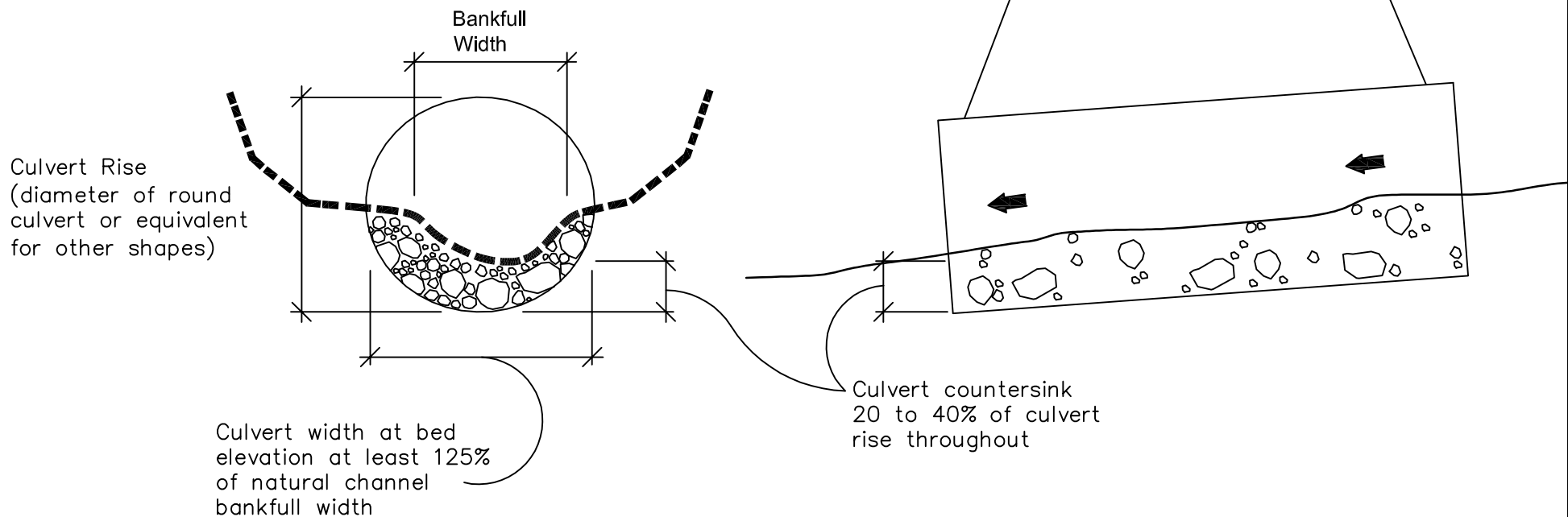


Vermont Low-Slope Culvert Design

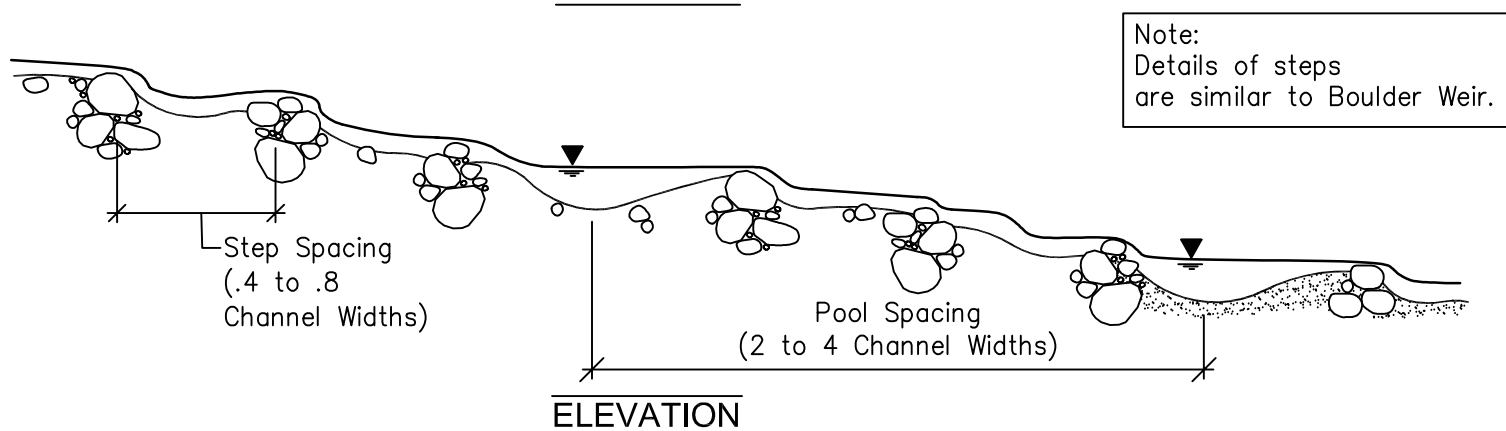
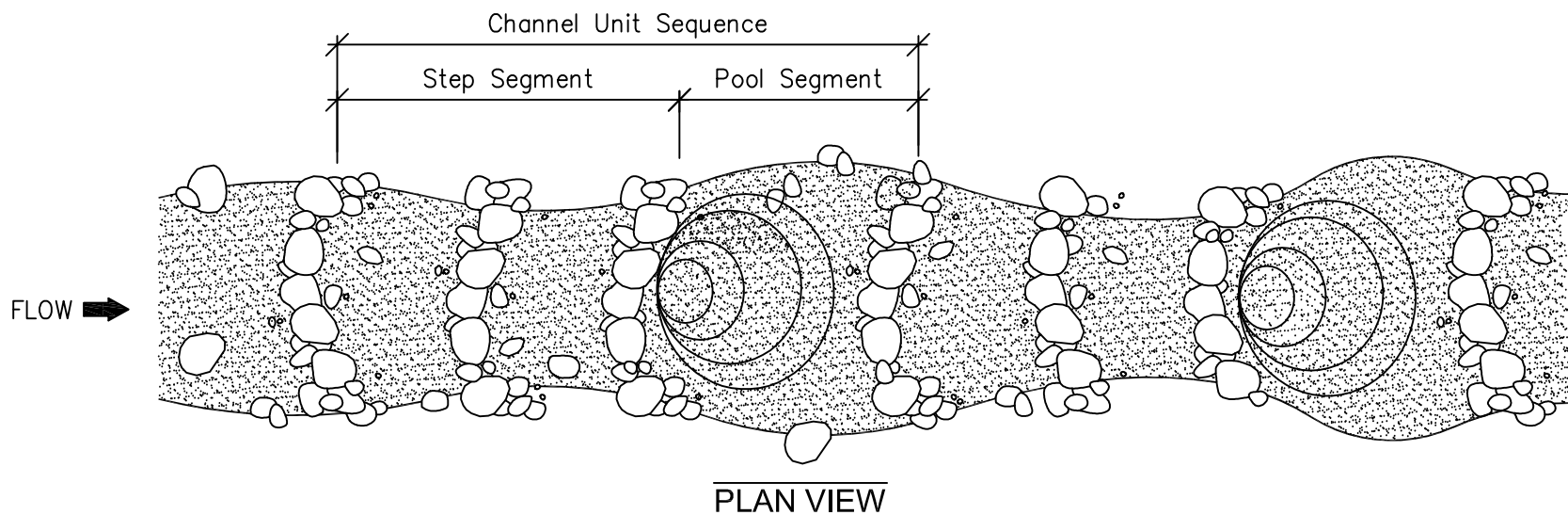
- Maximum channel slope: 1.0%
- Culvert at slope of natural channel.
- Maximum Culvert Length: 50 feet
- Suitable only where culvert does not excessively constrict the active floodplain.



For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm?libbase_=Reports_and_Documents

TREATMENTS FOR AQUATIC ORGANISM PASSAGE VERMONT LOW-SLOPE CULVERT DESIGN

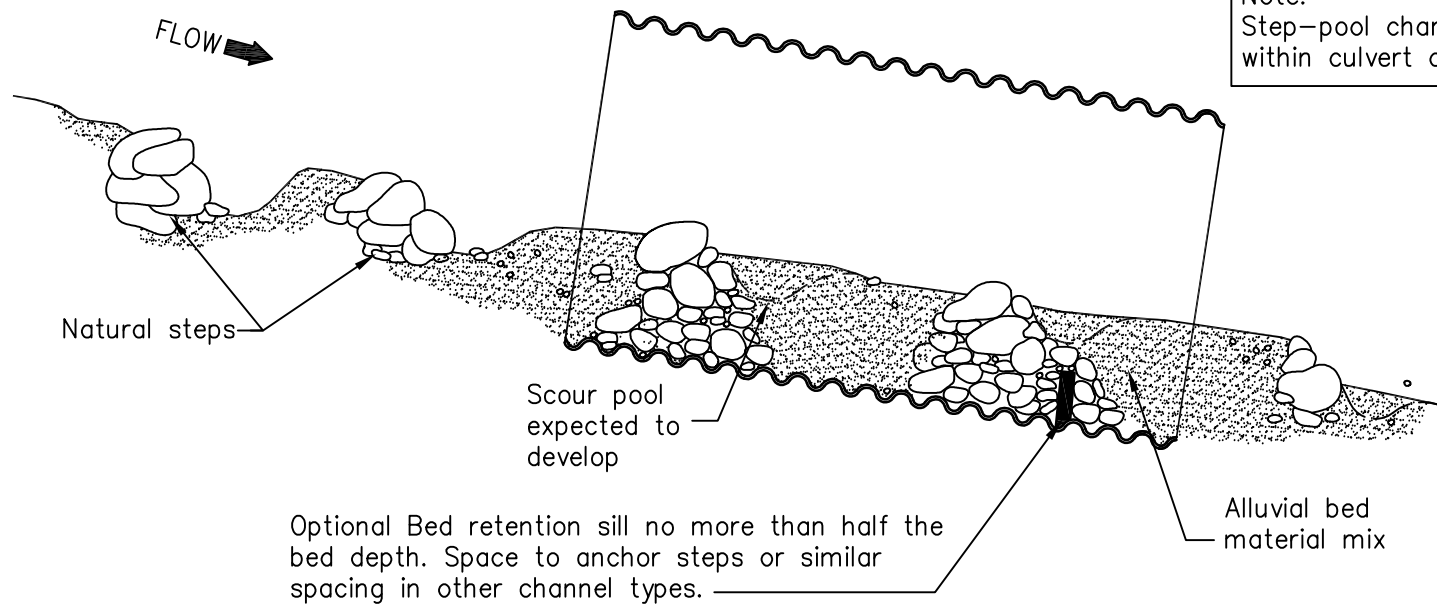
Note:
Step-pool channel for stream
simulation within culvert or profile
control. Pool segments are located
outside of culvert.



For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

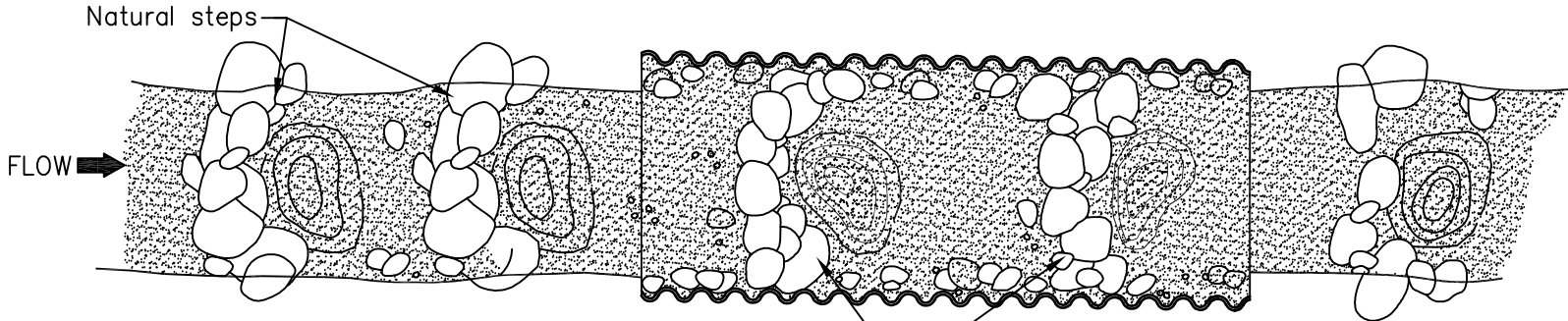
TREATMENTS FOR AQUATIC ORGANISM PASSAGE STEP POOL CHANNEL WITH POOL SEGMENTS

Note:
Step-pool channel for stream simulation
within culvert or profile control.



Optional Bed retention sill no more than half the bed depth. Space to anchor steps or similar spacing in other channel types.

PROFILE VIEW



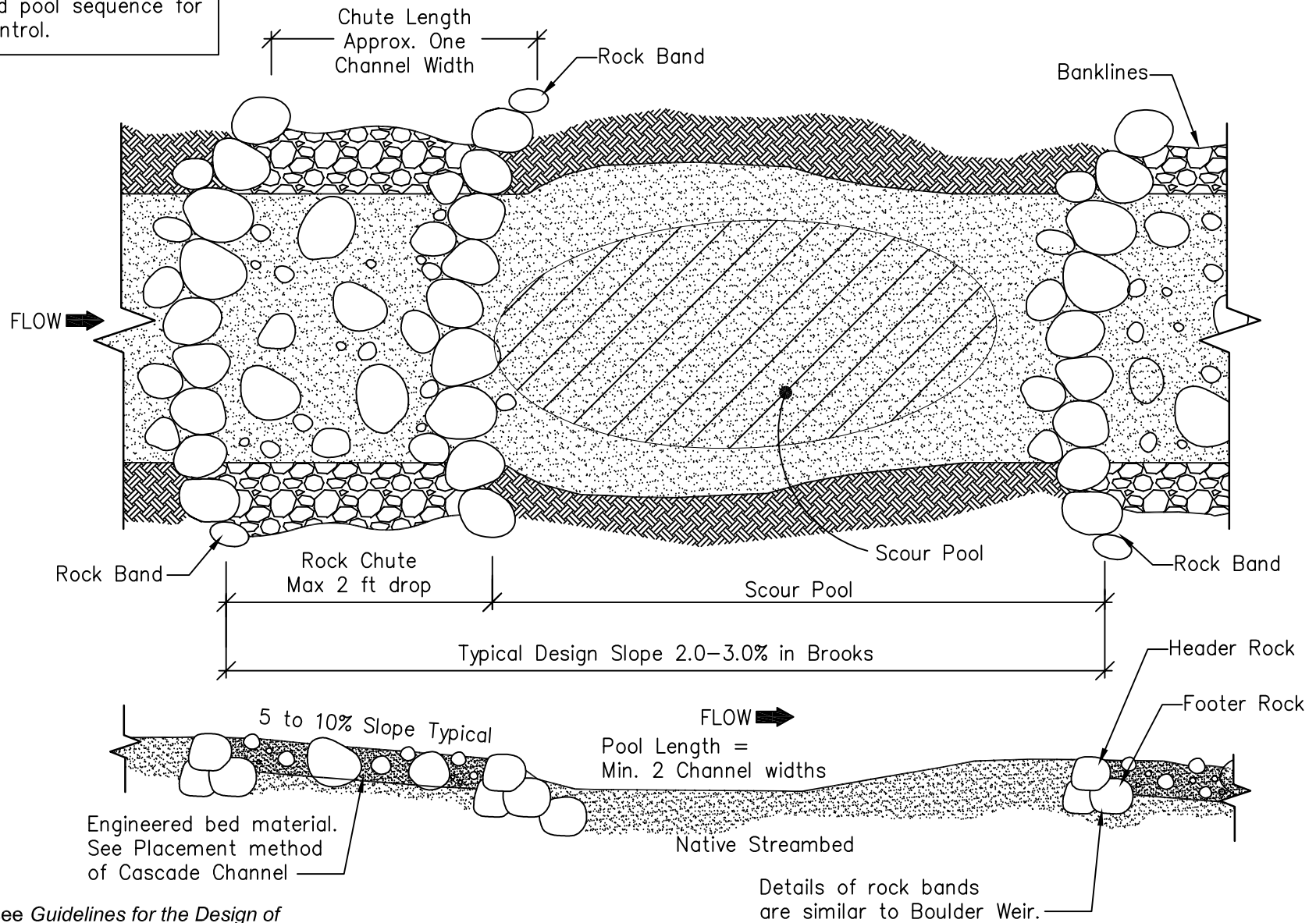
Constructed steps. Spacing and design simulate natural steps.

PLAN VIEW

For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

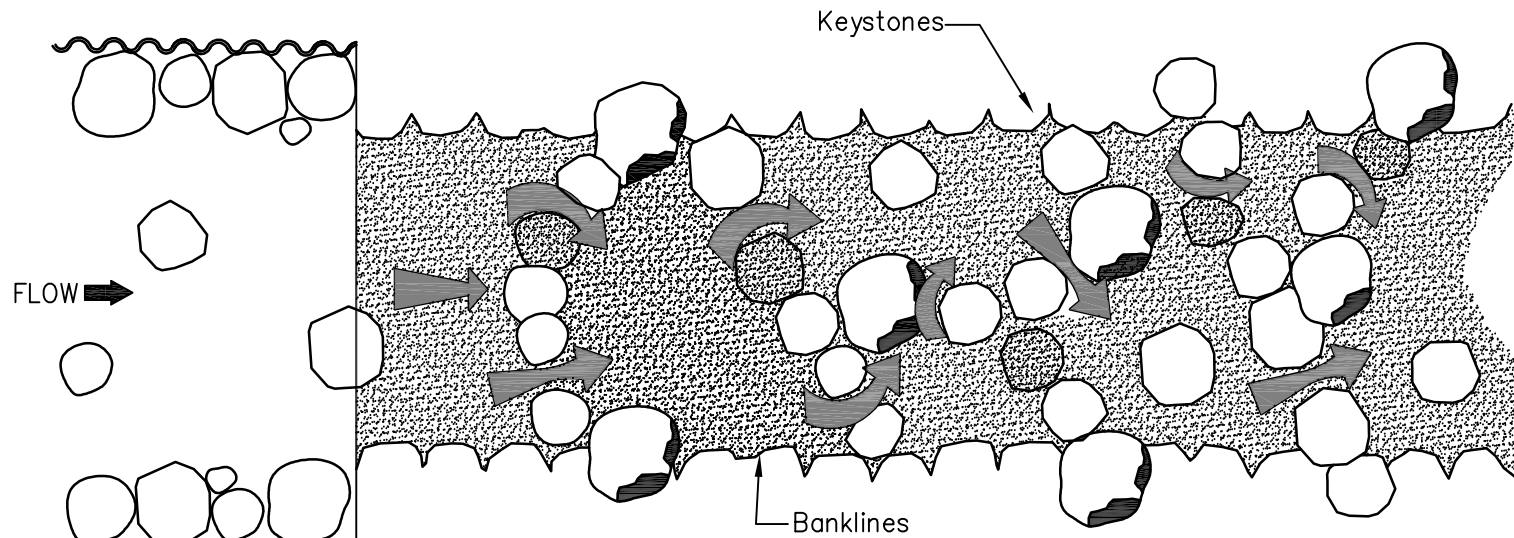
**TREATMENTS FOR AQUATIC ORGANISM PASSAGE
STEP-POOL STREAM SIMULATION**

Note:
Chute and pool sequence for
profile control.

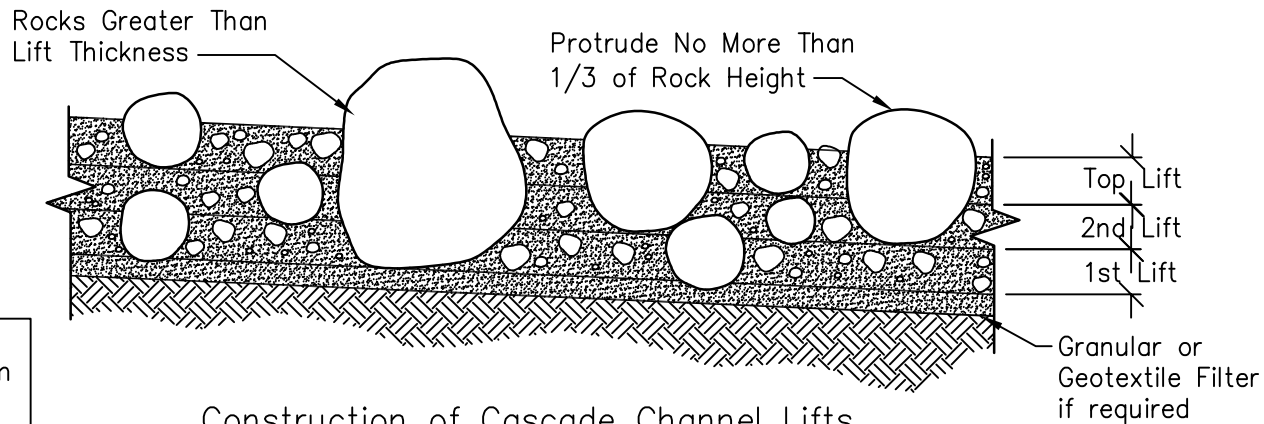


For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

TREATMENTS FOR AQUATIC ORGANISM PASSAGE CHUTE AND POOL SEQUENCE



The Cascade is a complex series of steps at low flow and a rough cascade at higher flows. Boulders are in scattered pattern. Most boulders contact each other.

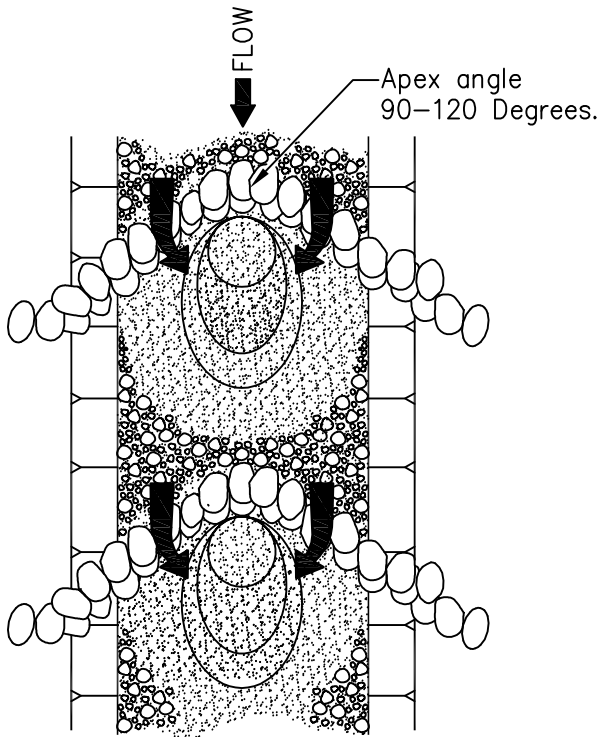


Construction of Cascade Channel Lifts

Note:
Cascade channel for stream simulation within culvert or profile control.

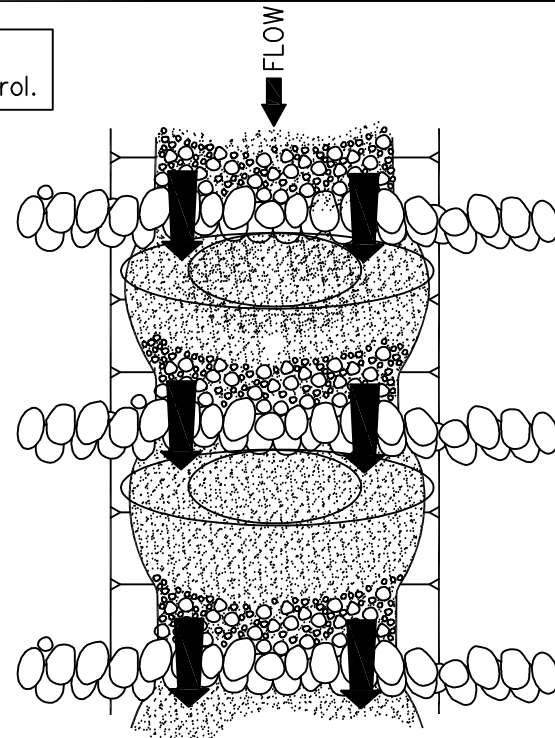
For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

TREATMENTS FOR AQUATIC ORGANISM PASSAGE CASCADE CHANNEL

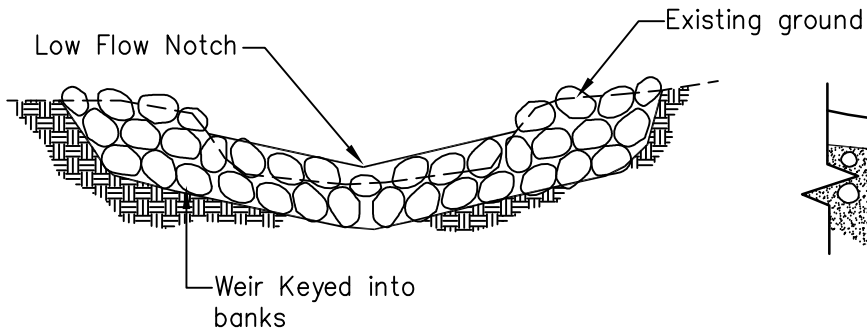


ARCH BOULDER WEIR

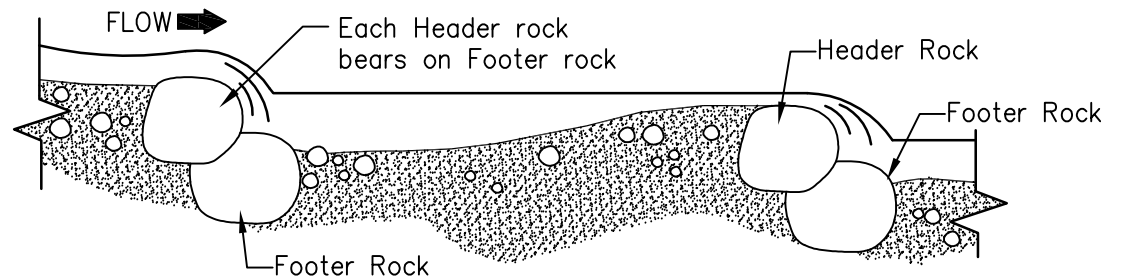
Note:
Boulder weirs for profile control.



STRAIGHT BOULDER WEIR



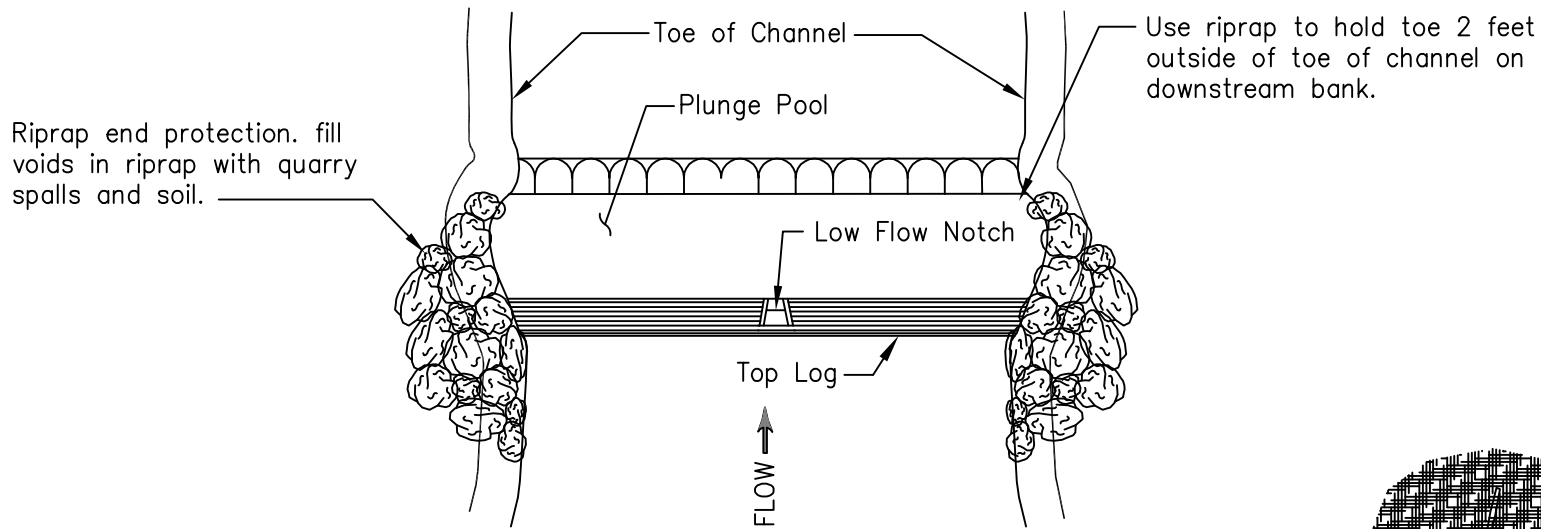
BOULDER WEIR ELEVATION



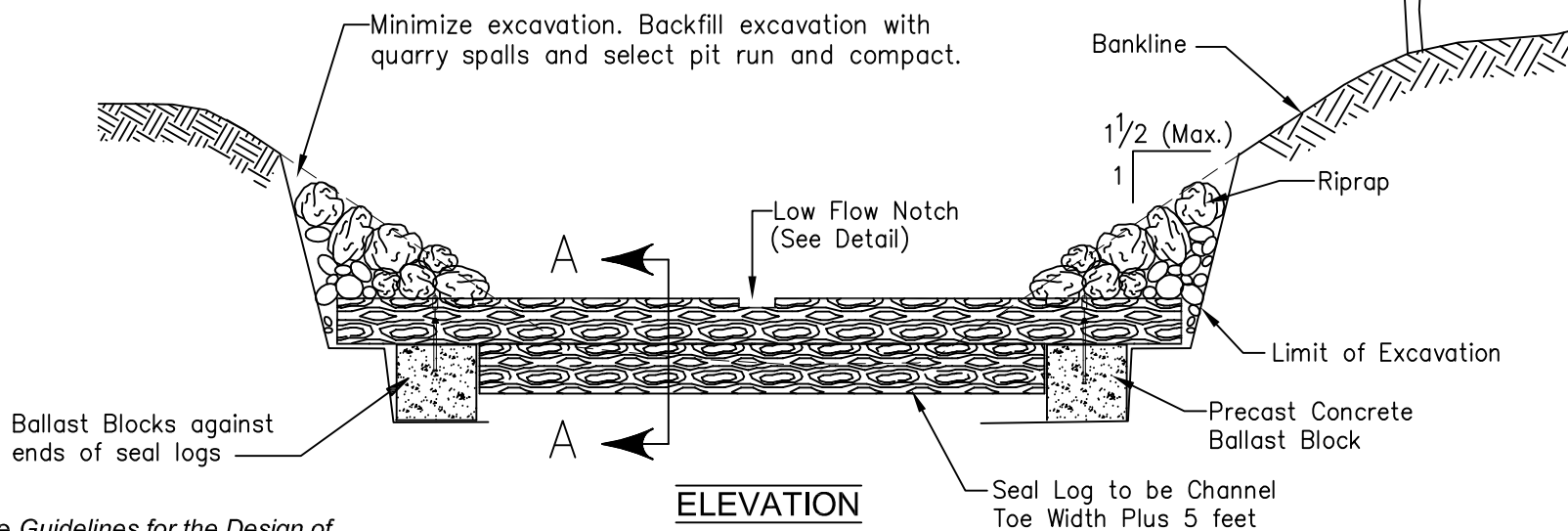
PROFILE

For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

TREATMENTS FOR AQUATIC ORGANISM PASSAGE BOULDER WEIR



PLAN VIEW



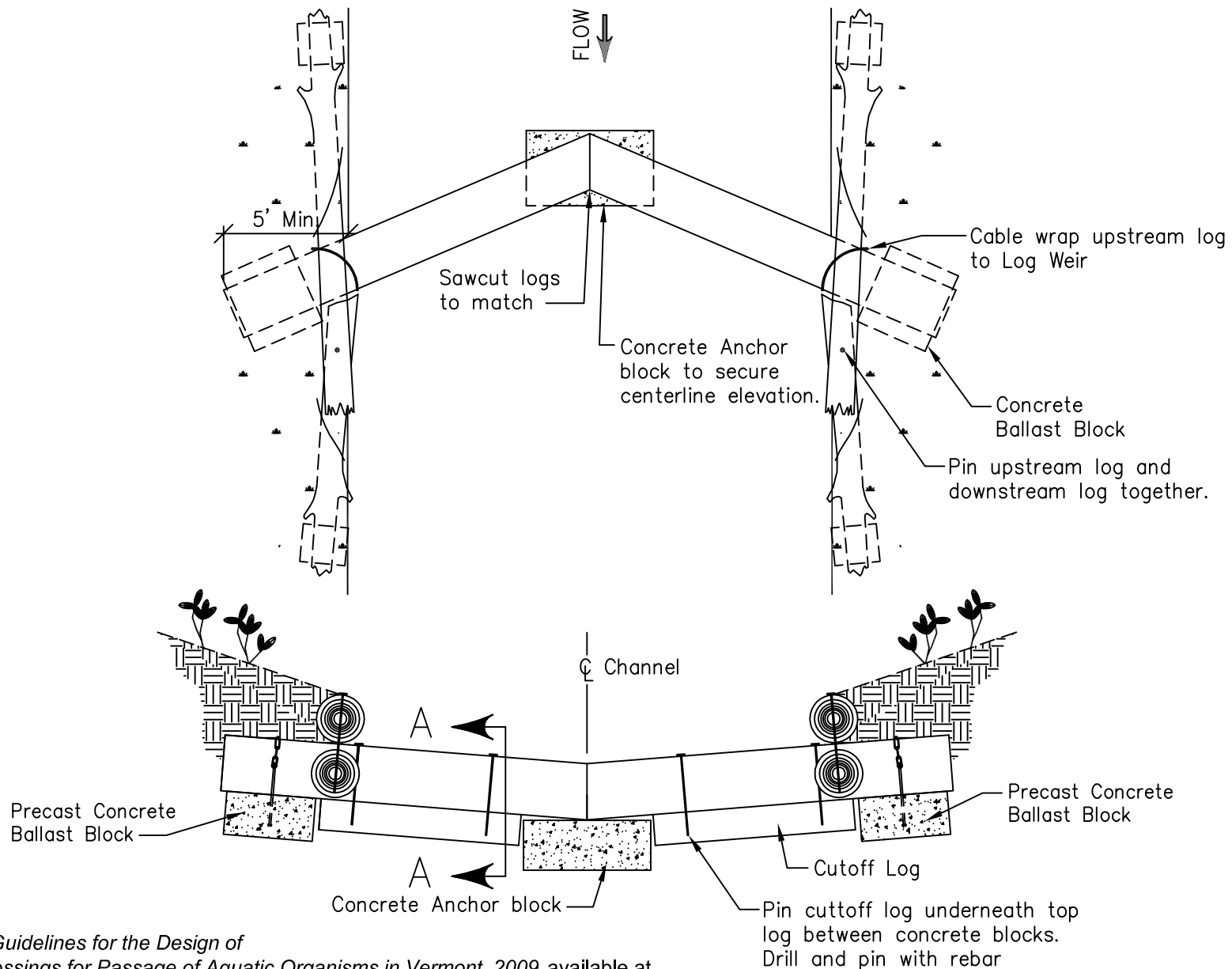
ELEVATION

LOG WEIR

NOT TO SCALE

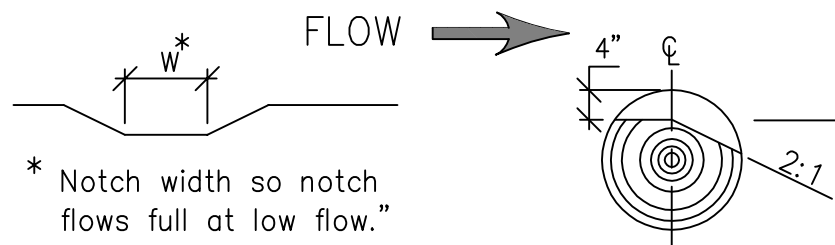
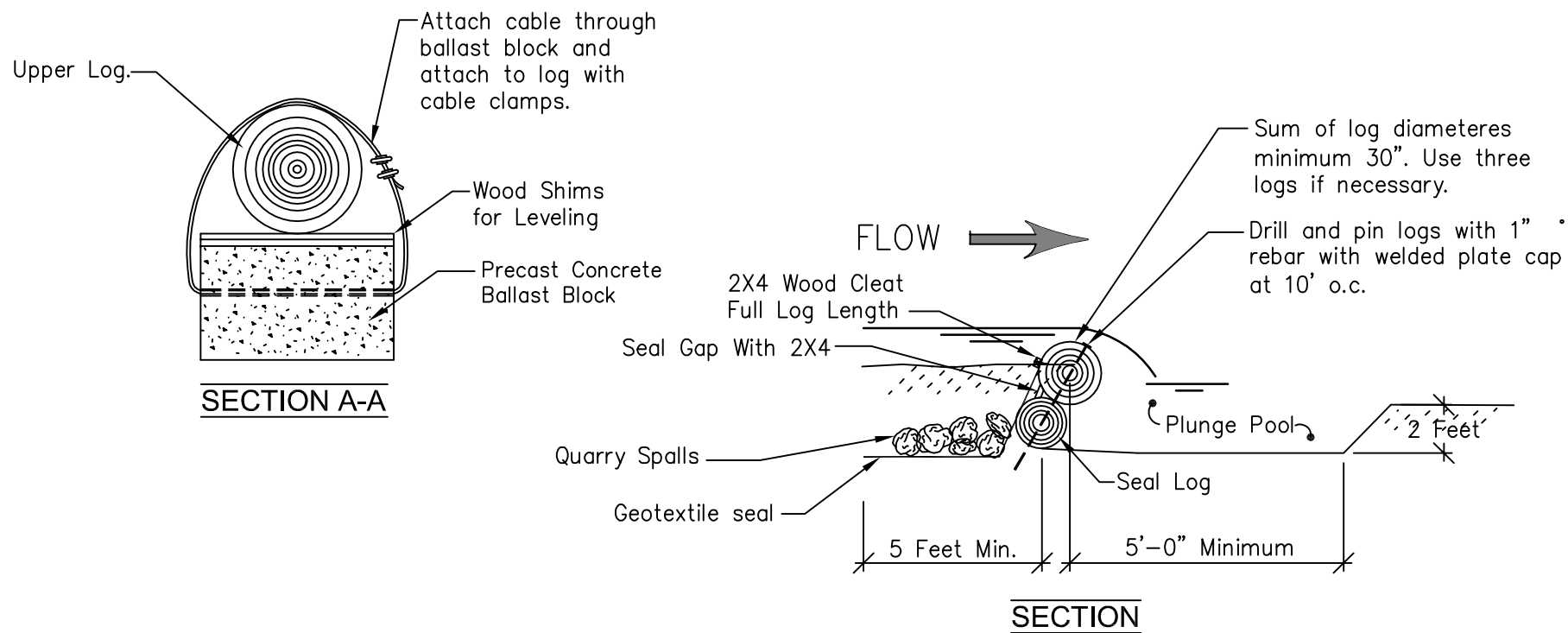
For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at <http://www.vtfishandwildlife.com/library.cfm> libbase_="Reports_and_Documents"

**TREATMENTS FOR AQUATIC ORGANISM PASSAGE
LOG WEIR**



For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

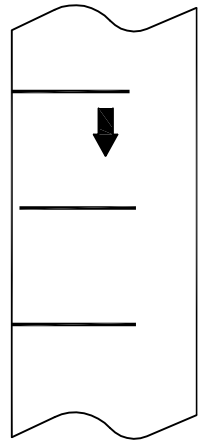
TREATMENTS FOR AQUATIC ORGANISM PASSAGE LOG WEIR WITH LOG CRIB BALLAST



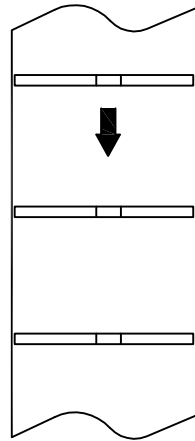
LOW FLOW NOTCH DETAILS

For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

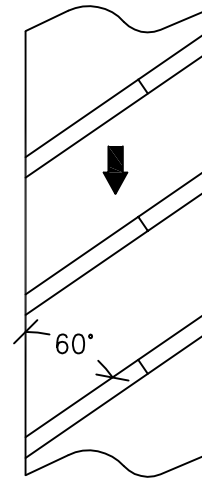
**TREATMENTS FOR AQUATIC ORGANISM PASSAGE
LOG WEIR**



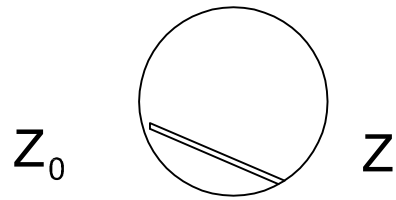
D



L

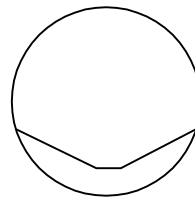


60°



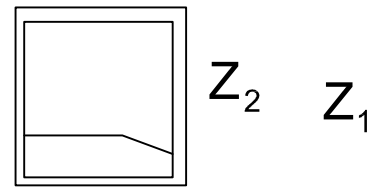
Z₀

Z



CORNER

NOTCH



Z₂

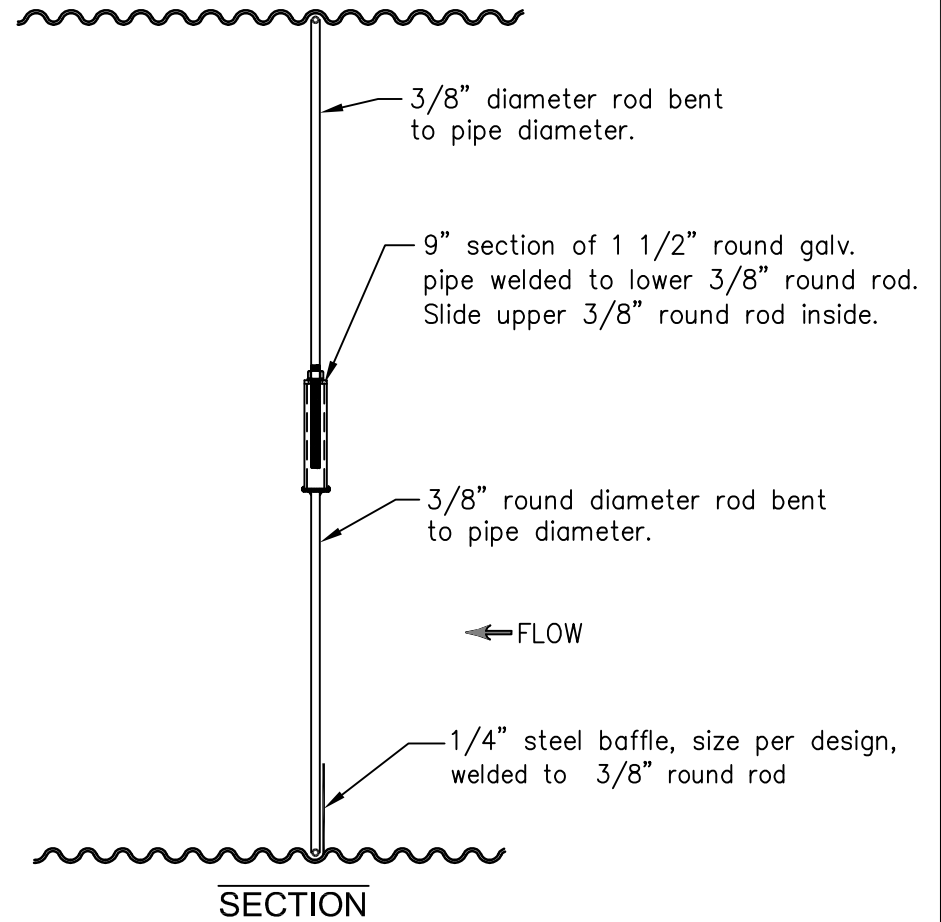
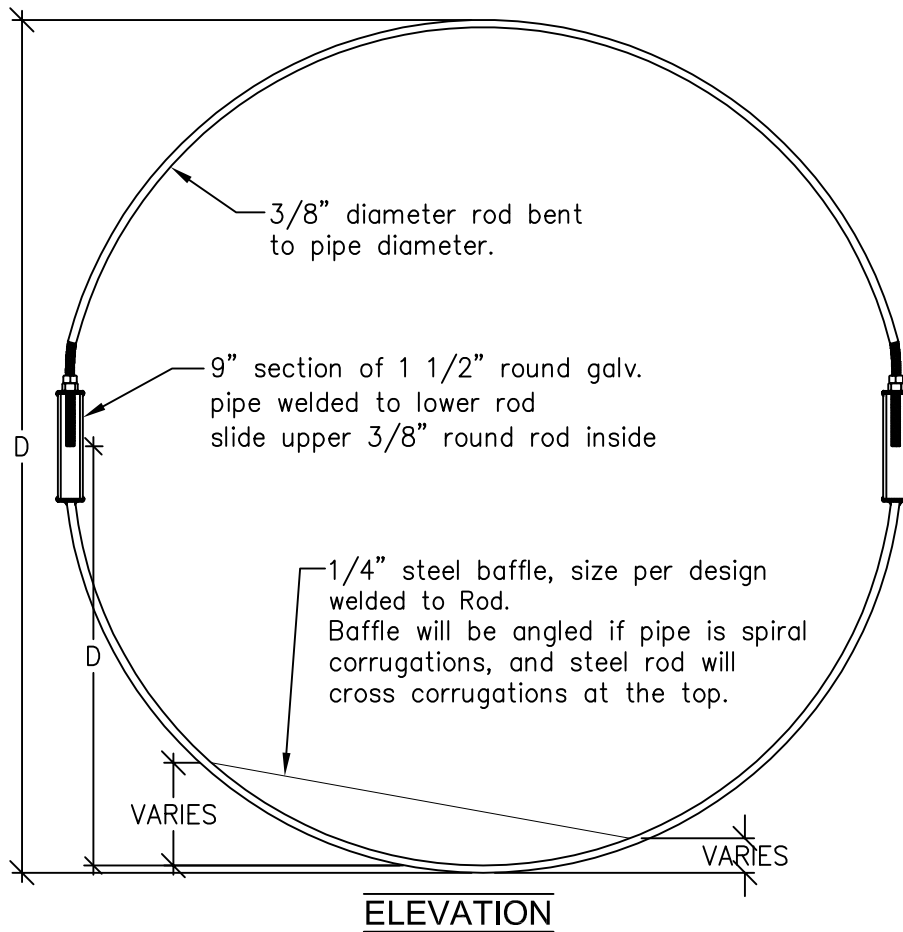
Z₁

ANGLED

NOTE:
Design dimensions D, L, and Z₂ control roughness and minimum depth. See design guidelines for details

For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm?libbase_=Reports_and_Documents

TREATMENTS FOR AQUATIC ORGANISM PASSAGE
TYPICAL CULVERT BAFFLE STYLES

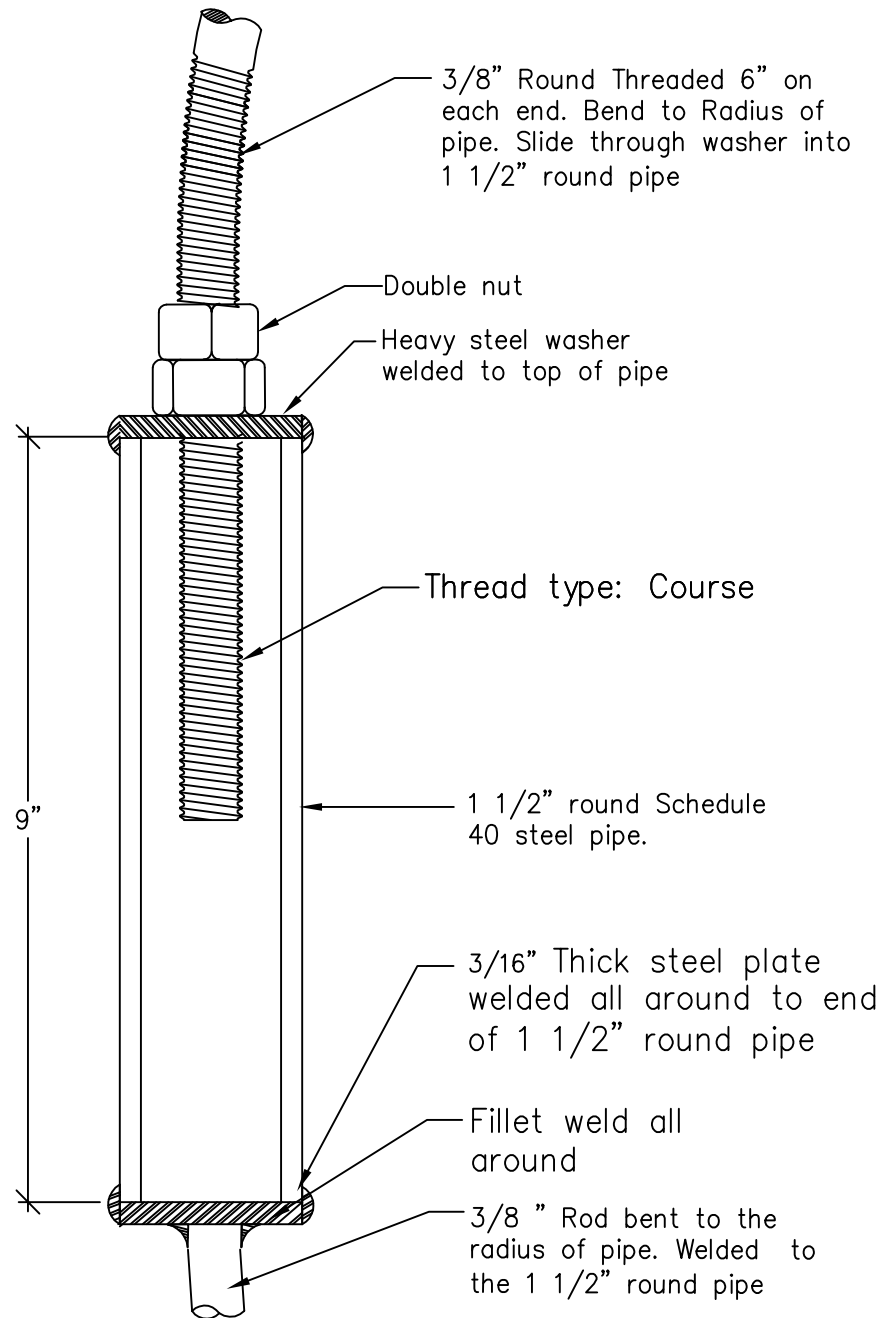


NOTE:

1. All steel to be galvanized after fabrication.
2. Due to possible deformation of pipe, confirm actual shape of each baffle in field before fabrication.

For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at http://www.vtfishandwildlife.com/library.cfm libbase_=Reports_and_Documents

**TREATMENTS FOR AQUATIC ORGANISM PASSAGE
EXPANSION RING CULVERT BAFFLE 1/2**



For details, see *Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont, 2009* available at <http://www.vtfishandwildlife.com/library.cfm> libbase_ =Reports_and_Documents"

TREATMENTS FOR AQUATIC ORGANISM PASSAGE EXPANSION RING CULVERT BAFFLE 2/2