DEVELOPMENT IN THE SHADOW WORKSHEET

State Form 55235 (R / 09-25)

Indiana Department of Natural Resources
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Indiana Department of Natural Resources

RESET

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Application	

An assessment using the Development in the Shadow Worksheet is appropriate to use for a project that is located entirely within the ineffective area of the contraction or expansion reach of a bridge, natural high ground, buildings or other obstruction. Application to a bridge or culvert requires that the base flood event is conveyed solely through the bridge opening (no road overflow). Application to buildings and structures requires placement of the expansion and contraction limits on the streamward and landward sides of the obstruction. The expansion and contraction limits should follow the same 2:1 and 1:1 ratios as those used on the bridge openings. Application to other obstructions requires that expansion and contraction ratios are defined by portions of the obstruction that are elevated above the base flood event. Project examples appropriate for this worksheet include a pedestrian bridge, fill, a non-residential building, etc. If a project is partially in the contraction or expansion reach, this assessment approach cannot be used.

The minimum documentation specified below in this document must be submitted to the Indiana DNR Division of Water along with a completed, signed, and dated application form (State Form 42946) and the appropriate application fee.

Unless the instructions in this document direct you otherwise, all plan details, questions, and computations in this worksheet must be addressed to adequately evaluate a project under this assessment approach.

MINIMUM PLAN DETAILS AND COMPUTATION REQUIREMENTS

1) PLAN DETAILS AND SUPPORTING DOCUMENTATION

For each of the minimum plan details described in the following chart, complete Column 1 and Column 2. The required plan view items can be combined into one or more plan drawings as long as the information is clearly defined.

Column 1 *Check if item is included.*	**Column 2** *Indicate page or sheet number for each required item.*	**Column 3** *Minimum plans required.*
☐		A map that clearly identifies the location of the proposed project site in relationship to the waterway and surrounding roadways.
☐		An aerial plan view illustrating disturbed areas of the project site.
☐		A plan view that illustrates the proposed project's construction components. Indicate permanent and temporary components throughout the project site.
☐		A plan view that illustrates: *(See The General Guidelines for Hydrologic Hydraulic Assessment of Floodplains in Indiana, figure 8-1.)* 1) Contraction or expansion reaches of the bridge, culvert, or other obstruction • Upstream contraction reach 1:1; • Downstream expansion reach 2:1. 2) Bridge abutment locations 3) Extents of obstruction
☐		Cross section view(s) showing: 1) Bridge opening, structure, or other obstruction 2) Base Flood Elevation (BFE) 3) Bridge low chord and high chord 4) Edge of waterway openings Cross sections should be stationed left to right, looking downstream, full valley, and oriented perpendicular to flow

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PLAN DETAILS AND SUPPORTING DOCUMENTATION CONTINUED		
☐		Bridge details *(if applicable)*: 1) Source of bridge information 2) Elevation of top of bridge deck 3) Lowest elevation of the approach roads within the floodplain
☐		Photos that illustrate the natural and man-made surroundings, e.g.: 1) from the bridge deck, a downstream view of the channel 2) from the bridge deck, an upstream view of the channel 3) from a downstream streambank, a view of the downstream bridge deck and waterway opening 4) from an upstream streambank, a view of the upstream bridge deck and waterway opening **Label orientation of each photo.*
☐		Plans require horizontal and vertical scale, vertical datum, north arrow, labels, stations, and date.
☐		A completed Fish, Wildlife, and Botanical Resources Impact Assessment Worksheet (State Form 57132).

2) DETERMINING THE BASE FLOOD EVALUATION

To utilize this assessment approach, the Base Flood Elevation (BFE) must be determined for the upstream side of the bridge or obstruction. **Note:** The Base Flood Elevation (BFE) is also referred to as the 1% annual chance flood, Regulatory Flood Elevation (RFE), or the 100 year frequency flood elevation (100 year flood).

To record the base flood elevation at the upstream side of the bridge, complete Columns 1 and 2 below.

Column 1 *BFE at the upstream side of the bridge.*	**Column 2** *Acceptable sources for the Base Flood Elevation for projects assessed under this non modeling assessment are listed within this column. Indicate the source(s) of the BFE and indicate the corresponding source, case, or file number, when applicable*	
BFE _____ ft. BFE datum _____	Published Flood Insurance Study or a Flood Study	Source
	Letter of Map Revision (LOMR)	Case #
	Approved model(s) from a DNR permit	DNR Permit #
	DNR Floodplain Analysis and Regulatory Assessment (FARA)	☐ INFIP FARA or DNR FARA #

3) ADDITIONAL JUSTIFICATION/COMMENTS

SIGNATURE

Be aware that after reviewing the submitted plans and computations in the worksheet, the IDNR staff may request additional documentation if sufficient evidence has not been provided that clearly demonstrates the effect that the project may have on the base flood elevation or impacts to fish, wildlife, and botanical resources in the floodway.

Printed Name of Preparer	Date Signed *(mm/dd/yyyy)*
Signature of Preparer	