

TECHNICAL SPECIFICATIONS
(IN ADDITION TO THE SPECIFICATIONS AND REQUIREMENTS)

BRIDGES AND MISCELLANEOUS STRUCTURES REPAIRS

A. GOVERNING STANDARDS, SPECIFICATIONS AND REFERENCES

The following listed documents are incorporated by reference and the applicable portions thereof are made a part of this contract as supplemented and amended by the provisions of this contract.

1. The Florida Department of Transportation (FDOT) Standard Plans for Road and Bridge Construction, latest edition. Including all subsequent revisions and updates.
<http://www.fdot.gov/design/standardplans/SPRBC.shtm>
2. 2010 ADA Standards for Accessible Design “2010 Standards”. Including all subsequent revisions and updates. https://www.ada.gov/2010ADASTandards_index.htm
3. Minimum Standards Applicable to Public Right-of-Way Under Broward County, Florida Jurisdiction. Exhibit 25A, Broward County Administrative Code. Exhibit 25A of the Broward County Administrative Code Minimum Standards is not intended to reduce or diminish National or State Standards in any way, but rather to further clarify and refine the functional needs of the maintaining agency.
<http://www.broward.org/Traffic/Documents/minstdsmanual%2010-25-05.pdf>
4. United States Department of Labor - Occupational Safety and Health Administration (OSHA) Construction Standards and Regulations (29 CFR Part 1926), latest edition, including all subsequent revisions and updates.
https://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=1&p_keyvalue=1926
5. NCHRP – Report 226, Damage Evaluation and Repair Methods for Prestressed Concrete Bridge Members. http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_226.pdf
6. Florida Department of Transportation (FDOT) Design Standards, FY 2017-18, including all subsequent revisions and updates.
<http://www.fdot.gov/roadway/DS/18/STDs.shtm>
7. AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications, 8th Edition, including all subsequent revisions and updates.
https://bookstore.transportation.org/item_details.aspx?id=3731
8. United States Department of Transportation (USDOT) / Federal Highway Administration (FHWA), Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition with Revision Numbers 1 and 2 incorporated, dated May 2012. Including all subsequent revisions and updates.
https://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm
9. Florida Department of Transportation (FDOT) Structures Manual, Latest Edition , including all subsequent revisions and updates.
<http://www.fdot.gov/structures/StructuresManual/CurrentRelease/StructuresManual.shtm>

10. Florida Department of Transportation (FDOT) Plans and Preparations Manual (PPM), Latest Edition including all subsequent revisions and updates.
<http://www.fdot.gov/roadway/ppmmanual/ppm.shtm>
11. Florida Department of Transportation (FDOT) Basis of Estimates Manual, latest edition, including all subsequent revisions and updates.
<http://www.fdot.gov/programmanagement/Estimates/BasisofEstimates/BOEManual/BOEOnline.shtm>
12. National Cooperative Highway Research Program (NCHRP) Report 271 "Guidelines for Evaluation and Repair of Damaged Steel Bridge Members."
http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_271.pdf
13. National Cooperative Highway Research Program (NCHRP) Project 20-07 Task 307, "Updated Research for Collision Damage and Repair of Prestressed Concrete Beams" (May 2012)
[http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07\(307\)_FR.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07(307)_FR.pdf)
14. AASHTO LRFD Movable Highway Bridge Design Specifications, 2nd Edition, including all subsequent revisions and updates. <https://store.transportation.org/Common/DownloadContentFiles?id=363>
15. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, 2018 Edition, included by reference. A list of Division I specifications and those of Section 101 that are applicable to this Contract are included below. Includes all subsequent updates and revisions.
<http://www.fdot.gov/programmanagement/Implemented/SpecBooks/default.shtm>
 - (a) Contractor shall not misconstrue that because an FDOT Standard Specification is not mentioned or listed in the following table it is not applicable to the project, it is in fact applicable.
 - (b) All references in the FDOT Standard Specification to "DEPARTMENT" shall mean "COUNTY".
 - (c) All references in the FDOT Standard Specification to "ENGINEER" shall mean "County Project Manager or other delegate appointed by Contract Administrator".

FDOT Standard Specifications Divisions I and II dated January 2018	Applicable Section	Deviations from the FDOT Standard Specifications
2-1 Prequalification of Bidders	No	
2-2 Proposals	No	
2-3 Interpretation of Estimated Quantities	No	
2-4 Examination of Plans, Specifications, Special Provisions and Site of Work	No	
2-5 Preparation of Proposals	No	
2-6 Rejection of Irregular Proposals	No	
2-7 Guaranty to Accompany Proposals	No	
2-8 Delivery of Proposals	No	
2-9 Withdrawal or Revision of Proposals	No	
2-10 Opening of Proposals	No	
2-11 Disqualification of Bidders	No	
2-12 Material, Samples and Statement	Yes	

3-1 Consideration of Bids	No	
3-2 Award of Contract	No	
FDOT Standard Specifications Divisions I and II dated January 2018	Applicable Section	Deviations from the FDOT Standard Specifications
3-3 Cancellation of Award	No	
3-4 Release of Proposal Guaranty	No	
3-5 Contract Bond Required	No	
3-6 Execution of Contract and Bond	No	
3-7 Failure by Contractor to Execute Contract and Furnish Bond	No	
3-8 Audit of Contractor's Records	No	
3-9 Public Records	No	
4-1 Intent of Contract	No	
4-2 Work not covered by Standard Specifications	No	
4-3 Alteration of Plans or of Character of Work	No	
4-4 Unforeseeable Work	No	
4-5 Rights in and Use of Materials Found on the Site of the Work	No	
4-6 Final Cleaning Up of Right-of-Way	No	
5-1 Plans and Working Drawings		
5-1.1 Contract Documents	No	
5-1.2 Department's Plans	Yes	
5-1.3 Alterations in Plans	Yes	
5-1.4 Shop Drawings		
5-1.4.1. Definitions	Yes	
5-1.4.2 Work Items Requiring Shop Drawings	Yes	
5-1.4.3 Schedule of Submittals	Yes	Excludes the following language: "Submit the schedule of submittals to the Department's Shop Drawing Review Office and the Engineer of Record within 60 days of the start of the Contract, and prior to the submission of any shop drawings."
5-1.4.4 Style, Numbering, and Material of Submittals	Yes	
5-1.4.5 Submittal Paths:	Yes	

FDOT Standard Specifications Divisions I and II dated January 2018	Applicable Section	Deviations from the FDOT Standard Specifications
5 -1.4.5.1 General: 1	Yes	Replace "Department" and "Florida Department of Transportation" with "County". Replace "Department's Shop Drawing Review Office" with "Highway and Bridge Maintenance Division".
5-1.4.5.1 General: 2	Yes	Replace "Department" and "Florida Department of Transportation" with "County". Replace "Consultant" with "Highway and Bridge Maintenance Division".
5-1.4.5.2 Building Structures	Yes	Replace "Architect of Record" with "County Project Manager".
5-1.4.5.3 Contractor-Originated Design	Yes	
5-1.4.5.4 Temporary Works	Yes	
5-1.4.5.5 Falsework Founded on Shallow Foundations	Yes	
5-1.4.5.6 Formwork and Scaffolding	Yes	
5-1.4.5.7 Beam and Girder Temporary Bracing	Yes	
5-1.4.5.8 Erection Plan	Yes	
5-1.4.5.9 Other Miscellaneous Design and Structural Details Furnished by the Contractor in Compliance with the Contract	Yes	
5-1.4.7 Other Requirements for Shop Drawings for Bridges	Yes	Excludes the submittal review timeframes. Submittal review timeframes shall be as stated in the Project Documents.
5-1.4.8 Modifications for Construction	Yes	
5-1.4.9 Cost of Shop Drawings	Yes	
5-1.5 Certifications	Yes	
5-1.6 Corrections for Construction Errors	Yes	
5-2 Coordination of Contract Documents	No	
5-3 Conformity of Work with Contract Documents	Yes	Excludes the second paragraph, "In the event that the Engineer... determination based on engineering judgement."

FDOT Standard Specifications Divisions I and II dated January 2018	Applicable Section	Deviations from the FDOT Standard Specifications
5-4 Errors or Omissions in Contract Documents	Yes	
5-5 Authority of the Engineer	Yes	References to the "Director, Office of Construction" are replaced with "Contract Administrator."
5-6 Authority and Duties of Engineer's Assistants	Yes	References to the "Director, Office of Construction" are replaced with "Contract Administrator."
5-7 Engineering and Layout	No	
5-8 Contractor's Supervision	Yes	
5-9 General Inspection Requirements	Yes	
5-9.4 Inspection by Federal Government	No	
5-10 Final Inspection	Yes	All references to "Engineer" shall equate to the County's definition of Engineer as defined in the Contract Documents.
5-11 Final Acceptance	Yes	Same comment as 5-10.
5-12 Claims by Contractor	No	
5-13 Recovery Rights, Subsequent to Final Payment	Yes	References to "Department" are replaced with "County".
6-1 Acceptance Criteria	No	
6-2 Applicable Documented Authorities Other Than Specifications	Yes	
6-3 Storage of Materials and Samples	Yes	
6-4 Defective Materials	Yes	Excludes submittal review periods timeframes as these will be determined solely by the Project Manager.
6-5 Products and Source of Supply	No	
7-1 Laws to be Observed		
7-1.1 General	Yes	
7-1.2 Plant Quarantine Regulations	Yes	
7-1.3 Introduction or Release of Prohibited Aquatic Plants, Plant Pests, or Noxious Weeds	Yes	
7-1.4 Compliance with Federal Endangered Species Act and other Wildlife Regulations	Yes	

FDOT Standard Specifications Divisions I and II dated January 2018	Applicable Section	Deviations from the FDOT Standard Specifications
7-1.5 Occupational Safety and Health Requirements	Yes	
7-1.6 Discovery of an Unmarked Human Burial	Yes	
7-1.7 Insecticides, Herbicides and Fertilizers	Yes	
7-1.8 Compliance with Section 4(f) of the USDOT Act	No	
7-1.9 Florida Minority Business Loan Mobilization Program	No	
7-2 Permits and Licenses		
7-2.1 General	Yes	
7-2.2 Work or Structures in Navigable Waters of the U.S., Waters of the U.S., and Waters of the State	Yes	
7-2.3 As-Built Drawings and Certified Surveys	Yes	
7-3 Patented Devices, Materials and Processes	Yes	
7-4 Right-of-Way Furnished by the Department	Yes	
7-5 Restoration of Surfaces Opened by Permit	No	
7-6 Sanitary Provisions	Yes	Supplement "Sanitary provisions shall be provided at no additional cost to the County."
7-7 Control of the Contractor's Equipment	Yes	
7-8 Structures over Navigable Waters	Yes	
7-9 Use of Explosives	No	
7-10 Forest Protection	Yes	
7-11 Preservation of Existing Property	Yes	Excludes the following language: "or provide access and coordinate with the Department's maintenance Contractor in accordance with 8-4.4 as directed by the Engineer. The Department will compensate the Contractor for the costs associated with the repairs for restoring the existing property in accordance with 4-4. Theft and vandalism are considered damage caused by a third party."

FDOT Standard Specifications Divisions I and II dated January 2018	Applicable Section	Deviations from the FDOT Standard Specifications
7-12 Responsibility for Damages, Claims, etc.	No	
7-13 Insurance.	No	
7-14 Contractor's Responsibility for Work	No	
7-15 Opening Sections of Highway to Traffic	Yes	
7-16 Wage Rates for Federal-Aid Projects	No	
7-17 Supplemental Agreements	No	
7-18 Scales for Weighing Materials	Yes	
7-19 Source of Forest Products	No	
7-20 Regulations of Air Pollution from Asphalt Plants	Yes	
7-21 Dredging and Filling	Yes	
7-22 Available Funds	No	
7-23 Contractor's Motor Vehicle Registration	Yes	The provisions of this section are applicable only if requested in writing by the Contract Administrator.
7-24 Disadvantaged Business Enterprise Program	No	
7-25 On-The-Job Training Requirements	No	
7-26 Cargo Preference Act – Use of US Flag Vessels	Yes	
8-1 Subletting or Assigning of Contracts	No	
8-2 Work Performed by Equipment-Rental Agreement	No	
8-3 Prosecution of Work		
8-3.1 Compliance with Time Requirements	Yes	
8-3.2 Submission of Working Schedule	No	
8-3.3 Beginning Work	No	
8-3.4 Provisions for Convenience of Public	Yes	
8-3.5 Preconstruction Conference	Yes	Replace "Contract" with "Project". This is the same as the Contract Kick-Off Meeting.
8-4 Limitations of Operations	Yes	Exclude reference to 4-4, replace with "in accordance with the terms of this contract".
8-5 Qualifications of Contractor's Personnel	Yes	Excludes second paragraph "It is prohibited ...conflict of interest exists." Replace "Engineer" with "County".

FDOT Standard Specifications Divisions I and II dated January 2018	Applicable Section	Deviations from the FDOT Standard Specifications
8-6 Temporary Suspension of CONTRACTOR's Operations	Yes	
8-7 Computation of Contract Time	Yes	
8-8 Failure of CONTRACTOR to Maintain Satisfactory Progress	No	
8-9 Default and Termination of Contract	No	
8-10 Liquidated Damages for Failure to Complete the Work	No	
8-11 Release of CONTRACTOR's Responsibility	No	
8-12 Recovery of Damages Suffered by Third Parties	No	
9-1 Measurement of Quantities	No	
9-2 Scope of Payments	No	
9-3 Compensation for Altered Quantities	No	
9-4 Deleted Work	No	
9-5 Partial Payments	No	
9-6 Record of Construction Materials	No	
9-7 Disputed Amounts Due the Contractor	No	
9-8 Acceptance and Final Payment	No	
9-9 Interest Due on Delayed Payments	No	
9-10 Offsetting Payments	No	
101-1 Description	No	
101-2 Basis of Payment	No	
101-2.1 When a Separate Item is Included in the Proposal	No	
101-2.2 Partial Payments	No	
101-2.3 When No Separate Item is Included in the Proposal	Yes	

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B. ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
ASTM	American Society for Testing and Materials
ATSSA	American Traffic Safety Services Association
AWS	American Welding Society
CTQP	FDOT Construction Training Qualification Program
DOT	Department of Transportation
EPA	Environmental Protection Agency
FDOT	Florida Department of Transportation
FDOT APL	Florida Department of Transportation's Approved Product List.
FDOT Standard Specifications	Florida Department of Transportation Standard Specifications for Road and Bridge Construction.
FHWA	Federal Highway Administration
HBMD	Broward County Highway and Bridge Maintenance Division. This agency will be responsible for the management and administration of this Contract.
IMSA	International Municipal Signal Association which is an industry-recognized organization that provides certification programs for the safe installation, operation and maintenance of public safety systems, including traffic signal systems.
MUTCD	Manual on Uniform Traffic Control Devices
OSHA	Occupational Safety and Health Administration
Pay Item	FDOT Pay Item per the FDOT Basis of Estimates Manual, latest edition.
NCHRP	National Cooperative Highway Research Program
SSPC	Society for Protective Coatings

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C. PASS-THRU ALLOWANCES

1. The purpose of the pass-thru allowance is to provide a means of covering the direct cost to the CONTRACTOR for any items or labor not contained within or specified by the Contract Documents.
2. Miscellaneous parts and materials reimbursable as a pass-thru item include cylinders, pumps, motors, traffic gates, limit switches, navigational lights, air buffers, gear boxes, brakes, structural steel, etc.
3. The pass-thru allowance may also be utilized for skilled labor or subconsultants in which unit prices are not pre-established in the electronic bid pricing sheet or included in the applicable Pay Item.
4. The Contract Administrator or Project Manager must authorize use of any allowances prior to CONTRACTOR incurring costs related to an allowance amount.
5. Any replacement parts, materials, and/or skilled labor not pre-priced in the unit prices required for any service call with a cost to the County of \$2,000 or more shall have prior written approval from the Contract Administrator or Project Manager. Approval of these items/services is contingent on the review of the three independent quotes from companies with no ownership affiliation to the CONTRACTOR, and the subcontractors/suppliers must be readily engaged in the business of supplying such parts, labor and/or materials quoted. Pass-thru costs less than \$2,000, but \$1,000 or more shall be supported by one independent quote. Pass-thru costs less than \$1,000 need not be supported by a quote, but rather an estimate of the pass-thru cost. At all times, the CONTRACTOR should endeavor to use Broward County CBE-certified businesses when procuring equipment, materials, or services in support of this contract. Refer to the Broward County Office of Small Business and Economic Development (OESBD) for information on patronizing, local, small businesses.
6. In cases where the CONTRACTOR manufactures its own parts, it will charge the County a price no higher than it charges its most favored customer. The County reserves the right to request verification.
7. If the CONTRACTOR uses its equipment that is not pre-priced in the unit prices, then the County has the right to verify the fair market price; the CONTRACTOR shall also provide a letter to the County stating that the price of the item is fair market value.
8. The pass-thru allowance may be utilized for the rental of equipment in which unit prices are not pre-established or included in the applicable Pay Item. The cost of transporting equipment to and from the job site is reimbursable. The County will not pay for equipment remaining overnight at the job site, or if the equipment is not operational for four hours or longer. Equipment usage is eligible for reimbursement when, in the normal course of performing the installation of the associated items the equipment would not be required. Equipment will not be reimbursed when it is essential to perform the installation of the associated Pay Item.
9. Non-County Agency permits and fees required by governmental agencies other than the Broward County Board of County Commissioners. Excluded are licenses, permit expediting services, re-inspection fees, "runner's fees", expired permit fees, overhead and profit. Submitting and securing permits is the responsibility of the CONTRACTOR.

10. Payment for any pass-thru items shall be paid by the pass-thru allowance at the CONTRACTOR's actual cost. The cost for these items will be a pass-thru, i.e. the CONTRACTOR will charge the County the same invoice prices as it is charged by the supplier, subcontractor or subconsultant, without mark-up. A copy of the CONTRACTOR's invoices must be submitted with the CONTRACTOR's payment application.

D. PAY ITEMS

1. In general, most unit prices are referenced to a FDOT Pay Item. Regarding the unit prices, the FDOT Basis of Estimates and the FDOT Standard Specifications are applicable to Pay Items unless specifically superseded in these specifications, including method of measurement and basis of payment.
2. All items are to be furnished and installed (unless otherwise stated) and include all labor, equipment, materials, tools and other incidental items that are required for the installation, but not necessarily indicated or specifically called out in this specification.
3. The wording or the name of a Pay Item shall not be misconstrued as wholly descriptive of the activity to which it applies.
4. The repair is to be performed according to the Purchase Order acknowledged by the CONTRACTOR, also either: according to the applicable part of FDOT Standard Specifications Division II that corresponds to the Pay Item; according to the applicable part of FDOT Standard Specifications Division II as modified by the description of the repair that is given in the text of this Contract; or according to the text of this contract without regard to any part of FDOT Standard Specifications Division II. Interpretation of how the work is to be performed shall be decided by the Contract Administrator or designee.
5. If a job activity can be paid through multiple Pay Items, only one Pay Item must be used. In this case, the Contract Administrator or his designee will select appropriate Pay Item to pay for the work.
6. The following Groups relate to the electronic bid pricing sheets and the unit prices within the Group:

E. GROUP 1: MAINTENANCE OF TRAFFIC

1. Any required MOT plans shall be approved by HBMD prior to the start of Work.
2. If the approved MOT plan does not require law enforcement on the job site, and the CONTRACTOR desires to have law enforcement on the job site, the CONTRACTOR shall be responsible for all costs incurred by law enforcement.
3. MOT and MOT labor for lane closures during working hours may be required at any time whether it be day, night, weekend or a holiday and shall not be an additional cost to the County for adjusting, relocating, maintaining, or otherwise manipulating MOT items. The unit prices for MOT items shall be inclusive of all labor, transportation, relocation, etc. that may be required for the phasing of the project unless there is a provision for a separate unit price in the bid for that item to be adjusted or relocated.
4. MOT plans by the CONTRACTOR must be certified by a Professional Engineer registered in the State of Florida and that maintains an Advanced MOT level certification from an FDOT

approved temporary traffic control training provider on all projects, regardless of the complexity of the proposed scheme.

5. Cost of MOT plan certification is included in the unit cost provided for the MOT devices included in this contract.
6. The CONTRACTOR shall complete daily construction activities such that all travel lanes are open to traffic by the end of each work day. Lane closures are not permitted before 9 a.m. nor after 4 p.m. Requests for an extension of MOT hours shall be directed to the County Project Manager. Under no circumstances should it be assumed that extended hours will be granted as each request is considered on a case-by-case basis.
7. In an emergency case where a roadway is blocked, or roadway material is removed, and unforeseen conditions arise that prevent completion of work before the end of the work day, CONTRACTOR shall obtain approval from the County Project Manager or Contract Administrator for a plan to maintain traffic in a safe manner at all times in accordance with MUTCD traffic control.
8. No less than two weeks before lane closures, the CONTRACTOR shall notify Broward County Traffic Engineering Division at (954) 484-9600.
9. No less than 48 hours before lane closures, the CONTRACTOR shall notify the local municipality, utility, and other agencies as designated in the Work Order and/or Work Documents.
10. MOT items in this Group of the electronic bid pricing sheet shall, at a minimum, comply with Section 102 of FDOT Standard Specifications and Temporary Traffic Control sections of the MUTCD. MOT items shall be listed on the FDOT APL for use on projects delivered through this contract.
11. Group 1 Payment Notes: MOT items with payment units of LF shall be furnished, installed, and maintained per 30 calendar day period. Projects less than or equal to 30 calendar days in duration will be paid for one unit; projects more than 30 days in duration will be paid in pro-rata units over 30 days (i.e. 45-day project will be paid for 1.5 units). All other items shall be paid by the units included in the unit prices.
12. Pavement Marking Removal: Pavement markings shall be removed from indicated areas by water-blasting or methods acceptable to the County Project Manager that cause negligible damage to existing pavements, or surface texture. If excessive damage, as determined by the County, results from the pavement marking removal operation, Vendor shall repair, at their expense, said damage to the pavement, or surface texture caused by the removal work by methods acceptable to the County Project Manager. Excessive damage can be defined as any result whereby concrete pavement is removed more than 1/8-inch in depth or asphalt pavement, after adequate clean-up, has exposed aggregate, a majority of which can be loosened by light brushing or abrasion. Grooved surfaces shall maintain their functionality, i.e., water shall be able to run off the surface without puddling.
 - a. Unit price submitted includes all equipment, materials, labor and mobilization to complete task.
 - b. County shall pay for a minimum of 100 SF of pavement marking removal when required on a project.

13. 710-11: Furnish and install painted pavement markings per the pavement marking plans provided for the task and per the Broward County Pavement Marking and Signs Detail Sheet found at:

www.broward.org/Traffic/Documents/Pavement%20Marking%20Details.pdf

The use of pavement marking paid for using this item shall be limited to application and maintenance of temporary pavement markings during milling and resurfacing operations, and for use as temporary pavement markings after paving is complete and before thermoplastic markings can be applied.

In general, the application of the pavement markings shall be per FDOT Standard Specification 710 and comply with said specification.

14. 711-11: Furnish and install thermoplastic pavement markings per the pavement marking provided for the task and per the Broward County Pavement Marking and Signs Detail Sheet found at:

www.broward.org/Traffic/Documents/Pavement%20Marking%20Details.pdf

In general, the application of the pavement markings shall be per FDOT Standard Specification 711 and comply with said specification. CONTRACTOR to provide inspection readings witnessed by County Project Manager or delegate indicating compliance with FDOT minimum requirements for Thermoplastic pavement markings within 72 hours of project completion.

F. GROUP 2: EROSION CONTROL

1. Section 104 of the FDOT Standard Specifications are applicable in addition to the requirement of the FDOT Erosion and Sediment Control Manual (ESCM) available at the following link: <http://www.fdot.gov/rddesign/Drainage/files/Erosion-Sediment-Control.pdf>
2. 104-1: The furnished and installed product shall satisfy the definition of a High Performance Turf Reinforcement Mat (HPTRM) as defined in the U.S. EPA Storm Water Fact Sheet, "Turf Reinforcement Mats;" and meet or exceed FHWA Specification FP-03, Section 713.18. Reference Standard: Propex Pyramat or an approved equivalent.
3. 104-10-3: Payment for this item will be to furnish, install, maintain, and remove silt fence sediment barrier per most recent version of FDOT Standard Index 102, satisfying FDOT Standard Specification 104. Payment for this item shall be per 30-day period. Usage greater than 30 days shall be pro-rated. Reference Standard: FDOT Type III Silt Fence.

G. GROUP 3: CLEARING AND GRUBBING

1. 110-1-1: Payment for clearing and grubbing of existing vegetation (ground cover, weeds, shrubs, and small trees with trunk less than 4 inches in diameter). Acceptance is based on resulting clear ground, free of vegetation, and roots of above-mentioned items removed. This item includes removal of trash and other debris in addition to requirements in FDOT Standard Specification 110-2. Trash, for the purpose of interpretation of the item alone, shall be defined as wrappers, cans, loose cardboard, fast-food bags, etc. CONTRACTOR will not be expected to demolish structures, remove vehicles, or remove vegetation with trunks 4 inches or larger. This item shall also include removal and proper disposal of trash at a legal disposal facility.

2. 110-3-X: Payment will be per unit area/measure for the unit price measured parallel to the largest face of the item measured (i.e. slope will be measured on the slope, not in overall plan area). Refer to FDOT Standard Specification 110.
 - a) 110-3-1: Removal of the bridge deck requires that the existing reinforcement shall be left intact unless otherwise indicated in the plans for the specific project. Bars broken or removed during the removal of the bridge deck shall be replaced with specific approval from the Project Manager, at the CONTRACTOR's expense. Includes the removal of bridge decks up to 9 inches in thickness. A greater thickness shall be pro-rated for payment.
 - b) 110-3-3: The removal of existing pile jackets on piles of square dimension 14 to 24 inches. Removal includes debris catching containment and safe, legal disposal to an off-site location.
 - c) 110-3-4: The removal of existing sand-cement rip-rap includes hammering, chipping or other mechanical means of demolishing the slope protection. Included in this payment is the removal of underlayment (i.e. filter fabric) that may be present.
 - d) 110-3-5: The removal of bridge joint(s) includes the removal an existing bridge joint. The type of joint applicable to this Pay Item is an armored strip seal or elastomeric joint. All other joint removals are to be paid for through separate unit prices.
 - e) 110-3-6: Includes the removal of existing traffic railing barriers of any type (32 inch, 42 inch, F-Shape, Vertical, Corral, etc.). This Pay Item requires the existing reinforcement be left intact unless otherwise indicated in the plans for the specific project. Bars broken or removed during the removal of the traffic railing barrier shall be replaced, with specific approval from the Project Manager, at the CONTRACTOR's expense.
 - f) 110-3-7: The removal of steel grating shall include the removal of open grid steel deck panels or solid aluminum diamond plate sidewalk surfaces. These surfaces are specifically located on the County maintained drawbridges numbered 860319, 864071 and 864072.
3. 110-4-X: Payment is for removal of the item entirely, including legal disposal and associated tipping fees, regardless of thickness.
4. 110-8-1: Payment is for the removal of underwater debris of any type, and legal, safe disposal off-site. The method of removal may require the use of a barge, crane, or any other combination of equipment to achieve the removal. Payment will by the ton for which verification of net, gross, and tare weights will be required in order for payment to be approved. The unit price shall include trucking to a legal disposal facility and the associated tipping fees. Vendor/CONTRACTOR shall consider what means and methods could potentially be used for any of the County's bridges. Payment for this item is for turn-key removal of debris from canals or rivers.
5. 110-12-1: Payment will be for the hydro-demolition for a one square yard area, one inch deep (SY-INCH) of concrete or concrete structure. This unit price also includes the costs associated with control and containment of slurry runoff and concrete fragments that are thrown from the hydro-demolition machine and the water supply.

6. 110-15: Shall be completed by a Broward County Class “A” licensed tree trimmer.
7. 110-82: The removal of structural timber may be in hard-to-reach locations such as bridge fenders or over water, and this shall be included in the unit price.
8. 129-1-31: Curb and Gutter Sweeping using a motorized street sweeper. Equipment shall be provided and operated by a firm routinely engaged in these services and which is insured and licensed to perform these services in accordance with Broward County Ordinances. Unit price shall include clean-out, legal disposal and associated tipping fees.
9. 129-1-32: Vacuuming inlets and rodding pipes shall be performed with the use of a vacuum truck which is provided and operated by a firm routinely engaged in these services and which is licensed and insured to do so in Broward County. Pipe rodding shall be performed using high-pressure water discharged from a capable vacuum truck. The unit price includes vacuuming the spoils from the rodding process as well as any associated dumping or tipping fees. The work shall be performed by a minimum of a 2 person crew. The truck shall be capable of delivering sufficient water pressure to rod up to 48 inch round pipe. CONTRACTOR shall also supply whatever rodder hose discharge heads may be necessary to complete the work. A minimum quantity of 100 LF will be allowed for this item.”
10. 129-1-21: This work involves the mechanical removal and re-sorting of disturbed area. Remove stumps, roots and other debris to a depth of 18 inches below the ground surface and within a 5 foot radius of the center of trunk. Remove roots and other debris from all excavated material to be re-used backfill on the project. Restore the disturbed area by back filling, compacting, and grading to match existing grades. Project Manager will make reasonable determination when additional backfill is required for which payment will be made through a separate item.

H. GROUP 4: EARTHWORK

1. Underground Pipe Video Recording shall be delivered in DVD format with English as the spoken language in the recording. Video shall be filmed in color. Linear benchmarks shall be established for each run of pipe videoed. Units of measure shall be in feet. Video shall be continuous and uninterrupted for each run of pipe. A run of pipe is defined as structure-to-structure. The videographer shall be a professional known to be skilled and regularly engaged in the business of underground color audio-video documentation. The videographer, through the CONTRACTOR, shall furnish to the Project Manager a list of all equipment to be used for the audio-video recording, i.e., manufacturer’s name, model number, specifications and other pertinent information. The CONTRACTOR shall supply the names and telephone numbers of at least three recent references that the videographer has performed of a similar scope. The Project Manager’s approval is required before recording can commence. All equipment, accessories, materials, tools, vehicles, and labor necessary to successfully record shall be provided and the unit price includes these costs. Recordings shall be bright, sharp, depict accurate colors, be recorded slowly enough to distinguish observed conditions (less than 30 feet per minute), and be free of distortion. The entire circumference of each joint traversed shall be recorded. Position camera head perpendicular to all defects requiring measurement by the video micrometer. Sufficient information shall be provided on each recording so that the information can be archived and easily referenced to a specific location for future use. A minimum of 4 hours will be permitted for each video recording.
2. 120-X: In general accordance with FDOT Standard Specification 120.

3. 121-70: Includes excavatable or non-excavatable flowable fill for delivery to any location within Broward County. The intent of the fill is to occupy large volumes of excavated, undermined, or otherwise voided volumes of earth. Fill can be used to fill voids in undermined abutments, or similar, but not exhaustive, installation.
4. 173-X: Refer to FDOT Technical Special Provision T173 available at: <http://www.fdot.gov/geotechnical/documents/specialprovisions/t173.pdf>

I. GROUP 5: ROADWAY SURFACES

1. 305-1: Refer to FDOT Developmental Specification DEV 305 at: <http://www.fdot.gov/programmanagement/OtherFDOTLinks/Developmental/Files/Dev305.pdf>
2. 350-3-X: For thicknesses varying from the described thickness, the quantity paid will be prorated for the actual thickness installed.
3. 350-4-X: For thicknesses varying from the described thickness, the quantity paid will be prorated for the actual thickness installed.
4. Furnish and Install Steel Road Plate, up to 30 calendar days.
 - a) Description: Unit price of the item listed above (SF) includes full compensation for all work, labor, material, and equipment required to furnish and install steel road plates used primarily to cover up an open trench.
 - b) Steel road plates shall meet the following specifications:
 - 1) Withstand an H-20 loading of 450 psf without any movement.
 - 2) Fabricated to meet ASTM A36 requirements, 1 in. minimum thickness.
 - 3) All steel plates shall be without deformation. The plate must not deviate more than 1/4 in. when measured with a 10 ft. straight edge along its length.
 - c) Installation: Site conditions must be evaluated by a person knowledgeable of the current OSHA Standards. The soil/material in the trench must remain vertical once the plates are placed over the open excavation. Excavation must be adequately shored to withstand the bridging and traffic loads. The area covered by the plate must be free of hazards such as, but not limited to, boulders, roots, trees, existing building foundations, above-ground utilities and water. The loading and unloading of the plate system must be in accordance to OSHA standards. When two or more plates are used, they must be tack welded together at each corner to eliminate vertical movement. Alternative methods to accomplish shall be approved by Project Manager. Steel plates shall be large enough to extend a minimum 12 in. beyond the edges of the open excavation. Installed plates shall be free of vibrations and rocking. Wedges or other non-asphaltic devices shall be used for leveling to eliminate the rocking of the plates. Compacted temporary asphalt shall be used to fill all gaps between the plates and existing pavement. Temporary paving with a cold or hot asphalt mix should be used to taper the edges and cover the edges of the steel plate. The recommended width of the taper is 12 in. Daily inspection must be performed by the CONTRACTOR to note and correct any variations in site conditions that may affect the steel plate installation.

Type I installation diagram (Figure Y):

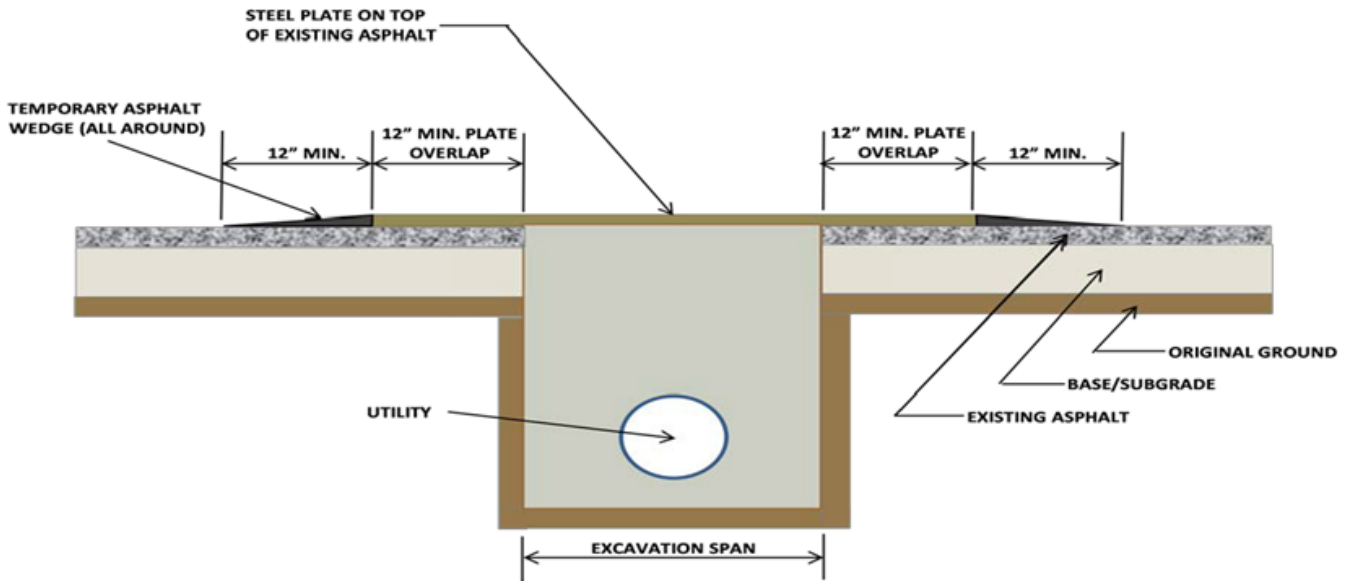


Figure Y

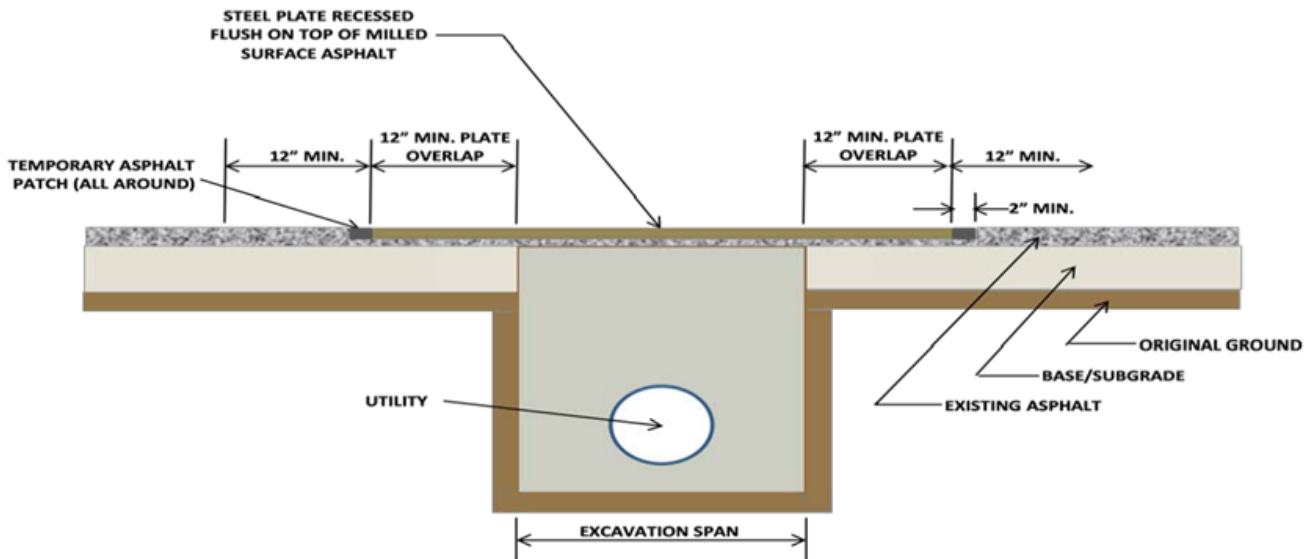


Figure Z: Type II installation diagram (flush)

- d) Type II installation (Figure Z): Steel plates shall be anchored into the existing surface. This is typically done by drilling holes and inserting support pins around the edges or through pre-drilled holes in the plate itself. Proprietary products such as plate locks may be used if approved by Project Manager. Warning signs shall be installed. W8-24 warning signs shall be placed approximately 100 feet in advance of the plated locations.

J. GROUP 6: CONCRETE

1. 400-0-X, 400-1-X, 400-2-X, 400-3-X, 400-4-X, 400-8-X, 400-16-X: Per FDOT Standard Specification and shall include costs for formwork/falsework of any shape or configuration for both standard and custom uses. Additional identifiers in the description of the Pay Item shall be used to indicate the proposed scope of work to aid in pricing per cubic yard to furnish and install including formwork/falsework.
2. 400-136: This is a turn-key delivery of an overlay product; the CONTRACTOR will be required to conform to the specifications of the proposed, and accepted, product manufacturer that is offered. Vendor shall bid its unit price for installation of the unit area of the product in accordance with the specification of the product bid. This product is an epoxy overlay wearing surface. Reference Standard: DEGADECK® Bridge Deck Overlay System or an approved equivalent.
3. 400-143X, 400-145X, 400-150X: These items include cleaning. Cleaning shall be performed in accordance with FDOT Standard Specification 400-19. Payment for these items includes the water used to perform the cleaning. There is no restriction on the source of water; however, the CONTRACTOR is notified that the source of water for cleaning is its own means and methods. No additional reimbursement shall be provided for metering, water trucks, etc. required to steadily supply a power washer during its use. This additional description does not eliminate or preclude any other specifications relevant to the application of any finishes or sealers; the provisions of FDOT Standard Specification 400 still apply to those portions.
4. 400-140: This work is for the replacement of neoprene bearing pads on flat slab bridges. The unit price includes jacking of the slab to affect the removal and replacement of the 1/2 inch thick neoprene pad. Jacking of flat slab bridges up to 1/2 inch may be performed under live load with the use of a taper wedge on the roadway surface of the bridge and on the pedestrian accessible routes. Neoprene pad removal shall be performed by mechanical means; chemical removal shall not be permitted. Replacement pads shall be bonded to the bearing seat with an epoxy adhesive in accordance with the bearing material manufacturer's recommendations for bonding to previously hardened concrete. Bearing replacement shall be paid per square foot. A minimum of 36 square feet of bearing replacement shall be ordered for any task performing this work; projects over 36 square feet shall be paid per square foot thereafter. County bridges are not currently outfitted with jacking sleeves and the CONTRACTOR shall provide a specialty Engineer's signed and sealed jacking plan to the Engineer or Project Manager in advance of performing this work for each bridge assigned; this cost is included in the unit price.
5. 400-150: Cleaning shall be per FDOT Standard Specification 400. Sealant used shall be selected from the FDOT APL list for Section 413 – High Molecular Weight Methacrylate (HMWM). The costs of all labor, equipment, tools and materials to clean and apply HMWM are included in the unit price.
6. 400-153: Non-shrink grout shall be per FDOT Standard Specification 934.
7. 401-70X: Spalled areas may be located over water or live traffic.
 - a) Description: This work shall consist of removing deteriorated concrete, by perimeter saw-cutting, preparing the repair site, forming where required, placing and finishing new concrete or qualified special mortar, and applying epoxy in the required areas. All materials shall be in compliance with FDOT APL.

- b) Materials: All materials used for these activities shall be selected from the FDOT APL for Section 930 – Materials for Concrete Repair.
- c) Requirements: The type of repair, including extent and depth of perimeter saw-cutting, to be repaired will be outlined by the County Project Manager. All loose, deteriorated and unsound concrete in the required repair areas shall be removed by conventional hand/mechanical, hydro demolition or other approved equipment to a depth as specified by the County Project Manager. Slight imperfections surrounded by sound concrete shall be cleaned of all dirt, loose material and deteriorated concrete.
- d) Conventional hand/mechanical equipment consisting of jackhammers no heavier than the 35-pound class shall be used for concrete removal. For bridge decks, the jackhammers shall not be heavier than the 65-pound class. Chipping hammers from the 15-pound class shall be used to remove concrete from beneath any reinforcing bars, where required. The bits shall be sharp in order to reduce pounding. Jackhammers shall be operated to minimize damage to the sound concrete around the patch area. Other methods that may be less damaging to the concrete and reinforcement may be used with prior approval from the Engineer.
- e) Hydro-demolition equipment shall be capable of removing concrete to the specified depth and shall be capable of removing rust and concrete particles from exposed reinforcing bars. All water used in hydro-demolition shall be potable. Stream, canal or lake water shall not be permitted. The CONTRACTOR shall take necessary precautions during hydro-demolition to prevent damage to the remaining structure and adjacent property as a result of runoff. Slab drains receiving runoff from the CONTRACTOR's operation shall be temporarily plugged. The discharge water shall not be released from the site until the broken concrete, aggregate and other suspended solids have been removed through filtration, sediment basins or other approved methods. The CONTRACTOR shall control dust and run-off in accordance with applicable governmental regulations. Hydro- demolition shall not impede or interfere with maintaining traffic.
- f) On horizontal surfaces and vertical surfaces, a boundary perimeter with one-inch vertical sides shall be established outside the deteriorated area. The deteriorated concrete shall be removed, as required, to provide good sound concrete on which new concrete can be placed and satisfactorily bonded to the reinforcing bars. The areas of repair shall be made approximately rectangular with the sides generally perpendicular to the surface being repaired. These areas shall be carefully removed such that reinforcement is not disturbed or damaged. For full depth repair of deck slabs, a saw cut outside the deteriorated area shall also be made on the bottom of the bridge deck, except on voided slab, solid slab and box girder bridges without entry access. Other acceptable methods for saw cutting the bottom of the deck may be used with prior approval from the Engineer. On columns, no more than one-fourth of the column perimeter shall be removed at any one time, and no more than one-eighth of the column perimeter if the repair is completed under live load. Once the one-quarter or one-eighth limit has been reached, the column shall be repaired before any further column removal is done.
- g) All exposed reinforcing bars shall be thoroughly cleaned by sand or hydro-blasting to the satisfaction of the Engineer.

- h) The concrete within the boundary area for superstructure repair (unformed), substructure repair (formed) and substructure repair (unformed) shall be removed a minimum of one inch beyond the inside edge of any exposed reinforcing bars, including the main reinforcement.
- i) The minimum depth of repair for repairing concrete repair shall expose the upper layer of the top mat of reinforcing steel. When the bond between existing concrete and a reinforcing bar has been destroyed, or more than half the diameter of a reinforcing bar is exposed, the concrete adjacent to the reinforcing bar shall be removed to a depth that will permit the concrete to bond to the entire circumference of the bar. A minimum of one-inch clearance shall be maintained.
- j) After removal of deteriorated concrete, the area to be repaired shall be sand or hydro-blasted to remove all foreign matter, dirt, free standing water and loose material. The hydro-demolition process will not require sand or additional hydro-blasting unless the bonding surface of the repair area becomes contaminated or unsatisfactory prior to placement of new concrete. The area to come in contact with new concrete shall be cleaned as stated above, saturated with water, and painted with a concrete bonding compound or an epoxy mortar prior to the placement of new concrete.
- k) Concrete shall be placed before the concrete bonding compound or epoxy mortar has begun to set. Deck repair concrete shall be placed in the repair area to match the top of the original deck surface. All joints shall be formed to match any existing joint pattern.
- l) Basis of payment: Accepted quantities of concrete masonry repairs will be paid for at the unit price for each of the Pay Items included in the contract. No direct payment will be made for epoxy bonding agents. Payment for accepted quantities of reinforcing steel replaced due to excess section loss will be paid for at the unit price for reinforcing steel (Group 7 of the electronic bid pricing sheet). No payment will be made for replacement of reinforcing steel cut or broken by the CONTRACTOR.

8. FDOT CTQP Certified American Concrete Institute (ACI) Concrete Field Inspector.

- a) The above referenced Inspector shall possess Level 1 and Level 2 certifications and be associated with a laboratory that maintains a quality control program and equipment to perform the tests, record and report the necessary data.
- b) Usage of this item is required on any task where structural concrete is placed.
- c) Payment for this item shall include the inspector(s), vehicles, equipment, laboratory, etc. for the turn-key gathering, testing, and reporting and certification of data associated with any of the concrete specifications in this contract.
- d) This unit price is to be paid when placing structural concrete and when the Project Manager requires that a QC sample be taken for quality control and project documentation.

K. GROUP 7: REINFORCING STEEL

- 1. Reinforcing steel shall be per FDOT Standard Specification 415.

2. 415-1: ASTM A615, Grade 60, straight, or bent per FDOT Standard Index 21300.
3. 415-2-6: ASTM A955, Grade 60, straight, or bent per FDOT Standard Index 21300.
4. Epoxy-coated: ASTM A775, Grade 60, straight, or bent per FDOT Standard Index 21300.

L. GROUP 8: UTILITY ADJUSTMENTS

Utility adjustments shall be per FDOT Standard Specification 425.

M. GROUP 9: BEAMS AND SLABS

1. 450-82: The following procedure shall be used for beam repairs.
 - a) Description: The purpose of this task is to repair beams (generally damaged in the lower flange), where pre-tensioning cables may be exposed and perhaps severed or severely damaged and the beam may be cracked (typically in the web). The repair shall restore the beam to essentially its original shape and with a smooth surface, and protect the reinforcement from further corrosion. When specified in the Project Documents, preloading shall be used during repair of the beam so as to place the new concrete in compression after completion of the repair. Loading will be accomplished by using loaded trucks. Epoxy injection of cracks is part of this task, but should be estimated under Concrete Cracks Inject and Seal in Group 6 of the electronic bid pricing sheet.
 - b) Generally, the repair will use forming and pouring of epoxy mortar. Use of Shotcrete or Guniting techniques are possible options, but will not be specified unless it can be demonstrated that these techniques can restore the beam to its original shape and to a relatively smooth surface condition. As a minimum, the CONTRACTOR should anticipate pouring or troweling epoxy mortar, SIKA 123, Master Builders Emaco S66R or S88CA, or approved equal. Construction techniques are similar to those described in the Restore Spalled Areas in Group 6 of the electronic bid pricing sheet. In instances where the joints between precast deck panels have loosened, clean the joint of particles and debris and pressure grout using non-shrink grout per FDOT Standard Specification 934.
 - c) Construction Techniques: Sound the concrete end-to-end, using a hammer, to locate hollow regions. Remove all loose concrete and all concrete behind exposed strands to a clearance of 3/4 inch. Clean the damaged area with sandblasting, cleaning the concrete and taking care to clean the strands to white metal without damage. As required, repair severed strands using GRAB-IT cable splice or approved equal. Install ramset type pins where concrete has been removed, in a somewhat irregular pattern about 4 inches square. The purpose is to augment the bond strength between old concrete and new material. Load the bridge with loaded trucks (see Test Vehicle), as called for per instructions from Engineer. Form and pour or apply Guniting/Shotcrete and form to restore original beam shape and smooth surface. Remove forms. Remove loaded trucks, if used. Paint the entire beam with Class 5 finish from FDOT APL specified in the Work Documents.
 - d) Additional Equipment: The following equipment may be required to complete the task: sandblasting equipment; epoxy injection equipment; hand tools; Shotcrete equipment; loaded trucks for preloading; ramset or equivalent equipment for driving pins; and light

(15 pound) jackhammer.

- e) Basis of Payment: All materials, labor, tools and other costs for this task are included in the unit price, such as lighting, compressors, etc. Repair of damaged beams shall be measured as the along-the-beam dimensions (out-to-out) of each damaged and repaired region, the total quantity to be the sum of quantities for individual regions. All costs necessary to complete this work are included, except for epoxy injection and sealing of cracks, for which Pay Items of the applicable section apply. Repairs requiring splicing of strands shall use both of the Pay Items for this section for placement of repair concrete and repair of strands. Payment shall be made under:

450-82 Beam repair (Patch Only) – Cubic Foot

450-83-1 Beam repair (Strand Splices) - Each

450-83-2 Beam repair (Splice Bars) – Each

- f) The following Pay Item applies to placing of a test load: that is, a lane loading by truck(s) or other materials on a span, to simulate the AASHTO HS-20 or HL-93 design vehicle required for a task of beam repair. Load will not exceed two trucks of 36 tons gross vehicle weight each. Payment shall be made under:

450-99 Test Truck – Each

N. GROUP 10: RETAINING WALLS

1. Unit prices for piles (Timber, Concrete Sheet, Steel Sheet) include all labor, equipment, tools, materials and incidentals to furnish and install piles at sites within Broward County. Pre-drilling or pre-forming may be required, and additional reimbursement will not be paid. The minimum quantity paid will be 75 linear feet, furnished. Unit price for pile installation shall include the cost of an FDOT CTQP Certified Pile Driving Inspector.
2. 548-20-X: Gravity wall per FDOT Design Standard Index 6011 schemes 1 and 2 per linear foot. Unit price includes all labor, equipment, tools, materials and incidentals to furnish and install gravity wall at locations within Broward County, including excavation for 1 or 2 foot depth embedment.
3. Bulkhead and Seawall Repair: Sections 120, 400, 455, 514, also 350 and 530, of FDOT Standard Specifications apply except as modified herein, and except as modified in the Work Order acknowledged by the CONTRACTOR. This task includes various items of repair for bulkheads of bridges and seawalls under and alongside bridges. Two examples of work under this section are:
 - a) The deterioration of a bulkhead such that the concrete sheet piling has separated in places, soil has leaked out, and the fill at the corners of the bulkheads has sunken down. The repair is to excavate down to 2 feet below bay bottom, exposing anchor piles (deadmen) and anchor beams (ties). Repairs may include: removing and adding deadmen and ties; sealing sheet piling on the inside with epoxy; placing filter fabric against the bulkhead wall; refilling the excavation; and restoring riprap.
 - b) A deteriorated seawall under a bridge and extending for some distance on each side. A section of concrete sheet piling and cap must be replaced, and several locations of cap, deadmen and ties must be repaired. Ties must be replaced.

4. This section is intended to cover any and all of the repairs needed for a typical bulkhead or seawall. Vendor/CONTRACTOR shall anticipate any minor items of cost not included here, and to identify them and include them in one or more of the listed Pay Items; however, note that not all Pay Items may be needed on a particular wall repair.

a) Basis for payment: All materials, equipment and labor and other costs for this task shall be included in the unit price. Payment shall be made under:

1.) For Excavation as needed:

0120 1 Regular Excavation

2.) For filter fabric to be furnished and placed against the wall, and to limit the passage of fill through any openings in the wall. Note that the estimated for this Pay Item includes the quantity to be used for slope protection plus the quantity to be used for bulkhead and seawall repair.

0514 71 1 Plastic Filter Fabric (Subsurface)

3.) For sealing of the inside of the wall, using a sealant intended for underwater use, use Pay Item 411-2-3 (FDOT Standard Specification 411, Pilgrim Magmaflow or approved equivalent Type K epoxy).

4.) For restoring the excavated material and restoring riprap:

Compacted backfill is included in the unit price, restoration of riprap or slope protection shall be per those unit prices in the Contract.

5.) For demolishing the existing cap and also re-pouring the replacement cap at specified locations:

0110 3 8 Removal of Existing Structures

0400 2 11 Concrete Class II - Retaining Walls

O. GROUP 11: FOUNDATIONS

1. Unit prices for piles shall include all labor, equipment, tools, materials and incidentals to furnish and install piles at sites in Broward County. Pre-drilling or pre-forming may be required for which no additional reimbursement will be paid. Minimum quantity paid will be 75 linear feet (unless otherwise stated), furnished and installed. Unit price for pile installation shall include the cost of an FDOT CTQP Certified Pile Driving Inspector.

2. 455-34-X: Per FDOT Standard Specification 455 and installed.

3. 455-133-X-27: Furnish and install temporary or permanent PZ-27 steel sheet pile.

4. 455-133-X-35: Furnish and install temporary or permanent PZ-35 steel sheet pile.

5. 457-1-2X: Install new integral pile jackets per the referenced sketch and general notes. Additionally, refer to FDOT Specification 457 for further information. CONTRACTOR has the

option to submit an alternate integral pile jacket system consisting of FRP jacket with epoxy injection. An alternate jacket system shall be approved only with supporting documentation that the system has been accepted and installed on a FDOT- maintained structure using materials listed on the FDOT Approved Products List. Payment for integral pile jackets shall be in units of lineal feet (LF).

General Notes for Figure 18.5 on next page (Integral Pile Jacket)

MATERIALS:

1. Structural Steel:

All Structural steel shall be in accordance with ASTM 709, Grade 50, unless otherwise noted.

2. Field Connections:

All field connections shall be made with $\frac{3}{4}$ " diameter high strength bolts with single, self locking nuts in accordance with ASTM A325 unless otherwise shown. Threads shall be excluded from the shear plane for plate thickness. The cost of bolts, nuts, filler plates, steel rods and steel coating shall be paid for under Pay Item 457-1-22, Standard Integral Pile Jacket, Structural.

3. Steel Coating:

All Structural steel shall be galvanized in accordance with ASTM A123. Galvanizing shall take place after the welding and fabrication process. All nuts, bolts and washers shall be galvanized in accordance with ASTM F2329. No alterations shall be made to the structural jackets or connections that sacrifice the galvanized coating.

4. Grout:

Grout shall be pumpable non-corrosive, non-shrink cementitious grout with a minimum compressive strength of 5000 psi.

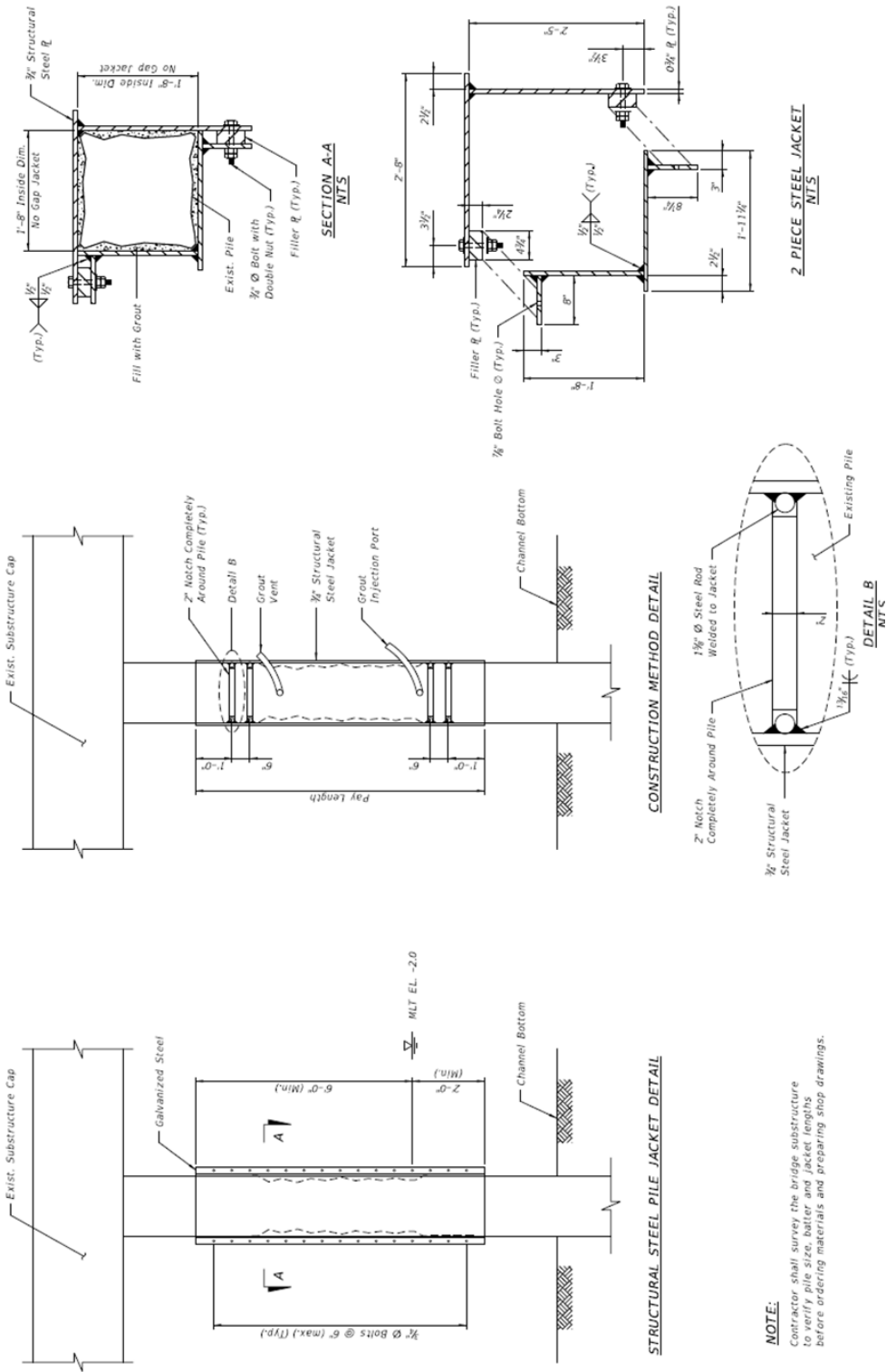
WELDING:

1. Weld metal shall conform to E70XX.

2. Perform non-destructive testing on welds as required by the Current Edition of the AASHTO / AWS D1.5 Bridge Welding Code.

3. Field welding to any structural steel is prohibited. Any miscellaneous steel required for erection purposes shall be included in shop drawings and shop welded prior to galvanizing.

6. 457-1-X: per Figure 18.5 below.



Additional General Notes for Figure 18.5 (Integral Pile Jacket)

STRUCTURAL STEEL PILE JACKET NOTES

1. *All loose and soft concrete or existing pile jackets (requiring new jackets) shall be removed using a 15 lb. chipping hammer or hand tools. All incipient spalls shall be broken out. All debris, residue, or marine growth on the surface of the piles at the elevation where the steel jackets will be installed shall be removed. This may be achieved by sandblasting, hydro-blasting, or other method as approved by the Engineer. Before starting the removal of pile jackets and loose concrete, the Contractor shall notify the Engineer, 48 hours in advance, who will supervise this operation.*
2. *Pile surface shall be cleaned above and below the water of any oil, grease, dirt, or other foreign materials. All exposed reinforcing steel shall be sandblasted to near white metal. Pile jacket installation and grout injection shall be completed as soon as possible after sandblasting pile (48 hrs. maximum).*
3. *A containment device such as a floating turbidity barrier will be required during the removal of existing concrete pile jackets, pile preparation, installation of jackets and grout injection procedure. Floating turbidity barriers shall fulfill all requirements for any permits obtained for this project.*
4. *The location and length of the jackets are subject to the following guidelines, but as a minimum shall extend 2' below Mean Low Water and 6' above Mean Low Water:*
 - a. *Pile jackets will overlap onto the sound existing pile at least two pile dimensions, at both upper and lower ends.*
 - b. *If the cap limits this overlap at the upper end, jacket will extend as close as possible to the cap.*
 - c. *If the lower end of the pile jacket shall extend within two pile dimensions of the bay bottom or ground line, the jacket shall extend as close as possible to the bay bottom.*
5. *Shop Drawings:*

Shop drawings shall include Bridge number, Bent numbers and Pile numbers, Pile dimensions, Survey of Piles illustrating limits of sound concrete, Jacket's length, pumping & location of entry points for grout.

A complete description of the method for placement, including method for removal of unsound concrete, removal of existing Jackets and cleaning of concrete and steel above water.
6. *Only one pile per bent may be repaired during any given time period. The purpose of this is to preserve the structural integrity of the bent. Piles in the same position in adjacent bents shall not be repaired during the same given time period. If at any time the pile or pile bent integrity is in question, work shall be stopped and the Engineer consulted immediately.*

P. GROUP 12: JOINTS

1. Joint rehabilitations per FDOT Standard Specification 458.
2. 458-2: Polymer Nosing for Bridge Deck Expansion Joint shall include: cutting back asphalt or concrete; preparing contact surfaces, mixing and placing polymer nosing; and placing of poured joint with backer rod. Dow-Corning XJS 902 RCS and XJS Expansions Joint System or an approved equivalent.

Q. GROUP 13: STRUCTURES

1. Refer to FDOT Standard Specifications and Basis of Estimates for further information unless supplemented or superseded in this section.
2. 460-1-X: Rehabilitation of Existing structural steel. The additional descriptors shall indicate the scope of work necessary to accurately bid unit prices for each item. For example, 0460 1 5 is to rehabilitate structural steel located on a bascule span; the CONTRACTOR shall consider accessibility, difficulty of access, and interruptions from operation of bascule bridge during the rehab work.
3. 460-2-X: CONTRACTOR shall install new structural steel per FDOT Standard Specification 460, properly coated per FDOT Standard Specification 560, in the location indicated in the Project Documents.
4. 460-81: Work includes removing (mechanical or drilling), preparing the faying surfaces, installing and tightening of the bolts.
5. 460-98-X: Unit price includes the furnishing and installing of pipe hanger for utilities under bridge deck overhangs or other location indicated on the work order plans. Unit price also includes installing new pipe hanger or removing and replacing existing pipe hanger.
6. 460-112: Involves cutting off the existing anchor bolt below shear plane so that 12 bolt diameters of new anchor bolt can be installed. The splice of existing to new anchor bolt is via threaded coupler only rated with a capacity that exceeds the ultimate strength of the anchor bolt itself.
 - a) Chip away grout and concrete to expose several inches of existing anchor bolt below the equipment base. A one inch bolt will need a hole approximately 12 inches deep. Chip the hole wide enough to provide access for a portable band saw or other power driven saw.
 - b) Cut off the existing anchor bolt two to three inches above the bottom of the chipped hole and then thread the old anchor bolt stub to match the threads in the coupling nut. Coupling nuts should have 8 pitch threads so a high-strength top replacement section can be used. The top of the coupling nut to the top of the shear plane should measure 12 bolt diameters.
 - c) Add the top section, screwing it by hand, without thread locker, into the coupling nut.
 - d) Place FDOT APL epoxy grout in chipped area and level.

e) Allow for setting per the grout manufacturer's recommendations prior to loading anchor.

7. 465-3-19: Furnish and install movable bridge, steel, counterweight ballast on any of the drawbridges. Each ballast block shall match the detail provided below. Payment is per ton.

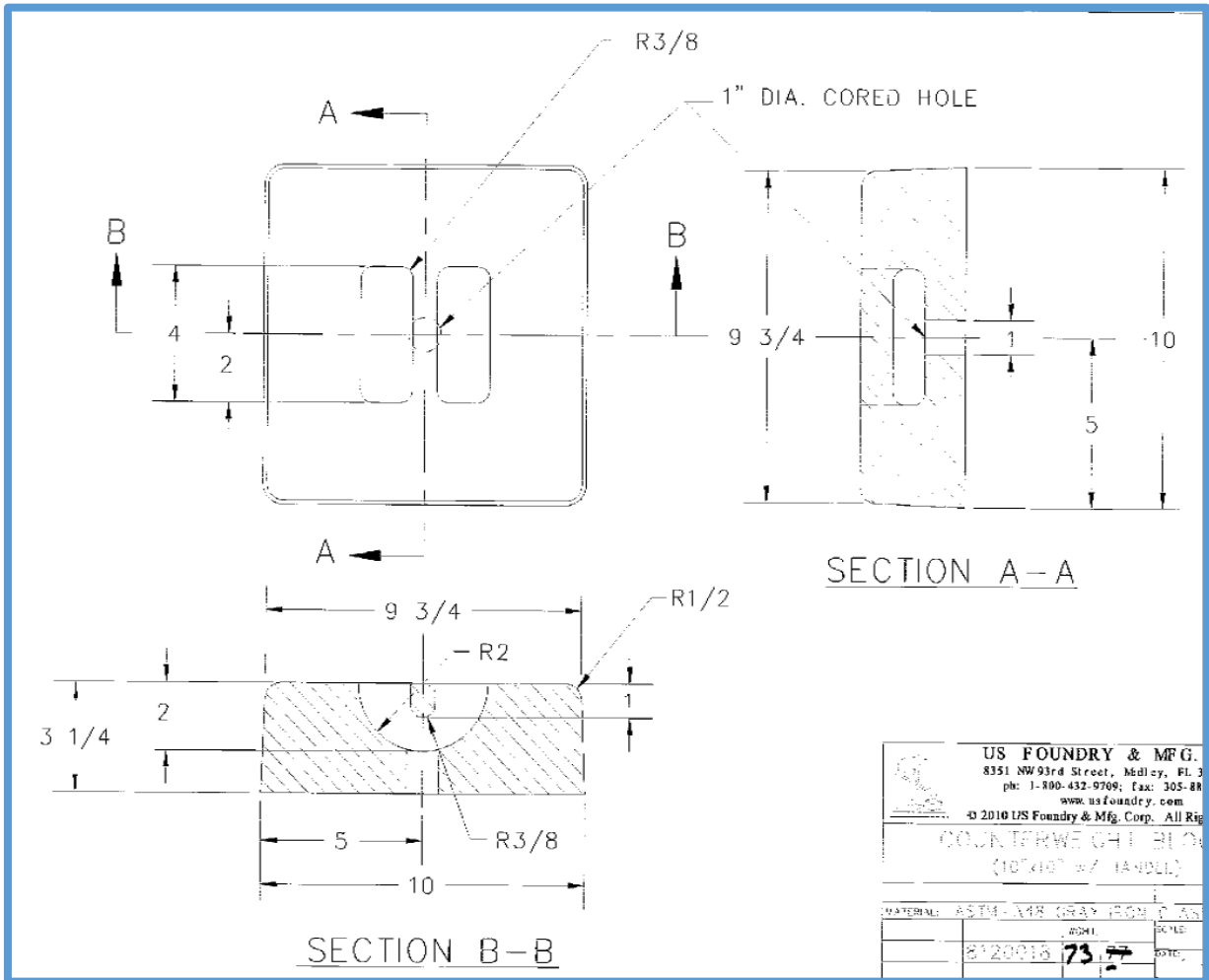


Figure A for 465-3-19

8. 465-3-50: Movable bridge counterweight shall be adjusted as follows:

- a) Description: Span Balance
 - 1.) This work includes balance testing and analysis, balance monitoring throughout construction, all required weight changes and any permanent or temporary weight that is required to maintain the balance requirements provided herein. A complete test procedure shall be submitted to the Project Manager for approval prior to the initial balance test.
 - 2.) The initial balance condition and the balance condition at the completion of construction shall be determined by the dynamic strain gauge method as described herein. During construction, the balance condition shall be calculated by monitoring the weight and location of all weight changes to the bascule span.
 - 3.) The balance spreadsheets (for two leaves) to be used to monitor the balance of the leaves during construction are to be submitted and approved by the Project Manager prior to the start of construction. The initial balance test (for two leaves) shall be performed prior to construction. The final balance test (for two leaves) shall be performed after all construction work is complete. The CONTRACTOR may elect to perform a balance test, at its own expense, anytime during the project.

- b) Strain Gauge Testing Requirements: Other methods may be submitted for approval, however the unit price shall account for the possibility that the submitted method may not be approved.
 - 1.) Two strain gauges shall be mounted on each rack-pinion shaft (S1) between the rack gear (G1) and the main girder bearing (B1), other quadrants similar but opposite. The gauges shall be mounted back to back (i.e. spaced 180 degrees circumferentially on the shaft and wired in a Wheatstone bridge configuration so as to measure torsion only).
 - 2.) The gauges from the two (2) pinion shafts shall be connected to a recording device capable of providing a permanent record of the strain in the shaft versus span angle. The span angle shall be recorded using either an event marker mounted on an appropriate shaft or on angle transducer mounted to the movable structure. The output for the span angle shall be recorded simultaneously and on the same device with the imbalance strain.
 - 3.) The strain recording device shall be capable of recording the strain for each shaft independently. The strain recording device shall also be capable of providing output sufficient to obtain the total strain for both shafts at any given point. Each leaf shall be tested through at least, three complete cycles, and a permanent record of each test shall be maintained. All testing is to be conducted with no extraneous materials or water on the movable span and the wind speed shall be less than 10 mph.
 - 4.) Ensure that each bascule leaf is balanced in accordance with the requirements of AASHTO LRFD Movable Highway Bridge Design Specifications, 2nd Edition (Interim), Section 1.5.

- 5.) Following each balance adjustment, conduct additional strain gauge testing and analysis to verify the span balance condition.
 - 6.) Repeat the testing until the desired balance of the bridge has been achieved.
 - 7.) The test procedure shall include the following:
 - Test method
 - List of equipment
 - Sample calculations
 - Report format
 - 8.) After the balance tests have been completed, submit a formal report signed and sealed by the CONTRACTOR's Professional Engineer who conducted the tests. The report shall include the following:
 - Introduction
 - Test Procedure and List of Equipment
 - Method of Analyzing Recorded Data
 - Presentation of Results
 - Conclusions
 - Calculations
 - Strain Data from Final Test
 - Graphical Representation of Span Balance vs. Opening Angle
 - 9.) Payment for the labor to adjust the physical counterweight is included in this unit price. This item shall include delivering counterweight ballast removed to HBMD Maintenance Yard in Pompano Beach, FL or another of the movable bridges in Fort Lauderdale. Payment for any additional counterweight required shall be paid for through Pay Item 0465-3-19.
9. 465-21: Supply Movable Bridge Operator with a minimum of six months experience of operating a bascule bridge. When requested, supply the experience record of the movable bridge operator. Documentation shall be submitted within three business days of County's request.
10. 506-72: This item involves the use of mechanical, pneumatic, or hydraulic means to purge bridge drainage pipes. The CONTRACTOR is hereby notified that there are two complex bridges currently in the County's inventory. Bridge No. 860594 is a continuous, quadruple steel tub bridge with bridge drainage in the steel tubs and in the integral caps. Access to the steel tubs is via ladder only and access to each drainage cleanout is several hundred feet apart within the steel tubs. Bridge Nos. 864121/864122 have exposed bridge drains accessible from the ground via man-lift or scissor lift. Other locations are low-level and accessible by truck, foot, or by scissor lift.
11. 508-2-X: Furnish movable bridge traffic gates. The gates shall be B&B Roadway Security Solutions or an approved equivalent that is compatible with the existing gate assembly.
- a) 508-2-1A: B&B Roadway Security Solutions Part #0100-0102-324-FL913, or an approved equivalent. 27 feet, 0 inch arm length, with 4 alternating L7 12 LED Lights, 16 inch red/white hi-intensity sheeting, two pairs of truss cables, bumper, and swinging arm leg.

- b) 508-2-1B: B&B Roadway Security Solutions Part #0100-0102-378-FL913, or an approved equivalent. 31 foot, 6 inch arm length, 4 alternating L7 12 LED Lights, 16 inch red/white hi-intensity sheeting, two pairs of truss cables, bumper, and swinging arm leg.

12. Movable Bridge Deck – Steel Grid Floors & Aluminum Sidewalk Floor

- a) Description: For bridge deck grating for replacement of all, or portions of, existing bridge deck grating. Aluminum non-slip plates are used on some bridge walkways.
- b) Materials: Hot Dipped Galvanized A36 steel. Aluminum may be used when appropriate to match existing.
- c) Criteria: Structural capacity for AASHTO HS-20-44 maximum wheel load (16 kip + Impact) for bridge deck grating or 85 PSF for aluminum, non-slip plating sidewalk.
- d) Product for Steel Bridge Deck : Structural and riding properties equivalent to 5 inch, 5-way, serrated Riv-Dexteel bridge deck grating manufactured by Amico Grating, or equal.
- e) Basis of Payment:
 - 1. Unit price includes all labor, equipment, tools, materials and incidentals (such as welding equipment, clamps, etc.) to furnish and install decking or plating on fixed or bascule bridges.

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SKILLED AND UNSKILLED HOURLY RATES

For the hourly labor rates below, a three hour minimum charge is permitted. Everything beyond three hours will be pro-rated into quarter hours (0 to 15 minutes is a quarter hour, etc.). Travel time is not reimbursable. If there is a change in service provider, the qualifications for the new provider shall be submitted before the requested change is allowed by the County.

The certifications, experience and licensing for the following personnel should be submitted at the time of bid; if not provided, provide within three business days of County's request. This information shall be provided for all CONTRACTOR personnel and/or any proposed subcontractors that may perform the work on behalf of CONTRACTOR.

13. Movable Bridge Mechanic: Supply a bridge mechanic with at least five years' experience in movable bridge machinery or similar industry, in the construction, maintenance and repair of movable bridge machinery. No additional payment will be made for travel to or from the site.

a) This is specialized manual work in a variety of tasks related to the maintenance and renovation of drawbridges. The Movable Bridge Mechanic shall perform mechanical adjustments and repairs of bascule bridges. Work involves skilled use of varied bridge equipment and tools. Duties require knowledge of safety measures and efficient work methods as well as ability to perform work under hazardous conditions.

b) Illustrative Tasks:

1. Performs the more difficult tasks in bridge maintenance and renovation; maintains, troubleshoots and repairs: electric motors, mechanical and hydraulic components and equipment.
2. Installs and repairs traffic gates and barriers, and hand rails.
3. Installs different bridge machinery systems and equipment, including, but not limited to, hydraulic, electrical, and mechanical components and parts.
4. Adjusts hydraulic brake thrusters.
5. Operates pumps, electric drills, saws, and other tools.
6. Repairs pumps and disassembles, cleans, replaces worn parts.
7. Repairs and adjusts bridge brakes, span locks, gate mechanisms, and drive linkage; changes bridge drive motors.
8. Applies lubrication to various mechanical parts of bridge with gun, can, spray, spatula, and brush as appropriate.
9. Operates bridges on an emergency basis.
10. Cleans and/or paints mechanical, hydraulic and electrical components.
11. Performs related work as required.

c) Knowledge, Abilities and Skills:

1. Knowledge of the materials, equipment, and labor methods commonly employed in repairing, renovating, or reconstructing wooden, concrete and steel bridges.
2. Knowledge of hydraulic, electrical and mechanical equipment and systems, including troubleshooting, maintenance and repair.
3. Knowledge of the necessary precautions in rigging.
4. Knowledge of necessary precautions and safety protective equipment for working at dangerous heights.

5. Knowledge of the methods, materials, tools, and practices used in the painting of structural steel surfaces.
 6. Skilled in the use of tools and equipment used in the maintenance and renovation of drawbridges.
14. Machinist: Supply a machinist with at least five years of continuous, recent experience (or equal) in the machining and fabricating precision machined alloys and forgings or possesses a recognizable industry certification for these services. Machinist to provide field or shop labor as required. No additional payment will be made for travel to or from the site.
- a) This is skilled work at the journey level in the construction, assembly, installation, and repair of metal parts, tools, and equipment.
 - b) Work involves the operation and maintenance of various lathes, milling machines, radial drills, surface grinders, horizontal and vertical saws, and related machinery used in the fabrication, maintenance, and repair of a wide variety of metal parts, tools, and equipment. Work involves performing intricate precision layout work.
 - c) Illustrative Tasks:
 1. Manufactures new sleeves, shafts, and bushings from various types of metals; performs heli-arc welding.
 2. Lays out sketches for replacement of equipment and machine parts; lays out intricate bolt-hole patterns, center lines on shafts, and lengths of cuts to be made.
 3. Designs and sharpens carbide and high-speed cutting tools for lathes; sharpens drill bits.
 4. Turns right-handed and left-handed threads, both standard and metric, on shafts; turns threads on inside diameters; makes pipe threads.
 5. Repairs shafts; re-machines bearing housings and drive shafts for pumps and motors.
 6. Disassembles, inspects, repairs or replaces worn parts and reassembles pump, gearboxes and other mechanical equipment.
 - d) Knowledge, Abilities and Skills:
 1. Considerable knowledge of the standard tools, materials, methods, and practices of the machinist trade.
 2. Considerable knowledge of the occupational hazards and safety precautions of the trade.
 3. Considerable knowledge of metallizing equipment and measuring instruments and gauges.
 4. Ability to perform precision machinist work holding close tolerance with required measuring instruments and gauges.
 5. Ability to interpret and work from plans, blueprints, sketches, and existent broken or worn parts.
 6. Skilled in steel fabrication including: arc welding, mig welding, acetylene and oxygen cutting.
 7. Skilled in operation of press brakes, iron workers, shear, pipe-bending machines, and rolling machines is desired.
 8. Skilled in aluminum welding.

15. Electrician: The following tasks shall be completed by a firm possessing one of the following licenses: State of Florida Certified Electrical Contractor, Broward County Master Electrician, or Broward County Electrical Contractor. No additional payment to be made for travel time to and from jobsite.

a) Illustrative Tasks:

1. Troubleshoots a variety of electrical equipment/system problems in order to identify the nature and extent of the maintenance/repair problem, identify the type of repair/preventive measure needed, identify potential safety issues, and/or find the fault in the system.
2. Performs a variety of routine electrical maintenance/repairs in order to maintain facility/equipment in operating condition, ensure safe work environment, and/or ensure electrical service is not interrupted.
3. Performs scheduled preventive maintenance on a variety of electrical equipment/services in order to identify potential problems, minimize need for emergency repairs, and/or maximize the usefulness of the equipment.

b) Knowledge, Abilities and Skills:

1. Knowledge of established safety procedures for performing a variety of skilled electrical construction, maintenance, and repair work.
2. Knowledge of types of materials appropriate for use in a variety of skilled electrical construction, maintenance, and repair work.
3. Knowledge of electrical system troubleshooting procedures and techniques.
4. Knowledge of electrical circuit/load principles.
5. Knowledge of the National Electric Code.
6. Knowledge of tools and equipment used for a variety of skilled electrical work.
7. Ability to troubleshoot a variety of electrical problems.
8. Ability to climb a ladder.
9. Ability to bend, stoop, twist, and reach to complete a variety of work assignments.
10. Ability to determine the type/amount of materials needed to complete the assigned project.
11. Ability to analyze problems and identify possible solutions.
12. Must have experience troubleshooting electrical relay control systems.
13. Must be able to supply tools typically used by electricians in the movable bridge industry.

16. AWS Certified Welder: Supply an AWS Certified Welder associated with a fabricator certified by the AISC Quality Certification Program for Simple Steel Bridges or Major Steel Bridges. No additional payment to be made for travel time to and from jobsite.

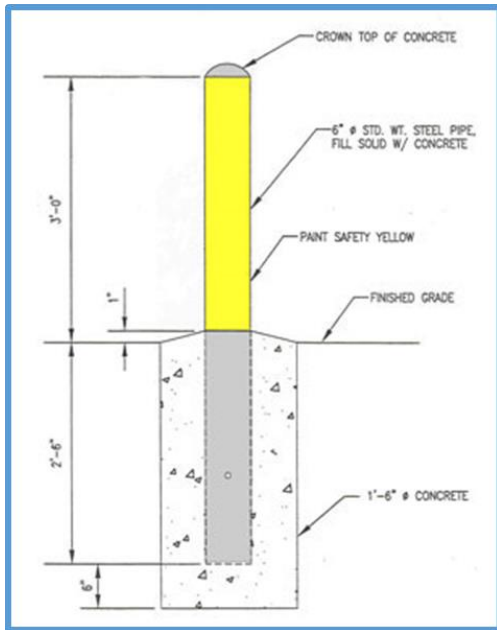
a) Knowledge, Abilities and Skills:

1. Knowledge of types of materials appropriate for use in a variety of skilled construction, maintenance, and repair work.

2. Knowledge of metals and their characteristics including rod types, sizes and appropriate uses.
 3. Knowledge of tools and equipment used for a variety of skilled welding tasks.
 - b) The AWS Certified Welder shall be equipped with all necessary equipment, tools and supplies to safely perform any of the Welding Procedure Specification prescribed in the Bridge Welding Code or required of an AISC certified fabricator.
 - c) No additional payment shall be made for mobilization of bridge welding equipment.
17. Commercial Diver: Supply a commercial or industrial diver team of at least 2 divers experienced in performing underwater construction, in some cases in confined spaces such as bridge substructures, drainage outfalls, etc.
- a) Divers shall possess Unrestricted Surface Supplied Diver certification, Entry Level/Tender/Diver Certification, or be able to demonstrate commensurate experience required to obtain either of the referenced certifications with approval from the Project Manager. Proof of certification may be required at any time during the Contract.
 - b) No additional payment shall be made for mobilization of the diver to a project site.
 - c) The unit price includes travel, mobilization, cameras, video recording equipment, tender truck, landside support personnel and any equipment normally required for the divers to safely and efficiently perform these services.
18. Certified Bridge Inspector (For underwater inspections): Supply a commercial diver certified as a Bridge Inspector with FDOT, or a commercial diver also registered as a Professional Engineer in the State of Florida with experience in inspecting underwater structures with additional diver support.
- a) No additional payment shall be made for mobilization.
 - b) The unit price includes travel, mobilization, cameras, video recording equipment, tender truck, landside support personnel and any equipment normally required for the divers to safely and efficiently perform these services.
19. Day Laborer: Provide unskilled labor to perform tasks not specifically covered by any Pay Item in this Contract. The Project Manager, as delegated by the Contract Administrator, has the sole discretion to approve the task performed by the Day Laborer.
- a) Payment for the Day Laborer will be per hour for hours actually worked and verified.
 - b) The Day Laborer shall be able to climb ladders, lift at least 75 pounds, and have a general familiarity with common construction methods.

R. GROUP 14: RAILINGS

519-78: Furnish and install bollard per detail below.
Figure B for 519-78



S. GROUP 15: CURBING AND TRAFFIC BARRIERS
No additional requirements or remarks.

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T. GROUP 16: SIDEWALKS AND CURB RAMPS

1. 526-1-2: This item is limited to the repair of architectural sidewalk pavers associated with bridges (approaches, intersections, etc.). CONTRACTOR shall match the color and quality of existing pavers to accomplish the task.
2. ADA Compliant Curb Ramps: Payment for these items includes the removal, compacting, forming, placing concrete, placing detectable warning surfaces, and finishing of each of the curb ramp types referenced on the electronic bid pricing sheet. FDOT Standard Specification 522, and FDOT Standard Index 304 shall apply. Detectable warning areas and curb ramp dimensions are shown in the referenced standard for estimating purposes only. These items include the redressing of adjacent curbs to match the new grades of the curb ramps proposed.
 - a. ADA COMPLIANT CURB RAMP, SINGLE DIRECTION
Unit price of the pay item listed above includes full compensation for:
 - Ramp must conform to FDOT Design Standards Index 300 and 304 or variation approved by the Project Manager.
 - Project Manager shall specify ramp type.
 - Ramp size shall not exceed 100 SF; any overage shall be pro-rated.
 - b. ADA COMPLIANT CURB RAMP, TWO-DIRECTIONS
Unit price of the pay item listed above includes full compensation for:
 - Ramp must conform to FDOT Design Standards Index 300 and 304 or variation approved by the Project Manager.
 - Project Manager shall specify ramp type.
 - Ramp size shall not exceed 200 SF; any overage shall be pro-rated.

U. GROUP 17: SLOPE PROTECTION

1. 514-71-1: Furnish and install filter fabric on slopes, under rip-rap, slope pavement, bedding stone, articulating block revetment, or fabric formed rip rap. Geotextile shall be type D-2 per Standard Index 199 (2014 version), and Specification 985. CONTRACTOR shall note that filter fabric may be used in conjunction with articulating block revetment. Installations may be underwater and in canal or river bottoms.
2. 530-78: Furnish and install articulating block revetment mat as scour protection under bridges.
 - a) Scope: The work covered by this Section consists of furnishing all labor, equipment, tools, materials and incidentals and performing all operations in connection with the installation of cellular concrete mattresses in accordance with the lines, grades, design, and dimensions shown on the drawings and as specified herein.
 - b) Delivery, Storage, and Handling of Materials
 1. Materials delivered to the job site shall be inspected by the CONTRACTOR for damage, then unloaded and stored with the minimum of handling. Materials shall be kept free of dirt and debris.
 2. Materials shall be handled in such a manner as to ensure delivery to the job site in a sound, undamaged condition. Synthetic geotextiles that are not to be installed immediately shall be protected from the direct sunlight.

c) Shop Drawings

1. At least 30 days prior to the start of any installation of the cellular concrete mats, the CONTRACTOR shall submit to the Project Manager all shop drawings for the layout and details of the cellular concrete mats. The cellular concrete mats layout shall be to the lines and grades shown on the drawings provided in the Project Documents. The shop drawings shall include layout, layout sequence, anchor details, mat junction details, anchor to mat connection details, tie-down details, and details for grade change.
2. The CONTRACTOR shall submit to the Project Manager the cellular concrete block revetment system certification letter from the manufacturer confirming that the revetment system and components meet the requirements of this specification.
3. The CONTRACTOR shall provide to the project manager all test results documenting that the revetment system has been tested under controlled flow conditions for hydraulic performance characteristics in accordance with FHWA-RD-89-199, utilizing a 2:1 slope in the direction of flow.

d) Construction Methods

Areas on which filter fabric and cellular concrete mattresses are to be placed shall be constructed to the lines and grades shown on the drawings in the Project Documents. The subgrade for the cellular concrete mats shall be free of voids, pits, or depressions, and shall be proof-rolled to a minimum of 90% of the ASTM D 698 Density. Voids, pits or depressions shall be brought to grade by backfilling in accordance with the applicable portions of the project specifications. All obstructions, such as roots and projecting stones larger than one inch remaining on the surface, shall be removed, and all of the soft or low density pockets of material removed must be filled with selected material and compacted to a minimum of 90% of the ASTM D 698 density. Special consideration for buried obstructions (i.e. stumps, debris, etc.) will be as shown on the drawings in the Project Documents.

e) Installation of Cellular Concrete Mattresses

1. Cellular concrete mattresses shall be placed within the limits shown on the drawings in the Project Documents. The cellular concrete mats or blocks shall be placed on the filter fabric in such a manner as to produce a relatively planar surface. No more than 200 linear feet of filter fabric shall be laid before being covered with concrete mattresses, and any fabric installed more than two calendar days shall be lifted, and the surface of the slope inspected for any slope defects. The Project Manager may require any uncovered fabric to be lifted after heavy rainfall to inspect for slope damage. Final acceptance and approval of the installation will be made by the Project Manager. The CONTRACTOR shall hold the County harmless from liability of any kind arising from the use of any patented or non-patented invention used in the performance of this work.
2. Placement of prefabricated mattresses shall be accomplished with mats attached to a spreader bar or other approved device to aid in the lifting and placing of the mats in their proper position by the use of a crane or other

approved equipment. The mats shall be placed side-by-side and/or end-to-end so that the mats abut each other. The maximum space or gap between mattresses shall be 3 inches, except that local wider gaps may be accepted if the length of the gap is less than 3 feet and the entire gap is grouted. No overlapping of mats shall be accepted, and no blocks shall project vertically more than 1 inch beyond the adjacent blocks. All placements of mats shall be in accordance with the mat manufacturer's recommendations and the CONTRACTOR's approved shop drawings. As adjacent mats are placed, they shall be secured to each other by fastening the protruding horizontal and vertical cable connections and end cable loops together along each side of the mats. The fastening shall be done with approved sleeves.

3. Adjacent layers of filter fabric shall have a minimum of two feet of overlap. Fabric shall be secured with 6 inch x 1 inch x 6 inch steel pins prior to placement of cellular concrete mattresses.

f) Payment

The unit of measurement for the cellular concrete mattresses shall be by the square yard of cellular concrete mattresses placed. The unit price includes all costs for furnishing, hauling, and placing the cellular concrete mattresses as specified herein.

g) Reference Standard: Shoretec Shoreblock BD-400 OC is the reference standard for this item, or an approved equivalent.

3. 547-70-X: Furnish and install at various locations associated with bridges.

a) Scope: The CONTRACTOR shall furnish all labor, materials, equipment, tools and incidentals required to perform all operations in connection with the installation of the proposed Filter Point (FP) lining in accordance with the lines, grades, design, and dimensions shown on the Project Documents and as specified herein.

b) Description: The work shall consist of installing an unreinforced concrete lining by positioning specially woven, double-layer synthetic forms on the surface to be protected, and filling them with a pumpable, fine aggregate concrete (structural grout) in such a way as to form a stable lining of required thickness, weight and configuration.

c) Installation:

1. Areas on which fabric forms are to be placed shall be constructed to the lines, grades, contours, and dimensions shown on the Project Documents. All obstructions such as roots and projecting stones shall be removed. Where such areas are below the allowable grades determined by the Project Manager, they shall be brought to grade by placing compacted layers of select material. The thickness of layers and the amount of compaction shall be as specified by the Project Manager. Immediately prior to placing the fabric forms, the prepared area shall be inspected by the Project Manager, and no forms shall be placed thereon until the area has been approved.
2. A filter fabric shall be placed on the graded surface approved by the Project Manager. Fabric forms shall be placed over the filter fabric and within the limits shown on the Project Documents. Anchoring of the fabric forms shall be accomplished through the use of anchor, terminal and toe trenches. Adjacent fabric forms shall be joined before filling with fine aggregate concrete by field sewing or zippering the two bottom layers of fabric together and the two top layers of fabric together. All field seams shall be made using two lines of U.S. Federal Standard Type 101 stitches.
3. All sewn seams shall be downward facing, and all zipper seams shall be fastened as shown on the Project Documents, except with the approval of the Engineer. When conventional joining of fabric forms is impractical, or where called for on the Project Documents, adjacent forms may be overlapped a minimum of 3 feet (1 meter) to form a lap joint, pending approval by the Engineer. Based on the predominant flow direction, the downstream edge of the form shall overlap the upstream edge of the next form. In no case shall simple butt joints between forms be used.
4. Expansion joints shall be provided as shown on the Project Documents, or as specified by the Project Manager. Immediately prior to filling with fine aggregate concrete, the assembled fabric forms shall be inspected by the Project Manager, and no fine aggregate concrete shall be pumped therein until the fabric seams have been approved. At no time shall the unfilled fabric forms be exposed to ultraviolet light (including direct sunlight) for a period exceeding five calendar days.
5. Following the placement of the fabric forms, small slits shall be cut in the top layer of the fabric form to allow the insertion of the filling pipe at the end of the fine aggregate concrete pump hose. These slits shall be of the minimum length to allow proper insertion of the filling pipe. Fine aggregate concrete shall be pumped between the top and bottom layers of fabric, filling the forms to the manufacturer's recommended thickness and configuration.
6. Fine aggregate concrete shall be pumped in such a way that excessive pressure on the fabric forms and cold joints are avoided. A cold joint is defined as one in which the pumping of the fine aggregate concrete into a given form is discontinued or interrupted for an interval of forty-five or more minutes.
7. Holes in the fabric forms left by the removal of the filling pipe shall be temporarily

closed by inserting a piece of nonwoven fabric or similar material. The nonwoven fabric shall be removed when the concrete is no longer fluid and the concrete surface at the hole shall be cleaned and smoothed by hand. Foot traffic on the filled form shall be restricted to an absolute minimum for one hour after filling.

8. After the fine aggregate concrete has set, all anchor, terminal and toe trenches shall be backfilled and compacted, as specified by the Project Manager. The Filter Point Lining shall be measured by the number of square yards computed from the payment lines shown on the Project Documents or from payment lines established in writing by the Project Manager. This includes Filter Point fabric forms, fine aggregate concrete, and filter fabric used in the aprons, overlaps, and anchor, terminal, or toe trenches. Slope preparation, excavation and backfilling, and bedding are separate Pay Items.
9. The Referenced Standard for this item is Hydrotex FP800 (8 inch, 547-70-1), and FP1000 (10 inch, 547-70-2) or an approved equivalent. Payment is per square yard as identified herein.

V. GROUP 18: GUARDRAIL

No additional requirements or remarks.

W. GROUP 19: FENCING

1. FULL ENCLOSURE SPECIAL: Shall match existing installed non-standard fences which cannot be installed per FDOT Standard Index 812.
2. 550 10 : Remove fencing from existing locations. Removal includes wire mesh, post(s), accessories, concrete post foundations, and anchor bolts and shall include completely filling any resulting openings with a FDOT approved grout.
 - a. Removal shall be for any type fence in any location. CONTRACTOR shall note that full enclosure fence removal may be over live traffic.
 - b. Unit price includes protection from falling debris on to pedestrians, vehicular traffic, or navigation below.
 - c. When removing and replacing Full Enclosure Fence; removal shall be carried out in stages to ensure that Full Enclosure Fencing is in place when CONTRACTOR is not on site.

X. GROUP 20: SURFACES

1. The CONTRACTOR is made aware that many of the structures requiring painting per this Group if items are elevated, over water, or are situated in environments where the apparent wind conditions are such that the risk for the spread of overspray or the spread of debris is highly probable. The CONTRACTOR shall be required to submit to the Project Manager a written containment plan referenced in this specification prior to the commencement of any work in this Group. The cost of this plan are included in the unit price for containment system (Pay Item 561 1D). All requirements of FDOT Section 561 are applicable. The requirements for Qualifications, Surface Preparation, Application, Protection, and Waste Handling are included therein.
2. 561-1X: These items are to be carried out in accordance with FDOT Standard Specification 561.

- a) 561-1A: This item includes rehabilitating scaling or rusting surfaces by any effective and approved means as specifically referred to in FDOT Standard Specification 561-6.1. This does not preclude the balance of FDOT Standard Specification 561, however, it is emphasized as a critical part of the work.
- b) 561-1C: The presence of structural steel coated with paint containing lead is probable. Prior to commencing work involving this item, CONTRACTOR shall submit for the Project Manager's review a waste management plan which specifically addresses hazardous waste management. This plan is not exclusive to this work item; however, it is emphasized as a critical part of the work.
- c) 561-1D: Furnish, install and remove a containment system required per FDOT Standard Specification 561. The containment system shall be paid for by calculating the projected, horizontal plan area of the area to be contained.
- d) 561-1E: This item shall be used to pay for waste stream and environmental sample testing per FDOT Standard Specification 561-11. Testing shall be performed by an EPA certified, independent laboratory with an approved Quality Assurance Plan. Lab analysis for worker monitoring and regulated area samples shall be conducted by an American Industrial Hygiene Association (AIHA) metals accredited laboratory.

Y. GROUP 21: LANDSCAPING

- 1. 570-1-2: County Project Manager may request the installation of *Mimosa Strigillosa* in lieu, of Bahia or St. Augustine.
- 2. 571 1 11, 571 1 12 and 571 1 13: Furnish and install turf reinforcement mat per the manufacturer's instructions. Refer to FDOT Standard Index 199 (Year 2014) for technical specifications of Types 1-3. Materials proposed shall conform to FDOT Standard Specification 985 (2018). Unit price includes the scope of work required by the product proposed which meets these specifications including the installation of anchors or other fasteners required by the system manufacturer. Excavation, grading and placement of sod or other turf shall be paid separately by the Pay Items elsewhere in the Contract.
- 3. 590-70-1: Provide skilled laborer to install, repair and program controllers on irrigation systems impacted by work performed through the Contract. This skilled laborer must be licensed to perform these services in Broward County.

Z. GROUP 22: ELECTRICAL OR COMMUNICATIONS CONDUIT

No additional requirements or remarks.

AA. GROUP 23: GENERATOR

- 1. 639 4 1A and 639 4 1B: Supply a portable generator capable of bypassing the model of generator indicated in the unit price.
 - a) The unit price includes delivery, connection, monitoring, fueling, refueling, insurance, and removal of the portable generator.
 - b) Also included in the unit price is at least 200 feet of power supply cable to tap into the

existing auto transfer switch should existing generators fail to perform.

BB. GROUP 24: MISCELLANEOUS

1. Crane Services Unit Cost shall include transportation to and from project location, assembly, set-up, and operation by National Commission for the Certification of Crane Operators (NCCCO) Certified Crane Operator. It shall include lattice or hydraulic boom crane; Crawler or All-Terrain type crane and shall comply with project requirements.
 - a. Crane Services Unit Cost shall include, but not limited to, all required rigging, equipment, and certified personnel (i.e. Certified Riggers, Certified Signal Person, etc.) to safely perform this service.
2. 10 FT. x 20 FT. Steel Work Barge Platform standard reference shall be the Flexi-float S-50 or S-70 or approved equal.
 - a. Submit to Project Manager proposed barge specifications for review for the required tasks.
 - b. Work barge configuration shall include means (i.e. boat) capable of moving complete assembled work platform into work location and be removed as required in navigable waters.
3. Lightweight Canal Work Platform (LCWP): Provide a modular lightweight work platform of at least 5 FT. x 8 FT. made of Aluminum, High-Density Polyethylene, or similar.
 - a. LCWP shall be capable of providing access to personnel, materials, and small equipment to required work areas.
 - b. LCWP may be easily pulled or pushed into work areas, if work boat is required; it shall be paid under Pay Item Work Skiff.
4. Boom Lift Unit Cost shall include Articulated or Telescopic booms.
5. The cost of transporting equipment to and from the job site is included in the unit price of the applicable Pay Item.
6. The County will not pay for equipment remaining overnight at the job site, or if the equipment is not operational for four hours or longer.

7. Equipment usage is eligible for reimbursement when, in the normal course of performing the installation of the associated items, the equipment would not be required.
8. Equipment will not be reimbursed when it is essential to perform the installation of the associated Pay Item (i.e. Pile or Sheet Pile Driving Operations, Beam Girder Installation, etc.).
9. A certified operator shall be included in the unit price for any equipment requiring an operator.
10. Equipment unit price includes all required fuel, refueling, or energy source.
11. Provide multi-discipline professional engineering services in support of activities below the Florida Competitive Consultant Negotiation Act (CCNA) limits. Professional Engineer services shall include, but not be limited to, civil, structural, electrical, and mechanical engineering disciplines in support of design, maintenance, construction, and repair of movable bridges. Construction costs of engineering solutions shall not be more than \$325,000 nor shall the fee for any usage of an engineering consultant exceed \$35,000, per use. Refer to Florida Statute 287.055 for more information. Hourly rate shall be inclusive of engineering, CADD, studies, reports, and signed and sealed specifications/ drawings. All deliverables and electronic files shall become the property of Broward County upon acceptance. All assigned tasks shall be documented via certified payroll to be eligible for reimbursement.

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