Culvert Length · Upstream Gradient · INLET · Culvert Diameter · Downstream Gradient · OUTLET · Water Depth in Culvert · Bankfull Width Above Culvert · Inlet Gradient · Height above stream surface · Pool Length · Pool Depth

Steps for BFPIP Culvert Surveys- Simple Instructions

Please Note:

- Measuring tape and rod are not in European inches, but survey units. Simply read exactly what the tape or rod shows you, and record down as decimals. e.g. 2.22 or 8.5 units. Does not apply to #19 "Corrugations", where it's designated in European inches. e.g. 1"
- Read and record **WHITE** side of measuring tape only.
- If **multiple pipes**, make a new data point and record each pipe separately.

1. Set up laser level tri-pod somewhere safely in between both ends of culvert. Attach laser sending unit, level and turn on.
2. Attach laser-receiver on top of survey rod, with receiver facing same side as large tics and numbers. Turn on receiver.
3. In ArcPad, while editing Culverts, either add a new Point, or select an existing Point. Open table (Feature Properties) button to edit table.
4. **Date**: Enter current date (format - year, month, day). Example May 13 2008 = 20080513
5. **Collection Method:** From selection choose best. Most likely Field - GPS
6. **Surveyors**: Enter team members present this day. e.g. t.burton, t.caran, j.goby
7. **Stream Name**: Enter known stream name, or write trib + name in the case of a tributary of a known stream, or "unknown" if not known.
8. **Road Name**: Enter road name if known, "private road" is fine**.**
9. **Feature Type**: Select best fit. Most likely Culvert – road stream crossing
10. **Multi Feature**? : Is there more than one feature at the site? If so create points and take measurements for all features.
11. **Bankfull Width**: Measure width across stream channel where high water marks are (i.e. vegetation change, lip or ledge present).

DETAIL OF CORRUGATIONS
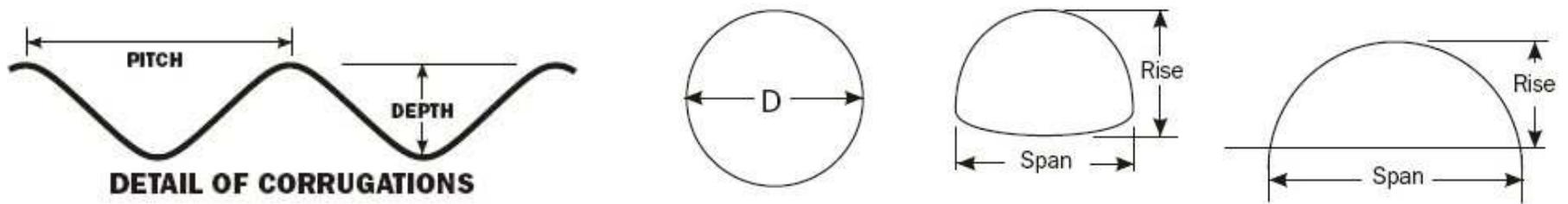
12. **Upstream Gradient**: With Survey rod still at bankfull. **(Note clinometer users eye-height on survey rod)** Using clinometer from culvert inlet lip, look at eye-height on survey rod. Record right hand number in clinometer.
13. **Inlet Gradient**: Using clinometer, stand at culvert inlet lip, looking to the person standing one culvert diameter from inlet. Record right side number in clinometer.
14. **Photo 1: Facing Inlet**: Take first photo, facing inlet. Report number to data recorder.
15. **Inlet Height**: Using laser level and rod with receiver, place rod on bottom-center lip of culvert, and measure height.
16. **Blockage at Mouth:** Percentage of debris blockage at inlet.
17. **Culvert Diameter**: Using measuring tape, measure horizontally at across widest point (the diameter or span) of culvert mouth.
18. **Culvert Type**: From pull-down menu, choose the best descriptor of the culvert's type. e.g. corrugated metal pipe
19. **Corrugations**: In ArcPad, use pull-down menu to select the best choice for pitch and depth of the "waves". N/A if smooth culvert.
20. **Culvert Substrate (stream bottom)**: Look through the culvert; visually estimate and choose between the values in the pull-down menu.
21. **Embedded?**: Looking through the culvert, establish whether or not there is substrate along at least 50% of the culvert.
22. **Rustline/Scour**: Measure from the bottom-center of the culvert to the approximate height of rust inside a metal culvert, or the approximate height of algae or moss inside a cement culvert.
23. **Photo 2: Away From Inlet:** Take second photo while standing over inlet end, facing upstream. Report number to data recorder.
24. **Culvert Length**: Using tape, measure either through or above culvert to get total length.
25. **Photo 3: Away from Outlet**: Take third photo while standing over outlet end, facing away from outlet. Report number to data recorder.
26. **Outlet Height**: Using laser level and rod with receiver, place rod on bottom-center lip of culvert, and measure height.
27. **Water Depth in Culvert**: Using rod, estimate water inside culvert at outlet.
28. **Drop to Pool**: Using rod, measure from rod placed on pool's surface up to culvert outlet lip.
29. **Pool Depth**: Using rod, measure the lowest streambed point within five feet of the outlet.
30. **Pool Length**: Using tape, measure the length of outlet pool to a visible "tailwater" structure.
31. **Downstream Gradient**: Using clinometer, stand at culvert lip, looking to person standing at end of influence of culvert.
32. **Photo 4: Facing Outlet**: Take fourth photo, facing outlet. Report number to data recorder.
33. **Comments**: Make comments about the condition or anything notable about the culvert. If comments already exist, read them, and either add to relevant comments or replace comments with your own.
34. **Supplemental Photo**: Take fifth photo of the general area above the culvert, with background for reference. Try to get a house, sign, or fence in the picture. Report number to data recorder.
35. Click the green "OK" button in the lower left corner of the screen. **Do not press the RED X**.
36. Pack up and move on.