

Revised 5/06/02

MICHIGAN DEPARTMENT OF TRANSPORTATION
LEVEL ONE SCOUR ANALYSIS WORKSHEET

Date:_____ By:_____ Structure No:_____ Control Section:_____

Job No._____ Route:_____ Watercourse:_____

All references are to HEC-20, 3rd Edition.**Data Collection**

- ____ Plans
 ____ Bridge Inspection Reports (Maintenance Division)
 ____ Underwater Inspection Reports (Maintenance Division)
 ____ Review existing items 60, 61, 71, 92, 93, and 113 of the NBIS
 ____ Review available construction, design, and maintenance files for repair and maintenance work done on structure

Field Investigation Date:_____

____ Channel bottom width approximately one bridge span upstream = _____ feet

____ Overbank and channel Manning's roughness coefficients

_____ Left _____ Channel _____ Right

____ Is there sufficient riprap? Abutments _____ Piers _____

____ Photographs

____ Cross sections at upstream and downstream faces of bridge

Comments:

Stream Characteristics

____ Complete the attached Figure 2.6 from HEC-20.

Comments:

Land Use: Identify the existing and past land use of the upstream watershed:

Urban Area	Yes__	No__	Comments:
Sand and Gravel Mining	Yes__	No__	Comments:
Undeveloped Land	Yes__	No__	Comments:

Lateral Stability: Refer to HEC-20, Section 2.3.9 on Channel Boundaries and Vegetation for channel bank stability. Comment:

Vertical Stability:

- streambed elevation change from as-built plans? Yes _____ No _____
- exposed pier footings (degradation)? Yes _____ No _____
- exposed abutment footings (degradation)? Yes _____ No _____
- channel bank caving in (degradation)? Yes _____ No _____
- eroding floodplain (aggradation)? Yes _____ No _____
- crossing at confluence or tributaries? Yes _____ No _____
- bridge sites upstream and downstream? Yes _____ No _____
- grade or hydraulic controls, i.e. dams, weirs, diversions? Yes _____ No _____
- foundation on rock Yes _____ No _____
- channel armoring potential Yes _____ No _____

Comments:

Stream Stability: Make a qualitative assessment of the overall stream stability by referring to the above information and Figure 2.6 and Table 3.2 from HEC-20 (attach copies of figures).

Stable _____ Unstable _____ Degrading _____ Aggrading _____

Comments:

RECOMMENDED NBIS ITEM 113 CODE: _____

LEVEL TWO ANALYSIS NEEDED: YES ___ **NO** ___

Worksheet approved by: _____ P.E. License # _____ Date _____


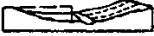



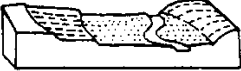









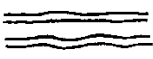















STREAM SIZE (Sect 2.3.2)	Small [< 30 m (100 ft.) wide]	Medium [30-150 m (100-500 ft.)]		Wide [> 150 m (500 ft.)]
FLOW HABIT (Sect 2.3.3)	Ephemeral	(Intermittant)	Perennial but flashy	Perennial
BED MATERIAL (Sect 2.3.4)	Silt-Clay	Silt	Sand	Gravel
VALLEY SETTING (Sect 2.3.5)	 No valley; alluvial fan	 Low relief valley [< 30 m (100 ft.) deep]	 Moderate relief [30-300 m (100-1000 ft.) deep]	 High relief [> 300 m (1000 ft.) deep]
FLOODPLAINS (Sect 2.3.6)	 Little or none (< 2 x channel width)	 Narrow (2-10 x channel width)		 Wide (> 10 x channel width)
NATURAL LEVEES (Sect 2.3.7)	 Little or none	 Mainly on concave		 Well developed on both banks
APPARENT INCISION (Sect 2.3.8)	 Not Incised		 Probably Incised	
CHANNEL BOUNDARIES (Sect 2.3.9)	 Alluvial	 Semi-alluvial		 Non-alluvial
TREE COVER ON BANKS (Sect 2.3.9)	< 50 percent of bankline	50-90 percent of bankline		> 90 percent of bankline
SINUOSITY (Sect 2.3.10)	 Straight Sinuosity (1-1.05)	 Sinuous (1.06-1.25)	 Meandering (1.25-2.0)	 Highly Meandering (>2.0)
BRAIDED STREAMS (Sect 2.3.11)	 Not braided (<5 percent)	 Locally braided (5-35 percent)		 Generally braided (> 35 percent)
ANABRANCHED STREAMS (Sect 2.3.12)	 Not anabranching (<5 percent)	 Locally anabranching (5-35 percent)		 Generally anabranching (> 35 percent)
VARIABILITY OF WIDTH AND DEVELOPMENT OF BARS (Sect 2.3.13)	 Narrow point bars	 Equiwidth	 Wider at bends	 Random variation
		 Wide point bars		 Irregular point and lateral bars

Figure 2.6. Geomorphic factors that affect stream stability (adapted from FHWA 1978a).