**PINELLAS COUNTY**
**PUBLIC WORKS**

# Standard Technical Specifications for Roadway and Related Construction

**(Revised October 2010)**

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## 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 Values 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.

Pay items in the bid submittal sheets of a contract shall be constructed in accordance with the Pinellas County Public Works Standard Technical Specifications for Roadway and Related Construction (PCPW Std. Tech. Spec.), contained herein, as amended by technical special provisions or supplemental specifications in the construction contract.

The first three digits of the pay item number and the pay item description shall be used to determine the applicable specification in the PCPW Std. Tech. Spec. If there is no applicable specification within these PCPW St. Tech. Spec., as amended by technical special provisions or supplemental specifications in the construction contract, then the pay item shall be constructed in accordance with the applicable section of the FDOT Specifications. In such instance, the first three digits of the pay item number and the pay item description shall be used to determine the applicable section in the FDOT Specifications.

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 NTU's 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 County 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)].

Payment for sheeting and bracing shall be included in the applicable pay item where sheeting and bracing is required for construction purposes, unless otherwise stated or provided for in the contract.

## Abbreviations and Definitions

***FDOT*** – The Florida Department of Transportation. ***ID*** – Inside diameter, or dimension.

***PCED*** – The Pinellas County Public Works Engineering Department.

***Schedule of Values*** – The Schedule of Values contained in the Proposal

***Ton*** – A weight of two thousand (2000) pounds.

***FDOT Specifications*** – FDOT Standard Specifications for Road and Bridge Construction (latest edition) (including latest FDOT approved interim specifications)

***FDOT Design Standards -*** FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System (latest edition) (including latest FDOT approved interim details)

# SURVEY AND LAYOUT BY CONTRACTOR

005-0700

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” of contract 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 contract 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.

**STATION BOARDS:** Where applicable, contractor shall furnish and install 1 x4 station boards, painted with white enamel paint with black enamel paint numbering, every 100-feet at the Right of Way for the entire project length and/or project limits. Contractor shall maintain for the duration of the project.

**RECORD DRAWINGS:** Record Drawings are a set of signed/sealed CONTRACT DRAWINGS that are maintained by the Contractor for the express use of recording AS-BUILT INFORMATION. Record Drawings will be verified by the ENGINEER at each monthly pay estimate request prior to processing payment request. At Final Acceptance, Contractor will provide one original Record Drawing set (in color) and eight (8) additional color copies to the ENGINEER.

## 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

005-0800

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.

The Contractor 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 County, 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 County.

For validation of earthwork volumes specified under *Section 120 Excavation and Embankment*, the Contractor shall provide the following:

a. Collect a sufficient number of data points to accurately represent the following surfaces:
    i. Pre-excavation Surface after clearing and grubbing.
    ii. Final Surface.
b. Compute earthwork volumes using the average end area method.
c. Provide Earthwork volume in a report format signed and sealed by a Florida registered Professional Land Surveyor.
d. Deliverables will include:
    i. Digital data files of all surface data points in a standard ASCII format.
    ii. Digital Terrain Model (DTM) files.
e. All Survey activities and deliverables are to be in accordance with:
    i. PINELLAS COUNTY CADD MANUAL FOR LAND SURVEYING AND CIVIL ENGINEERING
    ii. Rule 5J-17.050 through 5J-17.052 Florida Administrative Code, and Chapter 472 Florida Statutes.

NOTE: The PINELLAS COUNTY CADD MANUAL FOR LAND SURVEYING AND CIVIL ENGINEERING can be found on the following Pinellas County Public Works website: http://www.pinellascounty.org/PublicWorks/Documents.htm

In the case of dispute in quantity measurements, the County reserves the right to have Pinellas County Survey Department 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

005-0850

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.

The Contractor 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 County, signed and sealed by a Florida registered Professional Land Surveyor, within 25 days after receiving written request from the County. 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

Control structures - weir and grate dimensions

Ponds - top of bank, toe of slope, etc.

Other items (if specified in Technical Special Provisions)

All items highlighted on marked-up plans, or defined by other means, provided by the Engineer of Record, shall be as-built and certified by a Florida registered Professional Land Surveyor.

DELIVERABLES

All Survey activities and deliverables are to be in accordance with the PINELLAS COUNTY CADD MANUAL FOR LAND SURVEYING AND CIVIL ENGINEERING (formerly known as PINELLAS COUNTY GUIDE FOR PROFESSIONAL SURVEY AND MAPPING SERVICES), and Rule 5J-17.050 through 5J-17.052 Florida Administrative Code, and Chapter 472 Florida Statutes and shall include ten (10) Signed and Sealed As-built Surveys, (5J-17.052)). Deliverables will also include all Autodesk Land Desktop project files; fieldbook files; digital data files of all surveyed points in the standard ASCII format; and an electronic copy of the signed and seal survey in .pdf format

The PINELLAS COUNTY CADD MANUAL FOR LAND SURVEYING AND CIVIL ENGINEERING can be found on the following Pinellas County Public Works website: http://www.pinellascounty.org/PublicWorks/Documents.htm

## 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 Pinellas County Utility facilities and appurtenances 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.

The Contractor 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 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 County, signed and sealed by a Florida registered Professional Land Surveyor, within 30 days after receiving written or verbal request from the Engineer. Contractor's Surveyor shall make all field books and calculations available for review by the Engineer or his designee.

*Contractor shall refer to the Utility Company's Specifications for items that require as-built surveying.*

DELIVERABLES
All Survey activities and deliverables are to be in accordance with the PINELLAS COUNTY CADD MANUAL FOR LAND SURVEYING AND CIVIL ENGINEERING (formerly known as PINELLAS COUNTY GUIDE FOR PROFESSIONAL SURVEY AND MAPPING SERVICES), and Rule 5J-17.050 through 5J-17.052 Florida Administrative Code, and Chapter 472 Florida Statutes and shall include ten (10) Signed and Sealed As-built Surveys, (5J-17.052). Deliverables will also include all Autodesk Land Desktop project files; fieldbook files; digital data files of all surveyed points in the standard ASCII format; and an electronic copy of the signed and seal survey in .pdf format.

The PINELLAS COUNTY CADD MANUAL FOR LAND SURVEYING AND CIVIL ENGINEERING can be found on the following Pinellas County Public Works website:
http://www.pinellascounty.org/PublicWorks/Documents.htm.

## 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

101-0100

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.

Mobilization pay item shall include the cost of maintaining a plans contract set with redlines that depict any construction deviations to dimensions, measurements, stations, offsets, etc., shown on the plans. The Contractor shall provide this redlined set of plans to the County after construction is completed on 11"x17" or 24"x36" paper drawings.

The cost of bonds and any required insurance, consideration for indemnification to the County 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 County prior to beginning construction.

Pay item for Mobilization shall also include the furnishing and placement of door hangers on all properties immediately adjacent to the project, prior to construction beginning, informing them of construction time frame and any anticipated impact to properties. The contractor shall place the door hangers after project award date and at least two weeks prior to construction commencing.

## 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 which has a separate pay item for Mobilization.

# MAINTENANCE OF TRAFFIC (Lump Sum)

102-0100

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 County. 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 Maintenance of Traffic (M.O.T) pay items with prefix 102, including, but not limited to, 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 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.

If the Contractor chooses to deviate from the Maintenance of Traffic (MOT) plan provided by the County, the Contractor shall develop MOT plans, signed and sealed by a Professional Engineer registered in the State of Florida, that depict their proposed staging plan. Plans must be approved by Pinellas County prior to implementing the proposed deviation.

The work specified under this Section shall include all work shown in the Plans including, but not limited to, installing and removing temporary inlets, temporary manholes, temporary pipes, temporary outlet structures, temporary inlet grates, and all materials and construction necessary to maintain temporary drainage during construction operations. The pay item for "Maintenance of Traffic - Lump Sum" shall include all work necessary for maintenance of drainage during construction operations. Any drainage structure or pipe that is part of the permanent drainage plan will be paid for under other items of work.

## 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 & 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)

# MAINTENANCE OF TRAFFIC (Itemized)

102-1000

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 County. 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 Maintenance of Traffic (M.O.T) pay items with prefix 102, and 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.

If the Contractor chooses to deviate from the Maintenance of Traffic (MOT) plan provided by the County, the Contractor shall develop MOT plans, signed and sealed by a Professional Engineer registered in the State of Florida, that depict their proposed staging plan. Plans must be approved by Pinellas County prior to implementing the proposed deviation.

The work specified under this Section shall include all work shown in the Plans including, but not limited to, installing and removing temporary inlets, temporary manholes, temporary pipes, temporary outlet structures, temporary inlet grates, and all materials and construction necessary to maintain temporary drainage during construction operations. The pay item for "Maintenance of Traffic - Lump Sum" shall include all work necessary for maintenance of drainage during construction operations. Any drainage structure or pipe that is part of the permanent drainage plan will be paid for under other items of work.

## 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)

The lump sum MOT shall be paid on a pro-rated monthly amount based on the contract time.

Off Duty Law Enforcement Officer (per man hour)

Traffic Control Signal (Temporary) (per day)

Asphalt Curb (Temporary) (per linear feet) (includes paint & delineators)

Commercial Materials for Driveway Maintenance (per Cubic Yard)

Vehicle Impact Attenuator (Temporary) (per day)

Concrete Barrier Wall (Temporary) (per linear foot) Note: The pay item for Concrete Barrier Wall (Temporary) shall include Mounted Lights – Type C Steady Burn.

Panels Arrow Advance Warning (per day)

Variable Message Sign (Temporary) (per day)

Asphalt pavement (Temporary) (install & remove) (per square yard)

Asphalt pavement (Temporary) for pedestrian (install & remove) (per square yard)

**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.

# Railroad

102-201

The work specified under this Section consists of maintaining railroad traffic along the existing active CSX railroad tracks which crosses the project limits and for coordination with CSX railroad for the project duration. The work also includes the use of flagmen, watchmen or other protective services and devices as are required, in the sole opinion of CSX Transportation (Railroad), to promote safety and insure continuity of railroad traffic. The flagmen and/or watchmen are to be personnel of CSX Transportation (Railroad) and shall be paid in accordance to CSX Transportation (Railroad) rates.

Pinellas County has secured an agreement with CSX Transportation (Railroad) to allow the construction of an at-grade crossing of the existing railroad. CSX Transportation will be responsible for the construction of a grade crossing surface, an automatic flashing light signal and gates. The Contractor will be responsible for all other construction work up to the proposed crossing surface. The Contractor shall coordinate his construction with the proposed construction by CSX Transportation.

The Contractor shall endeavor to stage construction activities, which are within CSX Railroad Right-of-Way to minimize the duration required for the use of flagmen and/or watchmen to the maximum extent practical.

Prior to commencing work on the Railroad's right-of-way, Contractor shall submit the contractor's work plan to Railroad's Chief Engineer and obtain approval for: (1) Data regarding methods and procedures for performing work on Railroad's right-of-way and (2) Plans and Specifications for any shoring and sheeting upon Railroad's right-of-way. Railroad's Chief Engineer shall act on submitted information within 15 days of receipt. The Contractor shall abide by the Railroad's Chief Engineer's instructions relating to safety of railroad operations and give Railroad's Division Engineer or its authorized representative at least sixteen (16) days advance notice of any anticipated need for flagmen or watchmen.

The Contractor shall perform all work upon the Railroad's property in accordance with the plans and specifications for the Project and at such a time and in such a manner that are agreeable to the Railroad's Chief Engineer or its authorized representative.

The Contractor shall use reasonable care and diligence at all times and cooperate with Railroad officials in order to avoid accidents, damages or unnecessary delay to, or interference with, trains of Railroad. The Contractor shall not work or operate upon Railroad's tracks and shall not allow any of its equipment or material to encroach within the following minimum construction clearances without first obtaining authority from Railroad's Chief Engineer or its authorized representative:

Horizontal - 18.0 feet, measured at a right angle to the centerline of the nearest track.

Vertical - 23.0 feet above the top of the highest rail of Railroad's track.

The Contractor shall obtain written authority from the Railroad if at any time it desires to establish and use a temporary at-grade crossing of Railroad's tracks, or to use any existing unprotected grade crossing, and, if required by Railroad, execute Railroad's standard form of private grade crossing agreement with respect to the crossing desired.

The Contractor shall remove, upon completion of the work, from within the limits of Railroad's land, all machinery, equipment, surplus material, falsework, rubbish or temporary buildings and other property of the contractor and that contractor leave said land in a condition satisfactory to the Railroad's Chief Engineer or its authorized representative.

The Contractor shall supply copies of all documentation submitted to and from CSX Transportation (Railroad) to Pinellas County as a matter of information. However; the Contractor shall be solely responsible for securing approvals and proper coordination with CSX Transportation (Railroad) for all work within the Railroad Right-of-Way.

## Basis of Payment

The work specified under this Section shall be paid for under the pay items for Maintenance-of-Traffic - Railroad Flagman and Maintenance-of-Traffic - Railroad.

The pay quantities for the work specified under this Section shall be the number of hours which are required for CSX Transportation (Railroad) personnel flagmen and/or watchmen to be on-site during construction, as determined by CSX Transportation (Railroad), at the applicable labor rates established by CSX Transportation, Inc. Payment for securing CSX Transportation authorizations and for coordination is to be paid for at the contract lump sum price for Maintenance-of-Traffic - Railroad.

# WATER FOR DUST CONTROL

102-5000

The work specified under this Section consists of the furnishing and application of Water on the construction area including but not limited to subgrade, unsurfaced base, or other unsurfaced 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 water used may be obtained from any approved source that meets Federal, State and local requirements.

## 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 AND ABATEMENT OF EROSION AND 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 synthetic bales, 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 County, 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.

Re-establishment and maintenance as 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 County 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 County (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 County prior to commencing construction work. A deficient plan submittal by the contractor, and the subsequent need to re-submit a revised plan to the County 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.

References to baled hay or straw shall be replaced with synthetic bales in accordance with Section 104 of the FDOT Standard Specifications. Sod stabilization shall occur within 72 hours of achieving final grade.

## Basis of Payment

The pay quantities for the work specified under this Section shall be the linear feet of Synthetic Bales, 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)**

104-1010

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 AND GRUBBING

110

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 County-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.

A. Ownership of Removals:
   i. All removed materials not claimed by the County shall become the property of the Contractor, and shall be disposed of by the Contractor in areas provided by the Contractor. This work shall be included and paid for under the pay item Clearing and Grubbing.
   ii. Unless otherwise defined in the construction plans, excess millings resulting from construction activities shall remain the property of Pinellas County and shall be delivered to the main stockpile located at 12601 40th Street North, Pinellas Park. Contact Public Works Operations Department to make arrangements two weeks prior to the delivery.
   iii. Transporting and placement of removed material shall be paid for under and included in the pay item Clearing and Grubbing.

B. Plugging of Water Wells or Irrigation Lines: It is the contractor's responsibility to plug any water wells that are remaining in accordance with County and State specifications. The Contractor shall notify in writing all property owners to remove any items (landscaping, signs, sprinklers, lighting, etc.) from the County right-of-way that they wish to salvage a minimum of fourteen (14) calendar days in advance of construction activities in the area of the property. After the notification period, it is the contractor's responsibility to remove said improvements prior to construction and to place a temporary cap on the pipe that feeds into the irrigation system. The price and payment for plugging of water wells/sprinklers and removals shall be included in the payment item of clearing and grubbing.

C. Tree Protection: Trees not within the clearing and grubbing area and those specified to remain shall be protected during construction with Tree Protection Barricades, in accordance with FDOT Index 544. The price and payment for this item shall be included in the lump sum pay item, "Clearing and Grubbing".

D. Tree and Stump Removal:
   i. The Contractor shall obtain the tree removal permit from Pinellas County Department of Environmental Management.
   ii. All dead/dying trees (whether designated in the plans or not) that may be in the limits of the road right-of-way shall be removed after verification of removal by the Engineer.
   iii. This work shall be included and paid for under the pay item Clearing and Grubbing.

## 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

110-2001

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 12” 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.

# EXCAVATION AND EMBANKMENT

120

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 County 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 County 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 County.

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 5x10-5 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 County Engineer for approval prior to use. Any borrow source is required to have the appropriate soil and materials testing required per 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 County 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 furnishing, 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 backfill immediately with suitable material.

The usage of Roadway and Drainage Bid Pay Item ***120-0020 EXCAVATION, Unsuitable Material*** within the Roadway and Drainage section shall only be used for roadway and drainage construction. For excavation of unsuitable materials and backfill with suitable materials whose sole purpose is for the installation of the utility, the cost shall be included in the appropriate utility pay item and not paid for separately.

**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 County, 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 County 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 first encountered. 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.

**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 that 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

120-1100

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 furnishing, placement and compaction of all embankment and fill material, all grading of roadway shoulders and ditches, the construction or rechannelization 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 County.

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 County 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 County 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

120-1200

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

121

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.

125-3000

## 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 the 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

# TYPE B

The work specified under this Section consists of the stabilizing of designated portions of the roadbed to provide a firm and unyielding 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 stabilized roadbed shall conform to the requirements of Section 160 of the ***FDOT Specifications***, as amended herein.

Premixed Stabilization shall be required when proposed pipe culvert falls within 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 specifically authorized in writing by the Engineer, 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 minimum LBR shall be 40. The under-tolerance for this minimum LBR requirement 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.

# ORGANIC TOPSOIL

162-1000

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. 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 herein.

## Basis of Payment:

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

200

# 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. Load Bearing Ratio (LBR) shall be a minimum of 100.

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.

# 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 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 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

### Composition

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.

RECYCLED CRUSHED CONCRETE/GRADED AGGREGATE, CONTINUED

# CONSTRUCTION

## 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 subgrade, or dumping on the subgrade 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 subgrade.

Spreading shall be accomplished by mechanical spreaders capable of producing an even distribution of the crushed concrete aggregate. Spreading by other means shall be permitted only where and as directed by the Engineer.

## 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 blading 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

The County shall be responsible for all testing performed in connection with the construction of the base under this contract.

## 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

234

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 County], 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 County and its authorized representative testing laboratory the daily quality control test data immediately as it becomes available by facsimile or e-mail to both parties. The Bulk Specific Gravity ($G_{mb}$) of the mixture supplied by the Contractor may be utilized by the County 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 County (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 County'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 County's sample will be transported to the job site by the Contractor and delivered to the County Engineer on site. The Contractor (or his asphalt supplier) shall mark the back of the delivery ticket of the tested truck, "TEST SAMPLE".

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", 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 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 weigher, 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.

## Basis of Payment Adjustment For Asphaltic Cement:

The bid unit price for asphaltic concrete materials will be adjusted in accordance with applicable provisions and requirements of the Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, section 9-2.1.1 and FDOT Road and Bridge Supplemental Specifications as amended herein.

For the purposes of unit price adjustment determination, the following conditions shall be applicable:

1. The Bituminous Material, Asphalt Price Index (herein referenced (API) published monthly by the FDOT shall be used for the adjustment of unit prices in accordance with FDOT Specification 9-2.1.1. The FDOT API in effect at the bid opening date will be used for initial determination of asphaltic material price.

2. The formula referenced in FDOT section 9-2.1.1, Paragraph (d) shall be modified as follows:

   $P_a = AC_q (I_d - 1.05\ I_b)$ during a period of increasing prices
   $P_a = AC_q (I_d - 0.95\ I_b)$ during a period of decreasing prices.
   $P_a$ = Price adjustment for bituminous material, in dollars.
   $AC_q$ = Quantity of Asphalt Cement, in gallons.
   $I_b$ = API during the month in which bids were opened for this contract.
   $I_d$ = API during the month material is incorporated into the project.

3. Asphaltic Concrete, for which the unit price is per square yard, shall be assumed to weigh one hundred (100) pounds per inch of thickness per square yard and asphaltic cement to weigh 8.58 pounds per gallon. With concurrence from the Contractor, in order to simplify calculations, the Engineer shall have the option of determining the Price Adjustment based on either Square Yards of actual installed material or Tons of actual installed material.

4. Calculation of $AC_q$ (Quantity of Asphalt Cement) shall be based on the Contractor's approved mix design Asphalt Content, percentage by weight of total mix.

5. No adjustment in bid prices will be made for either tack coats or prime coats.

6. The contractor shall not be paid for quantities surpassing the “Maximum Yield” in the following table.

| Specified Thickness (Inches) | Target Yield (Lb/Sq. Yd) | Maximum Yield (Lb/Sq. Yd) |
|---|---|---|
| 1 | 100 | 110 |
| 1.25 | 125 | 137.5 |
| 1.5 | 150 | 165 |
| 1.75 | 175 | 193 |
| 2 | 200 | 220 |

7. Price adjustment shall be calculated and recorded as the bituminous material is incorporated into the project, however, the actual price adjustments will be processed on the contract's final pay request that is reviewed and approved by the County.

# OPTIONAL BASE COURSE

285

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 weigher, 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.

## Basis of Payment Adjustment For Asphaltic Cement:

The bid unit price for asphaltic concrete materials will be adjusted in accordance with applicable provisions and requirements of the Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, Section 9-2.1.1 and FDOT Road and Bridge Supplemental Specifications as amended herein.

For the purposes of unit price adjustment determination, the following conditions shall be applicable:

1. The Bituminous Material, Asphalt Price Index (herein referenced (API) published monthly by the FDOT shall be used for the adjustment of unit prices in accordance with FDOT Specification 9-2.1.1. The FDOT API in effect at the bid opening date will be used for initial determination of asphaltic material price.

2. The formula referenced in FDOT Section 9-2.1.1, Paragraph (d) shall be modified as follows:

$P_a = AC_q (I_d - 1.05 I_b)$ during a period of increasing prices
$P_a = AC_q (I_d - 0.95 I_b)$ during a period of decreasing prices.
$P_a$ = Price adjustment for bituminous material, in dollars.
$AC_q$ = Quantity of Asphalt Cement, in gallons.
$I_b$ = API during the month in which bids were opened for this contract.
$I_d$ = API during the month material is incorporated into the project.

3. Asphaltic Concrete, for which the unit price is per square yard, shall be assumed to weigh one hundred (100) pounds per inch of thickness per square yard and asphaltic cement to weigh 8.58 pounds per gallon. With concurrence from the Contractor, in order to simplify calculations, the Engineer shall have the option of determining the Price Adjustment based on either Square Yards of actual installed material or Tons of actual installed material.

4. Calculation of $AC_q$ (Quantity of Asphalt Cement) shall be based on the Contractor's approved mix design Asphalt Content, percentage by weight of total mix.

5. No adjustment in bid prices will be made for either tack coats or prime coats.

6. The contractor shall not be paid for quantities surpassing the “Maximum Yield” in the following table.

| Specified Thickness (Inches) | Target Yield (Lb/Sq. Yd) | Maximum Yield (Lb/Sq. Yd) |
|---|---|---|
| 1 | 100 | 110 |
| 1.25 | 125 | 137.5 |
| 1.5 | 150 | 165 |
| 1.75 | 175 | 193 |
| 2 | 200 | 220 |

7. Price adjustment shall be calculated and recorded as the bituminous material is incorporated into the project, however, the actual price adjustments will be processed on the contract's final pay request that is reviewed and approved by the County.

# SUPERPAVE ASPHALT CONCRETE

334

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 County and its authorized representative testing laboratory the daily quality control test data immediately as it becomes available by facsimile or e-mail to both parties. The Bulk Specific Gravity ($G_{mb}$) of the mixture supplied by the Contractor may be utilized by the County 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 County (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 County'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 County's sample will be transported to the job site by the Contractor and delivered to the County Engineer on site. The Contractor (or his asphalt supplier) shall mark the back of the delivery ticket of the tested truck, "TEST SAMPLE".

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.

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 | ------ |
| ORIGNAL 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:

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 warn 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 weigher, 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.

Basis of Payment Adjustment For Asphaltic Cement:

The bid unit price for asphaltic concrete materials will be adjusted in accordance with applicable provisions and requirements of the Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, Section 9-2.1.1 and FDOT Road and Bridge Supplemental Specifications as amended herein.

For the purposes of unit price adjustment determination, the following conditions shall be applicable:

1. The Bituminous Material, Asphalt Price Index (herein referenced (API) published monthly by the FDOT shall be used for the adjustment of unit prices in accordance with FDOT Specification 9-2.1.2. The FDOT API in effect at the bid opening date will be used for initial determination of asphaltic material price.

2. The formula referenced in FDOT Section 9-2.1.2, Paragraph (d) shall be modified as follows:

$P_a = AC_q (I_d - 1.05 I_b)$ during a period of increasing prices

$P_a = AC_q (I_d - 0.95 I_b)$ during a period of decreasing prices.

$P_a$ = Price adjustment for bituminous material, in dollars.

$AC_q$ = Quantity of Asphalt Cement, in gallons.

$I_b$ = API during the month in which bids were opened for this contract.

$I_d$ = API during the month material is incorporated into the project.

3. Asphaltic Concrete, for which the unit price is per square yard, shall be assumed to weigh one hundred (100) pounds per inch of thickness per square yard and asphaltic cement to weigh 8.58 pounds per gallon. With concurrence from the Contractor, in order to simplify calculations, the Engineer shall have the option of determining the Price Adjustment based on either Square Yards of actual installed material or Tons of actual installed material.

4. Calculation of $AC_q$ (Quantity of Asphalt Cement) shall be based on the Contractor's approved mix design Asphalt Content, percentage by weight of total mix.

No adjustment in bid prices will be made for either tack coats or prime coats.

The contractor shall not be paid for quantities surpassing the “Maximum Yield” in the following table.

| Specified Thickness (Inches) | Target Yield (Lb/Sq. Yd) | Maximum Yield (Lb/Sq. Yd) |
|---|---|---|
| 1 | 100 | 110 |
| 1.25 | 125 | 137.5 |
| 1.5 | 150 | 165 |
| 1.75 | 175 | 193 |
| 2 | 200 | 220 |

7. Price adjustment shall be calculated and recorded as the bituminous material is incorporated into the project, however, the actual price adjustments will be processed on the contract's final pay request that is reviewed and approved by the County.

# ASPHALTIC CONCRETE FRICTION COURSE



## FDOT TYPES FC-5, FC-9.5, FC-12.5

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, and 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 337, 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. The Contractor shall be required to supply the County and its authorized representative testing laboratory the daily quality control test data immediately as it becomes available by facsimile or e-mail to both parties. The Bulk Specific Gravity ($G_{mb}$) of the mixture supplied by the Contractor may be utilized by the County and its authorized representative testing laboratory to determine the volumetric properties of each production lot for acceptance purposes.

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 editon, 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.

# 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 County 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.

# CONCRETE - Warning Strip

350-0201

The work specified under this Section consists of the furnishing and placement of concrete for warning strip. Concrete pavement used for the work specified under this Section shall consist of Class I concrete, reinforced with 6 X 6 - 10/10 welded wire fabric, placed on compacted subgrade. Concrete warning strips shall have a minimum thickness of six (6) inches. Materials and construction shall conform to the requirements of Section 350 of the "Standard Specifications". A broom finish shall be applied unless otherwise directed by the Engineer.

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.

When included in the construction of trails, this section and pay item shall include all costs associated with construction of concrete sections with detectable ADA warnings, comprised of truncated domes aligned in parallel rows, in accordance with PCED Index 1365 and in accordance with Index 304 of the FDOT Design Standards (latest version - including latest interim standard) and Special Provision below for Section 522.

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 County shall have the option of accepting or rejecting requested substitution, depending on the amount of savings that will be extended to the County.

## Basis of Payment

The pay quantities for work specified under this Section shall be the number of square yards of Concrete Warning Strips, actually constructed and accepted.

# 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.

# MILLING AND RESURFACING OF EXISTING ASPHALTIC CONCRETE PAVEMENT AND ROADWAY BASE

380

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 County.

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 County.

All salvageable materials claimed by the County 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 County 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 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.

# 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. Contractor shall confirm, prior to commencing milling operations, 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 the 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.

# CONCRETE STRUCTURES

400

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.

# 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

415

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.

# FDOT AND 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, Pinellas County Engineering Department 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 Pinellas County Standard Detail Index No. 1265. 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 Pinellas County Engineering Department, and applicable drawings of the ***FDOT Design Standards***.

Pay items for FDOT/PCED drainage manhole structures (not inlets) shall include cost of constructing hinged frames and covers. Hinged frames and covers shall be manufactured from grey iron in accordance with ASTM-A48 class 35B, including a locking mechanism. Said covers shall weigh 120 lbs. (minimum) and have a 90-degree blocking system to prevent accidental closure. 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 hinge box shall be self-cleaning. 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 hinged cover and frame shall be constructed in accordance with PCED index 1251. 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 reticuline 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 Pinellas County Engineering Department 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 County. 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.

# SKIMMER

# FOR OUTFALL DRAINAGE STRUCTURE

425-9220

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.

## Basis of Payment:

The pay quantities for the work specified under this Section will be per square feet, 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 CULVERT

430

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. Pay item for "Pipe Filling and Plugging" shall also be constructed in accordance with FDOT Standard Specifications, Section 430.

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 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 County 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 County 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 County 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 County with a videotape 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 County, prior to televising.

The videotape shall be of the standard VHS format, in color, with all pertinent data and observations recorded as audio on the tape. The video shall also be provided on a computer 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 previously.

All visual and television inspections shall be completed and approved by the County 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 their own 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.

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 AND BORE

430-4000

The work specified under this Section consists of the installation of pipe culvert 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 pipe culvert installation by means of Jack and Bore operations. Also, the furnishing and construction of the pipe culvert and the casing shall be included in the work specified herein.

## 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 AND FLARED OR MITERED END SECTIONS

430-5000

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 County 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 County 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.

440-1000

# POLYVINYL-CHLORIDE (PVC) 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 County'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. 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 County'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. 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 and any other existing features and facilities disturbed or damaged in the performance of the work. 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.

## 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, 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.

# TIMBER STRUCTURES

470

The work specified in this Section consists of furnishing and installing all Material, Labor, Equipment, Hardware, Water repellant, and Wood Finish for the Superstructure and Substructure of all Timber Boardwalks, Fishing Piers, Dune Walkovers, Rest Areas, Canopies, Ramps, and Catwalks in conformance with the requirements of Sections 455, 470, 953, and 955 of the ***FDOT Specifications***, as amended herein; and in accordance with the details shown in the construction plans, or as directed by the Engineer.

Boardwalks, Fishing Piers, Dune Walkovers, Rest Areas, Ramps, and Catwalks shall consist of timber beams, stringers, decking, standard height railing (Horizontal Boards or Vertical Pickets), posts and cross-bracings. Including but not limited to all necessary hardware to complete the work.

Boardwalks at Ground Level shall consist of timber beams, stringers, decking, and foot rail. Including but not limited to all necessary hardware to complete the work.

Superstructure shall include Decks, Rails, Posts, Benches, Canopies, and Stairs (Landing, Risers and Treads). Substructures shall include all Beams, Stringers, and Cross-Bracing.

All timber shall be manufactured in accordance with Product Standards PS 20-05 or latest edition, Published by the U.S. Department of Commerce.

## Lumber Grading

All lumber specified in this section shall be Southern Yellow Pine.

All lumber, in the exception of piles, shall be dressed lumber on all four sides (S4S).

Typical grade stamp for visually graded lumber shall be stamped on every individual piece of lumber delivered to the field, which includes grading agency, mill number, lumber grade, commercial lumber species, and moisture content.

## Superstructure

All superstructure members shall be No.1 grade.

Superstructure shall be pressure treated wood with Non-arsenic and Non-chromium preservatives with built-in water repellent produced in accordance with ACQ (Alkaline Copper Quaternary) Preserve Standard ACQ-01-02 and AWPA Standards (U1, T1, UC1). ACQ retention value shall be a minimum of 0.40 pcf., and water repellent retention values of 0.25 pcf.

Superstructure shall be air-dried to less than 19% moisture content, graded in accordance with the SPIB grade rules, Section 4.

Deck and Rail shall be continuous unless otherwise noted in the plans.

Deck shall be installed Bark Side-up with maximum 0.1 inch spacing for expansion.

Deck shall be face screwed with three No. 10x3” Ceramic deck screws at each support.

Deck and Rail lumber with wane of 3/8” (Horizontal and Vertical direction) or more may be grounds for rejection, removal and replacement at no additional cost to the County.

## Substructure

All substructure members shall be No.2 grade. Substructure shall be pressure treated wood with Non-arsenic and Non-chromium preservatives with built-in water repellent produced in accordance with ACQ (Alkaline Copper Quaternary) Preserve Standard ACQ-01-02 and AWPA Standards (U1, T1, UC1). ACQ retention value shall be 0.6 pcf., and water repellent retention values of 0.25 pcf.

Beams and Stringers shall be continuous over single spans unless otherwise noted in the plans.

All bolt holes through timbers to be an extra 1/16” in diameter relative to the bolt diameter.

## Piles

All piles shall conform to ASTM D 25-99.

New installed Piles shall run full height. No pile splicing is permitted.

Field cuts in Piles shall be field treated in accordance with AWPA standard M4 prior to stringer support beam installation.

Pile Tip shall have a minimum of 8" diameter at the end, and have a standard linear taper of roughly 0.2 in/ft from the tip to the butt.

All Piles shall be installed in accordance with FDOT Section 455-6 of the “Standard Specifications” to a 2-Ton capacity (un-factored). Piles shall be installed to the minimum embedment indicated on the Plans or as directed by the Engineer.

Piles shall be pressure treated with CCA (Chromated Copper Arsenate) preserve in accordance with AWPA Standards. CCA retention value shall be 2.5 pcf.

Damaged or unused piles, if any, shall be removed or cut at the mud line as shown in the plans or as directed by the Engineer.

## Hardware

All steel plates, angles and miscellaneous shapes shall be ASTM-A36 and hot dipped galvanized.

Hot dipped galvanized items shall be galvanized as follows:

Structural shapes and plates shall conform to ASTM A123

All nuts, bolts and washers shall conform to ASTM A153

Class C or D depending on size, field touch up all steel immediately where galvanizing has been damaged during or prior to construction with cold galvanizing coating.

All bolts, “O-Gee” washers, washers, lock nuts shall be A307.

All through bolts which are exposed to human contact shall be cut off and ground smooth, flush with the nut.

All through bolts shall extend full length to the face of the nut. For bolts not exposed to human contact, extend bolt 1 ½ times the bolt diameter past the lock nut.

“O-GEE” washers shall be used for all timber side connector sizes equal to or greater than 7/8” diameter.

Stainless steel shall conform to AISI marine grade 316L stainless steel.

If stainless steel plates and angles are substituted with connectors, connectors shall also be stainless steel.

Stainless steel hurricane anchors shall be attached with stainless steel nails (8d). Whenever possible all anchors shall be placed in the least visible manner to the public.

## Basis of Payment

The pay quantities for the work specified under this Section shall be Linear Foot for Timber Piles, Boardwalks, Fishing Piers, Ramps, Dune Walkovers, Square Feet for Rest Areas and 30°/45°/90°/Tees Turns, Lump Sum for Catwalks, and Board Feet of Beams and Stringers complete, in place and accepted, including all necessary Hardware as shown in the plans.

# BOARDWALKS

470-1600

The work specified in this Section consists of the removal of existing boardwalk decking/handrails, selected replacement of piles/bents/stringers, replacement of rest station with canopy and furnishing, replacement of existing supply line, all labor, materials and equipment for the construction of Boardwalks.

The work specified under this Section shall conform to lines, grades, dimensions and notes shown in the Plans. Boardwalks shall be constructed as specified in the Plans and in accordance with Sections 400, 415 and 455 of the ***FDOT Specifications*** as amended herein. The work specified under this Section shall include all lumber, timber piling, hardware, PVC supply lines and hose bib assemblies, accessories, appurtenances, installation, and any other incidental work required to complete the project. All lumber shall be manufactured in accordance with Product Standards PS 20-94 published by the U.S. Department of Commerce. The supply line materials and work specified under this Section shall conform to lines, dimensions and notes shown in the Plans, and in accordance with the Florida Building Code, Plumbing Code, ANSI/AWWA Standards, ASTM D-2241 Specifications, and the resin compound conforming to ASTM Specification D-1784.

Timber Beams/Stringers/Decking/Railing includes all associated materials to re-construct the boardwalk. The work includes but is not limited to beams, exterior stringers, decking, hand rails, all nails/screws/bolts/nuts/washers, labor, equipment, and any other items associated with the construction of the boardwalk.

Boardwalk (Selective Demolition) includes the removal of the existing boardwalk decking, hand rails, exterior stringers, removal of demolition material to a prescribed location in the Park, or if not claimed by the County, removal to a proper disposal site as directed by the Engineer, or other appointed representative. Boardwalk (Selective Demolition) shall also include trimming/transplanting/removal of selected trees/vegetation in conflict with boardwalk construction, as directed by the Engineer.

Timber Turns w/ Beams/Stringers/Railing (30°/45°/90°/Tee) includes all associated material to re-construct the boardwalk. The work includes but is not limited to beams, stringers, decking, railings, all nails/screws/bolts/nuts/washers, labor, equipment, and any other items associated with the construction of the boardwalk turns.

Timber Beams (Contingency) includes all associated materials to replace damaged existing beams. The work includes and is limited to the installation of new beams, removal of damaged beams, with all associated materials, labor and equipment. Timber beams damaged by the Contractor will be replaced at the Contractor's own expense.

Timber Stringers (Contingency) includes all associated materials to replace damaged existing stringers. The work includes and is limited to the installation of new stringers, removal of damaged stringers, with all associated materials, labor and equipment. Timber stringers damaged by the Contractor will be replaced at the Contractor's own expense.

Rest Station w/ Canopy includes all associated materials to replace existing rest station. The work includes but is not limited to the removal of existing rest station, installation of new rest station including all beams/stringers/decking/hand rails/benches/canopy, all roofing material, including all associated materials, labor and equipment.

Timber Piling includes all associated materials to install new pilings. The work includes the installation of new piles were required, all necessary material and equipment.

Timber Piles, Remove and Replace (Contingency) shall include all associated materials necessary to replace damaged piles and install new piles to re-construct the boardwalk. The work includes but is not limited to the removal of damaged piles at mud line, installation of new piles, labor and equipment as directed by the Engineer. Timber piles damaged by the Contractor will be replaced at the Contractor's own expense.

1-1/2" PVC Pipe, Schedule 40 w/ Fittings and Hangers shall include removal of existing supply line, providing all labor, materials, supplies, and equipment required to install a new 1-1/2" PVC pipe to a new boardwalk, with related fittings, hangers and appurtenances, including connections to existing supply lines, and related testing.

Hose Bib Assembly shall include all labor and materials required to provide a ¾" commercial grade hose bib with ¾" PVC Pipe (Schedule 40), all necessary fitting, parts, and appurtenances, to construct a hose bib assembly as shown on the plans, including the connection to the 1-1/2" PVC supply line.

ALUMINUM HANDRAILS (Contingency) shall include all necessary fittings, parts, aluminum handrails, and equipment necessary to install ADA compliant handrails to the boardwalk where directed by the Engineer.

## Basis of Payment:

The work specified under this Section shall be paid for at the contract price, as described herein:

per linear feet of Timber Beams/Stringers/Decking/Railing

per lump sum of Boardwalk (Selective Demolition)

per square feet of Timber Turns w/ Beams/Stringers/Railing (30°/45°/90°/Tee)

per linear feet of Timber Beams (Contingency)

per linear feet of Timber Stringers (Contingency)

per each of Rest Station w/ Canopy

per linear feet of Timber Piling installed and accepted

per linear feet of Timber Piles, Remove and Replace

per linear feet of 1-1/2" PVC Pipe, Schedule 40 w/ Fittings and Hangers

per each of Hose Bib Assembly.

per linear feet of ALUMINUM HANDRAILS

# TIMBER PILING

470-4001

The work specified in this section consists of furnishing and driving of Timber Piling in accordance with the details, drawings, and notes shown in the plans and the applicable provisions of Section 455, 953, 955 of the FDOT Specifications, as amended herein.

The work specified under this section shall include all timber piling, hardware accessories, and any other incidental work required in completing the work.

All lumber shall be manufactured in accordance with Product Standard PS 20-94 published by the U.S. Department of Commerce.

## Basis of Payment:

The pay quantity for the work specified under this Section shall be the number each of Timber Piling, of the types and sizes specified in the applicable pay items, actually installed and accepted.

# PIPE HANDRAIL

515

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 number of linear feet of Handrail, Steel Pipe or Handrail, Aluminum Pipe actually constructed and accepted.

# CURB AND GUTTER & TRAFFIC SEPARATOR

520

## 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 Pinellas County Engineering Department, 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 County 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.

Sample mix designs will be available upon request.

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.

# CONCRETE

The work specified under this Section consists of the construction and placement of Concrete Barrier Wall to the lines, grade, dimensions and notes shown on the Plans in accordance with the requirements of Sections 346, 400 and 521 of the ***FDOT Specifications***, and FDOT Index No. 410.

The work specified under this Section shall include all ties, bolts, anchors, and joints which may be required; all handling, including loading, transport, unloading, and stockpiling; and all other materials or labor necessary to complete installation in accordance with Plans.

## CONCRETE

Shall be Class II Concrete as defined by Section 346 of the Standard Specifications, unless otherwise noted. Class IV shall be used for aggressive environments when specified in the Plans.

A Class 3 finish shall be given to the barrier wall unless otherwise specified.

## Basis of Payment:

The work specified under this Section shall be paid for at the contract unit price per linear foot for Concrete Barrier Wall.

## 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 County 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 County shall have the option of accepting or rejecting requested substitution, depending on the amount of savings that will be extended to the County.

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 within 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 County 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.

# CONCRETE

The work specified under this Section consists of the construction of concrete pavement for erosion protection in ditches and on side slopes. 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 construction of concrete ditch pavement shall conform to the requirements of Section 524 of the ***FDOT Specifications***, as amended herein, the details and notes shown on the Plans, and, when specified herein or on the Plans, applicable drawings of the ***FDOT Design Standards***, latest edition.

Concrete ditch pavement and concrete slope pavement not subjected to vehicular traffic or other forces of unusual magnitude shall be constructed to a minimum thickness of four (4) inches. Concrete ditch pavement and concrete slope pavement which will be subjected to vehicular traffic or other forces of unusual magnitude shall be constructed to a minimum thickness of six (6) inches, and shall be reinforced with reinforcing steel or welded wire fabric, as detailed on the Plans or as approved by the Engineer.

The work specified under this Section includes the furnishing of all required Welded Wire Fabric or 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 square yards, determined by measurement along the surface of the completed work, of concrete ditch pavement or concrete slope pavement, at the thicknesses specified in the applicable pay items, actually constructed and accepted. The volume of headers and toe walls shall be converted into equivalent square yards of pavement at the thickness applicable, and that quantity shall be added to the number of square yards determined by surface measure to obtain the total pay quantity.

530-1000

# SAND-CEMENT

The work specified under this Section consists of the construction of riprap composed of sand and cement.

The construction of sand-cement riprap shall conform to the requirements of Section 530 of the ***FDOT 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.

Geotextile fabric shall meet the requirements of Section 514. Sand for sand-cement riprap shall meet the quality requirements of 902-2 and gradation limits of 902-3.3.

The work specified and paid for under this Section shall include all materials, sacks, geotextile fabric, grouting, hauling, excavation and backfill.

## Basis of Payment

The pay quantity for the work specified under this Section shall be the number of cubic yards of sand-cement mixture, placed in sacks or used in the grout, actually placed and accepted.

530-2000

# RUBBLE

The work specified under this Section consists of the construction of riprap composed of broken stone. The construction of rubble riprap shall conform to the requirements of Section 530 of the ***FDOT 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 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 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, which do not bear the signature of the job inspector, will not be considered for payment.

# GABIONS

530-3000

The work specified under this specification consists of furnishing, assembling, filling, and tying open-wire mesh rectangular-compartmented gabions to the lines, grades and dimensions shown on Plans, or as directed by the Engineer in the field, in accordance with these Specifications and the details and notes shown on the Plans.

Gabion units shall consist of compartmented rectangular basket containers, with a minimum dimension greater than 12 inches, fabricated from triple-twisted PVC-coated galvanized steel wire mesh with hexagonal openings, placed on a prepared surface covered with filter fabric as specified herein, and filled with stone.

## MATERIALS

### PVC-Coated Galvanized Steel Wire Mesh Gabions

PVC coated gabion basket units shall be of non-raveling construction, fabricated from a triple-twisted hexagonal mesh of hot-dipped galvanized steel wire having a minimum diameter of 0.105 inches after galvanization, and coated additionally with a minimum of 0.020 inches of PVC. The steel core wire used shall be galvanized and PVC-coated prior to fabrication into mesh.

The core wire of all gabion diaphragm and frame components shall equal or exceed Fed. Spec QQ-W-461g, possess medium tensile strength, and a Finish 5 Class 3 coating of not less than 0.08 oz./sq. ft. of uncoated wire surface. Mesh openings shall be hexagonal in shape and uniform in size measuring approximately 3-1/4 inches by 4-1/2 inches.

Salvage or perimeter basket frame core wire shall be of heavier gauge than that of the wire mesh, with a minimum diameter after galvanization of 0.132 inches, and an overall diameter (core wire plus PVC coating) of 0.174 inches.

Coated wire used for lacing or internal connecting wire within basket cells may be of soft tensile strength and an overall diameter (core wire plus PVC coating) of 0.117 inches.

The PVC-coated wire of all gabion components shall be resistant to the destructive effects of immersion in acidic, salt, or polluted water, exposure to ultraviolet light and abrasion, and retain these characteristics after a period of not less than 3,000 hours under test in accordance with ASTM Test Designation G23.

## STONE FILL

### Quality

Stone shall have a minimum Specific Gravity of 2.4, and shall be of a quality and durability sufficient to insure permanency in the structure and climate in which it is to be used. The individual stones shall be free of cracks, seams and other defects that would tend to promote deterioration from natural causes, or which might reduce the stones to sizes that could not be retained in the gabion baskets. The inclusion of dirt, sand, clay, and rock fines will not be permitted.

The sources from which the Contractor proposes to obtain the material shall be selected well in advance of the time that the material will be required in the work, and suitable samples of stone fill material shall be submitted to the Engineer for approval prior to delivery of any such material to the job site.

Unless otherwise specified, all tests samples shall be obtained by the Contractor and delivered at his expense to the Engineer at the job site at least 30 days prior to the time that placement of the stone-filled gabions is expected to begin.

Suitable tests and service records will be used to determine the acceptability of the stone. In the event suitable test reports and service records are not available, as in the case of newly-established sources, the material shall be subjected to such tests as are necessary to determine its acceptability for use in the work. Tests to which the material may be subjected include petrographic analysis, specific gravity, absorption, wetting and drying, freezing, thawing, and such other tests as may be considered necessary to demonstrate to the satisfaction of the Engineer that the materials are acceptable for use in the work.

All tests shall be made by an approved testing laboratory, and shall be at the Contractor's expense.

## Gradation

Stone fill used in the gabions shall be a well-graded mixture with sizes ranging between 4 inches and 8 inches in diameter, based on U.S. Standard square-mesh sieves. No stone shall have a minimum dimension of less than 3 inches.

# FILTER FABRIC

Filter Fabric shall be a non-woven fabric consisting of a perferous sheet of polymeric fibers oriented into a stable network so that the fibers retain their relative position with respect to each other. The fabric shall be free of any chemical treatment or coating which might significantly reduce permeability, shall have no flaws or defects which could significantly alter its physical properties. The non-woven fabric shall meet the requirements listed below:

| PROPERTY | TEST METHOD | CHARACTERISTIC % |
|---|---|---|
| Grab Strength | *ASTM 1682 | Minimum: 90 lbs |
| Grab Elongation | *ASTM 1682 | Minimum: 50% |
| Permeability | *** | Minimum: 2x10 to minus 2 cm/sec |
| Effective Opening Size | | ** Openings no smaller than that of a No. 140 sieve and no larger than a No. 50 sieve |

* Test shall be run on wet samples soaked twenty-four hours. Grab test method using one square inch jaws and a travel rate of 12 inches per minute.

** The fabric shall be affixed to a US Standard Sieve size in which 85% of the soil is retained. Test to be performed in accordance with Corps of Engineers Guide Specification, Section 02502.

*** Tested in accordance with Alabama Highway Department Test for permeability for Filter Fabric.

Storage and handling of non-woven fabric shall be in accordance with the manufacturer's recommendations. The fabric shall be protected from direct sunlight, ultraviolet rays, and temperatures greater than 140 degrees F.

The Contractor shall furnish certified test reports with each shipment of material attesting that the fabric meets the requirements of this specification.

# FOUNDATION PREPARATION

After excavation or stripping to the extent indicated on the Plans or as directed by the Engineer, remaining loose or otherwise unsuitable materials shall be removed and all depressions carefully backfilled and compacted using suitable materials from adjacent required excavation. Any buried debris protruding from the foundation that will impede the proper installation and final appearance of the gabion layer shall also be removed, and the voids shall be carefully backfilled and compacted as directed by the Engineer.

Immediately prior to placing the filter fabric, the prepared foundation surface shall be inspected by the Engineer, and no fabric shall be placed thereon until that area has been approved.

# FABRICATION – PVC COATED GALVANIZED STEEL WIRE MESH GABIONS

Gabions shall be fabricated in a manner such that the sides, ends, lid, and diaphragms can be assembled at the construction site into rectangular baskets of the sizes specified and shown on the Plans.

Dimension for heights, lengths, widths and diaphragm(s) spacing are subject to a tolerance of 5% of manufacturer's stated sizes.

Gabions shall be of single unit construction, i.e., the base, lid. ends, and sides shall be either woven into a single unit, or one edge of these members connected to the base section of the gabion in such a manner that strength and flexibility at the point of connection is at least equal to that of the mesh.

Where the length of the gabion exceeds one and one-half its horizontal width, the gabion shall be equally divided by diaphragms of the same mesh and gauge as the body of the gabions, into cells whose length does not exceed the horizontal width.

The gabion shall be furnished with the necessary diaphragms, secured in proper position on the base in a manner such that no additional tying at this juncture will be necessary. All perimeter edges of the mesh forming the gabion shall be securely salvaged so that the joints formed by tying the salvages have at least the same strength as the body of the mesh. Lacing wire or connecting wire shall be supplied in sufficient quantity for securely fastening all diaphragms and edges of the gabion.

# ASSEMBLY AND INSTALLATION

Empty gabion units shall be assembled individually and placed on the approved surface to the lines and grades as shown on the Plans or as directed by the Engineer, with the sides, ends, and diaphragms erected in such a manner to insure the correct position of all creases and that the tops of all sides are level. All adjoining empty gabion units must be connected by tie wire lacing along the perimeter of their contact surfaces in order to obtain a monolithic structure.

Lacing of adjoining basket units shall be accomplished by continuous stitching with double loops at intervals of not more than 6 inches. All lacing wire terminals shall be securely fastened. The use of expedient clip connections for this purpose as final lid closing will not be permitted.

The initial line of basket units shall be placed on the prepared surface in a direction parallel to stream flow, and partially filled to provide anchorage against deformation and displacement during filling operations. After adjoining empty basket units are set to line and grade and common sides with adjacent units thoroughly laced, they may be placed in tension and stretched to remove any kinks from the mesh and to a uniform alignment. The stretching of empty basket units shall be accomplished in such a manner as to prevent any possible unraveling.

Stone filling operations shall carefully proceed, with placement by hand or machine so as not to damage PVC wire coating, to assure a minimum of voids between the stones, and the maintenance of alignment throughout the filling process.

Undue bulging of the mesh shall be avoided. To avoid localized deformation, the 3-foot high basket units in any row are to be filled in stages consisting of courses of a maximum thickness of 12 inches, and at no time shall any cell be filled to a depth exceeding 12 inches more than the adjoining cell.

The maximum height from which the stone may be dropped into the basket units shall be 36 inches. For gabion units in excess of 2 feet in thickness, a minimum of two uniformly spaced connecting wires shall be placed between each stone layer in all cells, connecting compartment faces that are parallel to stream flow. Connecting wires shall be looped around two mesh openings at each basket face and the wire terminals shall be securely twisted to prevent their loosening.

Along all exposed faces, the outer layer of stone shall be carefully placed and arranged by hand to insure a neat and compact appearance. The gabions shall be slightly overfilled, and then levelled to allow for potential settlement of the embankment.

Lids shall be stretched tight over the stone fill using crowbars or lid closing tools, until the lid meets the perimeter edges of the front and end panels. The lid shall then be tightly laced with tie wire along all edges, ends and internal cell diaphragms by continuous stitching with double loops at intervals of not more than 6 inches. Special care shall be taken to see that all projections or wire ends are turned into the baskets.

Where shown on the Plans or as directed by the Engineer, or where a complete gabion unit cannot be installed because of space limitations, the basket unit shall be cut, folded and wired together to suit existing site conditions. The mesh must be cleanly cut and the surplus mesh folded back and neatly wired to an adjacent gabion face. The assembling, installation, filling, lid closing, and lacing of the reshaped gabion units shall be carried out as specified above.

The work specified under this Section shall include the furnishing, assembling and placing of the wire baskets, filter material, toe walls and stone fill, and all other materials, labor, equipment, tools, and incidental items required for the completion of the work.

Gabion Mattresses shall be 9" deep and 6' x 9' or 6' x 12' with 3' wide cells. The nominal dimension of the openings shall be 2.5". The mattress rock size shall range between 3" to 5" for units of 9" depth. The range in sizes may allow for a variation of 5% oversize and/or 5% undersize rock, provided it is not placed on the gabion exposed surface. The size shall be such that a minimum of two layers of rock must be achieved when filling the mattress. The Contractor will meet the manufacturers requirements for 9" x 6' x 9' and 9" x 6' x 12', PVC coated Double-Twisted Hexagonal Mesh Gabions, including the requirements for rock and installation. Shop drawings and approval from the Engineer are required prior to construction.

## Basis of Payment

The quantity determined as specified above shall be paid for at the contract price per cubic yard and shall be paid for under the pay items for Gabion Mattresses.

The pay quantity for the work specified under this Section shall be the number of cubic yards of stone fill actually placed and accepted.

536

# 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.

# 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, 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, Fencing Type B

Corner Post Assembly, Fencing Type B

The pay quantity for Gate, Cantilever, 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

555

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

575

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.

**Mowing:** The Contractor is directed to mow all areas within the project limits and adjacent thereto, bounded by the right of way lines identified in the construction documents (shown as proposed and existing) and property lines under the jurisdiction of the County that are adjacent to the right of way, in addition to those areas specified in Pinellas County Specification Section 575. Remove and properly dispose of all litter and debris prior to the mowing operation. Use conventional and specialized equipment along with hand labor to mow the entire area including slopes, wet areas, intersections, and around all appurtenances. Unless otherwise directed by the Engineer, mow the grass areas to a height of 6 inches when competing vegetation height exceeds 18 inches in height. Do not mow wildflower areas until at least three weeks after the peak of the bloom period and do not mow lower than 6 inches. Do not use selective herbicides in wildflower areas. Should the vegetation exceed 18 inches, the contractor shall mow these designated areas within seven calendar days of receiving such order by the Engineer.

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 at other locations (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 mowing, 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.

603 to 699

The work specified under this Section shall include all work required for the installation of the traffic signals and related items including but not limited to, conduit, cable, pull and junction box, electrical power service, electrical service wire, poles, mast arms, traffic signals, pedestrian signals, signal head auxiliaries, loops, detectors, system auxiliaries, removal items, and signs, internal illuminated. The furnishing and installation of all items in connection with Traffic Signals shall be in accordance with Sections 603 to 699 of the FDOT Specifications as amended below.

## 670-1 Traffic Signal Controller Assembly

The vendor shall furnish a traffic controller assembly consisting of a fully loaded TS2 Type 1 traffic signal controller cabinet. This assembly includes the 2070L signal controller. These cabinets shall follow the TS2 Type 1 standard as published by the National Electrical Manufacturers Association (NEMA), and shall conform to the applicable requirements of the latest issues and addenda in effect on the date of advertisement, relative to manufacture conforming to current industry codes and standards. The vendor shall ensure that all components are compatible with each other and communicate without error to other components in the cabinet. The cabinet shall be configured to contain a 2070L controller, which shall be compatible with the existing OPAC (Optimized Policies for Adaptive Control) traffic adaptive system in use by Pinellas County via the use of an external unit provided by the adaptive system provider. The controller shall include the latest version of firmware that interfaces the existing OPAC adaptive signal control software. The vendor shall verify with the OPAC software vendor that the software provided meets all specifications for interfacing with OPAC.

The vendor shall submit shop drawings detailing configuration and layout of the cabinet, controller, and the components inside the traffic signal cabinets for approval.

## 670-2 Cabinet Features and Composition

Cabinet shall be a NEMA Type 7, Florida Department of Transportation (FDOT) Type 6 (44” x 72” x 24”) cabinet, to be installed according to FDOT Standard Specifications for Road and Bridge Construction Sections 670 and 676, and the latest NEMA TS2 Standard. The equipment shall be on the Approved Products List (APL) for traffic control devices.

## 670-3 Cabinet Configuration

In no case shall a cabinet be provided which does not have hardware interchangeability with a standard TS2 Type 1 cabinet from other manufacturers. The cabinet shall be modular in design. The cabinet shall be fully loaded including all load switches, flashers, relays, and all components necessary to operate a signalized intersection. The cabinet shall be designed and configured to serve 16 separate channels of vehicle and pedestrian movements. The cabinet shall utilize Electronic Industries Alliance (EIA) 485 communications to devices within the cabinet. The cabinet shall include as a minimum the following:

- Lifting tabs

- A minimum of 2 Non-GFI and 4 GFI standard outlets

- A power distribution assembly with photo cell to operate illuminated street name panels for the intersection

- Standard detector racks of 32-channel capacity, with the provision made to accommodate interface cards from video image detection system (VIDS) units, Contact Closure Modules (CCM). One rack shall include a minimum of four (4) pre-emption inputs in addition to the 32 vehicle detector channels.

- Eight (8) TS2 2-channel detector amplifier cards.

- The vendor shall include and install a smart 16-channel malfunction monitoring unit (MMU) with the cabinet. The smart MMU shall be IP addressable and have an Ethernet port.

- A three-way door lock keyed with a Corbin #2 lock.

- A florescent light fixture with a switch to automatically turn on the light when the door is opened.

- Two exhaust fans with thermostat.

- A standard police panel for access by authorized personnel.

- A test panel on the inside of the front door, with a standard set of test switches.

- Load resistors for all vehicle and pedestrian phases

- Three (3) total metal shelves (detectors racks, controller and MMU, ATMS equipment) with one shelf containing a pull out laptop shelf

- All pedestrian push button inputs from the field to the controller shall be opto-isolated through the BIU and operate at 12 VAC. In addition, a Pedestrian push button isolation panel shall be provided.

- Load switches shall be solid state and shall conform to the requirements of Section 6.2 of the NEMA TS2 Standard also with dual indication LED's for incoming and outgoing power for ease of trouble shooting.

- A removable Plexiglas protection panel over the main power connection terminals

*- It shall be possible to flash either the yellow or red indication on any vehicle movement and to change from one color indication to the other by use of a screwdriver.*

Field terminal blocks shall be wired to use four positions per vehicle or overlap phase (green, yellow, red, flash). It shall not be necessary to de-buss field terminal blocks for flash programming.

## 670-4 2070L Controller Configuration

Procure traffic controllers listed on the Florida Department of Transportation (FDOT) Approved Product List (APL). Ensure that the controller meets the specifications of the California Transportation Electrical Equipment Specifications (TEES) 2002 as revised. Provide certification numbers of the FDOT Traffic Engineering Research Laboratory (TERL) accepted 2070L traffic signal controller with the procurement response.

The controller shall be a type 2070L configured to operate in a TS2 Type 1 cabinet. The controller shall be 100 percent compatible with Pinellas County's ATMS. The software shall also fully support current National Transportation Communications for ITS Protocol (NTCIP) defined objects as of the time of bidding.

The 2070L controller shall contain the following modules:

- 2070 1B central processing unit (CPU) Module – with RJ45 Ethernet port

- 2070 2N Field I/O Module – For TS 2 Type 1 cabinet compatibility

- 2070 3B Front Panel Module – 8 line x 40 character display

- 2070 4A (N) 10A power supply module

- 2070 6B 9600 baud modem

Vendor shall supply to Pinellas County any communications and loader software that may be needed to read from and write to flash memory for the purpose of upgrading application software. All controller firmware shall be compliant with Pinellas County's existing OPAC adaptive signal control software.

## 670-5 Surge Suppression

Provide an AC power distribution panel with noise filtering surge protection. The filtering surge suppressor shall be purpose-designed for traffic signal cabinets. It shall be capable of withstanding a peak current of 50,000 amps and have a response time of less than 5 nanoseconds. It shall attenuate Radio Frequency (RF) noise between 2 and 20 MHz by at least 20 decibels (dB). The surge suppressor shall indicate failure status with a light emitting diode (LED).

## 670-6 Shelving

Each cabinet shall be provided with three (3) metal shelves that are suitable for the mounting of ATMS equipment or other auxiliary devices. A metal combination pull-out drawer and shelf suitable for containing cabinet documentation and supporting a lap-top computer shall be provided for each cabinet.

## 670-7 Manuals/Documentation

For each supplied cabinet, the vendor shall submit one manual that contains information on all of the connection, wiring and configuration information. Drawings may be on 24-inch by 36-inch sheets but must be neatly folded into an 8½-inch by 11-inch size. The manual shall be inserted in protective plastic sleeves in the drawer provided.

Schematics and logic diagrams shall accurately depict physical locations of each component. The cabinet wiring and component location diagram for the cabinets shall show all wiring and cabinet components completely on the drawing. This documentation shall be submitted to Pinellas County for approval prior to having the cabinets fabricated as well as updated as need be.

## 670-8 Guaranty Provisions

Ensure that the controller cabinet assembly has a two-year manufacturer's warranty from the date of final acceptance of all the work to be performed by the Contractor. If the manufacturer's warranties for the components are for a longer period, those longer period warranties will apply.

During the contract period, replace any part or equipment found to be defective at no cost to the County within 10 calendar days of notification by the System Manger.

For emergency repairs, the Contractor shall be available to respond to calls 24 hours a day as described in the general notes in the plans.

Ensure that the manufacturer's warranties on the controller cabinet assembly are fully transferable from the Contractor to the County.

## 670-9 Method of Measurement

Traffic signal controller assemblies, not including the controller, will measure for payment as each complete unit is furnished, installed, tested and warranted. The installation of the controller that is furnished by the County will be paid for separately.

## Basis of Payment

The work specified under this Section shall be paid for under the pay items listed in the schedule of values with prefixes 630 through 699. (Example: 670-5-134 Traffic Controller Assembly – Furnish and Install).

# 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 Pinellas County 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 County, 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 Pinellas County Sign Shop located at 22211 US 19 North, Building #5, Clearwater, Fl 33765; Ph: (727) 464-8900.

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 Pinellas County Sign Shop, then the contractor shall provide the Pinellas County Sign Shop with a replacement sign, in-kind, at no additional cost to the County.

Existing signs shall not be removed until first receiving confirmation from the Pinellas County 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, shown 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.

# PAVEMENT STRIPING, MARKINGS AND REFLECTIVE PAVEMENT MARKERS

705 to 710

The work specified under this Section consists of the furnishing and installation of pavement striping, pavement markings, and reflective pavement markers.

Installation of the traffic stripes, directional arrows and solid traffic markings shall conform to the requirements of the applicable FDOT Index and Section 710 of the ***FDOT Specifications***, except as amended herein.

Delineators shall be constructed in accordance with section 705 of the FDOT Standard Specifications.

Installation of the reflective pavement markers shall conform to the requirements of the applicable FDOT Index and Section 706 of the ***FDOT Specifications***, except as amended herein.

Pavement striping, markings and reflective pavement markers shall be installed in accordance with the details shown on the Plans, or as may be directed by the Engineer.

The work specified under this Section shall be paid for at the contract price as identified in the Schedule of Values, and the FDOT Basis of Estimates.

## Materials

Pavement striping and markings shall be latex paint with glass beads. The paint shall be an FDOT approved product.

## Basis of Payment

The work specified under this Section shall be paid for at the contract price as identified in the Schedule of Values.

# 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 AND BRACING

800-2100

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 County, 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.

## 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 no 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.

## Pay Quantity:

The pay quantity for the work specified under this Section shall be the 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.

## Basis of Payment:

The quantity determined as specified above, shall be paid for at the contract unit price per square foot.

800-9001

# 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 Pinellas County 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.

800-9010

# FDOT CASES I AND II

The work specified under this Section consists of the furnishing and installation of FDOT 9-Button Reflector Panel-and-Post assemblies in accordance with the details and notes shown in the Pinellas County Standard Construction Details and Index No. 17349 of the ***FDOT Design Standards***, latest edition, as amended herein.

Any details, notes or dimensions shown in the Pinellas County Standard Construction Details or on the Plans for the installation of Reflectors specified under this Section shall govern over corresponding details, notes or dimensions shown in FDOT Index No. 17349.

Where Reflector Panel-and-Post Assemblies are shown on the Plans to be installed in connection with barricades, the Reflector Panel-and-Post Assemblies shall be installed concurrently with the barricades. Where the Plans call for Reflector Panel-and-Post Assemblies only to be installed, they shall be installed 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 work specified under this Section shall include all work, materials and accessory items required for the assembly and installation of the Reflectors to the satisfaction of the Engineer.

## Basis of Payment

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

Reflector Panel-and-Post Assembly - FDOT Case I

Reflector Panel-and-Post Assembly - FDOT Case II

The pay quantity for the work specified under this Section shall be the number each of Reflector Panel-and-Post Assemblies, of the type specified in applicable pay items, actually installed and accepted.

# OFFICE FOR THE ENGINEER

900-0200

The Contractor shall provide the Engineer with an office, at a location to be approved by the Engineer, for the duration of construction activities. The office shall contain a minimum of 200 square feet of usable floor space, and shall be furnished with electric lights, telephone service, answering machine, facsimile machine (FAX), copy machine (capable of making 11" x 17" copies without reductions, all supplies, expendables, and maintenance), air conditioning, a desk, layout table, chairs, drinking water, plan rack, file cabinet, and water and sanitary facilities. The office shall have bars on the windows, and an adequate lock on the door. The Engineer and his representatives shall have full utilization of this facility, and shall be furnished with a key. The office shall be maintained from the notice to proceed until substantial completion of the project, unless removal at an earlier date is authorized, in writing, by the Engineer. The Contractor shall pay for all utilities except long distance telephone calls made by the Engineer or his representatives, for which the Contractor shall be reimbursed by the County. The Contractor, at his expense, shall obtain all required permits for electrical, water and sewer work and installations, shall have all required electrical, water and sewer inspections made, and shall be responsible for all repairs and maintenance required in connection with permits and inspections. Permit fees under the authority of the Board of County Commissioners are waived. All other permit fees shall be paid by the Contractor and shall be included in this pay item Office for the Engineer.

The Contractor shall also provide, at a minimum, a 20 ft. x 20 ft. fenced area to secure the County vehicles, during the length of the project.

## Basis of Payment

Payment for the furnishing of the facility and secured area specified under this Section, and all labor, materials, equipment and services incidental thereto, shall be made under the pay item for Office For The Engineer and shall be made at the contract price per day, except for long distance telephone calls made by the Engineer or his representatives, for which the Contractor shall be reimbursed by the County.

Payment per day by the County to the Contractor shall commence on the day that the Contractor provides a facility that satisfies the requirements of this specification.

# OFFICE FOR THE ENGINEER (LARGER)

900-0201

The Contractor shall provide, furnish and maintain an Engineer's Field Office for exclusive use by the County and its representatives

General Requirements: The field office shall be a building or mobile trailer erected at a location selected by the Engineer and shall be separate from any building used by the Contractor. The office ceiling height shall be at least 7 feet with a minimum floor space 1500 ft^2. The total floor area shall be partitioned according to the following table:

| Minimum Total Area Required | # of Small Rooms | # of Large Rooms | # of Restrooms |
|---|---|---|---|
| 1,500 ft2 | 6 | 2 | 2 |

Each room shall have at least one weatherproof window and two electrical outlets. Each window shall have a minimum area of 8 ft^2 and have bars for security. Each window shall be screened and open / close to provide adequate ventilation. Equip each outside door with a lock. The Engineer may approve an equivalent facility provided it meets the minimum specified requirements.

Equipment and Furniture - Include the following equipment and furniture:

| Item | Office Size (ft2) |
|---|---|
| | 1,500 |
| Lighting | Electric light, non-glare type luminaries to provide a minimum illumination level of 100 ft-cd at desk height level. |
| Heating and Cooling | Adequate equipment to maintain an ambient air temperature of 70 (+/-) 5 degree F. |
| Desks (w/ drawers & locks) | 5 |
| Office Chairs | 5 |
| Stackable Chairs | 16 |
| Office Tables (3x6) | 4 |
| Plans Racks | 2 |
| File Cabinet | 1 – 5 drawer vertical cabinet capable of holding 11" x 17" |
| Fire Proof File Cabinet | 2 – 3 (minimum) drawer vertical cabinet capable of holding 11" x 17" |
| Portable Water Cooler | If cooler is used, maintain adequate water supply. |
| Telephone Service | Local Service Only |
| Answering Machine | 1 |

| | |
|---|---|
| High Speed Internet Service | DSL or Cable Modem with wireless router |
| Facsimile Machine | 1- including all supplies, expendables, and maintenance |
| Printer/Copier/Scanner | 1-capable of making 11" x 17" copies/scans without reductions, all supplies, expendables, and maintenance |
| Restrooms | An enclosed room with toilet and sink with running water, and with proper sewer connection or septic tank. Number of restrooms as specified. |
| Storage Room | A room large enough to store surveying instruments and testing equipment. Proved the room with lock and electrical outlets. |
| Maintenance | Maintain all facilities and furnished equipment in good working condition. |
| Fire Extinguisher | Two, 5 pound, non-toxic, dry chemical, fire extinguishers meeting Underwriters' Laboratories, Inc. |
| Security | Provide adequate security of all facilities and furnished equipment. |

Occupancy and Maintenance: Provide a field office for the County and its representative's use, no later than the date of Notice-to-Proceed and remaining for 10 days after final acceptance, unless the County requests removal earlier. Do not begin work before the field office is available for the County's use.

Maintain the field office in good condition and appearance, inside and out. The Contractor will provide janitorial services and supplies, including paper supplies for the restrooms. After the designated period, remove all portable building or trailers, fencing, surfacing and utilities and leave the areas with a finish soil layer cleaned, and seeded, if required; and in an acceptable condition.

The Contractor shall pay for all utilities except long distance telephone calls made by the Engineer or his representatives, for which the Contractor shall be reimbursed by the County. The Contractor, at his expense, shall obtain all required permits for electrical, water and sewer work and installations, shall have all required electrical, water and sewer inspections made, and shall be responsible for all repairs and maintenance required in connection with permits and inspections. Permit fees under the County of the Board of County Commissioners are waived. All other permit fees shall be paid by the Contractor and shall be included in this pay item Office for the Engineer.

The Contractor shall also provide, at a minimum, a 20 ft. x 20 ft. fenced area to secure the County vehicles, during the length of the project.

Basis of Payment:

Payment for the furnishing of the facility and secured area specified under this Section, and all labor, materials, equipment and services incidental thereto, shall be made for under the pay item for Office For The Engineer (Larger) and shall be made at the contract price per day, except for long distance telephone calls made by the Engineer or his representatives, for which the Contractor shall be reimbursed by the County.

Payment per day by the County to the contractor shall commence on the day that the contractor provides a facility that satisfies the requirements of this specification.

# POND CLAY LINER

900-0300

The work specified under this Section consists of the furnishing and installation of a pond clay liner, in accordance with the details and notes shown in the Plans. The material of the clay liner shall exhibit a hydraulic conductivity of no greater than $1 \times 10^{-5}$ cm/sec.

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 furnishing, placement and compaction of all fill material, all grading, the shaping or reshaping of the clay liner and all other earthwork operations and construction activities required to complete the Clay Liner installation. The work also includes the backfill over the clay liner up to the lines, grades and locations of the pond bottom with the material specified on the Plans.

The Clay Liner shall be constructed in conformity with the lines, grades, details and specification notes shown in the Plans, and as directed by the Engineer.

## Basis of Payment

The pay quantities for the work specified under this Section shall be one lump sum quantity for Pond Clay Liner and shall include all work and materials described and specified herein.

The work specified under this Section shall be paid for at the contract lump sum price.

# COFFERDAMS

900-1060

The work specified in this Section consists of the construction of cofferdams to facilitate excavation of bridge foundations, box culverts, storm sewers and all other pipe lines, retaining walls, headwalls for pipe culverts and drains, drop inlets, manholes and similar structures. It shall also include:

1) the construction & removal of cofferdams, excavation, sheeting, bracing, etc.

2) pumping or otherwise dewatering foundations.

3) the removal & disposal of any existing structures or portions of structures not covered by other items in the contract, including foundations, abutments, piers, wings, & all other materials, obstructions, etc., found necessary to clear the site for the proposed work.

4) backfilling, disposing of surplus material & final cleaning, as may be necessary for the proper execution of the work. This Section shall not include the work of excavating for bases or pavements, curbs & gutter, valley gutter, ditch pavement or rubble gutter. All work shall conform to the requirements of Section 125-3 of the ***FDOT Specifications***, as amended herein, and where specified herein or on the Plans.

5) Additional requirements stipulated in environmental permits.

## Basis of Payment

The quantity for Cofferdam shall be the number each or lump sum and shall include all work and materials described and specified herein.

The work specified under this Section shall be paid for at the contract per each price or lump sum price for Cofferdam.

# UNSPECIFIED WORK (ALLOWANCE)

999-0000

The work under this Section includes an allowance for any unspecified work that may be associated with the work in this contract or as otherwise identified by the Engineer. Any amount of extra work and/or alterations to this contract charged to the allowance "Unspecified Work" shall be fully documented and approved in writing, in advance, by the Director of Public Works and Transportation or designee. All work performed under the allowance of "Unspecified Work" shall be completed in accordance with all conditions and requirements of this contract and shall include the work to be done by all necessary subcontractors and/or suppliers.

"Unspecified Work" shall mean the stated fixed sum of money to be used only at the Engineer's specified direction. The particular requirements and items for the allowances will be provided to the Contractor at the appropriate time and shall apply only to additional items over and above those specified/indicated in the plans for this contract.

For equipment under the control of the Contractor through direct ownership, leasing, renting or other method of acquisition not included in the bid, the Contractor shall furnish cost data, which may assist the Engineer in the establishment of an equitable rate.

## Time Frame

When Contractor is requested, in writing by the County, to provide a cost for unspecified work, the Contractor will provide a submittal of the cost to the County within 21 calendar days of receiving written request. After receipt of the Contractor's cost submittal, the County will have 21 calendar days to negotiate, approve or reject the Contractor's cost for proposed work in accordance with the contract specifications. If the County provides to the Contractor written approval of Contractor's cost submittal for proposed unspecified work, then the Contractor may proceed with commencing the unspecified work.

## Basis of Payment

The work in this Section shall be paid for by a portion of the allowance under "Unspecified Work" in the Schedule of Values of this contract. Use of any portion of this pay item shall require written pre-approval by the Director of Public Works and Transportation or designee. This work, materials, and equipment, when required, will be ordered in writing by the Engineer, at a lump sum price or at a non lump sum price. Price negotiations will consider reasonable market values (at the time of construction) for proposed items.

## Lump Sum

When a lump sum price is used, the lump sum price will be determined by negotiation, and only require written pre-approval by the Director of Public Works and Transportation or designee as backup documentation for payment purposes.

## Non Lump Sum

When a non lump sum price is used, compensation shall be limited to the Contractor's reasonable costs plus markup percentages stipulated in this contract. The basis of the non lump sum negotiated prices and subcontractor invoices will be included in pay application; Copies of invoices, equipment cost estimations and other supporting documentation will be included.

## Payment Item

Item No. 999-0000 Unspecified Work – per each

# SURVEY WORK (ALLOWANCE)

999-0003

**This specification shall only be applicable when pay item 999-0003 is used for Survey Work (Allowance) in a specific contract.**

The work under this Section includes an allowance for survey work that may be associated with the work in this contract identified by the Engineer. Any amount of survey related work in this contract charged to the allowance "Survey Work" shall be fully documented and approved in writing, in advance, by the Director of Public Works or designee. All work performed under the allowance of "Survey Work" shall be completed in accordance with all conditions and requirements of this contract and shall include the work to be done by all necessary subcontractors and/or suppliers.

"Survey Work" shall mean the stated fixed sum of money to be used only at the Engineer's specified direction for survey requirements. The particular survey requirements and items for the allowances will be provided to the Contractor at the appropriate time that survey scope is determined.

For equipment under the control of the Contractor through direct ownership, leasing, renting or other method of acquisition not included in the bid, the Contractor shall furnish cost data, which may assist the Engineer in the establishment of an equitable rate.

The Contractor shall employ or retain the services of a Florida registered Professional Land Surveyor to satisfy all the requirements specified in this specification and in section "SURVEY AND LAYOUT" of the contract specifications. The Contractor shall be responsible to perform all survey related work in acceptable standard methods. 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.

## SURVEY AND 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 the contract 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.

## 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 provide summaries to the County, 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 County. 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, underdrains, etc.)

Other items (Handrails, ditch pavement, gabions, guardrail, fencing, gates, landscaping, sod, fill, excavation, etc.)

In the case of dispute in quantity measurements, the County reserves the right to have Pinellas County Survey Department verify all measurements and calculations. Contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

## 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 provide the as-built survey to the County, signed and sealed by a Florida registered Professional Land Surveyor, within 25 days after receiving written request from the County. 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

Control structures - weir and grate dimensions

Ponds - top of bank, toe of slope, etc.

Other items (to be provided by Engineer of Record)

## UTILITY AS-BUILT SURVEY REQUIREMENTS

The work specified under this Section consists of all materials and labor necessary to complete all required as-built survey requirements for Pinellas County Utility Lines or other Utility Lines specifically listed in these specifications, to the satisfaction of the Engineer. The Contractor shall provide the utility as-built survey to the County, signed and sealed by a Florida registered Professional Land Surveyor, within 25 days after receiving written request from the County. Contractor's Surveyor shall make all field books and calculations available for review by the engineer or his designee.

The items that require utility as-built surveying shall include:

Pinellas County Sewer Line

Pinellas County Water Line

Other project specific Utility Lines

## Basis of Payment

The work in this Section shall be paid for by a portion of the allowance under "Survey Work" in the Schedule of Values of this contract. Use of any portion of this pay item shall require written pre-approval by the Director of Public Works or designee. This work, materials, and equipment, when required, will be ordered in writing by the Engineer, at a lump sum price or at a non lump sum price.

## LUMP SUM

When a lump sum price is used, the lump sum price will be determined by negotiation, and only require written pre-approval by the Director of Public Works or designee as backup documentation for payment purposes.

## NON LUMP SUM

When a non lump sum price is used, compensation shall be limited to the Contractor's reasonable costs plus markup percentages stipulated in this contract. The basis of the non lump sum negotiated prices and subcontractor/surveyor invoices will be included in pay application; Copies of invoices, equipment cost estimations and other supporting documentation will be included.

## Payment Item

**Item No. 999-0003Survey Work (allowance) – per each**