Iowa Department of Natural Resources
Flood Plain Management Program
Culverts

Use this guidance to ensure that your flood plain application is complete. To view a complete version of the state's flood plain management and dam safety criteria, visit http://floodplain.iowadnr.gov.

Technical Assistance Help Line: 515-725-8415

The criteria that a culvert needs to meet are dependent on the damage potential of the structures in the area where the culvert is located.

1. **New Culverts in Low Damage Potential Areas**: Criteria for culverts located near low damage potential structures such as detached residential garages, sheds, park shelters, buildings used for storage of equipment or crops that can be easily removed and buildings used as temporary shelter for livestock.

   ✓ Backwater Q100 is less than or equal to 1.5 feet

2. **Replacement Culverts in Low Damage Potential Areas**

   ✓ Backwater Q100 shall not exceed that created by the culvert or waterway crossing being replaced or 1.5 feet, whichever is greater.

3. **New Culverts in High Damage Potential Areas**: Criteria for culverts located near high damage potential structures such as residential, industrial, commercial, agricultural, recreational and public buildings.

   ✓ Backwater for Q100 shall be less than or equal to 1.0 feet.
   ✓ In no case shall the Q100 backwater effects of a culvert reduce the existing level of protection provided by certain flood control works, unless equivalent remedial measures are provided.

4. **Replacement Culverts in High Damage Potential Areas**

   ✓ Backwater Q100 shall not exceed that created by the culvert or waterway crossing being replaced or 1.0 feet, whichever is greater.

5. **For New Culverts located within a stream reach for which FEMA has published a detailed study FIS which includes a floodway:**
   ✓ Backwater Q100 shall not exceed the surcharge associated with the delineation for the floodway at that location

Summary of Engineering Data – Culverts

Stream: _____

Roadway: _____

If a Detailed Flood Insurance Study exists for the stream, provide the following information:

- ☐ Original hydraulic model as received from FEMA
- ☐ Original hydraulic model with corrections made
- ☐ Corrected model with additional cross sections located at the project site
- ☐ Model with cross-sections at the site with the project included

Stream Slopes

Reach: _____ ft/ft _____ ft/mi Source: _____

Main Channel Slope: _____ ft/mi Source: _____

Culvert Details

Proposed Culvert Length: _____ ft

Area of Waterway Opening of Proposed Culvert: _____ sq ft

Area of Waterway Opening of Any Existing Culvert: _____ sq ft

Elevation Data

Datum: NAVD '88

Channel Bottom: _____ ft

Top of Bank: _____ ft

Record High Water: _____ ft Source: _____

Low Superstructure: _____ ft

Low Point in Approach Grade: _____ ft

Flood Frequency Data

Design Frequencies:	50 year		100 year		
Discharges:	_____	cfs	_____	cfs	Source: _____
Waterway Opening Areas:	_____	sq ft	_____	sq ft	
Average Bridge Velocities:	_____	ft/sec	_____	ft/sec	
Natural Stages:	_____	ft	_____	ft	Datum: NAVD '88
Encroachment Stages:	_____	ft	_____	ft	Datum: NAVD '88
Maximum Backwater Due to Project:	_____	ft	_____	ft	
Freeboard (if applicable):	_____	ft	_____	ft	

Roadgrade Overflow Data

Amounts of Overflow	_____	cfs	_____	cfs