*<* [*Date*](#Date) *>*

TO: XXXX XXXXX

 INDOT Project Manager, XXXXX District

FROM: XXXX XXXXX

 Consultant Hydraulics Engineer

SUBJECT: HYDRAULIC LETTER FOR BRIDGES

New Structure Number: XXX-XX-XXXXX

Old Structure Number: XXX-XX-XXXXX

Location: XXXXX

 Des. #: XXXXX

Crossing: XXXXXX

Consultant: <Consultant Firm Name>

SPMS Type of Work: XXXXX

|  |
| --- |
| Designer Signature |

|  |
| --- |
| Designer PE Stamp |

ANALYSIS: XXXX XXXXX, P.E.

 Consultant Hydraulics Engineer

|  |
| --- |
| QA Signature |

REVIEWER: XXXX XXXXX, P.E.

 INDOT Hydraulics Engineer

**This memo is not to be considered final until it has been signed and stamped by the designer and signed by the QA engineer.**

Drainage Area = X.X sq. mi.

Q100 (AEP 1%) = XXX cfs

Q500 (AEP 0.2%) = XXX cfs

Elevation @ Q100 = XXX.X ft.

IDNR CIF Permit Needed (Y/N):

Legal Drain (Y/N):

**Existing Conditions**:

 *< Span XX ft and Structure Type >*

Q100 (AEP 1%) Headwater Elevation = XX.X ft.

Backwater = X.XX ft.

Velocity @ Q100 (AEP 1%) = XX.X ft./s.

Gross Waterway Opening Below Q100 (AEP 1%) Elevation (Str.) = XX.X sq. ft.

Road Overflow Waterway Area = XX.X sq. ft.

Low Structure Elevation = XX.X ft.

Skew = XX.X deg.

**Proposed Conditions**: *<if more than one option is given, copy the proposed bridge data and scour results list for each>*

 *< Modeled Span XX ft and Structure Type >*

Q100 (AEP 1%) Headwater Elevation = XX.X ft.

Backwater = X.XX ft.

Velocity @ Q100 (AEP 1%) = XX.X ft./s.

Gross Waterway Opening Below Q100 (AEP 1%) Elevation (Str.) = XX.X sq. ft.

Road Overflow Waterway Area = XX.X sq. ft.

Low Structure Elevation = XX.X ft.

Skew = XX.X deg.

 Q100 (AEP 1%) Contraction Scour = X.XX ft.

 Q100 (AEP 1%) Total Scour = X.XX ft.

 Q100 (AEP 1%) Low Scour Elevation = XXX.XX ft.

 Q100 (AEP 1%) Max Velocity = X.XX ft /s.

 Q500 (AEP 0.2%) Elevation = XXX.X ft.

 Q500 (AEP 0.2%) Contraction Scour = X.XX ft.

 Q500 (AEP 0.2%) Total Scour = X.XX ft.

 Q500 (AEP 0.2%) Low Scour Elevation = XXX.XX ft.

 Q500 (AEP 0.2%) Max Velocity = X.XX ft./s.

Based on a flowline elevation of XXX.XX feet.

*<Narrative: i.e. size and type of structure for each proposal, existing conditions needing corrections>*

The application of *<rip rap size>* on the spill slopes should be used as per IDM Fig. 203-3B *<or E714-BCSP for Boxes or E723-CCSP for 3-sided structures>*

As pertains to this memo, the minimal required waterway opening and structure span are based on hydraulics geometry that is perpendicular to the flow.

If you have any questions or comments, please contact me at (XXX) XXX-XXXX.

XXX

cc: file