

extend far enough to cover the area under the high water elevation and, if practical, shall cover an area two feet (2 ft) above high water. In the case of wide flood plains, the precise definition of minor variations in elevation \pm one foot (1 ft) may be omitted and average elevations over longer horizontal distances may be employed. **The Hydraulic Design Unit reserves the right to determine the spacing between the cross-sections.**

All flood plain cross-sections shall be referenced by station and angle to the stream traverse and shall be plotted in the sUPCb#.dgn file. It is imperative that the location of these cross-sections be referenced to some base data. The left and right side of all cross-sections (looking downstream) shall be clearly referenced.

Cross-sections should be plotted at a scale that will permit realistic definition of detail without occupying excessive area on the situation survey roll. In all cases, the horizontal and vertical scale will be clearly indicated.

The location and description of the land cover for each subsection shall be shown for each cross-section. The description shall be in sufficient detail to permit the designer to differentiate between the degrees of cover within a given category, i.e., tall trees with dense undergrowth, light woods, dense woods - not just woods.

When flood plain cross-sections are obtained for a longitudinal encroachment, they shall span the entire flood plain below the high water elevation, and, when practical, shall be carried two feet (2 ft) above the high water elevation. They shall be carried horizontally and vertically to the centerline of the existing roadway or horizontally to the centerline of the proposed roadway if there is no existing roadway.

High water elevations and topographic data shall be obtained, as much as practical, conforming to the preceding flood plain cross-section instructions.

Station and angle to the roadway centerline or a traverse line shall reference cross-sections for a longitudinal encroachment. This survey data may be shown as part of the highway survey or it may be reported independently. If the latter course is taken, sufficient correlation with the highway survey should be indicated.

Sec. 7.10 **Environmental Data**

The need for environmental data in the engineering analysis of a stream crossing stems from the obligation to investigate and mitigate possible impacts due to specific design configurations. In those cases where an environmental assessment has been completed earlier in project development, part or all of this evaluation may already have been accomplished. Where an environmental assessment has not been made, the data developed for planning and location of the crossing is often of value in the engineering-environmental analysis.