

Contract No. NAT14001-STR_REST

**DEPARTMENT OF NATURAL RESOURCES &
ENVIRONMENTAL CONTROL**

DIVISION OF WATERSHED STEWARDSHIP



**PROJECT NAME: UPPER CHRISTINA STREAM
RESTORATION**

BID PACKAGE

AND

PROVISIONS

June 6, 2014

BIDS DUE BY: 1:00 P.M. on July 28, 2014

TABLE OF CONTENTS

PROJECT NAME: UPPER CHRISTINA STREAM RESTORATION	1
NOTICE AND INVITATION TO BID.....	4
INSTRUCTIONS TO BIDDERS.....	5
SUBMISSION OF BIDS	5
QUESTION & ANSWER PROCESS	5
OPENING/REJECTION OF BIDS	6
RIGHT TO CANCEL SOLICITATION.....	6
GENERAL PROVISIONS	7
SCOPE OF SERVICES	7
NOTICE TO PROCEED.....	7
NON-DISCRIMINATION	7
EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS.....	7
STATE OF DELAWARE BUSINESS LICENSE AND TAX REQUIREMENTS	7
BONDING	8
FAILURE TO COMPLY WITH CONTRACT	9
CONTRACT INSURANCE AND CONTRACT LIABILITY	9
INDEMNIFICATION	9
PERSONNEL.....	9
TERMINATION OF CONTRACT FOR CAUSE	9
TERMINATION OF CONVENIENCE	10
SUSPENSION AND DEBARMENT	10
TOTAL COST AND COMPENSATION	10
OBLIGATIONS AND PAYMENT	10
INSURANCE.....	11
TIME OF PERFORMANCE.....	12
UTILITIES.....	12
PERMITS AND EASEMENTS.....	13
PROPERTY MARKERS.....	13
THIRD PARTY AGREEMENTS	13
EXAMINATION OF SITE, PLANS AND SPECIFICATIONS	13
CHANGE IN SCOPE OF WORK.....	13
EPA FUNDING	13
INSPECTIONS	14
PREVAILING WAGE REQUIREMENTS	15
STANDARD SPECIFICATIONS.....	19
CONSTRUCTION PLANS AND SPECIFICATIONS.....	19
UNIT QUANTITY ESTIMATE SHEET	20
TECHNICAL SPECIFICATIONS.....	22
SCOPE:.....	22
PROJECT SITE:	23
SECTION 1: MOBILIZATION.....	25
SECTION 2: CONSTRUCTION STAKEOUT	26
SECTION 3: CLEARING AND GRUBBING.....	27
SECTION 4: EROSION AND SEDIMENT CONTROL.....	28
SECTION 5: BLAZE ORANGE FENCE	29
SECTION 6: STABILIZED CONSTRUCTION ENTRANCE	30
SECTION 7: MULCH ACCESS PATH	31
SECTION 8: PUMP AROUND	32
SECTION 9: CHANNEL OR STREAM CHANGE EXCAVATION	33

SECTION 10: BORROW.....	34
SECTION 11: SALVAGE AND STOCKPILE TOPSOIL.....	35
SECTION 12: TOPSOIL.....	36
SECTION 13: TOPSOILING	38
SECTION 14: SUBSTRATE MATERIAL	39
SECTION 15: ROCK.....	41
SECTION 16: ROCK J-VANE	43
SECTION 17: ROCK CROSS VANE.....	46
SECTION 18: ROCK VANE	49
SECTION 19: ROOTWAD AND LARGE WOODY DEBRIS	51
SECTION 20: LOG TOE PROTECTION	54
SECTION 21: BOULDER BANK PROTECTION	56
SECTION 22: RANDOM ROCKS.....	58
SECTION 23: COIR FIBER MATTING.....	59
SECTION 24: HERBACEOUS PERMANENT SEEDING	60
SECTION 25: PLANTING TREES AND SHRUBS	62
SECTION 26: PROTECTION OF UTILITIES	65
SECTION 27: TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER	66
PROPOSAL AND SCHEDULE OF PRICES.....	68
BID BOND.....	69
PAYMENT BOND.....	70
PERFORMANCE BOND	72

NOTICE AND INVITATION TO BID

Sealed bids for **Contract No. NAT14001-STR_REST – Upper Christina Stream Restoration** will be received by the State of Delaware, Department of Natural Resources & Environmental Control, Division of Watershed Stewardship, for the Upper Christina River project. **Only those Contractors who have been PREQUALIFIED for the General Prequalification status may submit sealed bids on this project.** This project will consist of stabilizing approximately 3,600 feet of stream bank along the Upper Christina River. The project site lies along the Upper Christina River north and south of Nottingham Road. Phase I is located downstream of Church Road within the park land that runs parallel to, and in between, Timber Creek Lane and Timberline Drive. Phase II is located in the forested area that runs in between West Mill Station Drive and Hidden Valley Drive.

Contractors will have until Friday, June 13, 2014 to submit a General Prequalification Application for Stream Restoration for this project. (NOTE: A Supplemental Prequalification is **not** required for this project). Please see the full text of the General Prequalification Application for Stream Restoration at <http://mymarketplace.delaware.gov/topics/agency.shtml> Follow the instructions as outlined in the application. Contractors will be notified by Friday, June 20, 2014, regarding the status (approved/denied) of their General Prequalification application submittal. For a complete listing of approved Prequalified Stream Restoration Contractors go to <http://mymarketplace.delaware.gov/topics/agency.shtml>

A **MANDATORY** Pre-Bid Meeting with all **APPROVED PREQUALIFIED (General Prequalification status) CONTRACTORS** interested in this project will be held on Tuesday, July 8, 2014, at 10:00 a.m. on W. Church Road where it intersects with the Christina River (just west of the intersection of Casho Mill Road and W. Church Road) in Newark, Delaware. Contractors interested in submitting a bid will have the opportunity to walk the length of the project and to participate in a question/answer session. **ATTENDANCE OF THIS MEETING IS A PREREQUISITE FOR BIDDING ON THIS CONTRACT.**

Sealed bids for **Contract No. NAT14001-STR_REST – Upper Christina Stream Restoration** will be received by the State of Delaware, Department of Natural Resources & Environmental Control, Division of Watershed Stewardship, in the lobby of the Conservation Center, 2430 Old County Road, Newark, DE 19702 until 1:00 p.m. local time on Monday, July 28, 2014, at which time the bids will be publicly opened and read aloud in the Conservation Center lobby. The outer envelope should clearly indicate: "**Contract No. NAT14001-STR_REST – Upper Christina Stream Restoration - SEALED BID - DO NOT OPEN.**" Bidder bears the risk of late delivery. Any bids received after the stated time will be returned unopened.

Orders for a project plan set (i.e., design plans and technical specifications) must be placed with Elizabeth Hook at 302-832-3100, ext. 101, no less than 24-hours prior to pick-up at the Conservation Center, 2430 Old County Road, Newark, DE 19702. The cost of the plans and specifications is \$100.00 per set/non-refundable. Checks are to be made payable to "New Castle Conservation District."

Construction documents will be available for review (by appointment only) at the following location: Conservation Center, 2430 Old County Road, Newark, DE 19702.

Minority Business Enterprises (MBE), Disadvantaged Business Enterprises (DBE) and Women-Owned Business Enterprises (WBE) will be afforded full opportunity to submit bids on this contract and will not be subject to discrimination on the basis of race, color, national origin or sex in consideration of this award. The successful bidder must post a performance bond and payment bond in a sum equal to 100 percent of the contract price upon execution of the contract.

The DEPARTMENT reserves the right to reject any or all bids and to waive any informalities therein.

The DEPARTMENT may extend the time and place for the opening of the bids from that described in the advertisement, with not less than two calendar days notice by certified delivery, facsimile machine or other electronic means to those bidders receiving plans.

INSTRUCTIONS TO BIDDERS

The scope of this contract is as described on the Department of Natural Resources & Environmental Control's (the "DEPARTMENT'S") plans entitled **Contract No. NAT14001-STR_REST – Upper Christina Stream Restoration** (sealed 5/15/14) and these General and Special Provisions.

SUBMISSION OF BIDS

Enclose the Bid, the Bid Security, and any other documents required to be submitted with the Bid in a sealed opaque envelope. Address the envelope to the party receiving the Bids. Identify with the project name, contract number, bid opening date and time, and the Bidder's name and address. If the Bid is sent by mail, enclose the sealed envelope in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof. The State is not responsible for the opening of bids prior to bid opening date and time that are not properly marked.

Bid envelope shall carry a clear notation in the lower left quadrant, "**Contract No. NAT14001-STR_REST – Upper Christina Stream Restoration - SEALED BID - DO NOT OPEN.**"

Mailing Address: Department of Natural Resources & Environmental Control
Division of Watershed Stewardship
Conservation Center
2430 Old County Road
Newark, Delaware 19702

Bids shall be made by completing and submitting the "**Proposal and Schedule of Prices**" and the "**Bid Security**" portions of this booklet.

- Bid Bond: **REQUIRED**
- Performance Bond: **REQUIRED**
- Payment Bond: **REQUIRED**
- Retainage: **NOT/REQUIRED**

Deposit Bids at the designated location prior to the time and date for receipt of bids indicated in the Advertisement for Bids. Bids received after the time and date for receipt of bids will be marked "LATE BID" and returned.

Bidder assumes full responsibility for timely delivery at location designated for receipt of bids.

Oral, telephonic or telegraphic Bids are invalid and will not receive consideration.

Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids, provided that they are then fully in compliance with these Instructions to Bidders.

QUESTION & ANSWER PROCESS

The DEPARTMENT will accept written requests for clarification regarding this invitation to bid. All inquiries must be received by July 9, 2014 at 3:00 p.m. All questions will be consolidated into a single set of responses and posted on the State's website at www.bids.delaware.gov by July 14, 2014. Vendor names will be removed from questions in the responses released. Questions should be submitted to stephen.williams@state.de.us in the following format: Section number, Paragraph number, Page number, Text of passage being questioned. Deviations from this format will not be accepted.

OPENING/REJECTION OF BIDS

Unless otherwise stated, Bids received on time will be publicly opened and will be read aloud. The main purpose of the proposal opening is to reveal the name(s) of the Vendor(s), not to serve as a forum for determining the apparent low Vendors. The disclosure of additional information, including prices, shall be at the discretion of the contracting agency until such time that the responsiveness of each proposal has been determined. The DEPARTMENT shall award the contract to the lowest responsive and responsible bidder within thirty (30) calendar days of opening the bid pursuant to 29 Del. C., Section 6962.

The DEPARTMENT shall have the right to reject any and all Bids. A Bid not accompanied by a required Bid Security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

If the Bids are rejected, it will be done within thirty (30) calendar days of the Bid opening.

RIGHT TO CANCEL SOLICITATION

The DEPARTMENT reserves the right to cancel this solicitation at any time during the procurement process, for any reason or for no reason. The DEPARTMENT makes no commitments expressed or implied, that this process will result in a business transaction with any vendor.

This invitation to bid does not constitute an offer by the DEPARTMENT. Vendor's participation in this process may result in the DEPARTMENT selecting your organization to engage in further discussions and negotiations toward execution of a contract. The commencement of such negotiations does not, however, signify a commitment by the DEPARTMENT to execute a contract nor to continue negotiations. The DEPARTMENT may terminate negotiations at any time and for any reason, or for no reason.

GENERAL PROVISIONS

SCOPE OF SERVICES

CONTRACTOR shall perform all construction in accordance with design plans and technical specification issued for this project by the DEPARTMENT. All work shall be done in compliance with all Federal, State, County and City permits issued for this project. As part of this construction, CONTRACTOR shall provide all services, structures and materials described in the design plans (sealed 5/15/14) and technical specifications contained in the plan set prepared by Biohabitats, Inc. Additionally, CONTRACTOR shall perform all work under the supervision and direction of DNREC and/or an oversight contractor that will be selected and hired by the DEPARTMENT. The project shall be deemed complete when a "Certificate of Completion" has been recommended for issuance by the oversight contractor and issued by the DEPARTMENT.

NOTICE TO PROCEED

The obligations of each party to this Contract are not effective and no party is bound by the terms of this Contract unless and until a valid executed Purchase Order has been approved by the Secretary of Finance, and all the procedures of the Department of Finance have been complied with.

Work including material purchases shall not begin until the Contractor is in receipt of a bonafide State of Delaware Purchase Order. Any work performed or material purchases prior to the issuance of the Purchase Order is done at the Contractor's own risk and cost.

NON-DISCRIMINATION

The DEPARTMENT prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political belief and marital or family status. Contractors and subcontractors working on DEPARTMENT contracts shall comply with these requirements.

EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

For Public Works Projects financed in whole or in part by State appropriation, the Contractor agrees that during the performance of this Contract:

The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex or national origin. The Contractor will take positive steps to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting Agency setting forth this nondiscrimination clause.

The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that "all qualified applicants will receive consideration for employment without regard to race, creed, color, sex or national origin."

STATE OF DELAWARE BUSINESS LICENSE AND TAX REQUIREMENTS

In conformance with 30 Del. C., Chapter 25, Section 2502, any person desiring to engage in business in the State of Delaware shall obtain a license upon making application to the Division of Revenue. This license must be obtained and proof of license compliance must be made prior to, or in conjunction with, the execution of a contract to such person. In the case of contracts in excess of \$50,000 which are competitively bid, such person shall have initiated the license application procedure required by this subsection with the Division of Revenue prior to, or in conjunction with, the submission of a bid on a contract, or, in the case of a Subcontractor, prior to the submission of a bid by the General Contractor.

Each Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with 30 Del. C., Chapter 25, Section 2503, the Contractor “shall furnish the Department of Finance within 10 days after entering into any contract with a contractor or subcontractor not a resident of this State, a statement of the total value of such contract or contracts together with the names and addresses of the contracting parties.”

The Contractor shall comply with all requirements set forth in, 29 Del. C., Section 6962.

BONDING

➤ BID BOND

All bids shall be accompanied by a deposit of either a good and sufficient bond to the agency for the benefit of the agency, with corporate surety authorized to do business in this State, the form of the bond and the surety to be approved by the agency, and the bond form used shall be the standard form issued by the Office of Management and Budget (attached) for this purpose or a security of the bidder assigned to the agency, for a sum equal to at least 10% of the bid. The bid bond need not be for a specific sum, but may be stated to be for a sum equal to 10% of the bid to which it relates and not to exceed a certain stated sum, if said sum is equal to at least 10% of the bid. Any bid which, at the time it is submitted, is not accompanied by a bid bond or sufficient security as required by this paragraph shall not be opened or read, and shall be rejected.

The Agency has the right to retain the bid security of Bidders to whom an award is being considered until either a formal contract has been executed and bonds have been furnished or the specified time has elapsed so the Bids may be withdrawn or all Bids have been rejected.

In the event of any successful Bidder refusing or neglecting to execute a formal contract and bond within 20 days of the awarding of the contract, the bid bond or security deposited by the successful bidder shall be forfeited.

➤ PERFORMANCE BOND AND PAYMENT BOND

Simultaneous with the execution of the formal contract, the successful bidder shall also execute a Performance Bond and Payment Bond good and sufficient bond to the contracting agency for the benefit of the agency, with corporate surety authorized to do business in this State, in a sum equal to 100% of the contract price and the bond form used shall be the standard form issued by the Office of Management and Budget.

The Performance Bond and Payment Bond shall be conditioned upon the faithful compliance and performance by the successful bidder of each and every term and condition of the contract and the proposal and plans and specifications thereof, at the time and in the manner prescribed by the contract and the plans and specifications, including the payment in full, to every firm furnishing material or performing labor in the performance of the contract, of all sums of money due it for such labor or material. The bond shall also contain the successful bidder's guarantee to indemnify and save harmless the agency from all costs, damages and expenses growing out of or by reason of the successful bidder's failure to comply and perform the work and complete the contract in accordance with the contract.

Invoking a Performance Bond – The Agency may, when it considers that the interest of the State so requires, cause judgment to be confessed upon the bond.

The Performance Bond shall guarantee the satisfactory completion of the Project and that the Contractor will make good any faults or defects in his Work which may develop during the period of said guarantees as a result of improper or defective workmanship, material or apparatus, whether furnished by themselves or their Sub-Contractors. The Payment Bond shall guarantee that the Contractor shall pay in full all persons, firms or corporations who furnish labor or material or both labor and material for, or on account of, the work included herein. The bonds shall be paid for by this Contractor. The Owner shall have the right to demand proof that the parties signing the bonds are duly authorized to do so.

FAILURE TO COMPLY WITH CONTRACT

If any firm entering into a contract with the State, or Agency neglects or refuses to perform or fails to comply with the terms thereof, the Agency which signed the Contract may terminate the Contract and proceed to award a new contract in accordance with Chapter 69, Title 29 of the Delaware Code or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the Performance Bond. Nothing herein shall preclude the Agency from pursuing additional remedies as otherwise provided by law.

CONTRACT INSURANCE AND CONTRACT LIABILITY

In addition to the bond requirements stated in the Bid Documents, each successful Bidder shall purchase adequate insurance for the performance of the Contract and, by submission of a Bid, agrees to indemnify and save harmless and to defend all legal or equitable actions brought against the State, any Agency, officer and/or employee of the State, for and from all claims of liability which is or may be the result of the successful Bidder's actions during the performance of the Contract.

The purchase or nonpurchase of such insurance or the involvement of the successful Bidder in any legal or equitable defense of any action brought against the successful Bidder based upon work performed pursuant to the Contract will not waive any defense which the State, its agencies and their respective officers, employees and agents might otherwise have against such claims, specifically including the defense of sovereign immunity, where applicable, and by the terms of this section, the State and all agencies, officers and employees thereof shall not be financially responsible for the consequences of work performed, pursuant to said contract.

INDEMNIFICATION

The CONTRACTOR agrees that in the event it is awarded a contract, it will indemnify and hold harmless the State of Delaware, the DEPARTMENT and the Division of Watershed Stewardship ("Division") from contingent liability to others for damages because of bodily injury, including death, to the extent resulting from the CONTRACTOR'S negligent performance under the contract, and any other liability for damages under which the CONTRACTOR is required to indemnify the State, the DEPARTMENT and the Division under any provision of the contract.

The Contractor shall hold the DEPARTMENT and its agents harmless from claims resulting from events pertaining to this contract such as, but not limited to, trespass, property damage, personal injury, poor workmanship, inferior materials, liens of suppliers and subcontractors, and theft.

CONTRACTOR shall require each and every contractor or subcontractor for the project to indemnify, save and hold harmless, and defend the DEPARTMENT, its directors, employees, representatives, or agents against any demand, claim, suit, loss, costs, or damages sustained in connection with performance of services provided under this agreement.

PERSONNEL

CONTRACTOR represents that it has, or will secure at its own expense, all personnel required in performing the services under this Contract.

CONTRACTOR, or persons under CONTRACTOR'S supervision, shall perform all of the services required by this Contract, and all personnel engaged in the work shall be fully qualified and shall be authorized to perform such services.

CONTRACTOR shall not subcontract any of the work or services covered by this Contract without the prior written approval of DEPARTMENT.

TERMINATION OF CONTRACT FOR CAUSE

If, for any reasons, or through any cause, CONTRACTOR shall fail to fulfill in a timely or proper manner its obligations under this Contract, or if CONTRACTOR shall violate any of the covenants, agreements, or

stipulations of this Contract, DEPARTMENT shall then have the right to terminate this Contract by giving written notice to CONTRACTOR of such termination and specifying the effective date, at least 5 days before the effective date of such termination.

TERMINATION OF CONVENIENCE

DEPARTMENT may terminate this Contract in its sole discretion at any time for any reason by giving written notice of such termination and specifying the effective date, at least 15 days before the effective date of such termination. Exercise of this right by DEPARTMENT shall not be deemed a breach of this Contract, and no damages shall be awarded to CONTRACTOR for exercise of this paragraph. If this Contract is terminated due to the fault of CONTRACTOR,

SUSPENSION AND DEBARMENT

Per Section 6962(d)(14), Title 29, Delaware Code, "Any Contractor who fails to perform a Public Works Contract or complete a Public Works Project within the time schedule established by the Agency in the invitation to bid, may be subject to Suspension or Debarment for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the Project."

Upon such failure for any of the above stated reasons, the Agency that contracted for the Public Works Project may petition the Director of the Office of Management and Budget for Suspension or Debarment of the Contractor. The Agency shall send a copy of the petition to the Contractor within three (3) working days of filing with the Director. If the Director concludes that the petition has merit, the Director shall schedule and hold a hearing to determine whether to suspend the Contractor, debar the Contractor or deny the petition. The Agency shall have the burden of proving, by a preponderance of the evidence, that the Contractor failed to perform or complete the Public Works Project within the time schedule established by the Agency and failed to do so for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the project. Upon a finding in favor of the Agency, the Director may suspend a Contractor from Bidding on any project funded, in whole or in part, with public funds for up to 1 year for a first offense, up to 3 years for a second offense and permanently debar the Contractor for a third offense. The Director shall issue a written decision and shall send a copy to the Contractor and the Agency. Such decision may be appealed to the Superior Court within thirty (30) days for a review on the record.

TOTAL COST AND COMPENSATION

It is agreed that the total cost for the services provided under this Contract shall not exceed the accepted bid price. Payment to the CONTRACTOR shall be awarded based upon: (1) receipt of invoices and (2) the completion of all product deliverables to the DEPARTMENT.

CONTRACTOR is responsible for costs incurred in excess of the total cost of this Contract and the DEPARTMENT is not liable for such costs.

Condition Precedent: The rights and obligations of each party to this Contract are not effective and no party is bound by the terms of this Contract unless and until a valid executed purchase order is approved by the Secretary of Finance and received by CONTRACTOR. The rights and obligations of DEPARTMENT under this Contract are limited to the amount of any approved purchase order.

OBLIGATIONS AND PAYMENT

The obligations of the DEPARTMENT under this Contract shall be subject to the receipt of sufficient funds appropriated by the General Assembly and the U.S. Environmental Protection Agency and the obligations of the DEPARTMENT are limited to the amount of such appropriation.

Payments to the CONTRACTOR shall be made monthly upon satisfactory completion, in DEPARTMENT'S sole discretion, of the tasks outlined in the design plans and project specifications, and supported by submission of an invoice by CONTRACTOR, which are acceptable to the Division of

Watershed Stewardship's Stream Restoration Program. Invoices shall be paid within 30 days after receipt by DEPARTMENT, if services are performed satisfactorily, in DEPARTMENT'S sole discretion.

CONTRACTOR will maintain accurate financial records and make them available to Federal and State auditors, as needed, up to 3 years following Contract termination.

INSURANCE

The Contractor shall carry all insurance required by law, such as Unemployment Insurance, etc. The Contractor shall carry such insurance coverage as they desire on their own property such as a field office, storage sheds or other structures erected upon the project site that belong to them and for their own use. The Subcontractors involved with this project shall carry whatever insurance protection they consider necessary to cover the loss of any of their personal property, etc.

Upon being awarded the Contract, the Contractor shall obtain a minimum of two (2) copies of all required insurance certificates called for herein, and submit one (1) copy of each certificate, to the Owner, within 20 days of contract award.

Bodily Injury Liability and Property Damage Liability Insurance shall, in addition to the coverage included herein, include coverage for injury to or destruction of any property arising out of the collapse of or structural injury to any building or structure due to demolition work and evidence of these coverages shall be filed with and approved by the Owner.

The Contractor's Property Damage Liability Insurance shall, in addition to the coverage noted herein, include coverage on all real and personal property in their care, custody and control damaged in any way by the Contractor or their Subcontractors during the entire construction period on this Project.

Certificates of the insurance company or companies stating the amount and type of coverage, terms of policies, etc., shall be furnished to the Owner, within 20 days of contract award.

The Contractor shall, at their own expense, (in addition to the above) carry the following forms of insurance:

Contractor's Contractual Liability Insurance

Minimum coverage to be:

➤ <u>BODILY INJURY</u>	\$ 500,000	for each person
	\$1,000,000	for each occurrence
	\$1,000,000	aggregate
➤ <u>PROPERTY DAMAGE</u>	\$ 500,000	for each occurrence
	\$1,000,000	aggregate

Contractor's Protective Liability Insurance

Minimum coverage to be:

➤ <u>BODILY INJURY</u>	\$ 500,000	for each person
	\$1,000,000	for each occurrence
	\$1,000,000	aggregate
➤ <u>PROPERTY DAMAGE</u>	\$ 500,000	for each occurrence
	\$ 500,000	aggregate

Automobile Liability Insurance

Minimum coverage to be:

- | | | |
|---------------------------------|-------------|---------------------|
| ➤ <u>BODILY INJURY</u> | \$1,000,000 | for each person |
| | \$1,000,000 | for each occurrence |
| ➤ <u>PROPERTY DAMAGE</u> | \$ 500,000 | per accident |

Prime Contractor's and Subcontractors' policies shall include contingent and contractual liability coverage in the same minimum amounts as stated above.

Workmen's Compensation (including Employer's Liability):

Minimum Limit on employer's liability to be as required by law.

Minimum Limit for all employees working at one site.

Certificates of Insurance must be filed with the Owner guaranteeing fifteen (15) days prior notice of cancellation, non-renewal, or any change in coverages and limits of liability shown as included on certificates.

Social Security Liability

With respect to all persons at any time employed by or on the payroll of the Contractor or performing any work for or on their behalf, or in connection with or arising out of the Contractor's business, the Contractor shall accept full and exclusive liability for the payment of any and all contributions or taxes or unemployment insurance, or old age retirement benefits, pensions or annuities now or hereafter imposed by the Government of the United States and the State or political subdivision thereof, whether the same be measured by wages, salaries or other remuneration paid to such persons or otherwise.

Upon request, the Contractor shall furnish Owner such information on payrolls or employment records as may be necessary to enable it to fully comply with the law imposing the aforesaid contributions or taxes.

If the Owner is required by law to and does pay any and/or all of the aforesaid contributions or taxes, the Contractor shall forthwith reimburse the Owner for the entire amount so paid by the Owner.

TIME OF PERFORMANCE

The services of CONTRACTOR are to commence as soon as practicable after the execution of this Contract and shall be undertaken in such sequence as to assure their expeditious completion in the light of the purposes of this Contract, but in any event all of the services required by this CONTRACT shall be completed no later than **December 31, 2014**.

UTILITIES

It shall be the Contractor's responsibility to accurately locate all existing utilities such as gas, sewer, electric, water, telephone, etc. The Contractor shall take every precaution to prevent damage to any utility facilities. The Contractor shall be financially responsible for the repair of any utilities damaged as a result of his construction activities. The following shall be contacted for assistance in identifying the locations of utilities prior to commencing any activities on the project.

MISS UTILITY

1-800-282-8555

PERMITS AND EASEMENTS

The Contractor shall be responsible for any permits, ingress/egress and construction rights-of-way not provided by the DEPARTMENT, including any required DelDOT Temporary Construction Entrance permit.

PROPERTY MARKERS

The Contractor shall be responsible to protect any identified or found property markers or monuments and shall replace, at the Contractor's own expense, any markers or monuments disturbed during construction using a Delaware Professional Land Surveyor (PLS) or Delaware Professional Engineer (PE). The PLS or PE shall provide a letter certifying and describing the work done in resetting any markers or monuments.

THIRD PARTY AGREEMENTS

The Contractor shall obtain the DEPARTMENT'S consent prior to making any third party agreements with regard to this contract.

EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

The bidder shall examine carefully the site of the proposed work, the proposal, plans and specifications and contract forms before submitting a proposal. The submittal of a bid shall be prima facie evidence that the bidder has made such examinations and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the plans, specifications and contract. No additional payments shall be made for the completion of this contract, other than payment for the bid items included herein except as provided in these specifications.

CHANGE IN SCOPE OF WORK

The DEPARTMENT reserves the right to change the scope of work through alteration, addition or deletion. The DEPARTMENT will initiate cost negotiations based upon any revisions to the project.

EPA FUNDING

CONTRACTOR shall comply with all applicable State and Federal laws and regulations. If applicable State and Federal laws and regulations conflict with the provisions of this section, then applicable laws and regulations supersede the provisions of this section. The provisions of this section shall apply to the work to be performed under this Contract and such provisions shall supersede any conflicting provisions of this Contract.

This Contract is partially funded by a grant from the EPA. Neither the United States nor any of its departments, agencies, or employees is a party to this Contract.

The rights and remedies of DEPARTMENT provided for in these clauses are in addition to any other rights and remedies provided by law or under this Contract.

Remedies: Except as may be otherwise provided in this Contract all claims, counterclaims, disputes and other matters in question between DEPARTMENT and CONTRACTOR arising out of or relating to this Contract or the breach thereof will be decided by arbitration if the parties hereto mutually agree, or in a court of competent jurisdiction within the State of Delaware.

Audit: Access to Records: CONTRACTOR shall maintain books, records, documents and other evidence directly pertinent to performance on EPA grant work under this Contract in accordance with generally accepted accounting principles and practices. CONTRACTOR shall also maintain the financial information and data used by CONTRACTOR in the preparation or support of the cost submission, and a copy of the cost summary submitted to DEPARTMENT. The United State's Department of Labor, DEPARTMENT (and the State of Delaware) or any of their duly authorized representatives shall have access to such books, records, documents and other evidence for the purpose of inspection, audit and copying. CONTRACTOR will provide proper facilities for such access and inspection.

Subcontracts: Any subcontractors and outside associates or consultants required by CONTRACTOR in connection with the services covered by this Contract will be limited to such individuals or firms as were specifically identified and agreed to in writing during negotiations, or as are specifically authorized in writing by DEPARTMENT during the performance of this Contract. Any substitutions in or additions to such subcontractors, associates, or consultants will be subject to the prior written approval of DEPARTMENT.

Equal Employment Opportunity: CONTRACTOR agrees that it will not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin.

Utilization of Small and Minority Business: CONTRACTOR agrees that qualified small business and minority business enterprises shall have the maximum practicable opportunity to participate in the performance of EPA grant-assisted contracts and subcontracts.

Covenant Against Contingent Fees: CONTRACTOR warrants that no person or selling agency has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees. For breach or violation of this warranty, DEPARTMENT shall have the right to annul this Contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

Gratuities: If it is found, after notice and hearing, by DEPARTMENT that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by CONTRACTOR, or any agent of DEPARTMENT or of EPA with a view toward securing a Contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performance of this Contract, DEPARTMENT may, by written notice to CONTRACTOR, terminate the right of CONTRACTOR to proceed under this Contract and/or may pursue such other rights and remedies provided by law or under this agreement; provided that the existence of the facts upon which DEPARTMENT makes such findings shall be in issue and may be reviewed in proceedings pursuant to the Remedies clause of this Contract.

In the event this Contract is terminated as provided in previous paragraph, DEPARTMENT shall be entitled (i) to pursue the same remedies against CONTRACTOR, and (ii) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by DEPARTMENT), which shall be not less than three nor more than ten times the costs incurred by CONTRACTOR in providing any such gratuities to any such officer or employee.

Patents: If this Contract involves research, developmental, experimental, or demonstration work and any discovery or invention arises or is developed in the course of or under this Contract, such invention or discovery shall be subject to the reporting and rights provisions of Subpart D of 40 C.F.R. Part 30, in effect on the date of execution of this Contract including the Appendix of said Part 30. In such case, CONTRACTOR shall report the discovery or invention to EPA directly or through DEPARTMENT and shall otherwise comply with DEPARTMENT'S responsibilities in accordance with Subpart D of 40 C.F.R. Part 30. CONTRACTOR hereby agrees that the disposition of rights to inventions made under this Contract shall be in accordance with the terms and conditions of aforementioned Appendix. CONTRACTOR shall include provisions appropriate to effectuate the purposes of this condition in all subcontracts involving research, developmental, experimental, or demonstration work.

INSPECTIONS

A semi-final inspection will be held at the request of the Contractor, at completion of the project. Any deficiencies will be noted at that time. Contractor will address deficiencies and request final inspection. Final payment will be made if all work is found satisfactory and all required reports, drawings, etc. turned in and accepted.

PREVAILING WAGE REQUIREMENTS

Contract No. NAT14001-STR_REST – Upper Christina Stream Restoration is being funded by (refer to category which has been marked with an “X”):

 Federal Funds (100%). This will require that the prevailing wage rates as required by the Davis-Bacon Act and Related Acts (DBRA) be administered for this project. Refer to the following section entitled “Federal Prevailing Wage Requirements.”

 State Funds (100%). This will require that the prevailing wage rates as required by the Delaware Department of Labor be administered for this project. Refer to the following section entitled “State Prevailing Wage Requirements.”

 X State and Federal Funds. This will require that the higher rate between the State and Federal wage rates (or whichever rate benefits the employee the most) prevail. Refer to the following sections entitled “Federal Prevailing Wage Requirements” and “State Prevailing Wage Requirements” to make the appropriate determination and for related information.

➤ FEDERAL PREVAILING WAGE REQUIREMENTS

• Who is Covered

The Davis-Bacon and Related Acts (DBRA) are administered by the Wage and Hour Division. These Acts apply to contractors and subcontractors performing on federally funded or assisted contracts in excess of \$2,000 for the construction, alteration, or repair (including painting and decorating) of public buildings or public works.

• Basic Provisions/Requirements

The Davis-Bacon Act requires that all contractors and subcontractors performing on federal contracts (and contractors or subcontractors performing on federally assisted contracts under the related Acts) in excess of \$2,000 pay their laborers and mechanics not less than the prevailing wage rates and fringe benefits listed in the contract’s Davis-Bacon wage determination for corresponding classes of laborers and mechanics employed on similar projects in the area. Davis-Bacon labor standards clauses must be included in covered contracts.

Apprentices may be employed at less than predetermined rates if they are in an apprenticeship program registered with the Department of Labor or with a state apprenticeship agency recognized by the Department. Trainees may be employed at less than predetermined rates if they are in a training program certified by the Department.

Contractors and subcontractors on prime contracts in excess of \$100,000 are required, pursuant to the Contract Work Hours and Safety Standards Act, to pay employees one and one-half times their basic rates of pay for all hours over 40 worked on covered contract work in a workweek. Covered contractors and subcontractors are also required to pay employees weekly and to submit weekly certified payroll records to the contracting agency. For the purposes of **Contract No. NAT14001-STR_REST – Upper Christina Stream Restoration** the employee work week SHALL NOT exceed 40 hours.

• Employee Rights

The Davis-Bacon and Related Acts provide laborers and mechanics on covered federally financed or assisted construction contracts the right to receive at least the locally prevailing wage rate and fringe benefits, as determined by the Department of Labor, for the type of work performed. The [Wage and Hour Division](#) and respective federal contracting agencies accept complaints of alleged Davis-Bacon violations.

Recordkeeping, Reporting, Notices and Posters

• Notices and Posters

Every employer performing work covered by the labor standards of the DBRA must post the WH-1321 [“Employee Rights Under the Davis-Bacon Act” poster](#) at the site of the work in a prominent and accessible place where it may be easily seen by employees. There is no particular size requirement. The wage determination must be similarly posted.

• Recordkeeping

Under the DBRA, covered contractors must maintain payroll and basic records for all laborers and mechanics during the course of the work and for a period of three years thereafter. Records to be maintained include:

- Name, address, and Social Security number of each employee
- Each employee's work classifications
- Hourly rates of pay, including rates of contributions or costs anticipated for fringe benefits or their cash equivalents
- Daily and weekly numbers of hours worked
- Deductions made
- Actual wages paid

If applicable, detailed information regarding various fringe benefit plans and programs, including records that show that the plan or program has been communicated in writing to the laborers and mechanics affected

If applicable, detailed information regarding approved apprenticeship or trainee programs
Some of the records required to be kept under the law are also required under the Fair Labor Standards Act. See Wage and Hour Division [Fact sheet #21: Recordkeeping Requirements under the Fair Labor Standards Act \(FLSA\)](#) .

• Reporting

Each covered contractor and subcontractor must, on a weekly basis, provide the federal agency a copy of all payrolls providing the information listed above under “Recordkeeping” for the preceding weekly payroll period. Each payroll submitted must be accompanied by a “Statement of Compliance.” The contractor, subcontractor or the authorized officer or employee of the contractor or subcontractor who supervises the payment of wages must sign the weekly statement. Statements of Compliance are to be made on the form [WH-347 "Payroll \(For Contractors Optional Use\)"](#) or on any form with identical wording. This must be completed within seven days after the regular pay date for the pay period.

Contractors may also be asked to submit, via survey, wage data that may be used by the Wage and Hour Division to determine the locally prevailing wage rates that will apply to workers on Davis-Bacon and DBRA-covered projects. The submission of wage data is encouraged, but voluntary. Contractors and others may use the [WD-10 Form, Report of Construction Contractor's Wage Rates](#) .

Penalties/Sanctions

Contractors or subcontractors found to have disregarded their obligations to employees, or to have committed aggravated or willful violations while performing work on Davis-Bacon covered projects, may be subject to contract termination and debarment from future contracts for up to three years. In addition, contract payments may be withheld in sufficient amounts to satisfy liabilities for unpaid wages and liquidated damages that result from overtime violations of the Contract Work Hours and Safety Standards Act (CWHSSA).

Contractors and subcontractors may challenge determinations of violations and debarment before an Administrative Law Judge. Contractors and subcontractors may appeal decisions by Administrative Law Judge's with the Department's Administrative Review Board. Final Board determinations on violations may be appealed to and are enforceable through the federal courts.

Falsification of certified payroll records or the required kickback of wages may subject a contractor or subcontractor to civil or criminal prosecution, the penalty for which may be fines and/or imprisonment.

DAVIS-BACON HEAVY WAGE RATES

General Decision Number: DE140009 01/03/2014 DE9

Superseded General Decision Number: DE20130009

State: Delaware

Construction Type: Heavy

County: New Castle County in Delaware.

Modification Number	Publication Date
0	01/03/2014

	<u>Rates</u>	<u>Fringes</u>
CARP0454-005 05/01/2013 PILEDRIVERMAN:	\$ 39.65	29.57
<i>Footnote: PAID HOLIDAYS: Washington's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (provided the employee works the day before the holiday and the day after the holiday).</i>		
CARP0626-002 05/01/2013 CARPENTER:		
Carpenter	\$ 30.57	20.09
Scaffold Building	\$ 31.32	20.09
CARP1906-007 07/01/2013 MILLWRIGHT	\$ 34.30	28.98
ELEC0313-001 06/01/2013 ELECTRICIAN	\$ 36.44	69.33%
ENGI0542-001 05/01/2013 Operating Engineers:		
Bulldozer and Forklift	\$ 35.02	\$23.29
<i>Footnote: PAID HOLIDAYS: Washington's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (provided the employee works the day before the holiday and the day after the holiday).</i>		
IRON0451-002 07/01/2013 Ironworkers:		
Ornamental, Reinforcing, Rigger and Structural	\$ 33.60	25.90
LABO0199-004 05/01/2013 Laborers:		
Brick Mason Tender,	\$ 23.00	16.25
Common or General	\$ 22.75	16.25
PAIN0021-027 05/01/2013 PAINTER, Bridge	\$ 41.58	16.83
SUDE2007-005 08/16/2007 CEMENT MASON/CONCRETE FINISHER	\$ 22.92	2.88
LABORER: Pipelayer	\$ 17.43	4.51
OPERATOR: Backhoe	\$ 24.58	9.87
OPERATOR: Crane	\$ 23.83	12.13
OPERATOR: Excavator	\$ 24.99	3.85

OPERATOR: Loader \$ 21.83 7.30
OPERATOR: Roller \$ 18.94 3.25
TRUCK DRIVER: Dump Truck \$ 16.11 1.68
WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

➤ **STATE PREVAILING WAGE REQUIREMENTS**

Wage Provisions: In accordance with Delaware Code, Title 29, Section 6960, renovation projects whose total cost shall exceed \$15,000, and \$100,000 for new construction, the minimum wage rates for various classes of laborers and mechanics shall be as determined by the Department of Labor, Division of Industrial Affairs of the State of Delaware.

The prevailing wage shall be the wage paid to a majority of employees performing similar work as reported in the Department's annual prevailing wage survey or in the absence of a majority, the average paid to all employees reported.

The employer shall pay all mechanics and labors employed directly upon the site of work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics.

The scale of the wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work.

Every contract based upon these specifications shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly. The Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll.

DELAWARE DEPARTMENT OF LABOR PREVAILING WAGES HEAVY CONSTRUCTION

Effective Date: March 14, 2014

These rates are promulgated and enforced pursuant to the prevailing wage regulations adopted by the Department of Labor on April 3, 1992.

CLASSIFICATION	NEW CASTLE
Asbestos Worker	21.14
Biolermakers	71.87
Bricklayers	44.98
Carpenters	50.91
Cement Finishers	27.30
Electrical Line Workers	62.75
Electricians	62.10
Glaziers	19.54
Insulators	51.48
Iron Workers	58.70
Laborers	39.75
Millwrights	63.53
Painters	60.64
Piledrivers	69.32
Plasterers	18.40
Plumbers/Pipefitters/Steamfitters	74.03
Power Equipment Operators	58.31

Sheet Metal Workers	29.40
Sprinkler Fitters	31.68
Truck Drivers	31.02

Classifications of workers are determined by the Delaware Department of Labor. For assistance in classifying workers, or for a copy of the regulations or classifications, phone (302) 451-3423.

Non-registered apprentices must be paid the mechanic's rate.

Project: NAT14001-STR_RES Upper Christina Stream Restoration, New Castle County

STANDARD SPECIFICATIONS

The specifications shown in the construction design plans, general provisions, standard specifications and special provisions will prevail on this job. Any questions concerning specifications should be directed to the Department.

CONSTRUCTION PLANS AND SPECIFICATIONS

Construction plans prepared by Biohabitats, Inc. entitled "Upper Christina Stream Restoration" (sealed 5/15/14) shall govern the construction and specifications of this project.

UNIT QUANTITY ESTIMATE SHEET

Contractors bidding on this project are responsible for determining the actual materials and unit quantities required for this project. The Unit Quantity Estimate Sheets (Phases I & II) shown below prepared by Biohabitats, Inc only serves as a guide and their accuracy are not guaranteed.

Phase I:

Item No.	ITEM DESCRIPTION	QUANTITY	UNIT
	Mobilization	1	LS
	Construction Stakeout	1	LS
	Stabilized Construction Entrance	1	EA
	12" Filtrexx Soxx	289	LF
	Silt Fence	298	LF
	Blaze Orange Fence (including along Mulch Access Path)	4691	LF
	Shredded Hardwood Mulch for Mulch Access Path	865	CY
	Coir Fiber Matting	301	SY
	Pump Around - Maintenance of Stream Flow	1	LS
	Clearing & Grubbing (incl. Tree removal)	1.8	AC
	Channel or Stream Change Excavation	158	CY
	Salvage and Stockpile Topsoil (Excavation and Embankment)	20	CY
	Topsoiling	120	SY
	Rock J-vane	3	EA
	Rock Cross Vane	2	EA
	Rock Vane	5	EA
	Rootwad and Large Woody Debris	2	EA
	Boulder Bank Protection	220	LF
	Random Rocks	50	EA
	Substrate Material	285	CY
	Planting Trees and Shrubs - Zone 1		
	<i>Riparian Forest-Zone 1</i>		
	Planting Zone 1 - Trees	104	EA
	Planting Zone 1 - Midstory Trees	60	EA
	Planting Zone 1 - Shrubs & Vines	88	EA
	Herbaceous Permanent Seeding - Zones 1 & 2		
	<i>Riparian Forest-Zone 1</i>		
	Planting Zone 1 - Native Seed	18,387	SF
	<i>Turf Grass-Zone 2</i>		
	Planting Zone 2 - Native Seed	3,913	SF

Phase II:

Item No.	ITEM DESCRIPTION	QUANTITY	UNIT
	Mobilization	1	LS
	Construction Stakeout	1	LS
	Stabilized Construction Entrance	2	EA
	12" Filtrexx Soxx	1763	LF
	Silt Fence	1763	LF
	Blaze Orange Fence (including along Mulch Access Path)	6849	LF
	Shredded Hardwood Mulch for Mulch Access Path	948	CY
	Coir Fiber Matting	1226	SY
	Pump Around - Maintenance of Stream Flow	1	LS
	Clearing & Grubbing (incl. Tree removal)	4.2	AC
	Channel or Stream Change Excavation	212	CY
	Salvage and Stockpile Topsoil (Excavation and Embankment)	359	CY
	Topsoiling	2110	SY
	Rock J-vane	3	EA
	Rock Cross Vane	5	EA
	Rootwad and Large Woody Debris	11	EA
	Log Toe Protection	92	LF
	Boulder Bank Protection	1058	LF
	Random Rocks	40	EA
	Substrate Material	545	CY
	Planting Trees and Shrubs - Zone 1		
	<i>Riparian Forest-Zone 1</i>		
	Planting Zone 1 - Trees	386	EA
	Planting Zone 1 - Midstory Trees	227	EA
	Planting Zone 1 - Shrubs & Vines	333	EA
	Herbaceous Permanent Seeding - Zones 1 & 2		
	<i>Riparian Forest-Zone 1</i>		
	Planting Zone 1 - Native Seed	66,296	SF
	<i>Turf Grass-Zone 2</i>		
	Planting Zone 2 - Native Seed	20,829	SF

TECHNICAL SPECIFICATIONS

SCOPE:

- 1) The work to be performed under this Contract includes, but is not limited to, furnishing all materials, labor, equipment, tools, plants, seed, superintendence, transportation and performing all work in strict accordance with these Specifications and Plans.
- 2) The work consists of stabilizing the stream channel and banks with rocks, logs and vegetation by installing rock J-vanes, rock cross vanes, rock vanes, boulder bank protection, rootwad and large woody debris, and log toe protection structures, by planting and seeding; and by completing all of the necessary incidentals described and illustrated in the Contract Documents.
- 3) The work shall be performed under contract and the supervision of the Delaware Department of Natural Resources and Environmental Control (DNREC) or their assignee. The term "Delaware Department of Natural Resources and Environmental Control" throughout these Special Provisions shall be included to mean Delaware Department of Natural Resources and Environmental Control's assignee.
- 4) The work shall be completed in all its parts and ready for use in the working days specified and in strict accordance with the terms and conditions of the Contract Documents. Any deviation shall be subject to the approval of Delaware Department of Natural Resources and Environmental Control.
- 5) The Contractor shall adhere to the terms of the various permits issued to this project. This shall include permits from the U.S. Army Corps of Engineers, the Delaware Department of Natural Resources and Environmental Control, and any other applicable permits.
- 6) The Contractor shall assume all responsibility for the project and construction site until accepted by the Delaware Department of Natural Resources and Environmental Control.
- 7) The Contractor shall be prepared to execute a finished project in every particular without any extra charge, unless specifically provided for within the Contract.
- 8) The contractor must provide for the safe and contiguous maintenance of both vehicular and pedestrian traffic throughout the project site and to minimize accidents and accident severity, while at the same time minimizing inconvenience to the traveling public and the Contractor. All work shall be performed in accordance with Subsection 104.09 Maintaining Traffic within Section 104 – Scope of Work of the Delaware Department of Transportation Standard Specifications 2001.
- 9) Work shall be completed according to the Delaware Department of Transportation, Standard Specifications 2001. In case of conflict with other portions of the Specifications, the Special Provisions shall govern. The Special Provisions are hereby made a part of this Contract.

PROJECT SITE:

- 1) The project site is located in Newark, New Castle County, Delaware in the subdivisions of Timber Creek, Christiansted and West Branch neighborhoods. The project site lies along the Upper Christina River just north and south of Nottingham Road. Phase I is located downstream of Church Road within the park land that runs parallel to, and in between, Timber Creek Lane and Timberline Drive. Phase II is located in the forested area that runs in between West Mill Station Drive and Hidden Valley Drive.
- 2) The project site boundaries are illustrated on the plans as the Limit of Disturbance. The Contractor shall perform all activities related to this contract within the Limits of Disturbance. Due to the proximity of the improved properties, the Contractor shall exercise extreme care in this construction operation. Final adjustment of the limit of disturbance (LOD) will be made at the pre-construction meeting with approval from Delaware Department Natural Resources and Environmental Control.
- 3) The project site shall be accessed through the designated access points illustrated on the Plans. The Contractor is responsible for maintaining access throughout all construction activities. Upon completion of all construction activities, the area is to be restored to a condition equal to or better than found prior to undertaking work.
- 4) The existing elevations and contours shown on the plans, cross sections, and profiles were surveyed in March 2011 in an arbitrary coordinate system on assumed datum. The survey was then rectified via global positioning system (GPS) to NAD83 Delaware state plane, NAV88. Due to potential error involved with this process, it is the responsibility of the Contractor to confirm existing grades, stakeout the proposed channel and structure locations, and to coordinate stakeout review of the site to resolve any issues with the survey. It is the Contractor's responsibility to confirm existing grades and adjust quantities, earthwork, and work efforts as necessary at no additional cost to DNREC.
- 5) The Contractor, before submitting a proposal for this project, shall visit the construction site and thoroughly familiarize himself/herself with all existing conditions above and below ground. The Contractor shall satisfy himself/herself as to the accuracy and completeness of these Specifications and Plans regarding the nature and extent of the work described.
- 6) The Contractor shall make all field measurements necessary to lay out the lines and grades as called for in the Plans. The Contractor shall use the horizontal and vertical survey control points shown on the Contract Documents to lay out the lines of work, limits of grading, elevations, and locations of specific items of work.
- 7) Should there be any discrepancies between the Plans, Specifications and/or field conditions after bidding and prior to beginning work, the Contractor shall bring such discrepancies to the attention of DNREC at the preconstruction meeting.
- 8) THERE SHALL BE NO CLEARING OR REMOVAL OF ANY TREES, OTHER THAN THOSE INDICATED ON THE PLANS BY GRADING OR AS DIRECTED BY DNREC.
- 9) The Contractor shall exercise care in activities involving either cut and fill or grading in the vicinity of trees at the construction site. All earth cuts in the vicinity of trees not identified for removal shall be made in a manner that does not disturb the root system within the drip line of the tree.
- 10) The Contractor is responsible for any damage to existing utilities that may occur as a result of this operation. Any damage to existing structures, including existing sewer pipes/manholes, storm drain pipes/structures shall be immediately repaired to DNREC's satisfaction by the Contractor at his/her own expense. If a sanitary sewer line break occurs, the contractor must also immediately notify the New Castle County Sewer Emergency Service at (302) 395-5700.
- 11) 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 and leave the property in good condition and/or at least equivalent to the conditions found.

- 12) The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his/her employees as may be necessary to comply with requirements and regulations of the Delaware Department of Transportation Standard Specifications 2001, or other authorities having jurisdiction and shall commit no public nuisance.
- 13) The Contractor shall, at all times, keep the premises free from accumulation of waste materials and rubbish, surplus materials, etc., and shall leave the work area completely clean.
- 14) The work under this Contract includes all necessary temporary items required for good, safe, and sanitary construction practice and administration of the project. These requirements are subject to the approval of DNREC.
- 15) All incidental work required by the Contract Documents for which no payment is specifically provided, and any work or materials not specified therein which are required to complete the work, and which may fairly be implied as included in the Contract, and which DNREC shall judge to be so included, shall be performed and furnished by the Contractor without additional compensation from DNREC.
- 16) Prior to start of work, the Contractor shall submit the source of materials, including substrate material, rock, coir fiber matting, seed, and plant material to DNREC for review. No work shall be performed until the source of material is approved by DNREC.
- 17) The use of a backhoe with a "live" hydraulic thumb, opposing the bucket is recommended for the correct and efficient placement of all rock.

SECTION 1: MOBILIZATION

1. DESCRIPTION

This work shall consist of the construction preparatory operation, including the movement of personnel equipment to the project site and for the establishment of the Contractor's facilities necessary to begin work.

2. MATERIALS

Not Applicable.

3. CONSTRUCTION

All work completed in providing the facilities and services shall be done in a safe and workmanlike manner.

4. MEASUREMENT AND PAYMENT

Mobilization will not be measured but will be paid for at the Contract lump sum price.

END OF SECTION

SECTION 2: CONSTRUCTION STAKEOUT

1. DESCRIPTION

Construction Stakeout shall be in accordance with Section 105.10 (Construction Stakes, Lines, and Grades) of the Delaware Department of Transportation, Standard Specifications, 2001, with the following exceptions:

REPLACE: Replace the terms Engineer and Department with the Contractor.

2. ADDITION

The initial survey was completed by DNREC in an arbitrary coordinate system on assumed datum. The survey was then rectified via global positioning system (GPS) points by DNREC. Due to the potential error involved with this process, it is the responsibility of the contractor to stake out the proposed channel and structure locations and to coordinate a construction stakeout review of the site.

3. MEASUREMENT AND PAYMENT

Construction Stakeout shall be measured and paid for as a lump sum (LS) item. The payment will be full compensation for furnishing, setting, and preserving construction stakes, lines and grades. Payment shall include any materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 3: CLEARING AND GRUBBING

1. DESCRIPTION

The Contractor shall perform all work for clearing and grubbing in accordance with Sections 201 and Division 200 of the Delaware Department of Transportation, Standard Specifications, 2001, the Contract Documents, or as directed by DNREC.

2. CONSTRUCTION

201.02 General.

ADD: Add the following:

Place any excess rootwad and large woody debris in depressions along Phase II as shown on the Contract Documents or as directed by DNREC.

3. MEASUREMENT AND PAYMENT

201.09 METHOD OF MEASUREMENT

REPLACE: The quantity of clearing and grubbing will be measured by the acre (AC).

268.11 BASIS OF PAYMENT

REPLACE: The quantity of clearing and grubbing will be paid for per acre (AC). Price and payment will constitute full compensation for replacement of suitable material that was cleared and grubbed; for furnishing and compacting approved material to fill all depressions; for replacement or repair of damaged trees, shrubbery, or plants designated to remain; for disposal; and for all labor, equipment, tools, and incidentals required to complete the work.

All costs associated with the direction to withhold earth-moving activities will be incidental to the work.

END OF SECTION

SECTION 4: EROSION AND SEDIMENT CONTROL

1. DESCRIPTION

The Contractor shall perform all work for sediment and erosion control in accordance with Sections 110 and Division 200 of the Delaware Department of Transportation, Standard Specifications, 2001, the Contract Documents, or as directed by DNREC.

2. MEASUREMENT AND PAYMENT

Erosion and sediment control will be measured for payment on a linear foot (LF) basis for silt fence. The payment will be full compensation for furnishing, installing, maintaining and removing all erosion and sediment control measures shown on the plans, including all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 5: BLAZE ORANGE FENCE

1. DESCRIPTION

This work shall consist of the installation of blaze orange fence around the perimeter of the limits of disturbance (LOD) as shown in the Contract Documents, or as directed by DNREC.

2. MATERIALS

- A. Blaze orange fence - Fence shall be international orange, high-density polyethylene diamond mesh with a mesh opening of 1.5 inch. The fence shall be 4 feet in height with a roll weight of 20 pounds per roll and roll size of 4 feet by 50 feet.
- B. Posts - Posts shall be conventional metal "T" or "U" posts.
- C. Ties - Tension wire or rope.

3. CONSTRUCTION

A. Installation

- 1. Posts shall be spaced every 6 feet and installed to a minimum of 18 inches.
- 2. Ties shall be wrapped around a horizontal fence strand and post and are for securing the fence to the post.
- 3. Tension wire or rope may be used as a top stringer woven through the top row of strands to prevent potential sagging.
- 4. The blaze orange fence and posts shall be removed at the end of the contract and with the approval of DNREC. The fence and posts shall become the property of the contractor at the completion of the project.

B. Clean-up

- 1. During installation of blaze orange fence, all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures, and private property.
- 2. The Contractor shall be responsible for off-site removal and disposal of all trash, excess backfill and any materials incidental to the project and disposing of them off-site.

4. MEASUREMENT AND PAYMENT

Blaze orange fence shall be measured and paid for at the contract unit price per linear foot (LF) of blaze orange fence installed around the perimeter of the limits of disturbance (LOD). The payment will be full compensation for the installation, maintenance, and removal of the fence as shown on the plans, including all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 6: STABILIZED CONSTRUCTION ENTRANCE

1. DESCRIPTION

Stabilized Construction Entrance shall be in accordance with Section 268 Stabilized Construction Entrance of the Delaware Department of Transportation, Standard Specifications, 2001, with the following exceptions:

2. MEASUREMENT AND PAYMENT

268.10 METHOD OF MEASUREMENT

REPLACE: The stabilized construction entrance will not be measured but will be paid for at the contract sum price per each (EA) stabilized construction entrance installed.

268.11 BASIS OF PAYMENT

REPLACE: The stabilized construction entrance price per each (EA) installed includes all incidentals required to build the stabilized construction entrance according to details shown on the design plans. This lump sum includes any seeding and mulching, all labor, equipment, tools, and incidentals.

END OF SECTION

SECTION 7: MULCH ACCESS PATH

1. DESCRIPTION

This work shall consist of furnishing, installing and removing mulch access paths as specified in the Contract Documents, or as directed by DNREC. This special provision may also apply to the construction and maintenance of staging and stockpile areas as well as all other areas within the LOD as directed by DNREC.

2. MATERIALS

A. Shredded Hardwood Mulch

1. Shredded Hardwood Mulch shall consist of natural wood and bark derived from hardwood trees that have been milled and screened to a maximum 4 inch particle size. Shredded Hardwood Mulch shall contain negligible quantities of sawdust and/or other non-woody materials.

B. Blaze Orange Fence

1. Blaze Orange Fence shall consist of fencing as described in the Blaze Orange Fence specification.

3. CONSTRUCTION

- A. Install the mulch access path in locations specified in the Contract Documents.
- B. Install blaze orange fence along the mulch access paths in the locations shown in the Contract Documents.
- C. Place a minimum of 12 inches of shredded hardwood mulch along mulch access path as shown in the Contract Documents. Shredded hardwood mulch shall be replenished as needed, of as directed by the Engineer, during the construction period to maintain the minimum dimensions.
- D. The mulch access path shall vary in width and may be significantly wider in turns and at intersections. Refer to Contract Documents for the width of the mulch access path.
- E. Upon completion of the project, shredded hardwood mulch shall be removed leaving in place a maximum depth of 2 inches of shredded hardwood mulch. Scarify compacted shredded hardwood mulch upon removal of mulch access path at the direction of DNREC.

4. MEASUREMENT AND PAYMENT

Mulch Access Path shall be measured and paid for at the contract unit price per cubic yard (CY) of shredded hardwood mulch and per liner foot (LF) of blaze orange fence installed. The payment will be full compensation for the transportation, installation, maintenance, and removal for all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 8: PUMP AROUND

1. DESCRIPTION

This work shall consist of maintaining and diverting stream flow 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 DNREC.

2. MATERIALS

- A. Sandbags shall consist of materials, which are resistant to ultraviolet radiation, tearing and puncture, and woven tightly enough to prevent leakage of fill material.
- B. Sheeting shall consist of polyethylene plastic, which is impervious and resistant to puncture and tearing.
- C. 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 overland to the downstream section. Minimum linear feet of hose required is equivalent to the maximum estimate for one workday provided by the Contractor. The pump shall be shut off at night and baseflow shall flow through the completed portion of the project into the existing downstream channel.

3. CONSTRUCTION

- a. Installation of sand bags, sheeting and pump around shall be in accordance with the approved erosion and sediment control plan in the Contract Documents, or as directed by DNREC.
- b. The diversion structure shall be installed from upstream to downstream.
- c. The height of the sand bag diversion structure shall be a minimum of one half the distance from stream bed to top of stream bank plus one foot, or shall be of sufficient height so as to provide a pool deep enough to maintain pumping operations.
- d. Sheeting shall overlap the sandbags such that the upstream portion covers the downstream sandbag face with at least an 18 inch overlap.

4. MEASUREMENT AND PAYMENT

Pump Around - Maintenance of Stream Flow shall be measured and paid for as a lump sum (LS) item. The payment will be full compensation for installing and maintaining stream flow. Payment shall include sand bags, sheeting, stream pump around, and any other materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 9: CHANNEL OR STREAM CHANGE EXCAVATION

1. DESCRIPTION

Channel or Stream Change Excavation shall be in accordance with Section 203 Channel Excavation of the Delaware Department of Transportation, Standard Specifications, 2001, with the following exceptions:

203.01 DESCRIPTION

ADD: Add the following:

The existing elevations and contours shown on the plans, cross sections, and profiles were surveyed in March 2011 in an arbitrary coordinate system on assumed datum. The survey was then rectified via global positioning system (GPS) to NAD83 Delaware State Plane, NAVD88. Due to the potential error involved with this process and that existing elevations and grades may have changed since the original survey was completed due to the stream erosion, sediment accretion, and fill, it is the Contractor's responsibility to confirm existing grades and adjust earthwork as necessary at no additional cost to DNREC.

2. MATERIALS

Not applicable.

3. CONSTRUCTION

203.02 CONSTRUCTION METHODS

ADD: All stockpile areas will require appropriate sediment control (silt fence) in order to prevent erosion and sediment transport throughout the duration of storage. All excess material shall be removed from the site as shown on the Contract Documents or as directed by DNREC. All excess soil shall be disposed of in a site with an approved DNREC Control Grading Permit.

The Contractor shall be responsible for stabilizing all stream banks immediately after the completion of grading. The Contractor shall perform all care and remediation work required to maintain stable stream banks during construction including erosion and sediment control.

END OF SECTION

SECTION 10: BORROW

1. DESCRIPTION

The Contractor shall perform all work for borrow in accordance with Sections 209 and Division 200 of the Delaware Department of Transportation, Standard Specifications, 2001, the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 11: SALVAGE AND STOCKPILE TOPSOIL

1. DESCRIPTION

This work shall consist of salvaging and stockpiling topsoil for re-use onsite as specified in the Contract Documents, or as directed by Delaware Department of Natural Resources and Environmental Control. Salvage and stockpile topsoil shall be in accordance with Section 202 Excavation and Embankment of the Delaware Department of Transportation, Standard Specifications, 2001, with the following exceptions:

2. CONSTRUCTION

202.03 EXCAVATION

ADD:

1. Salvaged topsoil shall be removed from all areas to be graded as specified in the Contract Documents or as directed by DNREC. Prior to removing topsoil, the Contractor shall mow or remove all surface vegetation over the areas where topsoil is to be salvaged. Topsoil shall be removed to a maximum depth of 6 inches. Topsoil shall be transported and stockpiled in separate storage piles and kept separated from other materials.
2. Storage areas for topsoil shall be constructed on well drained land, away from streams. Prior to placing stockpiles, the Contractor shall install silt fence around the perimeter of the stockpile area and maintain the silt fence until the stockpile is removed. Topsoil shall be kept in neat and separate piles from other excavated material.
3. Topsoil stockpiles shall NOT be seeded. Topsoil piles shall be immediately and thoroughly covered with no more than 1 inch wood cellulose mulch. Wood cellulose mulch shall be a processed wood product having uniform fiber characteristics which shall remain in uniform suspension in water under agitation and shall blend with seed, fertilizer, and other additives to form a homogeneous slurry. The piles shall occasionally be re-mulched in order to maintain a consistent cover until they are removed.

END OF SECTION

SECTION 12: TOPSOIL

1. DESCRIPTION

This work shall consist of furnishing and placing topsoil as specified in the Contract Documents, or as directed by Delaware Department of Natural Resources and Environmental Control. Topsoil shall be in accordance with Section 732 Topsoil of the Delaware Department of Transportation, Standard Specifications, 2001, with the following exceptions:

2. MATERIALS

732.02 MATERIALS

REPLACE: Furnished topsoil shall be natural, friable surface soil uniform in color and texture and not supplied from the project. Furnished topsoil shall mimic native project area soils as described in local soil survey data based on the U.S.D.A. classification system. It shall be of uniform composition, without mixture of subsoil. Furnished topsoil shall be free from species present on State and Federal noxious plant lists or invasive species. It shall be from a local well drained site with a history of satisfactory vegetative growth.

Furnished topsoil shall also meet the following criteria:

<u>Characteristic:</u>	<u>Criteria:</u>
pH	From 6.0 to 7.5
Cation-exchange capacity	From 5 to 25 cmol+ /kg (meq/100g)
Organic Matter (OM)	From 2 to 10% by wt. (ODS)
Nutrient content	Normal contents of nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, proper micronutrient levels
Soluble salts	Less than 200 ppm
Contaminants	Should contain no toxic substances

Grading analysis shall be as follows:

<u>Sieve Size</u>	<u>Minimum Percent Passing by Weight</u>
2 inches	100
No. 4	90
No. 10	80

Textural analysis shall be as follows:

<u>Soil Particle Size (mm)</u>	<u>Percent Passing By Weight</u>
Sand (2.0 – 0.050)	20-75
Silt (0.050 – 0.002)	10-60
Clay (less than 0.002)	5-30

Excess topsoil shall become the responsibility of the Contractor and shall be completely removed from the project site prior to final site inspection and approval of the project.

3. CONSTRUCTION

732.06 PLACING

ADD:

1. Verify that any utilities have been field located and/or installed and accepted; if there is to be a drainage system, verify that it has been installed and accepted.

2. Verify that all required soil tests have been submitted and accepted by DNREC.
3. The Contractor shall make all arrangements and assume all responsibility for consents, agreements, and payments involved in topsoil and subsoil operations.
4. Do not handle topsoil or subsoil if it is wet or frozen.
5. The Contractor shall completely prepare and finish the surface of all areas to be covered with topsoil as specified in the Contract Documents.
6. Immediately prior to being covered with topsoil, the prepared sub grade shall be loosened to a depth of 3 inches and be free from rocks or other foreign material 3 inches or greater.
7. Slopes 4:1 to 2:1 shall be tracked with cleated tract type equipment operated perpendicular to the slope.
8. Seeding of topsoil and planting of plant material should be carried out simultaneously to prevent excessive traffic over soil lifts and the final grade and create undesirable soil compaction.
9. The Contractor shall place barricades as required to prevent any unnecessary compaction of soil from vehicles, equipment, or personnel.

END OF SECTION

SECTION 13: TOPSOILING

1. DESCRIPTION

Topsoiling shall be in accordance with Section 733 Topsoiling of the Delaware Department of Transportation, Standard Specifications, 2001, with the following exceptions:

2. CONSTRUCTION

733.03 CONSTRUCTION METHODS

ADD: Refertilization of topsoil shall not occur, unless approved by DNREC.

END OF SECTION

SECTION 14: SUBSTRATE MATERIAL

1. DESCRIPTION

This work shall consist of salvaging substrate material, placing salvaged substrate material, and placing furnished substrate material as specified on the plans for the stream bed, rock J-vanes, rock cross vanes, and rock vane structures, or as directed by DNREC. Substrate Material placed along the stream bed shall extend minimum of 1 foot from the toe of slope up the stream bank on both banks.

2. MATERIALS

A. Salvaged Substrate material

1. Salvaged substrate material shall be existing substrate material salvaged from the project site. Salvaging and placing substrate material shall consist of stripping and stockpiling existing substrate material and shall include removal of brush litter, roots and other foreign materials. IT IS NOT LIKELY THAT SUFFICIENT QUANTITIES OF SALVAGED RIFFLE MATERIAL WILL BE PRESENT WITHIN THE PROJECT LIMITS.

B. Furnished Substrate material

1. In the event that sufficient quantities of salvaged substrate material are not available from the project site, additional substrate material shall be furnished at no additional cost to DNREC. Furnished substrate material shall meet the following specifications:
2. Furnished substrate material shall consist of natural field rock or natural river rock with the exception of using R-4 Riprap. The furnished substrate material shall be sound, tough, dense, resistant to the action of air and water, and suitable in all respects for the purpose intended. Furnished substrate material may contain small amounts of fine aggregate but shall contain no amounts of soil material.
3. The source of furnished substrate material shall be from an approved mining operation with up-to-date regulatory permits, and shall be submitted to DNREC for review and approval prior to beginning construction. Furnished Substrate materials shall NOT be indiscriminately mined from active streams and rivers.
4. Furnished substrate materials shall be a mixture containing approximately the following size distribution:
 - 20 % R-4 Riprap (Section 712.04 Stone of the Delaware Department of Transportation, Standard Specifications 2001)
 - 40% Coarse Gravel & Cobble - 2 to 4 inch (50.8 – 101.6 mm) diameter
 - 40% Gravel - 0.08 to 2 inch (2 – 50.8 mm) diameter
5. All furnished substrate materials shall meet the approval of DNREC. While no specific gradation is required, the various sizes of the rock shall be equally distributed within the required size range. The size of an individual rock particle shall be determined by measuring its diameter across the intermediate axis.
6. Samples shall be submitted to DNREC for approval.

3. CONSTRUCTION

A. Salvaging Substrate material

1. When proper sediment and erosion control measures and the pump around are in place and functioning and prior to stream channel excavation, substrate material shall be harvested from the existing channel.

2. Substrate material shall be removed from all areas to be graded and excavated as specified in the Contract Documents or as directed by DNREC. Substrate material shall be transported and stockpiled in separate storage piles and kept separated from other materials.
3. Storage areas for substrate material shall be kept in neat and separate piles from other excavated material.
4. Boulders and rock from the excavation may be used throughout the Contract where rock is specified provided it meets applicable specifications.

B. Placing Salvaged Substrate material

1. The contractor shall excavate and install substrate material according to the Construction Drawings and specifications for Rock J-vane, Rock Cross Vane, and Rock Vane structures.

C. Placing Furnished Substrate material

1. The Contractor shall refer to Section B Placing Salvaged Substrate material above.

4. MEASUREMENT AND PAYMENT

Substrate Material for creating riffles shall be measured and paid for at the Contract unit price per cubic yard (CY) installed. Substrate Material placed at and a minimum of 2 feet upstream of the Rock J-vane, Rock Cross Vane, and Rock Vane structures shall be incidental to the cost of the structure(s). Payment shall be full compensation for the transport of all materials, excavation, installation and maintenance, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 15: ROCK

1. DESCRIPTION

This work shall consist of furnishing, transporting, stockpiling, maintaining and placing of rock for rock J-vanes, rock cross vanes, rock vanes, boulder bank protection, rootwad and large woody debris, log toe protection, and random rock structures as specified in the Contract Documents, or as directed by DNREC.

2. MATERIALS

- A. Rock shall consist of angular flat rock of appropriate color (e.g., green/gray, brown/gray, dark gray, and/or dark brown in color) obtained from an approved source. Rock shall not be harvested from streams or rivers outside a commercial quarry operation. All rock shall be free from laminations, weak cleavages and shall not disintegrate from the action of air, salt water and in handling and placing. Granular sedimentary rock shall generally be unacceptable. Concrete shall not be considered as an alternative for rock. White rock is not acceptable.
- B. Rock sizes shall be as specified in the Contract Documents for rock J-vanes, rock cross vanes, rock vanes, boulder bank protection, rootwad and large woody debris, log toe protection, and random rock structures.
- C. The rock shall have a minimum unit weight of 160 lbs. per cubic foot.
- D. The Contractor shall locate potential sources for rocks. The Contractor and DNREC will jointly visit the sites to determine whether the rock meets the specified requirements.
- E. Rock may come from the limits of grading of this Contract, provided that it meets the specified requirements and is within the limits of grading.
- F. The Contractor shall obtain from the quarry and submit to DNREC a certificate verifying the following
 - 1. Rock Classification.
 - 2. Weight per Cubic Foot.
 - 3. Weight of Rock Being Supplied.
 - 4. Rock quality shall meet all of the above specifications.
- G. Samples shall be submitted to DNREC for approval, prior to its use in the project. Any unsuitable material shall be removed at the Contractor's expense.
- H. The Contractor shall not be granted an extension of time or extra compensation due to delay caused by sampling, testing, approval or disapproval of rock protection material under the requirements of these Specifications.
- I. DUE TO THE ANTICIPATED QUARRY PREPARATORY TIME, AND/OR DEMAND FOR THE ROCK AS SPECIFIED IN THE CONTRACT DOCUMENTS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL NECESSARY ARRANGEMENTS WITH THE SOURCE OF SUPPLY IN A TIMELY FASHION, SO THAT THE CONTRACTOR SHALL MAINTAIN AN ADEQUATE SUPPLY OF ROCK MATERIAL AND THAT WORK SHALL NOT BE UNNECESSARILY DELAYED DUE TO INSUFFICIENT SUPPLY.

3. CONSTRUCTION

The Contractor shall install rock in accordance with each specification and the details shown in the

Contract Documents.

Rock Structure	Rock Type	A-axis Dimension (ft)	B-axis Dimension (ft)	C-axis Dimension (ft)
Rock J-Vane	Footer Top	3-4.5 (footer) 3-4	2-3.5 (footer) 2-3	1.5-2.5 (footer) 1-2
Rock Cross Vane	Footer Top	3-4.5 (footer) 3-4	2-3.5 (footer) 2-3	1.5-2.5 (footer) 1-2
Rock Vane	Footer Top	3-4.5 (footer) 3-4	2-3.5 (footer) 2-3	1.5-2.5 (footer) 1-2
Boulder bank protection/ Rootwad and Large Woody Debris	Footer Top/Anchor Rock	3-4.5 (footer) 3-4	2-3.5 (footer) 2-3	1.5-2.5 (footer) 1-2
Log Toe Protection	Anchor Rock	2.5-3.5 feet	2-2.5 feet	1-1.5
Random Rock	NA	2-2.5	1.5-2 feet	1-1.5

4. MEASUREMENT AND PAYMENT

Payment for rock shall be incidental to the installation of rock J-vanes, rock cross vanes, rock vanes, boulder bank protection, rootwad and large woody debris, log toe protection, and random rock structures.

END OF SECTION

SECTION 16: ROCK J-VANE

1. DESCRIPTION

This work shall consist of furnishing, transporting, installing and maintaining rock J-vane structures within the stream channel, as specified in the Contract Documents, or as directed by DNREC.

2. MATERIALS

A. Footer Rock

1. Footer rock shall be in accordance with the Rock specification. Footer rock consists of rock placed below the invert of the proposed channel to provide support for the top rock, prevent downstream scour, and provide splash protection.
2. The dimensions of the rock shall be in accordance with the Rock specification.

B. Top Rock

1. Top rock shall be in accordance with the Rock specification. Top rock consists of rock placed upon the footer rock.
2. The dimensions of the rock shall be in accordance with the Rock specification.

C. Random Rock

1. Random rock shall be in accordance with the Rock specification. Random rock consists of rock placed downstream of a structure to reduce symmetry in planform.
2. The dimensions of the rock shall be in accordance with the Rock specification.

D. Substrate material

1. Substrate material shall be in accordance with the Substrate Material specification.

E. Geotextile Fabric

1. Geotextile fabric shall meet the specifications for nonwoven geotextile fabric contained in Section 827.04 of the Delaware Department of Transportation, Standard Specifications 2001.

3. CONSTRUCTION

A. Installation

1. The rock J-vane shall be constructed in a 'J' formation so that adjoining rocks taper up in elevation towards the stream bank in a downstream direction. The vane side is to be angled 15-30 degrees from the stream bank towards mid-channel, while the J-hook side is to be angled 25-30 degrees from mid-channel to the end of the J-hook. Each portion of the rock J-vane (the center, vane and J-hook) shall comprise 1/3 the bankfull channel width.
2. The footer rocks shall be installed by excavating a trench to accommodate both the footer rocks and a 2 foot area upstream. In the event that bedrock is present in the area of installation, footer rock shall still be required unless approval for elimination of footer rock is obtained from the DNREC. For example, where bedrock is friable and weathered and can be trenched, footer rock will be required. In areas where bedrock is resistant and blasting would be required, the DNREC shall determine whether or not to eliminate footer rock.

3. In the event where installation of the rock J-vane may damage tree roots, excavation shall be minimized. This may include reducing the length of the rock J-vane structure or eliminating trenching for footer rocks and substrate materials. This decision shall be field determined and authorized by DNREC.
4. Place geotextile fabric at bottom of the trench and parallel to the trench. Exercise care in the placement of footer and top rocks to prevent puncture of the geotextile.
5. Place footer rocks on top of geotextile fabric and at the bottom and downstream side of the trench. Place footer rocks abutting one another. Footer rocks shall be firmly embedded into the stream bottom substrate. Footer rocks shall be placed so that the tops of the rocks are even with the proposed final grade.
6. Place a second row of footer rocks downstream to provide splash protection. Place the footer rocks for splash protection so that they lean on the first row footer rocks and are abutting one another. Footer rocks for splash protection shall be firmly embedded into the stream bottom substrate. Footer rocks for splash protection shall be placed so that the tops of the rocks are even with the proposed final grade. The second row of footer rocks shall extend one footer rock on either side of the center 1/3 bankfull channel width as shown in the Details.
7. Fold geotextile fabric forward over the footer rocks. Backfill the trench behind the footer rocks substrate material before the top rocks are set. Take care to fill all voids between the footer rocks with substrate material before setting the top rocks. Fold the geotextile back over the substrate material prior to placing top rocks.
8. Place the top rocks for the vane in front of geotextile fabric and so that they lean on the footer rocks and are abutting one another. Care should be taken when placing top rocks that the seams between top rocks do not line up with the seams between the footer rocks. The top rocks placed at the thalweg shall be placed so that the top of the rock is 20 percent of the bankfull depth from the thalweg elevation. Starting at the thalweg, adjacent top rocks for the vane shall taper up at a slope of approximately 4-8 percent to the end top rock of the vane, which shall extend $\frac{1}{2}$ the diameter of the rock above the bankfull elevation.
9. The outermost top rock shall be installed with $\frac{1}{2}$ the diameter of the end top rock buried into the stream bank and shall be oriented so the rock face follows the proposed grade. Fold geotextile fabric over the top rock of the vane and backfill behind the top rock with substrate material to the proposed elevation as specified in the Contract Documents. Take care to fill all voids underneath and between the top rocks.
10. Fold geotextile fabric back over the substrate material. Trim any excess geotextile fabric to be flush with the top of the top rock of the vane.
11. Place top rocks for the J-hook in front of geotextile fabric and so that they lean on the footer rocks and are abutting one another. Take care when placing top rocks so that the seams between hook rocks do not line up with seams between the footer rocks. The top rocks placed at the thalweg shall be placed so that the top of the rock is 20% of the bankfull depth from the thalweg elevation. Starting at the thalweg, adjacent top rocks for the J-hook shall taper up at a slope of approximately 4-10 percent to the end top rock which shall be placed so the top rock at the end of the hook is 50% of the bankfull depth from the thalweg elevation.
12. Fold geotextile fabric over the top rock of the J-hook and backfill behind the top rock with substrate material to the proposed elevation as specified in the Contract Documents. Take care to fill all voids underneath and between the top rocks.
13. Fold geotextile fabric back over the substrate material. Trim any excess geotextile fabric to be flush with the top of the top rock of the J-hook.

14. Substrate material shall be placed a minimum of 5 feet upstream of the rock J-vane to a minimum of 1 foot depth. The substrate material shall be placed to the proposed invert elevation shown in the Contract Documents.
15. Install random rocks as the Rock J-vane structures are being constructed as shown in the Contract Documents. Install in accordance with Section 21 of the Specifications.

B. Clean up

1. Upon completion of work, reshape slopes and stream bottom to specified elevations.
2. Remove unsuitable and surplus rocks, substrate material and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Rock J-vane structures shall be measured and paid for at the Contract unit price per each (EA) Rock J-vane installed. Rock, Substrate Material, and Geotextile Fabric shall be incidental to the cost of the J-vane structure. Random Rock(s) shall be measured and paid for at the Contract unit price per each (EA) installed. Payment shall be full compensation for the transport of all materials, excavation, installation and maintenance of rock J-vanes, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 17: ROCK CROSS VANE

1. DESCRIPTION

This work shall consist of furnishing, transporting, installing and maintaining rock cross vane structures within the stream channel, as specified in the Contract Documents, or as directed by DNREC.

2. MATERIALS

A. Footer Rock

1. Footer rock shall be in accordance with the Rock specification. Footer rock consists of rock placed below the invert of the proposed channel to provide support for the top rock, prevent downstream scour, and provide splash protection.
2. The dimensions of the rock shall be in accordance with the Rock specification.

B. Top Rock

1. Top rock shall be in accordance with the Rock specification. Top rock consists of rock placed upon the footer rock.
2. The dimensions of the rock shall be in accordance with the Rock specification.

C. Random Rock

1. Random rock shall be in accordance with the Rock specification. Random rock consists of rock placed downstream of a structure to reduce symmetry in planform.
2. The dimensions of the rock shall be in accordance with the Rock specification.

D. Substrate material

1. Substrate material shall be in accordance with the Substrate Material specification.

E. Geotextile Fabric

1. Geotextile fabric shall meet the specifications for nonwoven geotextile fabric contained in Section 827.04 of the Delaware Department of Transportation, Standard Specifications 2001.

3. CONSTRUCTION

A. Installation

1. The rock cross vane shall be constructed in a "U" formation so that adjoining rocks taper up in elevation towards the stream bank in a downstream direction. Each side of the vane is to be angled 15 to 30 degrees from the stream bank towards mid-channel and the center portion of the vane is to be 1/3 of the bankfull channel width.
2. The footer rocks shall be installed by excavating a trench to accommodate both the footer rocks and a 2 foot area upstream. In the event that bedrock is present in the area of installation, footer rock shall still be required unless approval for elimination of footer rock is obtained from the DNREC. For example, where bedrock is friable and weathered and can be trenched, footer rock will be required. In areas where bedrock is resistant and blasting would be required, the DNREC shall determine whether or not to eliminate footer rock.

3. In the event where installation of the rock cross vane may damage tree roots, excavation shall be minimized. This may include reducing the length of the vane or eliminating trenching for footer rocks and substrate material. This decision shall be field determined and authorized by DNREC.
4. Place geotextile fabric at bottom of the trench and parallel to the trench. Exercise care in the placement of footer and top rocks to prevent puncture of the geotextile.
5. Place footer rocks on top of the geotextile fabric and at the bottom and downstream side of the trench. Place footer rocks abutting one another. Footer rocks shall be firmly embedded into the stream bottom substrate.
6. Place a second row of footer rocks downstream to provide splash protection. Place the footer rocks for splash protection so that they lean on the first row footer rocks and are abutting one another. Footer rocks for splash protection shall be firmly embedded into the stream bottom substrate. Footer rocks for splash protection shall be placed so that the tops of the rocks are even with the proposed final grade. The second row of footer rocks shall extend one footer rock on either side of the center 1/3 bankfull channel width as shown in the Details.
7. Fold the geotextile fabric forward over the footer rocks. Backfill the trench behind the footer rocks with substrate material before top rocks are set. Fold the geotextile fabric back over the substrate material prior to placing the top rocks.
8. Place top rocks in front of geotextile and so that they lean on the footer rocks. Place top rocks abutting one another. Care should be taken when placing top rocks that the seams between top rocks do not line up with the seams between the footer rocks. The top elevation of the top rocks placed at the thalweg shall be equal to the elevation of the thalweg, as specified on the details. Starting at the thalweg, adjacent rocks shall taper up at a slope of approximately 4-8 percent to the end vane rocks, which shall extend $\frac{1}{2}$ the diameter of the rock above the bankfull elevation.
9. Fold the geotextile fabric over top rock and backfill behind the top rock with substrate material to the proposed elevation as specified in the Contract Documents.
10. Fold geotextile fabric back over substrate material. Trim any excess geotextile fabric to be flush with the top of the top rock.
11. The outermost top rocks on each end of the cross vane shall be installed with $\frac{1}{2}$ the diameter of the end top rock buried into the stream bank and oriented so the rock face follows the proposed grade. The trench behind the top rocks shall be backfilled with substrate material, taking care to fill all voids underneath and between the top rocks.
12. Substrate material shall be placed a minimum of 5 feet upstream of the rock cross vane structure to a minimum of 1 foot in depth. Substrate material shall be placed to the proposed invert elevation shown in the Contract Documents.
13. Install random rocks as the Rock Cross Vane structures are being constructed as shown in the Contract Documents. Install in accordance with Section 21 of the Specifications.

B. Clean-up

1. Upon completion of work, reshape slopes and stream bottom to specified elevations.
2. Remove unsuitable and surplus rocks, substrate material and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Rock Cross Vane structures shall be measured and paid for at the Contract unit price per each (EA) rock cross vane installed. Rock, Substrate Material, and Geotextile Fabric shall be incidental to the cost of the Rock Cross Vane structure. Random Rock(s) shall be measured and paid for at the Contract unit price per each (EA) installed. Payment shall be full compensation for the transport of all materials, excavation, installation and maintenance of rock cross vanes, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 18: ROCK VANE

1. DESCRIPTION

This work shall consist of furnishing, transporting, installing and maintaining rock vane structures within the stream channel, as specified in the Contract Documents, or as directed by DNREC.

2. MATERIALS

A. Footer Rock

1. Footer rock shall be in accordance with the Rock specification. Footer rock consists of rock placed below the invert of the proposed channel to provide support for the top rock and prevent downstream scour.
2. The dimensions of the rock shall be in accordance with the Rock specification.

B. Top Rock

1. Top rock shall be in accordance with the Rock specification. Top rock consists of rock placed upon the footer rock.
2. The dimensions of the rock shall be in accordance with the Rock specification.

C. Random Rock

1. Random rock shall be in accordance with the Rock specification. Random rock consists of rock placed downstream of a structure to reduce symmetry in planform.
2. The dimensions of the rock shall be in accordance with the Rock specification.

D. Substrate material

1. Substrate material shall be in accordance with the Substrate Material specification.

E. Geotextile Fabric

1. Geotextile fabric shall meet the specifications for nonwoven geotextile fabric contained in Section 827.04 of the Delaware Department of Transportation, Standard Specifications 2001.

3. CONSTRUCTION

A. Installation

1. The rock vane shall be constructed so that adjoining top and footer rocks form an angle of 15-30 degrees from the outside meander bend bank or from the stream bank towards mid-channel.
2. The footer rocks shall be installed by excavating a trench to accommodate both the footer rocks and a 2 foot area upstream. In the event that bedrock is present in the area of installation, footer rock shall still be required unless approval for elimination of footer rock is obtained from the DNREC. For example, where bedrock is friable and weathered and can be trenched, footer rock will be required. In areas where bedrock is resistant and blasting would be required, the DNREC shall determine whether or not to eliminate footer rock.
3. In the event where installation of the rock vane may damage tree roots, excavation shall be minimized. This may include reducing the length of the vane or eliminating trenching for footer rocks and substrate material. This decision shall be field determined and authorized

by DNREC.

4. Place geotextile fabric at bottom of the trench and parallel to the trench. Exercise care in the placement of footer and top rocks to prevent puncture of the geotextile.
5. Place footer rocks on top of the geotextile fabric and at the bottom and downstream side of the trench. Place footer rocks abutting one another. Footer rocks shall be firmly embedded into the stream bottom substrate.
6. Fold the geotextile fabric forward over the footer rocks. Backfill the trench behind the footer rocks with substrate material before top rocks are set. Fold the geotextile fabric back over the substrate material prior to placing the top rocks.
7. Place top rocks in front of geotextile and directly on the footer rocks. Place top rocks abutting one another. Care should be taken when placing top rocks that the seams between top rocks do not line up with the seams between the footer rocks. The top elevation of the top rocks placed at the thalweg shall be equal to the elevation of the thalweg, as specified on the details. Starting at the thalweg, adjacent rocks shall taper up at a slope of approximately 4-8 percent to the end top rock, which shall extend $\frac{1}{2}$ the diameter of the rock above the bankfull elevation.
8. Fold the geotextile fabric over top rock and backfill behind the top rock with substrate material to the proposed elevation as specified in the Contract Documents.
9. Fold geotextile fabric back over substrate material. Trim any excess geotextile fabric to be flush with the top of the top rock.
10. The outermost top rock shall be installed with $\frac{1}{2}$ the diameter of the end top rock buried into the stream bank and oriented so the rock face follows the proposed grade. The trench behind the top rocks shall be backfilled with substrate material, taking care to fill all voids underneath and between the top rocks.
11. Substrate material shall be placed a minimum of 5 feet upstream of the rock cross vane structure to a minimum of 1 foot in depth. Substrate material shall be placed to the proposed invert elevation shown in the Contract Documents.
12. Install random rocks as the Rock Vane structures are being constructed as shown in the Contract Documents. Install in accordance with Section 21 of the Specifications.

B. Clean-up

3. Upon completion of work, reshape slopes and stream bottom to specified elevations.
4. Remove unsuitable and surplus rocks, substrate material and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Rock Vane structures shall be measured and paid for at the Contract unit price per each (EA) rock vane installed. Rock, Substrate Material, and Geotextile Fabric shall be incidental to the cost of the Rock Vane structure. Random Rock(s) shall be measured and paid for at the Contract unit price per each (EA) installed. Payment shall be full compensation for the transport of all materials, excavation, installation and maintenance of rock vanes, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 19: ROOTWAD AND LARGE WOODY DEBRIS

1. DESCRIPTION

This work shall consist of harvesting, transporting, installing and maintaining rootwad and large woody debris materials as habitat and stream bank stabilization, as specified in the Contract Documents, or as directed by DNREC.

2. MATERIALS

A. Rootwads

1. Rootwads shall consist of the root fan and trunk of a hardwood tree with a trunk diameter at breast height (DBH) of 12-18 inches. Root fans shall be oblong to circular in shape and have a minimum spread of 3 feet as measured at its narrowest axis and covering an area a minimum of 9 square feet. The attached trunk shall be a minimum of 10 feet in length.

B. Large Woody Debris

1. Large woody debris shall be a bundle consisting of tree and shrub branches no greater than 3 inches in diameter individually. A bundle shall be a minimum of 18 inches in diameter at the basal end and no greater than 18 feet in length. Branches shall be selected that have intact, complex branching pattern for approximately the last 6 feet in length. The complex branching pattern at the end of the bundle shall have more than 10 branches. The wood branches shall be packed together, with the basal ends facing one direction and even with one another. The bundle shall be bound with ¼ inch steel cable and slip proof cable clamp. Large Woody debris bundles shall not contain exotic/invasive species.

C. Footer Rock

1. Footer rock shall be in accordance with the Rock specification. Footer rock consists of rock placed below the invert of the proposed channel to provide support for the rootwad and large woody debris and prevent downstream scour.
2. The dimensions of the rock shall be in accordance with the Rock specification.

D. Top Rock

3. Top rock shall be in accordance with the Rock specification. Top rock consists of a rock placed on top of the trunk of the rootwad immediately behind the root fan and in line with top rocks in the boulder bank protection structure.
4. The dimensions of the rock shall be in accordance with the Rock specification.

E. Anchor Rocks

1. The dimensions of the rock to be utilized for securing footer rocks, rootwads and large woody debris bundles shall be in accordance with the Rock specification.

3. CONSTRUCTION

A. Harvesting and Transporting Rootwads and Large Woody Debris

1. Rootwads shall be harvested by pushing over trees, leaving as much of the root fan and accompanying sod and soil clumps intact as possible. Care shall be taken in transporting rootwads to the construction site to minimize breakage of the root fan and loss of sod and soil clumps. Large woody debris shall be harvested from clearing and grubbing operations on-

site. Shrubs and tree branches should be stockpiled during clearing and grubbing operations for later use in creating large woody debris bundles.

B. Installation

1. Rootwad and large woody debris shall be installed in conjunction with boulder bank protection as shown on the Contract Documents. Unlike the boulder bank protection structure, no geotextile fabric shall be placed behind the rootwad large woody debris. Install the upstream-most rootwad and large woody debris first.
2. If bedrock is present at the channel invert, footer rocks shall still be required unless approval for elimination of footer rocks is obtained from DNREC. For example, where bedrock is friable and weathered and can be trenched, footer rocks will be required. In areas where bedrock is resistant and blasting would be required, DNREC shall determine whether or not to eliminate footer rocks.
3. Minimize excavation in the event installation of the rootwad and large woody debris may damage tree roots. This may include eliminating trenching for footer rocks and rootwad and large woody debris. This decision shall be field determined and authorized by DNREC.
4. Place a footer rock at the invert of the proposed channel in the trench excavated in conjunction with the boulder bank protection.
5. Excavate the trench for the rootwad trunk and place in the trench so that the rootwad rests on top of the footer rock. Place the rootwad trunk on top of the footer rock so that the root fan is approximately perpendicular to the flow. Place the root fan so that it diverts the force of the impact of the stream away from the stream banks. Placement of the rootwads shall be initially and periodically verified by DNREC to ensure that the rootwads are diverting flow away from the stream banks.
6. Place anchor rock(s) on top of the trunk of the rootwad behind the root fan to prevent shifting of the rootwad.
7. Large woody debris bundle shall be bound together using ¼ inch steel cables in 2 locations that shall be connected in such a way to minimize slippage of the cable. The material used to create the large woody debris bundles shall be oriented in the same direction with the cables at the larger diameter end of the stems.
8. Place the large woody debris bundles perpendicular to the rootwad, immediately behind the root fan and in front of the anchor rock so that the branched portion of the bundle is facing in a downstream direction.
9. Place an anchor rock on the opposite end from the branched portion of the large woody debris bundle to secure in place. Place a top rock on top of the trunk of the large woody debris so that the top of the rock is even with other top rocks in the boulder bank protection structure and with the proposed grade.
10. Backfill the area behind the rootwad and large woody debris structure and the trenches in which the rootwad, footer rocks, and anchor rocks are placed.
11. Under the direct supervision of DNREC, the Contractor is required to reset all rootwad and large woody debris structures not installed per the Plans. In the event of storm damage during construction, the Contractor may be required to reset up to 20% of the properly installed rootwad and large woody debris structures. The process shall involve removing any backfill material and boulder bank protection necessary to remove the rootwad, large woody debris bundle, footer rocks, top rocks, and anchor rocks as necessary. Resetting shall be performed as directed by DNREC and shall include restoring all materials including boulder toe protection, backfill, stabilization and replanting as necessary.

C. Clean-up

1. Upon completion of work, reshape slopes and stream bottom to specified elevations.
2. Remove unsuitable and surplus rootwads, large woody debris, rocks and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Rootwads and Large Woody Debris shall be measured and paid for at the Contract unit price per each (EA) Rootwad and Large Woody Debris structure installed. Rootwad, large woody debris, and anchor rock(s) shall be incidental to the cost of the Rootwad and Large Woody Debris structure. Footer and Top Rocks shall be incidental to the Boulder Bank Protection structure. Payment shall be full compensation for harvesting, transporting, installing and maintaining rootwads and large woody debris and resetting of rootwads and large woody debris (including footer rocks, top rocks, anchor rocks, and boulder toe protection), and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 20: LOG TOE PROTECTION

1. DESCRIPTION

This work shall consist of transporting, installing and maintaining log toe protection materials within the stream channel, as specified in the Contract Documents or as directed by DNREC. If sufficient logs are not available either on-site, or from readily available sources, boulder bank protection may be substituted for log toe protection.

2. MATERIALS

A. Footer and Toe Protection Logs

1. Logs shall consist of the trunk of a hardwood tree with a minimum trunk diameter at breast height (DBH) of 24 inches. Two 18 inch minimum DBH logs fixed together with reinforcing bar may be used as a substitute in the absence of 24 inch trunks. The trunk of the footer and toe protection logs shall be a minimum of 10 feet in length.

B. Anchor Rock

1. Anchor rocks shall be in accordance with the Rock specification. Anchor rocks consist of rocks placed on top of the ends of each log toe protection placed to keep the log toe protection in place.
2. The dimensions of the rock shall be in accordance with the Rock specification.

C. Geotextile Fabric

1. Geotextile fabric shall meet the specifications for nonwoven geotextile fabric contained in Section 827.04 of the Delaware Department of Transportation, Standard Specifications 2001.

D. Reinforcing bar

1. Reinforcing bar shall be made from a sturdy composite of carbon steel and be of #4 size. The reinforcing bar shall be used to fix together the footer log and toe protection log directly on top of one another.

3. CONSTRUCTION

A. Installation

1. Log toe protection shall be constructed so that the exposed face of the logs is flush with the proposed grade.
2. Should 24 inch DBH logs be unavailable, two 18 inch minimum DBH logs fixed together with number 4 reinforcing bar may be used as a substitute. The two logs shall be fixed together by drilling two ½ inch diameter holes through each log, ensuring the holes are in line when the logs are stacked. Three foot lengths of number 4 reinforcing bar shall then be driven through the holes so that the rebar is flush with the surface of the top log.
3. A trench shall be excavated in such a manner so that the top of the footer log is flush with the channel thalweg. In the event that bedrock is present in the area of installation, footer logs shall still be required unless approval for elimination of footer log is obtained from DNREC. For example, where bedrock is friable and weathered and can be trenched, footer logs will be required. In areas where bedrock is resistant and blasting would be required, DNREC shall determine whether or not to eliminate footer logs.
4. In the event where installation of log toe protection may damage tree roots, excavation shall

be minimized. This may include reducing the length of the log toe protection. This decision shall be field determined and authorized by DNREC.

5. Place geotextile fabric at bottom of the trench and parallel to the trench. Exercise care in the placement of materials to prevent puncture of the geotextile fabric.
6. Place footer log on top of geotextile fabric. Place toe protection log directly on top of the footer log and fixed together with number 4 reinforcing bar. Toe protection logs shall be installed so that the exposed face of the logs is flush with the proposed grade.
7. Fold the geotextile fabric over toe protection log. Place and tamp fill material behind the log toe protection after each toe protection log is installed. Compact fill material in 12 inch layers.
8. The top of the toe protection log shall be set at a minimum of 18 inches above the channel invert.
9. Place anchor rocks on top of the toe protection log so that a minimum of ½ the diameter of the anchor rock is buried laterally into the stream bank.

B. Clean-up

1. Upon completion of work, reshape slopes and stream bottom to specified elevations.
2. Remove unsuitable and surplus logs, rocks and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Log toe protection will be measured and paid for at the Contract unit price linear foot (LF) of log toe protection installed. Payment will be full compensation for the harvest and transport of all materials, excavation, installation of logs, and resetting of logs, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 21: BOULDER BANK PROTECTION

1. DESCRIPTION

This work shall consist of furnishing, transporting, installing and maintaining boulder bank protection within the stream channel, as specified on the Contract Documents, or as directed by DNREC.

2. MATERIALS

A. Footer Rock

1. Footer rock shall be in accordance with the Rock specification. Footer rock consists of rock placed below the invert of the proposed channel to provide support for the top rock and prevent downstream scour.
2. The dimensions of the rock shall be in accordance with the Rock specification.

B. Top Rock

1. Toe rock shall be in accordance with the Rock specification. Top rock consists of rocks placed upon the footer rocks.
2. The dimensions of the rock shall be in accordance with the Rock specification.

C. Geotextile Fabric

1. Geotextile fabric shall meet the specifications for nonwoven geotextile fabric contained in Section 827.04 of the Delaware Department of Transportation, Standard Specifications 2001.

3. CONSTRUCTION

A. Installation

1. Boulder bank protection shall be installed by excavating a trench to accommodate the footer rocks. In the event that bedrock is present in the area of installation, footer rock shall still be required unless approval for elimination of footer rock is obtained from DNREC. For example, where bedrock is friable and weathered and can be trenched, footer rock will be required. In areas where bedrock is resistant and blasting would be required, DNREC shall determine whether or not to eliminate footer rock.
2. In the event where installation of the boulder bank protection may damage tree roots, excavation shall be minimized. This may include reducing the length of the boulder bank protection structure or eliminating trenching for footer rocks. This decision shall be field determined and authorized by DNREC.
3. Place geotextile fabric at bottom of trench and parallel with the trench. Exercise care in the placement of footer and top rocks to prevent puncture of the geotextile fabric.
4. Place footer rocks on top of geotextile fabric. Footer rocks shall be placed at the bottom of the trench and shall abut one another. Footer rocks shall be firmly embedded into the stream bottom substrate. Footer rocks shall be placed so that the tops of the rocks are even with the proposed channel thalweg.
5. Fold the geotextile fabric forward over the footer rocks. Backfill the trench behind the footer rocks with fill material to the height of the footer rock. Tamp backfill in 12 inch layers to compact. Fold geotextile fabric back over backfill prior to placing top rocks.
6. Place top rock in front of geotextile fabric and so that they lean on the footer rocks. Place top

rocks abutting one another. Care should be taken when placing top rocks that the seams between top rocks do not line up with the seams between the footer rocks.

7. Fold geotextile fabric over top rock and backfill behind the top rock with fill material to the proposed elevation as specified in the Contract Documents. Tamp backfill in 12 inch layers to compact.
8. Fold geotextile fabric back over the backfill. Trim excess geotextile fabric to be flush with the top of the top rock.
9. Boulder bank protection shall be constructed so that the exposed face of the rocks is flush with the proposed grade.
10. Refer to the Boulder Bank Protection specification when installing Rootwad and Large Woody Debris with the boulder bank protection structure.

B. Clean-up

1. Upon completion of work, reshape slopes and stream bottom to specified elevations.
2. Remove unsuitable and surplus rocks and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Boulder Bank Protection shall be measured and paid for at the Contract unit price per linear foot (LF) Boulder bank Protection installed. Rock and Geotextile Fabric shall be incidental to the cost of the Boulder Bank Protection structure. Payment shall be full compensation for all materials, excavation, installation and resetting of rocks, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 22: RANDOM ROCKS

1. DESCRIPTION

The Contractor shall furnish all labor, material and equipment required to install random rocks at the Rock J-vane, Rock Cross Vane, and Rock Vane structures, as described in these Special Provisions and shown on the plans. This work shall consist of transporting, installing and maintaining random rocks within the stream channel, as specified in the Contract Documents or as directed by the DNREC.

2. MATERIALS

A. Random Rocks.

1. Random rocks shall be in accordance with the Rock specification. Random rocks consist of rocks placed downstream of a structure to reduce symmetry in planform.
2. The dimensions of the rock shall be in accordance with the Rock specification.

3. CONSTRUCTION

A. Installation

1. All materials and construction techniques shall be inspected and approved by the DNREC prior to installation.
2. Randomly place rocks as directed by the Engineer at the Rock J-vane, Rock Cross Vane, and Rock Vane structures as shown in the Details.
3. Place random rocks parallel to the ground and evenly buried along its entire length of the rock. Exact placement of random boulders will be determined in the field by the Engineer. The top elevation of the boulders shall vary from final grade to four (4) inches above final grade.

B. Clean-up:

1. Upon completion of work, reshape slopes and stream bottom to specified elevations.
2. Remove unsuitable and surplus rocks and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Random rocks shall be measured and paid for per each (EA) random rock installed. Payment will be full compensation for the transport of all materials, excavation, installation and maintenance of random rocks, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 23: COIR FIBER MATTING

1. DESCRIPTION

This work shall consist of furnishing, transporting, maintaining and installing coir fiber matting along stream banks and along the mulch access path as designated in the Contract Documents, or as directed by DNREC.

2. MATERIALS

Coir fiber matting shall consist of 100% coconut fiber matting (Landlok®, BonTerra® CF7 Matting or equivalent). Source of coir fiber matting shall be submitted to DNREC for review and approval prior to beginning construction. Installation shall be along the stream banks toe of slope, or as directed by DNREC.

3. CONSTRUCTION

A. Installation

1. All materials and construction techniques shall be inspected and approved by DNREC prior to installation.
2. Coir fiber matting shall be installed along graded stream banks, extending from the toe of the slope upwards towards the top of bank covering the extent of proposed grading.
3. Coir fiber matting ends shall overlap approximately 6 inches and shall be secured with staples spaced at a minimum of 2 feet on center.
4. Key in coir fiber matting a minimum of 1 foot at toe of slope and at the end of the proposed grading.
5. Install coir fiber matting for mulch access path as specified in the Mulch Access Path specification.

B. Clean-up

1. The Contractor shall be responsible for disposal of all trash and any materials incidental to the project and disposing of them off-site.

4. MEASUREMENT AND PAYMENT

Coir Fiber Matting shall be measured and paid for at the Contract unit price per square yard (SY) of coir fiber matting where placed along the stream bank and per square yard (SY) of coir fiber matting where placed for the mulch access path.

END OF SECTION

SECTION 24: HERBACEOUS PERMANENT SEEDING

1. DESCRIPTION

- A. This work shall consist of furnishing and installing all herbaceous seed for the Planting Zones as specified in the Contract Documents, or as directed by DNREC.
- B. Prior to start of work on this item, the Contractor shall submit a proposed seeding schedule, including the source of the seed, to DNREC for review. No work shall be performed until this schedule is approved by DNREC.

2. MATERIALS

A. Herbaceous Seed

- 1. Herbaceous Seed shall consist of seed varieties specified in the composition and planting schedules for all Zones.
- 2. Seed shall be certified that the Pure Live Seed (PLS) percentage is equal to or greater than that which is specified on the Plant Schedules. If the PLS is less than specified, the Contractor shall increase the seeding rate to compensate for the PLS difference at his/her own expense.
- 3. All seed and seed varieties shall be free from State and Federal prohibited noxious weed seeds and the following:

Annual bluegrass	Corn cockle	Spurred anoda
Bermuda grass	Dodder	Wild garlic
Bindweed	Giant foxtail	Wild onion
Cocklebur	Horse nettle	

B. Mulch

Seed mulch shall consist of straw or wood cellulose fiber.

C. Water

Water used in the establishment or caring of plants and seed shall be free from any substance that is injurious to plant life.

D. Fertilizer

Herbaceous seeding areas shall not be fertilized.

E. Limestone

Limestone shall not be applied to any areas receiving herbaceous seeding.

3. CONSTRUCTION

A. Installation

- 1. All areas disturbed by construction shall be seeded in accordance with the planting plans and schedules. The herbaceous plant seed mix is specified on the composition and planting schedules. Areas not disturbed, shall not be seeded.
- 2. All areas to be seeded shall conform to the finished grades as specified on the plans and be free of all weeds, trash, debris, brush, clods, loose rocks and other foreign materials larger

than 3 inches in diameter or length that would interfere with seeding. All gullies, washes or disturbed areas that develop subsequent to final dressing shall be repaired prior to seeding.

3. Seeding shall be performed from March 1 through November 30 or as directed by DNREC. No seeding shall be performed on frozen ground or when the temperature is 32°F/0°C or lower.
4. Seeding shall be accomplished by using a broadcast spreader. Any alternative seeding methods must be approved by DNREC, prior to Bid Submittal. All seeding equipment shall be calibrated before application to the satisfaction of DNREC so that the material is applied accurately and evenly to avoid misses and overlaps. Seed installed by a broadcast spreader shall be capable of placing seed at the specified rate.
5. Seed shall be applied within the top ¼ inch of the soil in two different directions. The Contractor shall maximize the seed/soil contact by firming soil around the seed with a cultipacker, other similar equipment, or by dragging the surface with chain link fence.
6. Immediately after seeding, the site shall be watered lightly but thoroughly so that the top 4 inches of soil is saturated.
7. The Contractor shall mulch and tack all seeded areas within 24 hours after seeding.

B. Clean-up

1. The Contractor shall be responsible for the removal of all trash and any other materials incidental to the project and disposing of them off-site.

4. WARRANTY

The Contractor shall maintain a minimum 85% aerial coverage of herbaceous seeding for 2 years after final inspection. This shall include necessary care and replacement to achieve the required coverage.

5. MEASUREMENT AND PAYMENT

Herbaceous seeding shall be measured and paid for at the contract unit price per square foot (SF) of area seeded. Payment will be full compensation for furnishing and incorporating all seed, including all maintenance and warranty, materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 25: PLANTING TREES AND SHRUBS

1. DESCRIPTION

- A. This work shall consist of furnishing and installing trees and shrubs to complete the work for the planting plan as specified in the Contract Documents, or as directed by DNREC.
- B. Prior to start of work, the Contractor shall submit a proposed planting schedule, including source of plant material, to DNREC for review. No work shall be performed until this schedule is approved by DNREC.
- C. DNREC may request the Contractor to stake the location of individual plants within the approved Planting Zones.

2. MATERIALS

A. Plant Material

- 1. All plant material shall conform to the current issue of the American Standard for Nursery Stock published by the American Association of Nurserymen.
- 2. Plant materials must be selected from certified nurseries that have been inspected by state and/or federal agencies. Nursery inspection certificates shall be furnished to DNREC upon request.
- 3. The nursery supply source shall certify that the origin of the seeds from which the trees and shrubs were produced is from Hardiness Zone 7, east of the Mississippi River.
- 4. Plant material collected from the wild is prohibited.
- 5. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil. Roots shall visibly extend to the inside face of the growing container. All container grown plants shall be grouped and kept moist until they are planted.
- 6. DNREC may reject plants damaged in handling or transportation.
- 7. No plants shall be installed unless DNREC approves both the condition of the plantings and the process of installation.

B. Substitute Plant Material

- 1. Prior to NOTICE-TO-PROCEED, DNREC must approve all plant substitutions.
- 2. If a substitute is selected, it must be native to the Delaware Piedmont and of the same size, value, and quality as the original plant.

C. Water

Water used in the establishment or caring of plants and seed shall be free from any substance that is injurious to plant life.

D. Fertilizer

Plant fertilizer is to be applied only to containerized plants. The Contractor shall use organic fertilizers in lieu of petroleum based fertilizers. Suitable products that are commercially available are marketed and certified as 'organic' or 'natural' fertilizers. Organic materials shall include such items as; sea grasses/kelp, rock powder, bone meal, whey, bean meal, blood meal, composted

manure, etc. Product nutrient content shall be identified in the standard form of Nitrogen (N), Phosphorous (P) and Potassium (K) ratios. Fertilizer nutrient content shall be 5-10-10 based on soil nutrient requirements derived from site soil tests. The application rate should be 400 lbs. per acre. Any proposed substitution to this nutrient content must be approved by DNREC.

E. Mycorrhizal Fungi

Mycorrhizal fungi applied to trees and shrubs shall consist of live spores of both endo- and ectomycorrhizal fungi.

3. CONSTRUCTION

A. Installation

1. All areas disturbed by construction shall be planted in accordance with the composition and planting schedules for each designated planting zone. Areas within designated planting zones not disturbed by construction shall be supplemented with trees and shrubs to meet the acre quantities specified in the composition schedule.
2. The Contractor shall refer to the planting plan and plant schedule on the plans for specific spacing requirements.
3. In the plant schedule, the Contractor shall use the overall spacing figure to determine the spacing between each species of vegetation. The Contractor shall use the individual spacing figure to determine the spacing between each plant of the same species.
4. Immediately after site preparation and approval, trees and shrubs shall be planted. Planting shall be conducted between March 1 and June 1 or September 15 and November 30, or as directed by DNREC.
5. Root stock of the plant material shall be kept moist during transport, from the source, to the job site and until planted.
6. The Contractor may be required to flag and label individual planting pits at specific locations. Upon planting a typical area within each planting zone, the Contractor shall have DNREC inspect and approve plant spacing and planting techniques before proceeding.
7. All planting pits shall be dug by hand. Walls of planting pits shall be dug so that they are vertical or sloping outward in heavy soils. Scarify the walls of the pit after digging.
8. Excavate the planting pit to $1\frac{1}{2}$ times the width of the root mass.
9. The planting pit shall be deep enough to allow the first lateral root of the root mass to be flush with the existing grade.
10. Remove all non-organic debris from the pit and tamp loose soil in the bottom of the pit by hand.
11. Remove the plant either by cutting or inverting the container.
12. Do not handle the plant by the branches, leaves, trunk or stem.
13. Place the plant straight in the center of the planting pit, carrying the plant by the root mass. Never lift or carry a plant by the trunk or branches.
14. Place 4 ounces of fertilizer in each plant pit for up to 1 gallon size containers, 6 ounces for up to 3 gallon container size and place 8 ounces for up to a 5 gallon container size. Place the fertilizer in the planting pit completely surrounding the plant ball prior to backfilling.

15. Mix a minimum of 500 spores of endomycorrhizal fungi and 30 million spores of ectomycorrhizal fungi to each cubic foot of backfill for trees and shrub planting.
16. Backfill planting pit with existing soil and hand tamp as pit is being backfilled to completely fill all voids and air pockets. Do not over compact soil. Make sure plant remains straight during backfilling/tamping procedure.
17. Do not cover the top of the root mass with soil.
18. An 18 inch diameter area of mulch shall be placed around each plant. Mulch shall be 2-3 inches thick. Mulch shall NOT be placed directly against the stem of the plant.
19. Water plant thoroughly immediately after planting, unless otherwise directed by DNREC.
20. The Contractor shall leave no open planting pits at the close of each day.

4. WARRANTY

The Contractor shall maintain a minimum 85% aerial coverage of herbaceous seeding for 2 years after final inspection. This shall include necessary care and replacement to achieve the required coverage.

5. MAINTENANCE

- A. During planting, all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures, and private property.
- B. Remove all tags, labels, strings and wire from the plant materials, unless otherwise directed by DNREC.
- C. Final cleanup shall be the responsibility of the Contractor and consist of removing all trash and materials incidental to the project and disposing of them off-site.
- D. The plant material shall be maintained and monitored for 1 year after completion, final inspection and approval of the planting.
- E. It will be the Contractor's responsibility to supply water if there is none available on the site. Any costs associated with supplying water shall be the responsibility of the Contractor.

6. MEASUREMENT AND PAYMENT

Planting trees and shrubs shall be measured and paid for at the Contract unit price per each (EA) plant in accordance with the plant schedule and planting plan. Payment for planting trees and shrubs shall be full compensation for furnishing, installing, maintenance and warranty, including all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by DNREC.

END OF SECTION

SECTION 26: PROTECTION OF UTILITIES

1. DESCRIPTION

- A. The Contractor shall, at his own expense, sustain in their places, and protect from direct or indirect injury all pipes, utilities, walls, buildings, and other structures or property in the vicinity of his work, whether above or below ground, or that may appear in the trench as hereinafter specified.
- B. The Contractor shall protect and/or support all existing utilities that are endangered by his operations and the cost therefore will be taken to be included in the total contract price.
- C. Sanitary sewer lines are located throughout the project study area. The County or municipality that is responsible for the sanitary sewer system shall identify and mark all sanitary sewer pipeline and manhole locations that are within the limit of disturbance. Identification and marking may be completed by a utility location company or local government department qualified to perform the work. The Contractor shall be responsible for making all arrangements at least five (5) days prior to the start of construction.
- D. The electric utility company responsible for any/all electric utilities within the limit of disturbance shall stub or brace all poles within the limits of work where required. Such relocation and/or bracing shall be at the County's expense. At least five (5) days notice must be given to the electric utility company prior to the need for such relocations or bracing.
- E. The telephone company responsible for any/all telephone utilities within the limit of disturbance shall stub or brace all telephone company pole lines, where required, and the cost thereof shall be at the County's expense. The telephone company responsible shall relocate telephone cable, if required, and the cost thereof shall be at the County's expense.
- F. The Contractor shall be responsible for making all arrangements for such work, and no extra compensation shall be due the Contractor for making said arrangements. The Contractor shall be responsible for the cost of repair or replacement of any utility should the Contractor be responsible for damage that has resulted from construction within the limit of disturbance.

END OF SECTION

SECTION 27: TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

1. DESCRIPTION

This provision specifies the procedure for determining time extensions for unusually severe weather in accordance with the contract. In order for the Contractor to obtain a time extension under this clause, the following conditions must be satisfied:

- A. The weather experienced at the project site during the contract period must be found to be unusually severe; that is, more severe than the adverse weather anticipated for the project location during any given month.
- B. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.
- C. The following schedule of monthly anticipated adverse weather delays is based on the National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute a baseline for monthly weather time evaluations. The Contractors progress schedule must include these adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY IN WORK DAYS

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	5	4	5	5	4	3	4	2	3	3	3

END OF SECTION

***** THE FOLLOWING PAGES, "PROPOSAL AND SCHEDULE OF PRICES" AND "BID SECURITY" REQUIREMENTS MUST BE FILLED OUT AND RETURNED TO CONSTITUTE SUBMITTING A BID.**

PROJECT NAME: Upper Christina Stream Restoration

DNREC Contract No. NAT14001-STR REST

Bid Opening: Date: **Monday, July 28, 2014**

Time: 1:00 p.m. EST

Location of Bid Opening: Conservation Center
2430 Old County Road, Newark, DE 19702

Location of Proposed Work: Along the Upper Christina River between Timber Creek Lane and Timberline Drive, and between West Mill Station Drive and Hidden Valley Drive, Newark, Delaware

County: New Castle

Performance & Payment Bond: REQUIRED – 100% of contract amount

PROPOSAL AND SCHEDULE OF PRICES

The undersigned bidder has carefully examined the site of the proposed work, Standard Specifications, General and Special Provisions, Drawings and Addenda, if any, forming a part of this contract designated as **Contract No. NAT14001-STR_REST**. Upon notice of award by the DEPARTMENT, the Bidder agrees to execute a contract within **20** calendar days which shall incorporate said plans and specifications, and further, upon notice to proceed shall, at his own cost and expense, furnish the materials, supplies, machinery, equipment, tools, labor, supervision, insurance, any other accessories and services to complete said work either with his own organization or subcontractors. The work shall be completed to the satisfaction of the DEPARTMENT in accordance with the plans, specifications and terms of the contract for the lump sum and/or unit prices for the items on the preceding proposal page(s).

Addendum Number(s)_____ have been considered.

*****NOTE - It is the contractor's responsibility to check if any Addendum(s) have been issued and include them in his bid price(s).**

Total Amount of Proposal: \$ _____
(Amount in figures)

(Amount written in words)

For Individuals and Partnerships:

Witness

Contractor SEAL
Address: _____

For Corporations:

Witness

Name of Corporation & Corporate Seal

Signature of Officer & Title
Address: _____

**STATE OF DELAWARE
BID BOND**

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____
_____ of _____ in the County of _____
_____ and State of _____ as **Principal**, and _____
_____ of _____ in the County of _____
and State of _____ as **Surety**, legally authorized to do business in the State of
Delaware ("**State**"), are held and firmly unto the **State** in the sum of _____
_____ Dollars (\$_____), or _____ percent not to
exceed _____
Dollars (\$_____) of amount of bid on Contract No. _____, to be
paid to the **State** for the use and benefit of _____ (*insert State
agency name*) for which payment well and truly to be made, we do bind ourselves, our and
each of our heirs, executors, administrators, and successors, jointly and severally for and in the
whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bonded
Principal who has submitted to the _____ (*insert State agency
name*) a certain proposal to enter into this contract for the furnishing of certain material and/or
services within the **State**, shall be awarded this Contract, and if said **Principal** shall well and
truly enter into and execute this Contract as may be required by the terms of this Contract and
approved by the _____ (*insert State agency name*)
this Contract to be entered into within twenty days after the date of official notice of the award
thereof in accordance with the terms of said proposal, then this obligation shall be void or else
to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our
Lord two thousand and _____ (20____).

SEALED, AND DELIVERED IN THE
Presence of

		_____ Name of Bidder (Organization)
Corporate Seal	By:	_____ Authorized Signature
Attest _____		_____ Title
		_____ Name of Surety
Witness: _____	By:	_____ Title

**STATE OF DELAWARE
PAYMENT BOND**

Bond Number: _____

KNOW ALL PERSONS BY THESE PRESENTS, that we, _____, as principal ("**Principal**"), and _____, a _____ corporation, legally authorized to do business in the State of Delaware, as surety ("**Surety**"), are held and firmly bound unto the _____ ("**Owner**") (*insert State agency name*), in the amount of _____ (\$_____), to be paid to **Owner**, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole firmly by these presents.

Sealed with our seals and dated this _____ day of _____, 20__.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if **Principal**, who has been awarded by **Owner** that certain contract known as Contract No. _____ dated the _____ day of _____, 20__ (the "Contract"), which Contract is incorporated herein by reference, shall well and truly pay all and every person furnishing materials or performing labor or service in and about the performance of the work under the Contract, all and every sums of money due him, her, them or any of them, for all such materials, labor and service for which **Principal** is liable, shall make good and reimburse **Owner** sufficient funds to pay such costs in the completion of the Contract as **Owner** may sustain by reason of any failure or default on the part of **Principal**, and shall also indemnify and save harmless **Owner** from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of **Surety** and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and **Surety** hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to **Surety** as though done or omitted to be done by or in relation to **Principal**.

Surety hereby stipulates and agrees that no modifications, omission or additions in or to

the terms of the Contract shall in any way whatsoever affect the obligation of **Surety** and its bond.

Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to **Surety** or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, **Principal** and **Surety** have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

PRINCIPAL

Name: _____

Witness or Attest: Address: _____

Name:

(Corporate Seal)

By: _____(SEAL)
Name:
Title:

SURETY

Name: _____

Witness or Attest: Address: _____

Name:

(Corporate Seal)

By: _____(SEAL)
Name:
Title:

**STATE OF DELAWARE
PERFORMANCE BOND**

Bond Number: _____

KNOW ALL PERSONS BY THESE PRESENTS, that we, _____,
as principal (“**Principal**”), and _____, a
_____ corporation, legally authorized to do business in the State
of Delaware, as surety (“**Surety**”), are held and firmly bound unto the
_____ (“**Owner**”) (*insert State agency
name*), in the amount of _____ (\$_____), to be paid to **Owner**,
for which payment well and truly to be made, we do bind ourselves, our and each and
every of our heirs, executors, administrations, successors and assigns, jointly and
severally, for and in the whole, firmly by these presents.

Sealed with our seals and dated this _____ day of _____, 20__.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if **Principal**, who has
been awarded by **Owner** that certain contract known as Contract No. _____
dated the _____ day of _____, 20__ (the “Contract”), which Contract is
incorporated herein by reference, shall well and truly provide and furnish all materials,
appliances and tools and perform all the work required under and pursuant to the terms
and conditions of the Contract and the Contract Documents (as defined in the Contract)
or any changes or modifications thereto made as therein provided, shall make good and
reimburse **Owner** sufficient funds to pay the costs of completing the Contract that
Owner may sustain by reason of any failure or default on the part of **Principal**, and
shall also indemnify and save harmless **Owner** from all costs, damages and expenses
arising out of or by reason of the performance of the Contract and for as long as
provided by the Contract; then this obligation shall be void, otherwise to be and remain
in full force and effect.

Surety, for value received, hereby stipulates and agrees, if requested to do so by
Owner, to fully perform and complete the work to be performed under the Contract
pursuant to the terms, conditions and covenants thereof, if for any cause **Principal** fails
or neglects to so fully perform and complete such work.

Surety, for value received, for itself and its successors and assigns, hereby stipulates
and agrees that the obligation of **Surety** and its bond shall be in no way impaired or
affected by any extension of time, modification, omission, addition or change in or to the
Contract or the work to be performed thereunder, or by any payment thereunder before
the time required therein, or by any waiver of any provisions thereof, or by any
assignment, subletting or other transfer thereof or of any work to be performed or any
monies due or to become due thereunder; and **Surety** hereby waives notice of any and
all such extensions, modifications, omissions, additions, changes, payments, waivers,
assignments, subcontracts and transfers and hereby expressly stipulates and agrees
that any and all things done and omitted to be done by and in relation to assignees,
subcontractors, and other transferees shall have the same effect as to **Surety** as
though done or omitted to be done by or in relation to **Principal**.

Surety hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of **Surety** and its bond.

Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to **Surety** or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, **Principal** and **Surety** have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

PRINCIPAL

Name: _____

Witness or Attest: Address: _____

(SEAL)

Name:

(Corporate Seal)

By: _____

Name:

Title:

SURETY

Name: _____

Witness or Attest: Address: _____

(SEAL)

Name:

(Corporate Seal)

By: _____

Name:

Title: