TOWN OF PONCE INLET

WATER SYSTEM IMPROVEMENT 2007

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-Consulting Engineers-
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Town of Ponce Inlet
Water System Improvement 2007

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I Introduction

The Town of Ponce Inlet requested assistance in identifying areas of deficiency within the Town's water distribution system. These areas of deficiency are reviewed and improvements are presented along with construction cost estimates. Funding alternatives are included to assist the Town in decisions as to when to implement the improvements.

The Town of Ponce Inlet is bounded on three sides by water and by unincorporated Wilbur by the Sea to the north. It is, for the most part, "built-out" and no further water main extensions are anticipated. For these reasons the improvements identified herein will be to replace existing water lines that are undersized or of out dated materials.

II Need For Improvements

The Town of Ponce Inlet was established in 1887. The water system was constructed starting in the 1950's. Various materials used over the years were susceptible to failure as well as perceived public health concerns for some. For example, galvanized iron pipe was largely used for small diameter (less than 4") water lines prior to the mid 1970's. Galvanized pipe has a tendency to rust severely especially in beachside areas where salts can leach into the soil. Ultimately, after repeated repairs, replacement is required. In addition, the metallic pipe can cause taste, odor and "black/red" water problems.

Asbestos Cement (AC) pipe is another material that had been used before the mid 1970's and poses problems for municipalities. Asbestos, if not handled properly, can cause health problems that are well documented. Existing AC pipe, when uncovered, must be treated sensitively because of its structural inferiority. Any disturbance of the soil within 2-3 feet of the pipe can cause pipe fractures and leaks.

A majority of the areas needing improvement are due to the reasons described above. Pressure deficiencies are another area of concern for the Town. Small diameter pipe or dead end systems can cause pressure problems. The pressure problems do not become evident until a fire hydrant is opened. The hydrant requires a much higher flow at a minimum pressure of 20 psi when comparing to peak flows during an average day. Several areas of deficiency are identified with small diameter pipe which may prevent proper fire flow demand.

As a policy matter the Town has requested that the City of Port Orange consider constructing gravity sewers concurrently in some areas of water main construction where significant road reconstruction costs are expected. The Town and Port Orange would share reconstruction costs in areas of joint participation. This would prevent these areas from being disturbed at a second future time for possible sewer construction.

III Identified Improvements

This section identifies the specific areas of deficiency and discusses a proposed solution to each.

3.1 Peninsula Drive – Jana Road to Seawinds Circle

Currently, the Town has a 10-inch water main which connects to Port Orange's system on Peninsula and runs to the south limits of the Town except for a small section between Jana Road and Seawinds Circle. This section is 1,100 lf of 8-inch main and is considered a bottle neck. In this project, the 8-inch main is recommended to be replaced by a 10-inch main in order to remove the bottle neck. The estimate cost to replace is shown in Table 3.1.

Table 3.1
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

PENINSULA DRIVE – JANA ROAD TO SEAWINDS CIRCLE
Preliminary Cost Estimate

ITEM	*DESCRIPTION*	*QTY*	*UNIT*	*UNIT COST*	*TOTAL*
1	Construct 10" C900 PVC Water Main	1,100	LF	$38.00	$41,800
2	Fire Hydrant Assembly – remove and replace	2	EA	$3,000.00	$6,000
3	Restoration	1,100	LF	$40.00	$44,000
				Construction Subtotal	$91,800
				Survey, Permitting, Engineering, Legal (15%)	$13,770
				Contingency (15%)	$13,770
				TOTAL	**$119,340**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.2 Beacon Point

An eight inch AC water main exists on the north side of Beacon Point Condominiums is proposed to grout filled and abandoned in place. There is no need for this line since Beacon Point is served from S. Atlantic Avenue and Peninsula Drive. The length is approximately 460 feet and the cost is shown in Table 3.2.

Table 3.2
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

BEACON POINT
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Grout fill and abandon 8” AC Water Main	460	LF	$5.00	$2,300
2	8” Gate Valve	1	EA	$2,000.00	$2,000
				Construction Subtotal	$4,300
				Survey, Permitting, Engineering, Legal (15%)	$0
				Contingency (15%)	$645
				TOTAL	**$4,945**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.3 Oceanview Avenue

Replace 1,200 feet of 8” AC water main with 8” PVC C900 water main. The replacement cost is shown in Table 3.3.

Table 3.3
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

OCEANVIEW AVENUE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 8” C900 PVC Water Main	1200	LF	$35.00	$42,000
2	Fire Hydrant Assembly – remove and replace	3	EA	$3,000.00	$9,000
3	Water Services	16	EA	$800.00	$12,800
4	Restoration	1200	LF	$80.00	$96,000
	Construction Subtotal				$159,800
Survey, Permitting, Engineering, Legal (15%)					$23,970
Contingency (15%)					$23,970
TOTAL					**$207,740**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.4 Montros Avenue

Replace 630 feet of 2” water line with 630 feet of 6” PVC C900 water main. The estimated implementation cost is shown below in Table 3.4.

Table 3.4
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

MONTROS AVENUE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 6” C900 PVC Water Main	630	LF	$30.00	$18,900
2	Fire Hydrant Assembly – remove and replace	1	EA	$3,000.00	$3,000
3	Water Services	9	EA	$800.00	$7,200
4	Restoration	630	LF	$80.00	$50,400
	Construction Subtotal				$79,500
	Survey, Permitting, Engineering, Legal (15%)				$11,925
	Contingency (15%)				$11,925
	TOTAL				**$103,350**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.5 Inlet Harbor West

Inlet Harbor West is an area that was identified as having a pressure deficiency during modeling for the City of Port Orange Utilities Master Plan. A fire demand of 1500 gpm could not be supplied at the minimum 20 psi pressure through the existing 6" water main. The actual fire flow needed for the Inlet Harbor boat storage facility is 3,000 gpm. In order for the flow of 3,000 gpm to be delivered at a pressure above 20 psi, the subject main should be upsized to a 16-inch size. Therefore, it is recommended to replace the 1400 feet of 6" AC water main with a 16" PVC C900 water main. This replacement cost should not be borne totally by the Town due to the commercial property being served. Typically, a new commercial development will share the cost to upgrade utilities if the development is creating a demand.

Table 3.5
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

INLET HARBOR WEST
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 16" C900 PVC Water Main	1400	LF	$48.00	$67,200
2	Fire Hydrant Assembly – remove and replace	3	EA	$3,000.00	$9,000
3	Water Services	10	EA	$800.00	$8,000
4	Restoration	1400	LF	$80.00	$112,000
				Construction Subtotal	$196,200
				Survey, Permitting, Engineering, Legal (15%)	$29,430
				Contingency (15%)	$29,430
				TOTAL	**$255,060**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.6 Dixie Drive

Dixie Drive has a 4” AC water main that should eventually be replaced with a minimum 6” PVC C900 water main. The cost to replace the main is shown below.

Table 3.6
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

DIXIE DRIVE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 6” C900 PVC Water Main	620	LF	$30.00	$18,600
2	Fire Hydrant Assembly – remove and replace	1	EA	$3,000.00	$3,000
3	Water Services	9	EA	$800.00	$7,200
4	Restoration	620	LF	$80.00	$49,600
				Construction Subtotal	$78,400
				Survey, Permitting, Engineering, Legal (15%)	$11,760
				Contingency (15%)	$11,760
				TOTAL	**$101,920**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.7 Rains Drive

Rains Drive was constructed with a 6” 150 class water main which does not meet present day standards which have thicker walls. It is recommended to replace 750 feet of 6” water main with 750 feet of 8” PVC C900 water main. This main is proposed to be connected to a new 8” water main on Sailfish Drive. Two new fire hydrants are proposed. The cost to implement is shown below.

Rains Drive is a candidate for a gravity sewer system. It is recommended the Town encourage the City of Port Orange to construct the sewer system along with the water system improvements.

Table 3.7
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

RAINS DRIVE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 8” C900 PVC Water Main	750	LF	$32.00	$24,000
2	Fire Hydrant Assembly – remove and replace	2	EA	$3,000.00	$6,000
3	Water Services	18	EA	$800.00	$14,400
4	Restoration	750	LF	$80.00	$60,000
	Construction Subtotal				$104,400
	Survey, Permitting, Engineering, Legal (15%)				$15,660
	Contingency (15%)				$15,660
	TOTAL				**$135,720**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.8 Alberto Avenue

The water main on Alberto Avenue between South Peninsula Drive and S. Atlantic Avenue is a 2" line. It is recommended to replace the 2" line with a 6" PVC C900 water main. In addition, a fire hydrant is needed at the intersection with Montrose Avenue. The cost to design, permit, and construct the new main is shown in Table 3.8.

Table 3.8
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

ALBERTO AVENUE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 6" C900 PVC Water Main	350	LF	$30.00	$10,500
2	Fire Hydrant Assembly – remove and replace	1	EA	$3,000.00	$3,000
3	Water Services	7	EA	$800.00	$5,600
4	Restoration	350	LF	$80.00	$28,000
				Construction Subtotal	$47,100
				Survey, Permitting, Engineering, Legal (15%)	$7,065
				Contingency (15%)	$7,065
				TOTAL	**$61,230**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.9 Front Street

The water main which connects the intersection of Front Street and Beach Street to Bounty Lane is 2” PVC. Pressure and fire fighting capability in this area can be significantly increased by replacing the 2” with an 8” water main. The estimated implementation cost is shown in Table 3.9.

Table 3.9
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

FRONT STREET
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 8” C900 PVC Water Main	700	LF	$32.00	$22,400
2	Fire Hydrant Assembly	2	EA	$3,000.00	$6,000
3	Water Services	4	EA	$800.00	$3,200
4	Restoration	700	LF	$80.00	$56,000
				Construction Subtotal	$87,600
				Survey, Permitting, Engineering, Legal (15%)	$13,140
				Contingency (15%)	$13,140
				TOTAL	**$113,880**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.10 Michael Lane

Michael Lane presently is served by a 2” water main which connects to Buschman Drive on each end. A fire hydrant is needed approximately half way down Michael Lane to meet the 350’ hose lay requirement. An 8” PVC C900 water main is recommended with a fire hydrant at mid block. The total length is 400 lf. The cost is shown in the table below.

Table 3.10
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

MICHAEL LANE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 8” C900 PVC Water Main	400	LF	$32.00	$12,800
2	Fire Hydrant Assembly	1	EA	$3,000.00	$3,000
3	Water Services	2	EA	$800.00	$1,600
4	Restoration	400	LF	$80.00	$32,000
				Construction Subtotal	$49,400
				Survey, Permitting, Engineering, Legal (15%)	$7,410
				Contingency (15%)	$7,410
				TOTAL	**$64,200**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.11 South Atlantic Avenue (4500 to 4600 Block)

A 6" AC water main presently exists on the west side of South Atlantic Avenue between the beach ramp at the North Turn Restaurant and Harbour Village Boulevard. This water main can be taken out of service by connecting all water services and fire hydrants to the 12" PVC water line which was constructed on the east side of South Atlantic Avenue in 2002. The existing 6" water main can be grout filled and abandoned in place. This is a low priority project.

Table 3.11
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

SOUTH ATLANTIC 4500-4600 BLOCK
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Cap,Grout Fill & Abandon 6"AC WM	2250	LF	$10.00	$22,500
2	HDD 6" WM	200	LF	$120.00	$24,000
3	Fire Hydrant Assembly – remove and replace	2	EA	$3,000.00	$6,000
4	Water Services	4	EA	$1,200.00	$4,800
5	Restoration	100	LF	$80.00	$8,000
	Construction Subtotal				$65,300
	Survey, Permitting, Engineering, Legal (15%)				$9,795
	Contingency (15%)				$9,795
	TOTAL				**$84,890**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.12 South Peninsula Drive

An 8” AC water main exists on the east side of South Peninsula Drive between Inlet Harbor Road and Beach Street. It is recommended to replace the AC water main with an 10” PVC C900 water main to reinforce the system in case of a break of the 12” water main on South Atlantic Avenue.

Also, it is recommended the Town officials encourage the City of Port Orange plan to construct a sewer gravity system as shown in Figure 8. The restoration costs could be shared between the two municipalities.

Table 3.12
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

SOUTH PENINSULA DRIVE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 10” C900 PVC Water Main	2900	LF	$35.00	$101,500
2	Fire Hydrant Assembly – remove and replace	6	EA	$3,000.00	$18,000
3	Water Services	20	EA	$800.00	$16,000
4	Restoration	2900	LF	$80.00	$232,000
				Construction Subtotal	$367,500
				Survey, Permitting, Engineering, Legal (15%)	$55,125
				Contingency (15%)	$55,125
				TOTAL	**$477,750**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.13 Sailfish Drive

A 6” AC water main serves the residents on Sailfish Drive. It is recommended that the 6” AC main be replaced with a 6” PVC water main. In addition a fire hydrant is needed at the end of Rains Drive.

A sewer system extension could be constructed in this area also. The Town should encourage the City of Port Orange to plan and construct the sewer system as shown on Figure 9. Restoration costs could be shared between the two municipalities.

Table 3.13
TOWN OF PONCE INLET
WATER SYSTEM IMPROVEMENTS

SAILFISH DRIVE
Preliminary Cost Estimate

ITEM	***DESCRIPTION***	***QTY***	***UNIT***	***UNIT COST***	***TOTAL***
1	Construct 6” C900 PVC Water Main	1700	LF	$30.00	$51,000
2	Fire Hydrant Assembly – remove and replace	5	EA	$3,000.00	$15,000
3	Water Services	15	EA	$800.00	$12,000
4	Restoration	1700	LF	$80.00	$136,000
	Construction Subtotal				$214,000
	Survey, Permitting, Engineering, Legal (15%)				$32,100
	Contingency (15%)				$32,100
	TOTAL				**$278,200**

Notes: 1. Water main construction costs include valves, fittings, testing, etc
2. Restoration cost is average for similar projects including driveways, sod sidewalks, etc.

3.14 Summary of Construction Costs

The following table summarizes the costs of improvements as detailed in the previous section. This list is not prioritized. The Town should review for prioritization.

TOWN OF PONCE INLET WATER SYSTEM IMPROVEMENTS SUMMARY OF IMPROVEMENTS Preliminary Cost Estimate	
LOCATION	***ESTIMATED COST***
PENINSULA DR – JANA RD TO SEAWINDS CIR	$119,340
BEACON POINT	$4,945
OCEANVIEW AVENUE	$207,740
MONTROS AVENUE	$103,350
INLET HARBOR WEST	$255,060
DIXIE DRIVE	$101,920
RAINS DRIVE	$135,720
ALBERTO DRIVE	$61,230
FRONT STREET	$113,880
MICHAEL LANE	$64,200
SOUTH ATLANTIC AVENUE	$84,890
SOUTH PENINSULA DRIVE	$477,750
SAILFISH DRIVE	$278,200
TOTAL	**$2,008,225**

IV Funding Alternatives

4.1 Sources

The Town's Water System is operated as an enterprise fund which is financially self sufficient.

Any improvements must be ultimately paid for either by the users or funded through a grant. At the present time, no known grant funds are available for the type or size of the improvements to the system that are recommended herein.

With the cost of the system improvements estimated to be approximately two million dollars, the most probable means of funding the project is either by issuing bonds with payback being from pledged revenues of the system or by use of a SRF (State Revolving Fund) loan. In years past, bonding was primarily the only means of financing water system improvements, but due to initial issuance costs and bond market rates near 5%, they have been used less and less lately.

SRF loans for water system improvements generally carry a 3% or slightly higher rate with a 20 year, or shorter, payback term. The State requires a 2% loan origination fee and a "business plan" similar to a "facility plan" used on the wastewater and stormwater program. Debt service coverage is required to be 1.15 or higher and inclusion of the first years debt service and amortization is required as part of the project capitalization. There are no known "small city" set asides or special financing rates available for the Drinking Water program at this time. Besides the initial loan application called a "request for inclusion", the project plans and specifications are required to be submitted and approved prior to the SRF Board approving the project and issuing a "Notice To Incur Cost" letter. The

drinking water SRF Board only meets twice a year so it is imperative that the Town start the process as early as possible. A typical loan cycle, from authorization of design to start of construction, is typically a year or more.

4.2 Debt Service Financing Fees

State Revolving Fund Loan (Drinking Water)

An estimate of possible SRF eligible project costs are shown in the following Table 3.15.

Table 3.15
Estimated Project Costs

A	SRF Loan Service Fee (2%)	$63,140
B	SRF Loan Allowance Cost (estimated)	$257,000
C	Construction and Demolition	$2,500,000
D	Contingences (10%)	$250,000
E	Technical Services after bid opening	$150,000
F	Capitalized Interest	$48,360
	TOTAL (Loan Principal Amount)	**$3,268,500**

The estimated yearly debt service required would be:

Principal Amount		Required Debt Service Coverage Factor		Capital Recovery Factor
$3,268,500	x	1.15	x	(A/P, 20yr, 3 %)

= $252,600/year or $21,050/month

Municipal Bond

1. (20 year financing)

Principal (items B, C, D and E from SRF)	$3,157,000
Issuance Cost (estimate)	$ 43,000
Total Principal Amount	$3,200,000

Estimated yearly debt service would be:

Principal Amount		Capital Recovery Factor
$3,200,000	x	(A/P, 20yr, 5%)

= $256,800/year or $21,400/month

2. (30 year financing)

Principal (items B, C, D and E from SRF)	$3,157,000
Issuance Cost (estimate)	$ 93,000
Total Principal Amount	$3,250,000

Estimated yearly debt service would be:

Principal Amount		Capital Recovery Factor
$3,250,000	x	(A/P, 30yr, 5%)

= $211,500/year or $17,625/month

4.3 Debt Service Funding

Three options are analyzed for debt service funding including 1)capital surcharge, 2)increase of water usage rates, and 3)utility service fee.

A. Capital Surcharge

Assuming the Town sold bonds to finance the project, the debt service payment using a capital surcharge on each water account or multiple minimums for apartments or condominiums would be based on the following number of connections.

# of total connections/accounts =	883+/- single family
	1,951+/- multi family
	25+/- commercial
	119+/- irrigation
	2,978+/- connections

The monthly debt service capital surcharge is calculated as follows:

$\frac{\$21,400/mo}{2,978 \text{ connections}}$ = $7.186 say $7.20/connections/month

B. Increase In Rates

To pay debt service using an increase in rates per thousand gallon used

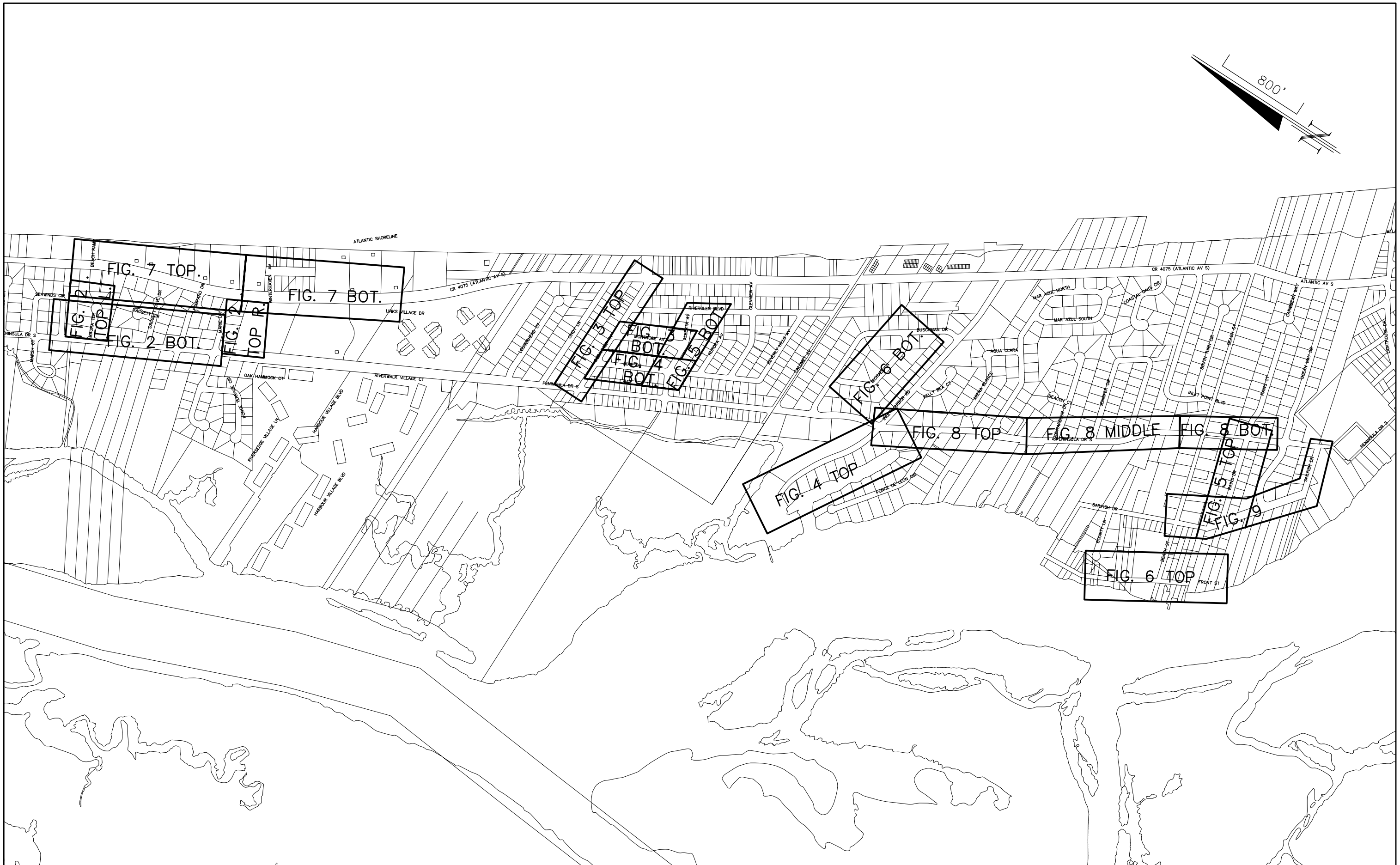
$$\frac{\$21{,}400/\text{month}}{16{,}140\ 1000\ \text{Gallons sold per month}} = \$1.325 \text{ say } \$1.35/1000 \text{ gallons used}$$

C. Utility Service Fee

Using the maximum of a 10% utility service fee as allowed by Florida Statutes approximately $10,000/month could be generated for debt service payment, this amount will not fund the entire project debt needs.

4.4 Conclusion

It would appear that since the proposed project improvements benefit the users of the entire system with additional looping of water mains including road restoration costs, and providing additional capacity for fire flow that the most appropriate means of paying for the debt service may be by use of the capital surcharge method.



REVISION					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

QUENTIN L. HAMPTON ASSOCIATES, INC.
CONSULTING ENGINEERS
FLORIDA CERTIFICATE OF AUTHORIZATION NUMBER: 626
FAX 386 761-3977
P.O. DRAWER 290247 PORT ORANGE, FLORIDA 32129-0247 386 761-6810

TOWN OF
PONCE INLET
VOLUSIA COUNTY, FLORIDA

WATER SYSTEM
IMPROVEMENTS 2007

KEY MAP

RICHARD W. FERNANDEZ, P.E. 14722
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BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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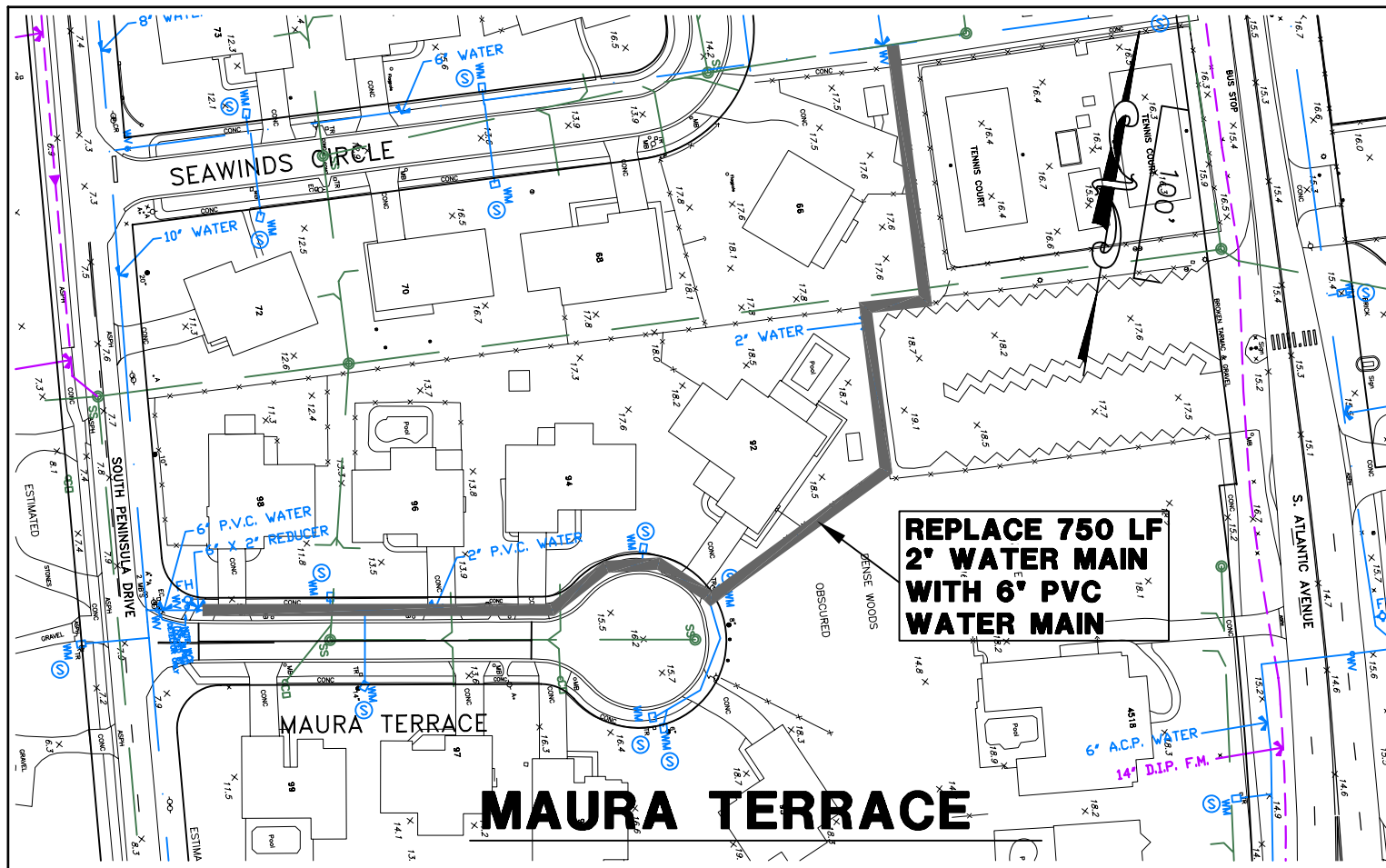

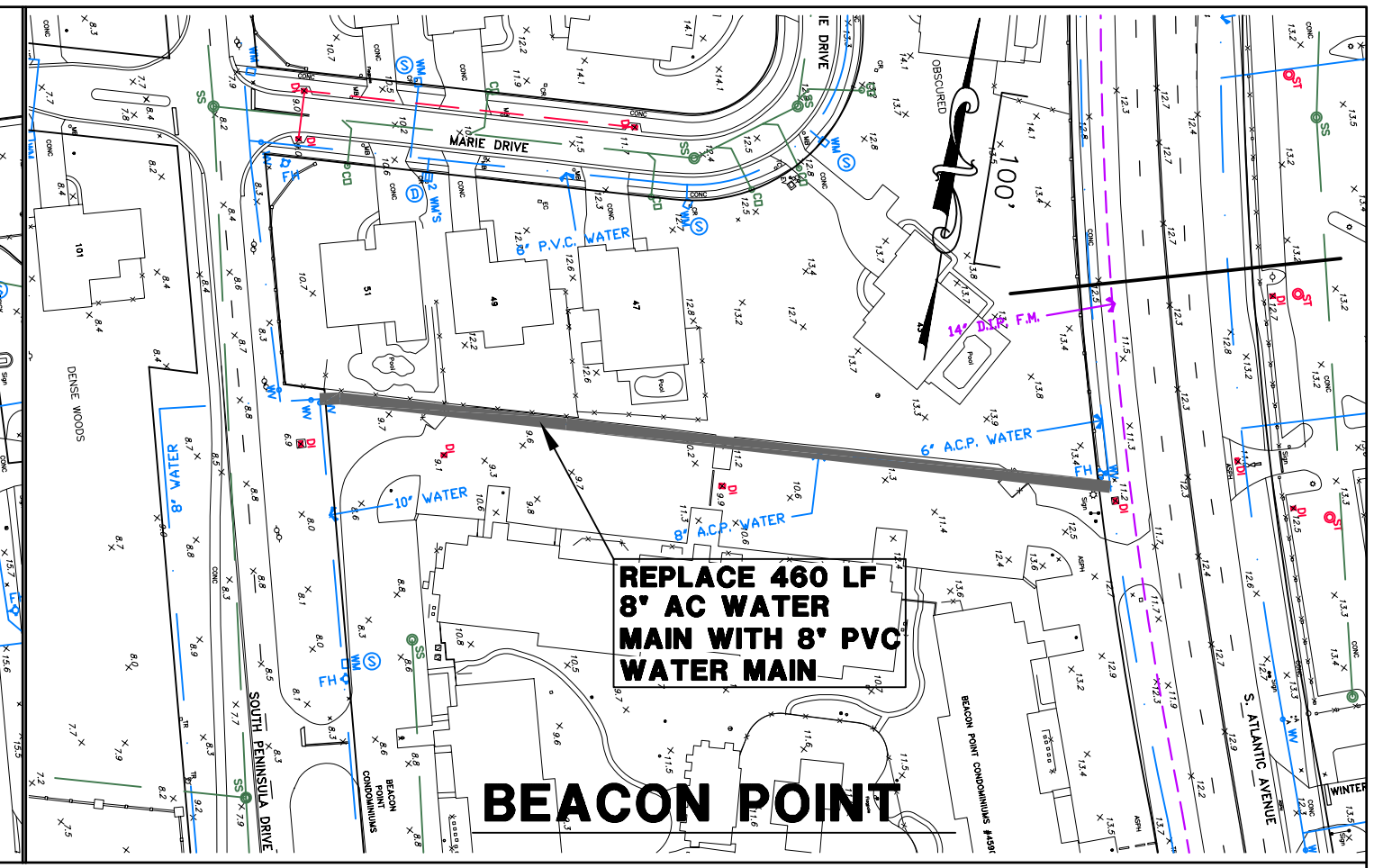

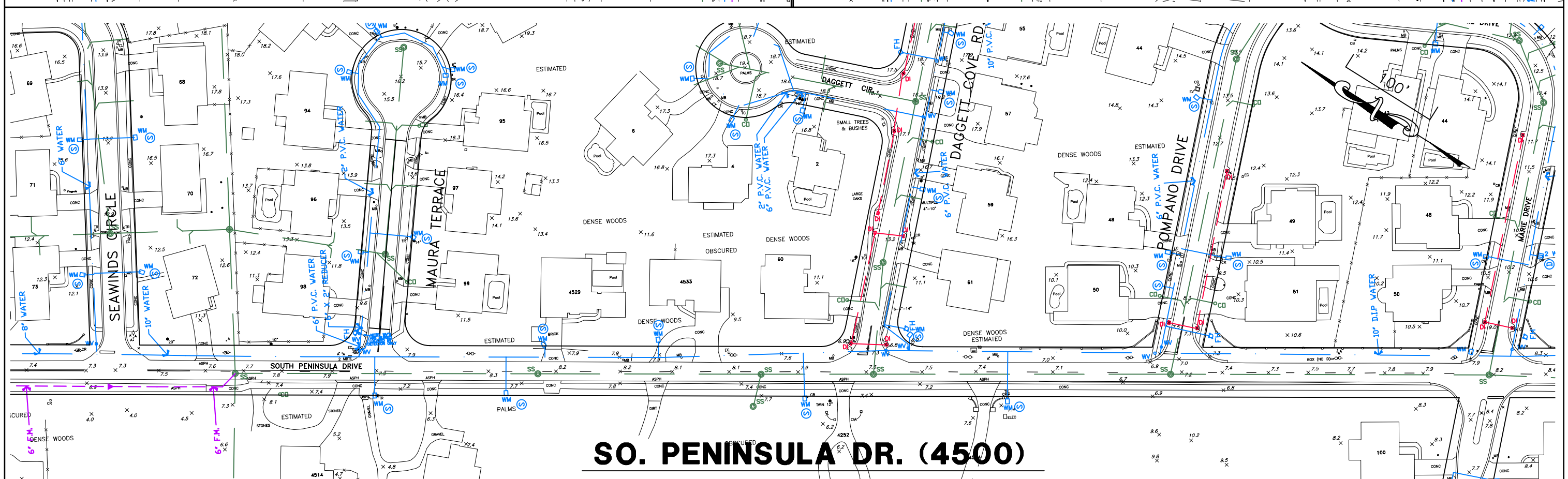

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TOWN OF
PONCE INLET
VOLUSIA COUNTY, FLORIDA

WATER SYSTEM
IMPROVEMENTS 2007

MAURA TER.
BECON POINT
S. PENINSULA DR.

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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SCALE AS SHOWN

SHEET NO.
FIG 2
OF

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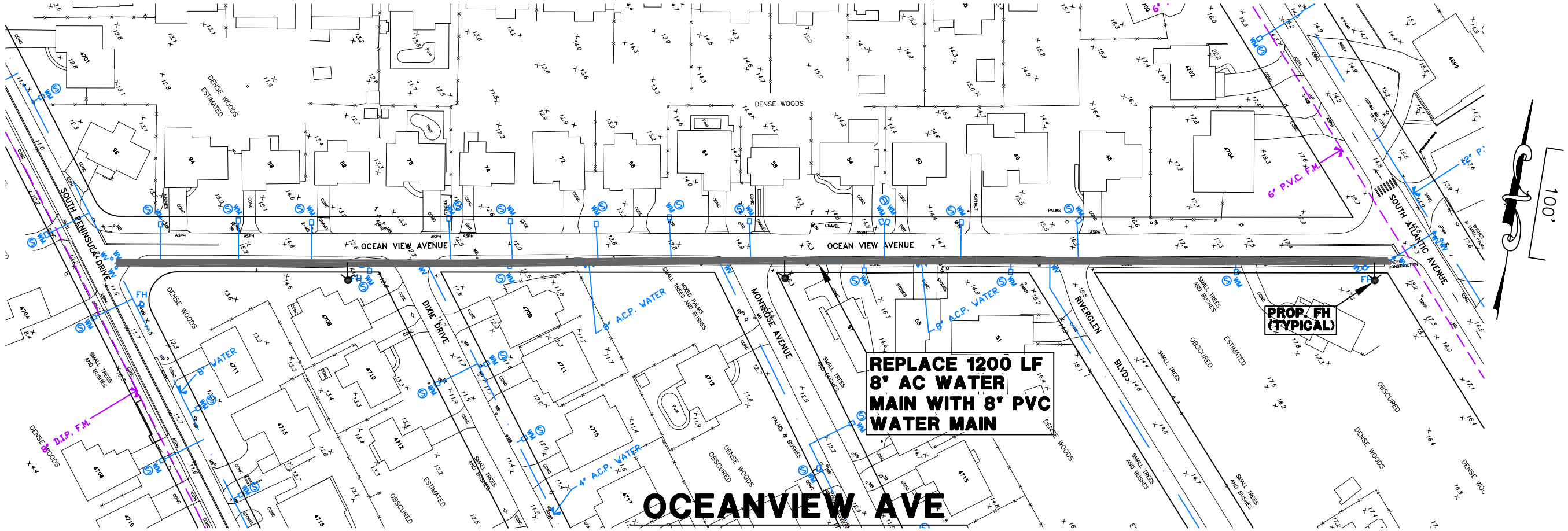

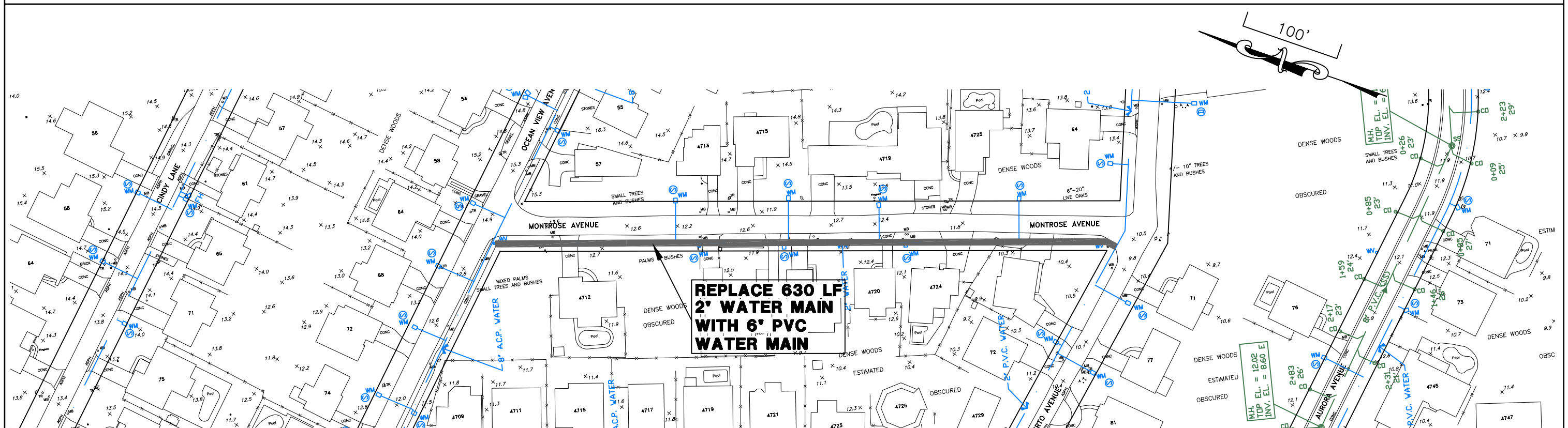

DATE	BY	DESCRIPTION	DATE	BY	REVISION DESCRIPTION

QUENTIN L. HAMPTON ASSOCIATES, INC.
CONSULTING ENGINEERS
FLORIDA CERTIFICATE OF AUTHORIZATION NUMBER: 626
FAX 386 761-3977
P.O. DRAWER 290247 PORT ORANGE, FLORIDA 32129-0247 386 761-6810

TOWN OF
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WATER SYSTEM IMPROVEMENTS 2007

OCEANVIEW AVE.
MONTROS AVE.

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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SCALE AS SHOWN

SHEET NO. FIG 3 OF

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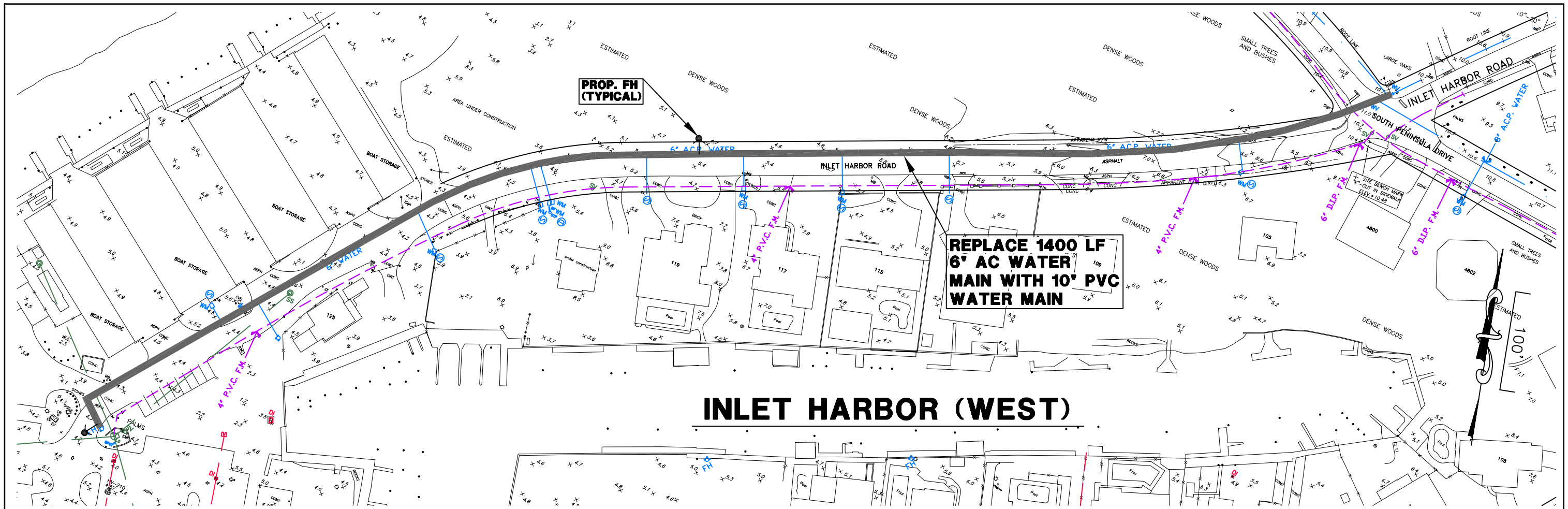
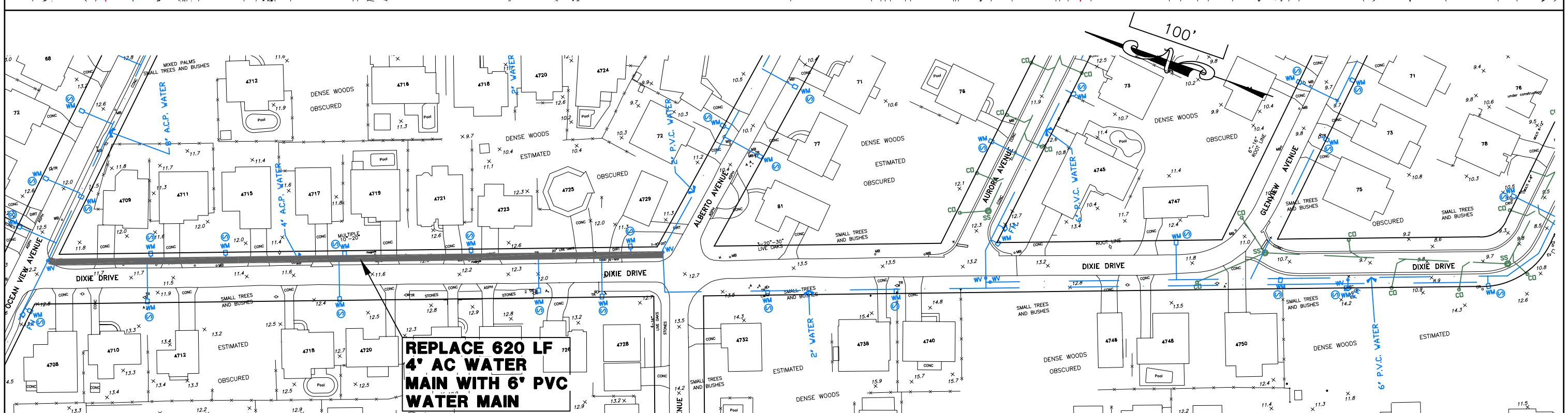


INLET HARBOR (WEST)



DIXIE DRIVE

REVISION					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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PONCE INLET
VOLUSIA COUNTY, FLORIDA

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INLET HARBOR (WEST)
DIXIE DRIVE

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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SCALE AS SHOWN

SHEET NO. FIG 4 OF

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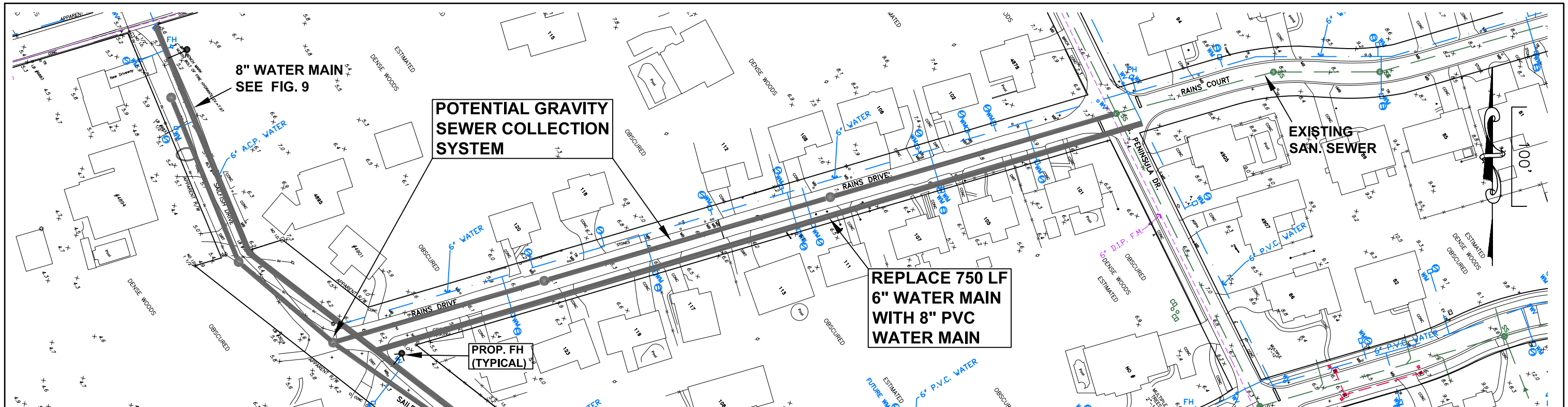
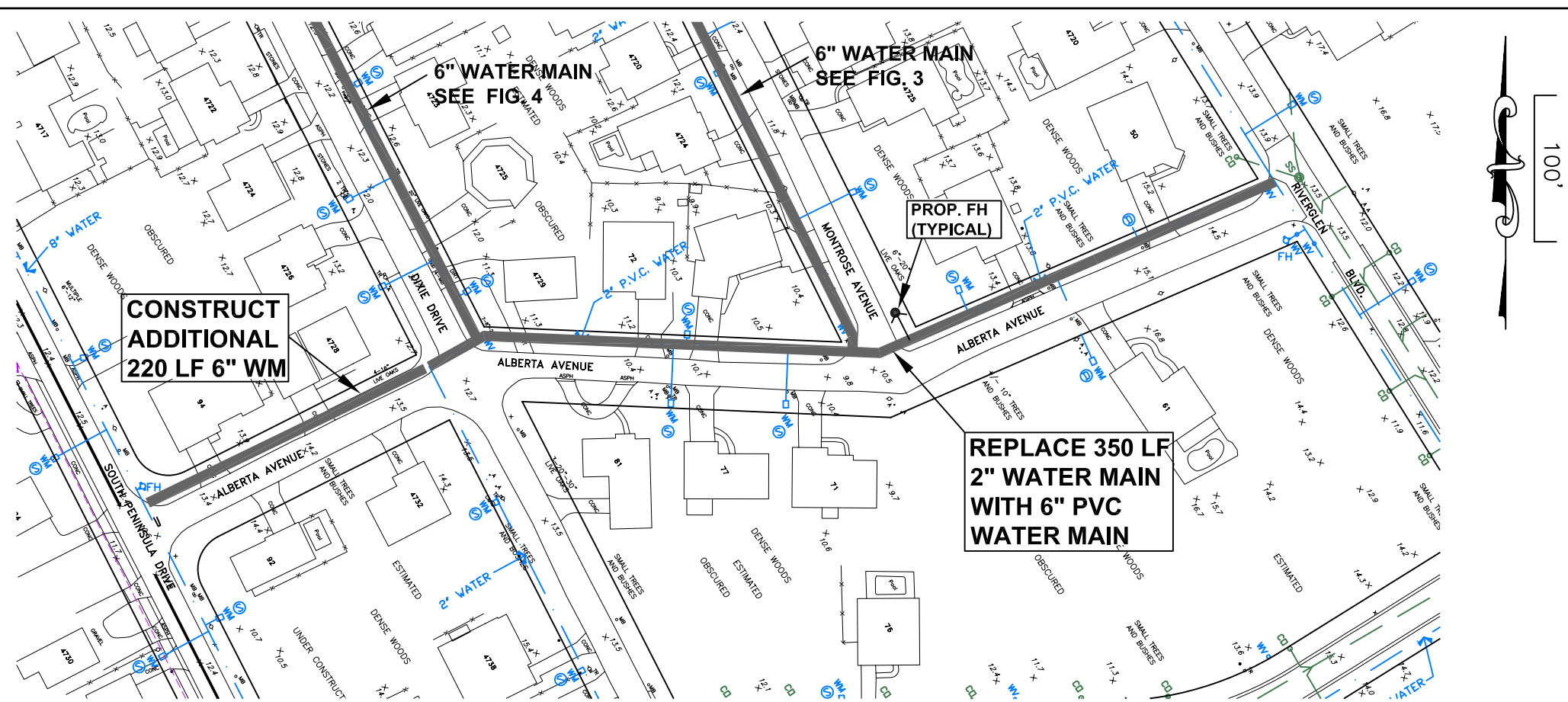


RAINS DRIVE



ALBERTA AVE

DATE	BY	DESCRIPTION	DATE	BY	REVISION DESCRIPTION

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TOWN OF
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WATER SYSTEM
IMPROVEMENTS 2007

RAINS CT.
ALBERTA AVE.

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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SCALE AS SHOWN

SHEET NO. FIG 5 OF

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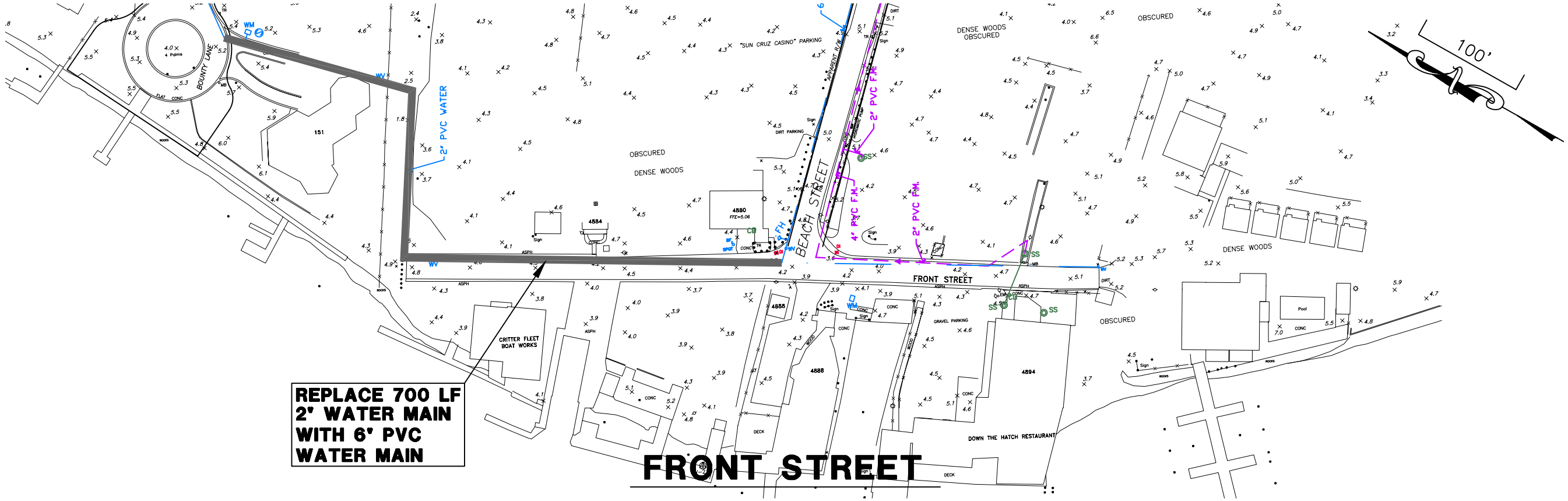

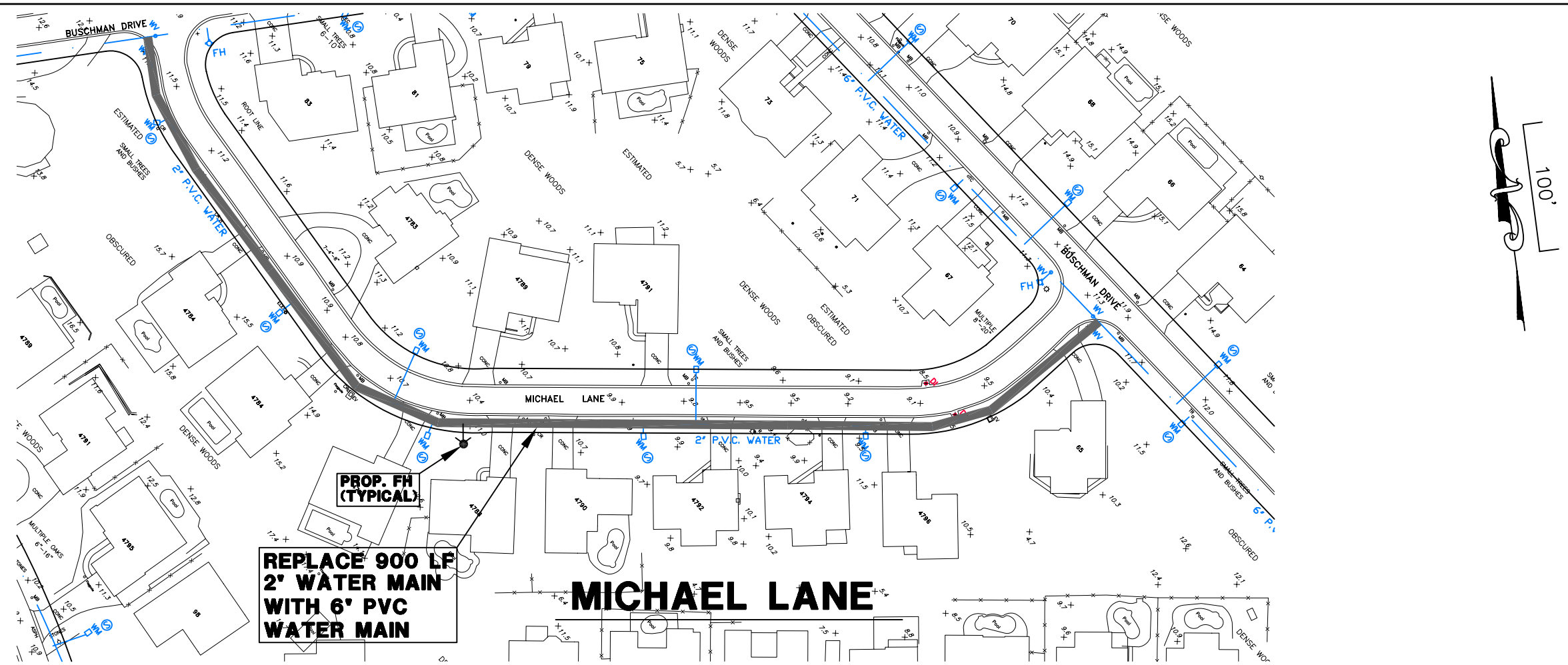

REVISION					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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TOWN OF
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VOLUSIA COUNTY, FLORIDA

WATER SYSTEM
IMPROVEMENTS 2007

FRONT STREET
MICHEAL LANE

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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SCALE
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SHEET NO.
FIG 6
OF

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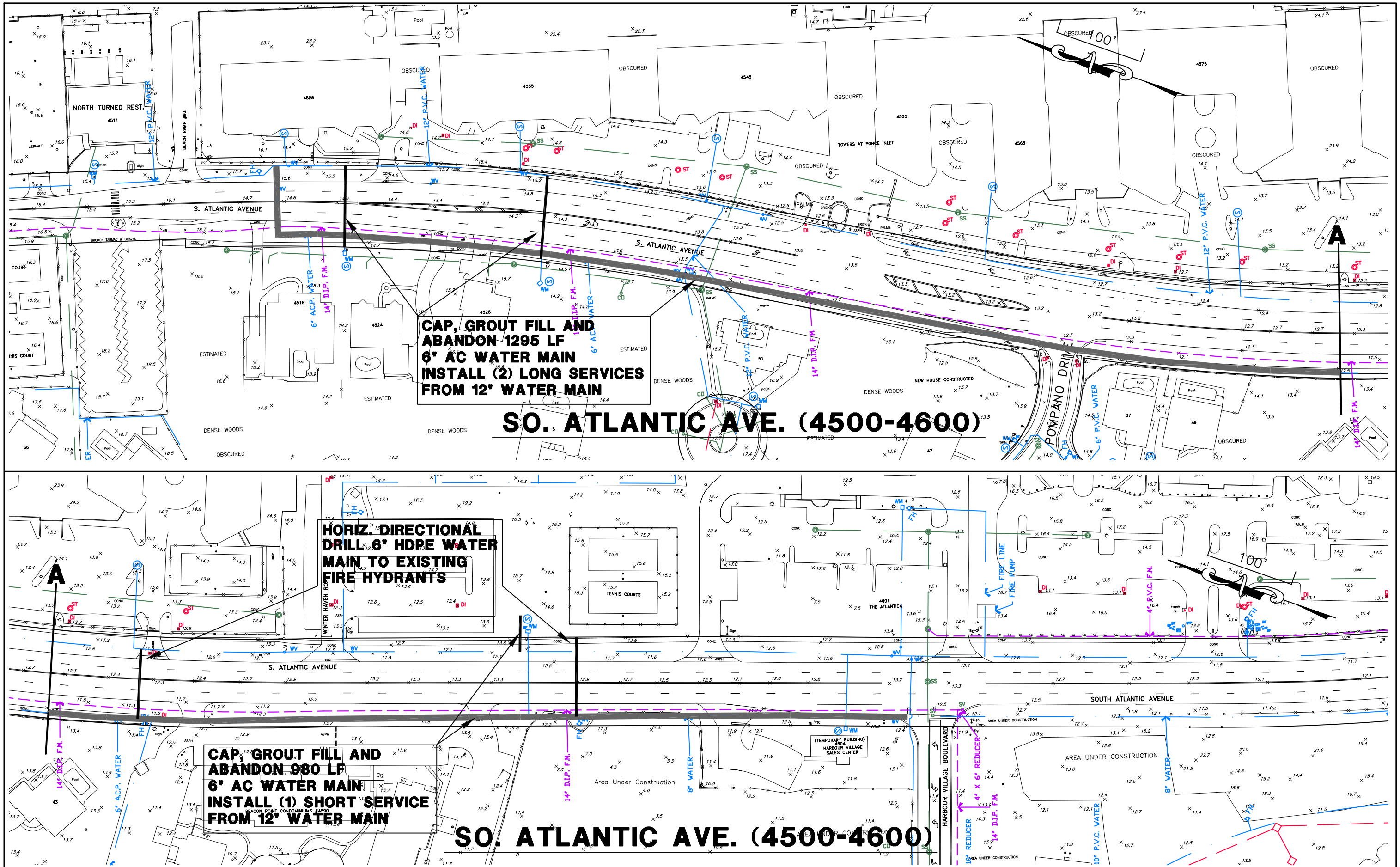

DATE	BY	DESCRIPTION	DATE	BY	REVISION DESCRIPTION

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TOWN OF
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WATER SYSTEM
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S. ATLANTIC AVE.

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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SHEET NO. FIG 7 OF

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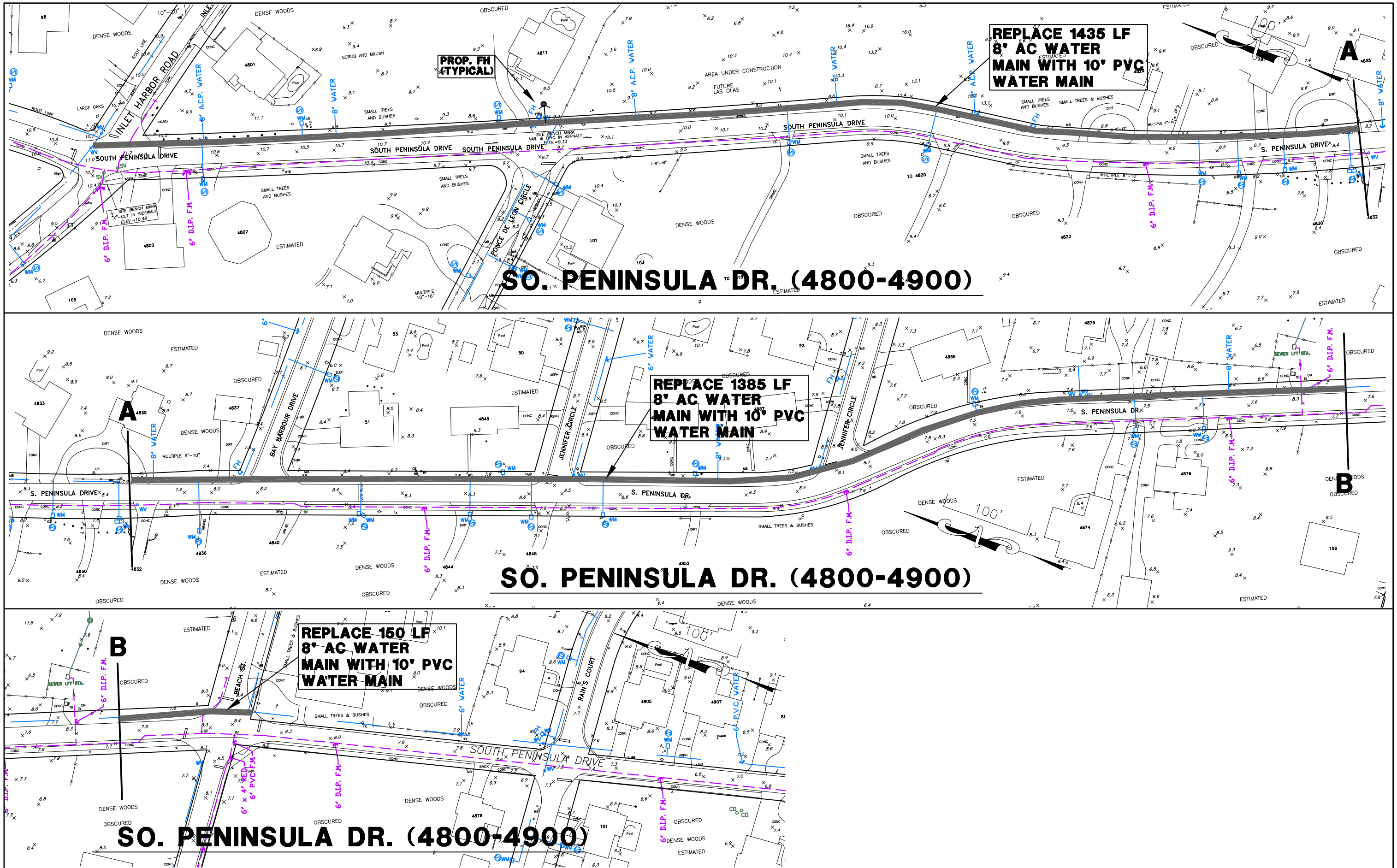

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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TOWN OF
PONCE INLET
VOLUSIA COUNTY, FLORIDA

WATER SYSTEM IMPROVEMENTS 2007

S. PENINSULA DR.

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

DESIGNED	ANG	DATE	1/07
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SHEET NO. FIG 8 OF

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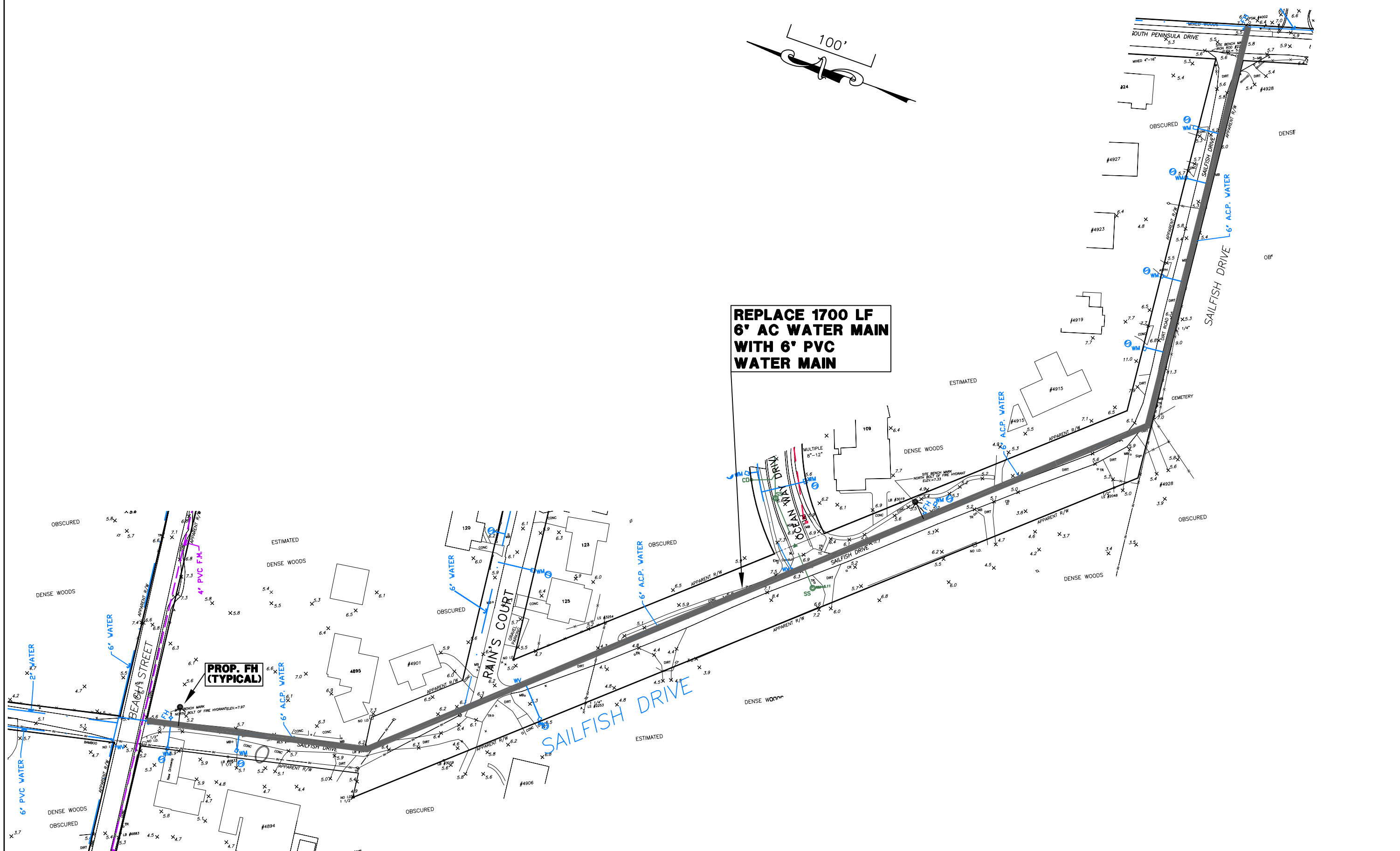

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TOWN OF
PONCE INLET
VOLUSIA COUNTY, FLORIDA

WATER SYSTEM
IMPROVEMENTS 2007

SAILFISH DR.

RICHARD W. FERNANDEZ, P.E. 14722
MARK A. HAMPTON, P.E. 27391
BRADLEY T. BLAIS, P.E. 47130
DAVID A. KING, P.E. 50609
ANDREW M. GIANNINI, P.E. 46601

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SHEET NO. FIG 9 OF

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