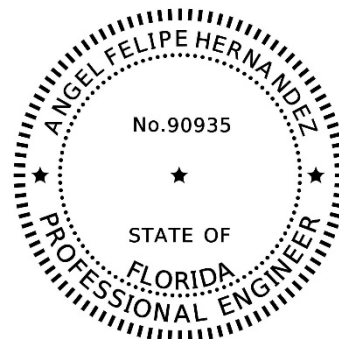


TECHNICAL SPECIFICATIONS
FOR
BIG CARLOS PASS BRIDGE REPLACEMENT BONITA
SPRINGS UTILITIES WATER MAIN RELOCATION

This item has been digitally signed and sealed by Angel F. Hernandez, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signatures must be verified on any electronic copies.

Date: 02/16/2022
Fla. License No.: 90935
Firm Name: CW3 Engineering, Inc.
Firm Address: 5783 Bayshore Rd. Ste. 113
City, State, Zip code: North Fort Myers, FL 33917



Technical Specifications

Bonita Springs Utilities Technical Specifications

Follow Bonita Springs Utilities Standard Specifications Revised April 2019 for all requirements including Technical Specification: The latest Specification can be found here:

<https://bsu.us/wp-content/uploads/2019/05/2019-BSU-Standard-Specifications.pdf>

Bonita Spring Utilities Standard Details can be obtained from the Bonita Springs Utilities website or by following this link:

<https://bsu.us/wp-content/uploads/2019/04/2019-BSU-Standard-Details.pdf>

A list of all applicable chapters from the Bonita Springs Utilities Standard Specifications are:

Chapter 1 – Introduction

Chapter 2 – Service Availability

Chapter 6 – Pre-Construction

Chapter 7 – Design, Material, and Technical Requirements

Chapter 8 – Construction / Testing Specifications

Chapter 9 – Turnover and Approval for Service

Bonita Spring Utilities Approved Vendor and Product Listings can be obtained from the Bonita Springs Utilities website or by following this link:

<https://bsu.us/wp-content/uploads/2021/12/2021-1213-BSU-Approved-Vendor-and-Product-Listing.pdf>

General Technical Specifications – Inclusion of FDOT Standard Specifications

The 2021 FDOT Edition of the Standard Specification for Road and Bridge Construction, as amended, will apply to, and form a part of the contract as is fully written herein. Where a FDOT Section is cited that contains references to other Sections, they will also be included as though written herein.

Where a reference is made to “Department” or “Department’s Representative” in the FDOT Standard Specifications and Technical Specifications, it shall mean “Owner” or “Owner’s Representative”, as applicable.

Where FDOT Standard specifications refer to the “Engineer”, “Engineer of Tests”, or “Division of Tests”, it shall be understood to mean the Engineer or the Owner as stated in the Contract Documents.

Copies of the FDOT Specification Manual and Supplements can be obtained from:

<https://www.fdot.gov/programmanagement/implemented/specbooks/default.shtm>

Method of measurement and basis of payment for material and work performed in conformance with the FDOT Standard Specifications and Technical Specifications shall be as indicated in the – BID SCHEDULE. The lump sum and/or unit cost bid shall be full compensation for labor, equipment, materials, and incidentals necessary to complete the Work in conformance with the Contract Documents.

All Indexes are to be referenced from the 2021 Standard Specifications for Road and Bridge Construction.

A list of all applicable Section from the 2021 Standard Specifications for Road and Bridge Construction are:

Section 101 – Mobilization

Section 102 – Maintenance of Traffic

Section 104 – Prevention, Control, and Abatement of Erosion and Water Pollution

Section 110 – Clearing and Grubbing

Section 570 – Performance Turf

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Explanation and Definitions
- B. Measurement
- C. Payment
- D. Schedule of Values
- E. Application for Payment

1.2 EXPLANATION AND DEFINITIONS

The following explanation of the Measurement and Payment for the Bid Schedule items is made for information and guidance. The omission of reference to any item in this description shall not, however, alter the intent of the bid form or relieve the Contractor of the necessity of furnishing such as a part of the Contract.

1.3 MEASUREMENT

The quantities set forth in the Bid Schedules are approximate and are given to establish a uniform basis for the comparison of bids. Bonita Springs Utilities (BSU) reserves the right to increase or decrease the quantity of any class or portion of the work during the progress of construction in accord with the terms of the Contract.

1.4 PAYMENT

- A. Payment shall be made for the items listed on the Bid Schedules on the basis of the work actually performed and completed, such work including but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, clean up, restoration of disturbed areas, and all other appurtenances to complete the construction and installation of the work as shown on the drawings and described in the specifications.
- B. Unit prices are used as a means of computing the final figures for bid and Contract purposes, for periodic payments for work performed, for determining value of additions or deletions and wherever else reasonable.

1.5 SCHEDULE OF VALUES

- A. Approval of Schedule: Submit for approval a preliminary schedule of values, in duplicate, for all of the Work. Prepare preliminary schedule in accordance with the General Conditions. Submit preliminary schedule of values within 10 calendar days

after the Effective Date of the Agreement. Submit final schedule of values in accordance with the General Conditions.

- B. Format: Utilize a format similar to the Table of Contents of the Project Specifications. Identify each line item with number and title of the major specification. Identify site mobilization, bonds and insurance. Include within each line item, a direct proportional amount of Contractor's overhead profit.
- C. Revisions: With each Application for Payment, revise schedule to list approved Change Orders.

1.6 APPLICATION FOR PAYMENT

- A. Required Copies: Submit three copies of each application on EJCDC Form No. 1910-8-E (1990) or approved equal. Present required information in typewritten form or on electronic media printout.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values.
- D. Stored Materials: When payment for materials stored is permitted, submit a separate schedule for Materials Stored showing line item, description, previous value received, value incorporated into the Work and present value.
- E. Change Orders: List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of work.
- F. Final Payment: Prepare Application for Final Payment as required in the General Conditions.
- G. Submit an updated construction schedule for each Application for Payment.
- H. Submit application for payment to ENGINEER on, or before, end the first full week of each Month.

PART 2 EXECUTION

2.1 PAYMENT

A. PAYMENT ITEMS

A. Mobilization

Payment for mobilization will be made for at the Contract lump sum price and shall include the establishment of safety equipment, first aid supplies, sanitary and other facilities, as required by these specifications, State and local laws; all other preconstruction expense necessary for the state of the Work, insurance and bonds, the cost of field engineering, including permits and fees, construction schedules (updated schedules are required monthly), shop drawings, temporary facilities, lay down storage area, construction aids and Survey layout.

The Preconstruction & Post Construction Audio-Video Recording is to be included in the price for Mobilization. This work includes necessary documentation of existing conditions on public and private properties. The Contractor may be required to restore private properties to conditions better than existing, at no additional cost to BSU, if the Contractor fails to sufficiently document existing conditions. Videos are to correlate with an associated report detailing all observations. Observations are to be listed in a table with, at a minimum, the date/time stamp from the video, street name, direction of travel, camera view (i.e. N, S, E, W, NW, NE, SW, SE) listed, address, and complete description of the observation.

Payment will be made under:

Item No. BSU 100-1	Mobilization
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B. Maintenance of Traffic

Maintenance of Traffic will be the same as in Lee County's Roadway plans. No additional MOT is required and no additional cost will be added for the work shown on the Plans.

C. Clearing and Grubbing

Payment for clearing and grubbing will be made for at the Contract lump sum price and will include the clearing of the additional area than shown on the Lee County's Roadway Plans set. This additional area is show on the Plans. This work includes the removal and disposal of all trees, stumps, roots and other such protruding objects, buildings, structures, existing and flexible pavement, sidewalk and other facilities necessary to prepare the area for the proposed construction. Remove and dispose of all products and debris not required to be salvaged or not require to complete construction.

The price and payment for Clearing and Grubbing will also include the removal of existing fire hydrant assemblies for fire hydrant assemblies acceptably removed. This includes all necessary equipment for the complete removal and appropriate disposal of the hydrant, concrete pad, gate valve, valve box and cover, restraints, thrust blocks, etc. as well as the associated water main pipe to the adjacent mainline tee. Any embankment material and compaction efforts required to fill the void left by the existing fire hydrant assembly is to be included in this item.

Payment will be made under:

Item No. BSU 110-1-1 Clearing & Grubbing

D. Performance Turf, Sod

Payment for performance turf (sod) will be made for at the Contract square yard price and will include the sod of the additional area than shown on the Lee County's Roadway Plans set. This additional area is show on the Plans. This work includes all the material and labor to establish a growing, healthy turf over the area shown in the plans. The sod to be install will match sod establish at the area shown in the Lee County Roadway Plans. Water the sod daily until it's established (per FDOT Standard Specification). Maintain performance turf area until final acceptance by Lee County and Bonita Springs Utilities.

Payment will be made under:

Item No. BSU 570-1-2 Performance Turf, Sod

E. Utility Pipe (Remove and Dispose, Plug and Place out of Service, Furnish and Install):

Payment for removing and disposing, plugging and placing out of service and/or furnishing and installing utility pipelines (various sizes and materials) will be made at the Contract unit price per linear foot for the pipe removed, plugged or installed in place. The utility work within the Lee County R/W must be completed by the Contractor using the approved MOT.

Remove and Dispose - The work of this item is to include all labor, materials and equipment to mobilize and demobilize, clear and grubbing (including drainage pipe), excavate, dewater, drain, properly dispose of materials and contents, plug or cap and remove existing water main, non-potable water main and force main pipes (including all appurtenances, fittings, restraints, and other in-line devices) designated to be removed as well as any bypass pumping or temporary main diversions necessary to construct improvements. Also included in this item are the removal, disposal, and salvage of existing valves, and valve boxes, valve pads, steel casings, thrust blocks, air release valves and vaults, water meters, and backflow preventers located on piping designated to be removed. Any embankment material and compaction efforts required to fill the material voids are included in this item.

Plug and Place out of Service - The work of this item is to include all labor, materials and equipment to mobilize and demobilize, clear and grubbing (including drainage pipe), excavate, dewater, drain, plug or cap, install grouting tubes, and grout in place existing water mains, non-potable water main, force main and / or casing pipe

designated to be placed out-of-service and grouted in place. Include any removal and restoration required to install grouting tubes in areas otherwise undisturbed by other roadway and utility construction. Remove and dispose of grouting spoils. Restore all work areas to the Engineer's satisfaction. Remove any valve pads, and boxes, or any other appurtenances that are part of the main that is placed out of service. Unless specified by other Pay Item, these are to be included in the linear foot cost of this item.

The method of grout installation shall be able to meet the requirement of completely filling the existing mains and any voids adjacent to the lines. The methods are to provide for the release of air. When intermediate points are required to be constructed for the grouting of the mains, they are to be part of placing the system out of service.

Each section of main to be placed out of service is to be first plugged with a cement mortar mix at least two pipe diameters in thickness. A PVC grout/vent tube is to be grouted in place at the top of the pipe during installation of the cement mortar plug. The grout/vent tube is not to extend more than 4' past the cement mortar plug into the line to be grouted. The vent tube is to be extended at least 3' above the invert of the line. An approved grout mix shall be continuously pumped through the grout tube until grout mix returns out of vent tube. The head pressure needed to make cement return through the vent tube is to be maintained for at least 10 minutes after return occurs.

Furnish and Install Water Main – This item includes all proposed materials, labor, equipment and materials for the furnishing and laying of the pipe, dewatering, clear and grubbing (including drainage pipe), directional drilling, joint fusing HDPE pipe adapters, bore pit(s), signing, dewatering, compaction, pipe bedding, backfilling, furnishing and installing sheeting, shoring and bracing, sheeting design & analysis, mylar detectable tape, polyethylene sleeve, clamps, harnessing, adapters, spacers, brick, plugs, excavation of all material encountered including rock, backfill, flowable fill and other surface materials not specifically designated in the Bid, clean-up, sterilization, sleeves/restraining glands/restraining devices (unless specific separate pay item is identified), connections to existing and tests as well as any bypass pumping or temporary main diversions necessary to construct improvements. Clearing, grubbing, installation and restoration required for placing restraints on existing mains at tie in locations are to be included in the linear foot measurement of the proposed main(s). Measurement of the pipe is to be to the nearest foot along the centerline including the lengths of valves and fittings. Linear footage measurement is to be horizontal (plan length). No distinction will be made for varying depths of bury for the pipelines. Additional sediment barrier as shown in the Plans is to be included in the cost of the pipe.

*******ADDITIONAL ITEMS TO BE INCLUDED IN THE LINEAR FOOT COST OF UTILITY PIPE.*******

- **As-Built Survey** – Installation/Removal/Plugging of the utility pipelines is to include record plan information furnished to the Engineer. The Record Plans must identify and satisfy the Bonita Springs Utilities as-built/record drawing requirements which include vertical and horizontal alignment, type of material, locations of material changes for all water, reclaimed and sewer lines, casings, valves, tees, bends, reducers, hydrants, casings, service size connections, grouting limits, meter boxes and/or pad, and other pertinent structures. Pipeline runs in excess of 100', without fittings are to include vertical alignment information at 100' intervals. Said alignment is to be tied to State Plane coordinates, and is to be certified by a Professional Land Surveyor, licensed in the State of Florida. All points provided are to indicate the size, elevation and type and material of item being identified. The contractor is to connect the as-built points and ensure the accuracy of the data. The Professional Land Surveyor can coordinate with the Contractor to install the necessary appurtenances on buried utilities to facilitate the survey at periodic intervals throughout construction.
- **Pressure Testing** – Include all necessary equipment, apparatuses, pressure gauges, etc. necessary for the intended construction sequence.
- **Chlorination/Bacteriological Sampling** – Include all necessary equipment, apparatuses, sampling points, etc. necessary for the intended construction sequence.
- **Existing Utilities** - Support of existing utility poles/equipment.
- **Traffic Signal Equipment** - heads, appurtenances, pavement loops, etc. required to be removed and re-installed after utility pipe installation are included. Coordination with the Department and the traffic signal maintenance and operations personnel are required.
- **Irrigation** - Irrigation main and/or appurtenance disturbance due to installation of utility infrastructure are to be removed, replaced and/or repaired immediately, at the same location and elevations. Coordination with Department and operations personnel are required.
- **Temporary Water Services** – All water services are to be maintained operation for the duration of this project. In areas where a temporary water service is required, the contractor will include the cost on the cost for the utility pipe. Coordination with Bonita Springs Utilities is required.
- **Water Services** – This item includes all labor and material from the water main to the meter box, all necessary pipe, fittings, connections, conduits/casings, tapping saddles,

tapping sleeves, curb stops, electronic markers, deflections, water meter/meter box adjustments, connection to existing meters, protection of existing utilities and facilities, removal of asphalt, placement of temporary asphalt, removal and replacement of shrubs, pavement, sidewalks and other surface materials, and all other work required for a complete installation in accordance with BSU standards. The connections to the water meters shall be performed by:

Rohaley & Sons Plumbing Contractors, Inc.
600 Danley Drive
Fort Myers, FL 33907
(239) 437-0123 Phone
(239) 437-0043 Fax
sewerdudes@rohaley.com

Utility Fittings (Furnish and install) – Payment for furnishing and installing utility fittings (various sizes, types) will be made at the Contract unit price of the linear feet of pipe. This item includes fittings, bends, tees, sleeves, where specific items are not referenced in the pay items. Connections to existing and proposed mains, labor, equipment and materials for the furnishing and installation of the fittings, signing, dewatering, compaction, pipe bedding, backfilling, furnishing and installing sheeting, shoring and bracing, sheeting design & analysis, mylar detectable tape, polyethylene sleeve, clamps, harnessing, adapters, excavation of all material encountered including rock, backfill, sod, clearing and grubbing, pavement, driveways, sidewalks, and other surface materials not specifically designated in the Bid, clean-up, sterilization, and tests.

Installation of the utility fittings is to include record plan information furnished to the Engineer. The Record Plans must include vertical and horizontal alignment of all water, reclaimed and sewer lines, valves, tees, bends, reducers, hydrants, service connections, meter boxes and/or pad, and other pertinent structures. Said information is to be tied to State Plane coordinates, and be certified by a Professional Land Surveyor, licensed in the State of Florida. All points provided are to indicate the size, type and material of item being identified. The Professional Land Surveyor can coordinate with the Contractor to install the necessary appurtenances on buried utilities to facilitate the survey at periodic intervals throughout construction. Include all necessary equipment, apparatuses, pressure gauges, etc. necessary for the intended construction sequence.

Payment will be made under:

Item No. BSU T-1000	Utility Pipe – Place out of service and Remove, PVC, Water, 12”
Item No. BSU T-1500	Utility Pipe – Place out of service and Grout, PVC, Water, 12”

Item No. BSU T-2000	Utility Pipe – DR18, PVC, F&I, Water, 6”
Item No. BSU T-2100	Utility Pipe – DR18, PVC, F&I, Water, 12”
Item No. BSU T-2110	Utility Pipe – DR14, PVC, F&I, Water, 12”
Item No. BSU T-2500	Utility Pipe – Steel, F&I, Casing 24”

F. Cut-in Connections –

Payment for furnishing and installing cut-in connections will be made at the Contract unit price per each cut-in connection successfully installed. This item includes all materials, labor and equipment to furnish and install all necessary pipe and fittings, locating existing facilities, protection of existing utilities and facilities, all excavation, including rock, dewatering, backfilling, compaction, fittings, labor and thrust restraint devices, bedding material, culverts and storm sewers, sidewalks and other surface materials not specifically designated in the Bid, cleanup, testing, and all other materials and equipment for an approved connection to the existing main facilities. Existing mains are to be restrained per the restraint schedule from cut-in connection.

Payment will be made under:

Item No. BSU T-3000	Cut-in Connection
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G. Utility Fixture – Valve Assembly:

Payment for furnishing and installing valves will be made at the appropriate Contract unit price per tapping saddle/sleeve, valve and/or line stop acceptably installed. These items are to include, but not be limited to, the tapping saddle, sleeves, valve, fire hydrant valves, valve box, vault or housing, and/or line stop, caps, concrete work, valve pad & ID, operators, stems, incidentals, valve box extensions and adjustments, protection of existing utilities and facilities, all excavation, including rock, backfilling, dewatering, compaction, thrust restraint devices, bedding material, culverts and storm sewers, and other surface material not specifically designated in the Bid, cleanup, testing, and all other work for a complete installation. This item also includes the installation of base material below the valve in accordance with the detail shown in the Contract Plans. Adjustment of existing valves and valve boxes to finish grade will also be included in this pay item. The adjusted valves are to include, but not be limited to valve, valve box, vault or housing, line stops, caps, concrete work, valve pad & ID, operators, stems, valve box extensions and any incidentals and equipment necessary to perform the work.

Installation is to include record plan information furnished to the Engineer. The Record Plans must include vertical and horizontal alignment of all water, reclaimed and sewer lines, valves, tees, bends, reducers, hydrants, service connections, meter boxes and/or pad, and other pertinent structures. Said information is to be tied to State Plane coordinates, and be certified by a Professional Land Surveyor, licensed in the State of Florida. All points provided are to indicate the size, type and material of item being identified. The Professional Land Surveyor can coordinate with the

Contractor to install the necessary appurtenances on buried utilities to facilitate the survey at periodic intervals throughout construction.

Payment will be made under:

Item No. BSU T-4000	Utility Fixture – Valve Assembly, F&I, 6” GV
Item No. BSU T-4100	Utility Fixture – Valve Assembly, F&I, 12” GV

- H. Fire Hydrant: The price and payment for the Fire Hydrant Assemblies will be made at the Contract unit price for each fire hydrant assembly acceptably installed. This includes the fire hydrant and all necessary fittings and joint restraints with the installation of the hydrant.

Record plan information furnished to the Engineer must include vertical and horizontal alignment of all water, valves, tees, bends, reducers, hydrants, and/or pad, and other pertinent structures. Said information is to be tied to State Plane coordinates, and be certified by a Professional Land Surveyor, licensed in the State of Florida. All points provided are to indicate the size, type and material of item being identified.

Payment will be made under:

Item No. BSU T-5000	Fire Hydrant, F&I
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END OF SECTION