

# Chain of Custody

Document 49453 - HBN 36073

Worker JOHN YOUNG

Subcontract To

Report To

Results Requested By 11/25/2014

Brandon Ohara  
Advanced Environmental Laboratories, Inc  
528 S. North Lake Blvd, Suite 1016  
Altamonte Springs, FL 32701  
Phone (407)937-1594  
Fax (407)937-1597

SUMMIT-Cuyahoga Falls-OH  
Summit Environmental Technologies, Inc.  
3310 Win Street  
Cuyahoga Falls, OH 44223  
Phone  
Fax

Requested Analytes

14/11/875-001  
RPR  
015



EPA 1631

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers
1	TW-8	11/18/2014 16:00	A1406831008	Water	NONE
2	TW-9	11/18/2014 15:20	A1406831009	Water	1
3	TW-11	11/18/2014 14:10	A1406831010	Water	1
4	TW-12	11/18/2014 13:21	A1406831011	Water	1
5	TW-13	11/18/2014 12:41	A1406831012	Water	1
6	TW-14	11/18/2014 12:03	A1406831013	Water	1
7	TW-15	11/18/2014 11:24	A1406831014	Water	1
8	TW-18	11/18/2014 10:42	A1406831015	Water	1
9	TW-21	11/18/2014 10:02	A1406831016	Water	1
10	TW-22	11/18/2014 09:23	A1406831017	Water	1
11	TW-1	11/19/2014 11:22	A1406831018	Water	1
12	TW-4	11/19/2014 12:01	A1406831019	Water	1
13	TW-5	11/19/2014 10:42	A1406831020	Water	1
14	TW-6	11/19/2014 10:01	A1406831021	Water	1
15	TW-7	11/19/2014 09:23	A1406831022	Water	1

LAB USE ONLY

# Chain of Custody

Document 49453 - HBN 36073      Workorder      JOHN YOUNG      Results Requested By 11/25/2014

Report To		Subcontract To		Requested Analytes	
Brandon Ohara Advanced Environmental Laboratories, Inc. 6681 Southpoint Parkway Jacksonville, FL 32216 Phone (904)363-9350 Fax (904)363-9354		SUMMIT-Cuyahoga Falls-OH Summit Environmental Technologies, Inc. 3310 Win Street Cuyahoga Falls, OH 44223 Phone Fax			
EPA 1631 Preserved Containers		NONE			
Item	Sample ID	Collect Date/Time	Lab ID	Matrix	LAB USE ONLY
16					
17					
18					
19					
Report			Electronic Data Deliverables		
<input type="checkbox"/> Standard (Results only) <input type="checkbox"/> Standard with Batch QC <input type="checkbox"/> CLP <input type="checkbox"/> Other			<input type="checkbox"/> SEDD Stage 2A <input type="checkbox"/> SEDD Stage 2B <input type="checkbox"/> SEDD Stage 3 <input type="checkbox"/> Other		
Transfers		Released By	Date/Time	Received By	Date/Time
1			11/19/14 20:54		11-21-14
2					
3					
4					
5					
Preservative NONE = NONE					
Comments					

**Summit Environmental Technologies, Inc.  
Cooler Receipt Form**

Client: Advanced Environmental Initials of person inspecting cooler and samples: FC  
Order Number: \_\_\_\_\_

Date Received: 11-21-14 Time Received: 9:40 a.m. Date cooler(s) opened and samples inspected: \_\_\_\_\_

Number of Coolers/Boxes: 1 N/A

Shipper: FED EX UPS DHL Airborne US Postal Walk-in Pickup Other: \_\_\_\_\_

Packaging: Peanuts Bubble Wrap Paper Foam None Other: \_\_\_\_\_

Tape on cooler box: Y N N/A

Custody Seals intact Y N N/A

C-O-C in plastic Y N N/A

Ice  Blue ice \_\_\_\_\_ present / absent / melted N/A

Sample Temperature IR Gun #16020459 CF \_\_\_\_\_ °C 1.5 °C N/A

Radiological Testing Instrument serial #35127 Y N N/A  
(see page 2 for scan results)

**\*\*Use 1 sheet per sample for Radiological Testing. If sample is HOT, the Radiological Safety Officer must be notified immediately.**

C-O-C filled out properly Y N N/A

Samples in separate bags Y N N/A

Sample containers intact\* Y N N/A

\*If no, list broken sample(s): \_\_\_\_\_

Sample label(s) complete (ID, date, etc.) Y N N/A

Label(s) agree with C-O-C Y N N/A

Correct containers used Y N N/A

Sufficient sample received Y N N/A

Bubbles absent from 40 mL vials\*\* Y N N/A

\*\* Samples with bubbles <6mm are acceptable. Indicate bubble size if >6mm. \_\_\_\_\_

Was client contacted about samples Y N

Will client send new samples Y N

Client contact: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Logged in by: \_\_\_\_\_

Comments: \_\_\_\_\_

# **APPENDIX B**

## **ORANGE COUNTY UTILITIES**

### **FORMS**

#### **Pressure Test**



**APPENDIX B**

**FORMS**

**Pressure Test**

February 11, 2011

Project Name: _____						<input type="checkbox"/> Force Main <input type="checkbox"/> Reclaimed Main <input type="checkbox"/> Water Main		<b>Allowable Loss – 2 Hours</b> $L = \frac{SD(P)}{1/2}$ 148,000 <i>See Note Below</i>										
Constructed by: _____																		
DATE	LINE SEGMENT	STATION		LENGTH	N	D	START		END		LOSS (gal)		Pass /Fail STATUS					
		From	To				Time	PSI	Time	PSI	Allow	Actual						
<b>COUNTY Inspector's Name:</b>						<b>Signature:</b>						<b>Date:</b>						
<b>Tester's Name:</b>						<b>Signature:</b>						<b>Date:</b>						
<b>Comments:</b>																		

**Note:** L - Allowable leakage in gallons per hour.  
 S - Length of pipe tested, in feet.  
 D - Nominal diameter of the pipe in inches.  
 P - Average test pressure during leakage test in pounds per square inch gauge.



# **APPENDIX C**

## **ORANGE COUNTY UTILITIES**

### **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**







1117 East Robinson Street  
Orlando, Florida 32801  
Phone: 407.425.0452

October 18, 2017

Mr. William Tew, District Director  
Valencia Water Control District  
10365 Orangewood Boulevard  
Orlando, Florida 32821

RE: C-11 Canal Directional Drill in JYP ROW  
VWCD Permit No. 0501  
CPH Project No. 6816.06

Dear Bill:

We have completed our review of the above referenced project submitted by BFA Environmental Consultants, October 6, 2017. Based on our review, we have no objection to the Board approving this permit.

Sincerely,

CPH, INC.

A handwritten signature in blue ink, appearing to read 'D. Mahler', is written over the printed name.

David E. Mahler, P.E.  
District Engineer

Cc: Cynthia Malone, PE, BFA  
file

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## **APPENDIX D**

### **ORANGE COUNTY UTILITIES Standards and Construction Specification Manual**

## **LIST OF APPROVED PRODUCTS**



Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Air Release	ARV Enclosure	<b>All ARV above ground enclosures shall be vented with tamper proof locking device</b>						
		Water Plus Polyethylene Enclosure	131632 H30-B	Blue 44" Tall	131632 H30-P	Pantone 44"	131632 H30-G	Green 44" Tall
			171730 H40-B	Blue 30" Tall	171730 H40-P	Pantone 30"	171730 H40-G	Green 30" Tall
		Hot Box Vent Guard Fiberglass Enclosure	AVG2036 Encl	Blue 36" Tall	AVG2036 Encl	Pantone 36" Tall	AVG2036 Encl	Green 36" Tall
			GP3232 Base		GP3232 Base		GP3232 Base	
			AVG2041 Encl	Blue 41" Tall	AVG2041 Encl	Pantone 41" Tall	AVG2041 Encl	Green 41" Tall
		GP3232 Base		GP3232 Base		GP3232 Base		
	Safety-Guard/Hydro Guard	15100 Encl	Blue 34" Tall	15100 Encl	Pantone 34" Tall	15100 Encl	Green 34" Tall	
	Air Release Valves	<b>Air Release Valves shall be Combination Type, 316 SS</b>						
		ARI	D-040SS	Combination	D-040SS	Combination	D-020 (SS)	Combination
H-TEC		NA	NA	NA	NA	986 (316SS)	Combination	
Vent-O-Mat		Series RBX DN50	2"	Series RBX DN50	2"	RGX series		
ARV Vault	<b>Air Release Valve Frame and Cover</b>							
	US Foundry	NA	NA	NA	NA	USF 7665-HH-HJ		
Blow Off	Auto Blow Off	<b>Automatic Blow Off Valve</b>						
		Hydro Guard	HG-1 Standard Unit	Automatic	NA	NA	NA	NA
	Blow Off Valve	<b>Blow Off Valve - Fits standard 5-1/4 inch Valve Box</b>						
Kupferle Foundry Co		Truflo Series TF #550		Truflo Series TF #550		NA	NA	
Water Plus Corp		The Hydrant Plus Series VB 2000B		The Hydrant Plus Series VB 2000B		NA	NA	
Casing Seals / Spacers	Casing End Seals	<b>Casing End Seals. Annular space between pipe and steel casing shall be brick and mortar with end seals to secure ends.</b>						
		Advance Products	Model AC and AW		Model AC and AW		Model AC and AW	
		BWM Company	Model WR and PO		Model WR and PO		Model WR and PO	
		Cascade Water Works	Model CCES		Model CCES		Model CCES	
		CCI Pipeline	Model ESW and ESC		Model ESW and ESC		Model ESW and ESC	
		Pipeline Seal & Insulator, Inc (PSI)	Model C and W		Model C and W		Model C and W	
		Power Seal	Model 4810ES		Model 4810ES		Model 4810ES	

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Casing Seals / Spacers	Casing spacer	<b>Casing spacers shall be a min. 8-inches wide for pipe 12" Dia or less or min. 12-inches wide for pipe 16 or greater , shall have a minimum 14 gauge 304 stainless steel shell/band, minimum 10 gauge 304 reinforced risers; minimum thickness of 0.090 EPDM or PVC interior liners, glass reinforces polymer or ultra high molecular weight polyethylene and 304 stainless bolts, nuts and washers.</b>						
		Advance Products	SSI8 / SSI12		SSI8 / SSI12		SSI8 / SSI12	
		BWM Company	BWM-SS-8 / SS-12		BWM-SS-8 / SS-12		BWM-SS-8 / SS-12	
		Cascade Water Works	Series CCS 8" / 12"		Series CCS 8" / 12"		Series CCS 8" / 12"	
		CCI Pipeline	Model CCS8 / CSS12		Model CCS8 / CSS12		Model CCS8 / CSS12	
		Pipeline Seal & Insulator, Inc (PSI)	Series S8G-2 / S12G-2		Series S8G-2 / S12G-2		Series S8G-2 / S12G-2	
Coatings	Exterior Coatings for Exposed Metal Assets	<b>Coatings: Aerial pipe, hydrants, above ground piping, fittings, valves and Appurtenances - System 1 Zinc / Urethane / Fluoropolymer application and color code per Section 3119 Coatings &amp; Linings. Coating shall not be in contact with Potable water unless NSF 61 approved.</b>						
		Carboline	Carbozinc 621	3.0 - 8.0 mils	Carbozinc 621	3.0 - 8.0 mils	Carbozinc 621	3.0 - 8.0 mils
			Carbothane 133 HB	3.0 -5.0 mils	Carbothane 133 HB	3.0 -5.0 mils	Carbothane 133 HB	3.0 -5.0 mils
			Carboxane 950	2.0 - 3.0 mils	Carboxane 950	2.0 - 3.0 mils	Carboxane 950	2.0 - 3.0 mils
		Tnemec	Zinc Series 90-97	2.5 - 3.5 mils	Zinc Series 90-97	2.5 - 3.5 mils	Zinc Series 90-97	2.5 - 3.5 mils
			Typoxy Series 27WB	4.0 -14.0 mils	Typoxy Series 27WB	4.0 -14.0 mils	Typoxy Series 27WB	4.0 -14.0 mils
			EnduraShield Series73	2.0 - 3.0 mils	EnduraShield Series73	2.0 - 3.0 mils	EnduraShield Series73	2.0 - 3.0 mils
	Hydroflon Series 700		2.0 - 3.0 mils	Hydroflon Series 700	2.0 - 3.0 mils	Hydroflon Series 700	2.0 - 3.0 mils	
	Exterior Coatings for Exposed Metal Assets	<b>Coatings: Aerial pipe, hydrants, above ground piping, fittings, valves and Appurtenances - System 2 Zinc / Epoxy / Urethane application and color code per Section 3119 Coatings &amp; Linings. Coating shall not be in contact with Potable water unless NSF 61 approved.</b>						
		Carboline	Carbozinc 621	3.0 - 8.0 mils	Carbozinc 621	3.0 - 8.0 mils	Carbozinc 621	3.0 - 8.0 mils
			Carboguard 60	4.0 -6.0 mils	Carboguard 60	4.0 -6.0 mils	Carboguard 60	4.0 -6.0 mils
			Carboxane 950	2.0 - 3.0 mils	Carboxane 950	2.0 - 3.0 mils	Carboxane 950	2.0 - 3.0 mils
		Tnemec	Zinc Series 90-97	2.5 - 3.5 mils	Zinc Series 90-97	2.5 - 3.5 mils	Zinc Series 90-97	2.5 - 3.5 mils
			Typoxy Series 27WB	4.0 -14.0 mils	Typoxy Series 27WB	4.0 -14.0 mils	Typoxy Series 27WB	4.0 -14.0 mils
Hi-Build Epoxoline II			4.0 - 10.0 mils	Hi-Build Epoxoline II	4.0 - 10.0 mils	Hi-Build Epoxoline II	4.0 - 10.0 mils	
Series N69			Series N69		Series N69			
PPG / Ameron	EnduraShield Series73	2.0 - 3.0 mils	EnduraShield Series73	2.0 - 3.0 mils	EnduraShield Series73	2.0 - 3.0 mils		
	Amercoat 68HS	Min 3.0 mils	Amercoat 68HS	Min 3.0 mils	Amercoat 68HS	Min 3.0 mils		
	Amercoat 385	4.0 - 6.0 mils	Amercoat 385	4.0 - 6.0 mils	Amercoat 385	4.0 - 6.0 mils		
	Amercoat 450H	2.0 - 3.0 mils	Amercoat 450H	2.0 - 3.0 mils	Amercoat 450H	2.0 - 3.0 mils		

APPENDIX D

LIST OF APPROVED PRODUCTS - TRANSMISSION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Fittings	Fittings	<b>Ductile Iron Fittings C153 SSB / C110 FLG: (Water &amp; Reclaimed Water fittings shall cement lined or holiday free fusion bonded epoxy lined) (Wastewater fittings interior shall be Protecto 401 and holiday free)</b>						
		American	30" & up	FBE / Cement	30" & up	FBE / Cement	30" & up	Protecto 401
		Sigma		FBE / Cement		FBE / Cement		Protecto 401
		Star		FBE / Cement		FBE / Cement		Protecto 401
		Tyler Union & Clow		FBE / Cement		FBE / Cement		Protecto 401
Flow Meter	Flow Meter	<b>Flow Meters With Replaceable Sensors</b>						
		EMCO	NA	NA	NA	NA	Unimag 4411E	
Hydrants	Hydrants	<b>Hydrants Shall open left, 1-1/2 Pentagon operating nut, NST hose &amp; pumper thread, rotate 360 degrees, closed drains, epoxy on shoe in &amp; out and 304 SS nuts &amp; bolts below ground.</b>						
		American Flow Control	B-84-B (6 inch)		NA	NA	NA	NA
		Clow	Medallion 2545		NA	NA	NA	NA
		Mueller	Super Centurion 250		NA	NA	NA	NA
Joint Restraints	Ductile iron pipe MJ Restraints	<b>Mechanical Joint Wedge-action Restraining Gland, Epoxy Coated Restrain ductile iron pipe to mechanical joint fittings, pipe and appurtenances.</b>						
		EBAA Iron Inc	Megalug Series 1100		Megalug Series 1100		Megalug Series 1100	
		Ford / Uni-Flange	UFR-1400		UFR-1400		UFR-1400	
		Sigma	OneLok Series SLD/SLDE		OneLok Series SLD/SLDE		OneLok Series SLD/SLDE	
		Smith Blair	Cam Lok Series 111		Cam Lok Series 111		Cam Lok Series 111	
		Star	Star Grip Series 3000		Star Grip Series 3000		Star Grip Series 3000	
		Tyler Union	TufGrip Series TLD		TufGrip Series TLD		TufGrip Series TLD	
	DIP Bell Joint Restraints (4" - 12") (New & Existing)	<b>Bell Joint Restraints for Ductile Iron Pipe (4"-12") (New &amp; Existing) - All restraints split serrated on bell and spigot ends. Pipe 16" and greater shall have restraint gaskets or locking bells. (Wastewater only for restraint of existing DIP FM)</b>						
		EBAA Iron Inc	Tru-Dual Series 1500TD		Tru-Dual Series 1500TD		Tru-Dual Series 1500TD	
		Ford / Uni-Flange	Uni-Flange Series 1390C		Uni-Flange Series 1390C		Uni-Flange Series 1390C	
		Sigma	PV-Lok Series PWP-C		PV-Lok Series PWP-C		PV-Lok Series PWP-C	
		Smith Blair	Bell-Lock Series 165		Bell-Lock Series 165		Bell-Lock Series 165	
		Star	StarGrip Series 3100S		StarGrip Series 3100S		StarGrip Series 3100S	
DIP Bell Joint Restraints (16" & Greater)	<b>Ductile Iron Pipe Bell Joint Restraints for Ductile Iron Pipe (16" &amp; Greater) - All restraints shall have a split back-up ring for the bell and a serrated or wedge action gland for the spigot end. New installation for water &amp; reclaimed water piping 16" and greater shall have restraint gaskets or locking bells.</b>							
	EBAA Iron Inc	Series 1100HD	Existing Only	Series 1100HD	Existing Only	Series 1100HD	Existing Only	
	Sigma	Series SSLDH	Existing Only	Series SSLDH	Existing Only	Series SSLDH	Existing Only	
	Star	Series 3100S	Existing Only	Series 3100S	Existing Only	Series 3100S	Existing Only	



APPENDIX D

LIST OF APPROVED PRODUCTS - TRANSMISSION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater		
			Model #	Comments	Model #	Comments	Model #	Comments	
Joint Restraints	Ductile iron pipe Bell Joint Restraint Gaskets and Locking Bell (4" & Above)	<b>Bell Joint Restraint Gaskets and Locking Bell (4" &amp; Above) Stainless Steel locking wedges built into the gasket-rubber. ANSI/AWWA C111/A21.11 Standard for Rubber-Gasket Joints for Ductile Iron Pressure Pipe. Ductile Iron Bell Joint Restraint for Push-On Pipe- Locking bell joint system that prevents joint separation and allows for joint deflection. Bells shall be painted red to verify restrained gasket.</b>							
		American	Fast Grip Gasket	Gasket	Fast Grip Gasket	Gasket	NA	NA	
			Flex-Ring Joint	Bell Lock	Flex-Ring Joint	Bell Lock	NA	NA	
			Lok-Ring Joint	Bell Lock	Lok-Ring Joint	Bell Lock	NA	NA	
		Griffin	Talon RJ Gasket	Gasket	Talon RJ Gasket	Gasket	NA	NA	
			Snap-Lok	Bell Lock	Snap-Lok	Bell Lock	NA	NA	
			McWane Inc. DI Pipe Group		Sure Stop 350 Gasket	Gasket	Sure Stop 350 Gasket	Gasket	NA
				Thrust-Lock	Bell Lock	Thrust-Lock	Bell Lock	NA	NA
				TR-Flex	Bell Lock	TR-Flex	Bell Lock	NA	NA
				Super-Lock	Bell Lock	Super-Lock	Bell Lock	NA	NA
		US Pipe		Field Lok 350 Gasket	Gasket	Field Lok 350 Gasket	Gasket	NA	NA
				Field Lok Gasket	Gasket	Field Lok Gasket	Gasket	NA	NA
				TR-Flex	Bell Lock	TR-Flex	Bell Lock	NA	NA
				HP Lok Restraint Joint	Bell Lock	HP Lok Restraint Joint	Bell Lock	NA	NA
	SS to DIP Transition Restraint	<b>SS to DIP Transition Restraint -Flanged stainless steel pipe from Wetwell to Valve box restrained joint transition (epoxy coated, SS hardware) Flg x PE RJ.</b>							
		EBAA Iron Inc	NA	NA	NA	NA	Megaflange 2100		
		Sigma	NA	NA	NA	NA	SigmaFlange with One Lock SLDE		
		Smith Blair	NA	NA	NA	NA	911 Flange - Lock Restrained FCA		
	PVC Pipe MJ Restraints	<b>Mechanical Joint Wedge-action Restraining Gland, Epoxy Coated Restrain PVC pipe to mechanical joint fittings, and appurtenances.</b>							
		EBAA Iron Inc	Mega-lug Series 2000PV		Mega-lug Series 2000PV		Mega-lug Series 2000PV		
			NA	NA	NA	NA	Megalug Series 2200 (42"-48")		
		Ford / Uni-Flange	UFR 1500 Series		UFR 1500 Series		UFR 1500 Series		
		Sigma	One Lok Series SLC/SLCE		One Lok Series SLC/SLCE		One Lok Series SLC/SLCE		
		Smith Blair	Cam Lok Series 120		Cam Lok Series 120		Cam Lok Series 120		
		Star	Star Grip Series 4000		Star Grip Series 4000		Star Grip Series 4000		
		Tyler Union	TufGrip Series TLP		TufGrip Series TLP		TufGrip Series TLP		
	PVC Bell Joint Restraints (4" - 12") (New & Existing)	<b>PVC Bell Joint Restraints: PVC pipe Split Serrated on Bell End and Spigot End. (4" - 12") (New &amp; Existing)</b>							
		EBAA Iron Inc	Tru-Dual Series 1500TD		Tru-Dual Series 1500TD		Tru-Dual Series 1500TD		
		Ford / Uni-Flange	Uni-Flange Series 1390		Uni-Flange Series 1390		Uni-Flange Series 1390		
		Sigma	PV-Lok Series PWP		PV-Lok Series PWP		PV-Lok Series PWP		
		Smith Blair	Bell-Lock Series 165		Bell-Lock Series 165		Bell-Lock Series 165		
		Star	Series 1100C		Series 1100C		Series 1100C		
		Tyler Union	TufGrip 300C		TufGrip 300C		TufGrip 300C		

APPENDIX D

LIST OF APPROVED PRODUCTS - TRANSMISSION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Joint Restraints	PVC Bell Joint Restraints (16" & Greater)	<b>PVC Bell Joint Restraints: (16" &amp; Greater) PVC pipe Split Serrated on Bell End and Spigot End. Water &amp; Reclaimed Water Existing pipe only. Wastewater shall be new and existing pipe.</b>						
		Ford / Uni-Flange	Series 1390	Existing Only	Series 1390	Existing Only	Series 1390	
		JCM	Sur-Grip Series 621	Existing Only	Sur-Grip Series 621	Existing Only	Sur-Grip Series 621	
		Sigma	PV-Lok PWP	Existing Only	PV-Lok PWP	Existing Only	PV-Lok PWP	
		Smith Blair	Bell-Lock Series 165	Existing Only	Bell-Lock Series 165	Existing Only	Bell-Lock Series 165	
		Star	Series 1100C	Existing Only	Series 1100C	Existing Only	Series 1100C	
Pipe	PVC C900 DR 18 Bell & Spigot (4" - 12")	<b>C900 Bell &amp; Spigot PVC Pipe: 4 to 12-inch - AWWA C-900, Minimum DR18 for Water, Reclaimed and Wastewater. DR14 for Fire Lines. Manufacturers shall be members in good standing with Uni-Bell to maintain approval status.</b>						
		Certaanteed 4" to 12"	Certa-Lok C900/RJ	Blue	Certa-Lok C900/RJ	Pantone Purple	Certa-Lok C900/RJ	Green
		Diamond Plastics Corp	C-900	Blue	C-900	Pantone Purple	Diamond C900	Green
		Ipex Inc	C-900 Blue Brute	Blue	C-900	Pantone Purple	C900 Blue Brute	Green
		JM Eagle	C-900	Blue	C-900	Pantone Purple	C-900	Green
		National Pipe & Plastics Inc	C-900 Dura- Blue	Blue	C-900	Pantone Purple	C-900 Pipe	Green
		North American Pipe Corp (NAPCO)	C-900	Blue	C-900	Pantone Purple	C-900	Green
		Sanderson Pipe Corp	C-900	Blue	C-900	Pantone Purple	C-900	Green
	PVC C905 DR 18 Bell & Spigot 16" and Larger	<b>C905 Bell &amp; Spigot PVC Pipe 16" and Larger: AWWA C-905, Minimum DR18 for all Force Mains up to 24". Minimum DR21/DR25 for 30" and greater. Manufacturers shall be members in good standing with Uni-Bell to maintain approval status.</b>						
		Certaanteed 16"	NA	NA	NA	NA	Certa-Lok C905/RJ	NA
		Diamond Plastics Corp	NA	NA	NA	NA	Trans-21 DR18	Green
		Ipex Inc	NA	NA	NA	NA	IPEX Centurion	Green
		JM Eagle	NA	NA	NA	NA	C905 Big Blue	Green
National Pipe & Plastics Inc		NA	NA	NA	NA	C905	Green	
HDPE C906 DR11	<b>HDPE Pipe DR11 AWWA C906 shall be Ductile Iron Pipe Size, PE 3408/3608/4710 DIPS manufactured in accordance with ASTM F-714 and listed with NSF. Pipe shall be marked in accordance with either AWWA C901,AWWA C906. Compression type connections are not acceptable in new installations. Pipe joints shall be butt fusion or electro-fusion with flange or adapter. All HDPE shall be color coded to the Utility. Color identifications are in accordance with the APWA/ULCC Uniform Color Code. Manufacturers shall be members in good standing with PPI to maintain approval status.</b>							
	JM Eagle	HDPE	DR11 Blue	HDPE	DR11 Pantone	HDPE	DR11Green	
	Performance Pipe(Chevron)	Driscoplex 4000	DR11 Blue	Driscoplex 4000	DR11 Pantone	Driscoplex 4300	DR11 Green	
	PolyPipe, Inc.	EHMW Poly Pipe	DR11 Blue	EHMW	DR11 Pantone	EHMW	DR11Green	

APPENDIX D

LIST OF APPROVED PRODUCTS - TRANSMISSION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Pipe	Ductile Iron Pipe	<b>Ductile iron/Cast iron: (4" to 12" = Class 350, 16" to 24" - Class 250, 30" to 64" = Class 200). Water and Reclaimed water shall be cement lined. Wastewater Piping shall be Protecto 401 and Holiday Free. Exterior coatings as specified. Wastewater DIP piping shall be for pump station piping only. Manufacturers shall be members in good standing with DIPRA to maintain approval status.</b>						
		American	Cement Lined	Blue	Cement Lined	Pantone Purple	Protecto 401	Pump Station
		Griffin	Cement Lined	Blue	Cement Lined	Pantone Purple	Protecto 401	Pump Station
		McWane Inc. DI Pipe Group	Cement Lined	Blue	Cement Lined	Pantone Purple	Protecto 401	Pump Station
		US Pipe	Cement Lined	Blue	Cement Lined	Pantone Purple	Protecto 401	Pump Station
Sample	Sample Station	<b>Sample Stations - Bacteriological Sample Station with built in flush system, all internal piping to be 2", brass and includes lockable green enclosures.</b>						
		Safety-Guard	SG-BSS-05 pedestal #77	green enclosure	NA	NA	NA	NA
		Water Plus Corp	Model 5000	green	NA	NA	NA	NA
Services	Brass Service Saddles	<b>Brass Service Saddles for 1" &amp; 2" water &amp; reclaimed water services on 4" through 12" Mains - Service saddles can be hinge or bolt controlled OD saddles to be used on C-900 and existing IPS OD PVC pipe.</b>						
		Ford	Series S-70, S-90	4"-12"	Series S-70, S-90	4"-12"	NA	NA
		AY McDonald	Model 3891 / 3895,3801 / 3805	4"-12"	Model 3891 / 3895,3801 / 3805	4"-12"	NA	NA
		Mueller	Series S-13000/H-13000	4"-12"	Series S-13000/H-13000	4"-12"	NA	NA
	Services	Service Saddles	<b>Service Saddles for 1" (CC) &amp; 2" (Iron pipe threads) Water &amp; Reclaimed Water services on mains greater than 12". Service saddles for 2" taps (iron pipe threads) on 4" mains and greater for Waste Water. : Epoxy or nylon coated stainless steel 18-8-type 304 double straps, controlled O.D. saddles to be used on C-900 / C905 or DI for all 1-in and -2in taps on pipes over 12in.</b>					
Ford			Series FC202	16" & greater	Series FC202	16" & greater	Series FC202	4" & greater
JCM			Series 406	16" & greater	Series 406	16" & greater	Series 406	4" & greater
Mueller			DR2S	16" & greater	DR2S	16" & greater	DR2S	4" & greater
Romac			Series 202NS	16" & greater	Series 202NS	16" & greater	Series 202NS	4" & greater
Smith Blair			Series 317	16" & greater	Series 317	16" & greater	Series 317	4" & greater
Services	Service Saddles for HDPE	<b>Service Saddles for 1" (CC) &amp; 2" (Iron Pipe threads) Water and Reclaimed Water Services: Epoxy or nylon coated stainless steel 18-8-type 304 double straps, controlled O.D. saddles to be used on HDPE for all 1-in and -2in taps. Taps to HDPE pipe shall be approved on a case by case basis.</b>						
		Ford	Series FCP202		Series FCP202		Series FCP202	
		Romac	Series 202N-H		Series 202N-H		Series 202N-H	
		Smith Blair	Series 317-1 for HDPE		Series 317-1 for HDPE		Series 317-1 for HDPE	
Corporation	Stops Ball Type	<b>Corporation Stops Ball Type (1-inch with AWWA taper C threads only/pack joint outlet for CTS) 2" Corporation Stop Ball Type shall be 2" MIP X FIP threads.</b>						
		Ford	FB1000, FB1700-7		FB1000, FB1700-7		FB1700-7	2" ARV
		AY McDonald	4701B-22, 3149B2		4701B-22, 3149B2		3149B2	2" ARV
		Mueller	P25008, B-20046		P25008, B-20046		B-20046	2" ARV

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Services	Curb Stops	<b>Curb Stops - Straight Valves: Ball type compression 2" cts O.D. tubing by 2" FIP</b>						
		Ford	B41-777W		B41-777W		NA	NA
		AY McDonald	6102W-22		6102W-22		NA	NA
		Mueller	P25172		P25172		NA	NA
	Curb Stops	<b>Curb Stops - Straight Valves: ball type compression x compression</b>						
		Ford	B44-444W		B44-444W		NA	NA
		AY McDonald	6100W-22		6100W-22		NA	NA
		Mueller	P25146		P25146		NA	NA
	PE tubing	<b>Polyethylene tubing: AWWA C901. UV protection (SDR-9) 1-inch and 2-inch only. PE 3408 / PE 4710</b>						
		Charter Plastics	Blue Ice		Lav Ice		NA	NA
		Endot	Endopure Blue		Endocore Lavender		NA	NA
		JM Eagle	Pure-Core		NA	NA	NA	NA
Line Stops	<b>Line Stops</b>							
	JCM							
	Romac							
	Smith Blair							
Tapping Sleeves and Valves	Tapping Sleeves	<b>Tapping Sleeves: (Mechanical joint for taps on cast iron, ductile iron, PVC &amp; AC pipe, including size on size) with stainless steel nuts and bolts.</b>						
		American Flow Control	Series 2800		Series 2800		Series 2800	
			Series 1004		Series 1004		Series 1004	
		Clow	Series F-5205	DIP/PVC	Series F-5205	DIP/PVC	Series F-5205	DIP/PVC
			Series F-5207	A/C Pipe	Series F-5207	A/C Pipe	Series F-5207	A/C Pipe
		JCM	Series 414	FBE	Series 414	FBE	Series 414	FBE
		Mueller	Series H-615	DIP/PVC	Series H-615	DIP/PVC	Series H-615	DIP/PVC
			Series H-619	A/C Pipe	Series H-619	A/C Pipe	Series H-619	A/C Pipe
Smith Blair	Style 623	FBE	Style 623	FBE	Style 623	FBE		
Tapping Valves: 12" and smaller	<b>Tapping Valves: 12" and smaller - Tapping Valves shall be furnished with an alignment lip and installed in the vertical position for Water and Reclaim Water. Wastewater shall be installed horizontally and abandoned in the open position. Tapping valves shall be resilient seated only and meet the requirements of AWWA C509 or C515</b>							
	American Flow Control	Series 2500	Alignment Lip	Series 2500	Alignment Lip	Series 2500	Alignment Lip	
	Clow	Series F-6114	Alignment Lip	Series F-6114	Alignment Lip	Series F-6114	Alignment Lip	
	Mueller	Series T2360 (4"-12")	Alignment Lip	Series T2360 (4"-12")	Alignment Lip	Series T2360 (4"-12")	Alignment Lip	

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LIST OF APPROVED PRODUCTS - TRANSMISSION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Tapping Sleeves and Valves	Tapping Valves: 16" and Larger	<b>Tapping Valves: 16" and Larger - Tapping valves shall be furnished with an alignment lip and be installed in the vertical position for Water and Reclaimed Water. No tapping valve shall be installed horizontally for Water and Reclaim Water unless approved by the engineer. Tapping Valves 16" and larger AWWA C515 resilient seated only (16" and 24" no gearing required) above 24" shall be installed vertically with a spur gear actuator unless noted by the engineer. All tapping valves above 24" shall be furnished with NPT pipe plugs for flushing the tracks when valves are installed horizontally. Tapping valves for Wastewater shall be installed horizontally and abandoned in open position.</b>						
		American Flow Control	Series 2500	Alignment Lip & flushing port	Series 2500	Alignment Lip & flushing port	Series 2500	Alignment Lip & flushing port
		Clow	Series F-6114	Alignment Lip & flushing port	Series F-6114	Alignment Lip & flushing port	Series F-6114	Alignment Lip & flushing port
		Mueller	Series T2361 (14"&up)	Alignment Lip & flushing port	Series T2361 (14"&up)	Alignment Lip & flushing port	Series T2361 (14"&up)	Alignment Lip & flushing port
Valves	Butterfly Valve 42" and Above	<b>Butterfly Valves 42"and above. AWWA C504. Actuators input torques based on 150 psi valve pressure and 16 fps velocity with a maximum input of 80 ft-lb on 2" nuts and shall withstand 250 ft-lbs. Valve seats shall be leak-tight in both directions at 150 psi.</b>						
		Clow	Style #1450		Style #1450		NA	NA
		Dezurik	BAW		BAW		NA	NA
		Mueller / Pratt	LINSEAL III / Groundhog		LINSEAL III / Groundhog		NA	NA
	Check Valves	<b>Valves (Check) 4-inch and Larger (8 mil epoxy lined)</b>						
		American Flow Control	NA		NA		Series 600 or 50 line	
		Clow / M&H / Kennedy	NA		NA		106	
	Gate Valves 4" - 12"	<b>Gate Valves 12" and smaller - resilient seated only AWWA C509 or C515. Valve seat shall be leak-tight in both directions at 150 psi.</b>						
		American Flow Control	Series 2500		Series 2500		NA	NA
		Clow	Series F-6100		Series F-6100		NA	NA
Mueller		Series A-2360		Series A-2360		NA	NA	
Gate Valves (Vertical) 16" and Up	<b>Gate Valves 16" and larger (Vertical Installation) AWWA C515 resilient seated only (16" and 24" no gearing required) above 24" shall be installed vertically with a gear actuator unless noted by the engineer. Valve seat shall be leak-tight in both directions at 150 psi.</b>							
	American Flow Control	Series 2500		Series 2500		NA	NA	
	Clow	Series F-6100		Series F-6100				
	Mueller	Series A-2361		Series A-2361		NA	NA	

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FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater			
			Model #	Comments	Model #	Comments	Model #	Comments		
Valves	Plug Valves	<b>Plug Valves - Bi-directional, MJ &amp; Flanged (min. 8mil fusion bonded epoxy with stainless steel bolts), gear operator to be sized for rated pressure of the valve. Valves 4"-20" shall be 80% Full Port and valves 24" and greater shall be minimum of 70% full port. Valve shall be factory tested to minimum 100 PSI in both directions.</b>								
		Clow	NA	NA	NA	NA	F-5412 FLG	4" & up		
			NA	NA	NA	NA	F-5413 MJ	4" & up		
		Dezurik	NA	NA	NA	NA	Series PEF or PEC	4" & up		
		Millikan / Pratt	NA	NA	NA	NA	Eccentric / Ballcentric	4" & up		
			NA	NA	NA	NA	5600 or 5800 (FLG)	4" & up		
Val-Matic	NA	NA	NA	NA	5700 or 5900 (MJ)	4" & up				
Valve Boxes	Valve Boxes with Locking Lids (Cast Iron)	<b>Two piece standard screw type Heavy Duty Valve Boxes with Locking Lids (Cast Iron) and type of service cast in heavy duty traffic lid (H2O loading) ASTM A48</b>								
		Bingham/Taylor	Series 4905	Box	NA	NA	Series 4905	Box		
			4905-X	Extension	NA	NA	4905-X	Extension		
			4904-L	Blue Water Locking Lid	NA	NA	4904-L	Green Sewer locking Lid		
		Sigma	Series VB 261X-267X	Box	VB-25031LK-VB-2612	Box	Series VB 261X-267X	Box		
			VB 6302	Extension	VB-6302	Extension	VB 6302	Extension		
			VB 4650W	Blue Water Locking Lid	VB2503LK	Purple Square Locking Lid	VB 4650S	Green Sewer locking Lid		
		Star	Series VB-0002	Box	NA	NA	Series VB-0002	Box		
			VBEX 12-24S	Extension	NA	NA	VBEX 12-24S	Extension		
			VBLIDLOCK	Blue Water Locking Lid	NA	NA	VBLIDLOCK	Green Sewer locking Lid		
		Tyler Union	Series 6850	Box	NA	NA	Series 6850	Box		
			58, 59, 60	Extension	NA	NA	58, 59, 60	Extension		
			Locking Lid	Blue Water Locking Lid	NA	NA	Locking Lid	Green Sewer locking Lid		
		Valve Box	Valve Box	<b>For mains equal to, or greater than, 16" diameter or equal to greater than 6' feet deep</b>						
				American Flow Control	# 2A - 9A Retrofit Valve Box Insert	Fit inside std valve boxes	NA		2A - 9A Retrofit Valve Box Insert	Green Sewer locking Lid
				Mueller Company	MVB050C thru MVB130C with Extension Stem	Blue Water Locking Lid	MVB050CR thru MVB130CR with Extension Stem	Purple Square Locking Reclaim Lid	MVB050C thru MVB130C with Extension Stem	Green Sewer locking Lid
				MVB875 Guide Plate		MVB875 Guide Plate		MVB875 Guide Plate		

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LIST OF APPROVED PRODUCTS - GRAVITY SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater		
			Model #	Comments	Model #	Comments	Model #	Comments	
Coatings	Anti-Graffiti Paint	<b>Block Walls-Anti-Graffiti Paint per Section 3119 Coatings &amp; Linings</b>							
		American Building Restoration Products	NA	NA	NA	NA	Polyshield Graffiti Preventer for Unpainted Masonry Type B	Super Bio Strip or Strip it all	
		Tnemec / Chemprobe	NA	NA	NA	NA	626 DUR A PEL	680 Mark A Way	
		Professional Products of Kansas, Inc	NA	NA	NA	NA	Professional Water Seal & Anti-Graffiti (PWS-15 Super Strength)	Professional Phase II Cleaner	
	Coatings for Existing Manholes	<b>Rehabilitation corrosion protection system per Section 3119 Coatings &amp; Linings. Interior coating for force main connections to existing concrete manholes only. New precast structures and existing pump stations shall be lined.</b>							
		CCI Spectrum, Inc	NA	NA	NA	NA	Spectrashield	min of 500 mils	
		Kerneos Aluminate Technologies	NA	NA	NA	NA	Sewpercoat	1" (1000mil)	
		Raven Lining System	NA	NA	NA	NA	Raven 155 Primer Raven 405	min 8 mils min 125 mils	
		Sauereisen	NA	NA	NA	NA	210 Series Topcoat Glaze 210G	min 125 mils min 20 mils	
		Tnemec	NA	NA	NA	NA	Series 434 Topcoat Glaze 435	min 125 mils 15-20 mils	
PVC Pipe and fittings	Pipe SDR 35 Gravity Mains	<b>PVC Pipe for Gravity SDR26/SDR 35 (Green in color) ASTM-D034. Manufacturers shall be members in good standing with Uni-Bell to maintain approval status.</b>							
		Certainteed	NA	NA	NA	NA	Gravity Sewer Pipe		
		Diamond Plastics Corp	NA	NA	NA	NA	Sani-21 SDR-35		
		JM Eagle	NA	NA	NA	NA	Gravity Sewer		
		National Pipe & Plastics, Inc.	NA	NA	NA	NA	Ever-Green Sewer Pipe		
		North American Pipe Corp (NAPCO)	NA	NA	NA	NA	Gravity Sewer		
		Sanderson Pipe Corp	NA	NA	NA	NA	Gravity Sewer		
	Locate Balls	<b>Locating Marker Systems - Wastewater Locator balls placed at all sanitary sewer cleanouts</b>							
		3M	NA	NA	NA	NA	3M™ EMS 4" Extended Range 5' Ball Marker 1404-XR		
	Fittings SDR 35	<b>Fittings, Adapters and Plugs - Gravity PVC ASTM-D3034, Min SDR26/ SDR 35</b>							
		GPK Products, Inc.	NA	NA	NA	NA	SDR26/SDR35 Gasketed sewer fittings		
		Harrington Corporation (HARCO)	NA	NA	NA	NA	SDR26/SDR35 Gasketed sewer fittings		
		Multi Fittings Corp.	NA	NA	NA	NA	SDR26/SDR 35 Trench Tough Sewer Fittings		
JM Eagle		NA	NA	NA	NA	SDR26/SDR35 Gasketed sewer fittings			
Plastic Trends Inc		NA	NA	NA	NA	SDR26/SDR35 Gasketed sewer fittings			
TIGRE USA, Inc.		NA	NA	NA	NA	SDR26/SDR35 Gasketed sewer fittings			

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LIST OF APPROVED PRODUCTS - GRAVITY SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
PVC Pipe a	Flexible Pipe Connectors	<b>Flexible Pipe Connectors and Transitions</b>						
		Fernco	NA	NA	NA	NA	1002, 1051, 1056 Series	
		Indiana Seal	NA	NA	NA	NA	102, 151, 156 Series	
		Mission Rubber	NA	NA	NA	NA	MR02, MR51, MR 56 Series	
Precast Concrete Structures	MH Lids	<b>Frame and Cover</b>						
		USF Fabrication Inc.	NA	NA	NA	NA	USF 225-AS	
	Adj Ring	<b>Top Adjusting Rings - HDPE with heavy duty loading (H-20)</b>						
		Ladtech, Inc	NA	NA	NA	NA	24R, 24S with Rope Sealant CS2455	
	Hatches	<b>Wet Well and Valve Vault Access Frames and Covers (Include the term "Confined Space" etched or cast into the cover with recessed lock &amp; hasp. Frames and covers per manufacturers specifications.</b>						
		Halliday Products	NA	NA	NA	NA	S1R or S2R Series	
		USF Fabrication Inc.	NA	NA	NA	NA	APS or APD Series	
	Precast Concrete Structures	<b>Precast Manhole and Wetwell Structures ASTM C478. Precast concrete shall be batched with concrete dyed crystalline waterproofing admixture with corrosion protection. Concrete without admixture or without color tint /tracer shall be rejected.</b>						
		Allied Precast	NA	NA	NA	NA	Dyed Admix	
		Atlantic Concrete Products, Inc.	NA	NA	NA	NA	Dyed Admix	
		Delzotto Products, Inc.	NA	NA	NA	NA	Dyed Admix	
		Dura Stress Underground Inc.	NA	NA	NA	NA	Dyed Admix	
		Hanson Pipe & Product	NA	NA	NA	NA	Dyed Admix	
		Mack Concrete	NA	NA	NA	NA	Dyed Admix	
		Oldcastle Precast	NA	NA	NA	NA	Dyed Admix	
Standard Precast Inc.	NA	NA	NA	NA	Dyed Admix			
Concrete Admix	<b>Crystalline Waterproofing Concrete Admix with color dye shall be added to all concrete structures (precast and cast-in-place) to provide waterproofing and corrosion resistance. Concrete without admixture or without color tint / tracer shall be rejected. % concentration of admix with colored dye added to the mix shall be based on weight of cement.</b>							
	Kryton International	NA	NA	NA	NA	KIM K-301R (with red dye)	2%	
	Xypex Chemical Corp	NA	NA	NA	NA	Xypex Admix C-1000Red (with red dye)	3.0 - 3.5%	
Liners	<b>Interior Liner for New or existing Precast Manhole and Precast Wetwell Structures per Section 3119 Coatings &amp; Linings</b>							
	AFE	NA	NA	NA	NA	Fiberglass Liner		
	AGRU Liner	NA	NA	NA	NA	HDPE Liner (Min 2 mm for Manhole / Min 5 mm for Pump Station)		
	Containment Solutions Inc. (Flowtite)	NA	NA	NA	NA	Fiberglass Liner		
	GSE Studliner	NA	NA	NA	NA	HDPE Liner (Min 2 mm for Manhole / Min 5 mm for Pump Station)		
	GU Liner	NA	NA	NA	NA	Reinforced Plastic Liner		
		L & F Manufacturing	NA	NA	NA	NA	Fiberglass Liner	



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LIST OF APPROVED PRODUCTS - GRAVITY SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater		
			Model #	Comments	Model #	Comments	Model #	Comments	
Precast Concrete Structures	Heat Shrink Seal	<b>Heat Shrink Seal - Precast structures shall be primed with manufacturer approved primer prior to application of heat shrunk encapsulation.</b>							
		Canusa-CPS	NA	NA	NA	NA	Wrapid Seal with WrapidSeal Primer (Canusa G Primer )		
		Pipeline Seal & Insulator, Inc (PSI)	NA	NA	NA	NA	Riser Wrap with Polyken 1027 or 1039 primer		
	Joining Material	<b>Joining Material Min. 2" width for all products to ensure squeeze out with manufacturer approved primer.</b>							
		Henry Company	NA	NA	NA	NA	Ram-Nek	with Primer	
		Martin Asphalt Company	NA	NA	NA	NA	Evergrip 990	with Primer	
		Trelleborg Pipe Seals	NA	NA	NA	NA	NPC – Bidco C-56	with Primer	
	Pipe Seals Gravity	<b>Resilient Connector Pipe Seals, Manhole - Gravity less than 12-inch and less than 15-ft deep</b>							
		Atlantic Concrete	NA	NA	NA	NA	A-Lok (cast-in-place)		
		Hail Mary Rubber	NA	NA	NA	NA	Star Seal (cast-in-place)		
		IPS	NA	NA	NA	NA	Wedge Style		
		NPC	NA	NA	NA	NA	Kor-N-Seal Model WS		
		Press seal gasket	NA	NA	NA	NA	PSX Direct Drive		
	Pipe Seals Gravity	<b>Cast in Place Pipe Seals, Manhole - Gravity Greater Than or Equal to 12-inch and all pipe sizes greater than 15-ft deep</b>							
		Atlantic Concrete	NA	NA	NA	NA	A-Lok	cast in place	
		Hail Mary Rubber	NA	NA	NA	NA	Star Seal	cast in place	
	FM Pipe Seals	<b>Modular Pipe Seals for Wet Well and Valve Box penetrations and all forcemain connections to existing and new precast concrete structures. EPDM Rubber with 316 SS Hardware</b>							
		CCI Pipeline Systems	NA	NA	NA	NA	Wrap-It Link WL-SS Series		
		Pipeline Seal & Insulator, Inc / Link Seal	NA	NA	NA	NA	Link-Seal S-316 Modular Seal		
		Proco Products, Inc	NA	NA	NA	NA	PenSeal ES-PS Series		

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LIST OF APPROVED PRODUCTS - PUMP STATION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Generator	Gen	<b>Generator Systems, Fixed Shall be UL 2200 Certified.</b>						
		Caterpillar	NA	NA	NA	NA	CAT Diesel Generator Set	
		Cummins Power Generation	NA	NA	NA	NA	Diesel Generator Set	
	Fuel Tanks	<b>Generator Fuel Tanks. Shall be UL2085 certified.</b>						
		Convault	NA	NA	NA	NA	CVT-3SF or CVT-3FF	
		Phoenix	NA	NA	NA	NA	Envirovault	
	GR	<b>Generator Receptacle (GR)</b>						
		Cooper Crouse-Hinds	NA	NA	NA	NA	AR2042 (230V, 200A, 3P, 4W) With AJA1 Angle Adaptor	
		Cooper Crouse-Hinds	NA	NA	NA	NA	AR2042-S22 (460V, 200A, 3P, 4W) With AJA1 Angle Adaptor	
		Pyle National	NA	NA	NA	NA	JRE-4100 (230V, 100A, 3P, 4W)	
ATS	<b>Generator Transfer Switch</b>							
	Russelectric	NA	NA	NA	NA	RMTD Series with model 2000 controller	NEMA 12/3R 316SS Enclosure	
Odor Control Units	Biotrickling Filters	<b>Biotrickling filters</b>						
		BioAir	NA	NA	NA	NA		
		Biorem	NA	NA	NA	NA	Biosorbens BTF	
		Envirogen	NA	NA	NA	NA	BTF	
		Siemens	NA	NA	NA	NA	Zabocs BTF	
	Carbon Adsorption Units	<b>Carbon Adsorption Units</b>						
		Calgon	NA	NA	NA	NA		
		Pure Air Filtration	NA	NA	NA	NA		
		Siemens	NA	NA	NA	NA		
	Pressure Gauges	<b>Pressure Gauges shall have Diaphragm Seals. Oil filled.</b>						
Ashcroft		NA	NA	NA	NA	10 1008SL 02L 60#	Gauge Diaphragm Seal	
		25 200SS 02T XYTSE						
Terice		NA	NA	NA	NA	D83LFSS4002LA100 - Gauge M51001SSSS - Diaphragm Seal D99100 Fill and Mount Charge		
	Winter Gauges	NA	NA	NA	NA	PFQ770 0-60 PSI D70950 top D70954 Bottom		
Pumps	<b>Submersible Pumps</b>							
	ABS	NA	NA	NA	NA			
	Flygt	NA	NA	NA	NA			

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LIST OF APPROVED PRODUCTS - PUMP STATION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Pumps	Floats	<b>Float Regulator (FR) - Duplex and Triplex Pump Stations</b>						
		Atlantic Scientific	NA	NA	NA	NA	Roto-Float	
Pumps	Radar	<b>Radar - Pulse Burst Radar Transmitter. Input 24 VDC and Output 4-20 mA</b>						
		Magnetrol	NA	NA	NA	NA	R82-520A-011	
Pump Station Main Ser	Main Srvc Disconnect	<b>Main Service Disconnect Breaker</b>						
		Square D	NA	NA	NA	NA	H or J Frame 3 Pole 600 Volt (HGL or JGL determined by amperage)	
	Surge Protector Device	<b>Surge Protector - UL 1449, 3rd Edition listed and labeled, minimum 10 year warranty, NEMA LS-1 and IEEE C62, 41/45 tested with NEMA 4X enclosure, internal fusing, voltage and phase to match service. Rated 80,000 amps per mode for Duplex &amp; Triplex stations and 150,000 Amperes per mode for Master Stations. All devices shall be provided with a NEMA 4X Plastic enclosure which is approved in lieu of stainless steel.</b>						
		Current Technology (Power & Systems)	NA	NA	NA	NA	XN-80, TG-150 or CurrentGuard 150 Plus Series	
		Joslyn AKA (Total Protection Solutions)	NA	NA	NA	NA	TSS-ST 160 Series, ST 300 Series or JSP-300 Series	
		Surge Suppressors, Inc	NA	NA	NA	NA	LSE Series or SHL Series	
Sub Panel	Sub Panel	<b>Sub-Panel Enclosure - NEMA 12/3R Enclosure 316SS, white polyester Powder coated finish inside and out, With 3 Point Pad lockable Handle, and Door Stop</b>						
		Hoffman	NA	NA	NA	NA		
		Schaefer	NA	NA	NA	NA		
		Universal enclosure systems	NA	NA	NA	NA		
Pump Station Control Panel	Control Panel	<b>Control Panel Supplier</b>						
		ECS	NA	NA	NA	NA		
		Sta-Con Inc	NA	NA	NA	NA		
	Enclosure	<b>Enclosure - NEMA 12/3R Enclosure 316SS, white polyester Powder coated finish inside and out, With 3 Point Pad lockable Handle, and Door Stop</b>						
		Hoffman	NA	NA	NA	NA		
		Schaefer	NA	NA	NA	NA		
		Universal enclosure systems	NA	NA	NA	NA		
	Mnts	<b>Mounting Channel for Enclosures</b>						
		Unistrut Stainless Steel	NA	NA	NA	NA	1" 5/8 x 1" 5/8 316 SS	
	Seal-off	<b>Explosion-Proof Sealoff</b>						
	Cooper Crouse-Hinds	NA	NA	NA	NA	EYSR - 2 Inch Min.		
FL	Flasher (FL)							
		MPE	NA	NA	NA	NA	025-120-105	
		SSAC	NA	NA	NA	NA	FS-126	

APPENDIX D

LIST OF APPROVED PRODUCTS - PUMP STATION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Pump Station Control Panel		<b>Alarm Light / With Base and Globe (AL)</b>						
	AL	American Electric	NA	NA	NA	NA	F32552	
		Red Dot Globe	NA	NA	NA	NA	VGLR-01	
		Red Dot Base					VA-01	
		<b>Alarm Horn (AH)</b>						
	AH	Wheelock	NA	NA	NA	NA	3IT-115-R	
		<b>Fuses (F)</b>						
	Fuse	Bussmann	NA	NA	NA	NA	FNQ-R or KTK-R	
		<b>Hand-Auto-Off Selector (HOA)</b>						
	HOA	Square D	NA	NA	NA	NA	9001-SKS43B	
		<b>Horn Silence Button (HSS)</b>						
	HSS	Square D	NA	NA	NA	NA	9001-SKR1RH5	
		<b>Mechanical Interlock</b>						
	Inter-lock	Square D	NA	NA	NA	NA	S29354	
		<b>Control Panel Main Circuit Breaker (MCB) With S29450 Circuit Breaker Auxiliary Switch</b>						
	Breakers	Square D	NA	NA	NA	NA	H or J Frame 3 Pole 600 Volt (HGL or JGL determined by amperage)	
		<b>Emergency Circuit Breaker (ECB) With S29450 Circuit Breaker Auxiliary Switch</b>						
		Square D	NA	NA	NA	NA	H or J Frame 3 Pole 600 Volt (HGL or JGL determined by amperage)	
		<b>Motor Circuit Breaker (MB)</b>						
		Square D	NA	NA	NA	NA	H or J Frame 3 Pole 600 Volt (HGL or JGL determined by amperage)	
		<b>Control Circuit Breaker/ GFCI Receptacle Breaker/ SCADA Breaker</b>						
	Square D	NA	NA	NA	NA	QOU120		
	<b>Motor Starter (MS)</b>							
MS	Square D	NA	NA	NA	NA	Type S Class 8536		
	<b>Overload Heater(OL)</b>							
OL	Square D	NA	NA	NA	NA	Part number will vary with size needed		
	<b>Overload Reset</b>							
OR	Square D	NA	NA	NA	NA	9066-RA1		
	<b>Control Circuit Transformer (XMFR)</b>							
Transformer	Square D	NA	NA	NA	NA	9070TF75D23	120/24 Volt .075 KVA	
	<b>Main Circuit Transformer (MCT)</b>							
	Square D	NA	NA	NA	NA	9070T2000D1	480/120 2KVA	
	<b>Supplemental Protector Breaker - 3 pole, 1-amp for Phase Monitor</b>							
SPB	Square D	NA	NA	NA	NA	MG24532		

APPENDIX D

LIST OF APPROVED PRODUCTS - PUMP STATION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater		
			Model #	Comments	Model #	Comments	Model #	Comments	
Pump Station Control Panel	PM	<b>Phase Monitor (PM)</b>							
		MPE 240 V.	NA	NA	NA	NA	001-230-118-OVG5		
		MPE 480 V.	NA	NA	NA	NA	002-480-123-OVG5		
	Pump Alternator	<b>Pump Automatic Alternator (PAA)</b>							
		Diversified Duplex	NA	NA	NA	NA	ARA-120-ACA		
		Diversified Triplex	NA	NA	NA	NA	ARA-120-AME		
		MPE Duplex	NA	NA	NA	NA	008-120-13SP		
		MPE Triplex	NA	NA	NA	NA	009-120-23P		
	MPE Triplex Socket	NA	NA	NA	NA	SD-12-PC			
	Alt. Test Switch	<b>Alt. Test Switch</b>							
		Carling Technologies	NA	NA	NA	NA	6GG5E-78		
		Honeywell	NA	NA	NA	NA	2TL1-50		
	Relay	<b>Relay</b>							
		Potter Brumfield 24 Volt	NA	NA	NA	NA	KRPA-11AN-24		
		Potter Brumfield 120 Volt	NA	NA	NA	NA	KRPA-11AN-120		
		Square D 24 Volt	NA	NA	NA	NA	8501KP12P14V14		
	Square D 120Volt	NA	NA	NA	NA	8501KP12P14V20			
	Relay Base	<b>Relay Base</b>							
		IEDC 8 Pin Relay Base 600 Volt	NA	NA	NA	NA	SR2P-06		
	Duplex Receptacle / GFCI	<b>Duplex Receptacle/GFCI (DR) Upgraded to 20 Amp</b>							
		Hubbell	NA	NA	NA	NA	GFTR20BK		
		Pass & Seymour	NA	NA	NA	NA	2095TRBK		
	ETM	<b>Elapse Time Meter (ETM)</b>							
		Reddington	NA	NA	NA	NA	711-0160		
	Grounding	<b>Grounding System</b>							
		Marathon	NA	NA	NA	NA	Neutral Isolation Block 1421570		
		Panduit	NA	NA	NA	NA	Ground Lug LAM2A 1/0 - 014 -6Y		
	Square D	NA	NA	NA	NA	Ground Buss PK7GTA			
TS	<b>Terminal Strip (TS)</b>								
	Marathon	NA	NA	NA	NA	Series 200			
	Square D	NA	NA	NA	NA	9080GR6			
TS	<b>Terminal Strip End Blocks and End Clamps</b>								
	Square D	NA	NA	NA	NA	9080GM6B & 9080GH10			

APPENDIX D

LIST OF APPROVED PRODUCTS - PUMP STATION SYSTEMS

FEBRUARY 11, 2011

Cat.	Desc	Manufacturer	Water		Reclaimed Water		Wastewater	
			Model #	Comments	Model #	Comments	Model #	Comments
Pump Station Control Pane	PL	<b>Pilot Light (PL) 24 Volt with 1819 Bulb</b>						
		Dialight	NA	NA	NA	NA	803-1710	
		Lighting Components & Design	NA	NA	NA	NA	Littlelight 930507X	
	RL	<b>Run Indicator Light (RL) 120 Volt</b>						
		Dialight	NA	NA	NA	NA	803-1710	
		Lighting Components & Design	NA	NA	NA	NA	Littlelites 930507X With 120MB Bulb	
	MT	<b>Moisture and Temperature Failure Light (MT) 120 Volt with 120MB Bulb</b>						
		Dialight	NA	NA	NA	NA	803-1710	
		Lighting Components & Design	NA	NA	NA	NA	Littlelites 930507X	
Sluice Gate	<b>Sluice Gate for Wet Well with Motorized Operator</b>							
	BNW	NA	NA	NA	NA	Model 77 - 316 SS		
	Fontaine	NA	NA	NA	NA	Model 20 - 316 SS		
VFD	<b>Variable Frequency Drives</b>							
	Square D	NA	NA	NA	NA			

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# **APPENDIX E**

## **ORANGE COUNTY UTILITIES**

### **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





ACCEPTED AND APPROVED BY THE REAL  
ESTATE MANAGEMENT DIVISION ON  
BEHALF OF ORANGE COUNTY, FLORIDA

MAY 18 2017

BY: *Sam Caswell*  
MANAGER

DOC# 20170336944  
06/16/2017 02:01:21 PM Page 1 of 4  
Rec Fee: \$35.50  
Deed Doc Tax: \$0.00  
DOR Admin Fee: \$0.00  
Intangible Tax: \$0.00  
Mortgage Stamp: \$0.00  
Phil Diamond, Comptroller  
Orange County, FL  
PU - Ret To: ORANGE COUNTY REAL ESTATE



Instrument: 701.1

Project: John Young Parkway Reclaimed Water Main Project  
(Town Center Blvd to North of SR 528)

This document has been executed and delivered under threat of condemnation. Therefore, this document is not subject to documentary stamp tax. See Fla. Admin. Code R. 12B-4.014(13).

### TEMPORARY CONSTRUCTION EASEMENT

For and in consideration of \$1.00, other valuable considerations, and of the benefits accruing to us, we, Hunter's Creek Community Association, Inc., a Florida non-profit corporation, having its principal place of business in the city of Orlando, county of Orange, whose address is 14101 Town Loop Blvd., Orlando, Florida 32837, GRANTOR, do hereby give, grant, bargain, and release to Orange County, a charter county and political subdivision of the state of Florida, whose address is P. O. Box 1393, Orlando, Florida, 32802-1393, GRANTEE, a temporary easement to enter upon the portion of the lands of the owners, for the purposes described herein, such lands being described as follows:

#### SEE ATTACHED SCHEDULE "A"

Property Appraiser's Parcel Identification Number:

a portion of  
28-24-29-3804-00-001

THIS EASEMENT is granted for construction purposes only, including the right to enter upon said lands for the purposes of sloping, grading, clearing, grubbing, storage of materials and equipment, excavation, and restoration during GRANTEE'S construction of a reclaimed water main improvement, as GRANTEE deems necessary or prudent. Should GRANTEE perform any such construction activities in the easement area, GRANTEE shall, at its sole cost and expense, restore such lands to the condition existing prior to such construction activities, including the repair or replacement of any paving, curbing, sidewalks or landscaping.

THIS EASEMENT is granted upon the condition that the sloping and/or grading upon the above land shall not extend beyond the limits outlined, and that all grading or sloping shall conform to all existing structural improvements within the limits designated, and all work will be performed in such a manner that existing structural improvements will not be damaged.

AGENT 8 BCC  
RETURN TO REAL ESTATE  
MANAGEMENT DIVISION

Instrument: 701.1  
Project: John Young Parkway Reclaimed Water Main Project  
(Town Center Blvd to North of SR 528)

THIS EASEMENT shall expire upon the completion of the construction of the said project or after two (2) years, whichever occurs first.

IN WITNESS WHEREOF, the said GRANTOR has caused these presents to be signed in its name.

Signed, sealed, and delivered  
in the presence of:

Hunter's Creek Community Association, Inc.,  
a Florida non-profit corporation

[Signature]  
Witness

BY: [Signature]

Michelle L. Ouimet  
Printed Name

RHONDA SMITH  
Printed Name

[Signature]  
Witness

PRESIDENT  
Title

Denise L Sedon  
Printed Name

(Corporate Seal)

(Signature of TWO Witnesses required by Florida Law)

STATE OF FLORIDA  
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me this 4<sup>th</sup> day of May, 2017,  
by RHONDA SMITH, the PRESIDENT of Hunter's Creek Community  
Association, Inc., a Florida non-profit corporation, on behalf of the corporation. He/she [ ] is personally  
known to me, or [ ] has produced \_\_\_\_\_ as identification.

Witness my hand and official seal this 4<sup>th</sup> day of May, 2017.

(Notary Seal)

[Signature]  
Notary Signature

This instrument prepared by:  
Kim Heim, a staff employee  
in the course of duty with the  
Real Estate Management Division  
of Orange County, Florida

BRYAN L. MERCED  
Printed Notary Name

Notary Public in and for  
the County and State aforesaid

My commission expires:



SCHEDULE "A"

LEGAL DESCRIPTION  
PARCEL: 701  
ESTATE: TEMPORARY EASEMENT  
PURPOSE: CONSTRUCTION  
ORANGE COUNTY UTILITIES PROJECT NUMBER 78145

LEGAL DESCRIPTION

A PARCEL OF LAND BEING A PORTION OF TRACT "A", HUNTER'S CREEK TRACT 415, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 39, PAGE 10 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA, DESCRIBED AS FOLLOWS:

BEGIN AT THE INTERSECTION OF THE EASTERLY RIGHT-OF-WAY LINE OF JOHN YOUNG PARKWAY WITH THE SOUTHERLY LIMITED ACCESS RIGHT-OF-WAY LINE OF CENTRAL FLORIDA GREENWAY (SR-417); THENCE RUN NORTH 55° 43' 58" EAST, ALONG THE SOUTHERLY LIMITED ACCESS RIGHT-OF-WAY LINE OF CENTRAL FLORIDA GREENWAY, SAID LINE ALSO BEING THE NORTHERLY LINE OF SAID TRACT "A", A DISTANCE OF 67.29 FEET; THENCE, DEPARTING SAID SOUTHERLY LIMITED ACCESS RIGHT-OF-WAY LINE AND SAID NORTHERLY LINE, RUN SOUTH 35° 05' 43" EAST, A DISTANCE OF 30.00 FEET TO THE SOUTHERLY LINE OF SAID TRACT "A"; THENCE RUN SOUTH 55° 43' 58" WEST, ALONG THE SAID SOUTHERLY LINE OF TRACT "A", A DISTANCE OF 88.17 FEET TO THE AFORESAID EASTERLY RIGHT-OF-WAY LINE OF JOHN YOUNG PARKWAY; THENCE RUN NORTH 00° 00' 53" EAST, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 38.30 FEET TO THE POINT OF BEGINNING.

CONTAINING 2331 SQUARE FEET, MORE OR LESS.

SURVEYOR'S NOTES

1. THIS LEGAL DESCRIPTION IS NOT VALID UNLESS SIGNED AND EMBOSSED WITH THE RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
2. A TITLE COMMITMENT WAS NOT REVIEWED FOR THIS LEGAL DESCRIPTION.
3. LANDS SHOWN HEREON WERE NOT RESEARCHED BY THIS FIRM FOR MATTERS SUCH AS OWNERSHIP, EASEMENTS, RIGHT OF WAY OR OTHER MATTERS IN THE PUBLIC RECORDS THAT MAY AFFECT THESE LANDS.
4. BEARINGS AND COORDINATES SHOWN HEREON ARE RELATIVE TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983/ 1990 ADJUSTMENT.
5. BEARINGS SHOWN HEREON ARE BASED ON THE EASTERLY RIGHT-OF-WAY LINE OF JOHN YOUNG PARKWAY AS BEING NORTH 00° 00' 53" EAST IN THE AREA OF THIS LEGAL DESCRIPTION.
6. GRAPHIC SYMBOLS SHOWN HEREON MAY NOT BE TO SCALE.
7. THE DELINEATION OF LANDS SHOWN HEREON IS AT THE CLIENT'S REQUEST.
8. THIS SKETCH OF DESCRIPTION AND LEGAL DESCRIPTION ARE CERTIFIED TO ORANGE COUNTY UTILITIES.

SURVEYOR CERTIFICATION

THIS LEGAL DESCRIPTION WAS PREPARED UNDER MY DIRECTION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS LEGAL DESCRIPTION WAS PERFORMED IN CONFORMANCE WITH THE "MINIMUM TECHNICAL STANDARDS FOR SURVEY AS CONTAINED IN CHAPTER 51-17, FLORIDA ADMINISTRATIVE CODE PURSUANT TO FLORIDA STATUTE 472.

*William L. Miller*  
 WILLIAM L. MILLER, PLS  
 FLORIDA SURVEYOR AND MAPPER  
 BARNES FERLAND AND ASSOCIATES, INC.  
 \*NOT VALID WITHOUT THE SIGNATURE AND RAISED SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER\*

SEE SHEET 2 FOR A SKETCH OF DESCRIPTION

REVISION 01/28/18 - REVISED PARCEL

\*NOTE: THIS IS NOT A BOUNDARY SURVEY\*

**BFA** Environmental Consulting  
 Barnes, Ferland and Associates, Inc.  
 1830 E. Hillcrest Street, Orlando, FL, 32803  
 407.850.0000  
 CERTIFICATE OF AUTHORIZATION: LB7774

LEGAL DESCRIPTION  
 JOHN YOUNG PARKWAY RECLAIMED WATER MAIN PROJECT  
 TOWN CENTER BOULEVARD TO NORTH OF SR528  
 LEGAL DESCRIPTION FOR ORANGE COUNTY UTILITIES

SHEET  
1 OF 2

Plot Date: Jan 28, 2016 1:18pm  
File Name: C:\Users\cmr\Documents\Projects\2016\20160128\20160128\_01.dwg  
Tech: cmr



ACCEPTED AND APPROVED BY THE REAL  
ESTATE MANAGEMENT DIVISION ON  
BEHALF OF ORANGE COUNTY, FLORIDA

JUN 14 2017

BY: Sam Caswell  
MANAGER

DOC# 20170366185  
06/30/2017 10:36:43 AM Page 1 of 4  
Rec Fee: \$35.50  
Deed Doc Tax: \$0.00  
DOR Admin Fee: \$0.00  
Intangible Tax: \$0.00  
Mortgage Stamp: \$0.00  
Phil Diamond, Comptroller  
Orange County, FL  
PU - Ret To: ORANGE COUNTY REAL ESTATE



Instrument: 704.1

Project: John Young Parkway Reclaimed Water Main Project  
(Town Center Blvd to North of SR 528)

This document has been executed and delivered under threat of condemnation. Therefore, this document is not subject to documentary stamp tax. See Fla. Admin. Code R. 12B-4.014(13).

### TEMPORARY CONSTRUCTION EASEMENT

For and in consideration of \$1,715.00, other valuable considerations, and of the benefits accruing to us, we, FDG Flagler Station Land LLC, A Delaware limited liability company, having its principal place of business in the city of Coral Gables, county of Miami-Dade, whose address is 2855 Le Jeune Road, 4<sup>th</sup> Floor, Coral Gables, Florida 33134, GRANTOR, does hereby give, grant, bargain, and release to Orange County, a charter county and political subdivision of the state of Florida, whose address is P. O. Box 1393, Orlando, Florida, 32802-1393, GRANTEE, a temporary easement to enter upon the portion of the lands of the owners, for the purposes described herein, such lands being described as follows:

#### SEE ATTACHED SCHEDULE "A"

#### Property Appraiser's Parcel Identification Number:

a portion of  
04-24-29-0000-00-012

THIS EASEMENT is granted for construction purposes only, including the right to enter upon said lands for the purposes of sloping, grading, clearing, grubbing, storage of materials and equipment, excavation, and restoration during GRANTEE'S construction of a reclaimed water main improvement, as GRANTEE deems necessary or prudent. Should GRANTEE perform any such construction activities in the easement area, GRANTEE shall, at its sole cost and expense, restore such lands to the condition existing prior to such construction activities, including the repair or replacement of any paving, curbing, sidewalks or landscaping.

THIS EASEMENT is granted upon the condition that the sloping and/or grading upon the above land shall not extend beyond the limits outlined, and that all grading or sloping shall conform to all existing structural improvements within the limits designated, and all work will be performed in such a manner that existing structural improvements will not be damaged.

Instrument: 704.1

Project: John Young Parkway Reclaimed Water Main Project  
(Town Center Blvd to North of SR 528)

GRANTOR hereby reserves the right and privilege to use and occupy and to grant to others the right to use and occupy the surface of said lands for any purpose which is not inconsistent with the rights herein granted to GRANTEE. GRANTEE shall exercise the easement conveyed herein in a manner that will not unreasonably interfere with the use and occupancy of any permitted improvements constructed upon real property adjacent to the easement area.

THIS EASEMENT shall expire upon the completion of the construction of the said project or after two (2) years, whichever occurs first.

IN WITNESS WHEREOF, the said GRANTOR has caused these presents to be signed in its name.

Signed, sealed, and delivered  
in the presence of:

FDG Flagler Station Land LLC,  
a Delaware limited liability company

[Signature]

BY: [Signature]

Witness  
Brenda Johnson

Kolleen O.P. Cobb, Vice President

Printed Name  
Jessica Perez

Witness  
Jessica Perez

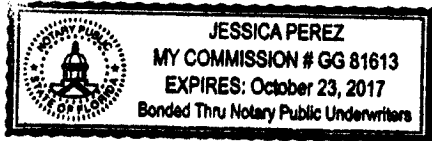
Printed Name

(Signature of TWO Witnesses required by Florida Law)

STATE OF Florida  
COUNTY OF Miami-Dade

The foregoing instrument was acknowledged before me this 20<sup>th</sup> day of April, 2017, by Kolleen O.P. Cobb, Vice President of FDG Flagler Station Land LLC, a Delaware limited liability company, on behalf of the limited liability company. He/she [] is personally known to me, or [] has produced \_\_\_\_\_ as identification.

(Notary Seal)



[Signature]

Notary Signature

Printed Notary Name

This instrument prepared by:  
Jeffrey L. Sponenburg, a staff employee  
in the course of duty with the  
Real Estate Management Division  
of Orange County, Florida

Notary Public in and for  
the County and State aforesaid

My Commission Expires:





SKETCH OF DESCRIPTION  
 PARCEL: 704  
 ESTATE: TEMPORARY EASEMENT  
 PURPOSE: CONSTRUCTION  
 ORANGE COUNTY UTILITIES PROJECT NUMBER 78145

**POINT OF COMMENCEMENT**

NW CORNER OF SW 1/4 OF SECTION 4-T24S-R29E FOUND 6"x6" CONCRETE MONUMENT (NO ID.) CCR 101711

NE CORNER OF SE 1/4 OF SECTION 4-24S-29E CCR 101707

SECTION 5  
SECTION 4

SECTION 4  
SECTION 3

SOUTHWEST 1/4 SECTION 4 TOWNSHIP 24 SOUTH RANGE 29 EAST

JOHN YOUNG PARKWAY  
 FLORIDA DEPARTMENT OF TRANSPORTATION  
 ROAD 423 SECTION 75004-2520  
 (RIGHT OF WAY WIDTH VARIES)

**LEGEND**

CCR - CERTIFIED CORNER RECORD  
 ID. - IDENTIFICATION

NOT PLATTED  
 PRD: 04-24-29-0000-00-012



**GRAPHIC SCALE**



N89° 52' 25"E 30.00'

S00° 07' 35"E 182.55'  
 (BEGIN WESTERLY R/W OF JOHN YOUNG PARKWAY)

**POINT OF BEGINNING**

N00° 07' 35"W 80.00'

TEMPORARY CONSTRUCTION EASEMENT  
 ±2400 SQUARE FEET

JOHN YOUNG PARKWAY  
 STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
 RIGHT OF WAY MAP FOR INTERSTATE 4-BEE LINE CONNECTOR SECTION 75004-2502  
 (LIMITED ACCESS RIGHT OF WAY WIDTH VARIES)

S00° 07' 35"E 80.00'

WESTERLY LIMITED ACCESS R/W

S89° 52' 25"W 30.00'

SEE SHEET 1 FOR LEGAL DESCRIPTION

REVISION 01/28/16 - REVISED PARCEL


\*THIS IS NOT A BOUNDARY SURVEY\*

**BFA Environmental Consulting**  
 Survey, Planning and Associates, Inc.  
 2200 E. Highway Street, Orlando, FL 32825  
 CERTIFICATE OF AUTHORIZATION: LB7774

**LEGAL DESCRIPTION**  
 JOHN YOUNG PARKWAY RECLAIMED WATER MAIN PROJECT  
 TOWN CENTER BOULEVARD TO NORTH OF SR528  
 LEGAL DESCRIPTION FOR ORANGE COUNTY UTILITIES

SHEET  
 2 OF 2

Plot Date: Jan 28, 2016 1:21pm  
 File Name: C:\Users\cm2088\appdata\local\temp\AutoSubst...\_6845\2012-30\_LEGAL\_FINAL.dwg  
 Title: sheet

DOC# 20170128516  
03/10/2017 10:44:51 AM Page 1 of 4  
Rec Fee: \$35.50  
Deed Doc Tax: \$0.00  
DOR Admin Fee: \$0.00  
Intangible Tax: \$0.00  
Mortgage Stamp: \$0.00  
Phil Diamond, Comptroller  
Orange County, FL  
PU - Ret To: ORANGE COUNTY REAL ESTATE  


FEB 07 2017

BY: *Ann Caswell*  
MANAGER

Instrument: 803.1

Project: John Young Parkway Reclaimed Water Main Proj. (Town Center Blvd to N. of SR 528)

This document has been executed and delivered under threat of condemnation and in settlement of condemnation proceedings affecting the property described herein. This document is immune from documentary stamp tax. See Florida Department of Revenue v. Orange County, 620 So. 2d 991, 18 FLW S336 (Fla. 1993).

**UTILITY EASEMENT**

THIS INDENTURE, Made this 16 day of November, A.D. 2016, between Grand Lakes Property, LLC, a Delaware limited liability company, having its principal place of business in the city of Orlando, county of Orange, whose address is clp Darden Restaurants, Inc., 1000 Darden Center Dr., Orlando, FL 32837, GRANTOR, and Orange County, a charter county and political subdivision of the state of Florida, whose address is P.O. Box 1393, Orlando, Florida 32802-1393, GRANTEE.

WITNESSETH, That the GRANTOR, in consideration of the sum of \$10.00 and other valuable considerations, paid by the GRANTEE, the receipt whereof is hereby acknowledged, does hereby give and grant to the GRANTEE and its assigns, a right-of-way and easement for utility purposes, with full authority to enter upon, excavate, construct and maintain, as the GRANTEE and its assigns may deem necessary, water lines, wastewater lines, reclaimed water lines, and any other utility facilities over, under and upon the following described lands situate in Orange County aforesaid, to-wit:

**SEE ATTACHED SCHEDULE "A"**

**Property Appraiser's Parcel Identification Number:**

**a portion of  
08-24-29-3049-04-000**

TO HAVE AND TO HOLD said right-of-way and easement unto said GRANTEE and its assigns forever.

THE GRANTEE herein and its assigns shall have the right to clear and keep clear all trees, undergrowth and other obstructions that may interfere with normal operation or maintenance of the utilities and any facilities placed thereon by the GRANTEE and its assigns, out of and away from the herein granted right-of-way, and the GRANTOR, its successors and assigns, agree not to build, construct, or create, nor permit others to build, construct, or create any buildings or other structures on the herein granted right-of-way that may interfere with the normal operation or maintenance of the utility facilities installed thereon.

**AGENT 8 BCC  
RETURN TO REAL ESTATE  
MANAGEMENT DIVISION**

Instrument: 803.1

Project: John Young Parkway Reclaimed Water Main Proj. (Town Center Blvd to N. of SR 528)

GRANTEE may at any time increase its use of the easement, change the location of pipelines or other facilities within the boundaries of the easement right-of-way, or modify the size of existing pipelines or other improvements as it may determine in its sole discretion from time to time without paying any additional compensation to GRANTOR or GRANTOR'S heirs, successors, or assigns, provided GRANTEE does not expand its use of the easement beyond the easement boundaries described above.

GRANTEE'S obligation to restore landscaping shall be limited to an obligation to restore to Orange County landscaping standards for Orange County right-of-way and shall not include an obligation to restore to exotic or enhanced landscaping standards.

IN WITNESS WHEREOF, the GRANTOR has caused these presents to be executed in its name.

Signed, sealed, and delivered  
in the presence of:

[Signature]  
Witness

Misty Curtice  
Printed Name

[Signature]  
Witness

Kimberly Curtis  
Printed Name

(Signature of TWO witnesses required by Florida law)

State of Florida  
County of Orange

The foregoing instrument was acknowledged before me this 16th day of November, 2016, by Joseph Kern, the Senior Vice President of Darden Corporation, a Florida corporation as Manager of Grand Lakes Property, LLC, a Delaware limited liability company, on behalf of the company. He/~~she~~  is personally known to me, or [ ] has produced \_\_\_\_\_ as identification.

(Notary Seal)

**This instrument prepared by:**  
Kim Heim, a staff employee  
in the course of duty with the  
Real Estate Management Division  
Of Orange County, Florida

Grand Lakes Property, LLC,  
a Delaware limited liability company

BY: Darden Corporation, a Florida corporation  
Manager

BY: [Signature]

Joseph Kern  
Printed Name

Senior Vice President  
Title

(corporate seal)

[Signature]  
Notary Signature

Sonia Saddler  
Printed Notary Name

Notary Public in and for  
the County and State aforesaid

My Commission Expires:



**SONIA SADDLER**  
MY COMMISSION # FF 038932  
EXPIRES: August 9, 2017  
Bonded Thru Budget Notary Services

Schedule "A"

LEGAL DESCRIPTION  
PARCEL: 803  
ESTATE: PERMANENT EASEMENT  
PURPOSE: UTILITY  
ORANGE COUNTY UTILITIES PROJECT NUMBER 78145

LEGAL DESCRIPTION

A PARCEL OF LAND BEING A PORTION OF LOT 4, GRANDE LAKES NW QUADRANT, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 63, PAGES 43-50 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA, AND DESCRIBED AS FOLLOWS:

BEGIN AT THE SOUTHEAST CORNER OF SAID LOT 4, ALSO BEING THE INTERSECTION OF THE NORTHERLY RIGHT-OF-WAY LINE OF CENTRAL FLORIDA PARKWAY, AND THE WESTERLY RIGHT-OF-WAY OF JOHN YOUNG PARKWAY; THENCE RUN NORTH 89° 51' 40" WEST, ALONG THE SAID NORTHERLY RIGHT-OF-WAY LINE, A DISTANCE OF 21.56 FEET; THENCE DEPARTING SAID NORTHERLY RIGHT-OF-WAY LINE, RUN NORTH 22° 04' 51" EAST, A DISTANCE OF 205.00 FEET; THENCE RUN SOUTH 67° 55' 09" EAST, A DISTANCE OF 20.00 FEET TO A POINT BEING ON THE AFORESAID WESTERLY RIGHT-OF-WAY LINE OF JOHN YOUNG PARKWAY; THENCE RUN SOUTH 22° 04' 51" WEST, ALONG SAID WESTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 196.94 FEET TO THE POINT OF BEGINNING.

CONTAINING 4019 SQUARE FEET, MORE OR LESS.

SURVEYOR'S NOTES

1. THIS LEGAL DESCRIPTION IS NOT VALID UNLESS SIGNED AND EMBOSSED WITH THE RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
2. A TITLE COMMITMENT WAS NOT REVIEWED FOR THIS LEGAL DESCRIPTION.
3. LANDS SHOWN HEREON WERE NOT RESEARCHED BY THIS FIRM FOR MATTERS SUCH AS OWNERSHIP, EASEMENTS, RIGHT OF WAY OR OTHER MATTERS IN THE PUBLIC RECORDS THAT MAY AFFECT THESE LANDS.
4. BEARINGS AND COORDINATES SHOWN HEREON ARE RELATIVE TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983/ 1990 ADJUSTMENT.
5. BEARINGS SHOWN HEREON ARE BASED ON THE WESTERLY RIGHT-OF-WAY LINE OF SOUTH JOHN YOUNG PARKWAY AS BEING SOUTH 22° 04' 51" WEST IN THE AREA OF THIS LEGAL DESCRIPTION.
6. GRAPHIC SYMBOLS SHOWN HEREON MAY NOT BE TO SCALE.
7. THE DELINEATION OF LANDS SHOWN HEREON IS AT THE CLIENT'S REQUEST.
8. THIS SKETCH OF DESCRIPTION AND LEGAL DESCRIPTION ARE CERTIFIED TO ORANGE COUNTY UTILITIES.

SURVEYOR CERTIFICATION

THIS LEGAL DESCRIPTION WAS PREPARED UNDER MY SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. IT WAS PERFORMED IN CONFORMANCE WITH THE REQUIREMENTS OF CHAPTER 472, SURVEY AS CONTAINED IN CHAPTER 472, FLORIDA STATUTE 472.

WILLIAM E. BARNES  
FLORIDA SURVEYOR AND MAPPER  
BARNES FERLAND AND ASSOCIATES, INC.

\*NOT VALID WITHOUT THE  
SEAL OF THE FLORIDA SURVEYOR

SEE SHEET 2 FOR A  
SKETCH OF DESCRIPTION

\*NOTE: THIS IS NOT A BOUNDARY SURVEY\*

**BFA** Environmental Consultants  
Barnes, Ferland and Associates, Inc.  
1230 E. Filmore Street, Orlando, FL 32803  
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CERTIFICATE OF AUTHORIZATION: LB7774

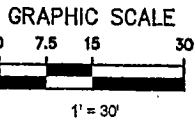
LEGAL DESCRIPTION  
JOHN YOUNG PARKWAY RECLAIMED WATER MAIN PROJECT  
TOWN CENTER BOULEVARD TO NORTH OF SR528  
LEGAL DESCRIPTION FOR ORANGE COUNTY UTILITIES

SHEET  
1 OF 2

Plot Date: May 13, 2015 4:06pm  
Tech: camth  
Filename: F:\CIVIL\PROJECTS\2012\2012-39 OCU John Young Parkway Reclaimed Water Improvements\9.0 Survey\9.6 Drawings\2012-39 LEGAL\_FINAL.dwg

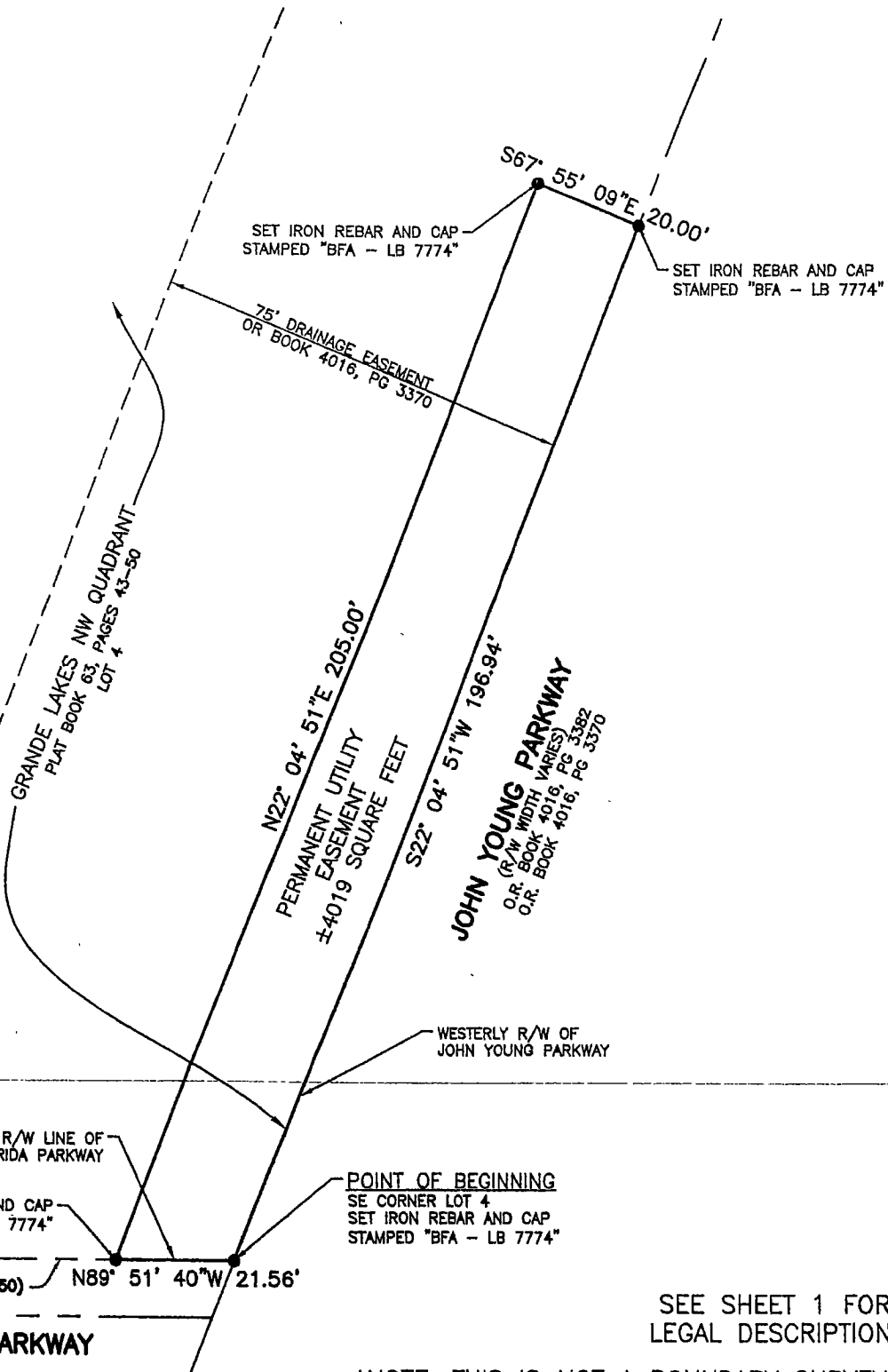
Schedule "A"

SKETCH OF DESCRIPTION  
 PARCEL: 803  
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 ORANGE COUNTY UTILITIES PROJECT NUMBER 78145



LEGEND

- ID. - IDENTIFICATION
- O.R. - OFFICIAL RECORDS
- SE - SOUTHEAST
- TYP. - TYPICAL



Plot Date: May 14, 2015 12:57pm  
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 Tech: smith  
 BFA Environmental Consultants  
 Barnes, Forland and Associates, Inc.  
 1830 E. Hillcrest Street, Orlando, FL 32803  
 407.497.9122 FAX 407.497.9122  
 CERTIFICATE OF AUTHORIZATION: LB7774

**LEGAL DESCRIPTION**  
 JOHN YOUNG PARKWAY RECLAIMED WATER MAIN PROJECT  
 TOWN CENTER BOULEVARD TO NORTH OF SR528  
 LEGAL DESCRIPTION FOR ORANGE COUNTY UTILITIES

SHEET  
 2 OF 2

# **APPENDIX F**

## **ORANGE COUNTY PUBLIC WORKS DEPARTMENT**

**Technical Provision 327 – Milling of Existing Pavement**

**Technical Provision 334 – Superpave Asphaltic Concrete Pavement**



## PART H

### TECHNICAL PROVISIONS

#### TP 327 – Milling of Existing Asphalt Pavement

##### MILLING OF EXISTING ASPHALT PAVEMENT

Milling of existing asphalt pavement shall be performed in accordance with the requirements of Sections 327 and 300 of the “Standard Specifications”, except as amended herein. The work specified in this Section consists of removing existing asphaltic concrete pavement by milling to lower the finished grade adjacent to existing curb prior to resurfacing, except as directed by the Engineer.

Milled material becomes the property of the Contractor.

##### Equipment

The milling machine shall be capable of maintaining a depth of cut and cross slope that achieves the results specified in the plans and specifications. The overall length of the machine (out to out measurements excluding the conveyor) shall be a minimum of 18 feet. The minimum cutting width shall be 6 feet.

The milling machine shall be equipped with a built-in automatic grade control system that controls the transverse slope and the longitudinal profile to produce the specified results.

Any commercially manufactured milling machine meeting the above requirements shall be accepted prior to starting the project. If after milling has started the milling machine cannot consistently produce the specified results, the milling machine will be rejected for further use.

Equipment permitted when milling adjacent to existing curbs or other areas. Use of a smaller milling machine will be subject to the Engineer’s acceptance, where it is impractical to use the above-described equipment.

The milling machine shall be equipped with means to effectively limit the amount of dust escaping the removal operation.

##### Construction

The Contractor shall remove the existing raised reflective pavement markers prior to milling. Include the cost of removing existing pavement markers in the price for milling.

The milling machine shall be operated to minimize the amount of dust being emitted from the machine. Pre-wetting of the pavement may be required.

Where traffic will be maintained on the milled surface prior to placing the new asphaltic concrete, the striation patterns shall produce an acceptable riding surface. The Engineer will accept the traveling speed of the milling machine to produce an acceptable riding surface.

Before opening a milled area to traffic, the pavement shall be thoroughly swept with power broom or other acceptable equipment to remove, to the greatest extent practicable, fine material, which will dust under traffic. This operation shall be conducted in such a manner that will minimize the potential of creating a traffic hazard and minimize air pollution.

Sweeping the milled surface with a power broom is required before placing asphaltic concrete.



## PART H

### TECHNICAL PROVISIONS

#### TP 327 – Milling of Existing Asphalt Pavement

The sweeping operation shall be performed immediately after the milling to prevent milled material infiltrating into the storm sewer system when the milling operation is near a municipal curb and gutter or a closed drainage system.

This operation shall include thoroughly removing all milled material from the gutter to prevent it from being swept into inlet openings or grates. Curbs shall not be damaged during the removal operation. The Engineer may require the equipment and/or methods be changed to achieve satisfactory results.

##### Milled Surface

Milled surfaces shall have a reasonably uniform texture, shall be within ¼ inch of a true profile grade and shall have no deviation in excess of ¼ inch from a straightedge applied to the pavement perpendicular to the centerline. Variations of the longitudinal joint between multiple cut areas shall not exceed ¼ inch. Areas varying from a true surface in excess of the above stated tolerance may be accepted without correction if the Engineer determines that they were caused by a pre-existing condition, which could not have reasonably been corrected by the milling operations. Any unsuitable texture or profile, as determined by the Engineer, shall be corrected by the Contractor at no additional compensation.

The Engineer may require re-milling of any area where a surface lamination causes a non-uniform texture to occur.

##### ~~Method of Measurement~~

~~Quantities measured for payment under this Section shall be square yards, of milling acceptably completed.~~

##### ~~Basis of Payment~~

~~Milling Existing Asphalt Pavement will be paid for at the contract unit price per square yard. Payment shall be full compensation for all work specified in this Section, including hauling off or otherwise disposing of the milled material.~~

~~Payment shall be made under:~~

~~Item No. 327-70-2 Milling existing asphalt pavement (1 1/2" avg. depth) — S.Y.~~

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

#### SUPERPAVE ASPHALTIC CONCRETE PAVING

##### **334-1 GENERAL**

Work specified in this Provision consists of the application of Asphaltic Concrete structural courses properly produced and laid upon a prepared and accepted base in accordance with these specifications and in conformity with the lines, grades, thicknesses and cross-sections provided in the plans. Base preparation and Asphaltic Concrete Friction Courses are covered under separate provisions.

This Provision is intended to stand alone for the production and placement of structural course asphalt and replaces Sections 330 and 334 of the FDOT Standard Specifications for Road and Bridge Construction except when specific references are made to these or other Sections. Any references to FDOT Specification Sections shall mean the latest FDOT Standard Specifications for Road and Bridge Construction, including Supplements. Any incorrect references to or conflicts with the FDOT specifications, test methods, or standards shall be brought to the attention of the Engineer for clarification.

The Engineer will have the right to disapprove of any material or process that does not conform to these specifications.

The Contractor shall document all QC procedures, Process Control, inspection, and all test results and make them available for review by the Engineer throughout the Contract duration.

All test methods designated as FM refer to the FDOT Florida Sampling and Testing Methods.

##### **334-2 CONTRACTOR QUALITY CONTROL REQUIREMENTS**

**334-2.1 GENERAL:** The Contractor shall be responsible for the overall quality of the materials and workmanship of the work covered under this Provision.

Ensure that the qualifications and certifications of personnel and laboratories are maintained throughout the Contract duration. Provide proof of qualifications and all applicable certifications to the County prior to construction operations commencing. Notify the County immediately when there is a change in any qualification or certification during the Contract duration.

**334-2.2 PERSONNEL:** Provide personnel who are both qualified and certified in all activities related to asphalt mix production at the plant and placement on the roadway, especially for the sampling, testing and inspection of materials and construction activities. At a minimum, a certified Paving Level II technician shall be present on site at all times during paving operations. Provide documentation to the Engineer that the personnel responsible for the production and placement of asphalt products under the Contract are qualified and certified.

**334-2.3 TESTING LABORATORY:** Furnish or have furnished a fully equipped asphalt laboratory (permanent or portable) at the production site. Provide documentation to the Engineer that any Laboratory used is FDOT qualified and certified.

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

**334-2.4 EQUIPMENT:** Provide equipment and methods conforming to Section 320 of the FDOT Standard Specifications for Road and Bridge Construction. Provide a sufficient number of trucks to transport the asphalt mixture from the plant to the job site such that paving of each lane can proceed in one smooth uninterrupted operation. In determining the number of trucks required the Contractor shall consider the capacity of the trucks, the length of the approved haul route from the plant to the job site, traffic conditions, weather conditions, and any other factors that could impact the round trip travel time. Stopping the paver to wait for trucks bringing the asphalt mixture will not be acceptable. In addition to meeting the requirements in Section 320-5, the paving machine shall be capable of pushing the asphalt truck as it dumps the asphalt mixture into the hopper. Stopping the paving machine to allow the next asphalt truck to back up to it to fill the hopper is not an acceptable procedure, and shall not be allowed.

Unless otherwise approved by the Engineer, the paving machine shall weigh a minimum of 26,000 pounds.

**334-2.5 MINIMUM QUALITY CONTROL REQUIREMENTS:** Perform the following activities necessary to maintain quality and process control and meet specification requirements:

**Stockpiles:** Ensure each aggregate component is placed in an individual stockpile, and separated from adjacent stockpiles, either by space or by a system of bulkheads. Prevent the intermingling of different materials in stockpiles. Form and maintain stockpiles in a manner that will prevent separation, contamination, segregation, etc. Identify each individual stockpile, including RAP, as shown on the mix design.

**Incoming Aggregate:** Obtain gradations and bulk specific gravity (Gsb) values from aggregate supplier for reference; determine the gradation of all component materials; routinely compare gradations and Gsb values to mix design.

**Cold Bins:** Calibrate the cold gate/feeder belt for each material; determine cold gate/feeder belt settings; observe operation of cold feeder for uniformity.

**Dryer:** Observe pyrometer for aggregate temperature control; observe efficiency of the burner.

**For Batch Plants:** Determine percent used and weight to be pulled from each bin to assure compliance with Mix Design, check mixing time, and check operations of weigh bucket and scales.

**For Drum Mixer Plants:** Determine aggregate moisture content, and calibrate the weigh bridge on the charging conveyor.

**Control Charts:** Plot and keep charts updated daily for all Quality Control Sampling and Testing and post in the asphalt lab where they can be seen. Maintain the following charts:

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

1. Sample test results for the following: No. 8 sieve, No. 200 sieve, asphalt binder content, air voids, and density.
2. Gradation of incoming aggregate.
3. Gradation and asphalt content of RAP.
4. Any other test result or material characteristic (as determined by the Contractor) necessary for process control.

The above listed minimum activities are to be considered normal activities necessary to control the production of hot mix asphalt at an acceptable quality level. It is recognized, however, that depending on the type of process or materials, some of the activities listed may not be necessary and in other cases, additional activities may be required. The frequency of these activities will also vary with the process and the materials. When the process varies from the defined process average and variability targets, the frequency of these activities will be increased until the proper conditions have been restored.

#### 334-2.6 MINIMUM PROCESS CONTROL TESTING REQUIREMENTS:

##### Asphalt Plant

1. Hot Mix Asphalt: Determine the asphalt binder content; mix gradation and volumetric properties at a minimum frequency of one per day. In the event that the daily production exceeds 1,000 tons, perform these tests a minimum of two times per day.
2. Aggregate (Including RAP): One sample per 1,000 tons of incoming material as it is stockpiled for gradation. The testing of RAP material shall include the determination of asphalt binder content and gradation of extracted aggregate.
3. Monitor the mix temperature for the first five loads and every fifth load thereafter.
4. Monitor the aggregate moisture content from stockpiles or combined cold feed aggregate - one per day.
5. Other tests (as determined necessary by the Contractor) for process control.

##### Roadway

1. Monitor the mix temperature for the first five loads and every fifth load thereafter.
2. Monitor the prime/tack spread rate as needed to control operations and ensure that it meets or exceeds the target spread rate.

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

3. Monitor the pavement cross slope at a frequency necessary to fulfill the requirements of the plans and section 334-3.10.3 below, and identify a system to control the cross slope of each pavement layer during construction.
4. Monitor the mix spread rate at the beginning of each day's production, and as needed to control the operations, at a minimum of once per 200 tons placed to ensure that the spread rate meets or exceeds the target spread rate. When determining the spread rate, use an average of five truckloads of mix.
5. Monitor mat placement thickness every 25' to ensure the minimum design thickness is met.
6. Monitor the pavement temperature with an infrared temperature device. Monitor the roadway density with either 6 inch diameter roadway cores, a nuclear density gauge, or other density measuring device, at a minimum frequency of once per 1,500 feet of pavement. When the layer thickness is greater than or equal to 1 inch (or the spread rate is greater than or equal to 105 lb/yd<sup>2</sup>) and an approved rolling pattern may be used in lieu of density testing, monitor the density (for informational purposes only) by cutting and testing a 6 inch diameter core at a minimum frequency of three cores per day. Maintain daily records of the testing results and make them available for review by the Engineer throughout the life of the Contract.
7. Monitor the pavement smoothness with a 15-foot rolling straightedge as required by section 334-3.10.4 below.

#### **334-3 GENERAL CONSTRUCTION REQUIREMENTS**

##### **334-3.1 DESCRIPTION**

Construct plant-mixed hot bituminous pavements. Establish and maintain a quality control system in accordance with section 334-2 above that provides assurance that all materials, products and completed construction submitted for acceptance meet Contract requirements.

##### **334-3.2 LIMITATIONS OF OPERATIONS**

**334-3.2.1 Weather Limitations:** Do not transport asphalt mix from the plant to the roadway unless all weather conditions are suitable for the laying operations.

##### **334-3.2.2 Limitations of Laying Operations:**

**334-3.2.2.1 General:** Spread the mixture only when the surface upon which it is to be laid has been previously prepared, is intact, firm, and properly cured, and is substantially dry. Do not place friction course until the adjacent shoulder area has been dressed and grassed.

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

**334-3.2.2.2 Temperature:** Spread the mixture only when the air temperature in the shade and away from artificial heat is at least 40°F and rising for layers greater than 1 inch in thickness and at least 45°F and rising for layers 1 inch or less in thickness (including leveling courses). The minimum temperature requirement for leveling courses with a spread rate of 50 lb/yd<sup>2</sup> or less is 50°F and rising.

**334-3.2.2.3 Wind:** Do not spread the mixture when the wind is blowing to such an extent that proper and adequate compaction cannot be maintained or when sand, dust, etc., are being deposited on the surface being paved to the extent that the bond between layers will be diminished.

**334-3.2.2.4 Night Paving:** Provide sufficient lighting for night operations.

#### 334-3.3 ROADWAY SURFACE PREPARATION

**334-3.3.1 Cleaning:** Prior to the laying of the mixture, clean the surface of the base or pavement to be covered of all loose and deleterious material by the use of a vacuum truck. Power brooms or blowers may be used when the use of a vacuum truck is impractical, supplemented by hand brooming where necessary.

**334-3.3.2 Patching and Leveling Courses:** Where an asphalt mix is to be placed on an existing pavement or old base which is irregular, or wherever the plans indicate, bring the existing surface to proper grade and cross-section by the application of patching or leveling courses. Wherever a patch is required, the width shall be taken out to the full width of each lane affected and the length shall extend far enough longitudinally to fully encompass the affected area. The existing pavement receiving a patch or leveling course shall be milled as shown on the plans or as required by the Engineer.

**334-3.3.3 Application Over Surface Treatment:** Where an asphalt mix is to be placed over a newly constructed surface treatment, sweep and dispose of all loose material from the paving area.

**334-3.3.4 Coating Surfaces of Contacting Structures:** Paint all structures which will be in actual contact with the asphalt mixture, with the exception of the vertical faces of existing pavements and curbs or curb and gutter, with a uniform coating of asphalt cement to provide a closely bonded, watertight joint.

#### 334-3.3.5 Tack Coat:

**334-3.3.5.1 Tack Coat Required:** Apply a tack coat, meeting the requirements of Section 300 in the FDOT Standard Specifications for Road and Bridge Construction, on existing pavement structures that are to be overlaid with an asphalt mix and between successive layers of all asphalt mixes. The use of Trackless Polymer Modified Asphalt Emulsion Tack Coat (MTSS-1HM) is not allowed unless approved by the Engineer.

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

**334-3.3.5.2 Tack Coat at Engineer's Option:** Apply a tack coat on the following surfaces only when so directed by the Engineer:

1. Freshly primed bases.
2. Surface treatment.

#### 334-3.4 ASPHALT PLANT PREPARATION

Ensure the following requirements are met at the asphalt plant:

##### **Asphalt Cement**

- Asphalt cement is delivered to the asphalt plant at a temperature not to exceed 370°F.
- Asphalt cement is maintained in storage within a range of 230 to 370°F in advance of mixing operations.
- Constant heating is maintained within these limits, and that high fluctuations in temperature during a day's production is avoided.

##### **Aggregate Blending:**

- All aggregates to be blended or proportioned are placed in separate bins at the cold hopper.
- Proportioning is performed by means of securely positioned calibrated gates or other approved devices.
- 

##### **Aggregate Cold Bins:**

- Bin compartments are constructed to prevent any spilling or leakage of aggregate from one bin to another.
- Bin compartments have the capacity and design to permit a uniform flow of aggregates.
- Bin compartments are mounted over a feeder of uniform speed, which will deliver the specified proportions of aggregate to the drier.
- Bins are equipped with vibrators to ensure a uniform flow of aggregate at all times.
- Each bin compartment is provided with a gate which is adjustable in the vertical direction.
- Gates can be held securely at any specified vertical opening.
- Gates are equipped with a measuring device for measuring the vertical opening of the gates from a horizontal plane level with the bottom of the feeder.

##### **Mineral Filler:**

Mineral filler (if required in the mix design) is fed or weighed in separately from the other aggregates.

##### **Aggregate Heating and Drying:**

- Aggregates are heated and dried before screening.
- The temperature of the aggregates is controlled so that the temperature of the completed

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

mixture at the plant falls within the permissible range allowed by this Section.

##### **Aggregate Screening:**

- Oversized pieces of aggregate are removed by the use of a scalping screen.
- Oversized material is not returned to the stockpile for reuse unless it has been crushed

and reprocessed into sizes that will pass the scalping screen.

- The quantity of aggregates being discharged onto the screens does not exceed the capacity of the screens to actually separate the aggregates into the required sizes.
- A maximum of 10% plus-10 material in the minus-10 bin is maintained.

#### **334-3.5 MIXTURE PREPARATION**

Ensure the following requirements are met:

**334-3.5.1 Batch Mixing:** The dried aggregates and mineral filler (if required), prepared as specified and proportioned to meet the verified mix design, shall be conveyed to the empty mixer. The accurately measured hot asphalt binder shall be introduced into the mixer simultaneously with, or after, the hot aggregates. The blended materials shall be continuously mixed until thoroughly uniform with all particles fully coated. The mixing time begins when the measuring devices for both the asphalt and the aggregates indicate that all the material is in the mixer, and continues until the material begins to leave the mixing unit. In no case will the mixing time be less than 35 seconds.

**334-3.5.2 Continuous Mixing:** The dried aggregates and mineral filler (if required), prepared as specified and proportioned to meet the verified mix design, shall be introduced into the mixer in synchronization with the accurate feeding of the hot asphalt cement. The blended materials shall be sufficiently mixed until thoroughly uniform with all particles fully coated.

**334-3.5.3 Mix Temperature:** The ingredients of the mix shall be heated and combined in such a manner as to produce a mixture with a temperature, when discharged from the pugmill or surge bin, which is within the master range as defined below.

The temperature of the completed mixture shall be determined using a quick-reading thermometer through a hole in the side of the loaded truck immediately after loading. A 1/4 inch hole on both sides of the truck body within the middle third of the length of the body, and at a distance from 6 to 10 inches above the surface supporting the mixture shall be provided.

The normal frequency for taking asphalt mix temperatures will be for each day, for each design mix on the first five loads and once every five loads thereafter. The temperature of the asphalt mix at the plant and at the roadway shall be taken at the normal frequency before the mix is placed. The temperature shall be recorded on the front of the respective delivery ticket. The Engineer shall review the plant and roadway temperature readings and may take additional temperature measurements at any time.



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### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

The master range for all mix designs will be the established temperature from the mix design  $\pm 30^{\circ}\text{F}$ . Reject for use on the project any load or portion of a load of asphalt mix at the plant or at the roadway with a temperature outside of this master range. The Engineer will be immediately notified of the rejection.

If any single load at the plant or at the roadway is within the master range but differs from the established mix temperature by more than  $\pm 25^{\circ}\text{F}$  or if the average difference of

the temperature measurements from the established mix temperature for five loads exceeds  $\pm 15^{\circ}\text{F}$ , the temperature of every load will be monitored until the temperature falls within the specified tolerance range in Table 334-1; at this time the normal frequency may be resumed.

#### Table 334-1

##### Temperature Tolerance From Verified Mix Design

Any Single Measurement

$\pm 25^{\circ}\text{F}$

Average of Any Five Consecutive Measurements

$\pm 15^{\circ}\text{F}$

**334-3.5.4 Maximum Period of Storage:** The maximum time that any mix may be kept in a hot storage or surge bin shall be 72 hours.

**334-3.5.5 Contractor's Responsibility for Mixture Requirements:** Produce a homogeneous mixture, free from moisture and with no segregated materials, that meets all specification requirements. Also apply these requirements to all mixes produced by the drum mixer process and all mixes processed through a hot storage or surge bin, both before and after storage.

#### 334-3.6 MIXTURE TRANSPORT

Transport the mixture in tight vehicles previously cleaned of all foreign material. After cleaning, thinly coat the inside surface of the truck bodies with soapy water or an asphalt release agent as needed to prevent the mixture from adhering to the beds. Do not allow excess liquid to pond in the truck body. Do not use diesel fuel or any other hazardous or environmentally detrimental material as a coating for the inside surface of the truck body. Cover each load during cool and cloudy weather and at any time there is a probability of rain.

#### 334-3.7 MIXTURE PLACEMENT

##### 334-3.7.1 Requirements Applicable to All Mixture Types:

**334-3.7.1.1 Alignment of Edges:** Lay all asphalt concrete mixtures, including leveling courses, other than the pavement edge just adjacent to curb and gutter or other true edges, by the stringline method to obtain an accurate, uniform alignment of the pavement edge. Control the unsupported pavement edge to ensure that it will not deviate more than  $\pm 1.5$  inches from the stringline.

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

**334-3.7.1.2 Temperature of Spreading:** Maintain the temperature of the mix at the time of spreading within the master range as defined in 334-3.5.3.

**334-3.7.1.3 Rain and Surface Conditions:** Immediately cease transportation of asphalt mixtures from the plant when rain begins at the roadway. Do not place asphalt mixtures while rain is falling, or when there is standing water on the surface to be covered. Once the rain has stopped and water has been removed from the tacked surface to the satisfaction of the Engineer and the temperature of the mixture caught in transit still meets the requirements as specified in 334-3.7.1.2, the Contractor may then place the mixture caught in transit.

**334-3.7.1.4 Speed of Paver:** Establish the forward speed of the asphalt paver based on the rate of delivery of the mix to the roadway but not faster than the optimum speed needed to adequately compact the pavement.

**334-3.7.1.5 Number of Crews Required:** For each paving machine operated, use a separate crew, each crew operating as a full unit. The technician who will be in charge of all paving operations shall be state approved and properly certified as deemed appropriate by the Engineer. The Contractor's technician in charge of the paving operations may be responsible for more than one crew but must be physically accessible to the Engineer at all times when placing mix.

**334-3.7.1.6 Checking Depth of Layer:** Check the depth of each layer at frequent intervals, and make adjustments when the thickness deviates from the design thickness. When making an adjustment, allow the paving machine to travel a minimum distance of 32 feet to stabilize before the second check is made to determine the effects of the adjustment.

**334-3.7.1.7 Hand Spreading:** In limited areas where the use of the spreader is impossible or impracticable, the Contractor may spread and finish the mixture by hand.

**334-3.7.1.8 Straightedging and Back-patching:** Straightedge and backpatch after obtaining initial compaction and while the material is still hot.

#### **334-3.7.2 Requirements Applicable to Courses Other Than Leveling:**

**334-3.7.2.1 Spreading and Finishing:** Upon arrival, dump the mixture in the approved mechanical spreader, and immediately spread and strike-off the mixture to the full width required, and to such loose depth for each course that, when the work is completed, the required specified thickness is placed. Carry a uniform amount of mixture ahead of the screed at all times.

## PART H

### TECHNICAL PROVISIONS

#### TP 334 – Superpave Asphaltic Concrete Pavement

**334-3.7.2.2 Thickness of Layers:** Construct each course of Type SP mixture in layers of thickness as shown in Section 334-4.1.3.

**334-3.7.2.3 Laying Width:** For regular roadways, pave to the full lane width, except in areas where physically constrained. For other applications such as sidewalks, provide a spreader capable of placing and screeding to the plan width. If necessary due to the traffic requirements, lay the mixture in strips in such a manner as to provide for the passage of traffic. As an option, where the road is closed to traffic, lay the mixture to the full width with machines traveling in echelon. Plan longitudinal joints such that they are not placed where a permanent wheel path will occur.

**334-3.7.2.4 Correcting Defects:** Before starting any rolling, check the surface. Correct any irregularities; remove all drippings, fat sandy accumulations from the screed, and fat spots from any source; and replace them with satisfactory material. Do not skin patch. When correcting a depression while the mixture is hot, scarify the surface and add fresh mixture.

#### **334-3.7.3 Requirements Applicable Only to Leveling Courses:**

**334-3.7.3.1 Patching Depressions:** Before spreading any leveling course, fill all depressions in the existing surface more than 1 inch deep by spot patching with leveling course mixture, and then compact them thoroughly.

**334-3.7.3.2 Spreading Leveling Courses:** Place all courses of leveling by the use of two motor graders, equip one with a spreader box. Other types of leveling devices may be used if approved by the Engineer.

**334-3.7.3.3 Rate of Application:** When using Type SP-9.5 (fine graded) for leveling, do not allow the average spread of a layer to be less than 50 lb/yd<sup>2</sup> or more than 75 lb/yd<sup>2</sup>. The quantity of mix for leveling shown in the plans represents the average for the entire project.

#### **334-3.8 MIXTURE COMPACTION**

**334-3.8.1 Equipment and Sequence:** For each paving or leveling train in operation, furnish a separate set of rollers, with their operators.

Select equipment, sequence, and coverage of rolling to meet the specified mix design density. The coverage is the number of times the roller passes over a given area of pavement.

Regardless of the rolling procedure used, complete the final rolling before the surface temperature of the pavement drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

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#### TP 334 – Superpave Asphaltic Concrete Pavement

**334-3.8.2 Standard Rolling Procedure:** Meet the following equipment, sequence, and coverage requirements:

1. Seal Rolling: Provide two coverages with a tandem steel-wheeled roller, weighing 5 to 12 tons, following as close behind the spreader as possible without pick-up, undue displacement, or blistering of the material. Use static mode only for all compaction. No vibration will be allowed.
2. Intermediate rolling: Provide five coverages with a self-propelled pneumatic-tired roller, following as close behind the seal rolling operation as the mix will permit.
3. Final rolling: Provide one coverage with a tandem steel-wheeled roller (static mode only), weighing 5 to 12 tons, after completing the seal rolling and intermediate rolling, but before the surface pavement temperature drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

For patching and leveling courses, the first structural layer placed on a milled surface, and on the first overbuild course, use only a self-propelled pneumatic-tired roller.

The Contractor may use equipment, sequences, or coverages other than those specified in the standard rolling procedure if so authorized by the Engineer.

**334-3.8.3 Compaction at Crossovers, Intersections, etc.:** When using a separate paving machine to pave the crossovers, compact the crossovers with one, 8 to 12 ton tandem steel roller (static mode only). If placing crossovers, intersections, and acceleration and deceleration lanes with the main run of paving, also use a traffic roller to compact these areas.

**334-3.8.4 Rolling Procedures:** Ensure that the initial rolling is longitudinal.

Where the lane being placed is adjacent to a previously placed lane, pinch or roll the center joint prior to the rolling of the rest of the lane.

Roll across the mat, overlapping the adjacent pass by at least 6 inches. Roll slowly enough to avoid displacement of the mixture, and correct any displacement at once by the use of rakes and the addition of fresh mixture if required.

Continue final rolling to eliminate all roller marks.

**334-3.8.5 Number of Pneumatic-tired Rollers Required:** Use a sufficient number of self-propelled pneumatic-tired rollers to ensure that the rolling of the surface for the required number of passes does not delay any other phase of the laying operation and does not result in excessive cooling of the mixture before completing the rolling. In the event that the rolling falls behind, discontinue the laying operation until the rolling operations are sufficiently caught up.

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**334-3.8.6 Compaction of Areas Inaccessible to Rollers:** Use hand tamps or other satisfactory means to compact areas which are inaccessible to a roller, such as areas adjacent to curbs, headers, gutters, bridges, manholes, etc.

**334-3.8.7 Correcting Defects:** Do not allow the rollers to deposit gasoline, oil, or grease onto the pavement. Remove and replace any areas damaged by such deposits as directed by the Engineer. While rolling is in progress, test the surface continuously, and correct all discrepancies to comply with the surface requirements.

Remove and replace all drippings, fat or lean areas, and defective construction of any description. Remedy depressions that develop before completing the rolling by loosening the mixture and adding new mixture to bring the depressions to a true surface. Should any depression remain after obtaining the final compaction, remove the full depth of the mixture, and replace it with sufficient new mixture to form a true and even surface.

Correct all high spots, high joints, and honeycombing as directed by the Engineer.

Remove and replace any mixture remaining unbonded after rolling. Correct all defects prior to laying the subsequent course.

#### 334-3.9 JOINTS

**334-3.9.1 General:** When laying fresh mixture against the exposed edges of joints (trimmed or formed as provided below), place it in close contact with the exposed edge to produce an even, well-compacted joint after rolling.

**334-3.9.2 Transverse Joints:** Place the mixture as continuously as possible. Do not pass the roller over the unprotected end of the freshly laid mixture except when discontinuing the laying operation long enough to permit the mixture to become chilled.

When thus interrupting the laying operation, construct a transverse joint by cutting back on the previous run to expose the full depth of the mat.

**334-3.9.3 Longitudinal Joints:** For all layers of pavement except the leveling course, place each layer so that longitudinal construction joints are offset 6 to 12 inches laterally between successive layers. The Engineer may waive this requirement where offsetting is not feasible due to the sequence of construction.

#### 334-3.10 SURFACE REQUIREMENTS

**334-3.10.1 General:** Construct a smooth pavement with good surface texture and the proper cross-slope.

**334-3.10.2 Texture of the Finished Surface of Paving Layers:** Produce a finished surface of uniform texture and compaction with no pulled, torn, raveled, crushed or loosened portions and free of segregation, bleeding, flushing, sand streaks, sand spots, or ripples. Correct any area of the surface that does not meet the foregoing requirements in accordance with 334-3.10.5.

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Do not use asphalt concrete mixtures containing aggregates that cause a different color appearance in the final wearing surface in sections less than 1 mile in length and across the full width of the roadway unless approved by the Engineer.

**334-3.10.3 Cross Slope:** Construct a pavement surface with cross slopes in compliance with the requirements of the Contract Documents. Furnish a level with a minimum length of 4 feet or a digital measuring device approved by the Engineer for the control of cross slope. Make this level or measuring device available at the jobsite at all times during paving operations. Utilize electronic transverse screed controls on the paving machine (unless directed otherwise by the Engineer) to obtain an accurate transverse slope of the pavement surface.

**334-3.10.3.1 Quality Control Checks:** Measure the cross slope of the pavement surface by placing the measuring device perpendicular to the roadway centerline. Report the cross slope to the nearest 0.1%. Record all the measurements on an approved form and submit to the Engineer for documentation.

Measure the cross slope at a minimum frequency of one measurement every 100 feet during paving operations to ensure that the cross slope is uniform and in compliance with the design cross slope. When the difference between the measured cross slope and the design cross slope exceeds  $\pm 0.2\%$  for travel lanes (including turn lanes) or  $\pm 0.5\%$  for shoulders, make all corrections immediately to bring the cross slope into the acceptable range.

When the cross slope is consistently within the acceptable range, upon the approval of the Engineer, the frequency of the cross slope measurements can be reduced to one measurement every 250 feet during paving operations.

For intersections, tapers, crossovers, transitions at beginning and end of project and similar areas, adjust the cross slope to match the actual site conditions or as directed by the Engineer.

**334-3.10.4 Pavement Smoothness:** Construct a smooth pavement meeting the requirements of this Specification. The County will provide a representative to be present when smoothness testing is performed.

**334-3.10.4.1 General:** Furnish a 15 foot manual and a 15 foot rolling straightedge meeting the requirements of FM 5-509. Make them available at the job site at all times during paving operations. Obtain a smooth surface on all pavement courses placed, and then straightedge all final structural and friction course layers in accordance with 334-3.10.4.5.

**334-3.10.4.2 Test Method:** Perform all straightedge testing in accordance with FM 5-509 with one pass of the rolling straightedge operated along the outside wheel path of each lane being tested. The Engineer may require additional testing at other locations within the lane.

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**334-3.10.4.3 Traffic Control:** Provide traffic control in accordance with 334-3.2 and FDOT Design Standard Indices (600 series as applicable) during all testing. When traffic control cannot be provided in accordance with the applicable indices, submit an alternative Traffic Control Plan. The cost of this traffic control is included in the Contract bid prices for other pay items.

#### **334-3.10.4.5 Quality Control Checks:**

**334-3.10.4.5.1 General:** Straightedge the final Type SP structural layer and friction course layer with a rolling straightedge. Test all pavement lanes and ramps where the width is constant using a rolling straightedge and document all deficiencies on a form approved by the Engineer. Notify the Engineer of the location and time of all straightedge checks a minimum of 48 hours before beginning. Testing shall be conducted by a certified Paving Level I or higher technician. Maintain a field record during testing on a form approved by the Engineer identifying the areas tested and listing the location and degree of all deficiencies found. The field record shall be signed by the technician conducting the test and the Engineer or Engineer's Representative observing the test.

**334-3.10.4.5.2 Rolling Straightedge Exceptions:** Testing with the rolling straightedge will not be required in the following areas: intersections, tapers, crossovers, parking lots and similar areas. In addition, testing with the rolling straightedge will not be performed on the following areas when they are less than 50 feet in length: turn lanes, acceleration/deceleration lanes and side streets. However, correct any individual surface irregularity in these areas that deviates from the plan grade in excess of 3/8 inch as determined by a 15 foot manual straightedge, and that the Engineer deems to be objectionable, in accordance with 334-3.10.5.

In addition, the Engineer may also waive the straightedging requirements on ramps and superelevated sections where the geometrical orientation of the pavement results in an inaccurate measurement with the rolling straightedge.

**334-3.10.4.5.3 Intermediate Layers:** Straightedge all intermediate Type SP layers (structural and overbuild) as necessary to construct a smooth pavement.

On roadways with a design speed 50 miles per hour or greater, when an intermediate Type SP layer will be opened to traffic, straightedge the pavement with a rolling straightedge and correct all deficiencies in excess of 3/8 inch within 72 hours of placement, unless directed otherwise by the Engineer. Correct all deficiencies in accordance with 334-3.10.5.

**334-3.10.4.5.4 Final Type SP Structural Layer:** Straightedge the final Type SP structural layer with a rolling straightedge, either behind the final roller of the paving train or as a separate operation. The Engineer will verify the straightedge testing by observing the Quality Control straightedging operations. Correct all deficiencies in

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excess of 3/16 inch in accordance with 334-3.10.5, and retest the corrected areas prior to placing the friction course.

For bicycle paths, straightedge the final structural layer with a rolling straightedge, either behind the final roller of the paving train or as a separate operation. Correct all deficiencies in excess of 5/16 inch in accordance with 334-3.10.5. Retest all corrected areas. If the Engineer determines that the deficiencies on the bicycle path are due to field geometrical conditions, the Engineer will waive corrections.

**334-3.10.4.5.5 Friction Course Layer:** Acceptance for pavement smoothness will be based on verified Quality Control measurements using the rolling straightedge. The Engineer will verify the straightedge testing by observing the Quality Control straightedging operations.

At the completion of all paving operations, straightedge the friction course as a separate operation. As an exception, if approved by the Engineer, straightedge the friction course behind the final roller of the paving train. Correct all deficiencies in excess of 3/16 inch in accordance with 334-3.10.5. Recheck all corrected areas.

**334-3.10.5 Correcting Unacceptable Pavement:** Correct all areas of unacceptable pavement at no cost to the County. Correct deficiencies in the Type SP structural layers or in the friction course by removing and replacing the full depth of the layer, extending for a distance on either side of the defective area as determined by the Engineer, but in no case less than 50 feet on either side of the defective area for the full width of the paving lane. At the discretion of the Engineer, removal and replacement of the entire limits of the new pavement may be required.

#### 334-3.11 FINISHED SURFACE PROTECTION

Keep sections of newly compacted asphalt concrete, which are to be covered by additional courses, clean until the successive course is laid.

Do not dump embankment or base material directly on the pavement. Dress shoulders before placing the friction course on adjacent pavement.

Equip blade graders operating adjacent to the pavement during shoulder construction with a 2 by 8 inch or larger board, or other attachment providing essentially the same results, attached to their blades in such manner that it extends below the blade edge in order to protect the pavement surface from damage by the grader blade.

To prevent rutting or other distortion, protect sections of newly finished dense graded friction course and the last structural layer prior to the friction course from traffic until the surface temperature has cooled below 160°F.

The Contractor may use artificial methods to cool the pavement to expedite paving operations. The County may direct the Contractor to use artificial cooling methods when maintenance of traffic requires opening the pavement to traffic at the earliest possible time.

#### 334-3.12 STRIPING



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Following final cooling and compaction of the mat and prior to opening to traffic, place temporary painted traffic stripes in accordance with TP-710 and Standard Specification 710 on each paved surface that will receive traffic, including intermediate structural courses, final structural courses that will serve as the surface course, and friction courses. Following thirty (30) days after placement of the final surface course, structural or friction, place thermoplastic striping in accordance with TP-711 and Standard Specification 711 and place raised reflective pavement markers. Final pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work. The pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of reflectivity or vehicular damage. The County reserves the right to check the color and retroreflectivity within 30 days prior to the end of the observation period. Replace, at no additional expense to the County, any pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

**334-4 SUPERPAVE ASPHALTIC CONCRETE**

**334-4.1 DESCRIPTION**

**334-4.1.1 General:** Construct a Superpave Asphaltic Concrete pavement using the type of mixture specified in the Contract on a properly prepared and accepted base. Superpave mixes are identified as Type SP-9.5, Type SP-12.5 or Type SP-19.0.

Meet the requirements of 334-2 for personnel, plant, methods and equipment. Meet the general construction requirements of 334-3.

**334-4.1.2 Traffic Levels:** The requirements for Type SP Asphaltic Concrete mixtures are based on the design traffic level of the project, expressed in 18-Kip Equivalent Single Axle Loads (ESAL's). The traffic levels applicable for this specification are as shown in Table 1.

<b>Traffic Level</b>	<b>Million ESAL's</b>	<b>Typical Applications</b>
A	<0.3	Local roads, county roads, and city streets where truck traffic is light or prohibited
B	0.3 to <3	Arterial roads, Collector roads, access streets, medium duty city streets and the majority of county roadways
C	3 to < 10	

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The traffic level(s) for the project are as specified in the Contract. A Type SP mix one traffic level higher than the traffic level specified in the Contract, up to a Traffic Level C mix, may be substituted at no cost to the County. In situations where the design traffic level is not specified in the Contract, a Traffic Level C mix shall be used.

**334-4.1.3 Layers:** Use only fine graded Superpave mixes.

**334-4.1.3.1 Layer Thickness:** The allowable structural layer thicknesses for fine Type SP Asphaltic Concrete mixtures are as follows:

Type SP-9.5 .....	3/4 – 1 1/2 inches
Type SP-12.5 .....	1 1/2 – 2 1/2 inches
Type SP-19.0 .....	2- 3 inches

In addition to the minimum and maximum thickness requirements, the following restrictions are placed on fine mixes when used as a structural course:

- Type SP-9.5 - Limited to the top two structural layers, two layers maximum.
- Type SP-12.5 - May not be used in the first layer of courses over 3 1/2 inches thick, nor in the first layer of courses over 2 3/4 inches thick on limited access facilities.
- Type SP-19.0 - May not be used in the final (top) structural layer.

**334-4.1.3.2 Additional Requirements:** The following requirements also apply to fine Type SP Asphaltic Concrete mixtures:

**334-4.1.3.2.1** When construction includes the paving of adjacent shoulders ( $\leq 5$  feet wide), the layer thickness for the upper pavement layer and shoulder shall be the same and paved in a single pass, unless called for differently in the contract documents.

**334-4.1.3.2.2** All overbuild layers shall be Type SP Asphalt Concrete designed at the traffic level as stated in the Contract. Use the minimum and maximum layer thicknesses as specified above unless called for differently in the contract documents. On variable thickness overbuild layers, the minimum allowable thickness may be reduced by 1/4 inch, and the maximum allowable thickness may be increased 1/2 inch, unless called for differently in the contract documents.

**334-4.2 MIX COMPOSITION**

**334-4.2.1 General:** Compose the asphalt mixture using a combination of aggregates (coarse, fine or mixtures thereof), mineral filler, if required, and asphalt binder material. Size, grade and combine the aggregate proportions to meet the grading and physical properties of the approved mix design. Aggregates from various sources may be combined.

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**334-4.2.2 Mix Design:** Submit to the Engineer the proposed mix design and proof that this mix design is on the FDOT District 5 accepted list. The Engineer will verify with the FDOT District 5 Bituminous Engineer that the mix is on the approved list. No mix design revisions will be allowed. A new design mix will be required for any substitution of an aggregate product, binder, or other design component unless approved by the Engineer. The Engineer will consider any marked variations from mix design parameters or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of that mix design. Provide certification from the plant (either in a statement on the delivery ticket or on a separate sheet) that the mix provided is in conformance with the design mix.

**334-4.2.3 Additional Information:** Provide the following information to the Engineer with each FDOT approved mix design submitted for use:

- The approved FDOT Mix Design Number.
- The design traffic level and the design number of gyrations ( $N_{\text{design}}$ ).
- The source and description of the materials to be used.
- The FDOT source number product code of the aggregate components furnished from an FDOT approved source.
- The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use. Compensate for any change in aggregate gradation in handling and processing as necessary.
- A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly -No. 200 [-75  $\mu\text{m}$ ]) should be accounted for and identified for the applicable sieves.
- The bulk specific gravity value for each individual aggregate (and RAP) component, as identified in the FDOT aggregate control program.
- A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%.
- A target temperature at which the mixture is to be discharged from the plant and a target roadway temperature. Do not exceed a target temperature of 340°F for modified asphalts and 315°F for unmodified asphalts.
- The physical properties achieved at four different asphalt binder contents, one of which shall be at the optimum asphalt content, and must conform to all specified physical requirements.
- The ignition oven calibration factor.

#### 334-4.3 MATERIALS

**334-4.3.1 General Requirements:** Meet the material requirements specified in Division III of the FDOT Standard Specifications for Road and Bridge Construction. Specific references are as follows:

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Coarse Aggregate: Stone, Slag, Crushed Gravel, Crushed Reclaimed Portland Cement  
Concrete Pavement, Crushed Glass ..... Section 901  
Fine Aggregate ..... Section 902  
Superpave PG Asphalt Binder.....Section 916-1

**334-4.3.2 Superpave Asphalt Binder:** Unless specified otherwise in the Contract, use a PG 67-22 asphalt binder unless the use of a different binder or recycling agent has been approved by the Florida Department of Transportation and the Engineer for a particular mix design.

**334-4.3.3 Use of Reclaimed Asphalt Pavement (RAP) Material:**

**334-4.3.3.1 General Requirements:** Reclaimed Asphalt Pavement (RAP) may be used as a component material of the asphalt mixture, with the exception of Friction Course mixes, subject to the following requirements:

- Assume responsibility for the production and placement of asphalt mixes which incorporate RAP as a component material.
- Use only RAP that has been approved by the FDOT. Provide documentation of the FDOT approval.
- Limit the amount of RAP material used in the mix to less than ~~20%~~<sup>25%</sup> by weight of total aggregate, unless otherwise approved the Engineer.
- Use any suitable means to prevent oversized RAP material from showing up in the completed recycled mixture. Take immediate corrective action if oversized RAP material appears in the completed recycled mix.
- Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.
- Provide RAP having a minimum average asphalt content of 4.0% by weight. The Engineer may sample the stockpile to verify that this requirement is met.

**334-4.4 ACCEPTANCE**

**334-4.4.1 General:** The asphalt mixture will be accepted based on one of the following methods as determined by the Engineer and/or the Contract Documents:

- 1) Certification, Contractor Process Control Testing, and Acceptance Testing by the Engineer
- 2) Other method(s) as determined by the Contract

**334-4.4.2 Certification by the Contractor:** Submit a Notarized Certification of Specification Compliance letter by an officer of the company who is in responsible charge of paving operations. The letter shall be submitted on company letterhead to the Engineer

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and shall state that all material produced and placed on the project was in substantial compliance with the Specifications.

**334-4.4.3 Contractor Process Control Testing:** Provide supporting test data documenting all quality and process control testing as described in 334-2 above. A pre-qualified Independent Laboratory as approved by the Engineer may be utilized for the Process Control testing.

**334-4.4.4 Acceptance Testing by the Engineer:** The Engineer may employ the use of a pre-qualified Independent Geotechnical Engineering firm and/or Laboratory to perform acceptance testing. For every 500 feet of pavement placed per lane per day, take a set of three (3) randomly placed cores, at least two (6") inches in diameter, for determining density and thickness. A minimum of two sets of three cores will be taken per roadway. Acceptance will be based on the following:

**334-4.4.4.1 Density:** The minimum acceptable average density for each course of asphaltic concrete placed shall be ninety-two (92%) percent of the design unit weight ( $G_{mm}$ ) of the job mix, with no test lower than ninety and eight tenths (90.8%) percent or higher than ninety-five (95%) percent.

**334-4.4.4.2 Thickness:** Meet the minimum design thickness on all cores. When a deficiency in thickness is found, the Engineer may require additional cores to be taken to determine the extent of the thickness deficiency. For any thickness that is less than the design thickness, remove and replace the full depth of the layer, extending for a distance on either side of the defective area as determined by the Engineer, but in no case less than 50 feet on either side of the defective area for the full width of the paving lane. At the discretion of the Engineer, removal and replacement of the entire limits of the new pavement may be required. For any thickness that is greater than the design thickness, the Engineer will make a determination about acceptance.

**334-4.4.4.3 Surface Tolerance:** The asphalt mixture will be accepted on the roadway with respect to surface tolerance in accordance with the applicable requirements of 334-3.10.

**334-4.4.4.4 Additional Tests:** The County reserves the right to run any test at any time for informational purposes and for determining the effectiveness of the Contractor's quality control and process control.

#### ~~334-4.5 METHOD OF MEASUREMENT~~

~~For the work specified under this Section the quantity to be paid for shall be the actual area in Square Yards (SY) of asphaltic concrete placed and accepted within the limits of the contract.~~

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##### ~~334-4.6 BASIS OF PAYMENT~~

~~Type SP Asphaltic Concrete will be paid for at the contract unit price per square yard, completed and accepted. No additional payment will be made for thickness of asphalt greater than the design thickness.~~

~~The bid price for the asphalt mix will include the cost of the liquid asphalt or the asphalt recycling agent. There will be no separate payment for the asphalt binder material in the asphalt mix.~~

~~Payment shall be made under:~~

~~Item No. 334-2-15 - Superpave Asphaltic Concrete, (Traffic C) (1 1/2") (SP 12.5)  
- per square yard (SY)~~



# **APPENDIX G**

## **ORANGE COUNTY UTILITIES**

### **DEWATERING DISCHARGE OFF-SITE**

- **Orange County Environmental Protection Division Work Instruction**
- **Generic Permit for the Discharge of Produced Ground Water From any Non-Contaminated Site Activity**
- **FDEP Notice of New Method for Mercury Testing**
- **Memo – EPA - Analytical Methods for Mercury in NPDES Permits**



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# Department of Environmental Protection

## Notice of New Method for Mercury Testing

### New Method for Mercury Testing Has Been Approved

In accordance with Rule 62-620.610, Florida Administrative Code (F.A.C.), all sampling and monitoring data, required to be reported to the Department, shall be collected and analyzed in accordance with Rule 62-4.246, Chapters 62-160 and 62-601, F.A.C., and 40 CFR 136, as appropriate. Effective August 25, 2003, Chapter 62-620, F.A.C., was revised to adopt, and incorporate by reference, various sections of Title 40 of the Code of Federal Regulations revised as of July 1, 2003, including the revised 40 CFR 136. The revised 40 CFR 136 includes a new method for low-level mercury analysis, EPA Method 1631(Revision E), Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry (Method 1631E).

### Who is Required to Use Method 1631E?

Applicants for a wastewater facility permit and wastewater facility permittees are now required to use the low-level mercury Method 1631E when reporting results associated with water quality standards (WQSs) below 0.2 micrograms per liter (ug/L). The following facilities are now required to use Method 1631E for all **effluent samples**:

- Facilities discharging to Class I and Class II surface waters, including wetlands.
- Facilities discharging to Class III Marine or Fresh surface waters, including wetlands.
- Facilities with Water Quality Based Effluent Limits (WQBELs), or any other limit for mercury specified in a permit, below 0.2 ug/L.

This includes effluent samples collected for any of the following requirements:

- Monitoring specified in Section I, *Reclaimed Water and Effluent Limitations and Monitoring*, section of permits.
- Monitoring performed under Section 3.A. of *Wastewater Permit Application Form 2A For Domestic Wastewater Facilities*; Part VII.C. of *Application to Discharge Process Wastewater from New or Existing Industrial Wastewater Facilities to Surface Water - Form 2CS*; or Part V.C. of *Application to Discharge Process Wastewater from New or Existing Industrial Wastewater Facilities to Ground Water - Form 2CG*.
- Priority pollutant scans performed in accordance with pretreatment program annual report requirements.
- Monitoring performed for the development or re-evaluation of local discharge limitations.
- Monitoring required in Table 4 of the Generic Permit for Discharges from Petroleum Contaminated Sites and Table 1 of the Generic Permit for the Discharge of Produced Ground Water from any Non-Contaminated Site Activity.

The low-level mercury method provides, for the first time, the ability to assess compliance with mercury water quality standards (WQSs) below 0.2 ug/L. Your permit requires that surface water discharges shall be analyzed using a sufficiently sensitive method in accordance with 40 CFR 136. *Wastewater Permit Application Forms 2A, 2CS, and 2CG* require effluent testing be conducted using methods that are able to detect pollutants at levels adequate to meet WQSs and to provide reasonable assurance that the WQSs will not be violated in the future.

Additionally, in order to develop technically and legally defensible local discharge limitations for domestic wastewater facilities that have pretreatment programs, Method 1631E must be used to provide data that clearly establishes the basis for any calculated mercury limitations. Note, regarding local discharge limitations, the requirement to use Method 1631E may be expanded to other locations in the collection and treatment system on a case-by-case basis depending on the initial results from effluent analysis using Method 1631E.

### Mercury Laboratory Analysis

Method 1631E has a minimum level of quantitation of 0.0005 ug/L, or 0.5 nanograms per liter (ng/L), which is 400-times more sensitive than Method 245.1 ("Manual Cold Vapor Technique"). Due to the sensitivity of Method 1631E, the results are typically measured in parts per trillion (ng/L) rather than in parts per billion (µg/L). The Department is currently evaluating Method 1631E to determine target method detection limits (MDLs) and target practical quantification limits (PQLs). Until target MDLs and PQLs are incorporated into Rule 62-4.246(4), the laboratory analysis is expected to achieve MDLs close to, or below, 1 ng/L. All laboratory analysis must be done by a NELAP accredited laboratory with current certification by Florida Department of Health for Method 1631E.

### Mercury Clean Sampling Techniques

Clean sample handling techniques should be used when collecting samples for low-level mercury analysis to preclude false positives arising from sample collection, handling, or analysis. Sample collection methods should be consistent with *DEP-SOP-001/01: FS 8200 Clean Sampling For Ultratrace Metals in Surface Waters* and *EPA Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels* (EPA-821-R-96-011). Because FS 8200 and Method 1669 are performance-based procedures, sample collection personnel may modify these procedures or eliminate steps if the modification does not lead to unacceptable contamination of samples or blanks. Any modifications should be thoroughly evaluated and demonstrated to be effective before field samples are collected. This may be accomplished through documentation of uncontaminated samples, equipment blanks and/or other quality control samples.

Note, discrete and composite samplers have been found to contaminate samples with mercury at the ng/L level. Therefore, grab samples are permissible when using Method 1631E. However, grab samples must be representative of the wastewater discharge and a field blank should be collected along with the sample.

In order for a permittee to justify a claim that any reported mercury is due to outside contamination, a blank must have been collected. For this reason, permittees should consider collecting at least one blank at each site for each day a sample is collected. If more than one sample is collected in a day, at least one blank for each 10 samples collected on that day should also be collected. The blank may either be an equipment blank or a field blank. Once a permittee demonstrates the ability to collect samples from a given site using an established procedure that prevents contamination, the permittee may choose to decrease the number of blanks being taken. Specific definitions and procedures for collecting blanks are found in DEP SOP FQ 1000.

Field blanks should be collected only if no equipment other than the sample container is used to collect samples. If the sampling procedure involves the use of additional equipment, such as a peristaltic pump and pump tubing, equipment blanks should be collected. All blanks are subject to the same preservation, digestion, and analysis protocols as regular samples and should have a concentration at least five times lower than the sample concentration. The permittee may not subtract field blank concentrations when reporting sample results.

Sample-collection, preservation, and shipping requirements should be discussed with contract laboratories to ensure the requirements of Method 1631E are met.

### Additional Assistance and Information

For additional information on Method 1631:  
[www.epa.gov/waterscience/methods/1631.html](http://www.epa.gov/waterscience/methods/1631.html)

Please refer questions concerning sample collection to:  
Silky Labic: 850-245-8066  
[Silky.Labic@dep.state.fl.us](mailto:Silky.Labic@dep.state.fl.us)

Additional information concerning NELAP certified laboratories can be obtained from:  
Department of Health Bureau of Laboratories  
P.O. Box 210 Jacksonville, FL 32231  
(904) 791-1599 (voice)(904) 791-1591 (fax)  
[ftp.dep.state.fl.us/pub/labs/assessment/doh/accredited.pdf](ftp://ftp.dep.state.fl.us/pub/labs/assessment/doh/accredited.pdf)

**STATE OF FLORIDA**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**GENERIC PERMIT**

**FOR THE**

**DISCHARGE OF PRODUCED GROUND WATER**

**FROM ANY NON-CONTAMINATED SITE ACTIVITY**

**Generic Permit for the Discharge of Produced Ground Water from any Non-Contaminated Site Activity**

(1) The facility is authorized to discharge produced ground water from any non-contaminated site activity which discharges by a point source to surface waters of the State, as defined in Chapter 62-620, F.A.C., only if the reported values for the parameters listed in Table 1 do not exceed any of the listed screening values. Before discharge of produced ground water can occur from such sites, analytical tests on samples of the proposed untreated discharge water shall be performed to determine if contamination exists.

(2) Minimum reporting requirements for all produced ground water dischargers. The effluent shall be sampled before the commencement of discharge, again within thirty (30) days after commencement of discharge, and then once every six (6) months for the life of the project to maintain continued coverage under this generic permit. Samples taken in compliance with the provisions of this permit shall be taken prior to actual discharge or mixing with the receiving waters. The effluent shall be sampled for the parameters listed in Table 1.

Table 1

Parameter	Screening Values for Discharges into:	
	Fresh Waters	Coastal Waters
Total Organic Carbon (TOC)	10.0 mg/l	10.0 mg/l
pH, standard units	6.0-8.5	6.5-8.5
Total Recoverable Mercury	0.012 µg/l	0.025 µg/l
Total Recoverable Cadmium	9.3 µg/l	9.3 µg/l
Total Recoverable Copper	2.9 µg/l	2.9 µg/l
Total Recoverable Lead	0.03 mg/l	5.6 µg/l
Total Recoverable Zinc	86.0 µg/l	86.0 µg/l
Total Recoverable Chromium (Hex.)	11.0 µg/l	50.0 µg/l
Benzene	1.0 µg/l	1.0 µg/l
Naphthalene	100.0 µg/l	100.0 µg/l

(3) If any of the analytical test results exceed the screening values listed in Table 1, except TOC, the discharge is not authorized by this permit.

(a) For initial TOC values that exceed the screening values listed in Table 1, which may be caused by naturally-occurring, high molecular weight organic compounds, the permittee may request to be exempted from the TOC requirement. To request this exemption, the permittee shall submit additional information with a Notice of Intent (NOI),

described below, which describes the method used to determine that these compounds are naturally occurring. The Department shall grant the exemption if the permittee affirmatively demonstrates that the TOC values are caused by naturally-occurring, high molecular weight organic compounds.

(b) The NOI shall be submitted to the appropriate Department district office thirty (30) days prior to discharge, and contain the following information:

1. the name and address of the person that the permit coverage will be issued to;
2. the name and address of the facility, including county location;
3. any applicable individual wastewater permit number(s);
4. a map showing the facility and discharge location (including latitude and longitude);
5. the name of the receiving water; and
6. the additional information required by paragraph (3)(a) of this permit.

(c) Discharge shall not commence until notification of coverage is received from the Department.

(4) For fresh waters and coastal waters, the pH of the effluent shall not be lowered to less than 6.0 units for fresh waters, or less than 6.5 units for coastal waters, or raised above 8.5 units, unless the permittee submits natural background data confirming a natural background pH outside of this range. If natural background of the receiving water is determined to be less than 6.0 units for fresh waters, or less than 6.5 units in coastal waters, the pH shall not vary below natural background or vary more than one (1) unit above natural background for fresh and coastal waters. If natural background of the receiving water is determined to be higher than 8.5 units, the pH shall not vary above natural background or vary more than one (1) unit below natural background of fresh and coastal waters. The permittee shall include the natural background pH of the receiving waters with the results of the analyses required under paragraph (2) of this permit. For purposes of this section only, fresh waters are those having a chloride concentration of less than 1500 mg/l, and coastal waters are those having a chloride concentration equal to or greater than 1500 mg/l.

(5) In accordance with Rule 62-302.500(1)(a-c), F.A.C., the discharge shall at all times be free from floating solids, visible foam, turbidity, or visible oil in such amounts as to form nuisances on surface waters.

(6) If contamination exists, as indicated by the results of the analytical tests required by paragraph (2), the discharge cannot be covered by this generic permit. The facility shall apply for an individual wastewater permit at least ninety (90) days prior to the date discharge to surface waters of the State is expected, or, if applicable, the facility may seek coverage under any other applicable Department generic permit. No discharge is permissible without an effective permit.

(7) If the analytical tests required by paragraph (2) reveal that no contamination exists from any source, the facility can begin discharge immediately and is covered by this permit without having to submit an NOI request for coverage to the Department. A short summary of the proposed activity and copy of the analytical tests shall be sent to the applicable Department district office within one (1) week after discharge begins. These analytical tests shall be kept on site during discharge and made available to the Department if requested. Additionally, no Discharge Monitoring Report forms are required to be submitted to the Department.

(8) All of the general conditions listed in Rule 62-621.250, F.A.C., are applicable to this generic permit.

(9) There are no annual fees associated with the use of this generic permit.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
WATER

signed: August 23, 2007

**MEMORANDUM**

**SUBJECT:** Analytical Methods for Mercury in National Pollutant Discharge Elimination System (NPDES) Permits

**FROM:** James A. Hanlon, Director  
Office of Wastewater Management

**TO:** Water Division Directors, Regions 1 - 10

The purpose of this memorandum is to inform you of EPA's March 12, 2007, approval of Method 245.7 for measurement of mercury and modified versions of approved analytical methods for mercury as well as the impact of their approval on the NPDES permitting process. While several different methods are currently approved under 40 CFR Part 136 for the analysis of mercury, some of these methods have much greater sensitivities and lower quantitation levels than others. This memorandum clarifies and explains that, in light of existing regulatory requirements for NPDES permitting,<sup>1</sup> only the most sensitive methods such as Methods 1631E and 245.7 are appropriate in most instances for use in deciding whether to set a permit limitation for mercury and for sampling and analysis of mercury pursuant to the monitoring requirements within a permit.

**BACKGROUND**

Section 301 of the Clean Water Act (CWA) requires NPDES permits to include effluent limitations that are as stringent as necessary to meet water quality standards. Thus, under the Act and EPA regulations, each permit must include, as necessary, requirements in addition to or more stringent than technology-based effluent limitations established under section 301 of the CWA in order to achieve water quality standards. 40 C.F.R. § 122.44(d)(1). The regulations require limitations to control all pollutants that the NPDES program director determines are or may be discharged at a level that "will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard," including both narrative and

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<sup>1</sup> This memorandum is based on existing legal requirements and authorities. It does not impose any new, legally binding requirements on EPA, states, or the regulated community.



numeric criteria, 40 C.F.R. § 122.44(d)(1)(i). If the program director determines that a discharge has the reasonable potential to cause or contribute to such an excursion, the permit must contain water quality-based effluent limitations for the pollutant, 40 C.F.R. § 122.44(d)(1)(iii). Thus, a prospective permittee may need to measure various pollutants in its effluent at two stages: first, at the permit application stage so that the program director can determine whether “reasonable potential” exists and establish appropriate permit limits; and second, where a permit limit has been established, to meet the monitoring requirements within the permit. The following discussion explains which analytical methods permit applicants and permittees should use to make these measurements when mercury is the pollutant at issue.

### Approved Analytical Methods

Measurements included on NPDES permit applications and on reports required to be submitted under the permit must generally be made using analytical methods approved by EPA under 40 CFR Part 136. See 40 CFR 136.1, 136.4, 136.5, 122.21(g)(7), and 122.41(j). For mercury, there are three methods commonly used in the NPDES program that EPA has approved under Part 136: Method 245.1, Method 245.2, and Method 1631E. Methods 245.1 and 245.2 were approved by EPA in 1974 and can achieve measurement of mercury down to 200 parts per trillion (ppt). Additionally, EPA approved Method 1631 Revision E in 2002. Method 1631E has a quantitation level of 0.5 ppt, making it 400 times more sensitive than Methods 245.1 and 245.2. In fact, the sensitivity of Methods 245.1 and 245.2 are well above the water quality criteria now adopted in most states (as well as the criteria included by EPA in the Final Water Quality Guidance for the Great Lakes System) for the protection of aquatic life and human health, which generally fall in the range of 1 to 50 ppt.<sup>2</sup> In contrast, Method 1631E, with a quantitation level of 0.5 ppt, does support the measurement of mercury at these low levels.

In addition to Methods 245.1, 245.2, and 1631E listed above, EPA approved Method 245.7 as well as modified versions of other EPA-approved methods on March 12, 2007. See 72 FR 11200. Method 245.7 has a quantitation level of 5.0 ppt, making it 40 times more sensitive than Methods 245.1 and 245.2. Additionally, modified versions of EPA-approved methods may also be used for the measurement of mercury. Methods approved under Part 136, such as 245.1 and 245.2, may be modified to achieve lower quantitation levels than can be achieved by the method as written.<sup>3</sup> Modifications to an EPA-approved method for mercury that meet the method

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<sup>2</sup> Many states have adopted mercury water quality criteria of 12 ppt for protection of aquatic life and 50 ppt for the protection of human health, and for discharges to the Great Lakes Basin, the applicable water quality criteria for mercury are 1.3 ppt for the protection of wildlife and 1.8 ppt for the protection of human health. In 2001, EPA issued new recommended water quality criteria guidance for the protection of human health. This new guidance recommends adoption of a methylmercury water quality criterion of 0.3 milligrams of methylmercury per kilogram (mg/kg) in fish tissue. EPA is currently developing implementation guidance to assist states in implementing the criterion, and *Draft Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion* (EPA-823-B-04-001) was released for public comment in August 2006.

<sup>3</sup> Examples of such modification may include changes in the sample preparation digestion procedures such as the use of reagents similar in properties to ones used in the approved method, changes in the equipment operating parameters such as the use of an alternate more sensitive wavelength, adjusting the sample volume to optimize method performance, and changes in the calibration ranges (provided that the modified range covers any relevant regulatory limit).

performance requirements of Part 136.6 are considered to be approved methods and require no further EPA approval. See 72 FR 11239-40 (March 12, 2007). For analytical method modifications that do not fall within the flexibility of Part 136.6, the modified methods may be approved under the alternate test procedure program as defined by Parts 136.4 and 136.5.

## **ACTIONS RESULTING FROM THE MARCH 12, 2007, RULEMAKING**

To implement the March 12, 2007, rule, the Office of Wastewater Management (OWM) provides the following guidance:

### Monitoring Data Submitted as Part of NPDES Permit Applications

As noted, most states have adopted water quality criteria for the protection of aquatic life and human health that fall in the range of 1 to 50 ppt, and Methods 245.1 and 245.2, as written, do not detect or quantify mercury in this range. A "did not detect" result using Method 245.1 or Method 245.2 would show only that mercury levels are below 200 ppt but would not establish that they are at or below the applicable water quality criterion. Therefore, when a permit writer receives a permit application reporting mercury data analyzed with Method 245.1 or Method 245.2 as "did not detect" results, the permit writer in reality may lack the information needed to make a "reasonable potential" determination. In contrast, Method 1631E is able to detect and quantify mercury concentrations at these low levels.

EPA therefore expects, in general, that all facilities with the potential to discharge mercury will provide with their NPDES permit applications monitoring data for mercury using Method 1631E or another sufficiently sensitive EPA-approved method. For purposes of permit applications, a method for mercury is "sufficiently sensitive" when (1) its method quantitation level is at or below the level of the applicable water quality criterion for mercury or (2) its method quantitation level is above the applicable water quality criterion, but the amount of mercury in a facility's discharge is high enough that the method detects and quantifies the level of mercury in the discharge.<sup>4</sup> Accordingly, EPA strongly recommends that the permitting authority determine that a permit application that lacks effluent data analyzed with a sufficiently sensitive EPA-approved method such as Method 1631E is incomplete unless and until the facility supplements the original application with data analyzed with such a method. See 40 CFR 122.21(e) (a permit application is determined to be complete at the discretion of the permitting authority) and 40 CFR 122.21(g)(13) (the applicant shall provide to the Director, upon request, such other information as the Director may reasonably require to assess the discharge). Such data would allow the permitting authority to characterize the effluent to determine whether the discharge causes, has the reasonable potential to cause, or contributes to an excursion of state water quality standards for mercury and would consequently allow the permitting authority to determine whether a water quality-based effluent limit for mercury is necessary in the permit.

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<sup>4</sup> To illustrate the latter, if the water quality criterion for mercury in a particular state is 2.0 ppt, Method 245.7 (with a quantitation level of 5.0 ppt) would be sufficiently sensitive where it reveals that the level of mercury in a facility's discharge is 5.0 ppt or greater. In contrast, Method 245.7 would not be sufficiently sensitive if it resulted in a level of non-detect for that discharge because it could not be known whether mercury existed in the discharge at a level between 2.0 and 5.0 (less than the quantitation level but exceeding the water quality criterion).

### Monitoring Requirements in Permits

Where a permit authority establishes a permit limit for mercury, it also needs to consider specifying an analytical method that the permittee must use to monitor for mercury during the term of the permit. Methods 245.1 and 245.2, as written, are not likely to be sensitive enough to detect or quantify the concentration of mercury in the discharge at a level that matches the limitation for mercury in the permit. EPA therefore expects the permitting authority to require the use of a sufficiently sensitive EPA-approved method for monitoring under the permit in order to ensure that the sampling and measurements required are "representative of the monitored activity" (as required by 40 CFR 122.41(j)(1)). For purposes of monitoring under a permit, a method for mercury is "sufficiently sensitive" when (1) its method quantitation level is at or below the level of the mercury limit established in the permit or (2) its method quantitation level is above the mercury limit in the permit, but the amount of mercury in a facility's discharge is high enough that the method detects and quantifies the level of mercury in the discharge.<sup>5</sup>

### EPA Permit Review and Objection to State Issued Permits

For NPDES-authorized states, EPA regions are expected to review state permits and should strongly consider objecting to permits that are issued based on analytical data collected and analyzed using an EPA-approved method that is not sufficiently sensitive or that do not require use of a sufficiently sensitive EPA-approved method for monitoring when the permit includes a limit for mercury. OWM is expecting to undertake a permit quality review of a small representative number of permits with respect to mercury limitations and other conditions.

If you have questions concerning the content of this memorandum, please contact Linda Boornazian, Director of the Water Permits Division, at 202-564-0221 or have your staff contact Marcus Zobrist of the State and Regional Branch at 202-564-8311 or zobrist.marcus@epa.gov.

cc: NPDES Branch Chiefs Regions 1 - 10

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<sup>5</sup> See footnote 4.

**ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION  
WORK INSTRUCTION**

**Title: Dewatering Permitting and Approvals Work Instruction**  
**Number: EPD-WI-2000-04**

Effective Date: 10/04/2011 Revision: 1  
Renewal Date: 10/04/2014 Revision Date: 10/04/2011  
Approved By: Elizabeth R. Johnson, Environmental Programs Administrator

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**Purpose:** The purpose of this work instruction is to provide guidance regarding the approvals required to initiate construction related dewatering in unincorporated Orange County

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**I. Procedure**

**County Offices:**

**Orange County Public Works**

For proposed dewatering discharges to the Orange County Municipal Separate Storm Sewer System (MS4), contact Orange County Development Engineering prior to commencement of dewatering. OC Public Works Contact: Miguel Tamayo, 407-836-7914.

**Orange County Utilities (OCU)**

If the groundwater discharge testing indicates groundwater quality parameter exceedences, the discharge may be allowed to enter into the Orange County sanitary system. Coordinate with OCU. If OCU can accept the discharge, a County Industrial Wastewater Discharge Permit (IWD) will be required. Per Florida Department of Environmental Protection (FDEP), no FDEP dewatering permitting is required if an IWD is received.

Contact: Susanna Littell, OCU/Water Reclamation, 407-254-7710 (Industrial Wastewater Discharge Permits)

Contact: Laura Woodbury, P.E., OCU/Development Engineering, 407-254-9928.

Rules/Permits:

- Chapter 37 Article XX. Addresses industrial waste pretreatment and permitting.
- Industrial Wastewater Discharge (IWD) Permit. Required prior to discharge to the wastewater system.
- OCU Development Engineering Connection Requirements. OCU Development Engineering reviews and approves plans for groundwater dewatering and remediation projects when discharge will be to the OCU sanitary sewer system.

EPD-WI-2000-04	Effective Date: 10/04/2011
<b>The only official copy of this document is on the EPD intranet.</b>	Page 1 of 3

**ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION  
WORK INSTRUCTION**

**State Agencies:**

**Florida Department of Environmental Protection (FDEP)**

For dewatering that is discharged offsite, sampling/analytical work is required prior to dewatering to determine if the proposed activity can be permitted under one of the generic dewatering permits.

FDEP Contacts: Ali Kazi, 407-897-4149; Randall Cunningham, 407-897-4152.

Rules/Permits:

- Generic Permit for Discharges from Petroleum Contaminated Sites (62-621.300(1)).
- Generic Permit for the Discharge of Produced Groundwater from any Non-Contaminated Site Activity (62-621.300(2)).
- Permit for all Other Contaminated Sites (62-04; 62-302; 62-620 & 62-660).

**Water Management Districts:**

**St. Johns River Water Management District**

Contact: Richard Kimmel, 407-659-4849.

Rules/Permits:

- No permit ("No Notice").
- Noticed General Permit for Short-term Construction Dewatering.
- Individual and Standard General Consumptive Use Permit.

**South Florida Water Management District**

Contact: Mario Cabana, 407-858-6100, ext. 3816.

Rules/Permits:

- "No-Notice" Short-Term Dewatering Permits.
- Dewatering General Water Use Permits.
- Long-term Dewatering Individual Permits.

For dewatering activities located in the City of Orlando contact Lisa Lotti at 407-246-2037.

**II. Scope**

This procedure applies to construction sites within unincorporated Orange County.

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**Definitions:**

**Off-site:** For the purposes of this Work Instruction, off-site means property not under control of the owner/applicant or (discharging to) the municipal separate storm sewer system or waters of the County.

EPD-WI-2000-04	Effective Date: 10/04/2011
<b>The only official copy of this document is on the EPD intranet.</b>	Page 2 of 3

**ORANGE COUNTY ENVIRONMENTAL PROTECTION DIVISION  
WORK INSTRUCTION**

**Related Documents:**

Florida Department of Environmental Protection's Construction Generic Permit

**History of Revisions:**

Revision No.	Revision Date	Summary of Revisions
0	06/06/2011	Original
1	10/04/2011	Update contact information

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# **APPENDIX H**

## **STRUCTURAL ENGINEERING MEMO**

**Dated April 12, 2016**

**ENGINEERING TECHNOLOGIES MEMO**



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e/T Project Number: 14-244

April 12, 2016

Ms. Cynthia Malone, P.E.  
Project Manager  
BFA Environmental Inc.  
1230 Hillcrest Street  
Orlando, FL 32803

Re: John Young Parkway Reclaimed Water Main Improvements  
Site Visit Stream Pipe Crossing Near Crystal Commerce Way and John Young Parkway  
Orange County, Florida

Ms. Malone,

Per your e-mail addressed to John Sobczak, PE. from our office, it is my understanding that Orange County Utilities Staff is requesting a documentation of my field observations, upon my site visit on May 21, 2015. The attached Photographs 1 and 2 show two overall views of the pipe crossing. As shown on the photos, the stream crossing consists of a 24 inch and a 12inch ductile iron pipe.

The purpose of my visit was to comment on the structural condition of the pipe supports and express an opinion on whether the pipe supports can accommodate additional loads if the 12 in. ductile iron pipe were to be replaced with a 24 in. ductile iron pipe, thereby increasing the load on the piles by approximately 30 percent.

The copies of original design drawings made available to us indicate that the pipe crossing was designed by GAI-Consultants Southeast Inc. in 1990. The documents do not include any reference as to the design capacity of piles. The piles were specified as 14-inch square piles to be driven to a tip elevation of 65 feet, which corresponds to about 12 ft. below the invert elevation of the canal. Consequently, the piles should have equal axial load capacities.

Visual observations indicate that the pipes are vertically aligned. This indicates that the piles supporting the larger pipe did not settle in excess of the smaller, lighter pipe. Therefore, in our opinion, if the existing 12 in. force main were to be replaced with 24-inch force main, any additional settlement will be small and within the capacity of both pipes to accommodate.

If you have any questions or need further information, please call.

Sincerely,  
E/T ENGINEERING TECHNOLOGIES, INC.

Bilgin Erel, P.E.  
President

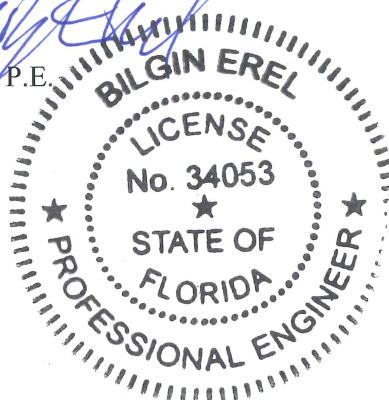




Photo-1: Pipe Crossing at Sky Lake Canal



Photo-2: Pipe Crossing at Sky Lake Canal