

# Fort Florida Road, 15th Street and River Drive Water Main Extension



**City Officials**

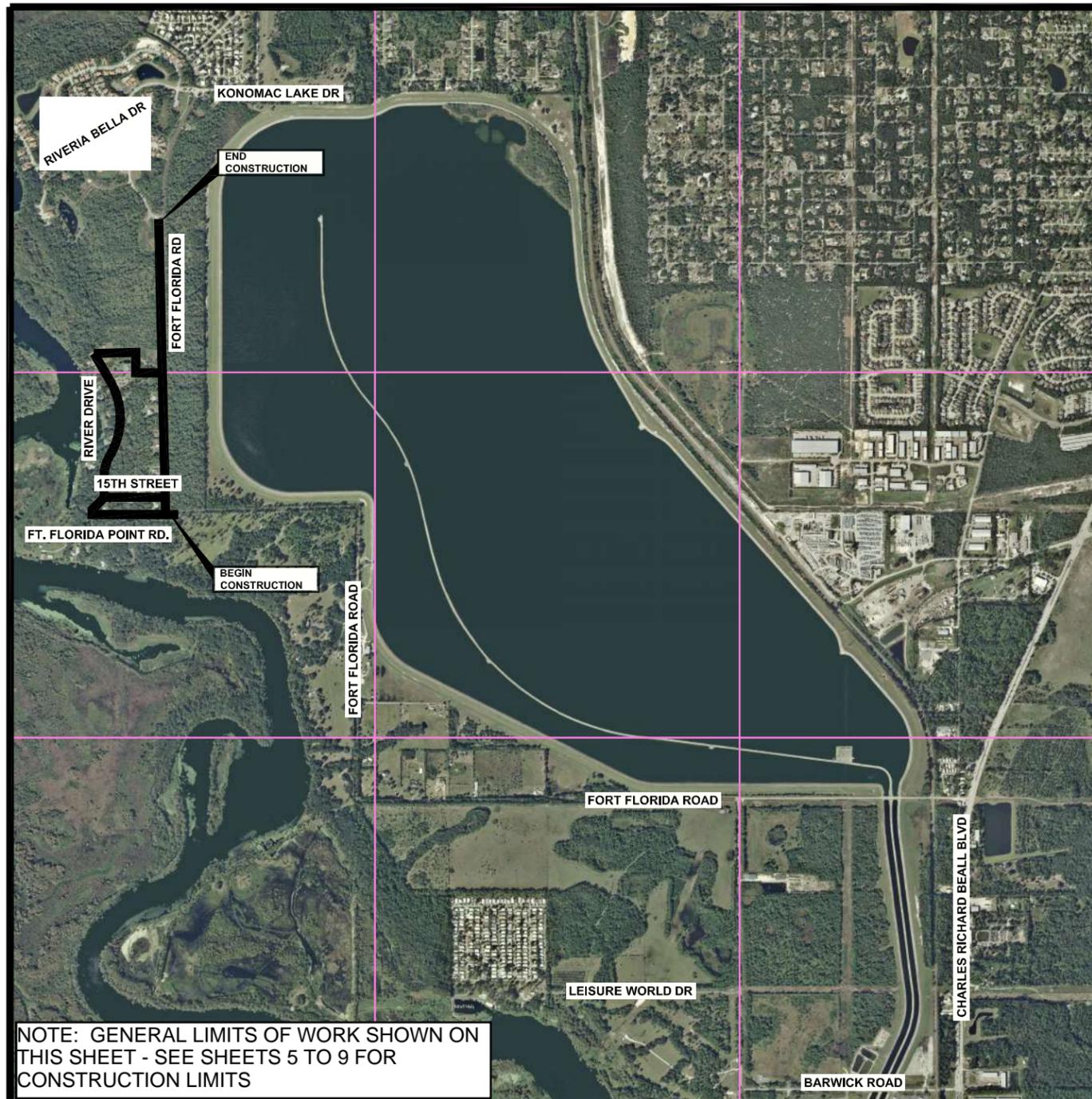
**MAYOR**  
Clint Johnson

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District 3: Mike Brady  
District 4: Lita Handy-Peters

**CITY MANAGER**  
Dan Parrott, City Manager

**PUBLIC WORKS**  
Alan Williamson



NOTE: GENERAL LIMITS OF WORK SHOWN ON THIS SHEET - SEE SHEETS 5 TO 9 FOR CONSTRUCTION LIMITS

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Plans Prepared By:  
**CPH, Inc.**  
 500 West Fulton St., Sanford, FL 32771  
 Phone: 407.322.6841  
 Licenses:  
 Eng. C.O.A. No. 3215 Arch. L.L.C. No. AA2600926  
 Survey L.B. No. 7143 Landscp. L.L.C. No. LC0000298

"NOTICE"  
 THIS SET OF PLANS IS NOT VALID FOR CONSTRUCTION PURPOSES WITHOUT BEING STAMPED  
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 GIVEN FOR INFORMATIONAL PURPOSES ONLY.

JOB# D8519  
 DATE: JAN. 2015  
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Rocco R. Nasso, P.E.  
 FL P.E. No. 64727



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NO.	DESCRIPTION	UNITS	QUANTITIES					Total
			Sheet 5	Sheet 6	Sheet 7	Sheet 8	Sheet 9	
1	Mobilization	LS						1
2	Maintenance of Traffic	LS						1
3	Preconstruction Video	LS						1
4	Erosion and Sediment Control	LS						1
5	Clearing and Grubbing	LS						1
6	Water Main Fittings (D.I.)	TN	2.02	0.27	0.62	0.35	0.09	3.35
7	6" PVC Water Main (Open Cut)	LF			304		966	1270
8	8" PVC Water Main (Open Cut)	LF			1644	2080		3724
9	12" PVC Water Main (Open Cut)	LF	2399	372				2771
10	6" Gate Valve	LF			1		2	3
11	8" Gate Valve	EA			2	3		5
12	12" Gate Valve	EA	3					3
13	Fire Hydrant Assembly	EA	2		2	2		6
14	Silt Fence	LF	2369	383	1815	2042	940	7549
15	2" Blowoff Assembly	EA	1					1
16	Temporary Jumper Connection	EA		1				1
17	Water Service Line (1") (Open Cut)	LF	140	17	242	148	10	557
18	Water Service Line (1") (Directional Drill)	LF	245	36	190	149	124	744
19	6" x 1" Service Saddle and Corp Stop	EA			1		4	5
20	8" x 1" Service Saddle and Corp Stop	EA			12	9		21
21	12" x 1" Service Saddle and Corp Stop	EA	18	2				20
22	Install New Meter Box with New Water Service and Curb Stop	EA	34	4	26	15	7	86
23	Connect to Existing Water Main (Installed By Others)	EA		1				1
24	Open Cut Remove and Replace Existing Concrete Driveway (6" Thick)	SY			20	38		58
25	Open Cut Remove and Replace Gravel Driveway	SY			55	13		68
26	Open Cut Remove and Replace Concrete Flume	SY				4		4
27	Open Cut Remove and Replace Existing Asphalt Pavement and Base	SY		37	87	74	46	244
28	Sodding	SY	4104	657	3294	3568	1578	13201

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FORT FLORIDA ROAD, 15TH STREET  
AND RIVER DRIVE  
WATER MAIN EXTENSION  
CITY OF DEBARY

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Rocco R. Nasso P.E.  
FL P.E. No. 64727

**SUMMARY OF QUANTITIES**



**GENERAL PROVISIONS**

- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL MAKE A PRE-CONSTRUCTION VIDEO (DVD FORMAT) ALONG THE PROPOSED ROUTE IN ACCORDANCE WITH THE SPECIFICATIONS. IN PARTICULAR, THE VIDEO SHALL DOCUMENT THE CONDITION OF EXISTING DRIVEWAYS, BUILDINGS, STRUCTURES, MAILBOXES, SIGNS, FENCES, AND LANDSCAPING ALONG PROPOSED CONSTRUCTION AREAS.
- THE CONTRACTOR SHALL RECOGNIZE AND ABIDE BY ALL OSHA EXCAVATION SAFETY STANDARDS, INCLUDING THE FLORIDA TRENCH SAFETY ACT (FS 563.60-563.64). ANY MATERIAL, CONSTRUCTION METHODS, OR MATERIAL COST TO COMPLY WITH THESE LAWS SHALL BE INCIDENTAL TO THE CONTRACT.
- THE CONTRACTOR SHALL OBTAIN FROM THE OWNER COPIES OF ALL AVAILABLE REGULATORY AGENCY PERMITS AND LOCAL AGENCY PERMITS.
- THIS PROJECT IS LESS THAN 1 ACRE IN SIZE AND THEREFORE IS NOT REQUIRED TO COMPLY WITH THE NPDES GENERAL PERMIT. HOWEVER, THE CONTRACTOR IS STILL RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO AND DURING CONSTRUCTION IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.
- THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS REPRESENT A MINIMUM REQUIREMENT. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES NEEDED IN ORDER TO PREVENT THE TRANSFER OF SEDIMENT FROM THE PROJECT AREA AND PREVENT THE EROSION OF SURFACES DURING CONSTRUCTION, AS NEEDED TO PROTECT ADJACENT PROPERTIES AND WATER BODIES.
- IN THE EVENT THAT WATER IS ENCOUNTERED DURING CONSTRUCTION, DEWATERING SHALL BE CONDUCTED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, OPERATION, AND SUBSEQUENT REMOVAL OF DEWATERING SYSTEMS AND THEIR SAFETY AND CONFORMITY WITH LOCAL CODES AND REGULATIONS. IF DEWATERING EQUIPMENT NEEDED EXCEEDS ANY OF THE FOLLOWING: 1) 6" PUMP VOLUTE; 2) 100,000 GPD TOTAL 24 HOUR (1 DAY) DEWATERING, AND; 3) 1,000,000 GPD PUMP CAPACITY, THE CONTRACTOR SHALL BE REQUIRED TO PERMIT THE DEWATERING SYSTEM WITH THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT (SJRWMD). THE ENGINEER AND/OR OWNER SHALL BE NOTIFIED IMMEDIATELY IF ANY OF THE ABOVE THRESHOLDS ARE EXCEEDED.
- DEWATERING DISCHARGE FROM THE SITE SHALL COMPLY WITH ALL NPDES GENERAL PERMIT REQUIREMENTS AND STATE WATER QUALITY STANDARDS. PROVIDE ALL TESTING AND PERMITTING REQUIRED AND COMPLY WITH ALL TREATMENT OR DISPOSAL METHODS REQUIRED TO MEET ALL LOCAL, STATE AND FEDERAL REQUIREMENTS.
- UNLESS OTHERWISE DIRECTED BY THE OWNER OR ENGINEER, THE CONTRACTOR IS EXPECTED TO CONTAIN ALL CONSTRUCTION ACTIVITIES WITHIN THE PROPERTY BOUNDARY, RIGHT-OF-WAY AND EASEMENTS, AND OTHER AREAS SPECIFICALLY DESIGNATED FOR CONSTRUCTION. AT NO TIME SHALL THE CONTRACTOR DISTURB SURROUNDING PROPERTIES OR TRAVEL ON SURROUNDING PROPERTIES WITHOUT WRITTEN CONSENT FROM THE PROPERTY OWNER. ANY REPAIR OR RECONSTRUCTION OF DAMAGED AREAS IN SURROUNDING PROPERTIES SHALL BE REPAIRED BY THE CONTRACTOR ON AN IMMEDIATE BASIS. ALL COSTS FOR REPAIRS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND NO EXTRA COMPENSATION SHALL BE PROVIDED.
- UNLESS OTHERWISE NOTED ON THE PLANS, THE CONTRACTOR SHALL USE THE GEOMETRY PROVIDED ON THE CONSTRUCTION PLANS. BENCHMARK INFORMATION SHALL BE PROVIDED TO THE CONTRACTOR BY THE OWNER OR OWNER'S SURVEYOR. ANY DISCREPANCIES BETWEEN FIELD MEASUREMENTS AND CONSTRUCTION PLAN INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
- THE ENTIRE PROJECT SITE SHALL BE THOROUGHLY CLEANED AT THE COMPLETION OF THE WORK. CLEAN ALL INSTALLED PIPELINES, STRUCTURES, SIDEWALKS, PAVED AREAS, ACCUMULATED SILT IN PONDS, PLUS ALL ADJACENT AREAS AFFECTED BY CONSTRUCTION, AS DIRECTED BY THE OWNER OR JURISDICTIONAL AGENCY. EQUIPMENT TO CLEAN THESE SURFACES SHALL BE SUBJECT TO APPROVAL BY THE OWNER.

**UTILITY GENERAL NOTES**

- THE UTILITY DATA SHOWN ON THESE PLANS WAS LOCATED BY THE RESPECTIVE UTILITY, OR IS BASED ON UTILITY DRAWINGS, MAPS, OR FIELD RECONNAISSANCE.
- THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE VARIOUS UTILITIES AND TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATIONS OF THESE UTILITIES WITH THE OWNER OF THE UTILITY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CROSSING AN UNDERGROUND UTILITY, WHETHER SHOWN ON THE PLANS OR LOCATED BY THE UTILITY COMPANY. ANY UTILITIES, WHETHER SHOWN ON THESE PLANS OR NOT, THAT INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER AND THE RESPECTIVE UTILITY COMPANY FOR RELOCATION OR PROPER INSTRUCTION.
- A SINGLE POINT UTILITY IDENTIFICATION SERVICE HAS BEEN SET UP FOR EXISTING UTILITIES. THE CONTRACTOR IS TO CONTACT THE SUNSHINE STATE ONE CALL CENTER BY DIALING "811" AT LEAST TWO (2) AND NO MORE THAN FIVE (5) WORKING DAYS PRIOR TO THE SPECIFIC CONSTRUCTION ACTIVITY FOR FIELD LOCATION. NOTE THAT NOT ALL UTILITIES PARTICIPATE IN THIS PROGRAM. THE CONTRACTOR SHOULD CONTACT ALL NON-PARTICIPATING UTILITIES SEPARATELY FOR FIELD LOCATION OF THEIR FACILITIES AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION. PER FLORIDA STATUTE 553.851, THE CONTRACTOR OR EXCAVATOR IS REQUIRED TO NOTIFY THE GAS COMPANY TWO (2) WORKING DAYS PRIOR TO STARTING EXCAVATION.

- THE FOLLOWING UTILITIES HAVE PREVIOUSLY INDICATED THAT THEY MAY HAVE FACILITIES IN THE VICINITY OF THE CONSTRUCTION AREA:

AT&T ATTN: RAY REGISTER 407-273-5084	DUKE ENGERY ATTN: SHARON DEAR 407-905-3321	VOLUSIA COUNTY WATER & SEWER SERVICES ATTN: ALAN FERGUSON 386-822-6465 EXT. 13632
COMCAST ATTN: WADE MATHEWS 352-516-3824	CITY OF DEBRY ATTN: XXXXX 407-688-XXXX	
FLORIDA POWER & LIGHT ATTN: ROB HELFER 386-586-6432	FLORIDA PUBLIC UTILITIES ATTN: DAN SCRIBBEN 386-668-9319	

- THE CONTRACTOR SHALL KEEP LOCATE TICKETS UP TO DATE AT ALL TIMES.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION WITH EACH UTILITY AND ALL COSTS ASSOCIATED WITH THE PROTECTION OF EXISTING FACILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL ALSO COORDINATE NECESSARY RELOCATIONS OR OTHER CONSTRUCTION RELATED MATTERS WITH EACH UTILITY.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN IN SERVICE ALL EXISTING PIPING ENCOUNTERED DURING CONSTRUCTION UNLESS OTHERWISE INDICATED IN THE DRAWINGS. ANY PIPING WHICH CAN BE REMOVED DURING CONSTRUCTION WITHOUT UNDUE INTERRUPTION OF SERVICE MAY BE REMOVED AND REPLACED BY THE CONTRACTOR WITH THE PERMISSION OF THE OWNER AND THE ENGINEER.
- THE CONTRACTOR SHALL FIELD LOCATE ALL WATER AND SEWER SERVICES AND LATERALS WITHIN THE PROPOSED CONSTRUCTION AREA PRIOR TO CONSTRUCTION AND ADJUST THE PROPOSED CONSTRUCTION AS NEEDED TO ACCOMMODATE THESE EXISTING LINES.
- TYPICAL DETAILS AND PROPOSED CONSTRUCTION AS SHOWN ILLUSTRATE THE ENGINEER'S INTENT AND ARE NOT PRESENTED AS A SOLUTION TO ALL CONSTRUCTION PROBLEMS ENCOUNTERED IN THE FIELD. THE CONTRACTOR MAY ALTER THE PROPOSED CONSTRUCTION TO SUIT FIELD CONDITIONS, PROVIDED IT COMPLIES WITH THE PROJECT SPECIFICATIONS AND APPROVAL IS RECEIVED FROM THE ENGINEER, WHERE SUCH PROPOSED REVISIONS DEVIATE FROM THE FDEP CONSTRUCTION PERMIT, THEN SUCH REVISIONS WILL ALSO REQUIRE APPROVAL FROM FDEP.
- FOR EACH RESPECTIVE PIPELINE CONSTRUCTION REQUIRED, THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION, DEPTH, AND ALIGNMENT OF ALL EXISTING PIPES, CABLES, ETC. TO BE CROSSED OR CONNECTED TO. IF THE CONTRACTOR DEEMS NECESSARY (A) A CHANGE IN ALIGNMENT OR DEPTH, OR THE NEED FOR ADDITIONAL FITTINGS, BENDS, OR COUPLINGS, WHICH REPRESENT A DEPARTURE FROM THE CONTRACT DRAWING, OR (B) A NEED FOR RELOCATION OF EXISTING UTILITIES, THEN DETAILS OF SUCH DEPARTURES, RELOCATIONS, OR ADDITIONAL FITTINGS, INCLUDING CHANGES IN RELATED PORTIONS OF THE PROJECT AND THE REASONS THEREFORE, SHALL BE SUBMITTED WITH SHOP DRAWINGS. APPROVED DEPARTURES FOR THE CONTRACTOR'S CONVENIENCE SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL PROVIDE AT HIS OWN EXPENSE ALL NECESSARY TEST PUMPING EQUIPMENT, WATER, WATER METERS, PRESSURE GAUGES, AND OTHER EQUIPMENT, MATERIAL AND FACILITIES REQUIRED FOR ALL HYDROSTATIC, LEAKAGE, AND PRESSURE TESTING. THE CONTRACTOR SHALL CONTACT THE ENGINEER AND THE OWNER IN WRITTEN FORM, FORTY-EIGHT (48) HOURS IN ADVANCE OF PROPOSED TESTING. THE CONTRACTOR SHALL PERFORM SATISFACTORY PRETESTING PRIOR TO NOTIFICATION.

**TRAFFIC CONTROL**

- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A MAINTENANCE OF TRAFFIC (M.O.T.) PLAN PRIOR TO CONSTRUCTION. THE M.O.T. PLAN SHALL SHOW ALL PROPOSED TRAFFIC CONTROL SIGNS, PAVEMENT MARKINGS, AND BARRICADES, AND SHALL DETAIL ALL PROPOSED CONSTRUCTION SEQUENCING. THE M.O.T. PLAN SHALL BE APPROVED BY THE ENGINEER, CITY, AND FDOT PRIOR TO CONSTRUCTION.
- ALL TRAFFIC CONTROL MEASURES SHALL BE IN ACCORDANCE WITH FDOT INDEX NO. 600 AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL TRAFFIC CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION.
- INSPECT TRAFFIC CONTROL DEVICES ON A DAILY BASIS TO ENSURE PLACEMENT OF BARRICADES AND FUNCTION OF LIGHTS IS MAINTAINED THROUGHOUT CONSTRUCTION.
- CONTACT PROPERTY OWNERS AFFECTED BY CONSTRUCTION. COORDINATE TEMPORARY DRIVEWAY CLOSURES AND SEQUENCING. MAINTAIN ACCESS FOR ALL PROPERTY OWNERS DURING CONSTRUCTION.
- WET UNSTABILIZED AREAS AS NECESSARY TO CONTROL DUST.
- ADJUST TRAFFIC CONTROL DEVICES AS REQUIRED UNDER EMERGENCY CONDITIONS.
- WHEN WORK OCCURS WITHIN 15-FT OF ACTIVE ROAD TRAVEL LANES BUT NO CLOSER THAN 2-FT FROM THE EDGE OF PAVEMENT, SIGNAGE AND WARNING DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH FDOT INDEX NO. 600 AND 602.
- TYPE I OR TYPE II BARRICADES AT 20-FT CENTERS SHALL BE PLACED AND MAINTAINED ALONG THE EDGE OF THE ROAD WHEREVER DROP-OFFS OR OTHER HAZARDS EXIST AND TO BLOCK ENTRANCE INTO COMPLETED OR PARTIALLY COMPLETED PAVEMENTS UNTIL SUCH PAVEMENTS ARE OPEN TO PUBLIC USE.

No.	Date	Revision	By	No.	Date	Revision	By
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FORT FLORIDA ROAD, 15TH STREET  
AND RIVER DRIVE  
WATER MAIN EXTENSION  
CITY OF DEBARY

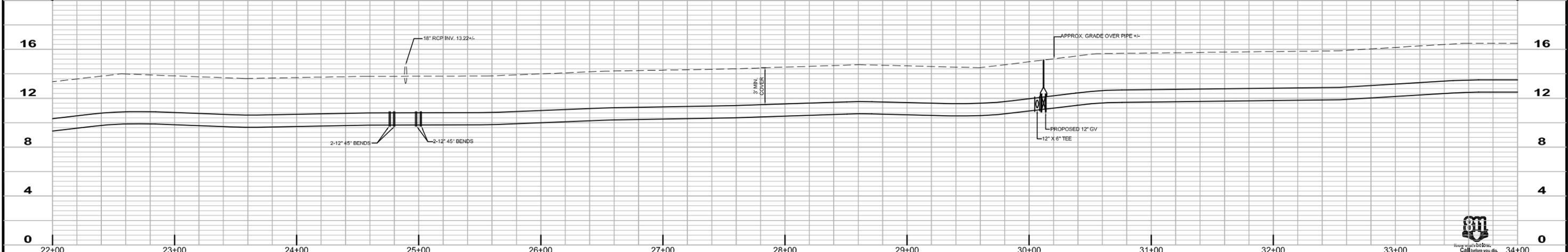
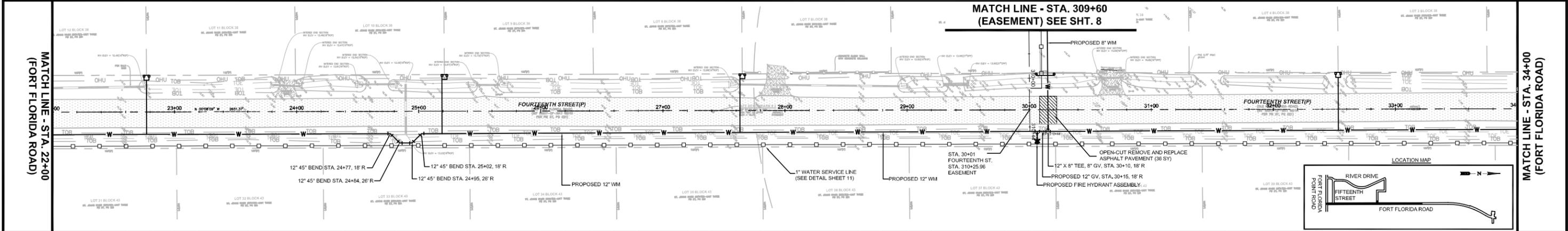
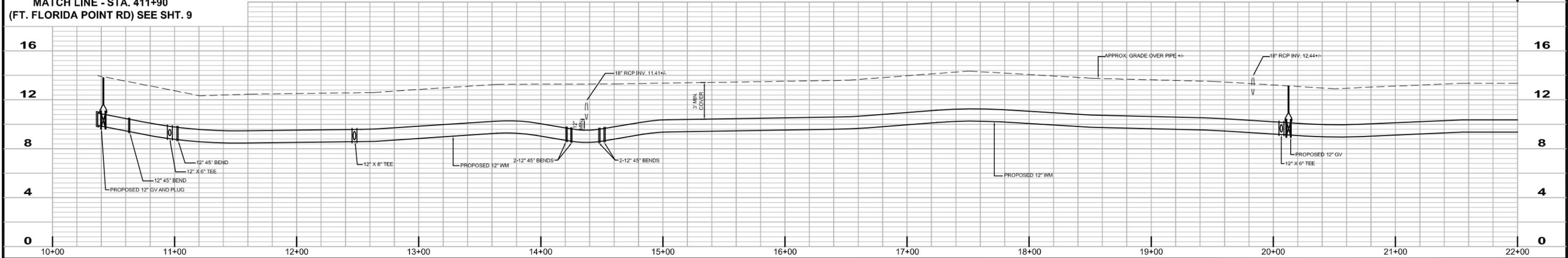
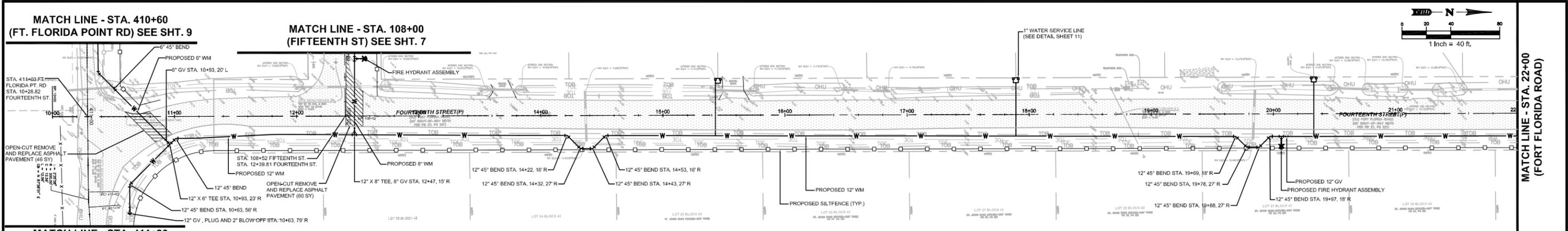
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Rocco R. Nasso P.E.  
FL P.E. No. 64727

**GENERAL NOTES**

Sheet No.  
**4**

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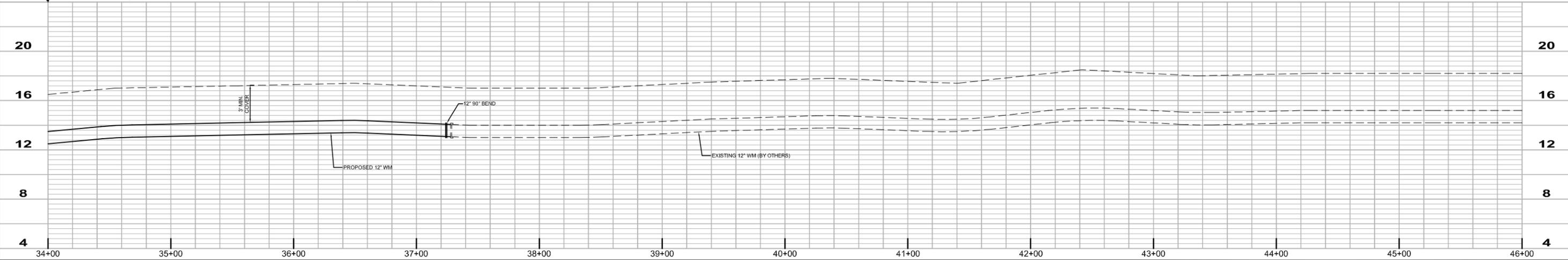
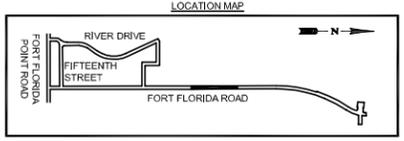
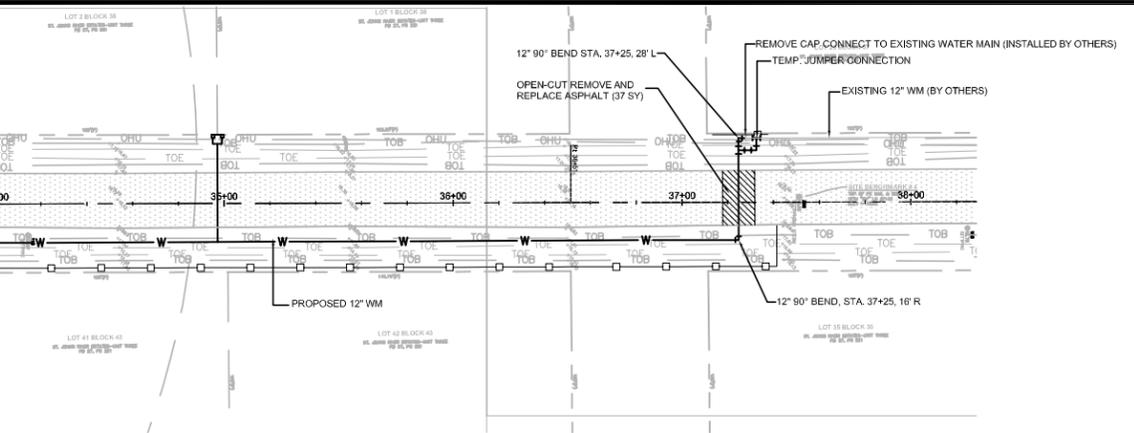
**FORT FLORIDA ROAD, 15TH STREET AND RIVER DRIVE WATER MAIN EXTENSION CITY OF DEBARY**

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**PLAN AND PROFILE STA. 10+00 TO 34+00 (FORT FLORIDA ROAD)**

Sheet No.  
**5**

MATCH LINE - STA. 34+00  
(FORT FLORIDA ROAD)



No.	Date	Revision	By	No.	Date	Revision	By
1				1			
2				2			
3				3			

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Rocco R. Nassio P.E.  
FL P.E. No. 64727

**PLAN AND PROFILE  
STA. 34+00 TO 58+00  
(FORT FLORIDA ROAD)**

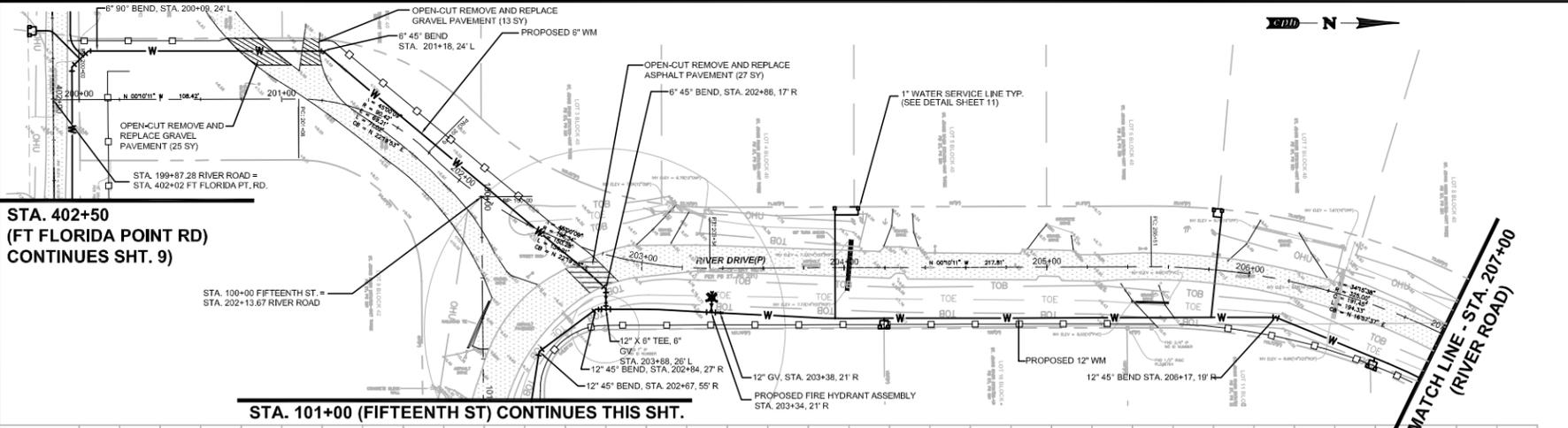
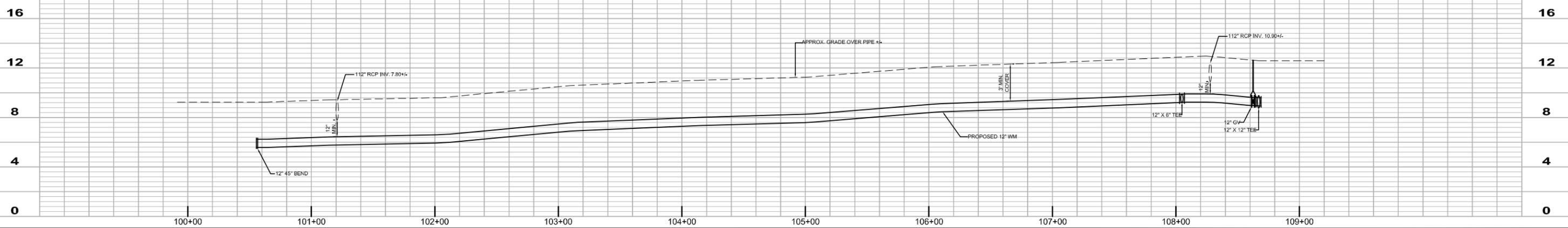
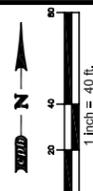
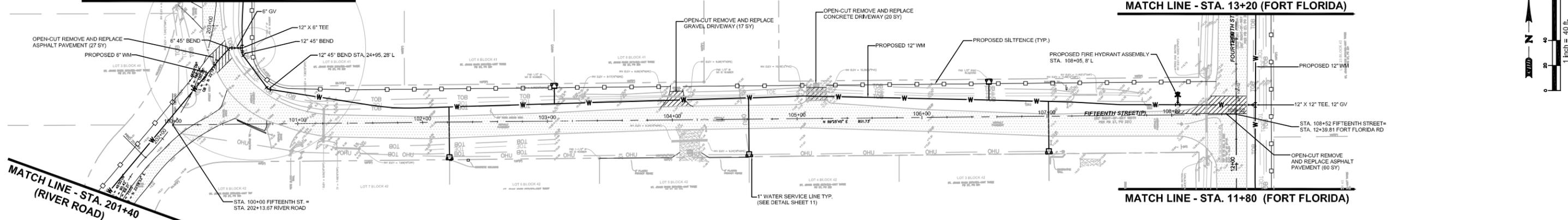
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Know what's below.  
Call before you dig.

Sheet No.  
**6**

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STA. 203+20 (RIVER ROAD) CONTINUES THIS SHT.

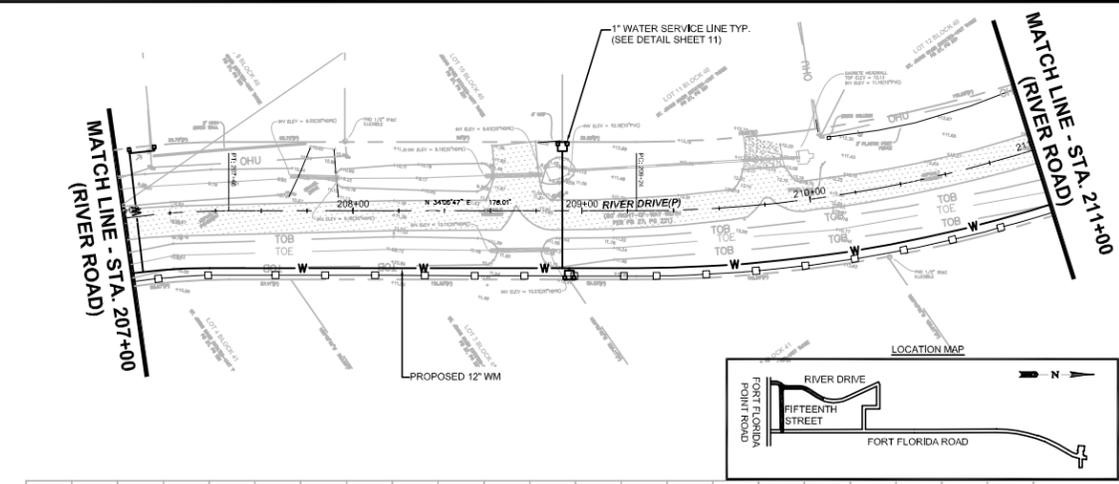
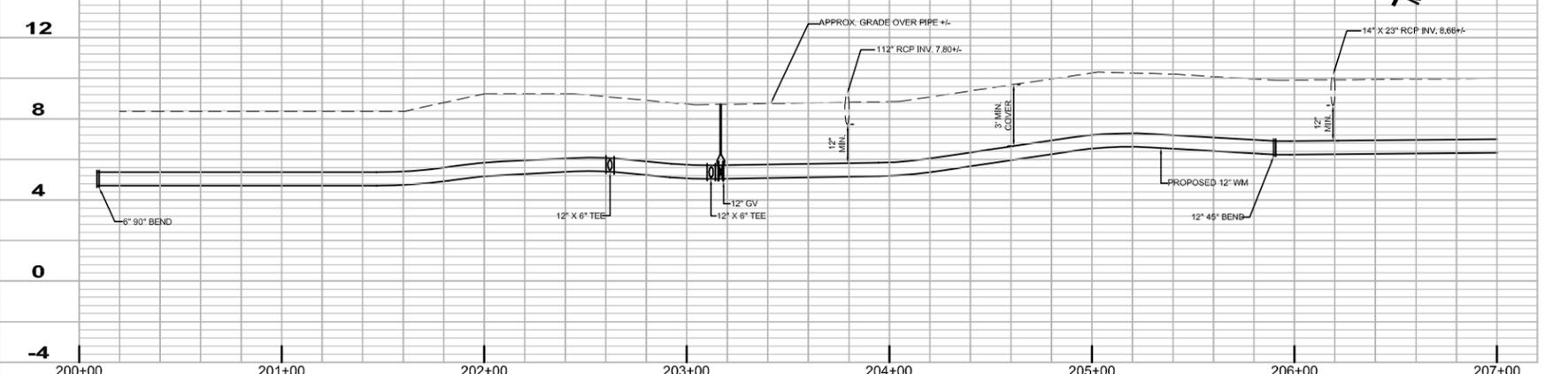
MATCH LINE - STA. 13+20 (FORT FLORIDA)



STA. 402+50  
(FT FLORIDA POINT RD)  
CONTINUES SHT. 9)

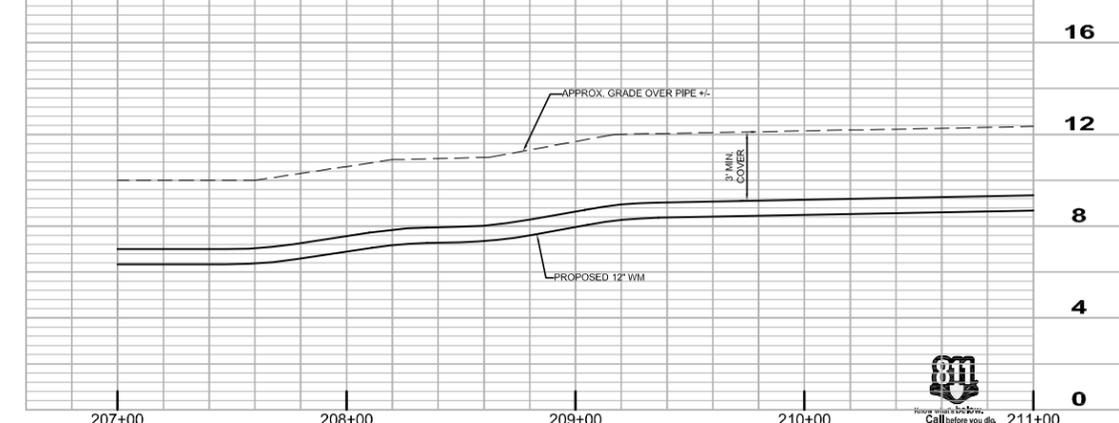
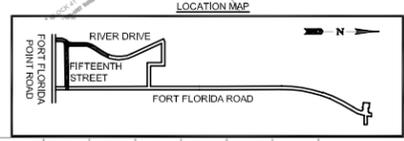
STA. 101+00 (FIFTEENTH ST) CONTINUES THIS SHT.

MATCH LINE - STA. 207+00  
(RIVER ROAD)



MATCH LINE - STA. 207+00  
(RIVER ROAD)

MATCH LINE - STA. 211+00  
(RIVER ROAD)



No.	Date	Revision	By	No.	Date	Revision	By
1				2			
2				3			

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Approved by: RRR  
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FORT FLORIDA ROAD, 15TH STREET AND RIVER DRIVE WATER MAIN EXTENSION CITY OF DEBAR

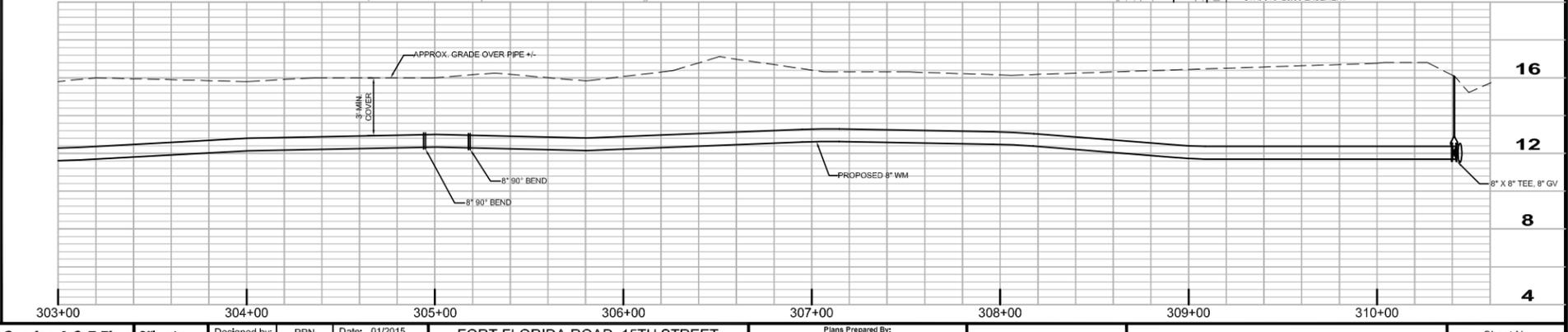
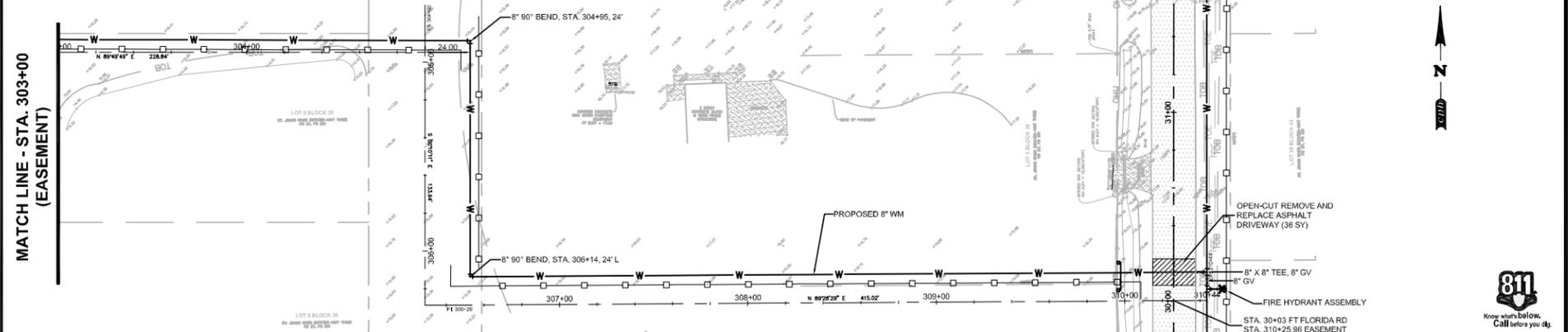
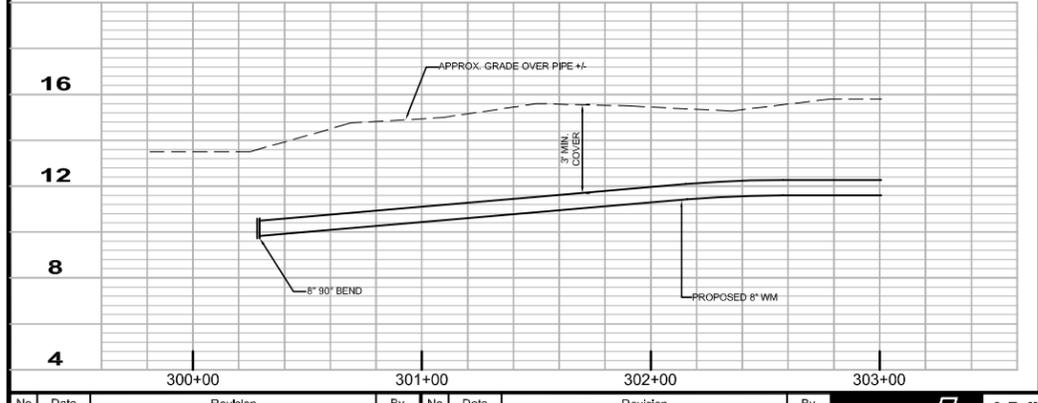
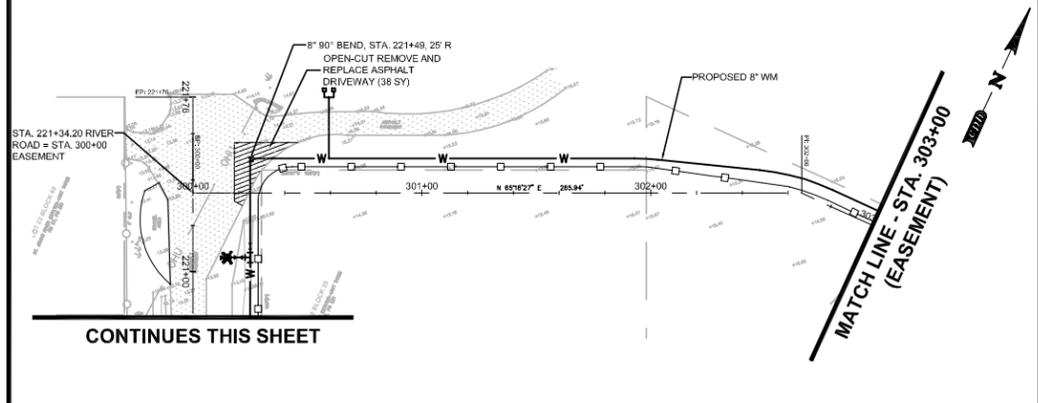
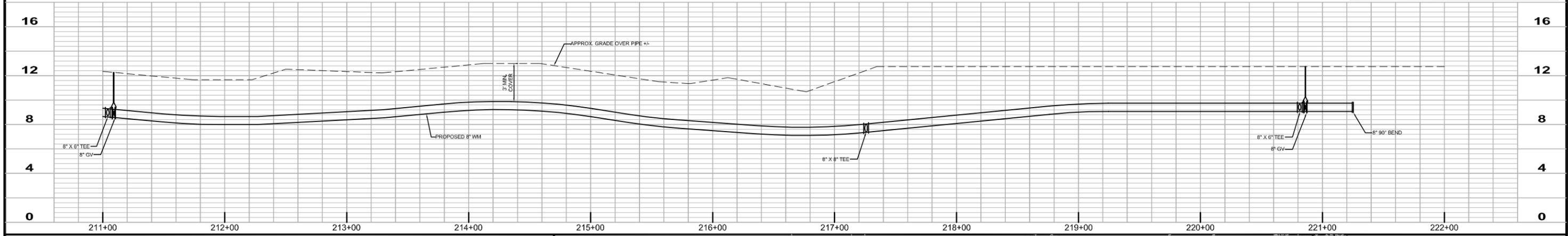
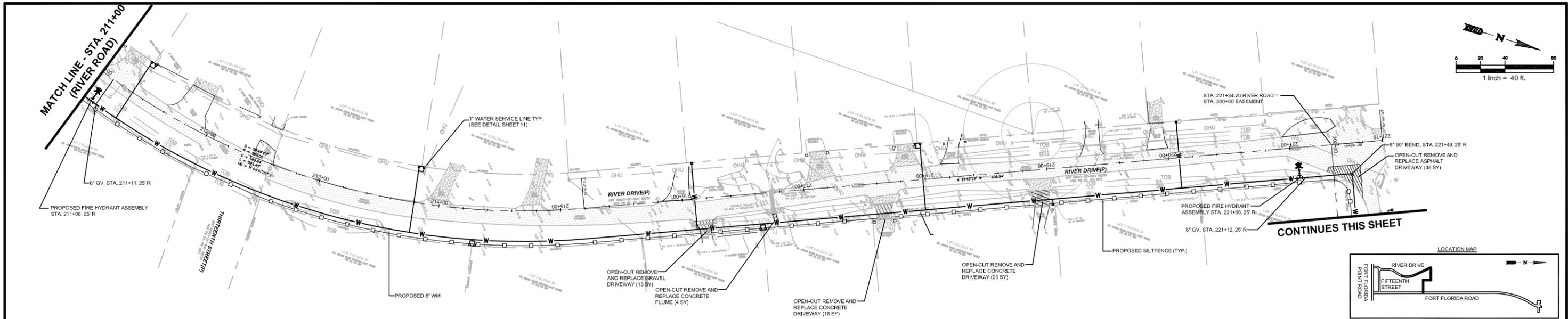
Plans Prepared By: CPH, Inc.  
500 West Fulton St., Sanford, FL 32771  
Phone: 407.322.6641  
Licenses: Eng. C.O.A. No. 3215 Arch. Lic. No. AA2600926 Survey L.B. No. 7143 Landscp. Lic. No. LC0000298

Rocco R. Nasso P.E.  
FL P.E. No. 64727

PLAN AND PROFILE  
STA. 100+00 TO 211+00  
(FIFTEENTH ST. & RIVER ROAD)

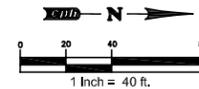
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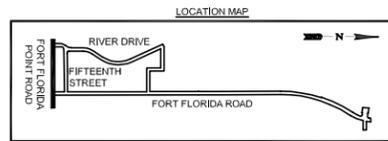


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No.	Date	Revision	By																														
No.	Date	Revision	By																														

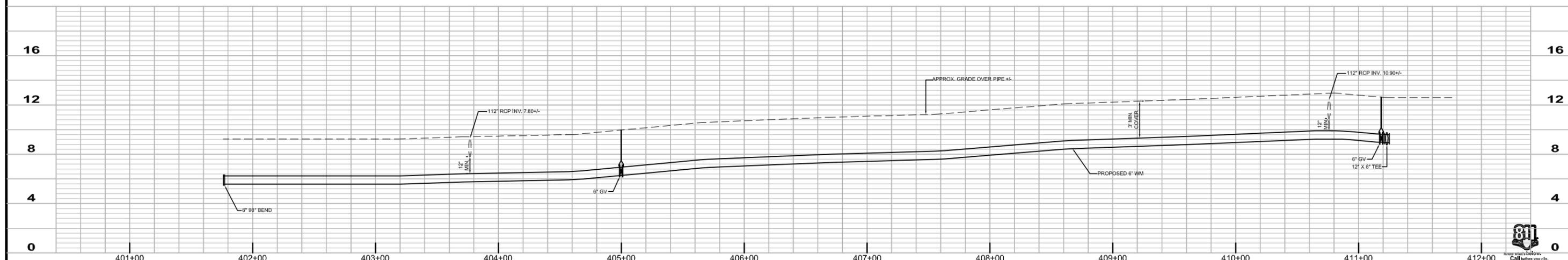
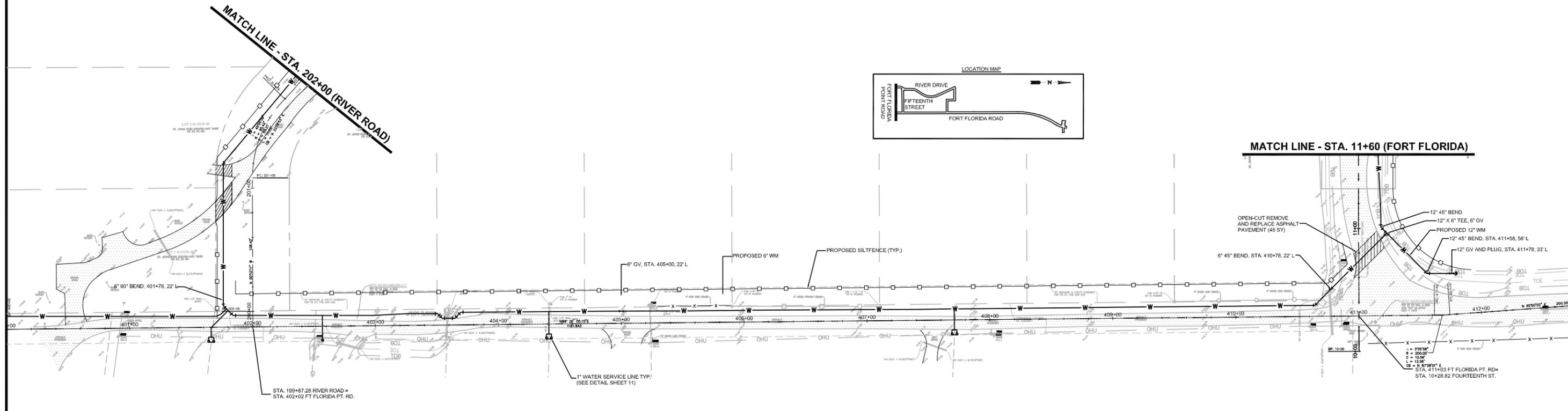
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**MATCH LINE - STA. 202+00 (RIVER ROAD)**



**MATCH LINE - STA. 11+60 (FORT FLORIDA)**



No.	Date	Revision	By	No.	Date	Revision	By

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Designed by: RRN Date: 01/2015  
Drawn by: DT Scale: 1" = 40' (H)  
Checked by: JDO 1" = 4' (V)  
Approved by: RRN  
Job No. D8519 ©2015

**FORT FLORIDA ROAD, 15TH STREET  
AND RIVER DRIVE  
WATER MAIN EXTENSION  
CITY OF DEBARY**

Plans Prepared By:  
**CPH, Inc.**  
500 West Fulton St. Sanford, FL 32771  
Phone: 407.322.6641  
Licenses:  
Eng. C.O.A. No. 3215 Arch. Lic. No. AA2600926  
Survey L.B. No. 7143 Landscp. Lic. No. LC0000298

Rocco R. Nasso P.E.  
FL P.E. No. 64727

**PLAN AND PROFILE  
STA. 401+00 TO 412+00  
(FORT FLORIDA POINT ROAD)**

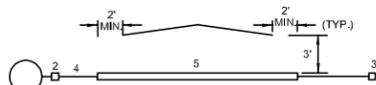
811  
Know what's below.  
Call before you dig.

Sheet No.  
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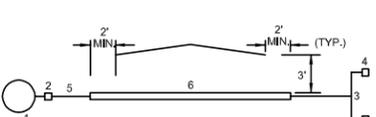
**POTABLE WATER METER SETS**

**SINGLE SET, METER SET FOR 5/8", 3/4" AND 1" METERS**  
 NO POLYTUBING UNDER ROAD ALLOWED WITHOUT 2" CASING  
 SINGLE SERVICE SET



- ITEM
- 1" TAPPING SADDLE CC THREAD, EPOXY COATED WITH STAINLESS STEEL STRAP, SMITH BLAIR, FORD, JCM, MUELLER
  - 1" CORPORATION STOP FORD FB1000-4-G (1" BALL VALVE, INLET, OUTLET) MUELLER EQUAL
  - 1" CURB STOP, FORD B43-342W-G (3/4" VALVE, 1" INLET PE END WITH GRIPPER, 3/4" METER SWIVEL NUT) OR MUELLER (THIS IS FOR 5/8" AND 3/4" METER SET.) IF 1" METER SET USE FORD CURB STOP B41-344W-G.
  - 1" 200 PSI, SDR 9 ENOPURE BLUE WATER SERVICE TUBING, ENDOT
  - 2" PVC SCHEDULE 40, CASING PIPE WHITE, IF INSTALLATION UNDER ROAD, (PAVED OR DIRT)
  - 2" PVC CASING (IF UNDER EXISTING ROAD) SHALL BE INSTALLED BY USING AIRLANCE OR PUSH-PULL METHOD APPROVED BY COUNTY.

**DOUBLE SET OR DUAL SET**  
 METER SET FOR 5/8" AND 3/4" METERS

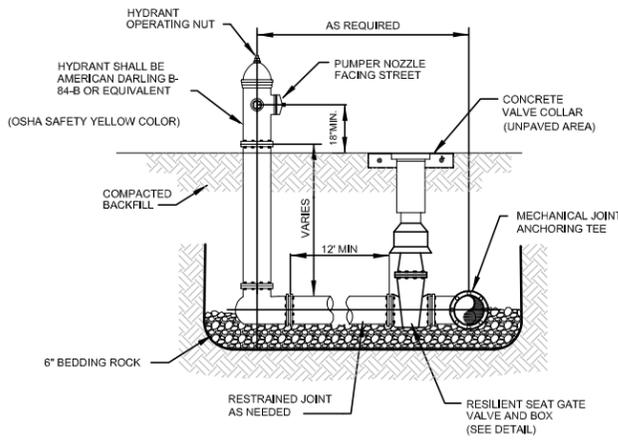


- ITEM
- NO POLYTUBING UNDER ROAD ALLOWED WITHOUT 2" CASING
- 1" TAPPING SADDLE CC THREAD, EPOXY COATED WITH STAINLESS STEEL STRAP, SMITH BLAIR, FORD, JCM, MUELLER
  - 1" CORPORATION STOP FORD FB1000-4-G (1" BALL VALVE, INLET, OUTLET) MUELLER EQUAL
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  - 2" PVC CASING (IF UNDER EXISTING ROAD) SHALL BE INSTALLED BY USING AIRLANCE OR PUSH-PULL METHOD APPROVED BY COUNTY.
  - LOCATE WIRE AND LOCATE TAPE (TWO TYPES) SHALL BE ON ALL PIPES.

**TYPICAL WATER SERVICE ROADWAY CROSSING DETAIL**

N.T.S.

VOLUSIA CO. FIG. 1-

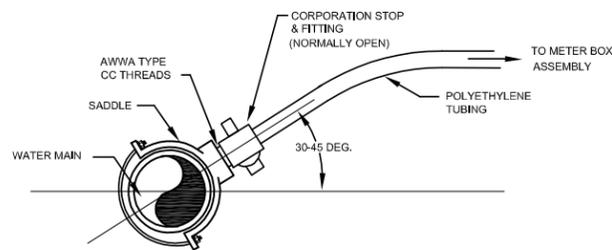


- NOTES:
- FIRE HYDRANT SHALL BE SUPPLIED WITHOUT WEEP HOLE, OR WITH A PERMANENTLY PLUGGED WEEP HOLE.
  - FIRE HYDRANT SHALL MEET VOLUSIA COUNTY SPECIFICATIONS.
  - ALL FIRE HYDRANT PIPING SHALL BE RESTRAINED BY MEGA-LUGS. FIRE DEPARTMENT SHALL INSPECT THE FIRE HYDRANT INSTALLATION.
  - RESTRAINED JOINT AS REQUIRED
  - LOCATE WIRE AND LOCATE TAPE (TWO TYPES) SHALL BE ON ALL PIPES.

**FIRE HYDRANT ASSEMBLY DETAIL**

N.T.S.

VOLUSIA CO. FIG. 1-

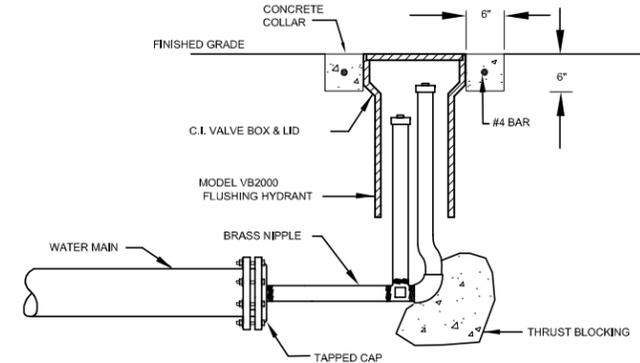


- NOTES:
- ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/GRIPPER TYPE CONNECTIONS.
  - NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
  - ALL WATER SERVICE CONNECTIONS SHALL TERMINATE AT THE SIDE PROPERTY LINE UNLESS OTHERWISE APPROVED BY THE WATER DEPT. WHICH SHALL BE BURIED APPROXIMATELY 3" BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2" x 2" x 3" STAKE WITH THE TOP PAINTED BLUE AND MARKED WITH THE NUMBER OF THE LOT(S) TO BE SERVED.
  - ALL WATER MAINS SHALL BE EITHER A BLACK OR BLUE AND SHALL BE MARKED WITH EITHER A BLUE STAKE OR SERVICE BOX.
  - SERVICES SHALL BE ETCHED INTO THE CURB.

**WATER SERVICE CONNECTION DETAILS**

N.T.S.

VOLUSIA CO. FIG. 1-

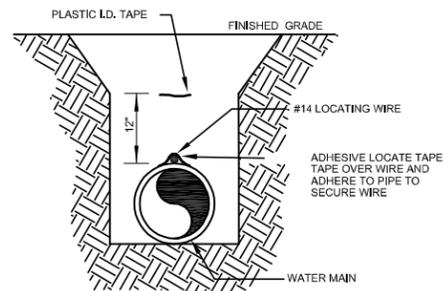


LOCATE WIRE AND LOCATE TAPE (TWO TYPES) SHALL BE ON ALL PIPES.

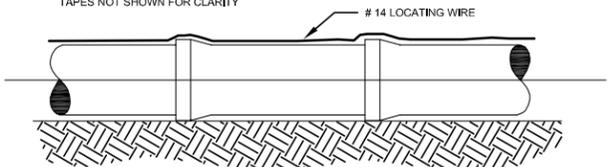
**BLOW-OFF VALVE DETAIL**

N.T.S.

VOLUSIA CO. FIG. 1-



NOTE:  
 TAPES NOT SHOWN FOR CLARITY

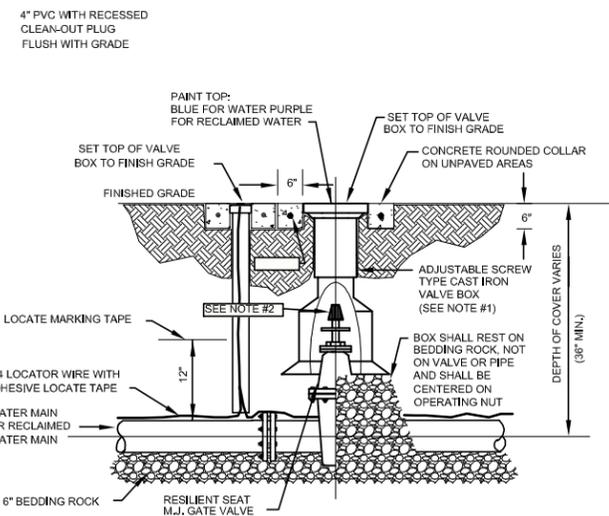


- NOTES:
- PVC PIPE SHALL REQUIRE INSULATED METALLIC LOCATING WIRE (14 GAUGE COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE BURIED DIRECTLY ABOVE CENTERLINE OF PIPE.
  - LOCATING WIRE SHALL TERMINATE AT THE TOP OF EACH VALVE BOX AND BE CAPABLE OF EXTENDING 12" ABOVE TOP OF BOX IN SUCH A MANNER SO AS NOT TO INTERFERE WITH VALVE OPERATION.
  - USE DUCT TAPE, WIRE TIES OR I.D. TAPE AS NECESSARY TO HOLD WIRE DIRECTLY ON THE TOP OF THE PIPE.
  - LOCATE WIRE AND LOCATE TAPE (TWO TYPES) SHALL BE ON ALL PIPES.

**PVC PIPE LOCATING WIRE DETAIL**

N.T.S.

VOLUSIA CO. FIG. 1-

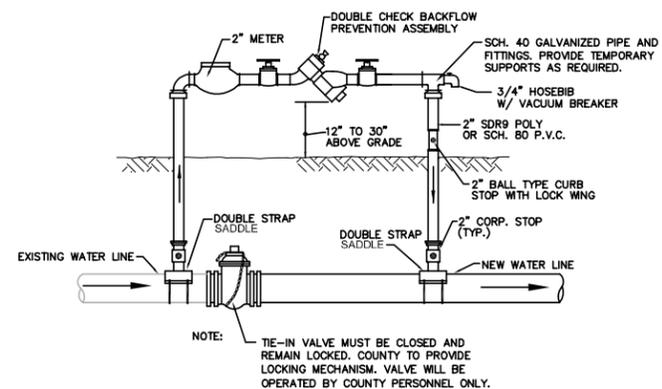


- NOTES:
- PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
  - THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 2-3 FOOT DEPTH BELOW FINISHED GRADES.
  - LOCATE WIRE AND LOCATE TAPE (TWO TYPES) SHALL BE ON ALL PIPES.

**GATE VALVE AND BOX DETAIL**

N.T.S.

VOLUSIA CO. FIG. 1-

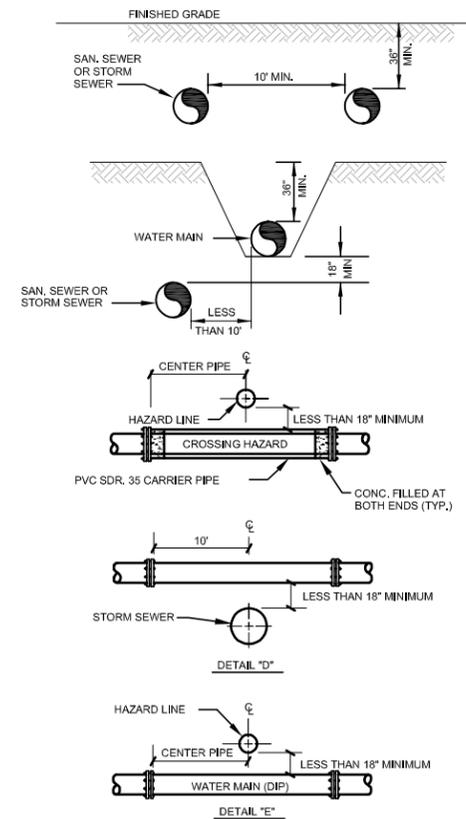


NOTE: TIE-IN VALVE MUST BE CLOSED AND REMAIN LOCKED. COUNTY TO PROVIDE LOCKING MECHANISM. VALVE WILL BE OPERATED BY COUNTY PERSONNEL ONLY.

**TEMPORARY JUMPER CONNECTION DETAIL**

LOCATION TO BE DETERMINED AT TIME OF PRECONSTRUCTION CONFERENCE W/ UTILITY.

VOLUSIA CO. FIG. 1-



LOCATE WIRE AND LOCATE TAPE (TWO TYPES) SHALL BE ON ALL PIPES.

**WATER MAIN SEPARATION DETAILS**

VOLUSIA CO. FIG. 1-

No.	Date	Revision	By	No.	Date	Revision	By

**cph** A Full Service A & E Firm

Architects M / E / P  
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Designed by: RRR Date: 01/2015  
 Drawn by: DT Scale: N.T.S.  
 Checked by: JDO  
 Approved by: RRR  
 Job No. D8519 ©2015

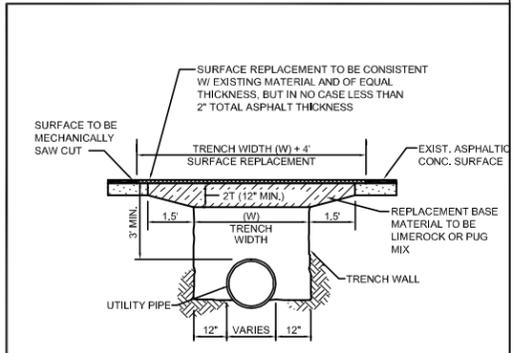
FORT FLORIDA ROAD, 15TH STREET  
 AND RIVER DRIVE  
 WATER MAIN EXTENSION  
 CITY OF DEBAR

Plans Prepared By:  
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 500 West Fulton St., Sanford, FL 32771  
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Rocco R. Nasso P.E.  
 FL P.E. No. 64727

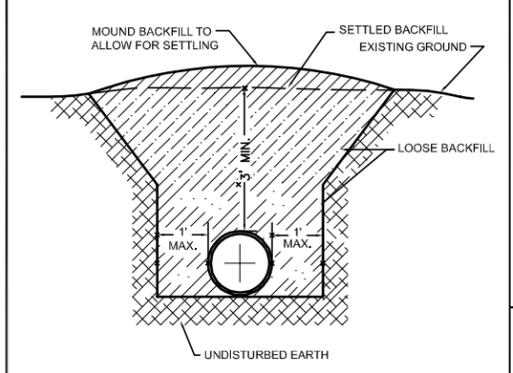
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- NOTES:**
- BACKFILL SHALL BE PLACED IN 6" LAYERS FROM BENEATH THE HAUNCHES OF THE PIPE TO THE BASE AND COMPACTED TO 98% DENSITY PER AASHTO T-180 MODIFIED PROCTOR.
  - BASE MATERIALS TO BE PLACED IN TWO OR THREE LAYERS ROLLED AND TAMPED TO ABOVE SPECIFIED DENSITY.

**STANDARD ROADWAY OPEN CUT DETAIL**



- NOTES**
- PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH BY UNDISTURBED EARTH. DIG OUT HOLLOW AT PIPE BELL.
  - TRENCH SHALL BE DRY DURING PLACEMENT
  - BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK, STICKS, ROOTS & OTHER DEBRIS.
  - ALL BACKFILL SHALL BE COMPACTED TO 95% DENSITY OF AASHTO T-180 MODIFIED PROCTOR.

**TYPICAL TYPE I TRENCH DETAIL**

VOL. UTL. STD. (FIG. 1001)

**PIPE RESTRAINT FOR PVC PIPE (C-900/C-905 DR 18)**  
MINIMUM RESTRAINED LENGTH (FT) - EACH SIDE OF FITTING

FITTING TYPE	PIPE SIZE - INCHES									
	4	6	8	10	12	14	16	18	20	24
VERT. UP OR HORIZ	2	3	4	5	6	6	7	8	9	10
11-1/4 BEND	2	3	4	5	6	6	7	8	9	10
22-1/2 BEND	5	6	8	10	12	13	15	16	17	20
45 BEND	10	13	17	21	24	27	30	33	36	41
90 BEND	23	32	42	50	58	66	73	80	87	100
VERTICAL DOWN										
11-1/4 BEND	6	8	10	12	14	16	18	20	22	25
22-1/2 BEND	11	16	20	24	28	32	36	40	43	50
45 BEND	23	33	42	51	59	67	75	83	91	105
90 BEND	56	79	102	122	143	163	182	201	219	253
BRANCH OF TEE	20	41	63	83	103	129	141	159	177	210
DEAD END	56	79	102	122	143	163	182	201	219	253
REDUCERS										
SIZE	6X4	8X4	8X6	10X6	10X8	12X6	12X8	12X10	14X8	14X8
RESTR. LENGTH	41	74	43	76	41	106	77	42	133	108
SIZE	16X6	16X8	16X12	18X8	18X12	18X16	20X12	20X16	24X12	24X16
REST. LENGTH	159	137	79	163	111	41	111	141	78	194

**PIPE RESTRAINT FOR D.I. PIPE**  
MINIMUM RESTRAINED LENGTH (FT) - EACH SIDE OF FITTING

FITTING TYPE	PIPE SIZE - INCHES									
	4	6	8	10	12	14	16	18	20	24
VERT. UP OR HORIZ	2	3	4	4	5	6	6	7	8	10
11-1/4 BEND	2	3	4	4	5	6	6	7	8	10
22-1/2 BEND	4	6	7	9	10	12	13	14	16	21
45 BEND	8	12	15	18	21	24	27	30	32	44
90 BEND	20	29	37	44	52	59	65	72	78	90
VERTICAL DOWN										
11-1/4 BEND	4	6	8	9	11	12	14	15	17	23
22-1/2 BEND	8	12	15	19	22	25	28	31	34	46
45 BEND	17	25	32	39	45	52	58	64	70	82
90 BEND	42	60	77	94	109	125	140	155	169	197
BRANCH OF TEE	15	31	48	63	79	94	108	123	136	164
DEAD END	42	60	77	94	109	125	140	155	169	197
REDUCERS										
SIZE	6X4	8X4	8X6	10X6	10X8	12X6	12X8	12X10	14X8	16X6
RESTR. LENGTH	31	57	33	59	32	82	59	32	103	84
SIZE	16X12	18X12	18X16	20X12	20X16	24X12	24X16	30X12	30X16	36X12
REST. LENGTH	60	86	32	109	60	150	110	152	151	130

- NOTES**
- INCREASE RESTRAINED LENGTH WHEN TEST PRESSURES EXCEED 150 PSI
  - RESTRAINED LENGTH BASED ON USING DUCTILE IRON FITTINGS.
  - RESTRAINED LENGTHS SHOWN ARE BASED ON LAYING CONDITION 3, AND MINIMUM COVER OF 3 FT.
  - RESTRAINED LENGTH BASED ON SAND-SILT SOILS, INT. FRICTION ANGLE = 30, DENSITY = 90 PCF PIPE TO SOIL FRICTION RATIO OF 0.6 (PVC), 0.75 (DI), PIPE TO SOIL COHESION RATIO OF 0 (PVC AND DI) ADJUST RESTRAINED LENGTHS FOR DIFFERENT SOIL TYPES.
  - INCREASE DP RESTRAINED LENGTH WHEN USING POLYETHYLENE ENCASEMENT.
  - TEE RESTRAINT IS BASED ON A MAXIMUM DISTANCE BETWEEN FIRST JOINTS OF 20 FEET. SHOULD THIS DISTANCE INCREASE, DECREASE THE RESTRAINED LENGTH.
  - TEE RESTRAINT SHOWN IS FOR NON-REDUCING TEES. FOR REDUCING TEES, THE RESTRAINED LENGTH OF THE BRANCH SHALL BE EITHER THE LENGTH BASED ON THE DIAMETER OF THE RUN OF THE TEE OR THE LENGTH REQUIRED FOR A REDUCER FITTING, WHICHEVER IS GREATER.
  - ALL PROPOSED REVISIONS TO THE ABOVE SHALL BE APPROVED BY THE ENGINEER.
  - THE SAFETY FACTOR UTILIZED FOR THE ABOVE TABLE IS 1.5.

**RESTRAINED JOINT TABLE**

N.T.S.

**MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS**

PROPOSED UTILITY	MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS									
	POTABLE WATER		RECLAIMED WATER		SANITARY SEWER FORCE MAIN		SANITARY SEWER GRAVITY MAN		STORM SEWER OR VACUUM TYPE SANITARY SEWER	
	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
POTABLE WATER	--	--	3'	12"	6'	12"	6"	12"	6" ABOVE 12" BELOW	3'
RECLAIMED WATER	3'	12"	--	--	3'	12"	3'	12"	--	--
SANITARY SEWER FORCE MAIN	6'	12"	3'	12"	--	--	--	--	--	--
SANITARY SEWER GRAVITY MAN	6"	6" ABOVE 12" BELOW	3'	12"	--	--	--	--	--	--
FIRE HYDRANT WATERFORGEOUND DEBRIS	--	--	3'	--	6'	--	6'	--	3'	--
STORM SEWER OR VACUUM TYPE SANITARY SEWER	3'	6" ABOVE 12" BELOW	--	--	--	--	--	--	--	--

- THE TABLE REPRESENTS THE MINIMUM SEPARATION REQUIREMENTS AS DESCRIBED IN F.D.E.P. RULES PER THE FLORIDA ADMINISTRATION CODE (F.A.C.). THESE SEPARATION REQUIREMENTS SHALL APPLY BETWEEN NEWLY PROPOSED UTILITY LINES AND EXISTING OR PROPOSED UTILITY LINES.
- FOR THE PURPOSE OF THIS TABLE RECLAIMED WATER SHALL MEAN UNRESTRICTED PUBLIC ACCESS REUSE WATER AS DEFINED BY F.A.C. 62B-10. OTHER TYPES OF RECLAIMED WATER ARE CONSIDERED RAW SEWAGE AND SEPARATION LISTED FOR SANITARY SEWER SHALL APPLY.
- ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
- THE MINIMUM HORIZONTAL SEPARATION BETWEEN POTABLE WATER AND GRAVITY SANITARY SEWER MAY BE REDUCED TO 3 FEET IF THE BOTTOM OF THE WATER MAIN IS LOCATED AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SEWER.
- AT UTILITY CROSSINGS ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED ABOVE OR BELOW THE OTHER UTILITY PIPELINE MAXIMIZING THE SEPARATION OF PIPELINE JOINTS. ALTERNATIVELY, WATER MAIN JOINTS MUST BE:
  - AT LEAST 3' FROM ALL JOINTS IN VACUUM TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR UNRESTRICTED PUBLIC ACCESS RECLAIMED WATER.
  - AT LEAST 6' FROM ALL JOINTS IN GRAVITY OR PRESSURE SANITARY SEWERS, WASTEWATER FORCE MAINS, AND ALL OTHER TYPES OF RECLAIMED WATER.
- NO WATER PIPE SHALL PASS THROUGH OR BE CONSTRUCTED TOUCHING ANY PART OF A SANITARY MANHOLE OR STORM SEWER MANHOLE OR INLET STRUCTURE.
- NEW OR RELOCATED WATER MAINS AND FIRE HYDRANTS WITH UNDERGROUND DRAINS MUST BE AT LEAST 10 FEET FROM ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT SYSTEM" (OSTADS) AS DEFINED IN SECTION 381.98(5)(2), F.S., AND RULE 64E-6.002 F.A.C. EXAMPLES OF OSTADS INCLUDE SEPTIC TANKS, DRAINFIELDS, AND GREASE TRAPS.
- THE FOLLOWING ARE ACCEPTABLE ALTERNATIVE CONSTRUCTION VARIANCES WHERE IT IS NOT POSSIBLE TO MEET THE SEPARATION REQUIREMENTS, AND ARE ONLY TO BE IMPLEMENTED UPON RECEIPT OF EXPRESSED WRITTEN CONSENT FROM THE ENGINEER AND APPROVAL FROM FDEP ON A CASE BY CASE BASIS. IMPLEMENTATION OF THESE MEASURES WITHOUT THE EXPRESSED WRITTEN CONSENT OF THE ENGINEER AND APPROVAL BY FDEP COULD RESULT IN THE REQUIREMENT THAT THE INSTALLED UNAPPROVED MEASURES BE REMOVED AND REPLACED AT NO COST.
  - WHERE A WATER MAIN IS BEING LAD LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE AND/OR WHERE A WATER MAIN CROSSING HAS LESS THAN THE MINIMUM REQUIRED DISTANCE BETWEEN JOINTS:
    - USE OF PRESSURE RATED PIPE CONFORMING TO ANYWA STANDARDS, FOR A GRAVITY OR VACUUM TYPE PIPE LINE.
    - USE OF WELDED, FUSED OR OTHERWISE RESTRAINED JOINTS FOR EITHER PIPE.
    - USE OF WATER TIGHT CASING PIPE OR CONCRETE ENCASEMENT AT LEAST 4" THICK FOR EITHER PIPE.
  - WHERE A WATER MAIN IS BEING LAD LESS THAN 3 FEET HORIZONTALLY FROM ANOTHER PIPE LINE AND/OR WHERE A WATER MAIN IS BEING LAD WITH LESS THAN THE REQUIRED MINIMUM VERTICAL SEPARATION:
    - USE OF PIPE OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (AT LEAST EQUAL TO 0.25" THICK D.I.P.), OR CONCRETE ENCASEMENT AT LEAST 4" THICK FOR THE WATER MAIN AND THE OTHER PIPELINE IF THE OTHER PIPE LINE CONVEYS WASTEWATER OR RECLAIMED WATER.

**MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS**

N.T.S.

No.	Date	Revision	By	No.	Date	Revision	By
1				1			
2				2			
3				3			

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• Puerto Rico	Checked by:	JDO		
• Connecticut	Approved by:	RRN		
• Maryland	Job No.:	D8519		
• Texas				

FORT FLORIDA ROAD, 15TH STREET  
AND RIVER DRIVE  
WATER MAIN EXTENSION  
CITY OF DEBARY

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**UTILITY DETAILS**

Drawing name: J:\D8519\Civil\DWG\Design\12 in All-8in\11 - D8519 12in Utility Detail.dwg Dec 17, 2015 - 10:39am dtucker