

NATURAL RESOURCES CONSERVATION SERVICE CONSTRUCTION SPECIFICATIONS

FILTER STRIP

1. Scope

The work shall consist of furnishing all materials and placing them on all designated areas to the limits as shown on the drawings, or as staked in the field, and performing cultural operations to establish a filter strip. Procedures, technical details, and other information listed provide additional guidance for carrying out selected components of this practice. This material supplements the requirements and considerations therein.

2. Specifications

Filter strips shall be a minimum of 30 feet and no more than 120 feet in flow length. The design width shall be determined to the extent needed to meet the primary purpose of the practice and the producer's objectives. [Agronomy Technical Note No. 2](#), Using the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the Design and Predicted Effectiveness of Vegetative Filter Strips (VFS) for Sediment, will provide guidance to design filter strips. The [Filter Strip Life Span Design for Sediment Tool](#) can be used to assist with the design.

When designing adjacent to watershed flood control structures or other surface-water reservoirs with fluctuating water levels, the filter will be designed above the elevation that would be inundated during a 10-year, 24-hour frequency storm. The filter flow length will also continue from the design storm elevation to the crest of inlet of the structure. The maximum flow length will be the design filter flow length plus the distance between the design storm elevation to the crest of the inlet of the structure.

3. Vegetation

The filter will be established to permanent herbaceous vegetation consisting of a single species or a mixture of grasses, legumes, and/or other forbs adapted to the local conditions.

Species selected should be adapted to the conditions and pollutants the filter is being designed for. For seeding design, rates, and seedbed preparation refer to Conservation Practice Standards 512, Pasture and Hay Planting; and 550, Range Planting; or if the site has a predicted erosion rate exceeding two times the tolerable soil loss (T), refer to Conservation Practice Standard 342, Critical Area Planting.

Plant characteristics may be reviewed at <http://plants.usda.gov/>.

4. Setback Zones for Wells, Surface Water Inlets, Surface Water Systems, and soluble contaminants

When the filter strip is being designed to serve as a set back zone for potential pollutants, the minimum flow length will be 30 feet unless specified by product labels, local, state, or federal regulations.

For atrazine-containing products, flow length will be a minimum of 50 feet from all wells, including abandoned wells, drainage wells, and sinkholes for mixing, loading, or application areas. When designing as a filter between mixing and loading areas and any intermittent stream, river, or natural or impounded reservoir, the minimum flow length will also be 50 feet. For application areas, the minimum flow length will be 66 feet at points where field run-off enters perennial or intermittent streams or rivers. The minimum design flow length will be 200 feet when adjacent to natural or impounded lakes or reservoirs where atrazine-containing products are being applied. Farm ponds are exempt if the water is not used for drinking water, and if the location is wholly on the owner's property and the discharge is not conveyed directly to a perennial or intermittent stream or river.

Soluble Contaminant Trapping Criteria	Average Filter Strip Design Slope			
	0.5%	1.0%	1.5%	2.0% or greater
Soluble Contaminant, Minimum Allowable (ft)	30	30	30	30
Soluble Contaminant, Preferred* (ft)	76	108	120	120

It is difficult to maintain sheet flow for distances greater than 120 feet through the filter strip. Once sheet flow has converted to concentrated flow, the effectiveness of the filter is reduced. Filter strips wider than 120 feet often will require additional practices such as spreader ditches, level berms, vegetative barriers, or grade control practices installed at the field/filter strip edge and/or within the filter strip at critical location to insure proper function.

* 30 minute flow through time distance was calculated using the National Engineering Handbook (NEH) Part 651, Agricultural Waste Management Field Handbook (210-VI-NEH 651, Amend KS7, Oct 2002) Table KS10-4; depth of flow 0.5 inch. (Note: When designing a vegetated Treatment Area, use Conservation Practice 635, Vegetated Treatment Area.)

When determining flow length for both sediment and soluble contaminants, do not add the two together. The required flow length for soluble contaminants will also be effective for trapping sediments

5. Required Documentation

Form KS-ECS-393, Filter Strip
 Form KS-ECS-4, Grass Seeding
 Aerial photo or detailed sketch identifying practice location

6. Operation and Maintenance

Refer to Kansas Agronomy Technical Note KS-42, Operation and Maintenance - Filter Strip.