STREAM CROSSING CONSTRUCTION SPECIFICATIONS

Site Preparation. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material. The cross section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.

Construction operations shall be done in such a manner that erosion and water pollution are minimized and held within reasonable and legal limits. State and Federal laws shall be followed when working in streams.

Clearing. All trees and brush shall be removed from the area before excavation starts. The foundation shall be cleared of all stumps, roots, brush, sod, and other debris. All waste materials shall be disposed of in a sightly and workmanlike manner in a designated area out of the natural floodway.

Materials

Geotextile. The geotextile shall be a non-woven non-heat bonded needle-punched fabric having a minimum tensile strength of 150 pounds (minimum average roll value) and weighing a minimum of 6 ounces per square yard.

In the upstream and downstream toe trenches of ford crossings, the geotextile shall be lapped back over its own trench a minimum of 1 foot beyond the edge of the trench and anchored to the fabric using anchoring pins placed on 5 foot centers. When more than one width of geotextile is required, the downstream panel shall be installed first. The next upstream panel shall be installed with a minimum of 24 inches overlap over the first section. Anchoring pins shall be installed on 3 foot centers 6 inches from the downstream edge of the lap.

Tears in the geotextile should be repaired immediately by removing all surface material and soil around the tear a minimum distance of 24 inches. Spread a new section of geotextile material over the area and anchor with anchoring pins around all sides.

Anchoring Pins. Anchoring pins shall be fabricated using a minimum of 9 gauge galvanized wire. Pins may be supplied by the geotextile manufacturer. Pins shall be 8 inches long by 1 inch across and be fully driven into the ground. All anchor pins shall be installed with the top width lying perpendicular (at right angles) to the direction of flow in the stream. Pins may also be fabricated from No. 3 rebar as shown on the drawing.

Anchoring pins shall be placed through the geotextile in all excavated trenches and overlaps on approximately 3 foot centers.

Care should be taken not to rip the geotextile while installing anchor pins. Pins should be sharpened to permit easy penetration through the geotextile. If a pin must be removed for any reason, plug the created opening with a wadded ball of geotextile.

Minimum No. of Anchoring Pins Required

Number of Fabric Strips Across Channel	Factor Times Total Length of Crossing
1	0.85
2	1.3

Example: Stream crossing 80 feet in total length using two adjacent strips of fabric for a crossing width of 20 feet. Minimum number of pins is 1.3 times 80 feet for a total of 104 pins. Specify 110 anchor pins.

Surfacing Material. Aggregates for the surfacing material may be quarried stone, that will conform to the requirements for Kentucky DOT coarse aggregate. Gradation may be sizes in range between No. 2 to No. 610.

Base Material. Kentucky DOT Class II riprap or similar coarse aggregate shall be used.

Culverts. Pipes shall be laid on a firm foundation to the neat lines and grades shown on the plans. Selected backfill shall be placed around the pipes in 6 inch layers and thoroughly compacted. Gravel can be used to bed pipe under wet conditions. The gravel shall be protected with larger stone at the upper and lower ends of the pipe.

Joints of pipe shall be sealed in accordance with manufactures' specifications. Pipes shall not be laid directly on rock. There must a soil bed or gravel cushion of at least 6 inches between the pipe and rock.

The outlet end of culverts shall terminate on the natural streambed unless protective outlet structures are installed.

Culvert materials shall be as specified by the engineer or as shown on the drawings.