

# Questions & Answers

**Centerville Creek (Miller Property)**

**Streambank Restoration Project**

**Shrewsbury and Codorus Townships, York County, PA**

**Q:** Is a grading plan available? It is difficult to determine grading quantities off just the cross sections since the E&S plan doesn't show proposed contours.

**A:** There is no separate grading plan showing proposed contours. The proposed grading is defined by the stream profiles, cross sections, and restoration features shown on the plans. Grading is generally limited to the streambanks and areas necessary to construct the proposed channel and stabilization features. The majority of bank grading is along the left descending bank, with some point-bar clearing and grading anticipated along the right bank near Cross Section 3.

Where suitable existing grassy root mass is present, the upper streambank may be laid back and blended into the top of the rock toe to retain existing root protection where practicable.

The most significant earthwork is anticipated at the downstream end of the project, where the stream will be returned to its former alignment following the recent oxbow cutoff. Suitable material generated during grading will be reused to backfill the existing/abandoned channel after the restored channel is completed and the channel block is installed.

**Q:** It appears there may be substantially more cut than fill areas. Does excess soil need hauled off-site or will the site balance?

**A:** Off-site disposal of suitable excavated material is not required. The project is intended to reuse suitable material generated from bank grading and channel shaping on site, primarily for backfilling the abandoned channel at the downstream end of the project. The construction plans specifically contemplate reuse of material salvaged during grading for this purpose.

**Q:** Does stone for rock toe need to be stackable boulders or just R-7 type material?

**A:** Rock toe does not need to consist of stackable boulders. R-6 stone is sufficient for the proposed rock toe, and R-7 stone is also acceptable. The larger footer stones should be keyed into the channel bed a minimum of approximately 1 foot. Smaller stone may be used above the footer course as necessary to construct and blend the toe treatment. The E&S/construction notes identify R-6 as the minimum size for streambank protection and require footer rock to be keyed into the channel. Although not shown on the plan, the contractor should plan to install up to (6) random boulder clusters (3 to 4 boulders per cluster) at the direction of the on-site engineer. The location of the clusters will be determined by site conditions at the time of construction and are intended to enhance aquatic habitat.

**Q:** Please confirm bypass pumping of stream is not required.

**A:** Continuous bypass pumping is not required. Construction should be completed during low-flow conditions and staged to minimize the duration of active in-stream disturbance and turbidity. The majority of the bank work can be completed from the top of bank or edge of channel. Localized diversion of flow around active work areas using boulders or other practical means is encouraged where feasible, but a pumped bypass system is not required.

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**Q:** Is E&S matting required? If so can an area or amount be provided?

**A:** No specific erosion-control matting areas are identified on the plans. Seed and mulch in accordance with the approved E&S plan is sufficient for final stabilization. Additional matting may be used if needed to address localized field conditions or stabilization problems.

**Q:** Please confirm plant protection is only required on trees, not shrubs.

**A:** Herbivore protection shall be provided for both planted trees and shrubs. Appropriate tree tubes, shelters, or similar protective measures should be installed for all woody container plantings.

**Q:** What type of seed is specified for floodplain areas? The planting plan only indicates ERNST 122 for disturbed wetland areas.

**A:** Ernst 122 FACW Wetland Meadow Mix is required only for temporarily disturbed wetland areas. Other disturbed streambank/floodplain areas should be permanently seeded with an appropriate permanent seed mixture selected in accordance with the approved E&S plan based on the applicable site conditions. Seed and mulch should be applied to establish permanent stabilization.

**Q:** At the densities specified in the planting plan, I am calculating (66) 1-gal shrubs and (228) 1-gal trees are required (no live stakes or bare root are shown). Please confirm.

**A:** The calculated quantity of approximately 228 trees is correct based on the 2.28-acre tree planting area and the specified density of 100 trees per acre. The 0.22-acre shrub planting area equates to approximately 66 shrubs if one-gallon container shrubs are used throughout.

However, the planting plan allows shrubs or live stakes within the designated streambank planting areas. The contractor may use the most practical and cost-effective combination of containerized shrubs and live stakes, provided the planting limits, maximum 8-foot spacing, native-species requirements, and overall intent of the approved planting plan are maintained. Existing willow and dogwood material within the project limits can be salvaged and used for live staking where suitable and practicable. Trees and any containerized shrubs shall be a minimum one-gallon container size.

**Q:** During the pre-bid, Bill mentioned R6 as the minimum rock size. Could you clarify whether we are looking to do stacked boulders or a riprap placement?

**A:** It should be closer to stacked boulders than riprap. The plans call for "Rock Toe Protection" and specify minimum R-6 rock, with the footer rock keyed a minimum of 1' into the channel. Something similar to the photos below.

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**Q:** Can you clarify the shrub density? The planting plan calls for 300 shrubs per acre at 8'x8' spacings but this spacing is actually 680 stems per acre. 300 shrubs per ac is closer to 12' spacings.

**A:** The 300 shrubs/acre and 8' x 8' spacing shown in the planting plan do not match mathematically. Please use 300 shrubs per acre as the controlling requirement, which is approximately 12-foot spacing.

**Q:** Can you clarify the tree density? The plan calls for 100 trees per acre at 10'x10 spacing but this spacing would create 435 stems per acre. 100 trees per ac is closer to 20' spacings.

**A:** Same issue with the trees. Please use 100 trees per acre as the controlling requirement, which is approximately 20-foot spacing.

**Q:** Is there a warranty on the planting, such as 1 year 100% survival?

**A:** A one-year, 100% survival warranty is not included in the approved planting plan or permits.

**Q:** Only the trees are receiving biodegradable shelters, and the shrubs will be unprotected?

**A:** The planting plan calls for protection on the trees. Shrub protection is not required, though recommended. The same shelters (4-to-5-foot shelters are preferred) used for tree protection can also be used for the shrubs.

**Q:** Rock toe detail indicates a single course of rock toe while sections appear to indicate 1-3 courses (depending on location) with no footer. Please confirm contractor to price per sections.

**A:** The contractor should price the rock toe based on the applicable cross-sections. The typical detail is general, while the sections show the anticipated rock configuration at the different locations. Rock should be minimum R6, with the bottom/footer rock keyed into the channel a minimum of 1 foot.

**Q:** Please confirm contractor can work in the wet and will not be required to divert flow around work areas.

**A:** A full stream diversion or dewatering system is not required for the general streambank work. Work should be completed during low-flow conditions and from the streambank/edge of channel. The restored channel at the downstream end does need to be completed in dry conditions before flow is redirected into it. Temporary controls can be used as needed to keep the work area stable and minimize turbidity.

**Q:** Has the engineer come up with a cut fill quantity?

**A:** Cut/fill quantities were not calculated as part of the design. The project was designed with the intent of reusing suitable excavated material onsite for channel backfill and restoration work and minimizing the need for material import or export. The contractor should account for the earthwork necessary to complete the project based on the plans and field conditions.

**Q:** Will there be an area on site where net cut can be wasted, or will contractor be required to export all spoils?

**A:** No material will be exported from the site. Excess spoil can be placed in the channel which will be backfilled after the flow is diverted to the restored channel. Suitable excavated material should be reused

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onsite as much as practical for channel backfill, grading, floodplain restoration, and other project work. There is not a designated permanent spoil area shown on the plans.

**Q:** Please confirm specification for soil stabilization matting required at disturbed areas.

**A:** The plans do not specifically identify areas requiring erosion-control matting. Disturbed areas should be seeded, mulched, and stabilized in accordance with the E&S plan. An erosion control blanket detail is included in the plans and may be used where needed based on field conditions, but matting is not shown as a requirement for all disturbed areas.

**Q:** Please provide a detail for shrub cages.

**A:** Shrub cages are not required by the planting plan. While not required, it is recommended, though. The same shelters used for tree protection (4-to-5-foot shelters are preferred) can also be used for the shrubs.

**Q:** Please confirm whether shrubs are to be planted either

- a. Along streambanks in areas indicated as "shrub planting area" at a maximum spacing of 8' on center. Planted above bank full elevation in two rows approximately 8' apart.
- b. 300 shrubs per acre in areas indicated as "shrub planting area"

**A:** The intent is 300 shrubs per acre within the areas shown as shrub planting areas. This works out to roughly 12 foot spacing. They do not need to be installed in two rigid rows at 8 foot spacing. The layout can be adjusted in the field as needed around existing vegetation and site conditions.

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