Sections	Location	At or near the locations shown in the image and kmz files.		Use Standard Guidance Location of sections may be moved to nearby locations that are transition points in width or slope of the channel. Additional sections may be added if more sections are needed to capture these transitions adequately.	
	Orientation	Perpendicular to channel		Use Standard Guidance	
	Terminal Point	Water Surface Elevation or Ordinary High Water Elevation Mark for dry or shallow streams (EPG 127.4.1.1) **Note: OHW Mark may be different at each section**.		See Bathymetric Channel Section Details Below	

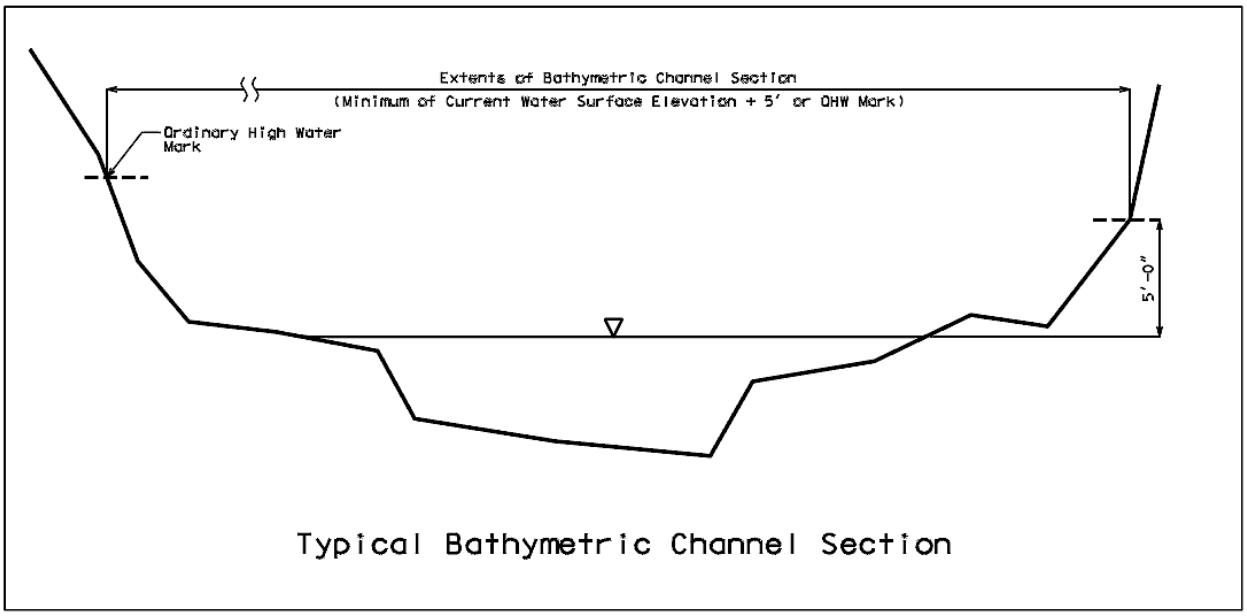
Item	Requirement	Standard Guidance		Specific Guidance
Water Surface Profile (EPG 238.3.36.3.7)	**Water Surface Profile Data Needed?** ☐ Yes ☒ No			
	Locations with flowing water	Drainage Ditch	100' and 200' each side of Crossing	Use Water Surface Profile Standard Guidance

Item	Requirement	Standard Guidance	Specific Guidance
Existing Bridge Data	**Existing Bridge Data Needed?** ☐ Yes ☒ No		
	Description	Provide General Description	N/A

Item	Requirement	Standard Guidance	Specific Guidance
Other Bridges (EPG 238.3.36.3.10)	**Other Bridge Data Needed?** ☐ Yes ☒ No		
	Description	Provide General Description	N/A

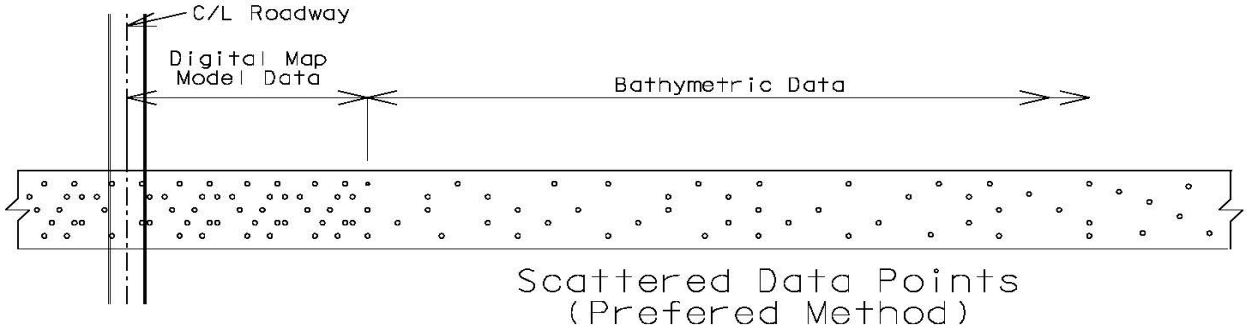
Bathymetric Channel Section Details:

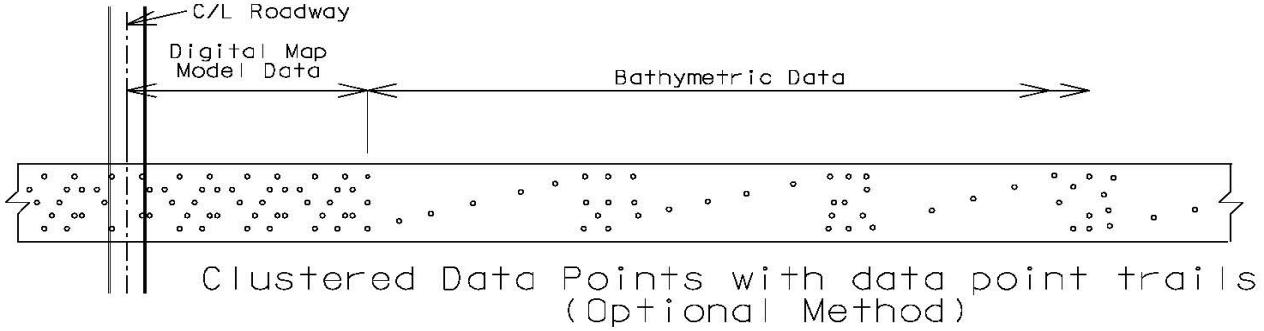
- **Dry or Shallow Streams** - Sections should extend to an elevation equal to:
  - Minimum of the current water surface plus 5',
  - or the Ordinary High Water mark (EPG 127.4.1.1.)
  - May be single row of field shots or cluster of shots near the section location.

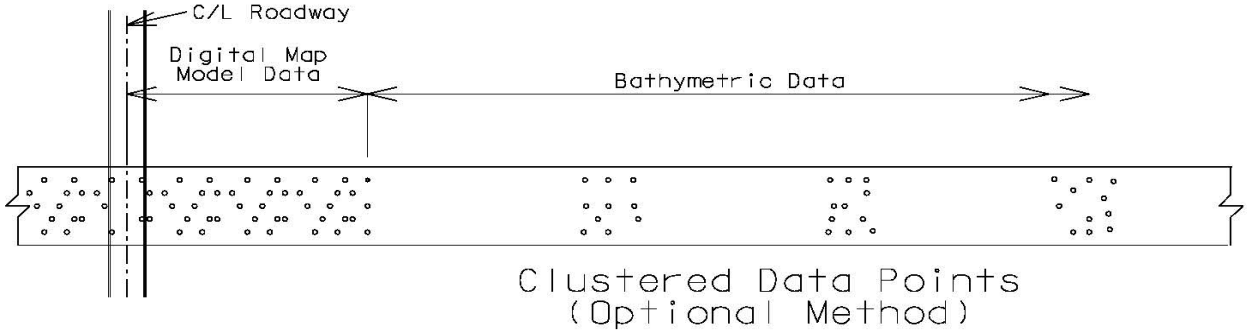


Typical Bathymetric Channel Section

- **Floatable Streams:**
  - Conventional Survey:
    - Sections should extend to an elevation equal to the current water surface elevation.
    - May be single row of field shots or cluster of shots near the section location.
  - Sonar Survey:
    - Data should extend as near to the current water surface elevation as feasible.
    - Example data collection methods are shown below:
      - Scattered data points for the full extent of the survey are preferred.
      - Data points concentrated at survey cross section locations are an acceptable alternative.







Example Sonar Data Collection Methods

Additional Information:

The streambed profile data and bathymetric channel section data should **not** be included in the terrain file. 3rd party LIDAR, MoDOT survey data (conventional or LIDAR) should be provided as separate terrain files.

Additional Documents Provided:

Image & kmz file showing LIDAR Data Limits and special channel section locations.

Details for Completion of Stream Crossing Bridge Survey				
Item	**Requirement**	**Standard Guidance**		**Specific Guidance**
Centerline and Offset (3 Line) Profiles (EPG 238.3.36.1.3 & EPG 747.2.3.4.1)	**Centerline and Offset (3-Line) Profiles Needed?** ☒ Yes ☐ No			
	C/L Profile	Terminal Point	Sufficiently Past End of Bridge	Use Standard 3-Line Profile Guidance
	Upstream Offset Profile	Terminal Point	Sufficiently Past End of Bridge	Use Standard 3-Line Profile Guidance
		Offset Distance	On Natural Ground	Estimated Distance = 60’
	Downstream Offset Profile	Terminal Point	Sufficiently Past End of Bridge	Use Standard 3-Line Profile Guidance
		Offset Distance	On Natural Ground	Estimated Distance = 40’
	Special			
Contracted Profile (EPG 747.2.3.4.2)	C/L Profile	Terminal Point of Grade Change		Use Standard Contracted Profile Guidance
	Note: • **Only the centerline profile is needed.** • **The full centerline profile may be included with 3-Line profile when practical, and the Contracted Profile Sheet eliminated.**			

Roadway Design Notes for Bridge Survey:

The Bridge Survey should include all the pertinent items listed in EPG 747 and the Bridge Survey Checklist except for the following:

- Valley Section sheets
- Channel Section sheets
- Water Surface Profile
- Other structures

A geo file will be needed for use in developing the bathymetric terrain in the hydraulic model.

Geo file requirements:

- The geo file should contain:
  - the streambed profile,
  - offset profiles
  - and Bathymetric Channel Section survey data
- In the GEO/HEC Converter spreadsheet the Bathymetric Channel Sections can be placed in either the Valley Section or Channel Section fields.
- If the stream bed profile is not provided, or does not extend to all the sections, use the coordinates and elevation of the low point of channel section as the coordinates and elevations to create a profile or extend the surveyed profile.

Bridge Design Notes:

FEMA Zone A, FIRM Panel 29025C0150B eff. 6/16/2015