BRIDGE SCOUR STABILITY WORKSHEET
Level A Evaluation

Name: _____ Date: _____

Bridge ID: _____ County / City: _____

FHWA No.: _____ ADT: _____

Main Span Materials & Design (Item 43): _____

Location: _____

Bridges with observed major bridge threatening scour problems should be considered scour critical and SI&A item #113 should be coded 0, 1, 2, or 3. If bridge threatening scour is not observed then this form is intended to evaluate whether a bridge can be determined to be scour critical, stable, or whether more review is necessary. For each numbered question enter the number of points into the blank at the right. If more than one answer applies, use the answer with the highest number of points. Each question should be answered.

	POINTS	POINTS GIVEN
STRUCTURE		
1. Category:		
A. Single span, pile foundations, and spread footing.	4	
B. Multi-span, piers on piling, and continuous and non-continuous superstructure.	4	
C. Multi-span, piers on spread footings, and continuous and non-continuous superstructure.	8	
D. Structure is an over flow bridge.	8	_____
2. Number of piers in the main channel:		
A. No piers in main channel.	0	
B. One pier.	1	
C. Two to four piers.	2	
D. Five or more piers.	4	_____
3. Pier foundation:		
A. No piers or all piers above flood flows.	0	
B. Spread foundations:		
1) Spread on erosion resistant bedrock	0	
2) Spread on erodible rock (shale)	2	
3) Unknown foundation type	5	
4) Spread on soil or gravel	6	
C. Pile bents, footing/piling or caisson, depth below existing stream bed:		
1) Pile depth greater than 40’	0	
2) Pile depth 20’ to 40’	2	
3) Unknown pile depth	3	
4) Pile depth less than 20’	5	_____

4. Abutment foundation:

A.	Abutments located above flood flows.	0
B.	Spread Foundations:	
1)	Spread on erosion resistant bedrock	0
2)	Spread on erodible rock (shale)	2
3)	Unknown foundation type	4
4)	Spread on soil or gravel	6
C.	Pile Bents, footing/piling or caisson, depth below existing stream bed:	
1)	Pile depth greater than 40’	0
2)	Pile depth 20’ to 40’	1
3)	Unknown pile depth	2
4)	Pile depth less than 20’	2
D.	High Timber Abutment.	6 _____

5. Road low point elevation vs. low member submergence:

A.	Submergence of low member or overtopping of road low point is improbable.	0
B.	Low member elevation is above road low point, submergence possible.	1
C.	Low member elevation is below road low point, submergence possible.	4 _____

HISTORY

6. Observed scour at piers:

A.	No piers or all piers above flood flows.	0
B.	Spread foundations:	
1)	No scour hole	0
2)	Scour hole above top of footing	2
3)	Scour hole within limits of footing	8
4)	No measurement taken at piers	7
C.	Footing/piling foundations:	
1)	No scour hole	0
2)	Scour hole above top of footing	2
3)	Scour hole within limits of footing	4
4)	Piling exposed	6
5)	No measurement taken at piers	5
D.	Pile bent foundations:	
1)	No scour hole	0
2)	Less than 5’ scour	2
3)	More than 5’ scour	4
4)	No measurement taken at piers	3 _____

7. Abutment type and condition:

A.	Stub/Integral abutments, effective berm slope:	
1)	2:1 or flatter	0
2)	Steeper than 2:1 but flatter than 1.5:1	3
3)	1.5:1 or steeper	6
B.	High abutments, depth of footings or backwall planking below stream bed:	
1)	More than 5 feet	0
2)	0 to 5 feet	4
3)	Footing is above stream bed	8
C.	Abutment on bedrock – no deficiencies.	0 _____

8. Abutment protection:

A. No protection necessary.	0	
B. Wingdikes or revetment protection in good condition.	0	
C. Other protection in good condition.	1	
D. Protection condition poor or not provided, but needed.	3	_____

9. Location of abutments compared to top of bank:

A. More than 25 feet away.	0	
B. 5' to 25'.	2	
C. Less than 5'.	6	
D. Abutment within stream banks.	8	_____

10. Observed scour at abutments:

A. No problems.	0	
B. Minor scour problems.	4	
C. Major scour problems observed in past inspections.	8	_____

11. Observed debris (or ice) lodged against bridge:

A. Remote.	0	
B. Slight Amount of Occasional – every 3 years or more.	3	
C. Frequent – more than once every 3 years.	6	
D. No available information.	4	
E. Moderate to heavy debris or continually present.	8	_____

STREAM GEOMORPHICS

12. Average degradation of stream bed since construction, not including local scour:

A. Less than 4' or stream aggrading.	0	
B. 4' to 6'.	2	
C. Greater than 6'.	6	
D. No Comparative cross-sections.	4	_____

13. Observed lateral movement of stream:

A. Stable.	0	
B. Movement, no threats to bridge.	2	
C. Unstable, threatens bridge.	8	
D. No information available.	4	_____

14. Channel bottom material:

A. Bedrock.	0	
B. Boulders and cobbles.	2	
C. Gravel, Sand, Silt, and Clay.	4	_____

15. SI&A Item #61 Channel and Channel Protection:

A. Rated a 6 or more.	0	
B. Rated a 5 or less.	4	_____

SITE GEOMORPHICS

16. Bridge location:

A. Bridge over mainstream, tributary or spillway nearby:		
1) No tributary nearby	0	
2) Tributary downstream within 100 ft	1	
3) Tributary or spillway upstream within 1,000 ft	4	
B. Bridge over tributary, mainstream nearby:		
1) No mainstream within 1,000 feet	0	
2) Mainstream within 1,000 feet	2	
3) Mainstream within 500 feet	4	_____

17. Stream bend within 150 feet of bridge (deflection):

A. 0 to 15 degree bend.	1	
B. 15 to 45 degree bend.	3	
C. 45 to 90 degree bend.	6	_____

18. Alignment of piers to flood flows:

A. No piers or all piers above flood flows.	0	
B. 0 to 5 degrees skew.	1	
C. 5 to 15 degrees skew.	3	
D. 15 to 90 degrees skew.	6	_____

STABILITY TOTAL _____

Bridges with a stability total below 35 points could be considered stable and code SI&A Item 113 as 7 or 8 depending on the particular situation. Bridges with a total greater than 45 for a single span or 55 for a multi-span should be considered scour critical and code SI&A Item 113 as 2 or 3. Bridges coded as scour critical need to be considered for corrective counter measures or monitored closely.

Bridges with a stability total in the 35 to 45 range for single span and 35 to 55 range for multi-span require Intermediate Scour Assessment Procedures Flowchart (see Attachment B to this IM) to be completed.