Appendix 12B-2 LD-293D Hydrologic and Hydraulic Analysis Documentation Outline

LD-293D
(3/20/07)

DEPARTMENT OF TRANSPORTATION
LOCATION AND DESIGN
HYDROLOGIC & HYDRAULIC ANALYSIS OUTLINE

DATE:	ENGINEER:		
HYDROLOGIC & HYDRAULIC ANALYSIS OUTLINE			
ROUTE:	PROJ. #:		UPC:
CITY/COUNTY:	STREAM NAME:		
DRAIN. AREA:	STATION:	LAT:	LONG:

EX #	**REFERENCE DATA**
	MAPS:
	PHOTOS:
	OTHER:
	APPLICABLE FLOOD PLAIN MANAGEMENT:
	STUDIES BY EXTERNAL AGENCIES:
	STUDIES BY INTERNAL SOURCES:
	GAGING DATA AVAILABLE:
	AVAILABLE SURVEY DATA:
	TECH. AIDES & FILE NAMES:
	OTHER DATA:

REMARKS:

Add any relevant comments concerning the data obtained and its quality (particularly if it is questionable).

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HYDROLOGY	
	METHODS USED FOR DISCHARGES:
	REASONS FOR FINAL SELECTION OF DISCHARGE VALUES:
	INFLUENCE AND CONTROL OF SITE:
	HIGH WATER ELEV: DATE & SOURCE:**
** See documentation data at the end of form for approximate discharge and frequency of event:	
REMARKS:	

STREAM STABILITY – LEVEL 1: QUALITATIVE ANALYSIS PER HEC-20		
	BRIDGE CHARACTERISTICS:	
	STREAM CHARACTERISTICS:	
	LAND USE CHANGES:	
	OVERALL STABILITY:	
	LATERIAL STABILITY:	
	VERTICAL STABILITY:	
	STREAM RESPONSE:	
BASED UPON THE ABOVE ANALYSIS, IS A MORE DETAILED ANALYSIS NECESSARY: YES: NO:		
IF YES, WHAT LEVEL:	SEE EXHIBIT #:	
REMARKS:		
Please complete with general comments based on observations of the conditions at the site.		

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EX #	HYDRAULIC ANALYSIS OF EXISTING STRUCTURE	
	Computer Model: FILE: Plan:	
	DESCRIPTION OF EXISTING STRUCTURE:	
	SPAN LENGTH:	PARAPETS:
	ABUTMENT TYPE:	SKEW TO CL:_ TO FLOOD FLOWS:
	NO. OF PIERS & TYPE:	
	PIER WIDTH:	TOTAL PIER AREA:
	ABUTMENT "A" STA:	FINISH GRADE ELEV:
	ABUTMENT "B" STA:	FINISH GRADE ELEV:
	ELLC ELEV:	ELLC FOR PRESSURE FLOW:
	STREAM BED ELEVATION:	
	WEIR ELEV. ON EACH SIDE OF STRUCTURE: LEFT: RIGHT:	
	EXPANSION COEF:	CONTRACTION COEF:
	ENERGY S_O "n" VALUES:	
	BRIDGE MODELING APPROACH:	
	REASON FOR SELECTION:	
	HIGH FLOW METHOD:	
	REASON FOR SELECTION:	

DISCHARGE	EXCEEDANCE PROBABILITY	WSP ELEV. AT COMMON UPSTREAM SECTION #	WSP ELEV. AT UPSTREAM FACE OF BRIDGE #	VEL. AT DOWNSTREAM FACE OF STRUCTURE #
(cfs)	(%)	(ft)	(ft)	(fps)
	50			
	20			
	10			
	4			
	2			
	1-N			
	1-FW			
	0.2			
	OHW			
	HW Event			

	EVENT	STAGE ELEV.	DISCHARGE	EXC. PROB.
	High Water Flood			
	Base Flood			
	Overtopping Flood			

REMARKS:

Comment on the modeling approach and correction or observations relative to the original analysis.

DOCUMENTATION OF STEPS TAKEN TO CALIBRATE MODEL

If there is difficulty in calibrating the model to a historical event contact VDOT to see if there is additional information available regarding that particular event.

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EX #	HYDRAULIC ANALYSIS OF PROPOSED STRUCTURE				
	SCHEME #:				
	Computer Model:	FILE:		Plan:	
	DESCRIPTION OF PROPOSED STRUCTURE:				
	SPAN LENGTH:		PARAPETS:		
	ABUTMENT TYPE:		SKEW TO CL:_	TO FLOOD FLOWS:	
	NO. OF PIERS & TYPE:				
	PIER WIDTH:		TOTAL PIER AREA:		
	ABUTMENT "A" STA:		FINISH GRADE ELEV:		
	ABUTMENT "B" STA:		FINISH GRADE ELEV:		
	ELLC ELEV:		ELLC FOR PRESSURE FLOW:		
	STREAM BED ELEVATION:				
	WEIR ELEV. ON EACH SIDE OF STRUCTURE:		LEFT:	RIGHT:	
	EXPANSION COEF:		CONTRACTION COEF:		
	ENERGY S_O	"n" VALUES:			
	BRIDGE MODELING APPROACH:				
	REASON FOR SELECTION:				
	HIGH FLOW METHOD:				
	REASON FOR SELECTION:				

DISCHARGE	EXCEEDANCE PROBABILITY	DIFFERNCE AT COMMON SECTION #	WSP ELEV AT COMMON UPSTREAM SECTION #	WSP ELEV AT UPSTREAM FACE OF BRIDGE #	VEL AT DWNSTREAM FACE OF STRUCTURE #
cfs	%	ft	ft	ft	fps
	50				
	20				
	10				
	40				
	2				
	1-N				
	1-FW				
	0.2				
	OHW				
	HW Event				

	EVENT	STAGE ELEV	DISCHARGE	EXC. PROB	
	Design Flood				
	Base Flood				
	Overtopping				

REMARKS:

DOCUMENTATION OF STEPS TAKEN FOR PROPOSED MODEL - SCHEME #:

Comment on modification to existing conditions model to develop the proposed model

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EX #	HYDRAULIC ANALYSIS OF PROPOSED STRUCTURE				
	SCHEME #:				
	Computer Model:	FILE:		Plan:	
	DESCRIPTION OF PROPOSED STRUCTURE:				
	SPAN LENGTH:		PARAPETS:		
	ABUTMENT TYPE:		SKEW TO CL:_	TO FLOOD FLOWS:	
	NO. OF PIERS & TYPE:				
	PIER WIDTH:		TOTAL PIER AREA:		
	ABUTMENT "A" STA:		FINISH GRADE ELEV:		
	ABUTMENT "B" STA:		FINISH GRADE ELEV:		
	ELLC ELEV:		ELLC FOR PRESSURE FLOW:		
	STREAM BED ELEVATION:				
	WEIR ELEV. ON EACH SIDE OF STRUCTURE:		LEFT:	RIGHT:	
	EXPANSION COEF:		CONTRACTION COEF:		
	ENERGY S_o	"n" VALUES:			
	BRIDGE MODELING APPROACH:				
	REASON FOR SELECTION:				
	HIGH FLOW METHOD:				
	RESAON FOR SELECTION:				

DISCHARGE	EXCEEDANCE PROBABILITY	DIFFERNCE AT COMMON SECTION #	WSP ELEV AT COMMON UPSTREAM SECTION #	WSP ELEV AT UPSTREAM FACE OF BRIDGE #	VEL AT DWNSTREAM FACE OF STRUCTURE #
cfs	%	ft	ft	ft	fps
	50				
	20				
	10				
	40				
	2				
	1-N				
	1-FW				
	0.2				
	OHW				
	HW Event				

	EVENT	STAGE ELEV	DISCHARGE	EXC. PROB	
	Design Flood				
	Base Flood				
	Overtopping				

REMARKS:

DOCUMENTATION OF STEPS TAKEN FOR PROPOSED MODEL - SCHEME #:

Comment on modification to existing conditions model to develop the proposed model

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EX #:	SCOUR DATA
	SCOUR POTENTIAL: SEE EX. # FOR COMPUTATIONS AND PLOT SUMMARY OF RESULTS:
	RIPRAP RECOMMENDATIONS: IF DESIRED, CLASS , D= , OVER FILTER CLOTH BEDDING WILL BE SATISFACTORY.

HISTORICAL RETURN PERIOD

The approximate frequency of the event that caused the highwater at the existing structure is the____Year or the _____% Exc. Event.

CAUSEWAY ANALYSIS RESULTS

The use of causeways for temporary construction access was not considered in this analysis. If it is subsequently found necessary to use causeways, they must be submitted to the Hydraulics Unit for analysis and documentation.

Temporary construction access causeways for this project should be composed of:
Armor layering will/will not be required on either side..
The ordinary highwater will be increased by___ft.
The high flow profiles will not be affected.
The causeway will not affect the water surface profile.
The maximum causeway elevation is ____ft.
From abutment A station_____to station_____.
From abutment B station_____ to station_____.
Only one will be in place at a time.

SUMMARY

Make a brief summary statement about the impact of the proposed bridge on the flooding.