KELLY BRANCH
SPECIAL PROVISIONS

PROPOSAL FORM

BALTIMORE COUNTY
DEPARTMENT OF PUBLIC WORKS
TOWSON, MARYLAND

Division of Construction Contracts Administration

Contract No. __________________________
DEPS Project
Kelly Branch Stream Restoration
District 8 c 3

Job Order No. __________________________

CONTRACT BASED ON FEBRUARY 2000
STANDARD SPECIFICATIONS FOR CONSTRUCTION & MATERIALS, AND
STANDARD DETAILS FOR CONSTRUCTION, 2007

A pre-bid meeting will be held on ___________ at ___________ local time
located at ________________________________ Towsnon, Maryland 21204.

First Advertisement:

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Cost $________

PROPOSAL OF:

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STREAM RESTORATION CERTIFICATION AS-BUILT CHECKLIST STREAM
RESTORATION CERTIFICATION AS-BUILT SURVEY
SCOPE OF WORK

1. The work to be performed under this Contract includes, but is not limited to, furnishing all labor, materials and supplies, tools, equipment, superintendence, and transportation necessary to perform all work described herein in strict accordance with the Contract Plans and Specifications.

2. The work shall consist of stream restoration along approximately 3,400 LF linear feet of Kelly Branch and the stabilization of two unnamed tributaries. This work includes installation of soil fabric lifts, stone toe, imbricated riprap walls, constructed riffles for grade control, stream bank stabilization with soil stabilization matting, live stake installation, live branch installation, permanent seeding, invasive vegetation removal, wetland and vernal pool creation and enhancement, outfall modification, protection, and energy dissipation, and installation of stream bank/riparian and floodplain plantings. Activities shall consist of, but are not limited to, clearing and grubbing, erosion and sediment control, excavating, backfilling, grading, stone placement, temporary and permanent soil stabilization, floodplain shaping and landscaping, general cleanup and all incidentals shown on the Construction Documents or described herein for the purpose of constructing the stream restoration, wetland restoration/enhancement, and water quality improvements.

3. The work shall be performed under Contract, to the satisfaction of and under the supervision of the Baltimore County Department of Environmental Protection and Sustainability (DEPS) or DEPS's authorized representative (Engineer). The term "DEPS" throughout these specifications is defined as an authorized representative of DEPS.

4. Once work has begun, the work shall be diligently completed in all its parts and ready for use in the time specified and in strict accordance with the terms and conditions of the Contract Documents. No in-stream work shall be performed during the closure period (March 1 - May 31). Any deviation from strict adherence to the Contract Documents shall be subject to approval from DEPS and shall require prior written approval from the Engineer.

5. The Contractor shall assume all responsibility for the project and construction site until the work is completed and accepted by DEPS.

6. The Contractor shall be prepared to execute a finished project in accordance with the plans and specifications without any extra charge, unless specifically provided for within the Contract.
PROJECT SITE

1. The Stream Restoration project site is located in Baltimore County and consists of an approximately 3,400 linear foot corridor of the main stem of Kelly Branch and two unnamed tributaries. The project on Kelly Branch begins approximately 2,000 linear feet upstream of Dulaney Valley Road within the existing County Drainage and Utility Reservation/Right of Way, and 1,400 linear feet immediately downstream of Dulaney Valley Road on Baltimore City's Loch Raven Reservoir Property.

2. The project boundaries are those areas designated on the plans within the Limit of Disturbance (LOD). The Contractor shall perform all activities within the LOD shown on the plans except as noted in the Contract Documents. Storage of materials and equipment, etc., shall remain in the designated areas. All work must be kept within these limits.

3. Construction access shall be from the designated access points illustrated on the Construction Documents via E. Timonium Road, and private entrances for the Pine Ridge Golf Course and Villa Maris School. The Contractor shall access the site and egress from the site only through these designated points. The Contractor is responsible for maintaining access throughout all construction activities. Upon completion of all construction activities, the access areas are to be restored to their current condition.

4. Before submitting a bid for this project, the Contractor shall visit the construction site and thoroughly familiarize themselves with all existing above ground and below ground conditions to the extent feasible. Before submitting a bid, the Contractor shall be satisfied as to the accuracy and completeness of these specifications and Construction Documents regarding the nature and extent of all work described.

5. Should there be any discrepancies between the Contract Drawings and/or field conditions after bidding and prior to the beginning of work, the Contractor shall bring such discrepancies to the attention of the Engineer and County at the work initiation conference.

6. The existing stream bottom profiles, contours, and/or bank alignment shown on the Contract Drawings were correct when surveyed. However, because of interim erosion, it is the Contractor’s responsibility to confirm existing grades and adjust earthwork as necessary at no additional cost to the County. Differing site conditions should be brought to the attention of DEPS and the Engineer prior to beginning construction.

7. This project occurs entirely on County and Baltimore City property; however, residential properties are in close vicinity. Prior to entering private property, the Contractor is required to identify himself/herself and secure permission to enter the property.

8. The Contractor shall take all necessary precautions and measures to protect all properties from damage. The Contractor shall repair all damage caused by his/her operations to all public and private property, including but not limited to structures, roads, bridges, walks, curbs, utilities, trees, shrubs, plantings, etc., and leave each property in a condition
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at least equivalent to the condition found. It is advised that the contractor document the condition of all structures, properties and utilities within the work area and adjacent to access points to establish the baseline condition.

9. Turf areas disturbed by the Contractor's operations outside of the "Limits of Disturbance" shall be restored at the Contractor's expense in accordance with Section 708, Sodding, of the Baltimore County Standard Specifications for Construction and Materials.

10. The Contractor shall at all times keep the premises free from accumulation of wood, waste materials, rubbish, surplus materials, etc., and shall leave the work area completely clean at the end of the project, with the exception of woody debris to be imported, salvaged and installed on the site according to the Construction Documents. The Contractor shall be responsible for removing all trash and debris from the project area to an approved off-site disposal location at the end of the project and disposing of trash and debris in a sanitary manner.

11. The Contractor shall be responsible for the removal and proper disposal of all material determined to be unsuitable for backfill and salvage from the site. No wasting of material shall be allowed in the 100-year floodplain or any regulated wetlands or waters of the U.S., with the exception of installed woody debris per the Contract Documents. Any wasting or stockpiling of materials on-site must be approved by DEPS and the Engineer.

12. All materials not salvaged as directed by the Contract Documents or that are designated on the plans to be disposed of shall become the property of the Contractor, and shall be removed from the site by the Contractor at the completion of construction. All materials disposed of by the Contractor shall be removed to a site with an approved erosion and sediment control plan.

13. The work under this Contract includes all necessary and temporary items required for good, safe and sanitary construction practices and administration of the project. Any facilities not included in the Contract Documents deemed necessary by the Contractor shall be subject to the approval of Baltimore County.

14. The Contractor shall provide and maintain, in a neat and sanitary condition, such accommodations for the use of his/her employees as may be necessary to comply with requirements and regulations of the Baltimore County Health Department or other authorities having jurisdiction and shall create no public nuisance.

15. Prior to commencing any grading operations, the Contractor shall apply for and secure required permits for the operation and grading of any and all off-site spoil areas that will be used in conjunction with this project, if required.

16. Prior to commencing any work, the Contractor shall submit a construction schedule to Baltimore County; including source of supply of stone, fill, borrow, woody debris, plants, seed, and all other imported materials.
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17. The Contractor must provide for the safe and continuous maintenance of both vehicular and pedestrian traffic along E. Timonium Road, Dulaney Valley Road, and private entrances for the Pine Ridge Golf Course and Villa Maris School. All work shall be performed in accordance with MSHA Specification Section 104, Part IV Traffic Control for Streets and Highway Construction, and Maintenance Operations of the US Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD). In lieu of the above, the Contractor has the option of preparing and submitting a Traffic Control Plan (TCP) of his/her own design as long as it complies with MUTCD. Any TCP developed by the Contractor cannot be implemented until it is approved, in writing, by DEPS, and no work will be permitted until said approval is obtained. Compensation for Maintenance of Traffic is an individual pay item.

CONSTRUCTION SEQUENCE

1. The Contractor shall perform the work in accordance with the construction sequence shown in the Standard and Specifications for Construction Materials dated February 2000 and on the Contract Documents. Prior approval of any deviation must be granted by DEPS and the Baltimore County Natural Resource Conservation District (SCD).

CONTRACT DOCUMENTS AND SCHEDULE OF DRAWINGS

1. The specifications that follow refer the Contractor to the Baltimore County Department of Public Works' Standard Specifications for Construction and Materials dated January 2000, and any errata, addenda or Supplemental Specifications issued by the County following that date. Therefore, it is the Contractor's responsibility to be familiar with these documents to properly bid on this contract.

2. The Contract Documents consist of these specifications, any and all subsequent addenda or additions thereto, and the Construction Drawings, as listed below.

3. The following list of Construction Drawings all date TBD and signed and sealed TBD form part of the Contract Documents.

4. Kelly Branch Stream Restoration Project plan, sections, and details (Sheets 1-113).

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SPECIAL INSTRUCTIONS TO THE CONTRACTOR

1. The Contractor must notify Miss Utility at 1-800-257-7777 at least seventy-two (72) hours (excluding weekends and holidays) in advance of any excavation on the project.

2. The Contractor is responsible for any damage to existing utilities that may occur as a result of Contractor’s operation. Any damage to existing structures, including existing sanitary sewer pipes and manholes, storm drain pipes, or other structures shall be immediately repaired to the County’s satisfaction by the Contractor at his/her own expense.

There are sanitary sewers within the project limits and project access areas. It is the Contractor's sole responsibility to protect the sanitary sewers within the vicinity of the project site. The Baltimore County Emergency Sewer Service telephone number is (410) 887-7415.

3. The Contractor is advised of the presence of overhead utility lines and guy wires throughout the project area and shall use caution while working in the area.

4. The Contractor is responsible for additional coordination for all utility crossings on the project site, including coordination with the owners of those utilities. This includes gas pipelines, sewer crossings, and others shown in the vicinity of or crossing the stream alignment or floodplain grading, as identified in the Contract Documents.

5. The Contractor shall use caution when accessing and constructing improvements around guy wires on utility poles. Minor field changes in proposed grades, as directed by Baltimore County, may be required to avoid disturbance to guy wires.

6. The Contractor shall not excavate within 3 feet of the base of any utility pole.

7. The Contractor shall plant only those plant materials approved by the Engineer in the vicinity of overhead utilities. This includes all overhead wire crossing through the LOD.

8. Prior to construction the Contractor shall conduct a general clean-up of the site to include the removal of fallen limbs, brush and other debris and shall dispose of this debris off-site unless such material is suitable as woody debris, in which case the material shall be stockpiled outside the 100-year floodplain, regulated wetlands and waters of the U.S. for reuse. Payment shall be included in the lump sum bid for clearing and grubbing.

9. The Contractor shall schedule operations so that existing topsoil and streambed material at the site can be salvaged, stockpiled and reused. Topsoil from areas containing prohibited noxious weeds (i.e. johnsongrass (Sorghum halepense), shattercane (Sorghum bicolor), Canada thistle (Cirsium arvense), bull thistle (Cirsium vulgare) plumeless thistle (Carduus sp.)) and non-native invasive species shall be treated with an application of herbicide at the direction of DEPS and the Engineer at least two (2) weeks prior to striping and stockpiling. The contractor is responsible for any permitting required to
perform this in the vicinity of water, wetland and riparian resources. Payment for permitting and herbicide applications shall be incidental to the price for Placing Salvaged Topsoil.

10. The Contractor shall maintain channel dimensions and elevations as shown on the Contract Documents unless otherwise directed by DEPS and the Engineer. The Contractor will notify DEPS and the Engineer of issues that arise that may potentially require changes to the Contract Documents.

11. The Contractor will minimize the number of trees removed for access and construction. No clearing will take place until the proposed limits of clearing and the trees to be saved are flagged and approved by DEPS and the Engineer. Grading plans indicate which trees are to be saved and removed within the project limits.

12. The Contractor shall place Temporary Orange Construction Fence along the entire LOD as pedestrian deterrent and/or tree protection area, as shown and described in the Contract Documents or as directed by the Engineer. Tree protection areas should have fencing installed along the periphery of critical root zone and limit of grading. The stabilized construction entrances shall be closed and secured at the end of each day. The Stella Maris/Villa Marie access road, stabilized construction entrance, and stockpile area shall be gated off to prevent public access at the end of each work day.

13. All incidental work required by the drawings or specifications, for which no payment is specifically provided and any work or materials not therein specified which are required to complete the work (i.e. grading and/or excavation necessary for placement of stone, topsoil, etc.), which may fairly be implied as included in the contract and which the Engineer shall judge to be so included, shall be done or furnished by the Contractor without extra compensation.

14. The Contractor should be aware that these stream channels have quick and often flashy stage responses to storm rainfall events; therefore, the Contractor should track the weather throughout the contributing watershed closely. The Contractor is responsible for his equipment and materials placed on site and any subsequent damage or loss by flooding, wind or other Acts of God.

15. It is strongly advised that the Contractor, in conjunction with the Engineer, document the condition of all sidewalks, curbs, driveways, roadways, fences, and other existing conditions, infrastructure and improvements so that if a dispute arises after construction the Contractor has a record of existing conditions.

16. If the Contractor has to shut down due to stream closures, remobilization will not be paid.

PERMITS

The Contractor shall adhere to all requirements and the terms of the various permits issued for the proposed construction of this project, unless prior written approval is granted by the regulatory agencies and DEPS for any deviation. This shall include permits from the U.S. Army
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Corps of Engineers, the Maryland Department of the Environment, Baltimore County and any other applicable permits.

END OF SECTION
101.01 DESCRIPTION.

101.01.01 Definitions.

151 DELETE: (c) Limits in its entirety.

INSERT: The following:

(c) **Limits.** Limits of clearing and grubbing will be directed by the Engineer and includes all portions of the construction area where erosion and sediment controls are to be installed and areas where stream or channel grading will occur. **The Limit of Disturbance (LOD) shown on the plans is not the limit of clearing and grubbing.** Only those trees approved by DEPS and the Engineer may be removed.

ADD: After (d) Clearing and Grubbing Unit.

(e) **Disturbed Area.** Any erodible material exposed by construction activities.

(f) **Stabilization.** Provide vegetation or structural measures (seed, temporary mulch, soil stabilization matting, riprap, stone aggregate, and paving by asphalt or concrete) that will prevent erosion. The placement of one or more of these temporary or permanent stabilization measures as directed by the Engineer shall satisfy the requirements to proceed with the next grading unit or operation.

(g) **Stabilized.** An area covered with erosion resistant materials such as grass cover, seed and mulch, soil stabilization matting, riprap, stone aggregate, or paving by asphalt or concrete.

(h) **Chipping.** Consists of chipping of existing stockpiles of cut trees, within the limit of disturbance, and spreading or placing these materials on the site as directed by the Engineer. Chipping will be accomplished by use of a chipping machine to a size acceptable to the Engineer. Chipped material which contains non-native invasive (NNI) species may not be re-used on site, however chipped material from native species may be utilized onsite. NNI chipped material must be disposed of offsite in a manner which prevents perpetuation of NNI species as approved by DEPS and the Engineer.

**Grading Operation.** A grading operation is defined as the Contractor's ability to provide adequate resources to perform the grading in a timely manner and to provide and maintain the proper erosion and sediment control measures.
101.03 CONSTRUCTION

101.03.01 Erosion and Sediment Control.

ADD: As the second paragraph.

When wet soil conditions are encountered, the Contractor will be allowed to clear and grub and grade another unit providing the initial unit has been stabilized properly as approved by the Engineer. No more than two grading units shall be active at any time.

101.03.07 Disposal.

ADD: As the first sentence under (a) Burning.

Burning is strictly prohibited on the project site without prior approval from the Engineer,

ADD: After 101.03.07 Disposal.

101.03.08 Destroying Trees and Wetlands Beyond Clearing Limits. The Contractor shall not damage nor destroy any trees and wetland areas that exist beyond the clearing limits as specified in Section 107 – Construction Stakeout of these specifications, and defined by the limit of disturbance and tree clearing / saving identified on the plans.

The Contractor shall be responsible for any and all damage to trees and wetlands located beyond the clearing limits that occur from his/her operations during the life of the Contract. The Contractor shall restore, at his/her own expense, and to the satisfaction of the Engineer, any trees or wetlands that have been damaged or destroyed. If the Contractor is found to be negligent, DEPS or the Engineer will determine the replacement species. In the replacement of trees, the replacement basis shall be "type and size". If a tree that was removed is above 4-in. in caliper, the Engineer will require a 2 for 1 caliper inch replacement. For example, if a 10-in. caliper tree measured 4.5 ft. above the ground is removed, this is equivalent to 10 caliper inches of tree, which shall require ten, 2-in. caliper trees as replacements.

All landscaping work shall require a replacement period as specified in Section 710. In case of failure on the part of the Contractor to restore and replace the damaged trees and wetlands at the start of the next appropriate planting season, the Engineer will notify the Contractor that he/she has 48 hours to begin corrective action. If, after this notice, the Contractor has not satisfied the Engineer or taken the corrective measures, the Engineer may initiate corrective measures. The cost of the corrective measures taken shall be billed at the rate of $200.00 per caliper in. for damaged woody material and this amount will be deducted from any monies due under the Contract.

101.04 MEASUREMENT AND PAYMENT.

153 INSERT: After the words "...disposal of fences," in the second sentence, the words:
"selective tree trimming for purposes of site access, chipping and spreading of existing stockpiles of cut trees,"

END OF SECTION
SECTION 107 — CONSTRUCTION STAKEOUT

193 **DELETE:** SECTION 107 — CONSTRUCTION STAKEOUT in its entirety.

**INSERT:** The following.

**107.01 DESCRIPTION.**

(a) This work shall consist of furnishing, placing and maintaining construction layout stakes, as specified in the Contract Documents or as directed by the Engineer.

(b) The Contractor shall provide and have available to the project an adequate survey staff which is competent and qualified to set all lines and grades needed to construct the stream restoration.

(c) The Contractor shall make all field measurements necessary to stakeout the baseline of construction and lay out the lines and grades and random/specific plant positions called for in the Contract Documents or as directed by the Engineer. The Contractor shall use the horizontal and vertical survey controls (established control points or benchmarks) as shown in the Contract Documents to lay out the lines of work, limits of grading, planting, fill placement and to stake out the location of all proposed structures.

(d) Only those benchmarks shown on the drawings shall be used for construction. The Contractor shall furnish the assistance for benchmark preservation after being set. The Contractor shall be held responsible for their preservation. If, in the opinion of the Engineer, the benchmarks are willfully or carelessly disturbed or destroyed by the Contractor or his/her employees, the entire cost of replacing them shall be charged against the Contractor and the cost shall be deducted from the Contractor's final payment.

(e) The Contractor shall, as a part of his/her construction stakeout operation and before any clearing operation commences, demarcate any wetlands, Limit of Disturbance, and Tree Protection Areas throughout the entire project as shown on the Plans and labeled as Limit of Disturbance and/or Wetlands, to the satisfaction of the Engineer.

(f) Construction stakeout shall occur prior to the pre-construction meeting. Trees to be protected during construction will be identified by Baltimore County and the Contractor during the pre-construction meeting. All tree protection devices shall be installed before clearing and grubbing commences. Trees to be protected during construction shall be identified by flagging and/or fencing. No paint shall be used to indicate saved trees.

(g) The Contractor shall notify DEPS once the stakeout or a phase of the stakeout is completed. DEPS will inspect the construction stakeout prior to the Contractor beginning clearing and grubbing activities. The purpose of the inspection is not to verify the
stakeout, but to allow the County an opportunity to assess the lines established by the Contractor prior to the start of construction. If there are obvious errors with or questions concerning the stakeout, the visible errors and questions will be discussed with the Contractor, prior to the Contractor proceeding with clearing and grubbing or construction. This inspection will in no way relieve the Contractor of his/her responsibilities to construct the site as specified in the Contract Documents.

(h) The existing elevations and contours shown on the plans, cross-sections, stream bottom profiles, and/or bank alignment shown on the Contract Drawings were correct when surveyed in 2012. However, because of interim vegetation growth, freeze/thaw action, and channel erosion and deposition, existing elevations and grades may have changed since the original survey was completed. It is the Contractor's responsibility to confirm existing grades and adjust quantities, earthwork and work efforts as necessary at no additional cost to Baltimore County.

107.02 MATERIALS. The material for flagging the limits of disturbance shall be a 3-in. international orange vinyl material. The material for flagging wetlands shall be standard pink vinyl flagging. The materials shall also include any and all construction layout stakes or additional flagging necessary to layout the construction baseline, proposed structures, or planting plan.

107.03 CONSTRUCTION.

107.03.01 Line and Grade. The Contractor will provide the following:

(a) Stream Channel and Floodplain Grading Stakeout. The Contractor shall stake the baselines of construction as indicated in the Contract Documents. Additionally, the floodplain grading, wetland extents and contours shall be staked out. The stakes shall be clearly labeled with appropriate stations. The stream channel base line of construction shall be staked with minimum 3-ft long, untreated wooden stakes. The maximum spacing of stations (stakes, nails, crosses, etc.) will be 25 ft, and the elevations on the top of each marked point will be furnished. The beginning, apex, and end of each meander or curve shall be staked. The Contractor shall establish appropriately spaced benchmarks and the necessary references including all points of intersection (P.I.), points of curvature (P.C.), point of reverse curvature (P.R.C), and points of tangency (P.T.) for the preservation and control of the base line. Upon completion of grading, the Contractor will provide a staked baseline or working line. An elevation for the top of each marked point will also be furnished, as well as two sets of prints of the cross sections.

In areas where the existing conditions prohibit stakeout as described above alternate methods of stakeout including, but not limited to marking of stones and offset stakes may be approved by the DEPS representative.

(b) In-Stream and Adjacent Structure Stakeout. For in-stream and channel-adjacent structures, the Contractor shall stake out the boundaries, all breaks in slope, and finish
grade elevations with a maximum spacing of 10 ft. Stakes will be used to mark spot elevations and bank toes and top of bank will be flagged with pin flags.

(c) Special Circumstances. The contractor shall stake out all special features, including the location of existing wetlands not to be impacted, structures, or channel features to be preserved, at the direction of DEPS and the Engineer.

107.03.02 Equipment and Personnel. The Contractor shall use competent personnel and state of the art equipment for all engineering work required to set and maintain the elevations and dimensions as specified in the Contract Documents.

107.03.03 Control Markers. The Contractor shall be responsible for preserving the baseline of construction, working lines, and benchmarks set at the beginning of the project. The Contractor shall replace the baseline of construction, working lines, and benchmarks if they are disturbed or destroyed, at no additional cost to DEPS.

107.03.04 Control Stakes. For the stream baseline of construction, as specified in 107.03.01(a), the Contractor shall furnish, set and preserve stakes at each station along each side of the proposed channel. On each of these stakes shall be marked its offset distance from the baseline of construction and its top elevation or the cut or fill to the profile grade line. Additional stakes, as needed for horizontal and vertical controls necessary for correct layout of the work, shall be set by the Contractor.

107.03.05 Layout. For structures specified in 107.03.01(b) and 107.03.01(c), the Contractor shall proceed with the layout work. From the field layouts, the Contractor shall check the proposed structure lengths by electronic distance measurement or chaining. When chaining is used, the measurements shall be compensated for horizontal alignment. The Contractor shall also check the location of the structure to affirm its correct location with relation to existing on-site features and conditions that are to remain in their original positions. If any discrepancies are found, the Contractor shall notify the Engineer at once in writing, otherwise, it will be assumed that all planned dimensions, grades and field measurements are correct. All lines established on the ground shall be preserved or referenced, marked, and kept available at all times.

107.03.06 Utilities. The Contractor shall be responsible for coordinating utility companies or agencies working within the limits of the project, promptly upon request, reference to control points, alignment and grade data, so that they may properly locate and coordinate their work and improvements in relation to the project.

(a) Intersection Utility Stakeout. The Contractor shall notify the appropriate agencies listed below a minimum of 72 hours (excluding weekends and holidays) prior to the Contractor's anticipated beginning of any underground work.

1) Request a MISS UTILITY stakeout and possess a valid MISS UTILITY clearance ticket number for any underground work.
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(2) Contact all utilities within the limits of the project that are not a member of MISS UTILITY and obtain a stakeout of their respective facilities.

107.03.07 Right-of-Way and Easement Lines. The Contractor shall define right-of-way and easement lines of the project for adjacent property owners, promptly upon request.

107.03.08 Subgrade and Base Controls. For structures and complex grading which have bedding, base layers and related subgrade preparation, the Contractor shall furnish for subgrade and base courses, a string line and grade with fixed controls having a maximum longitudinal and transverse spacing of 25 feet.

107.03.09 Flagging. The Contractor shall place flagging continuously throughout wetland areas. In areas where trees are not to be disturbed, the Contractor shall individually flag those trees in a line along the clearing limits, which are not to be moved or destroyed. If the flagging has been destroyed and the Engineer determines that its use is still required, the Contractor shall re-flag the area at no cost to Baltimore County.

If the Contractor, after notification by the Engineer that replacement flagging is needed, does not replace the destroyed flagging within 48 hours, the Engineer may proceed to have the area re-flagged at the Contractor’s expense. At the completion of construction, the Contractor shall remove all flagging.

107.04 MEASUREMENT AND PAYMENT. Construction Stakeout will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for furnishing, placing and maintaining construction layout stakes, flagging of disturbance and wetland limits, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. Payment of the Contract lump sum price will be prorated and paid in equal amounts on each monthly estimate. The number of months used for prorating will be the number estimated to complete the work.

END OF SECTION
108.01 DESCRIPTION.

194 ADD: The following paragraph after the sentence “...and other facilities necessary to begin work.”

Mobilization shall also include application, fee payment and acquisition of all necessary permits (i.e., sediment control plan for staging areas, permits, utility connections, etc.); the establishment of buildings and other facilities necessary to complete work on a substantial phase of the Contract; procurement and installation of project sign; costs for erosion and sediment control measures for off-site storage and staging areas; any maintenance of traffic plans requiring submission and approval from Baltimore County; and staging area removal and cleanup.

108.04 MEASUREMENT AND PAYMENT.

195 ADD: The following sentence at the end of the last paragraph: "If the Contractor has to shut down due to stream closures, remobilization will not be paid."

END OF SECTION
ORANGE CONSTRUCTION FENCE

DESCRIPTION. The Contractor shall install Orange Construction Fence around the perimeter of the critical root zone of existing individual trees and along edges of forests to protect the root systems from damage prior to grubbing operations. The critical root zone is defined as one foot per inch of tree diameter, measured as the diameter at breast height (DBH). Orange Construction Fence shall also be installed as security fencing around the LOD to prevent unauthorized access, and/or in other areas indicated on the plans or as directed by DEPS or the Engineer.

MATERIALS.

Fence. Orange Construction Fence shall be Blaze or International Orange colored, mono-oriented laminar polyethylene plastic, U.V. stabilized material with a mesh size of 3 inches by 1.5 inches and porosity of 60%. The fence shall have a minimum height of 4 feet.

Posts. Posts for attachment of the fence shall be 2-inch by 2-inch wood posts, a minimum of 6 feet long or 5-1/2 ft high, 2 in. steel U-channel posts.

Ties. Ties for attachment of fencing to posts shall consist of plastic or wire of a gauge sufficient enough to bear the weight of the fencing on the posts.

CONSTRUCTION. Drive posts into the ground to a depth of 12 to 18 inches. Posts shall be spaced every 8 to 10 feet. Roll fence out along the posts and secure fence to the posts using a minimum of three ties per post. Tension wire or rope may be used as a top stringer and woven through the top row of strands of the fence to prevent potential sagging.

The Contractor may elect to install Orange Construction Fence in another manner if approved by the Engineer. At such time that the construction is substantially complete and with the Engineer’s approval, the Contractor shall remove the fence, fence posts and other materials, which then becomes the property of the Contractor. The Contractor shall maintain fencing throughout the life of the project. The contractor shall repair fallen, damaged, or broken sections of fencing at the end of each work day and shall maintain the security of the site during periods of inactivity. Should construction sequencing allow, and with the approval of the Engineer, fencing from a completed section of the project site can be removed and reused on the site.

MEASUREMENT AND PAYMENT. The payment will be full compensation for the installation, removal, and maintenance of and for all materials, fence, posts, ties, labor, equipment, tools and incidentals necessary to complete the work. Orange Construction Fence will be measured and paid for at the Contract unit price per linear foot for the actual number of linear feet installed, measured to the centers of end posts. Fencing reused on-site following completion of a section of the site will be paid for at the same unit cost as the initial installation.

END OF SECTION
SECTON 202 - CHANNEL OR STREAM CHANGE EXCAVATION (CLASS 5)

210 DELETE: SECTION 202 — CHANNEL OR STREAM CHANGE EXCAVATION (CLASS 5) in its entirety.

INSERT: The following.

202.01 DESCRIPTION. The Contractor shall use all suitable materials, including topsoil, subsoil and channel bed material as specified in the Contract Documents, from excavation in the construction throughout the Contract.

This item includes excavation, separation, removal and disposal of debris and unsuitable materials from the stream channel, and salvaging, stockpiling and placement of suitable materials in areas designated on the plans and as outlined below. All concrete and masonry removed from the channel is considered unsuitable material.

202.01.01 Layout. The layout of the grading shall be as shown on the Contract Drawings (plans and cross-sections). Grading shall transition smoothly between cross-sections, with no abrupt changes in channel geometry.

202.01.02 Excavation. Excavation shall include the following:

(a) Cut areas within the boundary faces of the cross-sections specified in the Contract Documents, including excavation within the channel, banks or floodplain for stream channel restoration activities. This shall include excavation for the installation of stone structures, channel bed materials, and bank treatment techniques, as specified on the plans and in these specifications.

(b) Demolition and/or removal of debris from the stream channel, including trees indicated for removal and debris jams, tires, concrete lining, and broken up concrete and other materials as designated by the Engineer.

(c) Additional rock encountered within the stream channel that may be handled by the same tools and equipment used for channel or stream excavation under this Contract.

(d) When excavating for stream restoration or other facilities indicated on the plans, the Contractor will encounter wet or saturated soils. The Contractor shall be prepared to dewater and transport saturated soil off-site in a manner that prevents discharge or spillage of soils or water onto adjacent properties or roads. Should any discharge occur, the Contractor shall be responsible for immediate and complete clean-up.

202.02 MATERIALS. Not Applicable
202.03 CONSTRUCTION.

202.03.01 Grading Units. Refer to Section 201.03.01.

202.03.02 Site Clean-up. Prior to undercutting any stream invert, cutting into any stream bank, or excavating the site, the reach that is being constructed shall be cleaned of all non-desirable items such as waste concrete, metal, vegetation debris, and rubbish prior to stockpiling. The Contractor shall be responsible for removing as much unnatural or undesirable material as possible prior to salvaging and stockpiling of the suitable on-site materials. Disposal of non-desirable material shall be the responsibility of the Contractor.

202.03.03 Use of Excavated Materials. Refer to Section 201.03.02

202.03.04 Disposal of Unsuitable Materials. Existing debris, concrete, waste, and other unsuitable materials, as determined by these specifications or by the Engineer, shall be removed from the site and shall be disposed of at a site with an approved erosion and sediment control permit.

202.03.05 Rock Excavation.

(a) Boulders and Rock. Boulders and rock from the excavation may not be broken and used for any of the proposed in-stream or bank structures unless authorized by the Engineer or provided for in the Contract Documents.

(b) Blasting. The Contractor shall obtain prior approval from the Engineer before performing any rock blasting necessary to complete the excavation to the grades and lines indicated on the plans. All blasting shall conform to Section 201.03.04 (b).

(c) Pre-splitting. The Contractor shall obtain prior approval from the Engineer before performing any pre-splitting activities, necessary to complete the excavation to the grades and lines indicated on the plans. All pre-splitting shall conform to Section 201.03.04 (c).

202.03.05 Frozen Material. Frozen material shall be handled as specified in Section 201.03.05.

202.03.06 Excavation Beyond Specified Limits. The widening of cut or excavation sections beyond the limits of the cross-sections, as specified in the Contract Documents, is prohibited in all instances except by written order from the Engineer. When so ordered by the Engineer, the procurement of additional suitable materials for fill, except as otherwise specified under Borrow Excavation, shall conform to the following provisions.

(a) Finished Excavation. Refer to Section 201.03.08 (a).

(b) Excavation Limits. If the Engineer directs the Contractor to excavate beyond the limits of the cross-sections originally proposed, and within the limits of disturbance, prior to
the starting of earthwork construction in an excavation section, then all material within
the limits will be classified as Class 5 Excavation.

(c) Borrow Excavation Beyond Specified Limits. If the Engineer directs the Contractor to
excavate beyond the limits of the cross-sections originally proposed and after the
Contractor has substantially completed the excavation in a cut section, then all material
removed beyond the limits of the cross-sections will be classified as Borrow-Excavation.

202.03.07 Unsuitable Material and Undercuts. Unstable or other unsuitable material
encountered at or below the lowest normal excavation limit, as specified in the Contract
Documents, shall be undercut and removed to the extent directed by the Engineer. The
undercutting and removal of unsuitable material shall be incidental Class 5 Excavation. In rock
areas, the limit of measurement for excavation will be at the bottom of the normal plan section.
All voids created by the removal of unsuitable material and undercuts, except when rock is
encountered at subgrade, shall be backfilled to the lines and grades specified in the Contract
Documents. Backfill material for undercuts shall conform to materials specified and shall be
incidental to the Class 5 Excavation.

202.03.08 Placement of Salvaged Materials. Salvaged suitable materials meeting the
specifications described in the Contract Documents shall be placed as specified. See Section 200-
Select Borrow Subsoil, Section 200-Select Borrow Channel Bed Material, Section 200 – Select
Borrow RGC and Trib. Stability Mixes, Section 200 – Bank Run Gravel, Section 300 – Soil
Fabric Lifts Section 300-Riffle Grade Control, and Section 700 Placing Salvaged Topsoil.

202.03.09 Stabilization. The Contractor shall be responsible for temporary and permanent
stabilization of all stream banks, immediately after the completion of grading, as specified in the
Contract Documents. The Contractor shall perform all care and remediation work required to
maintain stable stream banks, including erosion and sediment control.

202.04 MEASUREMENT AND PAYMENT. Class 5 Excavation will be measured and paid
for at the Contract unit price per cubic yard. The payment will be full compensation for all
excavation, hauling, salvaging, separating, stockpiling and placement of suitable materials,
formation and compaction of embankments and backfill, backfilling old stream beds or
otherwise disposing of excess and unsuitable materials, undercutting and backfilling of
undercuts, and for all material, labor, equipment, tools, and incidentals necessary to complete the
work. The cost of handling and re-handling wet soils and over-excavation to construct a
temporary access bridge, if necessary, shall be considered incidental to the cost of Class 5
Excavation, as appropriate.

Class 5 Excavation shall be considered incidental to all appropriate items.

Material will be measured in its original position and the volume computed by the Method of
Average End Area. The cross-sectional area measured will not include water or other liquids.
Measurement for Class 5 Excavation will not include any material removed outside the limits of
payment as specified in the Contract Documents. Salvaging, stockpiling, placing, and
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compacting Salvaged Channel Bed Material, Bank Run Gravel, Topsoil, and Subsoil will be incidental to the contract unit price for Class 5 Excavation.

Excavation required to meet subgrade for placement of any and all structures on the Contract Drawings will not be measured and paid for separately and will be considered incidental those structures.

END OF SECTION
DESCRIPTION. This work shall consist of placing subsoil material for grade adjustments as specified in the Contract Documents or as directed by the Engineer.

MATERIALS.

Subsoil. Use of suitable materials for subsoil shall conform to the following specifications.

   a) Salvaged Subsoil. Salvaged Subsoil shall be a natural, friable subsurface soil uniform in texture salvaged from the Class 5 excavation areas and shall conform to the specifications for Furnished Subsoil described below.

   b) Furnished Subsoil. Furnished subsoil shall be a natural, friable subsurface soil uniform in texture and not salvaged from the project. Subsoil shall be free from any parts of non-native invasive species as specified in this specifications package. The Contractor shall submit a source of supply for the material to the DEPS representative for approval prior to use. Material shall have a maximum dry density of not less than 100 lb/ft³ (1600 kg/m³), be free of roots, concrete, and stones larger than 3- inches. Frozen material will not be approved for use as subsoil.

CONSTRUCTION. When soil or weather conditions are unsuitable, the Contractor shall cease subsoil operations until directed by the DEPS representative to resume.

Placing Salvaged Subsoil.

   (a) Evaluation. The DEPS representative will evaluate salvaged subsoil for infestation with any parts (seed, rhizomes, stolons, roots, etc.) of non-native, invasive species prior to placing, to establish a means of preventing the spread of these noxious weeds.

   (b) Surface Preparation. The Contractor shall completely prepare and finish the surface of all areas to be covered with subsoil as specified in the Contract Documents. Immediately prior to being covered with subsoil, the prepared subsoil surface shall be in a loose condition and be free from stones or other foreign material 3 in. or greater. Subsoil will be placed according to the Contract Documents and Sections 702 or 703. Salvaged Channel Bed Material, if present in the area of fill, will be salvaged prior to the placement of subsoil. Topsoil will be salvaged prior to placement, if present.

   (c) Loading and Hauling. Prior to the start of the hauling operations, all grass, weeds, brush, stumps, and other objectionable material shall be removed from the surface of stockpiles.
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(d) Placing, Spreading, and Compacting Subsoil. Subsoil shall be placed, spread, and compacted in maximum layers of 8 in. to produce a uniform firm layer of subsoil. The completed work shall be in conformance with the thickness, lines, grades, and elevations specified in the Contract Documents. Stones and other foreign material larger than 4 in. shall be removed and disposed by the Contractor. Slopes 4:1 to 2:1 shall be tracked with cleated tract type equipment operating perpendicular to the slope.

Placing Furnished Subsoil. Refer to the Placing Salvaged Subsoil section above. Suitable salvaged material shall be used prior to furnished material.

MEASUREMENT AND PAYMENT. The payment will be full compensation for the preparation of surfaces, loading, hauling, placing, supplying, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Placing Salvaged Subsoil will be incidental to Class 5 Excavation.

Placing Furnished Subsoil will be measured and paid for at the Contract unit price per cubic yard.

END OF SECTION
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CATEGORY 200
GRADING

CHANNEL BED MATERIAL

DESCRIPTION.

CHANNEL BED MATERIAL. This item includes the selection and placement of salvaged or furnished channel bed material for use as backfill within the proposed channel bed and to fill voids within furnished channel bed material. See Section 200 Select Borrow RGC and Trib. Stability Mixes.

MATERIALS.

Channel Bed Material. Use of suitable material for channel bed material shall conform to the following specifications:

(a) Salvaged Channel Bed Material. Suitable material for channel bed material salvaged from the Class 5 Excavation shall conform to Section 200 specifications and meeting the following gradation as approved by the Engineer.

<table>
<thead>
<tr>
<th>% Particle Size Less Than</th>
<th>Particle Diameter Passing through Sieve (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>12.0</td>
</tr>
<tr>
<td>85</td>
<td>6.0</td>
</tr>
<tr>
<td>50</td>
<td>3.0</td>
</tr>
<tr>
<td>30</td>
<td>1.0</td>
</tr>
<tr>
<td>16</td>
<td>0.5</td>
</tr>
</tbody>
</table>

(b) Furnished Channel Bed Material. Channel bed material shall be furnished to meet the above gradation specifications. Furnished Bed Material shall only be used after salvaged Channel Bed Material is no longer available and must be approved by DEPS and the Engineer prior to placement. Furnished Channel Bed Material shall not be composed of Riprap. Stones shall be angular in shape and brown in color, no white or blue rock will be accepted. No limestone shall be accepted; only stone conforming to the native geology of the site shall be accepted. Stone shape shall be preferred to be angular and tabular; rounded or cube-like stone shall be deemed unacceptable. The Engineer shall approve the size and composition of all Furnished Channel Bed Material prior to hauling to the site.
CONSTRUCTION.

Use of Channel Bed Materials. Suitable channel bed material shall be used to fill all voids in the Riffle Grade Control and Tributary Stability Mixes, Channel Bed Material shall be washed into the voids as at the direction of the engineer to achieve surface flow. Channel Bed material shall also be used as backfill to meet the proposed grades within the wetted width of the stream bed.

MEASUREMENT AND PAYMENT.

The payment for Channel Bed Material will be full compensation for the preparation of surfaces, loading, hauling, placing, mixing, washing-in and supplying and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Placing Salvaged Channel Bed Material will not be measured and paid for separately and will be considered incidental to Class 5 excavation.

Placing Furnished Channel Bed Material will be measured and paid for at the Contract unit price per cubic yard.

END OF SECTION
RGC AND TRIB. STABILITY MIXES

DESCRIPTION. This item includes furnishing and placing Riffle Grade Control and Tributary Stability mixes as specified on the Contract Documents.

MATERIALS.

Riffle Grade Control Stability Mix. Riffle Grade Control Stability Mix shall be made up of a mixture of riprap of different size classes. Stone shall be brown or grey in color. No white stone will be allowed. The stone shall not disintegrate from the action of air, water, or in handling and placing. Granular sedimentary stone will generally be unacceptable. Concrete will not be considered as an alternative for stone. The Riffle Grade Control Stability Mix shall be mixed prior to the material being brought on site and must be approved by the Engineer prior to construction. The mixture shall be composed of:

<table>
<thead>
<tr>
<th>SHA Riprap</th>
<th>$D_{50}$</th>
<th>$D_{100}$</th>
<th>Percent of Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 0</td>
<td>5.8 in.</td>
<td>8.7 in.</td>
<td>15%</td>
</tr>
<tr>
<td>Class I</td>
<td>9.5 in.</td>
<td>15 in.</td>
<td>50%</td>
</tr>
<tr>
<td>Class II</td>
<td>16 in.</td>
<td>24 in.</td>
<td>35%</td>
</tr>
</tbody>
</table>

Tributary Stability Mix. Tributary Stability Mix shall be made up of a mixture of riprap of different size classes. Stone shall be brown or grey in color. No white stone will be allowed. The stone shall not disintegrate from the action of air, water, or in handling and placing. Granular sedimentary stone will generally be unacceptable. Concrete will not be considered as an alternative for stone. The Tributary Stability Mix shall be mixed prior to the material being brought on site and must be approved by the Engineer prior to construction. The mixture shall be composed of:

<table>
<thead>
<tr>
<th>SHA Riprap</th>
<th>$D_{50}$</th>
<th>$D_{100}$</th>
<th>Percent of Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 0</td>
<td>5.8 in.</td>
<td>8.7 in.</td>
<td>25%</td>
</tr>
<tr>
<td>Class I</td>
<td>9.5 in.</td>
<td>15 in.</td>
<td>75%</td>
</tr>
</tbody>
</table>

Channel Bed Material. Channel Bed Material shall be per the Channel Bed Material Special Provision.

CONSTRUCTION.

Use of Materials. Stability Mixes shall be used as shown on the Contract Drawings. Channel Bed Material shall be washed into all void spaces as specified in the Channel Bed Material Special Provision.
KELLY BRANCH
SPECIAL PROVISIONS

(a) Surface flow and the establishment of a defined thalweg must be achieved and approved by the Engineer.

(b) Surface elevations, widths, and slopes shall conform to the proposed design stream profile and cross-sections specified on the Contract Drawings. Tolerances of the finished structure are as follows:

<table>
<thead>
<tr>
<th>Surface Elevation:</th>
<th>+/- 0.2 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope:</td>
<td>+/- 0.1 percent</td>
</tr>
</tbody>
</table>

Placed material not conforming to the specified limits shall be removed and replaced as directed by the Engineer at no additional cost.

MEASUREMENT AND PAYMENT. The payment for Stability Mixes will be full compensation for the preparation of surfaces, loading, hauling, placing, and supplying and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Washing the Channel Bed Material into the Stability Mixes will not be measured and paid for separately and will be considered incidental to Mixes.

Placing Riffle Grade Control Stability Mix will be measured and paid for at the Contract unit price per cubic yard. Key Stone Boulders to be incorporated with the Riffle Grade Control Stability Mix as part of the Riffle Grade Control Structures will not be measured and paid separately and will included as part of the volume measurement with this pay item.

Placing Tributary Stability Mix will be measured and paid for at the Contract unit price per cubic yard.

END OF SECTION
DESCRIPTION. This item includes the selection and placement of salvaged or furnished bank run gravel.

MATERIALS.

Bank Run Gravel. Use of suitable material for channel sand and bank run gravel shall conform to the following specifications:

(a) Salvaged Bank Run Gravel. Suitable material for bank run gravel salvaged from the Class 5 Excavation that is not topsoil and meets the following specifications and gradation as approved by the Engineer.

<table>
<thead>
<tr>
<th>% Particle Size Less Than</th>
<th>Particle Diameter Passing through Sieve (in) or Sieve No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>2.5 in</td>
</tr>
<tr>
<td>85</td>
<td>1 in</td>
</tr>
<tr>
<td>50</td>
<td>0.5 in</td>
</tr>
<tr>
<td>30</td>
<td>No. 40</td>
</tr>
<tr>
<td>16</td>
<td>No. 200</td>
</tr>
</tbody>
</table>

(b) Furnished Channel Bank Run Gravel. Bank Run Gravel shall be furnished to meet the above gradation specifications if the material salvaged is not sufficient or does not meet the required specifications. Furnished Channel Sand and Bank Run Gravel shall not be composed of Riprap. Sand and stones shall be brown in color, no white sands or stones will be accepted. No limestone shall be accepted; only stone conforming to the native geology of the site shall be accepted. The Engineer shall approve the size and composition of all Furnished Bank Run Gravel prior to hauling to the site.

CONSTRUCTION.

Use of Materials. Suitable bank run gravel is to be used in all areas of the stream that are part of Riffle Grade Controls, Imbricated Riprap Walls, and Soil Fabric Lifts as shown on the Contract Drawings. Suitable salvaged material shall be used prior to furnished material.

MEASUREMENT AND PAYMENT. The payment for Bank Run Gravel will be full compensation for the preparation of surfaces, loading, hauling, placing, and supplying and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Placing Salvaged Bank Run Gravel will not be measured and paid for separately and will be considered incidental to Class 5 excavation.
KELLY BRANCH
SPECIAL PROVISIONS

Placing Furnished Bank Run Gravel will be measured and paid for at the Contract unit price per cubic yard.

END OF SECTION
ADD: The following at the end of the first paragraph.

Erosion and sediment control will consist of the installation, maintenance, and removal of all sediment control devices shown on the Construction Documents, as required by the County or sediment control inspector. Detailed construction requirements and specifications for specific erosion and sediment control devices are shown on the Construction Plans. These requirements are in addition to the requirements of Section 308 of the Baltimore County Standard Specifications and these specifications.

All erosion and sediment controls shall be inspected daily to ensure that the controls meet the project specifications.

Construction shall not begin until all erosion and sediment control facilities have been installed and approved by the Engineer. The Contractor shall stay within the limits of disturbance shown on the Construction Documents, and minimize disturbance within the working area, wherever possible.

It is the responsibility of the Contractor to monitor any mud and surface debris accumulation beyond the limit of disturbance, and to perform daily cleanup of mud and surface debris accumulation. Mud and debris on the paved surfaces or sidewalks will not be permitted under any circumstances, and must be immediately remediated.

Dust generated from the Contractor’s performance of the work, either inside or outside the limit of work shall be controlled by the Contractor by applying water with the approval of the Engineer.

Application of water with calcium chloride or other additives shall not be a permitted practice. The Owner will not provide water for this project, however water from maintenance of flow operations shall be permissible as a water source.

All perimeter controls and erosion and sediment control structures and devices shall be maintained throughout the duration of the project, conforming to the detailed sequence of construction, or as directed by the Engineer and/or sediment control inspector. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with the approved erosion and sediment control plan and after the inspecting authority has approved their removal.
KELLY BRANCH
SPECIAL PROVISIONS

As regulated by the State of Maryland permit conditions, it is imperative that no sediment leaves the site. All sediment and erosion control measures will be strictly enforced by Baltimore County. The Contractor is advised to carefully consider access to the work area based on overhead utilities, storm drain outfalls, and structures/grading proposed to the given area.

The contractor shall same-day stabilize, either permanently or temporarily, all disturbed areas by the close of each work day. No unstabilized areas shall be permitted on the site for more than 24 hours.

308.03 CONSTRUCTION.

ADD: The following at the end of the first paragraph.

Erosion and sediment control shall be performed in accordance with 1) the Maryland Standards and Specifications for Soil Erosion and Sediment Control (2011), as published by the Maryland Department of the Environment, Soil Conservation Service and State Conservation Committee, 2) Maryland’s Guidelines for Waterway Construction, as published by the Water Resources Administration, 3) in accordance with Section 308 of the Baltimore County Standard Specifications, 4) as described in the Contract Drawings/Specifications, and 5) as specified by the Engineer.

For temporary seeding application rates, see the erosion and sediment control plan and notes in the Contract Documents.

308.04 MEASUREMENT AND PAYMENT.

DELETE: Section 308.04 in its entirety.

INSERT:

Erosion and sediment control will be paid on a lump sum basis. Removal and resetting, maintenance and other upkeep of erosion and sediment control devices shall be paid for as part of the lump sum bid price. Stabilized construction entrance will be paid for as part of the lump sum bid price.

Temporary seeding will be paid for per pound of seed applied including all incidentals. The payments for all items will be full compensation for the installation, maintenance, and removal of all erosion and sediment control measures shown on the Contract Drawings, including all materials, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION
MAINTENANCE OF STREAM FLOW

DESCRIPTION. This work shall consist of maintaining and diverting stream flow and installing flow diversion devices for the purpose of isolating work areas when construction activities take place within the stream channel, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS.

Sandbags. Sandbags shall consist of materials, which are resistant to ultraviolet radiation, tearing and puncture, and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).

Sheeting. Sheeting shall consist of polyethylene or other material, which is impervious and resistant to puncture and tearing.

Pump(s). Pump(s) shall be large enough to maintain uninterrupted base flow to the channel downstream of the work area. The pump-around shall include a hose suitable to convey water over land to the downstream section. The minimum length of hose required (measured in linear feet) is equivalent to the maximum estimate for three workdays provided by the Contractor.

Sediment Filter Bag(s). Sediment Filter Bags shall meet current MDE 2011 Standards as approved and as depicted in the contract drawings.

CONSTRUCTION.

(a) During all operations, the Contractor shall maintain continuous flow and operation of all waterways, channels and storm drains while minimizing the discharge of sediment to any watercourse. The Contractor shall conduct their operations in a manner that reduces the amount of sedimentation introduced into the stream to an absolute minimum. Dewatering of excavation areas directly into the stream is prohibited.

(b) The plans include details and suggested sequences for maintaining channel flow during construction. The Contractor may develop his/her own plan to maintain flow and control erosion with the approval of the Engineer. The Contractor may have to obtain approval from the Baltimore County Natural Resources Conservation District (NRCD) (formerly the Soil Conservation District) for any significant modifications to the plans.

(c) The Contractor shall utilize sandbags, pumps, sump pits, hoses, energy dissipaters, diversion pipes, dewatering methods, and other means to divert flow around the work area, dewater work areas, and control discharges of sediment to receiving waters.
(d) The height of the diversion structure shall be one half of the distance from streambed to the top of the streambank, plus one foot. Sheeting shall be overlapped such that the overlying portion covers the underlying portion with at least an 18-inch overlap.

(e) Maintenance of Stream Flow measures shall be maintained throughout the duration of the work to the Engineer's satisfaction. Any discharge of sediment resulting from the Contractor's construction shall be remedied to the satisfaction of the Engineer at the Contractor's expense.

(f) Upon completion of the work, after the drainage devices have served their purposes, and with the inspector's approval, the devices shall be removed and disposed of away from the project by the Contractor at their own expense. Removal and disposal shall be done in compliance with erosion and sediment control and waste disposal requirements of the Baltimore County Code.

MEASUREMENT AND PAYMENT.

Maintenance of Stream Flow will not be measured but the cost will be paid for at the Contract lump sum price. The payment will be full compensation for polyethylene sheeting, sandbags, sediment filter bag, excavation and clean-out of dewatering basins, pumps, geotextile, hoses, energy dissipaters for hose outfalls, and all other materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION
SOIL FABRIC LIFTS

DESCRIPTION. Soil Fabric Lifts consist of layers of compacted soil wrapped in biodegradable erosion control matting, and shall be placed on all stream banks in areas of fill as shown on the Contract Drawings, and as directed by the Engineer. The reinforced stream banks will be constructed of Soil Lifts that are approximately one foot thick. Each lift will be wrapped in biodegradable erosion control matting to provide short-term (3-5 years) erosion and stability protection as vegetation becomes established.

MATERIALS.

(a) Soil Lift Matting. Soil lift matting shall be Nedia KoirWrap 1000 type matting or an approved equivalent machine produced matting. Alternatively, two types of biodegradable erosion control matting consisting of an outer layer of high strength, continuously woven coir matting, and an inner layer of lightweight jute fabric may be utilized. However, in this case the two layers of matting will need to be sewn together at appropriate intervals with biodegradable thread at the direction of the Engineer. Matting must be approved by the Engineer or DEPS representative.

(b) Stone Toe Protection. Refer to the Stone Toe Protection Special Provision.

(c) Select Borrow. Must conform to the Subsoil Special Provision and be compacted to 95% of AASHTO specification T-99 or ASTM D698.

(d) Topsoil. as per 920.01

(e) Bank Run Gravel Filter. Refer to Bank Run Gravel Filter Special Provision.

(f) Brush Layering. Brush Layering shall consist of live branch cuttings that meet the mix ratio and size standards of the Brush Layering Special Provision.

(g) Anchor Stakes. Anchor Stakes shall be tapered 2 ft long wooden stakes consisting of standard 2 in. by 4 in. wooden boards cut diagonally as shown in the Contract Documents.

CONSTRUCTION.

The construction of the Fabric Encapsulated Soil Lifts shall be as specified in the Contract Documents and as noted herein:

(a) A toe trench shall be excavated and Stone Toe Protection placed as specified in the Stone Toe Protection Special Provision and Contract Documents.
(b) A base layer of Bank Run Gravel Filter shall be placed according to the Contract Documents to provide an under drain for the structure during rapid drawdown conditions.

(c) Soil Fabric Lifts shall be constructed so that successive lifts overlap one another beyond the exposed face according to the proposed grades shown on the Contract Documents. In order to minimize the amount of vertical lift face, the thickness of the lifts will be limited to 1 ft. Each lift shall be constructed on a 10-20 degree angle sloping away from the stream. Lifts will be filled with Select Borrow except for the exposed faces, which will receive 4 in. of topsoil to facilitate vegetation establishment.

(d) The Select Borrow and topsoil in each lift shall be compacted and smoothed over the full width of the backfill areas by the use of an approved, smooth-faced steel-wheeled roller or by mechanical tampers and vibratory compactors if rolling is not feasible.

(e) The face of each lift will be seeded per the Contract Drawings. The matting shall be placed within 24 hours after seeding operations have been completed. Brush layering will be installed between each lift as specified in the Brush Layering Special Provision and Contract Documents. Additional plantings shall be installed along the surface of the top lift as specified Contract Documents.

(f) The fabric on each lift will be stretched, smoothed, and secured in place with wooden stakes. Anchor Stakes shall be placed a maximum of 3 ft apart throughout the matting.

(g) Where more than one width of Soil Lift matting is required, the ends of each strip shall overlap at least 12 in. horizontally. Overlapping shall be performed so that the upstream matting shall overlap the downstream matting. Matting shall be firmly fastened in place with wooden stakes driven vertically into the soil and flush with the surface. Anchor Stakes shall be placed a maximum of 3 ft apart throughout the matting.

(h) On all overlapping edges, wooden stakes shall be placed 18 in. apart. At all ends of matting, wooden stakes shall be placed 18 in. apart.

(i) The Contractor shall excavate a trench along all edges of the matting to a depth of 6 in. The matting shall be placed into the trench and secured with wooden stakes as described above. After completion of staking, the trench shall be backfilled and tamped.

MEASUREMENT AND PAYMENT. Soil Fabric Lifts will be measured and paid for at the Contract unit price per square yard of finished area covered. Payment will be full compensation for the transport of all materials, excavation, installation, Anchor Stakes, Soil Lift Matting, and maintenance of the Soil Fabric Lifts, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in these special provisions and on the plans.

Furnish and placement of Brush Layering will not be measured and paid for separately and will be considered incidental to the Contract unit price per square yard of Soil Fabric Lifts.
KELLY BRANCH
SPECIAL PROVISIONS

Stone Toe Protection will be measured and paid for separately at the Contract unit price per linear foot.

Furnish and placement of the Bank Run Gravel Filter will not be measured and paid for separately and will be considered incidental to the Contract unit price per square yard Soil Fabric Lifts.

Select Borrow (Subsoil) will be measured and paid for separately according to the Subsoil special provision.

Topsoil will be measured and paid for separately at the Contract unit price per square yard.

END SECTION
KELLY BRANCH
SPECIAL PROVISIONS

CATEGORY 300
DRAINAGE

RIFFLE GRADE CONTROL

DESCRIPTION. This work shall consist of installing riffle grade controls as shown on the Contract Documents. Riffle grade controls are stone structures consisting of Key Stone Boulders, a Riffle Grade Control Stability Mix, and Channel Bed Material designed to improve habitat, provide fish passage, protect sewer lines, and provide grade control. This document includes specifications for the material, installation, measurement and payment of the riffle grade controls.

MATERIALS.

The Engineer reserves the right to reject any material brought on site if the material does not meet the gradation requirements as specified in the Contract Documents. The Engineer also reserves the right to require on-site remixing of the materials to eliminate stockpile segregation.

Channel Bed Material. Refer to the Channel Bed Material special provisions.

Bank Run Gravel. Refer to Bank Run Gravel special provision.

Riffle Grade Control Stability Mix. Refer to the RGC and Trib. Stability Mixes special provision.

Key Stone Boulders. Key Stone Boulders to be used for construction will be selected from the Riffle Grade Control Stability Mix at the direction of the Engineer, and shall consist of large stone, brown or grey in color and irregular in shape. No white stone will be allowed. All stone shall be free from laminations and weak cleavages. The stone shall not disintegrate from the action of air, water, or in handling and placing. Granular sedimentary stone will generally be unacceptable. Concrete will not be considered as an alternative for stone. The Boulders shall have a density greater than 150 lbs/ft³. Boulders shall have an intermediate (b axis) of 1.4 to 1.6 ft. and possess a minimum weight of 0.5 tons. Boulders must be approved by the Engineer, and must be obtained from an approved source.

Geotextile Class SE. Refer to Section 921.09 with the following exceptions:

921.09 DELETE: The third paragraph and the table in their entirety.

INSERT: The following.
<table>
<thead>
<tr>
<th>Class</th>
<th>Type of Geotextile</th>
<th>Grab Strength (lb) D4632</th>
<th>Puncture Strength (lb) D4833</th>
<th>Permittivity s D4491</th>
<th>Apparent Opening Size (max mm) D4751</th>
<th>Trapezoid Tear Strength (lb) D4533</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE</td>
<td>Nonwoven</td>
<td>200</td>
<td>80</td>
<td>0.20</td>
<td>0.30</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Woven</td>
<td>250</td>
<td>90</td>
<td>0.20</td>
<td>0.30</td>
<td>90</td>
</tr>
</tbody>
</table>

**Soil Stabilization Matting.** Refer to the Soil Stabilization Matting special provisions.

**CONSTRUCTION.**

(a) Excavate the bed according to the Plans to obtain the necessary sub-grade to install the Utility and Riffle Grade Control Structure. Allow room for the placement of the Bank Run Gravel Filter, Key Stone Boulders, Riffle Grade Control Stability Mix, and Channel Bed Material. The Contractor shall minimize open excavation during nonworking hours whenever possible.

(b) If banks are disturbed adjacent to the Riffle Grade Control Structure, install Soil Stabilization Matting concurrently with the construction of the Riffle Grade Control Structure. Soil Stabilization Matting shall be keyed in under the bank run gravel filter a minimum of 1 ft. according to the Contract Drawings.

(c) In areas where Stone Toe is to be placed adjacent to the Riffle Grade Control, construction should occur concurrently to avoid disturbance of placed Riffle Grade Control Stone.

(d) Once the appropriate subgrade is achieved including both upstream and downstream keys (glide and run transitions), place a base layer of Bank Run Gravel Filter under the entire foot print of the structure to a thickness of 0.5 ft.

(e) Prior to the placement of the Riffle Grade Control Stability Mix, place the Key Stone Boulders so the top of the stones match the proposed elevations specified on the Plans. Boulders should be 2-4 feet apart, offset 1-2 feet perpendicularly. Following placement of the Boulders, the Riffle Grade Control Stability Mix shall be placed so that it shingles in a downstream direction. small and large stones must be mixed to minimize void space and promote interlocking. Channel Bed Material shall be washed-into the mix to ensure all interstitial voids are filled and surface flow is achieved. Dumping of stone will not be permitted.

(f) Run and glide transitions of the Riffle Grade Control Structure shall be buried under compacted Channel Bed Material Backfill to match pre-construction or proposed grade as shown on the Contract Documents.
KELLY BRANCH
SPECIAL PROVISIONS

(g) In areas will Riffle Grade Controls are located immediately downstream of Sanitary Sewer Line Protection, modified key-ins may be necessary. See plan and profile for more detail.

(h) Surface flow and the establishment of a defined thalweg must be achieved and approved by the Engineer, prior to removal of the sandbag diversion.

(i) Surface elevations, widths, and slopes of the Riffle Grade Control Structure shall conform to the proposed design stream profile and cross-sections specified on the Plans. Tolerances of the finished structure are as follows:

<table>
<thead>
<tr>
<th>Surface Elevation:</th>
<th>+/- 0.2 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope:</td>
<td>+/- 0.1 percent</td>
</tr>
</tbody>
</table>

Placed material not conforming to the specified limits shall be removed and replaced as directed by the Engineer at no additional cost.

MEASUREMENT AND PAYMENT. Payment for Riffle Grade Control will be made under the individual items for Riffle Grade Control Stability Mix, Channel Bed Material, and Bank Run Gravel, and will be full compensation for all excavation, grading, furnishing and installing all materials, and for transportation, preparation, compaction, disposal of excess material, and for all material, labor, structure stakeout, equipment, tools, and incidentals necessary to complete the work.

Excavation, backfill and disposal of excess material will not be measured, but the cost incidental to Class 5 Excavation.

Geotextile Class SE will not be measured but will be incidental to the Riffle Grade Control Stability Mix.

Key Stone boulders will not be measured and paid for separately and are considered part of the Riffle Grade Control Stability Mix pay item.

Washing the Channel Bed Material into the Riffle Grade Control Bed Stability Mix will not be measured and paid for separately and will be considered incidental to the Riffle Grade Control Stability Mix.

Soil Stabilization Matting will be measured and paid for separately according to the Soil Stabilization Matting Special Provision.

END OF SECTION
STONE TOE PROTECTION

DESCRIPTION. Placement of Imbricated Stone along the toe of banks and Subgrade to prevent toe scour.

MATERIALS. The Engineer reserves the right to reject any stone delivered to the site that does not meet the Contract specifications. The Contractor will not be eligible for any claims or compensatory payments for Boulders rejected as not meeting the project requirements.

Imbricated Boulder. Imbricated Boulders to be used for construction shall consist of angular, flat rock that is rectangular in shape, and of appropriate color (e.g., green, gray, brown/gray, dark gray, and/or dark brown in color). No white stone will be allowed. No Round stone will be allowed. All stone shall be free from laminations and weak cleavages. The boulder shall not disintegrate from the action of air, water, or handling and placing. Granular sedimentary stone will generally be unacceptable. Concrete will not be considered as an alternative for stone. The Boulders shall have a density greater than 150 lbs/ft³. Boulders shall have general dimensions of 3.0 x 2.0 x 1.5 ft. Length measurements along the Boulders shall have an allowable tolerance of 0.5 ft; however, the minimum weight of any individual Boulders shall not be less than 0.7 tons, and the minimum vertical depth of the stone toe shall be 3.0 ft. Boulders must be approved by the Engineer, and must be obtained from an approved source. Boulders shall have the following size requirements:

<table>
<thead>
<tr>
<th></th>
<th>A Axis (Long)</th>
<th>B Axis (Intermediate)</th>
<th>C Axis (Short)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Size</td>
<td>2.5</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Maximum Size</td>
<td>3.5</td>
<td>2.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Geotextile Class SE. Refer to Riffle Grade Control special provision

Soil Stabilization Matting. Refer to the Soil Stabilization Matting special provisions.

CONSTRUCTION.

(a) Excavation of bed and banks shall occur as described in the Contract Documents accounting for the proper subgrade excavation necessary for the placement of the Stone Toe Protection.

(b) Class SE Geotextile shall be placed on the subgrade and along the streambank parallel to the direction of flow and as shown in the Contract Documents. Each layer shall overlap a minimum of 1 ft in a downstream direction. Geotextile torn or damaged shall be replaced at the Contractor’s expense in a manner acceptable to the Engineer. Class SE Geotextile shall be keyed-in, placed and trimmed to avoid exposed edges upon completion of construction.
KELLY BRANCH
SPECIAL PROVISIONS

(c) Imbricated boulder shall be placed to lines and grades specified in Contract Documents, and tied into the existing channel substrate at the direction of the Engineer to establish a stable cross section. Boulder shall be oriented so that the A axis is parallel to flow, the B axis is perpendicular to flow, and the C axis is vertical. Boulder shall not be placed by dumping or similar methods.

(d) Boulder shall be selected and placed to avoid the creation of voids.

(e) Surface elevations of individual boulders shall be within 0.2 ft of the elevations specified on the Contract Documents.

(f) Salvaged Channel Bed Material, and/or Riffle Grade Control bed Stability Mix shall be installed over the footer stones and along the Stone Toe to bring the channel bed elevation to the grade specified in the Contract Documents.

(g) In areas where Riffle Grade Controls and/or Soil Fabric Lifts are to be installed, construction shall be concurrent.

(h) The top stone shall be offset 0.5 ft. from the footer stones toward the stream bank.

(i) The upstream and downstream extents of the Stone Toe Protection shall be keyed-into the bank a minimum of 3.0 feet on a 45 degree angle at the direction of the engineer.

(j) Placed stone not conforming to specifications shall be removed and replaced as directed by the Engineer at no additional cost to the Administration.

MEASUREMENT AND PAYMENT. Stone Toe will be measured and paid for at the Contract unit price per linear foot (LF) placed and approved as measured parallel to the baseline and along the A axis (long) as described above. The payment will be full compensation for all excavation, grading, furnishing and installing Imbricated boulder; placement and repositioning of stones (if necessary); transportation, stockpiling, preparation, compaction, disposal of excess material; and for all material, labor, structure stakeout, equipment, tools, and incidentals necessary to complete the work. Stone Toe used as part of the upstream and downstream keys will not be measured and paid for separately and is considered incidental to the LF cost.

Excavation, and disposal of excess material will not be measured, but the cost incidental to Class 5 Excavation.

Riffle Grade Control will be measured and paid for separately according to the Riffle Grade Control Special Provision.

Channel Bed Material will be measured and paid for separately according to the Channel Bed Material Special Provision.
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Soil Fabric Lifts will be measured and paid for separately according to the Soil Fabric Lifts Special Provision.

Geotextile Class SE will not be measured but will be incidental to construction of Stone Toe.

Soil Stabilization Matting will be measured and paid for separately according to the Soil Stabilization Matting Special Provision.

END OF SECTION
DESCRIPTION. This work shall consist of the installation of imbricated stone riprap along the stream bank, as detailed on the Contract Drawings.

MATERIALS.

Imbricated Boulder. Refer to the Stone Toe Protection special provision.

Geotextile Class SE. Refer to the Riffle grade Control special provision.

Soil Stabilization Matting. Refer to the Soil Stabilization Matting special provisions.

Bank Run Gravel. Refer to the Bank Run Gravel special provision.

Tributary Stability Mix. Refer to RGC and Trib. Stability Mixes special provision.

Select Borrow. Must conform to the Subsoil Special Provision and be compacted to 95% of AASHTO specification T-99 or ASTM D698.

CONSTRUCTION.

(a) Excavation of bed and banks shall occur as described in the Contract Documents accounting for the proper subgrade excavation necessary for the placement of the Imbricated Riprap Wall. Loose material at the toe of the embankment and within the subgrade should be excavated until a stable condition is reached, as approved by the Engineer. The subgrade should be smooth, firm, and free from brush, trees, stumps and protruding objects or voids that would affect the proper positioning of the first layer of stones, and shall be acceptable to the Engineer.

(b) Class SE Geotextile shall be placed on the subgrade and along the streambank parallel to the direction of flow and as shown in the Contract Documents. Each layer shall overlap a minimum of 1 ft in a downstream direction. Geotextile torn or damaged shall be replaced at the Contractor’s expense in a manner acceptable to the Engineer. Class SE Geotextile shall be keyed-in, placed and trimmed to avoid exposed edges upon completion of construction.

(c) Imbricated Boulders shall be neatly stacked with staggered joints so that each stone rests firmly on two stones in the tier below with a minimum void space. Additionally, smaller stones should be used to fill voids so that each rock rests solidly on the previous rock layer with minimal opportunity for movement. There shall be no pockets of undersized stone. The height of the imbricated revetment is as specified in the Contract Drawings.
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(d) Imbricated boulders shall be placed to lines and grades specified in Contract Documents, and tied into the existing channel substrate at the direction of the Engineer to establish a stable cross section. Stone shall be oriented so that the A axis is parallel to flow, the B axis is perpendicular to flow, and the C axis is vertical. Stone shall not be placed by dumping or similar methods.

(e) Surface elevations of individual Stones shall be within 0.2 ft of the elevations specified on the Contract Documents.

(f) Tributary Stability Mix shall be installed over the footer stones to bring the channel bed elevation to the grade specified in the Contract Documents.

(g) Bank Run Gravel filter shall be placed behind the Imbricated Riprap Wall per the Contract Drawings to allow for proper drainage.

(h) The Contractor shall place any select backfill (Section 200 - Subsoil) as necessary, concurrently with stone placement and geotextile as shown in the Contract Documents.

MEASUREMENT AND PAYMENT. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work. Imbricated Riprap Wall will be paid for at the Contract unit price per linear foot installed and will be full compensation for all excavation, grading, furnishing and installing all materials, and for transportation, preparation, compaction, disposal of excess material, and for all material, labor, structure stakeout, equipment, tools, and incidentals necessary to complete the work.

Excavation, and disposal of excess material will not be measured, but the cost incidental to Class 5 Excavation.

Geotextile Class SE will not be measured but will be incidental to the Imbricated Riprap Wall.

Soil Stabilization Matting will be measured and paid for separately according to the Soil Stabilization Matting Special Provision.

Tributary Stability Mix will be measured and paid for separately according to the RGC and Trib. Stability Mixes special provision.

Bank Run Gravel will be measured and paid for separately according to the Bank Run Gravel special provision.

Select Borrow (Subsoil) will be measured and paid for separately according to the Subsoil special provision.

END OF SECTION
IMBRICATED CASCADE OUTFALL STRUCTURE

DESCRIPTION. This work shall consist of constructing an imbricated cascade outfall and plunge pool at an existing outfall for the purposes of dissipating energy associated with pipe flow prior to entering a natural channel.

MATERIALS.

The Engineer reserves the right to reject any material brought on site if the material does not meet the gradation requirements as specified in the Contract Documents. The Engineer also reserves the right to require on-site remixing of the materials to eliminate stockpile segregation.

Imbricated Boulder. Refer to the Stone Toe Protection special provision.

Geotextile Class SE. Refer to the Riffle grade Control special provision.

Soil Stabilization Matting. Refer to the Soil Stabilization Matting special provisions.

Select Borrow. Must conform to the Subsoil Special Provision and be compacted to 95% of AASHTO specification T-99 or ASTM D698.

Class II Pool Pavement. Class II Pool Pavement shall consist of MD SHA Class II riprap possessing a D_{50} of 16 inches and a D_{100} of 24 inches. Stone shall be brown or grey in color. No white stone will be allowed. The stone shall not disintegrate from the action of air, water, or in handling and placing. Granular sedimentary stone will generally be unacceptable. Concrete will not be considered as an alternative for stone.

CONSTRUCTION.

a) Saw cut existing concrete apron at the direction of the engineer and excavate to subgrade as described in the Contract Documents accounting for the proper subgrade excavation necessary for the placement of the Imbricated Boulder and Class II Pool Pavement. Loose material within the subgrade should be excavated until a stable condition is reached, as approved by the Engineer. The subgrade should be smooth, firm, and free from brush, trees, stumps and protruding objects or voids that would affect the proper positioning of the first layer of stones, and shall be acceptable to the Engineer.

b) Class SE Geotextile shall be placed on the subgrade as depicted on the Contract Drawings. Geotextile torn or damaged shall be replaced at the Contractor’s expense in a manner acceptable to the Engineer. Class SE Geotextile shall be keyed in, placed and trimmed to avoid exposed edges upon completion of construction.
c) Imbricated Boulders shall be neatly stacked with staggered joints so that each stone rests firmly on two stones in the tier below with a minimum void space as specified in the Contract Drawings. Additionally, smaller stones should be used to fill voids so that each rock rests solidly on the previous rock layer with minimal opportunity for movement. There shall be no pockets of undersized stone.

d) Imbricated Boulders shall be placed to lines and grades specified in Contract Documents, and at the direction of the Engineer. Surface elevations of individual Stones shall be within 0.2 ft of the elevations specified on the Contract Documents.

e) Following placement of all imbricated boulders including the weir stone as specified on the Contract Drawings, place Class II Pool Pavement to the lines and grades specified on the Contract Drawings. Stone shall be so that large and small stone interlock with minimal void space. Dumping of stone will not be permitted.

f) The Contractor shall place any select backfill (Section 200 - Subsoil) as necessary, concurrently with stone placement and geotextile as shown in the Contract Documents.

**MEASUREMENT AND PAYMENT.**

The Imbricated Cascade Outfall Structure will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

**END OF SECTION**
LOG DROP OUTLET STRUCTURE

DESCRIPTION. This work shall consist of building stabilized outlets with log sills by grading an outlet swale and installing log sills, stabilization mix, bank run gravel filter subbase, and biodegradable erosion control matting.

MATERIALS.

Logs. Logs shall have an average diameter between 12-18 inches. Logs are to be sourced from hardwood species on site marked for removal on the Contract Documents and approved by the Engineer. Alternative hardwood species may be substituted with approval from the Engineer. Logs shall be free of any branches. The minimum length of each log will be 20 feet in length and the log shall be sufficient length to allow proper construction in accordance with plans and structure details. Logs shall be free from rot and decay.

Class II Boulder. Class II Boulders shall consist of large stone, brown or grey in color and irregular in shape. No white stone will be allowed. All stone shall be free from laminations and weak cleavages. The stone shall not disintegrate from the action of air, water, or in handling and placing. Granular sedimentary stone will generally be unacceptable. Concrete will not be considered as an alternative for stone. The Boulders shall have a density greater than 150 lbs/ft³. Boulders shall and intermediate (b axis) of 1.4 to 1.6 ft. and possess a minimum weight of 0.3 tons. Boulders must be approved by the Engineer, and must be obtained from an approved source.

Topsoil. As per 920.01

Geotextile Class SE. Refer to the Riffle grade Control special provision.

Soil Lift Matting. Refer to the Soil Fabric Lift special provisions.

Bank Run Gravel. Refer to the Bank Run Gravel special provision.

Tributary Stability Mix. Refer to RGC and Trib. Stability Mixes special provision

Select Borrow. Must conform to the Subsoil Special Provision and be compacted to 95% of AASHTO specification T-99 or ASTM D698.

Anchor Stakes. Stakes for securing the matting shall be tapered two foot long wooden stakes consisting of standard 2 in. by 4 in. wooden boards cut diagonally.

CONSTRUCTION.
(a) The proposed outlet channel shall be excavated based on the grading shown in the Contract Documents, allowing for the placement of 1.5 ft of Tributary Stability Mix, and 1/2 ft of Bank Run Gravel.

(b) Bank Run Gravel material shall be placed at a depth of 6 in. below the riprap stabilization mix and at a depth of 10 in. below the footer logs as indicated in the Contract Documents.

(c) Tributary Stabilization Mix shall be placed along the channel to a minimum depth of 1.5 ft, as designated in the Contract Documents. Channel Bed Material shall be washed into the voids at the direction of the Engineer to achieve surface flow.

(d) Log drops shall be constructed to stations and elevations indicated on the plans and structure tables. The Contractor shall excavate a trench to place the logs, careful attention should be taken to avoid over excavation. Place upstream footer log, followed by top log to bank tie-in elevations as indicated on the contract documents with a minimum 5 ft tie-in to each top of bank. Make chainsaw notch in top log to elevation indicated on the Contract Documents. Nail geotextile as indicated on the Contract Documents to the upstream side of the log, trimming excess material. Place Class II riprap footer rocks around the logs in the tie-ins below fill.

(e) Place soil lift matting as shown in the Contract Documents and as directed by the Engineer. Matting shall be firmly fastened in place with wooden stakes driven vertically into the soil and flush with the surface. Anchor stakes shall be placed a maximum of 18 inches apart throughout the matting. At all ends of matting, wooden stakes shall be placed 18 in. apart. The Contractor shall excavate a trench along all edges of the matting to a depth of 6 in. The matting shall be placed into the trench and secured with wooden stakes as described above. After completion of staking, the trench shall be backfilled and tamped.

MEASUREMENT AND PAYMENT. The Log Drop Outlet Structures will be measured and paid for at the Contract unit price per each log drop installed. Payment will be full compensation for all excavation, material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents or as directed by the Engineer. All placed material not conforming to the specified limits shall be removed and replaced as directed by the Engineer at no additional cost.

Excavation, and disposal of excess material will not be measured, but the cost incidental to Class 5 Excavation.

Geotextile Class SE will not be measured but will be incidental to the Log Drop Outlet Structure.

Soil Lift Matting will not be measured but will be incidental to the Log Drop Outlet Structure.

Class II Boulders will not be measured but will be incidental to the Log Drop Outlet Structure.
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Logs will not be measured but will be incidental to the Log Drop Outlet Structure.

Tributary Stability Mix will be measured and paid for separately according to the RGC and Trib. Stability Mixes special provision.

Bank Run Gravel will be measured and paid for separately according to the Bank Run Gravel special provision.

Select Borrow (Subsoil) will be measured and paid for separately according to the Subsoil special provision.

Topsoil will be measured and paid for separately according to the Topsoil special provision.

END OF SECTION
EMERGENT WETLAND CELL

DESCRIPTION. This work shall consist of constructing an emergent wetland cell and associated spillway weir for the purposes of habitat and water quality improvements.

MATERIALS.

Organic Leaf Compost. Organic Leaf Compost must be free of any materials which pose a definitive hazard to human health, must contain less than <1% inert materials, be free of seed and pathogens, and possess a pH of 6.5 – 8.5.

Topsoil. As per 920.01

Imbricated Boulder. Refer to the Stone Toe Protection special provision.

Geotextile Class SE. Refer to the Riffle grade Control special provision.

Soil Stabilization Matting. Refer to the Soil Stabilization Matting special provisions.

Wetland Seed Mix. Wetland Seed Mix shall be per the Permanent Seeding Special Provision and as specified on the Contract Drawings.

CONSTRUCTION.

a) The emergent wetland cell shall be excavated to a depth of 8 in. deeper than finished grade shown on the Contract Drawings. Following completion of excavation, the Contractor shall place 8 inches of organic leaf compost and topsoil mix as depicted on the contract drawings. Equal parts topsoil and organic leaf compost shall be mixed on-site and approved by the engineer prior to placement.

b) Use available track equipment to compact the organic leaf compost and topsoil mix. Compaction testing will not be required but shall be completed to the satisfaction of the Engineer.

c) Following establishment of the pilot channel and microtopography as depicted in the Contract Drawings, seed the Emergent Wetland Cell with Wetland Seed Mix as per the Permanent Seeding special provision and Contract Drawings

d) Excavate subgrade for placement of the wetland spillway weir footer stones.

e) Class SE Geotextile shall be placed on the subgrade as depicted on the Contract Drawings. Geotextile torn or damaged shall be replaced at the Contractor’s expense in a manner acceptable to the Engineer. Class SE Geotextile shall be keyed in, placed and trimmed to avoid exposed edges upon completion of construction.

f) Imbricated Boulders shall be neatly stacked with staggered joints so that each stone rests firmly on two stones in the tier below with a minimum void space as specified
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in the Contract Drawings. Additionally, smaller stones should be used to fill voids so that each rock rests solidly on the previous rock layer with minimal opportunity for movement. There shall be no pockets of undersized stone.

g) Imbricated Boulders for the wetland spillway weir shall be placed to lines and grades specified in Contract Documents, and at the direction of the Engineer. Surface elevations of individual Stones shall be within 0.1 ft of the elevations specified on the Contract Documents.

MEASUREMENT AND PAYMENT.

The Emergent Wetland Cell will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work including Excavation, Topsoil, Organic Leaf Compost, Geotextile, Imbricated Boulders, and Soil Stabilization Matting.

Wetland Seed Mix will be measured and paid for separately according to the Permanent Seeding Special Provision.

END OF SECTION
DESCRIPTION. Grade and compact a small depressional cell with no outlet that is intended to intermittently hold water during Spring months. Salvaged Logs will be placed in the created pool. The logs will provide habitat and a passage in and out of the pools.

MATERIALS.

Topsoil. As per 920.01

Organic Leaf Compost. Refer to Emergent Wetland Cell special provision.

Furnished Clay. Clay Liner Material shall conform to Unified Soil Classifications GC, SC, CH, or CL, and shall pass a minimum of 35 percent components through the #200 sieve. Material used for clay channel block construction will be approved by the Engineer prior to use, including any alternative material not conforming to the Unified Soil Classifications listed above. The fill material shall be free of roots, stumps, wood, rubbish, stones greater than 4 in., as well as frozen and objectionable materials.

Salvaged Logs/Branching. Salvaged Logs/Branching shall be native hardwood approved and flagged by the Engineer or DEPS site representative. Salvaged Logs shall be placed in the Vernal Pools upon completion of grading. Logs shall be 10 to 16 in. in diameter and 15 to 25 ft in length. Branching shall consist of 1 to 4 in. diameter untrimmed branches that are 10 to 15 ft in length.

Wetland Seed Mix. Wetland Seed Mix shall be per the Permanent Seeding Special Provision and as specified on the Contract Drawings.

Emergent Wetland Plugs. Emergent Wetland Plugs shall be per the Emergent Wetland Plugs Special Provision and as specified on the Contract Drawings.

CONSTRUCTION.

(a) Vernal Pools will be constructed at the approximate locations shown on the grading plans with exact locations to be defined in the field at the direction of the Engineer. The dimensions of the Vernal Pools shall be 30 to 45 ft in length and 15 to 25 ft in width. Equal parts topsoil and organic leaf compost shall be mixed on-site and approved by the engineer prior to placement. Vernal Pools shall be constructed as per the details and shall conform to any additional requirements provided herein. Vernal Pools shall be excavated to a depth of 10 in. deeper than finished grade. Following completion of excavation, place a continuous clay liner through the entire extent of the Vernal Pool. The clay liner shall be 6 in. thick on the 10:1 bottom slope of the Vernal Pool and the clay liner shall be
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4 in. thick on the 5:1 side slope. The 5:1 side slope of the Vernal Pool shall be covered with a 6 in. thick layer of topsoil and tamped with a bucket or tracked. The 10:1 bottom of the pool shall be covered with a 4 in. thick layer of organic leaf compost and topsoil mix. Use available track equipment to compact the continuous clay layer and organic leaf compost and topsoil mix. Compaction testing will not be required but compaction of the continuous clay later shall be completed to the satisfaction of the Engineer. In areas where the pool will be constructed upon removal of a haul road, the top of pool elevation should match the pre-existing ground elevation.

(b) Place the two Native Hardwood Salvaged Logs randomly onto the side slopes of the graded the pool. The trunks shall reach the bottom of the pool and extend up the side slope.

(c) Place at least three bundles of branching randomly on the side slopes of the graded pool. The bundles of branching shall be intermixed and overlain, and shall contain a minimum of ten main branches that are 1 to 4 in. in diameter and 10 to 15 ft in length with additional smaller branching throughout. Branches shall cover a minimum of 20% of vernal pool surface area. Do not trim any or break additional branching from main branch. Branch bundles will be approved by the Engineer. The branching shall reach the bottom of the pool and extend up the side slope.

(d) Following installation of trunk and branching, plant/seed the pool with Wetland Seed Mix and or Emergent Wetland Plugs as per the Vernal Pool Treatment Schedule, Wetland Seed Mix and or Emergent Wetland Plugs Special Provisions, and Contract Drawings.

MEASUREMENT AND PAYMENT. Vernal Pools will be measured and paid for at the Contract unit price per each Vernal Pool installed. Payment will be full compensation for all excavation, material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents or as directed by the Engineer.

Furnished Topsoil, Furnished Organic Leaf Compost, Furnished Clay, and Salvaged Logs and Branching will not be measured and paid for separately and will be considered incidental to the unit price per each Vernal Pool installed.

Wetland Seed Mix will be measured and paid for separately as per the Permanent Seeding Special Provision.

Emergent Wetland Plugs will be measured and paid for separately as per the Permanent Seeding Special Provision.

END SECTION
CLAY CHANNEL BLOCK

DESCRIPTION. This work consists of furnishing material and equipment for, and placing a clay channel block material as detailed in the Contract Drawings.

MATERIALS.

Clay Channel Block Material. Must be unified soil. Classification SC or CL-ML and shall pass a minimum of 35 percent components through the #200 sieve. Material used for Clay Channel Block construction will be approved by the Engineer prior to use, including any alternative material not conforming to the Unified Soil Classifications listed above. The Fill Material shall be free of roots, stumps, wood, rubbish, stones greater than 6 in., as well as frozen and objectionable materials.

Select Borrow. Must conform to the Subsoil Special Provision and be compacted to 95% of AASHTO specification T-99 or ASTM D698.

CONSTRUCTION.

(a) Clay Channel Block shall be constructed as indicated on the plans with a minimum top width of 2 ft and side slopes of 1:1 or flatter. The top elevation of the Clay Channel Block shall be no more than 6 in. (maximum) below the proposed ground surface. The Clay Channel Block shall extend at least 1 ft (minimum) below the existing ground surface (existing channel bed) and shall extend at least 3 ft (minimum) into the existing ground surface (existing channel banks) at the upstream and downstream ends.

(b) Fill Materials shall be placed in maximum 8 in. thick, pre-compaction layers, which shall be continuous over the entire length of the fill. Fill Material shall contain sufficient moisture such that the required degree of compaction shall be obtained with the equipment used. The “required degree of compaction” shall be understood to mean that, if the Fill Material is formed into a ball it shall not crumble and shall not be so wet that water may be squeezed from the material.

(c) Fill Material shall be compacted to assure maximum density and minimum permeability. Compacted fill shall conform to a minimum 97 percent of maximum dry density as determined according to PMT No. 106, Method B. Material shall be maintained so that moisture content shall remain within ± 2 percent of optimum. Each layer of fill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum compaction and minimum permeability, and will be approved by the Engineer at the time of construction.
MEASUREMENT AND PAYMENT. Clay Channel Block will be measured and paid for at the Contract unit price per cubic yard of Clay Channel Block material placed and approved. The payment will be full compensation for excavation, furnishing Clay Channel Block material, grading, preparation, installation, compaction, and disposal of excess material, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Select Borrow (Subsoil) will be measured and paid for separately according to the Subsoil special provision.

END OF SECTION
BRIDGE SCoUR SIDE SLOPE PROTECTION

DESCRIPTION. This work shall consist of placing class II riprap adjacent to existing concrete wing walls to prevent scour.

MATTERIAls.

The Engineer reserves the right to reject any material brought on site if the material does not meet the gradation requirements as specified in the Contract Documents. The Engineer also reserves the right to require on-site remixing of the materials to eliminate stockpile segregation.

Geotextile Class SE. Refer to the Riffle grade Control special provision.

Soil Stabilization Matting. Refer to the Soil Stabilization Matting special provisions.

Select Borrow. Must conform to the Subsoil Special Provision and be compacted to 95% of AASHTO specification T-99 or ASTM D698.

Class II Riprap. Class II Riprap shall consist of MD SHA Class II riprap possessing a D_{50} of 16 inches and a D_{100} of 24 inches. Stone shall be brown or grey in color. No white stone will be allowed. The stone shall not disintegrate from the action of air, water, or in handling and placing. Granular sedimentary stone will generally be unacceptable. Concrete will not be considered as an alternative for stone.

CONSTRUCTION.

a) Excavate to subgrade as described in the Contract Documents accounting for the proper subgrade excavation necessary for the placement of Class II Riprap. Loose material within the subgrade should be excavated until a stable condition is reached, as approved by the Engineer. The subgrade should be smooth, firm, and free from brush, trees, stumps and protruding objects or voids that would affect the proper positioning of the first layer of stones, and shall be acceptable to the Engineer.

b) Class SE Geotextile shall be placed on the subgrade as depicted on the Contract Drawings. Geotextile torn or damaged shall be replaced at the Contractor’s expense in a manner acceptable to the Engineer. Class SE Geotextile shall be keyed in, placed and trimmed to avoid exposed edges upon completion of construction.

c) Place Class II Riprap as shown on the Contract Documents, not to exceed a maximum slope of 2:1.

d) The Contractor shall place any Select Borrow (Section 200 - Subsoil) as necessary, concurrently with stone placement and geotextile as shown in the Contract Documents.
MEASUREMENT AND PAYMENT.

Payment for Bridge Scour Side Slope Protection will be measured and paid for at the Contract unit price per cubic yard and will be considered full compensation for all excavation, grading, furnishing and installing all materials, and for transportation, preparation, compaction, disposal of excess material, and for all material, labor, structure stakeout, equipment, tools, and incidentals necessary to complete the work.

Excavation, backfill and disposal of excess material will not be measured, but the cost incidental to Class 5 Excavation.

Geotextile Class SE will not be measured but will be incidental to the Bridge Scour Side Slope Protection.

Soil Stabilization Matting will be measured and paid for separately according to the Soil Stabilization Matting Special Provision.

Select Borrow (Subsoil) will be measured and paid for separately according to the Subsoil special provision.

END OF SECTION
SECTION 704 - TEMPORARY SEEDING

704.01 DESCRIPTION.

531 **DELETE:** From the first sentence of the first paragraph "...fertilizer, ...

704.02 MATERIALS.

**DELETE:** The following.

<table>
<thead>
<tr>
<th>Material</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertilizer</td>
<td>920.03.01</td>
</tr>
<tr>
<td>Seed</td>
<td>920.04.01 and 920.04.02</td>
</tr>
</tbody>
</table>

**INSERT:** The following.

<table>
<thead>
<tr>
<th>Material</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed</td>
<td>920.04.01 and exception below</td>
</tr>
</tbody>
</table>

920.04.01 Seed.

695 **DELETE:** The second paragraph in its entirety.

**INSERT:** The Temporary Seed shall consist entirely of the seed specified on the Contract Drawings.

704.03 CONSTRUCTION.

704.03.01 Application Rates.

531 **DELETE:** Fertilizer (10-20-10) from the table in its entirety.

532 **DELETE:** From the first sentence "...fertilizer, ...

(b) Seeding, Fertilizing, and Mulching.

**DELETE:** (b) Seeding, Fertilizing, and Mulching in its entirety.

**INSERT:** The following.

(b) **Seeding and Mulching.** Seeding and mulching shall conform to the mixes specified on the Contract Drawings. Amendments shall be as specified on the Contract Drawings and in specification 705.03.01.

END OF SECTION
SECTION 709 - SOIL STABILIZATION MATTING

550 **DELETE:** Section 709.01 DESCRIPTION in its entirety.

**INSERT:** The following:

709.01 DESCRIPTION. This work shall consist of furnishing, placing and securing natural fiber matting along bank treatment areas and other areas of the site, as specified in the Contract Documents or as directed by the Engineer. This work will occur on all graded slopes and is to extend a minimum of 5 ft. beyond the top of bank or to the Limits of Disturbance, whichever comes first.

**DELETE:** Section 709.02 MATERIALS in its entirety.

**INSERT:** The following:

709.02 MATERIALS.

**Soil Stabilization Matting.** Matting for the bank treatment areas shall consist of a machine produced mat of degradable natural fibers and shall meet the following minimum specifications:

<table>
<thead>
<tr>
<th>Material</th>
<th>Woven coir fiber yarn or twine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness:</td>
<td>0.25 in.</td>
</tr>
<tr>
<td>Elongation (Dry/Wet):</td>
<td>29%/35%</td>
</tr>
<tr>
<td>Weight:</td>
<td>20 oz/SY</td>
</tr>
<tr>
<td>Open Area:</td>
<td>50%</td>
</tr>
<tr>
<td>Size:</td>
<td>6 ft. wide x 150 ft in length (100 SY per roll)</td>
</tr>
<tr>
<td>Flow Velocity:</td>
<td>8 ft./sec.</td>
</tr>
<tr>
<td>Life Expectancy:</td>
<td>3 years</td>
</tr>
</tbody>
</table>

**Anchor Stakes.** Stakes for securing the matting shall be tapered two foot long wooden stakes consisting of standard 2 in. by 4 in. wooden boards cut diagonally. Staples of any kind shall not be permitted.

709.03 CONSTRUCTION.

709.03.02 Placing and Securing.

**DELETE:** In the first paragraph, all remaining sentences beginning with the fourth sentence, "Where more than one width..." in their entirety.

**INSERT:** The following:
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Where more than one width of matting is required, the ends of each strip shall overlap as specified on the Contract Drawings. Overlapping shall be done with both the upslope and upstream ends of the matting overlapping the down slope and downstream ends. Matting shall be installed as depicted on the typical details to the limits of grading shown on the cross sections. In no case shall matting extend less than 24 inches beyond the top of the slope.

551 DELETE: The second paragraph in its entirety.

ADD: The following

709.03.03 Keying-In. The Contractor shall key-in matting to the finish grade as specified in the details on the Contract Drawings. Following installation of Matting Stakes or staples, disturbed soils adjacent to matting shall be tamped firmly. The Engineer may require any other edge of matting exposed to more than normal flow of water to be keyed-into the slope in a similar manner.

709.03.04 Securing Matting with Stakes. Matting shall be securely fastened in place with Anchor Stakes driven vertically into the soil. The stakes shall be installed no greater than 1 1/4-inches above the ground and matting surface.

Anchor Stakes shall be installed a maximum of 3 ft. apart in alternating rows. Anchor Stakes shall be installed 1.5 ft. apart along the upstream and downstream overlapping edges of the matting, and within the key-in trench at the top of slope. The Contractor shall excavate a trench along all finished edges of the matting to a depth of 6 in. The matting shall be placed into the trench and secured with Anchor Stakes as described above. After completion of staking, the trench shall be backfilled and tamped.

709.04 MEASUREMENT AND PAYMENT.

DELETE: The first paragraph in its entirety.

INSERT: The following:

Soil Stabilization Matting will be measured and paid for at the Contract unit price per square yard of area covered for the item Soil Stabilization Matting as designated on the plans. Should the matting become unsecured or degrade before the disturbed area is fully stabilized, the Contractor shall replace the matting and reseed the affected area at the Contractor’s expense. The payment will be full compensation for all materials, staples, stakes, labor, equipment, tools, and incidentals necessary to complete the work.

Anchor Stakes will not be measured and paid for separately and will be considered incidental to the Soil Stabilization Matting.

END OF SECTION
SECTION 710 - PLANTING TREES, SHRUBS, VINES & SEEDLING STOCK

710.01 DESCRIPTION.

The planting zones specified for this project shall be planted in accordance with Section 710, with the following exceptions:

710.01.01 Planting Schedule.

552 DELETE: The third sentence, "No planting will be allowed...." in its entirety.

INSERT: The following:

The contractor shall notify DEPS of the planned delivery date, in writing, two weeks prior to digging. Planting at any other time outside the designated planting seasons shall require the written approval of a representative of DEPS.

710.02 MATERIALS.

ADD: The following:

All plant materials shall be in accordance with the species, quantities, units, and sizes indicated on the Contract Drawings. All trees and shrubs will have at a minimum two branched growths at the time of planting. The plant species shown on the Plant Schedule may be unavailable from standard landscape nurseries. The Contractor shall make arrangements with competent wetland restoration and/or native plant supply sources to ensure a supply of the required materials. Source of supply for all plant materials shall be submitted to the DEPS representative two (2) weeks prior to planting. All plants shall be sourced from stock grown within a 50 mile radius of the project site, acclimated to the climate of Maryland and grown from naturally occurring ecotypes in the Piedmont Province of Maryland. Substitutions to plant species, type, size and origin may only be made at the approval of DEPS and the Engineer.

710.03 CONSTRUCTION.

710.03.02 Preparation for Planting.

553 DELETE: (a) Layout in its entirety.

INSERT: The following:

(a) Layout. The Contractor is not required to stake out each individual planting pit. However, upon planting a typical 50-foot by 50-foot area within each planting zone,
the Contractor shall have the Engineer inspect and approve plant spacing and planting techniques prior to proceeding. The contractor shall relocate plants that are deemed to interfere with power-lines, access, etc. at his/her own expense. Random planting details are provided in the Contract Documents as a guide for the intent for clustering of associated species of canopy, understory, wetland and riparian species. The contractor may be asked to stake out specialized planting areas along the perimeter of the site.

**DELETE:** (b) Planting Bed Preparation in its entirety.

710.03.03 Plantings.

555 **DELETE:** The first sentence, "The Contractor shall perform all planting, fertilizing, supporting..." in its entirety.

**INSERT:** The following:

The Contractor shall perform all planting, fertilizing, and initial watering operations conforming to the following:

557 **DELETE:** (b) Tree Staking and Guying in its entirety.

58 **DELETE:** (c) Mulching in its entirety.

**DELETE:** (d) Pruning in its entirety.

710.03.06 Plant Establishment.

559 **ADD:** The following at the end of the first sentence:

An 85% survival rate will be required at the end of the one-year maintenance period. The 85% survival rate will be measured per planting zone, and replacement will be required for a planting zone even if success of the overall evaluation area is greater than 85%. Survival will be measured through the monitoring, to be conducted by others, at the end of the first year following construction and within the Contractor’s warranty period.

(a) Beginning.

**ADD:** The following before the first sentence:

Inspection of installed plants shall be made by a representative of DEPS and the Contractor within two weeks of written notification from the Contractor that the plantings are complete. This inspection may be on all work or partially completed work under the contract.

(b) Maintenance.
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560 DELETE: (2) Weed Control in its entirety.

INSERT: The following:

(2) Weed Control. Non-native Invasive species control procedures shall be followed per Category 700 Non-native Invasive Species Control specifications.

710.04 MEASUREMENT AND PAYMENT.

562 DELETE: 710.04.02 Mulching in its entirety.

END OF SECTION

67
DESCRIPTION. Prior to seeding, the Contractor shall have previously added topsoil material to meet finished grades as specified in the Contract Documents. This work shall consist of soil preparation, seeding, mulching, and overseeding (as necessary) for all areas designated to receive herbaceous permanent seeding as specified in the Contract Drawings or as directed by the Engineer. This will include all specified permanent seed mixes as depicted in the Contract Drawings. These seed mixes shall supersede the use of any mixes specified in the erosion and sediment control plan.

Seeding Season. Seeding shall be performed during the seasons as specified in Section 705.01.02.

MATERIALS. (per Baltimore County Standard Specifications).

<table>
<thead>
<tr>
<th>Material</th>
<th>Refer to</th>
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<tbody>
<tr>
<td>Mulch Binder</td>
<td>920.05.04</td>
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<tr>
<td>Mulch</td>
<td>920.05.03 and 920.05.04</td>
</tr>
<tr>
<td>Water</td>
<td>920.08.01</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>920.03.01, with the following exceptions:</td>
</tr>
<tr>
<td>Seed</td>
<td>920.04.01, with the following exceptions:</td>
</tr>
</tbody>
</table>

694 920.03.01 Fertilizer.

CHANGE: The analysis options in the first paragraph of first sentence and replace with only 10-10-10, slow release.

INSERT: The following:

The Contractor shall apply amendments at the rates specified in the Contract Documents.

695 920.04.01 Seed.

DELETE: The second paragraph and following table in their entirety.

INSERT: The following:

The Contractor shall apply specialized herbaceous seed mixes at the rates specified in the Contract Documents. All seed shall have a minimum purity of 95%, and a minimum germination of 85% per planting zone.

697 920.04.02 Seed Mixes.
CHANGE: The word "following:" in the last sentence of the first paragraph to "specialized mixes listed on the Contract Drawings."

DELETE: Seed Mixes listed in Sections (a-g) in their entirety.

CONSTRUCTION, Seeding shall be performed when the temperature is above 32 degrees F (0 degrees C) and the ground is not frozen.

Seeding. Seeding shall consist of preparing soil and applying seed, straw or hay mulch, and wood cellulose fiber (mulch binder). The Contractor shall provide and apply all specified seed mixes, as shown on the Contract Drawings.

(a) Preparing Soil. Areas to be seeded shall conform to the specified finished grades and be free of any weed or plant growth. The area shall be free of all clods, loose stones and other foreign materials larger than 3-inches. Organic compost material shall have been previously spread and disked into the existing soil.

(b) Application Equipment. Refer to Section 705.03.01 (b).

(c) Application Mix and Rates. Application rates of seed shall conform to the rates as identified on the plant schedules in the Contract Documents. Application rates for mulch and mulch binder shall be at 4,000 lbs/acre (3,609 kg/ha) and 750 lbs/acre (690 kg/ha), respectively.

(d) Seeding. Seed shall only be applied to previously, prepared seedbeds. When seed is applied with hydraulic seeders, all mixtures shall be used within eight (8) hours after mixing. Otherwise the mixture shall be wasted and disposed by means acceptable to the Engineer. When sewn with mechanical seeders, seed shall be incorporated to a depth not more than 1/4- inch.

(e) Mulching. Refer to Section 705.03.01 Securing Straw or Hay Mulch. A mulch binder in the form of wood cellulose fiber shall be used as directed by the Engineer to secure the straw or hay mulch. Mulch binder material shall be uniformly applied without displacing the mulch.

Overseeding. Overseeding consists of applying seed to previously seeded and mulched areas where establishment has not been successful and where remulching is not required due to mulch remaining from the previous mulch application. Work shall conform to the original Seeding specifications above and as directed by the Engineer except for requirements of soil preparation and mulch.

Repairing Defective Areas. Refer to Section 705.03.10.

MEASUREMENT AND PAYMENT. Permanent Seeding will be measured and paid for at the Contract unit price per pound. The payment will be full compensation for soil preparation, specialized seed mixes, seeding, mulching, fertilizer, and overseeding, and for
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all material, labor, equipment, tools, and incidentals necessary to complete the work.

Repairing Defective Areas shall be measured and paid for as specified in Section 705.04.10.

END OF SECTION
DESCRIPTION. This work shall consist of furnishing and installing live stakes along the stream bank stabilization areas as specified on the Contract Drawings or as directed by DEPS.

Prior to the start of work on this item, the Contractor shall submit a proposed construction schedule, including source of supply of live cuttings, to DEPS for review. No species substitutions are allowed without prior approval from DEPS. No work shall be performed until this schedule is approved by DEPS. Live stake installation shall be conducted under the supervision of a representative of DEPS. Subsequent inspections, construction phase acceptance, and final approval of the live stakes will also be made by the DEPS representative.

MATERIALS.

Live Stakes. Live stakes shall be composed of freshly cut, dormant branches consisting of the species listed on the Plant Schedule in the Contract Drawings. The term "dormant" is used here to describe live cuttings harvested and installed in the late fall to early spring (November 1 to April 15), after the trees have lost their leaves or before they bud. Live branch cuttings for live stakes shall be 1 to 1.5-inches in diameter and 3 to 4-feet in length. The cuttings may be obtained from a landscape nursery that specializes in production of bioengineering plant materials, with prior approval of the source by DEPS.

CONSTRUCTION.

Live Material Handling. During transport of plant materials to the site, live materials shall be bundled together, covered with a tarpaulin, transported in unheated portions of a vehicle, and moistened to prevent drying-out and plant stress. Once plant materials are transported to the construction site, they shall be stored in a controlled environment and protected from overheating and wind damage (i.e., stored in on-site refrigeration or shaded areas covered with evergreen branches or plastic during periods with freezing daily temperatures) and from drying-out (i.e., placing in moist soil or spraying with anti-transpirant chemicals) until installation is possible. The storage location for plant materials, including any on-site refrigeration, shall be approved by DEPS prior to storing. Where water is available, live stakes shall be sprayed daily or the bundles shall be immersed. Warm water (over 15° C) stimulates plant growth and should be used only upon approval of DEPS.

Live Stake Preparation.

1. Live stakes shall be cut to size as specified above. All cuts shall be smooth and the cut surface shall be kept small.

2. Side branches and brushy limbs shall be cleanly removed. Buds on the stakes shall be oriented towards the top of the stake.
3. Each stake shall be scarified along the bottom 2/3 of the stake length such that 20% of the bark is abraded. Live stakes that have been girdled during scarification will not be approved for use.

4. The cut on the bottom end of the stake shall be angled to 30 to 45-degrees for easy insertion into the soil. The cut on the top end of the stake shall be at a 90-degree angle to the stake to ensure a flat surface for hammering into the slope. The use of large pruning shears or power saws may be required with larger branches.

**Live Staking Installation.**

1. Buds of the stakes shall be oriented upwards during staking. Live stakes shall be tamped into the ground approximately perpendicular to the slope with the tops angled slightly downstream (at approximately 30-degree angle). Stakes shall be tamped into the ground with a dead blow hammer, which is a hammer with a head filled with shot or sand.

2. Live stakes for streambank stabilization shall be installed at the spacing shown on the Plans.

3. A minimum of 2/3 of the length of the live stake shall be installed into the ground and soil firmly packed around it after installation. Rebar or similar material may be used to make a pilot hole in firm soil.

4. Stakes that split or are severely damaged during installation shall be trimmed to eliminate the damaged portion or replaced.

**Live Stake Care During Construction.** Live stake care shall begin immediately after each live stake is installed and shall continue through the landscape construction phase and as specified in the period of plant establishment described below.

**Construction Phase Acceptance.** The Contractor shall submit in writing a request to the Engineer for acceptance of the Construction Phase. The Engineer will grant acceptance when the landscape project has been substantially completed and the following requirements have been met:

(a) Live stake plant materials show evidence of having been successfully installed.
(b) Unacceptable live stakes have been replaced.
(c) All other required work has been completed.

**Live Stake Establishment.** The Contractor shall maintain and establish the live stakes for a period of one year. An 85% survival rate will be required at the end of the one-year maintenance period, per planting zone.

**Beginning.** Inspection of installed live stakes shall be made by a DEPS representative and the Contractor, within two weeks of written notification from the Contractor that the staking
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operation is complete. This inspection may be on all work or partially completed work under the contract. Upon acceptance of the Construction Phase by the DEPS representative, the one-year period of establishment will begin.

(a) Maintenance. The Contractor shall maintain all live stakes in conformance with the original specifications and as follows:

(1) Watering. The Contractor shall monitor the water needs of all live stakes. When the Contractor feels watering is necessary, the Engineer shall be notified. If the Engineer concurs, the Contractor shall begin watering immediately.

If the Contractor fails to water when and as required, the Engineer will notify the Contractor and watering shall begin within 24 hours. The Contractor shall continue to water daily until all live stakes in the Contract have been watered unless otherwise directed by the Engineer. Each watering shall be completed within five days of the day on which watering was designated to begin.

All watering shall be accomplished using a hose with nozzle end breaker or watering probe. To reduce the potential of soil movement on the slope, live stakes and existing soils shall be lightly watered but not completely saturated. Water shall be applied in an even distribution at low pressure directly to live stakes, allowing water to be absorbed into the soil without runoff.

(2) Weed Control. Non-native invasive species shall be controlled according to Category 700, Non-native Invasive Species Control Specification.

(3) Pest Management. The Contractor shall institute an Integrated Pest Management (IPM) Program. The Contractor shall periodically inspect the project for plant pests during each growing season. When damaging pest infestations are observed, they shall be controlled.

All pesticide applications shall be as specified in the Maryland Pesticide Applicator's Law and in conformance with the manufacturer's recommendations. The Contractor shall provide a Certified Applicator of Pesticides (Category III 0 or VI). Daily pesticide application reports shall be maintained by the Contractor. A completed copy for each day of application shall be provided to the DEPS representative.

If the Contractor fails to monitor and control plant pests prior to damage, the Contractor will be notified to begin pest control operations within 24 hours, until all damaging pests have been controlled.

(b) Removal and Replacement. Inspection of the live stakes will occur in the fall season, prior to leaf-drop. The Contractor shall be responsible for the removal and replacement of live stakes above the 85% success rate, as determined by the DEPS representative. Live stake replacement shall be made as originally specified during the dormant period of the following spring season.
(c) Final Acceptance. The Contractor shall submit a written request to the DEPS representative for a final acceptance of the live staking on the project.

MEASUREMENT AND PAYMENT. Live stakes will be measured and paid for at the Contract unit price per each 4-Foot Live Stake installed, based on the species specified in the Contract Drawings. The payment will be full compensation for furnishing, handling, preparation, transport, storage, installation, watering, maintenance, removal and replacement, and for all materials, labor, equipment, tools and incidents necessary to complete the work.

END OF SECTION
DESCRIPTION. Harvest, prepare, transport and install Brush Layering materials as shown on the Contract Documents and/or directed by the Engineer.

Harvesting and installation of Brush Layering materials shall take place during the dormant period of the year; i.e., November 1 through March 31. If completion of grading does not occur within this window; i.e., if the Contractor has not completed harvesting and installation on or before March 31, the Contractor shall wait until the dormant period that begins on the following November 1 to harvest and install the remaining plantings.

MATERIALS. Brush Layering materials shall be composed of freshly cut, dormant branches consisting of the species listed on the Plant Schedule in the Contract Drawings. Each live cutting shall range in diameter from ¼ in. to 1 ½ in. at its smallest point and shall be between 4 and 6 ft in length to ensure a minimum of 4 ft of each cutting is covered by soil lift matting and growing tips extend 6 to 18 in. beyond the finished grade. The cuttings may be obtained from a landscape nursery that specializes in production of bioengineering plant materials, with prior approval of the source by DEPS.

CONSTRUCTION.

Handling. Brush Layering shall be transported in climate controlled conditions to insure against temperatures greater than 50 F. Cuttings stored on site shall be kept moist, shaded, and protected against desiccation. Materials stored offsite shall be refrigerated and kept moist. Materials must arrive onsite within two days of harvest.

Prior to installation, cuttings shall be soaked in water for a minimum of 48 hours, and installed in the ground within four hours of removal from the water. Stakes shall be inspected for signs of desiccation, including but not limited to blackening of cut ends and lengthwise wrinkling of bark, and all unsuitable materials shall be appropriately discarded.

The Contractor shall remove all side branches from all cuttings, cleanly and without causing damage to bark. Buds shall be oriented toward the top of each stake. Within two hours prior to installation, using pruning shears or a power saw, the Contractor shall cut each branch at an angle on the bottom end of approximately 45 degrees.
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Installation. Brush Layering must be installed concurrently with Soil Fabric Lifts. Between each lift a 4 in. layer of topsoil and Brush Layering shall be placed a density of 30 cuttings per linear foot. Cuttings shall be oriented in a crisscross fashion with the basal facing the existing bank. Topsoil around the live cuttings should be compacted firmly by hand without damaging the live cuttings. Any cutting damaged during construction of the structure shall be replaced at no cost to the Administration. A minimum of 4 ft of each cutting shall be covered by soil lift matting and growing tips shall extend 6 to 18 in. beyond the finished grade.

MEASUREMENT AND PAYMENT. Brush Layering harvesting, preparation, transport, and installation will be incidental to Soil Fabric Lifts and is considered full compensation for furnishing, storing, soaking, watering, and planting, and for all material, labor, equipment, tools, and incidentals necessary to complete this work.

END OF SECTION
DESCRIPTION. The acquisition and installation of Herbaceous Plugs as shown on the Contract Documents.

MATERIALS. Plugs shall be grown herbaceous material as shown on the Contract Documents. Materials shall be purchased from a nursery specializing in the production of similar materials and shall include confirmation of species.

CONSTRUCTION.

Handling. Plugs shall be transported in climate-controlled conditions to insure against temperatures less than 45 F and greater than 85 F. Plugs stored on site shall be kept moist, shaded, and protected against desiccation. Materials stored offsite shall be kept moist.

During installation, Plugs shall be kept damp by heeling into moist mulch until ready for use. Plugs shall be inspected for signs of desiccation, including but not limited to blackening and/or wrinkling of leaves, and all unsuitable materials shall be appropriately discarded.

Installation. Plugs shall be installed per the Contract Documents. The Contractor shall firmly backfill by hand, all voids surrounding all Tubelings, hand tamping the soil tightly against each cutting without damaging the roots or plant. Water in accordance with 710.03.04 (c).

MEASUREMENT AND PAYMENT. Plugs, preparation, transport, and installation will be measured and paid for at the Contract unit price per each Plug. The payment will be full compensation for furnishing, storing, watering, and planting, and for all material, labor, equipment, tools, and incidentals necessary to complete this work according to the Contract Documents.
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**CATEGORY 700**
**LANDSCAPING**

**NON-NATIVE INVASIVE SPECIES CONTROL**

**DESCRIPTION.** This work shall consist of non-native invasive (NNI) species removal by herbicide or other means to all work areas for the initial Contractor’s warranty period, as identified by the Contract Drawings. NNI plants shall include but are not limited to:

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<thead>
<tr>
<th>Tree</th>
<th>Shrub</th>
<th>Vine</th>
<th>Herbaceous</th>
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<tbody>
<tr>
<td>Bradford Pear</td>
<td>Japanese Barberry</td>
<td>English Ivy</td>
<td>Bamboo species</td>
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<tr>
<td>Princess Tree</td>
<td>Multiflora Rose</td>
<td>Japanese Wisteria</td>
<td>Common Reed</td>
</tr>
<tr>
<td>Tree-of-Heaven</td>
<td>Privet</td>
<td>Mile-a-Minute</td>
<td>Japanese Knotweed</td>
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<tr>
<td>Japanese Holly</td>
<td>Russian Olive</td>
<td>Oriental Bittersweet</td>
<td>Purple Loosestrife</td>
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<tr>
<td>Norway Maple</td>
<td>Autumn Olive</td>
<td>Porcelain Berry</td>
<td>Japanese Stilt Grass</td>
</tr>
<tr>
<td>Various Ornamental Fruit Trees</td>
<td>Wineberry</td>
<td>Winter Creeper</td>
<td>Wavyleaf Basketgrass</td>
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<td></td>
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<td>Japanese Honeysuckle</td>
<td>Garlic Mustard</td>
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</table>

\[Pyrus calleryana\]
\[Paulownia tomentosa\]
\[Ailanthus altissima\]
\[Ilex crenata\]
\[Acer Platanoides\]

\[Berberis thunbergii\]
\[Rosa multiflora\]
\[Ligustrum sp.\]
\[Elaeagnus angustifolia\]
\[Elaeagnus umbellata\]
\[Rubus phoenicolasius\]
\[Hibiscus syriacus\]

\[Hedera helix\]
\[Wisteria floribunda\]
\[Polygonum perfoliatum\]
\[Celastrus orbiculatus\]
\[Ampelopsis brevipedunculata\]
\[Euonymus fortuneii\]
\[Lonicaera japonica\]

\[Phragmites australis\]
\[Polygonum cuspidatum\]
\[Lythrum salicaria\]
\[Microstegium vimineum\]
\[Oplismenus hirtellus\]
\[Alliaria petiolata\]
MATERIALS.

A. **Tools for Manual Removal.** Equipment shall include, but is not limited to hand tools; lever based tools, machetes, power pruners/trimmers, chainsaws, metal blade brush cutters, brush axes/hooks, shovels, spading forks, loppers, hedge shears and associated safety equipment as approved by the Engineer. Limited use of wood chippers and mowers may be applicable. For mechanical removal of Phragmites, heavy equipment may be utilized within the constraints of the Contract Documents and specifications, and all applicable federal, state and local permits.

B. **Glyphosate.** Glyphosate consists of aquatic glyphosate (N-(phosphonomethyl) glycine) and surfactant as recommended by the label and approved for areas adjacent to wetland and waterway areas, as approved by the State of Maryland. Its primary action is in the application to foliage.

C. Additional herbicide materials may include, but are not limited to:

1. Aquatic non-ionic wetting agent – Alenza 90*
2. Pathfinder II* (marker dye shall be added)
3. Rodeo Herbicide*
4. Triclopyr – Garlon 3A*, Garlon 4*

*indicates examples of approved Trade Name Products

D. All herbicides may be utilized for application as approved by the Engineer and appropriate for the species or area of control. The Contractor shall submit a plan detailing additional methods to be utilized 30 days prior to the intended implementation, for the approval of the Engineer. Application materials, surfactants, and other materials dependent on application means of execution shall be left to the Contractor to propose in their application plan.

CONSTRUCTION.

A. Invasive species plant material shall require removal and disposal from the designated treatment areas and additional areas as determined by the Engineer, unless otherwise authorized by the Engineer.

B. The Engineer may instruct the Contractor to perform NNI species control at any point during the warranty period of the project. Control may require manual removal or herbicide treatment, or both, depending on conditions. The Contractor shall perform the work according to the Contract Documents, regardless of schedule or work load. The Contractor is advised that delays to other components of the restoration project shall not be granted or allowed due to NNI species control management. The Contractor shall provide sufficient manpower to execute all aspects of invasive control work, concurrently with the restoration, whenever necessary.
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C. A pre-construction meeting shall be scheduled prior to commencement of any NNI plant control operations. The Contractor shall notify the Engineer seven (7) days prior to commencement of any work.

D. The areas planned for treatment shall be clearly flagged by the Contractor’s personnel in the field and reviewed by the Engineer prior to commencement of treatment activities. The Contractor shall be prepared to discuss NNI species control and native plant preservation methodologies during this field review.

E. Field verification of removal shall be conducted between the Contractor and Engineer at a minimum of 2 weeks after completion of the work to determine success. No payment will be made until this verification is complete. The removal shall be completed to the satisfaction of the Engineer.

Manual Removal

Depending on the species specific protocol (type, size, density) and existing onsite conditions, mechanical/manual removal of NNI may or may not require a herbicidal application component. Areas of NNI may only require manual removal treatments; however, subsequent herbicide application may be necessary to control and ultimately avoid re-emergence.

Herbicide Application - General

A. Depending on species-specific protocol (type, size, density), specific area of the site, and the spatial extent of the particular NNI vegetation, three different herbicide application treatments shall be utilized:

1. Cut-Stem Treatment; two methods, including: a) Cut stump/stem b) Hack and Squirt

2. Basal Bark Treatment

3. Foliar Treatment

B. All herbicides shall be EPA-registered chemicals that are approved for use in forested areas and/or adjacent to waterways to control and prevent re-growth of undesirable vegetation. The Contractor shall use manufacturer recommended wetting agent, basal oil (when appropriate), and marking dye, or equivalents, as approved by the Engineer. (NOTE: Garlon 4 and Round-up Pro are not approved for use in and/or directly adjacent to waterways/wetlands; however Rodeo Herbicide may be used as the alternative in environmentally sensitive areas, when approved by the Engineer). The Contractor shall submit a written request to the Engineer for use of herbicides other than those listed above and shall not use such chemicals on the project until first receiving written approval. Manufacturer’s specification sheets (labels) for herbicide, wetting agent, basal oil, and dyes shall be submitted to the Engineer.
C. All herbicide applications shall be as specified in the Maryland Department of Agriculture’s Regulations Pertaining to Pesticide Application (COMAR 15.05.01) and the Maryland State Highway Administration’s Integrated Vegetation Management Manual for Maryland Highways (October 2003), and in conformance with the manufacturer’s recommendations as shown on the product label. Daily herbicide application cards shall be provided to the Engineer within 24 hours of application.

D. Marking dye shall be from a commercial source, shall be herbicide compatible, and shall be water soluble. Marking dye shall be mixed with all herbicide prior to application at rates necessary to be readily visible in the field for at least 3 days after application.

E. The Contractor shall be responsible for replacing and/or pruning any native plant material killed or damaged through any act of negligence by the Contractor as determined by the Engineer in applying and handling the herbicide. Due to the nature of the treatment area and the density of invasive species, some damage to desired vegetation may occur.

F. All herbicide applications shall be selective low volume treatments with a backpack sprayer, squirt bottle, injection gun, paint brush or other methods, as approved by the Engineer. Broadcast high volume applications and equipment mounted spray operations shall not be permitted due to the potential for off-target drift.

G. Extreme caution shall be used when spraying adjacent to off-target, non-invasive vegetation or directly adjacent to any waterways/wetlands. The Contractor shall be responsible for any act of negligence in applying and handling the herbicide on the project. Herbicide application shall only be conducted during appropriate weather conditions as indicated on the product label (e.g., spraying during high winds, rain, high humidity, and/or high temperatures may result in uptake by off-target vegetation due to the volatility of certain herbicides).

H. Field verification of herbicide application success shall be conducted between the Contractor and Engineer after completion of the work and within 2 weeks of application. No payment will be made until signs of invasive species die-back are observed. If initial application is unsuccessful, for any reason, the Contractor shall reapply herbicide treatment at no additional cost to the Administration.

I. The Contractor shall be responsible for obtaining all necessary permits (i.e., Request for Permission to Use Herbicides for Aquatic Vegetation Management Purposes) prior to initiating herbicide application.

**Herbicide Application - Glyphosate**

A. The Contractor shall apply the initial round of glyphosate between August and September, after Phragmites has reached the tassel stage and purple loosestrife has reached peak bloom, as determined during the evaluation. The second application of
KELLY BRANCH
SPECIAL PROVISIONS

glyphosate will also be applied between August and September. An additional application of glyphosate shall occur a minimum of 2 weeks prior to spring planting, if determined necessary by the Engineer.

B. Glyphosate shall be applied following the manufacturer's recommendations and in accordance with the materials safety data sheets which accompany the material. Application shall be made by a commercial applicator registered in the State of Maryland.

Evaluation

The limits of NNI species control will be evaluated by DEPS prior to manual removal or herbicide application. Evaluation shall be limited to the work areas as described in the Contract Drawings. No coverage of Phragmites and purple loosestrife shall be permitted, and a maximum of 10 percent of all other invasive species shall be permissible per contiguous acre of mitigation area at the conclusion of the construction warranty period. DEPS will approve acceptable coverage after evaluation by Engineer and Contractor.

MEASUREMENT AND PAYMENT. Non-Native Invasive Species Control during the warranty period will be paid for at the Contract lump sum price. The payment will be full compensation for plant removal, initial chemical application and necessary reapplications, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION
MAINTENANCE OF TRAFFIC

DESCRIPTION. This work shall consist of all work to maintain traffic control on East Timonium Road, Dulaney Valley Road, and The Pine Ridge Golf Course Access Road, ensuring the safe entrance and exit of construction vehicles to the site.

MATERIALS.

Not Used.

CONSTRUCTION

A. Maintenance of Traffic Plan. The contractor shall prepare a plan describing the daily execution of traffic control on the site. This plan shall be submitted to the Engineer for approval.

MEASUREMENT AND PAYMENT. Maintenance of Traffic will not be measured, but paid for at the Contract lump sum price. Payment will be full compensation for all materials, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION
SANITARY SEWER LINE PROTECTION

DESCRIPTION. This work shall consist of all work to protecting sanitary sewer lines which cross under the proposed stream channel location within the limit of disturbance.

MATERIALS.

Concrete Encasement. Concrete encasement shall meet the standards of Baltimore County Department of Public Works Standard Specifications for Construction and Materials Section 902, Portland Cement Concrete and Related Products.

Imbricated Boulder. Refer to the Stone Toe Protection special provision.

Select Borrow. Must conform to the Subsoil Special Provision and be compacted to 95% of AASHTO specification T-99 or ASTM D698.

Class SE Geotextile. Refer to Stone Toe Protection special provision.

Soil Lift Matting. Refer to Soil Fabric Lifts special provision.

CONSTRUCTION.

a) The contractor, in all instances, shall conduct construction and protection of existing utilities in accordance with Baltimore County Department of Public Works Standard Specifications for Construction and Materials Category 1000 – Utility Construction.

b) The contractor shall encase underground sanitary sewer utilities in a minimum of 4” of concrete as depicted in the Contract Documents.

c) Following concrete encasement, imbricated boulders shall be placed on the upstream and downstream face of the encasement flush with the proposed streambed as illustrated in the Contract Documents.

d) Imbricated Boulders shall be neatly stacked with staggered joints so that each stone rests firmly on two stones in the tier below with a minimum void space as specified in the Contract Drawings. Additionally, smaller stones should be used to fill voids so that each rock rests solidly on the previous rock layer with minimal opportunity for movement. There shall be no pockets of undersized stone.

e) The Contractor shall encase utilities in other locations at the direction of the Engineer or County Inspector.

f) No interruption of utility service shall be permitted.
g) The Contractor shall be liable for all damage to existing utilities, and shall repair them in-kind at no additional cost to the County.

h) The Contractor shall notify the Engineer immediately upon discovery of deficiencies which would render the existing underground utilities unsuitable for concrete encasement.

i) In locations where proposed inverts of stream or other structures may prevent a minimum of 4” of concrete encasement, the Contractor shall be directed in-field by the Engineer as to the proper installation of stream restoration or other structures.

j) The contractor shall excavate by hand or other means necessary in order to protect the underground utilities to be encased.

k) The contractor shall ensure that underground utilities to be encased are properly supported.

l) No free spans containing pipe or duct joints shall be permitted in excess of ten feet in length without temporary support. Vertical deflection of underground utilities shall be minimized.

**MEASUREMENT AND PAYMENT.** Sanitary Sewer Line Protection shall be measured and paid at the Contract unit price per linear foot specified in the Contract Documents. The payment will be full compensation for furnishing, handling, preparation, transport, storage, installation, formwork, excavation, and for all materials, labor, equipment, tools and incidents necessary to complete the work.

Excavation, and disposal of excess material will not be measured, but the cost incidental to Class 5 Excavation.

Soil Lift Matting will not be measured but will be incidental to the Sanitary Sewer Line Protection.

Imbricated Boulders will not be measured but will be incidental to the Sanitary Sewer Line Protection.

Topsoil will be measured and paid for separately according to the Topsoil special provision.

Select Borrow (Subsoil) will be measured and paid for separately according to the Subsoil special provision.

**END OF SECTION**
KELLY BRANCH
SPECIAL PROVISIONS
BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION
AND RESOURCE MANAGEMENT

AS-BUILT STREAM RESTORATION CHECKLIST

PROJECT NAME: Kelly Branch Stream Restoration Project. This list is supplemental to the requirements contained in these Special Provisions.

The as-built conditions shall be clearly shown and differentiable from all other features. The approved construction drawings with all revisions noted shall be used as a base sheet for the as-built drawings. All as-built sheets shall be labeled "AS-BUILT" in the lower right hand corner of each sheet.

The following checklist is a list of items to be included as part of the as-built survey. The items shall be drawn on top of the respective feature of the approved plan.

LEGEND FOR REVIEW CHECKLIST:

<table>
<thead>
<tr>
<th>ACC. Accepted</th>
<th>N/A Not Applicable</th>
<th>NC Not Checked</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Not Acceptable</td>
<td>REQ. Required, Not Submitted</td>
<td>INC. Incomplete</td>
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</tbody>
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<thead>
<tr>
<th>MINIMUM INFORMATION REQUIRED:</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>1. Certifications — See end of Checklist for format:</td>
<td></td>
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<tr>
<td>a. Survey Certification</td>
<td></td>
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<tr>
<td>b. Design Consultant Certification</td>
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<tr>
<td>2. Plan View</td>
<td></td>
</tr>
<tr>
<td>a. Show the extent of the constructed grading</td>
<td></td>
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<tr>
<td>b. Identify and show extent of each bioengineering feature</td>
<td></td>
</tr>
<tr>
<td>c. Identify elevations and dimensions of any structure</td>
<td></td>
</tr>
<tr>
<td>d. Verify the geometric curve information — note any changes</td>
<td></td>
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<tr>
<td>e. Show the location and elevation of monitoring benchmarks</td>
<td></td>
</tr>
<tr>
<td>3. Profile Along Thalweg:</td>
<td></td>
</tr>
<tr>
<td>a. Elevations at design stations and at locations of any revisions</td>
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## KELLY BRANCH
### SPECIAL PROVISIONS

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<td>b.</td>
<td>In-stream structures bioengineering controls should be identified with elevations noted</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Cross-Sections (at design stations and at locations of any revisions):</strong></td>
</tr>
<tr>
<td>a.</td>
<td>Elevations identified at inverts and grade breaks</td>
</tr>
<tr>
<td>b.</td>
<td>Identify and show the placement of structures, bioengineering controls and any bank stabilization with elevations noted</td>
</tr>
<tr>
<td>c.</td>
<td>Show existing grading and the extent of constructed grading</td>
</tr>
</tbody>
</table>

## STREAM STABILIZATION FEATURES
Construction shall match design details — any modifications to design details shall be drawn and noted on plans

### Minimum Items To Be Verified:

1. **Stone Toe Protection:**
   a. Stone keyed into channel invert
   b. Finished grade

2. **Imbricated Cascade Outfall:**
   a. Indicate placement of crest and footer stone; note length, depth and width
   b. Indicate placement of pool pavement; note length, depth and width

3. **Ripple Grade Controls:**
   a. Placement of stone material; note length, depth and width

4. **Log Drop Structures:**
   a. Indicate placement of logs and stone; note length, depth and width

5. **Imbricated Riprap Wall:**
   a. Stone keyed into channel invert
   b. Finished grade

6. **In-Channel Structures:**
   a. Placement of stone material; note length, depth and width, not variations of structure length and invert per the structure tables.

6. **Other Items:**

### PLANTING
a. Certify installation in accordance with quantity, type and quality as specified in the design plans and specifications
b. Contractor shall submit to Baltimore County copies of delivery tickets / receipts from any plant supplier
CERTIFICATIONS

All certifications are to appear on the title page as noted below in quotation marks:

Survey Certification — The Contractor shall have the as-built topographic survey certified by a registered land surveyor licensed within the State of Maryland. The licensed surveyor shall attest that:

"I hereby certify that this As-Built Survey is an accurate representation of the locations and elevations in the field as of (Date)."

<table>
<thead>
<tr>
<th>Registered Land Surveyor (print name)</th>
<th>License Number</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>Seal &amp; Signature</td>
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2) Design Certification — The Consultant shall personally attest that:

"I have personally observed and inspected the construction of this stream restoration project. I have also reviewed the as-constructed conditions depicted on this As-Built Survey. I hereby certify that the stream restoration construction meets the design intent of this project and / or the construction is within the accepted tolerances as noted on the plans and within the Special Provisions."

<table>
<thead>
<tr>
<th>Consultant (print name)</th>
<th>License Number</th>
<th>Date</th>
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<tbody>
<tr>
<td>Seal &amp; Signature</td>
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SUBMITTALS

The approved construction drawings with all revisions noted shall be used as a base sheet for the As-Built drawings. The Contractor shall furnish Baltimore County with this checklist signed by the certifying surveyor and three (3) prints and a reproducible mylar copy of the as-built topographic survey. Baltimore County will forward to the Consultant — the Contractor’s certified as-built topographic survey and this checklist. The Consultant is then responsible for submitting: this completed checklist, a certified reproducible mylar set along with three (3) prints of the As-Built drawings to DEPS for final review and approval according to the time schedule established in the Special Provisions.

The following section is to be completed by the Consultant and the Certifying Surveyor.

SIGNATURES

I have reviewed this checklist and the referenced special provisions.

______________________________          ____________________          ____________
Consultant (print name)                  License Number              Date
Seal & Signature                          

______________________________          ____________________          ____________
Registered Land Surveyor (print name)    License Number              Date
Seal & Signature                          

END OF SECTION
KELLY BRANCH
SPECIAL PROVISIONS

STREAM RESTORATION CERTIFICATION AS-BUILT SURVEY

DESCRIPTION. The contractor shall prepare and submit to Baltimore County for approval, a certified as-built survey of the completed stream restoration construction to fully illustrate all proposed construction within the established limits of disturbance.

MATERIALS.

The As-Built Survey shall be a reproducible mylar copy of the approved Contract documents (to be obtained from Baltimore County), Features to be surveyed shall consist of items listed under the Stream Restoration As-Built Checklist contained in this Contract. The As-Built Survey shall be certified by a registered land surveyor licensed within the State of Maryland (the format of the certifications is contained in the Stream Restoration As-Built Checklist). The contractor shall adhere to tolerances noted within these Contract Documents. During construction, the Contractor shall adhere to tolerances as noted on the plans. The signed, sealed and certified reproducible mylar As-Built drawings along with 3 print copies shall be forwarded to. Baltimore County for approval.

CONSTRUCTION.

(a) The Contractor shall notify Baltimore County a minimum of two-weeks prior to completion of construction activities.

(b) Upon completion of construction activities, the contractor shall have no longer than 4 weeks to furnish Baltimore County with a certified as-built topographic plan.

(c) The Contractor may choose to submit to Baltimore County partial as-built survey drawings in order to illustrate the layout of all stream restoration features and grading; however, this submission of this partial as-built does not automatically convey Baltimore County approval of construction or eliminate the requirement for the Contractor to provide a final as-built survey of the entire completed project certified by a registered land surveyor. Baltimore County may, at its sole discretion, grant formal acceptance of the partial as-built in order to expedite the as-built certification process.

(d) Any errors or omissions found during the course of the as-built survey and determined by Baltimore County, who shall be the sole judge, to have occurred during construction shall be repaired by the Contractor to the satisfaction of Baltimore County at no additional expense to the County. The Contractor shall make any necessary repairs or corrections required by Baltimore County including grading, adjustment of stream restoration structures, etc. Upon completion of corrective action, the Contractor shall furnish Baltimore County with a re-survey of the problem area showing the original as-built information and any modification highlighted and noted. A registered land surveyor shall also seal the resurvey.

(e) Final acceptance of the project by Baltimore County will not occur until the certified as-built has been completed for the entire project.
MAINTENANCE.

(a) The Contractor will be held fully responsible for maintaining the project during the course of the construction including the period of the as-built certification.

(b) The Contractor shall be held responsible for maintaining the integrity of the project until final acceptance of the as-built drawing and a determination by Baltimore County that no errors or omissions have been made by the Contractor during the course of construction. Baltimore County shall make every effort to notify the Contractor within, five (5) weeks of Baltimore County’s receipt of the as-built survey as to the acceptability or rejection of the construction of the stream restoration project; however, lapse of this time frame does not relieve the Contractor of responsibility for maintaining the integrity of the project or for correcting any errors/omissions until final acceptance of the certified as-built for the entire stream restoration project.

MEASUREMENT AND PAYMENT. Preparation of the Restoration Site As-Built Survey and Certification will not be measured, but will be paid for at the Contract lump sum price. The payment will be full compensation for surveying, preparation of as-built drawings, and for the Licensed Surveyor to seal the as-built drawings. Payment shall include all materials, labor, equipment, tools, maintenance and incidentals necessary to complete the work.

END OF SECTION
SECTION IV

Permits
Baltimore County, Maryland
Department of Environmental Protection
and Sustainability
Kelly Branch Stream Restoration Project

Contract No.:
Project Length: 3,400 L.F. or 0.64 Miles

Vicinity Map

Kelly Branch Stream Restoration Project
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**KELLY BRANCH STREAM RESTORATION PROJECT**
NOTE: AFTER THE ACCESS ROAD IS REMOVED, COMPLETE THE VERNAL POOLS PER DAILY STABILIZATION GUIDELINES ONLY THAT WHICH CAN BE COMPLETED & STABILIZED (PER THE LANDSCAPING PLAN) BY THE END OF DAY.