 Form 517002 (01-20)

**HYDRAULIC DESIGN FOR BRIDGES (CULVERTS)**

LOCATION

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| County |       | Sec. |       |  | Twp. |        | Range |        |
| Over (River, Cr., Dr. Ditch) |  |        | Road No. |        |
| Project No. |        |  |  |  |  |  |
| Assessment Prepared by |        | Date |  |        |
|  | 1. HYDROLOGIC/HYDRAULIC EVALUATION |
| A. | Nearest Gaging Station available on this stream: |  |        | (None [ ]  )  |
| B. |  | Are flood studies available on this stream: Yes [ ]  No [ ]  |
| C. |  | Flood Data: |
|  | Q10 |       | cfs | Est. Bkwtr. |       | ft. |  | Q25 |  |       | cfs |  | Est. Bkwtr. |       | ft. |  |
|  | Q50 |       | cfs | Est. Bkwtr. |       | ft. |  | Q100 |  |       | cfs |  | Est. Bkwtr. |       | ft. |  |
|  | Q500 |       | cfs | or Overtopping |        |  | cfs (Whichever is lower) |
|  | Drainage Area  |        |  Method Used to compute Q |  |        |
| D. | Q**50** Freeboard Elev. At downstream fascia of bridge  |  |  |
|  | Scour |  |  |  |  |
|  |  Design Flood |       |  |  Check Flood |       |
|  |  Design Elev. |       |  |  Check Elev. |       |
|  | Provide a valley cross section and a graphical representation of the drainage area. |  |  |
|  | Does the crossing require outside agency approval? Yes [ ]  No [ ]  |
|   | List Agencies: |  |       |
|  | 2. PROPERTY RELATED EVALUATIONS |
| A. | Damage potential: | Low [ ]  |  | Moderate [ ]  |  |  | High [ ]  |  |
|   | List buildings in flood plain |        |  | Location |        |
|   | Floor Elevation |  |        |
|   | Upstream Land Use |  |        |
|   |  | Anticipate any Change? Yes [ ]  No [ ]  |
|   | If yes, describe anticipated change: |  |        |
| B. |  | Any flood zoning? (Flood Insurance Studies (FIS), etc.) Yes [ ]  No [ ]  |
|  | Type of Study |  |       |
|  | Base flood elevation (100 year) |  |       |  (100 year) |
|  | Regulatory floodway width |  |       |  (As noted in FIS Studies) |
|  |  | Comments       |
|  | 3. ENVIRONMENTAL CONSIDERATIONS |
| A.  |  | List commitments in environmental documents which affect hydraulic design (None [ ]  ) |
|  |  |       |
|  | 4. HIGHWAY AND BRIDGE (CULVERT) RELATED EVALUATIONS |
| A. |  | Note any outside features which might affect Stage, Discharge, or Frequency. |
|  |  | Levees [ ]  Aggradation / Degradation [ ]  Reservoirs [ ]  Diversions [ ]  |
|  |  | Drainage Dist. [ ]  Navigation [ ]  Backwater from another source [ ]  |
|  | Other |  |        |
|  |  | Explanation       |
| B. | Proposed Roadway Overflow Section (None [ ]  ) | Length |        | Elev. |  |        | Frequency (if < 500 yr.):\_\_\_\_\_\_\_ |  |
|   | Embankment: Soil Type |        |  | Type Slope Cover |        |
|   | Comments: |  |       |

|  |
| --- |
| 5. MISCELLANEOUS COMMENTS |
| A. | Recommend Wing Dikes if 25% or more of total Q is an overbank area? | Yes [ ]  No [ ]  |
|  | Unusual scour potential? | Yes [ ]  No [ ]  |
| B. | Are banks stable? Yes [ ]  No [ ]  | Protection Needed? | Yes [ ]  No [ ]  |
| C. | Are spur dikes needed? Yes [ ]  No [ ]  |
| D. | Does stream carry appreciable amount of ice? Yes [ ]  No [ ]  | Elevation of high ice |        |
| E. | Does stream carry appreciable amount of large driftwood? Yes [ ]  No [ ]  |
| F. | Is the stream widening? |  Yes [ ]  No [ ]  | Approximate amount per year |       |
|  | Is the stream deepening or filling? |  Yes [ ]  No [ ]   | Direction, rate, and amount |       |
|  | Comments       |
| 6. TRAFFIC RELATED EVALUATIONS |
| A. | Present Year |       | Traffic Count |        | VPD |  | % Trucks |        |
| B. | Design Year |       | Traffic Count |        | VPD |  | % Trucks |        |
|  | Comments       |
| 7. PRESENT FACILITY |
| A. | Low Roadway Elevation |       |
| B. | Bridge Hydraulic Capacity at point of overtopping |       | cfs | Frequency (if Less than Q500) |         | yr |
|  | Roadway Overflow: | Length |        | ft. | Elevation |        | ft. |
| C. | Is flash flooding likely? | Yes [ ]  No [ ]  |
|  | Comments       |
| 8. ALTERNATIVES |
| A. | Recommended Design |       |
|  | Low Superstructure (Bridge) |       | Top Opening (culvert) |        |
|  | Low Roadway Grade |        |
|  | Bridge Waterway Opening |        | Culvert Opening |        |
| B. | Were other hydraulic alternates considered? |  Yes [ ]  No [ ]  |
|  | Discussion       |
| C. | Is this assessment commensurate with the risks identified? | Yes [ ]  No [ ]  |
|  | or is further analysis needed? | Yes [ ]  No [ ]  |
|  |

Important Note: The information on this form must in all cases be supplemented by a complete plan and profile of the site.