



CITY OF TARPON SPRINGS, FLORIDA

STANDARD TECHNICAL SPECIFICATIONS

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GENERAL CONSTRUCTION OPERATIONS

Measurement and Payment

The items of work and the pay item numbers specified in the Schedule of Values contained in the Proposal are identified specifically with the corresponding primary Section numbers of the Technical Specifications, and are hereby incorporated by reference as extensions of the corresponding Technical Specifications.

The pay item descriptions shown in the Specifications, as, for example, Asphaltic Concrete or Concrete, Class II, shall be deemed to include all additional descriptive wording shown on the Plans or in the Schedule of Prices for the respective pay items.

The contract price shown for the various pay items in the Schedule of Values contained in the Proposal upon which award of the Contract is based shall constitute full compensation for all work and materials described and specified in the Specifications for the respective pay items.

Any pay items which appear on the Bid Submittal Sheets (Schedule of Values) and for which there is no technical or special provisions contained in Division I, the pay item shall be provided, measured, and paid as per the provisions of the FDOT Specifications, latest edition. Technical provisions have been included which may not have pay items listed on the Bid Submittal Sheets (Schedule of Values). These technical provisions are included as incidental to other items covered under other technical provisions which are included herein.

De-Watering Testing Requirements

If there is no separate pay item for de-watering, then the cost for de-watering shall be included in the pay items where de-watering is required. The Contractor will monitor the de-watering discharge to ensure that turbidity levels remain under the State allowed level of 29 Nephelometric Turbidity Units (units used to measure turbidity) above background. If turbidity levels exceed these State standards, activities will cease and corrective measures will be implemented until the discharge is in compliance. The Contractor shall make every effort to contain the discharge within City owned drainage.

Should the Contractor choose to de-water to waters of the State, the Contractor must meet the testing requirements of 62-621.300(2) or 62-621.300(1), including water quality testing. For all pay items where de-watering is required, said pay items shall include the testing, reporting, and notification requirements described in the "State of Florida - Department of Environmental Protection - Generic Permit for Discharge of Produced Ground Water From Any Non-contaminated Site Activity" [62-621.300(2)] or "State of Florida - Department of Environmental Protection - Generic Permit for Discharges from Petroleum Contaminated Sites" [62-621.300(1)].

ACRONYMS & ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ASTM	American Society of Testing and Materials
CITY or CTS	City of Tarpon Springs
FDOT	Florida Department of Transportation
ID	Inside Diameter
PCED	Pinellas County Public Works Engineering Department
SCHEDULE OF VALUES	The Schedule of Values contained in the Proposal (Division W)
TON	A weight of two thousand (2000) pounds
FDOT SPECIFICATIONS	FDOT Standard Specifications for Road and Bridge Construction (current edition unless otherwise stated including latest FDOT approved interim specifications)
FDOT DESIGN STANDARDS	FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System (current edition unless otherwise stated) (including latest FDOT approved interim details)

SURVEY & LAYOUT BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete the survey and layout by the Contractor, in accordance with the section “SURVEY AND LAYOUT” in Division B of these specifications, to completely construct the project, to the satisfaction of the Engineer.

This work shall include providing all lines, grades, boundaries and required survey and/or layout necessary to construct and inspect the project. All right-of-way and easement boundaries and centerline control points shall be established and maintained through the contract period by the Contractor.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements specified in section “SURVEY AND LAYOUT” of Division B of these specifications.

The Contractor shall be responsible to perform all layouts in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the survey and layout requirements of this project. All field books and calculations, related to layout, shall be available to the engineer upon request, for a period of one year after construction completion.

Basis of Payment:

The pay quantity shall consist of all materials and labor necessary to complete the survey and layout by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

QUANTITY MEASUREMENTS SURVEY BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete all quantity measurements by the Contractor, to the satisfaction of the Engineer.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements related to quantity measurements and shall be responsible to perform all measurements in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the measurement requirements of this project.

The Contractor shall provide summaries to the City, signed and sealed by a Florida registered Professional Land Surveyor, listing all items measured, measurement quantities and dates of measurements, within 5 days after receiving written request from the City.

The items that require measurements include, but are not limited to:

- Roadway items (surface course, base, stabilization, curb, sidewalks, etc.)
- Drainage items (inlets, pipes, box culverts, etc.)
- Other items (Handrails, guardrail, fencing, gates, landscaping, sod, fill, excavation, etc.)

In the case of dispute in quantity measurements, the City reserves the right to have CTS Development Services Department – Engineering Division, verify all measurements and calculations. Contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

Basis of Payment:

The pay quantity shall consist of all materials and labor necessary to complete the quantity measurements by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

PERMITTING AS-BUILT SURVEY REQUIREMENTS BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete all required permitting as-built requirements, to the satisfaction of the Engineer.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements related to this as-built survey and shall be responsible to perform all survey operations in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the permitting as-built requirements of this project.

The Contractor shall provide the as-built survey to the City, signed and sealed by a Florida registered Professional Land Surveyor, within 25 days after receiving written request from the City. Contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

The items that require as-built surveying shall include:

- Control structures - weir and grate elevations and dimensions
- Ponds - top of bank, toe of slope, etc.
- Sanitary Sewer Structures – Rim and Invert elevations
- Other items (if specified in Technical Special Provisions)

Basis of Payment:

The pay quantity shall consist of all materials and labor necessary to complete the permitting as-built survey requirements by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

AS-BUILT SURVEY REQUIREMENTS (UTILITY) BY CONTRACTOR

The work specified under this Section consists of all materials and labor necessary to complete all required as-built survey requirements for City of Tarpon Springs Utility Lines or other Utility Lines specifically listed in these specifications, to the satisfaction of the Engineer.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements related to this as-built survey and shall be responsible to perform all survey operations in acceptable standard methods.

The Contractor shall thoroughly familiarize themselves with the plans, specifications and on-site field conditions to submit a lump sum bid that will include all means and methods necessary to satisfy the utility as-built requirements of this project.

The Contractor shall provide the utility as-built survey to the City, signed and sealed by a Florida registered Professional Land Surveyor, prior to final project approval and release of monies retained by the City. The contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

The items that require as-built surveying shall include:

- CTS Sewer Line
- CTS Water Line
- CTS Storm Sewer
- Other Utility Lines (if specified in Special Technical Provisions)

Basis of Payment:

The pay quantity shall consist of all materials and labor necessary to complete the utility as-built survey requirements by the Contractor in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one Lump Sum quantity.

MOBILIZATION

The work specified under this Section consists of the preparatory work and operations in mobilizing to begin work on the project, including but not limited to those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site(s), and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities as required by these specifications, special provisions, and state and local laws and regulations.

The Contractor shall furnish, install, and maintain station boards (every 100 ft) on one side of the project for the duration of the project. The station boards shall be 48 inch long, 1" x 4" lumber, painted white with 3 inch black stenciled numbers. Station boards shall be removed by the Contractor upon written notice of the Engineer.

The Contractor and all sub-contractors shall enter into an agreement with the property owner for the acquisition and use of all staging areas or privately owned property, and a copy of such agreement/s will be furnished to the City prior to the use of such property. The agreement will hold the City of Tarpon Springs harmless and absolve the City of any and all liability or responsibility for the duration of the agreement.

The cost of bonds and any required insurance, consideration for indemnification to the City and the Engineer, and any other preconstruction expenses necessary for the start of the work, excluding the cost of construction materials, shall also be included in this Section.

Pay item for Mobilization shall include taking pictures and a video of the project by the Contractor, prior to construction beginning, for the purpose of documenting existing conditions. The pictures and video shall be provided to the City prior to beginning construction.

Pay item for Mobilization shall also include the furnishing and placement of door hangers on all properties immediately affected by the project, prior to commencing construction, informing said properties of construction time frame, road closures or as directed by the Engineer.

Basis of Payment

The work and incidental costs specified as being covered under this Section shall be paid for at the contract lump sum price, for Mobilization, in accordance with the following schedule:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for Mobilization
5	25
10	50
25	75
50	100

Partial payments shall be limited to ten percent (10%) of the original contract amount for the project. Any remaining amount will be paid upon completion of all work on the project.

When more than one project (separate Project Fund Number) is included in the Contract, the above percentages shall apply separately to each of the projects, where separate pay items for Mobilization apply.

MAINTENANCE OF TRAFFIC

The work specified under this Section consists of the maintaining of vehicular and pedestrian traffic within the limits of the project for the duration of the construction period, in accordance with the requirements of Section 102 of the FDOT Specifications, as amended herein and in accordance with the Plans.

The road shall be kept open to two-way traffic for the duration of the construction period, except that, DURING NON-PEAK TRAFFIC PERIODS, one lane of traffic will be permitted provided that flagmen are used and prior approval is obtained from the City. The Contractor will not be permitted to isolate residences or places of business. Access shall be provided to all residences and all places of business whenever construction interferes with the existing means of access.

The Contractor shall furnish, erect and maintain all necessary traffic control and safety devices, in accordance with the Plans and FDOT Design Standards, applicable edition, and the State of Florida Roadway and Traffic Design Standards for Design, Construction, Maintenance and Utility Operations for Streets and Highways on the State Maintained Systems, applicable edition, and shall take all necessary precautions for the protection of the work and the safety of the public for the duration of the construction period. The work specified under this Section shall include removal of pavement markings, installation of pavement striping, markings and reflective markers, and all materials and construction necessary to create temporary connections for street, driveways and pedestrian traffic. The applicable edition of the documents referenced herein shall be the current edition or that edition of the respective documents specified in the Plans.

Temporary Curb (Asphaltic or Concrete) shall not be used, with the following exception: Portable Temporary Low Profile Barrier for Roadside Safety, in accordance with FDOT Index 412, can be used in lieu of barrier walls for design speeds of 45 mph or less, where a low profile is desired to maintain sight distance at intersections and driveways. Portable Temporary Low Profile Barrier for Roadside Safety shall be paid for under the contract unit value for Barrier Wall (Temporary) Low Profile Concrete (Linear Foot), and will be full compensation for furnishing, installing, maintaining, relocating and removing the barrier wall. The contractor shall not receive additional compensation for relocating the barrier wall (i.e., from one construction phase to another). The approved "Portable Temporary Low Profile Barrier for Roadside Safety" is a proprietary design by the University of Florida. Only those barrier units cast by producers licensed by the University of Florida will be allowed for installation. Availability of this device may be limited as a result of demand; this should be considered in establishing project schedules calling for this device.

Basis of Payment

The work specified under this Section shall be paid for at the contract lump sum price for Maintenance of Traffic. The lump sum MOT shall be paid on a pro-rated monthly amount based on the contract time. Unless specified for under a separate pay item, the lump sum item shall include all costs for Maintenance of Traffic shown in the Plans, including, but not limited to, the following temporary items:

- Temporary Traffic Barricades
- Temporary Pavement for Maintenance of Vehicular Traffic (Install and Remove)
- Temporary Pavement for Maintenance of Pedestrian Traffic (Install and Remove)
- Temporary Pavement Markings, Pavement Striping and Reflective Markers
- Temporary Traffic Control Signals
- Temporary Curb (Includes Paint & Delineators)
- Panels Arrow Advance
- Temporary Vehicle Impact Attenuators
- Temporary Variable Message Signs
- Flagmen
- Off Duty Law Enforcement Officer
- Temporary Drainage
- Commercial Materials for Driveway Maintenance
- Temporary Concrete Barrier Wall (Including Mounted Lights-Type C Steady Burn)

MAINTENANCE OF TRAFFIC (ITEMIZED)

The work specified under this Section consists of the maintaining of vehicular and pedestrian traffic within the limits of the project for the duration of the construction period, in accordance with the requirements of Section 102 of the FDOT Specifications, as amended herein. The road shall be kept open to two-way traffic for the duration of the construction period, except that, during non-peak traffic periods, one lane of traffic will be permitted provided that flagmen are used and prior approval is obtained from the City. The Contractor will not be permitted to isolate residences or places of business. Access shall be provided to all residences and all places of business whenever construction interferes with the existing means of access.

The Contractor shall furnish, erect and maintain all necessary traffic control and safety devices, in accordance with the Plans and FDOT Design Standards, applicable edition, and the State of Florida Roadway and Traffic Design Standards for Design, Construction, Maintenance and Utility Operations for Streets and Highways on the State Maintained Systems, applicable edition, and shall take all necessary precautions for the protection of the work and the safety of the public for the duration of the construction period.

The work specified under this Section shall include all work shown in the Plans including, but not limited to, removal of existing pavement markings, installation and removal of pavement striping, markings and reflective markers, and all materials and construction necessary to create temporary connections for street, driveways and pedestrian traffic. The pay item for "Maintenance of Traffic – Lump Sum" shall include all work necessary for maintenance of vehicular traffic and pedestrian traffic, unless otherwise specified to be paid for under other items of work. Payment for pavement markings to be used during maintenance of traffic shall be paid for under Sections 706-710 of these specifications.

Temporary Curb (Asphaltic or Concrete) shall not be used, with the following exception: Portable Temporary Low Profile Barrier for Roadside Safety, in accordance with FDOT Index 412, can be used in lieu of barrier walls for design speeds of 45 mph or less, where a low profile is desired to maintain sight distance at intersections and driveways. Portable Temporary Low Profile Barrier for Roadside Safety shall be paid for under the contract unit value for Barrier Wall (Temporary) Low Profile Concrete (Linear Foot), and will be full compensation for furnishing, installing, maintaining, relocating and removing the barrier wall. The contractor shall not receive additional compensation for relocating the barrier wall (i.e., from one construction phase to another). The approved "Portable Temporary Low Profile Barrier for Roadside Safety" is a proprietary design by the University of Florida. Only those barrier units cast by producers licensed by the University of Florida will be allowed for installation. Availability of this device may be limited as a result of demand; this should be considered in establishing project schedules calling for this device. The applicable edition of the documents referenced herein shall be that edition of the respective documents specified in the Plans.

Basis of Payment

The work specified under this Section shall be paid for in accordance with the following individual pay items:

- Maintenance of Traffic (lump sum)
- Temporary Traffic Barricades
- Temporary Pavement for Maintenance of Vehicular Traffic (Install & Remove)
- Temporary Pavement for Maintenance of Pedestrian Traffic (Install & Remove)
- Temporary Pavement Markings, Pavement Striping and Reflective Markers
- Temporary Traffic Control Signals
- Temporary Curb (Includes Paint & Delineators)
- Panels Arrow Advance
- Temporary Vehicle Impact Attenuators
- Temporary Variable Message Signs

- Flagmen
- Off Duty Law Enforcement Officer
- Temporary Drainage
- Commercial Materials for Driveway Maintenance
- Temporary Concrete Barrier Wall (Including Mounted Lights-Type C Steady Burn)

Note: If a pay item for one of the items above is not provided in the “Schedule of Values”, then the cost for said item/work shall be included in the “Maintenance of Traffic” (Lump Sum) pay item.

WATER FOR DUST CONTROL

The work specified under this Section consists of the furnishing and application of Water on the construction area including but not limited to sub-grade, un-surfaced base, or other un-surfaced traveled ways, in order to control dust resulting from construction operations. The locations and frequency of application shall be as directed by the Engineer. The Contractor must comply with Item 23 of Part 'B' of the City's "General Conditions for Construction" as it relates to water used for construction and testing purposes.

Basis of Payment

The work specified under this Section shall be paid for at the contract unit price per thousand gallons of Water for Dust Control.

PREVENTION, CONTROL & ABATEMENT OF EROSION & WATER POLLUTION

The work specified under this Section shall consist of the furnishing and application of measures required to control erosion on the project and in areas where work is accomplished in conjunction with the project, so as to prevent pollution of water, detrimental effects of public or private property adjacent to the project right of way and damage to work on the project. These measures will consist of construction and maintenance of temporary erosion control features including baled hay or straw, silt fences, floating turbidity barriers, staked turbidity barriers, rock bags, or as otherwise shown on the Plans or Stormwater Pollution Prevention Plan (SWPP). The furnishing and application of these measures shall be in accordance with Section 104 of the FDOT Specifications, as amended herein, and, where specified herein or on the Plans, applicable standard drawings of the FDOT Design Standards.

The work shall consist of the construction of baled hay or straw dams across water flow paths, and the placement of baled hay or straw barriers around drainage structures during the construction thereof, to protect against downstream or lateral accumulations of silt and debris. The dams shall be placed so as to effectively control silt and debris dispersion under the conditions present on the project, or any conditions created during construction activities, which might tend to produce erosion or the accumulation of silt and debris. Silt fences and turbidity barriers shall be constructed in accordance with the details shown in the Plans, or as may be directed by the Engineer, in a manner such as to insure the adequate performance of their intended function.

The Contractor shall inspect on a daily basis and re-establish, at no additional expense to the City, all baled hay or straw dams, silt fences, turbidity barriers, rock bags or sections thereof, which may become damaged, destroyed or otherwise rendered unsuitable for their intended function during the construction of the project. The work specified under this Section shall include the installation and inspection, re-establishment and maintenance of all required baled hay or straw dams, silt fences, turbidity barriers and rock bags, and all other work required to control effectively the downstream or lateral accumulation of silt and debris, control erosion, reduce suspended solids in downstream waters, and the removal of all such temporary erosion control facilities upon completion of the project. The work specified under this Section shall include the removal and proper disposal of debris, sediment, etc, which accumulates against erosion control or turbidity barriers. It will also include the removal of the erosion control barriers after construction is deemed complete.

The re-establishment and maintenance described above; shall be performed within twenty-four (24) hours after receiving notice by the Engineer. For each day following the twenty-four (24) hour period the deficiency is not corrected, the Contractor shall be assessed an amount of Five Hundred (\$500.00) dollars per day. Payment to the City of said sums may become payable under the provisions of this article and shall be made by identifying said sums as a credit item on the Contractor's monthly pay estimate.

The Contractor shall be required to submit to the City (for review and approval) a project-specific plan for erosion and sedimentation control and construction phasing, prior to commencing construction activities. The plan will demonstrate the methodology for minimizing the amount of area disturbed and soil exposed at any one time and the corresponding erosion control measures. The plan must be approved and accepted by the City prior to commencing construction work. A deficient plan submittal by the contractor, and the subsequent need to re-submit a revised plan to the City for review, shall not constitute a basis for claiming a delay by the Contractor. There is no separate pay item for costs associated with the plan. All costs associated with the plan shall be included in the pay items for which erosion control will be needed.

Basis of Payment

The pay quantities for the work specified under this Section shall be each of Bales of Hay or Straw, linear feet of Silt Fences, linear feet of Floating Turbidity Barriers or Staked Turbidity Barriers, each of Rock Bags, each of Soil Tracking Prevention Devices, actually constructed, placed and accepted, as authorized by the Engineer, and maintained to the satisfaction of the Engineer for the duration of the construction period.

DRAIN PIPE WITH SOCK (FOR SEDIMENTATION CONTROL)

The work specified under this Section consists of the temporary installation of Drain Pipe with Sock type products for the specific purpose of preventing and controlling soil erosion runoff and intrusion into stormwater drainage systems.

Drain sock products, such as “ADS Sock” or approved equal, shall be installed to conform to the requirements set forth by the manufacturer and guidelines regulated by the Pinellas County Environmental Management Department for erosion control measures. Perforated PVC pipe, in lieu of ADS pipe, or approved equal, may also be used.

The SOCK material shall be an ultra-porous filter (synthetic wrap material) that provides water entry and sediment protection and fits (in a snug manner) over the pipe. It shall be 100% knitted polyester (or approved equal), with an equivalent opening size of 30 to 40, burst strength of 100-135 (ASTM D 3786), fiber size of 100-200 denier per filament, 2.5 to 3.5 ounces per square yard (ASTM D 3776). It shall be free of folds and tears and will be replaced immediately, by the contractor and at the contractor's expense, should such folds and tears occur.

The Contractor shall provide the Engineer a manufacturer's certificate stating the manufacturer's name, product name, style number and other pertinent information fully describing the product, to obtain approval prior to use.

The work specified under this Section shall include all preparation, installation and maintenance of the product per the manufacturer's specifications. It shall also include removal of product from inlets at the end of the construction phase.

Basis of Payment

The pay quantity for the work specified under this Section shall be the number each of Drain Pipe with Sock (pipe + synthetic wrap material) required to span the opening of the inlet, satisfactorily installed, accepted and removed at the end of construction. The pay quantity of each shall include varying lengths, ranging from the minimum to maximum inlet throat openings shown in plans

CLEARING & GRUBBING

The work specified under this Section consists of the clearing and preparation of sites for proposed construction, in accordance with the requirements of Section 110 of the FDOT Specifications, as amended herein.

The work specified under this Section shall include the removal and off-site disposal of all trees indicated on the Plans to be removed, the removal and off-site disposal of all brush, stumps, roots, rubbish and debris, and all obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas, the removal and off-site disposal of all existing facilities, structures and pavement indicated on the Plans to be removed, plugging of water wells, and the removal and off-site disposal of all buildings, structures, appurtenances, and other facilities necessary to prepare the area for the proposed construction.

All buildings, structures, utilities and other obstructions indicated on the Plans to remain shall be carefully protected against displacement or damage.

Except as otherwise provided for in these Specifications, the work to be performed under this Section shall also include the clearing and grubbing necessary for the excavation of detention ponds, borrow pits, and the like, and the clearing and grubbing necessary for the construction of designated haul routes.

Included under this Section shall be the removal and off-site disposal of all product and debris except that which is to be salvaged or which is required to complete the construction of the project. Whenever it is necessary to cut for removal large roots of trees to be preserved, the roots to be cut shall be cleaned prior to cutting and cut with a saw. Cut shall be smooth without jagged edges.

The Contractor shall make his own inspection to determine the character, density and extent of trees, vegetation and other items subject to removal and disposal under these provisions. The attention of the Contractor is directed to the fact that the burning of debris resulting from clearing and grubbing operations shall not be permitted within City-owned lands or rights-of-way.

Nothing in these provisions shall be construed to authorize the removal or disturbance of any tree or other form of vegetation, or any marine, land or air creature natural habitat, which may be subject to the jurisdiction of regulatory agencies.

This section shall also include the cost for trimming of trees by an arborist and disposal of the trimmings, as shown on the plans and/or required for construction of project.

This section shall also include the temporary relocation of mailboxes during construction and permanent relocation after construction has been completed.

Basis of Payment

The pay quantity shall consist of all clearing and grubbing required in connection with the construction of the project, performed to the satisfaction of the Engineer. The pay quantity for the work specified under this Section shall be one lump sum quantity, unless otherwise specified in the schedule of values.

ROOT CONTROL BARRIER

The work specified under this Section consists of the installation of Root Control Barrier in trenches, alongside hardscape structures such as sidewalks, curbing, pavements concrete and building foundations to prevent structural damage due to root penetration, in accordance with these specifications, at locations as directed by the Engineer.

Root control barrier, such as “Biobarrier” or approved equal, shall be installed to conform to the requirements as set forth by the manufacturer, to a minimal depth of 18” below finish grade of adjacent sidewalk or curbing. Root Barrier shall be free of folds and tears to produce an effective barrier between concrete construction and trees. Installation shall be perpendicular to finish grade and all edges shall be below finish grade once restoration of the adjacent disturbed area has been completed.

Product labels shall clearly show the manufacturer or supplier name, style number, and roll number and shall include a compliance statement certifying that all ingredients and inspection standards for this product have been met.

The Contractor shall provide to the Engineer a manufacturer’s certificate stating the manufacturer’s name, product name, style number, chemical composition and other pertinent information to fully describe the product. The Contractor shall affix an applicable MSDS (Material Safety Data Sheet) to the outside of each shipping container for the product.

The work specified under this Section shall include all preparation of sub-grade and the furnishing of all necessary incidental items for proper installation per the manufacturer’s specifications.

Basis of Payment

The work specified under this Section shall be paid for in Linear Feet, of root control barrier, of widths specified by the applicable pay items, actually constructed and accepted.

EARTHWORK & RELATED OPERATIONS

Excavation and Embankment

The work specified under this Section consists of the excavation and embankment required for completion of the project. All work specified under this Section shall conform to the requirements of Section 120 of the FDOT Specifications, except as amended herein.

Excavation specified under this Section shall include the excavation and removal of all existing materials, debris, obstructions, structures and utilities encountered during excavation, except where designated in the Plans or Specifications to remain, between the original ground or top of existing pavement and the surface of the completed earthwork, within the limits shown in the Plans. Fill material, borrow material, and embankment shall consist of suitable earthen material acceptable to the Engineer. Ownership of all suitable excavated material shall remain with the City until all earthwork requirements for the project have been fulfilled. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor. The Contractor shall not over-excavate a construction site below the elevations shown in the Plans and Permits, unless specifically pre-approved by the City.

All fill and embankment material shall be A-1 or A-3 soil material, per AASHTO M-145 classifications. If A-3 material is used, it shall have a minimum average lab permeability of 5×10^{-5} cm/sec (0.14 ft./day) as per FM I-T215. Sites such as stormwater management areas or mitigation sites located within the project corridor identified by the Contractor for possible use as Embankment must be presented to the Engineer for approval prior to use. Any borrow source is required to have the appropriate soil and materials testing required per Pinellas County and FDOT standards and specifications to qualify as Embankment. In addition, borrow sources shall not be in conflict with any specific stormwater or environmental permit and/or contract requirements. The Engineer of Record and the City do not guarantee or qualify any materials, identified in the plans as Regular Excavation, as being suitable borrow or a suitable borrow source.

EXCAVATION OF UNSUITABLE MATERIAL specified under this Section consists of the removal of muck, clay, rock and all other types of unsuitable material and shall include the supply, placement and compaction of fill material as replacement for unsuitable material.

The location and quantity of unsuitable material is estimated, and is approximate only. The removal of unsuitable material may be required at additional locations to be determined in the field by the Engineer, after unsuitability is confirmed by testing laboratory. For roadway construction in general, unsuitable material shall be removed to a minimum depth of four (4) feet below proposed centerline grade, or as directed by the Engineer in the field. In areas adjacent to existing structures, the Contractor shall remove unsuitable material to a minimum depth of four (4) feet below proposed grade, or as directed by the Engineer, and backfilled immediately with suitable material. Testing shall be performed in compliance with Item 44 of the City's "General Conditions for Construction".

EXCAVATION OF DETENTION POND AND/OR MITIGATION AREA specified under this Section shall include all excavation required for the construction of detention ponds, mitigation areas, reservoirs and other facilities of a similar nature and also shall include all grading, the preparation of side slopes, compacting as required, final dressing and all incidental work required for the construction of detention ponds.

Unless otherwise provided for in these Specifications, the work to be performed under this Section shall include the hauling, to designated sites, of all material which may remain the property of the City, and the stockpiling, compaction, and shaping of such material to the template lines shown in the Plans or as directed by the Engineer. Except as otherwise provided for in the Plans and Specifications, all surplus

material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor. Pay item for excavation of detention pond shall include the excavation of unsuitable materials.

FILL MATERIAL Work specified under this Section consists of the placement and compaction of fill material for such purposes as filling of ditches and channels, and the filling of substantial voids and depressions. The fill material used to replace excavated unsuitable material shall be paid under “excavation of unsuitable material.”

The work specified under this Section shall include the shaping, compaction and dressing of material to the condition required for the placement of embankment, bedding, pavement or other material, and where required, to the slopes and tolerances normally associated with final grading operations, such as required for seeding and the placement of sod. The work specified under this Section shall include the furnishing of all required borrow material. Borrow material shall be furnished from areas provided by the Contractor, and shall be approved by the Engineer prior to placement.

For limits of payment, where no other material, such as embankment, pavement, bedding or other select material, is to be constructed over fill material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the finished earthwork lines for Fill Material shown in the Plans. Where embankment is to be constructed directly over Fill Material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the straight line connecting the highest points of original ground to which Fill Material is to be placed. Where bedding or other select material is to be constructed directly over Fill Material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the bottom line of bedding or select material, whichever is encountered first. Where pavement is to be constructed directly over Fill Material, the limits of payment for Fill Material shall extend from the line of contact between Fill Material and original ground or completed excavation to the bottom line of Stabilization, Base material or pavement, whichever is first encountered. The limits of payment defined above shall be adjusted as necessary by the Engineer to exclude payment for such quantities of suitable fill material, measured in cubic yards after placement and compaction, as may be available as surplus material on the project site. Testing shall be performed in compliance with Item 44 of the City’s “General Conditions for Construction”.

EMBANKMENT work specified under this Section consists of the furnishing and placement of material where such work involves the construction of embankment, side slopes, and the shaping and dressing of material to neat lines conforming to definite geometric configurations, such as required in the construction of berms, road-beds and other embankments, and the reshaping of ditches, stream channels and pond bottoms, fill and backfill, and miscellaneous grading required for the completion of the project. Material shall be furnished from areas provided by the Contractor, and shall be approved by the Engineer prior to placement.

Where grading operations outside the limits shown in the Plans require the placement, compaction, shaping and dressing of fill material for the completion of the project, and where no separate pay items for such work are provided in the Schedule of Values, such work, including the furnishing of borrow material, shall be included under this Section. Borrow material shall be furnished from areas provided by the Contractor, and shall be approved by the Engineer prior to placement. The limits of payment for Embankment shall extend from the line of contact with original ground or Fill Material to the finished earthwork lines shown in the Plans. Where pavement is to be constructed over Embankment the upper limit of payment for Embankment shall be the bottom line of Stabilization, Base material or pavement, whichever is first encountered.

Basis of Payment

When the quantity for a pay item under this Section is shown in the Schedule of Values as a lump sum quantity, the pay quantity shall consist of all work described and specified herein which may be required in connection with the construction of the project, performed to the satisfaction of the Engineer. Unless

specified to be paid for at the lump sum price, the work specified under this Section shall be paid for at the contract price per cubic yard. If the contractor has a claim that actual volumes are greater than what is depicted in the contract, then the contractor shall be responsible for providing signed and sealed surveys (pre & post), with volume calculations, to substantiate any contractor claim/request for additional compensation.

For FILL MATERIAL, payment shall be made only for the furnishing and placement of such quantities of fill material as may be required in excess of suitable material available on the project site as surplus material.

For FILL MATERIAL AND BORROW MATERIAL, the pay quantity for work specified herein shall be the number of cubic yards of material actually furnished, as determined by field measurement of the compacted in-place material, and accepted by the Engineer.

FOR BORROW MATERIAL, at the discretion of the Engineer, the material furnished under this Section may be measured in its loose state and the volume thereof converted to the equivalent volume of compacted in-place material. In such case a shrinkage factor of 35% shall be assumed, and the equivalent volume of compacted in-place material shall be taken as the volume of the material in its loose state multiplied by the factor 0.74074.

For EMBANKMENT, the work specified herein shall be paid for under the pay items shown in the Schedule of Values for Embankment. All quantities shown in the Plans or the Schedule of Values shall be the theoretical quantities calculated, with no factor applied for shrinkage, losses due to clearing and grubbing, or any other consideration. It shall be the responsibility of the Contractor to address the various factors affecting the cost of the completed work, and to include in the unit bid price the costs associated with such factors.

If the schedule of values does not provide a specific pay item for the aforementioned work, then the work shall be included in the pay item for grading (lump sum).

GRADING

All work specified under this Section shall conform to the requirements of Sections 110 and 120 of the FDOT Specifications, except as amended herein.

Except for that work excluded under other provisions of this Section, and except as provided for under other Sections of these Specifications, the work to be performed under this Section shall consist of all excavation, the supply, placement and compaction of all embankment and fill material, all grading of roadway shoulders and ditches, the construction or re-channelization of all ditches and swales, all graded road connections, the shaping or reshaping of slopes, all final dressing, and all other earthwork operations required for the completion of the project. The Contractor shall not over-excavate a construction site below the elevations shown in the Plans and permits, unless specifically pre-approved by the City.

Unless otherwise provided for, all borrow material required for the completion of work performed under this Section shall be furnished by the Contractor from areas provided by the Contractor.

When the project includes the construction of Road Base, the work performed under this Section shall include also the furnishing, placement and compaction of all embankment material required between existing ground and the bottom of the Road Base.

The work to be performed under this Section shall not include the excavation of unsuitable material, or the furnishing or placement of borrow material as replacement for unsuitable material, or other items of work for which separate payment is to be made, but shall include the placement and compaction of suitable fill material as replacement for unsuitable material where suitable fill material is available as surplus material from the project site.

Ownership of all suitable material shall remain with the City until all earthwork requirements for the project have been fulfilled. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor.

Basis of Payment

The pay quantity for work specified under this Section shall be one lump sum quantity which shall include all work described and specified herein.

DREDGING

The work specified under this Section consists of the dredging of submerged channels and areas by the use of drag lines or by methods of hydraulic dredging.

Dredging by the use of drag lines or other non-hydraulic methods shall be classified as regular dredging.

Dredging by hydraulic methods shall be classified as hydraulic dredging.

All dredging operations shall conform to the applicable requirements of Section 120 of the FDOT Specifications, as amended herein, and shall be performed in accordance with all provisions and conditions of all permits issued for dredging operations on this project.

Dredging shall include all labor, equipment and materials necessary for cleaning, deepening and widening an area, canal, creek or area by the use of a dredge, or any other type of machinery or equipment used to clean, deepen, or widen and also pumping (and/or otherwise transporting) of the dredged material to the spoil site. It shall also include all work associated with spoils site area, stockpile management, disposition of dredged materials, discharge/containment of settling ponds, geo-tubes (if applicable), etc.

All dredged material shall become the property of the contractor and the contractor shall be responsible for transportation of dredged material to a suitable off site disposal area (unless specified otherwise).

Basis of Payment

The quantity to be paid for under this Section shall be one lump sum of cubic yards quantity which shall include all items of work described and specified for:

- Dredging, Regular
- Dredging, Hydraulic

FLOWABLE CONCRETE FILL

All work specified under this Section shall conform to the requirements of Section 121 of the FDOT Specifications, except as amended herein. The work specified under this Section consists of the furnishing and application of Flowable Concrete Fill, as shown on the Plans, and as directed by the Engineer. The unit price shall include all excavation to the springline of pipe, disposal of excess excavated soil, formwork if required, placement of flowable fill and all other operations required to protect the pipe. This Section shall include all cost of the mixture, any ad-mixtures; cost for delivery, labor and finishing for Excavatable or Non-Excavatable Flowable Concrete Fill, as specified in the Plans. Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 10% passing the 200 mesh sieve may be used for the Fine Aggregate. High air generators or foaming agents may be used in lieu of conventional Air Entraining Admixtures and may be added at jobsite and mixed in accordance with manufacturer's recommendation.

Mix Design

Flowable Concrete Fill is a mixture of Portland cement, fly ash, fine aggregate, air entraining admixture and water. Flowable Concrete Fill contains a low cementitious content for reduced strength development. Submit mix designs to the Engineer for approval. If conditions warrant, an anti-washout admixture shall be added to the mix design at the dosage rate of 3 gallons per cubic yard. This is an add-on product and must be specified when ordering.

Production and Placing

Deliver Flowable Concrete Fill using concrete construction equipment. Place Flowable Concrete Fill by chute, pumping or other methods approved by the Engineer. Revolution counter requirements are waived.

Construction Requirements

Use straps, soil anchors or other approved means of restraint to assure correct alignment when Flowable Concrete Fill is used as backfill for pipe or where flotation or misalignment may occur. Place Flowable Concrete Fill to the designated fill line without vibration or other means of compaction. Do not place Flowable Concrete Fill during inclement weather, e.g. rain or ambient temperatures below 40° F. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

Acceptance

Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi penetration resistance as measured using a hand held penetrometer with FM 1-T 197. Provide a hand held penetrometer to measure the penetration resistance of the hardened Flowable Concrete Fill.

Basis of Payment

When the item of Flowable Concrete Fill is included in the Contract, payment will be made at the contract unit price per cubic yard. Such price and payment will include all cost of the mixture, in place and accepted, determined as specified above. No measurement and payment will be made for material placed outside the neat line limits or outside the adjusted limits, or for unused or wasted material.

BEDDING MATERIAL

Crushed Stone

The work specified under this Section consists of the furnishing and placement of crushed stone as bedding and backfill material for concrete pipe culvert and standard drainage structures.

The crushed stone used under this Section shall be of the Size Number specified in the Plans and shown in the table “Standard Sizes of Coarse Aggregate” contained in Section 901-1.4 of the FDOT Specifications, and shall be placed in accordance with the Plans or placed to a thickness of 10 inches unless otherwise directed by the Engineer. For drainage structures, the bedding material shall extend beyond the outside bottom dimensions of the structure for a distance of 12 inches, or as shown in the Plans or as directed by the Engineer. For pipe and box culverts, the bedding is to be extended for a distance of 12 inches beyond the outside diameter or width of the culvert, or as shown in the Plans, or as directed by the Engineer.

No payment will be allowed for select bedding material, which might be utilized for convenience in lieu of dewatering. Bedding material shall only be used if the plans require it at a specific location or if the inspector deems it necessary, at a specific location, after de-watering efforts are considered ineffective.

Basis of Payment

The pay quantity for work specified under this Section shall be the number of tons of crushed stone, of the various sizes specified, actually placed and accepted. The tonnage to be paid for shall be determined from batch weights, truck scale weights, volume measurements or other methods approved by the Engineer.

STABILIZATION

Type B

The work specified under this Section consists of the stabilizing of designated portions of the roadbed to provide a firm and unyielding sub-grade, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. The construction of stabilized roadbed shall conform to the requirements of Section 160 of the FDOT Specifications, as amended herein.

Premixed Stabilization shall be required when the proposed pipe culvert falls within the area to be stabilized.

The work specified under this Section shall include the furnishing and placement of all stabilizing material required, and all mixing, shaping and compacting of the stabilized area.

Unless the Engineer has specifically provided authorization in writing, the Engineer will determine compliance with the bearing value requirements by the Limerock Bearing Ratio (LBR) method (FM 5-515), including Sections 6.0 and 6.1, specifying that the material will be soaked prior to penetration. The under-tolerance for a Specified Bearing Value of LBR 40 shall be 2.0.

The material utilized for type B stabilized subgrade, either existing or imported material, in addition to the 'select stabilized material,' shall be suitable material having a plasticity index less than ten and a liquid limit less than 40.

The Engineer will conduct materials testing during construction. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work performed and materials used are in accordance with the requirements and intent of the Plans and Specifications. Certain tests (e.g., Limerock Bearing Ratio Tests) performed may require a number of days (four to six) for the test results to be obtained by the Engineer. If the test results indicate that the material represented by the test is not in accordance with the Plans and Specifications, all such materials, whether in place or not, will be rejected. The bearing value determined by the initial LBR test will be used to determine compliance with Specifications, and an additional 'verification' test will not be performed unless otherwise authorized by the Engineer. Unless otherwise permitted by the Engineer, the Contractor shall correct the material in non-compliance by additional work performed or replacement of the material.

Basis of Payment

When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Stabilization, Type B, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

FINISH SOIL LAYER (ORGANIC TOPSOIL)

The work specified under this Section consists of the preparation of a 6 inch layer of existing soil mixed with imported material, if necessary to achieve the pH and the OM levels required in 162-4 of the FDOT "Standard Specifications" as amended. The Topsoil shall be composed of organic soil, which may consist of muck, mucky peat and peat and shall have an organic matter content of 30% or more if the mineral fraction is more than 50% clay, or more than 20% organic matter if the mineral fraction has no clay. Placement of the soil shall be as specified in the plans and as directed by the Engineer.

Materials for, and the application of, topsoil shall conform to the requirements of Section 162 (Prepared Soil Layer) and 987 (Prepared Soil Layer Materials) of the FDOT "Standard Specifications", as amended.

Basis of Payment:

Topsoil shall be paid for at the contract unit price per square yard of topsoil placed as specified under this section.

BASE COURSES

Roadway Base (Limerock)

The work specified under this Section consists of the construction of roadway base utilizing limerock on prepared subgrade, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. The construction of Limerock Base shall conform to the requirements of Section 200, 285 & 911 of the FDOT Specifications, as amended herein.

The Engineer will conduct materials testing during construction. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work performed and materials used are in accordance with the requirements and intent of the Plans and Specifications. Certain tests (e.g., Limerock Bearing Ratio Tests) performed may require a number of days (four to six) for the test results to be obtained by the Engineer. If the test results indicate that the material represented by the test is not in accordance with the Plans and Specifications, all such materials, whether in place or not, will be rejected. Unless otherwise permitted by the Engineer, the Contractor shall correct the material in non-compliance by additional work performed or replacement of the material.

The construction of Limerock Base under this Section shall also include the furnishing and application of a bituminous material prime coat conforming to the requirements set forth in Section 3 of the Pinellas County, Florida, Specifications for Hot Bituminous Mixtures, Plant Methods, Equipment and Construction Methods, latest edition.

The material will be inspected, tested and approved by the Engineer prior to incorporation in the work. Any work in which material not previously approved is used, shall be performed at the Contractor's risk and may be considered as unauthorized and unacceptable and not subject to the payment provisions of the contract. Upon delivery to the project site, the material will be sampled and tested by the Engineer or a duly authorized, qualified representative of the Engineer in accordance with Pinellas County Limerock Sampling Procedures and Guidelines, or as so directed by the Engineer.

Basis of Payment

When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Roadway Base, Limerock, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

ROADWAY BASE (RECYCLED CRUSHED CONCRETE/GRADED AGGREGATE)

The construction of recycled crushed concrete/graded aggregate shall conform to the requirements of Section 204 and 285 of the FDOT Specifications, as amended herein.

The work specified under this Section consists of the construction of roadway base utilizing crushed concrete on prepared sub-grade, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer.

The construction of Crushed Concrete Base shall conform to the requirements of this Section, or, in lieu thereof, such requirements as may be established by the Engineer during construction. The Engineer shall have full authority to modify the provisions of this Section as deemed necessary, in his opinion, to meet field conditions and requirements.

The construction of roadway base under this Section shall include also the furnishing and application of a bituminous-material prime coat conforming to the requirements set forth in Section 3 of the Pinellas County, Florida, Specifications for Hot Bituminous Mixtures, Plant Methods, Equipment and Construction Methods, latest edition.

Materials

Base material shall conform to the following gradation:

SIEVE SIZE	PERCENT BY WEIGHT PASSING
2"	100
1 1/2"	95-100
3/4"	65-90
3/8"	45-75
No. 4	35-60
No. 10	25-45
No. 50	5-25
No. 200	0-10

Material for Crushed Concrete Base shall consist only of crushed concrete and such additive materials as may be approved by the Engineer for the purpose of facilitating construction and achieving the desired characteristics of the finished in-place product. Material which shows a significant tendency toward adverse chemical or physical change on exposure to moisture will not be acceptable. The material shall be free of any Ferrous Metals.

Mechanical and Physical Properties

The material shall not contain lumps, balls, or pockets of sand or clay material in size or quantity sufficient to be detrimental to the proper bonding, finishing, or strength of the crushed concrete base.

The specific mechanical and physical properties of crushed concrete aggregate and any additive materials permitted in the construction of Crushed Concrete Base under this contract shall be determined on the basis of test results as the work progresses. The finished in-place product shall provide at least an LBR of 100 or greater.

Placement and Spreading of Material

The material shall be transported to the point where it is to be used, over crushed concrete previously placed where possible, and dumped at the end of the preceding spread. Hauling over the sub-grade, or dumping on the sub-grade for further placement operations, will be permitted only when, in the opinion of the Engineer, such procedures will not adversely affect the integrity of the completed base and sub-grade.

Base Courses

The minimum thickness of the Crushed Concrete Base constructed under this contract shall be as shown on the Plans.

Compacting and Finishing Requirements

After spreading is completed the crushed concrete shall be uniformly compacted, with water being added as required, to a density of not less than ninety eight (98%) of the maximum density as determined by AASHTO T-180. During final compaction operations, if the fine grading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to the performance of density tests on the finished base.

Priming and Maintaining

The prime coat shall be applied only when the base meets the required moisture and density requirements. At the time of priming, the base shall be firm, unyielding, and in such condition that no undue distortion will occur. The Contractor will be responsible for insuring that the true crown and template of the base are maintained, with no rutting or other distortion, and that the base meets all requirements at the time the surface course is applied.

Correction of Defects

All defects in materials and construction shall be corrected by the Contractor, at his expense, and to the satisfaction of the Engineer, as the work progresses.

Testing

Testing shall be performed in compliance with Item 44 of the City's "General Conditions for Construction".

Basis of Payment

The pay quantity for work performed under this Section shall be the number of square yards of Roadway Base, Recycled Crushed Concrete/Graded Aggregate, at the total thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

SUPERPAVE ASPHALT BASE

The work specified under this section consists of the construction of asphaltic concrete base course, including, but not limited to, quality assurance, general construction requirements, and acceptance procedures, utilizing Superpave Asphalt Base, Type B-12.5 [the contractor may use SP-12.5 (Traffic Level B or C) in lieu of Type B-12.5, at no additional cost to the City], in accordance with the applicable provisions of the Pinellas County, Florida, "SPECIFICATIONS FOR HOT BITUMINOUS MIXTURES, PLANT METHODS, EQUIPMENT AND CONSTRUCTION METHODS", latest edition. For composition and physical test properties and all other parameters not covered by the above referenced Pinellas County Specifications, the SP mixes shall comply with requirements of the FDOT Specifications, Section 234.

Asphaltic concrete base course shall be constructed in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. The Contractor shall be required to supply the City and its authorized representative testing laboratory the daily quality control test data immediately as it becomes available by facsimile to both parties. The Bulk Specific Gravity (Gmb) of the mixture supplied by the Contractor may be utilized by the City and its authorized representative testing laboratory to determine the volumetric properties of each production lot for acceptance purposes.

If directed by the Engineer, the Contractor may be required to supply the City (or its authorized representative testing laboratory) a test sample from each daily production lot. The sample shall be taken whenever possible from the same truck that the Contractor obtains his daily quality control test sample. The City's sample shall be a minimum of twenty thousand (20,000) grams, and shall be stored in a minimum of four (4) separate containers designed to protect the sample from loss of material during transport. Each container shall be clearly labeled with the following information: Producer's Name, Mix Type, and Date of Production. Immediately after the sample is obtained, the City's sample will be transported to the job site by the Contractor and delivered to the Engineer on site. The Contractor (or his asphalt supplier) shall mark the back of the delivery ticket of the tested truck, "TEST SAMPLE".

Table 9-2, Acceptance Schedule of Payment, Pinellas County Asphalt Specifications (Page 51 of 56) shall be revised as follows for this Superpave Asphaltic Concrete specification. When determining the Pay Factor (PFSA) for the Sieve Analysis properties, the No. 4 Sieve and No. 40 Sieve shall be removed from the specification and No. 8 Sieve shall be substituted for the properties and pay factors for the No. 10 Sieve. The No. 200 Sieve shall remain as specified in Table 9-2.

When the pay item number specifies the quantity of the item in square yards, the "overlay" exception referenced in "Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, July, 2000," section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment:

When the quantity for a pay item under this section is shown in the schedule of values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete Base Course, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

When the quantity for a pay item under this section is to be paid for per ton, the weight of the mixture shall be determined from batch weights, truck scale weights or other methods approved by the Engineer. Delivery tickets, in duplicate, signed by a sworn weigh-person, shall accompany each load of material to the project site. One copy of the delivery ticket shall be retained by the Contractor and one copy shall be delivered to the Engineering Inspector. The total number of tons reflected in one set of all delivery tickets collected by the Inspector shall be the measured pay quantity.

OPTIONAL BASE COURSE

The work specified under this Section consists of the construction of optional base course, in accordance with the requirements of Section 285 of the FDOT Specifications, as amended herein. When using asphalt, the work shall be constructed in accordance with the applicable provisions of the Pinellas County, Florida, "SPECIFICATIONS FOR HOT BITUMINOUS MIXTURES, PLANT METHODS, EQUIPMENT AND CONSTRUCTION METHODS", latest edition, including, but not limited to, quality assurance, general construction requirements, and acceptance procedures. For asphalt, the work specified under this Section includes the furnishing of material for, and the application of, all required tack coats.

Limerock Base shall be constructed in accordance with County specifications 200-1000. Graded Aggregate base shall be constructed in accordance with County specifications 204. Shell base shall be constructed in accordance with County specifications 250. Asphaltic concrete base course shall be constructed in accordance with County specifications 234, in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer. When the Bid Item Number specifies the quantity of the item in Square Yards, the "overlay" exception referenced in "Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, July, 2000," Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment:

When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete Base Course, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

When the quantity for a pay item under this Section is to be paid for per ton, the weight of the mixture shall be determined from batch weights, truck scale weights or other methods approved by the Engineer. Delivery tickets, in duplicate, signed by a sworn weigh-person, shall accompany each load of material to the project site. One copy of the delivery ticket shall be retained by the Contractor and one copy shall be delivered to the Engineering Inspector. The total number of tons reflected in one set of all delivery tickets collected by the Inspector shall be the measured pay quantity.

BITUMINOUS TREATMENTS SURFACE COURSES & CONCRETE PAVEMENT

Superpave Asphalt Concrete

The work specified under this Section consists of the construction of asphaltic concrete surface course, including, but not limited to, quality assurance, general construction requirements, and acceptance procedures, utilizing Superpave Asphaltic Concrete, Type SP-9.5, Type SP-12.5 or Type SP-19.0, in accordance with the applicable provisions of the Pinellas County, Florida, "SPECIFICATIONS FOR HOT BITUMINOUS MIXTURES, PLANT METHODS, EQUIPMENT AND CONSTRUCTION METHODS", latest edition. For composition and physical test properties and all other parameters not covered by the above referenced Pinellas County Specifications, the SP mixes shall comply with requirements of the FDOT Specifications, Section 334.

Asphaltic concrete surface course shall be constructed in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer.

The Contractor shall be required to supply the City and its authorized representative testing laboratory the daily quality control test data immediately as it becomes available by facsimile to both parties. The Bulk Specific Gravity (Gmb) of the mixture supplied by the Contractor may be utilized by the City and its authorized representative testing laboratory to determine the volumetric properties of each production lot for acceptance purposes.

If directed by the Engineer, the Contractor may be required to supply the City (or its authorized representative testing laboratory) a test sample from each daily production lot. The sample shall be taken whenever possible from the same truck that the Contractor obtains his daily quality control test sample. The City's sample shall be a minimum of twenty thousand (20,000) grams, and shall be stored in a minimum of four (4) separate containers designed to protect the sample from loss of material during transport. Each container shall be clearly labeled with the following information: Producer's Name, Mix Type, and Date of Production. Immediately after the sample is obtained, the City's sample will be transported to the job site by the Contractor and delivered to the Engineering Inspector on site. The Contractor (or his asphalt supplier) shall mark the back of the delivery ticket of the tested truck, "TEST SAMPLE".

Table 9-2, Acceptance Schedule of Payment, Pinellas County Asphalt Specifications (Page 51 of 56) shall be revised as follows for this Superpave Asphaltic Concrete specification. When determining the Pay Factor (PFSA) for the Sieve Analysis properties, the No. 4 Sieve and No. 40 Sieve shall be removed from the specification and No. 8 Sieve shall be substituted for the properties and pay factors for the No. 10 Sieve. The No. 200 Sieve shall remain as specified in Table 9-2.

When the Bid Item Number specifies the quantity of the item in Square Yards, the "overlay" exception referenced in "Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, July, 2000," Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

The work specified under this Section includes the furnishing of material for, and the application of, all required tack coats. The tack coat requirements specified further below shall take precedence over other specifications that may be found elsewhere in these specifications or in the plans, unless directed or approved by the Engineer.

Tack Coat

The work under this Section shall cover the furnishing and placing of a bituminous tack coat on an existing surface which is to be covered by a hot bituminous plant mix material. The work shall include the cleaning of the existing surface prior to application of the tack coat. The area of treatment and the rate of

application of a tack coat shall be based on the plans and specifications after evaluating the actual surface condition on which the plant mix overlay is to be placed.

Materials

The material shall be an anionic emulsion (NTSS-1HM) blended to meet the following minimum requirements:

TEST ON EMULSIFIED ASPHALT			
PARAMETER	TEST METHOD	MIN	MAX
VISCOSITY, SF @ 77° F, SEC	AASHTO T 59	25	500
STORAGE STABILITY 1 DAY	AASHTO T 59	-----	1.0 %
STORAGE STABILITY 5 DAY	AASHTO T 59	-----	5.0 %
RESIDUE BY EVAPORATION	AASHTO T 59	50%	-----
RESIDUE BY DISTILLATION	AASHTO T 59	50%	-----
NAPHTA CONTENT	AASHTO T 59	-----	1.0 %
SIEVE TEST	AASHTO T 59	*	*

The Sieve result is tested for reporting purpose only. Sieve test may be waived if no application problems are present in the field.

TEST ON RESIDUE FROM DISTILLATION OF EMULSION			
PARAMETER	TEST METHOD	MIN	MAX
PENETRATION @ 77° F	AASHTO T 49	5	20
SOFTENING POINT	AASHTO T 53	65° C	-----
ORIGINAL DSR @ 86° C	AASHTO T 315	1.0	-----

Construction Requirements

(a) EQUIPMENT. It shall be the Contractor's responsibility to select the proper size and amount of equipment to provide the desired results.

(b) WEATHER AND TEMPERATURE LIMITATIONS.

The bituminous tack material shall be applied in conformity with the following:

1. WEATHER - Tack material shall not be applied on an extremely wet surface or when weather conditions are determined not suitable by the Engineer.

2. TEMPERATURE - The atmospheric temperature should be 40° F and rising. This tack material shall not be used for cold applied Asphalt pavements. This tack can be used with warm mix asphalt with lay down temperatures over 200F.

(c) PREPARATION OF EXISTING SURFACE.

Loose material, dust, dirt, and all foreign matter shall be removed from the surface to be treated. Approval of the surface before application of the tack material is required.

(d) APPLICATION.

Tack coat material shall be applied in an amount from 0.04 gallons per square yard up to a maximum of 0.08 gallons per square yard for emulsified asphalt unless altered by the Engineer. Application temperature is 150° F to 180° F. An asphalt distributor shall be provided for use on all accessible areas; inaccessible areas such as around manholes, etc. may be coated by other approved methods. When

applying tack coat, it shall be applied to all contact surfaces of curbs, gutters, manholes, and adjacent pavement edges, whenever and to the extent directed. Adjacent surfaces, such as gutters and the like, that is not to be in contact with the mix, shall be adequately protected from the spray; by means of heavy paper securely fastened in place or other satisfactory means. Any such surface soiled by tack coat material shall be cleaned and restored to its previous condition without additional compensation. Tack coat material shall be spread only far enough in advance to permit the construction to progress consistently, uniformly, and continuously after the curing period. Tack coat shall be fully cured not showing wet surface prior to placement of hot mix. Tack coat that has been damaged or worn off shall be replaced without extra compensation.

Basis of Payment:

When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete, Type SP, at the thickness specified in the applicable pay item, actually constructed and accepted by the Engineer.

When the quantity for a pay item under this Section is to be paid for per ton, the weight of the mixture shall be determined from batch weights, truck scale weights or other methods approved by the Engineer. Delivery tickets, in duplicate, signed by a sworn weigh-person, shall accompany each load of material to the project site. One copy of the delivery ticket shall be retained by the Contractor and one copy shall be delivered to the Engineering Inspector. The total number of tons reflected in one set of all delivery tickets collected by the Engineering Inspector shall be the measured pay quantity.

MILLING & RESURFACING OF EXISTING ASPHALTIC CONCRETE PAVEMENT & ROADWAY BASE

The work specified under this Section consisting of the removal of existing asphaltic concrete pavement and roadway base, and the application of new surface course(s), shall conform to the requirements of Section 327 of the FDOT Specifications, as amended herein.

Milling Operations

A. Equipment

The equipment for the milling operation shall include a machine capable of maintaining a depth of cut and cross slope which will achieve the results specified herein. The machine shall be equipped with automatic grade controls which operate by sensing from one or more skids moving along the pavement surface, and which shall produce, where required, a skid-resistant surface texture. The machine shall be equipped with a means to effectively limit the amount of dust escaping from the removal operation. Special attention is directed to the fact that, if the machine is equipped with preheating devices, local environmental and other regulations governing operation of this type of equipment may vary considerably from place to place. It shall be the Contractor's responsibility to be familiar with, and to comply with, all such local regulations, as well as State and Federal rules, and to obtain all permits required for the operation of such equipment.

B. Construction

The existing pavement and base shall be removed to varying depths in a manner which will restore the pavement surface to a uniform longitudinal profile and cross-section as specified herein. Where indicated in the Plans, removal shall be to a specified depth and shall produce a specified cross slope. The longitudinal profile of the milled surface shall be established by skid sensor on the side of the cut nearest the centerline of the road. The cross slope of the milled surface shall be established by a second skid sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The Engineer may waive the requirements for the automatic grade or cross slope controls where the situation warrants such action. The milling pattern, in conjunction with the pavement lay-down operation, shall be approved by the Engineer prior to starting each phase.

If approved by the Engineer, the Contractor may elect to make multiple cuts to achieve the required pavement configuration or depth of cut.

The forward speed of the milling machine may be restricted by the Engineer to assure an acceptable finished surface.

Existing signal loops are to be located in the field prior to milling. Installation of signal loops shall be placed prior to final resurfacing course. Loops shall not be cut into the final surface course. After loop installation is complete, MEG readings shall be performed according to FDOT Specifications. Payment for signal loops shall be included in this Section, unless otherwise provided for in a different Section of this Contract.

Replacement of existing traffic loops shall immediately follow milling operations. Any cut loops shall be replaced within two (2) calendar days. For each day after the two (2) day period that the cut loops are not replaced, the Contractor shall be assessed the amount of one thousand (\$1,000.00) dollars per day. Payment to the County of such sums as may become payable under the provisions of this article shall be made by identifying the said sums as a credit item on the Contractor's final pay estimate.

The milling machine shall be operated to effectively minimize the amount of dust being emitted from the machine. Pre-wetting of the pavement may be required.

Prior to opening to traffic an area which has been milled (except for areas in which the roadway base is temporarily exposed), the pavement shall be thoroughly swept with a power broom or other approved equipment to remove to the greatest extent practicable, fine material which will dust under traffic. This

operation shall be conducted in a manner such as to minimize the potential for traffic hazards and pollution to the air.

Sweeping of the milled surface with a power broom shall be required prior to the placement of new surface course.

At the time of paving operations, immediately prior to placement operations, the use of a pick-up sweeper will be required in areas as directed by the Engineer. Special care shall be taken to clean all loose material from the area adjacent to the curb and gutter prior to paving operations.

C. Finished Surface

If the milled surface is to be the final surface of the pavement, it shall have either continuous or intermittent striations or any other preapproved pattern which will provide an acceptable level of skid resistance. If pavement is to be constructed over the milled surface it shall have a texture which will produce good bonding.

The finished surface shall have a reasonably uniform texture, shall be within 1/4 inch of a true profile grade, and shall have no deviation in excess of 1/4 inch from a straight edge applied to the pavement perpendicular to the centerline. Areas varying from a true surface in excess of the above stated tolerance may be accepted without correction if the Engineer determines that they were caused by preexisting conditions which could not reasonably have been corrected by the milling operations. Any unsuitable texture or profile, as determined by the Engineer, shall be corrected by the Contractor at no additional expense to the City.

The Engineer may require the re-milling of any area in which a surface lamination causes a non-uniform texture to occur.

D. Salvageable Materials

All surplus existing materials resulting from milling operations, except those materials designated by the Engineer as deleterious materials, shall remain the property of the City.

All salvageable materials claimed by the City shall be transported to and stockpiled at locations as indicated on the Plans

The transporting and stockpiling of salvageable materials shall be performed by the Contractor. The method of handling and stockpiling of salvageable materials shall be approved by the Engineer.

E. Disposable Materials

All surplus materials not claimed by the City shall become the property of the Contractor, and shall be disposed of by the Contractor in areas provided by the Contractor.

F. Coordination of Milling Operations and Paving Operations

No milled surface shall be left open to vehicular traffic for a period greater than five (5) consecutive calendar days. For each day after the five (5) day period that the milled surface is left open to vehicular traffic, the Contractor shall be assessed the amount of two thousand (\$2,000.00) dollars per day. Payment to the City of such sums as may become payable under the provisions of this article shall be made by identifying the said sums as a credit item on the Contractor's final pay estimate.

Adjustment of Utilities

All utilities and related structures requiring adjustment shall be adjusted by their owners at the owner's expense. The Contractor shall arrange his schedule to allow utility owners the time required for such adjustments. All utility adjustments shall be completed prior to the commencement of milling and resurfacing operations. Prior to commencing milling operations Contractor shall confirm that proposed milling does not negatively affect a utility.

Resurfacing

After the milled areas are declared by the Engineer to be suitably prepared for resurfacing operations, and all utility adjustments have been completed to the satisfaction of the Engineer, the areas shall be resurfaced in accordance with the materials and thicknesses specified in other applicable Sections of these Specifications.

Prior to installation of the resurfacing material, the milled surfaces shall be thoroughly cleaned of all dust and loose material, and a uniform application of tack shall be applied as specified in the Pinellas County Specifications for Hot Bituminous Mixtures, Plant Methods, Equipment and Construction Methods, latest edition, Section 3-7, at a rate of 0.04 to 0.06 gallons per square yard.

The “overlay” exception referenced in Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, latest edition, Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment

The pay quantity for work specified under this Section shall be the number of square yards of milling, of the various materials and the thicknesses thereof specified in the applicable pay items shown in the Schedule of Values, completed and accepted.

The work specified under this Section for milling operations shall be paid for under various pay items shown in the Schedule of Values for:

- Mill Existing Asphalt Pavement
- Mill Existing Asphalt Pavement and Shell Base

No payment shall be made under this Section for work related to resurfacing operations. All payment for such work shall be made under separate pay items specified in other Sections of these Specifications.

No payment shall be made for the adjustment of utilities. The cost of adjusting utilities shall be borne by the respective utility owners.

ASPHALTIC CONCRETE FRICTION COURSE

FDOT Types FC-2, FC-3, FC-5, and FC-6

The work specified under this Section consists of the overlaying of prepared roadway surfaces with an asphaltic concrete surface course identified in the FDOT Specifications as Asphaltic Concrete Friction Course.

The materials for and the construction of Asphaltic Concrete Friction Course shall conform to the requirements of Section 337 of the FDOT Specifications, as amended herein.

The work specified under this Section includes the furnishing of material for, and the application of, all required tack coats.

Asphaltic Concrete Friction Course shall be constructed in conformity with the lines, grades, notes and typical cross sections shown in the Plans, and as directed by the Engineer.

When the Bid Item Number specifies the quantity of the item in Square Yards, the “overlay” exception referenced in Pinellas County Specifications for Hot Bituminous Mixtures, Plants Methods, Equipment and Construction Methods, latest edition, Section 3-15.8 does not apply to acceptance and payment for asphaltic concrete under this section.

Basis of Payment

When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of Asphaltic Concrete Friction Course of the type and thickness specified in the applicable pay item, actually constructed and accepted.

PAVEMENT

Cement Concrete, Driveways

The work specified under this Section consists of the furnishing and placement of cement concrete pavement for the construction or restoration of driveways and driveway aprons, and the construction or restoration of concrete sidewalk across driveways.

Cement concrete pavement used for the work specified under this Section shall consist of Class I concrete, reinforced with 6 X 6 – W1.4xW1.4 welded wire fabric, placed on compacted subgrade. Concrete pavement for driveways, driveway aprons and sidewalk across driveways shall have a minimum thickness of six (6) inches.

Materials and construction shall conform to the requirements of Section 350 of the FDOT Specifications.

The Engineer may direct that the specified pavement thickness be increased to meet loading requirements identified in the field. In such cases the additional quantities shall be converted to the number of square yards corresponding to the specified thickness, and payment shall be made at the contract price per square yard for the specified thickness.

The work specified under this Section shall include the furnishing and placement of all forms, pavement, welded wire fabric and incidental accessories, and all grading, compaction and other incidental work not paid for under other pay items.

Substitution (by the contractor) of welded wire fabric with fibermesh requires that the contractor provide documentation confirming that specific type of proposed fibermesh is equivalent or superior to welded wire fabric in terms of structural characteristics. After receipt of documentation from the contractor, the City shall have the option of accepting or rejecting the requested substitution.

Basis of Payment

The pay quantities for work specified under this Section shall be the number of square yards of Pavement, Cement Concrete (Driveways), of the various thickness' specified in the applicable pay items, actually constructed and accepted.

DRIVEWAY RESTORATION

In Kind

The work specified under this Section consists of the restoration in kind of existing driveways, other than concrete and asphalt/limerock driveways, disturbed during construction, including the furnishing and placement of materials for the restoration in kind of driveways and driveway aprons, and the restoration of existing sidewalk across driveways.

Restoration of concrete and asphalt/limerock driveways shall not be paid under this Section when separate pay items for concrete and asphalt/limerock driveways are provided in the Contract. However, if separate pay items for concrete and asphalt/limerock driveways are not provided in this contract, then this Section shall also include restoration of concrete and asphalt/limerock driveways.

The work specified under this Section includes the furnishing and placement of all materials, and the construction of all forms, joints, bracing, expansion joint materials, wire fabric reinforcement, reinforcing steel, accessories, the application of required surface finishes, all required clearing and grubbing, excavation and backfilling and cleaning up after the work is completed, and all other required work necessary to complete restoration in kind of existing driveways.

Basis of Payment

The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per square yard, the pay quantity shall be the number of square yards of driveways, actually restored and accepted.

BRICK PAVEMENT REMOVAL

General

The work specified under this Section consists of the removal and palletizing of bricks between the limits shown on the plans and shall include all the labor to remove and stack the bricks by hand.

Brick Pavement Removal

The Contractor shall take care while removing the bricks, as the bricks will be used to rebuild the street. The Contractor shall submit his plan for brick removal to the City for approval at least 14 calendar days prior to initiation of the work. The Contractor's method of brick removal shall minimize damage to the existing brick to the extent possible. Use of a front end loader, bobcat bucket, or similar equipment will not be allowed unless approved by the engineer. The City of Tarpon Springs will supply pallets where the bricks must be stacked neatly to a maximum of 10 courses. The Contractor shall wrap the pallets of brick in plastic to secure the bricks prior to removal from the site. The Contractor will transport the bricks to and from the City's storage facility. No pallets of bricks or loose bricks are to be left on the site at any time the site is unattended.

Brick covered with asphalt pavement shall not be salvaged and shall be properly disposed of by the Contractor.

Basis of Payment

The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per square yard of bricks removed and transported to the City's storage facility.

BRICK PAVEMENT INSTALLATION

General

The work specified under this Section consists of the installation of brick street base, fine crushed concrete bedding course, compaction, sand joint filler to the lines shown on the plans and six (6) inches of crushed concrete and shall include all the labor to place the bricks.

The roadway base shall be constructed using crushed concrete compacted in accordance with PAVEMENT section of these specifications.

A fine crushed concrete bedding course shall be constructed on all completed bases for brick pavement. Brick pavement shall be laid in a running bond pattern on a completed base with a fine crushed concrete bedding course and only clean, whole, sound brick shall be used. The brick shall be laid in close contact and the joints of each course shall be uniformly staggered with respect to the adjacent course. Whole brick shall be used except in starting and finishing a course and fitting pavement around manhole tops or other structures. Proper crown, slope and grade must be maintained.

Bricks shall be clean and free from foreign materials before installation.

Installation should start from a corner or straight edge and proceed forward over the undisturbed fine crushed concrete bedding course.

Bricks shall be plumb, level, and true to line grade; shall be installed properly, coincide and align with adjacent work and elevations.

Brick should be installed hand tight on the undisturbed fine crushed concrete bedding course. String lines should be used to hold pattern lines true.

Gaps between the edges of the brick surface shall be filled with standard bricks or with bricks cut to fit. Cut bricks should be no smaller than one-third the size of full bricks. Care should be taken when establishing the laying pattern to insure that less than one-third bricks are minimized.

Bricks are set into the fine crushed concrete bedding course by roller or plate vibrator capable of 3,000 to 5,000 compaction force. Vibration shall be conducted in crossing paths until the pavement surface is smooth and required elevation is achieved. Gaps between bricks at this point should be filled to about two-thirds of the brick's full height. Gaps between edges should be no more than 3/16-inches wide after vibration. Gaps greater than 3/16 inch suggest that less than satisfactory interlock will be achieved. Bricks within three feet of unrestrained edges must not be compacted.

Once bricks are vibrated into place, clean, dry sand shall be hand swept with brooms over the pavement surface and vibrated once or into the remaining unfilled gaps between bricks to the height of the joint level. Surplus sand should be swept from the pavement surface and disposed of. The completed brick pavement installation should be washed down and cleaned to provide a clean finished workmanlike installation.

The work specified under this Section shall also include furnishing and preparing the fine crushed concrete bedding course, excavation, backfilling and compaction of the sub-base, installation of base course material and the edge restraint system called for in the Plans.

Mock Ups

The Contractor shall install a 4-foot by 4-foot brick pavement area as described in this Section. This area will be used to determine acceptability of the surcharge of the fine crushed concrete bedding course, joint size, lines, laying pattern(s), color(s) and texture of the job. This area will be protected and maintained by

the Contractor's project manager until final acceptance of the scope of the work covered in this Section has been granted. This area shall be the standard from which the work will be judged.

Fine Crushed Concrete Bedding Course

Fine crushed concrete bedding course shall be clean, non-plastic, free of deleterious or foreign matter. The Contractor shall not deposit fine crushed concrete bedding course upon any portion of the aggregate base course until the base course has been approved by the Owner's Engineer. The Contractor shall spread the fine crushed concrete bedding course evenly over the area to be paved. The Contractor shall screed the sand to a level that will produce a 1-inch thickness when the bricks have been placed and vibrated. Adjust the sand level to insure that the final pavement elevation will be 1/4 to 3/8 inches higher than adjacent edge restraints (curb, gutter, etc.) to allow for proper surface drainage.

Basis of Payment

The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per square yard of (Re-use) bricks installed and per square yard of (New) bricks installed and shall include all work and materials described and specified herein. Payment includes cleaning (re-use brick) and transporting brick from the City's storage facility.

STRUCTURES

Concrete Structures

The work specified under this Section consists of the construction of concrete structures, concrete endwalls, gravity walls, cast-in-place concrete box culverts, wingwalls for cast-in-place and pre-cast box culverts and other concrete members, in conformance with the lines, grades, dimensions and notes shown in the Plans. This Section does not include concrete pavement, incidental concrete construction and concrete structures paid for under separate pay items.

Unless otherwise specified, concrete structures shall be constructed of concrete of FDOT Class I, II, III or IV, according to whichever is shown on the Plans, or in applicable drawings of the FDOT Design Standards, latest edition. Endwalls shall be constructed of Class I or Class IV concrete, whereas Box Culverts and Concrete Wingwalls shall be constructed of Class II or Class IV concrete, whichever is specified in the Plans and applicable pay items. All Portland Cement Concrete shall comply with Section 9-2.1 of the FDOT Specifications.

Materials, placement, finishing and curing shall conform to the requirements of Sections 346 and 400 of the FDOT Specifications, as amended herein, and, where specified herein or on the Plans, applicable drawings of the FDOT Design Standards. A surface finish, of the Class specified on the Plans, or in applicable drawings of the FDOT Design Standards, shall be applied to all exposed surfaces of concrete structures. A Class 2 surface finish shall be required on all endwalls and wingwalls. All concrete shall be a minimum of 3,000 psi strength. If a greater strength than 3,000 psi is specified in the plans or specifications, then the contractor shall construct the concrete at the greater specified strength.

The work specified under this Section includes the furnishing and placement of all concrete, and the construction of all forms, falsework, joints, bracing, expansion joint materials, wire fabric reinforcement, reinforcing steel, weep holes, bearing pads, the setting of anchor bolts, dowels and similar accessories, the application of required surface finishes, all required clearing and grubbing, excavation and backfilling and cleaning up after the work is completed, and all required pumping, drainage diversion or other work required to handle drainage flow during construction. The work specified under this Section shall include also the furnishing and placement of reinforcing steel and accessory items for endwalls and headwalls, but not for cast-in-place concrete box culverts and wingwalls.

Basis of Payment

The pay quantity for work specified under this Section is shown in the Schedule of Values to be paid for per cubic yard, the pay quantity shall be the number of cubic yards of Concrete, of the Class designated in the applicable pay items, actually placed and accepted.

The pay quantity for work specified under this Section shall be the number of cubic yards of Concrete, computed within the neat lines of the structure or wall, as shown on Plans, actually placed and accepted. No deductions shall be made for weep holes, chamfers, scorings, fillets, or radii 1-1/2 square inches or less in cross-sectional area.

BOX CULVERT SECTION

Concrete, Pre-cast

The work specified in this Section consists of the construction of Pre-cast Concrete Box Culvert. The work shall be done in accordance with these specifications and the requirements of Section 410 of the FDOT Specifications, as amended herein, and in conformity with the lines, grades, dimensions, and notes shown in the Plans.

Materials and Manufacture

The materials and manufacture of Pre-cast Concrete Box Culvert sections shall conform to the requirements of the following specifications, as amended herein:

AASHTO M259 –for box sections with two feet or more of earth cover and subjected to highway loading, or subjected to dead load only.

AASHTO M273 –for box sections with less than two feet of earth cover and subjected to highway loading.

When approved by the Engineer, in writing, ASTM C789 may be used in lieu of AASHTO M259, and ASTM C850 may be used in lieu of AASHTO M273, subject to such requirements as may be stipulated, in writing, as a condition of approval. Also required is conformance with FDOT Structures Design Guidelines, latest edition and amendments thereto.

Concrete

Concrete shall be Class IV. Minimum concrete cover for slightly aggressive environment shall be 2 inches, and for moderately or extremely aggressive environment shall be 3 inches.

Construction

The methods for construction of trench and foundation, and for laying and backfilling shall conform to the requirements specified in Section 430 of the FDOT Specifications, with the following additional requirements:

Trench, Foundation, Laying and Backfill

The bedding shall consist of coarse concrete sand or other suitable granular material placed below the culvert to a minimum depth of 6 inches and to a minimum width of one foot outside the exterior walls of the culvert, between graded forms set one foot outside each exterior wall of the box culvert. When required by the Plans, other special bedding shall be provided.

Lifting Holes

Holes provided for lifting or joint restraint shall be sealed by plugging, using a non-shrinking mortar in accordance with Section 934 of the FDOT Specifications. Mortar shall be properly cured to insure a sound and watertight plug.

Joints

Field joints for Pre-cast Concrete Box Culvert shall be made with a butyl rubber-based pre-formed plastic gasket material, or as detailed in the Plans. Culverts to be laid with joints made from preformed plastic gasket material shall be subject to the applicable requirements of Section 430-7.3 of the FDOT Specifications, with the following additional requirements:

- 1) The culvert producer shall furnish to the Engineer a written recommendation as to the cross-sectional area of gasket material which will create a watertight seal. This recommended cross-sectional area shall be the minimum permitted for gasket material.

- 2) The outside of each joint shall be completely wrapped with either a woven or non-woven filter fabric. The fabric shall be a minimum of two feet in width, and shall be secured tightly against the box culvert section by metal or plastic reinforced strapping.
- 3) When specified in the Plans, the joint shall be secured by a suitable device capable of holding the sections to line and grade as well as fully home. These devices shall be removed after sufficient backfill has been placed and compacted to secure the sections.

Detail Drawings

Shop drawings, signed and sealed by a Florida licensed professional engineer, shall be submitted to the Engineer for review.

Details of special units, modifications and required devices shall be submitted for review to the Engineer prior to the manufacture thereof.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of linear feet of Box Culvert Section, Concrete, Pre-cast, and portions thereof, of the sizes of box culvert specified in the applicable pay items, actually constructed and accepted. Payment for this quantity shall constitute full compensation for all work specified under this Section.

REINFORCING STEEL

The work specified under this Section consists of the furnishing and placement of reinforcing steel and wire fabric in concrete structures, and in incidental concrete construction.

The materials, fabrication and placement of Reinforcing Steel shall conform to the requirements of Section 415 of the FDOT Specifications, as amended herein, such additional requirements as may be shown on the Plans, and, when specified herein or on the Plans, applicable drawings of the FDOT Design Standards.

Grade 60 reinforcing steel shall be used.

The Contractor shall submit reinforcing steel shop drawings to the Engineer for approval. The shop drawings shall show clearly the locations for all slab bolsters and high chair layouts.

Basis of Payment

When the quantity for a pay item under this Section is shown in the Schedule of Values to be paid for per pound, the pay quantity shall be the number of pounds (lbs) of Reinforcing Steel actually placed and accepted.

INLETS, MANHOLES & JUNCTION BOXES

FDOT & PCED Type Structures

The work specified under this Section consists of the construction of Inlets, Manholes, Junction Boxes, Underdrain Inspection Manholes, Shoulder Gutter Inlets, Yard Drains, Back-of-Sidewalk Drains, and similar small drainage structures. The work under this Section shall also include the adjustment of structures shown in the Plans to be adjusted or which are required to be adjusted for the satisfactory completion of the work. New structures shall be constructed in accordance with these specifications, City of Tarpon Springs Engineering Division standard construction details, and Florida Department of Transportation standard construction details.

The work specified under this Section shall also consist of the furnishing and placement of filter fabric wrap around all pipe-to-structure joints and grouting in accordance with City of Tarpon Springs Standard Detail. Cost for fabric wrap and grout shall be included in the cost of the drainage structure. Materials and construction shall conform to the requirements of Section 425 of the FDOT Specifications as amended herein, and such additional requirements as may be shown on the Plans, applicable standard drawings of the City of Tarpon Springs Engineering Division, and applicable drawings of the FDOT Design Standards. Pay items for FDOT/PCED drainage structures/inlets shall include cost of constructing frames and covers. Frames and covers shall be manufactured from grey iron in accordance with ASTM-A48 class 35B,. Said covers shall weigh 120 lbs. (minimum). They also shall be capable of withstanding a minimum H-20 type loading, be circular with 24" clear opening and have a 360-degree mechanically attached elastomer gasket. The frame shall weigh 70 lbs. (minimum) with a depth not exceeding 4 inches. The flange shall have bedding slots, bolt holes and lifting eyes. The cover and frame shall be constructed in accordance with City of Tarpon Springs Standard Details for all types of manhole frames and covers. Pay items for adjustment of inlets and/or manholes shall comply with and be constructed in accordance with Section 425 of the FDOT Specifications.

Grates for Drainage Structures

All grates for drainage structures shall be galvanized steel grates having a diamond, hexagonal or similar reticulate pattern. Additionally, all grates utilized on drainage structures within right-of-way or other areas subject to vehicular traffic shall be secured to the structure and shall be capable of withstanding H20 loading, and shall be the equivalent of those grates manufactured by U.S. FOUNDRY & MANUFACTURING CORPORATION in its H20 Loading series.

Underdrain Inspection Manholes

Underdrain Inspection Manholes shall be as shown in the Plan and the City of Tarpon Springs Engineering Division Standard Details book, latest edition.

The work specified under this Section shall include the furnishing and placement of all concrete, reinforcing steel and accessory items, removable clean-out plugs for upstream ends of underdrains ("T-gripper mechanical plugs without bypass" or approved equal), gratings, frames, covers and any other necessary fittings, and providing plugs and openings in existing structures, as shown in the Plans or as directed by the Engineer, all forms and falsework, all excavation and backfilling around the structure, all labor and materials required to restore the work site and affected property and facilities to a condition acceptable to the Engineer, and the disposal of surplus materials not claimed by the City. Unless otherwise provided for in the contract documents all materials disposed of by the Contractor shall be disposed of in areas provided by the Contractor.

Basis of Payment

The pay quantity for the work specified under this Section shall be the number each of the structures identified in the applicable pay items, satisfactorily completed and accepted.

RELOCATION / ADJUSTMENT OF EXISTING UTILITIES

The work specified under this Section shall consist of all the labor, materials and necessary incidentals to relocate and/or make vertical adjustments to structure tops, valve boxes, meter boxes and incidental items to the proposed grade in accordance with the plans.

The work specified under this Section shall also include adjusting and reconstructing existing grate inlet or other structure tops to manhole tops including ring and cover for structures located within the proposed roadway typical section or other pavement areas as shown on the plans. Materials and construction shall conform to the requirements of Section 425 of the Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, 2000 edition, except as amended herein, and such additional requirements that may be shown on the plans and applicable drawings of the Florida Department of Transportation (FDOT) Roadway and Traffic Design Standards, 2004 edition.

Basis of Payment

The pay quantity for the work specified under this Section shall be the number each of the structures identified in the applicable pay items, satisfactorily completed and accepted. The quantities determined as specified above shall be paid for at the contract price per each for adjustment and/or relocation of water valves, meters, manholes, inlet structures or electrical outlets.

SKIMMER FOR OUTFALL DRAINAGE STRUCTURE

The work specified under this Section consists of the construction of a Skimmer as shown in the plans. If the plans do not provide the necessary details, then the work specified under this Section shall be in accordance with FDOT standard detail index number 240, as amended herein, and as directed by the Engineer.

The skimmer shall be UV Stabilized High Density Solid Polyethylene 0.5" Thick – Matte Finish - Light Grey Color, in accordance with the dimensions specified in FDOT index 240. Unless otherwise specified in the plans, the skimmer will consist of two (2) side panels, one front panel, two (2) flat bars, and accessory hardware. The cost of the skimmer shall be paid for separately in the pay item provided for in the schedule of values (Division W).

Basis of Payment:

The pay quantities for the work specified under this Section will be per square foot actually constructed and accepted. The bid contract unit price will include full compensation for the furnishing and installation of all materials, hardware, and other items necessary to completely install the skimmer.

PIPE CULVERTS & STORM SEWERS

The work specified under this Section consists of the furnishing and installation of steel reinforced round or elliptical Concrete Pipe Culvert, Polyvinyl-Chloride (PVC) Pipe Culverts or round corrugated High Density Polyethylene (HDPE) Pipe with an integrally formed smooth interior in conformity with the lines, grades and elevations shown on the Plans, and as directed by the Engineer, in accordance with the manufacturer's recommendations and in accordance with the requirements of Section 430 of the FDOT Specifications, as amended herein, and all applicable drawings of the FDOT Design Standards, latest edition. The designation "concrete pipe" in the pay items refers to steel reinforced concrete pipe as described in ASTM C361 and C507.

For HDPE pipe, the pipe and fittings shall be made of polyethylene compounds and shall meet or exceed the requirements of ASTM D1248, ASTM F810, ASTM F667, and AASHTO M294-97. Pipe shall be equivalent to the HDPE pipe manufactured by Advanced Drainage Systems, Inc or equal. The nominal size of the pipe and fittings is based on the nominal inside diameter of the pipe. Joints may be made with bell and spigot or with couplings, but the outside diameter must be uniform throughout the length of the pipe. Joints shall utilize gaskets to ensure a watertight seal. All pipe joints shall be wrapped with filter fabric pipe jackets. Cost for filter fabric pipe jackets shall be included in the cost of the pipe. If specified in the Plans, non-corrosive pipe straps and screw anchor assembly shall be installed at the specified spacing.

For PVC pipe, the pipe shall have a permanently installed reinforced rubber ring gasket in an integral bell joint. The pipe shall meet the requirements of ASTM D 3034. There shall be no evidence of splitting, cracking or breaking while meeting the specifications as outlined in ASTM D 1784 and no shattering or splitting result when the pipe is tested in accordance with ASTM 2444. Joint tightness shall conform to ASTM D 2152. All concrete pipe joints shall be wrapped with filter fabric pipe jackets. Cost for filter fabric pipe jackets shall be included in the cost of the pipe.

The work shall include all excavation, sheeting and bracing, trench boxes, backfilling and compacting around the culvert, patching through existing endwalls, the furnishing and installation of fittings, including pipe strap and screw anchor assembly, disposal of surplus materials and the connection of proposed pipes to existing structures. All backfill shall be compacted to a density of at least 100% of the maximum density as determined by AASHTO T 99, Method C, for concrete pipes and 95% of the maximum density as determined by AASHTO T 99, Method C, for metal and plastic pipes.

The Contractor shall make every attempt to dewater the area with normal dewatering equipment including, but not limited to, surface pumps, sump pumps, wellpoints and header pipes and trenching/digging machinery. Once the Engineer is satisfied that the Contractor has made every effort to dewater the area, and the conditions still remain wet, the Engineer will then consider authorization for payment for the use of select material. In either case, the Contractor must schedule the backfilling work to allow the Engineer to determine staged in-place density determinations as the area is being backfilled. If the area is backfilled without the specified in-place density being verified, and the ground water subsequently rises above the backfilled area adjacent to the structure, no payment will be made for this pipe culvert/storm sewer/structure until the area can be dewatered and the specified density verified by the Engineer.

In locations outside the plane describe by a two (horizontal) to one (vertical) slope downward from the roadway shoulder line or back of curb as applicable and along storm sewer outfall lines where no vehicular traffic will pass over the pipe, compact the backfill to a density of at least ninety-five (95) percent of the maximum density as determined by AASHTO T 99, Method C.

All joints of round and elliptical concrete pipe shall be wrapped with filter fabric pipe jackets. Elliptical pipes shall have rubber gasket joints. Cost for filter fabric pipe jackets shall be included in the cost of the pipe.

Unless specified to be paid for under other items, the work under this Section shall include the restoration of all driveways, curb, sidewalk, sod and any other existing features and facilities disturbed or damaged in the performance of the work. Existing features and facilities shall be restored to the condition existing prior to the commencement of construction activities. Payment for restoration under this Section shall be made only for that restoration within the limits of payment shown in the Plans for such restoration. The Contractor shall restore, at his expense, and in accordance with the intent of these Specifications and the details and notes for restoration shown in the Plans, all existing features and facilities disturbed or damaged during construction activities outside the limits of payment shown in the Plans. Unless otherwise specified in the Plans, lawn sprinkler systems shall be removed from the public right-of-way and capped off at the right-of-way line. Unless otherwise specified, concrete pipe shall meet the design requirements of class III ASTM C76.

The work to be performed under this Section shall not include the excavation of unsuitable material, the furnishing, placement and compaction of fill material as replacement for unsuitable material, the furnishing and placement of bedding material, or other items of work for which separate payment is to be made.

Ownership of all suitable material shall remain with the City until all earthwork requirements for the project have been fulfilled. The suitable material shall be stored by the Contractor for use on the project until the City determines it is no longer needed. All costs associated with the storage shall be included in the cost of the pipe. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor.

The work under this Section shall include the internal televising of new stormwater drainage pipes and drainage structures. The Contractor shall provide the City with a video CD of the completed stormwater drainage system, and a written report. The Contractor shall pump down and clean the pipes and drainage structures, to the satisfaction of the City, prior to televising.

The video CD shall be of the standard format, in color, with all pertinent data and observations recorded as audio on the CD. The data should include:

- 1) An accurate recorded footage of the pipe lengths.
- 2) The drainage structure number and pipe size.
- 3) The run of the pipe and direction of flow (i.e. from S-1 to S-2).
- 4) Details of structural defects, broken pipes, sags, dips, misalignments, obstructions and infiltration.

The written report shall include the 4 items listed above.

All visual and television inspections shall be completed in the presence of a City inspector prior to the placing of any concrete, asphalt or sod. Televising shall occur after backfilling is complete and water table returns to natural levels. For pipes located under roadways, televising shall occur after road has been stabilized. A 360-degree view shall be taken of each joint. Any deficient or damaged pipe discovered during televising shall be the responsibility of the Contractor to repair or replace at the Contractor's expense. The televising shall include a numerical scale by which viewers of the video can visually determine the precise width of cracks and/or joint gaps. The contractor must notify the City 48 hours prior to any televising.

As a complement to the video, the Contractor shall also provide digital photos of areas of concern in electronic (computer CD) and hard-copy form (in color).

All known or indicated breaks shall be repaired by the Contractor regardless of the test allowances. Faulty sections of drainage pipes or drainage structures rejected by the Engineer shall be removed and re-laid by the Contractor. Sections of pipe that are repaired, re-laid or replaced shall be re-televised at the Contractor's expense.

In all cases that a leak is found, re-televising shall be required at the Contractor's expense, to confirm that the problem has been resolved.

F949 PVC pipe shall have a 100-year service life, and meet the requirements of ASTM F 949. This shall apply to pipe sizes up to and including a maximum inside diameter of 36 inches. F949 PVC pipe shall be installed according to manufacturer's requirements, and of Section 430 of the FDOT Specifications, and all applicable drawings of the FDOT Design Standards (latest version - including latest interim standard).

Additional requirements beyond ASTM F 949 are as follows:

- A. When F949 PVC pipe is located under roadways and driveways, the minimum cover requirement (between the bottom of base and top of pipe) shall be 18 inches.
- B. During installation, F949 PVC pipe shall not experience ongoing direct sunlight exposure, such as above ground, unshaded installations, such as bare-pipe mitered end sections.
- C. F949 PVC pipe shall be manufactured from PVC compounds having no less than 1.0 part of Titanium Dioxide per 100.0 parts of PVC resin, by weight.
- D. F949 PVC pipe shall be installed within 2 years from the date of manufacture. Pipe more than 2 years of age may not be used unless it can be demonstrated, to the satisfaction of the Engineer, that the pipe has been adequately protected from direct exposure to sunlight.
- E. Contractor is responsible for identifying and field verifying the locations and fill requirements for F949 PVC pipe. In such cases, F949 PVC pipe shall not be used where the minimum or maximum cover for the proposed storm sewer does not meet FDOT Index #205, or as amended herein.
- F. Tight Joints shall be an integral bell-gasketed joint. When the joint is assembled, it shall prevent misalignment of adjacent pipes and form a watertight joint (10.8 psi test per ASTM D3212, titled: "Standard Specification for Joints for Drain and Sewer Pipes"), using Flexible Elastomeric Seals, per ASTM F477, as required.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of linear feet of the types and sizes of pipe specified in the applicable pay items, actually constructed and accepted, including that portion of the pipes extending into the walls (farthest point) of the structures to which the pipes are connected. Payment for this quantity shall constitute full compensation for all work specified under this Section, and shall include the televising and digital photos specified herein and dewatering (unless contract has separate dewatering pay item). For all pipe culverts, payment shall also include filter fabric pipe jackets at all joints.

JACK & BORE

The work specified under this Section consists of the installation of casing under roadways, railroads and other types of embankment by tunneling or driving through the embankment.

Jacking and boring under railroad embankments shall conform to Section 556 and applicable requirements of Section 430-6 of FDOT Specifications, except as amended herein. The Contractor shall be solely responsible for any damages from negligent operations or failure to comply with the methods and procedures prescribed.

In accordance with the requirements of Section 556 and applicable requirements of Section 430-6 of the FDOT Specifications, it shall be the responsibility of the Contractor to devise and use adequate methods and procedures to insure the safety and integrity of jacking and boring operation, and to prevent damage to existing facilities. The Contractor shall be solely responsible for any damages to existing facilities.

The work specified under this Section shall include all materials, labor and equipment required for the acceptable completion of the casing installation by means of Jack and Bore operations and shall include casing spacers.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of linear feet of jacking and boring, measured as the length from end to end of pipe casing.

U-TYPE ENDWALLS & FLARED OR MITERED END SECTIONS

The work specified under this Section consists of the construction of U-Type Endwalls for pipe culverts and the furnishing and installation of pipe culvert end sections, flared or mitered, in accordance with the requirements of Sections 346, 400, 415 and 430 of the FDOT Specifications, latest edition, as amended herein, all applicable drawings of the FDOT Design Standards, latest edition, and the details and notes shown in the Plans.

A Class II surface finish shall be applied as directed by the Engineer.

The work specified under this Section shall include all forms, bracing, concrete, reinforcing steel, grates and other required materials and accessories, all clearing and grubbing, excavation, backfilling, disposal of surplus material, and any other incidental work required to complete the installation of the end sections to the satisfaction of the Engineer.

Ownership of all suitable material shall remain with the City until all earthwork requirements for the project have been fulfilled. Except as otherwise provided for in the Plans and Specifications, all surplus material and other items not claimed by the City shall become the property of the Contractor and shall be disposed of by the Contractor in areas provided by the Contractor.

Basis of Payment

For U-Type Endwalls, the pay quantities for the work specified under this Section shall be the number each actually constructed and accepted.

For End Sections, Flared or Mitered, the pay quantities for the work specified under this Section shall be the number each of the types and sizes of End Sections specified in the applicable pay items actually constructed and accepted.

UNDERDRAIN

Polyvinyl Chloride (PVC), High Density Polyethylene (HDPE) and Roadway

The work specified under this Section consists of the furnishing and installation of Polyvinyl-Chloride (PVC) Pipe for roadway underdrain systems, and shall include all pavement cuts, trench excavation, the furnishing and installation of all filter aggregate, earth backfill and filter wrap material, and all restoration not paid for under separate pay items.

When incorporated by reference into the Specifications for such work, applicable provisions of this Section shall apply also to the furnishing and installation of underdrain systems for retention/detention ponds, stormwater treatment filtration systems, and other facilities requiring the installation of underdrain.

The furnishing and installation of underdrains shall conform to the requirements of Section 440 of the FDOT Specifications, as amended herein, and to the details shown in the City's Standard Roadway Underdrain Detail and applicable pavement restoration details contained in the Plans. Where a conflict occurs between the specifications and the details shown on the Plans, the details shown on the Plans shall govern.

Polyvinyl-chloride pipe for use as underdrain shall conform to the requirements of ASTM F 758 or ASTM F 949. Also, PVC underdrain manufactured from PVC pipe meeting ASTM D 3034, perforated in accordance with the perforation requirements given in AASHTO M 36 or AASHTO M 196 will be permitted.

HDPE Pipe for use as underdrain shall conform to the requirements of AAASHTO M294 and the cell classification as defined in ASTM3350. The gasket material shall conform to the requirements of ASTM F477. The pipe shall possess male and female pipe ends, which allow the construction of overlapping, gasketed pipe joints in conformance with the requirements of ASTM D3212.

All roadway underdrain, including that installed under driveways, shall be perforated in accordance with the perforation detail shown in the Plans, except that in the vicinity of trees, and under roadways, non-perforated sections of underdrain shall be used where directed by the Engineer.

Underdrain installed under driveways, streets and other pavement shall be installed by open-cut trenching in accordance with the details shown in the City's Standard Roadway Underdrain Detail and applicable pavement restoration details contained in the Plans. Underdrain installed in the vicinity of trees shall be installed in accordance with the provision entitled "Underdrain in the Vicinity of Trees" contained in these Specifications.

Underdrain shall be placed as directed by the Engineer to avoid conflict with existing utilities. Any change in the location of underdrain, or the length of underdrain used, from that shown on the Plans, shall be authorized in writing by the Engineer.

No separate payment will be made for non-perforated roadway underdrain. It shall be the responsibility of the Contractor to determine from inspection of the project site the quantity of non-perforated underdrain anticipated to be required in the vicinity of trees and under roadways.

Underdrain cleanout plugs shall be installed in the upstream ends of underdrains wherever the upstream end is connected to a storm water inlet structure or junction box and at all bends. Underdrain plugs shall be "T-gripper mechanical plugs without bypass" or equal, and shall be considered incidental to the cost of the underdrain pipe, unless a separate pay item is provided.

Underdrain in the Vicinity of Trees

When underdrain is to be installed in the vicinity of trees designated on the Plans or by the Engineer to be preserved, trenching, and the installation of underdrain in such areas, shall be accomplished by hand operations in order to prevent damage by machinery to the trees and their root systems. Filter aggregate and the top membrane shall be deleted in areas where intertwined root systems may prevent excavation of the trench to standard width, and the underdrain installed in such areas shall consist of solid-walled underdrain (non-perforated) of the specified material laid on grade, with all backfill material placed, compacted and dressed by hand to the required final grades.

Restoration Requirement

Unless specified to be paid for under other items, the work under this Section shall include the restoration of all driveways, curb, sidewalk, sod, lawn sprinkler systems and any other existing features and facilities disturbed or damaged in the performance of the work.

Unsuitable Material

Unless otherwise provided for under separate pay items in this contract, the work to be performed under this Section shall include the excavation of unsuitable material, the furnishing, placement and compaction of fill material as replacement for unsuitable material.

Identification

Each section of underdrain pipe delivered to the construction site shall be clearly stamped with the ASTM designation, in a size and pattern such as to be immediately visible to the Engineer.

Basis of Payment

The work specified under this Section shall be paid for under the pay items for Underdrain, Polyvinyl-Chloride (PVC), Perforated, HDPE or Roadway. No separate payment will be made for non-perforated underdrain.

The pay quantity for the work specified under this Section shall be the number of linear feet of Underdrain, of the various types and sizes specified in the applicable pay items, actually constructed and accepted.

INCIDENTAL CONSTRUCTION

Pipe Handrail

The work specified under this Section consists of the furnishing and erection of Aluminum or Steel pipe handrail, in accordance with the requirements of Section 965 of the FDOT Specifications, as amended herein.

Steel Pipe Handrail shall be constructed of galvanized steel pipe railings, with galvanized steel diamond wire fabric, assembled and erected as shown in the Plans.

Aluminum Pipe Handrail shall be constructed in accordance with the requirements of Section 965 of the FDOT Specifications, and Index No. 870 of the FDOT Design Standards, latest edition.

The work specified in this Section includes the furnishing and erection of all posts, railing, bracing, wire fabric and anchorage assemblies required for the completed work.

Basis of Payment

The pay quantity for the work specified under this Section shall be the total horizontal length measured in linear feet of the handrail structure, actually constructed and accepted. The handrail structure length shall be measured in terms of total horizontal length from end to end and shall not mean the total of tubing or posts.

CURB & GUTTER

Concrete

The work specified under this Section consists of the construction of concrete curb, curb and gutter, valley gutter, shoulder gutter, and traffic separators in accordance with the requirements of Section 520 of the FDOT Specifications, as amended herein, applicable drawings of the FDOT Design Standards, latest edition, applicable standard construction details of the City of Tarpon Springs Engineering Division, and the details and notes shown in the Plans.

Job-mix design formulas for all Portland Cement Concrete, of the type specified, shall be submitted at least 14 days prior to use on the project. The submitted formulas shall be derived or approved by the City and/or its agents. All concrete mix designs shall meet FDOT Concrete Class mix guidelines, except as follows:

WHEN APPROVED, IN WRITING, BY THE ENGINEER, an Alternate Class I Concrete mix design formula, for concrete curb and gutter to be placed by automated curb machines, may show, as a substitution for #57 aggregate, an amount of #89 aggregate not to exceed 33 percent, by weight, of the #57 aggregate.

All Portland Cement Concrete shall be FDOT Class I Concrete with a minimum cementitious content of 508 lbs/cy, a maximum water cementitious ratio of 0.50 lbs/lb, and a minimum compressive strength of three thousand (3000) psi at twenty-eight (28) days.

The work specified under this Section shall include the construction of all Curb Transitions called for in the Plans in accordance with the details shown or referenced in the Plans, the furnishing and placement of all required Reinforcing Steel, and the furnishing and construction of all necessary forms.

Basis of Payment:

The pay quantities for the work specified under this Section shall be the number of linear feet of concrete curb, curb and gutter, valley gutter, shoulder gutter, wheel stops or traffic separator actually constructed and accepted. Payment for the quantities determined as specified herein shall constitute full compensation for all work specified under this Section.

REMOVE & RESET GRANITE CURB

The work specified under this Section consists of all the labor, materials and necessary incidentals for the removal and resetting of granite curb (straight and curved) in accordance with the details and notes shown on the Plans.

Granite curb shall be cleaned by pressure washing or other suitable means to remove dirt, asphalt, paint and other foreign material prior to resetting.

Contractor shall repair damage to any surface or facility adjacent to the granite curb that is caused by the removal and resetting of the granite curb. No separate measurement or payment will be made for such repairs.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of linear feet of granite curb actually constructed and accepted. Payment for the quantities determined as specified herein shall constitute full compensation for all work specified under this Section.

SIDEWALK

Concrete

The work specified under this Section consists of the construction of Concrete Sidewalk to the lines and grades shown on the Plans, and as directed by the Engineer.

The construction of Concrete Sidewalk shall conform to the requirements of Section 522 of the FDOT Specifications, as amended herein, to the details and notes shown in the Plans, and to all applicable drawings of the FDOT Design Standards, latest edition, and the Pinellas County Department of Public Works Standard Construction Details, latest edition.

Unless otherwise specified, concrete sidewalk for pedestrian traffic shall be constructed to a minimum thickness of four (4) inches, with no reinforcement. Concrete sidewalk having a design thickness greater than four (4) inches shall be reinforced with either Welded Wire Fabric or Reinforcing Steel bars, as shown on the Plans or as approved by the Engineer.

All Portland Cement Concrete shall be FDOT Class I Concrete with a minimum cementitious content of 508 lbs/cy, a maximum water cementitious ratio of 0.50 lbs/lb, and a minimum compressive strength of three thousand (3000) psi at twenty-eight (28) days.

If separate restoration pay items are not provided, then the work specified under this Section shall include the restoration, to the condition existing prior to the commencement of construction activities, of all existing roadway pavement, curb and gutter, driveways, sidewalk, topsoil, and sod disturbed or damaged in the performance of the work specified under this Section. All surplus materials resulting from construction operations shall remain the property of the City until all construction requirements have been fulfilled, and such materials as may be acceptable to the Engineer for restoration purposes shall be so utilized.

The work specified under this Section shall include the furnishing and construction of all necessary forms, and the furnishing and placement of all required Welded Wire Fabric or Reinforcing Steel. Substitution (by the contractor) of welded wire fabric with fibermesh requires that the contractor provide documentation confirming that specific type of proposed fibermesh is equivalent or superior to welded wire fabric in terms of structural characteristics. After receipt of documentation from the contractor, the City shall have the option of accepting or rejecting requested substitution, depending on the amount of savings that will be extended to the City.

Sidewalk shall be constructed according to FDOT Design Standards (latest version - including latest interim standard) Index 310, and sidewalk ramps shall be constructed according to FDOT Design Standards (latest version - including latest interim standard) Index 304, unless a separate detail is provided. However, all 6" thick (or greater) concrete sidewalks shall be reinforced with either welded wire fabric or reinforcing steel bars.

Driveway walk-around widths previously shown to be 3 ft. minimum are revised to 4 ft. minimum; a reduction to 3 ft. minimum is allowed only in restricted conditions, when specifically approved by the Engineer. Ramp widths previously shown to be 3 ft. minimum are revised to 4 ft. minimum; a revision to 3 ft. is allowed only in restricted conditions when specifically approved by the Engineer.

Concrete Sidewalk Curb Ramps shall be constructed to a minimum thickness of six (6) inches and shall be reinforced with either welded wire fabric or reinforcing steel bars; reinforcing shall be as specified on the plans or as directed by the Engineer. Contractor shall install an expansion joint at each edge of a curb cut.

Detectable Warnings on Walking Surfaces shall be in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 4.29.2, and FDOT Section 527 Detectable Warnings on

Walking Surfaces. Detectable warnings may consist of tiles, pavers or mats. Use detectable warnings with size and pattern as shown in the plans comprised of truncated domes aligned in parallel rows in accordance with Index 304 of the FDOT Design Standards (latest version - including latest interim standard). Do not use detectable warnings with a diagonal pattern. Mats shall not be the adhesive/glued down type. However, thermo-type/torch down thermoplastic mat applications and other types (i.e., anchored), in accordance with FDOT specifications, shall be acceptable.

Contractor shall prepare the surface and install detectable warnings in accordance with the detectable warning manufacturer's recommendations and instructions, using materials and/or equipment recommended and approved by the manufacturer, for adherence to cementitious substrate surfaces. Mortar topping [351-2(d) Materials] shall not be used. The quantities to be paid for will be: (1) Detectable warnings that are applied to newly constructed concrete sidewalk/curb ramps will be included in the cost of the concrete sidewalk/curb ramp. (2) Detectable warnings that are applied to existing curb ramps will be paid per square feet for each detectable warning that is furnished, installed and accepted.

Contractor shall submit for review and approval by the Engineer, certification that detectable warnings planned for use meet the requirements of FDOT Section 527-2.2 "Material Properties" as well as manufacturer's installation recommendations and instructions. The City reserves the right to select which product can be utilized. Tactile surfaces shall be colored black.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of square yards of Sidewalk, Concrete, at the thicknesses specified in the applicable pay items, actually constructed and accepted.

RIPRAP

Rubble

The work specified under this Section consists of the construction of riprap composed of broken stone or broken concrete. The construction of rubble riprap shall conform to the requirements of Section 530 of the FDOT Standard Specifications, as amended herein, the details and notes shown on the Plans, and, where specified herein or on the Plans, applicable drawings of the FDOT Design Standards, latest edition.

Materials

Rubble riprap shall consist entirely of broken stone or broken concrete conforming to the following requirements:

- The material shall be sound, hard, durable rubble, free of open or incipient cracks, soft seams, or other structural defects, consisting of broken stone or broken concrete that are rough and angular.

The material shall be free of cracks, soft seams or other structural defects. The pieces shall be roughly angular, and the lot shall be reasonably free of thin, flat or elongated pieces.

Stones shall be of a graded mixture, with gradation and weights in accordance with applicable requirements of Section 530-2.2 – Rubble, in the FDOT Specifications.

Construction Methods

The riprap shall be dumped in place and arranged to form compact layers conforming to the neat lines called for in the Plans, and to the thickness' specified, plus or minus three inches.

The riprap shall be placed in a manner such that the smaller pieces are evenly distributed and placed so as to fill the voids between the larger pieces, and in a manner to avoid sharp exposed edges.

Basis of Payment

Rubble material shall be measured by the ton, in its surface-dry natural state. Measurement shall be by railroad scales, truck scales, barge displacement, volume measurements or other methods approved by the Engineer. Weights shall be determined as specified in Section 530 - 4.2 of the FDOT Standard Specifications. The Engineer shall approve which of the methods, i.e., railroad weights, truck weights, barge displacement, or volume measurements, is to be used.

If the method of truck weights is to be used, duplicates of the sworn certificates of weight shall be furnished with each truckload of material, and presented to the job inspector for his signature. Certificates of weight not signed by the job inspector will not be considered for payment.

GUARDRAIL

Metal

The work specified under this Section consists of the construction and/or removal of Metal Guardrail in accordance with the requirements of Section 536 of the FDOT Specifications, as amended herein, applicable drawings of the FDOT Design Standards, latest edition, and the details and notes shown on the Plans. Box Beam guardrail shall be constructed in accordance with the details shown in the Plans. If there is no specific pay item for removal of guardrail, then the cost for removal of guardrail shall be included in the pay item for Clearing and Grubbing, if required for satisfactory completion of the project and/or called out in the contract.

Basis of Payment

The pay quantity for Guardrail under this Section shall be the number of linear feet of guardrail, measured along the centerline of the guardrail panel, actually constructed and accepted. Payment for the said pay quantity shall be full compensation for all work and materials specified in the construction of metal guardrail, including posts, fasteners, any required bending of the guardrail panels, miscellaneous asphalt (3 inches thick) and any other materials or work incidental to the construction of the guardrail, except that work and materials specified to be paid for under other pay items.

The pay quantity for End Anchorage Assembly shall be the number each of end anchorage assemblies actually installed and accepted. Payment for the said pay quantity shall be full compensation for all work and materials specified in the construction of guardrail anchorage assemblies, including miscellaneous asphalt (3 inches thick).

The work specified under this Section shall be paid for under the pay items for guardrails, including metal guardrail with timber posts, steel posts, end anchorage assembly, metal guardrail (box beam type) and other pay items related to guardrails.

FENCING

FDOT Type B

The work specified in this Section consists of the construction of chain link fencing, and the furnishing and installation of cantilever gates as shown in the Plans. If shown in the Plans, the work in this Section shall also include vinyl coated fence fabric, extra-length posts and top rails.

The construction of Fencing under this Section shall conform to the applicable provisions of Section 550 of the FDOT Specifications and Index Nos. 801, 802 & 803 of the FDOT Design Standards, latest edition, as amended herein, and the lines, grades, dimensions and notes shown in the Plans. Fencing shall be constructed to the heights specified in the Plans.

The construction of Cantilever Gates under this Section shall conform to the applicable requirements of Section 550 of the FDOT Specifications and Index Nos. 801, 802 & 803 of the FDOT Design Standards, latest edition, as amended herein, and the details and notes shown in the Plans. Cantilever gates shall be of the type specified in the Plans (i.e., swing, slide, etc).

Basis of Payment

The pay quantity for Fencing, FDOT Type B shall be the number of linear feet of fencing installed and accepted. Payment for this quantity shall constitute full compensation for all fence material and fastening accessories, all line posts at the length required for construction of the fence to Plan height (nominal fence height, plus two feet), all concrete encasements for posts, and all clearing and grubbing, grading and miscellaneous work necessary to the completed work, except that work for which payment is specified to be made under other pay items. Temporary fencing shall include furnishing, installation, maintenance and removal.

The pay quantity for the following shall be the number each of the different types of assembly installed at Plan height (nominal fence height, plus two feet) and accepted:

- Pull or End Post Assembly, FDOT Fencing Type B
- Corner Post Assembly, FDOT Fencing Type B

The pay quantity for Gate, Cantilever, FDOT Fencing Type B shall be the number each of the various sizes and types of gates shown in the Plans installed and accepted. Payment for this quantity shall constitute full compensation for all accessories and incidentals necessary to complete the work.

DIRECTIONAL BORE

The work specified under this Section shall include all work required for the installation for Directional Boring. The furnishing and installation of all items in connection with Directional Boring shall be in accordance with Section 555 of the FDOT Specifications.

Basis of Payment

The work specified under this Section shall be paid for under the pay items listed under the Method of Measurement and Basis of Payment sections of the FDOT Specifications, sections 555-7 and 555-8.

SODDING

The work specified under this Section shall consist of the furnishing and placement of grass sod within the limits shown on the Plans, and in such other areas as the Engineer may direct. The furnishing and placement of sod shall be in accordance with Section 575 of the FDOT Specifications, as amended herein, and, where specified herein or on the Plans, applicable standard drawings of the FDOT Design Standards. Sod shall be tropical soda apple free.

The work specified under this Section shall include all necessary mowing of sod to the satisfaction of the Engineer for the duration of the construction period. It shall include all staking of sod specified on the Plans.

If this contract includes the construction of grass medians, then the work specified under this Section shall include the furnishing and placement of 6 inches of topsoil in the median prior to the placement of the sod. Topsoil materials shall be in accordance with Section 987 of the FDOT Specifications. No clay or limerock shall be allowed in the median to a depth of 24 inches from the back of curb to the back of curb (or edge of pavement). The medians shall not be used for the disposal (burying) of debris.

When called out in the plans, sod (other than in medians) shall also include the furnishing and placement of 6 inches of topsoil prior to the placement of the sod.

Cost of topsoil shall be included in the pay items for sod, unless the contract has a separate pay item for top soil.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of square yards of Sodding, of the types specified in the applicable pay items, actually placed and accepted. This pay quantity shall include all required water and fertilizer, top soil (if applicable – see above), excavation of the trench for the sod, and the satisfactory disposal of excavated material. No payment shall be made for unauthorized areas of sodding, and no additional allowance shall be made for furnishing and applying the fertilizer and water necessary to establish the growth of sodding.

HIGHWAY SIGNING

The work specified under this Section shall include the erection, installation and furnishing of all material necessary for the completion of all signing as shown on the Plans.

All work and material shall be in accordance with Section 700 of the FDOT Specifications.

For traffic sign installation into concrete median, work shall be completed in accordance with FDOT Index No. 17302, Case VIII, post in concrete detail, and PCED Index No. 1380.

All City of Tarpon Springs sign faces shall be ASTM Type XI Retro-Reflective Sheeting for Rigid Sign Surfaces. Certifications for the sheeting material of all project signs shall be provided to the City, in accordance with FDOT Standard Specifications, Section 700, paragraph "Acceptance of Signs - Manufacturer's Certification and Recommendation". Reference to PCED Index No. 1380 shall be a requirement for sign installations into all concrete areas, and not limited to installations of signs in medians.

All existing signs that will not be used in the project shall be removed by the contractor and carefully transported to the City of Tarpon Springs, Public Works Yard 325 Ring Street, Tarpon Springs, FL 34688; Ph: (727) 942-5606.

Cost for removal and transportation of these signs shall be included in the lump sum payment for "Clearing and Grubbing". If a sign is lost or damaged prior to, or during transportation to the City's yard, then the contractor shall provide the City with a replacement sign, in-kind, at no additional cost to the City. Existing signs shall not be removed until first receiving confirmation from the Engineer, or his designee, that the sign removal shall not adversely affect traffic flow during the construction phase. Pay items for all signs shall be for new signs without damage, original to the bid project and shall not be old, aged, or reconditioned signs posted on other projects, or from a jobsite stockpile. All signs shall have affixed to the rear face of the sign a sticker that contains the Sign Manufacturer, Date of Manufacture, Date of Installation, and Sign Sheeting Material type.

All existing signs, identified to remain or be relocated on site, shall be maintained by the contractor and (if damaged or lost) replaced with a new sign, at no additional cost to the County.

Basis of Payment

The pay quantity for the work specified under this Section shall be the number each or per assembly of item actually installed and accepted.

STREET LIGHTING CONDUIT SYSTEM

The work specified under this Section shall include all work required for the installation of street lighting conduit, pull strings furnishing and laying the pipe fittings, installation of pull construction and 36" radius sweeps at ends. The furnishing and installation of all items in connection with Street Lighting Conduit System shall be in accordance with Sections 603 to 690 of the FDOT Specifications. The work specified under this Section shall be paid for at the contract unit value as identified in the Schedule of Values and the FDOT Basis of Estimates.

Polyvinyl-Chloride (PVC)

Construction of Polyvinyl-Chloride Lighting Conduit shall conform to the requirements of Section 630 of the FDOT Specifications.

Pull Boxes

Lighting pull boxes shall comply with Section 635 of the "FDOT Standard Specifications for Road & Bridge Construction" and shall have a bolted down lid with 5-sided head bolt.

Basis of Payment

The pay quantities for the work specified under this Section shall be the number of linear feet of the types and sizes of conduit specified in the applicable pay items, actually constructed and accepted, including that portion of the conduit extending into the walls (farthest point) of the structures to which the conduits are connected including the 36" radius sweeps at ends, and the number each of pull boxes accepted and items actually installed and accepted.

The work specified under this Section shall be paid for under the pay items for Polyvinyl-Chloride (PVC) (Lighting Conduit), Lighting Cable Pull Boxes.

SHEETING & BRACING

The work specified under this Section consists of the construction of Sheeting and Bracing for trenches, retaining walls, etc., for the purpose of preventing injury to workers, damage to completed work, or disturbance of or damage to adjacent areas and existing structures and facilities resulting from the collapse of trench walls.

It shall be the responsibility of the Contractor to provide adequate Sheeting and Bracing for all trenching operations where such is required pursuant to applicable Federal, State, County and Municipal regulations. Additionally, the Contractor shall construct such Sheeting and Bracing as may be called for on the Plans, or directed by the Engineer during construction operations, for the protection of adjacent areas and existing structures and facilities.

The construction of all Sheeting and Bracing shall conform to the requirements of all applicable Federal, State, County and Municipal regulations.

The design, methods of installation, and adequacy of Sheeting and Bracing shall be, and shall remain, solely the responsibility of the Contractor. At the Contractor's option, and at no additional expense to the City, a trench box may be substituted as approved by the Engineer.

In general, sheeting and bracing shall be removed as the trench is backfilled, in such manner as to prevent the collapse of trench walls or the disturbance of or damage to adjacent areas and existing structures and facilities. The voids left by the extraction of the sheeting and bracing shall be carefully filled by jetting, ramming or other means approved by the Engineer. No sheeting or bracing shall be removed prior to obtaining permission from the Engineer. Permission from the Engineer to remove sheeting and bracing shall not relieve the Contractor of the responsibility for damages resulting from the premature removal of sheeting and bracing.

The Engineer may order, in writing, any or all sheeting or bracing to be left in place for the purpose of preventing injury to adjacent structures, property, etc. If left in place, such sheeting shall be cut off at the elevation specified by the Engineer, but in no case shall sheeting be cut off at an elevation higher than thirty-six (36) inches below the existing grade. Bracing remaining in place shall be driven in tight. The right of the Engineer to order sheeting and bracing to remain in place shall not be construed as creating any obligation on his part to issue such order.

Basis of Payment:

The work specified under this Section shall be paid for under the pay item for:

- Sheeting and Bracing, (Removed)
- Sheeting and Bracing, (Left-in-Place)

If there is not separate pay item for Sheeting and Bracing, then the cost of Sheeting and Bracing shall be included in the cost of the item (i.e., pipe, drainage structure, etc.) for which sheeting and bracing is required. The pay quantity for the work specified under this Section shall be the total number of square feet of Sheeting and Bracing used as authorized by the Engineer, measured from the surface of existing ground to a depth of two (2) feet below flow line of the proposed pipe or structure, completed and accepted. The quantity determined as specified above, shall be paid for at the contract unit price per square foot.

BARRICADES

PCED Type III

The work specified under this Section consists of the furnishing and installation of permanent traffic barricades constructed of wooden members coated with reflectorized material in accordance with the requirements of Sections 952 and 962-7 of the FDOT Specifications, as amended herein.

The barricades shall be fabricated and installed in accordance with City of Tarpon Springs Standard Details Book construction details for Type III Barricade. Stripes shall be retro-reflective white and retro-reflective red, reflectorized with a material that has a high intensity and smooth sealed outer surface. Only pressure treated posts (ASTM D-1760 pressure treatment of timber products) and galvanized coated hardware shall be used.

The barricades shall be permanently installed, at the locations shown in the Plans, as soon as the construction of the project reaches that stage of completion which, in the opinion of the Engineer, requires the level of protection to the public intended by the installation of the barricades.

The Contractor shall maintain the barricades, in a condition suitable for final acceptance, from such time as the barricades are installed until final acceptance of the project.

Basis of Payment

The pay quantity for the work specified under this Section shall be the number each of Barricade, PCED Type III installed and accepted.