Section 6: Bridge Inspector Requirements

Mark Wallace – TxDOT Bridge Division

What's all the hubbub over scour?

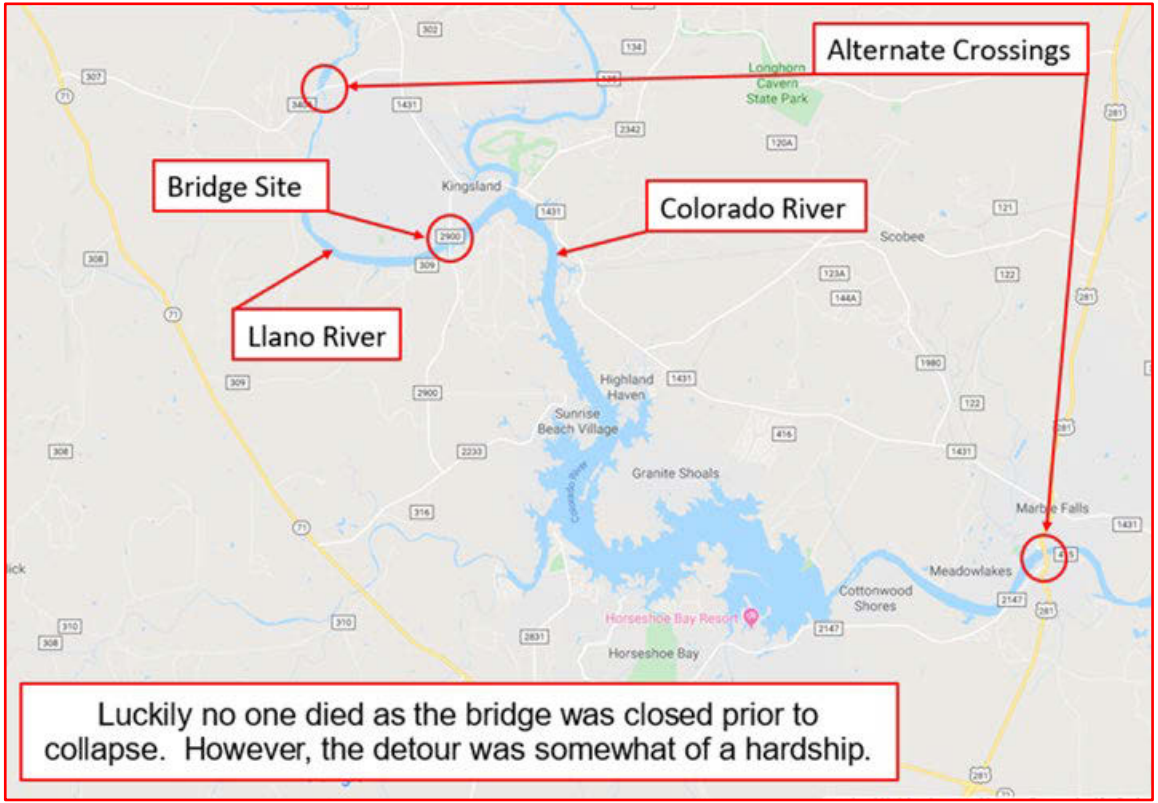
Scour on downstream side of approach due to an overtopping event.

High flow can cause VERY large drift accumulations. What has to happen at this bridge? (Hint – the amount of water passing this location will not change because of the drift!)

What's all the hubbub over scour?

Not the same bridge but the problem is the same. Smaller hydraulic opening due to drift accumulation, so water has to accelerate, increasing the likelihood of damaging scour.

What's all the hubbub over scour?



RM 2900 over the Llano River/Lake LBJ in Kingsland

Flooding in October of 2018 caused an approximate 40' rise in the water surface.

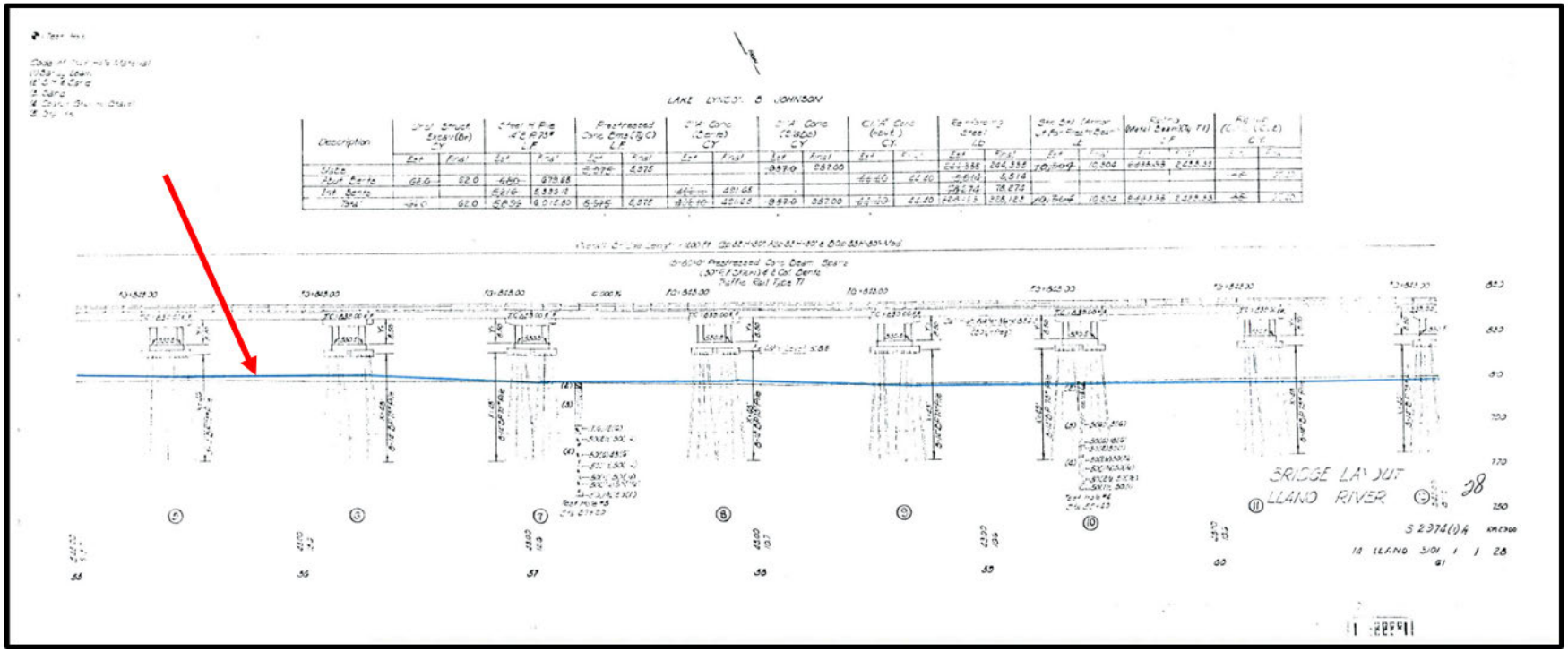
What's all the hubbub over scour?

RM 2900 in Kingsland

What is missing from this picture?!

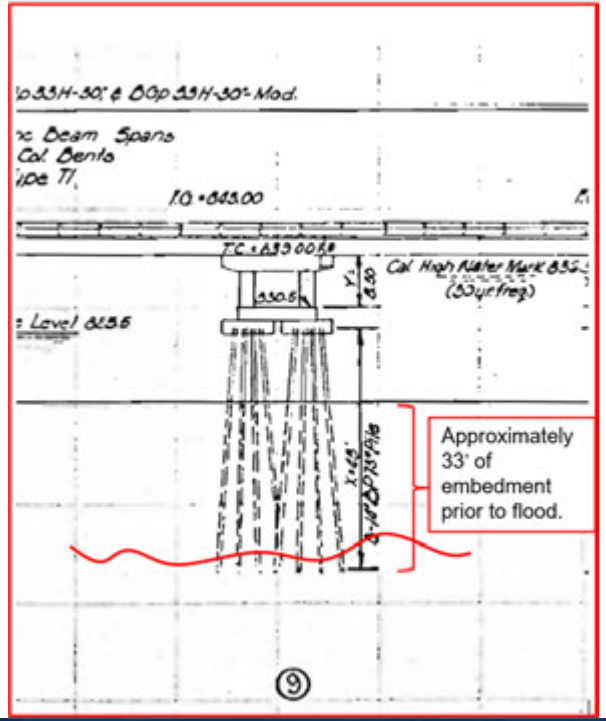
What's all the hubbub over scour?

Channel plot from 2017 inspection shows river bottom to be same as when originally built.



What's all the hubbub over scour?

The October 2018 flooding and resulting extreme velocity in the Llano River removed nearly all embedment material surrounding the steel pile foundation of the RM 2900 bridge.



What's all the hubbub over scour?

The collapse was caught on camera by a new crew.

What's all the hubbub over scour?

A local uploaded caught this span washing downstream. (A few hundred feet from FM 2900.)

What's all the hubbub over scour?

Scour can occur rapidly, or it can be cumulative damage, occurring over time.

To quote the FHWA:

Approximately 85 percent of the structures listed in the National Bridge Inventory cross waterways. In the United States, flooding and scour cause more bridge collapses than all other causes combined.

Routine Bridge Inspection Contracts – Inspector Responsibilities

Routine bridge inspectors **are not** responsible for:

- Completing any type of scour documentation (analyses, evaluations, summary sheets)

They **are** responsible for reporting the following:

- Is scour occurring at a bridge?
- If so, is it new, changing, or unchanged?
- Does the current scour documentation meet requirements?
- Are site conditions representative of the existing scour documentation? (Is a new analysis or evaluation required?)
- SNBI coding:
  - Item B.C.11 – Scour Condition Rating (observation of site conditions or using the Scour Summary Sheet, if available)
  - Item B.AP.03 – Scour Vulnerability (documentation review)

Routine Bridge Inspection Contracts – Inspector Responsibilities

Scour responsibilities are addressed in the Routine Inspection Contract Scope:

- Section 14 – Inspection File Contents, Item k – Channel Cross-Section Measurement Record and Plot – “Additional measurements shall be taken on the downstream side or from underneath the bridge to document scour….”
- Section 14, Item n – Inspection Photographs – sub-Item iv “Photographs of a stream shall show evidence of scour if present and it is possible to capture.”
- Section 21 – Scour Documentation – Explains what constitutes proper scour documentation and directs inspectors to explain any insufficient scour documentation in the “Lists of Structures” spreadsheet on the “Scour” tab. This spreadsheet is to be submitted to the district with each submittal. A cumulative version is required to be sent to both the district and Bridge Division at the end of the work authorization.
- Section 11 – Reporting Requirements – “SNBI data is to be collected and entered into AssetWise.




Routine Bridge Inspection Contracts – Inspector Responsibilities

Texas Department of Transportation

Scour Documentation

District : 17-Bryan
Contract:
WA No. :
Firm Name:
Submittal Date:

NBI # (DDCCC0CCCCSSSSS) (no hyphens)	Facility Carried	Feature Crossed	Current Coding			Scour Critical (Y/N)	Missing Document (Y/N/NA)			Change in Site Conditions Since Last SSS Coupled (Y/N)	New Scour Summary Sheet or Scour Evaluation Needed (Y/N)	Comments
			Item 113	Item 113.1	Item 113.2		Scour Analysis (*)	Scour Summary Sheet (SSS)	Scour POA			
170210004909043	US 190 WFR	Thompson Creek	8			N	N	N	N/A	Y	Y	bent 3 on both reports is actually for adjacent structure #138.
170210004909045	BS 6	Still Creek	8			N	N	Y	N/A			SSS missing. Scour analysis in AW (Secondary Scour Evaluation).
170210004909137	US 190 WB	Thompson Creek	8			N	N	N	N/A	N	N	SSS & scour analysis (Secondary Scour Evaluation & Max Allowable Scour Worksheet) in AW.
170210004909138	US 190 EB	Thompson Creek	8			N	N	N	N/A	Y	Y	Scour Worksheet) in AW. Scour at bent 3 is on scour reports for adjacent structure #043.
170210004912095	SH 6 SB	BURTON CREEK	8			N	N	Y	N/A	N	N	TSEAS in AW. SSS missing.
170210004912096	SH 6 NB	BURTON CREEK	8			N	N	Y	N/A	N	N	TSEAS in AW. SSS missing.
170210004912097	SH 6 WFR	BURTON CREEK	8			N	N	N	N/A	N	N	Scour Vulnerability Assessment recommends coding Item 113 to 2.
170210004912098	SH 6 EFR	BURTON CREEK	8			N	N	N	N/A	N	N	Scour Vulnerability Assessment recommends coding Item 113 to 2.
170210004912104	SH 6 MLS & FRS	BEE CREEK	3	P		Y	N	N		N	N	Scour Plan of Action in AW.
170210005001001	BS 6	Burton Creek	7			N	N	Y	N/A	N	Y	SSS missing. Scour analysis in AW (Secondary Scour Evaluation).
170210005001002	BS 6	Pin Oak Creek	8			N	N	Y	N/A	N	Y	SSS missing. Scour analysis in AW (Secondary Scour Evaluation).
170210005002008	SH 6	Spring Creek	7			N	N	Y	N/A	N	Y	SSS missing. Scour analysis in AW (Secondary Scour Evaluation).

This listing provides valuable information to the districts to use in completing scour documentation or setting up scour contracts.