**A hydraulic report should accompany this form for natural streams with Q50 of 500cfs or more and canals.**

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| --- | --- | --- | --- |
| Key Number | Project Number | Station | Date |
|       |       |       |       |
| Project Title | Local Name |
|       |       |
| Location | County |
|       |       |
| Roadway Identification |
|       |
| Crossing | A Tributary Of |
| [ ]  Creek [ ]  River [ ]  Canal |       |

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| **Hydrologic Data** |
| Hydrology Methods Used to Determine Design Flows |
| [ ]  USGS Website [ ]  Flood Insurance Study [ ]  USGS Regression Equations |
| [ ]  Other (Describe) |       |
| Description of Watershed |
|       |
| Drainage Basin Area [ ]  mi2 [ ]  acres | Community Name |
|       |       |
| Flood Insurance Rate Map (FIRM) Panel Number\* | Regulatory Floodway | If Yes, Floodway Map Panel Number\* |
|       | [ ]  Yes [ ]  No |       |

\*Attach 8 1/2" x 11" copy of map panel at the structure location.

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| **Stream Data** |
| [ ]  Natural Stream [ ]  Canal | Months Dry, If Any | Streambed Elevation of Structure | Streambed Slope |
|       |       |       ft |
| Stream Carries an Appreciable Amount of Ice | Ice Thickness | Stream Carries an Appreciable Amount of Driftwood |
| [ ]  Yes [ ]  No |       in | [ ]  Yes [ ]  No |
| Character of Streambed | Describe Streambed |
| [ ]  Stable [ ]  Agrading [ ]  Degrading [ ]  Headcutting |       |
| Flow Controlled | If Controlled, Explain |
| [ ]  Upstream [ ]  Downstream |       |

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| **Existing Structure** |
| [ ]  Bridge [ ]  Culvert (Describe the Bridge or Culvert) |
|       |
| General Condition | Year Constructed |
|       |      |
| Describe Any Existing Adverse Conditions |
|       |
| Type of Bridge Piers | Number of Piers | Bridge or Culvert Type | Structure Dimensions, Diameter, Etc. |
| [ ]  Spread Footings [ ]  Piles |       |       |       |
| Total Bridge Opening Area Normal to Channel | Bridge Clearance Above Q50 High Water | Velocity Through Structure |
|       ft2 |       ft |       fps |
| Existing Culvert Carried Flow Adequately | If No, Explain |
| [ ]  Yes [ ]  No |       |

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| **Design Flow Data** |
| **Flood** | **Discharge** | **Water Surface Elevation** | **Velocity** |
| Design [Q]\* |       cfs |       ft |       fps |
| Base [Q100] |       cfs |       ft |       fps |
| Scour [Q500] |       cfs |       ft |       fps |
| Canal Flow |       cfs |       ft |       fps |

\*Use Q50 for bridges and culverts 12 ft or more in width/diameter and for open bottom culverts. Use Q25 for all other culverts.

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| **Proposed Bridge** |
| Type | Ordinary High Water Elevation | Number and Length of Spans |
|       |       ft |       |
| Skew Angle | Calculated Riprap Size, D50 | Bottom of Girder Elevation |
|       ° |       ft |       ft |
| Flow Angle to Pier | Calculated Contraction Scour Depth | Q50 Water Surface Elevation |
|       ° |       ft |       ft |
| Streambed Material Size, D50 | Calculated Pier Scour Depth | Q50 Freeboard |
|       mm |       ft |       ft |

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| **Proposed Culvert** |
| Type | Dimensions | Inlet Type |
|       |       |       |
| Culvert Flowing Under | Invert Inlet Elevation | Outlet Elevation |
| [ ]  Inlet Control [ ]  Outlet Control |       ft |       ft |
| Outlet Protection Required | Tailwater Elevation | Bottom of Gravel Course Elevation |
| [ ]  No [ ]  Yes |       ft |       ft |
| Channel Change | Tailwater Depth | Calculated Headwater Elevation (HW) |
| [ ]  No [ ]  Yes |       ft |       ft |
| Energy Dissipater (If Yes, Describe) | Culvert Slope | Bottom of Gravel Course Freeboard |
| [ ]  No [ ]  Yes |       |       ft |       ft |
| Riprap Required (If Yes, D50) | Finished Grade Elevation Centerline Roadway | HW/D Ratio |
| [ ]  No [ ]  Yes       ft |       |       |
| Proposed Culvert Will Carry the Base Flood (Q100) Without Overtopping the Roadway |
| [ ]  No [ ]  Yes |

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| **In addition to the above information, submit and check each of the following that apply.** |
| [ ]  | A typical proposed roadway section at the structure. |
| [ ]  | A 11" x 17" contour map of the structure site showing 1 foot contours. |
| [ ]  | A centerline profile to the same scale as the contour map. |
| [ ]  | A vicinity map, such as a county map, with the location of the structure clearly indicated. |
| [ ]  | A streambed profile 500 to 1,000 feet above and below the structure. |
| [ ]  | Riprap details (typical section, limits, size, toe embedment, etc.) for proposed locations. |
| [ ]  | Photographs of the existing structure and channel upstream and downstream from the site. |
| [ ]  | Channel change or canal lining details (typical section, plan and profile, and limits). |
| [ ]  | Computations for scour based on Q500 or canal flow. (Attach HEC-RAS contraction scour and if applicable, pier scour report.) |
| [ ]  | Hydraulic report. (See Design Manual for format.) |
| [ ]  | Letter of approval from canal company or irrigation district. |
| [ ]  | Floodplain Development Permit from the city/county if the structure is located in the 100-year floodplain. |

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| Remarks/Sketches (Dimensions in Feet) |
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|  |  |       |       |       |       |       |       |       |  |  |
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|  |       |  | Elev. |  |       |  | Elev. |  |  |  |  |  |  |  |  |  | Elev. |  |       |  | Elev. |  |       |  |
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|  |  |  |  |  |  |  |       |  | Elev. |  |  |  |  |  | Elev. |  |       |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |       |  | Elev. |  | Elev. |  |       |  |  |  |  |  |  |  |  |  |
|  |
| Channel Cross Section at Upstream Face of Proposed Bridge (From HEC-RAS) |
|       |

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| --- | --- | --- |
| Prepared By | Title | Engineer’s Signature and Seal |
|       |       |  |
| Accepted by LHTAC Administrator, Bridge Engineer, or District Engineer | Signature/Date |
|       |  |