

February 16, 2018

BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
IFB NO. Y18-719-TA/ ADDENDUM NO. 2

JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS

BID OPENING DATE: ~~February 22, 2018~~ March 15, 2018

This Addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to and shall take precedence over the original documents. Additions are indicated by underlining, deletions are indicated by ~~strikethrough~~.

A. CLARIFICATIONS

1. Q: Please clarify bid item #3 as the schedule of values states “Bid Item #3 (Minimum of 1% of Items 7 thru 69)” and the specification Measurement & Payment states “Not to Exceed 1% of bid price from Bid items 7 thru 66)”.

A: The lump sum bid for Item #3 shall be a minimum of 1% of the total bid price for Bid Items 7 through 76 in accordance with the revised Bid Schedule and revised Measurement and Payment description.

2. Q: Please clarify the specification for the pipe bedding material required for the project. Section 02662 3.01 1) references pipe bedding per section 02220. There does not appear to be a specification section 02220, however there is section 02202 which addresses excavation, bedding and backfill. Specification section 02202, part 2.01, sentence 6 address granular pipe bedding material and calls for crushed stone or crushed gravel 3/4” to #4 stone for pipe bedding.

A: The reference to specification 02220 is an error/typo. The reference should have been for specification 02202 *Excavating, Trenching, and Backfilling*.

3. Q: It’s likely that some of the magnolia trees will not survive transplanting. Can the contractor opt to remove and replace the 13 magnolia trees called to be removed and relocated in Bid Item #69 so that a warranty on these plant materials can be maintained?

A: Magnolia trees shall be removed and relocated in accordance with the Measurement and Payment description of Bid Item #69. The selected Contractor may submit a Value Engineering change request to Orange County Utilities upon award of the Contract.

4. Q: Is all DIP associated with the project to be poly wrapped?

A: Yes, all proposed buried ductile iron pipe shall be encased in polyethylene wrap in accordance with specification section 15062 – *Ductile Iron Pipe and Fittings*.

5. Q: Are there any work hour restrictions along the pipe route or associated with the restorations (including mill and overlay)?

A: The Contractor is responsible for submission of a traffic control plan to Orange County Public Works for their review and approval. Any requirements of the traffic control plan (work hour restrictions) are at the discretion of Orange County Public Works. There are currently no work hour restrictions.

6. Q: Will bid items and quantities be provided for temp and permanent line striping?

A: Pavement markings, both temporary and permanent as required by Orange County Public Works, are included under Specification Section 01025 - *Measurement and Payment*, Bid Items 57 and 58 – *Asphalt Pavement Removal and Replacement*.

7. Q: Based on the information provided at the pre-bid meeting, what is the new deadline for questions associated with the project bid?

A: In accordance with item J, page C-3, Questions must be received ten days prior to bid opening. Bid opening date has been revised to **3/15/18**.

8. Q: Technical Specifications – Appendix C cover page indicates that the following permits have been obtained by the County:

- **Utility Permit for Crossing State Road 417,**
 - **Utility Permit for Crossing State Road 528,**
 - **Valencia Water Control Dist. Permit for Crossing Canal C-11.**
- These permits are not included in Appendix C. Please provide a copy of the three permits mentioned above?**

A:

- The Utility Permit application for crossing State Road 417 has been submitted to the FDOT/Central Florida Expressway Authority and is currently being reviewed. The permit will be provided upon issuance.
- The Utility Permit application for crossing State Road 528 was submitted to FDOT/Florida's Turnpike Enterprise (FTE). FTE is not issuing Utility Permits for work in the vicinity JYP/SR528 until the completion of the current road work of SR 528. The SR 528

Beachline Widening Project (I-4 to Turnpike) has a completion date of 11/06/18 with a 200 day incentive/disincentive period.

- The Valencia Water Control District Permit has been issued and is attached and labeled this Addendum No. 2.

9. Q: **Measurement and Payment provisions for Bid Item 32 Install Steel Casing Pipe by Open Cut Installation: “Payment will be made at the contract unit price bid per linear feet as stated in the proposal for the open cut installation of 42-inch steel casing pipe, and shall include the subsequent installation of the 24-inch ductile iron water main (paid for separately by the linear foot as Bid Item No. 12 – Furnish and Install 24-inch DI Reclaimed Water Main). Payment for this item shall also include furnishing and installing mechanically restrained joints, casing spacers and end seals to be attached to the 24-inch ductile iron pipe to be installed within the 42-inch steel casing pipe installation as part of this pay item”**

The above wording is confusing and may lead to future interpretation conflicts. The underlined sentences appear to contradict each other. Please clarify if the 24” DIP carrier pipe is included in this Bid Item # 32 or if it will be paid for under Bid Item # 12.

- A: The material cost for the 24-inch DI carrier pipe shall be paid for under bid item #12. Any cost associated with the installation of the carrier pipe within the casing (that is installed by open-cut construction methods) and furnishing and installing restrained joints on the carrier pipe, casing spacers and end seals shall be paid for under bid item #32.

10. Q: **Will FPVC pipe be allowed for the Directional Drills?**

- A: No, fusible PVC pipe will not be allowed for the Directional Drills. Bid in accordance with the Project Drawings.

11. Q: **Why was the bid opening for the *John Young Parkway Reclaimed Water Main Improvements* project postponed?**

- A: Orange County Utilities (OCU) has opted to add additional work to the project.

B. IFB-Y18-719-TA BID SCHEDULE

Delete: Delete the ~~IFB-Y18-719-TA Bid Schedule~~ in its entirety.

Add: Add in its place IFB-Y18-719-TA Bid Schedule, attached and labelled this Addendum No. 2.

IMPORTANT: Failure to submit your bid with the “Revised Bid Schedule” per this Addendum 2
Y18-719-TA
February 16, 2018

Addendum shall be cause for your bid to be rejected as non-responsive.

C. PROJECT MANUAL

TABLE OF CONTENTS

Delete: Delete the ~~Table of Contents~~ in its entirety.

Add: Add in its place Table of Contents, attached and labelled this Addendum No. 2.

SPECIFICATION SECTION 01010 – SUMMARY OF WORK

Delete: Delete ~~Specification Section 01010 – Summary of Work~~ in its entirety.

Add: Add in its place “Specification Section 01010 – Summary of Work”, attached and labelled this Addendum No. 2.

SPECIFICATION SECTION 01015 – SPECIAL PROJECT PROCEDURES

Delete: Delete ~~Specification Section 01015 – Special Project Procedures~~ in its entirety.

Add: Add in its place “Specification Section 01015 – Special Project Procedures”, attached and labelled this Addendum No. 2.

SPECIFICATION SECTION 01025 – MEASUREMENT AND PAYMENT

Delete: Delete ~~Specification Section 01025 – Measurement and Payment~~ in its entirety.

Add: Add in its place “Specification Section 01025 – Measurement and Payment”, attached and labelled this Addendum No. 2.

SPECIFICATION SECTION 01516 – COLLECTION SYSTEM BYPASS

Add: Add “Specification Section 01516 – Collection System Bypass”, attached and labelled this Addendum No. 2.

SPECIFICATION SECTION 02661 – WASTEWATER FORCE MAINS

Add: Add “Specification Section 02661 – Wastewater Force Mains”, attached and labelled this Addendum No. 2.

SPECIFICATION SECTION 02662 – RECLAIMED WATER TRANSMISSION SYSTEM

Page 02662-3, Paragraph 3.01, A.1

Addendum 2

Y18-719-TA

February 16, 2018

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Delete: Delete the first sentence, "~~Pipe Cradle: Upon satisfactory installation of the pipe bedding material as specified in Section 02220 "Excavating, Backfilling and Compacting", a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging.~~"

Add: Add in its place the following sentence: "Pipe Cradle: Upon satisfactory installation of the pipe bedding material as specified in Section 02202 "Excavating, Trenching, and Backfilling", a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging."

SPECIFICATION SECTION 02668 – LINE STOPS/BYPASS ON FORCE MAIN SYSTEMS

Add: Add "Specification Section 02668 – Line Stops/Bypass on Force Main Systems", attached and labelled this Addendum No. 2.

SPECIFICATION SECTION 15110 – PLUG VALVES

Add: Add "Specification Section 15110 – Plug Valves", attached and labelled this Addendum No. 2.

APPENDIX C, PERMITS OBTAINED BY COUNTY

Add: Add the "Valencia Water Control District – Permit 0501", attached and labelled this Addendum No. 2.

D. PROJECT DRAWINGS

JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS DRAWINGS

Add: Add the Component Drawings titled "John Young Parkway Reclaimed Water Main Improvements – 30-inch Force Main Replacement", attached and labelled this Addendum No. 2. Component drawings shall be added to the back of the *John Young Parkway Reclaimed Water Main Improvements* drawings.

E. BID OPENING DATE

Bid Opening Date is changed from ~~February 22, 2018~~ to March 15, 2018.

F. ACKNOWLEDGEMENT OF ADDENDA

- a. The Bidder shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of proposal.
- b. All other terms, conditions and specifications remain the same.
- c. Receipt acknowledged by:

Authorized Signature

Date Signed

Title

Name of Firm

**To the Board of County Commissioners
Orange County, Florida**

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized himself with the local conditions, nature and extent of the work, and having examined carefully the Contract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: **JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS** in full accordance with the drawings and specifications prepared in accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following ESTIMATED TOTAL BASE BID.

It is understood that this is a unit price Contract and the resultant Contract will contain estimated quantities, unit prices, extended totals and that the Estimated Total Base Bid is the sum of all pay item totals from the schedule of prices, Page D-3 through D-6.

The Contract resulting from this solicitation is based on estimated quantities. The contractor shall only be paid for materials installed in the work in accordance with the applicable unit prices for the specific work element (line item). No payment shall be made for excess materials delivered to the jobsite and not incorporated into the work. Therefore, it shall be the contractor's responsibility to determine the quantities of materials necessary to perform the project to its completion.

ESTIMATED TOTAL BASE BID:

_____ DOLLARS
(In Words)

\$ _____

In the event the Contract is awarded to this Bidder, he/she will enter into a formal written agreement with the County in accordance with the accepted bid within ten (10) calendar days after said Contract is submitted to him/her and will furnish to the County a Contract Payment and Performance Bond with good and sufficient sureties, satisfactory to the County, in the amount of 100% of the accepted bid. The Bidder further agrees that in the event of the Bidder's default or breach of any of the agreements of this proposal, the said bid deposit shall be forfeited as liquidated damages.

Failure of the Bidder to provide pricing for all unit priced items and/or the Base Bid and ALL requested additive/deductive bid items, or alternate bids shall be cause for rejection of the bid as non-responsive.

IFB Y18-719-TA REVISED BID SCHEDULE

ITEM NUMBER	DESCRIPTION	UNITS	EST'D. QTY.	UNIT PRICE	TOTAL PRICE
1.	Mobilization, Demobilization, General Requirements, Bonds and Permits (Limited to 5% of Total Bid of items 7 through 76)	LS	1		
2.	Indemnification	LS	1	\$100.00	\$100.00
3.	Project Record Documents (Minimum of 1% of Items 7 through 76)	LS	1		
4.	Preconstruction Audio/Video Documentation	LS	1		
5.	Maintenance of Traffic	LS	1		
6.	Public Information Officer	LS	1		
7.	Erosion and Sedimentation Control	LS	1		
8.	Clearing, Grubbing and Stripping	LS	1		
9.	Furnish and Install 4-inch DI Reclaimed Water Main	LF	35		
10.	Furnish and Install 6-inch DI Reclaimed Water Main	LF	50		
11.	Furnish and Install 12-inch DI Reclaimed Water Main	LF	90		
12.	Furnish and Install 24-inch DI Reclaimed Water Main	LF	17,034		
13.	Furnish and Install 4-inch Gate Valve	EA	1		
14.	Furnish and Install 6-inch Gate Valve	EA	2		
15.	Furnish and Install 12-inch Gate Valve	EA	3		
16.	Furnish and Install 24-inch Gate Valve	EA	25		
17.	Furnish and Install 16-inch Tapping Sleeve and Valve Assembly	EA	1		
18.	Cut in and Connect to Exist. 12" PVC Reclaimed Water Main, Station 176+15	EA	1		
19.	Cut in and Connect to Exist. 6" PVC Reclaimed Water Main, Station 190+97	EA	1		
20.	Cut in and Connect to Exist. 4" PVC Reclaimed Water Main, Station 197+07	EA	1		
21.	Cut in and Connect to Exist. 6" PVC Reclaimed Water Main, Station 207+50	EA	1		
22.	Cut in and Connect to Exist. 12" PVC Reclaimed Water Main, Station 234+53	EA	1		
23.	Cut in and Connect to Exist. 12" PVC Reclaimed Water Main, Station 266+04	EA	1		
24.	Cut in and Connect to Exist. 30" Gate Valve, Station 326+94	EA	1		
25.	Bore and Jack 42" Steel Casing Pipe with 24" DI Carrier Pipe: Sta. 129+23 to Sta. 130+18	LF	95		

26.	Bore and Jack 42" Steel Casing Pipe with 24" DI Carrier Pipe: Sta. 131+60 to Sta. 135+00	LF	341		
27.	Bore and Jack 42" Steel Casing Pipe with 24" DI Carrier Pipe: Sta. 136+58 to Sta. 137+14	LF	57		
28.	Bore and Jack 42" Steel Casing Pipe with 24" DI Carrier Pipe: Sta. 151+77, 70' L to Sta. 151+77, 71' R	LF	141		
29.	Bore and Jack 42" Steel Casing Pipe with 24" DI Carrier Pipe: Sta. 306+20 to Sta. 307+28	LF	108		
30.	Bore and Jack 42" Steel Casing Pipe with 24" DI Carrier Pipe: Sta. 320+90 to Sta. 321+89	LF	100		
31.	Bore and Jack 42" Steel Casing Pipe with 24" DI Carrier Pipe: Sta. 326+66, 91' L to Sta. 326+66, 80' R	LF	171		
32.	Install Steel Casing Pipe by Open Cut Installation	LF	24		
33.	Directional Drill 30" HDPE Reclaimed Water Main: Sta. 161+02 to Sta. 166+41	LF	182		
34.	Directional Drill 30" HDPE Reclaimed Water Main: Sta. 217+60 to Sta. 228+90	LF	1,130		
35.	Directional Drill 30" HDPE Reclaimed Water Main: Sta. 244+41 to Sta. 249+25	LF	484		
36.	Directional Drill 30" HDPE Reclaimed Water Main: Sta. 266+19 to Sta. 271+70	LF	558		
37.	Directional Drill 30" HDPE Reclaimed Water Main: Sta. 277+44 to Sta. 286+28	LF	850		
38.	Directional Drill 30" HDPE Reclaimed Water Main: Sta. 289+97 to Sta. 296+36	LF	634		
39.	Directional Drill 30" HDPE Reclaimed Water Main: Sta. 309+80 to Sta. 314+14	LF	533		
40.	Reclaimed Water Main Aerial Pipe Crossing Modification and Reinstallation: Station 202+30	LS	1		
41.	Furnish and Install Offset 2-inch Air Release Valve Assembly	EA	24		
42.	30-inch RCP Storm Pipe Removal and Replacement: Station 149+55, 68'R	EA	1		
43.	48-inch RCP Storm Pipe Removal and Replacement: Station 149+76, 68'R	EA	1		
44.	15-inch RCP Storm Pipe Removal and Replacement: Station 170+16, 75'L	EA	1		
45.	30-inch RCP Storm Pipe Removal and Replacement: Station 175+93, 77'L	EA	1		
46.	24-inch RCP Storm Pipe Removal and Replacement; Station 176+45, 67' L	EA	1		
47.	15-inch RCP Storm Pipe Removal and Replacement; Station 183+16, 67'L	EA	1		
48.	15-inch RCP Storm Pipe Removal and Replacement; Station 208+16, 72'L	EA	1		
49.	15-inch RCP Storm Pipe Removal and Replacement; Station 234+16, 77'L	EA	1		
50.	15-inch RCP Storm Pipe Removal and Replacement; Station 242+16, 78'L	EA	1		
51.	15-inch RCP Storm Pipe Removal and Replacement; Station 244+15, 78'L	EA	1		

52.	18-inch RCP Storm Pipe Removal and Replacement; Station 253+16, 80'L	EA	1		
53.	18-inch RCP Storm Pipe Removal and Replacement; Station 276+15, 108'L	EA	1		
54.	36-inch RCP Storm Pipe Removal and Replacement; Station 300+16, 111'L	EA	1		
55.	36-inch DUAL RCP Storm Pipes Removal and Replacement, including DUAL 36-inch Mitered End Section; Station 319+92, 88'L	EA	1		
56.	Asphalt Milling and Resurfacing	SY	4,675		
57.	Asphalt Pavement Removal and Replacement (longitudinal cuts)	SY	1,468		
58.	Asphalt Pavement Removal and Replacement (transverse cuts)	SY	335		
59.	FDOT Type F Conc. Curb Removal and Replacement	LF	283		
60.	FDOT Drop Curb Removal and Replacement	LF	72		
61.	Remove and Replace Conc. Sidewalk	SY	930		
62.	Abandon and Grout Fill Exist. 12-inch PVC Reclaimed Water Main in Place	LF	7,010		
63.	Remove Exist 4-inch PVC Reclaimed Water Main	LF	26		
64.	Remove Exist 6-inch PVC Reclaimed Water Main	LF	47		
65.	Remove Exist 12-inch PVC Reclaimed Water Main	LF	1,937		
66.	Furnish, Install and Maintain Sod	SY	46,353		
67.	Furnish, Install and Maintain Magnolia Trees	EA	35		
68.	Furnish, Install and Maintain Sand Cordgrass Shrubs	EA	135		
69.	Relocate Existing 6-inch Diameter Magnolia Trees	EA	13		
70.	Furnish and Install 24-inch DR 11 HDPE Bypass Piping and Fittings	LF	1,050		
71.	Furnish and Install 30-inch DR 18 PVC Force Main	LF	1,000		
72.	Furnish and Install 30-inch Plug Valve	EA	2		
73.	Furnish and Install 30-inch Line Stop w/ 24-inch Bypass Outlet	EA	2		
74.	Furnish and Install 6-inch Combination Air Release Valve Assembly	EA	1		
75.	Remove Existing 30-inch Ductile Iron Force Main	LF	1,000		
76.	Furnish, Install and Maintain Drake Elm Trees	EA	18		
TOTAL ESTIMATED BID				\$ _____	

The Bidder hereby agrees that there is attached:

- | | | | |
|-----|---|-----|-------------|
| 1. | Non-Collusion Affidavit, Attachment A | Yes | ___ |
| 2. | Required Disclosure, Attachment B | Yes | ___ |
| 3. | M/WBE Forms | | |
| | Employment Data, Attachment C-1 | Yes | ___ |
| | Subcontractor/Supplier Page, Attachment C-2 | Yes | ___ |
| | Good Faith Effort, Attachment C-4 | Yes | ___ No ___ |
| 4. | Trench Safety Act Form, Attachment D | Yes | ___ N/A ___ |
| 5. | Drug-Free workplace Form | Yes | ___ |
| 6. | Bid Bond on Form in Exhibit 1 or Cashier's Check
(10% of Base Bid) | Yes | ___ N/A ___ |
| 7. | Original Bid Form (marked "Original") & 3
complete copies with all attachments | Yes | ___ |
| 8. | References, Attachment E | Yes | ___ |
| 9. | Licenses | Yes | ___ N/A ___ |
| 10. | Current W9 | Yes | ___ |
| 11. | Project Expenditure Report, Attachment F | Yes | ___ |
| 12. | Relationship Disclosure Form, Attachment G | Yes | ___ |
| 13. | Verification of Employment Status, Attachment H | Yes | ___ |

ACKNOWLEDGEMENT OF ADDENDA

The Bidder shall acknowledge receipt of any addenda issued to the solicitation by completing the blocks below or by completion of the applicable information on the addendum and returning it not later than the date and time for receipt of the bid. Failure to acknowledge an addendum that has a material impact on the solicitation may negatively impact the responsiveness of your bid. Material impacts include but are not limited to changes to specifications, delivery time, performance period, quantities, bonds, letters of credit, insurance, qualifications, etc.

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

If awarded this construction Contract, the Bidder agrees to complete the work covered by this Contract as follows:

1. Work shall start at the project site within fourteen (14) days of the effective date of the Notice to Proceed.
2. Substantially complete in **540** consecutive calendar days from date of Official Notice to Proceed.
3. Final completion in **570** consecutive calendar days from date of Official Notice to Proceed.
4. Should the Successful Bidder fail to complete work as specified, the liquidated damage clause will apply (Part E, Contract).

The Bidder hereby agrees that the County reserves the right to waive informalities in any bid and to reject any or all bids, or to accept any bid that in its judgment will be for the best interest of the County.

**JOHN YOUNG PARKWAY
RECLAIMED WATER MAIN IMPROVEMENTS PROJECT**

**TECHNICAL SPECIFICATIONS
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DIVISION 1 – GENERAL REQUIREMENTS

01001	General Work Requirements
01010	Summary of Work
01015	Special Project Procedures
01021	Soils Report and Other Information
01025	Measurement and Payment
01027	Application for Payment
01050	Surveying and Field Engineering
01065	Permits and Fees
01200	Project Meetings
01300	Submittals
01301	Product Substitutions
01310	Progress Schedules
01370	Schedule of Values
01380	Audio-Visual Documentation
01400	Quality Control
01410	Testing and Testing Laboratory Services
01516	Collection System Bypass
01560	Erosion and Sedimentation Control
01570	Maintenance of Traffic
01580	Project Identification and Signs
01590	Construction Field Office
01610	Delivery, Storage, and Handling
01700	Project Closeout
01720	Project Record Documents
01740	Warranties and Bonds

DIVISION 2 – SITE WORK

02050	Demolition of Existing Structures
02080	Abandonment, Removal, and Salvage or Disposal of Existing Pipe
02100	Temporary Erosion and Sedimentation Control
02110	Clearing, Grubbing and Stripping
02140	Dewatering
02202	Excavating, Trenching, and Backfilling
02215	Finish Grading
02570	Stabilized Subgrade
02572	Soil Cement Base
02573	Asphalt Pavement Removal and Replacement

**JOHN YOUNG PARKWAY
RECLAIMED WATER MAIN IMPROVEMENTS PROJECT**

TECHNICAL SPECIFICATIONS

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02576	Concrete Sidewalks and Driveways
02578	Solid Sodding
02661	Wastewater Force Mains
02662	Reclaimed Water Transmission System
02665	Horizontal Directional Drilling of Pressure Mains
02667	Jacking and Boring Pipe
02668	Line Stops/Bypass on Force Main Systems
02670	Pressure Main Sample Collection

DIVISION 3 – CONCRETE

03100	Concrete Formwork
03200	Concrete Reinforcement
03300	Cast-in-Place Concrete
03600	Grouting

DIVISION 4 – MASONRY (NOT USED)

DIVISION 5 – METALS (NOT USED)

DIVISION 6 – WOOD AND PLASTICS (NOT USED)

DIVISION 7 – THERMAL AND MOISTURE PROTECTION (NOT USED)

DIVISION 8 – DOORS AND WINDOWS (NOT USED)

DIVISION 9 – FINISHES

09960	High Performance Ferrous Metal Coatings
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DIVISION 10 – SPECIALTIES (NOT USED)

DIVISION 11 – EQUIPMENT (NOT USED)

DIVISION 12 – FURNISHING (NOT USED)

DIVISION 13 – SPECIAL CONSTRUCTION (NOT USED)

DIVISION 14 – CONVEYING SYSTEMS (NOT USED)

**JOHN YOUNG PARKWAY
RECLAIMED WATER MAIN IMPROVEMENTS PROJECT
TECHNICAL SPECIFICATIONS**

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(Continued)**

DIVISION 15 – MECHANICAL

15062	Ductile Iron Pipe and Fittings
15064	Polyvinyl Chloride (PVC) Pressure Pipe
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15100	Ancillary Equipment
15110	Plug Valves
15111	Gate Valves

DIVISION 16 – ELECTRICAL (NOT USED)

APPENDICIES

APPENDIX A GEOTECHNICAL ENGINEERING REPORT

- Geotechnical Report (geotechnical investigation)
- Geotechnical Report (dewatering groundwater quality values)

APPENDIX B FORMS

- Pressure Test

APPENDIX C PERMITS OBTAINED BY COUNTY

- Utility Permit for Crossing State Road 417
- Utility Permit for Crossing State Road 528
- Valencia Water Control District Permit for Crossing Canal C-11

APPENDIX D LIST OF APPROVED PRODUCTS

- Orange County Utilities – List of Approved Products (February 11, 2011)

APPENDIX E EASEMENTS

- Parcel 701 – Temporary Construction Easement – Refer to Sheets U-9 and U-11
- Parcel 704 – Temporary Construction Easement – Refer to Sheet U-77
- Parcel 803 – Permanent Utility Easement – Refer to Sheet U-57

APPENDIX F ORANGE COUNTY PUBLIC WORKS TECHNICAL PROVISIONS

- TP 327 – Milling of Existing Asphalt Pavement
- TP 334 – Superpave Asphaltic Concrete Pavement

**JOHN YOUNG PARKWAY
RECLAIMED WATER MAIN IMPROVEMENTS PROJECT
TECHNICAL SPECIFICATIONS**

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APPENDIX G DEWATERING DISCHARGE OFF-SITE
FDEP Notice of New Method for Mercury Testing
FDEP Generic Permit for the Discharge of Produced Groundwater
Memo – EPA – Analytical Methods for Mercury in NPDES Permits
Orange County EPD Work Instruction

APPENDIX H STRUCTURAL ENGINEERING MEMO
Engineering Technologies Memo (April 12, 2016)

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. This Project comprises the construction of reclaimed water main and wastewater improvements along John Young Parkway from just north of Town Center Boulevard to the north side of the S.R. 528 Interchange and as shown on the Drawings and specified herein.
- B. The reclaimed water main portion of the Project generally includes, but is not limited to the following Work:
1. Furnish and install approximately 17,000 linear feet of 24-inch diameter DI reclaimed water main and associated appurtenances.
 2. Furnish and install approximately 175 linear feet of 4-inch, 6-inch and 12-inch diameter DI reclaimed water main and associated appurtenances.
 3. Furnish and install approximately 1,000 linear feet of 42-inch steel casing pipe with 24-inch DI reclaimed water main by seven (7) individual bore and jacks and associated appurtenances.
 4. Furnish and install approximately 4,400 linear feet of 30-inch HDPE reclaimed water main by seven (7) individual directional drills and associated appurtenances.
 5. Modification and reinstallation of the existing reclaimed water main aerial pipe crossing, approximately 120 linear feet.
 6. Removal and replacement of 15-inch, 18-inch, 24-inch, 30-inch, 36-inch, and 48-inch RCP storm pipe.
 7. Excavation, backfill and compaction for underground utilities.
 8. Removal of and/or placing out of service approximately 9,000 linear feet of existing 12-inch reclaimed water main.
 9. Furnish, install and maintain approximately 35 Magnolia trees and 135 Sand Cordgrass shrubs.
 10. Relocate and maintain approximately thirteen (13) 6-inch diameter Magnolia trees.
 11. Asphalt pavement removal, milling and resurfacing, and roadway striping.
 12. Testing of installed systems.
 13. Restoration and site clean-up.
- C. The force main replacement portion of the Project generally includes, but is not limited to the following Work:
1. Furnish and install a 30-inch double linestop with 24-inch bypass outlet on existing 30-inch force main including concrete thrust collars and concrete fitting supports.
 2. Furnish and install temporary barrier wall for protection of by-pass piping.
 3. Furnish and install temporary 6-foot chain link fence and gate(s) for security of by-pass piping.
 4. Furnish and install approximately 1,000 linear feet of 24-inch HDPE temporary

- above-grade bypass piping and fittings.
5. Remove existing approximately 1,000 linear feet of 30-inch DI force main from between line stops.
 6. Furnish and install two (2) 30-inch plug valves.
 7. Furnish and install approximately 1,000 linear feet of 30-inch PVC force main.
 8. Removal temporary bypass piping and line stops
 9. Excavation, backfill and compaction for underground utilities.
 10. Testing of installed systems.
 11. Furnish, install and maintain Drake Elm trees.
 12. Restoration, sidewalk and sod replacement, and site clean-up.

1.02 CONTRACTOR'S USE OF PREMISES

- A. The Contractor shall assume full responsibility for the protection and safekeeping of products and materials at the job site. If additional storage or work areas are required, they shall be obtained by the Contractor at no additional cost to the Owner.

1.03 SEQUENCE OF WORK

- A. The Contractor shall establish his work sequence based on the use of crews to facilitate completion of construction and testing within the specified Contract Time. Refer to Specification Section 01015 – Special Project Procedures for more detailed information regarding the sequence of work.
- B. The Contractor shall submit a schedule and work sequence to the Owner at least five (5) days prior to the Notice to Proceed. Work on all utility lines shall be accomplished so that all facilities will stay in operation.
 1. Construction of proposed force main replacement:
 - a. Install double line stops with bypass outlets.
 - b. Install concrete thrust collars and concrete fitting supports.
 - c. Install temporary HDPE bypass pipe and fittings.
 - d. Remove existing DI force main.
 - e. Install PVC force main and valves.
 2. Construction of proposed reclaimed water main:
 - a. Install proposed reclaimed water main including bore and jacks and directional drills.
 - b. Pressure test reclaimed water main.
 - c. Place reclaimed water main in service.
 3. Remove or abandon-in-place existing reclaimed water main.

1.04 PUBLIC UTILITY INSTALLATIONS AND STRUCTURES

- A. Some of the utility contacts are listed on the plans for the Contractor's convenience.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01015
SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.01 CONTRACTOR'S USE OF RIGHTS-OF-WAY

- A. The Work to be performed under this contract is located within Orange County, OOCEA, Florida's Turnpike and Hunters Creek Homeowners Association rights-of-way. The Contractor shall be required to coordinate with these right-of-way owners and perform all work in accordance with the OOCEA and Florida's Turnpike Utility Permits.

1.02 CONTRACTOR'S USE OF PREMISES

- A. The Contractor's use of premises shall be confined to the limits of the existing rights-of-way and temporary and permanent construction easements identified in the construction documents unless the Contractor obtains additional construction easements from the land owners adjacent to the project. The Contractor shall provide Orange County Utilities with copies of such construction easements or agreements before use.
- B. The Contractor is responsible for independently obtaining areas for long term storage and laydown of all materials and equipment. It shall be the Contractor's responsibility to pay for such areas and the cost is considered incidental to the Contract and no additional compensation shall be allowed. The Contractor shall not utilize the existing rights-of-way for anything more than daily laydown and daily storage of materials and equipment. Long term laydown and storage of materials and equipment within the project rights-of-way shall not be allowed.
- C. The Contractor shall assume full responsibility for the protection and safekeeping of materials and equipment stored on and off premises. Contractor shall not store materials that interfere with the rights-of-way owners, homeowners, businesses or others.
- D. The Contractor shall clean the construction area daily. The work site shall be kept free from accumulation of waste materials, rubbish and debris from and about the work site and shall be left clean and safe at all times. On a daily basis, all unused materials and equipment shall be returned to the Contractor's long-term storage and equipment area.

1.03 UTILITY COORDINATION AND RELOCATIONS

- A. The Contractor shall be responsible for the coordination, location, protection, and relocation of utilities, including but not limited to utility light poles, cables, fiber optic lines, water mains and services, reclaimed water mains and services, sewer mains and services, electrical, telephone and television cables, signals and signal poles, fences, guard rails, piping, culverts, conduits and drains that interfere with the positioning of the Work as set out in the Drawings. The cost of all such coordination, protection and

relocations shall be included in the Bid for the Project and shall not result in any additional cost to the Owner.

- B. It is the responsibility of the Contractor to ensure that all utility or other existing facilities, the stability of which may be endangered by the close proximity of the excavation for the Work, are temporarily held in position while the Work proceeds in the vicinity of the pole or other facilities and that the utility or other companies concerned be given reasonable advance notice of any such excavation by the Contractor in accordance with the requirements of the affected utility.
- C. Prior to proceeding with the excavation, the Contractor shall contact all utility companies and all other users of the rights-of-way in the area to aid in locating their underground services. It shall be the Contractor's responsibility to contact utility companies in accordance with the requirements of the affected utility or at least three (3) normal working days before starting construction, whichever is greater. The Contractor shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground utilities may be determined. The Contractor shall comply with Chapter 556 F.S., Underground Facility Damage Prevention and Safety Act; Chapter 553 F.S., Florida Trench Safety Act, Part IV; Chapter 368 F.S., Florida Gas Safety Law, Part 1; and OSHA Standard 1926.651.
- D. The Contractor shall take all reasonable precautions against damage to existing utilities. However, in the event of a damaging an existing utility, the Contractor shall immediately notify the responsible official of the organization operating the interrupted utility. The Contractor shall lend all possible assistance in restoring the services and shall assume all costs, charges, or claims connected with the interruption and repair of such services, as determined by and in accordance with the requirements of the affected utility.

1.04 DOCUMENTS INCORPORATED BY REFERENCE

- A. Divisions II and III of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction and FDOT Design Standards for Design, Construction, Maintenance, and Utility Operations on the State Highway System (latest editions) are hereby incorporated into these Contract Documents by reference and shall be complied with by Contractor.

1.05 LOCAL NOTIFICATION

- A. Local residential and business traffic (including Lynx bus service) shall be maintained at all times. If unable to do so, the Contractor shall be responsible for notification of affected residents and businesses (including Lynx) a minimum of two (2) weeks in advance of the start of any phase of construction, in writing, to coordinate alternate access arrangements. The Contractor shall provide copies of the notifications to the Orange County Inspector prior to distribution
- B. The Contractor shall be required to provide the services of a Public Information Officer in accordance with the requirements of Specification Section 01001 1.15 A.

1.06 SEQUENCE OF WORK

- A. Within 6 months of Notice to Proceed, the Contractor shall complete the construction of the 30-inch force main replacement from approximately Station 223+00 to Station 233+15.
- B. Within 6 months of Notice to Proceed, the Contractor shall complete the construction of the 42-inch reclaimed water main bore and jack across John Young Parkway at approximately Station 326+66. To facilitate the bore and jack construction, *Temporary Construction Easement 704* has been obtained and is provided in Appendix E of these specifications. In accordance with the Temporary Construction Easement, the Contractor shall provide a 60-day notification to the property owner prior to beginning work: FDG Flagler Station Land LLC, Attn. Kolleen O.P. Cobb, Vice President, 2855 Le Jeune Road, 4th Floor, Coral Gables, Florida 33134. All work occurring within the Temporary Construction Easement and restoration of said property must be completed within 6 weeks of beginning work within the Temporary Construction Easement.
- C. Work to be completed within Florida's Turnpike Enterprise (FTE) limited access right-of-way (S.R 528) has not been approved by FTE. FTE is not issuing Utility Permits for work occurring in the John Young Parkway and S.R. 528 vicinity until the completion of the SR 528 Project. The SR 528 Beachline Widening Project (I-4 to Turnpike) has a completion date of 11/06/18 with a 200 day incentive/disincentive period. Orange County Utilities will submit the FTE Utility Permit application at that time and provide to the Contractor upon issuance.
- D. With regard to the 24-inch reclaimed water main, the Contractor shall construct this project beginning at the southern project limits in the area of Town Center Boulevard and proceed northward until project completion. The Contractor shall establish his work sequence based on the use of crews to facilitate completion of construction and testing within the specified Contract Time.
- E. The Contractor shall construct no more than 1,500 linear feet of 24-inch reclaimed water main, pressure test, place the constructed 24-inch reclaimed water main into service, and completely restore the project rights-of-way to original condition before progressing to the construction of the next 1,500 linear foot segment of 24-inch reclaimed water main. This sequenced progressive procedure is necessary to maintain the general aesthetics of the project corridor, and because the Contractor shall be responsible for maintaining reclaimed water service to customer's connected to the existing 12-inch reclaimed water main during construction of the 24-inch reclaimed water main. Scheduled temporary shut downs of the existing 12-inch reclaimed water main shall be allowed provided the Contractor coordinate with the Orange County Inspector and the affected reclaimed water customers one (1) week in advance of each scheduled temporary shutdown.
- F. No more than two (2) turning lanes shall be closed at the same time for the purpose of constructing the reclaimed water main.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. This Section specifies administrative and procedural requirements to define pay items and determine payable amounts, and includes but is not limited to:
1. General Provisions
 2. Cash Allowances (Not Used)
 3. Work Not Paid for Separately
 4. Measurement for Payment
 5. Partial Payment for Stored Materials and Equipment

1.02 GENERAL PROVISIONS

- A. The total Contract Amount shall cover the Work required by the Contract Documents. All costs in connection with the successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.
- B. All estimated quantities stipulated in the Bid Schedule or other Contract Documents are approximate and are to be used only (a) for the purpose of comparing the bids submitted for the Work, and (b) as a basis for determining an initial Contract Amount. The actual amounts of Work completed and materials furnished under unit price items may differ from the estimated quantities. The County does not expressly or by implication represent that the actual quantities involved will correspond exactly to the quantities stated in the Bid Schedule; nor shall the Contractor plead misunderstanding or deception because of such estimate or quantities or of the character, location or other conditions pertaining to the Work. Payment to the Contractor will be made only for the actual quantities of work performed or material furnished in accordance with the Drawings and other Contract Documents, and it is understood that the quantities may be increased or decreased as provided in the General Conditions.
- C. The unit prices listed in the Bid Schedule shall include all services, obligations, responsibilities, labor, materials, devices, equipment, royalties and license fees, supervision, temporary facilities, construction equipment, bonds, insurance, taxes, clean up, traffic control, control surveys, field offices, close out, overhead and profit and all connections, appurtenances, and any other incidental items of any kind or nature, as are necessary to complete the Work in accordance with the Contract Documents.

- D. Except for mobilization/demobilization, payment for Work will be based on the percent of completed work of each item in the Schedule of Values, including stored materials, as determined by the County. Progress of work in each item of the Schedule of Values will be determined separately by the County. However, the County will issue a single payment certificate for progress on the Contract.
- E. The Contractor agrees that it will make no claim for damages, anticipated profits, or otherwise because of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefore.
- F. Where payment by scale weight is specified under certain items, the Contractor shall provide suitable weighing equipment which shall be kept in accurate adjustment at all times and certified. The weighing of all material shall be performed by the Contractor in the presence and under the supervision of the County.
- G. All schedules included in the Contract Documents are given for convenience and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in work to be done under this Contract.
- H. Where pipe fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve the Contractor from laying and jointing different or additional items where required.
- I. All contracts shall be subject to 10% minimum retainage as defined in the General Conditions and the Agreement.

1.03 CASH ALLOWANCES (NOT USED)

1.04 WORK NOT PAID FOR SEPARATELY

- A. Delivery: Payment for equipment delivery, storage, or freight shall be included in the pay items including their installation and no other separate payment will be made therefore.
- B. Bonds: Payment for bonds required by the Contract shall be included in the pay items for the Work covered by the required bonds and no separate payment will be made.
- C. Preparation of Site: Payment for preparation of site shall be included in pay items proposed for the various items of Work and no separate payment will be made therefore. Preparation of site includes setting up construction plant, offices, shops, storage areas, sanitary and other facilities required by the specifications or state law or regulations; providing access to the site; obtaining necessary permits and licenses; payments of fees; general protection, temporary heat and utilities; providing shop and working drawings, certificates and schedules; providing required insurance; and cleaning up.
- D. Permitting & Permit Fees; Testing Materials and Apparatus; Field verification of buried utilities; and Measurements.

- E. All other work regardless of its nature which may not be specifically referred to in a Bid Item but is necessary for the complete construction of the project set forth by the Contract.
- F. The County reserves the right to delete any item included in the Schedule of Values and decrease the Contract Price by the scheduled amount for the item deleted.

1.05 MEASUREMENT FOR PAYMENT

A. Methods of Measurement – Generally

- 1. Units of measurement shall be defined in general terms as follows:
 - a. Linear Feet (LF)
 - b. Square Feet (SF)
 - c. Square Yards (SY)
 - d. Cubic Yards (CY)
 - e. Each (EA)
 - f. Sacks (SK)
 - g. Lump Sum (LS)
- 2. Unit Price Contracts/Items:
 - a. Linear Feet (LF) shall be measured along the horizontal length of the centerline of the installed material, unless otherwise specified. Pipe shall be measured along the length of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves or fittings. Pipe included within the limits of lump sum items will not be measured.
 - b. Square Feet (SF), Square Yards (SY), Cubic Yards (CY), Each (EA) and Sacks (SK) shall be measured as the amount of the unit of measure installed and compacted within the limits specified and shown in the Specifications and Drawings. Slope angles and elevations shall be measured using land-surveying equipment. Contractor shall provide supporting documentation (i.e. drawings, delivery tickets, invoices, survey calculations, etc.) to verify actual installed quantities.

B. Lump Sum Contracts/Items – Generally:

- 1. Quantities provided in the Schedule of Values are for the purpose of estimating the completion status for progress payments. Payment will be made for each individual item on a percentage of completion basis as estimated by the Contractor and approved by the County.
- 2. Adjustments to costs provided in the accepted Schedule of Values may be made only by Change Order.
- 3. The County reserves the right to delete any item included in the Schedule of Values and decrease the Contract Price by the scheduled amount for the item deleted.

1.06 MEASUREMENT AND PAYMENT ITEMS

- A. Separate payment will be made for the Unit Price and Lump Sum Items listed on the Bid Schedule.

B. Work included in the Bid Schedule.

Bid Item 1 Mobilization, Demobilization, General Requirements, Bonds, and Permits

- a. Measurement: Measurement of various items for Mobilization and Demobilization shall not be made for payment and all items shall be included in the lump sum price. This lump sum price shall not exceed 5% of the bid price for Bid Items 7 through 76.
- b. Payment: Payment of 75 percent of the applicable lump sum price for the item shall be full compensation for the Work consisting of the preparatory Work and operations in mobilizing for beginning Work on the Contract, including, but not limited to, movement of those personnel, equipment, supplies and incidentals to the project site, preparation of submittals, and for the establishment of temporary offices and buildings, safety equipment and first aid supplies, project signs, field surveys, sanitary and other facilities required by these specifications, and State and local laws and regulations. The costs of General Requirements (Section 01001), bonds, permits, and any required insurance, project signs, and any other preconstruction expense necessary for the start of the work, excluding the cost of construction materials, shall also be included. This Work also consists of the general project management of the Work including, but not limited to, field supervision and office management, as well as other incidental cost for management of the Work during the duration of the Contract. This Work also includes maintenance of the field offices for the duration of the Contract.

Payment of the remaining 25 percent of the applicable lump sum price for this item also consists of demobilization or the operations normally involved in ending Work on the project including, but not limited to, termination and removal of temporary utility service and field offices; demolition and removal of temporary structures and facilities; restoration of Contractor storage areas; disposal of trash and rubbish, and any other post-construction work necessary for the proper conclusion of the Work.

Bid Item 2 Indemnification

- a. Payment: In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, the Owner specifically agrees to give the Contractor a minimum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

Bid Item 3 Project Record Documents

- a. Measurement: Measurement for this item shall be based on satisfactory progress of the Contractor to provide Project Record Documents in accordance with the County requirements and specifications (Section 01720). Various items for Project Record Documents shall not be made for individual payment and all items shall be included in the lump sum price. This lump sum price shall be a minimum of 1% of the total bid price for Bid Items 7 through 76.
- b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment necessary to create the Project Record Drawings, including the certified as-built survey, in accordance with the County requirements and specifications. Payment will be made at the lump sum price

divided into equal monthly payments based on the Contract Time and acceptance by Owner of the progressive as-builts drawings and tables.

Bid Item 4 Preconstruction Audio/Video Documentation

- a. Measurement: Measurement shall be based on the satisfactory submittal of a comprehensive pre-construction video in accordance with the County requirements and specifications (Section 01380).
- b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment necessary to create a comprehensive pre-construction video in accordance with the County requirements and specification.

Bid Item 5 Maintenance of Traffic

- a. Measurement: Measurement shall be based on satisfactory Maintenance of Traffic (MOT) in accordance with Orange County requirements and Florida Department of Transportation (FDOT) standards.
- b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment necessary to maintain public roadway and pedestrian traffic including flag men, uniformed police officers, barricades, warning lights/flashers, and safety ropes. Also included is furnishing, installing and maintaining a Traffic Control Plan, control and safety devices, control of dust, temporary crossing structures over trenches, any necessary detour facilities, and other special requirements for the safe and expeditious movements of vehicular and pedestrian traffic. Payment will be made at the lump sum price divided into equal monthly payments based on the Contract Time.

Bid Item 6 Public Information Officer

- a. Measurement: Measurement shall be based on satisfactory Public Information/Relations in accordance with Orange County requirements.
- b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment necessary to provide and maintain communication with those individuals having a residence, business, or property adjacent to or within 1000 feet of the construction area. Payment shall include the rental of venues, preparation of and conducting all meetings, and preparation of and disbursement of printed materials. Payment will be made at the lump sum price divided into equal monthly payments based on the Contract Time.

Bid Item 7 Erosion and Sediment Control

- a. Measurement: Measurement shall be based on satisfactory Erosion and Sediment Control in accordance with Orange County requirements and specifications (Section 01560).
- b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment to control and prevent sediment transportation from the Work area to adjacent properties, including installation, maintenance, and removal of temporary erosion and sediment controls.

Bid Item 8 Clearing, Grubbing and Stripping

- a. Measurement: Measurement shall be based on satisfactory Clearing, Grubbing and Stripping of the Work area in accordance with Orange County requirements and specifications (Section 02110).
- b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment to clear, grub and strip, and otherwise prepare the Work area for construction operations. This item includes removing and disposing of all trees designated to be removed on the Drawings; and removing and disposing of tree limbs, shrubs, brush and other vegetative growth necessary for the construction of the project. This item also includes the protection and preservation of trees, shrubs, landscaping, and other plant material not designated to be removed for the construction of the project. Similarly, this item includes removal, storage and maintenance of thirteen (13) existing 6-inch diameter Magnolia trees in such fashion and until such time they can be later relocated by the Contractor to a location designated on the Drawings. The relocation and subsequent maintenance of these thirteen (13) Magnolia trees shall be paid for under Bid Item No. 69.

Bid Items 9 to 12 Furnish and Install Reclaimed Water Main

- a. Measurement: Reclaimed Water Main installation regardless of size shall be measured in actual linear feet satisfactorily furnished and laid, as measured along the length of the centerline of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves and fittings. Pipe included within the limits of jack and bores, directional drills, or lump sum pay items will not be measured for payment under this item.
- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Reclaimed Water Main and shall include all labor, materials, and equipment to construct the respective pipeline including coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, coordination with Homeowner's Associations, coordination with Orange County Public Works Department, coordination with SR 417 and SR 528 Owner's, coordination with residents and business owner's, removal and replacement of street light poles and service conductors where required, removal and replacement of existing street signs where required, removal and replacement of guard rail where required, excavation, sheeting, shoring and bracing, dewatering, ground water treatment and disposal, backfill, compaction, and grading, all pressure testing, restoration, and clean-up. This item also includes all necessary fittings, reducers, bends, tees, wyes, plugs, sleeves, joint and fitting restraining devices, polyethylene encasement, metallic tracer wire, line locator, identification markers, and removal, repair and/or replacement of fences, gates, irrigation systems and other obstructions as required.

Bid Items 13 to 16 Furnish and Install Gate Valve

- a. Measurement: Measurement for Gate Valve shall be made per actual number of gate valves with valve boxes satisfactorily furnished and installed complete with covers and concrete collars. Gate valves included within tapping sleeve and valve, and air release valve assembly pay items will not be measured for payment under this item.
- b. b. Payment: Payment for the Gate Valve shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full

compensation for furnishing all labor, materials and equipment to install the valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, covers, concrete collars, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, restoration, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, and all other items required for a complete, acceptable and operable installation.

Bid Item 17 Furnish and Install Tapping Sleeve and Valve Assembly

- a. Measurement: Measurement for Tapping Sleeve and Valve Assembly shall be made per actual number of tapping sleeves and valves satisfactorily furnished and installed to provide a complete and functional unit.
- b. Payment: Payment for the Tapping Sleeve and Valve Assembly shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to perform a wet tap to an existing reclaimed water main including excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, tapping sleeve, tapping valve, valve box extensions, operating nut extensions, valve wrenches, restraining devices, testing, restoration, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, and all other items required for a complete, acceptable and operable installation. This item also includes the coordination and collection of a pipe sample from the wet tap in accordance with Specification Section 02670.

Bid Items 18 to 24 Cut-in Connection to Existing Reclaimed Water Main

- a. Measurement: Measurement for cut-in connections to the existing reclaimed water main shall be made per number of cut-in connections made complete and in place regardless of the size and type from the constructed reclaimed water main to the existing reclaimed water main as authorized in the Contract Documents regardless of the depth of the connection.
- b. Payment: Payment for the Cut-in Connection to the Existing Reclaimed Water Main shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, and equipment to make a cut-in connection from the constructed reclaimed water main to the existing reclaimed water main including coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, excavation, sheeting, shoring and bracing, dewatering, ground water treatment and disposal, cutting pipe, completely drain and properly dispose of existing pipe contents, connection to existing main, thrust protection and restraint of existing main in accordance with the County requirements, backfill, compaction, grading, restoration and clean-up. This item also includes polyethylene encasement and all necessary fittings, reducers, bends, tees, sleeves, and wyes. This item also includes the coordination and collection of a pipe sample from the connection point with the existing water main in accordance with Specification Section 02670.

Bid Items 25 to 31 Bore and Jack Steel Casing Pipe with DI Carrier Pipe

- a. Measurement: Bore and jack steel casing pipe with ductile iron reclaimed water carrier main installation shall be measured in actual linear feet satisfactorily furnished and installed, as measured along the length of the centerline of the completed jack and bore casing in accordance with the County requirements and specifications (Section 02667).

- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Bore and Jack Steel Casing with DI Carrier Pipe and shall include all labor, materials, and equipment necessary for a complete bore and jack casing and ductile iron carrier pipe installation and testing including excavation, dewatering, ground water treatment and disposal, backfill, compaction, casing pipe, carrier pipe, polyethylene encasement, casing spacers, mechanically restrained joints, end seals, restoration, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, and clean-up.

Bid Item 32 Install Steel Casing Pipe by Open Cut Installation

- a. Measurement: Installation of steel casing pipe by open cut installation shall be measured in actual linear feet satisfactorily furnished and installed, as measured along the length of the centerline of the steel casing pipe in accordance with Orange County requirements. The steel casing pipe, casing spacers and casing end seals required with this installation shall meet the requirements of Specification Section 02667.
- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for the open cut installation of 42-inch steel casing pipe, and shall include the subsequent installation of the 24-inch ductile iron water main (paid for separately by the linear foot as Bid Item No. 12 – Furnish and Install 24-inch DI Reclaimed Water Main). Payment for this item shall also include furnishing and installing mechanically restrained joints, casing spacers and end seals to be attached to the 24-inch ductile iron pipe to be installed within the 42-inch steel casing pipe installation as part of this pay item. Payment also includes excavation, dewatering, ground water treatment and disposal, backfill, compaction, restoration, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, and clean up.

Bid Items 33 to 39 Directional Drill HDPE Reclaimed Water Main

- a. Measurement: Directional Drill HDPE Reclaimed Water Main installation shall be measured in actual linear feet satisfactorily furnished and installed, as measured along the length of the centerline of the completed directionally drilled reclaimed water main in accordance with the County requirements and specifications (Section 02662 and Section 02665).
- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Directionally Drill Reclaimed Water Main and shall include all labor, materials, and equipment necessary for a complete directional drill pipe installation and testing including coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, equipment staging and assembly areas, excavation, dewatering, ground water treatment and disposal, backfill, compaction, HDPE pipe, fittings, mechanical joint pipe adaptor/ pipe connection assemblies and appurtenances, mechanical restraint, metallic tracer wires, drilling mud recycling and disposal, pre and post pipe pressure testing, disinfection and bacteriological testing, connection to ductile iron main on each side of the directional drill, restoration, and clean-up.

Bid Item 40 Reclaimed Water Main Aerial Pipe Crossing Modification and Reinstallation; Station 202+30

- a. Measurement: Measurement of this item shall be on a lump sum basis for the modification and reinstallation of the existing reclaimed water main aerial pipe crossing approximately centered at Station 202+30 as shown in the Drawings. The Work included in the lump sum for this item shall include all labor, materials, equipment and tools to remove the existing 12-inch ductile iron reclaimed water main piping and appurtenances, modify the existing concrete structural supports, then install 24-inch diameter Class 53 ductile iron pipe on the modified pipe supports, including joint restraint, fittings, 2-inch air relief valve with piping and service saddle, security fan guards, stainless steel pipe straps with neoprene bearing pads, pipe painting and all related Work for a complete aerial pipe crossing installation.
- b. Payment: Payment for the applicable lump sum item shall be full compensation for furnishing all labor, materials and equipment to remove the existing aerial crossing, modify the existing concrete structural supports, construct a complete bridge crossing including erosion and sedimentation protection, excavation, sheeting, shoring and bracing, dewatering, backfill, compaction, grading, reinforced concrete, stainless steel hardware, ductile iron pipe and fittings, pipe supports, air release valve, service saddle, security fan guards, pipe straps, pipe bearing pads, anchors, grouting, clean-up and painting.

Bid Item 41 Furnish and Install Offset 2-inch Air Release Valve Assembly

- a. Measurement: Measurement for Air Release Valve Assembly shall be made per actual number of 2-inch air release valves with enclosures satisfactorily furnished and installed to provide a complete and functional unit.
- b. Payment: Payment for the Air Release Valve Assembly shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the valve including saddle, fittings, pipe, concrete pad, pre-cast vault or enclosure, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration, coordination with existing utilities, protection and relocation of existing utilities including service connections, and all other items required for a complete, acceptable and operable installation.

Bid Items 42 to 55 RCP Storm Pipe Removal and Replacement

- a. Measurement: Reinforced Concrete (RCP) Storm Pipe Removal and Replacement shall be made per actual number of RCP crossings satisfactorily removed and replaced for the purpose of constructing the proposed reclaimed water main that must cross underneath at the locations identified on the plans and in the Bid Form.
- b. Payment: Payment shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to remove the respective existing RCP and replace the RCP pipe in order to construct the reclaimed water main that must cross underneath. Payment shall include temporary storm water management, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, dewatering, excavation, pipe replacement, connection to existing storm pipes utilizing collars wrapped in 6-feet of filter fabric, removal and replacement of mitered end

sections to match inverts of existing, backfill, compaction, grading, sod replacement, restoration and clean-up.

Bid Item 56 Asphalt Milling and Resurfacing

- a. Measurement: Milling and resurfacing shall be measured in actual square yards over which the milling and subsequent resurfacing is completed and accepted at a compacted thickness of 1.50 inches as indicated on the Drawings.
- b. Payment: Payment will be made at the contract unit price bid per square yard as stated in the proposal for Milling and Resurfacing and shall include all labor, materials and equipment to mill surface; dispose of milled materials; prime and tack coats; and apply and compact a 1.50-inch-thick Type FC-12.5 asphaltic concrete surface overlay with PG 76-22 PMA in accordance with County requirements and specifications. The unit price bid shall also include inventorying of existing pavement striping and markings, protection/ adjustment of manhole frames and covers and valve boxes, and installation of temporary and permanent pavement striping and markings. Maintenance of Traffic required and associated with asphalt milling and resurfacing shall be included in Pay Item No. 5 - Maintenance of Traffic.

Bid Item 57 and 58 Asphalt Pavement Removal and Replacement

- a. Measurement: Asphalt Roadway Removal and Replacement shall be measured in actual square yards of existing asphalt paving, base and subgrade removal and replacement furnished and installed in accordance with Orange County requirements and specifications. The width measured for payment of asphalt roadway removal and replacement, as measured perpendicular to the centerline of the pipe, shall be limited to the width shown on the Drawings. The thickness and types of asphaltic concrete and base materials shall be as shown on the Drawings. The length shall be as measured along the centerline of the pipe. The replacement base material shall be soil cement in turning lanes (longitudinal cuts) and shall be high early strength concrete in side street crossings (transverse cuts). The type and thickness of asphaltic concrete replacement material shall be as shown on the Drawings.
- b. Payment: Payment will be made at the contract unit price bid per square yard as stated in the proposal for Asphalt Roadway Removal and Replacement and shall include all labor, materials, and equipment necessary to provide a safe, smooth driving surface. The Work shall include inventorying of existing pavement striping and markings, saw cutting, pavement and base removal and proper disposal of exiting pavement and base, installing the replacement base material, installing prime coat, tack coat, and asphaltic concrete, compaction, protection/ adjustment of manhole frames and covers and valve boxes, and installation of temporary and permanent pavement striping and markings, all in accordance with the County requirements and specifications. Payment will be made once and shall include both temporary and permanent Asphalt Roadway Replacement. Maintenance of Traffic required and associated with asphalt pavement removal and replacement shall be included in Pay Item No. 5 - Maintenance of Traffic.

Bid Items 59 and 60 Curb and Gutter Removal and Replacement

- a. Measurement: Concrete Curb and Gutter Removal and Replacement shall be measured in actual linear feet removed and replaced measured along the centerline of the curb within the excavation of the trench to a maximum width equal to the width of asphalt pavement cut or as indicated on the Drawings. All additional curb and gutter damaged shall be replaced by the Contractor at his own expense.

- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Concrete Curb and/or Curb and Gutter Replacement and shall include all labor, materials, and equipment for saw-cutting, removal and proper disposal of existing concrete curb and/or curb and gutter, compaction, and concrete curb and/or curb and gutter replacement for a complete installation. Concrete curb and gutter drainage flumes located within sections of curb and gutter to be removed and replaced shall also be removed and reconstructed in their existing locations, dimensions and elevations.

Bid Item 61 Concrete Sidewalk Removal and Replacement

- a. Measurement: Concrete Sidewalk Removal and Replacement shall be measured in actual square yards of concrete sidewalk removed and replaced (including concrete at bus stops). Width of replaced sidewalk shall match that of existing sidewalk. Thickness of pavement shall be as indicated in the plans and specifications.
- b. Payment: Payment will be made at the contract unit price bid per square yard as stated in the proposal for Remove and Replace Concrete Sidewalk and shall include all labor, materials, and equipment for saw-cutting, removal and proper disposal of existing concrete, compaction, form work, concrete replacement, restoration, and clean-up for a complete installation. In addition, where sidewalks meet street corners, this item shall also include the installation of detectable warning surfaces per FDOT Specification Section 527 and FDOT Standard Index 304.

Bid Items 62 Abandon-in-Place and Grout Fill Pipe

- a. Measurement: Abandon-in-Place Pipe of each size, service and material shall be measured in actual linear feet satisfactorily abandoned-in-place in accordance with the County requirements and specifications (Section 02080). Pipe abandonment shall be measured along the centerline without deduction for valves and fittings.
- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Abandon-in-Place Pipe and shall include all labor, materials, and equipment to excavate, backfill and compact, sheet, shore, and brace, dewater, treat and dispose of ground water, completely drain and properly dispose of pipe contents, thrust protection and restraint of existing main in accordance with the County requirements, grout fill, and plug or cap existing pipes of all services and sizes designated “to be abandoned” on the Drawings. Also included in this item is coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, the removal and salvage of existing air release valves and boxes, and valve boxes located on valves connected to piping designated to be retired. Excavations from appurtenances removed shall be backfilled and compacted with suitable soil material. This item also includes the coordination and collection of a pipe sample from the existing water main abandoned in place in accordance with Specification Section 02670.

Bid Items 63 to 65 Remove Existing Reclaimed Water Main

- a. Measurement: Remove existing reclaimed water main regardless of size shall be measured in actual linear feet satisfactorily excavated, removed and disposed of in accordance with the County requirements and Specification Section 02080. Existing pipe removal shall be measured along the centerline without deduction for valves and fittings. Also included in this item is the disposal of pipe, fittings and valves attached to the reclaimed water main.

- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Remove Existing Reclaimed Water Main and shall include all labor, materials, and equipment to sheet, shore, and brace; dewater; treat and dispose of ground water; excavate; completely drain and dispose of pipe contents; thrust protection and restraint of existing main in accordance with the County requirements; plug or cap; restoration; clean up; remove and dispose; provide additional suitable soil material; backfill and compact. Also included in this item is the coordination with Orange County Public Works Department, coordination with SR 417 and SR 528 Owner's, coordination with residents and business owner's, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, removal and replacement of existing street light poles and conductors as required, removal and replacement of existing street signs where required, and the removal, disposal and salvage of items attached to the piping to be removed.

Bid Item 66 Furnish, Install and Maintain Sod

- a. Measurement: Replacement sod shall match the existing types of sod and shall be measured in actual square yards of sod furnished, laid, fertilized, watered and maintained for all areas as specified on the Drawings.
- b. Payment: Payment will be made at the contract unit price bid per square yard as stated in the proposal for and shall include all labor, materials, and equipment necessary to furnish, install, fertilize, water and maintain a healthy stand of grass including any soil amendments or conditioning required to bring the existing soil to within acceptable pH levels as recommended by the sod grower.

Bid Item 67 Furnish, Install and Maintain Magnolia Trees

- a. Measurement: Measurement for installation of Magnolia Trees shall be made per actual number of trees satisfactorily furnished, installed and maintained throughout the duration of the construction period and establishment period in accordance with the Florida Department of Transportation's (FDOT) Specification Section 580 (Landscape Installation) and FDOT Index No. 544. Magnolia trees shall be planted in the locations designated in the Drawings. Magnolia trees shall be of the variety "Magnolia Grandiflora – Little Gem" and shall each be in the range of 8' – 10' overall height.
- b. Payment: Payment for the Magnolia Trees shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, equipment, maintenance and warranty to install the trees including coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, soil backfill, soil ring, mulch, support stakes, support straps, and watering in accordance with the referenced Specification Section.

Bid Item 68 Furnish, Install and Maintain Sand Cordgrass Shrubs

- a. Measurement: Measurement for installation of Sand Cordgrass Shrubs shall be made per actual number of shrubs satisfactorily furnished, installed and maintained throughout the duration of the construction period and establishment period in accordance with the Florida

Department of Transportation's (FDOT) Specification Section 580 (Landscape Installation) and FDOT Index No. 544. Shrubs shall be planted in the locations designated in the Drawings. Shrubs shall be of the variety "Sand Cordgrass – Spartina Bakeri" and shall each be of 5 gallon container size.

- b. Payment: Payment for the Sand Cordgrass shrubs shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, equipment, maintenance and warranty to install the trees including coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, soil backfill, soil ring, mulch, and watering in accordance with the referenced Specification Section.

Bid Item 69 Relocate Existing 6-inch Diameter Maintain Magnolia Trees

- a. Measurement: Measurement for relocation of existing 6-inch diameter Magnolia trees shall be made per the actual number of existing trees (being stored and maintained by the Contractor under Bid Item 8) satisfactorily relocated, installed and maintained throughout the duration of the construction period and establishment period in accordance with the Florida Department of Transportation's (FDOT) Specification Section 580 (Landscape Installation) and FDOT Index No. 544. These Magnolia trees shall be planted in the locations designated in the Drawings and as directed by the Orange County Inspector.
- b. Payment: Payment for the relocation of existing Magnolia trees shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, equipment, maintenance to relocate and install the trees including coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, soil backfill, soil ring, mulch, support stakes, support straps, and watering in accordance with the referenced Specification Section.

Bid Item 70 Furnish and Install 24-inch DR 11 Temporary Bypass Piping and Fittings

- a. Measurement: Temporary Bypass Piping and Fitting installation shall be measured in actual linear feet satisfactorily furnished and laid, as measured along the length of the centerline of the completed temporary HDPE pipeline, regardless of the type of joint required, without deduction for the length of valves and fittings.
- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for 24-inch DR 11 Temporary Bypass Piping and Fittings and shall include all labor, materials, and equipment to construct the temporary above-grade pipeline including coordination with existing utilities, protection and relocation of irrigation, coordination with Homeowner's Associations, coordination with Orange County Public Works Department, coordination with LYNX, coordination with residents and business owner's, removal and replacement of existing street signs where required, installation and subsequent removal of temporary barrier wall and temporary 6-foot chain link fence and gate(s), all pressure testing, restoration, and clean-up. This item also includes all necessary fused fittings, temporary valves, flanges, flange adaptors, joint and fitting restraining devices and removal, repair and/or replacement of irrigation systems and other obstructions as required.

Bid Item 71 Furnish and Install 30-inch DR 18 PVC Force Main

- a. Measurement: Force main shall be measured in actual linear feet satisfactorily furnished and laid, as measured along the length of the centerline of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves and fittings.
- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for 30-inch DR 18 PVC Force Main and shall include all labor, materials, and equipment to construct the pipeline including coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, coordination with Homeowner's Associations, coordination with Orange County Public Works Department, coordination with LYNX, coordination with residents and business owner's, removal and replacement of existing street signs where required, excavation, sheeting, shoring and bracing, dewatering, ground water treatment and disposal, backfill, compaction, and grading, all pressure testing, restoration, and clean-up. This item also includes all necessary fittings joint and fitting restraining devices, metallic tracer wire, line locator, identification markers, and removal, repair and/or replacement of irrigation systems and other obstructions as required.

Bid Item 72 Furnish and Install 30-inch Plug Valve

- a. Measurement: Measurement for 30-inch Plug Valve shall be made per actual number of plug valves with valve boxes satisfactorily furnished and installed complete with covers and concrete collars.
- b. Payment: Payment for the 30-inch Plug Valve shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment to install the valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, covers, concrete collars, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, restoration, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, and all other items required for a complete, acceptable and operable installation.

Bid Item 73 Furnish and Install 30-inch Line Stop with 24-inch Bypass Outlet

- a. Measurement: Measurement for 30-inch Line Stop with 24-inch Bypass Outlet shall be made per actual number of line stops satisfactorily furnished and installed to temporarily stop the flow of wastewater and allow the set up of temporarily bypassing wastewater flow through the line stop housing at the locations shown on the Drawings.
- b. Payment: Payment for the 30-inch Line Stop with 24-inch Bypass Outlet shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment necessary to perform a 30-inch line stop with a 24-inch bypass outlet on the existing ductile iron force main. The purpose of this work is to perform a double line stop with bypass that will allow the temporary bypass of wastewater flow through temporary 24-inch HDPE piping so that the existing 30-inch ductile iron force main can be removed and subsequently replaced with 30-inch PVC pipe. The line stop assembly will be required to remain in place for the duration of the construction of the replacement 30-inch force main. Payment of the applicable unit price shall include all necessary exploratory excavations to site the line stop

fitting relative to existing force main pipe joints, the installation of a concrete thrust collar on the existing 30-inch force main and a concrete line stop support pad as detailed in the Drawings. Payment of the applicable unit price shall also include coordination with OCU, Orange County Public Works, and LYNX, tapping sleeve, temporary tapping valve, temporary line stop housing with outlet flange, completion plug, completion flange, testing, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, and all other miscellaneous items required for a complete, acceptable and operable installation.

Bid Item 74 Furnish and Install 6-inch Combination Air Release Valve Assembly

- a. Measurement: Measurement for 6-inch Combination Air Release Valve Assembly shall be made per actual number of offset combination air release valves with enclosures satisfactorily furnished and installed to provide a complete and functional unit.
- b. Payment: Payment for the 6-inch Combination Air Release Valve Assembly shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the valve including saddle, fittings, pipe, concrete pad, valve enclosure, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration, coordination with existing utilities, protection and relocation of existing utilities including service connections, and all other items required for a complete, acceptable and operable installation.

Bid Item 75 Remove Existing 30-inch Ductile Iron Force Main

- a. Measurement: Remove Existing 30-inch Ductile Iron Force Main shall be measured in actual linear feet satisfactorily excavated, removed and disposed of in accordance with the County requirements and Specification Section 02080. Existing pipe removal shall be measured along the centerline without deduction for valves and fittings. Also included in this item is the disposal of pipe, fittings and valves attached to the reclaimed water main.
- b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Remove Existing 30inch Ductile Iron Force Main and shall include all labor, materials, and equipment to sheet, shore, and brace; dewater; treat and dispose of ground water; excavate; completely drain and dispose of pipe contents; restoration; clean up; remove and dispose; provide additional suitable soil material; backfill and compact. Also included in this item is the coordination with Orange County Public Works Department, coordination with LYNX, coordination with residents and business owner's, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, removal and replacement of existing street signs where required, and the removal, disposal and salvage of items attached to the piping to be removed.

Bid Item 76 Furnish, Install and Maintain Drake Elm Trees

- a. Measurement: Measurement for installation of Drake Elm Trees shall be made per actual number of trees satisfactorily furnished, installed and maintained throughout the duration of the construction period and establishment period in accordance with the Florida Department of Transportation's (FDOT) Specification Section 580 (Landscape Installation) and FDOT

Index No. 544. Drake Elm trees shall be planted in the locations designated in the Drawings. Drake Elm trees shall be of the variety “Ulmus Parvifolia” and shall each be of the 65 gallon container size.

- b. Payment: Payment for the Drake Elm Trees shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, equipment, maintenance and warranty to install the trees including coordination with Orange County Public Works, coordination with existing utilities, protection and relocation of existing utilities including service connections and irrigation, soil backfill, soil ring, mulch, support stakes, support straps, and watering in accordance with the referenced Specification Section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01516
COLLECTION SYSTEM BYPASS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Work covered by this section consists of providing all temporary bypassing to perform all operations in connection with the flow of wastewater around pipe segment(s) or pump stations. The purpose of bypassing is to prevent wastewater overflows and provide continuous service to all wastewater customers. The Contractor will maintain wastewater flow in the construction area in order to prevent backup and/or overflow and provide reliable wastewater service to the users of the wastewater system at all times.

1.02 SUBMITTALS

- A. Prior to implementation of any bypass, the Contractor will submit and receive County acceptance of a bypass plan. The Contractor will submit to the County a comprehensive written plan for approval and acceptance that describes the intended bypass for the maintenance of flows during construction. The Contractor will also provide a sketch showing the location of bypass pumping equipment for each pump station or line segment(s) around which flows are being bypassed. The plan will include proposed tanker(s), pump(s), bypass piping, backup plan and equipment, work schedule, monitoring log for bypass pumping, monitoring plan of the bypass pumping operation, and maintenance of traffic plan.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The Contractor will provide and maintain adequate equipment, piping, tankers, and other necessary appurtenances in order to maintain continuous and reliable wastewater service in all wastewater lines as required for construction. The Contractor will have tankers, backup pump(s), piping, and appurtenances ready to deploy immediately.
- B. All piping will be designed to withstand at least twice the maximum system pressure or a minimum of 50-psi, whichever is greater.
- C. When bypassing a pump station, one (1) back-up pump equal to the primary unit will be provided by the Contractor. Bypass pumps shall have a maximum rating of 55 decibels for sound attenuation.

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall have all materials, equipment and labor necessary to complete the repair, replacement, or rehabilitation on the job site prior to isolating the gravity main segment, force main segment, manhole, or pump station. The Contractor will demonstrate that the temporary bypass pumping system is in good working order and is sufficiently sized to successfully handle flows by performing an operational test run for a period of 72-hours prior to beginning the Work. Both, the Contractor's Representative and Tapping Contractor's Site Manager must be on-site or available to be on-site within 30-minutes during the testing period.

3.02 TRAFFIC CONSIDERATIONS

- A. The Contractor shall locate bypass pumping suction and discharge lines so as to not cause undue interference with the use of streets, private driveways, and alleys, to include the possible temporary trenching of piping at critical intersections. Additional traffic maintenance requirements are found in Section 01570 "Maintenance of Traffic".

3.03 BYPASS OPERATION

- A. The Contractor shall submit a bypass plan to the County and the bypass plan must be approved before the bypass is operational to perform the Work. Contractor shall maintain the wastewater system flow and no surcharging will be allowed to occur out of the system.
- B. Where Work requires the main or pump station to be taken out service after normal working hours and bypass pumping is being used; the Contractor shall be responsible for monitoring the bypass operation 24-hours per day, 7-days per week. Any electronic monitoring in lieu of on-site monitoring must be detailed in the comprehensive written bypass plan.
- C. The Contractor shall ensure that no damage will be caused to private property as a result of bypass pumping operations. The Contractor will complete the Work as quickly as possible and pass all tests and inspections before discontinuing bypassing operations and returning flow to the wastewater manhole, main, or pump station.
- D. During bypassing, no wastewater will be leaked, dumped, or spilled in or onto, any area outside of the existing wastewater system.
- E. The Contractor shall immediately notify the County should a sanitary sewer overflow (SSO) occur. The Contractor shall take the necessary action to wash down, clean up and disinfect the spillage area to the satisfaction of the County or other governmental agency.
- F. The Contractor shall cease bypass operations and return flows to the new and/or existing

sewer when directed by the County. When bypass operations are complete, all bypass piping shall be drained into the wastewater system prior to disassembly.

3.04 CONTRACTOR LIABILITY

- A. The Contractor shall be responsible for all required pumping, equipment, piping, and appurtenances to accomplish the bypass and for any and all damage that results directly or indirectly from the bypass pumping equipment, piping and/or appurtenances. The Contractor shall also be liable for all County personnel labor and equipment costs, penalties and fines resulting from sanitary sewer overflows. It is the intent of these specifications to require the Contractor to establish adequate bypass pumping as required regardless of the flow condition.

END OF SECTION

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SECTION 02661
WASTEWATER FORCE MAINS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The work under this Section includes providing a complete system for wastewater transmission pressure piping and appurtenant items.

1.02 QUALITY ASSURANCE

A. Design Requirements

1. Piping shall be laid with a minimum cover of 36-inches below finished grade, unless otherwise indicated.
2. Pipelines shall be constructed of the materials indicated on the Drawings.
3. All force mains shall be installed with a continuous insulated 10-gauge copper wire. Wire shall terminate at the top of each valve and be capable of extending 18-inches above the top of the box.
4. All PVC force mains shall be solid green. All lettering shall appear legibly on the pipe and shall run the entire length of the pipe. Lettering shall read as is acceptable for the intended use.
5. Flanged ductile iron used in valve vaults or above ground piping at pump stations shall be Protecto 401 lined and coated per specification Section 09901, "Coatings and Linings." Flanged DIP shall be epoxy coated from the factory and shall not be coated with bitumastic or asphaltic exterior coatings.

- B. Pipe Inspection: The Contractor shall obtain from the pipe manufacturers a certificate of inspection to the effect that the pipe and fittings supplied for this contract have been inspected at the plant and that they meet the requirements of these specifications. All pipe and fittings shall be subjected to visual inspection at time of delivery and just before they are lowered into the trench to be laid. Joints or fittings that do not conform to these specifications will be rejected and must be removed immediately by the Contractor. The entire product of any plant may be rejected when, in the opinion of the County, the methods of manufacture fail to secure uniform results, or where the materials used produce inferior pipe or fittings.

- C. Prevention of Electrolysis: Where shown on Drawings or deemed necessary, electrolytic action through the contact of dissimilar metals shall be prevented by either;

1. The separation of one material from the other by means of an insulating or dielectric coupling (polyethylene wrap), or
2. The use of alternative materials, as directed by the County

1.03 SHOP DRAWINGS AND SUBMITTALS

- A. Submittals shall be submitted to the County for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01300 "Submittals."
 - 1. Certified test reports on pipe
 - 2. Details of restrained and flexible joints
 - 3. Detailed laying schedule for pipe
 - 4. Valves and valve boxes
- B. Acceptance of Material: The County reserves the right to sample and test any pipe or fitting after delivery and to reject all pipe and fittings represented by any sample which fails to comply with the specified requirements.

1.04 JOB CONDITIONS

- A. Water in Excavation: Water shall not be allowed in the trenches while the pipes are being laid and/or tested. The Contractor shall not open more trenches than the available pumping facilities are able to dewater to the satisfaction of the County. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately blocked during construction by the use of acceptable stoppers and not by improvised equipment. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the Work any such material has entered the pipelines, it must be cleaned as directed by the County so that the entire system will be left clean and unobstructed.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All material supplied shall be one of the products specified in Appendix D "List of Approved Products" appended to these technical specifications.

2.02 MATERIALS

- A. Pipe Fittings, Valves, and Ancillary Equipment shall be installed as shown on the Drawings and as specified in Division 15.
- B. Additional Work: Additional items of construction, necessary for the complete installation of the systems, shall conform to specific details shown on the Drawings and shall be constructed of first-class materials conforming to the applicable portions of these specifications.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Bedding: Upon satisfactory installation of the pipe bedding material as specified in Section 02220 "Excavating, Backfilling and Compacting", a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging. The pipe shall be laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure will be exerted on the pipe joints from the trench bottom.
- B. Cleanliness: The interior of the pipes shall be thoroughly cleaned of all foreign matter before being gently lowered into the trench and shall be kept clean during laying operations by means of plugs or other methods acceptable by the County. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other foreign material from entering the pipe.

3.02 INSTALLATION

- A. Pipe Identification/Location
 1. All PVC wastewater mains shall be solid green in color. All lettering shall appear legibly on the pipe and shall run the entire length of the pipe. Lettering shall read as is acceptable for the intended use.
 2. All HDPE wastewater mains shall be either a solid green or black with four co-extruded equally spaced green stripes of the same material as the pipe. Stripes painted on the pipe outside surface shall not be acceptable.
 3. If main is located over 30-feet from the edge of the pavement or in an easement, the Contractor shall install 4-inch diameter schedule 80 PVC utility pipe line markers over the pipe alignment at 1,000-foot intervals, at all valves, and at all locations where fittings deflect the pipe alignment in the horizontal plane. Utility pipeline markers shall include a decal and shall be colored purple for reclaimed water service.
 4. All mains (PVC and HDPE) shall be installed with a continuous, insulated 10-gauge copper wire installed directly above the pipe for location purposes. Locate wire shall terminate in a test station box and be capable of extending 12-inches above the top of the box. Directionally drilled pipe shall be installed with two insulated 10-gauge copper wires.
- B. Pipe:
 1. Gradient: Lines shall be laid straight, and depth of cover shall vary to provide uniform gradient or slope to pipe, whether grading is completed or proposed at time of pipe installation. When a grade or slope is shown on the Drawings, batter boards with string line paralleling design grade, or other previously approved means, shall be used by the Contractor to assure conformance to required grade.

2. Pipe Joint Deflection: No joint deflection or pipe bending is allowed in PVC pipe. The maximum allowable tolerance in the joint due to variances in installation is 0.75° (degrees), (3-inches per joint per 20-ft stick of pipe). No bending tolerance in the pipe barrel shall be acceptable. Alignment changes shall be made with sleeves and fittings as shown in Drawings. Deflection in fittings and sleeves shall not exceed 75% of the limits recommended by the fitting manufacturer.
3. Rejects: Any pipe found defective shall be immediately removed from the site and replaced with sound pipe at the Contractor's expense.
4. Joint Compounds: No sulfur base joint compound shall be used.
5. Thrust restraints shall be accomplished by the use of mechanical restraining devices unless specifically identified otherwise on the Drawings or herein. Restraining devices are specified in Section 15064 "Polyvinyl Chlorine Pipe and Fittings", respectfully.

C. Installing Valves and Boxes

1. Valves: Valves shall be carefully inspected, opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Plug valves shall have the disc shaft installed horizontally with the plug rotating upward to the top of the valve. Any valve that does not operate correctly shall be removed and replaced.
2. Valve Boxes: Valve boxes and riser shall be centered over the operating nuts of the valves with a centering ring or disc so as to permit a valve key to be fitted easily to the operating nut. In unpaved areas, valve boxes shall be set to conform to the level of the finished surface and held in position by a concrete collar placed under the support flange as shown on the Drawings. The valve box shall not transmit surface loads to the pipe or valve. Extensions or risers for valve boxes shall be an integral part of the box. No cut sections of D.I. or PVC pipe shall be used in extending the box to its proper height. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the Work all valve boxes shall be adjusted to finish grade.

D. Concrete Encasement

1. Concrete encasement shall be constructed in accordance with details shown on the Drawings and shall be constructed of Class C concrete. Encasement shall be constructed where
 - a. As indicated on the Drawings
 - b. As directed by the County
2. The points of beginning and ending of pipe encasement shall be not more than 6-inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.
3. Concrete Collar: Each valve installed in an unimproved area (outside of pavement, driveways or sidewalks) shall require a 24-inch x 24-inch x 6-inch concrete pad or collar as shown in the Drawings.

- E. Flush Out Connections: Flush out connections shall be installed at the locations as determined by the County and be full pipe size to accommodate a full diameter flush for pipes 12-inches and smaller or a swab for pipes greater than 12-inches.

- F. Backfilling: Backfilling shall be in accordance with Section 02220 "Excavating, Backfilling and Compacting" of these specifications.

3.03 CLEANING

- A. General: At the conclusion of the Work the Contractor shall thoroughly clean the new pipe lines by flushing with water or other means to remove all dirt, stones or other material which may have entered the line during the construction period.
- B. Flushing 12-inch pipes and less: Flushing to remove all sand and other foreign matter from pipelines shall only be permitted for mains 12-inches and smaller. Flushing shall be accomplished through full pipe size connections at full pipe depth. The velocity of the flushing water shall be at least 4-feet per second. Flushing shall be terminated at the direction of the County. The Contractor shall dispose of the flushing water without causing a nuisance or property damage. The Contractor shall arrange and pay for the source of flushing water with the County or others.
- C. Swabbing in lieu of flushing: New mains may be hydraulically or pneumatically cleaned with a polypropylene swabbing device to remove dirt, sand and debris from main. If swabbing access and egress points are not provided in the design drawings, it will be the responsibility of the Contractor to provide temporary access and egress points for the cleaning, as required. Passage of cleaning poly swabs through the system shall be constantly monitored, controlled and all poly swabs entered into the system shall be individually marked and identified so that the exiting of the poly swabs from the system can be confirmed. Cleaning of the system shall be done in conjunction with the initial filling of the system for its hydrostatic test. After initial slow-fill, pipe shall sit full for 24 hours to facilitate cleaning and collection of debris from interior of pipe. The Contractor shall insert flexible polyurethane foam swabs (2-pounds per cubic foot density) complete with rear polyurethane drive seal, into the first section of pipe. The swabs shall remain there until the pipeline construction is completed. The line to be cleaned shall only be connected to the existing distribution system at a single connection point. Locate and open all new in-line valves beyond the point of connection on the pipeline to be cleaned during the swabbing operation. At the receiver or exit point for the poly swab, the Contractor is responsible for creating a safe environment for collection of debris, water and the swab. Considerations shall be made for protecting surrounding personnel and property and safe retrieval of the swab. Only County personnel shall operate the supply valve from the existing distribution system. Cleaning and flushing shall be accomplished by propelling the swab down the pipeline to the exit point with potable water. Flushing shall continue until the water is completely clear and swab is retrieved.

3.04 FIELD QUALITY CONTROL

- A. Correction of Non-Conforming Work: All non-conforming work shall be repaired or replaced by the Contractor at no additional expense to the County. Non-conforming work shall be defined as failure to adhere to any specific or implied directive of this Project Manual and/or the Drawings, including but not limited to pipe not laid true to the lines and grades as shown on the Drawings, damaged or unacceptable materials, misalignment or diameter ring deflection in pipe due to bedding or backfilling, visible or detectable leakage and failure to pass any specified test or inspection.
- B. Pressure and Leakage Tests of Pressure Piping
1. General: The Contractor shall perform hydrostatic pressure and leakage tests on all pressure piping. Tests shall be conducted on segments between valves and no more than 2,000 linear feet is to be tested at one time unless otherwise acceptable by the County.
 2. Standard: AWWA C600, Section 5 (DI pipe) and AWWA C605 Section 7 (PVC pipe) with the exceptions required herein and the exception that the Contractor shall furnish all gauges, meters, pressure pumps and other equipment needed to test the lines.
 3. Hydrostatic Pressure Test
 - a. Test Pressure: Test pressure will be 50% above the normal working pressure, but not less than 100-psi, unless otherwise noted on the Drawings.
 - b. Test Duration: Test shall be for a period of 2-hours. If during the test, the integrity of the tested line is in question, the County may require a 6-hour pressure test.
 - c. Air Release: Corporation cocks at least 3/4-inch in diameter, pipe riser and angle globe valves shall be provided at each dead-end to bleed air from the line.
 4. Hydrostatic Leakage Test
 - a. General: Following the pressure test, the Contractor shall perform the leakage test. The line shall be filled with water and all air removed for the test. The Contractor shall provide a pump to maintain the test pressure for the entire test period.
 - b. Test Pressure: Maximum operating pressure as determined by the County but not less than 100-psi unless otherwise noted.
 - c. Test duration: 2-hours.
 - d. Allowable leakage:
$$L = \frac{SD(P)^{0.5}}{148,000}$$

L = Allowable leakage (gallons per hour)
S = Length of pipe tested (feet)
D = Nominal diameter of pipe (inches)
P = Average test pressure maintained (psig)
 - e. Visible Leakage: All leaks evident at the surface shall be repaired and leakage eliminated regardless of the measured total leakage.
 - f. Leakage Measurement: The amount of water required to maintain the test pressure is the leakage.

END OF SECTION

SECTION 02668
LINE STOPS/BYPASS ON FORCE MAIN SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The Contractor shall furnish all coordination, labor, supervision, materials, tools, equipment, supplies, and services; and, shall perform all Work necessary for the installation of double line stopping fittings and equipment and bypass piping on Orange County sanitary sewer force main system as indicated in the Contract Documents.

1.02 SUBMITTALS

- A. Submittals shall be made by the Contractor in accordance with the procedures set forth in “Section 01300 – Submittals” and as described below:
- B. Calculations – Submit head loss calculations for proposed double line stop/bypass configuration based on flow/pressure data furnished by the Owner. Total head loss shall between line stop units shall include losses through the tapping sleeve, plugging head, line stop housing unit, all bends and fittings, and the bypass piping.
- C. Measurements: Submit all field measurements taken to verify pipe outside and inside diameter, wall thickness, pipe joint locations, etc.
- D. Manufacturer’s catalog cuts, technical data, operation and maintenance data, and/or shop Contract Documents are required for the following components (shop drawings shall be drawn to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the work):
1. Sketches and drawings of line stop equipment including dimensions and weights
 2. Field sketch of line stop locations based on exploratory excavation
 3. Written procedure for installing and operating line stop equipment
 4. Tapping fittings
 5. Completion plug
 6. Coatings for completion plug and flange
 7. HDPE bypass piping and fittings
 8. Temporary automatic air release valve
 9. Section view of line stop equipment showing folding plugger engaged in stop position

PART 2 – PRODUCTS

2.01 LINE STOP FITTINGS

- A. General: Stopper head, line stop fitting, completion plug, and blind flange shall be pressure rated at 150 PSI. All line stop equipment shall be suited for vacuum conditions.
- B. Stopple insertion head gaskets: Contractor must have, at their disposal numerous size stopple cups/gaskets in ¼” increments. Contractor will be required to bring a minimum of three (3) stopple cups/gaskets to the job site: One (1) will be of a size that is anticipated to fit the inside diameter of the pipe, the other two (2) will be ¼” larger and ¼” smaller than that size. Contractor must have the ability to obtain any size stopple cup/gasket within 24 hours of tapping the pipe.
- C. Tapping Fittings for Ductile Iron/Cast Iron/Asbestos Cement Pipe
 - 1. Tapping sleeves shall be fabricated mechanical joint tapping sleeves manufactured in accordance with the requirements of Specification “Section 15100 – Ancillary Equipment”.
 - 2. Line stopping assemblies shall be in accordance with Specification “Section 15100 – Ancillary Equipment”.
- D. Line Stop Housing
 - 1. For instances where the bypass is proposed through the line stop housing, the use of any type of flow-through style strainer that is placed into the flow path once the folding plugger is extended into its stopped position will not be permitted.

2.02 COMPLETION PLUGS

- A. All flanges used for line plugging will be manufactured from ASTM-A-105 grade or equal and shall be machined to accept completion plug.
- B. The completion plug shall be manufactured from carbon steel plate in accordance with ASTM A-36 with circumferential groove to contain a compressible “O” ring to seal pressure tight against the bore of the flange. Completion plug locking mechanisms shall consist of ring segments or steel leaves that lock from or into the flange bore. Set screw style locking mechanisms that tighten against wedges set against the completion plug and have removable thread inserts within the tapping fitting flange are also acceptable. Set screws set directly against completion plugs and/or without removable thread inserts

- within the tapping fitting flange will NOT be acceptable.
- C. Blind flanges for mating with line plugging flanges shall be in accordance with ASTM A-181 or ASTM A-105 grade steel. Minimum thickness shall be AWWA C-207, Class D.
 - D. Flange gaskets shall be of non-asbestos composition and will be designed to mate to the inner bore and inner bolt circle of the line plugging flange. All gaskets will be at least 0.125" minimum thickness.

2.03 TEMPORARY BYPASS PIPING

- A. Bypass piping and fittings shall be watertight Ductile Iron Pipe sized HDPE pipe joined by butt-fusion method in strict accordance with the manufacturer's recommendations.
- B. Bypass piping shall be DR 11 minimum HDPE piping.
- C. The exact location of the bypass piping shall be determined by the Contractor following field investigations and approval by the Owner.
- D. A temporary automatic 2-inch air release valve shall be placed on the bypass piping at any localized high points to vent air during start-up and operation.
- E. The bypass piping shall include a tee and branch valve for controlled dewatering of residual sewage after the bypass piping is taken out of service.
- F. In-line isolation valves shall be provided on the bypass piping at each line stop location.

PART 3 - EXECUTION

3.01 LINE STOP INSTALLATION REQUIREMENTS

- A. Refer to Specification Section "01001 – General Work Requirements" and "01516- Collection System Bypass" for meeting and coordination requirements.
- B. Prior to starting any work related to the line stops, the Contractor shall perform explorations on the existing force main pipe to determine joint locations and the locations for concrete thrust collars and the line stops. A sketch of the field verified information shall be included in the shop drawings.
- C. If other utilities or obstructions encroach the concrete thrust collar and/or the line stop fitting zone, the Contractor shall notify the company performing the line stop for exact clearance required for drilling, plugging and completion machines.

- D. The length of pipe receiving the line stop fitting must be completely free and clear of corporation stops, air release valves, joints or any other irregularities that would prevent the installation of the line stop fitting.
- E. The line stop fitting shall be tested after being installed before the final concrete thrust collar is poured around the force main.
 - 1. Line stop pressure test shall be 100 psi.
 - 2. Allowable leakage shall be zero and test duration shall be one (1) hour.
 - 3. The line stop fitting shall be tested and accepted prior to tapping the force main. The pressure test shall be performed in the presence of the Owner's representative.
- F. For the initial installation and pressure equalization of the line stops, if necessary, the Contractor is permitted to tap a section of the existing force main that is to be abandoned. Additional taps of the new or existing force main that is to remain in service will not be permitted.
- G. The line stop unit shall be equipped with a pressure gauge to monitor line pressures on the active side of the force main for the duration of the line stop.
- H. Once line stops are inserted, the Contractor shall work continuously until connections are made and service is returned to the force main.
- I. A completion plug and blind flange shall be installed on the line stop fitting (on the force main that is to remain in service) prior to backfilling.
- J. GPS coordinates of the center of the blind flange shall be obtained by the Contractor and recorded on the Record Drawings.

3.02 CONCRETE SUPPORT AND THRUST COLLAR REQUIREMENTS

- A. The concrete support blocking, and concrete thrust collar are provided as a means of thrust restraint and support of the line stop fitting, valves, equipment, etc. The Contractor shall use care at all times when performing work on or near the force main to prevent differential settlement, excessive loading, etc., which may damage the force main.
- B. Linestop Blocking Basis of Design: Operating Pressure = **100 PSI**.
- C. All concrete shall be high early strength and have a minimum 28 day compressive strength of 3,000 psi with a slump of 4-inches +/- 1inch. The Contractor is to prepare test cylinders and provide certified testing to ensure the required compressive strength

is reached on the thrust collar and the support blocking prior to mounting the tapping machine and line stop equipment.

- D. Thrust surface area of floor is based upon bearing against undisturbed soil of 2,000 PSF minimum bearing strength. Contractor shall verify actual soil conditions and increase bearing surface area as required. Reduction of the bearing surface area will not be permitted.
- E. All exposed joints of the force main must be supported with concrete support piers.
- F. Concrete support and concrete thrust collars for line stop fitting shall be poured immediately after successful pressure test of assembled line stop fitting. Blocking must engage shear keys in concrete floor. Top of blocking shall be poured to cover the top of the line stop fitting where possible and not encroach onto lower bolts of the gate valve.
- G. The Contractor shall utilize straps instead of chains, cables, or unpadded forks to handle pipe.

3.03 BYPASS PIPING INSTALLATION REQUIREMENTS

- A. Prior to connecting HDPE bypass piping and fittings to line stop housing, bypass piping shall be tested at 100 PSI.
- B. The Contractor shall provide a means for minimizing pipe movement during pressurization and operation.
- C. Test pressure shall be applied to the bypass piping for three (3) hours to allow for initial expansion of the pipe. After three (3) hours, reduce initial test pressure by 10% and monitor pressure for one (1) hour. If the test pressure remains steady (to within 5% of target value) for one (1) hour, no leakage is indicated.

END OF SECTION

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**SECTION 15110
PLUG VALVES**

PART 1 - GENERAL

1.01 DESCRIPTION

Wastewater force mains shall have plug valves installed as shown on the Drawings. This Section specifies plug valves, manual actuators and associated valve boxes.

1.02 QUALITY ASSURANCE

A. References

Reference	Title
ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250, and 800
ASTM A126	Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM A276	Stainless and Heat-Resisting Steel Bars and Shapes
ASTM A436	Austenitic Gray Iron Castings
ASTM A536	Ductile Iron Castings
AWWA C504	Rubber Seated Butterfly Valves

B. Proof-of-Design Tests

The Contractor shall furnish the County three (3) certified copies of a report from an independent testing laboratory certifying successful completion of proof-of-design testing conducted in accordance with AWWA C504, Section 5.2, except that where the word "disc" appears in the standard, it is understood to mean "plug." In lieu of testing the valves at an independent testing laboratory, proof-of-design testing may be performed at the valve manufacturer's laboratory, but must be witnessed by a representative of a qualified independent testing laboratory, and all test reports must be certified by the laboratory representative. Proof-of-design testing shall have been performed on at least 3 (three) 6-inch diameter valves, with all 3 (three) test units demonstrating full compliance with the test standards. Failure to satisfactorily complete the test shall be deemed sufficient evidence to reject all valves of the proposed make or manufacturer's model number.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. Submittals shall be submitted to the County/Professional for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01300 "Submittals."

- B. **PRODUCT DATA:** The following information shall be provided in accordance with 1.03 of Section 01300 "Submittals."
1. Manufacturer's product data
 2. Proof-of-design test reports specified in paragraph 1.02 B

PART 2 - PRODUCTS

2.01 GENERAL

- A. All material supplied shall be one of the products specified in Appendix D "List of Approved Products" appended to these technical specifications.

2.02 MANUFACTURERS

Plug valves meeting the requirements of this Section shall be supplied from the approved manufacturers as listed in Appendix D "List of Approved Products."

2.03 MATERIALS

Materials of construction shall be as follows:

Component	Material
Body	Cast iron, ASTM A126, Class B
Plug	Cast iron, ASTM A126, Class B, or cast iron ASTM A436 (Ni-resist), or ductile iron, ASTM A536
Plug facing	Neoprene
Body seats	
3-inches and larger	Nickel
Packing	Buna V-flex or TFE

2.04 MANUFACTURE

- A. **Plug Valves:** Valves shall be straight-flow non-lubricated resilient plug type suitable for drip tight, bi-directional shutoff at the specified valve design pressure.
1. Plug valves shall be eccentric, ball centric or full port. All valves shall open counter-clockwise.
 2. All buried valves shall be fitted with valve boxes as specified in Paragraph 2.03.B of this Section. One 2-inch square tee-handled valve wrench, made by the valve manufacturer, of suitable length to operate all valves within valve boxes shall be furnished for every 5 valves installed.
 3. Plug valves shall be installed complete with extension stems, buried gear actuators, and 2-inch operating nuts (buried) or operating hand wheels (exposed), as required for normal operation. All valve nuts shall be brought up to 1-foot below the proposed finish grade.

4. Valves shall have the name of the manufacturer and the size of the valve cast or molded onto the valve body. A permanent plate shall be attached to the valve or operator indicating serial number, order number, accessories, operator model and manufacturer.
5. Ball centric/eccentric plug valves shall be of the non-lubricated type. The port area for valves 4-inches to 20-inches shall have a minimum 80% nominal pipe diameter and valves 24-inches and larger shall have a minimum port area of 70% of nominal pipe diameter unless noted on the Drawings as "full port". Plug valves denoted as full port shall have a port area equal to the full area of the nominal pipe diameter.
6. Minimum pressure rating of valves 4-inches to 12-inches shall be 175-psi; valves 14-inches to 72-inches shall be 150-psi. Valve bodies shall be cast iron ASTM A126, Class B and fusion-bonded epoxy coated.
7. Valve ends shall be mechanical joint (buried) or flanged (exposed) as indicated on the Drawings. Valve flange drilling for valves 3-inches and larger shall be per ANSI B16.1, Class 125. Plugs shall be cast iron or ductile iron with neoprene facing and shall be of the single piece design. The plug shall be of the same configuration for all valves and shall require no stiffening member opposite the plug for balance or support. Valve body seats shall have a welded-in overlay of not less than 90% nickel. Packing shall be adjustable and safely replaceable without disassembling the valve. Bushing shall be 316 stainless steel in both upper and lower journals and shall be protected from foreign matter with the use of a grit seal or similar. The valve should be capable of drip tight shut off with flow in either direction at the full pressure of the valve. All exposed nuts, bolts, springs and washers on buried service valves shall be 304 stainless steel. All above-grade valves shall have 316 stainless steel hardware.
8. Actuators: Manual valves shall have lever or gear actuators and tee wrenches, extension stems, and floor stands as indicated on the Drawings. Valves 6-inch and larger shall be equipped with buried service rated gear actuators. Buried valves shall have a 2-inch square operating nut. All gearing shall be enclosed in a steel housing and be suitable for running in a lubricant with seals provided on all shafts to prevent entry of dirt and water into the actuator. Actuator shafts shall be supported on permanently lubricated bronze bearings. Actuators shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque. Exposed nuts, bolts and washers shall be 316 stainless steel. Valve packing adjustment shall be accessible without disassembly of the actuator.
9. Valve Testing: Plug valves shall be tested in accordance with AWWA C504. Each valve shall meet the performance, leakage, and hydrostatic tests described in AWWA C504. The leakage test shall be applied to the face of the plug tending to unseat the valve. The manufacturer shall furnish certified copies of reports covering proof-of-design testing as described in AWWA C504.

B. Valve Boxes

1. All valves installed underground shall have cast iron 2-piece valve boxes. Valve boxes shall be provided with suitable heavy bonnets and shall extend to such elevation at or slightly above the finished grade surface as directed by the County. The barrel shall be screw type only, with a 5-1/4-inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with locking cast iron covers. Covers shall have "SEWER" cast into the top for all

- wastewater mains which shall be so constructed as to prevent tipping or rattling.
2. A valve box with an operating nut extension is required for any size main that is 6-feet or greater below finished grade. The extension shall be high strength, corrosion resistant steel construction and permanently attached to the operating nut. The operating nut extension insert shall be one complete assembled unit with a self-adjusting extension stem system that fits inside a standard valve box. All moving parts of the extension stem shall be enclosed in a housing to prevent contact with the soil. A valve box-centering device designed to eliminate the shifting of the valve box against the operating nut of the valve shall be used. The valve box assembly shall be adjustable to accommodate variable trench depths 6-foot and greater as shown in the Drawings.
 3. The stem assembly shall be of a telescoping design that allows for variable adjustment length. The material shall be galvanized square steel tubing. The stem assembly shall have a built-in device that prevents the stem assembly from disengaging at its fully extended length. The extension stem must be capable of surviving a torque test to 1,000 foot-pounds without failure.
 4. The valve boxes shall have locking lids.
 5. Extension sections shall be cast or ductile iron only.
 6. Valve boxes in non-paved areas shall be installed with a valve collar as shown in the Drawings. The protective concrete collar with a bronze identification disc shall be constructed of Class B concrete as shown on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLING VALVES AND BOXES

- A. Valves: Valves shall be carefully inspected, opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Plug valves shall have the plug shaft installed horizontally with the plug rotating upward to the top of the valve. Any valve that does not operate correctly shall be removed and replaced. Seats shall face in the direction as recommended by the manufacturer.
- B. Valve Boxes: Valve boxes and risers shall be carefully centered over the operating nuts of the valves so as to permit a valve key to be fitted easily to the operating nut. In unpaved areas, valve boxes shall be set to conform to the level of the finished surface and held in position by a concrete collar placed under the support flange as shown on the Drawings. The valve box shall not transmit surface loads to the pipe or valve. Extensions or risers for valve boxes shall be an integral part of the box. No cut sections of ductile iron or PVC pipe shall be used in extending the box to its proper height. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the Work all valve boxes shall be adjusted to finish grade.

END OF SECTION



VALENCIA WATER CONTROL DISTRICT
135 W. CENTRAL BLVD., SUITE 320, ORLANDO, FL 32801
PHONE: 407-841-5524 X 101 - FAX: 407-839-1526

October 10, 2017

Orange County Utilities
C/o Orange County, Florida
Attn: Jose Hernandez, P.E.
9150 Curry Ford Road
Orlando, FL 32825

Subject: Permit #0501

To Whom It May Concern:

Orange County Utilities, is hereby granted a construction permit to directional drill under VWCD Canal C-11, all within the Orange County owned John Young Parkway Right-of-Way. Approval is granted in accordance with approved plans and hydraulic calculations and the following **GENERAL AND SPECIFIC CONDITIONS:**

GENERAL CONDITIONS:

1. That the District or their agents may at any time make such inspections as they may deem necessary to insure that the construction or work is performed in accordance with the conditions of this permit.
2. That the permittee will maintain the work authorized herein during construction and thereafter in good condition in accordance with the approved plans.
3. That the permittee shall comply promptly with any lawful regulations, conditions, or instructions affecting the structure or work authorized herein if and when issued by the U.S. Environmental Protection Agency, the South Florida Water Management District and the Florida Department of Environmental Protection and/or any county or city environmental protection agency having jurisdiction to abate or prevent water pollution, including thermal or radiation pollution. Such regulations, conditions, or instructions in effect or hereafter prescribed by the federal, state, county and city agencies have hereby made a condition of this permit.
4. It is understood and agreed that the rights and privileges herein set out are granted only to the extent of the District's right, title and interest in the land to be entered upon and used by the permittee, and the permittee will at all times, assume all risk and indemnify, defend and save harmless Valencia Water Control District from and against any and all

loss, damage, cost or expense arising in any manner on account of the exercise or attempted exercises by the permittee of the aforesaid rights and privileges.

5. The permittee and/or their agents will use every measure to prevent the run-off of turbid water into the District's facilities including, but not limited to, the use of temporary ponds, silt barriers, chemical additives and temporary grassing during construction.
6. If discharge of water by permittee should at any time raise the level of pollutants in the District's water management facility to the point where the District is in violation of a statute or regulation, permittee will either: (a) immediately cease such discharge, (b) remove pollutants from the water before discharging into District facilities, and pay all costs which the District must incur in order to reduce pollution in the District's facilities to acceptable levels.
7. That all the provisions of this permit shall be binding on any assignee or successor in interest of the permittee.
8. That any modification, suspension or revocation of this permit shall not be the basis for a claim for damages against Valencia Water Control District.
9. The Valencia Water Control District agrees that the issuance of this permit allows the passage of water through their canals but in so doing does not assume any responsibility for damage to any persons or property.
10. That the engineer of record certify that the facilities as constructed comply with the submitted hydraulic calculations and approved drawings.
11. That the permittee agrees not to modify or alter the constructed facilities at any future time without the express consent of the District.
12. This permit is valid for 3 years from date of approval or runs concurrently with the SFWMD permit, if required, whichever expires first.
13. That this permit must be executed within 30 days of Board approval or must be brought back to the Board for reconsideration.

END OF GENERAL CONDITIONS

SPECIFIC CONDITIONS

1. That drawings titled Construction Drawings for John Young Parkway Reclaimed Water Main Improvements as recommended for approval by the District Engineer on 10/10/17, become part of this permit.

Attest:

Cynthia K. Malone

Signature:

Jose Hernandez

Jose HERNANDEZ
Orange County Utilities -
Orange County, Florida

Title:

Chief ENGINEER

Attest:

[Signature]

Granted by:

Valencia Water Control District

By:

James A Gerard

James Gerard, President

On this 23 day of October, 2017

CONSTRUCTION DRAWINGS FOR

NOTE:
THIS SET OF DRAWINGS IS A COMPONENT OF
THE JOHN YOUNG PARKWAY RECLAIMED
WATER MAIN IMPROVEMENTS CONTRACT
PLAN SET.

JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS - 30 - INCH FORCE MAIN REPLACEMENT

FEBRUARY 2018

SUB UNIT ORGANIZATION No. 1504-0062

PROJECT SEQUENCE No. 62605

ORANGE COUNTY MAYOR
TERESA JACOBS

BOARD OF COUNTY COMMISSIONERS
DISTRICT 1: COMMISSIONER BETSY VANDERLEY
DISTRICT 2: COMMISSIONER BRYAN NELSON
DISTRICT 3: COMMISSIONER PETE CLARKE
DISTRICT 4: COMMISSIONER JENNIFER THOMPSON
DISTRICT 5: COMMISSIONER EMILY BONILLA
DISTRICT 6: COMMISSIONER VICTORIA P. SIPLIN

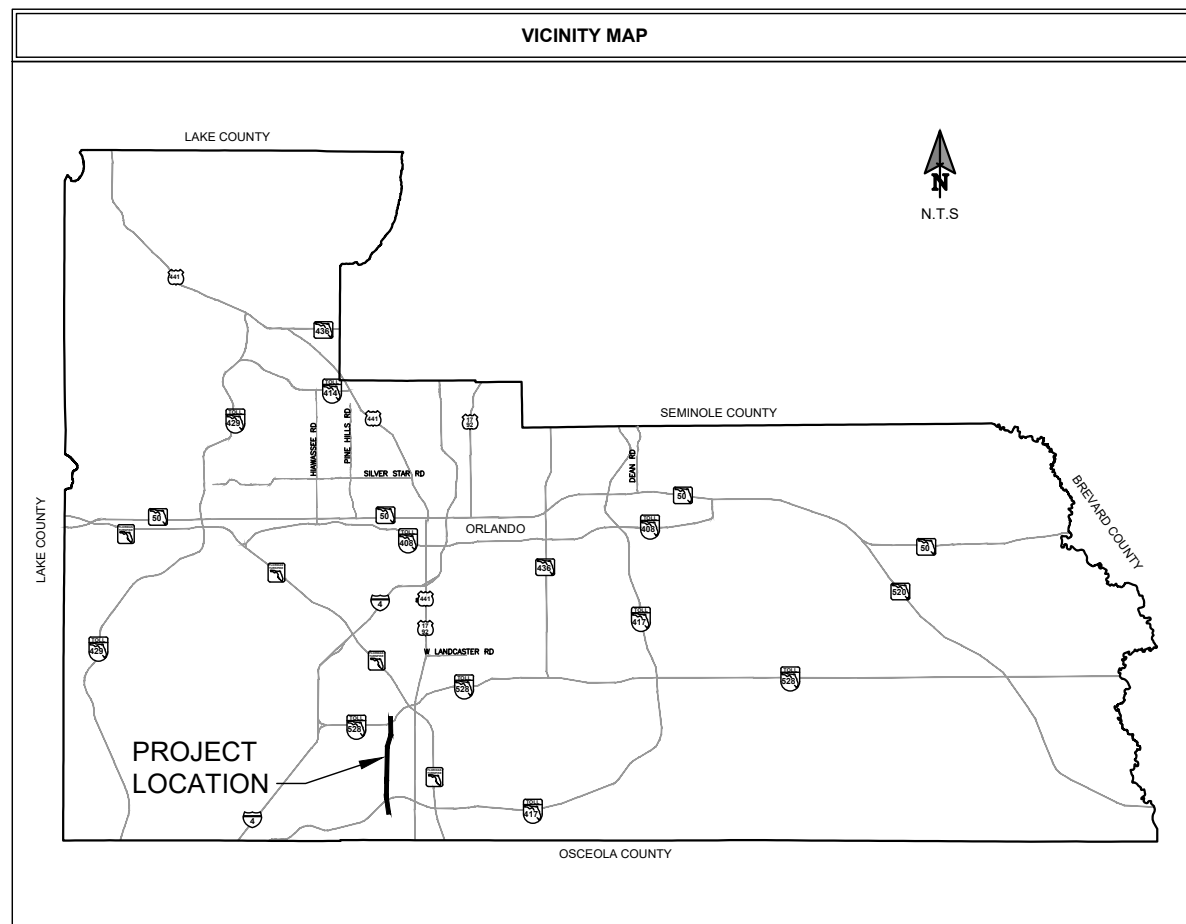
COUNTY ADMINISTRATOR: AJIT LALCHANDANI
UTILITIES DIRECTOR: RAYMOND E. HANSON, P.E.

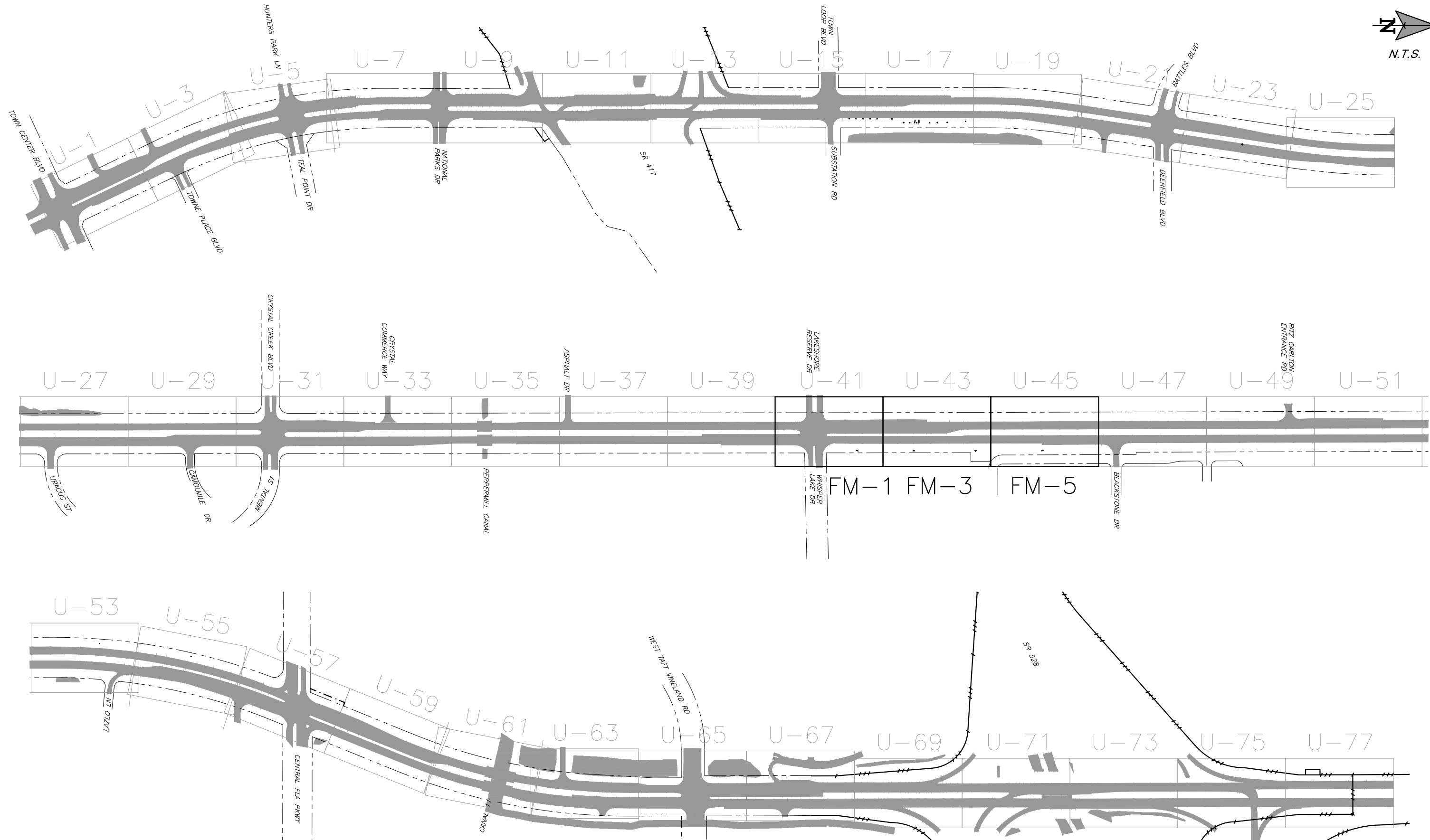
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825



PREPARED BY:

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
P: (407) 896-8608 F: (407) 896-1822
ENGINEERING BUSINESS No. 6899





No.	REVISIONS	BY	DATE
ADDENDUM No 2		CKM	2-01-2018
BID SET		CKM	10-26-2017

LINE IS 1 INCH
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED



ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825



JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS - 30" FM REPLACEMENT

KEY MAP

DESIGN ENGINEER
CYNTHIA K. MALONE, P.E.

FLORIDA REGISTRATION No.
58685

PROJECT No.: 2012-39
PROJECT DATE: FEB 2018
DESIGNED BY: CKM
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

DRAWING No.
G-3A

3 SHEET
OF 13

SUMMARY OF QUANTITIES JYP 30-INCH FORCE MAIN

Item No.	Description	Units	FM-1	FM-3	FM-5	TOTAL
1	Furnish and Install 24-inch DR 11 HDPE Temporary Bypass Piping and Fittings	LF	155	600	295	1050
2	Furnish and Install 30-inch DR 18 PVC Force Main	LF	130	600	270	1000
3	Furnish and Install 30-inch Plug Valve	EA	1		1	2
4	Furnish and Install 30-inch Line Stop w/ 24-inch Bypass Outlet	EA	1		1	2
5	Furnish and Install 6-inch Combination Air Release Valve	EA		1		1
6	Remove Existing 30-inch Ductile Iron Force Main	LF	130	600	270	1000
7	Remove and Replace Concrete Sidewalk	SY	81	334	162	577
8	Furnish, Install and Maintain Sod	SY	430	1667	833	2930
9	Furnish, Install and Maintain Drake Elm Trees	EA	2	10	6	18

SUMMARY OF SUE RESULTS

Location ID	Sheet Number	Horizontal Coordinates	Elevation (ft)	Utility Owner	Size, Material & Type
TH-FM1	FM-1/FM-2	N 1477504.457	84.47	ORANGE CO	30" DI FM
		E 519601.145			
TH-FM2	FM-3/FM-4	N 1477815.749	85.24	ORANGE CO	30" DI FM
		E 519601.457			
TH-FM3	FM-3/FM-4	N 1478158.448	84.45	ORANGE CO	30" DI FM
		E 519602.260			
TH-FM4	FM-5/FM-6	N 1478527.472	84.24	ORANGE CO	30" DI FM
		E 519599.515			

ALL ELEVATIONS ARE TO TOP OF UTILITY
FIELD WORK FOR TH-FM1 THROUGH TH-FM4 PERFORMED DECEMBER 28, 2017.

No.	REVISIONS	BY	DATE
ADDENDUM No 2		CKM	2-01-2018
BID SET		CKM	10-26-2017

LINE IS 1/8" AT FULL SIZE (IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED



ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825



JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS - 30" FM REPLACEMENT

SUMMARY OF QUANTITIES AND SUMMARY OF SUE RESULTS

DESIGN ENGINEER
CYNTHIA K. MALONE, P.E.

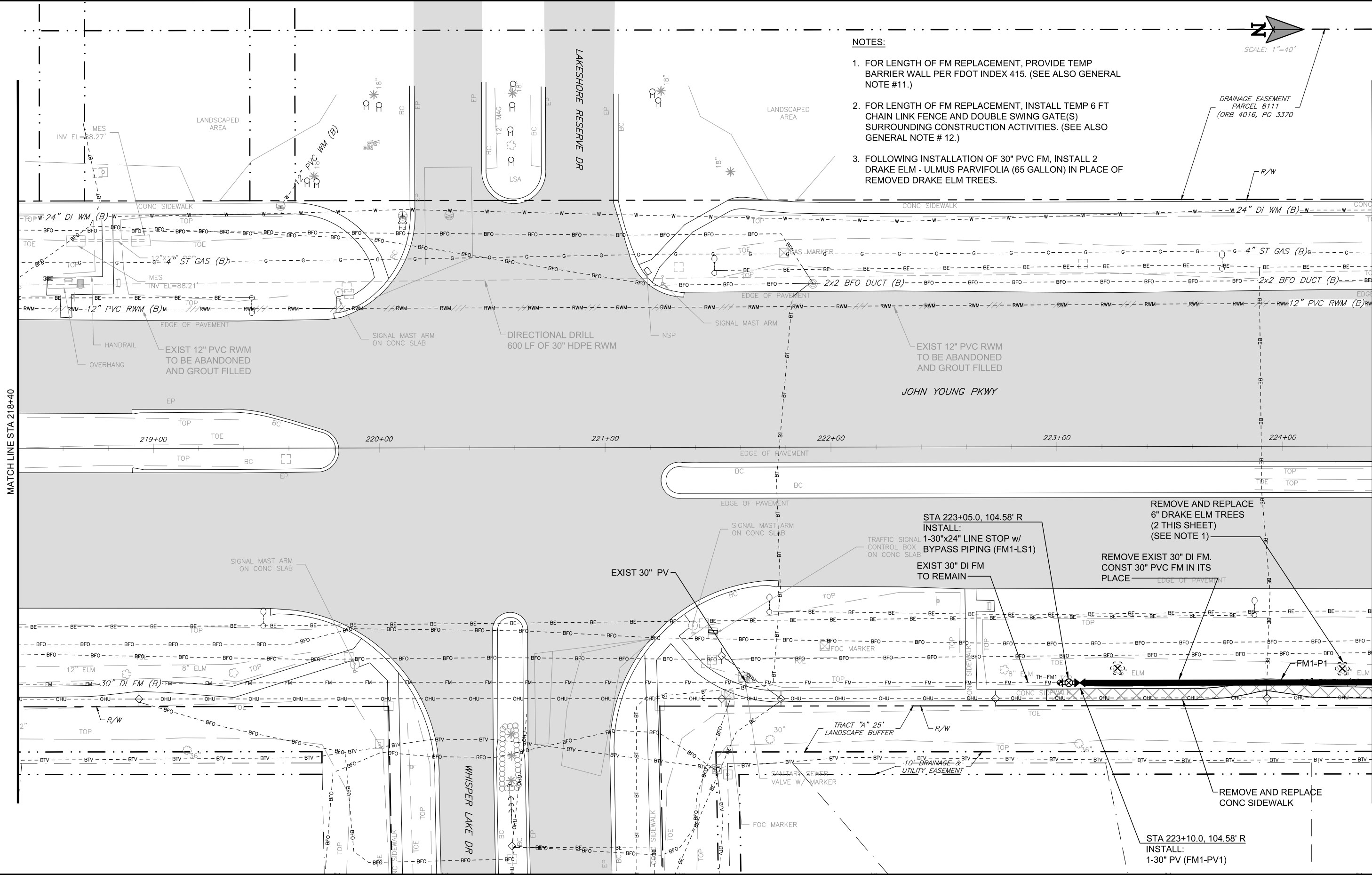
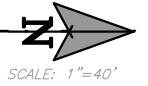
FLORIDA REGISTRATION No:
58685

PROJECT No.: 2012-39
PROJECT DATE: FEB 2018
DESIGNED BY: CKM
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

DRAWING No. G-4A
SHEET 4 OF 13

NOTES:

- 1. FOR LENGTH OF FM REPLACEMENT, PROVIDE TEMP BARRIER WALL PER FDOT INDEX 415. (SEE ALSO GENERAL NOTE #11.)
- 2. FOR LENGTH OF FM REPLACEMENT, INSTALL TEMP 6 FT CHAIN LINK FENCE AND DOUBLE SWING GATE(S) SURROUNDING CONSTRUCTION ACTIVITIES. (SEE ALSO GENERAL NOTE # 12.)
- 3. FOLLOWING INSTALLATION OF 30" PVC FM, INSTALL 2 DRAKE ELM - ULMUS PARVIFOLIA (65 GALLON) IN PLACE OF REMOVED DRAKE ELM TREES.



MATCHLINE STA 218+40

MATCHLINE STA 224+40

No.	REVISIONS	BY	DATE
ADDENDUM No 2		CKM	2-01-2018
BID SET		CKM	10-26-2017

LINE IS 1 INCH
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED



ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825



FORCE MAIN REPLACEMENT PLAN
STA 218+40 TO STA 224+40

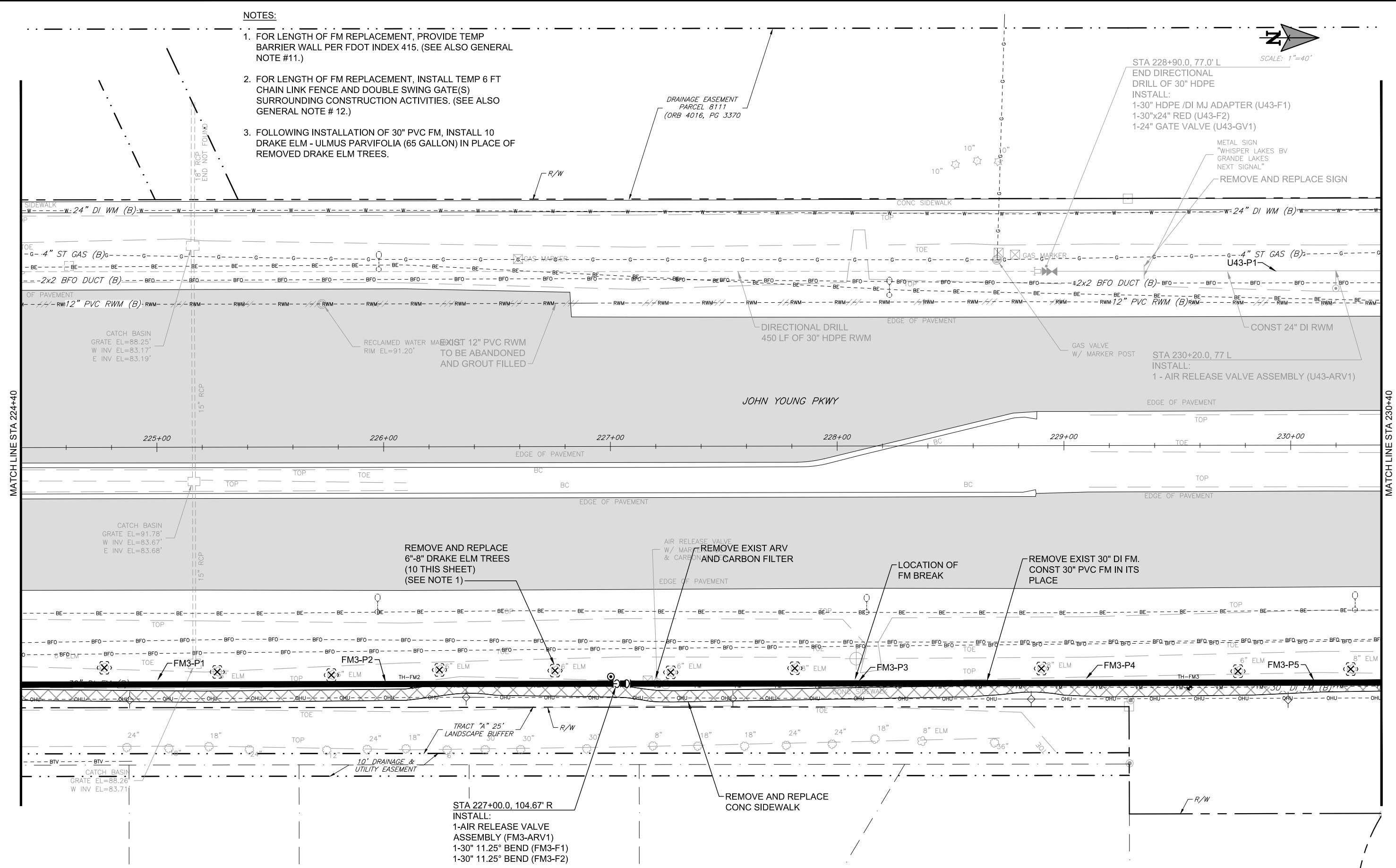
DESIGN ENGINEER
CYNTHIA K. MALONE, P.E.
FLORIDA REGISTRATION No.
58685

PROJECT No.: 2012-39
PROJECT DATE: FEB 2018
DESIGNED BY: CKM
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

DRAWING No.
FM-1
SHEET
5 OF 13

NOTES:

1. FOR LENGTH OF FM REPLACEMENT, PROVIDE TEMP BARRIER WALL PER FDOT INDEX 415. (SEE ALSO GENERAL NOTE #11.)
2. FOR LENGTH OF FM REPLACEMENT, INSTALL TEMP 6 FT CHAIN LINK FENCE AND DOUBLE SWING GATE(S) SURROUNDING CONSTRUCTION ACTIVITIES. (SEE ALSO GENERAL NOTE # 12.)
3. FOLLOWING INSTALLATION OF 30" PVC FM, INSTALL 10 DRAKE ELM - ULMUS PARVIFOLIA (65 GALLON) IN PLACE OF REMOVED DRAKE ELM TREES.



No.	REVISIONS	BY	DATE

LINE IS 1 INCH
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)
SCALE: AS NOTED

ORANGE COUNTY
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825



JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS - 30" FM REPLACEMENT
FORCE MAIN REPLACEMENT PLAN
STA 224+40 TO STA 230+40

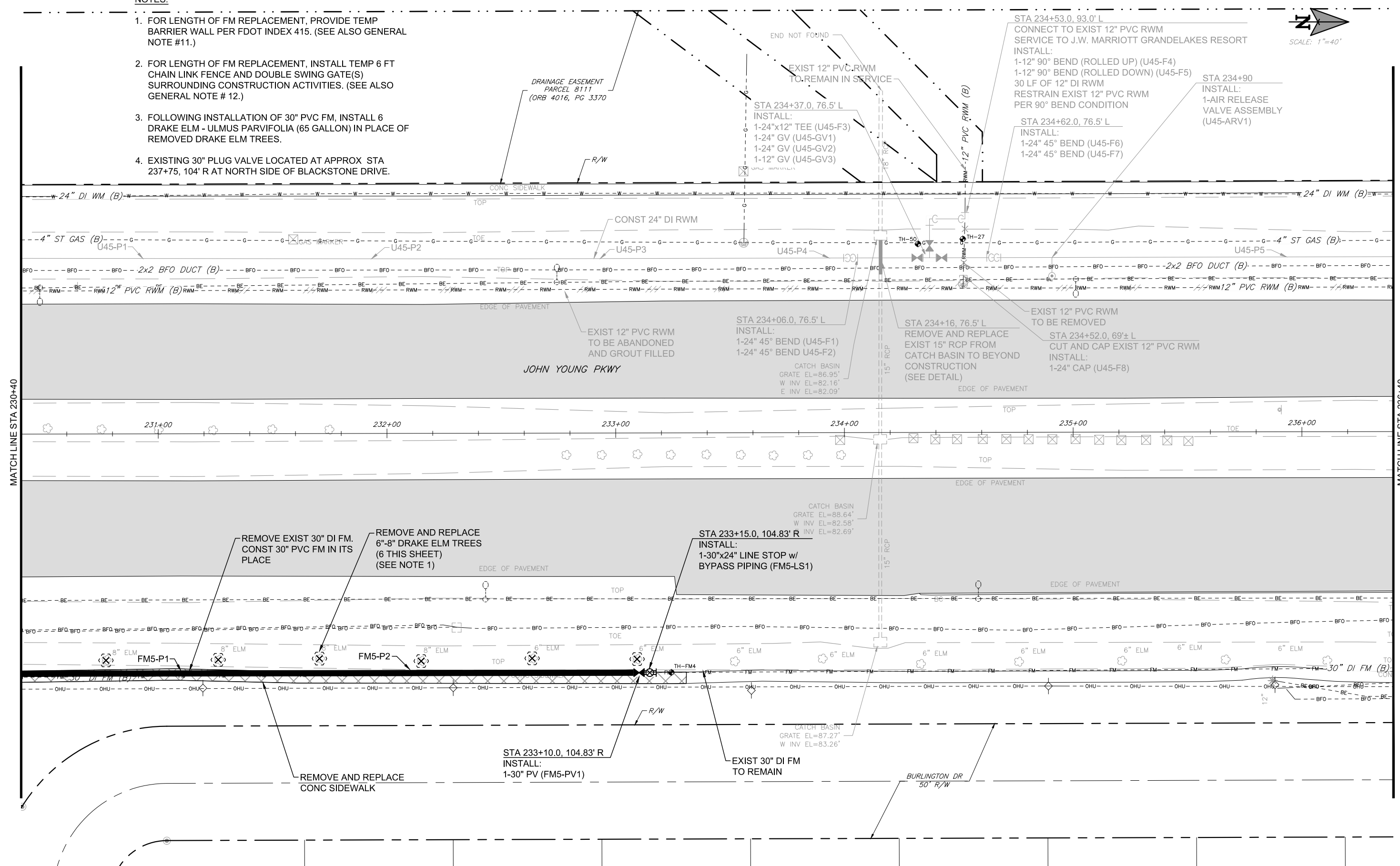
DESIGN ENGINEER
CYNTHIA K. MALONE, P.E.
FLORIDA REGISTRATION No.
58685

PROJECT No.: 2012-39
PROJECT DATE: FEB 2018
DESIGNED BY: CKM
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

DRAWING No.
FM-3
SHEET
OF 13

NOTES:

- 1. FOR LENGTH OF FM REPLACEMENT, PROVIDE TEMP BARRIER WALL PER FDOT INDEX 415. (SEE ALSO GENERAL NOTE #11.)
- 2. FOR LENGTH OF FM REPLACEMENT, INSTALL TEMP 6 FT CHAIN LINK FENCE AND DOUBLE SWING GATE(S) SURROUNDING CONSTRUCTION ACTIVITIES. (SEE ALSO GENERAL NOTE # 12.)
- 3. FOLLOWING INSTALLATION OF 30" PVC FM, INSTALL 6 DRAKE ELM - ULMUS PARVIFOLIA (65 GALLON) IN PLACE OF REMOVED DRAKE ELM TREES.
- 4. EXISTING 30" PLUG VALVE LOCATED AT APPROX STA 237+75, 104' R AT NORTH SIDE OF BLACKSTONE DRIVE.



MATCHLINE STA 230+40

MATCHLINE STA 236+40

No.	REVISIONS	BY	DATE
ADDENDUM No. 2	BID SET	CKM	2-01-2018
		CKM	10-26-2017

LINE IS 1 INCH
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)
SCALE: AS NOTED

ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

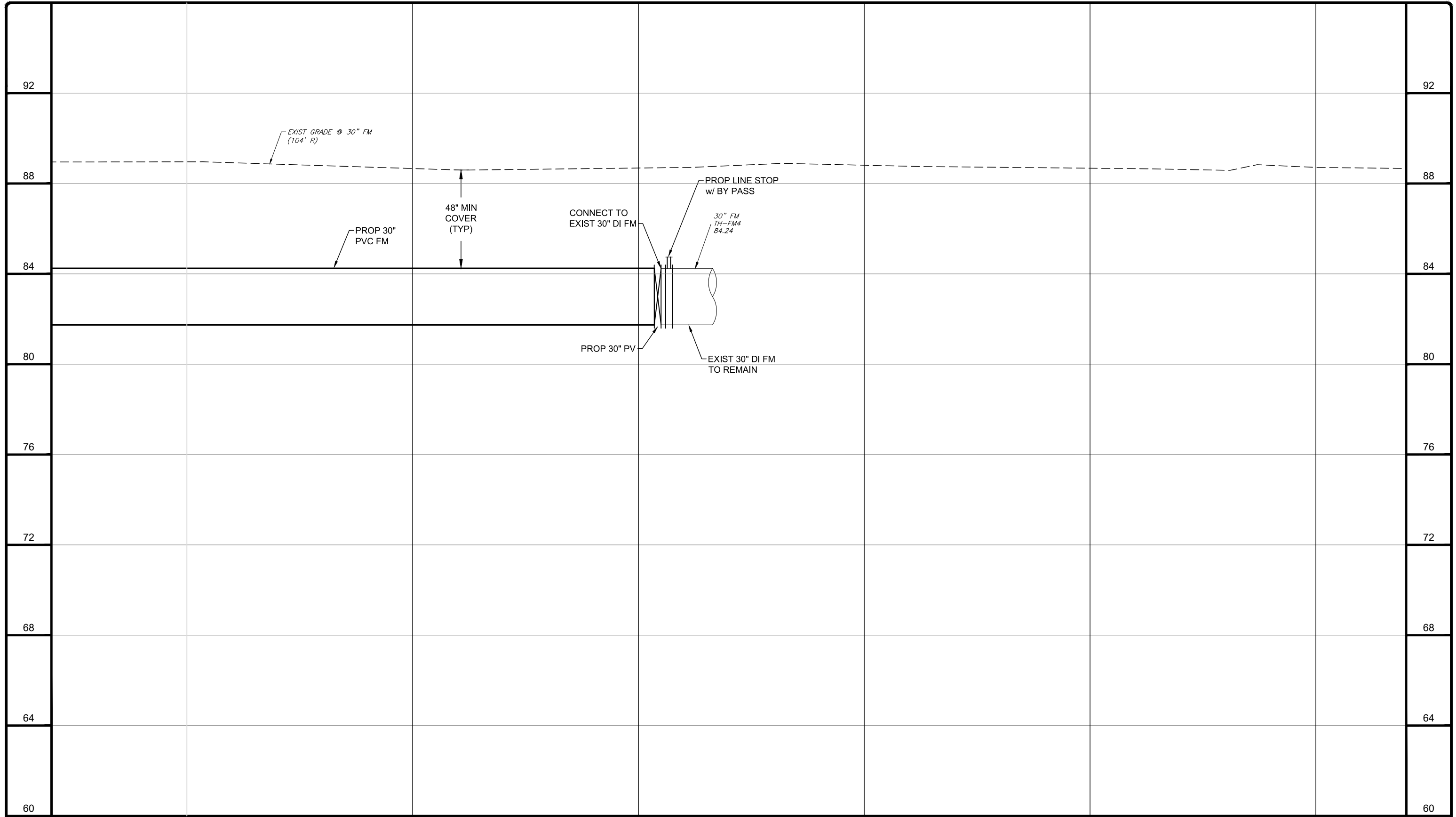
BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
150 E. Hillcrest Street, Orlando, FL, 32803
FLORIDA REGISTRATION NO. 48842
ENGINEERING BUSINESS No. 6899

JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS - 30" FM REPLACEMENT

FORCE MAIN REPLACEMENT PLAN

STA 230+40 TO STA 236+40

DESIGN ENGINEER CYNTHIA K. MALONE, P.E.	PROJECT No.: 2012-39 PROJECT DATE: FEB 2018	DRAWING No. FM-5
FLORIDA REGISTRATION No. 58685	DESIGNED BY: CKM DRAWN BY: JAB CHECKED BY: GJH DRAWING FILE: SEE MARGIN	SHEET 9 OF 13



231+00 232+00 233+00 234+00 235+00 236+00

SCALE: HORZ 1"=40'
VERT 1"=4'

No.	REVISIONS	BY	DATE

LINE IS 1 INCH
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)



ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825



JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS - 30" FM REPLACEMENT
FORCE MAIN REPLACEMENT
PROFILE STA 230+40 TO STA 236+40

DESIGN ENGINEER CYNTHIA K. MALONE, P.E.	PROJECT No.: 2012-39 PROJECT DATE: FEB 2018 DESIGNED BY: CKM DRAWN BY: JAB	DRAWING No. FM-6
FLORIDA REGISTRATION No. 58685	CHECKED BY: GJH DRAWING FILE: SEE MARGIN	10 SHEET OF 13

DATE: July 2014

RESTRAINED PIPE TABLE
WASTEWATER FORCE MAINS

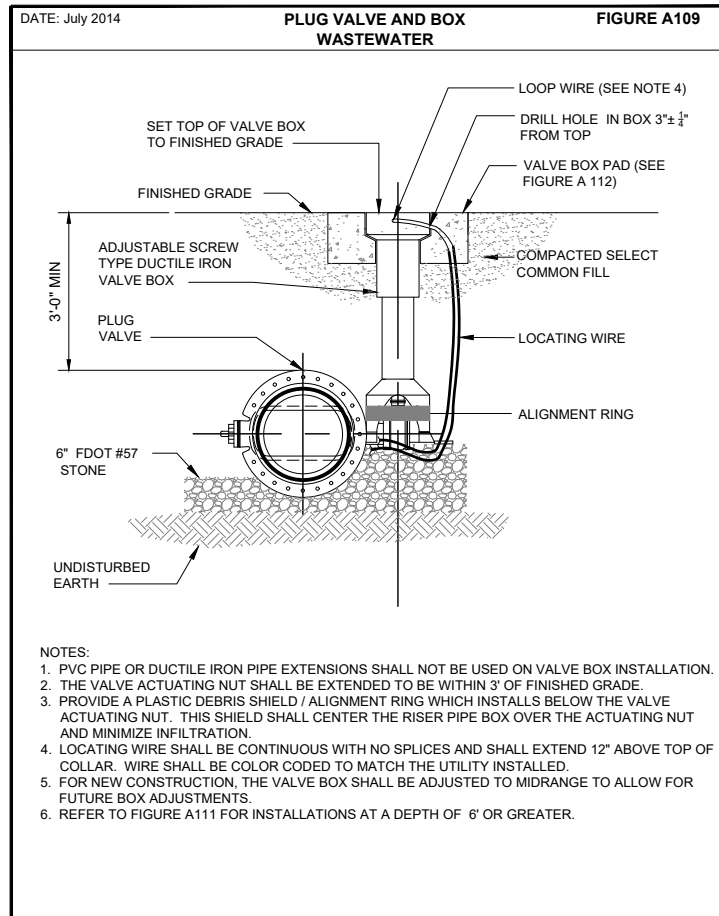
FIGURE A104-2

TYPE	PVC PIPE SIZE									
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"
90° BEND	18	24	31	38	43	55	65	75	88	100
45° BEND	8	10	13	15	18	23	26	31	38	43
22-1/2° BEND	4	5	6	8	9	11	13	15	18	20
11-1/4° BEND	2	3	4	5	6	8	9	10	11	13
PLUG OR BRANCH OF TEE	38	50	65	79	90	117	139	163	194	223
VALVE	19	25	32	40	45	59	70	82	98	112
REDUCER	VARIES BY SIZE; TO BE DETERMINED BY THE DESIGN ENGINEER.									

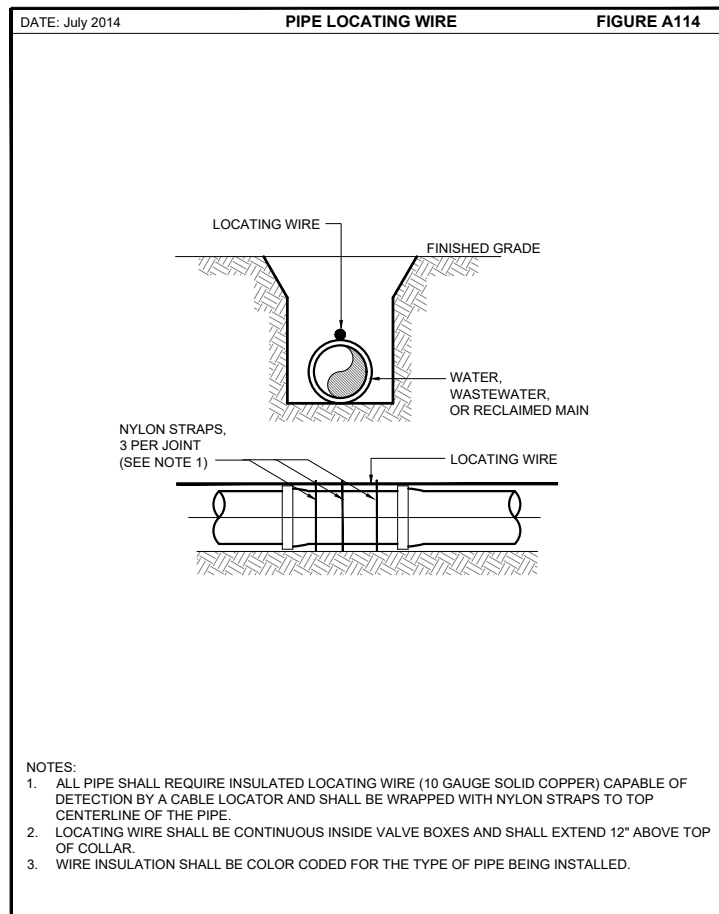
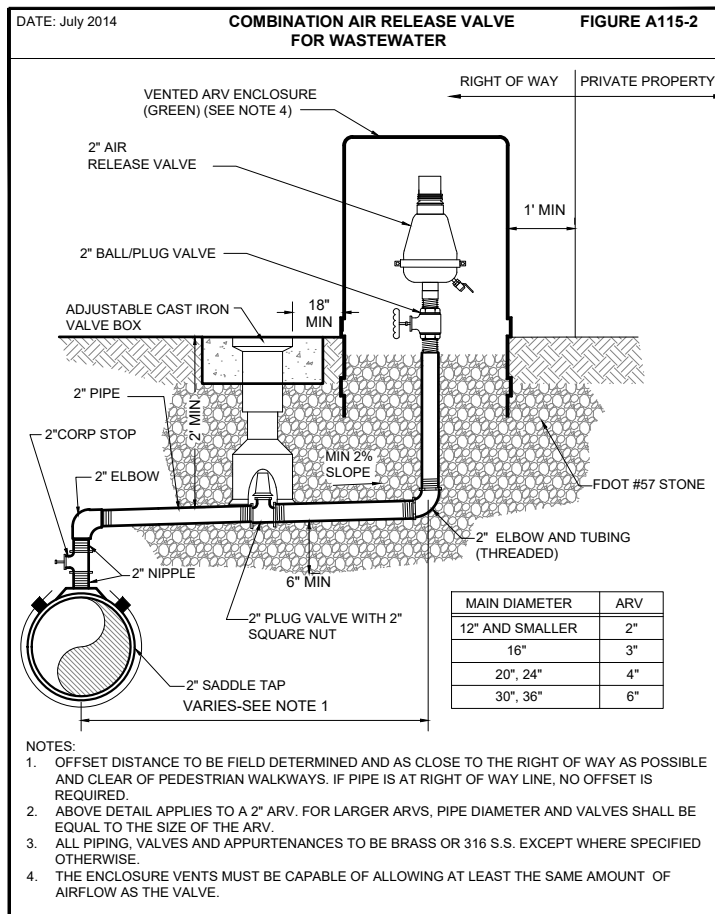
NOTES:
1. FITTINGS SHALL HAVE RESTRAINED JOINTS UNLESS OTHERWISE INDICATED.
2. INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO OR GREATER THAN LENGTH SHOWN IN THE TABLE.
3. WHERE TWO OR MORE FITTINGS ARE IN SERIES, SELECT FITTING RESTRAINT LENGTH THAT YIELDS THE LONGEST RESTRAINT DISTANCE.
4. ALL INLINE VALVES SHALL BE RESTRAINED.
5. WHERE INTERNAL RESTRAINED JOINTS ARE USED, THE ENTIRE BELL SHALL BE PAINTED RED.
6. LENGTHS SHOWN IN THE TABLE WERE CALCULATED IN ACCORDANCE WITH PROCEDURES OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" GUIDELINES PUBLISHED BY DIPRA, USING THE ASSUMPTIONS SHOWN BELOW:

WORKING PRESSURE: 100 PSI
SOIL DESIGNATION: SM (SAND SILT)
LAYING CONDITIONS: 3
DEPTH OF COVER: 3 FT
SAFETY FACTOR: 1.5
CONVERSION FACTOR FOR PVC PIPE: 1.25

THE DESIGN ENGINEER SHALL INCREASE THE VALUES IN THE TABLE AS WARRANTED BY SITE-SPECIFIC PARAMETERS, SUCH AS SOIL DESIGNATIONS AND LAYING CONDITIONS.



- DATE: February 11, 2011
- GENERAL NOTES**
- FIGURE FigGN
- OCU GENERAL NOTES:
1. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING IN PROXIMITY OF WATER MAINS, WASTEWATER FORCE MAINS, GRAVITY MAINS AND RECLAIMED WATER MAINS. MAIN LOCATIONS SHOWN ON PLANS MAY NOT BE EXACT. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING UTILITY LOCATIONS.
 2. SHOULD A PIPE EMERGENCY OCCUR, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OCU DISPATCH OPERATOR (407-836-2777) AND THE OCU INSPECTOR.
 3. THE CONTRACTOR SHALL NOTIFY THE OCU CONSTRUCTION DIVISION AT LEAST SEVEN DAYS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION PROJECT BY CALLING (407) 254-9798.
 4. THE CONTRACTOR SHALL NOTIFY THE OCU CONSTRUCTION DIVISION AT LEAST 48 HOURS PRIOR TO ANY UTILITIES CONSTRUCTION BY CALLING (407) 254-9798.
 5. THE MATERIALS, PRODUCTS, AND CONSTRUCTION OF ALL UTILITIES CONNECTING TO THE OCU SYSTEM SHALL BE IN CONFORMANCE WITH THE ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL.
 6. ALL OCU MAINS AND FACILITIES WITHIN THE LIMITS OF THE PROJECT SHALL BE SUPPORTED AND PROTECTED AGAINST DAMAGE DURING CONSTRUCTION.
 7. THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, SHALL IMMEDIATELY REPAIR ALL DAMAGES TO OCU MAINS AND FACILITIES. IF THE REPAIR IS NOT MADE IN A TIMELY MANNER, AS DETERMINED BY OCU, OCU MAY PERFORM REQUIRED REPAIRS AND CLEANUP. THE CONTRACTOR WILL BE CHARGED FOR ALL EXPENSES ASSOCIATED WITH THE REPAIR.
 8. THE CONTRACTOR SHALL ADJUST ALL EXISTING OCU MAINS AND FACILITIES IN CONFLICT WITH NEW GRADE, NEW OR ALTERED ROADWAYS, SIDEWALKS, DRIVEWAYS, OR STORM WATER IMPROVEMENTS. OCU FACILITIES TO BE ADJUSTED INCLUDE, BUT ARE NOT LIMITED TO PIPELINES, PUMP STATIONS, VALVE BOXES, AIR RELEASE VALVES, FIRE HYDRANTS, MANHOLE COVERS, AND METERS.
 9. ONLY OCU SHALL OPERATE OCU WATER, WASTEWATER, AND RECLAIMED WATER VALVES. THE CONTRACTOR SHALL COORDINATE VALVE OPERATION WITH THE OCU INSPECTOR. FOR OPERATION OF MAINS NOT OWNED BY OCU, IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE APPROPRIATE UTILITY REPRESENTATIVE.
 10. CONSTRUCTION ACTIVITIES SHALL NOT CAUSE INTERRUPTIONS IN WATER, WASTEWATER, OR RECLAIMED WATER SERVICE. THE CONTRACTOR SHALL COORDINATE PRE-APPROVED INTERRUPTIONS OF SERVICE WITH THE OCU INSPECTOR 7 WORKING DAYS IN ADVANCE.



- DATE: February 11, 2011
- GENERAL NOTES**
- FIGURE FigGN
11. THE CONTRACTOR SHALL PROVIDE FOR BYPASSING AND/OR HAULING WASTEWATER DURING APPROVED INTERRUPTIONS OF WASTEWATER FLOWS AND CONNECTIONS. THE CONTRACTOR SHALL SUBMIT A BYPASS PLAN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER TO OCU ENGINEERING FOR APPROVAL PRIOR TO IMPLEMENTATION BY CONTRACTOR.
 12. ALL VALVES INSTALLED AS PART OF THIS CONSTRUCTION PROJECT SHALL REMAIN CLOSED DURING CONSTRUCTION. KEEP VALVES ON ALL WET TAPS CLOSED UNTIL CLEARED BY FDEP. DO NOT CONNECT NEWLY CONSTRUCTED WATER MAINS TO ANY EXISTING WATER MAINS UNLESS CLEARED BY FDEP AND OCU.
 13. THE CONTRACTOR SHALL PROVIDE A JUMPER ASSEMBLY WITH A BACKFLOW PREVENTER FOR MAKING TEMPORARY CONNECTIONS TO AN EXISTING POTABLE WATER SOURCE IN ORDER TO CHLORINATE AND FLUSH NEW WATER MAINS WITH POTABLE WATER. ANY TEMPORARY POTABLE WATER CONNECTIONS TO RECLAIMED WATER OR FORCEMAIN SHALL ALSO BE EQUIPPED WITH A BACKFLOW PREVENTER.
 14. FOR PVC PIPE THAT WILL BE OWNED AND MAINTAINED BY OCU, NO PIPE BENDING IS ALLOWED. THE MAXIMUM ALLOWABLE TOLERANCE FOR JOINT DEFLECTION IS 0.75 DEGREES (3-INCHES PER JOINT PER 20 FT STICK OF PIPE.) ALIGNMENT CHANGE SHALL BE MADE ONLY WITH SLEEVES AND FITTINGS.
 15. FOR NON-PVC PIPE THAT WILL BE OWNED AND MAINTAINED BY OCU, LONG RADIUS CURVES, EITHER HORIZONTAL OR VERTICAL, MAY BE INSTALLED WITH STANDARD PIPE BY DEFLECTIONS AT THE JOINTS. MAXIMUM DEFLECTIONS AT PIPE JOINTS, FITTINGS AND LAYING RADIUS FOR THE VARIOUS PIPE LENGTHS SHALL NOT EXCEED 75 PERCENT OF THE PIPE MANUFACTURER'S RECOMMENDATION.

No.	REVISIONS	BY	DATE

ADDENDUM No 2
BID SET

CKM 2-01-2018
CKM 10-26-2017

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SCALE: AS NOTED

ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Bernes, Ferland and Associates, Inc.
1250 E. Hillcrest Street, Orlando, FL 32803
TEL: (407) 536-9800
FAX: (407) 536-1200
ENGINEERING BUSINESS No. 6869

JOHN YOUNG PARKWAY RECLAIMED WATER MAIN IMPROVEMENTS - 30" FM REPLACEMENT

STANDARD DETAILS

DESIGN ENGINEER
CYNTHIA K. MALONE, P.E.

PROJECT No.: 2012-39
PROJECT DATE: FEB 2018
DESIGNED BY: CKM
DRAWN BY: JAB
CHECKED BY: GJH
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FLORIDA REGISTRATION No.
58685

DRAWING No.
D-1A

11 SHEET
OF 13

