

**CITY OF RICHMOND
DEPARTMENT OF PUBLIC WORKS
SPECIAL PROVISIONS**

- STREETS AND DRAINAGE-

- A. GENERAL - The basic specifications for this project shall be the 2016 issue of the Virginia Department of Transportation Road and Bridge Specifications <http://virginiadot.org/business/const/spec-default.asp>, except for those Sections that may be in conflict with the City of Richmond Standards or Contract documents, in which case the City Standards or Contract documents shall govern; and wherein the above specifications, the word "State" appears, the word "City" is to be substituted and where the word "Department" appears, it shall mean the Department of Public Works within the City of Richmond. In the event, any city, state or federal funds are utilized, the appropriate city, state or federal guidelines must be adhered to.

These special provisions are intended to add to and more fully describe the requirements not otherwise detailed or set forth on the plans and specifications. In addition, when necessary, the provisions are to amplify or modify the character of workmanship and materials.

Copies of all forms, releases, standards, drawings, specifications, handbooks, orders, and codes referred to in this proposal are available in the offices of the Department of Public Works within the City of Richmond, Virginia.

- B. STANDARDS & REVISIONS TO THE GENERAL CONDITIONS OF THE CONTRACT - In addition to the requirements stated in the Virginia Department of Transportation Road and Bridge Specifications, the following requirements supplement, add to or modify those Specifications and shall govern in all conflicting cases.

Applicable Standards - The work shall be done in accordance with the latest editions of the following, in effect on the date of the invitation to bid:

1. City of Richmond, Departmental Standards Drawing N-14000 (Sheets 1-26).
[G:\4-TRANSPORTATION SERVICES\Develop Trans Sys\Roadway\Standard & Specifications - Design & Construction\DPW Standards CD Images\DPWEngStand_Images](#) (Note: Where N-14000 Standards conflict with the City of Richmond Roadway Geometric Design Standards, the City of Richmond Roadway Geometric Design Standards will govern.)
2. City of Richmond Sewer Specifications Issue of 1998.
3. City of Richmond "Right of Way Excavation & Restoration Manual."
<http://www.richmondgov.com/PublicWorks/documents/ExcResManual.pdf>
4. City of Richmond Department of Public Works – A policy for Temporary Steel Plate Bridging for General Utility Street Work.
<http://www.richmondgov.com/PublicWorks/documents/ExcResManual.pdf>
5. City of Richmond "Right-of-Way Roadway Geometric Design Manual"

6. City of Richmond Standard Specifications for Gas, Water System, Construction and Maintenance DPU No. 1-92.
7. Division of Traffic Engineering, Traffic Order #2844, dated April 2011, Traffic Control Specifications for Work in Street and Alley Permits.
http://www.richmondgov.com/PublicWorks/documents/WorkInStreetsAlleys_ReferenceManual_RevisedApril2011.pdf
8. Virginia Department of Transportation Work Area Protection Manual, latest revision.
<http://www.virginiadot.org/business/trafficeng-wzs.asp>
9. Latest rules and regulations governing construction, demolition and excavation as adopted by the Safety Codes Commission of the Commonwealth of Virginia.
<http://www.doli.virginia.gov/index.html>
10. Virginia Erosion and Sediment Control [E&S] Handbook, Virginia Department of Conservation and Recreation and Division of Soil and Water Conservation.
http://www.dcr.virginia.gov/stormwater_management/e_and_s-ftp.shtml
11. Federal Highway Administration, USDOT, Manual on Uniform Traffic Control Devices, latest revision. http://mutcd.fhwa.dot.gov/pdfs/2009/pdf_index.htm
12. OSHA Regulations (Standards – 29 CFR).
http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=1&p_keyvalue=Construction

C. ADDITIONAL REQUIREMENTS –

By submitting a bid for this project the contractor certifies that they are familiar with the requirements of all the contract documents and that all their subcontractors are familiar with the requirements of the contract documents as they may be additionally affected.

1. OWNER REPRESENTATION - The work will be done under the general supervision of the Director of Public Works with direct supervision by the Capital Projects Manager, who will assign a Project Manager engineer and a Project Inspector at the pre-construction meeting to the project. The presence or absence of the Owner's representative shall in no way relieve the contractor of their responsibility to complete the work in accordance with the Contract Documents or lessen his obligation to correct unsatisfactory work. All required submittals shall be submitted to the Project Manager through the Project Inspector.
2. PRE-CONSTRUCTION MEETING - After award of the contract and prior to commencement of the work, a meeting will be arranged between the contractor, Purchasing Officer, Project Manager, Project Inspector, and Construction Manager to discuss all aspects of project, including Public Works Department policies and regulations, administrative matters, safety and accident prevention, and will also provide the contractor an opportunity to request clarification of any of the contract documents and Owner requirements.
3. COORDINATION- The Contractor is required to attend Quarterly Coordination Meetings. Whenever multiple assignments are given, the Contractor shall perform the work in the order designated by the Construction Manager. The Contractor will

then provide the Construction Manager with a projected schedule for Start and Completion of each assignment as well as updates to the schedule should the provided dates change.

4. SCHEDULING - The Contractor shall submit a written schedule 10 days prior to beginning any given assignment and provide updates as required by the Project Manager or Inspector
5. TESTING- A minimum of 24 hours notice shall be given to the Inspector prior to performing any activity that requires Quality Control Testing. The Contractor is to avoid performing any activities that require Quality Control testing in the late afternoon. Should the Contractor choose to proceed in executing work without inspection, they do so at their own risk and may be required to remove such work without charge at the discretion of the Project Manager.
6. SEQUENCE OF WORK- On projects involving more than one street or block, the work shall be so scheduled as to provide a continuous and uninterrupted flow of all work items in a logical sequence in each street or block. If, in the opinion of the Owner, the flow of all work items is not being followed in accordance with the approved schedule on a block-by-block and street-by-street basis, the Owner may suspend work on all or portions thereof until such time as those items not being prosecuted sequentially are completed or on schedule. Additional time will not be allowed for the remaining work for the time the suspension was in effect.
7. HOLIDAYS - The Contractor shall not permit work, except that which is necessary to maintain traffic, to be done on Sundays and city observed holidays without written consent of the Owner. A moratorium on non-emergency work involving streets, sidewalks, or alleys in the Christmas shopping and festival areas will be in effect from the Wednesday prior to Thanksgiving until the Monday after New Years Day unless written permission to proceed is given by the Owner. A complete list of the affected areas is available from the Office of Right-of-Way Management.
8. EXISTING INFRASTRUCTURE - The location of existing sewer, water or gas lines, conduits, underground cables or other structures across or along the line of the proposed work may vary from the locations shown on the drawings and, where shown, the locations depth and dimensions of such structures are approximately correct and may vary. The Contractor shall be responsible for determining the exact location of the lines or structures and will be liable for repairs in the event of damage.
 - a. It is the Contractor's responsibility to notify and coordinate with "Miss Utility" (811) prior to the beginning of construction.
 - b. The Contractor must notify the proper City agencies and coordinate with all private utilities at least 3 business days prior to the time set for work involving their facilities or equipment. Furthermore, this responsibility shall extend to coordinating all contract work with existing utility owners to avert or minimize any conflicts whether apparent or unforeseen. The owner or their representative may allow a contract time extension, at their sole discretion, based on full documentation received from the contractor.

- 1) Department of Public Utilities: The Contractor shall arrange for adjustment of fire hydrants, gas, water or electrical lines and such work shall be performed by contractors prequalified by the Department of Public Utilities. Documentation of pre-qualification by DPU shall be provided to the Project Inspector at least 5 business days prior to commencement of utility work. If the actual adjustment of fire hydrants, gas, water or electrical lines are made by City personnel, the Contractor's responsibility will consist of uncovering and properly restoring the utility.
 - 2) Traffic Signal Equipment: A representative from the Division of Traffic Engineering must be present before beginning any work involving their equipment and/or excavation in the vicinity of signalized intersections. Traffic loops damaged during excavation will be repaired at the contractor's expense. Installation and relocation of this equipment will be by others unless included as a bid item. The Contractor shall cooperate with others for this work with no additional time allowed.
9. MATERIALS FURNISHED BY THE OWNER - The Owner will furnish the Contractor from the Department of Public Works storage yards at Parker Field, Hopkins Road, East Richmond Road Landfill and Convenience Center and/or the Department of Public Utilities Warehouse at 400 Jefferson Davis Highway, hereafter defined as "city storage yards", all required sewer and utility casting extension rings, durax block, granite spall, granite curb, and adapters unless noted elsewhere to the contrary. The Project Inspector will provide the contractor with the necessary charge number and assist in providing these items to the Contractor as needed. All materials furnished by owner shall be hauled to the project at the Contractor's expense.
10. OFF DUTY UNIFORMED POLICE - During the course of the work it may be necessary to employ off- duty uniformed police for traffic control. They shall be employed only when approved by the Project Manager. The Contractor shall pay police officers \$28.00 (12/2012) per hour and Supervisors \$30.00 (12/2012) per hour if they report for work. Whenever three or more police officers are employed off-duty, at least one must function as a Supervisor. Off-duty police will be paid at time-and-a-half when working on City of Richmond holidays and New Year's Eve. The contractor shall pay the Richmond Police Department \$35 (6/2009) per day for usage per marked police car. The City will reimburse the Contractor at the rate plus \$0.50 per hour for police officers (regardless of rank) and use of marked police car, minimum payment of four hours for officers reporting for duty. Reimbursement will not be made when officers report for work, the Contractor does not work and does not request cancellation of officers. When requesting Police Officers, the contractor shall contact the Police Department (Sgt. Gary Borges, 646-0445) a minimum of 5 business days prior to the anticipated reporting time for the required officers. A copy of the request for use of uniformed police officers shall be sent to the City's Project Manager.
11. PROTECTION OF TREES - All trees on any street or public property are protected by the City Ordinance. Any time work is done within proximity to city trees they shall be protected by a tree protection fence at least four (4) feet high. The fence should extend at least 10 feet from the trunk of the tree; or a distance in feet from the tree equal to the tree diameter (DBH) in inches; whichever is greater. (For example a 24" diameter tree would have a 24 foot radius protection zone.) Any deviation from this standard must first be approved, in writing, by a City Arborist. All building material,

dirt, or other debris shall be kept outside the barrier. Failure to comply with tree protection standards may result in the contractor being monetarily responsible for the value of the tree(s) as appraised by International Society of Arboriculture Standards. In addition, the Contractor shall notify both Urban Forestry and the Project Inspector a minimum of 2 business days before excavating around trees. The Contractor shall use extra care with his equipment when working on a street where there are trees. Any tree limbs or roots that are cut in the course of work will not be coated with any type of paint. Where equipment is working close to trees, the Contractor shall be required to protect the trees by acceptable methods at no additional cost to the Owner. Should there be a need for extensive pruning (1 Block or greater) of low hanging branches for paving or other operations; pruning will be performed by the City of Richmond unless directed otherwise. A copy of the request for this work shall be sent to the Project Manager 10 days, in advance.

12. USE OF CITY WATER - Any connections to a city water source (i.e. hydrant, spigot) shall be made in accordance with Plan M-646. Connections made to fire hydrants without yellow caps shall be by special permission from the Department of Public Utilities, and shall be governed by all rules and requirements of that Department.

13. EROSION AND SEDIMENT CONTROL:

- a. The Contractor will be required to obtain a Land Disturbing Activity Permit from the Department of Community Development, when applicable. Policies, procedures, guidelines, etc. are contained in the Virginia Erosion and Sediment Control Handbook, which is available for a fee from the Virginia Soil and Water Conservation Commission. The contractor must have a person certified as the "Responsible Land Disturber" assigned to the project. Certifications shall be submitted to the Project Inspector prior to the commencement of work.
- b. On projects requiring a Stormwater Pollution Prevention Plan (SWPPP), the contractor shall conduct operations in accordance with the SWPPP. The City will obtain the VSMP permit then transfer the permit to the contractor. The contractor will be required to follow all aspects of the plan to include recording of land disturbance activities, E & S inspections, etc. as set forth in the permit.
- c. The construction plans have been pre-approved as conforming to the Erosion and Sediment Control Ordinance and the guaranty of the owner required by the ordinance will be included in the Contractor's Performance Bond. The Land Disturbing Activity Permit, when applicable, will be issued upon payment of the necessary fees by the Contractor.
- d. The Contractor shall not allow any area to remain unprotected from erosion and sedimentation control. Methods most suitable to the site and soil conditions shall be employed to intercept sediment carrying runoff from the site and remove the maximum practical amount of sediment from the storm runoff. These methods shall consist of diversion dikes, interceptor dikes, diversion channels, sediment traps, straw or hay bale barriers, or other methods suitable to the topography, soil conditions and nature of the disturbance as outlined and conforming to the latest edition of Erosion & Sediment Control Handbook.

- e. Only the smallest practical area shall be exposed or disturbed at any one time for the shortest practical period of time. Permanent vegetation shall be established at the earliest practical date. No disturbed area to remain denuded for more than 7 calendar days.
 - f. On occasions, unforeseen erosion or sedimentation situations or circumstances may arise and should some method of erosion and sediment control be ordered by the Project Manager or Inspector, the Contractor must commence making these corrections within two (2) calendar days after the request is made.
 - g. The disposal of excess excavation off site, the disposal of waste materials removed from erosion and sediment control facilities, and the disposal of erosion and sediment control facilities shall be in accordance with the Virginia Erosion and Sediment Control Handbook.
 - h. All temporary Erosion & Sediment Control Measures shall be removed by Contractor at his expense within 30 days of achieving final stabilization as approved by the Project Manager or Inspector.
 - i. Payment for any erosion and sediment control devices will be made at the contract price for items used. When not a pay item, erosion and sediment control devices will be paid using force account procedures.
14. PERMANENT DRIVEWAYS - The Contractor is advised that all existing permanent driveways on the project are to be removed and replaced with new concrete driveway crossing when so designated on the contract drawings or when new curb and gutter is to be installed as part of this contract.
- a. A permanent driveway shall be defined both as a curb cut on a street which has existing curb or curb and gutter or as an existing culvert located in a ditch overtop of which has been built up with an improved surface such as stone, concrete, or asphalt.
 - b. Driveways not designated as permanent driveways on the plan, nor meeting the criteria specified above, shall be considered temporary driveways and will not be constructed. If the property owner desires to upgrade their driveway to permanent status, the property owner shall be required to obtain a permit from the City for a permanent driveway which shall be installed during construction of the project. The property owner may request the Contractor install the new permanent driveway. The property owner shall pay the Contractor for work for the new permanent driveway. This work shall be considered a separate contract between the property owner and the Contractor and DPW's involvement will consist of inspection duties only.
15. SITE MAINTENANCE - Throughout all phases of construction, the Contractor shall keep the work site clean and free from rubbish, debris, and dust. Dust nuisance shall be abated by cleaning, sweeping, sprinkling with water or calcium chloride at no additional cost to the City. Care shall be taken to prevent spillage on haul routes. Any such spillage shall be removed immediately and the route cleaned. If the use of water results in mud tracking on adjacent streets, the project will be shut down until streets are cleaned by the Contractor at his expense and no extra time will be allowed

for the time thus lost. Materials and equipment shall be removed from the site as soon as they are no longer needed. If the Contractor does not respond to the requests to clean the streets, they shall be cleaned by the City and the cost shall be deducted from the payments due the Contractor.

16. BRICK AND CONCRETE PAVERS – Paver materials that are to be used within the right of way shall be in accordance with the following section.

a. Brick Pavers:

- 1) Brick paver reference is from Technical notes on Brick Constuction 9A (“Specifications for and classification of Brick”) as publish by the Brick Industry Association (www.gobrick.com).
- 2) Brick pavers shall be rated ‘not efforesed’ in accordance with ASTM C67.
- 3) Bricks intended for PEDSTRIAN ONLY traffic areas, generally sidewalks and paths, shall conform to ASTM C-902 (Standard Specification for Pedestrian and Light Traffic Paving Brick) and be rated for severe weathering (SX) and extensive abrasion resistance (Type I). All clay brick paver units used for pedestrian travel ways shall be square edged “Paver” brick with dimensions of full 4”x8”.
- 4) Bricks intended for use in vehicular traffic areas shall conform to ASTM C-1272 (“Standard Specification for Heavy vehicular Paving Brick”) and conform to the requirements of Type F. All clay brick paver units used for vehicular travel ways shall be bevel edged “Paver” brick with dimensions of full 4”x8”. Thickness for vehicular paver brick shall be at least 2-5/8” (67mm).
- 5) Dimensional (distortion) tolerances shall conform to Classification PX.
- 6) Color for brick pavers shall be similar to “Virginia Red #222” by Interlock Paving Systems or as adopted by the Planning Commission. It is understood that colors may be copyrighted, patented or trademarked, and the color reference is intended as a guide.
- 7) Acceptable products for PEDESTRIAN paver brick are:
 1. Paver: Classic-Square Edge “traditional series”
Color : “Pathway Red”
Manufacturer: Pine Hall Brick
2701 Shorefair Drive
Winston-Salem, NC 27105
Website: www.pinehallbrick.com
 2. Paver: York Red Extruded series
Color : “York Red”
Manufacturer:
Glen-Gery Corporation
P O Box 7001

1166 Spring Street
Wyomissing, PA 19610
Website: www.glengerybrick.com

3. Approved equal.

b. Concrete Pavers:

- 1) Paving Units shall be conforming to ASTM C-936 (Standard Specifications for Solid Interlocking Concrete Paving Units). Concrete paver unit for use in areas subject to constant vehicular use (streets, alleys and similar travelways) shall have dimensions of 4"x8"x3-1/8" (80 mm).
- 2) Pavers shall be similar to "Holland stone" with beveled edge.
- 3) Color for Paving Units shall be similar to "Virginia Red #222" by Interlock Paving Systems or as adopted by the Planning Commission. It is understood that colors may be copyrighted, patented or trademarked, and the color reference is intended as a guide.
- 4) Acceptable concrete pavers include:
 1. Paver: Holland Stone 4x8
Color: "Virginia Red #222" (formerly "Autumn Red")
Manufacturer:
Interlock Paving System Inc.
802 W. Pembroke Ave.
Hampton, VA 23669
Website: www.interlockonline.com
 2. Approved equal.

c. Certification:

- 1) The contractor shall submit a color sample of the intended paver(s) to be used not less than 14 calendar days prior to commencement of laying pavers.
- 2) The Contractor shall submit independent test results or material certifications showing compliance with specifications to include, but not limited to, appropriate ASTM standard, weathering, and abrasion resistance.
- 3) Paver materials acceptable to the City will be marked by the City project inspector in such a way that the inspector can recognize the accepted materials.

17. CONSTRUCTION STAGING AREA - The contractor shall be responsible for selecting the staging and laydown areas and any needed storage yard in the vicinity of the project. Areas used by the contractor within the public right-of-way require the prior

approval of the Project Manager. All costs associated with the use, maintenance, and final restoration of areas needed shall be at the sole expense of the contractor. In addition, the Contractor shall do the following:

- d. Arrange for and maintain the staging area at their expense.
 - e. Locate trailers and equipment as far as possible from nearby occupied dwellings.
 - f. Keep the site neat and policed so that debris will not be transported to neighboring properties by wind or other means.
 - g. Start construction equipment only when necessary in the mornings.
 - h. Do not leave construction equipment running needlessly.
 - i. Caution workmen to speak quietly and to use language that would not offend citizens in the area.
 - j. Locate portable sanitary facilities on a secluded or concealed portion of the site.
 - k. Where appropriate, provide lighting and/or fencing to make access to the site during non-working hours more difficult.
 - l. When storing construction materials insure that they do not have a tendency to become unstable.
 - m. Where dust may become a nuisance, provide means for dust control.
 - n. The Contractor shall maintain access to all properties and city services.
 - o. Grass and weeds within the project limits shall be kept trimmed at all times by the contractor at no additional cost to the city.
18. SITE SAFETY- Safety is the contractor's responsibility; all barricades, safety fencing, temporary signage, etc. are incidental to the contract. The Contractor shall also inspect the project area for unsafe conditions prior to mobilization. Should unsafe conditions be found the Contractor shall immediately contact the responsible party and will not mobilize until sufficient repairs are made to make the area safe. The contractor may request a contract time adjustment if in their opinion, repairs created a significant delay to their critical path activities. Provided prior notification was timely, the Project Manager, at their sole discretion, may grant such time extension based on written documentation duly furnished by the contractor. No delay claim will be receivable if, in the opinion of the Project Manager, the responsible party has accomplished due diligence in adjusting its facilities within 10 (ten) working days of the above notification.
19. SUBGRADE STABILIZATION - If #2 or #3 stone is listed as a bid item in this contract, even though not shown, contractor shall stabilize areas where poor bearing conditions exist. All undercuts require the prior approval of the Project Manager or Inspector.

20. SALVAGE OF SIDEWALK BRICK, GRANITE SPALL, COBBLESTONE, GRANITE CURB, DURAX BLOCK, AND ANY OTHER BUILDING MATERIALS – All materials for sidewalk brick, granite spall, cobblestones, granite curb, durax block, or other building materials are the property of the City. Specific materials specified to be salvaged are to be removed to designated City storage.

All salvaged materials shall be handled with due care to avoid damage. Granite curb is to be carefully stacked with wooden strips between layers.

Removal of salvaged materials to designated storage areas and proper storage at those areas shall be paid for at the unit price indicated for salvaging that item. Where the item is not specifically indicated a price shall be agreed upon before the item is moved.

21. DISPOSAL OF EXCESS MATERIALS - All inert materials not designated for salvage (concrete, brick, uncontaminated soils, cobblestone, etc.) from the project shall be disposed of at an approved landfill and the cost of loading and hauling to the landfill shall be incidental to the unit price of other items.
22. MOBILIZATION - Mobilization will not be paid unless noted as a separate bid item.
23. TRAFFIC CONTROL – Traffic Control will not be paid and is considered incidental to unit prices where work is to be performed in residential/local streets. Where work is to be performed in other than residential streets, the Project Manager will either provide a maintenance of traffic plan as part of the project paying for traffic control on a unit cost basis or require the contractor to provide a lump sum quote to provide traffic control on the project based on the latest Work Area Protection Manual.
24. SURVEYING – Surveying shall be incidental to other unit prices and shall not be paid separately.

- D. COPIES FURNISHED TO CONTRACTOR - After the contract has been executed, the Contractor will be furnished one (1) set of the Contract Drawings and Specifications in portable document format (PDF) and only one (1) full size set of drawings/sketches. It shall be the Contractor's responsibility to furnish each of their subcontractors, manufacturers and material suppliers such copies of the Contract Documents, as may be required for their respective work.
- E. LUMP SUM CONTRACT ITEMS – Measurement and Payment of Lump Sum items, such as Traffic Control and Construction Surveying, when pay items, will be made in installments based on work completed from the schedule of values. The schedule of values shall not be consider lump sum contract items (Mobilization, Traffic Control, Surveying, etc.) for calculation of work progression. Mobilization, when a pay item, will be paid on the first two payments in accordance with the specifications.
- F. VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD & BRIDGE SPECIFICATIONS - MODIFICATIONS: ADDITIONAL PROJECT REQUIREMENTS

In the event of a conflict between the referenced VDOT Road and Bridge Specifications and the modifications thereto listed below, the below listed modifications shall govern.

1. SECTION 107.11 IS AMENDED TO INCLUDE THE FOLLOWING:
 - a. Blasting - If rock excavation is encountered and blasting is necessary, the City will accept, subject to the conditions of the City Code and approval of the Director of Public Works and the City Attorney, coverage in the form of a Rider to Certificate of Insurance in the amount equal to the Personal Liability and Property Damage Insurance of this contract. In addition, before any blasting operations may be performed, the Contractor must first obtain a blasting permit from Fire and Emergency Services of the City of Richmond.
 - b. No blasting shall be allowed on any job until the Project Inspector has seen the Contractor's approved blasting permit.
 - c. No blasting is to occur unless the Project Inspector is on-site to monitor the blasting activities.
 - d. It is the Contractors responsibility to provide for seismic monitoring.
2. SECTION 302 - DRAINAGE STRUCTURES IS AMENDED AS FOLLOWS:
 - a. Pipe shall be paid for at the contract unit price per linear foot, complete in place. This price shall include all fittings, connections, anti-seepage collars, anchor and blocks.. Measurement of new pipe shall be from inner face of structure to inner face of structure. Measurement of pipe extensions shall be from center of structure to connection to existing pipe. Excavation for pipe shall be paid as a separate item designated as Trench Excavation.
 - b. Trench Excavation shall consist of the removal of all materials encountered as required for installing new pipe, complete in place, and restoration of existing surfaces per the City of Richmond "Right of Way Excavation & Restoration Manual.
 - c. Manholes shall be measured in linear feet, vertical measure, from top of the rim to the bottom interior. Manholes shall be constructed as tee sections. Manholes shall be paid for at the contract unit price per vertical linear, complete in place and restoration of existing surfaces, as per the City of Richmond "Right of Way Excavation & Restoration Manual." Manholes shall also include frame and cover unless noted as being supplied by City.
 - d. Trap Basins, Sub Basins, Drop Inlets, Endwalls, and other structures shall be paid for at the contract unit price, complete in place. and restoration of existing surfaces as per the City of Richmond "Right of Way Excavation & Restoration Manual."
 - e. Excavation and trenching protection for all drainage/utility structures shall be included in the contract unit price. No separate payment will be made. The contractor shall provide documentation (such as tabulated data or engineering calculations) that the trench protection is adequate for the field conditions 2 business days prior to commencement of work.
 - f. Bedding material shall conform to requirements of section 302. The contractor shall provide . Class "C" bedding material per sheet 23 of the City of Richmond,

Departmental Standards Drawing N-14000 (Sheets 1-26). Bedding material shall be included in the unit price for utility structure or pipe.

- g. Casting frames and covers, not designated as being supplied by the City, shall conform to City standards, be provided new by the contractor, and be included in the structure cost. No separate payment will be made.

3. SECTION 303 – EARTHWORK IS AMENDED AS FOLLOWS:

- a. Excavation - Unclassified excavation, shall consist of the removal of all materials encountered, not specifically provided for or included as a part of other bid items or the approved drawings. Excavation shall include undercut excavation regardless of depth. Side slopes shall be trimmed to neat lines and even surfaces with tops hand raked to a rounded edge and 2:1 slopes where practical or as shown on the drawings.
- b. Trench Excavation shall consist of the removal of all materials encountered as required for installing new and/or existing service pipe, complete in place., and restoration of existing surfaces per the City of Richmond “Right of Way Excavation & Restoration Manual.”.
- c. Where embankment or backfill is required, it shall be made with suitable material obtained from the project excavation if available or from suitable material as directed by the Project Manager. Should the Contractor dispose of suitable excavated material to the extent that sufficient material is unavailable for fill purposes, extra payment will not be made for furnishing the required borrow. All fill areas shall be compacted to the appropriate density per the latest Virginia Department of Transportation specifications or as specified by the Project Manager.
- d. All excess excavation shall be disposed of by the contractor at the East Richmond Convenience Center and be paid as a separate item.
- e. Rock Excavation shall be defined as excavation of material such as limestone, sandstone, granite, shale or similar material in solid beds or masses in its original or stratified position which can be removed only by blasting operations, drilling, wedging, or use of pneumatic tools, and boulders with a volume of greater than 1.0 cubic yard.

4. SECTION 315 – ASPHALT CONCRETE PAVEMENT IS AMENDED AS FOLLOWS:

- a. The Contractor shall lay bituminous concrete on one-half of the roadway at a time. When laying the first half of the roadway, traffic will be maintained on the opposite side of the street. Traffic will not be allowed on the newly laid surface until it has cooled and been rolled sufficiently in the opinion of the Project Manager or Inspector.
- b. Certified Flagmen or off-duty Police Officers shall be provided, as directed by the Project Manager. The cost of the Certified Flagmen shall be paid at the unit price bid unless otherwise provided for under maintenance of traffic bid item. If Flagmen are requested by the Project Manager, they must be certified by VDOT, the

American Traffic Institute, or other approved entity and if evidence of certification is not provided, the work will be suspended until proper documentation is provided to the Inspector. Additional time for stop work order due to uncertified flagman will not be allowed.

- c. Before the laying of the asphalt base, the Contractor shall verify that all castings are to the proper grade. Manhole and valve box frames shall meet or be less than one quarter of an inch ($\frac{1}{4}$ ") from the proposed grade when measured with a 16-ft straight edge laid on the finished pavement. The grade shall be checked both parallel and perpendicular to the center of the street.
 - d. Prior to installation of the final surface, the Contractor shall pour cutback asphalt around the top of the castings as necessary to seal the joint between the pavement and casting. All the cost of cleaning, pointing and sealing with cutback asphalt shall be included in the price bid per ton for bituminous concrete asphalt.
 - e. Asphalt paint applied to the curb lines shall not show more than one (1") inch above the finished pavement grade. Any curbs marred by excess asphalt shall be cleaned by the Contractor at his expense. Curbs marred or broken by the Contractor's equipment shall be repaired or replaced at the Contractor's expense.
 - f. When the final asphalt course is to be placed on roadways which have been cold planed (milled), the contractor shall use a bituminous paver with electronically controlled screeds to insure a smooth riding surface. The cost of the electronic screed equipment is to be included in the bid price per ton for bituminous concrete.
 - g. The Contractor shall strip old asphalt paving where directed by the Project Manager, either to investigate the base or make the desired tie-in at intersecting streets. In cutting tie-ins only one-half of the street can be cut out at a time and padding placed on that half before cutting the other half of each side of the intersection. Payment for stripping and padding will be made at the bid price per square yard for stripping.
5. SECTION 502 – INCIDENTAL CONCRETE ITEMS IS AMENDED TO INCLUDE THE FOLLOWING:
- a. Realigning/Setting Granite Curb
 - 1) Realigning - Granite curb to be realigned, shall be carefully removed from its present bed. The curb trench shall be graded and compacted so as to provide the realigned curb minimum clearances of 4" under the curb and 6" in front of and behind the curb. The curb shall then be placed back in the trench and shimmed to correct line and grade with brick. After the curb has been realigned, the curb trench shall be backfilled with concrete to a minimum depth of 12". Special care shall be taken to insure that the concrete completely fills the space under the granite curb.
 - 2) Setting - This item includes the replacement of existing granite curb in bad condition, filling in where curb is missing or setting a new granite curb line. Where additional curb is specified, it will be furnished by the City and hauled to the site by the Contractor. The curb trench shall be excavated, graded, and

compacted so as to provide the new/replacement curb minimum clearances of 4" under the curb and 6" in front of and behind the curb. The curb shall be placed in the trench and shimmed to correct line and grade with brick. After the curb has been set, the curb trench shall be backfilled with concrete to a minimum depth of 12". Special care shall be taken to insure that the concrete completely fills the space under the granite curb.

- 3) Joints - Joints between the sections of granite curb above the gutter line wider than one-quarter (1/4) of an inch will not be accepted, and any rough ends of the sections will have to be chiseled or saw cut to reduce the joint width to less than one-quarter (1/4) inch. The joints shall be filled with 1:3 cement-sand mortar. Saw cutting at joints to reduce the joint width shall be considered incidental to installation of granite curb.
- 4) Payment - Realigning/Setting Granite Curb shall be paid at the contract price bid per linear foot for realigning/setting granite curb and shall include all costs of removing the curb from its original position, cleaning, resetting, rejoining, grading and compacting the sub grade, mortar joints, concrete backfill, and furnishing all materials, equipment, tools, labor and incidental work. Saw cutting shall be considered incidental to realigning/resetting granite curb. The cost of loading, hauling, setting, and jointing shall be included in the price bid per linear foot of granite curb set.

b. Curb, Curb & Gutter, Valley Gutter

- 1) For typical Monolithic Curb, Curb and Gutter and Valley Gutter sections see City Standards N-14000 and the City of Richmond "Right-of-Way Roadway Geometric Design Manual. Otherwise use plan design specified.
- 2) Three (3") inch holes shall be left in the curb opposite each downspout to each house. The cost of forming these holes shall be included in the price bid per linear foot for concrete curb and gutter. Valley gutter shall not require holes.
- 3) Backfill adjacent to and behind Curb, Curb and Gutter and Valley Gutter immediately after stripping forms.
- 4) Payment - Curb, Curb & Gutter, and Valley Gutter shall be paid at the contract unit price bid per lineal foot of curb and gutter, or valley gutter and shall include radial or tangential curb, gutter and/or curb and gutter, and shall include all costs in connection therewith except for any required undercut or fill to achieve finished grade. Concrete curb or curb and gutter will not be considered complete for payment until the rear of the curb is properly backfilled and compacted to the satisfaction of the Project Manager. Backfilling and compaction of the rear of the curb and gutter shall be done immediately after forms are stripped. Saw cutting to be paid separately if noted in the item description.

c. Wheel Chair Ramps – This item shall include all work involved in the construction of ADA approved wheel chair ramps.

- 1) All existing curb and sidewalk shall be removed without damage to curb and sidewalk designated to remain and shall be properly disposed of by the Contractor. The Contractor shall then perform all required excavation or furnish and place an approved fill material so as to obtain a proper subgrade. The subgrade shall then be compacted to a theoretical density of 95% at optimum moisture for a depth of 6 inches. A 6 inch thick wheel chair ramp shall then be constructed per VDOT Standard CG-12 (latest revision).
- 2) Detectable Warning surface - materials shall conform to the requirements of Section 502 of the VDOT Road and Bridge Specification, except as follows:

Detectable Warning Surface shall be 'tiles' made of homogeneous glass and carbon, reinforced composite material or vitrified polymer composite (VPC) material with ultraviolet stabilize coating to minimize color wear, and a 'non-slip' surface, incorporating "truncated domes" made of the same material. The nominal thickness of the detectable warning tile shall be 1/8" exclusive of the height of the truncated domes. The tiles shall be in compliance with applicable Americans with Disabilities Act Accessibility Guidelines (ADAAG) and American with Disabilities Act (ADA) regulations with regard to detectable warning surfaces.

a. **Types:** Detectable warning surface shall be classified as follows:

- i. **Cast in place** tile shall be installed in the concrete in accordance with the manufacturer's specifications. The cast in place tile shall be used for new construction.
- ii. **Surface Mounted** tile shall be secured to the concrete with a structural adhesive system and fasteners that anchor to the concrete. The surface mounted tile shall be installed to existing or proposed smooth finished concrete ramps.

b. **Detail Requirements:** Requirements for the detectable warning surface tiles shall meet the following:

- i. **Compressive strength:** 18,000 PSI when tested by ASTM D695.
- ii. **Tensile Strength:** 10,000 PSI when tested by ASTM D638.
- iii. **Flexural Strength:** 24,000 PSI when tested by ASTM C293 or ASTM D790.
- iv. **Waster Absorption:** 0.35% maximum when tested by ASTM D570.
- v. **Slip resistance:** 0.9 minimum or the combined wet/dry static coefficient of friction when tested by ASTM C1028.
- vi. **Chemical and Stain resistance:** No deterioration, discoloration or staining when tested by ASTM D543 or ASTM 1308.
- vii. **Fire Resistance:** 25 minumum when tested to ASTM E84.
- viii. **Accerlated Weathering:** No deterioration, fading, or chalking of surface after 2,000 hours minimum exposure when tested by ASTM G26.
- ix. **Salt and Spray performance:** No deterioration or other defects after 100 hours minimum exposure when tested by ASTM B117

- x. **Accelerated Aging and Freeze Thaw:** No disintegration, cracking, delamination, warpage, blistering, color change or other defects when tested by ASTM D037 or ASTM C1026.

 - c. **Pattern/Dimension:** Pattern and dimension of the detectable warning surface tile shall incorporate an "in-line" dome pattern of truncated domes 0.2" in height, 0.9" diameter at the base and 0.4" diameter at top of dome. Domes should be spaced no greater than 2 3/8" center to center. The field area of the detectable warning surface should consist of raised points no greater than 0.045, to create a non-slip surface for wheelchair safety. Surface mounted detectable warning surface tiles shall have countersunk fastening holes and perimeter beveled edges. Overall dimension of the detectable warning surface tiles shall be in accordance with this specification and the contract documents.

 - d. **Color:** Generally, the warning tile color shall contrast the surrounding material either, light on dark or dark on light. Colors shall conform to Federal Standard 595. Unless otherwise called out in the contract documents, the detectable warning surface tiles shall be "Brick Red", Federal color No. 31136, or 11140, or "Yellow", Federal Color No. 33538, or as approved by the Owner. The color shall be integral with the detectable warning surface tiles and shall not be surface applied. Paints or other surface coatings shall not be used. Product samples with proposed color shall be submitted to the Owner for approval prior to installation.

 - e. **Manufacturer:** Detectable Warning tile shall be provided by:
 - i. Engineered Plastics, Inc. (Armor-Tile)
 - ii. ADA Solutions, Inc.
 - iii. Approved Equal

 - f. **Fasteners:** Fasteners shall be flat-head drive anchors made of corrosion-resistant material 1/4" in diameter and 1 3/4" long, or as per manufacturer's specification if exceeding these requirements.

 - g. **Adhesives:** Adhesive shall be urethane elastomeric adhesive material, as required by the manufacturer's specification.

 - h. **Sealants:** Sealant shall be a gray epoxy, two-component sealant, as required by the manufacturer's specification.
- 3) Payment - Wheel Chair Ramps shall be paid at the unit price bid per square yard for "6" concrete driveway or wheel chair ramps" and shall include removal (disposal paid separately), all excavation or fill required, compaction of subgrade, construction of 6" thick wheel chair ramp as per Standard CG-12 (latest revision), all expansion material, tools and anything else necessary or incidental thereto. Measurement for payment shall be square yards of concrete including 6" plain concrete sides.

- a. Removal and reconstruction of curbing and curb and gutter will not be part of this item and will be paid separately.
 - b. Truncated domes shall be paid for at the contract price per square foot and shall include all cutting, trimming and shaping of the truncated dome panels to conform with the curb line as needed as well as any other incidental materials such as adhesives.
 - c. Topsoil, seeding and fertilizer shall be paid as a separate item.
- d. Concrete Sidewalk - The concrete shall be screeded to a true surface, free from depressions and other irregularities and shall be floated with a magnesium alloy float. After it has taken its original set, it shall be floated again with a magnesium alloy float to produce a hard smooth finish free from water. The surface shall be given a light broom finish acceptable to the Project Manager.
- 1) Should the sidewalk be too wide to properly finish from each side, it shall be bridged so that the concrete will not be disturbed after it is screeded.
 - 2) Wherever full width sidewalk is placed from the curb to the property line, the sidewalk shall be placed in alternate blocks. The size of these blocks shall be determined by the Inspector. Every effort shall be made to maintain color and texture.
 - 3) Where there are soil pipes draining into the streets at a lower elevation than the proposed gutter grade, the Contractor will relay these pipes under the sidewalk before construction of sidewalk and/or curb & gutter. The cost of this work is to be included in the price bid per lineal foot for laying soil pipe. This item may be deleted in whole or in part and shall only be done if included as a bid item.
 - 4) Entrance (Carriage) walks, connecting with the city sidewalk that have to be cut off, shall be cut with a concrete saw and all exposed ends faced up with concrete shall leave a neat appearing surface. The cost of this work is to be included in the price bid for concrete sidewalk.
 - 5) Excavation will be paid at the unit price for the material to be excavated.
 - 6) Preparation of Subgrade - The subgrade of sidewalks that replace existing concrete sidewalks shall be prepared by the removal and satisfactory disposal of all unsuitable material above the normal subgrade. No roots encountered above normal subgrade will be cut unless approved by the City Arborist.
 - 7) Wherever sidewalk must be backfilled to obtain plan grade over 4" (included in item cost) unit costs will be paid separately for this material. Any area adjacent to the property side of the sidewalk, shall be filled in and compacted with an approved material, fertilized and seeded.
 - 8) Subgrade shall be compacted to a density of 95% based on Standard Proctor and shall be graded flat to not vary more than 1/2" at any one point from

normal subgrade. Wherever tree roots prevent excavation of existing ground surface to normal subgrade, subgrade will be determined by the Project Manager in the field.

- 9) Backfill adjacent to and behind sidewalk immediately after stripping forms.
- 10) Wherever a property or retaining wall exists or is to be constructed, as shown on the approved drawings, an expansion joint shall be placed between the back face of the sidewalk and the property wall. This cost is to be included in the unit bid price.
- 11) In the event the adjoining property is more than 10" above or below grade at the property line, a concrete retaining wall, in accordance with VDOT RW-2 or RW-3, shall be constructed for the purpose of retaining the back face edge of the proposed brick sidewalk. The cost of this wall shall be paid separately.
- 12) Payment - Sidewalks - Payment for all new concrete sidewalk and for removal and replacement of existing sidewalk with new concrete sidewalk shall be made at the contract unit price bid per square yard.
 - a. 4" Concrete Sidewalk, complete in place (does not include excavation) includes items as noted in the bid item. Excavation shall be paid separately and shall include a maximum 6" allowance per excavated side for formwork. Root cutting or trimming shall be incidental to the sidewalk installation.
 - b. 4" Concrete Sidewalk, complete in place (remove and replace) shall include removal (disposal paid separately) and includes items as noted in the bid item. Excavation is included and shall include 6" allowance per excavated side for formwork. Root cutting or trimming shall be incidental to the sidewalk installation.

6. SECTION 515 – PLANING PAVEMENT IS SUPPLEMENTED TO INCLUDE THE FOLLOWING:

- a. General - This item shall include all work involved in the removal of the top surface of asphalt streets by means of a cold planer.

It is the intent of this contract that all streets which are to be cold planed, shall have a continuous operation of cold planing, clean-up and asphalt placement. In the event that breakdowns, malfunctions, or other situations occur during the performance of work on any street, the Project Manager may prohibit further cold planing until a suitable continuous operation can be resumed.

- b. Equipment - The cold planer shall be a single self-propelled unit with a series of carbide teeth on a rapidly-rotating drum which can be precisely positioned by an operator for the purpose of removing the top surface of an asphalt street to a depth of 1" or more. The cold planer shall be capable of removing an asphalt surface in widths of 30" minimum with the final surface having longitudinal grooves approximately 1/8" to 1/4" in depth. The cold planer shall be similar to that made by

G. L. Payne Company, CMI, or an approved equal and shall be so designed that it can remove irregularities from asphalt road surfaces.

- c. Application - The cold planer shall be used to remove various specified depths of asphalt surface from specified streets so that the planed surface conforms to a desirable, grooved, cross sloped street profile. All areas adjacent to castings, curb or gutter or lapped tie-ins, which cannot be cut with the cold planer will be cut by hand and paid for as a square yard of specified depth for "Cold Planing". Any castings which must be set or reset or concrete work deemed necessary by the Project Manager will be performed after the specified depth that has been planed from the roadway surface. The final asphalt top will be placed on the roadway after all casting and concrete work has been completed.
- d. Removal of Material - All asphalt surface material which is cut from the asphalt road surface by the cold planer shall become the property of the Contractor, unless otherwise specified as becoming the property of the City. Material that is property of the City shall be hauled to the designed City yard. All cost involved in the removal and delivery of material shall be included in the unit price
- e. Basis of Measurement - Cold planed areas shall be measured in units of square yards of a specified depth. The depth of cut shall be defined as the distance from the original surface to the top of the grooves of the planed, grooved surface.
- f. Basis of Payment - Payment shall be made at the unit pricing bid per square yard per specified depth of "Cold Planing" accomplished, and shall include all cost in supplying a cold planer and providing everything necessary for the cold planing of an asphalt surface, including the removal and satisfactory delivery of the cut material as specified in the plans, and maintaining traffic.

Example:

Specified Depth of Cold planing 1". Pay quantity shall be for full area "Cold Planing, 1" Depth" regardless of any additional depth unintentionally planed.

7. SECTION 517 – CONTRACTOR CONSTRUCTION SURVEYING IS SUPPLEMENTED AS FOLLOWS:

Measure and Payment for Construction Surveying, when a bid item, will be at the contract unit price in accordance with these special provisions. When not a pay item, the costs of Construction Surveying shall be included in the price bid for other appropriate items.

8. SECTION 601 – SELECTIVE TREE REMOVAL AND TRIMMING IS AMENDED AS FOLLOWS:

Tree Removal - This item shall include the removal and satisfactory disposal, in the area provided by the Contractor, of all trees over 6" in diameter, measured 36" above ground and designated on the approved drawings for removal. Removal of trees shall include the removal of their stumps to a minimum of two (2) feet below finished grade, unless otherwise noted. Existing stumps shall also be removed to a minimum of two (2) feet below finished grade, unless otherwise noted. The unit price for removal shall also include the restoration of the excavated area to normal grade with onsite borrow unless

otherwise specified. The cost of removing trees smaller than 6" in diameter and brush shall be included in the price bid for clearing and grubbing. Felled trees or felled portions shall be removed the same day. The Contractor shall take all precautions to protect trees, shrubs or other vegetation scheduled to remain and shall repair or replace all trees, shrubs or seeded areas negligently destroyed at no cost to the City. Payment for removal of trees and their stumps, or stumps only, will be made as per the unit price in the bid sheet. Removal of all trees shall be approved by the city arborist.

9. SECTIONS 602 – TOPSOIL AND SECTION 603 – SEEDING ARE AMENDED AS FOLLOWS:

- a. Topsoil, Grass Seed and Fertilizer - The area indicated by note on plans shall be graded to three (3") inches below finished grade and covered with a minimum of three (3") inches of topsoil, hand raked to a level finish. The topsoil shall be free of subsoil, seeds, rocks, or any other foreign matter. Top soil shall be subject to the approval of the Department of Grounds Maintenance before being moved from the source of supply.
 - 1) The seed applied to areas noted shall consist of 1/3 2nd Millennium turf type tall fescue, 1/3 Falcon IV turf type tall fescue and 1/3 Rebel Exeda tall fescue, unless otherwise directed by the Project Manager. This mixture shall be applied at the rate of five (5) pounds per 1,000 sq. ft. Agricultural lime shall be applied at the rate of 3,000 pounds per acre. 10-20-10 fertilizer shall be applied at the rate of 2,000 pounds per acre.
 - 2) The lime and fertilizer shall be worked into the top soil prior to seeding.
 - 3) The City reserves the right to delete the item top soil, fertilizing and seeding from this contract.
 - 4) Where seed and fertilizer only are to be used, the existing ground is to be broken up, rocks and unsuitable material raked out and the fertilizer and seed applied at the same rate and method as explained above.
 - 5) Where there is a build up of unsuitable soil between the existing or proposed curb and the existing or proposed sidewalk, or where there is insufficient or unsightly grass cover, the area will be excavated to 3" below grade and filled with 3" of top soil, seeded and fertilized. Any areas close to grade and well turfed should not be disturbed.
 - 6) Permanent seeding shall take place only during the regular sowing period in the spring or fall. Temporary seeding will be in accordance with the Virginia Erosion & Sediment Control Handbook. If a suitable stand of grass is not obtained during the first seeding, the Contractor will be required to return once and resow those areas in which a suitable stand of grass is not obtained.
- b. Hydroseeding - The areas outlined for seeding shall be properly shaped, all wash areas shall be filled to provide a smooth, uniform surface and shall be scratched to a depth of at least two (2") inches to provide a satisfactory seed bed.

- 1) Liming - An approved limestone or approved equal shall be spread uniformly over the area to be seeded at the rate of 2 tons per acre.
 - 2) Fertilizing - At the time of seeding, 10-20-10 fertilizer shall be applied uniformly at the rate of 1,500 pounds per acre.
 - 3) Mulching - Mulch (wood cellulose fiber) shall be applied at the rate of 1,500 pounds per acre (dry weight) and in such a manner that uniform distribution is obtained. Five pounds of annual rye grass seed shall be added to the seed mix for each acre.
 - 4) Sowing Seed - A seed mixture of 83 pounds Kentucky 31 Fescue and 2 pounds Red Top or approved equal shall be sown per acre. Hydroseeding will be permitted provided equipment approved by the City is used and all mixtures are constantly agitated from the time they are mixed to the time they are applied to the seed bed. All such mixtures shall be used within 8 hours of mixing. Nozzles or sprays shall not be directed toward the ground in such a manner as to cause erosion or runoff.
 - 5) Hydroseeding - Unless specifically in the contract, hydroseeding may be done at the option of the contractor. No separate payment will be made for hydroseeding when done at the option of the contractor. Payment will be made at the contract price for "Grass Seed and Fertilizer, in place".
- c. Out-of-Season Seeding – Out of season seeding is seeding that occurs in Summer (June 1st to September 1st) of the calendar year and/or Winter (January 1st to March 1st).

The Contractor is permitted to seed at times other than during the regular seeding season provided that the contractor furnishes the Director of Public Works a letter that the contractor shall:

- 1) Re-establish the original condition and grade prior to supplementary seeding.
 - 2) The area shall have 85% vegetative cover to be acceptable.
 - 3) Bare areas over 5 square feet are not acceptable.
 - 4) Acceptability will be determined by an inspection approximately 60 days after the beginning of the following seeding season.
 - 5) Supplemental seeding, if performed during a regular seeding season, will only be required once.
 - 6) Supplemental seeding shall not entitle the Contractor to additional compensation.
- d. Payment for Out-of-Season Seeding - Payment for the work will be made as follows:

- 1) Fifty percent (50%) of the lump sum bid will be paid on completion of all work as outlined.
- 2) An additional twenty-five (25%) percent will be paid when seventy-five (75%) percent cover is obtained over the entire area.
- 3) The balance will be paid when the Project Manager or Inspector is satisfied that the necessary vegetative cover is obtained over the entire area and the work is acceptable as complete and satisfactory.
- 4) Full payment may also be released at the discretion of the Project Manager should the Contractor provide in writing adequate guarantees and assurances that permanent seeding will be performed during the next planting season.
- 5) The City of Richmond reserves the right to withhold payment on future assignments equal to the value of Grass Seed and Fertilizer on any project for which the Contractor did not adequately perform the required permanent seeding as outlined above.

10. SECTION 605 – PLANTING IS AMENDED AS FOLLOWS:

- a. Tree Planting - This item shall cover all work involved in the supplying and planting of trees where noted on the approved drawings.
 - 1) Trees to be planted under this contract shall be as specified on the Bid Sheet, balled and burlapped stock. All trees shall be moved with a compact natural ball of earth so firmly wrapped in burlap that upon delivery the soil in the ball is still firm and compact about the small feeding roots. Each ball shall be of sufficient size to encompass all the fibrous feeding roots necessary to insure successful recovery and development of the plant. The minimum sizes of balls, ball depth and diameters, and increased ball sizes for collected stock shall be in accordance with recommended balling and burlapping specifications as set forth in the current edition of American Standards of Nursery Stock, sponsored by the American Association of Nurserymen, Inc.
 - 2) Trees will not be accepted if the ball is cracked or broken before or during planting operations or if there is any damage to the bark or branches before or during planting operations. Tree trunks shall be single stem and free from trunk wounds.
 - 3) The plant hole should be centered at the location noted on the plan and be three-to five times wider than the root ball if possible. The depth of the planting hole must be no greater than the height from the bottom of the root ball to the root flare of the tree. The root flare (trunk flare, crown flare) is the area of the tree where roots join the trunk: this may actually be buried 6 inches below the top of the root ball. If the trunk flare is not visible, remove soil or media from the top of the ball until it is visible. The root flare shall be slightly above the surface of the surrounding soil at all times. Determine the desired depth of each hole prior to digging.

- 4) Whenever trees are to be placed in a concrete sidewalk area, a 5'x5' tree box will be cut in the existing sidewalk and the concrete which is within the tree box shall be removed as part of the excavation for the tree ball.
 - 5) Whenever trees are to be placed in a brick sidewalk, a 5' by 5' tree box will be formed around the tree as described in Item "k. Tree Boxes" under Brick Sidewalk on Cement-Sand Bedding in the Special Provisions of this contract and all brick which is within the tree box shall be removed as part of the excavation for the tree ball. All concrete sidewalk which must be removed and replaced, as directed by the Project Manager, outside the tree box area shall be paid for under the item bid per square yard for 4" concrete sidewalk.
 - 6) A root barrier shall be installed in accordance with the manufacturer's recommendations or instructions at the time of tree planting or installation of curb and gutter for existing trees. The root barrier shall be Deep Root UB-24 High Density Polyethylene or approved equal and installed to protect curb & gutter and sidewalks adjacent to trees. Root barrier shall be installed along the perimeter of tree boxes or along longitudinal curbing and sidewalk for a minimum distance of 10 feet, centered on the tree for single plants, as directed by the Engineer. The contractor shall provide all materials, equipment, and labor necessary to install the root barrier. Each location will be inspected for existing conditions by the City prior to installation. Payment for root barrier will be made at the contract unit price, complete in place.
- b. Tree selections shall be approved by the City Arborist prior to planting - Planting of trees shall be performed under the supervision of an experienced nurseryman. Whenever conditions are such, by reason of drought, high winds, excessive moisture, frozen earth, or other similar factors, that satisfactory results are not likely to be obtained, work shall be stopped. It may not be resumed until desired results can be obtained or until approved alternate or corrective measures and procedures are adopted.
- 1) Prior to delivery of trees to the project site, the selected trees shall be inspected and approved by the city arborist in the nursery or yard of purchase.
 - 2) Trees will be set in the planting hole in a straight and plumb fashion, with the top of the root flare at the proposed finish grade, so that a normal or true relationship of the crown of the plant with the ground surface will be established. Before backfilling, someone must view the tree from two directions perpendicular to each other to confirm the tree is plumb. Fill in with some more backfill soil to secure the tree in the upright position. Attempts must be made to break up clayey soil clumps as much as possible. Do NOT step firmly on the backfill soil because this could compact the soil and restrict root growth, especially in clayey soil. Begin to fill the hole around the root ball with soil. When the hole is filled approximately two-thirds with soil, the root ball should remain 6 to 8 inches above the backfill soil. Slice the shovel 20 to 30 times into the backfill to settle the soil. Add 10 to 20 gallons of water to the root ball and backfill. Fill in any holes or depressions with additional backfill soil. The water infiltrating the soil will eliminate large air pockets. The burlap and wire basket will then be cut away or folded back

from at least the top one-third of the root ball and the plant hole shall be filled to grade with topsoil. All synthetic materials from around the tree trunk and root ball shall be removed and not evident within the backfill soil mix. String, rope, synthetic burlap, plastic, strapping, and other materials that will not decompose in the soil shall be removed at planting.

- 3) The entire tree planting box, or at least a 6-foot diameter circle around the tree, shall be covered with mulch. Construct a berm of mulch at the edge of the root ball only if the tree will be watered with a hose, bucket, or other high volume means. Mulch shall be placed over the root zone to a minimum depth of two inches and a maximum depth of four inches. Mulch shall be placed against the trunk of the tree. Leave an unmulched area at least 6 inches around the tree trunk. If mulch is found against the base of the trunk, carefully remove it and the soil at the base of the tree to expose the root collar, which needs adequate air circulation. Use non-metallic hand tools when working near the root collar to prevent damaging the trunk and roots.
 - 4) Trees shall be supported immediately after planting with guy wires as shown on the contract drawings. Do not guy the tree unless necessary to maintain the tree in an upright position. If guying, guy wires shall be loose enough to allow the tree to be able to move freely in the wind, but shall be tight enough to keep the tree from overturning. Guy wires shall have protective materials in contact with the tree to keep it from damaging the bark. Cut or damaged surfaces shall not be coated with tree paint. All Guying material and stakes shall be removed after one (1) year.
 - 5) Each tree will be inspected by the City Arborist for any disease or insect pest infestations. Upon the discovery of any disease or insect pest infestation, the nature or species shall be identified and a proposed method of control shall be submitted to the Chief of Parks for approval prior to application of control measures. Should the disease or insect pest infestation be such that it could cause the death of the tree during the guarantee period, said tree shall be replaced at the Contractor's expense. The Contractor shall be responsible for control of disease and insect pest infestation during the one year Guarantee Period plus proper watering and weeding for a minimum of three weeks after project acceptance.
- c. Payment - The basis of payment shall be at the unit price bid per each "Tree" and shall include supply and placement of each tree, excavation and disposal of all existing sidewalk within the tree box, excavation for tree ball and disposal of all excess material, supply of any extra topsoil required for backfilling planted tree, planting and backfilling tree, down guying and wrapping of tree, pruning of tree, supply and placement of an approved mulch, control of disease and insect pest infestation plus all required watering and weeding including all labor, equipment, tools and materials incidental thereto.
- d. Contractor's Guarantee - The Contractor shall guarantee all trees, which have been planted as part of this contract, against any defects or loss of plant life for a period of one (1) year following the date of final acceptance of the work by the Project Manager or City Arborist. The contractor shall be responsible for watering and necessary maintenance during the warranty period. Under this guarantee, the

Contractor agrees to replace, without delay, any defects or loss of tree or plant life, at his own expense, It is hereby agreed that the Performance Bond shall fully cover the guarantee contained within this paragraph.

11. ADJUSTING UTILITIES AND CASTINGS

- a. Resetting Castings - The Contractor shall be required to adjust sewer manhole castings, gas, water valve and drip boxes to new grades. For large valve and drip boxes the vertical adjustment shall be made with brick and concrete. The entire base of the box shall be placed on brick when set to new grade. For small valve boxes the vertical adjustment is made by screwing the top section and/or by installing a new mid-section.
- 1) Sewer manhole castings shall be reset to grade on brick with high early concrete or precast concrete adjustment rings. Virginia Power and telephone manhole castings will be reset by the respective utility. Old pavement removed to adjust gas, water valve and drip boxes and sewer manhole castings shall be replaced with concrete on graded streets. The contractor shall coordinate adjustment of private utility owned manholes with the respective owner.
 - 2) The Contractor shall properly place and fit the sewer rings and adapters. Rings and adapters improperly placed shall be cut out and replaced at the Contractor's expense.
 - 3) The Contractor shall remove all materials that fall in the sewer manholes and basins and reset all castings the day the castings are disturbed. Work shall not be resumed the next day or on any new work until such time as previous day's work is complete (i.e.: the Contractor not cleaned out any sewer manhole or basin or reset the castings of previous day's work).
 - 4) Concrete collars around sewer manhole castings and valve boxes shall be Class "A3" Type I or II cement and shall be protected from traffic for three (3) days. Backfill for valve boxes set to grade shall be compacted with a pneumatic tamp to a minimum of ninety-five (95%) percent density (Standard Proctor).
 - 5) Sewer castings, gas, water valve and drip boxes where the final surface shall be concrete, shall be set to grade without concrete collar.
 - 6) All castings shall be adjusted via methods such that they do not settle from the adjusted elevation.
- b. Adjusting Utilities - In the event that any existing gas, water lines, fire hydrants or services have to be adjusted and not shown on the plan, the Contractor will be required to notify the Department of Public Utilities (DPU) seventy-two (72) hours prior to the time set for uncovering the existing lines, adjusting hydrants, or adjusting service boxes. Any adjustment to gas-water lines or fire hydrants, unless included in the contract, will be done by the Department of Public Utilities' forces. Uncovering lines shall be done by the Contractor. The contractor may request a contract time adjustment if in his opinion, DPU in adjusting its facilities created a

significant delay to his critical path activities. Provided prior notification was timely, the Project Manager, at his sole discretion, may grant such time extension based on written documentation duly furnished by the contractor. No delay claim will be receivable if, in the opinion of the Project Manager, DPU has accomplished due diligence in adjusting its facilities within 10 (ten) working days of the above notification. The same process shall apply to other private and public utilities with facilities within the public right-of-way.

- c. Payment - Payment for manholes set to grade will be made at the unit price bid for this item and shall include the cost of excavation, backfill, brick, mortar, hauling and placing sewer rings and adapters, barricading, lighting, concrete collar, and all other costs in connection therewith. Payment for adjusting gas, water valve, and drip boxes will be made at the unit price bid for "Adjust utility castings, large (greater than 16 dia.)" or "Adjust Utility Casting, Small (6"-16")." Water meter boxes and gas curb cocks will be paid for at the unit price for "Adjust water meter or gas cock to grade " and shall include all connection costs including costs of excavation, backfill, concrete, barricading, lighting and asphalt padding and any other costs.

12. ADJUSTING OR CONSTRUCTING BASIN SLABS

- a. Drop inlet throat sections where specified on the plans shall be either cast in place or a pre-cast unit. Before placement of the throat section, the barrel will be either cast in place, prefabricated or a modified existing structure. The throat section shall either be mortared to the barrel or shall be sealed with an asphaltic seal. Existing drop inlet barrels shall be re-mortared to repair weak mortar joints. The base for the pre-cast throat units will be of concrete either dry or wet at a thickness of 3 inches minimum. Specific detail references will be made in the plan or per VDOT Standards.
- b. Payment will be made according to the specified design units identified in the plans. Cost of work in connection with the drop inlet construction will be made per each unit, specified in place.
- c. When adjusting existing drop inlets the cost of extending the throats shall be paid per linear foot of length greater than 4-foot minimum. The cost of curb and gutter shall be separate unit costs.

13. NEW BRICK SIDEWALK ON CONCRETE BASE

- a. General - The work of this section shall comprise the furnishing and installing new brick sidewalk on a 4" concrete base as noted on the approved drawings.
- b. Materials shall conform with these special provisions (Section C, paragraph 16).
- c. The cost of new brick shall be included in the unit prices for brick sidewalk.
- d. Excavation shall be paid at the unit price for the material to be excavated.
- e. The subgrade of sidewalks that replace existing sidewalks shall be prepared by the removal and satisfactory disposal of all unsuitable material above the normal

subgrade. Tree roots encountered shall not be cut unless approved by the City Arborist.

- f. Wherever sidewalk must be backfilled to obtain plan grade over 4" (included in item cost) unit costs will be paid separately for this material. Any area adjacent to the property side of the sidewalk, shall be filled in and compacted with an approved material, fertilized and seeded.
- g. Subgrade shall be compacted to 95% of Standard Proctor and shall be graded flat and not to vary more than 1/2" at any one point from normal subgrade. Wherever tree roots prevent excavation of existing ground surface to normal subgrade, subgrade shall be determined by the Project Manager in the field.
- h. Concrete Base - Upon compaction and grading of subgrade, the subgrade shall be cleaned of all loose and foreign material. After this has been done, a 4" concrete slab shall be placed on the compacted subgrade.
- i. Wherever a property or retaining wall exists or are to be constructed as shown on the drawings, an expansion joint shall be placed between the back face of the sidewalk and the property wall. This cost is to be included in the unit bid price.
- j. Back Face of Sidewalk – Wherever brick sidewalk abuts a non-solid confining surface a soldier course of bricks is required to prevent the new brick sidewalk from failure due to movement. This soldier course shall be formed by setting new sidewalk brick on end, side to side, in a row along the back edge of the sidewalk. The lower portions of the soldier course shall be embedded in 2" of a 1:3 cement mortar. The cost of the soldier course shall be included in the unit prices for brick sidewalk.
- k. In the event the adjoining property is more than 10" above or below grade at the property line, a concrete retaining wall, in accordance with VDOT RW-2 or RW-3, shall be constructed for the purpose of retaining the back face edge of the proposed brick sidewalk. The cost of this wall shall be paid at the bid unit cost.
- l. Tree Boxes - Wherever trees exist within the brick sidewalk area or wherever trees are to be placed in the brick sidewalk area, a tree box shall be formed with the bricks which are to be used in the brick sidewalk. The tree box shall be 5'x5' (unless otherwise noted on the drawings) and shall be formed by embedding bricks on side, end to end, in 2" of a 1:3 cement mortar. The Project Manager will determine in the field the exact location and size of any required tree boxes. The cost of the tree boxes shall be included in the unit price bid for Brick Sidewalk.
- m. Laying Brick - Bricks shall be stored in areas designated by the Project Manager. All bricks shall be carefully laid with the best face up in the pattern noted on the approved drawings or designated by the Project Manager. Bricks shall be cut, not broken, using a high-speed masonry saw producing clean, sharp edges.
- n. Cement-Sand Bedding - Upon completion of the 4" Concrete base a uniform layer mixture of 1 part cement to 3 parts sand, 1/2" thick, shall be placed upon the subgrade. This cement-sand bedding shall be screeded off and densified by tamping or rolling so that the top surface of the cement-sand bedding will be

smooth with no more than 1/4" variation from a flat plane and shall be compacted to 95% of theoretical density, at optimum moisture (Standard Proctor). Sand used for sand bedding shall be uniform in gradation and free from foreign material. Cement shall be Portland Cement and conform to ASTM C150. The cement-sand mixture shall be mixed in a mechanical mixer by the contractor.

- o. The bricks shall be laid with a uniform 1/8" joint between each brick and joints shall be filled with a 1:3 cement-sand mixture. Sand used for filling joints shall be very fine in gradation and cement shall be Portland Cement which conforms to ASTM C150. Wooden mallets or the wooden end of a brick mason's hammer will be used to strike each brick to insure a proper set during placement of the bricks and after sweeping the cement-sand mixture into the joints.
- p. Finishing Sequence - Once the cement-sand bedding is in place and the bricks have been set upon the bedding the joints shall be filled with a dry sand joint filler. Joint filler shall be reapplied as many times as necessary to achieve a locking bond. The contractor will be responsible for cleaning the brick surface of any excess filler material.
- q. Basis of Payment - Payment shall be made at the unit price per bid per square yard and shall include all costs except excavation in connection with installing new brick sidewalks on concrete base.

14. NEW BRICK SIDEWALK ON CEMENT-SAND BEDDING

- a. General - The work of this section shall comprise the furnishing and installing new brick sidewalk on a 4" sand cement base as noted on the approved drawings.
- b. Materials shall conform with these special provisions (Section C, paragraph 16).
- c. The cost of new brick shall be included in the unit prices for brick sidewalk.
- d. Excavation will be paid at the unit price for the material to be excavated.
- e. The subgrade of sidewalks that replace existing sidewalks shall be prepared by the removal and satisfactory disposal of all unsuitable material above the normal subgrade. Tree roots encountered shall not be cut unless approved by the City Arborist.
- f. Wherever sidewalk must be backfilled to obtain plan grade over 4" (included in item cost) unit costs will be paid separately for this material. Any area adjacent to the property side of the sidewalk, shall be filled in and compacted with an approved material, fertilized and seeded.
- g. Subgrade shall be compacted to 95% of Standard Proctor and shall be graded flat to not vary more than 1/2" at any one point from normal subgrade. Wherever tree roots prevent excavation of existing ground surface to normal subgrade, subgrade shall be determined by the Project Manager in the field.

- h. Wherever a property wall exists or is to be constructed as shown on the drawings, an expansion joint shall be placed between the back face of the sidewalk and the property wall. This cost is to be included in the unit bid price
- i. Back Face of Sidewalk – Wherever brick sidewalk abuts a non-solid confining surface a soldier course of bricks is required to prevent the new brick sidewalk from failure due to movement. This soldier course shall be formed by setting new sidewalk brick on end, side to side, in a row along the back edge of the sidewalk. The lower portions of the soldier course shall be embedded in 2" of a 1:3 cement mortar. The cost of the soldier course shall be included in the unit prices for brick sidewalk.
- j. In the event the adjoining property is more than 10" above or below grade at the property line, a concrete retaining wall, in accordance with VDOT RW-2 or RW-3, shall be constructed for the purpose of retaining the back face edge of the proposed brick sidewalk. The cost of this wall shall be paid separately.
- k. Tree Boxes - Wherever trees exist within the brick sidewalk area or wherever trees are to be placed in the brick sidewalk area, a tree box shall be formed with the bricks which are to be used in the brick sidewalk. The tree box shall be 5'x5' (unless otherwise noted on the drawings) and shall be formed by embedding bricks on side, end to end, in 2" of a 1:3 cement mortar. The Project Manager will determine in the field the exact location and size of any required tree boxes. The cost of the tree boxes shall be included in the unit price bid for Brick Sidewalk.
- l. Laying Brick - Bricks will be stored in areas designated by the Project Manager. All bricks shall be carefully laid with the best face up in the pattern noted on the contract drawings or designated by the Project Manager. Bricks shall be cut, not broken, using a high-speed masonry saw producing clean, sharp edges.
- m. Cement-Sand Bedding - Upon completion of compaction and grading of the subgrade, the subgrade shall be cleaned of all loose and foreign material. A uniform layer mixture of 1 part cement to 3 parts sand, 4" thick, shall be placed upon the subgrade. This cement-sand bedding shall be screeded off and densified by tamping or rolling so that the top surface of the cement-sand bedding will be smooth with no more than 1/4" variation from a flat plane and shall be compacted to 95% of theoretical density, at optimum moisture (Standard Proctor). Sand used for sand bedding shall be uniform in gradation and free from foreign material. Cement shall be Portland Cement and conform to ASTM C150. The cement-sand mixture shall be mixed in a mechanical mixer by the contractor.
- n. The bricks shall be laid with a uniform 1/8" joint between each brick and joints shall be filled with a 1:3 cement-sand mixture. Sand used for filling joints shall be very fine in gradation and cement shall be Portland Cement which conforms to ASTM C150. Wooden mallets or the wooden end of a brick mason's hammer will be used to strike each brick to insure a proper set during placement of the bricks and after sweeping the cement-sand mixture into the joints.
- o. Finishing Sequence - Once the cement-sand bedding is in place and the bricks have been set upon the bedding the joints shall be filled with a dry sand joint filler. Joint filler shall be reapplied as many times as necessary to achieve a locking

bond. The contractor will be responsible for cleaning the brick surface of any excess filler material.

- p. Special Brick Sidewalk Conditions - Whenever an existing brick sidewalk is to be replaced with all new brick and spot restoration of brick is a part of the contract, the existing brick shall be removed by hand, culled and cleaned and used for the brick sidewalk restoration. The unit price bid per square yard for spot restoration of brick shall include the cost of removing by hand, culling and cleaning of the existing bricks and moving to restoration area. If no brick sidewalk restoration is part of the contract, the Project Manager will designate any brick to be salvaged or removed and this work will be paid for separately as unclassified excavation or salvage. This will be noted on the drawings or made a part of the additional requirements for the project.
- q. Basis of Payment Payment shall be made at the unit price per bid per square yard and shall include all costs except excavation in connection with installing new brick sidewalks on cement-sand bedding.

15. SPOT RESTORATION OF BRICK SIDEWALK

- a. This item shall cover all work involved in the spot replacement of missing brick and/or the restoration to proper grade of existing brick sidewalk.
- b. Bricks in existing sidewalks where designated for restoration shall be removed by hand and the subgrade shall be cut or filled, as required, until a proper subgrade is obtained. Sand which is uniform in gradation and free of foreign material shall be used as a fill material. The bricks removed and replacement brick shall then be placed back in the sidewalk as to conform to the pattern of the sidewalk adjacent to the area restored. Bricks shall be cut, not broken, using a high-speed masonry saw producing clean, sharp edges. Once the existing bricks have been placed back in the sidewalk, joints shall be filled with a 1:3 cement-sand mixture. Sand used for filling joints shall be clean and very fine in gradation and cement shall be Portland cement which conforms to ASTM C150. Wooden mallets or the wooden end of a brick mason's hammer will be used to strike each brick to insure a proper set during placement of the bricks and after sweeping the cement-sand mixture into the joints. After the joints have been filled with the cement-sand mixture, the brick sidewalk surface shall be cleaned of all residue cement or sand by means of sweeping, washing or cleaning with an acid solution.
- c. Once the brick sidewalk surface has been cleaned to the satisfaction of the Project Manager or Inspector, a light coat of clean fine graded sand shall be placed on the brick sidewalk surface. This light coat of sand will be removed by the contractor at the end of the job.
- d. Whenever there is a deficiency of existing brick in an area designated for spot restoration of brick bricks may be obtained from areas designated for removal of existing brick sidewalk and replacement with new brick or concrete. The existing brick sidewalk shall be removed by hand, by the contractor, culled and cleaned and used for the spot restoration of brick. The unit price bid per square yard for spot restoration of brick shall include the cost of removing by hand, culling and cleaning of the existing bricks, and brick cutting. If no brick sidewalk removal and

replacement with new brick or concrete is part of the contract, the contractor will obtain all bricks needed for restoration work from the City storage yard and haul them to the site. If this is to occur it will be noted on the drawings or made a part of the additional requirements of the project.

- e. This work shall be paid for at the unit price bid per square yard for "spot restoration of brick " and shall include all work involved in the removal and replacement of bricks in existing sidewalks, cutting or fill required for preparation of subgrade, hand removal and culling and cleaning of all bricks from existing brick sidewalks or the City storage when a deficiency of bricks occurs, hauling brick, cement-sand joint filler complete in place, and cleaning of the brick sidewalk surface and sand coating.

16. SOLID CONCRETE PAVING UNITS

- a. Materials shall conform with these special provisions (Section C, paragraph 16).
- b. Paving units shall be installed in accordance with manufacturer's specifications. Unit bid cost shall include supply and placement of solid concrete paving units, sand bedding course, plastic edge restraints and joint filling sand. Excavation, granular or concrete base course, concrete or special design edge restraints such as angle iron are not included and may be a separate unit price bid item unless otherwise specified on the plan.

17. RESTORE DURAX BLOCK PAVEMENT

- a. Description - Work shall consist of restoring damaged areas of Durax Granite Paving Block as indicated on the approved plans.
- b. Durax Block – Durax Block shall be granite cubes approximately 3.5" in all direction. If additional Durax Block is necessary, the Durax block shall be furnished by the City. the durax block shall be picked up from the City storage area and hauled to the site by the Contractor; the cost of this work shall be included in the unit price bid for the restoration work.
- c. Mortar Bedding - The mortar bedding shall comply with the requirements for nonshrink mortar.
- d. The sand used shall conform to VDOT Specifications, sec. 202, for Grading C.
- e. The mortar bedding shall be not less than one-half inch nor more than one and one-quarter inches in thickness after blocks have been laid.
- f. Laying Durax Block - The Durax block shall be laid on the mortar bedding in concentric, interlocking segments of about three (3) foot radius, with broken joints, or to meet existing pattern. The upper or wearing surface of each block shall be flush with the general surface of the pavement, and four (4) inches above the concrete base, if used, when the pavement is completed. Joints between the blocks shall be 1/4" to 1/2" wide at the surface.

- g. Prior to the placement of grout, the pavement shall be checked with a ten (10) foot straight edge laid parallel with the center of the street and all irregularities greater than one-quarter inch shall be corrected.
 - h. Once the blocks are to acceptable grade, the joints shall then be filled with grout (EMACO T-1061) or approved equal, around all Durax Block to within ¼” of the top.
 - i. Obligation of Contractor at End of Warranty Period - In addition to the proper maintenance of the pavement during the period of warranty, the Contractor shall at their expense, just before the expiration of the warranty period, make such repairs as are necessary to the pavement where it shows indication of having been defectively constructed.
 - j. Basis of Payment - This work shall be paid for at the contract unit price per square yard for "Restore Durax Block Pavement on Mortar bedding" which price shall include removal, cleaning, the mortar bedding, loading Durax block and hauling to the site as necessary, and placing the joint filler, complete in place and all material, equipment, tools, labor, and work incidental thereto.
18. RESTORE GRANITE SPALL PAVEMENT - This work shall consist of restoring or installing new Granite Spall (a.k.a. Cobblestone)
- a. Description - This pavement is a roughly cut granite block wearing surface as hereinafter described and locally known as “Spall”. The Spall shall laid in a mortar bed with grout joint filler. The base is specified and paid for separately. Unless otherwise specified in the proposal, the City will furnish the Spall. Spall provided by the City shall be picked up from the City storage area and hauled to the site by the Contractor. The cost of this work shall be included in the unit price bid for the restoration work.
 - b. Granite Spall - Granite Spall shall be from four (4) to seven and one-half (7½) inches deep, from three (3) to six (6) inches wide and from three (3) to ten (10) inches long. The sides shall permit laying with joints not over three-quarters (¾) of an inch in width and joints of that width shall be exceptional. The upper face shall be uniform to permit laying to the general surface of the pavement.
 - c. Mortar Bedding - the mortar bedding shall comply with the requirements for Nonshrink Mortar. The sand used shall conform to VDOT specifications, Sec. 202, grading C. The mortar bedding shall be maximum two (2) inches thick.
 - d. Laying Spall - On this mortar bedding the Granite Spall shall be laid at right angles to the center of the street. Each course of Spall shall be approximately of uniform width and depth, and so laid that all longitudinal joints shall be broken by a lap of at least two (2) inches. As each course is laid the Cement Sand Bedding will fill the joints to within three (3) inches of the surface of the pavement. Irregular shaped and odd sized Spall shall be culled by the pavers.
 - e. After the Spall has been placed in the mortar bedding the pavement shall be tested with a ten (10) foot straight edge laid parallel with the center line of the pavement

and any irregularities exceeding one-quarter (1/4) of an inch must be corrected as directed by re-laying of the Spall.

- f. Grouting- The joints shall then be filled with grout (EMACO T-1061) or approved equal, around all Granite Spall to within 1/4" of the top.
- g. Obligation of Contractor at End of Warranty Period - In addition to the proper maintenance of the pavement during the period of guarantee, which will include refilling grout filled joints if they become open, the Contractor shall at his expense, just before the expiration of the guarantee period, make such repairs as necessary to the pavement where it shows indication of being defective.
- h. Basis of Payment - This work shall be paid for at the contract unit price per square yard for "Remove clean and replace granite spall..." which price shall include removal, cleaning, the mortar bedding, loading granite spall and hauling to the site as necessary, and placing the joint filler, complete in place and all material, equipment, tools, labor, and work incidental thereto.

19. RUBBER SIDEWALK

- a. General-This specification is to cover the placement of rubberized sidewalk pavers as noted on the contract drawings. The color of rubber sidewalk shall match adjacent sidewalk color to which the work is placed. Generally, the acceptable colors are gray or terra cotta.
- b. Product - Pavers shall be TERREWALK as manufactured by Terrecon Inc or approved equal. Pavers shall be nominally 2'x2.5' as to be suitable for 4' (or multiples thereof) or 5' (or multiples thereof) wide sidewalk. Color of paver shall match adjacent sidewalk to the extent practicable as offered by the manufacturer.
- c. Base - The contractor shall prepare the aggregate base for the paver tiles in accordance with the manufacturer's instructions and recommendations.
- d. Installation - Pavers shall be installed in accordance with the manufacturer's instructions and recommendations and shall include doveled tie-in to existing sidewalk.
- e. Basis of Payment - This work shall be paid for at the contract unit price per square yard for "Rubberized sidewalk, in place" which price shall include excavation, materials, labor, equipment to the site as necessary, and placing the joint filler, complete in place and all material, equipment, tools, labor, cutting, jointing and work incidental thereto.

- 20. SAW CUTTING – Saw cutting is incidental to any asphalt or concrete tie-in work. All existing asphalt & concrete pavements shall require saw cut in order to create a neat line, no other methods will be allowed. If the contractor uses an unacceptable method to create the pavement cut, the contractor shall establish a saw cut beyond the limits of work using acceptable methodology to create a neat joint at no additional cost to the City. Saw cutting will also be paid ONLY if requested by the inspector or PM that is outside of the item's normal scope.

21. MAINTENANCE OF TRAFFIC- the Contractor shall submit a Maintenance of Traffic plan as part of the requirements for the Work in Street permit.

The following procedure shall be followed for all street and sidewalk construction projects which may create obstructions to traffic movements in accordance with Traffic Order #2844, dated August 12, 1998 – Traffic Control Procedure for Street and Sidewalk Construction.

a. General

- i. The Transportation Engineering Division shall be notified not less than 72 hours prior to beginning street, utility or sidewalk construction. If work requires changes in bus routes, bus stops or traffic detours, a longer advance notice may be required. Under no circumstances shall a roadway be closed for routine construction without the approval of the City Traffic Engineer or his agent, and prior notification to the Division of Emergency Communications, telephone 646-5123.
- ii. In case of EMERGENCY WORK during normal business hours (8:00am to 5:00pm, Monday-Friday), notify the Transportation Engineering Division, telephone 646-0442, as soon as possible. At all other times notify the Division of Emergency Communications, telephone 646-5123, who in turn will notify Fire and Emergency Services.
- iii. Except for emergencies, work shall not be performed in the Central Business District (an area bounded by and including: Jackson Street on the north, Byrd Street on the south, Belvidere Street on the west, and Fourteenth Street on the east), or on major arterial, minor arterial & collector streets between the hours of 7-9am and 4-6pm without specific consent of the Transportation Engineering Division.
- iv. Metal plates will be required over street openings to maintain adequate traffic movement in order to reopen travel lanes during peak traffic periods. Metal plates and the installation thereof shall conform to DPW Policy for Temporary Steel Plate Bridging for General Utility Street Work dated April 2004.
- v. No vehicles shall be parked on the street or in alleys, at construction sites in violation of "No Parking" regulations unless the vehicle is essential to the completion of the job. Whenever a traffic lane is blocked by construction work, all vehicles, equipment and materials shall be parked or stored in the same lane.
- vi. No vehicles shall be parked neither on the streets nor on the sidewalks behind fences and barricades on construction and demolition projects. The area behind fences and barricades, whether in the street or on the sidewalk area, is for either loading and unloading, or storage of necessary materials. Materials shall not be stored where they may cause a safety hazard by obstructing the vision of drivers and pedestrians.
- vii. Any traffic signs, signals, or pavement markings removed as a result of the construction shall be replaced by the contractor. Before removing any traffic

control device, the Transportation Engineering Division shall be notified in order that temporary safety arrangements can be made. Any signs removed shall be delivered to the Sign Shop, 2800 Hermitage Road by the person removing same or his agent.

- viii. All flaggers shall be certified by VDOT, the American Traffic Institute, or other approved entity. The contractor shall provide copies of certifications of flaggers to be used to the Project Inspector prior to the commencement of work. Further, the flagger shall have the certification card on their person at all times while engaged in flagging operations.
- ix. The Contractor shall plan and stage operations such as to maintain access to all properties, especially for emergency services, at all times.

b. Traffic Control Devices

- i. All traffic control devices shall be in conformance with the Federal Highway Administration's Manual on Uniform Traffic Control Devices for Streets and Highways and the Virginia Department of Transportation's Work Area Protection Manual.
- ii. The contractor shall furnish, erect and maintain all signs; barricades shall be in place before any work is started by the contractor.
- iii. In the event that a construction site in the opinion of the Department of Police, Right-of-Way Management, or the Transportation Engineering Division is improperly signed, barricaded, or lighted, the contractor will be so notified. If the contractor cannot be reached immediately or fails to take necessary corrective measures, a stop work order may be issued until such corrective action is taken. Additional time for stop work order due to improper signage will not be granted.
- iv. On streets with unlimited parking, No Parking signs shall be erected a minimum of 72 hours in advance of the beginning of any street construction, tree spraying, tree trimming or street cleaning. Such signs shall bear the effective day and time. Signs prohibiting parking shall be placed not more than 100 feet apart. All existing regulatory signs which do not apply during construction shall be covered. Parking Meters shall be covered with bags or temporary "No Parking" Signs approved by the Transportation Engineering Division.
- v. All construction signing, barricades and other traffic control devices shall be removed promptly when the construction is completed.
- vi. The contractor shall maintain all signs and barricades in the roadway in the manner prescribed. All traffic control devices shall be kept in proper position, clean and legible at all times. Damaged traffic control devices shall be repaired or replaced immediately. Paper parking regulation signs shall be affixed so they will remain legible at all times, especially during inclement weather. In the event that work is halted, all unnecessary signs will be removed.

- vii. Traffic signs, signals, or pavement markings called out to be relocated and removed as a result of the construction shall be replaced by the contractor. Before removing any traffic control device, the Transportation Engineering Division shall be notified in order that temporary safety arrangements can be made. Any signs removed shall be delivered to the Sign Shop, 2800 Hermitage Road by the person removing same or his agent.

- c. Single Lane Traffic Control
 - i. Where traffic in both directions must use a single lane for a limited distance, provisions must be made for alternate one-way movement to pass vehicles through the constructed section. At a “spot” obstruction, such as isolated pavement patch, the movement may be self-regulating. However, where the one-lane movement section is of sufficient length, there must be means of coordinating movements at each end so that vehicles are not simultaneously moving in opposite directions in the section and delays are not excessive at either end. Control points at each end of the route must be chosen to permit easy passing of opposing lines of vehicles.

 - ii. The following minimum lane widths should be maintained at all times:
 - One Lane 10 Feet Wide

 - Two Lanes 20 Feet Wide