

**TREATMENT STRATEGIES BASED ON CLASSIFICATION**

Stream classification can be used not only to assess general trends in stream behavior but also to provide a guide to the selection of treatment strategies. The two tables provided below have been developed as such a guide\*. Since every stream system is unique, these are only general trends and there are certainly exceptions.

**Treatment Strategies Based on Stream Classification for Low Banks (< 8 ft.)**

Simon CEM Stage	Rosgen Classification	Treatment Strategies	Typical Practices <sup>1</sup>
I Stable <sup>2</sup>	C, E	Maintain existing watershed runoff volumes and patterns and sediment loads. Maintain or improve existing riparian corridor vegetation. May need to implement soil bioengineering in isolated spots.	Spot treatments with fascines, live stakes, seedlings, rooted stock, or grasses.
III Down-cutting	Gc	Reduce watershed runoff and sediment loads. May need to raise channel bottom to reconnect stream to floodplain and reestablish sinuosity, or may need to establish grade control structurally. May need to reestablish or improve riparian corridor vegetation, DO NOT IMPLEMENT SOIL BIOENGINEERING ALONE.	May need to either fill channel and realign or install grade control; then whatever soil bioengineering is required.
Early IV Widening and down-cutting	F	May need to reduce watershed runoff and sediment loads. May need to create more floodplain (excavation) and shape banks enough to place toe protection. May need to reestablish or improve riparian corridor vegetation. DO NOT IMPLEMENT SOIL BIOENGINEERING ALONE.	May require minor grading with permanent toe protection; then whatever soil bioengineering is required.
IV <sup>3</sup> Widening w/o down-cutting	C, E <sup>3</sup>	Maintain existing watershed runoff volumes and patterns and sediment loads. Reestablish or improve existing riparian corridor vegetation. Consider physically modifying channel width. May need to shape banks enough to place temporary toe protection. Implement soil bioengineering where needed.	May require minor grading with temporary toe protection; then whatever soil bioengineering is required.
Late IV Widening	F, Bc	Maintain existing watershed runoff and sediment loads. May need to create more floodplain (excavation) and shape banks enough to place toe protection. May need to reestablish or improve riparian corridor vegetation. DO NOT IMPLEMENT SOIL BIOENGINEERING ALONE.	Minor grading with permanent toe protection; then whatever soil bioengineering is required.
Early V Deposition	F, Bc	Maintain existing watershed runoff and sediment loads. May need to create more floodplain (excavation) and shape banks enough to place toe protection. Improve riparian corridor vegetation. Implement soil bioengineering where needed.	Minor grading with permanent toe protection; then whatever soil bioengineering is required.
Late V Deposition	Bc, C, E	Maintain existing watershed runoff and sediment loads. May need to shape some banks enough to place toe protection. Improve riparian corridor vegetation. Implement soil bioengineering where needed,	Minor grading with permanent toe protection; then whatever soil bioengineering is required.
VI Stable <sup>2</sup>	C, E	Maintain existing watershed runoff volumes and patterns and sediment loads. Maintain or improve existing riparian corridor vegetation. May need to implement soil bioengineering in isolated spots.	Spot treatments with fascines, live stakes, seedlings, rooted stock, or grasses.

**Treatment Strategies Based on Stream Classification\* for High Banks (≥ 8 ft.)**

Simon CEM Stage	Rosgen Classification	Treatment Strategies	Typical Practices <sup>1</sup>
I Stable <sup>2</sup>	C, E	Maintain existing watershed runoff volumes, patterns and sediment loads. Maintain or improve existing riparian corridor vegetation. May need to implement soil bioengineering an isolated spots.	Spot treatments with fascines, live stakes, seedlings, rooted stock, or grasses.
III Down- cutting	Gc	Reduce watershed runoff and sediment loads. Raise channel bottom to reconnect stream to floodplain and reestablish sinuosity, or establish grade control structurally. May need to reestablish or improve riparian corridor vegetation. DO NOT IMPLEMENT SOIL BIOENGINEERING ALONE.	Either fill channel and realign or install grade control; then whatever soil bioengineering is required.
Early IV Widening and down-cutting	F	Reduce watershed runoff and sediment loads. Create more floodplain (excavation) and shape banks to reduce slope failure hazard and place toe protection. May need to reestablish or improve riparian corridor vegetation. DO NOT IMPLEMENT SOIL BIOENGINEERING ALONE.	Major grading with permanent toe protection; then whatever soil bioengineering is required.
IV <sup>3</sup> Widening w/o down- cutting <sup>3</sup>	C, E <sup>3</sup>	Maintain existing watershed runoff volumes, patterns and sediment loads. Reestablish or improve existing riparian corridor vegetation. Consider physically modifying channel width. May need to shape banks enough to reduce slope failure hazard and to place temporary toe protection. Implement soil bioengineering where needed.	May require grading with temporary toe protection; then whatever soil bioengineering is required.
Late IV Widening	F, Bc	Maintain existing watershed runoff and sediment loads. Create more floodplain (excavation) and shape banks to reduce slope failure hazard and place toe protection. May need to reestablish or improve riparian corridor vegetation. DO NOT IMPLEMENT SOIL BIOENGINEERING ALONE.	Major grading with permanent toe protection; then whatever soil bioengineering is required.
Early V Deposition	F, Bc	Maintain existing watershed runoff and sediment loads. May need to create more floodplain (excavation) and shape some banks to reduce slope failure hazard and to place toe protection. Improve riparian corridor vegetation. Implement soil bioengineering where needed.	Minor grading with permanent toe protection then whatever soil bioengineering is required.
Late V Deposition	Bc, C, E	Maintain existing watershed runoff and sediment loads. May need to shape some banks to reduce slope failure hazard and to place toe protection. Improve riparian corridor vegetation. Implement soil bioengineering where needed.	Minor grading with permanent toe protection then whatever soil bioengineering is required.
VI Stable <sup>2</sup>	C, E	Maintain existing watershed runoff volumes, patterns and sediment loads. Maintain or improve existing riparian corridor vegetation. May need to implement soil bioengineering in isolated spots.	Spot treatments with fascines, live stakes, seedlings, rooted stock, or grasses.

<sup>1</sup> Most soil bioengineering practices will be placed on the active floodplain above the top of the low streambanks. Some practices may be placed on the upper part of the bank.

<sup>2</sup> Stable from a geomorphic perspective.

<sup>3</sup> "C" or "E" stream types with higher width/depth ratios than the norm, and with accelerated streambank erosion rates, may be in Stage III due to loss or deterioration of riparian corridor vegetation.

\*Based on information provided by Lyle J. Steffen, retired Geologist, USDA-NRCS, Lincoln, NE.