

City of Greenbelt

**GREENBELT LAKE DAM
REPAIR PROJECT**

PHASE 1

CONTRACT NO. 2016-01

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**GREENBELT LAKE DAM REPAIRS PROJECT PHASE 1
CONTRACT NO. 2016-01**

Notice, Bidders Information & Special Conditions

CITY OF GREENBELT, MARYLAND

NOTICE TO BIDDERS

The Purchasing Agent for the City of Greenbelt will receive sealed bids for:

Bid No. 2016 - 01
Greenbelt Lake Dam Repairs Project Phase 1

until **(Friday, June 3, 2016 at 2:00 pm)** at which time they will be publically opened and read at the City of Greenbelt Council Room, 25 Crescent Road, Greenbelt, Maryland 20770-1886.

Submissions must be clearly marked on the envelope “Bid #2016-01” and “Do Not Open”.

Bids may be hand delivered or mailed to the attention of the Finance Department as follows:

City of Greenbelt
25 Crescent Road
Greenbelt, Maryland 20770
Attn: Finance Department Bid #2016-01 Do Not Open

Questions should be directed to the Project Manager:

Jessica Bellah, Community Planner
15 Crescent Road, Suite 200
Greenbelt, Maryland 20770
(301) 345-5417
jbellah@greenbeltmd.gov

Description

The City of Greenbelt is soliciting bids from qualified construction companies for Phase One of a multiphase project to make repairs and improve the safety of Greenbelt Lake Dam. Work performed under Bid No. 2016 - 01 consists of replacing the lake drain conduit for a 22 acre lake located in Greenbelt Maryland. Greenbelt Lake is designated a high hazard dam by the Maryland Department of the Environment. Construction will take place in summer 2016. The work will be performed in coordination with an Engineer’s Technical Representative (ETR) with a fully-permitted design and will involve oversight by the City.

The bidding documents may be obtained electronically at <http://www.greenbeltmd.gov/phaseone>

The pre-bid meeting will be held on-site of the Dam (meet at the parking lot of Buddy Attick Park; 555 Crescent Road, Greenbelt, MD 20770) on April 13, 2016 at 11:00 am. Attendance at the pre-bid

PAGE TO BE INCLUDED WITH BID

meeting is strongly recommended, but not mandatory.

The City of Greenbelt encourages all minority, female and disabled citizen-owned businesses to submit bids for this project.

Each bid must be accompanied by a Certified check or Bid bond made payable to the City of Greenbelt in the amount of five (5) percent of the total amount of the bid.

The City of Greenbelt reserves the right to reject any or all bids.

The City of Greenbelt is an equal opportunity employer.

CITY OF GREENBELT, MARYLAND

INFORMATION FOR BIDDERS

1. Form of Bid

All bids must be made only upon the blank form provided in the Contract Documents, enclosed in a sealed envelope marked "Sealed Bid for Contract 2016-01". **Submissions must be clearly marked on the envelope "Bid #2016-01" and "Do Not Open"**. All blank spaces must be filled in, in ink and must give the price for each item and the aggregate amount for the work both in words and figures and must be signed and acknowledged by the Bidder.

In the event of discrepancies between the prices quoted in the bid in words and those quoted in figures, the words shall control. The prices are to include the furnishing of all materials, plant, equipment, tools and all other facilities, and the performance of all labor and services necessary or proper for the completion of the work, except such as may be otherwise expressly provided in the Contract Documents.

2. Omissions and Discrepancies

Should a Bidder find discrepancies in, or omissions from the Drawings and/or Contract Documents, or should the Bidder be in doubt as to their meaning, the Bidder should at once notify the City's Project Manager, who may send a written instruction to all Bidders.

No oral interpretation shall be made to any Bidder as to the meaning of any of the Contract Documents. Every request for interpretations shall be in writing to the Owner.

3. Certified Check/Bid Bond

All bids shall be accompanied by a certified check or bank cashier check equal to five (5) percent of the amount of bid made payable to the City of Greenbelt or a bid bond for this amount, as security for faithful performance. The form of security shall be a certified check or proposal bond issued by a surety licensed to conduct business in the State of Maryland.

The checks/bid bonds of all except the lowest bidder will be returned/released within 30 days after the opening of bids. The check/bond will be returned/released to lowest bidder when the Contract is executed. In the event that the bids are rejected, or the project postponed for any reason, the check/bond will be returned/released to the low bidder within 30 days therefrom. The City reserves the right to retain the bid bond for the second lowest bidder

until a contract is signed. If any bidder refuses to enter into a contract, the Owner will retain the check/bond as liquidated damages, but not as a penalty.

4. Rejection of Bids

The Owner reserves the right to reject any or all bids. Without limiting the generality of the foregoing, any bid which is incomplete, obscure, irregular or unqualified may be rejected; any bid having erasures or corrections or any bid in which the unit prices are omitted or obviously unbalanced may be rejected; any bid accompanied by an irregular or insufficient check/bond may be rejected; any bid submitted by a bidder who fails to satisfy the Owner that said bidder is properly qualified to carry out the obligations of the Contract or to complete the work contemplated therein may be rejected.

5. Determination of Low Bidder

Except where the Owner exercises the right reserved herein to reject any or all bids and contingent upon the availability of funds, the Contract will be awarded to the lowest, responsive, responsible bidder as determined by the City on the basis of the follow criteria:

Basis of Award

The purchase shall be awarded to the firm with the lowest, responsive, responsible bidder as determined by the City. In determining the lowest, responsive, responsible bidder, the purchasing agent and the City Council shall give consideration to the following:

- a. The ability, capacity and skill of the bidder to perform the Contract or provide the services required.
- b. Whether the bidder can perform the Contract or provide the service promptly, or within the time specified, without delay or interference.
- c. The character, integrity, reputation, judgment, experience and efficiency of the bidder.
- d. The quality of performance of previous contract or services.
- e. The previous and existing compliance by the bidder with the laws and ordinances relating to the contract or service.
- f. The sufficiency of the financial resources and ability of the bidder to perform

the contract or provide the service.

- g. The quality, availability and adaptability of the supplies, or contractual services to the particular use required.
- h. The ability of the bidder to provide future maintenance and service of the items to be purchased, if required, and the convenience to the City of the location at which such maintenance or service will be performed.
- i. The number or scope of conditions attached to the bid.
- j. The estimated life cycle costs of the items to be purchased when it is possible to reasonably estimate such costs.
- k. The cost of delivery of supplies or services to be purchased, or, if the City must obtain delivery of supplies or receive services at a place other than the premises of the City, the convenience of the location at which delivery or receipt is to be made.
- l. Whether or not the bidder is a person or business located within the corporate limits of the City of Greenbelt or a minority-owned business enterprise that has submitted a bid which has been adjudged to be equal in all other respects to the bids received from bidders which are neither minority-owned or located within the corporate limits of the City.
- m. Whether the prices quoted by the bidder are balanced.
- n. Such other information which, in the judgment of the City Council, may have a bearing upon the determination of the lowest, responsive, responsible bidder.

6. Acceptance of Bids

The contract shall be awarded to the lowest, responsive, responsible bidder who offers the lowest or best bid, quality of goods, materials, and work, time of delivery or completion, and responsibility of bidders being considered.

The acceptance of the bids will be a notice in writing signed by the Owner and shall bind the successful bidder to execute the Contract. The Owner, however, reserves the right to postpone the date for presentation and opening bids and will give notice of any such

postponement to each prospective bidder.

A bid must not be modified, withdrawn, or canceled by the Bidder for 120 days following the time and date designated for receipt of Bids, and Bidder so agrees when submitting a bid

7. Executing Contract, Insurance, Liquidated Damage

Within ten (10) days after receiving a notice of acceptance, the successful bidder shall obtain both a Performance Bond and a Labor and Material Payment Bond, each equal to 100 percent of the amount of the contract award from a surety company acceptable to the Owner licensed to conduct business in the State of Maryland and shall deliver them to the City and shall execute the Contract. The obligee under these bonds shall be the City of Greenbelt. The premium on these bonds shall be paid by the Contractor. Contracts shall be executed on a City of Greenbelt standard contract.

All insurance requirements shall apply to both the General Contractor and his subcontractors. The Contractor shall submit a certificate of insurance showing that he satisfies the conditions of the contract prior to the execution of the contract.

The Contractor acknowledges by executing this contract that time is of the essence in the completion of the work, and the Contractor further agrees to substantially complete all work as specified in the contract documents within 120 calendar days from the commencement of work. The Contractor shall agree to begin work within seven days after receiving the notice to proceed. The Contractor agrees that he may be charged damages at a rate of \$200 per calendar day for every day beyond the contract time frame for which contract requirements are not completed. Whether construction has actually begun or not, the construction will be considered to have started no later than seven days following the notice to proceed.

8. No Misunderstanding

The attention of persons intending to submit bids is specifically called to the General Conditions of the Contract for Construction wherein the bidder agrees that the bidder has examined the Contract Documents and the site of the work and is fully informed from personal examination of the same regarding the quantities, character and location and other conditions affecting the work to be performed. Particular attention is called to special notes and specifications in the contract documents which may contain contract requirements at variance with standard plans and specifications.

9. Revocation of Award

If the bidders to whom an award is made shall fail to expedite any contract or bonds as may be required by these specifications or otherwise fails to perform in accordance with his bid, the Contract Documents, or specifications, the award may be annulled and the Contract awarded to the second lowest responsible bidder and such bidder shall fulfill every stipulation embraced herein as if he were the original party to whom the award was made, or the City may reject all of the bids as its interest may require.

10. Plans Provided

Upon execution of the Contract, the Owner will supply at no cost to the Contractor sufficient copies of the plans and specifications for the Contractor and its Subcontractor(s) to complete the work.

CITY OF GREENBELT

SPECIAL CONDITIONS

A. Scope

The work under this contract includes all labor, materials, equipment and appurtenances required for the complete construction of all items of work necessary or required to make the installation complete and correct in every respect and guaranteed to be substantial, safe, and ready for regular operation and use by the Owner as shown in the plans and specifications. All work is to be completed in accordance with applicable government and other regulatory standards, codes and requirements.

B. General

Only new materials will be acceptable for use on the project.

All materials and workmanship shall be of the best quality and shall be subject to the approval of the Owner. No deviation from the provisions of the detailed specifications and plans shall be made without written approval of the Owner.

Weekly progress meetings are required between the City, their agents and the Contractor. The time and place of the meetings shall be determined at the mutual convenience of all.

C. Laws and Regulations

The Contractor shall comply with all municipal, county, state and federal laws and ordinances and also those of the local utility companies having jurisdiction.

If electrical work is required, the electrical work shall be installed in strict accordance with the requirements of the National Electric Code, the utility company, and all other authorities having jurisdiction at the time of the execution of the electrical work herein required, including all necessary Fire Underwriter's inspections and approvals.

D. Site Investigation

The Contractor acknowledges that he has satisfied himself to the nature and location of the work, the general and local conditions, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, tides or similar physical conditions at the

site. Also, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during the prosecution of the work is the responsibility of the Contractor.

The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and sub-surface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as, from information presented by the drawings and specifications made a part of this contract. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner. The Owner also assumes no responsibility for any understanding or representations made by its officers or agents during or prior to the execution of this contract, unless (i) such understanding or representations are expressly stated in the contract and (ii) the contract expressly provides that the responsibility therefore is assumed by the Owner. Representations which are not expressly stated in the contract and for which liability is not expressly assumed by the Owner in the Contract Documents shall be deemed only for the information of the Contractor.

E. Or Equal Clause

When any article is specified by proprietary name, trade name, or name of manufacturer, with or without the addition of such expressions as "or equal", it is to be understood that the article named or the equal thereof is intended, subject to the approval of the City of Greenbelt as to the quality thereof; and it is distinctly understood: (1) that the City of Greenbelt is to use his own judgment in determining, from time to time, whether or not any article proposed to be substituted is the equal of any article to be specified; (2) that the decision on all such questions of equality shall be final; (3) that, in the event of any adverse decisions, no claim of any sort shall be made or allowed against the Project Manager or the City of Greenbelt because of such decision; and (4) that no article submitted for approval will be approved which requires re-design of project facilities unless the submittal of said article was requested in writing to the City of Greenbelt.

F. Work Schedule

The Contractor shall at the execution of the Contract, notify the Owner in writing of the names of Subcontractors proposed for the principal parts of the work and for such others as the Owner may direct and shall not employ any that the Owner may, within a reasonable time, object to as incompetent or unfit.

Before starting work, the Contractor shall submit to the Owner for approval an outline of its proposed methods and manner of executing the work including the sequences of operation and a time schedule of performing them. The Contractor shall not inhibit pedestrian access on the Greenbelt Lake Park recreation trail. Temporary closure of pedestrian access may be permitted upon written approval by Owner. The Owner reserves the right to direct the Contractor at which points to begin work. The Contractor shall confine its operations to Monday through Friday, from 7:00 AM to 6:00 PM, with no work on Saturdays, Sundays or Holidays, unless the Contractor has the written permission of the Owner to do otherwise, at no additional cost to the Owner.

G. Unsatisfactory Progress - Contract Cancellation

The Contractor shall provide sufficient qualified personnel and equipment to maintain a reasonable rate of progress in accordance with the approved schedule until work is complete.

If the Contractor does not properly staff the job with the proper personnel and construction equipment in sufficient number so as to maintain a reasonable construction rate each and every working day until work is complete, the Owner or their agent may so notify the Contractor. Thereafter, if the Contractor still fails to meet the rate of construction requirements or place work in accordance with these specifications, this shall be sufficient cause for the cancellation of this Contract on the date of such default. This decision is the sole discretion of the Owner. Ten (10) days after written notice of contract cancellation shall represent approval for the Owner to contract with another responsible firm to complete the work. All increased costs are to be defrayed by the Contractor, and/or the Contractor's bonding company.

If in the opinion of the Owner the progress is not satisfactory, overtime shall be demanded and instituted to meet the Construction Schedule, at no additional cost to the Owner.

H. Subcontractors

The Contractor shall, at the execution of the contract, provide the Owner, in writing, the names of subcontractors proposed for the principal parts of the work and for such others as the Owner may direct, and shall not employ any that the owner may, within a reasonable period of time, object to as incompetent or unfit, or otherwise be precluded from performing services under the contract.

I. Survey

The Contractor shall perform all stakeout survey work necessary to insure that improvements, building, utilities, site grading, structure locations, elevations, pipe invert elevations, pavement grades, etc., are installed as shown on the plans. The Contractor will be responsible for all layout work.

Where pavement restoration work is required, the Contractor's survey crews shall also provide grade stakes along gutter lines at a maximum interval of 50 feet which will insure the placement of trench pavement at:

1. A constant grade into catch basins; and
2. Minimum cross slope of $\frac{1}{4}$ " per foot from the pavement saw cut line to the gutter line where applicable.

Any ponding or puddling along the new paving will be unacceptable. The cost of all survey work to be performed by the Contractor shall be included in the contract bid.

J. Fire Hydrants

All hydrants within or adjacent to the construction limits shall be kept and maintained readily accessible to fire apparatus at all times. No obstruction shall be placed within 15 feet of any such hydrant.

K. Necessary Details Not Specifically Mentioned

All work called for in the specifications and not shown on the plans, or shown on the plans and not called for in the specifications, shall be furnished and executed by the Contractor as if designated in both of these ways and should any work or materials be required which is not denoted on the plans and specifications either directly or indirectly, but which is, nevertheless, necessary for the proper carrying out of the intent thereof, it is understood and agreed that the same is implied and required and the Contractor shall perform such work and furnish such materials as fully as if they were completely delineated and described.

L. Inspection of Work

All work shall be subject to continuous inspection by the Owner. The Contractor shall perform any work requested and required for this inspection and shall make all work accessible to the Owner at all times.

The Contractor is responsible for all material testing required. Within ten (10) days after execution of the Contract, the Contractor shall submit to the Owner the name and

qualifications of an independent testing and inspection lab employed by the Contractor to conduct all testing and inspection as called for in these specifications. The Owner may object to the selected inspection agent, with cause, in which case, the Contractor shall select an alternate inspection agent.

Within ten (10) days of the selection of the independent testing and inspection lab, the Contractor shall forward to the Owner a list of all tests to be performed and a schedule of testing. In the case that the schedule is altered or amended, the Owner shall be notified at least 24 hours prior to a rescheduled or previously unscheduled test inspection.

The Owner shall be permitted to observe all testing and inspections. Test reports shall be promptly forwarded to the Owner, with the report noting time; day and date of the test; the area tested; testing performed; results; and compliance or noncompliance with contract specifications. All reports shall be sealed by a registered Professional Engineer. The Contractor shall bear all costs of required testing and inspection as required in the Contract Documents.

The work of the Owner's inspector will not include any supervisory duties. Supervisory duties will remain the sole responsibility of the Contractor at all times. The inspector shall not be responsible for insuring the Contractor follows all applicable safety regulations. This responsibility remains the sole responsibility of the Contractor.

The Contractor shall be responsible for carrying out the provisions of the Contract at all times, regardless whether an authorized inspector is present or not.

It shall be solely the responsibility of the Contractor to see that the plans and specifications are being followed. Failure of the Owner to immediately reject any unsatisfactory materials or workmanship or to notify the Contractor of any deviation from the specifications shall not relieve the Contractor of the responsibility to replace unsatisfactory work.

Any material or finished work which, in the opinion of the Owner, does not comply with the plans and specifications shall be removed by the Contractor and replaced at the Contractor's own cost and expense.

M. Sanitary Provisions

Sanitary conveniences for the use of all persons employed on the work shall be provided and maintained by the Contractor in sufficient manner, in such manner, and at such places as shall be approved. The Contractor shall vigorously prohibit the committing of nuisances at the site of the work. Any employee found violating these provisions shall be removed from

the project and not again employed. Such sanitary conveniences shall be constructed and maintained in compliance with all laws, ordinances, or regulations governing the same.

N. Utilities

Any utilities encountered during the work shall be maintained and protected in their existing location unless otherwise provided. The Contractor shall cooperate in every way with the owning companies or agencies to make it possible for them to provide uninterrupted service.

The contractor shall contact Miss Utility (1-800-257-7777) at least two days prior to construction to allow for marking of existing utilities.

Excavations shall not be started until all gas mains, water mains, and other service mains have been located and flagged by a utility inspector or engineer. A gas inspector shall be present on this project at all times whenever excavations are in close proximity to gas mains and/or service lines.

Any existing utilities, including individual house services, in the way of proposed construction, shall be readjusted by the supplying utility company; except where the utility is publicly owned. The Owner shall, whenever possible, allow for minor field adjustments in order to expedite the Contract and to prevent unnecessary hardship and expense to any utility company. The Contractor shall notify the utility companies sufficiently in advance of construction to permit ample time to do such work as necessary to provide clearance for the proposed construction.

All known private or public utility lines within or adjacent to the project area are shown in their approximate existing locations on the plans. The Contractor is, however, cautioned that these locations shown are not guaranteed nor is there any guarantee to the Contractor that all lines actually in existence within the Contract limits have been shown on the plans. The Contractor shall satisfy itself as to the exact locations and extent of all utilities that may be encountered in the work. The Contractor shall contact Miss Utility at least 48 hours prior to beginning construction.

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 sanitary sewer pipes and manholes, storm drain pipes, structures, shall be immediately repaired to the City's satisfaction by the contractor at his own expense.

O. Protection of Work and Property

The Contractor shall at all time safely guard the public against, and the Owner's property

from, injury or loss in connection with the Contract. He shall at all times safely guard and protect the public, his own work and that of adjacent property from damage, loss or injury. All passageways, guard fences, lights, and other facilities required for protection by all authorities or local conditions must be provided and maintained.

It is further understood and agreed that loss or damage arising out of the nature of the work to be done under this Contract or from any unforeseen obstruction or difficulties which may be encountered in the performance of the same or from the action of the elements, public or from encumbrances on the line of work or from any injury done in consequence of acts or omissions on the part of the Contractor, Subcontractor, their employees, or agents in carrying out any of the provisions or requirements of this Contract shall be borne and assumed by the Contractor.

Work taking place near the Washington Suburban Sanitary Commission (WSSC) lines will be observed by WSSC representatives.

P. No Waiver of Legal Rights

The Owner shall not be precluded or estopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment, therefore, from showing the true amount and character of the work performed and materials furnished by the Contractor, nor from showing that any such measurement, estimate or certificate is untrue or incorrectly made nor that the work or materials do not, in fact, conform to the Contract. The Owner shall not be precluded or estopped not withstanding any such measurement, estimate or certificate any payment in accordance therewith, from recovering from the Contractor or its sureties, or both, such damages as it may sustain by reason of its failure to comply with the terms of the Contract. Neither the acceptance by the Owner, or any other representative of the Owner, nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, nor any possession taken by the Owner shall operate as a waiver to any portion of the Contract or any power herein reserved, or of any right to damages.

Q. Subsurface Conditions - Dewatering

When excavating or dredging, the Contractor may encounter wet or saturated soils. Contractor shall be prepared to transport soil off-site in a manner that prevents discharge or spillage of soils or water onto adjacent properties or roads. The cost of handling, and re-handling as necessary, wet soils shall be considered incidental to the cost of excavation. Should any discharge occur, the Contractor shall be responsible for immediate and complete clean up.

All excavation for structures and pipe laying must be kept free of water. Sufficient pumps or pumping machinery must be provided and maintained in working order by the Contractor. The cost of dewatering shall be included in the appropriate items. No additional compensation will be paid separately for this work.

R. Maintenance and Protection of Trees

The Contractor will be required to install and maintain construction fence along existing vegetated areas that are not to be disturbed. All caution shall be exercised by the Contractor to protect these protected vegetated areas. Should vegetation within any such protected areas be damaged due to the Contractor's activities, the Contractor shall remove, at his cost, any damaged areas as directed by the Owner and may be responsible for one of the following remedies, as specified by the Owner: replacement of damaged tree(s) with an equivalent caliper tree(s), cash damages equaling \$100 for each caliper inch of damaged tree(s), or alternative damages deemed acceptable to the Owner and the Contractor. The Contractor is fully responsible for any remediation as defined in applicable local ordinances, which remedy is separate from those required by the Owner.

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. The Contractor shall operate a trenching machine, vibratory knife or rock saw along the outside limits of grading prior to clearing and grubbing operations in areas adjacent to trees. This root pruning, to a depth of 30 inches and to be performed only in the vicinity of existing trees, will clean cut roots and minimize construction activity shock to the affected trees. When a trenching machine is used, the trench shall be immediately back-filled.

S. Maintenance and Protection of Traffic

A sufficient number of lighted type II barricades of suitable size and color shall be provided by the Contractor adjacent to the work areas to guide traffic through the work areas safely and efficiently.

All barricades shall be adequately illuminated at night and lights for this purpose shall be kept operative from sunset to sunrise.

If the Contractor fails to maintain traffic adequately, the Owner may correct the adverse conditions by use of his forces, augmented, if necessary, by such other equipment and personnel as it may be necessary to hire, and the cost of the entire work by such forces shall

be deducted from the monies due the Contractor on this Contract. The cost of such work shall be deducted from the total amount due the Contractor within the current billing period.

T. Sediment and Erosion Control

1. The Contractor shall furnish all labor, materials, and equipment necessary to provide erosion control during construction as required by State of Maryland and local law, and as shown on the County approved sediment and erosion control plans. The extent of the control will be in accordance with Prince George's County Soil Conservation Standards, Grading and Sediment Control Ordinances for Prince George's County, the Code of the City of Greenbelt, and the latest applicable regulations of the State Department of Natural Resources, Water Resource Administration, and as ordered by the Sediment Control Inspector.
2. All of the work shall be performed as indicated on the plans and specifications, or as specified by the designated Engineer assigned by the City. Construction shall not begin until all sediment and erosion control facilities have been installed and approved by the Engineer. The Contractor shall stay within the limits of disturbance shown on the Construction Documents, and minimize disturbance within the working area wherever possible.
3. All perimeter controls and erosion and sediment control structures and devices shall be maintained throughout the life of the project, conforming to the detailed Sequence of Construction, or as directed by the Engineer and/or Sediment Control Inspector
4. In order to minimize transport of earth and other construction materials into natural water courses during construction, the Contractor shall:
 - a. Provide, maintain, and remove, when the work is complete, temporary dirt bags and silt fences in the locations shown on the plans or as directed by the Owner.
 - b. Remove existing natural cover or man-made earth cover only when actually ready to begin and complete the work requiring it.
 - c. Stabilize areas immediately after grading operations are completed. The Contractor shall provide temporary seeding as required.

- d. All work shall be completed with no delays.
 - e. The Contractor must keep City streets free from dust and debris associated with any and all of his construction activities.
5. All sediment and erosion controls shall be inspected daily to ensure that the controls meet the project specification.
 6. In the event that, in the judgment of the Sediment Control Inspector, erosion control is not maintained adequately and is not satisfactorily corrected, on any part of the contract, on any day, damages in the amount of \$100/day may be assessed against the Contractor, in addition to other penalties as set forth in city, county and/or state law.
 7. Contractor shall be responsible for preventing sediment laden water from leaving the site at all times and for the protection of all existing culverts from sediment runoff. Approved sediment control measures shall be utilized, as necessary, for all culverts and flow diversion devices in the vicinity of the proposed construction. The failure of plans to indicate required measures shall not relieve Contractor of this responsibility. In the event sediment is carried into existing culverts or downstream areas, Contractor shall be responsible for cleaning and restoring the entire drainage system affected at this own expense.
 8. In case of repeated failures on the part of Contractor to control erosion or siltation, the Project Manager reserves the right to employ outside assistance or to use his own forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering cost will be charged to Contractor and appropriate deductions made from Contractor's monthly invoice.
 9. Special concern must be given to sediment control issues, due to the close proximity of the receiving streams. Stream restriction dates must be honored, and all work performed with all local, State and Federal applicable regulations and project permits.

U. Warranty

1. Contractor shall guarantee all of the work included on this contract for a period of one year after the date of completion and acceptance of the facilities by the City of Greenbelt as follows:
 - a. Against all faulty or imperfect materials, and against all imperfect, careless, unskilled workmanship on the part of Contractor, his sub-contractors, or component manufacturers.
 - b. 85% survival rate for all bioengineering or plantings.

- c. The entire facilities and each and every part thereof shall operate with normal care and attention in a satisfactory and efficient manner, and in accordance with the requirements of the specifications.
2. If, within any guarantee period, repairs or changes are required in connection with guaranteed work which, in the sole opinion of the Project Manager is rendered necessary as a result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract, the Contractor shall promptly upon receipt of notice from the Project Manager and without expense to said Owner:
 - a. Place in satisfactory condition in every particular all of such guaranteed work, correct all defects therein;
 - b. Make good all damage to the site, which, in the sole opinion of the Project Manager is the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract; and
 - c. Make good any work or material disturbed in fulfilling any such guarantee.
3. In any case wherein fulfilling the requirements of the Contract or of any guarantee, embraced in or required thereby, the Contractor disturbs any work guaranteed under another contract, he shall restore such disturbed work to a condition satisfactory to the Project Manager and guarantee such restored work to the same extent as it was guaranteed under such other contract.
4. If the Contractor, after notice, fails to proceed promptly to comply with the terms of the guarantee, the Owner may have the defects corrected and the Contractor and his Surety shall be liable for all expense incurred.
5. All special guarantees applicable to definite parts of the work that may be stipulated in the specifications or other papers forming a part of the Contract Documents shall be subject to the terms of this paragraph during the first year of the life of such special guarantee.

V. Permits and Bonds

The Owner has secured the necessary local, county and state permits.

The Contractor shall pay for all necessary bonds as required by the City of Greenbelt, MD. The Contractor shall obtain both a Performance Bond and a Labor and Material Payment Bond, equal to 100 percent of the total amount of the bid from a surety company acceptable to the Owner. At the time of project acceptance of the City, the Contractor shall furnish a Maintenance Bond in the amount of five (5) percent of the total cost of the project(s). The Maintenance Bond guarantees for a period of one (1) year to indemnify against defective workmanship or materials.

W. Contractor Parking

Except for vehicles required for immediate construction activity, all employee vehicles are to be parked legally, unless otherwise directed by the Owner.

X. Material Storage

Materials are to be stored in a location approved by the Owner. The Contractor shall provide protection and security of the storage areas.

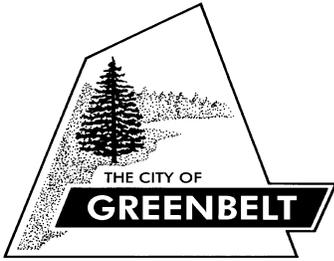
Y. Contractor's Use of Premises

The Contractor shall limit the use of the premises to the area of construction, and any areas provided for access, staging and storage of materials.

Deliveries are to be scheduled to minimize space and time requirements of materials and equipment on the site. Do not drive over sidewalks, curbs, or other permanent construction, unless approved by the Owner.

**GREENBELT LAKE DAM REPAIRS PROJECT PHASE 1
CONTRACT NO. 2016-01**

Bid Forms (Submittals)



CITY OF GREENBELT

GREENBELT LAKE DAM REPAIRS PROJECT

CONTRACT 2016-01

BID DOCUMENTS

CITY OF GREENBELT
BIDDER INFORMATION
(Page 1)

Name of Bidder _____
(Individual/Firm/Corporation, as case may be)

Residence of Bidder _____

Telephone Number _____

Place of business
of Bidder _____

Telephone Number _____

NAME OF PARTNERS
(If Bidder is a FIRM, state
here the name and residence
of each member thereof)

RESIDENCE OF PARTNERS

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

If Bidder is a CORPORATION, fill in the following blanks:

Organized under the laws of the State of _____

Name and address of President _____

Name and address of Vice President _____

Name and address of Secretary _____

CITY OF GREENBELT

BIDDER INFORMATION

(Page 2)

The undersigned also declares that he/she has carefully examined and fully understands the Information for Bidders, Contract Agreement, Specifications, Plans and the Bid Documents; and hereby proposes to furnish all the materials, adequate equipment, incidentals and sufficient labor, to progressively do all the work required to construct, finish, and complete the work within the time specified for:

CITY OF GREENBELT
Greenbelt Lake Dam Repairs Project
Contract 2016-01

and other incidental work included in this bid, in accordance with the price given, at the proper cost and expense and in a first-class manner and in accordance with the Plans and Specifications, Notice, and Bidder's Information; all of which are a part of the Contract to be assumed, and in accordance with the plans, specifications, and detailed directions or instructions as may from time to time be given by the Architect and/or Owner at the quoted price:

Bidder's name _____

Bidder's signature _____

CITY OF GREENBELT
BIDDER'S QUESTIONNAIRE

(Page 1)

Name & Address of Bidder:

List three similar type contracts performed within the last three years:

| FOR WHOM PERFORMED | CONTRACT AMOUNT | DATE COMPLETED | CONTACT'S NAME & TELEPHONE NUMBER |
|-----------------------|--------------------|-------------------|--------------------------------------|
|-----------------------|--------------------|-------------------|--------------------------------------|

1. Have you ever failed to complete any work awarded to you? ____ If yes, state where and why.

2. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a contract? _____ If yes, state name of individual, other organization, and reason therefore.

3. Has any officer or partner of your organization ever failed to complete a contract handled in that individual's own name? ____ If yes, state name of individual and reason therefore.

4. In what other lines of business are you financially interested?

5. The work, if awarded to you, will have the personal supervision of whom?

PAGE TO BE INCLUDED WITH BID

BF-4

CITY OF GREENBELT

BIDDER'S QUESTIONNAIRE

(page 2)

6. Do you have, or can you obtain sufficient personnel and equipment to commence work when required by the Contract Documents?

7. Name the surety company to whom you intend to apply for a performance bond.

8. What Maryland units of government can you give as a reference? Include the name and telephone number of your contact with the agency.

9. In emergencies, either day or night, what telephone number(s) should be called for immediate action?

Dated this _____ day of _____, 20 ____.

(Bidder's name)

(Bidder's signature)

(Title of person signing)

CITY OF GREENBELT

QUALIFICATION STATEMENT

I, _____, being first duly sworn, depose and say that

- 1) I am the _____ (*title*) of _____ (*business entity or individual*) a party interested in obtaining a contract with the City of Greenbelt under Conditions set forth in documents for Contract No. 2016-01;
- 2) I, pursuant to authority granted me by the aforementioned party, have examined relevant records and other information available to or know by me in relation to Items 3 and 4 below;
- 3) To the best of my knowledge, no officer director or partner of the aforementioned party has, on the basis of acts committed after July 1, 1977, been convicted or, entered a plea of nolo contendere to, a charge of bribery, attempted bribery or conspiracy to bribe under the laws of the state of Maryland, any other state, or the federal government other than those listed on the attachment to this affidavit (attachment should list name, title, offense, place and time of conviction or plea);
- 4) To the best of my knowledge, no employee of the aforementioned party directly involved in obtaining the- subject contract has, on the basis of acts committed after July 1, 1977, been convicted of, or entered a plea of nolo contendere to, the offenses listed above other than those listed on the attachment; and
- 5) I have been authorized to make this statement on behalf of the aforementioned party.

(signature)

CITY OF GREENBELT

NON-COLLUSION CERTIFICATION

By submission of this bid, each bidder and each person signing certifies, under penalty of perjury, that to the best of their knowledge and belief:

1. The prices in this bid have been arrived at independently, without collusion, consultation, communication or agreement, for the purpose of restricting completion, as to any matter relating to such prices with any competitor;
2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed prior to opening, directly, or indirectly to any competitor; and
3. No attempt has been made or will be made to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

I hereby affirm under the penalties of perjury that the foregoing statement is true.

(Legal name of person/firm/corporation)

(Signature)

(Affix Seal If
Principal Is Corporation)

IF A CORPORATION

The following is a certified copy of resolution authorizing the execution of this certificate by the signature of this bid in behalf of the corporation, resolved that _____ be authorized to sign and submit the bid of this corporation for the project on items described, herein, in the Notice, and to include in such bid the Certificate as to Non-Collusion required by the City of Greenbelt, Maryland as the act and deed of such corporation, and for any inaccuracies of misstatement in such certificate this corporation shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution by _____ corporation at a meeting of its Board of Directors held on the _____ day of _____ 20__.

(Secretary)

Seal of Corporation:

CITY OF GREENBELT

AFFIDAVITS

Name and Address of Bidder:

The above named affirms and declares:

1. That said Bidder is of lawful age and the only one interested in this bid; and that no person, firm or corporation other than hereinabove named has any interest in this bid, or in the contract proposed to be entered into.
2. That this bid is made without any understanding, agreement, or connection with any other person, firm, or corporation submitting a bid for the same material, supplies, or equipment, and is in all respects fair and without collusion or fraud.
3. That said is not in arrears to the Owner upon debt or contract, and is not a defaulter, as surety or otherwise, upon any obligation to the Owner or any municipality in the State of Maryland.
4. That said has carefully examined the site of the work, that from these investigations, has satisfied itself as to the nature and location of the work, the character, quality and quantity of existing materials, and all difficulties likely to be encountered, the kind and extent of equipment and other facilities needed for the performance of the work, general and local conditions, and all other items which may, in any way, affect the work or its performance.
5. On acceptance of this bid for said work the undersigned does or do bind the person or persons to enter into written contract with the Owner as specified in the "Information for Bidders".
6. In default of the performance of any of the conditions required in making this bid, the undersigned agrees that the certified check/bid bond which is herewith deposited with the Owner shall be retained by the Owner as liquidated damages for such default or fraud, otherwise the check/bond will be returned to the selected firm as noted in the " Information for Bidders".

(Legal name of person, firm or corporation making this bid)

(Signature)

(Title of person signing)

CITY OF GREENBELT

AFFIDAVITS

(Form of Affidavit where Individual submits Bid)

STATE OF MARYLAND)
) ss:
COUNTY OF PRINCE GEORGE'S)

_____ being duly sworn, says:

I am the person described in and who executed the foregoing bid and the several matters therein stated are in all respects true.

Signature of person who signed the bid

Subscribed and sworn to before me: this _____ day of _____, 20____.

(Notary Public)

COUNTY OF;

CITY OF GREENBELT

AFFIDAVITS

(Form of Affidavit when Bidder is a Partnership)

STATE OF MARYLAND)
) ss:
COUNTY OF PRINCE GEORGE'S)

_____ being duly sworn, says: I am a member of _____ the firm described in and which executed the foregoing bid. I subscribed the name of the firm thereto on behalf of the firm, and the several matters therein stated are in all respects true.

Signature of person who signed the bid

Subscribed and sworn to before me; this _____ day of _____, 20____.

(Notary Public)

COUNTY OF:

CITY OF GREENBELT

AFFIDAVITS

(Form of Affidavit where Bidder is a Corporation)

STATE OF MARYLAND)

) ss:

COUNTY OF PRINCE GEORGE'S)

_____ being duly sworn, says:

I am the _____ of _____ Corporation, the above named corporation whose name is subscribed to and which executed the foregoing bid. I reside at

_____. I have knowledge of the several matters therein stated, and they are in all respects true.

(Signature of person who signed the bid)

Subscribed and sworn to before me; this _____ day of _____, 20____.

(Notary Public)

COUNTY OF:

NOTES

1. Where the bid is submitted by a firm, the bid must be signed in the name of the firm by a member of the firm, who must sign that member's own name immediately thereunder, as A. & B. Company, by C. A. Partner.
2. Where the proposal is submitted by a corporation, the proposal must be signed in the name of the corporation by some duly authorized officer or agent thereof having knowledge of the matters stated in the proposal, and such officer or agent shall also subscribe said person's own name, as: A. B. Company, by D.C., President, and the seal of the corporation must be affixed.
3. The proposal must be sworn to by the person signing it.

ANNOTATED CODE OF MARYLAND

The party, in submitting the bid, agrees that the provisions of the Annotated Code of Maryland, which is hereby incorporated herein by reference, applies to this contract, and that the parties expressly covenant and agree that they and this contract are fully subject to the provisions of the said laws, specifically:

1. All foreign corporations doing business within the State of Maryland are required to be registered with the State Department of Assessment and Taxation. In order to be eligible to contract with the City, compliance with this law is mandatory.

2. Parties are required under Article 56, Section 180, Annotated Code of Maryland, 1957 Edition, to show evidence of certificate of registration before the bid may be received and considered on a general or subcontract of \$ 20,000.00 or more. The following notation shall be placed on the outside of the envelope containing the bid over the signature of the party signing the bid:

“Registered Maryland Contractor No. _____”.

**CITY OF GREENBELT, MARYLAND
BIDDER'S FINANCIAL RESPONSIBILITY AFFIDAVIT**

The undersigned bidder, affirms, under penalty of perjury, that the following statements are true:

1. The financial statements, if required, delivered to the Owner or its agent by the bidder presents fairly, in all material respects, the financial condition of the bidder as of the date of the bid.
2. Since the date of the financial statement presented to the Owner or its agent, there have been no material adverse changes in the financial condition of the bidder, except as disclosed in writing in an attachment to this affidavit.
3. The bidder is current in all of its tax payments, including federal withholding taxes, except as disclosed in writing in an attachment to this affidavit.
4. There are no liens filed by the bidder's subcontractors or suppliers, regardless of the tier, on the bidder's projects in the State of Maryland, except as disclosed in writing in an attachment to this affidavit.
5. During the last three (3) years, the bidder has not received a notice of default with respect to any Project in the State of Maryland, except as disclosed in writing in an attachment to this affidavit.
6. The bidder's surety bonding company has an A. M. Best rating of A- or higher, except as disclosed in writing in an attachment to this affidavit.
7. The undersigned is not aware of any claim, potential claim, liability, or potential liability that could adversely affect the ability of the bidder to complete the Owner's project, except as disclosed in writing in an attachment to this affidavit.

Signature of person who signed the bid

Sworn to before me, a notary public, by _____ and _____
on day of _____.

Notary Public

CITY OF GREENBELT

ADDENDUM ACKNOWLEDGEMENT

This is to certify that _____ has received Addendum Number
_____ through Number _____ and this bid reflects the change by these
Addenda.

(Bidder's name)

(Bidder's signature)

(Date)

**CITY OF GREENBELT
GREENBELT LAKE DAM REPAIR PROJECT
CONTRACT NO: 2016-1**

BID FORM

Schedule of Prices Page 1 of 2

| ID | Item | Unit | Approximate Quantity | Approximate Quantity (Written) | Unit Price Dollars/Cents | Unit Price (Written) | Total Amount Dollars/Cents | Total Amount (Written) |
|-------|--|------|----------------------|--------------------------------|--------------------------|----------------------|----------------------------|------------------------|
| 101-1 | CLEARING AND GRUBBING | LS | 1 | One | | | | |
| 102-1 | DEMOLITION - EX. 24" C.M.P./C.I.P. | LF | 290 | Two Hundred Ninety | | | | |
| 102-2 | DEMOLITION - EXISTING CONCRETE END WALL (STR. EW1) | EA | 1 | One | | | | |
| 104-1 | CONSTRUCTION SAFETY FENCE | LF | 280 | Two Hundred Eighty | | | | |
| 107-1 | CONSTRUCTION STAKEOUT | LS | 1 | One | | | | |
| 108-1 | MOBILIZATION | LS | 1 | One | | | | |
| 201-1 | STRIP AND STORE EMBANKMENT TOPSOIL | CY | 100 | One Hundred | | | | |
| 201-2 | STRIP AND HAUL EMBANKMENT TOPSOIL | CY | 100 | One Hundred | | | | |
| 303-1 | 24" R.C.P. C-361 CL C-25 | LF | 264 | Two Hundred Sixty Four | | | | |
| 305-1 | TYPE A MANHOLE (STR. MH2) | EA | 1 | One | | | | |
| 305-2 | 24" END WALL (STR. EW2) | EA | 1 | One | | | | |
| 308-1 | STABILIZED CONSTRUCTION ENTRANCE | EA | 1 | One | | | | |
| 308-2 | SILT FENCE | LF | 525 | Five Hundred Twenty Five | | | | |
| 308-3 | EARTH DIKE | LF | 320 | Three Hundred Twenty | | | | |
| 308-4 | MOUNTABLE EARTH DIKE | EA | 1 | One | | | | |
| 312-1 | CLASS I RIPRAP | SY | 35 | Thirty Five | | | | |

PAGE TO BE INCLUDED WITH BID

Schedule of Prices Page 2 of 2

| ID | Item | Unit | Approximate Quantity | Approximate Quantity (Written) | Unit Price Dollars/Cents | Unit Price (Written) | Total Amount Dollars/Cents | Total Amount (Written) |
|--------|--|------|----------------------|--|--------------------------|----------------------|----------------------------|------------------------|
| 420-1 | CONCRETE COLLAR | EA | 4 | Four | | | | |
| 701-1 | TOPSOIL PLACEMENT (FROM ON-SITE) | SY | 750 | Seven Hundred Fifty | | | | |
| 701-2 | TOPSOIL PLACEMENT (FROM IMPORT) | SY | 750 | Seven Hundred Fifty | | | | |
| 705-1 | PERMANENT SEEDING AND MULCHING | SY | 4875 | Four Thousand Eight Hundred Seventy Five | | | | |
| 1002-1 | TREE PROTECTION FENCE | LF | 380 | Three Hundred Eighty | | | | |
| 1007-1 | CCTV INSPECTION OF 24" C.I.P. LAKE DRAIN | LS | 1 | One | | | | |
| 1009-1 | 24" D.I.P. VALVE (CONTINGENCY) | EA | 1 | One | | | | |
| 1009-2 | VALVE STEM EXTENSION | EA | 1 | One | | | | |
| 1009-3 | LUBRICATE AND EXERCISE EX. VALVE | LS | 1 | One | | | | |
| 1301-1 | 18" O.D. SNAP TITE SLIP LINER (SDR 32.5) | LF | 72 | Seventy Two | | | | |
| 1302-1 | SLIP LINE GROUT | CY | 5 | Five | | | | |
| 1304-1 | REPAIR LAKE DRAIN MANHOLE (STR. MH1) | LS | 1 | One | | | | |
| 2001-1 | GENERAL ALLOWANCE | LS | 1 | One | \$13,000.00 | Thirteen Thousand | \$13,000.00 | Thirteen Thousand |

The bidder agrees to perform all base contract work as described in the specifications and drawings for the Unit Price Base Contract Sum of:

_____ \$ _____
 (in words) (in numerals)

_____ (Bidder's name) _____ (Bidder's signature) _____ (Date)

PAGE TO BE INCLUDED WITH BID

**GREENBELT LAKE DAM REPAIR PROJECT PHASE 1
CONTRACT NO. 2016-01**

Contract for Construction

CITY OF GREENBELT, MARYLAND

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 GENERAL PROVISIONS

1.1 The Contract Documents

- 1.1.1 The *Contract Documents* consist of the General Conditions of the Contract for Construction, conditions of the Contract, drawings, specifications, addenda issued prior to the execution of the Contract, and other documents as listed in attachment one (1) to the General Conditions of the Contract for Construction.
- 1.1.2 No deviation from the Contract Documents for any reason whatsoever and with regard to any provision of the services, materials, labor, and/or equipment required for the Work shall be a precedent for the handling of any subsequent interpretation or application of any provision of the Contract Documents.
- 1.1.3 The division of the specifications into divisions and sections is for the purpose of convenience or reference. Such separations shall not serve to make sections independent of the total specification and other Contract Documents or to modify the Contractor's duty to coordinate all parts of the Work.
- 1.1.4 In the event of discrepancies within the drawings and specifications that show a conflict in materials, methods of construction, quantities, sizes or quality of materials, or method of payment, the Contractor shall notify the Owner who will then clarify the discrepancy in writing. In the event that such discrepancies are not clarified prior to the execution of the Contract, then the more costly of the conflicting materials, methods of construction, quantities, sizes or quality of materials shall be provided at no extra cost to the Owner.

1.2 The Contract

- 1.2.1 The Contract Documents form the *Contract* for construction. The Contract Documents form the entire agreement between the parties and supersede prior negotiations, representations, or agreements, written or oral.
- 1.2.2 The Contract may be amended only by written modification.
- 1.2.3 The Contract shall not be construed to create a contractual relationship of any kind between any persons or entities other than the Owner and the Contractor.
- 1.2.4 The Owner and the Contractor shall sign the Contract.

1.2.5 The intent of the Contract is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

1.3 The Work

1.3.1 The *Work* means the construction and services required by the Contract Documents, and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.3.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated personal observations with requirements of the Contract and is familiar with all local permit requirements and ordinances that may affect the Work.

1.3.3 All systems in all divisions are to be constructed as wholly closed, connected and fully working systems. Any doubts by the Contractor as to the intent of the Contract Document requirements for such total systems must be verified before bidding. Where new power operated devices are shown such as equipment or light fixtures, the Contractor must provide all electrical work shown or not shown necessary to make such devices operable including electrical connections, circuits, conduits, breakers, panels and cutoff switches.

1.4 Definitions

1.4.1 The *Project* is the total construction of which the Work performed under the Contract Documents may be the whole or part and which may include construction by the Owner or by separate contractors.

1.4.2 The *Drawings* are the graphic and pictorial portions of the Contract Documents, whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.4.3 The *Specifications* are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

1.4.4 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

ARTICLE 2 THE OWNER

2.1 In General

2.1.1 Unless otherwise indicated, the *Owner* is the City of Greenbelt. The term Owner means the Owner or the Owner's authorized representative(s).

2.2 Owner's Responsibilities

2.2.1 Unless otherwise provided in the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, fees, permits and charges required for building and grading permits.

2.2.2 Unless otherwise provided, the Owner shall supply, free of charge, such copies of the Project Drawings and Specifications as are reasonably necessary for the execution of the Work.

2.3 Owner's Right to Complete or Correct Contractor's Work

2.3.1 If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents, or fails to carry out Work as specified within the Contract Documents, the Owner may, by written order, order the Contractor to stop work until the cause of such stop work has been eliminated and corrections made.

2.3.2 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case a Change Order shall be issued deducting from payments due the Contractor the cost of correcting such deficiencies. The cost of correcting deficiencies shall include compensation for additional architecture and/or engineering services, legal services, and administrative services.

ARTICLE 3 THE CONTRACTOR

3.1 In General

3.1.1 The *Contractor* is the person or entity identified as such in the Contract and is referred to throughout the Contract as if singular in number. The term Contractor means the Contractor or the Contractor's authorized representative.

3.1.2 The Contractor must be a fully licensed contractor in the State of Maryland and Prince George's County. All licenses required for the work must be current, and the Contractor shall not be the subject of any government action to suspend or revoke such license(s). The Contractor has not during the preceding five (5) years filed for bankruptcy or protection from creditors.

3.2 Review of Contract Documents and Field Conditions

3.2.1 The Contractor shall study and compare the Contract Documents with each other and with information furnished by the Owner and shall at once report errors, inconsistencies or omissions discovered.

3.2.2 The Contractor shall verify field conditions and shall compare such field conditions and other information with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Owner at once.

3.2.3 The Contractor agrees that, prior to the execution of the Contract, the Contractor carefully examined the Contract Documents, together with the site of the proposed

Work, as well as its surrounding territory, and is fully informed regarding all conditions affecting the Work and labor and materials to be furnished for the completion of the Work, including the existence of poles, wires, pipes, ducts, conduits and other facilities and structures of municipal or other public service corporations, on, over or under the site. The Contractor further agrees that this information was secured by personal investigations and research and not from the estimates or records of the Owner, and that the Contractor will make no Claim against the Owner by reason of estimates, tests or representations of any officer or agent of the Owner. The execution of the Contract shall indicate that the bidder thoroughly understands the terms of the Contract Documents.

3.3 Construction Procedures and Requirements

- 3.3.1 The Contractor shall perform the Work in accordance with the Contract Documents.
- 3.3.2 The Contractor shall be responsible for inspection of Work performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.
- 3.3.3 Provisions of the Drawings and Specifications requiring the Contractor's conformance to standards, manufacturer's recommendations or specific requirements for installation or protection of materials shall be construed to establish minimum standards only. The Contractor shall be solely responsible for determining the necessary standards (where not required by applicable laws or ordinances) to be used for the Work where related to construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work, and it shall be the Contractor's sole responsibility to employ qualified persons necessary for such determination.
- 3.3.4 All work shall be completed in the most substantial and workmanlike manner. Work shall conform with the plans as well as standards and specifications for PEPCO, Washington Gas, Washington Suburban Sanitary Commission, Bell Atlantic, Prince George's County, the Maryland State Highway Administration, the City of Greenbelt, and other government authority, as applicable.

3.4 Conformance with Regulations, Laws and Standards

- 3.4.1 If the Contractor observes that portions of the Contract Documents are at variance with the applicable laws, statutes, ordinances, building codes, rules and regulations, the Contractor shall promptly notify the Owner in writing, and necessary changes shall be accomplished by appropriate modifications. The Contractor represents that it is knowledgeable of all applicable Federal, State and local codes and ordinances.
- 3.4.2 All Work must be done in accordance with applicable Federal, State and local codes, regulations, laws and ordinances.

3.5 Supervision

- 3.5.1 The Contractor shall employ competent superintendents and necessary assistants who shall be in attendance at the project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

- 3.5.2 The Contractor shall supervise and direct the Work. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.
- 3.5.3 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing the portions of the Work under the Contract with the Contractor.
- 3.5.4 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract.
- 3.5.5 The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.
- 3.5.6 Upon request, the Contractor will remove or have removed from the project site any person considered by the Owner to be obnoxious or incompetent.
- 3.5.7 The Contractor shall provide an adequate number of employees and assure that Subcontractors provide an adequate number of employees to assure the Work will progress in the time set forth in the Contract Documents.

3.6 Labor and Materials

- 3.6.1 The Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.7 Taxes

- 3.7.1 The Contractor shall pay all appropriate taxes including Maryland Retail Sales Tax (if necessary) on all materials, equipment and supplies, as required by the State of Maryland.

3.8 Permits, Licenses and Inspections

- 3.8.1 The Contractor shall be responsible for securing all permits required to be secured by professional trades as directed by state and/or local law.
- 3.8.2 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for all permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work, except as set forth in Section 2.2.1.
- 3.8.3 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities bearing on performance of the Work.
- 3.8.4 If the Contractor performs Work contrary to applicable Federal, State and local laws, statutes, ordinances, building codes, and rules and regulations, the Contractor shall assume full responsibility for such Work and shall bear the cost to remove said Work and replace it as required in the Contract Documents. The Contractor shall confine operations at the site to areas permitted by law, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.8.5 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner harmless from loss on account thereof.

3.9 Coordination with Other Work

3.9.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work.

3.9.2 The Contractor shall not damage or endanger a portion of the Work, or Work of the Owner, or Work of separate contractors, by cutting, patching, excavating or otherwise altering such construction.

3.9.3 If the Contractor causes damage to the Work or property of any other contractor, the Contractor shall be fully responsible for the cost of repair.

3.10 Access

3.10.1 The Contractor shall provide to the Owner access to the Work.

3.11 Clean-Up

3.11.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish. At completion of the Work the Contractor shall remove from and about the project site all waste materials, rubbish, tools, equipment, machinery and surplus materials.

3.11.2 The Contractor shall be responsible for restoring and/or repairing any areas damaged through actions of the Contractor and the Contractor's agents, Subcontractors or employees.

3.11.3 If the Contractor fails to clean up, and/or restore any damaged areas, the Owner may deduct the cost thereof from any retainage held by the Owner.

3.11.4 In addition to removing all surplus material, construction equipment, and rubbish, the Contractor shall clean any glass surfaces and leave the building broom clean. The Contractor shall replace any broken glass, remove stains, marks, and dirt from decorated work, clean all fixtures, and wash all floors.

3.12 Allowances

3.12.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents.

3.12.2 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts.

3.12.3 The Contractor's costs for unloading and handling, labor, installation costs, profit, overhead, and other expenses associated with stated allowance amounts shall be included in the Contract Sum and not in the allowances.

3.12.4 Whenever costs are more or less than allowances, a Change Order shall adjust the Contract Sum accordingly. The amount of the Change Order shall reflect the difference between actual costs and the allowance. The owner must approve all Change Orders in writing.

3.13 Schedule

- 3.13.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit to the Owner a construction schedule for the Work. The schedule shall provide for completion of the Work within the time limits specified under the Contract Documents, and shall be revised at appropriate intervals as required by the conditions of the Work and Project. The schedule shall provide for expeditious and practicable execution of the Work.
- 3.13.2 The Contractor shall prepare and keep current a schedule of submittals that allows for reasonable time to review the submittals.

3.14 Records

- 3.14.1 The Contractor shall maintain at the site one record copy of the drawings, specifications, addenda, Change Orders and other modifications, in good order, to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Owner and shall be delivered to the Owner upon completion of the Work.
- 3.14.2 The Contractor is required to maintain a daily job log, completed for each day on which Work is performed. The job log shall indicate (at a minimum) the day and date, hours worked, Contractor personnel on site, Subcontractors on site, Work undertaken, materials delivered, weather conditions, inspections, and all other activities relating to the Work. Copies of the daily job logs shall be provided to the Owner upon request.
- 3.14.3 The Work records maintained by the Contractor, including but not limited to bid estimates, payment records, payroll records, job meeting minutes, daily reports, logs and diaries, and survey will be make available for review by the Owner upon request.

3.15 Shop Drawings, Product Data and Samples

- 3.15.1 *Shop Drawings* are drawings, diagrams, schedules and other data specially prepared for the Work by the Owner, Contractor, Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
- 3.15.2 *Product Data* are illustrations, standards schedules, performance charts, instructions, brochures, diagrams and other information furnished by or to the Contractor to illustrate materials or equipment for some portion of the Work.
- 3.15.3 *Samples* are physical examples that illustrate materials, equipment or workmanship and establish standards upon which the Work will be judged.
- 3.15.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.
- 3.15.5 The Contractor shall review, approve and submit to the Owner Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.
- 3.15.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective

submittal has been approved by the Owner. Such Work shall be in accordance with approved submittals.

- 3.15.7 By submitting Shop Drawings, Product Data, Samples or similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, and has checked and confirmed that the information contained within such submittals conform to the requirements of the Contract Documents.
- 3.15.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Owner's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Owner in writing of such deviation at the time of submittal and the Owner has given written approvals to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Owner's approval thereof.
- 3.15.9 The Contractor shall direct specific attention in writing on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions on previous submittals.
- 3.15.10 When professional certification or performance criteria of materials, systems or equipment is required by the Contract Documents, the Owner shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.
- 3.15.11 The Contractor shall promptly forward copies of all approved submittals to the Owner.

3.16 Indemnification

- 3.16.1 The Contractor shall indemnify and hold harmless the Owner, the Owner's agents, and the Owner's employees from and against Claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work.
- 3.16.2 The Contractor shall indemnify the Owner for any and all damages sustained including consequential damages, including the loss of profits, resulting from the Contractor's failure or refusal to perform the Work required by the Contract Documents or failure by the Contractor to perform the Work within the time allowed in the Contract Documents.

3.17 Contractor's Warranty

- 3.17.1 The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects, and that the Work will conform with the requirements of the Contract Documents and all applicable Federal, State and local laws and ordinances. Work not conforming to these requirements, including substitutions not properly approved and authorized will be considered defective and not in conformance with the Contract Documents.
- 3.17.2 The Contractor is to familiarize himself with all patented specialties and commodities specified for the Work. All these materials must be guaranteed by the Contractor against failure and the Contractor is to assume full responsibility of such specialties and commodities, and must make good any failures or deficiencies at its own expense.
- 3.17.3 Each Subcontractor shall furnish the Contractor a written guarantee to repair, replace or otherwise make good any defects in the Subcontractor's work or materials due, in the

sole opinion of the Owner, to any error or omission by the Subcontractor which may occur.

3.17.4 The Contractor is to guarantee the work of the Subcontractors. Should the Subcontractor not promptly comply with the requirements of this article, the Contractor must make such repairs or replacements or shall otherwise repair the defects as if the Contractor installed the Work.

3.17.5 Prior to final payment, the Contractor shall furnish to the Owner its written guarantee. The Contractor shall secure all written guarantees and warranties called for in the Contract Documents. The Contractor is responsible for the guarantee on the entire Work.

3.17.6 All manufacturer's and supplier's warranties shall be applied to the Owner.

3.17.7 At the time of final acceptance of the Work by the Owner, the Contractor shall furnish to the Owner a loose-leaf bound manual of information related to the maintenance, operation and construction of equipment incorporated in the Work. The information shall include, but is not limited to, the following:

1. Guarantees
2. Warranties
3. Equipment operation instructions
4. Maintenance
5. Names and catalog numbers of all finish materials
6. Names and addresses of all Subcontractors
7. Names and addresses of all suppliers with mention of material (s) supplied
8. Any additional information required by the Owner.

3.18 No Collusion or Fraud

3.18.1 The Contractor hereby agrees that the only persons interested as principal or principals in the bid or proposal submitted by the Contractor for this contract are named therein, and that no person other than those mentioned therein has any interest in the referenced proposal or in the securing of the Contract, and that this Contract has been secured without any connection with any person or persons other than those named, and that the bid or proposal is in all respects final and was prepared and the Contract was secured without collusion or fraud, and that neither any officer nor employee of the Owner has or shall have a financial interest in the performance of the Contract or in the supplies, work or business to which it related, or in any portion of the profits thereof.

ARTICLE 4 CLAIMS AND DISPUTES

4.1 In General

4.1.1 A *Claim* is a demand or assertion by one of the parties subject to this Contract, during the time of performance of the Contract, seeking as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term Claim also includes other disputes and matters in question between the Owner and the Contractor arising out of or relating

to the Contract. Claims must be made by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.2 Time Limits on Claims

4.2.1 Claims by either party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. Nothing herein limits any Claim by the Owner for defaults, defects or the like after the Contract has been substantially performed.

4.3 Continued Performance

4.3.1 Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents, except that payment for Claims shall not be due until such Claim is resolved.

4.4 Concealed or Unknown Conditions

4.4.1 If conditions are encountered at the site, which are subsurface, or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed, and in no event later than 21 days after first observance of the conditions. The Owner will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost, or time required for performance of the Work, than an equitable adjustment in the Contract and/or Contract Time will be approved.

4.5 Claims for Additional Cost

4.5.1 If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency or circumstances endangering of life or property.

4.6 Claims for Additional Time

4.6.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notices as provided herein shall be given. The Contractor's Claim shall include justification for the requested additional time.

4.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, and could not have been reasonably anticipated, and that the weather conditions had an adverse effect on the scheduled construction.

4.7 Injury or Damage to Persons or Property

4.7.1 If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter.

4.8 Resolution of Claims

4.8.1 The Owner will review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule indicating when the Owner expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) approve the Claim or (5) suggest a compromise.

4.8.2 There will be no arbitration associated with the Contract or the Work. The Owner and the Contractor hereby waive arbitration as a remedy.

ARTICLE 5 SUBCONTRACTORS

5.1 In General

5.1.1 A *Subcontractor* is a person or entity that has a direct Contract with the Contractor to perform a portion of the Work at the site. The term Subcontractor is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor.

5.1.2 Approval of the Subcontractor shall not relieve the Contractor of any responsibilities, duties and liabilities as specified in the Contract Documents. The Contractor shall be solely responsible to the Owner for the acts or default of the Subcontractors, and of such Subcontractors' officers, agents and employees, each of who shall for all purposes be deemed to be the agent or employee of the Contractor. Nothing contained in the Contract Documents shall create any contractual relationship between the Subcontractor and the Owner. All Claims by the Subcontractor shall be directed to the Contractor.

5.2 Selection of Subcontractors

5.2.1 Within 10 days following execution of the Contract, the Contractor shall furnish in writing to the Owner the names of every Subcontractor proposed to be used in the execution of the Work.

5.2.2 The Contractor shall not contract with a proposed Subcontractor to whom the Owner has made reasonable and timely objection.

5.2.3 If the Owner has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner has no reasonable objection.

5.2.4 If requested, the Contractor shall provide references for the proposed Subcontractors for review by the Owner.

5.3 Subcontractual Relations

- 5.3.1 By appropriate agreement, the Contractor shall require each Subcontractor to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by the Contract Documents, assumes toward the Owner. Each subcontract agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor. The Contractor shall make available to each proposed Subcontractor copies of the Contract Documents to which the Subcontractor will be bound.

5.4 Ability of Subcontractor to Complete Work

- 5.4.1 Each Subcontractor may be required to furnish the Owner proof of his financial ability and experience to perform the particular Work in which the Subcontractor is engaged.

ARTICLE 6 CONSTRUCTION BY OWNER OR OTHERS

6.1 In General

- 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operation on the site not part of this Contract.
- 6.2 When separate contracts are awarded for different portions of the project or other construction or operations on the site, the term Contractor in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor agreement.
- 6.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.
- 6.4 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.
- 6.5 If part of the Contractor's Work depends upon construction or operations by the Owner or a separate contractor, the Contractor shall promptly report to the Owner apparent discrepancies or defects in other construction that would render it unsuitable for proper execution and results. Failure of the Contractor to report any discrepancies shall constitute an acknowledgement that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not reasonably discoverable.

- 6.6 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefore.
- 6.7 The Contractor shall promptly remedy damage caused by the Contractor to construction or to property of the Owner or a separate contractor.
- 6.8 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Article 4.
- 6.9 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Article 3.
- 6.10 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Article 3, the Owner may clean up and allocate the cost among all contractors as the Owner determines to be just.

ARTICLE 7 CHANGES IN THE WORK

7.1 In General

- 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, only by written Change Order or Construction Change Directive, or Owner's written directive.
- 7.1.2 A Change Order shall be based upon agreement between the Owner and the Contractor. The Owner may issue a Construction Change Directive without agreement by the Contractor. The Owner may order any minor change at any time. All Change Orders, Construction Change Directives or minor changes shall be in writing and executed by the Owner.
- 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents.
- 7.1.4 The Contractor shall proceed promptly with changes in the Work as set forth by Change Order, Construction Change Directive, or Owner's written directive.
- 7.1.5 No additional compensation or Contract Time will be permitted in the absence of an approved change as specified in this article.
- 7.1.6 Should it be desired at any time or times, during the progress of the Work, to make any alterations or changes, or to add to or to delete Work, the Owner shall have the undisputed right to make such changes, deletions, additions or alterations by written order, without invalidating the Contract.

7.2 Change Orders

- 7.2.1 A Change Order is a written instrument signed by the Owner and the Contractor, stating their agreement upon all of the following: (1) a change in the Work, (2) the amount of the adjustment in the Contract Sum, if any, and (3) the extent to the adjustment in the Contract Time, if any.
- 7.2.2 Costs for any Change Order shall be determined as set forth in Section 7.4.

7.3 Construction Change Directives

- 7.3.1 A Construction Change Directive is a written order signed by the Owner, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. A Construction Change Directive shall be used in the absence of agreement on the terms of a Change Order.
- 7.3.2 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be determined as set forth in Section 7.4.
- 7.3.3 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Owner of the Contractor's agreement or disagreement with the proposed adjustment, if any, in the Contract Sum or Contract Time.
- 7.3.4 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor. Such agreement shall be effective immediately and shall be recorded as a Change Order.
- 7.3.5 If the Contractor does not respond promptly, or disagrees with the proposed adjustment in the Contract Sum or time, the Contractor shall submit in writing to the Owner basis for the disagreement, including supporting documentation. Such submission shall be made to the Owner no later than 48 hours after receipt of the Construction Change Directive.

7.4 Basis for Determining Cost

- 7.4.1 The value of approved change in the Work shall be determined by a complete breakdown of direct cost of all units of labor, material, profit and overhead.
- 7.4.2 The term Cost shall be defined as including the actual cost of labor, including using foremen, materials entering permanently into the Work, the Ownership or rental cost of construction plant and equipment during the time of use of the extra Work, and power and combustible supplies for the operation of power equipment.
- 7.4.3 The Contractor shall furnish to the Owner a fully itemized breakdown of the quantities and the process used in computing the value of any change that might be requested. All written requests for a change in the Work must include a full explanation and justification for the change regardless of its nature.
- 7.4.4 For all Work performed by a Subcontractor, the Contractor shall furnish the Subcontractor's itemized proposal that shall contain an original signature by an authorized representative of the subcontracting firm. If requested by the Owner, proposals from suppliers or other supporting data to substantiate the Contractor's or the Subcontractor's cost shall be furnished.
- 7.4.5 When changes, alterations, deductions or additions are so ordered, the value of such Work will be determined in the following ways:
 - 7.4.5.1 When unit prices are stated in the Contract or have been subsequently agreed upon by application of those unit prices; or
 - 7.4.5.2 A lump sum price agreed to by both the Owner and the Contractor; or
 - 7.4.5.3 If the job conditions or the extent of the change prohibit the use of either 7.4.5.1 or 7.4.5.2, a price arrived at by performing the Work on a cost plus not to exceed basis.
 - 7.4.5.4 When unit prices are not indicated, the percentage for overhead, profit and commission to be allowed may vary according to the nature, extent, and complexity of the Work involved, but in no case shall exceed the following: Overhead/Profit to Subcontractor and/or the Contractor for Work performed with their own forces may not exceed 10%; and to the Contractor on Work performed by other than the Contractor's forces shall not

exceed 5%. These percentages shall be considered to include insurance, bonds, field and office supervisors and assistants, use of small tools, average job engineering, stakeout, incidental job burdens and general office expenses.

- 7.4.6 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are changed, then the Contract price shall be adjusted according to the agreed upon unit price.
- 7.4.7 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change, which results in a net decrease in the Contract Sum, shall be actual net cost including overhead and profit. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any.
- 7.4.8 The Contractor shall furnish the Owner a fully itemized breakdown of the quantities and prices used in computing the value of any change. All written requests for a change in Work must include the full explanation and justification for the change regardless of its nature.
- 7.4.9 If requested by the Owner, proposals from suppliers or other supporting data to substantiate the Contractor's or the Subcontractor's cost shall be furnished.
- 7.4.10 If a change involves only a credit, the Contract Sum will be reduced by the amount it would have cost the Contractor if the omitted item or Work had not been eliminated; including overhead and profit, however, the Contractor and the Subcontractor will be allowed to retain a sum not in excess of three percent (3%) for handling.
- 7.4.11 If a change involves both an extra and a credit, both sums shall be shown and the two sums balanced to determine the adjusted total cost or credit.
- 7.4.12 No payment shall be made or allowed for loss of anticipated profits due to any changes in the Work.
- 7.4.13 No Subcontractor will be allowed any expenses, overhead or profit for employment of a Sub-Subcontractor.
- 7.4.14 The cost of foremen and superintendents may be added only when the Change Order makes necessary the hiring of additional supervisory personnel or makes their employment for the time in addition to that normally required by the basic Contract and only with the written approval of the Owner.
- 7.4.15 Should the Contractor undertake work not approved as specified in this Article, he shall not be entitled to any Claims for additional cost. In no case will the Contractor be entitled to damages against the Owner.

7.5 Basis for Determining Time

- 7.5.1 If the Contractor and the Owner cannot agree as to what extent the Contract Time should be increased for extra Work or what extent the Contract Time should be reduced for any Work omitted by the Owner, the increase or decrease, as the case may be, shall be in the same proportion to the original contract as the cost of the additional or omitted work, including overhead and profit.

7.6 Minor Changes

- 7.6.1 The Owner will have the authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent

with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

7.7 Payment for Changes in the Work

7.7.1 Pending final determination of cost by the Owner, amounts not in dispute may be included in applications for payment.

ARTICLE 8 TIME

8.1 In General

8.1.1 Unless otherwise provided, *Contract Time* is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The Contractor shall begin Work within ten (10) days of the Owner's written notice to proceed.

8.1.3 The date of commencement of the Work shall be the first day of the Contractor mobilization of operations, but in no case will the date of commencement be later than the date which the Contractor must commence Work as specified herein.

8.1.4 Upon commencement of Work, the Contractor shall perform the Work in an expeditious fashion with adequate forces so as to be substantially complete within the maximum number of calendar days specified in the Contract Documents, unless modified by Change Order.

8.1.5 If in the opinion of the Owner the progress is not satisfactory, overtime may be demanded by the Owner and instituted by the Contractor to meet the construction schedule, at no additional cost to the Owner.

8.1.6 The term day as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.1.7 The time in which the Contractor agrees to complete the Work is of the essence and failure to complete the Work within the time specified will entitle the Owner to deduct and retain out of the funds which may be due the Contractor under the Contract the sum of \$500.00 for each calendar day, including Sundays and Legal Holidays, of delay beyond the completion date stipulated in the Contract Documents, unless otherwise set forth in the Contract Documents.

8.1.8 This sum shall not be considered as a penalty but a sum mutually agreed upon as the ascribed damages suffered by the Owner because of the delay in the completion of the Work.

8.1.9 The Owner will review requests for an extension of completion time due to strikes, or any other causes over which the Contractor has no control, after written application is made for a time extension to the Owner. Any request for an extension of time is to be made immediately upon occurrence of conditions which, in the opinion of the Contractor warrant such an extension, with reasons clearly stated and detailed proof given for all delay beyond the Contractor's control, these to be made in writing to the Owner. No time extension will be allowed, except by written approval by the Owner.

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 In General

- 9.1.1 The Contract Sum is stated in the Contract Documents and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.
- 9.1.2 Before the first Application for Payment, the Contractor shall submit to the Owner a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Owner may require. The schedule shall be used as the basis for reviewing the Contractor's Application for Payment.

9.2 Application for Payment

- 9.2.1 On or about the first day of every month, unless otherwise established in the Contract Documents, the Contractor shall submit to the Owner an itemized Application for Payment for Work completed in accordance with the schedule of values. Such Application for Payment shall be notarized and supported by such data substantiating the Contractor's right to payment as the Owner may require.
- 9.2.2 Application for progress payments shall be 90% of that portion of the Contract Sum properly allocated to labor, materials and equipment incorporated in the completed Work, and materials and equipment suitably stored at the site, as of five days prior to the date on which the Application for Payment is submitted.
- 9.2.3 Application for Payment may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.
- 9.2.4 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Payment for materials and equipment stored on the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest.
- 9.2.5 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a Claim by reason of having provided labor, materials and equipment relating to the Work.
- 9.2.6 The submittal of an Application for Payment will constitute a representation by the Contractor to the Owner that the Work has progressed to the point indicated and that the Work is in accordance with the Contract Documents. The submittal of an Application for Payment will further constitute a representation that the Contractor is entitled to payment in the amount requested.

9.2.7 All Applications for Payment shall bear the following certification: “I certify that the above is a true statement of the status of the Work and of the accounts; that Work and materials conform with the Contract Documents and duly authorized changes; that all just and lawful bills against the undersigned and his Subcontractors for labor, materials and equipment required by the Contract Documents have been paid in full through prior Certificates for Payment.”

9.3 Certification for Payment

9.3.1 The Owner’s approval of a Certificate for Payment will not be a representation that the Owner has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data to substantiate the Contractor’s right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account to the Contract Sum.

9.3.2 The Owner may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Owner’s opinion the representation to the Owner reflected in the Application for Payment cannot be verified. The Owner may also decide not to certify payment because of subsequently discovered evidence or subsequent observations of: (1) defective Work not remedied; (2) third party claims filed or reasonable evidence indicating probable filing of such claims; (3) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment; (4) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum; (5) damage to the Owner’s or another contractor’s work; (6) reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; (7) persistent failure by the Contractor to carry out the Work in accordance with the Contract Documents.

9.3.3 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.3.4 The Owner will, within ten days after receipt of the Contractor’s Application for Payment either approve the Certificate for Payment for such amount as the Owner determines is properly due, or notify the Contractor in writing of the Owner’s reasons for withholding certification in whole or in part.

9.4 Payment

9.4.1 After the Owner has approved a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents.

9.4.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor’s portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor’s portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-Subcontractors in similar manner.

- 9.4.3 The Owner shall not have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.
- 9.4.4 The Owner reserves the right to require a release of liens from each Subcontractor covering work for which each progress payment is made.
- 9.4.5 Payment to material suppliers shall be treated in a manner similar to that provided in this Article.
- 9.4.6 Payment does not waive the Owner's right to require correction of Work not in compliance with the Contract Documents.

9.5 Failure of Payment

- 9.5.1 If the Owner does not pay the Contractor within ten days after the date established in the Contract Documents the amount certified by the Owner, then the Contractor may, unless the Owner notifies the Contractor of a problem with the Application for Payment, upon seven additional days' written notice to the Owner, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, which shall be accomplished as provided in the Contract Documents. This shall not apply if the Owner disputes an Application for Payment as prescribed in Section 9.3.2.

9.6 Substantial Completion

- 9.6.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. The Owner will be the sole judge in determining Substantial Completion.
- 9.6.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall request that the Owner make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Owner's inspection discloses any item that is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such items. The Contractor shall then submit a request for another inspection to determine Substantial Completion. The Contractor shall obtain and submit to the Owner all necessary inspections and permits necessary for occupancy prior to a determination of Substantial Completion.
- 9.6.3 When the Work or designated portion thereof is substantially complete, the Owner will issue a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the lists accompanying the certificate. Failure to include an item on such a list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial

Completion shall be signed by the Owner and the Contractor to signify their written acceptance of the responsibilities assigned to them therein.

9.7 Final Completion and Final Payment

- 9.7.1 Upon receipt of written notice from the Contractor that the Work is ready for final inspection and upon receipt of a final Application for Payment, the Owner will make a final inspection and, when the Owner finds the Work complete and acceptable under the Contract Documents and the Contract fully performed, the Owner will approve a final Certificate for Payment.
- 9.7.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents is to remain in force after final payment is currently in effect and will not be cancelled or allowed to expire until at least 45 days prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) other data establishing payment or satisfaction of obligations (such as releases of liens) arising out of the Contract, as may be required by the Owner.
- 9.7.3 If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such liens or Claims.
- 9.7.4 In the event that the Owner expends funds to satisfy a lien placed by the Contractor or Subcontractor through no cause of the Owner, the Contractor shall pay to the Owner all costs and fees, including attorneys' fees, incurred by the Owner to discharge such lien.
- 9.7.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of Claims by that payee except those previously made in writing and identified by the payee as unsettled at the time of final Application for Payment.
- 9.7.6 Final payment shall not become due until after all Claims made by the Contractor and the Owner have been settled in writing by the parties. The Contractor shall submit an Application for Final Payment on the same form as for other applications for payment and identify it as "Final Payment".

9.8 Partial Occupancy or Use

- 9.8.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such is designated by separate agreement with the Contractor. Such partial occupancy or use may commence whether or not the portion is substantially complete.
- 9.8.2 Immediately prior to such partial occupancy or use, the Owner and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.
- 9.8.3 Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements to the Contract Documents.

9.9 Retainage

9.9.1 Progress payments shall be subject to retainage of 10% of the approved Certificate for Payment. Upon certification of Substantial Completion, retainage shall be reduced to 5%, and the Contractor shall be paid any amounts due as a result of the reduction in the retainage.

9.10 Acceptance of Work

9.10.1 A Certificate for Payment, progress payment, or partial or entire use or occupancy of the project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 Safety Precautions and Programs

10.1.1 The Contractor shall be responsible for maintaining and supervising all safety precautions and activities in connection with the performance of the Work.

10.1.2 In the event the Contractor encounters on the site material believed to be asbestos or polychlorinated biphenyl (PCB), which has not been rendered harmless, the Contractor shall immediately stop work in the area affected and notify the Owner in writing. Work in the affected area shall not be resumed except by written notice by the Owner. The Work in the affected area shall be resumed if the material is found not to be asbestos or PCB, if the materials have been removed, or if the materials have been rendered harmless.

10.1.3 The Contractor shall not be required to perform Work relating to asbestos or PCB, without consent, unless so specified in the Contract Documents.

10.2 Safety of Persons and Property

10.2.1 The Contractor shall take precautions for the safety of, and shall provide protection to prevent damage, injury or loss to:

10.2.1.1 Employees on the Work and other persons who may be affected thereby;

10.2.1.2 The Work, materials and equipment to be incorporated therein under the care, custody or control of the Contractor or Subcontractors;

10.2.1.3 Other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety or persons or property of their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, erecting barricades, providing flagmen, erecting beacons or other warning devices, or other

signs, structures or barricades as needed, in order to protect the safety of the public and employees of the Owner, Contractor, and Subcontractors.

- 10.2.4 When use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise utmost care and carry on such activities under the supervision of properly qualified personnel.
- 10.2.5 The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor or anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable and for which the Contractor is responsible.
- 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. Unless otherwise notified, this person shall be the Contractor's superintendent.
- 10.2.7 The Contractor shall not load or permit any part of the construction, transportation or site to be loaded so as to endanger its safety and the safety of others.

10.3 Emergencies

- 10.3.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent damage, injury or loss.

ARTICLE 11 INSURANCE AND BONDS

11.1 Contractor's Liability Insurance

- 11.1.1 All insurance required hereunder shall include the following provision: "It is agreed that this policy is not subject to cancellation or reduction in coverage until 45 days prior written notice has been given to the City of Greenbelt, Maryland".
- 11.1.2 No acceptance and/or approval of any insurance by the Owner shall be construed as relieving or excusing the Contractor, or any surety, or its bond, from any liability or obligation imposed upon either or both of them by the provisions of the Contract Documents.
- 11.1.3 The Contractor shall purchase and maintain in a company or companies acceptable to the Owner such insurance as will protect the Contractor and the Owner from Claims set forth which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by the Contractor or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.
- 11.1.4 The Contractor shall not commence Work under this Contract until the Contractor has obtained at the Contractor's own expense all of the insurance as required hereunder and such insurance has been approved by the Owner. The Contractor shall not allow the Subcontractor(s) to commence Work until all similar insurance required of the Subcontractor has been so obtained and approved by the Contractor. Approval of the insurance required of the Contractor and the Subcontractors will be granted only after submission to the Owner of certificates of insurance or, alternately at the Owner's request, certified copies of the required insurance policies. Insurance shall be in a company or companies authorized to do business in the State of Maryland.

- 11.1.5 The Contractor shall require all of the Subcontractors to maintain during the term of this agreement, comprehensive (or commercial) general liability insurance, business automobile liability insurance, and workman's compensation and employer's liability insurance, in the same manner and amounts as specified for the Contractor as set forth in this article.
- 11.1.6 The specific insurance policies required to cover the claims listed in this subparagraph shall include the following:
- 11.1.6.1 Comprehensive (or commercial) general liability "occurrence" basis – Combined single limit of liability for bodily injury and property damage per occurrence of \$1,000,000; personal injury liability with an aggregate limit of \$1,000,000; annual aggregate of \$2,000,000; products and completed operations of \$1,000,000. Such limits can be provided under a single policy of in combination with "Umbrellas" or other excess policies. Such comprehensive general liability policy shall include coverage for: (1) Premises/operation; (2) Actions of independent contractors; (3) Products/completed operations to be maintained for four years after final payment; (4) Contractual liability including protection for the Contractor from claims arising out of liability assumed under this Contract; (5) Personal injury liability including coverage for offenses related to employment; (6) Explosion, collapse or underground hazards; (7) Broad form property damage liability, including completed operations.
- 11.1.6.2 Business Automobile Liability – Combined single limit for bodily injury and property damage per accident of \$1,000,000 and mandatory limits for personal injury protection and uninsured motorists coverage. Such limits can be provided under a single policy or in combination with "Umbrellas" or other excess policies.
- 11.1.6.3 Workmen's compensation – Statutory benefits as required by Maryland law of other laws, or as required by labor union agreements, including standard other states coverage;
- 11.1.6.4 Comprehensive (or Commercial) General Liability Insurance "Claims made" basis – If the comprehensive general liability insurance purchased by the Contractor has been issued on a "Claims made" basis, the Contractor must comply with the following additional conditions. The limits of liability and the extensions to be included as described in Section 11.1.6 remain the same. The Contractor must either: (1) Agree to provide certificates of insurance evidencing the above coverages for a period of four years after final payment on the contract. This certificate shall evidence a "retroactive date" no later than the beginning of the Contractor's or Subcontractor's work under this Contract; or (2) Purchase the unlimited extended reporting period endorsement for the policy or policies in force during the term of the Contract and evidence the purchase of this extended reporting period endorsement by means of a certificate of insurance or a copy of the endorsement itself.
- 11.1.7 The insurance required shall be written for not less than limits of liability as specified in this Article or required by law, whichever coverage is greater. Coverages, whether written or on occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment.
- 11.1.8 If any of the foregoing insurance coverages are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment.

11.2 Owner's Liability Insurance

11.2.1 The Owner shall be responsible for purchasing and maintaining its own liability insurance and, at the Owner's option, may purchase and maintain such insurance and, at the Owner's option, may purchase and maintain such insurance, or may self-insure, to protect the Owner against Claims which may arise from operations under the Contract.

11.3 Performance, Payment (Labor and Materialmen's) and Maintenance Bond

11.3.1 The Contractor shall furnish to the Owner, prior to the commencement of Work, bonds covering the faithful performance of the Contract and payment of obligations arising thereunder (labor and materialmen's) for the full amount of the Contract and with such sureties as may be agreeable to the Owner. The obligee under these bonds shall be the City of Greenbelt, Maryland. The Contractor shall pay the premium on these bonds or sureties.

11.3.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 Uncovering of Work

12.1.1 If a portion of the Work is covered contrary to the Owner's request or the requirements of the code enforcing authority, or to requirements expressed in the Contract Documents, it must, if required, be uncovered for the Owner's observation or inspection by the code enforcing authority, and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Owner has not specifically requested to observe prior to its being covered, the Owner may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, appropriate Change Orders shall charge costs of uncovering and replacement charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs.

12.2 Correction of Work

12.2.1 The Contractor shall promptly correct Work rejected by the Owner or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including testing and inspections and compensation for any costs, services or expenses by the Owner made necessary thereby.

12.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established herein or by terms of an applicable special warranty required by the Contract Documents, any of

the Work is found to be defective or not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so. If the defect is not readily apparent to a reasonable person, this limit shall be extended to one-year from the date the defect is discovered or should have been discovered.

12.2.3 The period of one year shall be extended with respect to portions of the Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation shall survive acceptance of the Work under the Contract and termination of the Contract.

12.2.4 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.5 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct such Work in accordance with the Contract Documents. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Owner, the Owner may remove it and store the salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for any costs, services and expenses made necessary thereby. If such proceeds of sale do not cover costs that the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.6 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.7 Nothing contained in the Article shall be construed to establish a period of limitation with respect to other obligations with the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in this Article related only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 Acceptance of Nonconforming Work

12.3.1 If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 Governing Law

13.1.1 The laws of the City of Greenbelt, Prince George's County and the State of Maryland, as applicable, shall govern the Contract.

13.2 Successors and Assigns

13.2.1 The Owner and Contractor respectively bind themselves to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 Written Notice

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 Rights and Remedies

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to or by the Owner or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 Tests and Inspections

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, and shall bear all related costs of the tests, inspections and approvals. The Contractor shall give the Owner timely notice of when and where tests and inspections are to be made so the Owner may observe such procedures. The Owner shall bear costs of tests, inspections or approvals that do not become requirements until after the Contract is executed.

13.5.2 If the Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not required under the Contract

Documents, the Owner will instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Owner of when and where tests and inspections are to be made so the Owner may observe such procedures. The Owner shall bear such costs.

- 13.5.3 If such procedures for testing, inspection or approval reveals failure of portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for any additional costs, services and expenses borne by the Owner.
- 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner.
- 13.5.5 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 Commencement of Statutory Limitation Period

13.6.1 As between the Owner and Contractor:

- 13.6.1.1 Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion.
- 13.6.1.2 Between Substantial Completion and Final Certificate for Payment. As to actions or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment., and
- 13.6.1.3 After Final Certificate for Payment. As to actions or failure to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any action or failure to act by the Contractor pursuant to any warranty provided in the Contract Documents, the date of any correction of the Work or failure to correct the Work by the Contractor, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 Termination by the Contractor

- 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under Contract with the Contractor, for any of the following reasons:

- 14.1.1.1 Issuance of an order of the court or other public authority having jurisdiction;
- 14.1.1.2 An act of government, such as a declaration of national emergency, making material unavailable;
- 14.1.1.3 Because the Owner has not approved a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in the Contract Documents or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents;
- 14.1.2 If one of the above reasons exists, the Contractor may upon seven additional days written notice to the Owner terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools and construction equipment and machinery, including overhead, profit and damages, as set forth in Article 7.
- 14.1.3 If the Work is stopped for a period of 60 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under Contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days written notice to the Owner terminate the Contract and recover from the Owner as provided herein.

14.2 Termination by the Owner for Cause

- 14.2.1 The Owner may terminate the Contract if the Contractor:
 - 14.2.1.1 Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
 - 14.2.1.2 Fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
 - 14.2.1.3 Persistently disregards laws, ordinances, or rules, regulations orders of a public authority having jurisdiction; or
 - 14.2.1.4 Otherwise is guilty of substantial breach of a provision of the Contract Documents.
- 14.2.2 When any of the above reasons exist, the Owner upon determination that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:
 - 14.2.2.1 Take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
 - 14.2.2.2 Accept assignment of subcontracts; and
 - 14.2.2.3 Finish the Work by whatever reasonable method the Owner may deem expedient.
- 14.2.3 When the Owner terminates the Contract for one of the reasons stated in this article, the Contractor shall not be entitled to receive further payment until the Work is furnished.
- 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for any additional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner.

14.3 Termination by the Owner for Convenience

- 14.3.1 The Owner may without cause, order the Contractor in writing to terminate the Work. The Contractor will be compensated for Work through the date of the termination, together with those additional costs determined by the Owner to have been reasonably incurred in the execution of the Contract through the date of termination. The Contractor will not be due any cost for lost profit associated with the termination of the Contract.
- 14.3.2 If after notice of termination for cause as described in this Article it is determined for any reason that the Contractor was not in default under any provision of this Contract, then termination shall be considered termination by the Owner for convenience as described in this Article with remedies as described therein.

14.4 Suspension by the Owner for Convenience

- 14.4.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.
- 14.4.2 An adjustment shall be made for increases in the cost of performance, caused by suspension, delay or interruption. No adjustment shall be made to the extent:
 - 14.4.2.1 That performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
 - 14.4.2.2 That an equitable adjustment is made or denied under another provision of the Contract.

By: _____

City of Greenbelt
 Sign and date above

By: _____

Contractor
 Sign and date above

CITY OF GREENBELT, MARYLAND

**GENERAL CONDITIONS
OF THE
CONTRACT FOR CONSTRUCTION**

**ATTACHMENT 1
List of Attached Document**

The Following documents are attached and made part of this Contract:

- I. GREENBELT LAKE DAM REPAIRS (MD DAM NO. 8) - Phase 1 Technical Specifications
- II. GREENBELT LAKE (MD DAM NO. 8) DAM REPAIRS – Plan Set Approved by Maryland Department of the Environment Dam Safety Division on March 19, 2015
- III. Dam Safety Inspection for Greenbelt Lake Dam (MD Dam No. 8) from Charles P. Johnson and Associates, Inc.; March 26, 2009

ATTACHMENT 2

Conditions to the Contract

1. The Work shall be complete within 120 calendar days as described in the Contract Documents.
2. Damages for failure to complete the Work as required in the Contract Documents shall be \$200.00 for each calendar day.
3. The Contractor's Application for Payment shall be submitted_____
4. The owner shall remit payment to the Contractor within_____ calendar days from the approval of the Certificate for Payment.
5. The Contractor is required to obtain the following permits: None
6. The Owner is required to obtain the following permits: Completed

The City of Greenbelt is an Equal Opportunity Employer
and supports affordable housing.

**GREENBELT LAKE DAM REPAIR PROJECT PHASE 1
CONTRACT NO. 2016-01**

Technical Specifications

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THERE ARE NO SPECIFICATIONS IN THIS SECTION

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THERE ARE NO SPECIFICATIONS IN THIS SECTION

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THERE ARE NO SPECIFICATIONS IN THIS SECTION

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THERE ARE NO SPECIFICATIONS IN THIS SECTION

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CATEGORY 000 – GENERAL REQUIREMENTS, REFERENCES, AND SPECIFICATIONS

CATEGORY 000 – GENERAL REQUIREMENTS, REFERENCES, AND SPECIFICATIONS

A. SUMMARY DESCRIPTION OF WORK

The City of Greenbelt, Maryland (the “City” or the “Owner”) intends to enter into a Contract with a qualified firm to provide construction and construction-related services including but not limited to the construction, repair, retrofit, alteration and modernization for:

GREENBELT LAKE DAM REPAIRS PHASE 1

The purpose of this project is to rehabilitate Greenbelt Lake Dam over the course of a four year, three phase project. Contract 2016 -01 is for Phase 1 of the Greenbelt Lake Dam repairs which includes replacing the lake drain conduit and repair or replacement of the lake drain valve. The work involves the routine use of heavy equipment in the moving of earth, controlled placement of earth embankments, placement of rock in streams and outfalls, construction of pre-cast and cast-in-place concrete structures, and other associated tasks, most of which are defined in the Specifications. This Unit Price contract will allow the City to perform these projects according to their design, but also allows for variations in field conditions at the time of construction, and the ability to address these conditions in a timely, responsive manner. The Work will be performed in coordination with an Engineer’s Technical Representative (ETR) with a fully-permitted design. All work will involve the technical and contractual oversight of the City.

Greenbelt Lake Dam was constructed in the early 1930’s. No original construction plans could be located. The only documents that remain from the original construction period are a set of specifications and photographs taken during construction. A concrete core wall runs the length of the dam along the centerline of the top of embankment.

Special concern must be given to sediment control issues, due to the close proximity of the receiving streams. Stream restrictions dates must be honored, and all work performed with all local, State, and Federal applicable regulations and project permits. Trees and wildlife must be protected and conserved in the process of the work. Handling of stormwater flows through the work areas must be considered. Pumping around the work areas must mitigate against any sediment release and fish loss.

The Contractor will ensure the quality of work by employing qualified, experienced personnel, trained in environmental restoration and sediment control measures. Contractor will provide all necessary management, supervision, personnel, labor, tools, materials, and equipment for each of the Unit Prices bid. This is the means of payment, and is intended to be the price inclusive of all Contractor costs.

B. REFERENCED STANDARDS AND SPECIFICATIONS

The following specifications and standards, including addenda, amendments and errata, form a part of this specification to the extent required by the references thereto. The Contractor must adhere to any newer versions of the referenced standards and specifications. The list below is the most frequently used standards that are referenced but other references may be referenced in the standard specifications.

American Association of State Highway and Transportation Officials (AASHTO). Washington D.C. <<http://www.transportation.org/>>. Referenced as "AASHTO".

American Concrete Institute (ACI), Farmington Hills, Michigan. <<http://www.concrete.org/general/home.asp>>. Referenced as "ACI".

- ACI-318-11 – "Building Code Requirements for Reinforced Concrete".
- ACI-350-06 – "Code Requirements for Environmental Engineering Concrete Structures and Commentary".
- ACI SP-66-04 – "ACI Detailing Manual". This standard replaced ACI 315-92.

American National Standards Institute (ANSI), Washington D.C.

- A300 – "American National Standard for Pruning", 2008.
- Z60.1 – "American Standard for Nursery Stock", 2004.

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), "Standard Methods for the Examination of Water and Wastewater". Washington D.C. 2012, 22nd Edition. <<http://www.standardmethods.org/>>. Referenced as "Standard Methods for the Examination of Water and Wastewater".

American Society of Testing and Materials International, Standards Worldwide. West Conshohocken, PA. <<http://www.astm.org/Standard/index.shtml>>, Referenced as "ASTM".

Concrete Reinforcing Steel Institute (CRSI). Schaumburg, Illinois. <<http://www.crsi.org/>>. Referenced as "CRSI"

- CRSI "Manual of Standard Practice 2009", 28th edition.
- CRSI "Placing Reinforcing Bars 2011", 9th edition,

International Code Council (ICC), International Building Code (IBC). Washington D.C. <<http://www.iccsafe.org/>>. Referenced as "International Building Code"

Maryland Department of the Environment (MDE), Water Management Administration in association with Soil Conservation Service and State Soil Conservation Committee, "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control". Baltimore, Maryland. 2011. Referenced as "MDE Specifications for Soil Erosion and Sediment Control".

Maryland Department of Environment, Water Resources Administration, "Maryland's Guidelines to Waterway Construction", Baltimore, Maryland. November 2000 revision. Referenced as "MDE Construction Guidelines".

Maryland Department of Transportation (MDOT), State Highway Administration (MSHA), Hanover, Maryland. <<http://www.roads.maryland.gov/home.aspx/>>. As revised on MSHA website. Referenced as "MSHA".

- "Book of Standards for Highway and Incidental Structures". Referenced as "MSHA Standard Details".
- "Standard Specifications for Construction and Materials", July, 2008. Referenced as "MSHA Standard Specifications" or "MSHA".

NSF International, "NSF/ANSI Standard 61-2012" (NSF 61). Ann Arbor, Michigan. <<http://www.nsf.org/>>.

United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Maryland, "Conservation Practice Standard, Pond, Code 378", January 2000. Washington D.C. Referenced as "NRCS MD-378".

United States Department of Agriculture (USDA), United States Composting Council (USCC), "Test Methods for the Examination of Composting and Composts (TMECC)". Washington D.C. 2002.

United States Department of Justice (USDJ), American Disabilities Act (ADA), "ADA Standards for Accessible Design". Washington D.C. 2010. <<http://www.ada.gov/>>

United States General Services Administration, "Index of Federal Specifications, Standards and Commercial Item Descriptions (FMR 102-27)". Washington D.C. <<http://apps.fas.gsa.gov/pub/fedspecs/>>. Referenced as "Federal Specifications"

United States Occupational Safety and Health Administration (OSHA), "Confined Spaces Standard, 2004". Washington D.C. <<http://www.osha.gov/>>.

Washington Suburban Sanitary Commission (WSSC). Laurel, Maryland. <http://www.wsscwater.com/>

- "General Conditions and Standard Specifications", 2011. Referenced as "WSSC General Conditions and Standard Specifications".
- "Standard Details for Construction", 2005. Referenced as "WSSC Standard Details".

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C. SPECIFICATIONS/SCOPE OF WORK: NOTE: The specification sections are organized per Bid Items listed in the Schedule of Unit Prices (listed in Section C).

Where applicable, items are cross-referenced to, and incorporate, information and requirements provided in the Part III – Technical Requirements of the Maryland State Highway Administration (MSHA) July 2008 Standard Specifications for Construction and Materials and the MSHA Book of Standards, latest revision.

The link to the MSHA Standard Specifications for Construction and Materials is:
<http://roads.maryland.gov/OHD/FrontPage.pdf>

Note: Part I (General Provisions) and Part II (Terms and Conditions) of the MSHA Standard Specifications for Construction and Materials **DO NOT APPLY** to, and are not incorporated into, this Contract. Refer to the terms and conditions of this Contract including the General Conditions of Construction Contract.

Any references in MSHA Part III – Technical Requirements to the “Administration” or “MSHA” shall be interpreted as referring to “City of Greenbelt, Maryland”.

Any references in MSHA Part III – Technical Requirements to the “Engineer” shall be interpreted as referring to the “Contract Administrator” as defined in the Contract.

Any references in MSHA Part III – Technical Requirements to the “MDE” shall be interpreted as referring to the “The City of Greenbelt Department of Public Works”. However, any such changing shall not be to the exclusion of any required MDE reviews.

Any references in MSHA Part III – Technical Requirements to material testing by the Engineer shall be deemed to be the Contractor’s responsibility. Contractor must utilize the services of accredited material testing laboratories that are acceptable to the Contract Administrator. All field and laboratory testing required by the Contract must be performed by qualified professionals who are currently licensed in the state of Maryland to perform such tests. The results of all material tests must be submitted to the Contract Administrator promptly and before requesting payment for the Work being tested for compliance.

Any references to the “Owner” shall be interpreted as referring to the City of Greenbelt, Maryland.

CATEGORY 100 – PRELIMINARY (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Contract Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

SECTION 101 – CLEARING AND GRUBBING

Line Item 101-1: Clearing and Grubbing (LS)

DESCRIPTION:

Comply with Subsection 101.01 of MSHA and Section 120 of these specifications unless noted otherwise on Contract Documents. This work consists of clearing and grubbing within the limits specified in the Contract Documents. Clearing includes removing and disposing of all trees (less than 24” in diameter), brush, shrubs, vegetation, rotten wood, rubbish, fences and structures in construction area for removal and disposal, and trimming and disposal of tree limbs that interfere with performance of the Work. Grubbing covers removal and disposal of all stumps, roots, stubs, brush and debris within Limits of Disturbances specified in the Contract Documents. No tree greater than 24 inches in diameter, not explicitly shown to be removed in the Contract Documents, may be removed without prior approval by the Owner.

MATERIALS:

Comply with Subsection 101.02 of MSHA unless noted otherwise on Contract Documents.

CONSTRUCTION:

Comply with Subsection 101.03 of MSHA unless noted otherwise on Contract Documents.

1. Erosion and sediment control measures and tree protection devices must be in place prior to mass clearing and grubbing operations.
2. Vegetation: The Contractor must mark (do not use paint) the clearing limits including any trees, shrubbery, and plants that are to be removed, as well as those that are to remain and be protected, prior to work. The Owner and other appropriate regulatory agencies must review and approve the clearing limits. The Contractor must protect the marked items from any damage. Branches and exposed roots of trees overhanging and interfering with the Work must not be cut without the Owner’s prior approval. All trimming must be done under the field supervision of a Certified Arborist or Maryland Licensed Tree Expert (MLTE), including trimming of trees by the Contractor for any other reason. Trimming, and/or repair of cuts and scars must be properly bandaged (Referenced Standards: American National Standard Institute (ANSI), “American National Standard for Pruning.”)
3. Grubbing:
 - a. All embedded stumps and roots must be removed to a depth of not less than 3 feet below the subgrade or slope surfaces. Depressions made below the subgrade or slope surfaces by removal of stumps must be refilled with soil or as specified on Contract Documents.
 - b. In the area of a dam embankment, all embedded stumps and roots must be completely removed on the embankment or beneath the embankment subgrade. Depressions made

below the subgrade or embankment surfaces by removal of stumps must be refilled with materials suitable for dam embankment construction, and compacted in accordance with USDA, Natural Resources Conservation Services, "Code MD-378" requirements, hereinafter referenced as MD-378. The embankment material must be overlaid with 6" of top soil, seeded, and mulched. The final grade must match the adjacent grades.

- c. Disposal: Unless designated for reuse on the Contract Documents, material and debris collected as a result of the clearing and grubbing operation is the property of the Contractor and must be disposed of in accordance with the local and state regulations. No burning will be permitted within the Work Site. Disposal of wood to the general public can be made so long as the wood piles do not interfere with the Work.

MEASUREMENT AND PAYMENT:

Comply with Subsection 101.04 of MSHA unless noted otherwise on Contract Documents. Line item 101-1 will be paid as a lump sum while line item 101-2 will be paid per each tree removal.

SECTION 102 – REMOVAL AND DISPOSAL OF EXISTING STRUCTURES

Line Item 102-1: Demolition – Ex. 24" C.M.P. (LF)

Line Item 102-2: Demolition – Existing Concrete End Wall (Str. EW1) (EA)

DESCRIPTION:

Comply with Subsection 102.01 of MSHA unless noted otherwise on Contract Documents.

MATERIALS:

Not Applicable

CONSTRUCTION:

Comply with Subsection 102.03 of MSHA unless noted otherwise on Contract Documents.

MEASUREMENT AND PAYMENT:

Comply with Subsection 102.04 of MSHA unless noted otherwise on Contract Documents. Line items 102-1, 102-2, and 102-3 will be paid for based on the units specified in the bid sheet.

SECTION 104 – MAINTENANCE OF TRAFFIC

- Comply with MSHA Subsection 104.00 unless noted otherwise on Contract Documents.

Line Item 104-1: Construction Safety Fence (LF)

- Comply with MSHA Subsection 104.20 modified as follows: In addition to use for Maintenance of Traffic (MOT), this line item includes the provision, installation, maintenance and removal of temporary fencing needed to: protect trees, mark limits of disturbance, and for resident safety and resource protection. **MATERIALS:** Vinyl fence must be orange high density UV stabilized polyethylene diamond mesh with 1-1/2" openings. Fence must be 4 feet high and must be erected on metal "T" or "U" posts spaced at 7 feet. **EXECUTION:** Install vinyl fencing for MOT and as indicated on the Contract Documents. The fence must be removed from the site with all related materials upon project completion. **PAYMENT:** The Unit Price cost for fence includes off-site removal of all related fence materials.

DESCRIPTION:

Comply with MSHA Subsections listed above unless noted otherwise on Contract Documents. Work shall be performed in accordance with MSHA and/or local agency requirements; whichever is applicable.

MATERIALS:

Comply with MSHA Subsections listed above unless noted otherwise on Contract Documents.

CONSTRUCTION:

Comply with MSHA Subsections listed above unless noted otherwise on Contract Documents.

MEASUREMENT AND PAYMENT:

Comply with MSHA Subsections listed above unless noted otherwise on Contract Documents.

SECTION 107 – CONSTRUCTION STAKEOUT

Line Item 107-1: Construction Stakeout (LS)

DESCRIPTION:

Comply with Subsection 107.01 of MSHA unless noted otherwise on Contract Documents. This work consists of providing a construction layout (stakeout) performed by a licensed surveyor currently registered in the State of Maryland. Also, see Article 5.6.2, Construction Stakeout, in the General Conditions of Construction Contract.

Note: In addition to the items listed below to be provided by a licensed surveyor, the Contractor must provide construction stakeout as incidental to all related construction work. The Contractor must use competent personnel and appropriate equipment for all work required to set and maintain the elevations and dimensions as specified in the Contract Documents. This stakeout must be installed to the satisfaction of all appropriate permit inspectors before any operation commences. If any discrepancies between plan and field conditions are found, the Contractor must resolve any needed field adjustments with the Owner before starting construction.

MATERIALS:

Comply with Subsection 107.02 of MSHA unless noted otherwise on Contract Documents. The surveyor must use marker materials that can be maintained by the Contractor during the course of construction.

CONSTRUCTION:

Comply with Subsection 107.03 of MSHA unless noted otherwise on Contract Documents.

The Contractor must have the licensed surveyor provide the following:

1. Baseline Stakeout.
 - a. A licensed surveyor must stakeout all construction baselines with the maximum spacing of stations (stakes, nails, crosses, etc.) of 100 feet.
2. Site Stakeout.
 - a. Right-of-Way and Easement Lines: Where required by the Contract Documents, the Contractor must have a surveyor define right-of-way and easement lines of the project for adjacent property owners.
 - b. The Contractor must perform a surveyed stake out of any alignment centerlines (e.g., embankments) or structure locations.
3. As-built survey
 - a. An as-built survey of the completed Work shall be performed and shall include but not limited to: horizontal dimensions, grading limits, elevations, slopes, types/length/height of restoration features, and any new pipes, structures, profiles or typical details. The as-built survey shall include a final as-built topographic survey for all grading and stream measures; a final as-built survey of all storm drain and sewer structures must also be performed for inverts and distances.

4. Equipment and Personnel: Where a licensed surveyor is required, the surveyor must be currently registered in the State of Maryland.
5. Control Markers: The Contractor must preserve the center line and bench marks set by the surveyor. When the center line and bench marks are disturbed or destroyed, they must be replaced by the Contractor at no additional cost to the Owner.
6. Control Stakes: For construction baselines, the surveyor must furnish and set stakes at each station as shown on the Contract Documents or offset along one side of the project as site conditions require and per the Owner's approval. As applicable, each of these stakes must be marked with its offset distance from the center line along with key reference elevation(s) needed for proper construction. Maintenance of surveyor stakes and additional stakes needed for the horizontal and vertical controls necessary for the correct layout of the work must be provided by the Contractor at no additional cost to the Owner.
7. Utilities: When applicable, the Contractor must furnish to the utility companies or agencies working within the limits of the project, reference information related to control points, alignment and grade data. These must be furnished promptly upon request, so that the utility companies may properly locate and coordinate their work related to the project.

MEASUREMENT AND PAYMENT:

Comply with Subsection 107.04 of MSHA unless noted otherwise on Contract Documents.

All other stakeout maintenance and flagging of clearing limits, wetlands, etc., shall be incidental to, and included in this line item.

SECTION 108 – MOBILIZATION

Line Item 108-1: Mobilization (LS)

DESCRIPTION:

Comply with Subsection 108.01 of MSHA unless noted otherwise on Contract Documents.

MATERIALS:

Comply with Subsection 108.02 of MSHA unless noted otherwise on Contract Documents.

CONSTRUCTION:

Comply with Subsection 108.03 of MSHA unless noted otherwise on Contract Documents.

MEASUREMENT AND PAYMENT:

Comply with Subsection 108.04 of MSHA unless noted otherwise on Contract Documents. Contrary to Section 108.04, the payment schedule for the mobilization line item will follow the schedule below:

- Invoice 1 – 50% of Line Item
- Invoice 2 – 25% of Line Item
- Invoice 3 – 25% of Line Item
- Invoice 4+ – 0% of Line Item

SECTION 120 – TREE PRESERVATION

DESCRIPTION:

This work includes implementing arboricultural activities related to tree preservation and protection of existing trees on site as shown on plans and directed by the Owner and/or approval agencies. The work includes, but is not limited to, tree protection fencing and signs, tree trunk protection, pruning, root pruning, mulching, fertilization, and other remedial activities.

Comply with Subsection 120.01 of MSHA unless noted otherwise on Contract Documents.

SUBMITTALS:

Qualifications to be submitted include the following: Contractor will provide an arborist with current certification from the International Society of Arboriculture or the American Society of Consulting Arborists (ASCA). This person shall be responsible for seeing that all work is performed to standards in a safe and professional manner

QUALITY ASSURANCE:

1. Equipment: All applicable Federal, State, and Local regulations shall be followed. The Contractor will be responsible for damage to property resulting from equipment, including fluid leakage or damage resulting from equipment failure. All incidents of this type shall be reported immediately to the Owner.
2. Safety shall be a primary concern while working on the property. Qualified company shall have an established safety program and adhere to all OSHA and ANSI standards applicable to the tree care industry. This includes all electrical and utility requirements as well as personal equipment and safe work procedures. All accidents resulting in property damage or personal injury shall be reported immediately to Owner.
3. The Contractor shall be responsible for any damage to structures, installations, fixtures, paving, concrete, plant materials and any other items on the property which result from the execution of work prescribed. All work is to be performed in the safest manner possible in order to avoid damage of any kind.
4. Herbicide Applications: If pesticide applications are required, a Certified Pesticide Applicator shall be responsible for supervision of all applications of pesticides on the property. The name and certification number of certified applicator(s) assigned to this job shall be submitted to Owner. All pesticides shall be applied in strict accordance with Invasive Plant Control by Herbicide Application in these specifications. All pesticide applications shall be approved by the Owner prior to application. Pesticide Labels and Material Safety Data sheets shall be available for all pesticides while on the site.

DEFINITIONS:

1. Tree Diameter shall be defined as diameter at breast height (dbh) which is the average tree diameter at 4.5 feet, measured from the ground on the uphill side of the tree.
2. Tree Caliper shall be defined as the diameter of the trunk at 6" above the soil for trees up to 6" in caliper and diameter at 12" above the soil for trees up to 12" caliper.

3. Critical Root Zone shall be defined as 1.5-foot of radius for every inch of trunk diameter at four feet six inches above ground level on the uphill side of the tree.
4. Tree Preservation Area shall be defined as all areas outside limits of construction which contain trees and all areas within the limits of construction which are designated as tree preservation areas on the plans and/or in the field by fencing and signage.

MATERIALS:

1. Granular Fertilizer: 30-7-7 with 50% of nitrogen in slow release form. Formula shall contain micronutrient compliment. This shall be included under Tree Preservation.
2. Liquid Fertilizer: 30-10-7 arboricultural grade. Nitrogen shall be 67% slow release in the form of urea formaldehyde. Potassium shall be derived from soluble potash. Phosphorous shall be in the form of phosphoric acid. This shall be included under Tree Preservation.
3. Root stimulant: Roots concentrate; Essential; manufactured by Growth Products Limited; MycorTree Saver Injectable, manufactured by Plant Health Care, Incorporated, 440 William Pitt Way, Pittsburgh, Pennsylvania, 15238, (412) 826-5445; or equivalent product approved by the Owner. This shall be included under Tree Preservation.
4. Tree Protection Fence: Tree protection fence shall be a minimum of four feet high. Welded Wire: 14 gauge galvanized welded wire with 2" x 4" openings attached to 6' minimum "T"- steel posts, driven at least 2' into ground at 10 foot intervals or approved equivalent. Brightly colored flagging shall be attached to top of fence to ensure visibility.
5. Tree Trunk Protection: Wooden planks must be a minimum of 2 inch thick. Planks must be placed to a height of 10 feet, starting at 18 inches above the ground. Space between planks must be no greater than 2 inches.
6. Tree Protection Signage: Material must be plastic or other weatherproof material (may be laminated) and printed in bold text so as to be easily read from a distance of 20 feet. Wording on signage shall be provided in both English and Spanish. Minimum size shall be 10 x 12 inches square. This shall be incidental to Tree Protection Fencing.

Comply with Subsection 120.02 of MSHA unless noted otherwise on Contract Documents.

CONSTRUCTION:

All trees on site which are to be preserved will be prepared and treated to maximize their potential for survival and improve their health and condition. All work will be performed to meet or exceed current industry standards. This will also meet the minimum of the most recently published ANSI standards. Comply with Subsection 120.03 of MSHA unless noted otherwise on Contract Documents.

1. Schedule: Contractor's Arborist shall be responsible for field supervising all arboricultural activities included within the scope of this specification. All activities will commence immediately upon notice to proceed. Activities will be completed in a continuous manner and coordinated to prevent delay of other construction processes.
2. Labor: The Contractor will dedicate labor and equipment as necessary to complete the work. It shall be the Contractor's responsibility to maintain a consistent crew on the job site in order to complete work in a timely manner. It will be the Contractor's Arborist's responsibility to supervise work and scheduling and see that work progresses in an efficient manner.

3. Meeting: The Contractor shall contact the Owner to set up a pre-construction meeting in the field to review the location of trees to be saved and limits of construction. Any potential conflicts between construction and preservation shall be addressed at that time. **The Contractor's certified arborist must attend this pre-construction meeting.**
4. Notifications: Contractor shall notify the Owner of any site condition changes which may affect work progress.
5. Initial Work: No other construction activity may occur on site until tree preservation fencing has been installed and approved by the Owner.
6. Construction Activity: All construction activity within the areas fenced off around the trees shall be prohibited. This shall include the following activities:
 - a. Parking or driving of equipment, machinery or vehicles of any type.
 - b. Storage of any construction materials, equipment, stockpiling, excavation or fill, soil, gravel, etc.
 - c. Dumping of any chemicals, (e.g. paint thinner from cleaning brushes), wash-out materials from cleaning equipment, concrete or mortar remainder, trash, garbage, or debris of any kind.
 - d. Burning within or in proximity to protected areas.
 - e. Felling trees into protected areas.
 - f. Trenching or grading within the Critical Root Zones of protected trees for any purpose without notifying the Owner 10 days in advance of operation in writing. This includes utilities, lighting, irrigation, drainage etc.
7. Tree Preservation Area: Any work required by plans which is in a tree preservation area shall be performed by hand. All work will be performed in a manner to prevent compaction, siltation and disturbance of the root mat of all associated trees and understory trees. At no time shall tree protection fencing be removed or relocated without permission of the Owner.
8. Subcontractor: The Contractor shall be responsible for ensuring that all subcontractors are aware of tree preservation specifications.
9. Critical Root Zone: Contractor may operate equipment within the root zone of trees to be preserved only if buffered root protection matting. Approval from the Owner is required prior to operation of any equipment in tree preservation areas. Root protection measures shall be inspected and maintained throughout construction.
10. Location: Contractor will be responsible for installation of tree protection fencing around trees and groups of trees to be preserved. See plan for location.
11. Flagging: Prior to installation, Contractor shall flag location of fencing in field for verification by the Owner.
12. Tree Protection Fence: Fencing shall remain in place and be continuously maintained for duration of construction.
13. Tree trunk protection must protect bark from damage due to direct contact with wire or other anchoring materials by use of burlap or other approved material. Planks must be removed off-site upon project completion.
14. Signs: Signs prohibiting access to preservation areas shall be placed at least every thirty feet along preservation fencing. Signs shall be as shown on the drawings.

15. Root Pruning: See plan for Final locations for root pruning to be performed and determined in the field in conjunction with both tree protection and sediment control fencing and approved by the Owner. Root pruning shall be performed wherever grades will be lowered within the critical root zone of a tree to be preserved. Root pruning shall be to the depth of excavation, or 24 inches, whichever is less. An approved trencher or vibratory plow shall be used to prune roots. The blade will be sharpened daily prior to the beginning of the operations. The supersonic air tool will be used when roots larger than 2" in diameter are exposed to facilitate root pruning or when root pruning the inner third of a trees critical roots. Roots over 1-1/2" in diameter shall have a clean cut made on the surface of the root which is still attached to the tree. This cut shall be made with a handsaw or chain saw as soon as larger root is severed is encountered.

Backfill the root-pruning trench with excavated soil, mulch and mark location for future reference. Silt fence may be installed in trench prior to backfilling as long as trench is not open for longer than 48 hours without watering.

Root pruning work must not be done when more than the top one-inch of soil is frozen. Root pruning must not be undertaken when the soil is wet and conditions are muddy.

16. Fertilizer: All trees indicated shall receive a liquid fertilization. Fertilizer will be applied at a rate of 1.5 pounds of nitrogen per 1,000 square feet of root zone treated. Fertilizer shall be injected using a soil probe at a depth of six inches. Fertilizer shall be applied in three-foot grid pattern evenly distributed throughout the root zone.

17. Damage: Contractor will provide services as necessary to respond to damage by construction activities within 48 hours of notification by the Owner.

MEASUREMENT AND PAYMENT:

Work performed as specified in the Tree Preservation Program will not be measured and paid for under Section 120. Rather, it will be measured and paid for one or more of the line items listed below. Payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

120.04.04 Brush Removal: Per Clearing and Grubbing; refer to Line Item 101-1.

120.04.05 Tree Felling: Refer to Line Item 101-1.

120.04.08 Tree Protection Fencing: Refer to Line item 1002-1.

120.04.09 The licensed tree expert services will not be measured and the cost will be incidental to the other line items.

SECTION 122 – CONTRACTOR KEY PERSONNEL REQUIREMENTS

DESCRIPTION:

This Section provides minimum requirements for the Contractor's key personnel on the Project – the Project Manager and Superintendent. The full requirements for the Project Manager and Superintendent shall be to provide adequate management and supervision to ensure performance of the Work in accordance with the Contract.

SUBMITTALS:

Within ten (10) days of Notice to Proceed, the Contractor must submit resumes of its Project Manager and Superintendent to the Owner and Engineering Consultant for approval. The resumes must be current and must reflect experience relevant to the Work.

REQUIREMENTS:

The Project Manager:

- Is an experienced and knowledgeable person designated as such by the Contractor, and approved by the Owner, having authority to act on behalf of the Contractor with respect to all aspects of the Project and to whom the Superintendent reports;
- Must attend all bi-weekly progress meetings at the site;
- Must attend other meetings scheduled by the Owner or Engineering Consultant needed to progress the work;
- Must submit the Contractor's Requests for Substantial and Final Completion in accordance with Article 14 of the General Conditions of Construction Contract;
- Must be fluent in written and spoken English;
- Must respond, on behalf of the Contractor, to all correspondence from the Owner and/or Engineering Consultant;
- Must coordinate with the Superintendent regularly in order to adequately progressing the Work;
- Must coordinate the Contractor's approval, record keeping, and timely processing of Shop Drawings, Product Data, Samples, and other Submittals;
- Must submit Project Schedules on behalf of the Contractor;
- Must approve Requisitions for Payments on behalf of the Contractor, prior to submittal; and
- Must process Change Proposals and Change Documents in an accurate and timely manner.

The Superintendent:

- Is an experienced and knowledgeable person designated as such by the Contractor, and approved by the Owner, who serves as the Contractor's representative at the Site with overall responsibility for direction and execution of the Work (including any Subcontractor's, Sub-subcontractor's or Supplier's work) and, unless otherwise designated by the Contractor, for the protection of persons and property at and adjacent to the Site and compliance with all applicable Laws and Regulations;
- Must be in attendance and performing his/her duties at the Site at all times during the performance of the Work or any other operations by the Contractor (including any operations by Subcontractors, Sub-subcontractors or Suppliers) until issuance of the Certificate of Substantial

Completion and for such additional time thereafter as necessary for completion of Punch List work.

- Unless approved otherwise by the Owner, must serve as the Safety Officer who must maintain a full-time presence on the Site and whose duty is conformance to OSHA and MOSH requirements and the prevention of accidents and the maintenance of safety programs, precautions and procedures;
- Must have a Certificate of Attendance at a Maryland Department of the Environment approved training program for the control of sediment and erosion. The Owner may request proof of this Certification at any time;
- Must oversee the work of all Subcontractors, Sub-subcontractors and Suppliers at the Site
- Must attend all bi-weekly progress meetings at the Site;
- Must attend all Pre-Construction meetings;
- Must provide full Site access and assistance to agents of regulatory agencies;
- Must coordinate with Utilities as necessary for completion of the Work;
- Must attend other meetings scheduled by the Owner or Engineering Consultant needed to progress the work;
- Must be fluent in written and spoken English;
- Must maintain Daily Records of Work performed by the Contractor at the Site, on a form approved by the Owner, and submit these Daily reports regularly to the Owner (each week or more frequently);
- Must perform all Work measurements and related activities including bookkeeping, and coordinate same with the Owner's representative, to ensure true and accurate quantities for billing purposes;
- Must maintain current copies of all Contract Documents at the Site;
- Must maintain approved copies of all Shop Drawings, Product Data, Samples, and other Submittals at the Site; and

MEASUREMENT AND PAYMENT:

Cost is incidental to other cost line items and Sections.

CATEGORY 200 – GRADING (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Contract Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

General Description: Work consists of all labor, materials, equipment, dewatering, sheeting and shoring, and services necessary for and incidental to the execution and completion of Grading (Earthwork), as indicated on the Contract Documents and specified herein. The extent of excavation, filling, and grading is shown in the Contract Documents. Preparation of subgrade for slabs and pavements is part of this Work. Backfilling required to establish proposed grade around facilities such as structures, curbs, pavements etc. is included as part of this Work.

All borrow sites and off-site disposal sites utilized by the Contractor to perform work under this Contract must have all necessary State and local permits. The Contractor must identify these sites and provide a copy of appropriate permit(s) to the Owner prior to starting work.

Note: Excavation and backfilling of native material incidental to the installation of in-stream structures and concrete structures should be included as incidental to the Unit Costs for those items provided in these specifications.

Existing Utilities:

1. Notify "Miss Utility" a minimum of 48 hours prior to performing earthwork by calling 1-800-257-7777. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. The Contractor must repair any Contractor damage to utilities shown on the Drawings or identified in the field. All utility work must be done in accordance with specific utility requirements including the use of utility-approved contractors and/or inspectors as appropriate; all costs for utility requirements shall be borne by the Contractor.
2. Should piping or other utilities (not shown on the Drawings) be encountered during excavation, stop work in that area and consult the Owner immediately for direction. Cooperate with the Owner and utility companies in keeping respective services and facilities in operation. Repair any Contractor-damaged utilities to satisfaction of utility company.
3. Do not interrupt existing utilities serving occupied facilities, except when permitted in writing by the Owner, and only after acceptable temporary utility services have been provided.

General Execution Requirements:

1. Use of Explosives: The use of explosives is prohibited unless authorized in writing by the Owner.
2. Protection:
 - a. Safety: Provide protective measures necessary for the safety of the workers, public, and adjacent property. Prevent cave-ins, collapse of walls, structures and slopes, both on and adjacent to the site.
 - b. Standards: Comply with regulations of local authorities having jurisdiction, including all applicable OSHA and MOSH requirements.

- c. Repair: Remove damaged materials and replace with new materials (as required by the Contract Documents) where such materials are affected by settlement or other damage caused by improper earthwork.

SECTION 201 – EARTH EXCAVATION

Line Item 201-01: Strip and Store Embankment Topsoil (CY)

Line Item 201-02: Strip and Haul Embankment Topsoil (CY)

DESCRIPTION:

Comply with Subsection 201.01 of MSHA unless noted otherwise on Contract Documents.

Although the MSHA title and specification Section refers only to roadway excavation, this Section applies to all excavation not identified elsewhere in these Specifications.

This Section covers excavation and handling of any soil material not classified elsewhere (e.g., pond dredge material, stream excavation, or topsoil). Excavation will be measured as the difference between an existing and the final design grades (e.g., cut) as shown on the Contract Documents. Earth excavated for reuse as fill on site must be kept in separate stockpiles for top soil and general soil regrading as required by the Contract Documents, Owner, or Permit Inspectors.

MATERIALS:

Referenced Standards:

- American Association of State Highway and Transportation Officials (AASHTO)
- American Society for Testing and Materials (ASTM)
- Maryland Department of Transportation, State Highway Administration “Standard Specifications for Construction and Materials” (MSHA), July, 2008.
- American National Standard for Pruning, ANSI A300 (2008)

Material Storage:

1. Stockpile excavated material suitable for backfill or fill where permitted by the Contract Documents, until required. Place, grade and shape stockpiles for proper drainage.
2. Locate and retain soil materials away from edge of excavations.
3. Dispose of excess and or unsatisfactory materials as specified herein.
4. Temporarily stabilize or cover the stockpile as required.

CONSTRUCTION:

Comply with Subsection 201.03 of MSHA unless noted otherwise on Contract Documents.

1. Excavation consists of cutting, removing, stockpiling and grading of material encountered when establishing required grade elevations in accordance with the Contract Documents that are not classified rock excavation, pond dredging or unauthorized excavation. Placing topsoil must be in accordance with MSHA Standard Specifications Section 701, and will be measured and paid separately under that Line Item.
2. Unauthorized excavation consists of site grading that extends beyond the specified bottom elevations or horizontal limits without the direction of the Owner. All remedial work, to correct

unauthorized excavation, including backfilling and compacting with earth or gravel, lean concrete fill or any other material to bring elevations to grade as specified and to the satisfaction of the Owner, must be performed at the Contractor's expense.

3. The Owner must be contacted, and work in that area must be stopped, if unsuitable bearing materials are encountered at required elevations. Any additional work must be authorized by the Owner **before work** continues including deeper excavation and placement of suitable replacement material.
4. All areas to be paved must be proof-rolled at sub-grade in the presence of the Owner. If deemed necessary, soils below sub-grade must be undercut and replaced as described below. At the end of each day undercutting is performed, the Contractor must certify in writing the quantity, in cubic yards, of undercutting performed in agreement with the Owner. Both parties must sign the certification which must be submitted to the Owner at the end of the month.
5. Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace the excavation where sloping is not possible because of space restrictions or stability of materials excavated.
6. Site Information: Data on indicated subsurface conditions is not intended to be a representation or warrant of continuity of such conditions between soil borings. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn there from by the Contractor. Data is made available for the convenience of the Contractor.
7. Excavation for Structures:
 - a. Excavation for structures must conform to elevations and dimensions shown on the Contract Documents within a tolerance of plus or minus 0.1 foot. Excavation should extend sufficient distance from footings and foundations to permit placing and removal of concrete formwork in addition to other utilities or adjacent structures. Excavation must not be backfilled without the Owner's approval.
 - b. In excavating for footings and foundations, do not disturb bottom of excavation. Excavate by hand to final grade just before concrete is placed. The horizontal limits of excavation must be within 18 inches of the surface of installed structures unless specified otherwise on the Contract Documents or covered separately for deep excavation.
 - c. Abandoned structures, which may exist where footings, foundations, etc., are to be placed, are to be removed to one foot below the elevations of bottoms of such footings, foundations, etc, unless additional excavation is directed in writing by the Owner.
8. Excavation for Stone and Bituminous Pavements:
 - a. Cut surface under pavements to comply with cross-section, elevations and grades as shown. All excavated areas which are to be paved must be compacted to 95% of maximum density as determined by AASHTO T-99.
 - b. Where rock is encountered, carry excavation 1'-0" below subgrade and backfill with suitable material approved by the Certified Geotechnical Engineer.
 - c. All topsoil from under areas to be paved with stone, asphalt or concrete, must be removed, until suitable soil is encountered. At that point, the Contractor must not proceed until the Owner has inspected the soil to determine if the excavated area is deeper than the required elevation for sub-base, sub-grade, etc. The Owner may then determine and/or direct that any replacement material be provided to bring grades up to required specifications for compaction until required density is achieved before proceeding with the next step.

9. Fine Grading

- a. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finish surface within specified tolerances, with uniform levels or slopes between points where elevation are shown, or between such points and existing grades.
- b. Ditches: Finish ditches to ensure proper flow and drainage. Manage excavation equipment and travel paths as to minimize soil compaction. Stabilize the soil surface with temporary or final stabilization in accordance with sediment control guidelines.
- c. Grass Areas: Finish areas to receive topsoil must conform to within a tolerance of 0.1 foot above or below the required sub-grade elevations.
- d. Walks: Shape surface or areas under walks to line, grade and cross-section, with finish surface not more than ½ inch above or below the required sub-grade elevation, duly compacted.
- e. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1 inch above or below the required subgrade elevation, duly compacted.

10. Maintenance

- a. Protection of Graded Areas: Protect newly graded areas from traffic and erosion in accordance with local and State Sediment Control Standards and keep free of trash and debris. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.
- b. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.
- c. Disposal of excess and waste materials: Remove waste materials, including unacceptable excavated material, trash, and debris from the construction site. All excess and waste materials must be disposed of in accordance with local requirements.

11. Rock Excavation

- a. Refer to MSHA 201.03.04.
- b. Rock excavation consists of removal and disposal of materials encountered that cannot be excavated without the use of explosives or pneumatic equipment. Typical materials classified as rock are, solid rock, rock in ledges, and rock hard aggregate deposits. Intermittent drilling performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.
- c. The determination of rock excavation will be determined and measured in the field by the Owner. Rock is defined as that material which cannot be removed by use of a bulldozer blade with a single-tooth ripper and will require blasting or use of pneumatic equipment for breaking. The removal of disintegrated rock is classified as Earth Excavation. The rock excavation as measured in the field must be deducted from the volume of Earth Excavation item provided it is within the grading limits of the area. Rock Excavation outside of these limits must be carried out only at the discretion and direction of the Owner.
- d. Minimum Effort: If rock is not removed during the process of normal digging and ripping, contact the Owner for prior approval, then extend the excavation to expose the rock surface within the limit of original excavation. The contractor must perform any and all rock excavation required to complete the Work.

MEASUREMENT AND PAYMENT:

Comply with Subsection 201.04 of MSHA unless noted otherwise on Contract Documents.

Payment per units shown on the Schedule of Unit Prices shall be full compensation for all excavation to be either reused locally or hauled off site for disposal. Each pay item shall include excavation, temporary stockpiles, and preparation of final grade for stabilization, materials, labor, equipment, tools, and incidentals necessary to complete the work. Excavation for any changes to the design grades shall be calculated from the revised Contract Documents or field measured.

SECTION 204 – EMBANKMENT AND SUBGRADE

DESCRIPTION:

Comply with Subsection 204.01 of MSHA unless noted otherwise on Contract Documents.

Although the title refers only to embankment and subgrade placement, this Section applies to all soil placements resulting from excavation – and not identified elsewhere in these Specifications.

MATERIALS:

Comply with Subsection 204.02 of MSHA unless noted otherwise on Contract Documents.

CONSTRUCTION:

Comply with Subsection 204.03 of MSHA unless noted otherwise on Contract Documents.

MEASUREMENT AND PAYMENT:

Comply with Subsection 204.04 of MSHA unless noted otherwise on Contract Documents. **Cost is incidental to other line items and sections.**

SECTION 205 – TEST PIT EXCAVATION

DESCRIPTION:

Comply with Subsection 205.01 of MSHA unless noted otherwise on Contract Documents.

This work consists of hand excavation of test pits to determine the location and elevation of utilities and other underground facilities as specified in the Contract Documents. The Contractor must determine the location of underground structures, pipes and utilities by use of test pit excavation prior to equipment excavation. Hand excavation is required; if appropriate, the Owner may approve the use of pot-holing equipment to dig the test pits.

Work taking place near the Washington Suburban Sanitary Commission (WSSC) lines will be observed by WSSC representatives. Test pits will be dug by the contractor in this area and care will need to be taken. The lake drain pipe replacement will be placed over the WSSC line. Work will involve placement of granular unshaped bedding (Class B) under the concrete pipe portion of the drain line. Stub PVC drain pipes will be installed in the manhole, capped, and left for connection to future phase work under a separate contract.

MATERIALS:

Comply with Subsection 205.02 of MSHA unless noted otherwise on Contract Documents.

CONSTRUCTION:

Comply with Subsection 205.03 of MSHA unless noted otherwise on Contract Documents.

Test Pits must not exceed one square yard in surface area without the permission of the Engineer's Technical Representative. All test pits must be backfilled with compacted soil and restored to the original site elevation and grades unless otherwise specified.

MEASUREMENT AND PAYMENT:

Cost for Test Pit Excavation shall be considered incidental to other line items and sections.

SECTION 208 – SUBGRADE PREPARATION

DESCRIPTION:

Comply with Subsection 208.01 of MSHA unless noted otherwise on Contract Documents.

MATERIALS:

Comply with Subsection 208.02 of MSHA unless noted otherwise on Contract Documents.

CONSTRUCTION:

Comply with Subsection 208.03 of MSHA unless noted otherwise on Contract Documents.

MEASUREMENT AND PAYMENT:

Comply with Subsection 208.04 of MSHA unless noted otherwise on Contract Documents. **Cost is incidental to other line items and sections.**

CATEGORY 300 – DRAINAGE (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Contract Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

SECTION 303 – PIPE CULVERTS INCLUDING TRENCH EXCAVATION

Line Item 303-01: 24" R.C.P. C-361 CL C-25 (LF)

DESCRIPTION:

Comply with Subsection 303.01 of MSHA unless noted otherwise on Contract Documents.

This Section includes the requirements to install and/or reconstruct temporary and permanent stormwater drainage and piping systems to the limits indicated in accordance with the Contract Documents.

This Work includes trench excavation for installation of pipe, including when the trench excavation requires shoring.

MATERIALS:

Comply with Subsection 303.02 of MSHA unless noted otherwise on Contract Documents.

Reinforced concrete pipe associated with storm drains must meet the applicable MSHA Standard Specifications Section 905. Reinforced concrete pipes associated with dam embankments and spillways must be watertight and meet NRCS MD-378 and ASTM C 361 standards. These pipes must have bell and spigot joints with o-ring rubber gaskets.

Heavy duty corrugated black polyethylene pipe (HDPE), slotted or solid must meet the requirements of applicable MSHA Standard Specifications Section 905, and all pipe must have a smooth walled interior.

Ductile Iron Pipe must meet the applicable requirements of WSSC Standard Specifications Section 02530 and must include restraining joints if located within a dam embankment.

Polyvinyl Chloride (PVC) plastic pipe, drainpipe, and perforated underdrain must meet the requirements of WSSC Standard Specifications Section 02730. PVC plastic pipe to be used as sanitary sewer pipe must be Schedule 40 solid and must meet the applicable requirements of WSSC Standard Specifications Section 02530. Stormdrain/underdrain PVC pipe must meet the requirements of applicable MSHA Standard Specifications Section 905.

Corrugated Metal Pipe (CMP) must meet the requirements of MSHA Standard Specifications Section 905. CMP pipes utilized for underground detention must be aluminized, Type 2, 14-gauge or stronger. Pipe ends must be matched and numbered by manufacturer. Connecting bands must be corrugated, and sleeve gaskets must be used. All pipe connections must be watertight, and utilize 24-inch wide connecting band and 24-inch flat neoprene or rubber sleeve gasket with four rods and lugs, and must conform to requirements of AASHTO M-245 and M-246. Coupling bands, anti-seep collars, end sections, etc. must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mills in thickness. Aluminum surfaces that are to be in contact with concrete must be painted with one coat of zinc chromate primer or two coats of asphalt. Any damaged or removed aluminum coating must be replaced with cold applied bituminous coating compound.

CONSTRUCTION:

Comply with Subsection 303.03 of MSHA unless noted otherwise on Contract Documents.

Reinforced concrete pipe installation in dam embankments must meet the manufacturer's recommendation and NRCS MD-378 requirements and must be laid in concrete cradle unless otherwise noted on the contract documents. Mechanical pipe pullers or come-along devices must be utilized to bring the pipe joints into the home position. All backfill within the public right-of-way, on dam embankments, near structures and in other critical areas identified on the Contract Documents will be compacted to 95% of the maximum density as determined by AASHTO T-99.

All temporary pipes must be removed at the end of the project.

1. Excavation for Ditches: Cut ditches to cross-sections and grades as shown. Deposit excavated materials to prevent cave-ins or material falling or sliding into ditch. Keep ditches free of debris until final acceptance of the work. Ditches must meet OSHA requirements to prevent cave-ins.
2. Sheeting, Shoring, and Bracing must be provided to prevent cave-ins when necessary. Professional Engineer-designed sheeting and shoring shop drawings must be submitted to the Owner for approval prior to installation.
 - a. Sheeting, shoring, and bracing materials must be timber, steel or aluminum, or a combination thereof, designed by a Professional Engineer registered in the State of Maryland, to retain the earth around structures, prevent cave-in and settlements, and to fulfill all safety requirements.
 - b. Timber must be structural grade with minimum working stress of 1,100 psi.
 - c. Steel sheet piling must conform to requirements of ASTM A328, continuous interlocking type. Struts, bracing and all other accessories required for the sheet piling system must meet requirements of ASTM A36.
3. Cold Weather Protection: Protect excavated bottoms against freezing when atmospheric temperature is less than 35°F.

Ductile Iron Pipe construction shall be in accordance with WSSC Standard Specifications Section 02530 and MSHA 303.03 (although not specified in MSHA 303). Ductile iron pipe associated with lake drain must be cast with the concrete structure. This installation requires bentonite waterstop ring to work as a gasket to ensure watertight connection.

MEASUREMENT AND PAYMENT:

Comply with Subsection 303.04 of MSHA unless noted otherwise on Contract Documents. Excavation, backfill (including imported materials as specified by the contract documents), compaction, testing and inspection shall be considered incidental to this line item.

Installation and removal of any temporary shoring, shoring or bracing or related material from the site will be incidental to the work. Removal of any temporary piping or related material from the site will be incidental to the work.

SECTION 305 – MISCELLANEOUS STRUCTURES

Line Item 305-1: Type A Manhole (Str. MH2) (EA)

Line Item 305-2: 24" End Wall (Str. EW2) (EA)

DESCRIPTION:

Comply with Subsection 305.01 of MSHA unless noted otherwise on Contract Documents.

This Work includes excavation for installation of underground structures, including when the excavation requires shoring.

MATERIALS:

Comply with Subsection 305.02 of MSHA unless noted otherwise on Contract Documents.

Reinforced concrete pipe and end sections associated with storm drains must meet the applicable MSHA Standard Specifications provided in Section 905. End sections must conform with MSHA 305 and per the standard detail as specified in the Contract Documents.

Corrugated Metal Pipe end sections must meet the requirements of MSHA Standard Specifications Section 905.

Trench Drains and trench drain grates: This item provides for trench drains and all associated required accessories for use in walkways, parking lots, and roads. Trench drains must be manufactured by EconoDrain, Zurn or ACO. Grates must be American Disabilities Act (ADA) compliant and in accordance with the Contract Documents, MSHA, and WSSC Standard Details. Where trench drains are traffic bearing, trench drain must be designed to withstand H-20 loading. For widths where ADA compliant grates are not available, solid trench covers shall be installed upon prior Owner's approval.

Manhole frames, covers, and steps must be provided in accordance with Construction Documents, MSHA, and WSSC Standard Details. Where materials are traffic bearing, they must be designed to withstand H-20 loading. Manholes Steps must be Polypropylene Encapsulated manufactured per MSHA Standard Detail MD-383.92.

Inlets shall be 2.5" x 4' unless noted otherwise in Contract Documents.

Trash Grates for Stormdrain Inlets: This item provides for the fabrication and installation of trash grates inside the manholes of storm drain inlets. Trash grates must be cut and bent from 3/4-inch, #9 Expanded Sheet Metal and hot-dipped galvanized in the shop. Installation and anchoring must be determined in the field to match conditions of each inlet. The Contractor must have the ability to cut, bend, and punch materials in the field. Angle Iron Support may be installed where additional benching or anchoring supports are required. Support Angle Irons must be 3" by 3" by 3/16" thick and hot-dipped galvanized in the shop. Any field cuts to grates or angle iron supports must be spray coated with galvanizing paint in the field.

CONSTRUCTION:

Comply with Subsection 305.03 of MSHA unless noted otherwise on Contract Documents.

Pre-fabricated structural plastic trash racks: This item provides for the provision and installation of pre-fabricated structural plastic trash racks on concrete risers or other structures. Structural plastic trash racks must come with pre-drilled holes to fit the bolts. Structural plastic trash racks must be securely

anchored to concrete riser structures by using stainless steel anchor bolts. Anchor bolts must be provided by the plastic trash rack supplier.

Trench Drains: Installation must be per manufacturer's specifications and shop drawings in addition to the Contract Documents.

MEASUREMENT AND PAYMENT:

Comply with Subsection 305.04 of MSHA unless noted otherwise on Contract Documents.

SECTION 308 – EROSION AND SEDIMENT CONTROL

Line Item 308-1: Stabilized Construction Entrance (EA)

Line Item 308-2: Silt Fence (LF)

Line Item 308-3: Earth Dike (LF)

Line Item 308-4: Mountable Earth Dike (EA)

GENERAL DESCRIPTION:

This Work consists of the provision and installation of all Sediment Control Devices as indicated in the Contract Documents. Control Devices must comply with the latest version of the Maryland Department of the Environment (MDE) “2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control” and “Maryland’s Guidelines to Waterway Construction” standards.

Work includes measures to prevent erosion and run-off of earth and silt, methods to prevent the transport of sediment off-site by construction vehicles, dust control, and contact and coordination with Sediment Control Inspection staff and any other involved regulatory agencies throughout the project.

The Contractor shall assume all Erosion and Sediment Control obligations and responsibilities placed on the Owner per the approved Erosion and Sediment Documents. The Contractor shall perform all layout, construction, scheduling, bookkeeping, notification, review and maintenance assigned to the Owner as the Erosion and Sediment Control permittee.

DESCRIPTION:

Comply with Subsection 308.01 of MSHA except Subsections 308.01.03 and 308.01.04 unless noted otherwise on Contract Documents.

MATERIALS:

Comply with Subsection 308.02 of MSHA unless noted otherwise on Contract Documents.

All materials must be in accordance to MDE specifications for Soil Erosion and Sediment Control, MDE Construction Guidelines, unless otherwise specified in the Contract Documents.

Geotextile fabrics must conform to Section H of the MDE “2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control”.

Straw mats (bales) with any type of plastic netting will not be accepted. The Straw/Single Jute Mat must be East Coast Erosion Blanket ECS–1B, Straw Biodegradable Single Net Blanket or City-approved equal and must provide biodegradable ground cover for seeding purposes with an estimated field life of less than 12 months.

Any Soil Reinforcement Matting must be Enkamat 7020 or Owner-approved equal and must be installed per manufacturer’s specifications.

Sand Bags: Sand bags must be made of UV resistant material, resistant to tear and puncture and woven tightly to prevent leakage of the sand. The sand bag must be at least 14” x 26” in size and hold a minimum of 50 pounds of sand.

The dewatering bag must be made of non-woven geotextile with a minimum surface area of 225 square feet per side. All structural seams must be sewn with double stitch using a double needle machine with

high strength thread. The seam strength must withstand 100 lb/in using ASTM D-4884 test method. The dewatering bag must have a nozzle large enough to accommodate a 4 inch discharge hose. The geotextile fabric must be a nonwoven fabric with the following properties:

| | | |
|---------------|-------------|------------------|
| Weight: | ASTM D-3776 | 12oz/yd |
| Grab Tensile | ASTM D-4632 | 300 lbs |
| Puncture | ASTM D-4833 | 180 lbs |
| Flow Rate | ASTM D-4491 | 75 gal/min/sq ft |
| Permittivity | ASTM D-4491 | 1/1 sec |
| UV Resistance | ASTM D-4355 | 70% |
| AOS | ASTM D-4751 | 100 |

CONSTRUCTION:

Comply with Subsection 308.03 of MSHA unless noted otherwise on Contract Documents.

1. The Contractor must employ a responsible person involved in the Project who has a Certificate of Attendance at a Maryland Department of the Environment approved training program for the control of sediment and erosion as the Superintendent/Supervisor. At any time, the Owner may request proof of this Certification.
2. Upon issuance of the Notice to Proceed, the Contractor shall layout the Limits of Disturbance and mark utilities via Miss Utility interaction. After these activities are completed, the Contractor shall schedule a pre-construction meeting with: Owner, City DPW Sediment Control Inspection staff, the Contractor, ETR staff, and other appropriate permit inspection staff. The Contractor must not access the Project Site for any reason other than visual observation and surveying prior to this meeting; no land disturbance activities are permitted prior to this pre-construction meeting.
3. The Contractor will be provided with a copy of the Sediment Control Permit if applicable and all other required permits at the pre-construction meeting (or earlier), and must keep a copy of each permit on the Project Site at all times.
4. Installation of sediment control devices must begin only after the City Sediment Control Inspector has granted approval, and must include any modifications to the approved Sediment Control Plan that the Sediment Control Inspector has required. The Sediment Control Inspector has the authority to make field modifications to the approved Sediment Control Plan. The Contractor must notify, and receive approval from, the Engineer before making any changes as directed by the Inspector. Upon approval by the Engineer, revised work shall be provided as required. The contractor is eligible for compensation for revised work in accordance with the Contract Documents.
5. All Sediment Control features must be constructed and installed in accordance with the Contract Documents or, if not indicated in the Contract Documents, then in accordance with the appropriate detail as specified in the MDE Specifications for Soil Erosion and Sediment Control and MDE Guidelines for Waterway Construction. All proprietary sediment control devices must be installed per manufacturer’s instructions.
6. All notifications for inspection and coordination with the City Sediment Control Inspector are the responsibility of the Contractor.
7. Events requiring Sediment Control inspection and approval include, but may not be limited to: start of land disturbance activities, compliance with warning notices, lifting of stop work orders

for violations, start of temporary or permanent stabilization, removal of Sediment Control facilities, and any other pertinent events noted in the Contract Documents.

8. Grading must be accomplished such that existing surface drainage is not impaired, a potential hazard is not created, hazardous erosion will not occur, or sediment will not collect in existing drainage systems.
9. All sediment control devices must be maintained, inspected and repaired as necessary at the end of each working day and after each rain event. If sediment leaves the construction area, it must be removed immediately and the area must be cleaned to the satisfaction of the Owner. Inspections must be documented on the MDE Construction Activity Inspection Form as required by permit. Completed inspection forms are required to be kept at the site in a notebook should an MDE representative wish to review them. Temporary stabilization must be provided.

The Contractor shall assume any Owner requirements identified on State or City Erosion and Sediment Control permit for the project. The Contractor must complete and comply with any formal transfer of permit responsibilities including completion and compliance with the MDE NPDES Transfer Form for individual and general permits, which must be filed with MDE by the Contractor. Once the NPDES permit conditions have been met, and the permit is ready to be closed, the MDE Notice of Termination must be filed for individual and general permits.

10. Removal of sediment control devices:

Once the Project has been completed, and all disturbed areas have been restored (seeded, sodded, paved, constructed, etc) as called for in the Contract Documents and there is a good stand of grass in the seeded/sodded areas, the Contractor must contact the City Sediment Control Inspector (with concurrent notification to the Owner and Engineer) for approval to remove the sediment control devices. The sediment control devices must be removed within 14 days from the date of the Sediment Control Inspector's approval.

11. As permitted, after removal of all sediment control devices, the Contractor must re-grade affected areas to proposed designed grades and seed/or sod them as required for stabilization. **The Work is not considered complete until all temporary sediment control devices have been removed and all regrading and seeding/sodding is completed and the City Sediment Control Inspector has released the Sediment Control permit.**
12. Dust Control: The Contractor must provide water as necessary to reduce airborne dust when directed by the Owner, at no additional cost to the Owner.
13. Dewatering: Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding Project Site and surrounding area. Do not allow water to accumulate in excavations or other areas of the Site. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of sub-grades and foundations. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water from excavations. Convey water removed from excavations and rainwater to collecting or run-off structures. Provide and maintain temporary drainage ditches and other diversions outside excavations limits for each structure. Do not use trench excavations as temporary drainage ditches. Dewatering activities must be performed at no additional cost to the Owner. Any repair to foundations which results from deficient dewatering is the sole responsibility and cost of the Contractor.

Dewatering (Filter) bags: Water encountered within the Site must be pumped through a dewatering (filter) bag before it is allowed to drain away from the Site. Dewatering setup must be made in accordance with the Contract Documents; if not shown; the filter bag must be placed

so that the incoming water flowing into the bag will pass through the system and then off site without creating erosion. The neck of the system must be tied off tightly to stop water from flowing out of the system without passing through the walls of the bag. The filter bag must be placed over a wood chip (mulch) bed to allow the water to flow in all directions. The filter bag must be placed on level or gently sloping grade and secured in place by wooden stakes spaced at 5 feet on center.

Contractor shall provide adequate pump(s) for all dewatering. All dewatering installations must be inspected by appropriate permit inspectors and the Owner prior to being placed into operation.

Install standard Stabilized Construction Entrances (SCEs) in accordance with Contract Documents and MSHA 308 and applicable State and City guidelines. The price must include off-site removal of all related materials upon project completion.

Temporary curb inlet protection must be installed around all storm drain curb inlets to control sedimentation into the storm drainage system.

Maintenance of Stream Flow (Stream Diversion):

Any stream diversion (maintenance of stream flow) must be set up and operated in accordance with the MDE Construction Guidelines for Waterway Construction 1.2 unless otherwise directed by the Owner. The Contractor must notify all applicable inspectors as well as the Owner 48 hours before initiating pump-around. If required, the Owner will advise on fish removal requirements. All pumps must be maintained in proper working condition. All stream diversion outfalls must utilize a velocity reduction device to prevent erosion. Pipes must be checked regularly for leaks and repaired as necessary. Any piping that crosses paved trails must have a wooden ramp at a slope of 1:20 (vertical: horizontal) for pedestrian and bike passage. A warning sign must be placed in advance of the pipe crossing. Pump inlets must have a screen (mesh size <1 inch) over opening. If pump operations occur between 5pm and 7am, the Contractor must have an employee on site at all times to monitor pumping operations. Pumps utilized in the stream diversion must be in compliance with the City Noise Ordinance and if necessary the Contractor must construct devices to muffle pump noise at no additional compensation.

MEASUREMENT AND PAYMENT:

Comply with Subsection 308.04 of MSHA unless noted otherwise on Contract Documents.

Delete MSHA Subsections 308.04.01 and 308.04.02.

Any maintenance for erosion and sediment controls shall be incidental to the Erosion and Sediment Control costs.

Sand bags will be paid per each based as size as specified above. Smaller bags will be prorated by size or weight for payment.

Geotextile material will not be paid separately but shall be incidental to, and included in, other line item costs.

Construction Safety Fencing shall be paid per Section 104.

Each sediment control will be paid for once. Any rework, repair or re-installation of sediment control devices shall be performed at the Contractor's expense.

Maintenance of Stream Flow will not be measured but will be paid at the Contract unit price. The amount of payment shall be prorated over the time period the Maintenance of Stream Flow is required.

SECTION 312 — RIPRAP SLOPE AND CHANNEL PROTECTION

Line Item 312-1: Class I Riprap (SY)

DESCRIPTION:

Comply with Subsection 312.01 of MSHA unless noted otherwise on Contract Documents.

This section includes the requirements for the provision and installation of rip-rap and round river rock for the purpose of channel and slope stabilization in accordance with the Contract Documents.

MATERIALS:

Comply with Subsection 312.02 of MSHA unless noted otherwise on Contract Documents.

The material for rip-rap (round river rock per MSHA's "stone" terminology) slope and channel protection must conform to the requirements of MSHA Standard Specifications listed below unless otherwise specified in the Contract Documents:

| | | |
|----|--|-----------------|
| a. | Aggregate Filter Blanket (Graded Aggregate Sub-base) | 901, Table 901a |
| b. | Stone (Rock) | 901.02 |
| c. | Geotextile, Class as specified | 921.09 |

SUBMITTALS: The Contractor must submit, for Owner approval, sample material a minimum of thirty days prior to starting work.

Locally Harvested Riprap: When the Contractor and the Owner jointly determine that local rock meets the above-specified requirements, the rock may be used to construct in-stream structures per the Contract Documents. Stone must be harvested within the limits of disturbance of the Project Site. The installation of the rock must adhere to all requirements stated in this Section (including filter cloth).

CONSTRUCTION:

Comply with Subsection 312.03 of MSHA unless noted otherwise on Contract Documents.

Excavation must conform to the lines and grades specified in the Contract Documents. The subgrade must be smooth and firm, free from protruding objects that would damage the geotextile, and constructed in a manner acceptable to the Owner.

Geotextile Filter Cloth: Unless specified otherwise by Contract Documents, the geotextile must be placed on the prepared subgrade with the adjacent edges overlapping a minimum of 2 feet (0.6m). Geotextile torn or damaged must be replaced or repaired at the Contractor's expense in a manner acceptable to the Owner.

Aggregate Filter Blanket (Graded Aggregate Sub-base): When aggregate filter blanket is specified in lieu of geotextile, it must conform to the lines and grades specified in the Contract Documents and must be compacted in a manner acceptable to the Owner.

Installation of rip-rap aprons must be in accordance with MSHA Section 312. Installation of rip-rap in stacked configurations must be in accordance with Contract Documents. The Maryland Department of the Environment (MDE) Maryland's Guidelines to Waterway Construction must be followed unless specified otherwise in the Contract Documents.

Stacked Imbricated Rip-rap Placement: The placement of rip-rap must begin with the cutoff walls or tie-in locations. The larger stones must be placed in the cutoff walls and along the outside edges of the limits of slope and channel protection. Rock must be stacked to prevent sliding due to loads from streambank soils or storm flows. Gaps in between stacked rocks must be minimized. The Contractor must use a "thumb" attachment to an excavator bucket to place rock unless otherwise approved by the Owner.

Backfill: Any excavation voids existing along the edges of the completed slope and channel protection must be backfilled in a manner acceptable to the Owner.

MEASUREMENT AND PAYMENT:

Comply with Subsection 312.04 of MSHA unless noted otherwise on Contract Documents.

PAYMENT: The payment will be full compensation at the Unit price on the Schedule of Unit Prices for all applicable and incidental excavation, geotextile, sheeting, shoring, de-watering, hauling, storing, re-handling of material, removal and disposal of excess material, backfill, grading and slope adjustments, and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents.

CATEGORY 400 – STRUCTURES (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Contract Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

SECTION 420 – PORTLAND CEMENT CONCRETE STRUCTURES

Line Item 420-1: Concrete Collar (EA)

DESCRIPTION:

Comply with Subsection 420.01 of MSHA unless noted otherwise on Contract Documents.

The purpose of this specification is to obtain a dense and durable concrete having the specified strength. The Owner may inspect and reject any concrete structure that is poor in quality for reasons including but not limited to: exposed reinforcing steel, misaligned features, poor consolidation of concrete, unacceptably joints, spalls, cracks, damages or poor workmanship.

Work includes constructing concrete structures such as risers, headwalls, weirs, outlet structures, foundations, slabs, underground vaults, manholes, pipe cradles, and any other concrete structures on the Contract Documents. The Work also includes furnishing, forming, transporting, mixing, placing, curing, and finishing of Portland Cement concrete and protecting the work as called for in the Contract Documents. Pre-cast units may not be substituted for cast in-place concrete without prior written authorization of the Owner and appropriate regulatory agencies, as applicable.

Unreinforced non-structural concrete may be formed or unformed, and is used in construction of pipe cradles, concrete collars, etc. in accordance with the Contract Documents.

MATERIALS:

Comply with Subsection 420.02 of MSHA unless noted otherwise on Contract Documents.

Concrete Codes, Regulations, Referenced Standards and Specifications:

1. International Building Code, latest version
2. American Concrete Institute, "Building Code Requirements for Reinforced Concrete", ACI 318-02
3. American Concrete Institute, "Environmental Engineering Concrete Structures," ACI 350/350R-01
4. American Concrete Institute, "Specifications for Hot Weather Concreting", ACI 305
5. American Concrete Institute, "Specifications for Cold Weather Concreting", ACI 306
6. Detail and Detailing of Concrete Reinforcement ACI 325-92
7. MSHA "Standard Specifications for Construction and Materials", July 2008, Sections 420, 902, 908, 909, 911, 913, 915, 917, and 921.

8. American Society for Testing Materials (ASTM)

Concrete Structure MATERIAL Specifications:

1. Building Code Requirements for Reinforced Concrete, ACR 318, Manual of Standard Practice For Detailing Reinforced Concrete, ACI 315.
2. Maryland Department of Transportation, State Highway Administration "Standard Specification For Construction and Materials", July 2008, Section 421, 902, and 908.
3. CRSI: Manual of Standard Practice and Recommended Practice for Placing Reinforcing Bars.
4. AASHTO: Standard Specification for Highway Bridges.
5. ASTM: A82, A185, A615

Required Submittals:

1. Shop Drawings:
 - a. Detail reinforcing in accordance with ACI Detailing Manual.
 - b. Bar lists showing the individual weight of each bar, total weight of each bar size and total weight of bars on list. Base calculated weights on theoretical unit weights show in ASTM A615, Table 1.
2. Design Mix Certification:
 - a. Prior to placing concrete, submit design mixes for each class and type of concrete, certifying that proposed concrete ingredients and proportions will result in concrete mix meeting specified requirements.
 - b. Include for each class and type of concrete, as many mix designs as there are combinations of different ingredients or type of ingredients anticipated to cover requirements of the work.
 - c. Establish mix designs through an Owner-approved design laboratory. Design concrete mix for protection against alkali-aggregate reactivity.
3. Cast in Place Installation Documentation: Proposed methods for controlling concrete temperature and plans for placing concrete taking into account sun, heat, wind, ambient air temperature or other limitations of facilities that will prevent proper finishing or curing.
4. Poured Concrete Certifications
 - a. Submit with mix design, laboratory test reports and mill or manufacturer's certificates verifying that ingredients conform to specified requirements. Use ingredients in design mix which are representative samples of materials to be used in the work.
 - b. Submit test results whenever the aggregates, cement or other additives to be used in the concrete come from a different lot, source, other area of quarry, different quarry or from other than the representative stockpile or batch from which the original material was tested and approved.
 - c. If the source, brand or characteristic properties of ingredients need to be revised during the term of the Contract, submit revised laboratory-mix report in accordance with procedures specified for original mix design.

5. Concrete Batch tickets: Before unloading at the site, submit certification or delivery ticket from concrete supplier with each batch delivered to the site bearing the following information:
 - a. Name of supplier
 - b. Name of batching plant and location
 - c. Series number of ticket
 - d. Date
 - e. Truck number
 - f. Specific job designation: contract number and location
 - g. Volume of concrete in cubic yards
 - h. Class and type of concrete
 - i. Time loaded
 - j. Type and brand of cement
 - k. Weight of cement and fly ash or ground-iron blast-furnace slag.
 - l. Maximum size of aggregates
 - m. Weights of coarse and fine aggregates
 - n. Maximum amount of water to be added and amount of water added at the site
 - o. Kind and amount of admixtures – Admixtures containing Calcium Chloride must not be allowed

6. Precast Concrete Certification:
 - a. Manufacturer's certificates.
 - b. Mill tests on each heat showing chemical and physical analyses performed in accordance with ASTM A615, as modified by ACI 318.

Concrete Materials:

1. As a minimum, the materials for structural cast in place concrete must be provided in accordance with MSHA Standard Specifications Section 420.02. Concrete material for spillways and control structures must also meet ACI 350. Structural concrete must be either mix #3 (f'c = 3,500 psi at 28 days) or mix #6 (f'c = 4,500 psi at 28 days) as designated on the Contract Documents. All exposed corners of concrete structures must have 3/4" x 3/4" chamfered edges. Note: The slump measured at the point of placement as determined in accordance with ASTM C143 will be: 3 inch maximum for footings and substructure walls, and 4 inch maximum for beams, reinforced walls and columns.
2. Non-shrink grout must comply with WSSC Standard Specification Section 3300.
3. In addition to meeting the requirements of MSHA Standard Specifications Section 420 and related sections, Precast Structures must meet the WSSC Standard Specifications Section 3400 for quality assurance. Unless noted otherwise, the compressive strength of precast structures must be 5,000 psi at 28 days. Field coring of new precast structures is not allowed. The Owner reserves the right to reject any structure delivered to the jobsite which is poor in its quality, with regard to exposed reinforcing steel, misaligned features, poor consolidation of concrete, unacceptable joints, spalls or workmanship. Rejected poor quality structures will not be accepted, but must be replaced at no cost to the Owner.

Unless noted otherwise, non-structural concrete must meet all requirements for MSHA Mix #1 (minimum compressive strength of 2500 psi at 28 days) as specified in MSHA Section 420.

CONSTRUCTION:

Comply with Subsection 420.03 of MSHA unless noted otherwise on Contract Documents.

Concrete Installation:

1. Prior to any installation of a concrete structure or conveyance piping, the sub-grade must be tested and approved by a Certified Geotechnical Engineer registered in the State of Maryland. Compaction requirements must be demonstrated by the geotechnical testing and reporting, and is a responsibility of the Contractor. Additional independent quality assurance testing may be exercised by the Owner. In the event of any discrepancy, the Contractor must demonstrate full compliance with the Contract Documents.
2. The base on which concrete is to be poured must be free of water, mud, debris, loose materials, oil, frost, and ice. Unless specified, gravel must not be used as concrete sub-base in dam embankments.
3. The Owner must be notified at least 24 hours in advance of concrete placement. Form work must be approved for lines and grades by the Owner, ETR, or Certified Geotechnical Engineer prior to placing concrete. Concrete must be laid only in the presence of the Owner, ETR, or Certified Geotechnical Engineer.
4. Proper forms (MSHA Section 420.03.02) must be laid providing the required depth for the concrete as shown on the plans. Forms must be heavy and secure in place so as not to move during the construction process.
5. Concrete must be placed from a truck which should be no more than 15 feet from the area being poured. Extension of chute beyond 15 feet may be permitted by the ETR at his/her sole discretion. Tubes or chutes, if used, must have metal lining, and must have ends lowered as close as possible to the newly poured concrete. Concrete must not be dropped from more than 2 feet above the forms. Concrete must be placed in such a manner that there is no segregation of material or displacement of reinforcement.
6. Curing of concrete must be in accordance with MSHA Sections 420 and 902. Any options shown in MSHA Section 420.03.09 will be acceptable. Spraying with liquid membrane is encouraged. Product specifications with application rates must be submitted to the Owner for approval. Failure to cure concrete per specifications may result in rejection and Owner-directed removal of the poured concrete.
7. Concrete must be poured within a temperature range of 50 and 90 degrees Fahrenheit. Special provisions must be developed and approved by the Owner when pouring outside of this range.
8. Concrete must be thoroughly consolidated during and immediately after depositing by mechanical vibration, internal or external as approved by the Owner.
9. A broom finish will be used when specified on drawings or details, and it must be provided before the initial set. Ordinary surface finish must be used on all other structures. See MSHA 420.03.07(a). All concrete structures must have chamfered edges.
10. During construction, the Contractor is required to have the concrete tested by an independent laboratory in accordance with ASTM C 31, C 39, and C 172. Seven-day and 28-day tests must be conducted. For each day that concrete is poured on a project site, the Contractor must provide a minimum of six (6) test cylinders for each mix design to be tested at a material testing laboratory. All test cylinders must be cured under the laboratory conditions. In addition, the Owner may require an equal number of test cylinders cured under the job conditions. The test results must be forwarded to the Owner. If the concrete fails to meet the contractual

requirements, the Owner has the right to require additional testing or reject the concrete, at the Contractor's expense.

11. If any concrete is found to be defective, the Contractor must, at the direction of the Owner, remove defective concrete at no cost to the Owner. Concrete must be deemed defective if: the surface is not finished properly to the satisfaction of the Owner, it does not meet the strength requirements, it is not cured properly, it shows excessive cracking, or it fails to meet other contract requirements. Any concrete not accepted to the satisfaction of the Owner must be removed and replaced by the Contractor at no cost to the Owner.

Concrete Joints: Where required, concrete joints must be installed to include waterstops to ensure a watertight structure. Commonly used waterstops include rubber, PVC, and bentonite. Type and size of the waterstops and accommodations for nearby reinforcement must be per Contract Documents. PVC waterstops must be at least 6" wide and must be supported and centered on the joint. PVC waterstop can be field spliced by using the electric splicing iron or by using fittings to assure continuity. Swell type bentonite waterstops must be placed to ensure a minimum of 2" of concrete cover.

MEASUREMENT AND PAYMENT:

Comply with Subsection 420.04 of MSHA unless noted otherwise on Contract Documents.

CATEGORY 500 – PAVING (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Contract Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

Any defective work rejected by the owner or ETR must be re-done at no additional cost to the Owner.

Unless otherwise described in each Line Item, in general, work performed under this Division is subject to inspection and acceptance by the Owner prior to payment. Any work not accepted must be re-done at no additional cost to the Owner.

THERE ARE NO SPECIFICATIONS IN THIS SECTION

CATEGORY 600 – SHOULDERS (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Contract Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

Unless otherwise described in each specification section, in general, work performed under this Division is subject to inspection and acceptance by the Owner prior to payment. Any defective work not accepted must be re-done at no additional cost to the Owner

THERE ARE NO SPECIFICATIONS IN THIS SECTION

CATEGORY 700 – LANDSCAPING (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Task Order Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

specifically specified otherwise in the individual Specification Sections below, the following minimum acceptance and maintenance requirements apply to all plant and seeding installations:

Initial Watering: The Contractor must provide at least one initial watering after planting, sodding or seeding. All watering must be accomplished using a hose with nozzle end breaker or a sprinkler. Water must be applied in sufficient quantities to maintain moist soil to a depth of at least 4 inches. Water must be applied at low water pressure directly to each plant, allowing water to be absorbed into the planting area until saturated, but without runoff. The Contractor must avoid the application of too much water.

Contractor must be able to supply the required water from a water truck or from a nearby hydrant. When a hydrant is used, the Contractor is responsible for all regulations, permits or expenses necessary to use the public water supply.

Final Cleanup: Prior to Initial Acceptance, the Contractor must remove all trash and materials incidental to the project and dispose of it off-site. All rejected materials must be immediately removed from the site.

Inspection and Initial Acceptance: The Contractor must notify the Owner in writing that the Plantings, sod and/or seeds are installed in accordance with these specifications. The Contractor must request an inspection by the Owner. The inspection shall be performed by the Owner and Contractor within two weeks of written notification from the Contractor. If the installation and plantings are satisfactory, the Owner will provide a Certificate of Initial Acceptance to the Contractor. The Warranty period will begin from the date of the Certificate.

WARRANTY (ESTABLISHMENT AND MAINTENANCE) PERIOD WORK

After Initial Acceptance of any Planting work, and before receiving complete payment for any planting installations, the Contractor must provide a written Warranty to the Owner for the planting work. The Warranty must be provided using the Owner's form or other form acceptable to the Owner. The Warranty must acknowledge the Contractor's responsibility to: establish and maintain all plantings, sodding, and/or seeding, and to replace all deficient work at the Contractor's sole cost. The length of the warranty will vary depending on the nature of the work; see the individual Specification Sections for information on Warranty length. Work to be performed during the Warranty period shall include, but not be limited to:

Maintenance Watering: The Contractor must provide sufficient watering as necessary to maintain the plantings, sodding, and/or seeding in good health throughout the Warranty period. This maintenance watering of planted trees, shrubs, herbaceous plants, sod, and/or seeded areas shall be as required for proper growth and health of the plantings. Water used on plants must be free of any substance harmful to the plants.

During the Warranty period, the Contractor must monitor the water needs of all plant material at least once per month between March 31 and October 31. Additionally, the Contractor shall perform more frequently water monitoring visits in periods of low rain (defined as any two-week period with less than an inch of rain at the Site). When the Contractor identifies the need for watering, the Contractor must notify the Owner of the timing of the Contractor's planned watering. After Owner notification, the Contractor shall proceed with its planned watering – whether the Owner attends the watering or not.

While the Owner has no obligation to monitor watering, the Owner may notify the Contractor if the Owner feels that the Contractor has failed to properly water plantings. If so notified, the Contractor must start watering within 24 hours of that notification. The Contractor must provide watering until all plant material has been properly watered as approved by the Owner. All required watering must be completed within five calendar days of Owner notification.

Contractor must be able to supply the required water from a water truck or from a nearby hydrant. When a hydrant is used, the Contractor is responsible for all regulations, permits or expenses necessary to use the public water supply.

Maintenance: The Contractor shall be responsible for all maintenance during the Warranty period including but not limited to: watering, invasive plant control, fence maintenance, stake and guy maintenance, and mowing (as applicable). See individual Sections for additional requirements.

Final Inspection: The Contractor will conduct a Final Inspection with the Owner at the end of each Warranty period. It will be the Contractor's responsibility to notify the Owner at least two weeks before the anticipated meeting. Any planting installation that does not meet the Task Order Documents and/or the Warranty must be corrected or replaced by the Contractor at its own expense.

Replacements and Conditions: The Contractor must meet the required Warranties for replacement of deficient plantings. During the Warranty period, the Contractor will not be responsible for plant material that has been damaged due to vandalism, fire, relocation or other activities beyond the Contractor's control as determined by the Owner. The Contractor is responsible for maintaining adequate protection against deer (and other animal) damage, as specified in the specifications, during the Warranty period.

The cost of the Planting Warranty work (including watering, maintenance, care and replacement) will not be paid for directly. Cost is incidental to other cost Line Items and Sections. If the Contractor fails to perform any Warranty work, the Owner has the right to perform the work and back-charge the Contractor.

SECTION 701 – TOPSOIL AND SUBSOIL

Line Item 701-1: Topsoil Placement (From On-Site) (SY)

Line Item 701-2: Topsoil Placement (From Import) (SY)

DESCRIPTION:

Comply with Subsection 701.01 of MSHA unless noted otherwise on Contract Documents.

This work consists of providing and installing topsoil over prepared subsoil prior to establishment of vegetation.

MATERIALS:

Comply with Subsection 701.02 of MSHA unless noted otherwise on Contract Documents.

The topsoil must be in accordance with MSHA Section 920.01.02 and must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Soils having low moisture content, low nutrient levels, low pH, materials toxicity to plants, and/or unacceptable soil gradation are not acceptable. Topsoil must not be a mixture of contrasting textured subsoils, and shall contain less than 5 % by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 " in diameter.

Maximum sand content in topsoil shall be 50%.

CONSTRUCTION:

Comply with Subsection 701.03 of MSHA unless noted otherwise on Contract Documents.

Topsoil must be placed according to the Contract Documents. Thirty days prior to installation, the Contractor must provide the Owner with a soil test report from an accredited soils testing lab for the existing subsoil on site and a soils report for all to-be supplied topsoil. The soil test must verify the material is in accordance with MSHA section 920.01.02. Only topsoil meeting MSHA section 920.01.02 (and Contract limit on sand content) can be applied according to the Contract Documents.

Before topsoil placement, the subsoil must be tilled to a minimum depth of 6 inches. Where the subsoil is either highly acidic or composed of heavy clay, ground limestone must be spread according to the soil test results, or if not specified, at the rate of 4-8 tons/acre (200-400 lbs per 1000 sq ft) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil. Topsoil shall be tested and amended as per soil test recommendations.

During installation, topsoil must be uniformly distributed in a 6-8 inch layer and lightly compacted to a minimum thickness of 4 inches. Any irregularities in the surface resulting from the installation of topsoil or other operations must be corrected in order to prevent the formation of water pockets or depressions. The Contractor must minimize soil compaction during installation and avoid applying topsoil on frozen, muddy or other conditions that may be detrimental to proper grading and seedbed preparation. All necessary erosion and sediment control practices must be maintained as required by the Owner and regulatory inspectors.

Temporary stockpiling and replacement of local top soil on a construction site will be covered under Excavation.

MEASUREMENT AND PAYMENT:

Comply with Subsection 701.04.06 of MSHA unless noted otherwise on Contract Documents.

SECTION 705 – TURFGRASS ESTABLISHMENT (BY SEEDING)

Line Item 705-1: Permanent Seeding and Mulching (SY)

DESCRIPTION:

Comply with Subsection 705.01 of MSHA unless noted otherwise on Contract Documents.

This section specifies the establishment of turf by seeding as specified in the Contract Documents. The work includes soil preparation, seeding, fertilizing, liming as required, mulching, overseeding and re-fertilizing of all areas designated for turf establishment.

MATERIALS:

Comply with Subsection 705.02 of MSHA unless noted otherwise on Contract Documents.

Submittals:

1. At least one month prior to proposed seeding date, the Contractor must submit: proposed seeding schedule, manufacturer's certificates of seed purity and guarantees of germination in accordance with Maryland Seed Law, and soil test results to the Owner for review and approval. Proposed seed must be approved by the Owner prior to installation.
2. Before the seed is applied to the site, the Contractor must provide the Owner the seed tickets and manufacturer's invoice for the seed to be installed. The seed tickets and seed mixture being installed must match the mixture approved by the Owner.
3. Warranty: After the Contractor receives a Certificate of Initial Acceptance from the Owner, the Contractor must submit a written Warranty covering the establishment and maintenance of turfgrass installation. The Warranty period shall begin from the date of the Certificate of Initial Acceptance.

Seed and other Materials:

1. Seed must be fresh, clean, new seed crop composed of the following varieties mixed in the proportion shown and tested to the following minimum percentages of purity and germination.

Minimum standards for percent purity and percent germination of turfgrass:

| Turfgrass species | % Purity | % Germination |
|--------------------------|-----------------|----------------------|
| Kentucky bluegrass | 90 | 80 |
| Perennial ryegrass | 95 | 85 |
| Tall fescue | 95 | 80 |
| Fine fescues | 95 | 80 |

| APPROVED BLUEGRASS | | APPROVED PERENNIAL RYE | | APPROVED TALL FESCUE | |
|--------------------|-----------|------------------------|-----------|----------------------|-----------------------|
| Merit | Limosine | Opni | Greenland | Amigo | Hounddog |
| Fairfax | Liberty | Bright Star | Prizm | Apache | Jaguar |
| Blacksburg | Julia | Cutter | Assure | Bonanza | Mesa |
| Preakness | Midnight | Repell II | Affinity | Chieftain | Mustang |
| Cynthia | Penn Pro | Prelude II | Seville | Finelawn I | I Olympic |
| Eclipse | Touchdown | APM | Rivera II | Finelawn 5GL | Rebel II |
| Georgetown | Dawn | Palmer II | Advent | Guardian | Shenandoah Tribute |

2. Limestone applications must be determined by the soil test results and recommendations as approved by the Owner. Pulverized limestone must contain 50% calcium oxide equivalent (CaO or Ca Mg O) and ground to such fineness that at least 50% will pass through a 100 mesh sieve and 90% will pass through a 20 mesh sieve.
3. Fertilizer applications must be determined by soil test results and recommendations as approved by the Owner. Fertilizer must be 100 percent organic-based fertilizer and meet the following specifications:
 - a. Organic Fertilizer (5-3-4) – The organic fertilizer must be 100% organic based fertilizer (free of synthetic materials). The fertilizer may be derived of fish by-products, cottonseed meal, alfalfa meal, feather meal, rock phosphate, kelp meal, cocoa meal, blood meal, dried whey, natural nitrate of soda, natural sulfate of potash, and magnesium sulfate, and must meet the following chemical requirements:

| | |
|--|-------|
| Total Nitrogen (N) | 5.00% |
| Water Soluble Nitrogen | 1.50% |
| Water Insoluble Nitrogen | 3.50% |
| Available Phosphate (P ₂ O ₅) | 3.00% |
| Soluble Potash (K ₂ O) | 4.00% |

4. Mulch
 - a. Straw: Straw must meet the requirements of MSHA Section 920.04.01.
 - b. Wood Cellulose Fiber: Wood cellulose fiber must meet the requirements of MSHA Section 920.04.02.
5. Straw Mulch Binder must be bound with a suitable binder or straw must be rolled thoroughly with a crimping roller in several directions to prevent erosion of the soil and/or mulch.

CONSTRUCTION:

Comply with Subsection 705.03 of MSHA unless noted otherwise on Contract Documents.

1. All areas disturbed by construction must be seeded unless noted otherwise in the Contract Documents and as directed by the Owner. Areas that are not disturbed must NOT be seeded.
2. Soil must be tested by an accredited soil testing laboratory for acidity (pH), phosphorous (P₂O₅), potassium (K₂O), soluble salts concentrations and organic matter.

3. All areas to be seeded must conform to the finished grades as specified on the Contract Documents and be free of all weeds, trash, debris, brush, clods, stones and other foreign materials larger than 3 inches in diameter or length that would interfere with seeding, or future grass maintenance. All gullies, washes or disturbed areas that develop subsequent to final dressing must be repaired prior to seeding.
4. Seeding must be performed from March 1 through May 15 or August 1 through October 20 unless otherwise approved by the Owner.
5. Seeding must not be performed on frozen ground or when the temperature is 32°F (0°C) or lower.
6. Before seeding, all soils must be loosened with rototillers, disk harrows, chisel plows, or other Owner-approved equipment, to a minimum depth of 4 inches. All stones over ¾ inch in any dimension must be removed from the top 4 inches of soil by use of a "Rock Hound" or other means. Fertilizer and limestone application may be accomplished at this time according to the results of the soil test. Fertilizer and limestone must be evenly distributed on the seed bed areas and worked into ground to a depth of 3 inches.
7. All seeding equipment must be calibrated before application to the satisfaction of the Owner so that the materials are applied accurately and evenly to avoid misses and overlaps. Seed installed by a broadcast spreader capable of placing seed at the specified rate. The minimum seed application rate is 250 pounds per acre.

Hydroseeding applications must meet MSHA Section 705.

8. Seed must be applied within the top ¼ inches of the soil in two different directions. The Contractor must maximize the seed/soil contact by firming soil around the seed with a cultipacker or other similar equipment.
9. Initial Watering must be provided as described in Category 700.
10. The Contractor must mulch and tack all seeded areas within 24 hours after seeding in accordance with MSHA Sections 705.03.09 and 705.03.10.

Initial Acceptance: After the Contractor has completed its initial seeding (including soil preparation, seeding, fertilizing, liming as required, mulching and initial watering), the Contractor shall submit a request for Initial Acceptance. An Owner Inspection will be conducted to verify completion. If complete, an Initial Acceptance Certificate will be issued by the Owner at that time.

Warranty:

1. The Contractor must provide a written establishment, maintenance, and replacement Warranty on all permanent turf seeding. The length of the Warranty shall be the longer of: a) one year or b) until adequate grass coverage is obtained. The Warranty must guarantee an 85% survival rate per 1000 square foot area.
2. The Warranty period shall begin upon the date of the Initial Acceptance Certificate.
3. As necessary, the Contractor must reseed all areas experiencing a less than an eighty-five percent (85%) survival rate at its sole cost. As practicable, reseeding shall be performed prior to May 15 of the year following Initial Acceptance.

4. If Soil Stabilization matting is used, it shall be included as part of the turfgrass seeding Warranty.

Establishment and Maintenance of Newly Seeded Areas:

1. Establishment and Maintenance of grass areas requires fertilizing, watering, mowing, weeding, and re-seeding as necessary to obtain an Owner-approved stand of grass. It must continue until the end of the Warranty period. Until Final Acceptance, the Contractor shall refertilize all of the grassed areas during each seeding seasons. The actual timing and rate of application of the refertilization shall be decided by the Owner, consistent with MSHA 705.03.16. Proper maintenance of the turf will continue until the project is finally accepted.
2. Flooded, washed-out, rilled or otherwise damaged or defective areas of seeding, mulch, grade, swales or berms must be reconstructed and all grades re-established in accordance with the grade plans or other specifications.
3. The Contractor is responsible for all mowing until Final Acceptance. Mowing must not remove more than one-half of the grass blade length. Heavy mowing, resulting in grass piles, must be "double mowed" or piles must be removed by the Contractor. Height of the grass must be maintained at 3 inches, unless otherwise specified by the Owner.
4. The following are examples of deficiencies that will result in the Owner's non-acceptance of the work:
 - a. Improper Grades:
 - Low or high spots on flat ball field-type areas.
 - Improper drainage such as swales, low areas, rip-rapped outlets and paved areas.
 - Washed out or rilled areas.
 - Exposed rock and log debris
 - b. Turf Grass Conditions:
 - Poor or thin stand; improper application of seed, dead grass; use of seed mixtures other than specified in the specifications.
 - Improper fertilizer application – Uneven spreading, insufficient amounts, or failure to re-fertilize during extended acceptance.
 - Persistent weeds established in turf areas.

Final Acceptance: When: 1) the Contractor has established adequate (at least 85%) turfgrass establishment, and 2) a minimum of 11 months has elapsed since the date of the Initial Acceptance Certificate, the Contractor shall submit a request for Final Acceptance. Owner and/or Regulatory Inspections will be conducted to verify completion. If complete, a Final Acceptance Certificate will be issued by the Owner at that time.

If Establishment is not complete at the time of the Inspection, the Contractor shall take immediate steps to establish adequate coverage during the next planting season. Re-inspections will occur until Final Acceptance.

MEASUREMENT AND PAYMENT:

Turfgrass establishment shall be measured and paid for at the Contract Unit Price shown on the Schedule of Unit Prices. Payment must be full compensation for furnishing and incorporating seed

including all, materials, labor, equipment, tools, maintenance and Warranty and incidentals necessary to complete the work as specified in the Contract Documents.

Turfgrass Establishment including preparing soil, preparing seed bed, applying fertilizer, seed mixes, seed additives, overseeding, reseeding, mulching, securing mulch, and repairing unacceptable areas will be measured and paid for at the Contract unit price.

The Contractor shall be paid 100% of the Unit Price after Initial Acceptance and the Owner's receipt of the Contractor's written Warranty.

The cost of all Warranty work is incidental to the Unit Price; the Contractor shall perform all Warranty work at no additional cost. **If the Contractor fails to perform any Warranty work, the Owner has the right to perform the work and back-charge the Contractor.**

SECTION 714 – TREE FELLING

Refer to Line Item 101-1

DESCRIPTION:

Comply with Subsection 714.01 of MSHA unless noted otherwise on Contract Documents.

This work consists of Selective Tree Felling of trees having exceptional size or requiring technical removal (e.g. risk to nearby infrastructure or personal property) by a Certified Arborist or Maryland licensed Tree Expert. All Selective Tree Felling will be specified on the Contract Documents. For tree felling done in riparian forests, the use of heavy equipment is to be minimized. Unless noted otherwise, the Work includes stump and root removal.

Trees requiring selective tree felling are defined as trees having caliper of 24" or greater. The caliper of a tree is the diameter of the tree at breast height (DBH) measures at 4.5 feet from the ground on the uphill side of the tree.

This work also includes flush cutting trees greater than 24 inches in diameter that are not designated to be saved, or for Selective Tree Felling, in the Contract Documents

MATERIALS:

Comply with Subsection 714.02 of MSHA unless noted otherwise on Contract Documents.

All tools and work must be in accordance with accepted arboricultural practices and as approved by the Owner.

CONSTRUCTION:

Comply with Subsection 714.03 of MSHA unless noted otherwise on Contract Documents.

All Selective Tree Felling will be identified on the Contract Documents. All work must be performed by personnel under the supervision of a Certified Arborist or Maryland Licensed Tree Expert.

This work consists of felling and removal of trees within the limits of disturbance. The stump and all visible roots must be completely removed and ground to a minimum depth of 8 inches below the final ground surface, unless noted otherwise. The stump's hole must be backfilled and compacted level with the adjacent ground consistent with final grades and stabilization. The stump hole must be backfilled and compacted level with the adjacent ground using an Owner-approved soil, seeded and mulched as specified in MSHA Section 705.

All Flush Cutting must be as specified in the Contract Documents. While Flush Cutting trees, the stumps must be cut to 4 inches above the ground surface and soil disturbance around root ball must be minimized.

All wood, branches and debris need to be removed and disposed of. With Owner's approval (and at Owner's sole discretion), debris may be able to be reused onsite. However, if debris cannot be reused onsite, removal and disposal of debris is incidental to, and compensated per, this Line Item. The obtaining of any and all required permits for the trimming of trees will be the sole responsibility of the Contractor.

Where the felling and removal of trees conflicts with overhead utility lines and cables, it is the Contractor's responsibility to coordinate this work with the appropriate utility company(s) to ensure that no damage or interrupted service occurs when this work is performed.

MEASUREMENT AND PAYMENT:

Comply with Subsection 714.04 of MSHA unless noted otherwise on Contract Documents.

24¼ inches in caliper or larger trees will be measured and paid at the Contract unit per the Schedule of Unit Prices. The caliper of a tree must be the diameter at breast height measured at 4.5 feet from the ground. The removal and disposal of shrubs and trees less than 24¼ inches in caliper will be measured and paid for as specified in the Clearing and Grubbing Section.

The payment will be full compensation for any required coordination with utility companies, the services of the Certified Arborist or Maryland Licensed Tree Expert, tree felling, complete removal or grinding to 8 inches below the adjacent ground of all stumps, backfill and compaction of all voids created by stump removal, the obtaining of all required permits, and for all material, labor, equipment, stump grinder, tools, and incidentals necessary to complete the work. The work includes removal of debris and/or stockpiling of debris on site for reuse.

FOR THIS CONTRACT, TREE FELLING SHALL BE INCIDENTAL TO LINE ITEM 101-01.

CATEGORY 800 – TRAFFIC (MSHA-BASED)

GENERAL NOTE: The referenced MSHA Sections and Subsections apply unless noted otherwise elsewhere in the Contract Documents. In case of conflict between MSHA specifications and other Contract Documents, the requirements of the other Contract Documents shall apply.

THERE ARE NO SPECIFICATIONS IN THIS SECTION.

CATEGORY 900 – MATERIALS (MSHA-BASED)

GENERAL NOTE: The material specifications of MSHA Category 900 shall apply as referenced in other Specification Sections. The material specifications of MSHA Category 900 are not repeated below. Following are only modifications to the referenced MSHA material specifications:

SECTION 901 – AGGREGATES

1. In addition to conformance with MSHA Section 901 (Tables 901 A and B), aggregate must conform to the following ASTM/AASHTO gradation table (M 43). Washed aggregate and river rock/gravel must also conform to ASTM C-33.

| SIZES OF COARSE AGGREGATE, (AASHTO M 43) (inches) | | | | | | | | | | | | | | | | |
|---|---|--|-----------|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|---------|--------|----------|
| Size number | Nominal size square openings ⁽¹⁾ | Amounts finer than each laboratory sieve (square openings), percentage by weight | | | | | | | | | | | | | | |
| | | 4 | 3-½ | 3 | 2-½ | 2 | 1-½ | 1 | ¾ | ½ | 3/8 | No. 4 | No. 8 | No. 18 | No. 50 | No. 100 |
| 1 | 3-½ to 1-½. | 100 | 90 to 100 | | 25 to 60 | | 0 to 15 | | 0 to 5 | | | | | | | |
| 2 | 2-½ to 1-½. | | | 100 | 90 to 100 | 35 to 70 | 0 to 15 | | 0 to 5 | | | | | | | |
| 24 | 3-½ to ¾. | | | 100 | 90 to 100 | | 25 to 60 | | 0 to 10 | 0 to 5 | | | | | | |
| 3 | 2 to 1. | | | | 100 | 90 to 100 | 35 to 70 | 0 to 15 | | 0 to 5 | | | | | | |
| 357 | 2 to No. 4. | | | | 100 | 95 to 100 | | 35 to 70 | | 10 to 30 | | 0 to 5 | | | | |
| 4 | 1-½ to ¾. | | | | | 100 | 90 to 100 | 20 to 55 | 0 to 15 | | 0 to 5 | | | | | |
| 467 | 1-½ to No. 4. | | | | | 100 | 95 to 100 | | 35 to 70 | | 10 to 30 | 0 to 5 | | | | |
| 5 | 1 to ½. | | | | | | 100 | 90 to 100 | 20 to 55 | 0 to 10 | 0 to 5 | | | | | |
| 56 | 1 to 3/8. | | | | | | 100 | 90 to 100 | 40 to 75 | 15 to 35 | 0 to 15 | 0 to 5 | | | | |
| 57 | 1 to No. 4. | | | | | | 100 | 95 to 100 | | 25 to 60 | | 0 to 10 | 0 to 5 | | | |
| 6 | ¾ to 3/8. | | | | | | | 100 | 90 to 100 | 20 to 55 | 0 to 15 | 0 to 5 | | | | |
| 67 | ¾ to No. 4. | | | | | | | 100 | 90 to 100 | | 20 to 55 | 0 to 10 | 0 to 5 | | | |
| 68 | ¾ to No. 8. | | | | | | | 100 | 90 to 100 | | 30 to 65 | 5 to 25 | 0 to 10 | 0 to 5 | | |
| 7 | ½ to No. 4. | | | | | | | | 100 | 90 to 100 | 40 to 70 | 0 to 15 | 0 to 5 | | | |
| 78 | ½ to No. 8. | | | | | | | | 100 | 90 to 100 | 40 to 75 | 5 to 25 | 0 to 10 | 0 to 5 | | |
| 8 | 3/8 to No. 8. | | | | | | | | | 100 | 85 to 100 | 10 to 30 | 0 to 10 | 0 to 5 | | |
| 89 | 3/8 to No. 16. | | | | | | | | | 100 | 90 to 100 | 20 to 55 | 5 to 30 | 0 to 10 | 0 to 5 | |
| 9 | No. 4 to No. 16. | | | | | | | | | | 100 | 85 to 100 | 10 to 40 | 0 to 10 | 0 to 5 | |
| 10 | No. 4 to 0 ⁽²⁾ . | | | | | | | | | | 100 | 85 to 100 | | | | 10 to 30 |

(1) In inches, except where otherwise indicated. Numbered sieves are those of the United States Standard Sieve Series.

(2) Screenings. Where standard sizes of coarse aggregate designated by two or three digit numbers are specified, the specified gradation may be obtained by combining the appropriate single digit standard size aggregates by a suitable proportioning device which has a separate compartment for each coarse aggregate combined. Blending must be done as directed by the Laboratory.

2. **SUBMITTALS:** The Contractor must submit, for Owner approval, sample aggregate material a minimum of thirty days prior to starting work.
3. **Sand (Fine Aggregate):** In addition to conformance with MSHA Section 901 (Tables 901 A and B), sand for bioretention facilities and other applicable infiltration facilities must be double-washed and otherwise conform to ASTM Standard C33 for fine aggregate.

SECTION 921.09 – GEOTEXTILES

1. Geotextile Filter Fabric (Non-Woven): Unless otherwise specified by the contract documents, in addition to conformance with MSHA Subsection 921.09, Non-Woven geotextile filter fabric must conform to Class C per Table H-24-1 in the MDE “2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.” The fabric must have minimum grab strength of 200 pounds and minimum puncture strength of 80 pounds. Note: This item will not be paid when fabric is incidental to other work (e.g., riprap – Section 312).

CATEGORY 1000 – GENERAL (NON MSHA-BASED)

GENERAL NOTE: The specification sections in this Category are not based on the MSHA.

SECTION 1002 – TEMPORARY TREE PROTECTION FENCING

Line Item 1002-01: Tree Protection Fencing (LF)

(Coordinate with Line Item 104-1)

DESCRIPTION:

This section specifies the requirements for fencing needed to keep equipment away from tree root protection areas. Provide per Tree Protection Fence detail found on the contract documents.

MATERIALS:

Fencing must be a 14½ gauge, welded-wire mesh fence (woven, 6" x 6"). Fence must be 6 feet long metal "T" posts spaced at 10 feet (maximum) and embedded a minimum of 8" into the ground.

CONSTRUCTION:

Install wire mesh fencing for protection of trees per the Contract Documents. The fence must be removed from the site with all related materials upon project completion.

MEASUREMENT AND PAYMENT:

The Unit Price cost for fence on the Schedule of Unit Prices includes all labor, tools, equipment, materials including hardware, and incidentals necessary to construct the fence. The price must include off site removal of all related materials.

SECTION 1007 – CERTIFIED TESTING AND INSPECTION SERVICES

Line Item 1007-01: CCTV Inspection of 24" C.I.P. Lake Drain (LS)

DESCRIPTION:

The Contractor must provide Certified Inspection and Testing services as required to determine all material compliance with Contract Document requirements. These services include but are not limited to: allowable soil bearing pressures, adequacy of fill material, and concrete material testing as specified on the Contract Documents.

CCTV Inspection - The contractor shall televise the pipe and shall inspect the upstream and downstream structures and document all observations.

MATERIALS: NA

CONSTRUCTION:

The provider(s) of the geotechnical and/or structural inspection and testing services must be approved by the Owner prior to commencement of work. The Contractor's geotechnical and material reports must be produced and provided as part of the construction records. The Contractor must provide compaction and geotechnical analysis of fill material placed under this Contract. This Section requires the services of a Certified Engineer registered in the State of Maryland as well as the technical staff under the supervision of the Certified Engineer conducting soil tests in accordance with the requirements of the Contract Documents.

Pipe sections and manholes shall be inspected by means of remote CCTV. If a blockage cannot be removed and hampers the video taping of the sewer in one direction then the contractor shall attempt to complete the section by televising from the other manhole to complete the section, this reversal must immediately follow the initial direction on the same survey and report. The contractor must immediately report the obstruction to the Owner.

The recorded video must show the entire circumference of the pipe. Any flow control to remove standing water and debris shall be incidental to the contract. The contractor must also consider weather conditions to obtain the best video image of the pipe. This may require the contractor to delay any video work after major rain events until the system can return to dry conditions.

Perform all CCTV inspections in accordance with NASSCO's Pipeline Assessment Certification Program (PACP). CCTV inspections will be conducted entirely in digital format. The entire inspection survey shall be recorded in MPEG-1 format written to DVD and submitted with digital links to the survey. All cleaning and television inspection reports shall be within +/- 2 (two) feet of the measured linear footage between structures along the existing pipe centerline from the end of pipe to end of pipe. Work not following these specifications may be rejected for payment and the contractor may be required to redo the work.

The documentation of the work shall consist of PACP CCTV Reports, Unmodified PACP database, logs, electronic reports, etc. noting important features encountered during the inspection. The speed of travel shall be slow enough to inspect each pipe joint, connections, structural deterioration, infiltration and inflow sources, and deposits, but should not, at any time, be faster than 30 feet per minute. The camera must be centered in the pipe to provide accurate distance measurements to provide exact locations of important features in the sewer and these footage measurements shall be displayed and documented on the video. The completed DVD will become the property of the Owner.

Every section of pipe (structure to structure) shall be identified by audio and alphanumeric on the video display and shall include: project name, municipality, site name, inspector's name, pipe diameter and length, and date of inspection. Important features shall be identified by audio and on PACP log to include all structures, active and inactive service connections, structural defects, maintenance problems, grease, roots, infiltration, obvious inflow sources, etc. All video must be continuously metered from structure to structure. In addition to televising the pipe, all structures shall be panned with the video camera and visually inspected.

MEASUREMENT AND PAYMENT:

Unless noted in this section, Certified Testing and Inspection Services will not be paid for separately; they shall be included in the unit costs for related line items requiring inspection(s).

CCTV Inspection will be paid for at the unit price listed on the schedule of unit prices and includes all labor, tools, equipment, materials and incidentals necessary to complete the inspections and deliver the report.

SECTION 1009 – VALVE INSTALLATION

Line Item 1009-01: 24" D.I.P. Valve (Contingency) (EA)

Line Item 1009-02: Valve Stem Extension (EA)

Line Item 1009-03: Lubricate and Exercise Ex. Valve (LS)

DESCRIPTION, MATERIAL AND CONSTRUCTION:

This Section is for the installation or replacement of valves. Gate valves and valve extensions must meet the requirements of WSSC Standard Specifications Section 02510 for Class 125 gate valves. Valves must be manufactured by DeZurik, Mueller or Kennedy only. All valves must be non-rising stem. Valves will have 2" square operating nut or wheel per the Owner's option. Valve extensions must be plum, supported and installed in such a way as to allow for proper valve operation.

Note: the existing valve must be replaced, if required by the owner, while the lake level is at normal pool. The lake cannot be drained for this work; therefore, a qualified underwater diver may be required to install any required bulkheads in the lake drain system intake to prevent water loss during valve replacement. Diver qualifications showing similarly-scoped projects should be submitted with the valve submittal.

MEASUREMENT AND PAYMENT:

Measurement and payment per units provided on the Schedule of Unit Prices cover installation of valves. Payment will be full compensation for transportation/delivery of the valves, connections, labor, equipment, storage, tools and incidentals necessary to remove, replace and/or install valves. Underwater diving services, bulkheads, and other means to safely replace the valve should be considered incidental to installation of the valve.

CATEGORY 1100 – STREAM RESTORATION (NON MSHA-BASED)

GENERAL NOTE: The specification Sections in this Category are not based on the MSHA.

General Introduction: This section includes the requirements for the placement of items for the purpose of stream channel improvements as indicated in accordance with the Project Documents. Stream channel improvements are intended to lend stability to stream channels and when applicable and improve aquatic habitat.

Quality Assurance: The Contractor must submit to the Owner the specific methods and materials to be used to install or construct the stream channel improvements shown in the Contract Documents. The Maryland Department of the Environment (MDE) Maryland's Guidelines to Waterway Construction provides guidelines and examples of common stream improvements. Specifications for the materials necessary to construct each type of stream channel improvement are provided in the specifications provided below.

THERE ARE NO SPECIFICATIONS IN THIS SECTION.

CATEGORY 1200 – DAMS AND PONDS (NON MSHA-BASED)

GENERAL NOTE: The specification sections in this Category are not based on the MSHA.

THERE ARE NO SPECIFICATIONS IN THIS SECTION.

CATEGORY 1300 – REPAIRS AND MAINTENANCE (NON MSHA-BASED)

GENERAL NOTE: The specification sections in this Category are not based on the MSHA.

SECTION 1301 – PIPE RESTORATION BY SLIPLINING

Line Item 1301-1: 18” O.D. Snap Tite Slip Liner (SDR 32.5) (LF)

DESCRIPTION:

This section includes the requirements to repair the existing conveyance pipes by inserting a HDPE pipe liner and grouting of the annular space between two pipes with cement based grout (grouting for sliplining is covered under separate line item). This work must be performed in the dry.

MATERIALS:

Liner to be used for sliplining must be: (as specified by Engineer)

Snap-Tite Solid HDPE Liner by ISCO or Owner-approved equal.

CONSTRUCTION:

The liner pipe must be centered on the host pipe. The host pipe must be cleaned to remove any obstructions prior to slip lining. The annular space must be fully grouted in continuous operation. In case the existing pipe shows signs of significant infiltration, the potential cavity outside the pipe may have to be treated by pumping of a chemical grout prior to slip lining operation as directed by the Owner.

If a slip line is necessary, drain intake line must be plugged at the upstream end and the valve removed temporarily in order to construct a grouting bulkhead at the upstream end. The requirements for plugging the intake are the same as for valve replacement (line item 1009). • The cost of the intake line plugging and the valve removal and replacement for the slip lining shall be incidental to the cost of the grouting (line item 1302).

SUBMITTALS: The Contractor must furnish a Supplier’s Certification for the pipe material, and pipe dimensions. Liner and fittings shall be manufactured from PE resin compounds, which conform to the requirements of cell class 345464C as defined and described in ASTM D 3350-12. The liner must have smooth, non-corrugated interior capable of maintaining a minimum flow rate of 100% of the existing pipe. The liner size will be selected based on the size and condition of the existing pipe. Liner selected must be resistant to UV radiation. Liner must be capable of being jointed into continuous length with mechanical connectors, male and female. Pipe joints shall comply with ASTM D3212 Standard Specification for Joints. The Contractor must follow the manufacturer’s recommendations for proper installation of the product. Slip liner pipe grade must be centered on the host pipe and by use of wood spacers in accordance with manufacturer’s recommendations.

QUALITY ASSURANCE: The installation by an experienced installer who has completed pipe lining installations similar in material, design and whose work has resulted in construction with the record of successful performance. Prior to starting work, the Contractor must submit for Owner approval installer qualifications including list of completed projects involving pipe sliplining, identified by name, location, the reference name and the phone numbers.

MEASUREMENT AND PAYMENT:

Payment per Unit Price on the Schedule of Unit Prices will include all labor, materials, installation, equipment, hardware, and incidentals needed to complete the work.

SECTION 1302– CEMENT BASED GROUT FOR SLIPLINING

Line Item 1302-01: Slip Line Grout (CY)

DESCRIPTION:

This section includes the requirements for the grouting with cement based grout of the annular space between the two pipes in the sliplining process.

MATERIALS:

Grout must be composed of Portland cement, fine sand, admixtures, and potable water proportioned as to create a concrete that can be pumped yet remains dense, to completely fill void between the host pipe and the pipe liner. Grout must be mixed on site, unless approved otherwise by the Owner. The grout mix must be cement and water proportioned in the ratio of 1 cubic foot of cement to 1 cubic foot (7.5 gallons) of water. The mix ratio may be modified by grout pump operator to ensure filling of all voids. Grout must meet ASTM C1107. Grout must remain fluid for at least 2 hours after it was pumped, and must develop minimum compressive strength of 500 psi within 7 days. Grout must be tested in accordance with ASTM C939.

CONSTRUCTION:

The annular void must be grouted solid by injecting grout from one end of the pipe run and allowing it to flow toward the other end. Venting of the annular void must be performed to ensure uniform filling of the void space during the grouting process. Care must be taken so that the grout does not float or damage the liner. The Contractor must follow the HDPE liner manufacturer's recommendations for allowable grouting pressures based on the pipe size.

MEASUREMENT AND PAYMENT:

Payment per Unit Price on the Schedule of Unit Prices will include all labor, installation, equipment, hardware, and incidentals needed to complete the work.

SECTION 1304– REPAIR OF EXISTING CONCRETE STRUCTURES

Line Item 1304-1: Repair Lake Drain Manhole (Str. MH1) (LF)

DESCRIPTION:

This section includes the requirements to repair existing concrete structures including grouting cracks and joints, epoxy injection, and parging. Note: Repairs involving masonry or concrete reconstruction will be covered separately under the appropriate Line Items.

The manhole is form poured concrete. The repairs that need to be made involve repairing damage to the poured concrete walls of the manhole. The manhole is a confined space. There are a few small areas in the concrete manhole that require parging with non-shrink grout.

A stem extension with guides will need to be installed from the valve to within 36 inches of the manhole cover. The contractor shall provide the City with two valve keys compatible with the stem extension that can be used to operate the valve from the top of the manhole. This cost shall be incidental to the cost of the stem extension.

MATERIALS:

Quality Assurance and Applicable Standards:

1. Grout and Concrete Repairs must comply with:
 - a. AASHTO: T277, M235.
 - b. ASTM: C273, C293, C666, C679, C884, C920, D412, D624, D1622, D1623, D2126, D2127, D2240, D2842, D4121, E96, G3.
 - c. Federal Specification: TT-S-00227E
 - d. MSHA 902.11(c)
2. Submittals: Submit manufacturer's specifications and recommendations for Owner's approval.
3. Delivery, Storage, and Handling of the product must be in accordance with manufacturer's recommendations.
4. Owner-Approved Equal or Approved Equivalent must be submitted and approved in accordance with the General Conditions of Construction Contract before use by contractor.

General Material Information:

1. Bonding Agent and Reinforcement Protection: Three-component, epoxy modified, cementitious bonding agent and anti-corrosion coating used for bonding plastic concrete to existing concrete and protecting existing reinforcement must be "Sika Armatec 110 EpoCem" as manufactured by the Sika Corporation, or equivalent as approved by the Owner.
2. Concrete Protective Seal: Two component, polymer-modified cement-based protective and waterproofing slurry coating used for sealing cracks in existing concrete where noted, must be "SikaTop Seal 107" as manufactured by the Sika Corporation, or equivalent as approved by the Owner.

3. Polyurethane Grout: Expanding, polyurethane, liquid chemical grout used for preventing water infiltration and sealing cracks in existing concrete where noted, must be "SikaFix HH" as manufactured by the Sika Corporation, or equivalent as approved by the Owner.
4. Portland Cement Mortar: Two component, polymer-modified, cementitious, non-sag mortar used for repairing spalls in existing concrete must be "Sika Top 123 Plus" as manufactured by the Sika Corporation, or equivalent as approved by the Owner.
5. Elastomeric Joint Sealant: Two component, polyurethane-based, elastomeric sealant used for sealing existing joints in concrete where noted, must be "Sikaflex – 2c, NS/SL" as manufactured by the Sika Corporation, or equivalent as approved by the Owner.
6. Adhesive Primer: Adhesive primer used in conjunction with elastomeric joint sealant must be "Sikaflex Primer 35" as manufactured by the Sika Corporation, or equivalent as approved by the Owner.
7. Non-Shrink Grout: Non-corrosive, non-shrink grout must be Master Builders Company Embecco 153 Grout or Owner-approved equal.
8. Quartzite Aggregate: Quartzite aggregate must be supplied by epoxy grout manufacturer and used as epoxy grout filler when required.
9. Epoxy Grout:
 - a. Two component epoxy-resin used for crack repairs to existing concrete where noted and for epoxy grouting of bolts and dowels for horizontal services where noted, must be "Sikadur 35 Hi-Mod LV" as manufactured by the Sika Corp., or equivalent as approved by the Owner.
 - b. Two component epoxy-resin used in conjunction with the Owner-approved epoxy-resin for crack repairs to existing concrete where noted, and for epoxy grouting of bolts and dowels for vertical and overhead surfaces where noted, must be "Sikadur 31, Hi-Mod Gel", as manufactured by the Sika Corp., or equivalent as approved by the Owner.
10. Parging: Large gaps or cracks in concrete must be filled with a non-shrink grout meeting MSHA 902.11(c) specifications. Mortar must be QUIKRETE® Non-Shrink Precision Grout or Owner-approved equal. Before mortaring any cracks, each crack must be washed clean with a wet brush. Immediately prior to placing the mortar, the concrete must be thoroughly wetted. Free water must not be allowed to come in contact with the mortar until well after initial set (more than 1 day is recommended). The grout must be protected from rapid moisture loss (cured with wet burlap).
11. Prior to the start of any concrete repair work, the repair areas and appropriate repair method must be delineated by the Owner.
12. Cracks measuring 1/32 inch wide or wider must be repaired with the Owner-approved epoxy grout. Cracks measuring smaller than 1/32 inch wide must be repaired with the Owner-approved concrete protective seal. However, any cracks exhibiting visible signs of water infiltration must be repaired with Owner-approved polyurethane grout as directed by the Owner.
13. Prior to repairing spalls with Portland cement mortar, the deteriorated concrete must be removed to sound concrete by use of a 30 lb, maximum weight, chipping hammer to the limits as directed by the Owner. After completion of the removal of deteriorated concrete, detergent cleaning

followed by sandblasting and air blast may be required as determined by the Owner in order to remove foreign materials detrimental to achieving bond.

14. The cracks and adjacent substrate must be clean, sound, and free from frost. All bond inhibiting substances including dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, and efflorescence must be removed from all surfaces adjacent to and in the area to be repaired by mechanical means (e.g., sandblasting, high pressure water blasting, etc.) as approved by the Owner.
15. All preparations to the area to be repaired must be done in accordance with all manufacturers' specifications pertaining to the Owner-approved repair material, and as directed by the Owner.
16. All repair material must be mixed, applied, handled, installed, etc. in accordance with the manufacturers' specifications and as directed by the Owner.
17. Elastomeric joint sealant for use in concrete pipe joint repairs must be limited to a maximum depth of repair of ½ inch, or as directed by the Owner. Prior to beginning repairs, water must be temporarily diverted until joint repairs are complete and as directed by the Owner.
18. Before parging a crack, it must be washed clean with a wet brush. Immediately prior to placing the mortar, the concrete must be thoroughly wetted. Free water must not be allowed to come in contact with the mortar until well after initial set (more than 1 day is recommended). The grout must be protected from rapid moisture loss (cured with wet burlap).

MEASUREMENT AND PAYMENT:

Payment per Unit Price shown on the Schedule of Unit Prices will include all labor, materials, tools, equipment and incidentals.

CATEGORY 2000 – ALLOWANCES

SECTION 2001 – GENERAL ALLOWANCE

Line Item 2001-01: General Allowance (LS)

DESCRIPTION: This Section provides administrative and procedural requirements for a General Allowance (in the amount of \$13,000.00) for additional work within the general scope of the Work.

An Allowance is a monetary contingency amount established in the Contract Documents and included in the Contract Sum to compensate the Contractor for its performance of additional Unit Price Work, if any, consistent with the Contract Documents, upon written direction from the Contract Administrator.

An Allowance shall only be used for Work already defined by Unit Prices in the Contract.

EXECUTION: Additional work, utilizing the General Allowance, must be approved in writing by the Contract Administrator prior to the performance of any additional work.

The General Allowance shall be adjusted (reduced) based on the increase of line item quantities, above the Contract quantity, multiplied by pre-determined Unit Prices in the Contract.

The Contractor, upon its discovery of an overrun in the quantities of any line item(s) in the Contract Sum must notify the Contract Administrator of its discovery and must, upon request, provide all supporting documentation justifying the overrun. The work covered by an Allowance must be purchased on the basis of the Unit Price(s) specified in the Contract Documents. Upon the Owner's verification and approval of the overrun and overrun amount, the Owner will direct the Contractor, in writing, to reduce the Allowance by the amount of the overrun. **All invoices submitted after such written direction must indicate the reduction in the Allowance and the change (increase) in referenced line item quantities.**

The Contractor must submit all invoices and/or delivery slips to justify actual quantities of line item work.

All time required for the performance of work covered by the General Allowance is conclusively presumed to be included in the Contract Time. For other Change Work, the Contractor must demonstrate a Delay and request an extension of time in writing in accordance with the Contract.

At the end of the Contract, the Contract Sum must be reduced by an appropriate Contract Modification to reflect the deletion of any remaining value in the Allowance.

Use any contingency allowance only as directed in writing by the Contract Administrator.