

SECTION 00300

BID

CONTRACT INSTALLATION OF

HWY 701 TO HWY 544 48" WATER TRANSMISSION LINE IMPROVEMENT PROJECT

Proposal of Ruby-Collins, hereinafter called the "Bidder", organized and existing under the laws of the State of Georgia doing business as (a corporation) (a partnership) (an individual).

To GRAND STRAND WATER AND SEWER AUTHORITY hereinafter called "Owner".

In compliance with your Advertisement for Bids, the Bidder hereby proposes to perform all work for the construction of the **HWY 701 TO HWY 544 48" WATER TRANSMISSION LINE IMPROVEMENT PROJECT** in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

By submission of this Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to his own organization, that this Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in the Notice to Proceed and to fully complete the Project within **365** consecutive calendar days thereafter. Bidder further agrees to pay, as liquidated damages, in the sum of **\$1,000.00** for each consecutive working day thereafter as provided in Section 15 of the General Conditions.

Bidder acknowledges the receipt of the following addendum:

Addendum 1 - September 25, 2019

Addendum 2 - 10.05.19

HWY 701 TO HWY 544 48" WATER TRANSMISSION LINE IMPROVEMENT PROJECT

SCHEDULE OF BID ITEMS

The Contractor shall furnish all labor, equipment, materials, and transportation and perform all work necessary to complete the construction and installation of water utilities and appurtenances as shown on the drawings prepared by DDC Engineers, Inc. and per all specifications herein.

NOTE: This project will be bid with alternates for certain items of work as it relates to this project. "The OWNER reserves the right to award a CONTRACT on the basis of the BASE BID ITEMS and ADD, DEDUCT, AND ALTERNATE BID ITEM(s) deemed by the OWNER to be in their best interest. Final award shall be made to the lowest responsive BIDDER as selected by the OWNER."

The alternate is for Grand Strand Water and Sewer Authority to review and determine the best means to construct the project. The Owner may elect to substitute the alternate or not with the contractor after the project is bid and before the award to stay within their budgets.

Bids shall include sales tax and all other applicable taxes and fees. Any work required as shown on the plans or called for in the specifications not specifically listed below shall be included in the most closely related work item listed. It is the responsibility of the Contractor to verify all quantity takeoffs, and to bid the work appropriately.

Bid prices shall also include all traffic control, silt fencing, erosion control, grading, cuts, fills and site restoration for the project as shown on the construction plans. The pavement prices will include all stripping with pavement markings that are required to complete the project unless otherwise listed as a pay item. All fittings are to be restrained with megalugs or an approved equal and are to be included in the fitting price. All fittings shall have restrained joints on either side of the fitting to the length recommended by the manufacturer and shall be included in the price of the pipe. All sleeves needed to make any tie-ins are to be included in the tie-in price and/or pipe price. The contractor must verify the size and type of line being tapped and must supply the appropriate tapping sleeves to complete the work for this project.

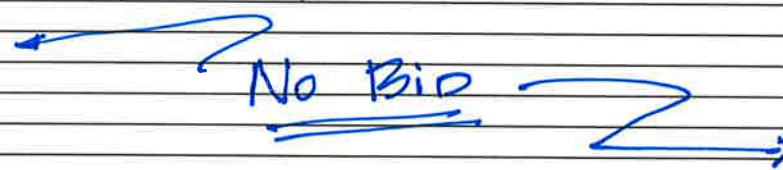
Item	Description	Quantity	Unit	Unit Cost	Total Cost
48" Water Transmission Line Base Bid					
1.	Mobilization	1	LS	\$ 550,000 ⁰⁰	\$ 550,000 ⁰⁰
2.	Clearing and Grubbing	1	LS	\$ 300,000 ⁰⁰	\$ 300,000 ⁰⁰
3.	Sediment and Erosion Control Complete	1	LS	\$ 250,000 ⁰⁰	\$ 250,000 ⁰⁰
^4.	48" C-900 DR-25 PVC Water Line	19,680	LF	\$ 450 ⁰⁰	\$ 8,856,000 ⁰⁰
5.	36" C-900 DR-25 PVC Water Line	80	LF	\$ 415 ⁰⁰	\$ 33,200 ⁰⁰
^6.	48" Class 250 Retrained Joint Zinc Coated Ductile Iron Pipe Water Line	180	LF	\$ 650 ⁰⁰	\$ 117,000 ⁰⁰
^7.	54" IPS DR-17 HDPE Pipe Open Cut w/Pre-cast Concrete Gravity Anchors	6,000	LF	\$ 1,095 ⁰⁰	\$ 6,570,000 ⁰⁰
8.	48" M.J. Butterfly Valve Restrained	7	EA	\$ 35,000 ⁰⁰	\$ 245,000 ⁰⁰
9.	36" M.J. Butterfly Valve Restrained	2	EA	\$ 20,000 ⁰⁰	\$ 40,000 ⁰⁰
^10.	48" MJ 45° Bend Restrained	21	EA	\$ 19,280 ⁰⁰	\$ 404,880 ⁰⁰
^11.	48" MJ 90° Bend Restrained	3	EA	\$ 24,500 ⁰⁰	\$ 73,500 ⁰⁰
^12.	48" MJ 11 1/4° Bend Restrained	4	EA	\$ 10,000 ⁰⁰	\$ 40,000 ⁰⁰
^13.	48" M.J. 22-1/2° Bend Restrained	2	EA	\$ 15,000 ⁰⁰	\$ 30,000 ⁰⁰

Item	Description	Quantity	Unit	Unit Cost	Total Cost
14.	48" X 36" MJ Reducer Restrained	2	EA	\$ 15,000.00	\$ 30,000.00
15.	Air Release Valve in Manhole	5	EA	\$ 5,000.00	\$ 25,000.00
16.	Air Release Valve with Quazite Box	9	EA	\$ 3,500.00	\$ 31,500.00
^*17.	HDPE to PVC Connection	4	EA	\$ 25,000.00	\$ 100,000.00
18.	Sampling Station	2	EA	\$ 2,500.00	\$ 5,000.00
19.	16" Blowoff Assembly Complete includes 48" x 16 MJ Tee, 16" MJ Gate Valve 16" Piping and Tideflex Valve Fully Restrained	3	EA	\$ 45,000.00	\$ 135,000.00
^*20.	54" IPS DR-17 HDPE Directional Bores	2,500	LF	\$ 1,376.95	\$ 3,442,375.00
^*21.	66" Steel Bore Casing (SC-Hwy 544) 0.75 Wall Thickness	100	LF	\$ 2,000.00	\$ 200,000.00
22.	Remove Existing 36" PVC Water Line	170	LF	\$ 5.00	\$ 850.00
23.	Temporary 48" Tall Wire Fence with Steel Posts (10' Max Spacing on Post)	800	LF	\$ 10.00	\$ 8,000.00
24.	SCDOT Roadway Asphalt Repair	75	LF	\$ 200.00	\$ 15,000.00
25.	County Roadway Asphalt Repair	1,060	LF	\$ 150.00	\$ 159,000.00
26.	GABC Base Driveway Repair	160	LF	\$ 50.00	\$ 8,000.00
27.	2" SCDOT Type B Road Overlay	4,650	SY	\$ 25.00	\$ 116,250.00
28.	Cut in 36" MJ 45° Bend Restrained on Existing 36" PVC Water Line	1	LS	\$ 25,000.00	\$ 25,000.00
29.	Cut-In to existing 36" Pipe Line	2	EA	\$ 15,000.00	\$ 30,000.00
30.	Restrained Existing 36" PVC Water Line	40	LF	\$ 150.00	\$ 6,000.00
31.	Asphalt Roadway Milling Tie Points	1	LS	\$ 15,000.00	\$ 15,000.00
32.	Asphalt Driveway Repair	120	LF	\$ 200.00	\$ 24,000.00
33.	Repair Existing 4 Strain Electrical Fence with Wooden Post	1,000	LF	\$ 20.00	\$ 20,000.00
34.	Repair Existing Single Tape Electric Fence with Steel Post	980	LF	\$ 20.00	\$ 19,600.00
35.	6" Concrete Driveway Repair	28	LF	\$ 250.00	\$ 7,000.00
36.	Remove Existing 36" MJ 22½° Bend	1	EA	\$ 5,000.00	\$ 5,000.00
TOTAL:				\$	\$ 21,937,155.00

Bid Item	Manufacturer (one per bid item)
4	DIAMOND
5	DIAMOND
6 AMERICAN	AMERICAN
7	ROPLINE PLASTICS
8	DEZNEIK
9	DEZNEIK
10, 11, 12, 13, 14, 17	TYLER UNION (Fittings) ERBA (RESTRAINTS)
19	TYLER UNION, ACIPCO, AFC, ERBA
20	ROPLINE PLASTICS
21	VALIANT STEEL

ALTERNATE #1 Ductile Iron Pipe - Grand Strand Water and Sewer Authority may elect to select an alternate. The item (*) number in the base bid schedule will be replaced with the alternate value.

Item	Description	Quantity	Unit	Unit Cost	Total Cost
*4.	Substitute 48" Class 150 Zinc Coated DIP Water Line in lieu of 48" C-900 DR-25 PVC Water Line for #4 in the base bid	19,680	LF	\$ No Bid	\$ No Bid
*4.	Substitute 48" Class 150 DIP Water Line in lieu of 48" C-900 DR-25 PVC Water Line for #4 in the base bid	19,680	LF	\$ No Bid	\$ No Bid
*7.	Substitute 48" Class 150 Restrained Joint Zinc Coated DIP Water Line in lieu of 54" IPS DR-17 HDPE	6,000	LF	\$ No Bid	\$ No Bid
*7.	Substitute 48" Class 150 Restrained Joint DIP Water Line in lieu of 54" IPS DR-17 HDPE	6,000	LF	\$ No Bid	\$ No Bid
*17.	Substitute HDPE to PVC Connection (Not needed with DIP Pipe)	0	EA	\$ No Bid	\$ No Bid
*20.	Substitute 48" Class 350 Restrained Joint Zinc Coated DIP installed by Directional Bore	2,500	LF	\$ No Bid	\$ No Bid
*21.	Substitute 60" Steel Bore Casing (SC-Hwy 544) 0.75 Wall Thickness	100	LF	\$ No Bid	\$ No Bid

Bid Item	Manufacturer (one per bid item)
4	 <p>No Bid</p>
4	
7	
7	
20	
21	

ALTERNATE #2 Steel Pipe - Grand Strand Water and Sewer Authority may elect to select an alternate. The item (^) number in the base bid schedule will be replaced with the alternate value. Note: Steel Pipe unit price will include all fittings except Bid Items #14 & #19.

Item	Description	Quantity	Unit	Unit Cost	Total Cost
^4.	Substitute 48" -0.20 Thickness in lieu of 48" C-900 DR-25 PVC Water Line for #4 in Base Bid	18,180	LF	\$ 444. ⁵⁰	\$ 8,081,010. ⁸⁰
^6.	Substitute 48" Steel Pipe in lieu of Retrained Joint Zinc Coated DIP Water Line	180	LF	\$ 650. ⁰⁰	\$ 117,000. ⁰⁰
^7.	Substitute 48" Steel Pipe in lieu of 54" IPS DR-17 HDPE Pipe	6,000	LF	\$ 1,075. ⁰⁰	\$ 6,450,000. ⁰⁰
^10.	Substitute 48" Steel Pipe in lieu of 48" MJ 45° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ No Cost	\$ No Cost
^11.	Substitute 48" Steel Pipe in lieu of 48" MJ 90° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ No Cost	\$ No Cost

Item	Description	Quantity	Unit	Unit Cost	Total Cost
^12.	Substitute 48" Steel Pipe in lieu of 48" MJ 11 1/4° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ No Cost	\$ No Cost
^13.	Substitute 48" Steel Pipe in lieu of 48" M.J. 22-1/2° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ No Cost	\$ No Cost
^17.	Substitute 48" Steel Pipe in lieu of HDPE to PVC Connection (Not needed with Steel Pipe)	0	EA	\$ No Cost	\$ No Cost
^20.	Substitute 48" Steel Pipe installed by Directional Bore in lieu of 54" IPS DR-17 HDPE	4,000	LF	\$ 1,475 ⁰⁰	\$ 5,900,000 ⁰⁰
^21.	Substitute 60" Steel Bore Casing (SC-Hwy 544) 0.75 Wall Thickness in lieu of 66" Steel Bore Casing	100	LF	\$ 1850 ⁰⁰	\$ 185,000 ⁰⁰

Bid Item	Manufacturer (one per bid item)
4	AMERICAN
6	AMERICAN
7	AMERICAN
20	AMERICAN
21	VALIANT

GSWSA may change the proposed 48" water line to a 36" water line due to budget reasons along with SCDHEC wanting to receive a price difference between the two (2) lines. All contractors must bid both 48" and 36" water line projects.

Item	Description	Quantity	Unit	Unit Cost	Total Cost
Alternate 36" Water Line Transmission Bid					
1.	Mobilization	1	LS	\$ 375,000 ⁰⁰	\$ 375,000 ⁰⁰
2.	Clearing and Grubbing	1	LS	\$ 300,000 ⁰⁰	\$ 300,000 ⁰⁰
3.	Sediment and Erosion Control Complete	1	LS	\$ 250,000 ⁰⁰	\$ 250,000 ⁰⁰
4.	36" C-900 DR-25 PVC Water Line	19,680	LF	\$ 310 ⁰⁰	\$ 6,100,800 ⁰⁰
5.	36" C-900 DR-25 PVC Water Line	80	LF	\$ 375 ⁰⁰	\$ 30,000 ⁰⁰
6.	36" Class 250 Retrained Joint Zinc Coated Ductile Iron Pipe Water Line	180	LF	\$ 450 ⁰⁰	\$ 81,000 ⁰⁰
7.	42" IPS DR-17 HDPE Pipe Open Cut w/Pre-cast Concrete Gravity Anchors	6,000	LF	\$ 970 ⁰⁰	\$ 5,820,000 ⁰⁰
8.	36" M.J. Butterfly Valve Restrained	7	EA	\$ 20,000 ⁰⁰	\$ 140,000 ⁰⁰
9.	36" M.J. Butterfly Valve Restrained	2	EA	\$ 20,000 ⁰⁰	\$ 40,000 ⁰⁰
10.	36" MJ 45° Bend Restrained	21	EA	\$ 8500 ⁰⁰	\$ 178,500 ⁰⁰
11.	36" MJ 90° Bend Restrained	3	EA	\$ 10,000 ⁰⁰	\$ 30,000 ⁰⁰
12.	36" MJ 11 1/4° Bend Restrained	4	EA	\$ 6500 ⁰⁰	\$ 26,000 ⁰⁰
13.	36" M.J. 22-1/2° Bend Restrained	2	EA	\$ 7250 ⁰⁰	\$ 14,500 ⁰⁰
14.	Air Release Valve in Manhole	5	EA	\$ 5,000 ⁰⁰	\$ 25,000 ⁰⁰
15.	Air Release Valve with Quazite Box	9	EA	\$ 3500 ⁰⁰	\$ 31,500 ⁰⁰
16.	HDPE to PVC Connection	4	EA	\$ 15,000 ⁰⁰	\$ 60,000 ⁰⁰
17.	Sampling Station	2	EA	\$ 2000 ⁰⁰	\$ 4000 ⁰⁰
18.	16" Blowoff Assembly Complete includes 36" x 16 MJ Tee, 16" MJ Gate Valve 16"	3	EA	\$ 30,000 ⁰⁰	\$ 90,000 ⁰⁰

Item	Description	Quantity	Unit	Unit Cost	Total Cost
	Piping and Tideflex Valve Fully Restrained				
19.	42" IPS DR-17 HDPE Directional Bores	2,500	LF	\$ 1240.00	\$ 3,100,000.00
20.	42" Steel Bore Casing (SC-Hwy 544) 0.625 Wall Thickness	100	LF	\$ 1500.00	\$ 150,000.00
21.	Remove Existing 36" PVC Water Line	170	LF	\$ 5.00	\$ 850.00
22.	SCDOT Roadway Asphalt Repair	75	LF	\$ 170.00	\$ 12,750.00
23.	County Roadway Asphalt Repair	1,060	LF	\$ 150.00	\$ 159,000.00
24.	GABC Base Driveway Repair	160	LF	\$ 50.00	\$ 8,000.00
25.	2" SCDOT Type B Road Overlay	4,650	SY	\$ 25.00	\$ 116,250.00
26.	Temporary 48" Tall Wire Fence with Steel Posts (10' Max. Spacing on Post)	800	LF	\$ 10.00	\$ 8,000.00
27.	Cut in 36" MJ 45° Bend Restrained on Existing 36" PVC Water Line	1	LS	\$ 10,000.00	\$ 10,000.00
28.	Cut-In to existing 36" Pipe Line	2	EA	\$ 7500.00	\$ 15,000.00
29.	Restrain Existing 36" PVC Water Line	40	LF	\$ 150.00	\$ 6,000.00
30.	Asphalt Roadway Milling Tie Points	1	LS	\$ 15,000.00	\$ 15,000.00
31.	Asphalt Driveway Repair	120	LF	\$ 250.00	\$ 30,000.00
32.	Repair Existing 4 Strain Electrical Fence with Wooden Post	1,000	LF	\$ 2.00	\$ 2,000.00
33.	Repair Existing Single Tape Electric Fence with Steel Post	980	LF	\$ 20.00	\$ 19,600.00
34.	6" Concrete Driveway Repair	28	LF	\$ 300.00	\$ 8,400.00
35.	Remove Existing 36" MJ 22½° Bend	1	EA	\$ 5,000.00	\$ 5,000.00
TOTAL:				\$ 17,280,150.00	

Bid Item	Manufacturer (one per bid item)
4	DIAMOND
5	DIAMOND
6	AMERICAN
7	PIPELINE PLASTICS
8	DEZUREK
9	DEZUREK
10, 11, 12, 13, 18	TULAR UNION (MJ FITTINGS) EBAA (RESTRAINTS)
19	PIPELINE PLASTICS
20	VALIANT Steel

Item	Description	Quantity	Unit	Unit Cost	Total Cost
Sewer Force Main Conversion Base Bid					
1.	Mobilization	1	LS	\$ 25,000.00	\$ 25,000.00
2.	36" C-900 DR-25 PVC Force Main	60	LF	\$ 465.00	\$ 27,900.00
3.	30" C-900 DR-25 PVC Force Main	500	LF	\$ 365.00	\$ 182,500.00
4.	30" Sewer Coat Class 250 Restrained Joint DIP Force Main	100	LF	\$ 605.00	\$ 60,500.00
5.	30" MJ Plug Valve with Box Restrained	3	EA	\$ 30,000.00	\$ 90,000.00
6.	30" x 30" MJ Tee Restrained	1	EA	\$ 13,825.00	\$ 13,825.00

Item	Description	Quantity	Unit	Unit Cost	Total Cost
7.	30" MJ 45° Bend Restrained	7	EA	\$8,650. ⁰⁰	\$60,550. ⁰⁰
8.	36" x 30" MJ Reducer Restrained	2	EA	\$9,675. ⁰⁰	\$19,350. ⁰⁰
9.	30" MJ Plug	1	EA	\$5,000. ⁰⁰	\$5,000. ⁰⁰
10.	48" Steel Bore Casing (SC Highway 701) 0.625" Wall Thickness	60	LF	\$1,300. ⁰⁰	\$78,000. ⁰⁰
11.	Cut-Out Existing 36" Butterfly Valve and Install a 36" MJ Plug Valve with Box Restrained with MJ Sleeve	5	EA	\$55,000. ⁰⁰	\$275,000. ⁰⁰
12.	Remove Existing 30" Plug and Tie into 30" Line	1	EA	\$10,000. ⁰⁰	\$10,000. ⁰⁰
13.	Cut In 30" x 30" MJ Tee Restrained on Existing Force Main	1	EA	\$30,000. ⁰⁰	\$30,000. ⁰⁰
14.	Cut In 36" - 45° Bend Restrained	2	EA	\$15,000. ⁰⁰	\$30,000. ⁰⁰
15.	Sediment and Erosion Control	1	LS	\$5,000. ⁰⁰	\$5,000. ⁰⁰
16.	Driveway Repair	16	LF	\$300. ⁰⁰	\$4,800. ⁰⁰
17.	Restrained Existing 36" PVC Line	80	LF	\$150. ⁰⁰	\$12,000. ⁰⁰
18.	Install Sewer Air Release Valve in Quazite Box Complete	1	EA	\$5,000. ⁰⁰	\$5,000. ⁰⁰
19.	Remove Existing Water Air Release Valve and Install a Sewer Air Release Valve	12	EA	\$5,000. ⁰⁰	\$60,000. ⁰⁰
20.	Remove Existing Fire Hydrant Assembly and cap/plug hydrant lead	1	EA	\$5,000. ⁰⁰	\$5,000. ⁰⁰
TOTAL:				\$999,425. ⁰⁰	

TOTAL WATER AND SEWER BASE BID AMOUNT IN WORDS: TWENTY TWO million, NINE HUNDRED THIRTY SIX THOUSAND, 00/100 Dollars (22,936,580.⁰⁰).
FIVE HUNDRED EIGHTY $\frac{00}{100}$

Respectfully submitted,

Ruby-Collins, Inc.
Contractor Name

Signature David A. Westrick

Chief Executive Officer
Title

G11428

License Number

Seal if bid is from a corporation

Attest:

Robert L. Cates ~ Secretary

4875 Martin Court, SE
Address

Smyrna, Georgia 30082

October 8, 2019
Date



Hwy 701 to Hwy 544 48" Water Transmisssion Line Improvement Project (627-01)

GRAND STRAND WATER AND SEWER AUTHORITY

166 Jackson Bluff Road, PO Box 2368

Conway, SC 29526-2368

Tel: (843)-443-8200, Fax: (843)-347-4680

BID TABULATION

BIDS RECEIVED 2:00 P.M. EST OCTOBER 8, 2019

Verified by Matthew T. Minor, PE
10/9/19



3 Bidders

48" Water Transmission Line Base Bid				Quantity	Units	Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.	Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.
1.	Mobilization	1	LS			\$ 550,000.00	\$ 793,000.00	\$ 750,000.00	\$ 550,000.00	\$ 793,000.00	\$ 750,000.00
2.	Clearing and Grubbing	1	LS			\$ 300,000.00	\$ 145,000.00	\$ 210,000.00	\$ 300,000.00	\$ 145,000.00	\$ 210,000.00
3.	Sediment and Erosion Control Complete	1	LS			\$ 250,000.00	\$ 364,000.00	\$ 225,000.00	\$ 250,000.00	\$ 364,000.00	\$ 225,000.00
^*4.	48" C-900 DR-25 PVC Water Line	19,680	LF			\$ 450.00	\$ 280.00	\$ 501.00	\$ 8,856,000.00	\$ 5,510,400.00	\$ 9,859,680.00
5.	36" C-900 DR-25 PVC Water Line	80	LF			\$ 415.00	\$ 198.00	\$ 465.00	\$ 33,200.00	\$ 15,840.00	\$ 37,200.00
^6.	48" Class 250 Retrained Joint Zinc Coated Ductile Iron Pipe Water Line	180	LF			\$ 650.00	\$ 428.00	\$ 760.00	\$ 117,000.00	\$ 77,040.00	\$ 136,800.00
^*7.	54" IPS DR-17 HDPE Pipe Open Cut w/Pre-cast Concrete Gravity Anchors	6,000	LF			\$ 1,095.00	\$ 1,350.00	\$ 1,230.00	\$ 6,570,000.00	\$ 8,100,000.00	\$ 7,380,000.00
8.	48" M.J. Butterfly Valve Restrained	7	EA			\$ 35,000.00	\$ 39,500.00	\$ 63,000.00	\$ 245,000.00	\$ 276,500.00	\$ 441,000.00
9.	36" M.J. Butterfly Valve Restrained	2	EA			\$ 20,000.00	\$ 26,300.00	\$ 34,000.00	\$ 40,000.00	\$ 52,600.00	\$ 68,000.00
^10.	48" MJ 45° Bend Restrained	21	EA			\$ 19,280.00	\$ 23,000.00	\$ 57,000.00	\$ 404,880.00	\$ 483,000.00	\$ 1,197,000.00
^11.	48" MJ 90° Bend Restrained	3	EA			\$ 24,500.00	\$ 30,000.00	\$ 103,000.00	\$ 73,500.00	\$ 90,000.00	\$ 309,000.00
^12.	48" MJ 11 1/4° Bend Restrained	4	EA			\$ 10,000.00	\$ 20,000.00	\$ 32,000.00	\$ 40,000.00	\$ 80,000.00	\$ 128,000.00
^13.	48" M.J. 22-1/2° Bend Restrained	2	EA			\$ 15,000.00	\$ 21,000.00	\$ 46,000.00	\$ 30,000.00	\$ 42,000.00	\$ 92,000.00
14.	48" X 36" MJ Reducer Restrained	2	EA			\$ 15,000.00	\$ 32,000.00	\$ 46,000.00	\$ 30,000.00	\$ 64,000.00	\$ 92,000.00
15.	Air Release Valve in Manhole	5	EA			\$ 5,000.00	\$ 7,700.00	\$ 8,000.00	\$ 25,000.00	\$ 38,500.00	\$ 40,000.00
16.	Air Release Valve with Quazite Box	9	EA			\$ 3,500.00	\$ 7,900.00	\$ 7,000.00	\$ 31,500.00	\$ 71,100.00	\$ 63,000.00
^*17.	HDPE to PVC Connection	4	EA			\$ 25,000.00	\$ 38,000.00	\$ 28,000.00	\$ 100,000.00	\$ 152,000.00	\$ 112,000.00
18.	Sampling Station	2	EA			\$ 2,500.00	\$ 3,700.00	\$ 2,500.00	\$ 5,000.00	\$ 7,400.00	\$ 5,000.00
19.	16" Blowoff Assembly Complete includes 48" x 16 MJ Tee, 16" MJ Gate Valve 16" Piping and Tideflex Valve Fully Restrained	3	EA			\$ 45,000.00	\$ 58,000.00	\$ 57,000.00	\$ 135,000.00	\$ 174,000.00	\$ 171,000.00
^*20.	54" IPS DR-17 HDPE Directional Bores	2,500	LF			\$ 1,376.95	\$ 3,675.00	\$ 2,270.00	\$ 3,442,375.00	\$ 9,187,500.00	\$ 5,675,000.00
^*21.	66" Steel Bore Casing (SC-Hwy 544) 0.75 Wall Thickness	100	LF			\$ 2,000.00	\$ 2,000.00	\$ 1,775.00	\$ 200,000.00	\$ 200,000.00	\$ 177,500.00
22.	Remove Existing 36" PVC Water Line	170	LF			\$ 5.00	\$ 50.00	\$ 55.00	\$ 850.00	\$ 8,500.00	\$ 9,350.00
23.	Temporary 48" Tall Wire Fence with Steel Postss (10' Max Spacing on Post)	800	LF			\$ 10.00	\$ 9.00	\$ 20.00	\$ 8,000.00	\$ 7,200.00	\$ 16,000.00
24.	SCDOT Roadway Asphalt Repair	75	LF			\$ 200.00	\$ 217.00	\$ 400.00	\$ 15,000.00	\$ 16,275.00	\$ 30,000.00
25.	County Roadway Asphalt Repair	1,060	LF			\$ 150.00	\$ 187.00	\$ 250.00	\$ 159,000.00	\$ 198,220.00	\$ 265,000.00
26.	GABC Base Driveway Repair	160	LF			\$ 50.00	\$ 23.00	\$ 35.00	\$ 8,000.00	\$ 3,680.00	\$ 5,600.00
27.	2" SCDOT Type B Road Overlay	4,650	SY			\$ 25.00	\$ 15.00	\$ 21.00	\$ 116,250.00	\$ 69,750.00	\$ 97,650.00
28.	Cut in 36" MJ 45° Bend Restrained on Existing 36" PVC Water Line	1	LS			\$ 25,000.00	\$ 31,500.00	\$ 18,000.00	\$ 25,000.00	\$ 31,500.00	\$ 18,000.00
29.	Cut-In to Existing 36" Pipe Line	2	EA			\$ 15,000.00	\$ 23,000.00	\$ 15,000.00	\$ 30,000.00	\$ 46,000.00	\$ 30,000.00
30.	Restrain Existing 36" PVC Water Line	40	LF			\$ 150.00	\$ 190.00	\$ 400.00	\$ 6,000.00	\$ 7,600.00	\$ 16,000.00
31.	Asphalt Roadway Milling Tie Points	1	LS			\$ 15,000.00	\$ 14,000.00	\$ 25,000.00	\$ 15,000.00	\$ 14,000.00	\$ 25,000.00
32.	Asphalt Driveway Repair	120	LF			\$ 200.00	\$ 130.00	\$ 240.00	\$ 24,000.00	\$ 15,600.00	\$ 28,800.00
33.	Repair Existing 4 Strain Electrical Fence with Wooden Post	1,000	LF			\$ 20.00	\$ 7.00	\$ 25.00	\$ 20,000.00	\$ 7,000.00	\$ 25,000.00
34.	Repair Existing Single Tape Electric Fence with Steel Post	980	LF			\$ 20.00	\$ 5.00	\$ 20.00	\$ 19,600.00	\$ 4,900.00	\$ 19,600.00
35.	6" Concrete Driveway Repair	28	LF			\$ 250.00	\$ 210.00	\$ 255.00	\$ 7,000.00	\$ 5,880.00	\$ 7,140.00
36.	Remove Existing 36" MJ 22½° Bend	1	EA			\$ 5,000.00	\$ 3,500.00	\$ 1,000.00	\$ 5,000.00	\$ 3,500.00	\$ 1,000.00
48" Water Transmission Line Base Bid Total:									\$ 21,937,155.00	\$ 26,363,485.00	\$ 27,763,320.00

Alternate #1 Ductile Iron Pipe				Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.	Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.
^*4.	Substitute 48" Class 150 DIP Zinc Coated water line in lieu of 48" C-900 DR-25 PVC water line for #4 in base bid	19,680	LF	\$ -	\$ -	\$ 560.00	\$ -	\$ -	\$ 11,020,800.00
^*4.	Substitute 48" Class 150 DIP Water Line in lieu of 48" C-900 DR-25 PVC Water Line for #4 in the base bid	19,680	LF	\$ -	\$ -	\$ 536.00	\$ -	\$ -	\$ 10,548,480.00
^*7.	Substitute 48" Class 150 Restrained Joint Zinc Coated DIP Water Line in lieu of 54" IPS DR-17 HDPE	6,000	LF	\$ -	\$ 955.00	\$ 978.00	\$ -	\$ 5,730,000.00	\$ 5,868,000.00
^*7.	Substitute 48" Class 150 Restrained Joint DIP Water Line in lieu of 54" IPS DR-17 HDPE	6,000	LF	\$ -	\$ 930.00	\$ 954.00	\$ -	\$ 5,580,000.00	\$ 5,724,000.00
^*17.	Substitute HDPE to PVC Connection (Not needed with DIP Pipe)	0	EA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
^*20.	Substitute 48" Class 350 DIP Zinc Coated Restrained Pipe with V-Bio Polyethylene installed by HDD	2,500	LF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
^*21.	Substitute 60" Steel Bore Casing (SC-Hwy 544) 0.5 Wall Thickness	100	LF	\$ -	\$ 1,985.00	\$ 1,675.00	\$ -	\$ 198,500.00	\$ 167,500.00

Alternate #2 Steel Pipe				Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.	Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.
^*4.	Substitute 48" -.020 Thickness in lieu of 48"C-900 DR-25 PVC Water Line for #4 in Base Bid	18,180	LF	\$ 444.50		\$ 598.00	\$ 8,081,010.00	\$ -	\$ 10,871,640.00
^*6.	Substitute 48" Steel Pipe in lieu of Retrained Joint Zinc Coated Ductile Iron Pipe Water Line	180	LF	\$ 650.00	\$ -	\$ 785.00	\$ 117,000.00	\$ -	\$ 141,300.00
^*7.	Substitute 48" Steel Pipe in lieu of DR-17 HDPE Pipe Open Cut w/Pre-cast Concrete Gravity Anchors	6,000	LF	\$ 1,075.00	\$ -	\$ 1,055.00	\$ 6,450,000.00	\$ -	\$ 6,330,000.00
^10.	Substitute 48" Steel Pipe in lieu of 48" MJ 45° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
^11.	Substitute 48" Steel Pipe in lieu of 48" MJ 90° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
^12.	Substitute 48" Steel Pipe in lieu of 48" MJ 11 1/4° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
^13.	Substitute 48" Steel Pipe in lieu of 48" M.J. 22-1/2° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
^17.	Substitute 48" Steel Pipe in lieu of HDPE to PVC Connection (Not needed with Steel Pipe)	0	EA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
^20.	Substitute 48" Steel Pipe in lieu of IPS DR-15.5 HDPE Directional Bores	4,000	LF	\$ 1,475.00	\$ -	\$ 2,125.00	\$ 5,900,000.00	\$ -	\$ 8,500,000.00
^21.	Substitute 60" Steel Bore Casing (SC-Hwy 544) 0.75 Wall Thickness in lieu of 66" Steel Bore Casing	100	LF	\$ 1,850.00	\$ -	\$ 1,700.00	\$ 185,000.00	\$ -	\$ 170,000.00

Alternate 36" Water Line Transmission Bid					Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.	Ruby-Collins, Inc.	R.H. Moore Company, Inc.	State Utility Contractors, Inc.						
1.	Mobilization	1	LS	\$	375,000.00	\$	503,000.00	\$	750,000.00	\$	375,000.00	\$	503,000.00	\$	750,000.00	
2.	Clearing and Grubbing	1	LS	\$	300,000.00	\$	145,000.00	\$	210,000.00	\$	300,000.00	\$	145,000.00	\$	210,000.00	
3.	Sediment and Erosion Control Complete	1	LS	\$	250,000.00	\$	364,000.00	\$	225,000.00	\$	250,000.00	\$	364,000.00	\$	225,000.00	
^*4.	36" C-900 DR-25 PVC Water Line	19,680	LF	\$	310.00	\$	185.00	\$	410.00	\$	6,100,800.00	\$	3,640,800.00	\$	8,068,800.00	
5.	36" C-900 DR-25 PVC Water Line	80	LF	\$	375.00	\$	119.00	\$	465.00	\$	30,000.00	\$	9,520.00	\$	37,200.00	
^6.	36 " Class 250 Retrained Joint Zinc Coated Ductile Iron Pipe Water Line	180	LF	\$	450.00	\$	340.00	\$	620.00	\$	81,000.00	\$	61,200.00	\$	111,600.00	
^*7.	42" IPS DR-17 HDPE Pipe Open Cut w/Pre- cast Concrete Gravity Anchor s	6,000	LF	\$	970.00	\$	1,150.00	\$	1,110.00	\$	5,820,000.00	\$	6,900,000.00	\$	6,660,000.00	
8.	36 " M.J. Butterfly Valve Restrained	7	EA	\$	20,000.00	\$	23,800.00	\$	34,000.00	\$	140,000.00	\$	166,600.00	\$	238,000.00	
9.	36" M.J. Butterfly Valve Restrained	2	EA	\$	20,000.00	\$	23,800.00	\$	34,000.00	\$	40,000.00	\$	47,600.00	\$	68,000.00	
^10.	36" MJ 45° Bend Restrained	21	EA	\$	8,500.00	\$	11,700.00	\$	29,000.00	\$	178,500.00	\$	245,700.00	\$	609,000.00	
^11.	36" MJ 90° Bend Restrained	3	EA	\$	10,000.00	\$	13,500.00	\$	50,000.00	\$	30,000.00	\$	40,500.00	\$	150,000.00	
^12.	36" MJ 11 1/4° Bend Restrained	4	EA	\$	6,500.00	\$	9,900.00	\$	16,000.00	\$	26,000.00	\$	39,600.00	\$	64,000.00	
^13.	36" M.J. 22-1/2° Bend Restrained	2	EA	\$	7,250.00	\$	10,700.00	\$	23,000.00	\$	14,500.00	\$	21,400.00	\$	46,000.00	
14.	Air Release Valve in Manhole	5	EA	\$	5,000.00	\$	7,600.00	\$	8,000.00	\$	25,000.00	\$	38,000.00	\$	40,000.00	
15.	Air Release Valve with Quazite Box	9	EA	\$	3,500.00	\$	7,700.00	\$	7,000.00	\$	31,500.00	\$	69,300.00	\$	63,000.00	
^*16.	HDPE to PVC Connection	4	EA	\$	15,000.00	\$	23,000.00	\$	18,000.00	\$	60,000.00	\$	92,000.00	\$	72,000.00	
17.	Sampling Station	2	EA	\$	2,000.00	\$	3,600.00	\$	2,500.00	\$	4,000.00	\$	7,200.00	\$	5,000.00	
18.	16" Blowoff Assembly Complete includes 36" x 16 MJ Tee, 16" MJ Gate Valve 16" Piping and Tideflex Valve Fully Restrained	3	EA	\$	30,000.00	\$	44,000.00	\$	43,000.00	\$	90,000.00	\$	132,000.00	\$	129,000.00	
*19.	42" IPS DR-17 HDPE Directional Bores	2,500	LF	\$	1,240.00	\$	3,900.00	\$	1,710.00	\$	3,100,000.00	\$	9,750,000.00	\$	4,275,000.00	
20.	42" Steel Bore Casing (SC-Hwy 544) 0.625 Wall Thickness	100	LF	\$	1,500.00	\$	1,425.00	\$	1,200.00	\$	150,000.00	\$	142,500.00	\$	120,000.00	
21.	Remove Existing 36" PVC Water Line	170	LF	\$	5.00	\$	50.00	\$	55.00	\$	850.00	\$	8,500.00	\$	9,350.00	
22.	SCOOT Roadway Asphalt Repair	75	LF	\$	170.00	\$	217.00	\$	400.00	\$	12,750.00	\$	16,275.00	\$	30,000.00	
23.	County Roadway Asphalt Repair	1,060	LF	\$	150.00	\$	186.00	\$	250.00	\$	159,000.00	\$	197,160.00	\$	265,000.00	
24.	GABC Base Driveway Repair	160	LF	\$	50.00	\$	23.00	\$	35.00	\$	8,000.00	\$	3,680.00	\$	5,600.00	
25.	2" SCDOT Type B Road Overlay	4,650	SY	\$	25.00	\$	15.00	\$	21.00	\$	116,250.00	\$	69,750.00	\$	97,650.00	
26.	Temporary 48" Tall Wire Fence with Steel Posts (10' Max. Spacing on Post)	800	LF	\$	10.00	\$	9.00	\$	20.00	\$	8,000.00	\$	7,200.00	\$	16,000.00	
27.	Cut in 36" MJ 45° Bend Restrained on Existing 36" PVC Water Line	1	LS	\$	10,000.00	\$	32,000.00	\$	18,000.00	\$	10,000.00	\$	32,000.00	\$	18,000.00	
28.	Cut-In to Existing 36" Pipe Line	2	EA	\$	7,500.00	\$	22,500.00	\$	15,000.00	\$	15,000.00	\$	45,000.00	\$	30,000.00	
29.	Restrain Existing 36" PVC Water Line	40	LF	\$	150.00	\$	190.00	\$	400.00	\$	6,000.00	\$	7,600.00	\$	16,000.00	
30.	Asphalt Roadway Milling Tie Points	1	LS	\$	15,000.00	\$	14,000.00	\$	25,000.00	\$	15,000.00	\$	14,000.00	\$	25,000.00	
31.	Asphalt Driveway Repair	120	LF	\$	250.00	\$	135.00	\$	240.00	\$	30,000.00	\$	16,200.00	\$	28,800.00	
32.	Repair Existing 4 Strain Electrical Fence with Wooden Post	1,000	LF	\$	20.00	\$	7.00	\$	25.00	\$	20,000.00	\$	7,000.00	\$	25,000.00	
33.	Repair Existing Single Tape Electric Fence with Steel Post	980	LF	\$	20.00	\$	5.00	\$	20.00	\$	19,600.00	\$	4,900.00	\$	19,600.00	
34.	6" Concrete Driveway Repair	28	LF	\$	300.00	\$	210.00	\$	255.00	\$	8,400.00	\$	5,880.00	\$	7,140.00	
35.	Remove Existing 36" MJ 22½° Bend	1	EA	\$	5,000.00	\$	3,500.00	\$	1,000.00	\$	5,000.00	\$	3,500.00	\$	1,000.00	
Alternate 36" Water Line Transmission Bid Total:											\$	17,280,150.00	\$	22,854,565.00	\$	22,535,740.00

From: Monte Beasley mbeasley@ruby-collins.com
Subject: RE: Grand Strand 48 Inch Water Line - SDR11 HDPE and Steel Pipe Connections
Date: November 8, 2019 at 12:24 PM
To: Matthew Minor mattminor@gswsa.com
Cc: Scott Cline sccline@ruby-collins.com, Tad Nusbaumer tad@ruby-collins.com, David Westrick dwestrick@ruby-collins.com, Bobby Cates bcates@ruby-collins.com, Monte Beasley mbeasley@ruby-collins.com



Thanks for the information Matt. I'll work on gathering the items you've requested and will shoot to have something back to you early to middle of next week.

We look forward to building this project with Grand Strand. Have a great weekend!!



Monte Beasley
Senior Project Manager

Ruby-Collins, Inc.
p: 770-432-2900
m: 470-515-4271

4875 Martin Court Smyrna, Georgia
www.ruby-collins.com



We have moved! Please update your records.

From: Matthew Minor <mattminor@gswsa.com>
Sent: Friday, November 8, 2019 12:13 PM
To: Monte Beasley <mbeasley@ruby-collins.com>
Subject: Re: Grand Strand 48 Inch Water Line - SDR11 HDPE and Steel Pipe Connections

Monte,

Wanted to check in with you and let you know it appears we will be going with the engineers recommendation which is all steel. That being said we will need to work on finalizing a contract amount. I've listed below some items we need to finalize and nail down exact quantities and pricing.

- Deletion of the directional drill along Bucksville Road and adding a bore and jack at this wetland crossing. I've confirmed with our engineer (DDC) that as long as there is no impact to the wetland then we can make this revision. I'm thinking this will be around 100 LF? I'll need exact length and unit cost for this bore and add this as a line item.

- Directional drill length for the river crossing. You mentioned approximately 2,500' for steel. Wanted to verify we can use this number.

Also, since it appears we will be going with steel can you your experience or past projects where Ruby-Collins has installed steel. Thanks.

Matthew T. Minor, P.E.
Engineering Services Manager
Grand Strand Water & Sewer Authority
P.O. Box 2368 Conway, SC 29528-2368
Phone: (843) 234-8405 Fax: (843) 347-4680

On Nov 5, 2019, at 11:04 AM, Monte Beasley <mbeasley@ruby-collins.com> wrote:

Got it – let me see what we can find out.

**Monte Beasley***Senior Project Manager*

Ruby-Collins, Inc.
p: 770-432-2900
m: 470-515-4271

4875 Martin Court Smyrna, Georgia
www.ruby-collins.com



We have moved! Please update your records.

From: Matthew Minor <mattminor@gswsa.com>
Sent: Tuesday, November 5, 2019 11:02 AM
To: Monte Beasley <mbeasley@ruby-collins.com>
Cc: Scott Cline <sccline@ruby-collins.com>; Tad Nusbaumer <tad@ruby-collins.com>;
Christy Everett <christy@gswsa.com>
Subject: Re: Grand Strand 48 Inch Water Line - SDR11 HDPE and Steel Pipe Connections

Thanks Monte. Do the manufactures have any past projects where 54" has been produced at DR11 or even possibly DR13.5? I've asked our engineer about the possibility of DR13.5 and if this would be sufficient. Do you mind checking with Laney on a sufficient DR (possibly 13.5) for the river crossing. Thanks again for all your help.

Matthew T. Minor, P.E.
Engineering Services Manager
Grand Strand Water & Sewer Authority
P.O. Box 2368 Conway, SC 29528-2368
Phone: (843) 234-8405 Fax: (843) 347-4680

On Nov 4, 2019, at 4:01 PM, Monte Beasley <mbeasley@ruby-collins.com> wrote:

Matt,

I appreciate your patience while waiting on the information below. Hopefully, the following will help Grand Strand make budgetary decisions while choosing what pipe material to use for the above referenced project.

1. **Budget Adder SDR11 HDPE for Directional Drill Pipe = \$248.95 per linear foot**
 - We have two sources that say they can furnish the SDR11 HDPE
 - All materials will be manufactured in accordance with ANSI/AWWA C906, ASTM F714, ASTM D3035 and ASTM 2619

- The above unit price includes the additional material cost plus the extra time required to fuse the thicker HDPE and also the handling of the heavier pipe (*SDR11 weighs 352.14 lbs./lf and SDR17 weighs 223.84 lbs./lf*)
 - For comparison purposes, you can use +/-2,000-feet for the river drill length with SDR11 HDPE and +/-2,500-feet for the river drill length with Steel Pipe. Preliminary Engineering shows the HDPE river drill length to be 1,960-feet and the Steel river drill length to be 2,360-feet. Key is the word "Preliminary". The actual length cannot be confirmed until after the field survey is complete. So, hovering around +/-2,000 for HDPE and +/-2,500 for Steel for drill length beneath the river should be a safe bet.
- 2. Budget Adder for Steel to HDPE Connection = \$72,125.00 per connection**
- The above unit price includes all material, labor, equipment, welding, dewatering etc.... necessary to complete the connection between the 48 Inch Steel and the 54 Inch HDPE
 - In general, the approach would be to **1.** Fuse a 54 Inch HDPE Flanged Adapter to the plain end of the HDPE Drill Pipe **2.** Install a 54x48 HDPE Flanged Reducer **3.** Connect the 48 HDPE Flange to a 48"x10' Flanged x PE Piece of Steel Pipe and **4.** Tie the 48" Plain End Pieces together with a 48 Inch Butt Strap Weld

If you should have any questions, feel free to advise. We look forward to hearing from you soon.

Thanks



Monte Beasley
Senior Project Manager

Ruby-Collins, Inc.
p: 770-432-2900
m: 470-515-4271

4875 Martin Court Smyrna, Georgia
www.ruby-collins.com



We have moved! Please update your records.

From: Eric Sanford eks@ddcinc.com
Subject: RE: Grand Strand 48 Inch Water Line - SDR11 HDPE and Steel Pipe Connections
Date: November 8, 2019 at 9:21 AM
To: Matthew Minor mattminor@gswsa.com
Cc: Christy Everett christy@gswsa.com, Mike Wooten jmw@ddcinc.com

E

Matt,

You can jack and bore the wetland along the roadway as long as you clear the wetland on both sides and stay out of wetland completely.

If this is the option that you choose and based on the numbers that you have provided me in this email, it looks like steel pipeline would end up the more economical pipe method system installed by roughly \$1,000,000 depends who's bid quantities you use. The bid quantities that we gave you for the bit tab or the ones that was in the final bid tab. The overall difference between Steel vs PVC is anywhere from \$1,357,765.00 to \$908,040.00 savings. The totals work out to be, PVC roughly \$22,872,200 (\$22,383,700) and Steel roughly \$21,514,435.00 (\$21,475,660.00)

Your Operations Department needs spend a day going to see how steel pipe is made and get educated on other options they have for large diameter pipe lines. As, GSW&SA continues to grow and expand its service area in the future. Grand Strand will need to look at larger and larger utility lines throughout the County and the Region. Your operations department may like and have a familiarity with PVC pipe in smaller diameters 6" through 36" but, when it comes to pipelines larger than 36" there is no real history with larger diameter PVC in the Country that you can look for any type of long term proven operational history. You are installing a water line that is going to be your main backbone of your water system from your water treatment plant to distribute water throughout the County and the Region. You want to make sure that you installing a line that has a proven operational history and that there are miles and mile of line that you can look to for this history. At this time we do not see this with PVC. The list that you supplied me on the 48" PVC pipe from the manufacture. Since 2002, in a 17 year history, on that size pipe, most of the pipelines installed have being in a gravity flow application and not pressure situation. The 4100 If in Springfield IL. was install in a storm drainage application, the 1360 If Shreveport La. was for a gravity sewer line. Your operation department needs to know and understand that there is no real history on that size or even bigger sizes of PVC pipe that you can actually look at for a good reference for the pipe for reliability and performance. Also, from what we can determine there are only limited quantities of 48" DR-25 pipe out there which is scattered throughout the Country, no large installations of this type pipe. This would be that largest installation of this type of pipe in the Country todate. We realize that proposed operational pressures in the pipe line will be relatively low in the beginning but, as time passes and the Grand Strand Region continues to explode development wise you may be increasing the pressures to keep up with the demands.

Now on the DR-13.5 and DR-11 HDPE I have no idea, that is something that will have to come from the drillers on what they can pull.

Thanks

Eric

Eric K. Sanford, PE, CPSWQ

Principal/Director of Municipal Services

DDC Engineers, Inc.

1298 Professional Drive

Myrtle Beach, SC 29577

eks@ddcinc.com

www.ddcinc.com

p (843) 692-3200

F (843) 692-3210

From: Matthew Minor <mattminor@gswsa.com>

Sent: Tuesday, November 5, 2019 11:00 AM

To: Eric Sanford <eks@ddcinc.com>

Cc: Christy Everett <christy@gswsa.com>

Subject: Fwd: Grand Strand 48 Inch Water Line - SDR11 HDPE and Steel Pipe Connections

Eric,

We are still weighing our options and doing some research and working with Ruby-Collins on providing additional information. At this point our Operations Dept. is very concerned about steel so we are gathering as much information as possible to help determine the best installation.

I am also working with Ruby-Collins to nail down exact costs for the project. One thing we have discussed is the possibility of replacing the directional drill along Bucksville Drive with a bore and jack. I'm assuming this would be allowed as long as we do not impact the wetlands correct? This would be approximately 100 LF in lieu of the 825' drill. Additional shoring would be required but is still much cheaper than the drill. Also, if we went with HDPE we need to determine that DR11 is the correct selection. Would DR 13.5 be sufficient? I've asked Ruby-Collins to check into this with their sub Laney. Thanks.

Matthew T. Minor, P.E.

Engineering Services Manager

Grand Strand Water & Sewer Authority

P.O. Box 2368 Conway, SC 29528-2368

Phone: [\(843\) 234-8405](tel:(843)234-8405) Fax: [\(843\) 347-4680](tel:(843)347-4680)

Begin forwarded message:

From: Monte Beasley <mbeasley@ruby-collins.com>

Subject: Grand Strand 48 Inch Water Line - SDR11 HDPE and Steel Pipe Connections

Date: November 4, 2019 at 4:01:30 PM EST

To: Matthew Minor <mattminor@gswsa.com>

Cc: Scott Cline <sccline@ruby-collins.com>, Tad Nusbaumer <tad@ruby-collins.com>, Christy Everett <christy@gswsa.com>, Monte Beasley <mbeasley@ruby-collins.com>

From: Monte Beasley mbeasley@ruby-collins.com

Subject: Grand Strand 48 Inch Water Line

Date: November 14, 2019 at 8:47 AM

To: Matthew Minor mattminor@gswsa.com, Christy Everett christy@gswsa.com

Cc: Scott Cline sccline@ruby-collins.com, Tad Nusbaumer tad@ruby-collins.com, Monte Beasley mbeasley@ruby-collins.com

MB

Matt,

Attached is a preliminary view of the directional drill at the river. "Paper Points" for tangents, curves etc... indicate that the drill length will be +/-2,360-feet. So, using 2,500-feet at this stage of the game should be in the range.

We need to stress that this is preliminary and field layout may require that we flatten entry/exit points, extend curves etc...

With this email, you should have all of the information you requested last Friday regarding – Steel Pipe Experience, Units for the Bucksville Road Bore and Engineering review for the River Drill Length. I'll touch base with you within the next couple of days to make sure your "good" on your end. In the meantime, if you need anything else – don't hesitate to ask.

On another note, our CEO David Westrick was planning on being in Myrtle Beach on Monday November 25th. He'd like the opportunity to meet with yourself, Christy and Fred if possible sometime Monday afternoon. Please let me know if that would work for you guys. It would be brief and informal.

Thanks



Monte Beasley
Senior Project Manager

Ruby-Collins, Inc.
p: 770-432-2900
m: 470-515-4271

4875 Martin Court Smyrna, Georgia
www.ruby-collins.com



We have moved! Please update your records.



Grand Strand
Directi...rill.pdf

CONSTRUCTION PHASING		
PHASE	START DATE	COMPLETION DATE
1	SEPTEMBER 2019	SEPTEMBER 2020

Construction Plans

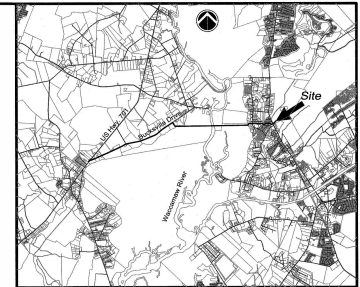
for

US HWY. 701 TO SC HWY. 544

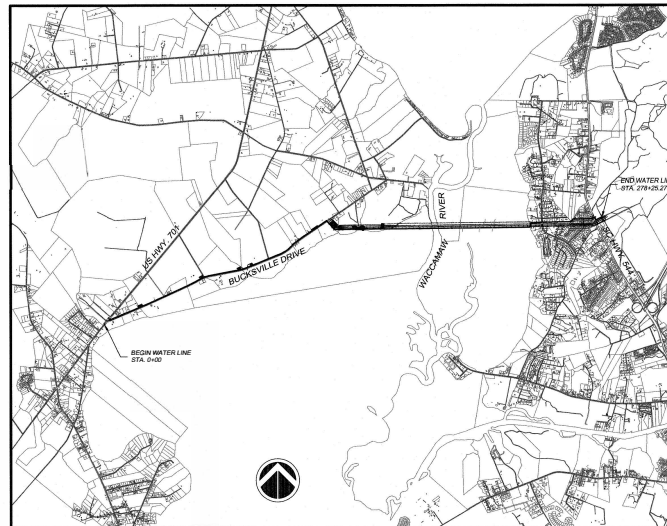
48" WATER TRANSMISSION LINE

IMPROVEMENT PROJECT

WACCAMAW RIVER DRILL



VICINITY MAP
N.T.S.

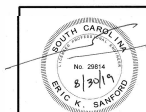


SITE LAYOUT
SCALE: 1" = 3000'

REVISION OCCURRENCE LIST			
8	8/30/19	REVISED PER GSW&SA COMMENTS	KJG
7	7/1/19	REVISED PER IN HOUSE REVIEW	KJG
6	5/17/19	REVISED PER IN HOUSE REVIEW	KJG
5	4/29/19	REVISED PER IN HOUSE COMMENTS	PES
4	3/6/19	REVISED PER GSW&SA COMMENTS	KJG
3	8-19-18	ADDED KEY PLAN	KJG
2	10-27-17	REVISIONS PER IN HOUSE REVIEW	PES
1	8-14-17	REVISIONS PER GSW&SA COMMENTS	PES
REVISION NO.	DATE	REVISION DESCRIPTION	BY

Owner:
**GRAND STRAND WATER AND
 SEWER AUTHORITY**
 P.O. BOX 2368
 CONWAY, SC 29528

3 DAYS BEFORE DIGGING IN
 SOUTH CAROLINA
CALL 811
 www.811.org
 PALMETTO UTILITY LOCATION SERVICE



GENERAL NOTES:

- ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING 24-HOUR NOTICE TO ALL RESPECTIVE UTILITY COMPANIES FOR FIELD VERIFICATION OF EXISTING UTILITIES. ANY CHANGES TO EXISTING UTILITIES DUE TO THE CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- WATER AND SEWER LINES SHALL BE INSTALLED WITH A MINIMUM OF 12 FEET HORIZONTAL SEPARATION. WHEN WATER AND SEWER LINES CROSS, THE SEWER LINE SHALL BE PLACED UNDER THE WATER MAIN WITH A MINIMUM OF 48" VERTICAL SEPARATION. SEWER MAINS SHALL BE PLACED IN ACCORDANCE WITH SOUTH CAROLINA STATE PRIMARY DRINKING WATER REGULATIONS (R. 61-68).
- PROVISIONS SHALL BE MADE TO ENSURE POSITIVE DRAINAGE ON THE SITE AT ALL TIMES. NATURAL DRAINAGE FEATURES DISTURBED BY CONSTRUCTION MUST BE RE-ESTABLISHED. NO PONDING DUE TO SPILLS STOCKPILING OR OTHER ACTIVITIES SHALL BE PERMITTED.
- WORK WITHIN PUBLIC RIGHT-OF-WAY OR PRIVATE DRIVEWAYS SHALL BE ACCOMPANIED BY THE CONTRACTOR ACCORDING TO THE REQUIREMENTS OR CONDITIONS OF THE ENCROACHMENT PERMIT OR OTHER LEGAL DOCUMENTS AS THOUGH DOCUMENTS WERE ISSUED IN THE CONTRACTOR'S NAME. THE CONTRACTOR SHALL MAINTAIN COPIES OF THESE DOCUMENTS ON THE SITE AT ALL TIMES.
- WHEN THE CONTRACTOR IS UNABLE TO COMPLETE HIS WORK AS SHOWN ON THE PLANS BECAUSE OF AN EXISTING UTILITY, THE CONTRACTOR SHALL STAKE THE LOCATION OF THE UTILITY PRIOR TO PROCEEDING AND CONTACT THE ENGINEER.
- THE CONTRACTOR SHALL NOTIFY ALL PUBLIC AGENCIES, THE OWNER, THE ENGINEER AND ALL OTHER CONCERNED PARTIES WHEN CONSTRUCTION IS TO COMMENCE. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL MEET AND BE HELD WITH THE MUNICIPALITY AUTHORITY, THE CONTRACTOR, THE ENGINEER AND ANY OTHER INTERESTED PARTY.
- DATA REQUIRED FOR PREPARATION OF AS-BUILT DRAWINGS SHALL BE OBTAINED BY THE CONTRACTOR AT THE TIME OF INSTALLATION. THIS DATA SHALL BE ACCUMULATED BY THE CONTRACTOR DURING THE CONSTRUCTION PERIOD AND BE SUBMITTED TO THE ENGINEER IN A NEAT AND LEGIBLE MANNER AFTER COMPLETION OF THE PROJECT. RISE AND INVERT ELEVATIONS WILL BE VERIFIED BY THE ENGINEER'S SURVEYOR.
- ALL WORK SHALL BE IN ACCORDANCE WITH THE APPLICABLE FEDERAL, SOUTH CAROLINA AND LOCAL ORDINANCES, REGULATIONS, SPECIFICATIONS AND PERMITS. THE CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ALL LICENSES AND PERMITS AS REQUIRED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE ENGINEER AND GRAND STRAND WATER AND SEWER AUTHORITY PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL LICENSES AND PERMITS AS REQUIRED BY HORRY COUNTY ORDINANCES.
- ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO GRADING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SILT BARRIERS AND SEDIMENT CONTROL INSTALLATIONS DURING CONSTRUCTION UNTIL COMPLETION OF THE SITE DEVELOPMENT.
- FINAL GRADING SHALL CONSIST OF SPREADING TOP SOIL (FOUR INCHES MINIMUM TO GRADES INDICATED) ON ALL DISTURBED AREAS.
- ALL DISTURBED AREAS SHALL BE GRASSED AND STABILIZED IMMEDIATELY AFTER FINAL GRADING, AS PER THE GRASSING SPECIFICATIONS.
- ALL SLOPES EXCEEDING 4:1 SHALL BE HYDROSEEDING, AS PER THE GRASSING REQUIREMENTS AND SOOTY SPECIFICATIONS.
- ALL SILT BARRIERS MUST BE PLACED IMMEDIATELY AS ACCESS IS OBTAINED DURING CLEANING. REGARDLESS OF PLAN REQUIREMENTS, NO GRADING SHALL BE DONE UNTIL SILT BARRIER INSTALLATION HAS BEEN COMPLETED.
- THE CONTRACTOR SHALL INSTALL AND MAINTAIN SILT BARRIERS AROUND ALL DRAINAGE STRUCTURES UNTIL ALL CONSTRUCTION HAS BEEN COMPLETED.
- ADDITIONAL EROSION CONTROL MEASURES WILL BE EMPLOYED WHERE DETERMINED NECESSARY BY ACTUAL SITE CONDITIONS.
- PROVISIONS TO PREVENT EROSION OF SOIL FROM THE SITE SHALL BE AS MINIMAL IN CONFORMANCE WITH THE REQUIREMENTS OF HORRY COUNTY AND ADOPTED COMMERCIAL INTERSECTION AND SEDIMENTATION.
- SITE CONSTRUCTION WILL COMMENCE WITH THE INSTALLATION OF ALL EROSION CONTROL MEASURES NECESSARY TO CONTROL SEDIMENT DEPOSITS AND EROSION. ALL SEDIMENT CONTROL WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED WITH PERMANENT VEGETATION.
- EROSION CONTROL DEVICES MUST BE INSTALLED IMMEDIATELY AFTER LAND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE CONTROL DEVICES MAY BE ALTERED FROM THAT SHOWN ON THE APPROVED PLANS IF GRASSING PATTERNS DURING CONSTRUCTION VARY FROM THE FINAL GRASSING PATTERNS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SOIL EROSION CONTROL FOR ALL DRAINAGE PATTERNS DURING ALL STAGES OF CONSTRUCTION. ALL INADEQUACIES IN SOIL EROSION CONTROL DURING ANY PHASE OF CONSTRUCTION MUST BE REPORTED IMMEDIATELY TO THE ENGINEER.
- THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED. THE CONTRACTOR SHALL INSPECT EROSION CONTROL MEASURES AT THE END OF EACH WORKING DAY TO ENSURE PROPER FUNCTIONING OF ALL DEVICES.
- THE CONTRACTOR SHALL REMOVE ACCUMULATED SILT AND DEBRIS FROM SILT BARRIERS WHEN SILT IS WITHIN TWELVE (12) INCHES OF THE TOP OF THE SILT FENCE.
- FAILURE TO INSTALL, OPERATE AND MAINTAIN ALL EROSION CONTROL MEASURES, AS SHOWN ON THE APPROVED PLANS OR AS DIRECTED BY THE ENGINEER AND/OR HORRY COUNTY WILL RESULT IN ALL WORK ON THE CONSTRUCTION SITE BEING STOPPED UNTIL PROPER CORRECTIVE MEASURES HAVE BEEN MET, AS REQUIRED AND/OR DIRECTED.
- SILT BARRIERS MUST BE PLACED AT THE DOWNSTREAM END OF ALL FILL SLOPES.
- ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN FOURTEEN (14) DAYS SHALL BE STABILIZED WITH TEMPORARY GRASSING. STABILIZATION MEASURES SHALL BE INITIATED BY THE SITEWORK, OR AS SOON AS POSSIBLE, AFTER THE TEMPORARY OR PERMANENT CEASE OF CONSTRUCTION ACTIVITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING EXISTING UTILITIES AND FOR PREPARING ANY DAMAGE TO SAME. UTILITY LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT MAY HAVE SERVICE IN THE AREA FOR AN ACCURATE LOCATION PRIOR TO BEGINNING WORK.
- RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURES AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING LOT CONSTRUCTION OR PROVIDE AN INDIVIDUAL PLAN MEETING SECTION R 72-307 OF THE STORMWATER AND SEDIMENT REDUCTION REQUIREMENTS.
- THE CONTRACTOR MUST EXCAVATE THE PONDS AS INDICATED ON THE PLANS. THE CONTRACTOR MUST PERIODICALLY REMOVE SILT AND DEBRIS FROM THE PONDS AS MAY BE DIRECTED BY THE OWNER OR ENGINEER. IMMEDIATELY AFTER ALL EXCAVATIONS HAVE BEEN COMPLETED, THE CONTRACTOR SHALL STABILIZE THE POND SLOPES AS PER THE GRASSING SPECIFICATIONS.
- ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24 HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED. ON SITE INSPECTOR: DDC ENGINEERS, INC. PHONE # 843.663.3303.
- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE UPON WORK OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 21 DAYS.
- DATA REQUIRED FOR PREPARATION OF RECORD DRAWINGS SHALL BE OBTAINED AND RECORDED BY THE CONTRACTOR AT THE TIME OF INSTALLATION. THIS DATA SHALL BE ACCUMULATED BY THE CONTRACTOR DURING THE CONSTRUCTION PERIOD AND EVIDENCE PROVIDED TO THE ENGINEER AS PART OF THE MONTHLY PAY REQUEST. PAY REQUESTS WILL NOT BE APPROVED BY THE ENGINEER IF THIS DATA IS NOT SUBMITTED WITH THE PAY REQUEST. CONTRACTOR IS TO PROVIDE NEAT AND LEGIBLE COMPLETED RECORD DRAWINGS TO THE ENGINEER AT THE COMPLETION OF THE PROJECT.
- CONTRACTOR IS TO COMPLY WITH ALL PROVISIONS OF THE "SOUTH CAROLINA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" SECTION V, WHEN WORKING IN OR ADJACENT TO AN EXISTING PUBLIC HIGHWAY RIGHT OF WAY. THIS SECTION COVERS CONSTRUCTION SIGNAGE, FLAGGING, AND OTHER TRAFFIC CONTROL DEVICES.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		RIGHT-OF-WAY CENTERLINE
		EASEMENT
		SWALE/DITCH
		TREES
		TREE LINE
		PAVEMENT
		EX. ROAD
		CONTOUR
		SPOT ELEVATION
		MAILBOX
		POWER POLE
		GUY WIRE
		TELEPHONE PEDESTAL
		OVERHEAD ELECTRIC
		UNDERGROUND ELECTRIC
		GAS
		SIGN
		WATER
		WATER VALVE
		WATER METER
		FIRE HYDRANT
		SANITARY SEWER
		SANITARY SEWER MANHOLE
		FORCE MAIN
		STORM DRAIN
		STORM DRAIN STRUCTURE

SHEET SCHEDULE

SHEET TITLE	SHEET NUMBER	ORIGINAL DATE	REVISION DATE
COVER SHEET	1	APRIL 28, 2017	JULY 1, 2019
GENERAL NOTES, LEGEND AND SHEET SCHEDULE	2	APRIL 28, 2017	JULY 1, 2019
KEY PLAN	KEY	SEPT. 19, 2018	MARCH 8, 2019
48" WATER LINE PLAN AND PROFILE	3	APRIL 28, 2017	AUGUST 30, 2019
48" WATER LINE PLAN AND PROFILE	4	APRIL 28, 2017	JULY 1, 2019
48" WATER LINE PLAN AND PROFILE	5	APRIL 28, 2017	OCTOBER 27, 2017
48" WATER LINE PLAN AND PROFILE	6	APRIL 28, 2017	JULY 1, 2019
48" WATER LINE PLAN AND PROFILE	7	APRIL 28, 2017	JULY 1, 2019
48" WATER LINE PLAN AND PROFILE	8	APRIL 28, 2017	JULY 1, 2019
48" WATER LINE PLAN AND PROFILE	9	APRIL 28, 2017	JULY 1, 2017
48" WATER LINE PLAN AND PROFILE	10	APRIL 28, 2017	JULY 1, 2019
48" WATER LINE PLAN AND PROFILE	11	APRIL 28, 2017	JULY 1, 2019
48" WATER LINE PLAN AND PROFILE	12	APRIL 28, 2017	JULY 1, 2019
48" WATER LINE PLAN AND PROFILE	13	APRIL 28, 2017	MAY 17, 2019
48" WATER LINE PLAN AND PROFILE	14	APRIL 28, 2017	MAY 17, 2019
48" WATER LINE PLAN AND PROFILE	15	APRIL 28, 2017	AUGUST 30, 2019
48" WATER LINE PLAN AND PROFILE	16	APRIL 28, 2017	AUGUST 30, 2019
48" WATER LINE PLAN AND PROFILE	17	APRIL 28, 2017	AUGUST 30, 2019
48" WATER LINE PLAN AND PROFILE	18	APRIL 28, 2017	MAY 17, 2019
48" WATER LINE PLAN AND PROFILE	19	APRIL 28, 2017	AUGUST 30, 2019
48" WATER LINE PLAN AND PROFILE	20	APRIL 28, 2017	AUGUST 30, 2019
48" WATER LINE PLAN AND PROFILE	21	APRIL 28, 2017	AUGUST 30, 2019
30" FORCEMAIN PLAN AND PROFILES	22	APRIL 28, 2017	OCTOBER 27, 2017
SEDIMENT AND EROSION CONTROL DETAILS	23	APRIL 28, 2017	OCTOBER 27, 2017
GENERAL DETAILS	24	APRIL 28, 2017	AUGUST 30, 2019
GENERAL DETAILS	25	APRIL 28, 2017	APRIL 3, 2019
GENERAL DETAILS	26	APRIL 28, 2017	MAY 17, 2019
GENERAL DETAILS	27	APRIL 28, 2017	AUGUST 30, 2019

This set is current through sheet dated AUGUST 30, 2019

EROSION CONTROL LEGEND

SYMBOL	PRACTICE	DESCRIPTION
	INLET PROTECTION	A TEMPORARY SEDIMENT BARRIER Laid AROUND A STORM DRAIN INLET TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
	OUTLET PROTECTION	RIP RAP CHANNELS / BANK PLACED BELOW DRAINAGE OUTLETS TO REDUCE THE VELOCITY OF FLOW, EROSION, AND STABILIZE GRADES DOWNSTREAM OF OUTLET STRUCTURES.
	TEMPORARY CHECK DAM	RIP RAP BANK PLACED BELOW DRAINAGE OUTLETS TO REDUCE THE VELOCITY OF FLOW, EROSION, AND STABILIZE GRADES DOWNSTREAM OF DRAINAGE OUTLETS.
	SILT FENCE	A TEMPORARY STRUCTURE USED TO SLOW THE VELOCITY OF RUN-OFF, CAUSE SEDIMENT DEPOSITION AT THE STRUCTURE, AND FILTER SEDIMENT FROM RUN-OFF.
	SLOPE REWORK	A TEMPORARY STRUCTURE USED TO SLOW THE VELOCITY OF RUN-OFF, CAUSE SEDIMENT DEPOSITION AT THE STRUCTURE, AND FILTER SEDIMENT FROM RUN-OFF.
	CONSTRUCTION LIMITS	ADJACENT AREA THAT ALL LAND DISTURBANCE WILL OCCUR DURING CONSTRUCTION.
	PERMANENT EROSION CONTROL MATTING	A PERMANENT REINFORCEMENT MAT TO PREVENT SOIL EROSION AND MAINTAIN PERMANENT GROUND COVER.
	DISTURBED AREA (WITH TEMPORARY VEGETATION)	ESTABLISHING PERMANENT VEGETATIVE COVER SUCH AS TREES, SHRUBS, VINES, GRASSES, SOIL, OR LOGS/RAILS ON DISTURBED AREAS.
	SEDIMENT TIME	SEEDING TIME PLACED IN EXISTING OR PROPOSED DITCH SECTIONS TO REDUCE THE VELOCITY OF FLOW, EROSION, AND STABILIZE GRADES DOWNSTREAM OF DRAINAGE OUTLETS.

SEEDING NOTES:

- INCLUDES RURAL AREAS ADJACENT TO WELL-DEVELOPED LAWNS.
- NOT REQUIRED ON SHOULDER, MEDIAN, ETC., AND SLOPES UNDER 5 FEET IN HEIGHT.
- GRASS BERMUDA SEED, INCLUDING NK-37, SHALL NOT BE USED.
- RESEEDING CRACKS/CLOVER SHALL BE INOCULATED IN ACCORDANCE WITH SUBSECTION 610.05. DO NOT PLANT CLOVER IN MEDIANS OR IN RURAL AREAS ADJACENT TO WELL-DEVELOPED LAWNS.
- PINE/COLA BARK SHALL BE ALLOWED ONLY AS SHOWN IN SEEDING BOXES/FILES 1 AND 4 AT THE RATE OF 50 POUNDS PER ACRE. ONLY WHEN SEEDING IN AREAS THAT ARE COVERED BY THE SOUTH CAROLINA MANUFACT. CERTIFICATION. DO NOT INCLUDE BARK SEED IN THE MIX.
- THE CONTRACTOR SHALL OBTAIN A SATISFACTORY STAND OF PERENNIAL VEGETATION WHOSE ROOT SYSTEM SHALL BE DEVELOPED SUFFICIENTLY TO SURVIVE DRY PERIODS AND WINTER WEATHER, AND BE CAPABLE OF RE-ESTABLISHMENT IN THE SPRING. THE PERENNIAL VEGETATIVE COVER SHALL HAVE A MINIMUM COVERAGE DENSITY OF 70% FOR THE SEEDING AREAS. CONTRACTOR SHALL DETERMINE ALL RATES OF APPLICATION NECESSARY TO PROVIDE THE REQUIRED STAND OF GRASS, AND SHALL FOLLOW THE APPLICATION PROCEDURES AS SPECIFIED HEREIN.
- GRASS BERMUDA SEED, INCLUDING NK-37, SHALL NOT BE USED.

SEEDING SCHEDULE FOR TEMPORARY VEGETATION				
SCHEDULE	COMMON NAME (OF SEED)	RATE PER ACRE (LBS)	PLANTING DATES	
1	COMMON BERMUDA (SEED)	210	MARCH 15 TO AUG 31	
	TALL FESCUE	140		
2	COMMON BERMUDA (HYBRID)	175	SEPT 1 TO MARCH 15	
	ANNUAL RYEGRASS	175		

NOTES:

THE CONTRACTOR SHALL OBTAIN A SATISFACTORY STAND OF PERENNIAL VEGETATION WHOSE ROOT SYSTEM SHALL BE DEVELOPED SUFFICIENTLY TO SURVIVE DRY PERIODS AND WINTER WEATHER, AND BE CAPABLE OF RE-ESTABLISHMENT IN THE SPRING. THE PERENNIAL VEGETATIVE COVER SHALL HAVE A MINIMUM COVERAGE DENSITY OF 70% FOR THE SEEDING AREAS. CONTRACTOR SHALL DETERMINE ALL RATES OF APPLICATION NECESSARY TO PROVIDE THE REQUIRED STAND OF GRASS, AND SHALL FOLLOW THE APPLICATION PROCEDURES AS SPECIFIED HEREIN.



NO.	REVISION	DATE	BY	CHKD.
1	REVISION 1	APRIL 28, 2017	DDC	DDC
2	REVISION 2	APRIL 28, 2017	DDC	DDC
3	REVISION 3	APRIL 28, 2017	DDC	DDC
4	REVISION 4	APRIL 28, 2017	DDC	DDC
5	REVISION 5	APRIL 28, 2017	DDC	DDC
6	REVISION 6	APRIL 28, 2017	DDC	DDC
7	REVISION 7	APRIL 28, 2017	DDC	DDC
8	REVISION 8	APRIL 28, 2017	DDC	DDC
9	REVISION 9	APRIL 28, 2017	DDC	DDC
10	REVISION 10	APRIL 28, 2017	DDC	DDC
11	REVISION 11	APRIL 28, 2017	DDC	DDC
12	REVISION 12	APRIL 28, 2017	DDC	DDC
13	REVISION 13	APRIL 28, 2017	DDC	DDC
14	REVISION 14	APRIL 28, 2017	DDC	DDC
15	REVISION 15	APRIL 28, 2017	DDC	DDC
16	REVISION 16	APRIL 28, 2017	DDC	DDC
17	REVISION 17	APRIL 28, 2017	DDC	DDC
18	REVISION 18	APRIL 28, 2017	DDC	DDC
19	REVISION 19	APRIL 28, 2017	DDC	DDC
20	REVISION 20	APRIL 28, 2017	DDC	DDC
21	REVISION 21	APRIL 28, 2017	DDC	DDC
22	REVISION 22	APRIL 28, 2017	DDC	DDC
23	REVISION 23	APRIL 28, 2017	DDC	DDC
24	REVISION 24	APRIL 28, 2017	DDC	DDC
25	REVISION 25	APRIL 28, 2017	DDC	DDC
26	REVISION 26	APRIL 28, 2017	DDC	DDC
27	REVISION 27	APRIL 28, 2017	DDC	DDC
28	REVISION 28	APRIL 28, 2017	DDC	DDC
29	REVISION 29	APRIL 28, 2017	DDC	DDC
30	REVISION 30	APRIL 28, 2017	DDC	DDC
31	REVISION 31	APRIL 28, 2017	DDC	DDC
32	REVISION 32	APRIL 28, 2017	DDC	DDC
33	REVISION 33	APRIL 28, 2017	DDC	DDC
34	REVISION 34	APRIL 28, 2017	DDC	DDC
35	REVISION 35	APRIL 28, 2017	DDC	DDC
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38	REVISION 38	APRIL 28, 2017	DDC	DDC
39	REVISION 39	APRIL 28, 2017	DDC	DDC
40	REVISION 40	APRIL 28, 2017	DDC	DDC
41	REVISION 41	APRIL 28, 2017	DDC	DDC
42	REVISION 42	APRIL 28, 2017	DDC	DDC
43	REVISION 43	APRIL 28, 2017	DDC	DDC
44	REVISION 44	APRIL 28, 2017	DDC	DDC
45	REVISION 45	APRIL 28, 2017	DDC	DDC
46	REVISION 46	APRIL 28, 2017	DDC	DDC
47	REVISION 47	APRIL 28, 2017	DDC	DDC
48	REVISION 48	APRIL 28, 2017	DDC	DDC
49	REVISION 49	APRIL 28, 2017	DDC	DDC
50	REVISION 50	APRIL 28, 2017	DDC	DDC

GENERAL NOTES, LEGEND AND SHEET SCHEDULE

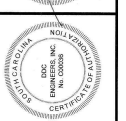
CSWSA WATER LINE FROM US HWY. 701 TO SC HWY. 544
HORRY COUNTY, SOUTH CAROLINA

PREPARED FOR: GRAND STRAND WATER AND SEWER AUTHORITY

SCALE	NO SCALE
DATE	4-28-17
DESIGNED BY	EXS
DRAWN BY	PEB
APPROV. BY	EXS
PROJECT NO.	17010E
2	
FILE NO.	17010E

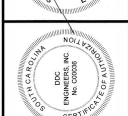
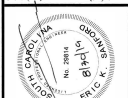
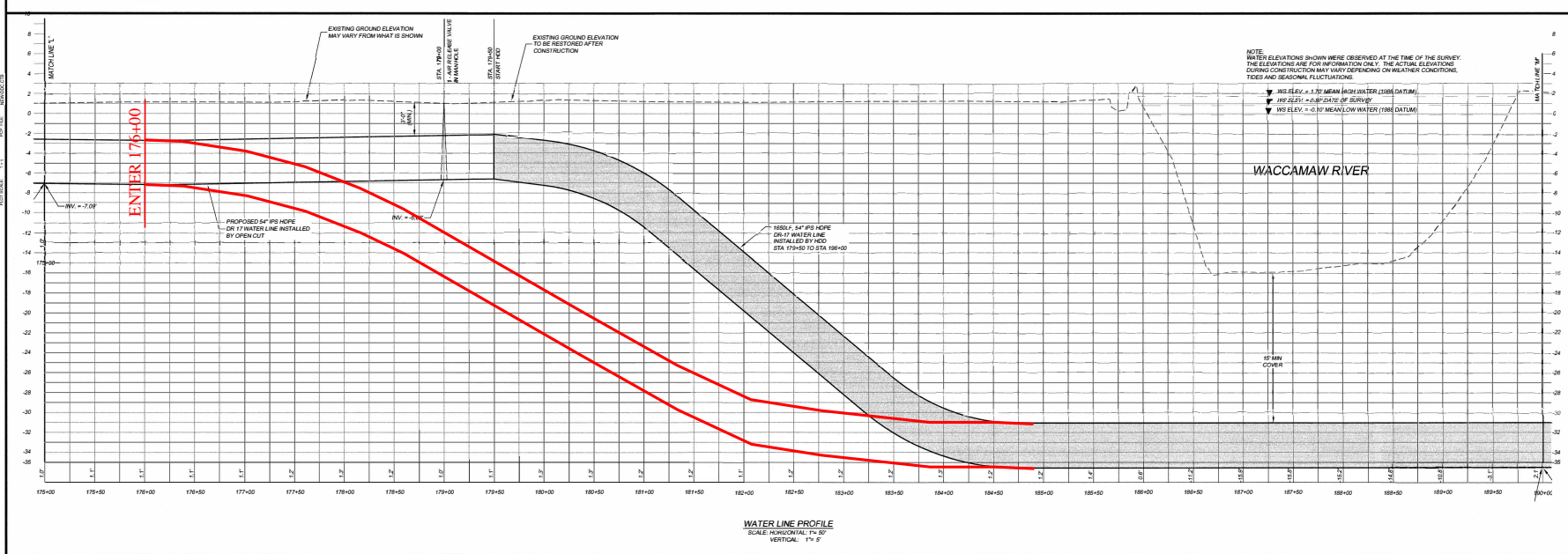
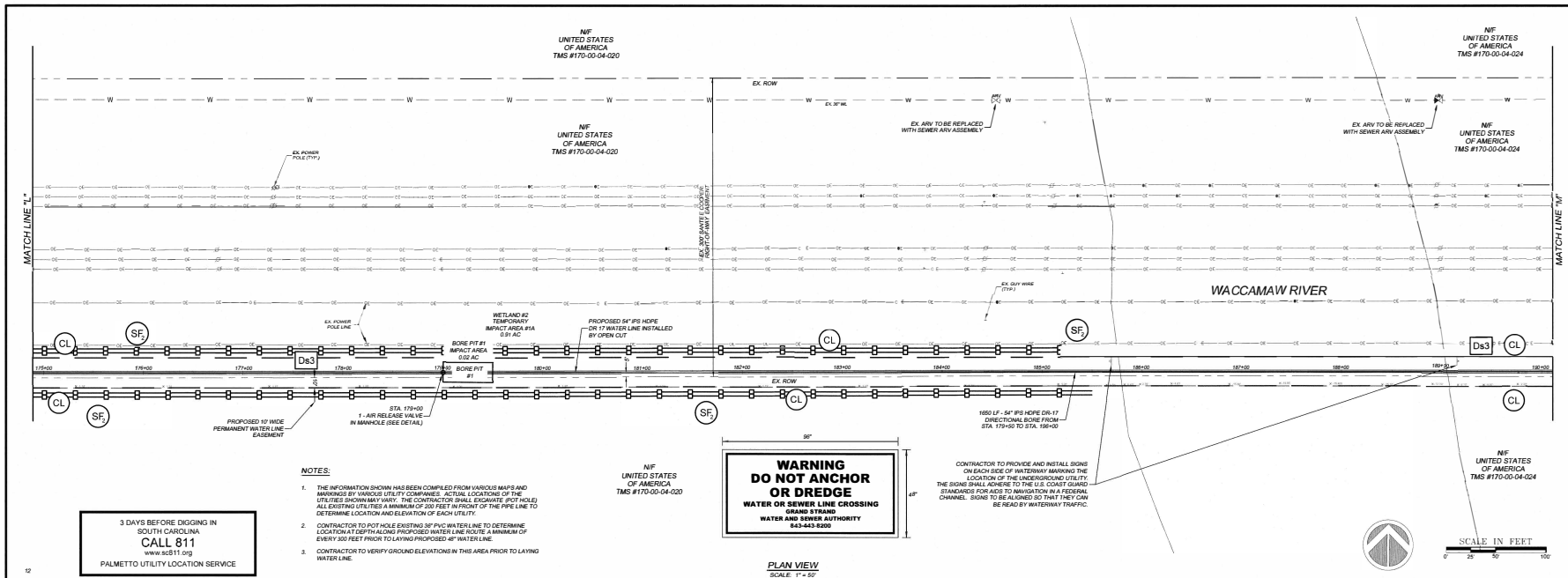


DDC ENGINEERS
Civil/Structural/Environmental/Planning
1208 Providence Dr., Myrtle Beach, SC 29577
Phone: (843) 675-5200 Fax: (843) 675-5201



NO.	DATE	REVISION	DESCRIPTION
1	01/15/15		DESIGN
2	01/15/15		DRAWING
3	01/15/15		APPROVAL

48" WATER LINE - KAY PLAN	
GSWSA WATER LINE FROM US HWY 701 TO SC HWY 544 MYRTLE BEACH, SOUTH CAROLINA	
PREPARED FOR: GRAND STRAND WATER AND SEWER AUTHORITY	
SCALE:	
DATE:	01/15/15
DESIGNED BY:	EKS
DRAWN BY:	PES/KJS
APPROV. BY:	EKS
PROJECT NO.:	17006
KEY	
FILE NO.:	



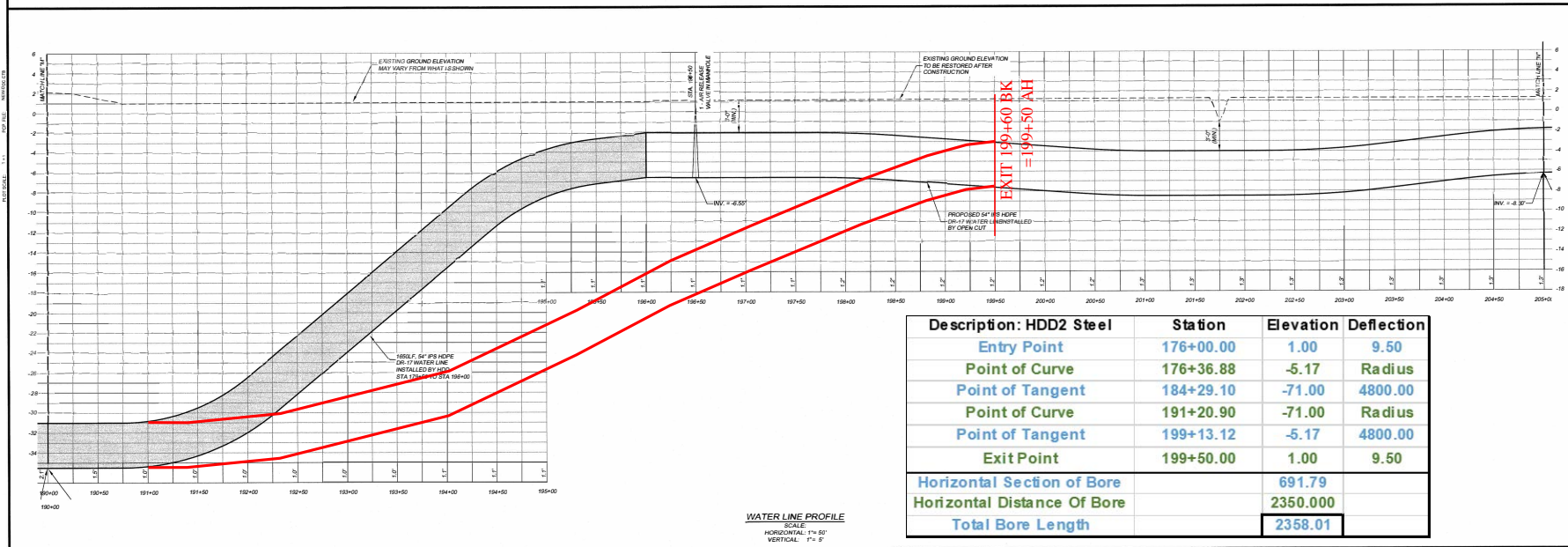
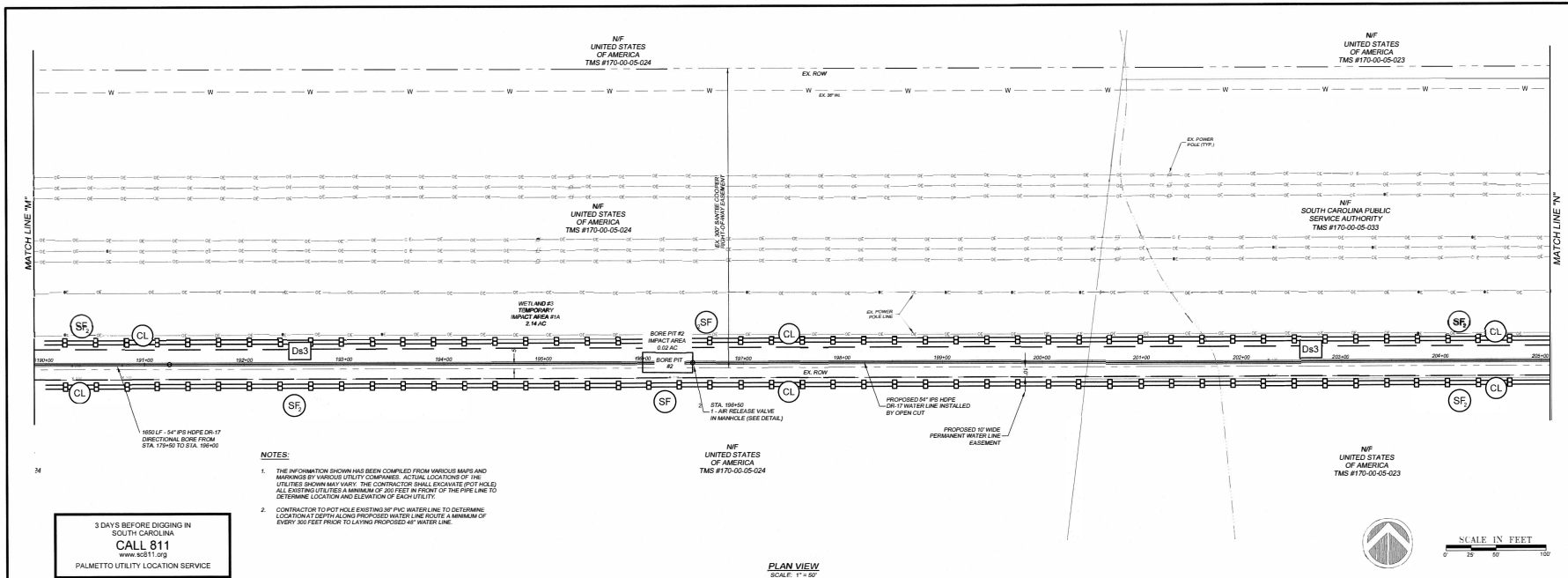
NO.	DATE	REVISION DESCRIPTION	BY
1	8/20/17	REVISED PER OWNER COMMENTS	KJS
2	8/20/17	REVISED PER OWNER COMMENTS	KJS
3	8/20/17	REVISED PER OWNER COMMENTS	KJS
4	8/20/17	REVISED PER OWNER COMMENTS	KJS

48" WATER LINE
PLAN AND PROFILE

GSWSA WATER LINE FROM US HWY. 701 TO SC HWY. 544
MYRTLE BEACH, SOUTH CAROLINA

PREPARED FOR: GRAND STRAND WATER AND SEWER AUTHORITY

SCALE: 1" = 50'
DATE: 4-28-17
DESIGNED BY: EKS
DRAWN BY: PES
APPROVED BY: EKS
PROJECT NO.: 17010E
15
FILE NO.: 17010E



DDC ENGINEERS
Civil, Mechanical, Electrical, and Environmental Engineers
208 Palmetto Dr., North Beach, SC 29581
Phone: (803) 692-3200 Fax: (803) 692-3201

NO.	DATE	REVISION DESCRIPTION	BY
1	07/15/10	ISSUED FOR PERMITS	EXS
2	07/15/10	REVISIONS FOR HOUSE REVIEW	EXS
3	07/15/10	REVISIONS FOR HOUSE REVIEW	EXS
4	07/15/10	REVISIONS FOR HOUSE REVIEW	EXS

48" WATER LINE PLAN AND PROFILE

GSWSA WATER LINE FROM US HWY 701 TO SC HWY 544 MYRTLE BEACH, SOUTH CAROLINA

PREPARED FOR: GRAND STRAND WATER AND SEWER AUTHORITY

SCALE: 1" = 10'

DATE: 4-25-17

DESIGNED BY: EXS

DRAWN BY: PES

APPROV BY: EXS

PROJECT NO.: 17010E

16

FILE NO.: 17010E

From: **Monte Beasley** mbeasley@ruby-collins.com
Subject: RE: Hwy 701
Date: December 2, 2019 at 8:58 AM
To: Matthew Minor mattminor@gswsa.com
Cc: Scott Cline scline@ruby-collins.com, Tad Nusbaumer tad@ruby-collins.com

MB

Yes, that looks good to us.



Monte Beasley
Senior Project Manager

Ruby-Collins, Inc.
p: 770-432-2900
m: 470-515-4271

4875 Martin Court Smyrna, Georgia
www.ruby-collins.com



We have moved! Please update your records.

From: Matthew Minor <mattminor@gswsa.com>
Sent: Monday, December 2, 2019 8:52 AM
To: Monte Beasley <mbeasley@ruby-collins.com>
Cc: Scott Cline <scline@ruby-collins.com>; Tad Nusbaumer <tad@ruby-collins.com>
Subject: Re: Hwy 701

Monte,

Just wanted to double check with you one last time if Ruby-Collins agrees with the \$20,701,605 in the attached. This hasn't changed since our last email but wanted to confirm before we had our engineer update their recommendation letter. Once we get this letter back from our engineer we will be sending you a Notice of Intent to Award.

Also, the additional sampling station is at STA 65+00.

Matthew T. Minor, P.E.
Engineering Services Manager
Grand Strand Water & Sewer Authority
P.O. Box 2368 Conway, SC 29528-2368
Phone: (843) 234-8405 Fax: (843) 347-4680

On Nov 14, 2019, at 3:13 PM, Monte Beasley <mbeasley@ruby-collins.com> wrote:

Thanks Matt. I'll take a look at it and let you know if anything jumps out at me. At first glance, it looks like I thought it would.



Monte Beasley
Senior Project Manager

Ruby-Collins, Inc.
p: 770-432-2900
m: 470-515-4271

4875 Martin Court Smyrna, Georgia

www.ruby-collins.com



We have moved! Please update your records.

From: Matthew Minor <mattminor@gswsa.com>

Sent: Thursday, November 14, 2019 3:09 PM

To: Monte Beasley <mbeasley@ruby-collins.com>

Cc: Scott Cline <scline@ruby-collins.com>; Tad Nusbaumer <tad@ruby-collins.com>

Subject: Re: Hwy 701

Monte,

Thanks. I should have everything I need at this point. Attached you find a spreadsheet with updated quantities and unit costs for steel. You will see items in bold red that have changed or been added. One thing you will notice is the overall linear feet of pipe is slightly less than the original bid. I believe the original total length was incorrect. Let me know your thoughts, comments, questions or concerns regarding these new numbers.

19,940 LF (item 4)

360 LF (item 6)

5,000 LF (item 7)

2,500 LF (item 20)

27,800 Total LF

Construction Plans overall length of 48" is 27,757.

Matthew T. Minor, P.E.

Engineering Services Manager

Grand Strand Water & Sewer Authority

P.O. Box 2368 Conway, SC 29528-2368

Phone: [\(843\) 234-8405](tel:8432348405) Fax: [\(843\) 347-4680](tel:8433474680)

On Nov 11, 2019, at 1:29 PM, Monte Beasley <mbeasley@ruby-collins.com> wrote:

Matt,

Hopefully, this email will answer 2 out of 3 of your comments from Friday.

1. Below is a link to a brief narrative of individual and company "key projects" experience. The steel pipe projects for myself and the Site Operations Manager Tad Nusbaumer are "boxed out" in red.
2. Attached is a profile of what we think the bore on Bucksville Drive might look like in the field. We agree that +/-100-feet for the bore length is a safe guess at this point. We do think that we will encounter some additional dewatering risk by boring

beneath the creek and our bore entry/exit pits may have to be a little deeper in order to lessen that risk. Also, we will have to consider the risk to the existing building near station +/-16+50.

As a result, we would like to ask that the following unit prices apply to this work.

- 60-Inch Casing Bore 15+25 to 16+25 Including Bore Entry Pit \$2,080.00 Per Linear Foot
 - Exit Pit at 16+25 \$42,875 Lump Sum
3. I have asked Laney to spend a little time this week and double check the 2,500-foot length for the River Drill. As soon as they have confirmed that length, I will let you know.

If you should have any questions, feel free to advise.



Monte Beasley

Senior Project Manager

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We have moved! Please update your records.

From: Megan Griffin <mgriffin@ruby-collins.com>

Sent: Monday, November 11, 2019 10:04 AM

To: Monte Beasley <mbeasley@ruby-collins.com>

Subject: Hwy 701

<https://www.dropbox.com/s/7d6rt7hebx3fuk4/Hwy%20701%20to%20Hwy%20544%20Project%20Management%20Team%20Experience.pdf?dl=0>

Here is the updated dropbox link and the file has been updated in the Bid File as well!

<Grand Strand Bore Sketch - JC.pdf>

Hwy 701 to Hwy 544 48" Water Transmisssion Line Improvement Project (627-01)
Ruby-Collins, Inc.

ORIGINAL BID TABULATION (STEEL)		Quantity	Units	Unit Cost	Total Cost
1.	Mobilization	1	LS	\$ 550,000.00	\$ 550,000.00
2.	Clearing and Grubbing	1	LS	\$ 300,000.00	\$ 300,000.00
3.	Sediment and Erosion Control Complete	1	LS	\$ 250,000.00	\$ 250,000.00
^4.	Substitute 48" -0.20 Thickness in lieu of 48"C-900 DR-25 PVC Water Line for #4 in Base Bid	18,180	LF	\$ 444.50	\$ 8,081,010.00
5.	36" C-900 DR-25 PVC Water Line	80	LF	\$ 415.00	\$ 33,200.00
^6.	Substitute 48" Steel Pipe in lieu of Retrained Joint Zinc Coated Ductile Iron Pipe Water Line	180	LF	\$ 650.00	\$ 117,000.00
^7.	Substitute 48" Steel Pipe in lieu of DR-17 HDPE Pipe Open Cut w/Pre-cast Concrete Gravity Anchors	6,000	LF	\$ 1,075.00	\$ 6,450,000.00
8.	48" M.J. Butterfly Valve Restrained	7	EA	\$ 35,000.00	\$ 245,000.00
9.	36" M.J. Butterfly Valve Restrained	2	EA	\$ 20,000.00	\$ 40,000.00
^10.	Substitute 48" Steel Pipe in lieu of 48" MJ 45° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
^11.	Substitute 48" Steel Pipe in lieu of 48" MJ 90° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
^12.	Substitute 48" Steel Pipe in lieu of 48" MJ 11 1/4° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
^13.	Substitute 48" Steel Pipe in lieu of 48" M.J. 22-1/2° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
14.	48" X 36" MJ Reducer Restrained	2	EA	\$ 15,000.00	\$ 30,000.00
15.	Air Release Valve in Manhole	5	EA	\$ 5,000.00	\$ 25,000.00
16.	Air Release Valve with Quazite Box	9	EA	\$ 3,500.00	\$ 31,500.00
^17.	Substitute 48" Steel Pipe in lieu of HDPE to PVC Connection (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
18.	Sampling Station	2	EA	\$ 2,500.00	\$ 5,000.00
19.	16" Blowoff Assembly Complete includes 48" x 16 MJ Tee, 16" MJ Gate Valve 16" Piping and Tideflex Valve Fully Restrained	3	EA	\$ 45,000.00	\$ 135,000.00
^20.	Substitute 48" Steel Pipe in lieu o f IPS DR-17 HDPE Directional Bore	4,000	LF	\$ 1,475.00	\$ 5,900,000.00
^21.	Substitute 60" Steel Bore Casing (SC-Hwy 544) 0.75 Wall Thickness in lieu of 66" Steel Bore Casing	100	LF	\$ 1,850.00	\$ 185,000.00
22.	Remove Existing 36" PVC Water Line	170	LF	\$ 5.00	\$ 850.00
23.	Temporary 48" Tall Wire Fence with Steel Posstss (10' Max Spacing on Post)	800	LF	\$ 10.00	\$ 8,000.00
24.	SCDOT Roadway Asphalt Repair	75	LF	\$ 200.00	\$ 15,000.00
25.	County Roadway Asphalt Repair	1,060	LF	\$ 150.00	\$ 159,000.00
26.	GABC Base Driveway Repair	160	LF	\$ 50.00	\$ 8,000.00
27.	2" SCDOT Type B Road Overlay	4,650	SY	\$ 25.00	\$ 116,250.00
28.	Cut in 36" MJ 45° Bend Restrained on Existing 36" PVC Water Line	1	LS	\$ 25,000.00	\$ 25,000.00
29.	Cut-In to Existing 36" Pipe Line	2	EA	\$ 15,000.00	\$ 30,000.00
30.	Restrain Existing 36" PVC Water Line	40	LF	\$ 150.00	\$ 6,000.00
31.	Asphalt Roadway Milling Tie Points	1	LS	\$ 15,000.00	\$ 15,000.00
32.	Asphalt Driveway Repair	120	LF	\$ 200.00	\$ 24,000.00
33.	Repair Existing 4 Strain Electrical Fence with Wooden Post	1,000	LF	\$ 20.00	\$ 20,000.00
34.	Repair Existing Single Tape Electric Fence with Steel Post	980	LF	\$ 20.00	\$ 19,600.00
35.	6" Concrete Driveway Repair	28	LF	\$ 250.00	\$ 7,000.00
36.	Remove Existing 36" MJ 22½ ° Bend	1	EA	\$ 5,000.00	\$ 5,000.00
48" Water Transmission Line Alternate Bid (Steel) Total:					\$ 22,836,410.00

Hwy 701 to Hwy 544 48" Water Transmisssion Line Improvement Project (627-01)
Ruby-Collins, Inc.

REVISED BID TABULATION (STEEL)		Quantity	Units	Unit Cost	Total Cost
1.	Mobilization	1	LS	\$ 550,000.00	\$ 550,000.00
2.	Clearing and Grubbing	1	LS	\$ 300,000.00	\$ 300,000.00
3.	Sediment and Erosion Control Complete	1	LS	\$ 250,000.00	\$ 250,000.00
^4.	Substitute 48" -0.20 Thickness in lieu of 48"C-900 DR-25 PVC Water Line for #4 in Base Bid	19,940	LF	\$ 444.50	\$ 8,863,330.00
5.	36" C-900 DR-25 PVC Water Line	80	LF	\$ 415.00	\$ 33,200.00
^6.	Substitute 48" Steel Pipe in lieu of Retrained Joint Zinc Coated Ductile Iron Pipe Water Line	360	LF	\$ 650.00	\$ 234,000.00
^7.	Substitute 48" Steel Pipe in lieu of DR-17 HDPE Pipe Open Cut w/Pre-cast Concrete Gravity Anchors	5,000	LF	\$ 1,075.00	\$ 5,375,000.00
8.	48" M.J. Butterfly Valve Restrained	7	EA	\$ 35,000.00	\$ 245,000.00
9.	36" M.J. Butterfly Valve Restrained	2	EA	\$ 20,000.00	\$ 40,000.00
^10.	Substitute 48" Steel Pipe in lieu of 48" MJ 45° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
^11.	Substitute 48" Steel Pipe in lieu of 48" MJ 90° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
^12.	Substitute 48" Steel Pipe in lieu of 48" MJ 11 1/4° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
^13.	Substitute 48" Steel Pipe in lieu of 48" M.J. 22-1/2° Bend Restrained (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
14.	48" X 36" MJ Reducer Restrained	2	EA	\$ 15,000.00	\$ 30,000.00
15.	Air Release Valve in Manhole	5	EA	\$ 5,000.00	\$ 25,000.00
16.	Air Release Valve with Quazite Box	9	EA	\$ 3,500.00	\$ 31,500.00
^17.	Substitute 48" Steel Pipe in lieu of HDPE to PVC Connection (Not needed with Steel Pipe)	0	EA	\$ -	\$ -
18.	Sampling Station	3	EA	\$ 2,500.00	\$ 7,500.00
19.	16" Blowoff Assembly Complete includes 48" x 16 MJ Tee, 16" MJ Gate Valve 16" Piping and Tideflex Valve Fully Restrained	3	EA	\$ 45,000.00	\$ 135,000.00
^20.	Substitute 48" Steel Pipe in lieu of f IPS DR-17 HDPE Directional Bore	2,500	LF	\$ 1,475.00	\$ 3,687,500.00
^21.	Substitute 60" Steel Bore Casing (SC-Hwy 544) 0.75 Wall Thickness in lieu of 66" Steel Bore Casing	100	LF	\$ 1,850.00	\$ 185,000.00
22.	Remove Existing 36" PVC Water Line	170	LF	\$ 5.00	\$ 850.00
23.	Temporary 48" Tall Wire Fence with Steel Posstss (10' Max Spacing on Post)	800	LF	\$ 10.00	\$ 8,000.00
24.	SCDOT Roadway Asphalt Repair	75	LF	\$ 200.00	\$ 15,000.00
25.	County Roadway Asphalt Repair	1,060	LF	\$ 150.00	\$ 159,000.00
26.	GABC Base Driveway Repair	160	LF	\$ 50.00	\$ 8,000.00
27.	2" SCDOT Type B Road Overlay	4,650	SY	\$ 25.00	\$ 116,250.00
28.	Cut in 36" MJ 45° Bend Restrained on Existing 36" PVC Water Line	1	LS	\$ 25,000.00	\$ 25,000.00
29.	Cut-In to Existing 36" Pipe Line	2	EA	\$ 15,000.00	\$ 30,000.00
30.	Restrain Existing 36" PVC Water Line	40	LF	\$ 150.00	\$ 6,000.00
31.	Asphalt Roadway Milling Tie Points	1	LS	\$ 15,000.00	\$ 15,000.00
32.	Asphalt Driveway Repair	120	LF	\$ 200.00	\$ 24,000.00
33.	Repair Existing 4 Strain Electrical Fence with Wooden Post	1,000	LF	\$ 20.00	\$ 20,000.00
34.	Repair Existing Single Tape Electric Fence with Steel Post	980	LF	\$ 20.00	\$ 19,600.00
35.	6" Concrete Driveway Repair	28	LF	\$ 250.00	\$ 7,000.00
36.	Remove Existing 36" MJ 22½ ° Bend	1	EA	\$ 5,000.00	\$ 5,000.00
37.	60" Steel Bore & Jack (Bucksville Rd/Wetland) STA 105+25 to 106+25	100	LF	\$ 2,080.00	\$ 208,000.00
38.	Bore & Jack Exit Pit (Bucksville Rd/Wetland)	1	EA	\$ 42,875.00	\$ 42,875.00
48" Water Transmission Line Alternate Bid (Steel) Revised Total:					\$ 20,701,605.00

Hwy 701 to Hwy 544 48" Water Transmisssion Line Improvement Project (627-01)
Ruby-Collins, Inc.

ITEMIZED REVISIONS (STEEL)			Quantity	Units	Unit Cost	Total Cost
a.	Delete 48" Steel Pipe Directional Bore (Bucksville Rd/Wetland)		-1,500	LF	\$ 1,475.00	\$ (2,212,500.00)
b.	Add 60" Steel Bore & Jack Casing (Bucksville Rd/Wetland)		100	LF	\$ 2,080.00	\$ 208,000.00
c.	Add 48" Steel Carrier Pipe at Bore & Jack (Bucksville Rd/Wetland)		180	LF	\$ 650.00	\$ 117,000.00
d.	Additonal Cost for Bore & Jack Exit Pit (Bucksville Rd/Wetland)		1	EA	\$ 42,875.00	\$ 42,875.00
e.	Add 48" Steel Water Line (Bucksville Rd/Wetland)		1,320	LF	\$ 444.50	\$ 586,740.00
f.	Add 48" Steel Water Line		440	LF	\$ 444.50	\$ 195,580.00
g.	Delete open-cut 48" Steel Pipe w/Pre-cast Concrete Gravity Anchors		-1,000	LF	\$ 1,075.00	\$ (1,075,000.00)
h.	Add Sampling Station		1	EA	\$ 2,500.00	\$ 2,500.00
48" Water Transmission Line Alternate Bid (Steel) Reduction:						\$ (2,134,805.00)

- a. Delete 1,500' of 48" steel directional bore at wetland along Bucksville Road **(Bid Item ^20)**
- b. Replace crossing with 100' of 60" steel bore & jack **(Bid Item 37)**
- c. Add 180' 48" steel carrier pipe within steel casing **(Bid Item ^6)**
- d. Additional cost for bore and jack exit pit due to depth and additional shoring due to proximitley to Bucksville Rd and limited R/W **(Bid Item 38)**
- e. Add remaining 1,320' of trenched in 48" steel waterline at this location replacing the directional bore **(Bid Item ^4)**
- f. & g. Original bid quantities in bid package did not align with actual footage on the construction drawings.
 Total length of project is 560 LF less than original bid.
(Bid Items ^4 and ^7)
- h. Added water sampling station at STA 65+00 **(Bid Item 18)**



Consulting Engineers
Surveyors
Land Planners
Landscape Architects
Environmentalists

1298 Professional Drive
Myrtle Beach
South Carolina 29577

P. 843.692.3200
F. 843.692.3210

www.ddcinc.com

October 28, 2019
Revised December 04, 2019

Transmitted via Email and US Mail
christy@gswsa.com

Ms. Christy Everett, PE
Chief Operations Officer
Grand Strand Water and Sewer Authority
P.O. Box 2368
Conway, South Carolina 29528

**Re: Highway 544 48" Water Line Project
Contractor Recommendation
DDC P/N 17010E**

Dear Ms. Everett:

First, thank you for the opportunity afforded to DDC Engineers, Inc. to assist Grand Strand Water & Sewer Authority (GSW&SA) with this very important project. We have enjoyed the challenges associated with this design and gaining the regulatory approvals necessary to allow the project to proceed. As you know, gaining the approvals has proven to be equally as challenging then the design. I would like to express my appreciation for the hands-on involvement from both you and Matt through-out this process.

We have carefully reviewed the bids as well as the proposed construction methodology and the collective history of the contractors. We believe that all three (3) bidders are capable of building the project. We are comfortable with recommending the selection of Ruby-Collins Inc. as the low bidder for the project.

As you know, we have been greatly concerned with the type of pipe to be utilized for this project, especially for the river crossing segment. We believe that the pipe for this element should have a long record of proven success in similar situations. Ultimately, it is our opinion that steel pipe is the only material with this record of success. An additional reason for our recommendation of steel pipe is that we recognize that a connection from "Plastic" to "HDPE" or "HDPE" to "HDPE" pipe of different "standard dimension ratios" at this size requires a specialized connection that is a manufactured adapter of the HDPE pipe elements. Also, because of the lack of deflexion in this diameter of HDPE pipe, there will be a need to add bends to each side of the river crossing. As such, the project will require two (2) manufactured connection points on each side of the river crossing. Given this, we also recognize that there is a much higher potential for failure at the connection points. With this knowledge, coupled with the lack of a "track record" of the large diameter plastic pipe and DR-11 54" HDPE pipe which would be required for the river crossing, we feel that GSW&SA would be much better served by utilization of steel pipe for the entirety of the project. Also, given that there is no hard bid item price for the HDPE DR-11 and the required extra fittings for making the river crossing, we have no idea as to the actual cost of the DR-11 if it is utilized.

To conclude, we recommend award of the contract to Ruby-Collins Inc., with a bid of \$20,701,605.00. The bid includes a 560 lf reduction in pipe length as compared to the bid quantities and replacement of "directional drill" with a bore and jack installation for the Bucksville Road wetland. Also, it was decided to add a sampling station at 65+00. These revisions are all included in the above referenced cost.

We trust that GSW&SA understands and shares our concerns and that you will agree with our conclusion. Should you have questions or need additional information, please contact us at your convenience.

Ms. Christy Everett
October 28, 2019
Revised December 04, 2019

Page 2

Again, thank you for the opportunity to be of service for you and GSW&SA.

Sincerely,
DDC ENGINEERS, INC.


A handwritten signature in blue ink, appearing to read 'J. Wooten', is written over the company name.

James M. Wooten, PE
President and Principal Engineer

JMW:cjt

Cc: Eric K. Sanford, PE
Project File

H:\PROJECTS\2017\17010E- GSW&SA Hwy 544 48-Inch Water Line\COMM\Letter-Christy Everett 10.28.19(revised 12-3-19).doc

From: Joe Rast jrast@ruby-collins.com 
Subject: Ruby Collins Proposed SOV
Date: March 9, 2020 at 4:03 PM
To: Matthew Minor mattminor@gswsa.com



Hey Matt,

See attached for our proposed schedule of values. I think you said the water and sewer portions of the job need to be separate pay request, but let me know if that isn't the case and we can combine into a single. If you already have your own form you want us to use, feel free to send it over. Or modify this one however you see fit.

I have renamed some of the pay item descriptions so that it was more clear (i.e. got rid of the "in lieu of" stuff that resulted from all the alternates), removed the items not being used (i.e. MJ bends), and changed the item numbers accordingly. Also since the prep work is such a big part of the work in the wetlands/river, we were hoping to break those pipe items into 3 pay phases. Something like 15% prep, 80% pipe, 5% cleanup. At the end of the day, the total price will be the same, but it would really help us out cash flow wise. Let me know of your thoughts on this approach. I understand if your hands are tied as far as it being SRF funded or subject to forces outside of Grand Strand.

While I got you, how do you want to handle the Lump Sum items like Mobilization, Clearing & Grubbing, and Sediment & Erosion Control? We should have a significant portion of each completed by the end of the month so we are hoping to bill as much % as we can against those. Just let me know what you think is fair.

Thanks,



Joe Rast
District Manager

Ruby-Collins, Inc.
m: 865-414-2756
p: 770-432-2900
e: jrast@ruby-collins.com

4875 Martin Court Smyrna, Georgia
www.ruby-collins.com



We have moved! Please update your records.



48 Inch
Waterli...AFT.xls



36 Inch Sewer
Force...AFT.xls


CONTINUATION SHEET

APPLICATION AND CERTIFICATION FOR PAYMENT, containing
Contractor's signed certification is attached.
In tabulations below, amounts are stated to the nearest dollar.

PROJECT:US HWY 701 to SC HWY 544 48" Water Transmission Line Improvement Project

APPLICATION NO:1
APPLICATION DATE:0-Jan-00
PERIOD TO:26-Mar-20
CONTRACTOR'S PROJECT #:1059

ITEM NO.	STANDARD CODE	DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT \$	CONTRACT VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED	TOTAL COMPLETED AND STORED TO DATE	QUANTITIES THIS PERIOD	BALANCE TO FINISH	RETAINAGE
							PREVIOUS QUANTITIES	FROM PREVIOUS APPLICATION					
		SCHEDULE OF VALUES											
1		Mobilization	1	LS	\$550,000.00	\$550,000.00		\$0.00	\$0.00	\$0.00		\$550,000.00	\$0.00
2		Clearing and Grubbing	1	LS	\$300,000.00	\$300,000.00		\$0.00	\$0.00	\$0.00		\$300,000.00	\$0.00
3		Sediment and Erosion Control Complete	1	LS	\$250,000.00	\$250,000.00		\$0.00	\$0.00	\$0.00		\$250,000.00	\$0.00
4		48" Steel Water Line-Open Cut	19940	LF	\$444.50	\$8,863,330.00		\$0.00	\$0.00	\$0.00		\$8,863,330.00	\$0.00
5		36" C-900 DR-25 PVC Water Line	80	LF	\$415.00	\$33,200.00		\$0.00	\$0.00	\$0.00		\$33,200.00	\$0.00
6		48" Steel Water Line (Carrier Pipe in Bores)	360	LF	\$650.00	\$234,000.00		\$0.00	\$0.00	\$0.00		\$234,000.00	\$0.00
7		48" Steel Water Line with Anchors (Wetlands)-Prep Easement-15%	5000	LF	\$161.25	\$806,250.00		\$0.00	\$0.00	\$0.00		\$806,250.00	\$0.00
8		48" Steel Water Line with Anchors (Wetlands)-Lay/Backfill/Anchor-80%	5000	LF	\$860.00	\$4,300,000.00		\$0.00	\$0.00	\$0.00		\$4,300,000.00	\$0.00
9		48" Steel Water Line with Anchors (Wetlands)-Cleanup-5%	5000	LF	\$53.75	\$268,750.00		\$0.00	\$0.00	\$0.00		\$268,750.00	\$0.00
10		48" M.J. Butterfly Valve Restrained	7	EA	\$35,000.00	\$245,000.00		\$0.00	\$0.00	\$0.00		\$245,000.00	\$0.00
11		36" M.J. Butterfly Valve Restrained	2	EA	\$20,000.00	\$40,000.00		\$0.00	\$0.00	\$0.00		\$40,000.00	\$0.00
12		48" x 36" MJ Reducer Restrained	2	EA	\$15,000.00	\$30,000.00		\$0.00	\$0.00	\$0.00		\$30,000.00	\$0.00
13		Air Release Valve in Manhole	5	EA	\$5,000.00	\$25,000.00		\$0.00	\$0.00	\$0.00		\$25,000.00	\$0.00
14		Air Release Valve with Quazite Box	9	EA	\$3,500.00	\$31,500.00		\$0.00	\$0.00	\$0.00		\$31,500.00	\$0.00
15		Sampling Station	3	EA	\$2,500.00	\$7,500.00		\$0.00	\$0.00	\$0.00		\$7,500.00	\$0.00
16		16" Blowoff Assembly Complete includes 36" x 16 MJ Tee, 16" MJ Gate Valve 16" Pipingand Tidellex Valve Fully Restrained	3	EA	\$45,000.00	\$135,000.00		\$0.00	\$0.00	\$0.00		\$135,000.00	\$0.00
17		48" Steel Waterline-Horizontal Directional Drill-Prep Launching Pad/Weld Pipe-15%	2500	LF	\$221.25	\$553,125.00		\$0.00	\$0.00	\$0.00		\$553,125.00	\$0.00
18		48" Steel Waterline-Horizontal Directional Drill-Drill River/Pull Pipe-80%	2500	LF	\$1,180.00	\$2,950,000.00		\$0.00	\$0.00	\$0.00		\$2,950,000.00	\$0.00
19		48" Steel Waterline-Horizontal Directional Drill-Cleanup-5%	2500	LF	\$73.75	\$184,375.00		\$0.00	\$0.00	\$0.00		\$184,375.00	\$0.00
20		60" Steel Bore & Jack (SC-Hwy 544)	100	LF	\$1,850.00	\$185,000.00		\$0.00	\$0.00	\$0.00		\$185,000.00	\$0.00
21		Remove Existing 36" PVC Water Line	170	LF	\$5.00	\$850.00		\$0.00	\$0.00	\$0.00		\$850.00	\$0.00
22		Temporary 48" Tall Wire Fence with Steel Posts (10' Max. Spacing on Post)	800	LF	\$10.00	\$8,000.00		\$0.00	\$0.00	\$0.00		\$8,000.00	\$0.00
23		SCDOT Roadway Asphalt Repair	75	LF	\$200.00	\$15,000.00		\$0.00	\$0.00	\$0.00		\$15,000.00	\$0.00
24		County Roadway Asphalt Repair	1060	LF	\$150.00	\$159,000.00		\$0.00	\$0.00	\$0.00		\$159,000.00	\$0.00
25		GABC Base Driveway Repair	160	LF	\$50.00	\$8,000.00		\$0.00	\$0.00	\$0.00		\$8,000.00	\$0.00
26		2" SCDOT Type B Road Overlay	4650	SY	\$25.00	\$116,250.00		\$0.00	\$0.00	\$0.00		\$116,250.00	\$0.00
27		Cut in 36" MJ 45" Bend Restrained on Existing 36" PVC Water Line	1	LS	\$25,000.00	\$25,000.00		\$0.00	\$0.00	\$0.00		\$25,000.00	\$0.00
28		Cut-In to existing 36" Pipe Line	2	EA	\$15,000.00	\$30,000.00		\$0.00	\$0.00	\$0.00		\$30,000.00	\$0.00
29		Restrain Existing 36" PVC Water Line	40	LF	\$150.00	\$6,000.00		\$0.00	\$0.00	\$0.00		\$6,000.00	\$0.00
30		Asphalt Roadway Milling Tie Points	1	LS	\$15,000.00	\$15,000.00		\$0.00	\$0.00	\$0.00		\$15,000.00	\$0.00
31		Asphalt Driveway Repair	120	LF	\$200.00	\$24,000.00		\$0.00	\$0.00	\$0.00		\$24,000.00	\$0.00
32		Repair Existing 4 Strain Electrical Fence with Wooden Post	1000	LF	\$20.00	\$20,000.00		\$0.00	\$0.00	\$0.00		\$20,000.00	\$0.00
33		Repair Existing Single Tape Electric Fence with Steel Post	980	LF	\$20.00	\$19,600.00		\$0.00	\$0.00	\$0.00		\$19,600.00	\$0.00
34		6" Concrete Driveway Repair	28	LF	\$250.00	\$7,000.00		\$0.00	\$0.00	\$0.00		\$7,000.00	\$0.00
35		Remove Existing 36" MJ 22½" Bend	1	EA	\$5,000.00	\$5,000.00		\$0.00	\$0.00	\$0.00		\$5,000.00	\$0.00
36		60" Steel Bore & Jack (Bucksville Rd/Wetland) STA 15+25 to 16+25	100	EA	\$2,080.00	\$208,000.00		\$0.00	\$0.00	\$0.00		\$208,000.00	\$0.00
37		Bore & Jack Exit Pit (Bucksville Rd/Wetland)	1	EA	\$42,875.00	\$42,875.00		\$0.00	\$0.00	\$0.00		\$42,875.00	\$0.00
		GRAND TOTALS				\$20,701,605.00		\$0.00	\$0.00	\$0.00		\$20,701,605.00	\$0.00

From: Joe Rast jrast@ruby-collins.com 
Subject: HDD pipe submittal
Date: July 21, 2020 at 9:10 AM
To: Matthew Minor mattminor@gswsa.com



Hey Matt,

Attached is the submittal for the HDD pipe that shows the polyurethane lining. Sorry for the delay, I was sure I sent this way back in spring but apparently not.

Thanks,
Joe



Joe Rast

District Manager

Ruby-Collins, Inc.

Phone: 770-432-2900 | Mobile: 865-414-2756

4325 Dick Pond Road Suite D | Conway, South Carolina 29588

www.ruby-collins.com



RC1059-040
48x.75...DD.pdf

SUBMITTAL COVER

TO: GRAND STRAND WATER & SEWER AUTHORITY
166 Jackson Bluff Road
Conway South Carolina 29526
Phone: 843-443-8200

FROM: RUBY-COLLINS, INC.
4875 Martin Court, SE
Smyrna GA 30082
Phone: 770-432-2900

Copy To:

DDC ENGINEERS, INC.
1298 Professional Drive
Myrtle Beach South Carolina 29577
Phone: 843-692-3200

ATTENTION: MATT MINOR, PE

REFERENCE: HIGHWAY 701 TO HIGHWAY 544 48" WATER TRANSMISSION LINE IMPROVEMENT PROJECT

OWNER: GRAND STRAND WATER & SEWER AUTHORITY

SUPPLIER/MANUFACTURER: American Spiralweld Pipe Company LLC

SUBMITTAL NUMBER: RC1059-040

SUBMITTAL TITLE: 48x.75 Steel Pipe-Horizontal Directional Drill

SPECIFICATION SECTION: 330524

SUBMITTAL DATE: 7/21/2020

REMARKS:

CONTRACTOR'S STAMP

RUBY-COLLINS INC

(X) APPROVED
() APPROVED, AS NOTED
() RESUBMIT, AS NOTED
() REJECTED

This shop drawing has been verified for compliance with information given in the Contract Documents, and field construction criteria. Approval does not relieve the manufacturer from responsibility for correctness of details and dimensions or for deviation from Contract Documents requirements.

By: **Joe Rast**

Date: 7/21/2020

ENGINEER'S STAMP



AMERICAN

SPIRALWELD PIPE

THE RIGHT WAY

ASWP TRANSMITTAL # 5

Date: 3/13/2020

To: Monte Beasley
Ruby-Collins, Inc.
4875 Martin Court
Smyrna, Georgia
(770)-432-2900

Project: US HWY. 701 To SC HWY. 544
48" Water Transmission Line

ASWP Project Number: ASC08990

From: John Traylor

Enclosed for your use:

Documents for Submittal	Rev.	Spec/DWG Reference
HDD Drawing Package	0	

If the documents above are not found as listed, please notify at once.

Please see the attached documents for approval. We request the approval of this transmittal by 3/27/2020.

Sincerely,

John Traylor

US HWY. 701 TO SC HWY. 544 48" WATER TRANSMISSION LINE

PROJECT

RUBY-COLLINS, INC.

CUSTOMER

GRAND STRAND WATER AND SEWER AUTHORITY

OWNER

ASC08990B

ASWP PROJECT NUMBER

DDC ENGINEERS, INC.

ENGINEER

PIPE SUMMARY

DESCRIPTION	LENGTH
49.750" x 0.750"	2500.00'
TOTAL	2500.00'

NO.	REVISION	DATE	BY	CHK	APP



AMERICAN
SpiralWeld Pipe Co., LLC
Birmingham, AL 35207

US HWY. 701 TO SC HWY. 544 48" WATER TRANSMISSION LINE					
DRAWN	WB	3/9/20	RUBY-COLLINS, INC.		
CHECKED	JT				
APPVD			ASC08990B-G10		

GENERAL DRAWING INDEX

GENERAL DRAWINGS	DWG#
COVER SHEET	ASC08990A-G10
GENERAL DWG INDEX	ASC08990A-G20
MARK No DWG INDEX	ASC08990A-G30
SYMBOLS & ABBS	ASC08990A-G40
ACCESSORIES	ASC08990A-G60

DETAIL DRAWINGS	DWG#
BUTTWELD	ASC08990A-D1

NO.	REVISION	DATE	BY	CHK	APP



AMERICAN
SpiralWeld Pipe Co., LLC
Birmingham, AL 35207

US HWY. 701 TO SC HWY. 544 48" WATER TRANSMISSION LINE			
DRAWN	WB	3/9/20	RUBY-COLLINS, INC.
CHECKED	JF		
APPVD	KG		ASC08990A-G20

MARK & DRAWING NUMBER INDEX

MARK	DWG#	MARK	DWG#
1100	ASC08990B-S1	1128	ASC08990B-S1
1101	ASC08990B-S1	1129	ASC08990B-S1
1102	ASC08990B-S1	1130	ASC08990B-S1
1103	ASC08990B-S1	1131	ASC08990B-S1
1104	ASC08990B-S1	1132	ASC08990B-S1
1105	ASC08990B-S1	1133	ASC08990B-S1
1106	ASC08990B-S1	1134	ASC08990B-S1
1107	ASC08990B-S1	1135	ASC08990B-S1
1108	ASC08990B-S1	1136	ASC08990B-S1
1109	ASC08990B-S1	1137	ASC08990B-S1
1110	ASC08990B-S1	1138	ASC08990B-S1
1111	ASC08990B-S1	1139	ASC08990B-S1
1112	ASC08990B-S1	1140	ASC08990B-S1
1113	ASC08990B-S1	1141	ASC08990B-S1
1114	ASC08990B-S1	1142	ASC08990B-S1
1115	ASC08990B-S1	1143	ASC08990B-S1
1116	ASC08990B-S1	1144	ASC08990B-S1
1117	ASC08990B-S1	1145	ASC08990B-S1
1118	ASC08990B-S1	1146	ASC08990B-S1
1119	ASC08990B-S1	1147	ASC08990B-S1
1120	ASC08990B-S1	1148	ASC08990B-S1
1121	ASC08990B-S1	1149	ASC08990B-S1
1122	ASC08990B-S1		
1123	ASC08990B-S1		
1124	ASC08990B-S1		
1125	ASC08990B-S1		
1126	ASC08990B-S1		
1127	ASC08990B-S1		

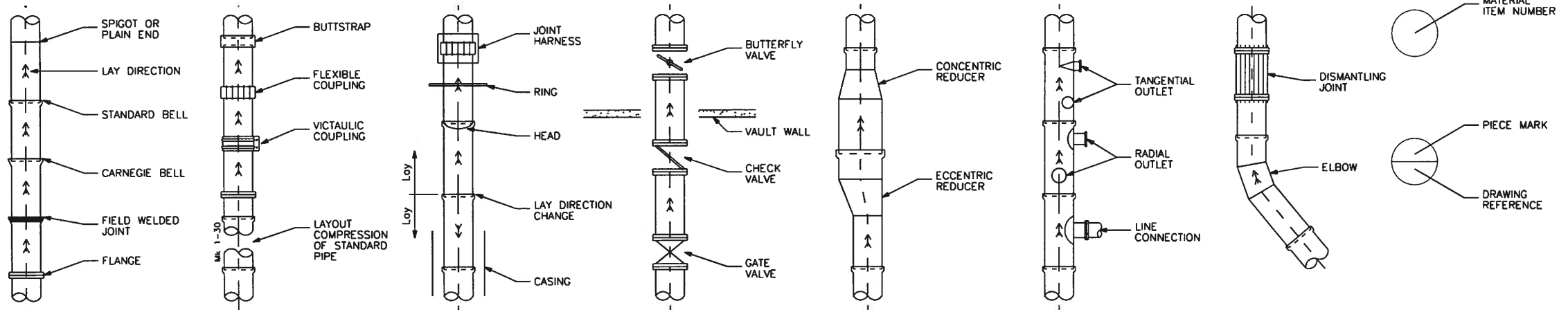
NO.	REVISION	DATE	BY	CHK	APP



AMERICAN
SpiralWeld Pipe Co., LLC
Birmingham, AL 35207

US HWY. 701 TO SC HWY. 544 48" WATER TRANSMISSION LINE					
DRAWN	WS	3/9/20	RUBY-COLLINS, INC.		
CHECKED	JT		ASC08990B-G30		
APPVD					

SYMBOLS



ABBREVIATIONS

ARV - AIR RELEASE VALVE
 ATH - AIR TEST HOLE
 AV - AIR VENT
 AWSP - WELDED STEEL PIPE
 BEV - BEVEL
 BF - BLIND FLANGE
 BFV - BUTTERFLY VALVE
 BHC - BEGIN HORIZ CURVE
 BI - BID ITEM
 BK - BACK
 BO - BLOW OFF
 BOP - BOTTOM OF PIPE
 BS - BUTTSTRAP
 BSA - BUTTSTRAP w/AIR
 BSC - FLEX COUPLING
 BVC - BEGIN VERT CURVE
 BVI - BUTTWELD - BEVEL INSIDE
 BVIO - BUTTWELD - DOUBLE BEVEL
 BVIR - BUTTWELD - BEVEL INSIDE w/BACKING BAR
 BVMI - BUTTWELD - BEVEL INSIDE w/MITER
 BVMO - BUTTWELD - DOUBLE BEVEL w/MITER
 BVMI - BUTTWELD - BEVEL INSIDE w/MITER & w/BACKING BAR
 BVMO - BUTTWELD - BEVEL OUTSIDE w/MITER
 BVMO - BUTTWELD - BEVEL OUTSIDE w/MITER & w/BACKING BAR
 BVO - BUTTWELD - BEVEL OUTSIDE
 BVOR - BUTTWELD - BEVEL OUTSIDE w/BACKING BAR
 BW - BUTTWELD - SQUARE CUT END
 BWM - BUTTWELD - w/MITER
 BWMRI - BUTTWELD - w/MITER & w/INSIDE BACKING BAR

BWMRO - BUTTWELD - w/MITER & w/OUTSIDE BACKING BAR
 BWRI - BUTTWELD - w/INSIDE BACKING BAR
 BWRO - BUTTWELD - w/OUTSIDE BACKING BAR
 C/L - CENTERLINE
 CB - COMBINED
 CB - CARNEGIE BELL
 CONC - CONCENTRIC
 CPI - COMBINED POINT OF INTERSECT
 CPLG - COUPLING
 CS - CARNEGIE SPIGOT
 CSA - CARNEGIE SPIGOT w/AIR
 CTF - CUT TO FIT
 CYL - CYLINDER
 DEG - DEGREE
 DIA - DIAMETER
 DIM - DIMENSION
 DN - DOWN
 DWG - DRAWING
 EA - EACH
 ECC - ECCENTRIC
 EHC - END HORIZ CURVE
 ELEV - ELEVATION
 EQU - EQUATION
 EVC - END VERT CURVE
 F150 - FLANGE CLASS 150
 F300 - FLANGE CLASS 300
 FB - FLANGE CLASS B
 FD - FLANGE CLASS D
 FE - FLANGE CLASS E

FF - FLANGE CLASS F
 FF - FLANGE FLAT FACE
 FLG - FLANGE
 FOL - FLANGED OUTLET
 FT - FIELD TOP
 FTG - FITTING
 FW - FIELD WELD
 GKT - GASKET
 GR - GRADE
 GRD - GRIND BACK
 Ga - GAUGE
 HD - HEAD
 HORIZ - HORIZONTAL
 HPI - HORIZ POINT of INTERSECT
 ID - INSIDE DIAMETER
 IN - INCHES
 INV - INVERT
 LEN - LENGTH
 LL - LAY LENGTH
 LOT - LATERAL OUTLET
 LS - LUMP SUM
 LS - LONG SIDE
 LT - LEFT
 MAX - MAXIMUM
 MH - MANHOLE
 MIN - MINIMUM
 MK - MARK
 No - NUMBER
 OAL - OVERALL LENGTH

OB - O-RING BELL
 OD - OUTSIDE DIAMETER
 OL - OUTLET
 OS - O-RING SPIGOT
 PC - PIECE
 PE - PLAIN END
 QTY - QUANTITY
 R - RADIUS
 REF - REFERENCE
 ROT - RADIAL OUTLET
 RT - RIGHT
 S - SLOPE
 SCH - SCHEDULE
 SHT - SHEET
 SPC - SPECIAL
 SS - STAINLESS STEEL
 SS - SHORT SIDE
 SSCE - SLEEVE COUPLING ExE
 SSCF - SLEEVE COUPLING FxF
 STD - STANDARD
 STL - STEEL
 Sta - STATION
 TAN - TANGENT
 THK - THICKNESS
 TOL - THREADED OUTLET
 TOT - TANGENTIAL OUTLET
 VERT - VERTICAL
 VICT - VICTAULIC
 VPI - VERT POINT of INTERSECT

WB - LAP WELD BELL
 WBA - LAP WELD BELL w/AIR
 WBB - BANDED BELL
 WBB - BANDED BELL w/AIR
 WBBM - BANDED BELL w/MITER
 WBM - LAP WELD BELL w/MITER
 WDB - DOUBLE WELD LAP BELL
 WDBB - DOUBLE WELD BANDED BELL
 WDBS - DOUBLE WELD LAP BELL w/SEAL
 WS - LAP WELD SPIGOT
 WSA - LAP WELD SPIGOT w/AIR
 WSP - FLARED LAP WELD SPIGOT
 WT - WEIGHT
 w/ - WITH
 w/o - WITHOUT

NO.	REVISION	DATE	BY	CHK	APP



AMERICAN
 SpiralWeld Pipe Co., LLC
 Birmingham, AL 35207

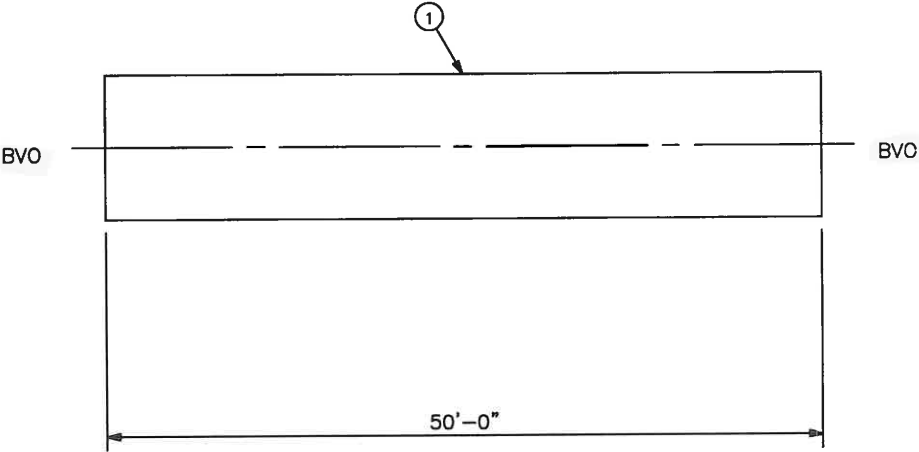
US HWY. 701 TO SC HWY. 544 48" WATER TRANSMISSION LINE			
DRAWN	WJ	3/9/20	RUBY-COLLINS, INC.
CHECKED	JT		
APPVD			ASC08990B-G40

STANDARD PIPE

MARK	MARK
1100	1126
1101	1127
1102	1128
1103	1129
1104	1130
1105	1131
1106	1132
1107	1133
1108	1134
1109	1135
1110	1136
1111	1137
1112	1138
1113	1139
1114	1140
1115	1141
1116	1142
1117	1143
1118	1144
1119	1145
1120	1146
1121	1147
1122	1148
1123	1149
1124	
1125	

ITEM No	QTY	DESCRIPTION	REF SHEET
1	50	49.750" x 0.750" x 50'-0" SPIRAL PIPE	
	50	BVO END	D1-A
	50	BVO END	D1-A

BVO	FIN	GRD	BVO	FIN	GRD
INT	2.0	0.0	INT	2.0	0.0
EXT	2.0	0.0	EXT	2.0	0.0



Lining: C222 Polyurethane
Coating: C222 Polyurethane/ARO
Shipping: 50.00' x 4.15' x 4.15'
Overall Length Tolerance: ±2.0"

NO.	REVISION	DATE	BY	CHK	APP



AMERICAN
SpiralWeld Pipe Co., LLC
Birmingham, AL 35207

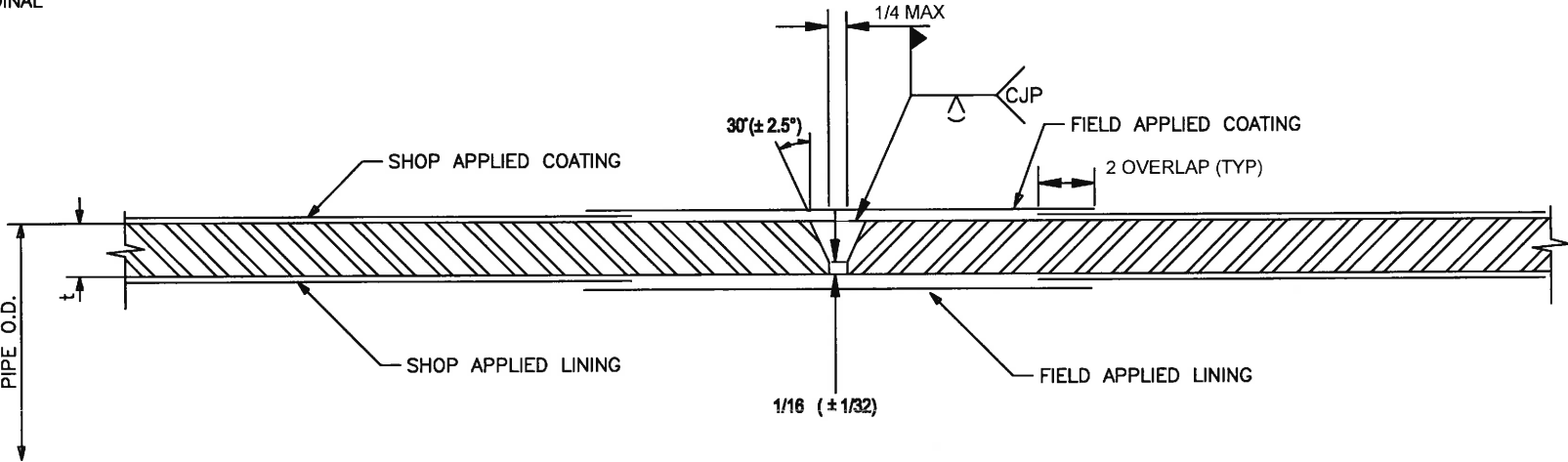
US HWY. 701 TO SC HWY. 544 48" WATER TRANSMISSION LINE			
DRAWN	WB	3/9/20	RUBY-COLLINS, INC.
CHECKED	JT		
APPVD	47		ASC08990B-S1

BUTTWELD

ROW	STEEL CYLINDER		DIMENSIONS	
	O.D. OF CYLINDER.	THICKNESS t		
D1-A	49.750	0.750		

- NOTES:
- 1. ALL DIMENSIONS ARE IN INCHES.
 - 2. SEE PROJECT PLANS AND SPECS FOR JOINT REPAIR DETAILS.
 - 3. ROOT FACE MUST BE PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE PIPE WITHIN 1/8".

LINING: AWWA C222 Polyurethane
COATING: AWWA C222 Polyurethane/ARO



NO.	REVISION	DATE	BY	CHK	APP



AMERICAN
SpiralWeld Pipe Co., LLC
Birmingham, AL 35207

US HWY. 701 TO SC HWY. 544 48" WATER TRANSMISSION LINE

DRAWN	WS	3/9/20	RUBY-COLLINS, INC.
CHECKED	JT		
APPVD			ASC08990B-D1

From: Joe Rast jrast@ruby-collins.com 
Subject: HDD Design Submittal
Date: October 28, 2020 at 2:19 PM
To: Matthew Minor mattminor@gswsa.com



*** EXTERNAL EMAIL ***

This message was received from an outside source, please do not click/open any unexpected or suspicious links/attachments. Contact IT if you are unsure or need assistance.

Hey Matt, see attached submittal for HDD design. Let me know if you have any questions or need anything else on this.

Thanks,
Joe



Joe Rast
District Manager
Ruby-Collins, Inc.
Phone: 770-432-2900 | Mobile: 865-414-2756
4325 Dick Pond Road Suite D | Myrtle Beach, South Carolina 29588
www.ruby-collins.com



Submittal
RC105...ign.pdf

SUBMITTAL COVER

TO: GRAND STRAND WATER & SEWER AUTHORITY
166 Jackson Bluff Road
Conway South Carolina 29526
Phone: 843-443-8200

FROM: RUBY-COLLINS, INC.
4875 Martin Court, SE
Smyrna GA 30082
Phone: 770-432-2900

Copy To:

DDC ENGINEERS, INC.
1298 Professional Drive
Myrtle Beach South Carolina 29577
Phone: 843-692-3200

ATTENTION: MATT MINOR, PE

REFERENCE: HIGHWAY 701 TO HIGHWAY 544 48" WATER TRANSMISSION LINE IMPROVEMENT PROJECT

OWNER: GRAND STRAND WATER & SEWER AUTHORITY

SUPPLIER/MANUFACTURER: Laney Directional Drilling Co.

SUBMITTAL NUMBER: R1059-045

SUBMITTAL TITLE: HDD Design Drawing

SPECIFICATION SECTION:

SUBMITTAL DATE: 10/28/2020

REMARKS:

CONTRACTOR'S STAMP

RUBY-COLLINS INC

- (X) APPROVED
() APPROVED, AS NOTED
() RESUBMIT, AS NOTED
() REJECTED

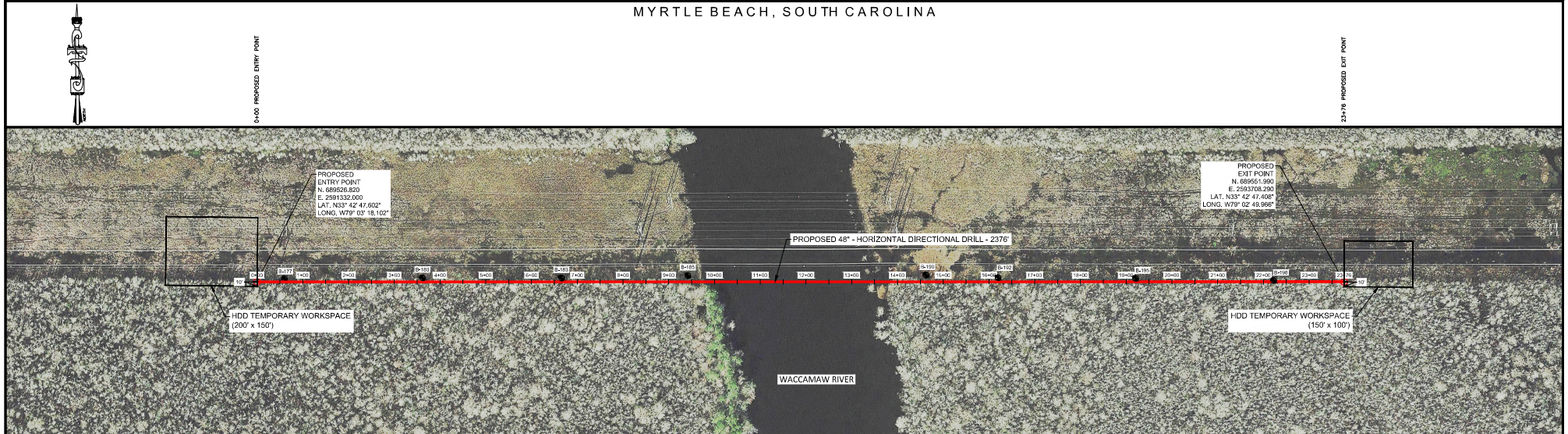
This shop drawing has been verified for compliance with information given in the Contract Documents, and field construction criteria. Approval does not relieve the manufacturer from responsibility for correctness of details and dimensions or for deviation from Contract Documents requirements.

By: **Joe Ragt**

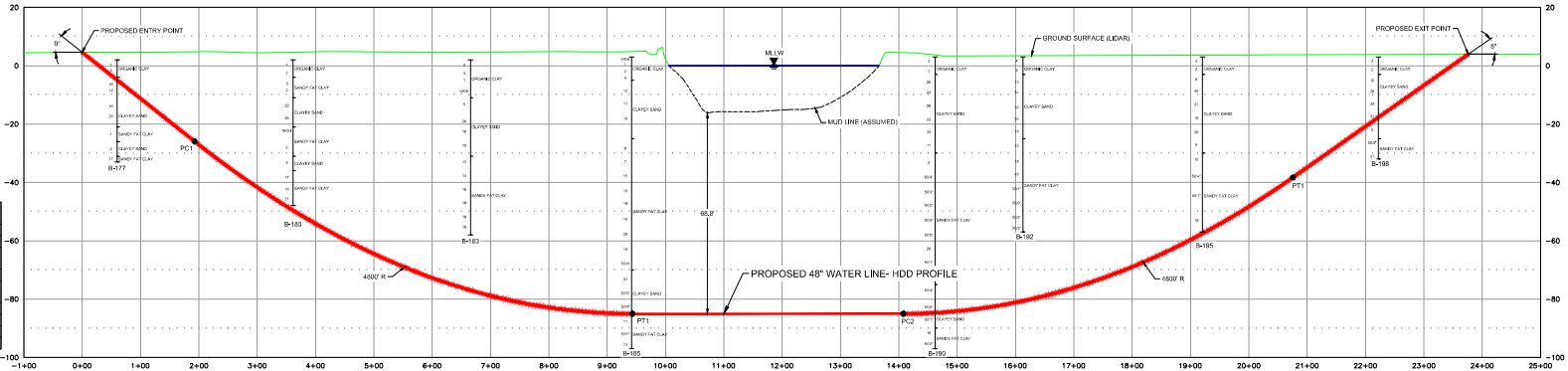
Date: 10/28/2020

ENGINEER'S STAMP

MYRTLE BEACH, SOUTH CAROLINA



PLAN VIEW
GRAPHIC SCALE IN FEET
0 100 200



DESIGN DATA WACCAMAW RIVER, HDD		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 9"	0+00.00	4.62
PT1 =	1+00.72	-25.36
PT2 =	14+01.25	-45.26
PT3 =	20+75.68	-38.29
EXIT @ 9"	23+76.42	3.88
HORIZONTAL DISTANCE (ft)	2376.42	
HORIZONTAL DRILL PIPE LENGTH (ft)	2387.05	

- NOTES:**
- CONTRACTOR SHALL ADHERE TO THE SPECIFICATIONS AND REQUIREMENTS PER COMPANY SPECIFICATIONS, CONTRACT DOCUMENTS AND SPECIAL PERMIT CONDITIONS, EXCEPT AS NOTED ON THE DRAWINGS.
 - CONTRACTOR IS RESPONSIBLE FOR CALLING SOUTH CAROLINA ONE-CALL AND LOCATING ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION. IF ANY UTILITY IS LOCATED WITHIN 15 FEET OF THE DESIGNED HDD PROFILE AND ALIGNMENT, CONTRACTOR SHALL OBTAIN APPROVAL FROM COMPANY PRIOR TO BEGINNING HDD OPERATIONS.
 - IF THE CONTRACTOR IS RESPONSIBLE TO IDENTIFY AND PROTECT ANY FOREIGN UTILITY THAT MAY BE AFFECTED BY THE HDD OPERATIONS.
 - ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION HIGHWAY OR HIGH APPROVED ACCESS ROADS.
 - WORKSPACE MAXIMUM WORKSPACE LIMITS ARE SHOWN, RESTRICT CLIMBING TO THE WORKSPACE INDICATED AT THE ENTRY AND EXIT POINTS AND STRINGING AND FABRICATION AREA ALONG THE CONSTRUCTION HIGHWAY. CLIMBING BETWEEN THE ENTRY AND EXIT POINTS REQUIRED PRIOR COMPANY APPROVAL AND LIMITED TO THE AMOUNT NECESSARY TO STRING SURVEY VIBES AND METAL PUMPS AND PIPING TO OBTAIN WATER LINE APPROVAL.
 - WATER SOURCE: DRILL WATER AND HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM COMPANY APPROVED SOURCE.
 - HYDROSTATIC TEST: PRE-INSTALLATION AND POST-INSTALLATION HYDROSTATIC TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROJECT HYDROSTATIC TEST PLAN. TEST WATER SHALL BE ACQUIRED FROM AN APPROVED SOURCE. THE TEST WATER SHALL BE DISCHARGED IN AN UPLAND AREA INTO AN EROSION CONTROL STRUCTURE OF STRAIN BULBS AND/OR BELT FENCES, GEOTEXTILE FILTER BAG, OR COLLECTED IN A TRUCK AND WATER LINE APPROVED.
 - SMALL HYDROSTATIC TEST EQUIPMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE SPLIT PREVENTION CONTROL AND COUNTER MEASURE PLAN.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLING CROSSING SHALL BE MADE UP WITHIN THE APPROVED CONSTRUCTION HIGHWAY AS SHOWN, AFTER THE PILOT HOLE IS COMPLETE. CONTRACTORS ASSEMBLY DRILL, PLAN AND PROFILE SHALL BE SUBMITTED FOR COMPANY APPROVAL PRIOR TO BEGINNING PULLING OPERATIONS. CONTRACTOR SHALL ASSURE THE NEED FOR AND SUPPLY APPROPRIATE BRILLIANT COATING PULL BACK, 1/2 IN. LINE FLUID DISPENSER. CONTRACTOR SHALL DEPOSE OF EXCESS DRILLING FLUID IN ACCORDANCE WITH PERMIT CONDITIONS, UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DEPOSED OF IN WATER BODIES OR WITHIN ANY DRILLING FLUID USED SURFACES AT PORTS OTHER THAN THE ENTRY OR EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL, AND DEPOSITED IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/RESTORATION: AFTER ALL DEFERRED AREAS SHALL BE RETURNED TO THE ORIGINAL CONDITIONS, DEFERRED AREAS SHALL BE BEDDED AS SPECIFIED IN THE CLEANUP AND RESTORATION PERMIT. IF THE PERMIT ALLOWS AND ACCESS IS PERMITTED, CONTRACTOR SHALL USE LOW CIRCULAR PRESSURE EQUIPMENT OR OTHER EQUIPMENT APPROVED BY COMPANY TO FACILITATE CONTINUED AND CLEANUP OF ANY DRILLING FLUID SURFACE RELEASES THAT OCCUR DURING THE HDD INSTALLATION PROCESS.
 - THE DATA INFORMATION SHOWN ON THIS DRAWING IS A COMBINATION OF DATA OBTAINED FROM VARIOUS SOURCES. INTEGRATED TRENCHLESS ENGINEERING, INC. DOES NOT GUARANTEE THE ACCURACY OF THE INFORMATION SHOWN.
 - ALL TECHNICAL DATA, BORINGS SHOWN ARE OFFSET FROM THE PROPOSED CENTERLINE AS SHOWN ON THE PLAN VIEW AND PROJECTED TO THE PROFILE VIEW. THE GEOTECHNICAL INFORMATION PROVIDED ON THIS DRAWING IS A GENERAL SUMMARY, REFER TO THE APPLICABLE GEOTECHNICAL DATA REPORT FOR MORE DETAILED INFORMATION.
 - GROUND SURFACE LIDAR DATA DOWNLOADED FROM [HTTPS://COASTALGA.GOV/DATAVIEWER/](https://coastalga.gov/dataviewer/).

PROFILE VIEW
GRAPHIC SCALE IN FEET
0 100 200

ISSUED FOR REVIEW

BORING LEGEND		DRAWING LEGEND		DRAWING COORDINATE SYSTEM		PIPE SPECIFICATIONS	
BORING NAME		BORING		REFERENCE ELEVATION		REFERENCE ELEVATION	

RECOMMENDED TOLERANCES	
ITEM	TOLERANCE
PILOT HOLE ENTRY ANGLE	INCREASE ANGLE UP TO 1° (STEEPER), BUT NO DECREASE IN ANGLE ALLOWED.
PILOT HOLE ENTRY LOCATION	AS PER COORDINATES PROVIDED BY COMPANY WITH NO CHANGES WITHOUT COMPANY APPROVAL.
PILOT HOLE EXIT ANGLE	INCREASE ANGLE UP TO 1° (STEEPER) OR DECREASE UP TO 1° (FLATTER).
PILOT HOLE EXIT LOCATION	UP TO 3 FEET BEYOND OR 2 FEET SHORT OF THE EXIT STAND, BETWEEN 2 FEET LEFT AND 2 FEET RIGHT OF CENTERLINE.
PILOT HOLE DEPTH	UP TO 1 FEET ABOVE THE DESIGN DRILL PROFILE ALLOWED, UP TO 15 FEET BELOW THE DESIGN DRILL PROFILE ALLOWED.
PILOT HOLE ALIGNMENT	SHALL REMAIN WITHIN 5 FEET LEFT AND 5 FEET RIGHT BETWEEN THE HDD ENTRY POINT AND THE HDD EXIT POINT.

GRAND STRAND WATER & SEWER AUTHORITY
US HIGHWAY 701 TO SC HIGHWAY 544
SOUTH CAROLINA

WACCAMAW RIVER
HORIZONTAL DIRECTIONAL DRILL

DATE: 08/15/2020
SCALE: AS NOTED

DESIGNED: DCH
DRAWN: EHT
CHECKED: AEB
PROJECT NO.: 2008L02
REV: 1

1100 Allegacy Place • Waller, Texas 77484
Tel: (281) 540-6615 • Fax: (281) 540-7272

INTEGRATED
Trenchless Engineering Inc.
I Love Deep Drilling

From: **Joe Rast** jrast@ruby-collins.com
Subject: HDD Alignment Change
Date: January 3, 2021 at 6:52 PM
To: **Matthew Minor** mattminor@gswsa.com

J

*** EXTERNAL EMAIL ***

This message was received from an outside source, please do not click/open any unexpected or suspicious links/attachments. Contact IT if you are unsure or need assistance.

*** EXTERNAL EMAIL ***

Hey Matt,

Hope you had a great Christmas/New Year. Sorry to be sending you anything work related late on a Sunday, but it's a little bit time critical and we were really hoping to get some kind of answer by tomorrow if at all possible.



As you know, Laney has encountered some difficult ground conditions while performing the pilot hole for the HDD. They said the hole alignment has deviated as a result and is no longer in spec. They believe the best course of action is to pull out, shift over 5 feet (toward the powerline), and start a new hole.

See attached revised HDD design from Laney.

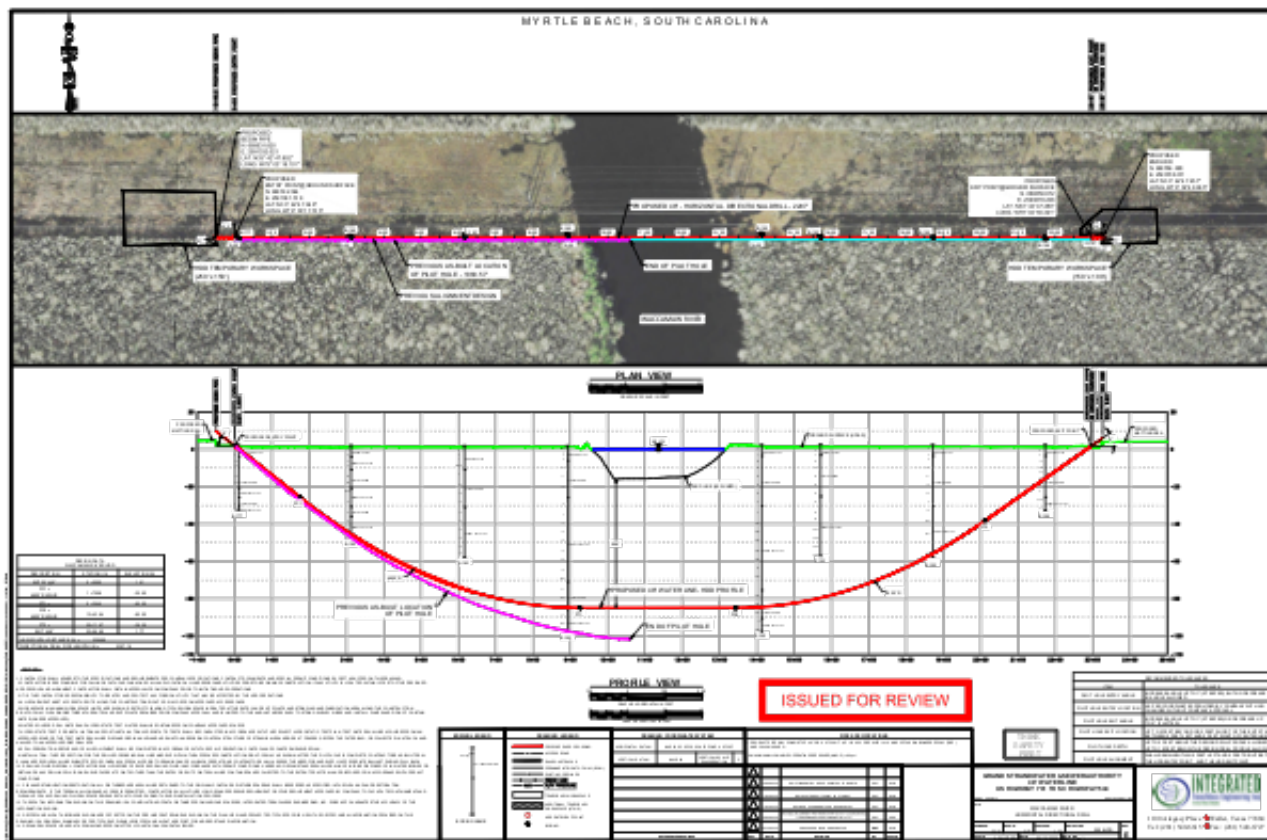
Please call me at your earliest opportunity tomorrow so that we can discuss this and come up with a plan going forward.

Thanks,
Joe

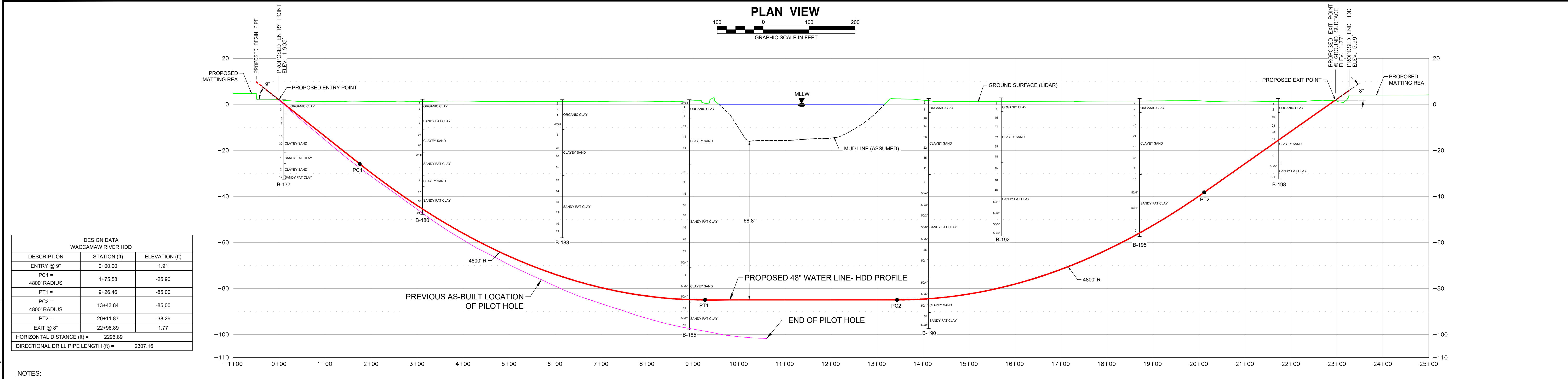
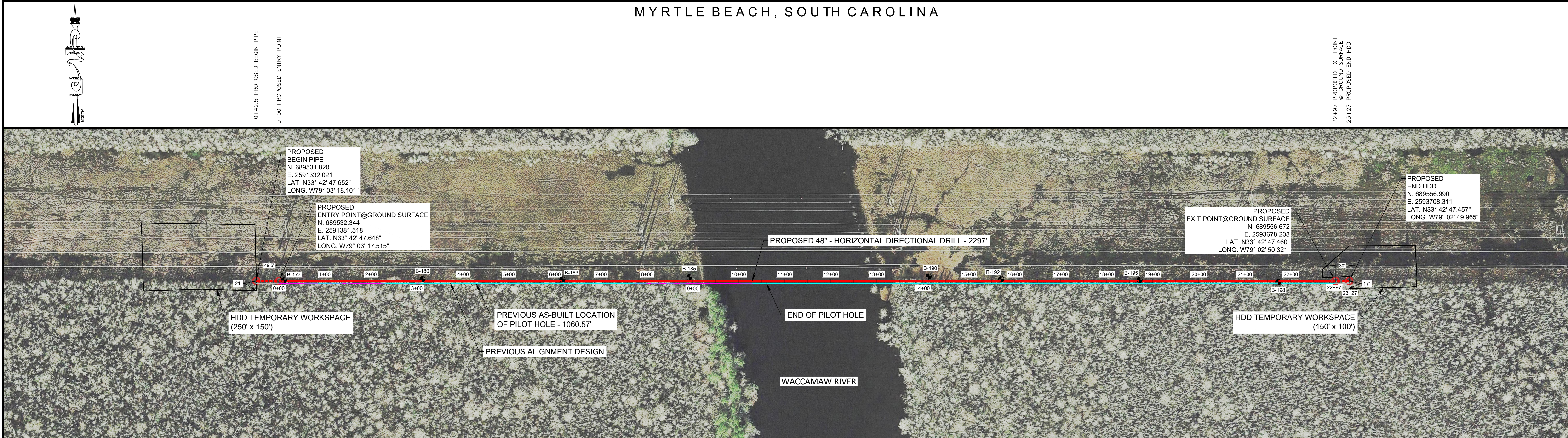
RC **50th**
Joe Rast
District Manager
Ruby-Collins, Inc.
Phone: 770-432-2900 | Mobile: 865-414-2756
4325 Dick Pond Road Suite D | Myrtle Beach, South Carolina 29588
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WACC...1.1.dwg

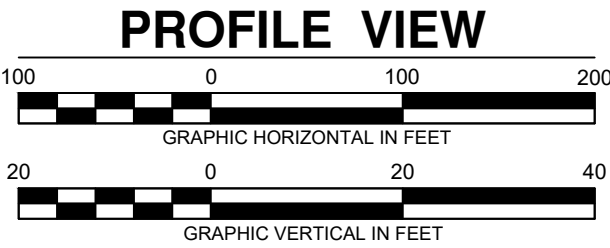


MYRTLE BEACH, SOUTH CAROLINA



DESIGN DATA WACCAMAW RIVER HDD		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY @ 9°	0+00.00	1.91
PC1 = 4800' RADIUS	1+75.58	-25.90
PT1 =	9+26.46	-85.00
PC2 = 4800' RADIUS	13+43.84	-85.00
PT2 =	20+11.87	-38.29
EXIT @ 8°	22+96.89	1.77
HORIZONTAL DISTANCE (ft) =	2296.89	
DIRECTIONAL DRILL PIPE LENGTH (ft) =	2307.16	

- NOTES:
- CONTRACTOR SHALL ADHERE TO THE SPECIFICATIONS AND REQUIREMENTS PER COMPANY SPECIFICATIONS, CONTRACT DOCUMENTS AND SPECIAL PERMIT CONDITIONS, EXCEPT AS NOTED ON THIS DRAWING.
 - CONTRACTOR IS RESPONSIBLE FOR CALLING SOUTH CAROLINA ONE-CALL AND LOCATING ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION. IF ANY UTILITY IS LOCATED WITHIN 15 FEET OF THE DESIGNED HDD PROFILE AND ALIGNMENT, CONTRACTOR SHALL OBTAIN APPROVAL FROM COMPANY PRIOR TO INITIATING HDD OPERATIONS.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY AND PROTECT ANY FOREIGN UTILITY THAT MAY BE AFFECTED BY THE HDD OPERATIONS.
 - ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY OR FROM APPROVED ACCESS ROADS.
 - WORKSPACE: MAXIMUM WORKSPACE LIMITS ARE SHOWN. RESTRICT CLEARING TO THE WORKSPACE INDICATED AT THE ENTRY AND EXIT POINTS AND STRINGING AND FABRICATION AREA ALONG THE CONSTRUCTION RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS REQUIRES PRIOR COMPANY APPROVAL AND IS LIMITED TO THE AMOUNT NECESSARY TO STRING SURVEY WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER AND HYDROSTATIC TEST WATER SHALL BE OBTAINED FROM COMPANY APPROVED SOURCE.
 - HYDROSTATIC TEST: PRE-INSTALLATION AND POST-INSTALLATION HYDROSTATIC TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROJECT HYDROSTATIC TEST PLAN. TEST WATER SHALL BE ACQUIRED FROM AN APPROVED SOURCE. THE TEST WATER SHALL BE DISCHARGED IN AN UPLAND AREA INTO AN EROSION CONTROL STRUCTURE OF STRAW BALES AND/OR SILT FENCES. GEOTEXTILE FILTER BAG, OR COLLECTED IN A TRUCK AND HAULED TO AN APPROVED DISPOSAL SITE.
 - SPILL PREVENTION: REFUELING OF ALL EQUIPMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE SPILL PREVENTION, CONTROL AND COUNTER MEASURE PLAN.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE APPROVED CONSTRUCTION RIGHT-OF-WAY AS SHOWN. AFTER THE PILOT HOLE IS COMPLETE, CONTRACTOR'S AS-BUILT DRILL PLAN AND PROFILE SHALL BE SUBMITTED FOR COMPANY APPROVAL PRIOR TO REAMING AND PULLBACK OPERATIONS. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - DRILLING FLUID DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING FLUID IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING FLUID WHICH SURFACES AT POINTS OTHER THAN THE ENTRY OR EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH PERMIT CONDITIONS.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEEDED AS SPECIFIED IN THE CLEAN-UP AND RESTORATION REQUIREMENTS. IF THE TERRAIN ALLOWS AND ACCESS IS PERMITTED, CONTRACTOR SHALL UTILIZE LOW GROUND PRESSURE EQUIPMENT OR OTHER EQUIPMENT APPROVED BY COMPANY, TO FACILITATE CONTAINMENT AND CLEAN-UP OF ANY DRILLING FLUID SURFACE RELEASES THAT OCCUR DURING THE HDD INSTALLATION PROCESS.
 - THE SPATIAL INFORMATION SHOWN ON THIS DRAWING IS A COMPILATION OF DATA OBTAINED FROM VARIOUS SOURCES. INTEGRATED TRENCHLESS ENGINEERING, INC. DOES NOT GUARANTEE THE ACCURACY OF THE INFORMATION SHOWN.
 - GEOTECHNICAL DATA: BORINGS SHOWN ARE OFFSET FROM THE PIPELINE CENTERLINE AS SHOWN ON THE PLAN VIEW AND PROJECTED TO THE PROFILE VIEW. THE GEOTECHNICAL INFORMATION PROVIDED ON THIS DRAWING IS A GENERAL SUMMARY. REFER TO THE APPLICABLE GEOTECHNICAL DATA REPORT FOR MORE DETAILED INFORMATION.
 - GROUND SURFACE LIDAR DATA DOWNLOADED FROM [HTTPS://COAST.NOAA.GOV/DATAVIEWER/](https://coast.noaa.gov/dataviewer/).



BORING LEGEND	
	BPT (ft)
	SOIL DESCRIPTION
	BORING NAME

DRAWING LEGEND	
	PROPOSED HDD CROSSING
	ACCESS ROAD
	RAILROAD TRACKS
	PERMANENT RIGHT OF WAY (ROW)
	EXISTING PIPELINES
	FENCE LINE
	O/H POWERLINE
	TEMPORARY WORKSPACE
	ADDITIONAL TEMPORARY WORKSPACE (ATWS)
	HDD ENTRY/EXIT POINT
	BORING

DRAWING COORDINATE SYSTEM			
HORIZONTAL DATUM	NAD83, SC SPCS, SOUTH ZONE, US FOOT	VERTICAL DATUM	NAVD 88
VERTICAL SCALE	EXAGGERATION	5	
REFERENCE DRAWINGS			

PIPE SPECIFICATIONS			
1. PRODUCT PIPE WILL CONSIST OF 48" O.D. X 0.750 W.T., API-5L X-52 PIPE WITH 14-16 MILS OF FUSION BONDED EPOXY (FBE) AND 30-40 MILS AIR.			
2. MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP) = 80 psi.			
REV.	DATE	REVISION	BY
△	12/28/2020	SHIFTING ENTRY & EXIT POINTS 5 FT NORTH	EHT
△	11/05/2020	RELOCATED EXIT POINT 30 FT WEST	EHT
△	11/04/2020	REVISED ALIGNMENT PER NEW SURVEY	EHT
△	10/20/2020	REVISED ALIGNMENT PER NEW ENTRY & EXIT COORDINATES LOWERING BOTTOM TANGENT BY 10 FT	EHT
△	08/16/2020	PROPOSED PLAN AND PROFILE	EHT

GRAND STRAND WATER & SEWER AUTHORITY			
48" WATER LINE			
US HIGHWAY 701 TO SC HIGHWAY 544			
Horry County, South Carolina			
WACCAMAW RIVER			
HORIZONTAL DIRECTIONAL DRILL			
DESIGNED:	DCB	DRAWN:	EHT
CHECKED:	AES	PROJECT NO.:	2008LDD
DATE:	09/15/2020	DWG. NO.:	1 OF 1

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INTEGRATED
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A Lacey Group Company