

Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (Inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
33660037-33660036	Gravity Main Line	Line main due to DI pipe from 343' to 361'.	PVC	8	401	9	Light Highway	0
33660043-33660042	Gravity Main Line	Line due to DI pipe from 253' to 271'.	PVC	8	401	16	Light Highway	0
33660055-33660056	Gravity Main Line	Line main due to DI pipe from 267' to 285' used cctv report.	PVC	8	113	11	Light Highway	0
33660055-33660056	Gravity Main Descale	Descale before lining.	PVC	8	113	11	Light Highway	0
33660059-33660058	Gravity Main Line	Line main due to DI pipe from 148' to 165'.	PVC	8	20	7	Light Highway	0
33660059-33660058	Gravity Main Descale	Descale ductile iron pipe before lining.	PVC	8	20	7	Light Highway	0
33660062-33660061	Gravity Main Line	Line main due to DI pipe from 190' to 208'. Note need to de-scale first.	PVC	8	196	4	Light Highway	0
33660062-33660061	Gravity Main Descale	Descale ductile iron pipe.	PVC	8	196	4	Light Highway	0
33660063-33660062	Gravity Main Line	Line due to DI pipe note will need to De-scale first.	PVC	8	142	6	Light Highway	0
33660063-33660062	Gravity Main Descale	Descale ductile iron pipe 170'-188' upstream	PVC	8	142	6	Light Highway	0
33660064-33660063	Gravity Main Descale	Descale due to camera blocked, 117'-135' downstream.	PVC	8	112	5	Light Highway	0
33660064-33660063	Gravity Main Line	After descailing line main due to DI pipe.	PVC	8	112	5	Light Highway	0
33660090-33660089	Gravity Main Line	Line main due to DI pipe Note televising against the flow from 193' to 211'.	PVC	8	393	7	Light Highway	7
33660093-33660094	Gravity Main Line	Line main due to DI pipe from 86' to 106'.	PVC	8	295	8	Light Highway	5
F3146SON2-33660059	Gravity Main Line	Line due to DI pipe from 0' to 20'.	PVC	8	28	7	Light Highway	0

Manhole ID	R/R Action	Additional Information	Approx. Depth	Surface Type
33660030	Manhole Coat	Coat MH 30	12	Light Highway
33660031	Manhole Coat	Coat MH 31 missing concrete in invert brick showing.	13	Light Highway
33660032	Manhole Coat	Coat MH 32 brick in invert showing	13	Light Highway
33660051	Manhole Coat	Coat to prevent future deterioration	14	Light Highway
33660057	Manhole Coat	MH 57 Leaking at bench	11	Light Highway
33660057	Manhole Seal	MH 57 leaking above down stream invert.	11	Light Highway

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Ⓜ Manhole Repair or Replace
- ▬ Gravity Main Clean
- ▬ Gravity Main Replace
- ▭ Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- ▬ Lateral Line Repair
- ▬ Gravity Main Line
- ★ Gravity Main Repairs
- ▬ Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

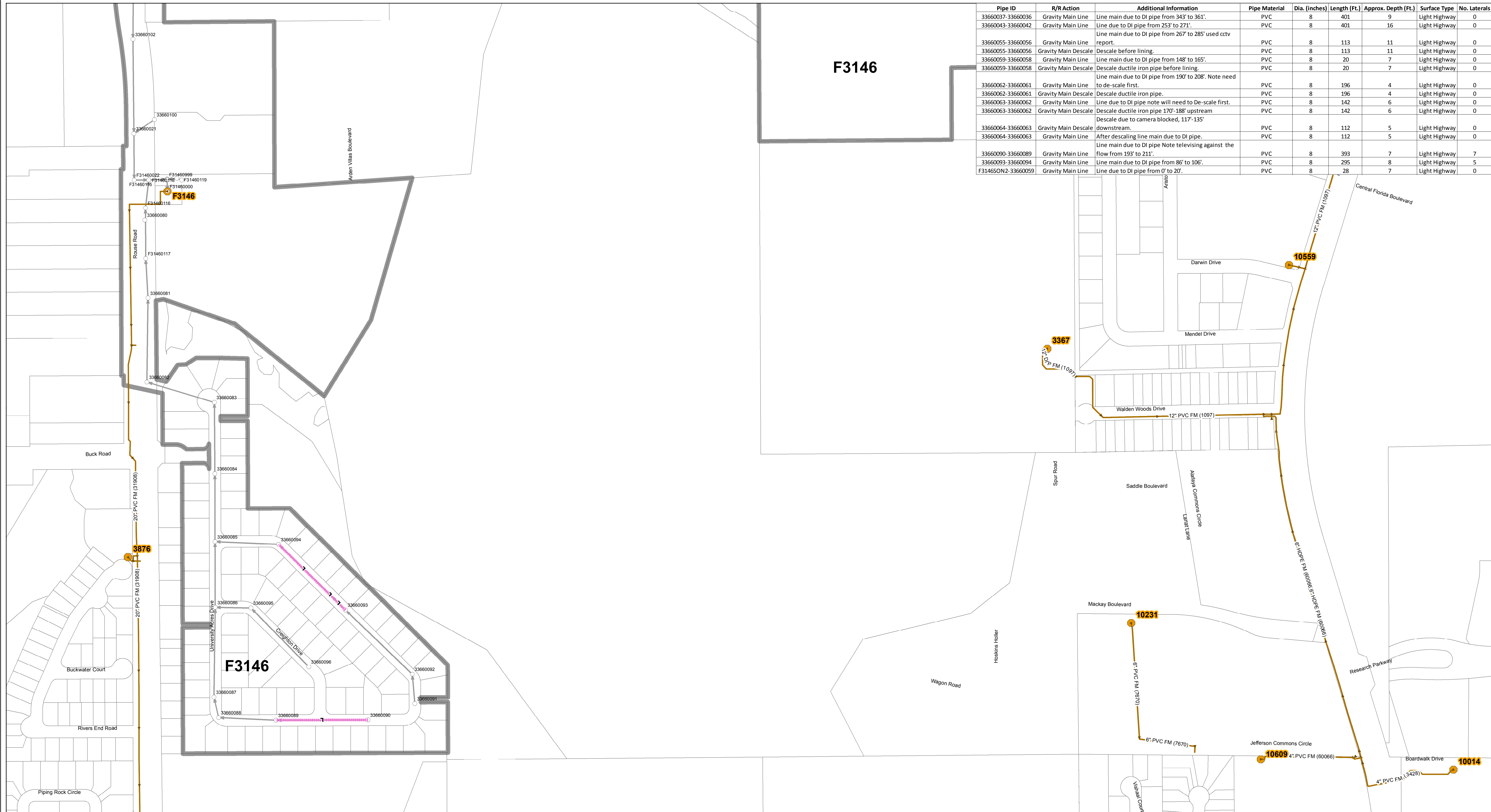
0 400 Feet

GRAVITY R/R PACKAGE NO. 19
SA F3146 UNIVERSITY ACRES (2)

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'
DRAWING NO.: **C-14**
SHEET 25 OF 47



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (Inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
33660037-33660036	Gravity Main Line	Line main due to DI pipe from 343' to 361'.	PVC	8	401	9	Light Highway	0
33660043-33660042	Gravity Main Line	Line due to DI pipe from 253' to 271'.	PVC	8	401	16	Light Highway	0
33660055-33660056	Gravity Main Line	Line main due to DI pipe from 267' to 285' used cctv report.	PVC	8	113	11	Light Highway	0
33660055-33660056	Gravity Main Descaler	Descaler before lining.	PVC	8	113	11	Light Highway	0
33660059-33660058	Gravity Main Line	Line main due to DI pipe from 148' to 165'.	PVC	8	20	7	Light Highway	0
33660059-33660058	Gravity Main Descaler	Descaler ductile iron pipe before lining.	PVC	8	20	7	Light Highway	0
33660062-33660061	Gravity Main Line	Line main due to DI pipe from 190' to 208'. Note need to de-scale first.	PVC	8	196	4	Light Highway	0
33660062-33660061	Gravity Main Descaler	Descaler ductile iron pipe.	PVC	8	196	4	Light Highway	0
33660063-33660062	Gravity Main Line	Line due to DI pipe note will need to De-scale first.	PVC	8	142	6	Light Highway	0
33660063-33660062	Gravity Main Descaler	Descaler ductile iron pipe 170'-188' upstream	PVC	8	142	6	Light Highway	0
33660064-33660063	Gravity Main Descaler	Descaler due to camera blocked, 117'-135' downstream.	PVC	8	112	5	Light Highway	0
33660064-33660063	Gravity Main Line	After descaling line main due to DI pipe.	PVC	8	112	5	Light Highway	0
33660090-33660089	Gravity Main Line	Line main due to DI pipe Note televising against the flow from 193' to 211'.	PVC	8	393	7	Light Highway	7
33660093-33660094	Gravity Main Line	Line main due to DI pipe from 86' to 106'.	PVC	8	295	8	Light Highway	5
F3146SON2-33660059	Gravity Main Line	Line due to DI pipe from 0' to 20'.	PVC	8	28	7	Light Highway	0

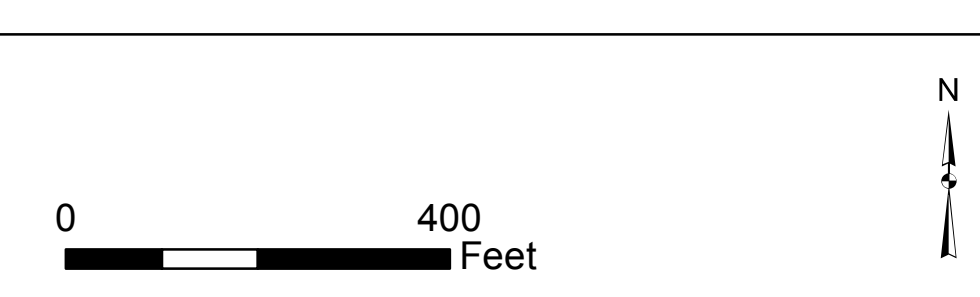
Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descal & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

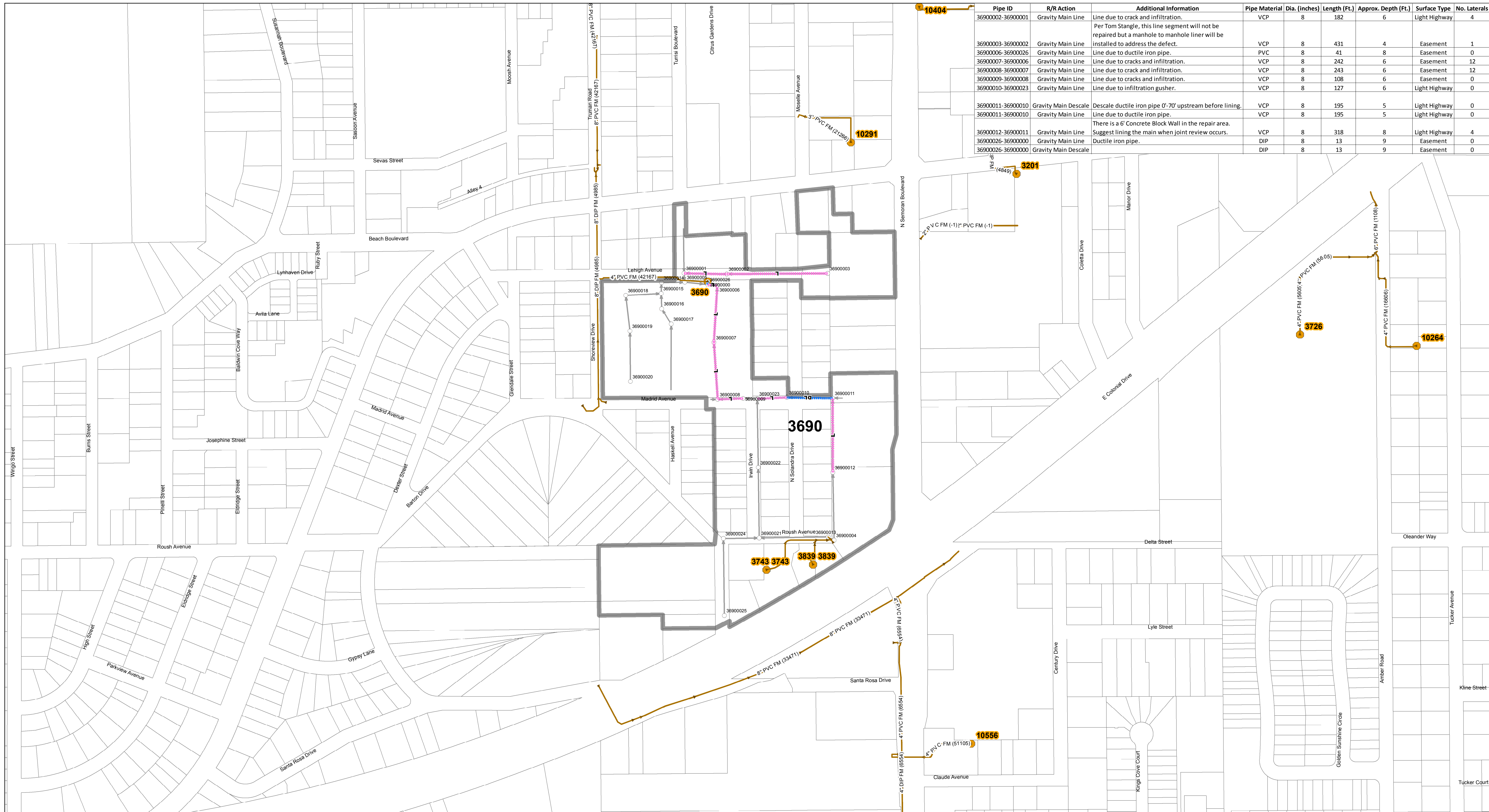


GRAVITY R/R PACKAGE NO. 19
SA F3146 UNIVERSITY ACRES (3)

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'
DRAWING NO.: **C-15**
SHEET 26 OF 47



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
36900002-36900001	Gravity Main Line	Line due to crack and infiltration.	VCP	8	182	6	Light Highway	4
36900003-36900002	Gravity Main Line	Per Tom Stangle, this line segment will not be repaired but a manhole to manhole liner will be installed to address the defect.	VCP	8	431	4	Easement	1
36900006-36900026	Gravity Main Line	Line due to ductile iron pipe.	PVC	8	41	8	Easement	0
36900007-36900006	Gravity Main Line	Line due to cracks and infiltration.	VCP	8	242	6	Easement	12
36900008-36900007	Gravity Main Line	Line due to crack and infiltration.	VCP	8	243	6	Easement	12
36900009-36900008	Gravity Main Line	Line due to cracks and infiltration.	VCP	8	108	6	Easement	0
36900010-36900023	Gravity Main Line	Line due to infiltration gusher.	VCP	8	127	6	Light Highway	0
36900011-36900010	Gravity Main Descale	Descale ductile iron pipe 0'-70' upstream before lining.	VCP	8	195	5	Light Highway	0
36900011-36900010	Gravity Main Line	Line due to ductile iron pipe.	VCP	8	195	5	Light Highway	0
36900012-36900011	Gravity Main Line	There is a 6' Concrete Block Wall in the repair area.	VCP	8	318	8	Light Highway	4
36900026-36900000	Gravity Main Line	Suggest lining the main when joint review occurs.	DIP	8	13	9	Easement	0
36900026-36900000	Gravity Main Descale	Ductile iron pipe.	DIP	8	13	9	Easement	0

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

GRAVITY R/R PACKAGE NO. 19
SA 3690 LEJEUNE HEIGHTS

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'
DRAWING NO.: **C-16**
SHEET 27 OF 47

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
30690007-30690006	Gravity Main Line	Minor defects. Cracks / Stains / Sags.	VCP	10	271	8	Light Highway	3
30690010-30690016	Gravity Main Line	Line due to cracks 3' and 153', 226'	VCP	8	225	5	Light Highway	4
30690011-30690008	Gravity Main Line	Minor defects. Cracks / Leaks / Stains / Sags.	VCP	8	300	4	Light Highway	8
30690016-30690015	Gravity Main Line	Minor defects. Cracks / Sags. Re-inspect S/T	VCP	8	258	5	Easement	6
30690017-30690018	Gravity Main Line	Gravity main in the back-yard of property	VCP	8	300	5	Easement	0
30690018-30690019	Gravity Main Line	Minor defects. Cracks / Leaks / Stains / Sags. Re-inspect S/T	VCP	8	400	6	Easement	3
30690019-30690020	Gravity Main Line	Minor defects. Cracks / Leak / Stains / Sags.	VCP	8	385	8	Easement	3
30690026-30690027	Gravity Main Line	Minor defects. Cracks / Leak / Stain / Sags.	VCP	8	394	4	Light Highway	12

Manhole ID	R/R Action	Group	Additional Information	Approx. Depth	Surface Type
30690010	Manhole Coat	3		5	Light Highway

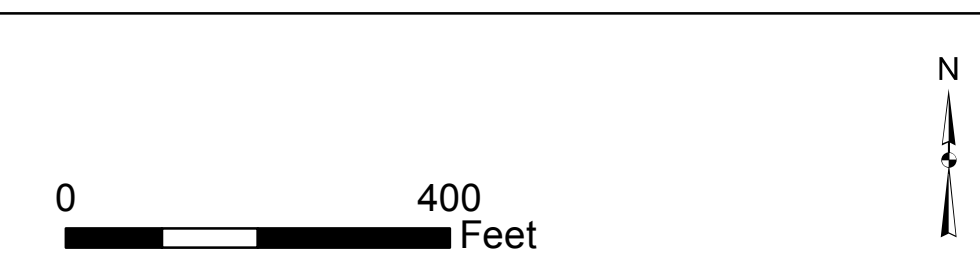
Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

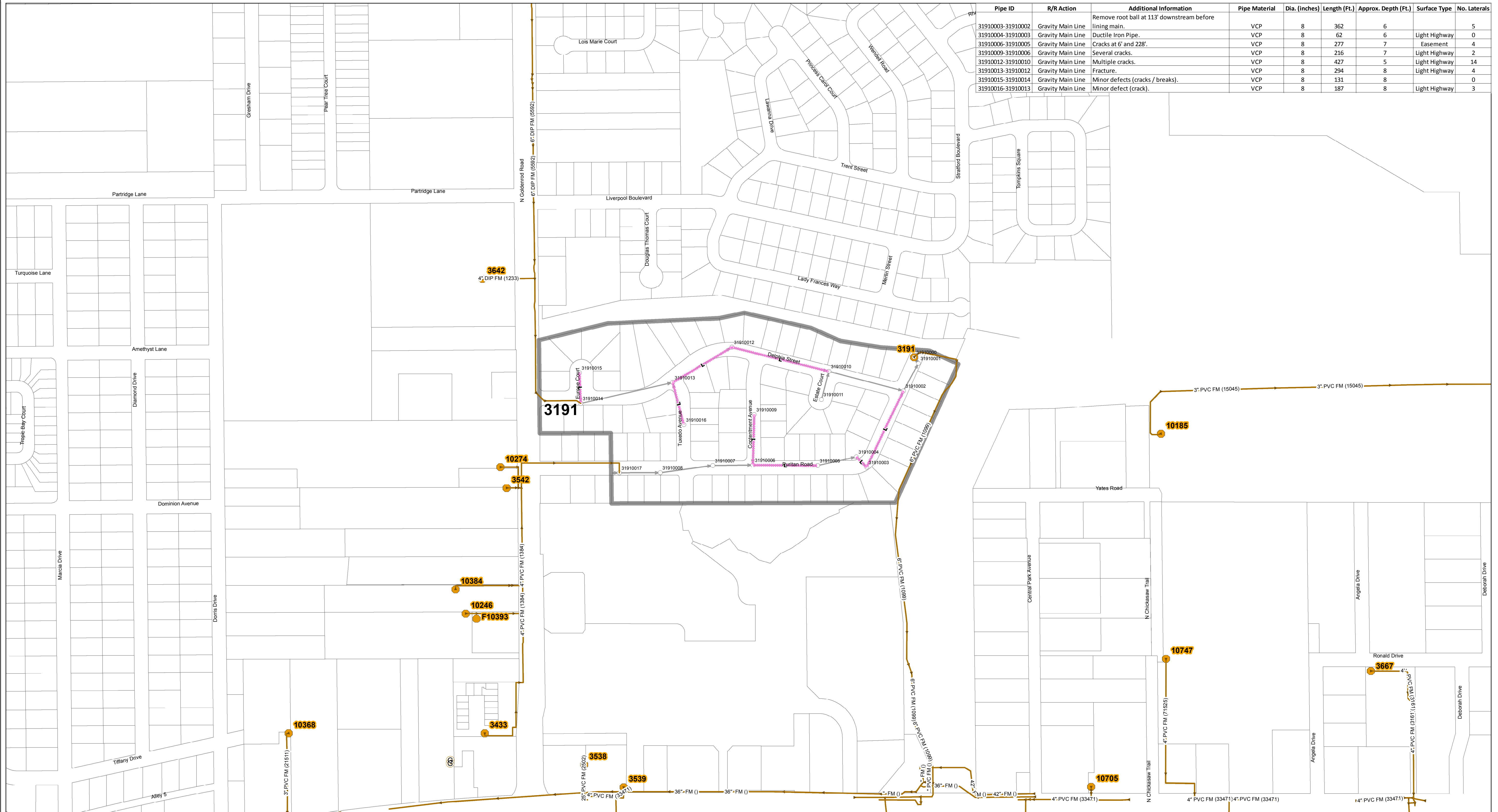


GRAVITY R/R PACKAGE NO. 20
SA 3069 QUAIL HOLLOW

OCU FILE No. 82146	SCALE: 1" = 200'
DESIGN BY:	DRAWING NO.:
DRAWN BY: KM	C-17
CHECKED BY: SJR	SHEET 28 OF 47
CAD FILE:	

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
31910003-31910002	Gravity Main Line	Remove root ball at 113' downstream before lining main.	VCP	8	362	6		5
31910004-31910003	Gravity Main Line	Ductile Iron Pipe.	VCP	8	62	6	Light Highway	0
31910006-31910005	Gravity Main Line	Cracks at 6' and 228'.	VCP	8	277	7	Easement	4
31910009-31910006	Gravity Main Line	Several cracks.	VCP	8	216	7	Light Highway	2
31910012-31910010	Gravity Main Line	Multiple cracks.	VCP	8	427	5	Light Highway	14
31910013-31910012	Gravity Main Line	Fracture.	VCP	8	294	8	Light Highway	4
31910015-31910014	Gravity Main Line	Minor defects (cracks / breaks).	VCP	8	131	8		0
31910016-31910013	Gravity Main Line	Minor defect (crack).	VCP	8	187	8	Light Highway	3



Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

**ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION**

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

GRAVITY R/R PACKAGE NO. 20

SA 3191 ACADIA ACRES

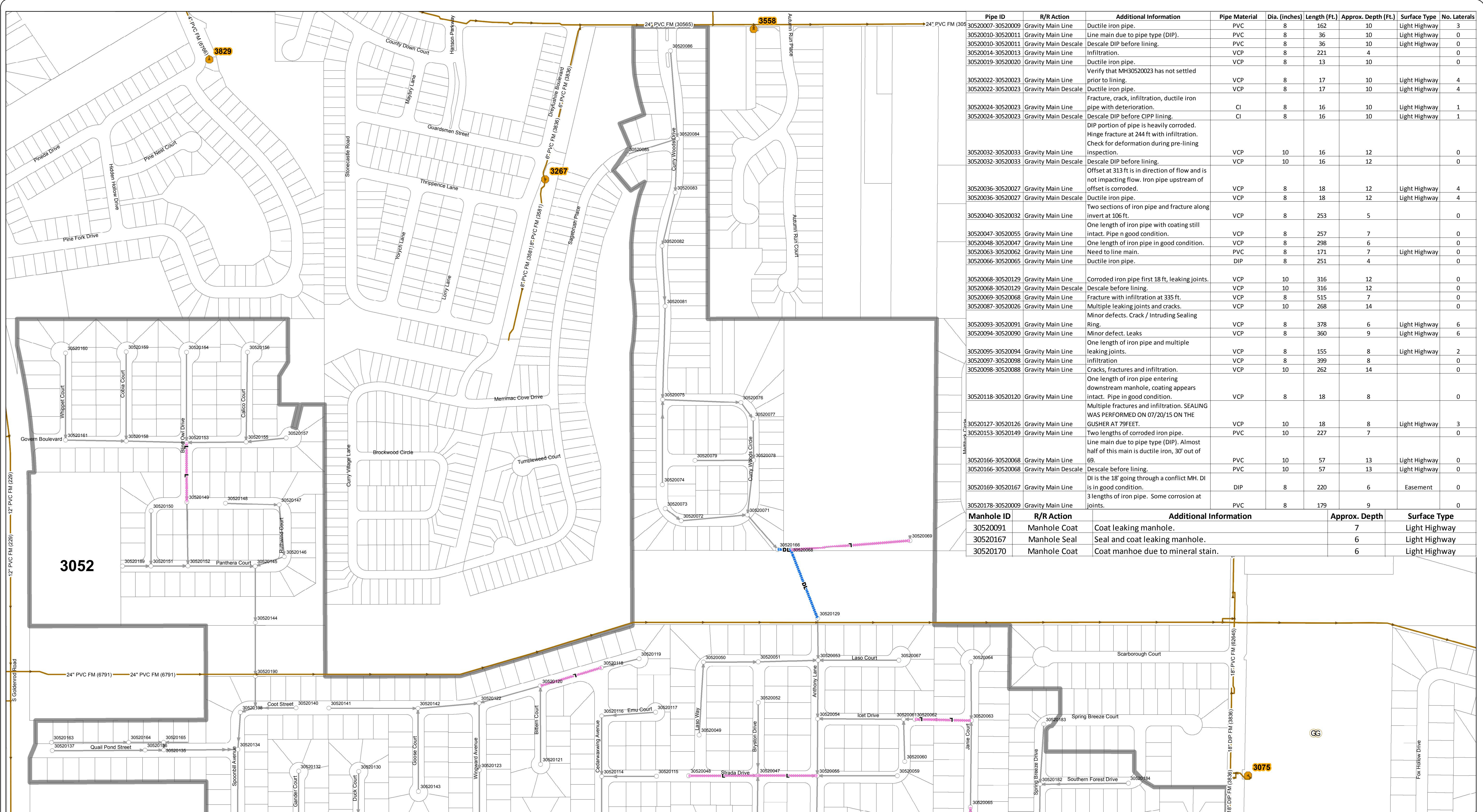
KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-18

SHEET 29 OF 47



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
3052007-3052009	Gravity Main Line	Ductile iron pipe.	PVC	8	162	10	Light Highway	3
3052010-3052011	Gravity Main Line	Line main due to pipe type (DIP).	PVC	8	36	10	Light Highway	0
3052010-3052011	Gravity Main Descaler	Descaler DIP before lining.	PVC	8	36	10	Light Highway	0
3052014-3052013	Gravity Main Line	Infiltration.	VCP	8	221	4	Light Highway	0
3052019-3052020	Gravity Main Line	Ductile iron pipe.	VCP	8	13	10	Light Highway	0
3052022-3052023	Gravity Main Line	Verify that MH30520023 has not settled prior to lining.	VCP	8	17	10	Light Highway	4
3052022-3052023	Gravity Main Descaler	Ductile iron pipe.	VCP	8	17	10	Light Highway	4
3052024-3052023	Gravity Main Line	Fracture, crack, infiltration, ductile iron pipe with deterioration.	CI	8	16	10	Light Highway	1
3052024-3052023	Gravity Main Descaler	Descaler DIP before CIPP lining.	CI	8	16	10	Light Highway	1
3052032-3052033	Gravity Main Line	DIP portion of pipe is heavily corroded. Hinge fracture at 244 ft with infiltration. Check for deformation during pre-lining inspection.	VCP	10	16	12	Light Highway	0
3052032-3052033	Gravity Main Descaler	Descaler DIP before lining.	VCP	10	16	12	Light Highway	0
3052036-3052027	Gravity Main Line	Offset at 313 ft is in direction of flow and is not impacting flow. Iron pipe upstream of offset is corroded.	VCP	8	18	12	Light Highway	4
3052036-3052027	Gravity Main Descaler	Ductile iron pipe.	VCP	8	18	12	Light Highway	4
3052040-3052032	Gravity Main Line	Two sections of iron pipe and fracture along invert at 106 ft.	VCP	8	253	5	Light Highway	0
3052047-3052055	Gravity Main Line	One length of iron pipe with coating still intact. Pipe in good condition.	VCP	8	257	7	Light Highway	0
3052048-3052047	Gravity Main Line	One length of iron pipe in good condition.	VCP	8	298	6	Light Highway	0
3052063-3052062	Gravity Main Line	Need to line main.	PVC	8	171	7	Light Highway	0
3052066-3052065	Gravity Main Line	Ductile iron pipe.	DIP	8	251	4	Light Highway	0
3052068-30520129	Gravity Main Line	Corroded iron pipe first 18 ft, leaking joints.	VCP	10	316	12	Light Highway	0
3052068-30520129	Gravity Main Descaler	Descaler before lining.	VCP	10	316	12	Light Highway	0
3052069-3052068	Gravity Main Line	Fracture with infiltration at 335 ft.	VCP	8	515	7	Light Highway	0
3052087-3052026	Gravity Main Line	Multiple leaking joints and cracks.	VCP	10	268	14	Light Highway	0
3052093-3052091	Gravity Main Line	Minor defects. Crack / Intruding Sealing Ring.	VCP	8	378	6	Light Highway	6
3052094-3052090	Gravity Main Line	Minor defect. Leaks	VCP	8	360	9	Light Highway	6
3052095-3052094	Gravity Main Line	One length of iron pipe and multiple leaking joints.	VCP	8	155	8	Light Highway	2
3052097-3052098	Gravity Main Line	infiltration	VCP	8	399	8	Light Highway	0
3052098-3052088	Gravity Main Line	Cracks, fractures and infiltration.	VCP	10	262	14	Light Highway	0
3052118-30520120	Gravity Main Line	One length of iron pipe entering downstream manhole, coating appears intact. Pipe in good condition.	VCP	8	18	8	Light Highway	0
3052127-30520126	Gravity Main Line	Multiple fractures and infiltration. SEALING WAS PERFORMED ON 07/20/15 ON THE GUSHER AT 79 FEET.	VCP	10	18	8	Light Highway	3
3052153-30520149	Gravity Main Line	Two lengths of corroded iron pipe. Line main due to pipe type (DIP). Almost half of this main is ductile iron, 30' out of 69.	PVC	10	227	7	Light Highway	0
3052166-3052068	Gravity Main Line	Descaler before lining.	PVC	10	57	13	Light Highway	0
3052166-3052068	Gravity Main Descaler	Descaler before lining.	PVC	10	57	13	Light Highway	0
3052169-30520167	Gravity Main Line	DI is the 18' going through a conflict MH. DI is in good condition.	DIP	8	220	6	Easement	0
3052178-3052009	Gravity Main Line	3 lengths of iron pipe. Some corrosion at joints.	PVC	8	179	9	Light Highway	0
Manhole ID	R/R Action	Additional Information	Approx. Depth	Surface Type				
30520091	Manhole Coat	Coat leaking manhole.	7	Light Highway				
30520167	Manhole Seal	Seal and coat leaking manhole.	6	Light Highway				
30520170	Manhole Coat	Coat manhole due to mineral stain.	6	Light Highway				

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Ⓜ Manhole Repair or Replace
- ▬ Gravity Main Clean
- ▬ Gravity Main Replace
- ▭ Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- ▬ Lateral Line Repair
- ▬ Gravity Main Line
- ★ Gravity Main Repairs
- ▬ Gravity Main Descaler & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

**ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION**

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

GRAVITY R/R PACKAGE NO. 21

SA 3052 QUAIL HOLLOW EST. (NORTH)

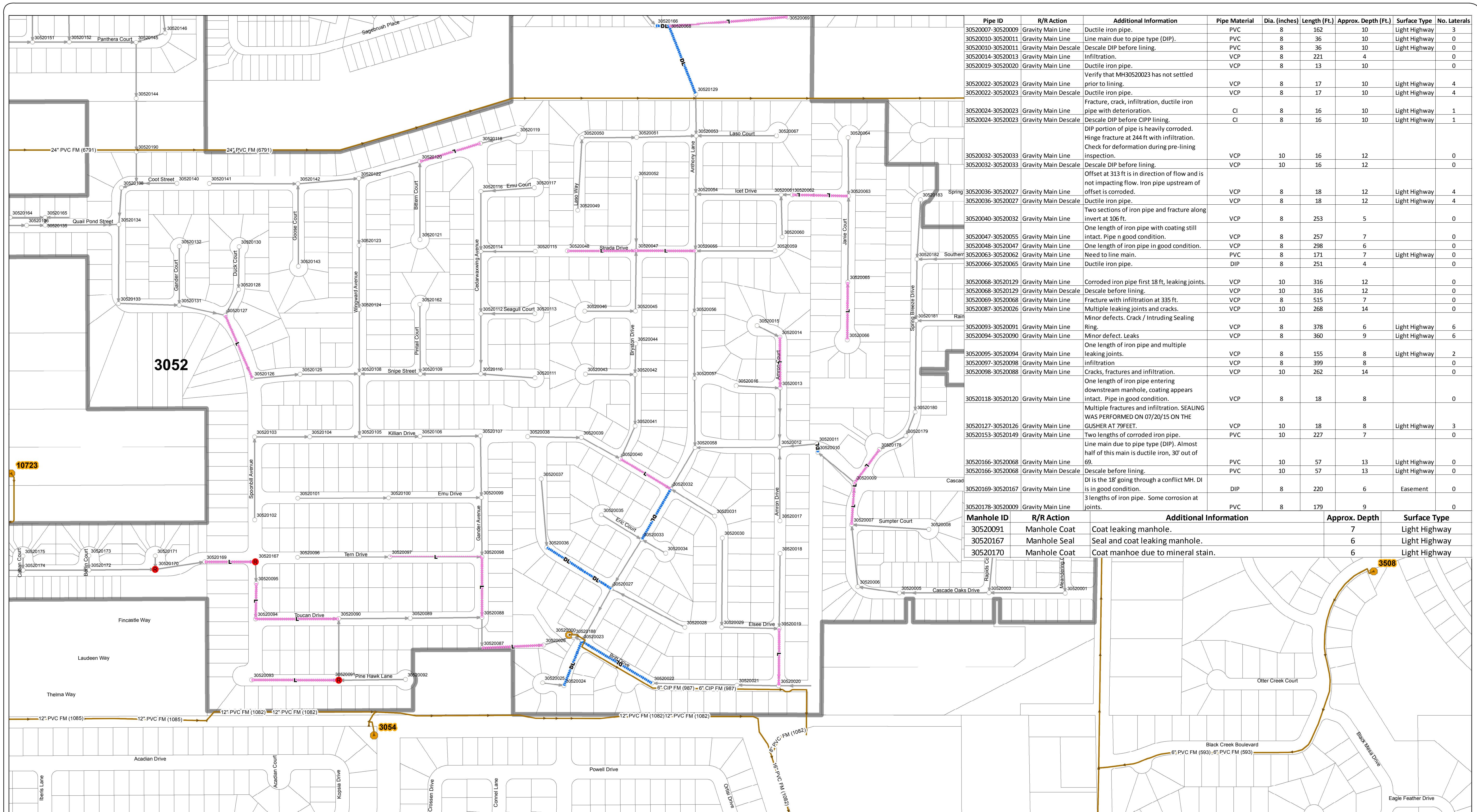
OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: STEVE RAPP
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-19

SHEET 30 OF 47

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
3052007-3052009	Gravity Main Line	Ductile iron pipe.	PVC	8	162	10	Light Highway	3
3052010-3052011	Gravity Main Line	Line main due to pipe type (DIP).	PVC	8	36	10	Light Highway	0
3052010-3052011	Gravity Main Descaler	Descaler DIP before lining.	PVC	8	36	10	Light Highway	0
3052014-3052013	Gravity Main Line	Infiltration.	VCP	8	221	4	Light Highway	0
3052019-3052020	Gravity Main Line	Ductile iron pipe.	VCP	8	13	10	Light Highway	0
3052022-3052023	Gravity Main Line	Verify that MH30520023 has not settled prior to lining.	VCP	8	17	10	Light Highway	4
3052022-3052023	Gravity Main Descaler	Ductile iron pipe.	VCP	8	17	10	Light Highway	4
3052024-3052023	Gravity Main Line	Fracture, crack, infiltration, ductile iron pipe with deterioration.	CI	8	16	10	Light Highway	1
3052024-3052023	Gravity Main Descaler	Descaler DIP before CIPP lining.	CI	8	16	10	Light Highway	1
3052032-3052033	Gravity Main Line	DIP portion of pipe is heavily corroded.	VCP	10	16	12	Light Highway	0
3052032-3052033	Gravity Main Descaler	Descaler DIP before lining.	VCP	10	16	12	Light Highway	0
3052036-3052027	Gravity Main Line	Offset at 313 ft is in direction of flow and is not impacting flow. Iron pipe upstream of offset is corroded.	VCP	8	18	12	Light Highway	4
3052036-3052027	Gravity Main Descaler	Ductile iron pipe.	VCP	8	18	12	Light Highway	4
3052040-3052032	Gravity Main Line	Two sections of iron pipe and fracture along invert at 106 ft.	VCP	8	253	5	Light Highway	0
3052047-3052055	Gravity Main Line	One length of iron pipe with coating still intact. Pipe in good condition.	VCP	8	257	7	Light Highway	0
3052048-3052047	Gravity Main Line	One length of iron pipe in good condition.	VCP	8	298	6	Light Highway	0
3052063-3052062	Gravity Main Line	Need to line main.	PVC	8	171	7	Light Highway	0
3052066-3052065	Gravity Main Line	Ductile iron pipe.	DIP	8	251	4	Light Highway	0
3052068-30520129	Gravity Main Line	Corroded iron pipe first 18 ft, leaking joints.	VCP	10	316	12	Light Highway	0
3052068-30520129	Gravity Main Descaler	Descaler before lining.	VCP	10	316	12	Light Highway	0
3052069-3052068	Gravity Main Line	Fracture with infiltration at 335 ft.	VCP	8	515	7	Light Highway	0
3052087-3052026	Gravity Main Line	Multiple leaking joints and cracks.	VCP	10	268	14	Light Highway	0
3052093-3052091	Gravity Main Line	Minor defects. Crack / Intruding Sealing Ring.	VCP	8	378	6	Light Highway	6
3052094-3052090	Gravity Main Line	Minor defect. Leaks	VCP	8	360	9	Light Highway	6
3052095-3052094	Gravity Main Line	One length of iron pipe and multiple leaking joints.	VCP	8	155	8	Light Highway	2
3052097-3052098	Gravity Main Line	infiltration	VCP	8	399	8	Light Highway	0
3052098-3052088	Gravity Main Line	Cracks, fractures and infiltration.	VCP	10	262	14	Light Highway	0
3052118-30520120	Gravity Main Line	One length of iron pipe entering downstream manhole, coating appears intact. Pipe in good condition.	VCP	8	18	8	Light Highway	0
3052127-30520126	Gravity Main Line	Multiple fractures and infiltration. SEALING WAS PERFORMED ON 07/20/15 ON THE GUSHER AT 79 FEET.	VCP	10	18	8	Light Highway	3
3052153-30520149	Gravity Main Line	Two lengths of corroded iron pipe.	PVC	10	227	7	Light Highway	0
3052166-3052068	Gravity Main Line	Line main due to pipe type (DIP). Almost half of this main is ductile iron, 30' out of 69.	PVC	10	57	13	Light Highway	0
3052166-3052068	Gravity Main Descaler	Descaler before lining.	PVC	10	57	13	Light Highway	0
3052169-30520167	Gravity Main Line	DI is the 18' going through a conflict MH. DI is in good condition.	DIP	8	220	6	Easement	0
3052178-3052009	Gravity Main Line	3 lengths of iron pipe. Some corrosion at joints.	PVC	8	179	9	Light Highway	0

Manhole ID	R/R Action	Additional Information	Approx. Depth	Surface Type
3052091	Manhole Coat	Coat leaking manhole.	7	Light Highway
30520167	Manhole Seal	Seal and coat leaking manhole.	6	Light Highway
30520170	Manhole Coat	Coat manhole due to mineral stain.	6	Light Highway

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descaler & Line

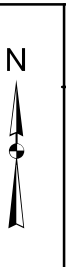
REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet



GRAVITY R/R PACKAGE NO. 21

SA 3052 QUAIL HOLLOW EST. (SOUTH)

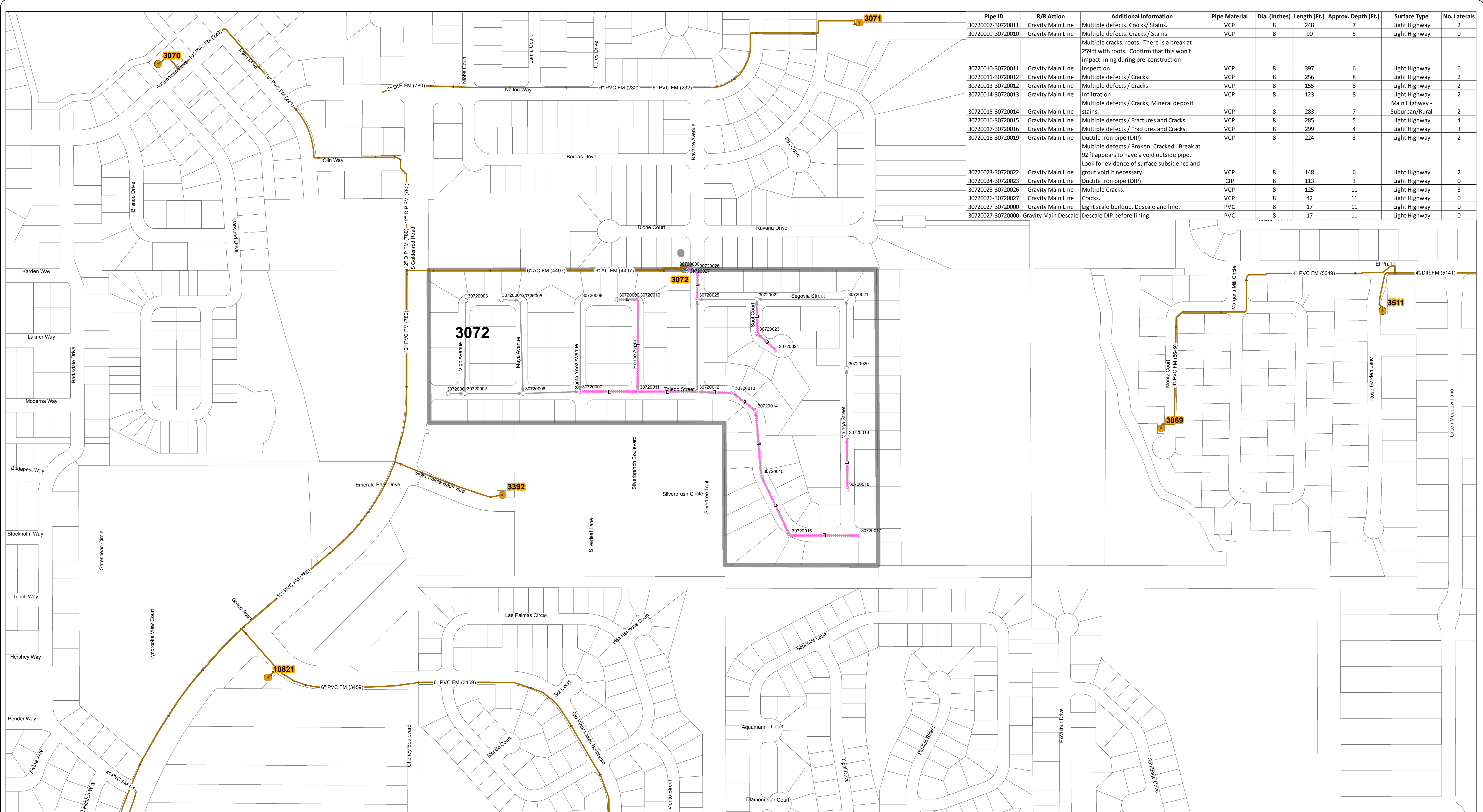
KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-20

SHEET 31 OF 47



Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

GRAVITY R/R PACKAGE NO. 21

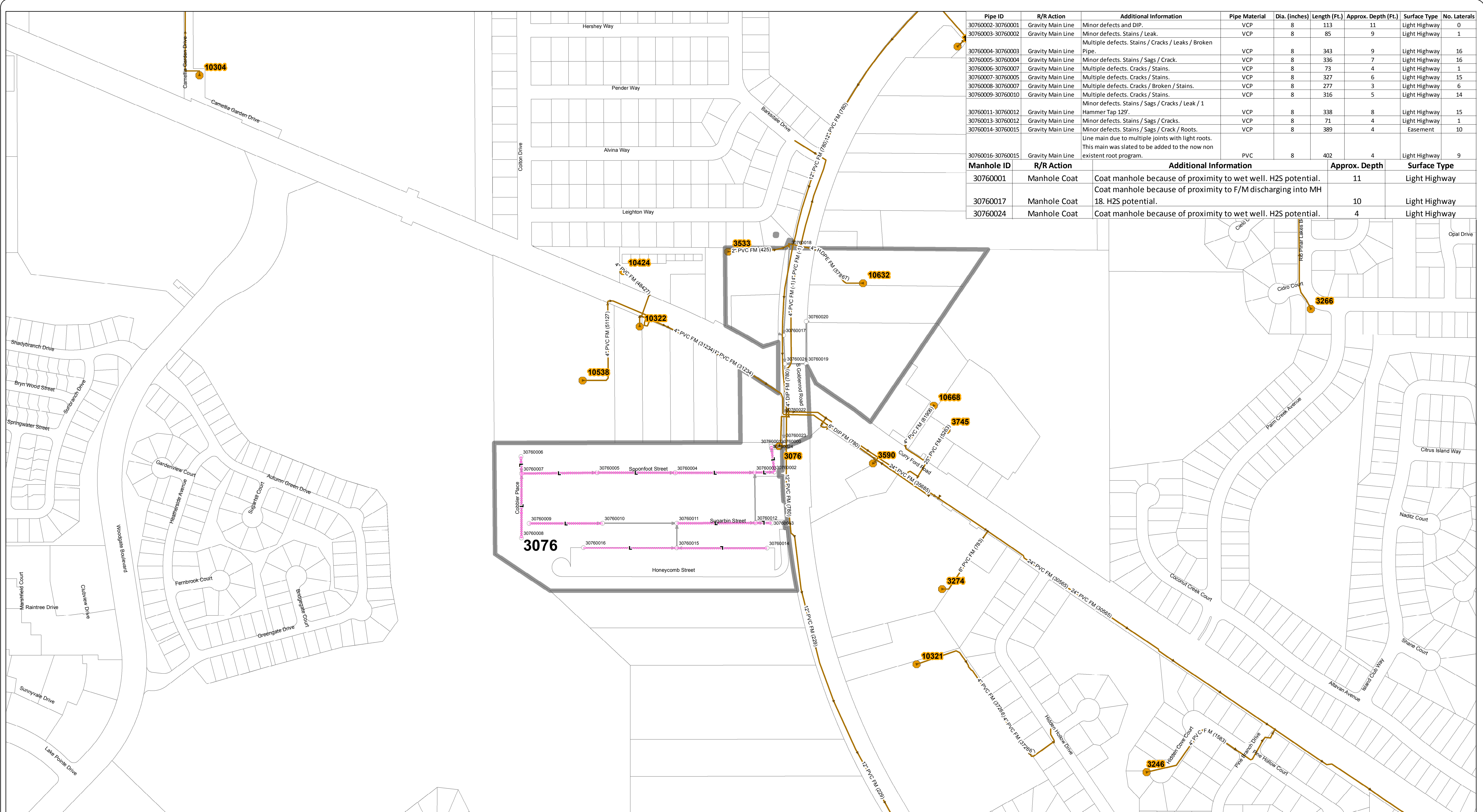
SA 3072 VERONA PARK

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-21
SHEET 32 OF 47

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (Inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
30760002-30760001	Gravity Main Line	Minor defects and DIP.	VCP	8	113	11	Light Highway	0
30760003-30760002	Gravity Main Line	Minor defects. Stains / Leak.	VCP	8	85	9	Light Highway	1
30760004-30760003	Gravity Main Line	Multiple defects. Stains / Cracks / Leaks / Broken Pipe.	VCP	8	343	9	Light Highway	16
30760005-30760004	Gravity Main Line	Minor defects. Stains / Sags / Crack.	VCP	8	336	7	Light Highway	16
30760006-30760005	Gravity Main Line	Multiple defects. Cracks / Stains.	VCP	8	73	4	Light Highway	1
30760007-30760006	Gravity Main Line	Multiple defects. Cracks / Stains.	VCP	8	327	6	Light Highway	15
30760008-30760007	Gravity Main Line	Multiple defects. Cracks / Broken / Stains.	VCP	8	277	3	Light Highway	6
30760009-30760010	Gravity Main Line	Multiple defects. Cracks / Stains.	VCP	8	316	5	Light Highway	14
30760011-30760012	Gravity Main Line	Minor defects. Stains / Sags / Cracks / Leak / 1 Hammer Tap 129'.	VCP	8	338	8	Light Highway	15
30760013-30760012	Gravity Main Line	Minor defects. Stains / Sags / Cracks.	VCP	8	71	4	Light Highway	1
30760014-30760015	Gravity Main Line	Minor defects. Stains / Sags / Crack / Roots.	VCP	8	389	4	Easement	10
30760016-30760015	Gravity Main Line	Line main due to multiple joints with light roots. This main was slated to be added to the now non existent root program.	PVC	8	402	4	Light Highway	9

Manhole ID	R/R Action	Additional Information	Approx. Depth	Surface Type
30760001	Manhole Coat	Coat manhole because of proximity to wet well. H2S potential.	11	Light Highway
30760017	Manhole Coat	Coat manhole because of proximity to F/M discharging into MH	10	Light Highway
30760024	Manhole Coat	18. H2S potential.	4	Light Highway
30760024	Manhole Coat	Coat manhole because of proximity to wet well. H2S potential.	4	Light Highway

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

**ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION**

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

GRAVITY R/R PACKAGE NO. 21

SA 3076 GOLDEN ACRES

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-22

SHEET 33 OF 47

Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
32460009-32460007	Gravity Main Line	Crack and infiltration.	VCP	8	222	5	Light Highway	2



Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

GRAVITY R/R PACKAGE NO. 21

SA 3246 HIDDEN HOLLOW

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

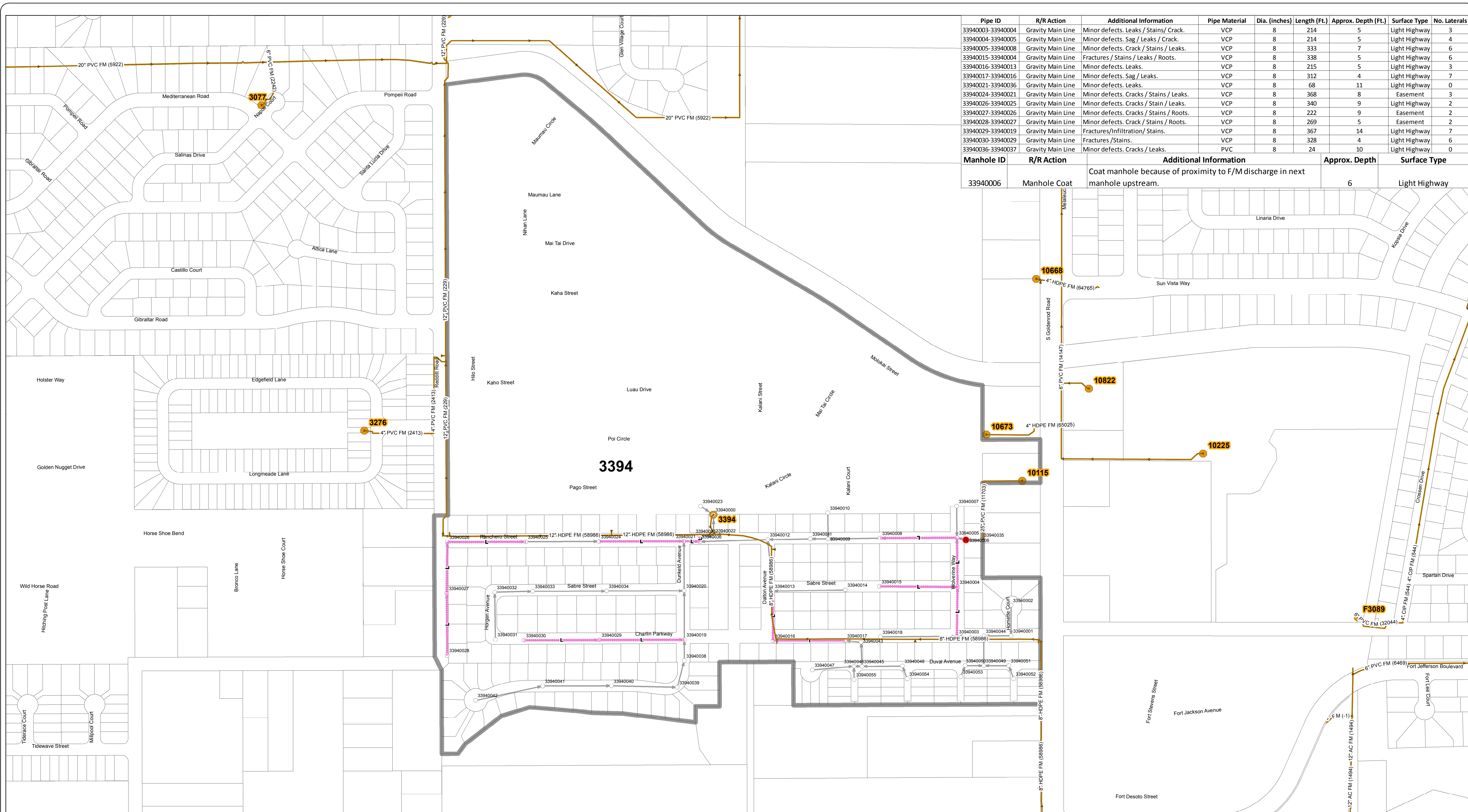
SCALE: 1" = 200'

DRAWING NO.:

C-23

SHEET 34 OF 47

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 858880



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
33940003-33940004	Gravity Main Line	Minor defects. Leaks / Stains / Crack.	VCP	8	214	5	Light Highway	3
33940004-33940005	Gravity Main Line	Minor defects. Sag / Leaks / Crack.	VCP	8	214	5	Light Highway	4
33940005-33940008	Gravity Main Line	Minor defects. Crack / Stains / Leaks.	VCP	8	333	7	Light Highway	6
33940015-33940004	Gravity Main Line	Fractures / Stains / Leaks / Roots.	VCP	8	338	5	Light Highway	6
33940016-33940013	Gravity Main Line	Minor defects. Leaks.	VCP	8	215	5	Light Highway	3
33940017-33940016	Gravity Main Line	Minor defects. Sag / Leaks.	VCP	8	312	4	Light Highway	7
33940021-33940036	Gravity Main Line	Minor defects. Leaks.	VCP	8	68	11	Light Highway	0
33940024-33940021	Gravity Main Line	Minor defects. Cracks / Stains / Leaks.	VCP	8	368	8	Easement	3
33940026-33940025	Gravity Main Line	Minor defects. Cracks / Stain / Leaks.	VCP	8	340	9	Light Highway	2
33940027-33940026	Gravity Main Line	Minor defects. Cracks / Stains / Roots.	VCP	8	222	9	Easement	2
33940028-33940027	Gravity Main Line	Minor defects. Crack / Stains / Roots.	VCP	8	269	5	Easement	2
33940029-33940019	Gravity Main Line	Fractures/Infiltration/ Stains.	VCP	8	367	14	Light Highway	7
33940030-33940029	Gravity Main Line	Fractures/Stains.	VCP	8	328	4	Light Highway	6
33940036-33940037	Gravity Main Line	Minor defects. Cracks / Leaks.	PVC	8	24	10	Light Highway	0

Manhole ID	R/R Action	Additional Information	Approx. Depth	Surface Type
33940006	Manhole Coat	Coat manhole because of proximity to F/M discharge in next manhole upstream.	6	Light Highway

Legend

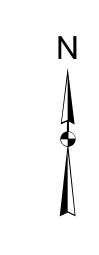
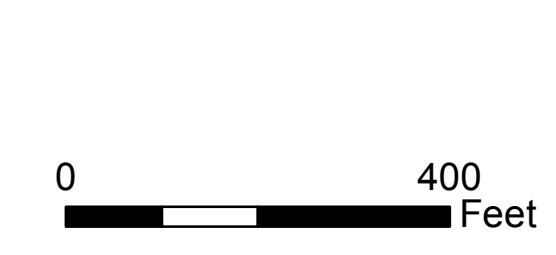
- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)



ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

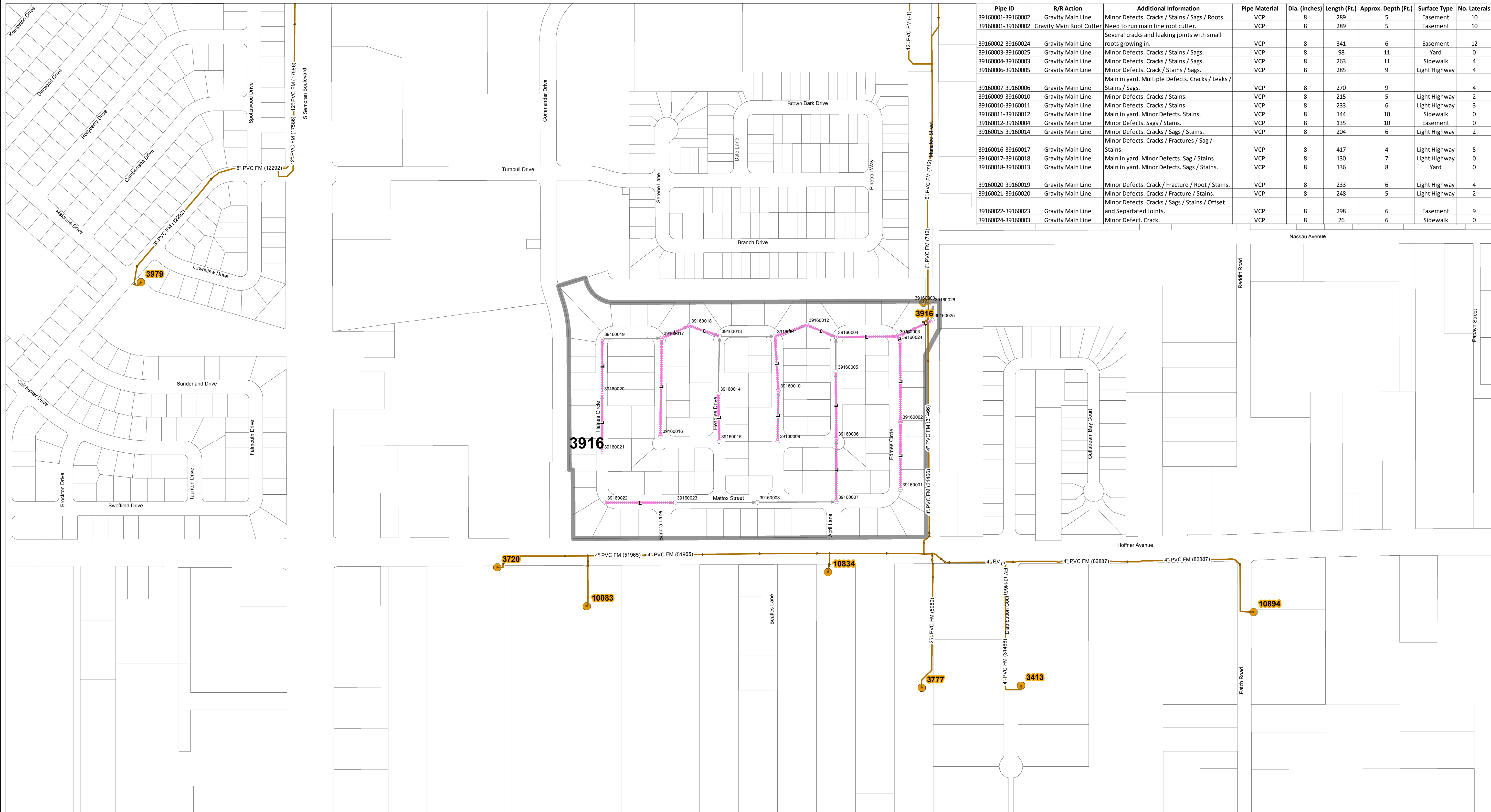


GRAVITY R/R PACKAGE NO. 21
SA 3394 CHARLIN PARK

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 858880

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

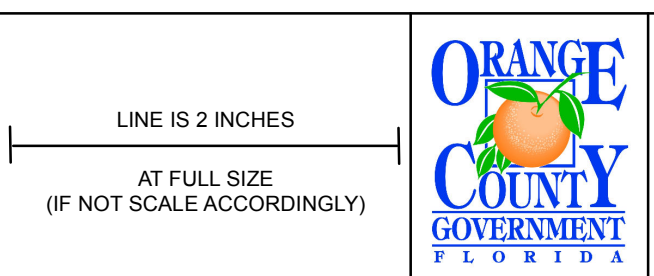
SCALE: 1" = 200'
DRAWING NO.: **C-24**
SHEET 35 OF 47



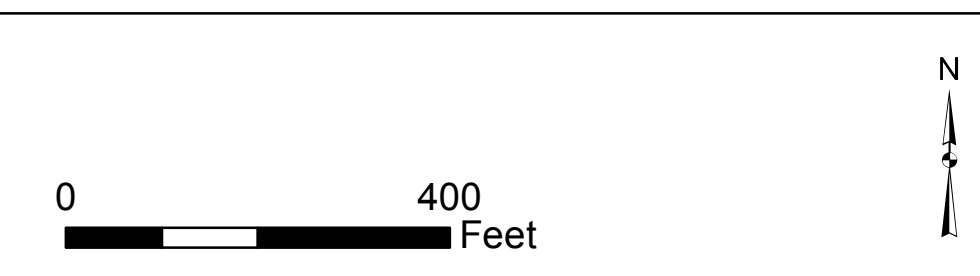
Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Ⓜ Manhole Repair or Replace
- ▬ Gravity Main Clean
- ▬ Gravity Main Replace
- ▭ Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- ▬ Lateral Line Repair
- ▬ Gravity Main Line
- ★ Gravity Main Repairs
- ▬ Gravity Main Descale & Line

REV	DATE	DESCRIPTION



ORANGE COUNTY UTILITIES DEPARTMENT
ENGINEERING DIVISION
 9150 CURRY FORD ROAD ORLANDO, FL. 32825

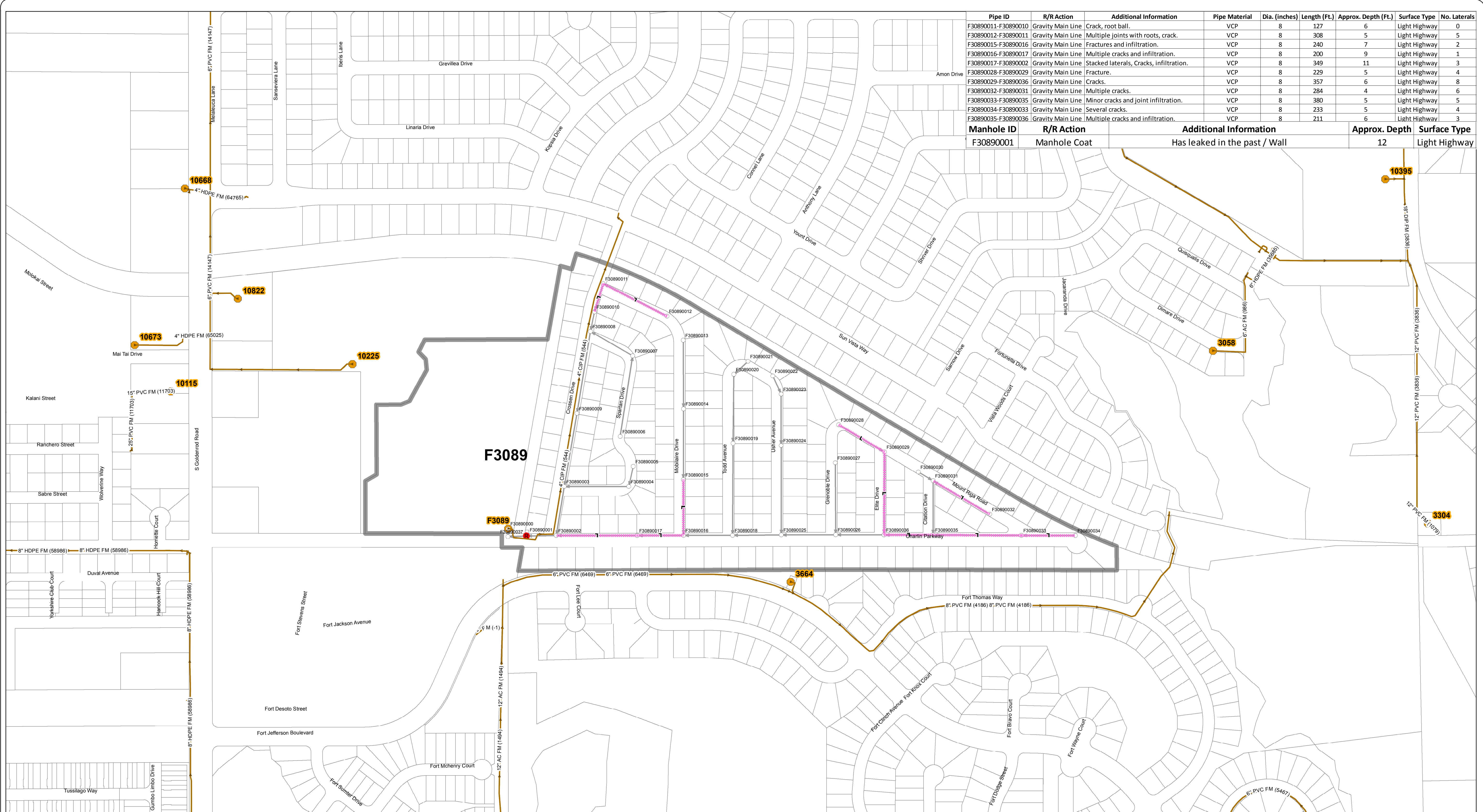


GRAVITY R/R PACKAGE NO. 21

SA 3916 CONWAY MANOR

OCU FILE No. 82146	SCALE: 1" = 200'
DESIGN BY:	
DRAWN BY: KM	
CHECKED BY: SJR	
CAD FILE:	DRAWING NO.: C-25
KIRSTEN MCELHINNEY, P.E. PROFESSIONAL ENGINEER FLORIDA LICENSE # 85880	SHEET 36 OF 47

Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
F30890011-F30890010	Gravity Main Line	Crack, root ball.	VCP	8	127	6	Light Highway	0
F30890012-F30890011	Gravity Main Line	Multiple joints with roots, crack.	VCP	8	308	5	Light Highway	5
F30890015-F30890016	Gravity Main Line	Fractures and infiltration.	VCP	8	240	7	Light Highway	2
F30890016-F30890017	Gravity Main Line	Multiple cracks and infiltration.	VCP	8	200	9	Light Highway	1
F30890017-F30890002	Gravity Main Line	Stacked laterals, Cracks, infiltration.	VCP	8	349	11	Light Highway	3
F30890028-F30890029	Gravity Main Line	Fracture.	VCP	8	229	5	Light Highway	4
F30890029-F30890036	Gravity Main Line	Cracks.	VCP	8	357	6	Light Highway	8
F30890032-F30890031	Gravity Main Line	Multiple cracks.	VCP	8	284	4	Light Highway	6
F30890033-F30890035	Gravity Main Line	Minor cracks and joint infiltration.	VCP	8	380	5	Light Highway	5
F30890034-F30890033	Gravity Main Line	Several cracks.	VCP	8	233	5	Light Highway	4
F30890035-F30890036	Gravity Main Line	Multiple cracks and infiltration.	VCP	8	211	6	Light Highway	3
Manhole ID	R/R Action	Additional Information	Approx. Depth	Surface Type				
F30890001	Manhole Coat	Has leaked in the past / Wall	12	Light Highway				



Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

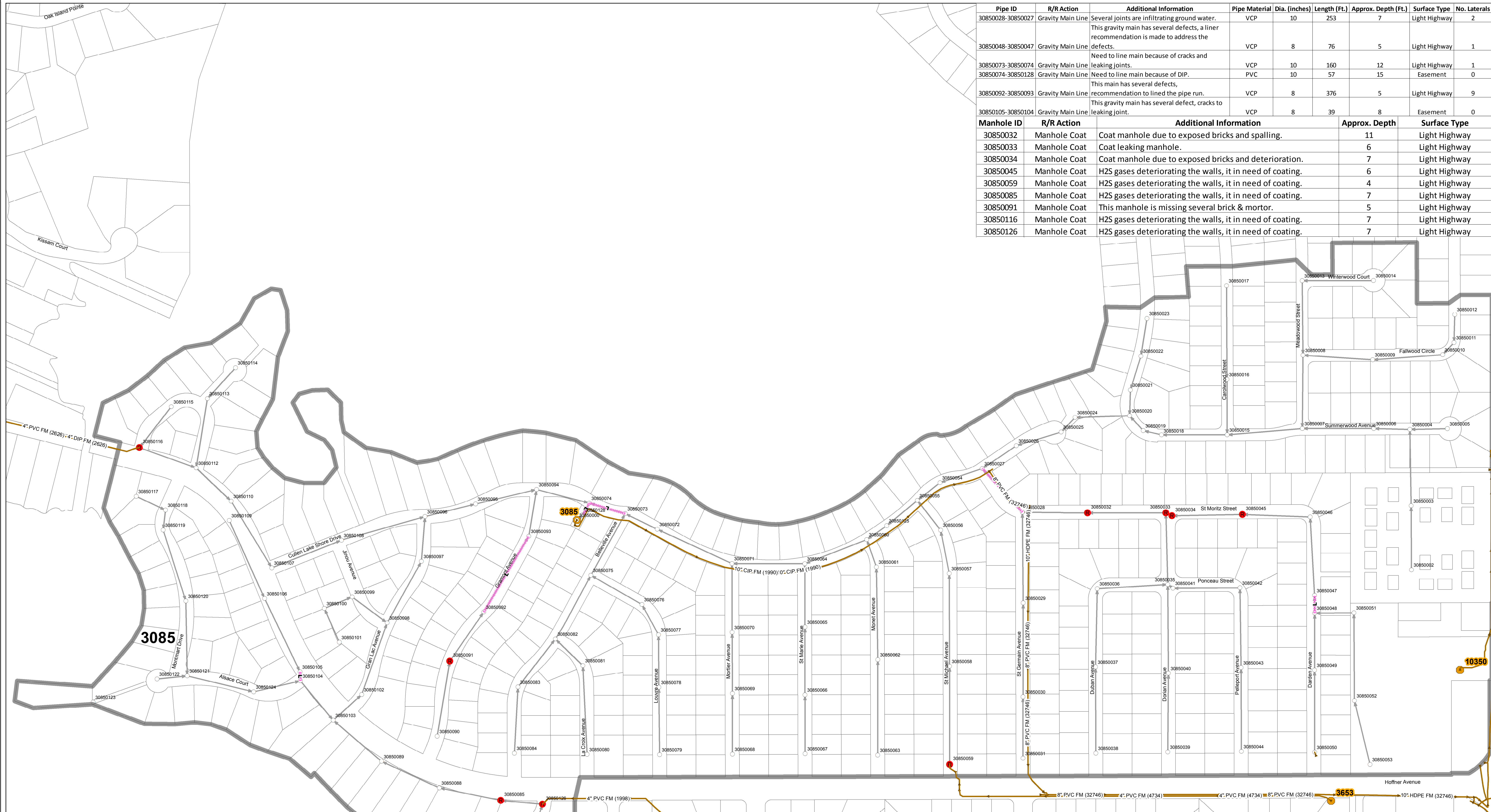
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GRAVITY R/R PACKAGE NO. 21
SA F3089 CHARLIN PARK

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'
DRAWING NO.: **C-26**
SHEET 37 OF 47

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
30850028-30850027	Gravity Main Line	Several joints are infiltrating ground water. This gravity main has several defects, a liner recommendation is made to address the defects.	VCP	10	253	7	Light Highway	2
30850048-30850047	Gravity Main Line	Need to line main because of cracks and leaking joints.	VCP	8	76	5	Light Highway	1
30850073-30850074	Gravity Main Line	Need to line main because of DIP.	VCP	10	160	12	Light Highway	1
30850074-30850128	Gravity Main Line	Need to line main because of DIP.	PVC	10	57	15	Easement	0
30850092-30850093	Gravity Main Line	This main has several defects, recommendation to lined the pipe run.	VCP	8	376	5	Light Highway	9
30850105-30850104	Gravity Main Line	This gravity main has several defect, cracks to leaking joint.	VCP	8	39	8	Easement	0

Manhole ID	R/R Action	Additional Information	Approx. Depth	Surface Type
30850032	Manhole Coat	Coat manhole due to exposed bricks and spalling.	11	Light Highway
30850033	Manhole Coat	Coat leaking manhole.	6	Light Highway
30850034	Manhole Coat	Coat manhole due to exposed bricks and deterioration.	7	Light Highway
30850045	Manhole Coat	H2S gases deteriorating the walls, it in need of coating.	6	Light Highway
30850059	Manhole Coat	H2S gases deteriorating the walls, it in need of coating.	4	Light Highway
30850085	Manhole Coat	H2S gases deteriorating the walls, it in need of coating.	7	Light Highway
30850091	Manhole Coat	This manhole is missing several brick & mortar.	5	Light Highway
30850116	Manhole Coat	H2S gases deteriorating the walls, it in need of coating.	7	Light Highway
30850126	Manhole Coat	H2S gases deteriorating the walls, it in need of coating.	7	Light Highway

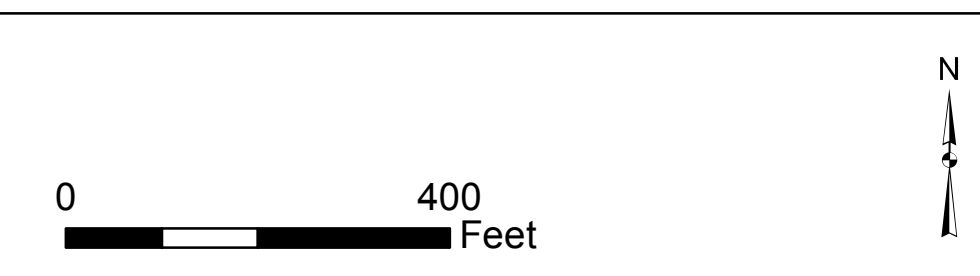
Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

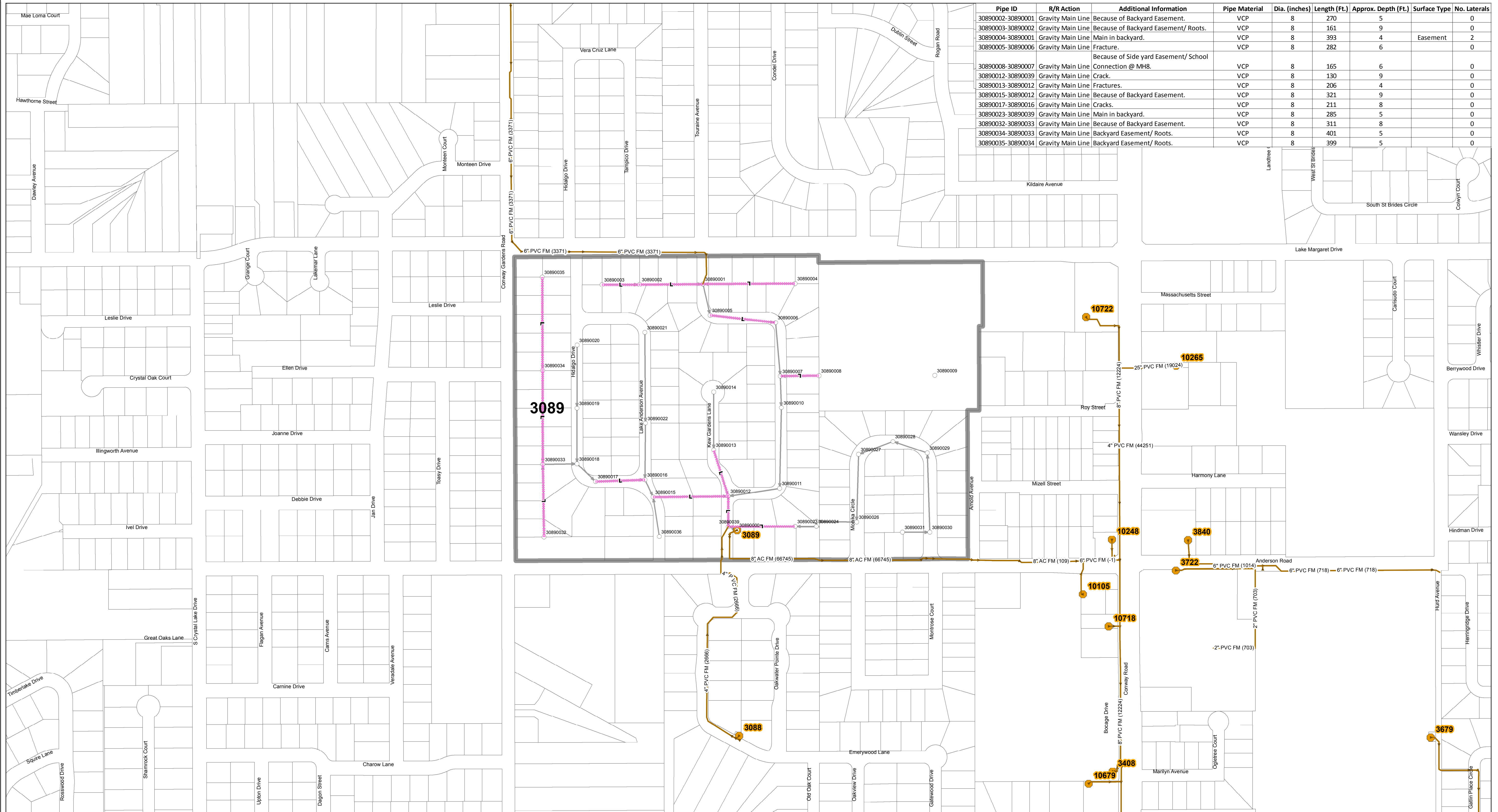


GRAVITY R/R PACKAGE NO. 22
SA 3085 LAKE CONWAY EST.

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'
DRAWING NO.: **C-27**
SHEET 38 OF 47

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880



Pipe ID	R/R/Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
30890002-30890001	Gravity Main Line	Because of Backyard Easement.	VCP	8	270	5		0
30890003-30890002	Gravity Main Line	Because of Backyard Easement/ Roots.	VCP	8	161	9		0
30890004-30890001	Gravity Main Line	Main in backyard.	VCP	8	393	4	Easement	2
30890005-30890006	Gravity Main Line	Fracture.	VCP	8	282	6		0
30890008-30890007	Gravity Main Line	Because of Side yard Easement/ School Connection @ MH8.	VCP	8	165	6		0
30890012-30890039	Gravity Main Line	Crack.	VCP	8	130	9		0
30890013-30890012	Gravity Main Line	Fractures.	VCP	8	206	4		0
30890015-30890012	Gravity Main Line	Because of Backyard Easement.	VCP	8	321	9		0
30890017-30890016	Gravity Main Line	Cracks.	VCP	8	211	8		0
30890023-30890039	Gravity Main Line	Main in backyard.	VCP	8	285	5		0
30890032-30890033	Gravity Main Line	Because of Backyard Easement.	VCP	8	311	8		0
30890034-30890033	Gravity Main Line	Backyard Easement/ Roots.	VCP	8	401	5		0
30890035-30890034	Gravity Main Line	Backyard Easement/ Roots.	VCP	8	399	5		0

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

GRAVITY R/R PACKAGE NO. 22
SA 3089 ANDERSON HEIGHTS

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # XXXXX

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'
DRAWING NO.: **C-28**
SHEET 39 OF 47



Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

N

GRAVITY R/R PACKAGE NO. 22

SA 3235 LAKE CONWAY SHORES

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-29
SHEET 40 OF 47

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # XXXXX

Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
32390001-32390002	Gravity Main Line	Minor Defects. Crack / Stains.	VCP	8	302	4	Light Highway	1
32390002-32390003	Gravity Main Line	Minor Defects. Leak / Stains	VCP	8	281	8	Light Highway	2
32390005-32390007	Gravity Main Line	Minor Defects. Leak / Crack / Stains.	VCP	8	288	11	Light Highway	2
32390007-32390012	Gravity Main Line	Minor Defects. Leak / Crack / Stains.	VCP	8	250	11	Light Highway	2
32390009-32390007	Gravity Main Line	Minor Defects. Cracks	VCP	8	259	7	Light Highway	4



Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400
Feet

N

GRAVITY R/R PACKAGE NO. 22

SA 3239 CONWAY LAKES

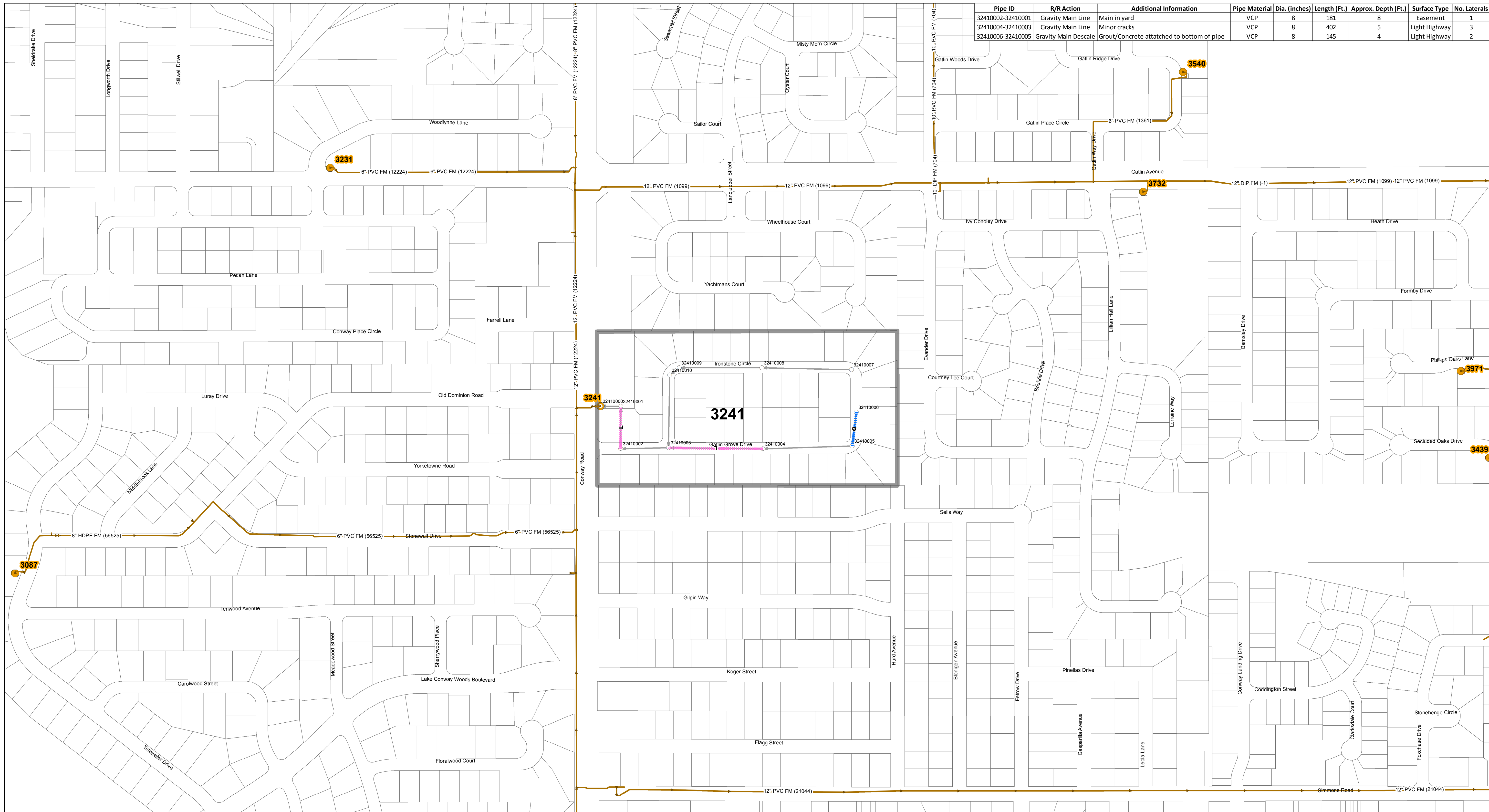
KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-30

SHEET 41 OF 47



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
32410002-32410001	Gravity Main Line	Main in yard	VCP	8	181	8	Easement	1
32410004-32410003	Gravity Main Line	Minor cracks	VCP	8	402	5	Light Highway	3
32410006-32410005	Gravity Main Descale	Grout/Concrete attached to bottom of pipe	VCP	8	145	4	Light Highway	2

Legend

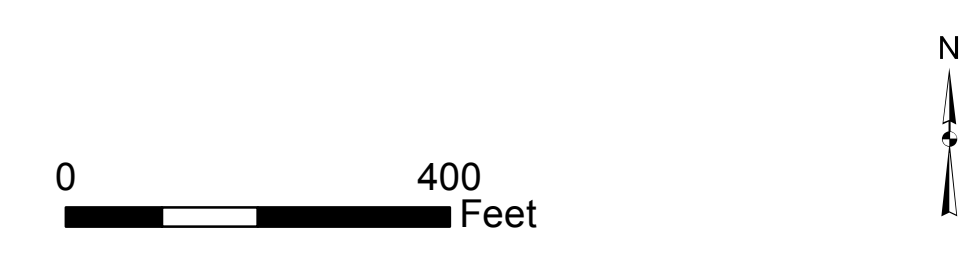
- Pump Station
- Pump Station Subarea (SA)
- Gravity Main
- Force Main
- Sewer Manhole
- Sewer Lateral
- Manhole Repair or Replace
- Lateral Line Repair
- Gravity Main Clean
- Gravity Main Line
- Gravity Main Replace
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

**ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION**

9150 CURRY FORD ROAD ORLANDO, FL. 32825

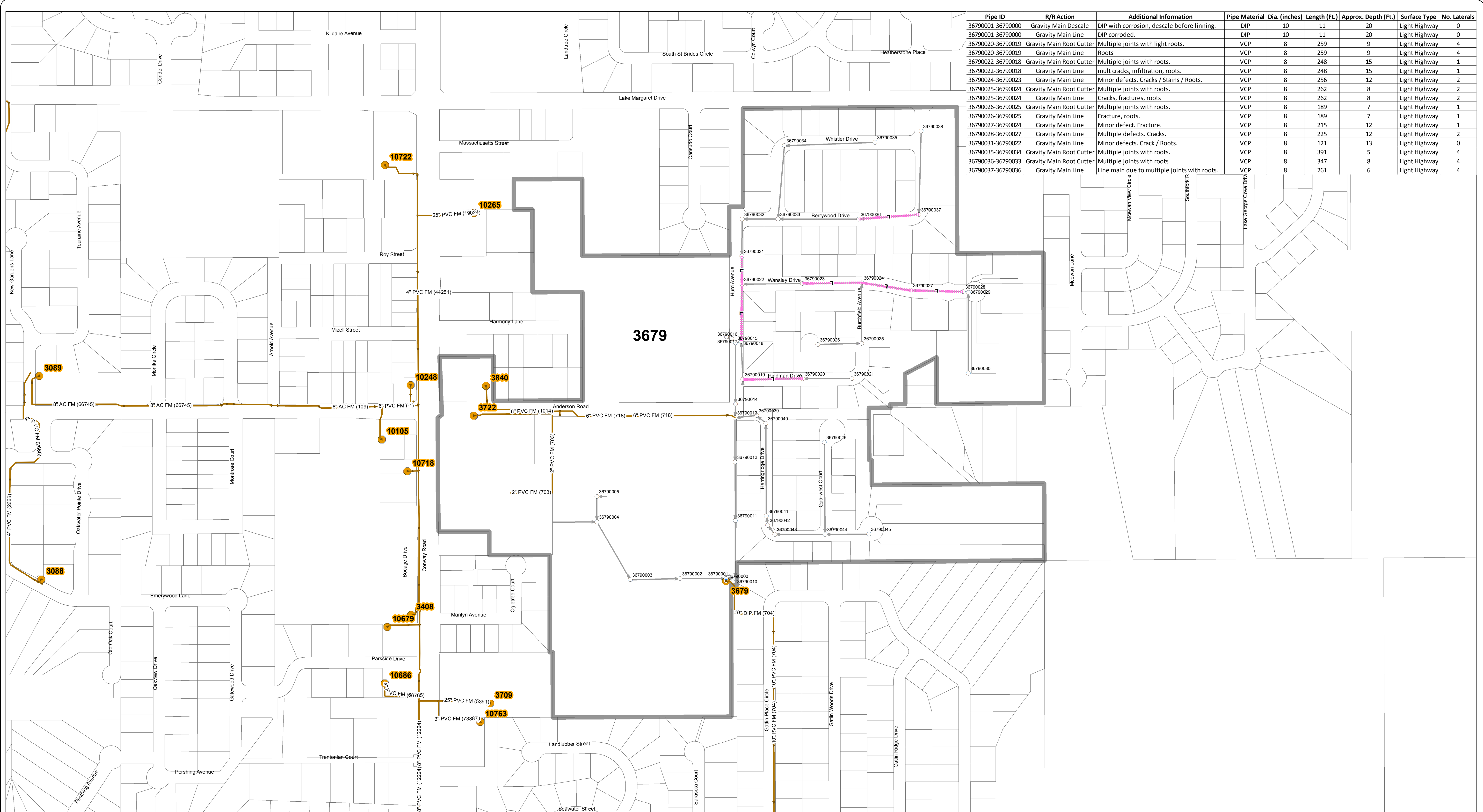


GRAVITY R/R PACKAGE NO. 22

SA 3241 GATLIN GROVE

OCU FILE No. 82146	SCALE: 1" = 200'
DESIGN BY:	DRAWING NO.:
DRAWN BY: KIRSTEN MCELHINNEY	C-31
CHECKED BY: STEVE RAPP	SHEET 42 OF 47
CAD FILE:	

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880



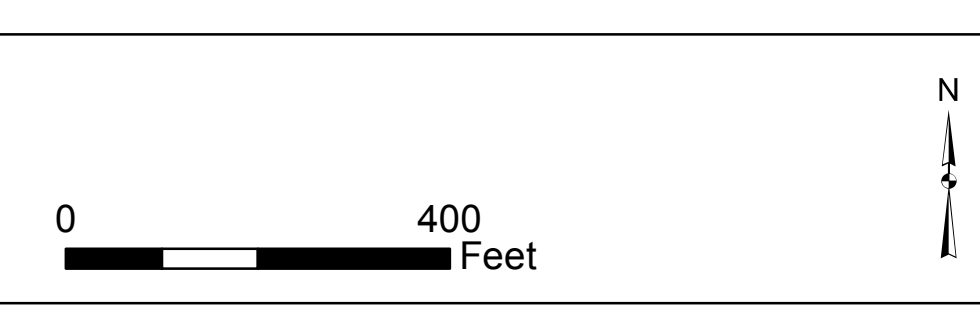
Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
36790001-36790000	Gravity Main Descale	DIP with corrosion, descale before lining.	DIP	10	11	20	Light Highway	0
36790001-36790000	Gravity Main Line	DIP corroded.	DIP	10	11	20	Light Highway	0
36790020-36790019	Gravity Main Root Cutter	Multiple joints with light roots.	VCP	8	259	9	Light Highway	4
36790020-36790019	Gravity Main Line	Roots	VCP	8	259	9	Light Highway	4
36790022-36790018	Gravity Main Root Cutter	Multiple joints with roots.	VCP	8	248	15	Light Highway	1
36790022-36790018	Gravity Main Line	mult cracks, infiltration, roots.	VCP	8	248	15	Light Highway	1
36790024-36790023	Gravity Main Line	Minor defects. Cracks / Stains / Roots.	VCP	8	256	12	Light Highway	2
36790025-36790024	Gravity Main Root Cutter	Multiple joints with roots.	VCP	8	262	8	Light Highway	2
36790025-36790024	Gravity Main Line	Cracks, fractures, roots	VCP	8	262	8	Light Highway	2
36790026-36790025	Gravity Main Root Cutter	Multiple joints with roots.	VCP	8	189	7	Light Highway	1
36790026-36790025	Gravity Main Line	Fracture, roots.	VCP	8	189	7	Light Highway	1
36790027-36790024	Gravity Main Line	Minor defect. Fracture.	VCP	8	215	12	Light Highway	1
36790028-36790027	Gravity Main Line	Multiple defects. Cracks.	VCP	8	225	12	Light Highway	2
36790031-36790022	Gravity Main Line	Minor defects. Crack / Roots.	VCP	8	121	13	Light Highway	0
36790035-36790034	Gravity Main Root Cutter	Multiple joints with roots.	VCP	8	391	5	Light Highway	4
36790036-36790033	Gravity Main Root Cutter	Multiple joints with roots.	VCP	8	347	8	Light Highway	4
36790037-36790036	Gravity Main Line	Line main due to multiple joints with roots.	VCP	8	261	6	Light Highway	4

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- Gravity Main Repairs
- Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)



GRAVITY R/R PACKAGE NO. 22

SA 3679 ORLANDO PINES

OCU FILE No. 82146	SCALE: 1" = 200'
DESIGN BY:	DRAWING NO.:
DRAWN BY: KM	C-32
CHECKED BY: SJR	SHEET 43 OF 47
CAD FILE:	

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880



Pipe ID	R/R Action	Additional Information	Pipe Material	Dia. (inches)	Length (Ft.)	Approx. Depth (Ft.)	Surface Type	No. Laterals
3979004-3979003	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	305	9	Light Highway	4
3979005-3979004	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	294	6	Light Highway	5
3979006-3979005	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	239	5	Light Highway	3
3979007-3979006	Gravity Main Line	Repair complete	VCP	8	368	5	Light Highway	5
3979009-3979008	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	235	9	Light Highway	3
3979010-3979009	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	271	9	Light Highway	3
3979011-3979010	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	252	7	Light Highway	3
3979012-3979011	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	235	6	Light Highway	2
3979013-3979012	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	243	4	Light Highway	3
3979014-3979009	Gravity Main Line	Remove obstruction in joint at 83 ft prior to lining. Cracks / Sags / Root. Re-inspect S/T	VCP	8	340	8	Light Highway	2
3979015-3979014	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	227	5	Light Highway	2
3979016-3979015	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	215	4	Light Highway	3
3979017-3979014	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	86	5	Light Highway	1
3979020-3979019	Gravity Main Line	This line segment has several crack throughout.	VCP	8	115	10	Light Highway	2
3979021-3979020	Gravity Main Line	This has several cracks with infiltration.	VCP	8	183	7	Light Highway	3
3979023-3979022	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	261	9	Light Highway	5
3979024-3979023	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	350	8	Light Highway	7
3979025-3979024	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	261	7	Light Highway	3
3979026-3979025	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	361	5	Light Highway	4
3979027-3979024	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	257	7	Light Highway	0
3979028-3979027	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	212	5	Light Highway	0
3979029-3979029	Gravity Main Line	Multiple cracks and defects in this line segment	VCP	8	194	6	Light Highway	3
3979030-3979029	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	260	5	Light Highway	6
3979031-3979030	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	251	5	Light Highway	8
3979034-3979033	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	92	8	Light Highway	2
3979035-3979034	Gravity Main Line	Multiple cracks and defects in this line segment	VCP	8	375	4	Easement	8
3979036-3979035	Gravity Main Line	Multiple fractures, cracks and infiltration. Minor defects. Cracks / Stains / Sags. Re-inspect S/T	VCP	8	215	5	Easement	4
3979037-3979036	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	314	5	Easement	7
3979039-3979034	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	240	7	Easement	3
3979040-3979039	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	228	7	Light Highway	5
3979041-3979040	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	258	5	Easement	6
3979046-3979045	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	317	6	Light Highway	9
3979047-3979046	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	376	6	Light Highway	10
3979050-3979043	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	368	5	Light Highway	10
3979055-39790054	Gravity Main Line	Line pipe after repair. Multiple fractures, cracks and leaks	VCP	8	297	9	Other	6
3979056-39790055	Gravity Main Line	Multiple defects, cracks & leaking joints. Repair was completed from 136' to 156' and repair work order closed. Ready for lining.	VCP	8	287	8	Light Highway	5
3979057-39790056	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	279	8	Light Highway	6
3979058-39790057	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	358	6	Light Highway	8
3979063-39790062	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	280	10	Light Highway	6
3979065-39790064	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	201	7	Light Highway	4
3979067-39790062	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	224	8	Light Highway	6
3979068-39790061	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	303	9	Light Highway	4
3979069-39790068	Gravity Main Line	several defects, recommending liner.	VCP	8	430	9	Light Highway	11
3979071-39790079	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	322	5	Light Highway	9
3979080-39790079	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	97	4	Light Highway	3
3979084-39790083	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	345	6	Light Highway	6
3979085-39790084	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	336	5	Light Highway	6
3979094-39790093	Gravity Main Line	Line - ductile iron	DIP	8	337	4	Light Highway	6
3979098-39790097	Gravity Main Line	Line - ductile iron	DIP	8	150	6	Easement	0
39790101-39790100	Gravity Main Line	Multiple areas with light/medium scale buildup on walls	DIP	8	407	6	Easement	1
39790102-39790098	Gravity Main Descale	DESCALE MAIN THEN LINE	VCP	8	123	6	Light Highway	0
39790102-39790098	Gravity Main Line	LINE MAIN	VCP	8	123	6	Light Highway	0
39790103-39790102	Gravity Main Line	LINE MAIN	VCP	8	225	6	Light Highway	0
39790104-39790103	Gravity Main Line	LINE MAIN	VCP	8	277	5	Easement	5
39790106-39790102	Gravity Main Line	LINE MAIN	VCP	8	267	6	Light Highway	4
39790106-39790102	Gravity Main Line	Descale. This is a 6" Main. Was not TV'd at this time.	VCP	6	132	4	Light Highway	0
397905E3-39790094	Gravity Main Clean	Multiple fractures, cracks and infiltration.	VCP	8	148	5	Light Highway	4
397905E4-39790065	Gravity Main Line	Multiple fractures, cracks and infiltration.	VCP	8	148	5	Light Highway	4

Legend

- Pump Station
- Gravity Main
- Sewer Manhole
- Ⓜ Manhole Repair or Replace
- Gravity Main Clean
- Gravity Main Replace
- ▭ Pump Station Subarea (SA)
- Force Main
- Sewer Lateral
- Lateral Line Repair
- Gravity Main Line
- ★ Gravity Main Repairs
- ▭ Gravity Main Descale & Line

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
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ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

0 400 Feet

GRAVITY R/R PACKAGE NO. 22

SA 3979 CONWAY ACRES

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

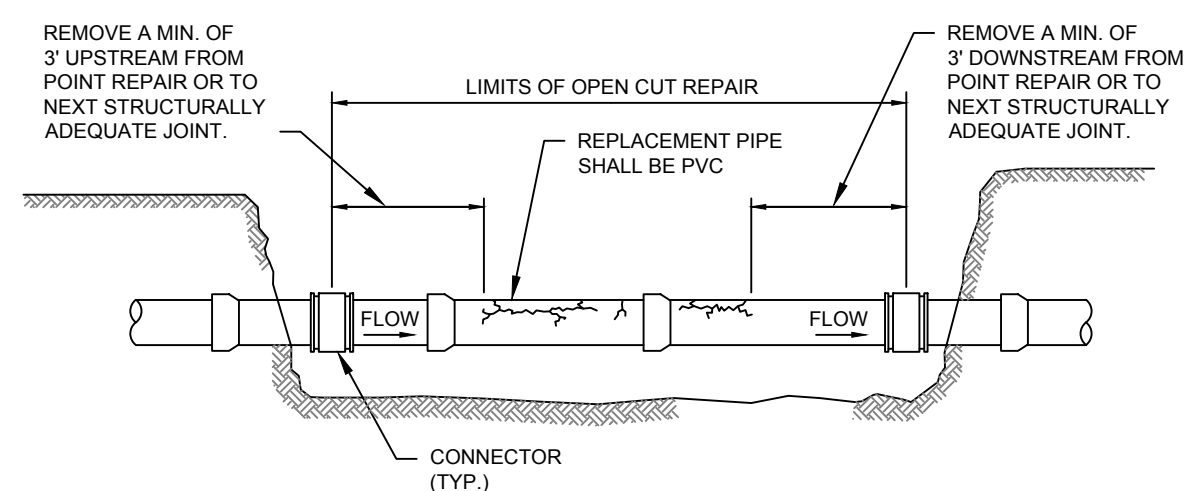
OCU FILE No. 82146
DESIGN BY:
DRAWN BY: KM
CHECKED BY: SJR
CAD FILE:

SCALE: 1" = 200'

DRAWING NO.:
C-33

SHEET 44 OF 47

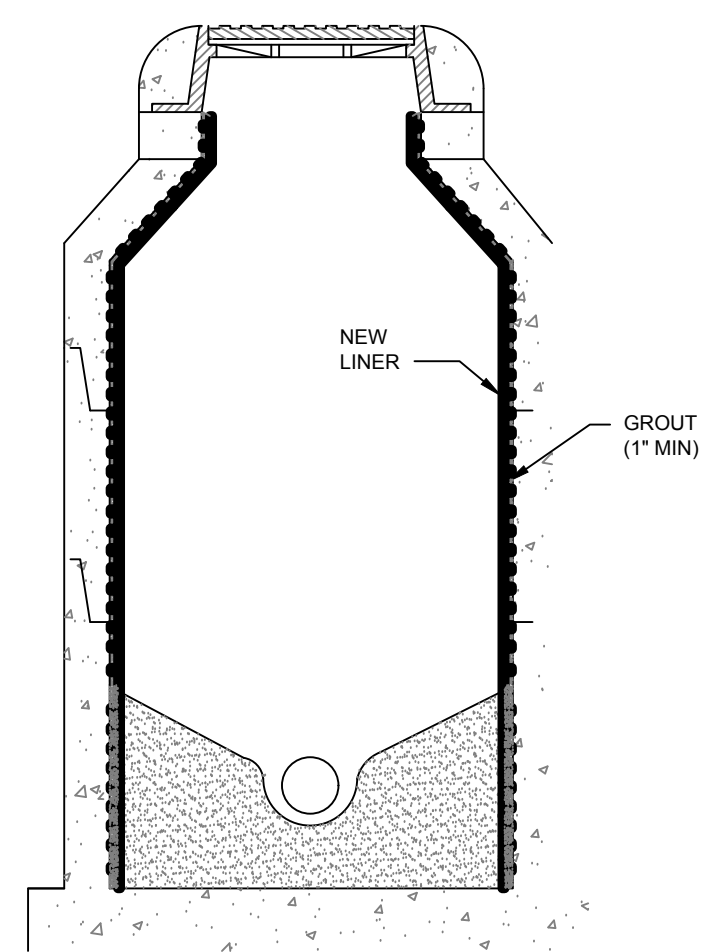
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 2012 POINT REPAIR FIGURE A-601



NOTES:

1. LATERAL REPAIR NEEDED WITHIN THE EXTENTS OF A PIPE REPLACEMENT, SHALL OCCUR AFTER NEW PIPE IS INSTALLED.
2. PAVEMENT RESTORATION SHALL BE IN ACCORDANCE WITH FIGURES A-702 AND A-703.

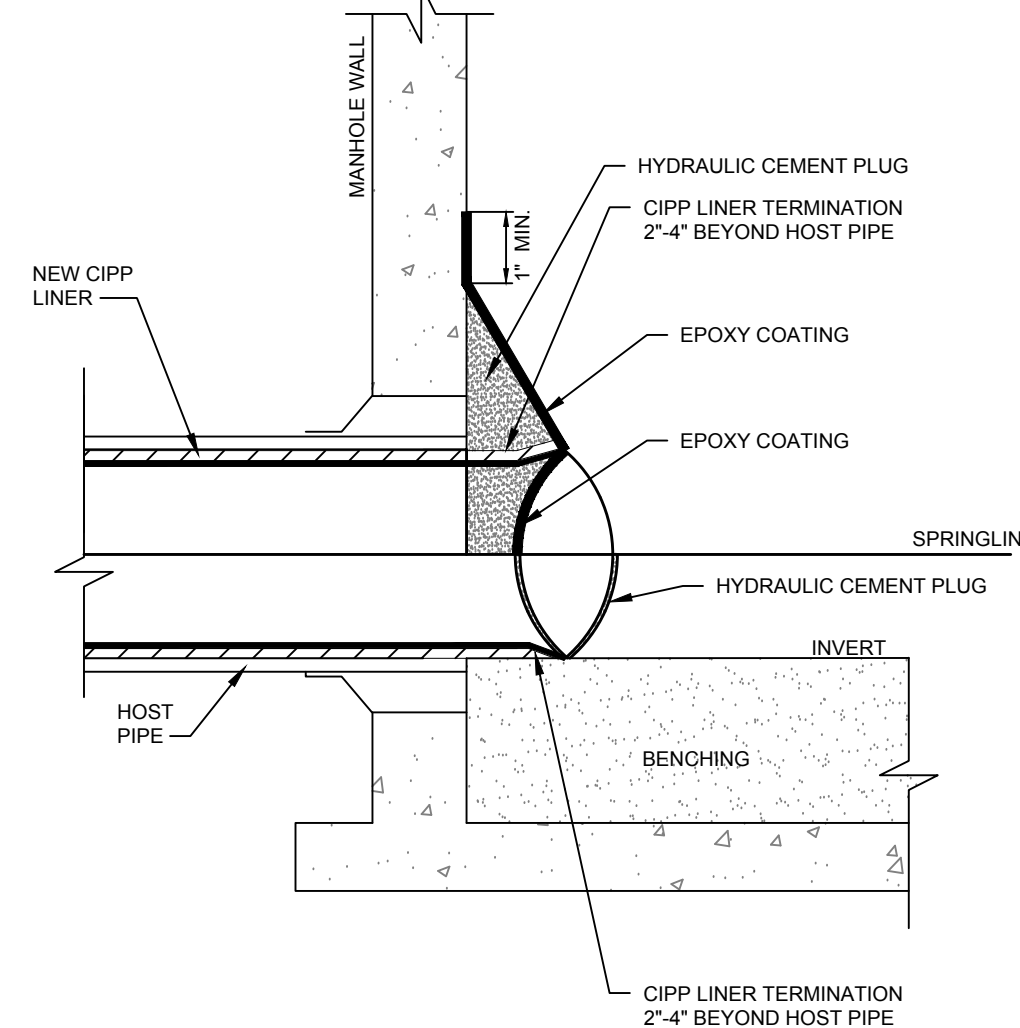
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: February 2013 MANHOLE LINING FIGURE A-602



NOTES:

1. LINERS SHALL BE HDPE, OR REINFORCED PLASTIC AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
2. PREPARE STRUCTURE INTERIOR, PRESSURE WASH OR SANDBLAST TO REMOVE ALL SCALE, LOOSE MATERIAL, GREASE AND SLUDGE BUILD UP IN ACCORDANCE WITH SPECIFICATION SECTION 09900.
3. ACTIVE LEAKS SHALL BE REPAIRED WITH HYDRAULIC MORTAR. ALL OTHER STRUCTURAL REPAIRS DEEMED NECESSARY SHALL BE PERFORMED PRIOR TO INSTALLING LINER.

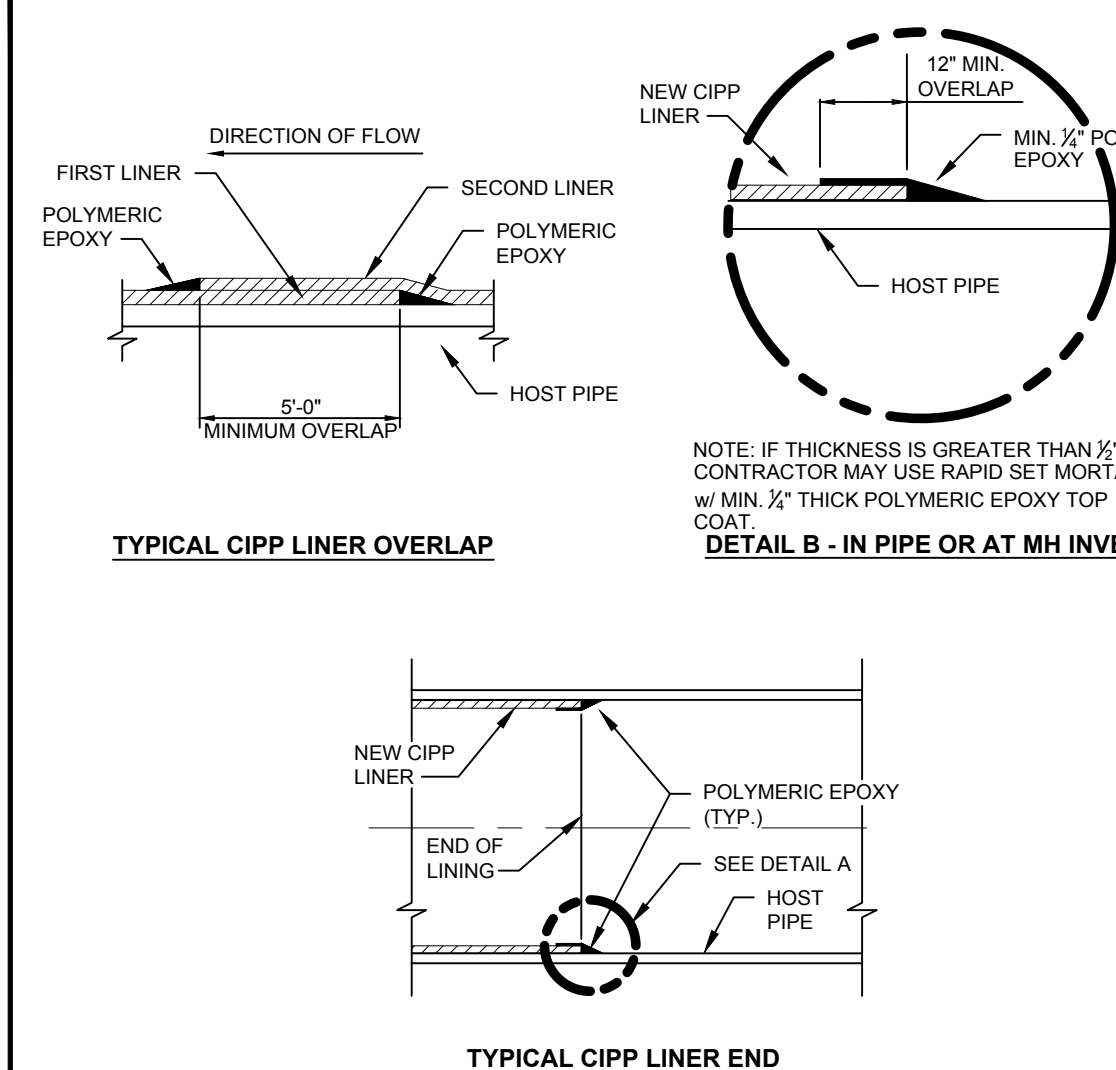
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: April 1, 2016 LINER TERMINATION AT MANHOLE FIGURE A-603



NOTES:

1. CONTRACTOR SHALL REPAIR DETERIORATION ON INSIDE CIRCUMFERENCE OF PIPE WALL TO FORM A SMOOTH SURFACE FOR THE END OF CIPP LINER.
2. IF POLYETHYLENE IS USED FOR INTERIOR OF LINING, CONTRACTOR SHALL ABRASE THE POLYETHYLENE LAYER PRIOR TO APPLYING THE EPOXY.
3. COMPLETE MANHOLE REHABILITATION PRIOR TO PIPE LINING.
4. EPOXY COATING PER APPENDIX D OF ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION MANUAL.
5. CONTRACTOR TO INSTALL EPOXY COATING PER MANUFACTURERS INSTRUCTIONS.

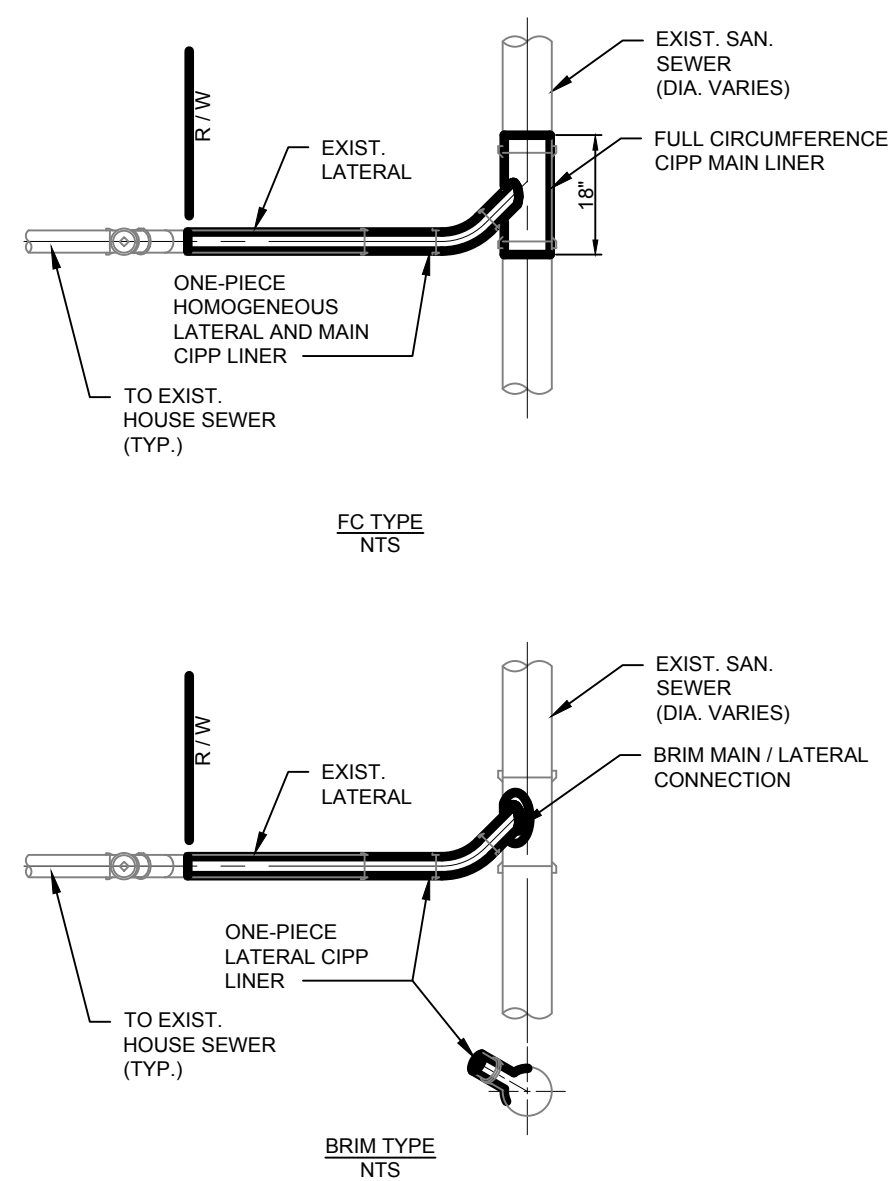
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 2012 LINER TERMINATION IN SANITARY SEWER FIGURE A-604



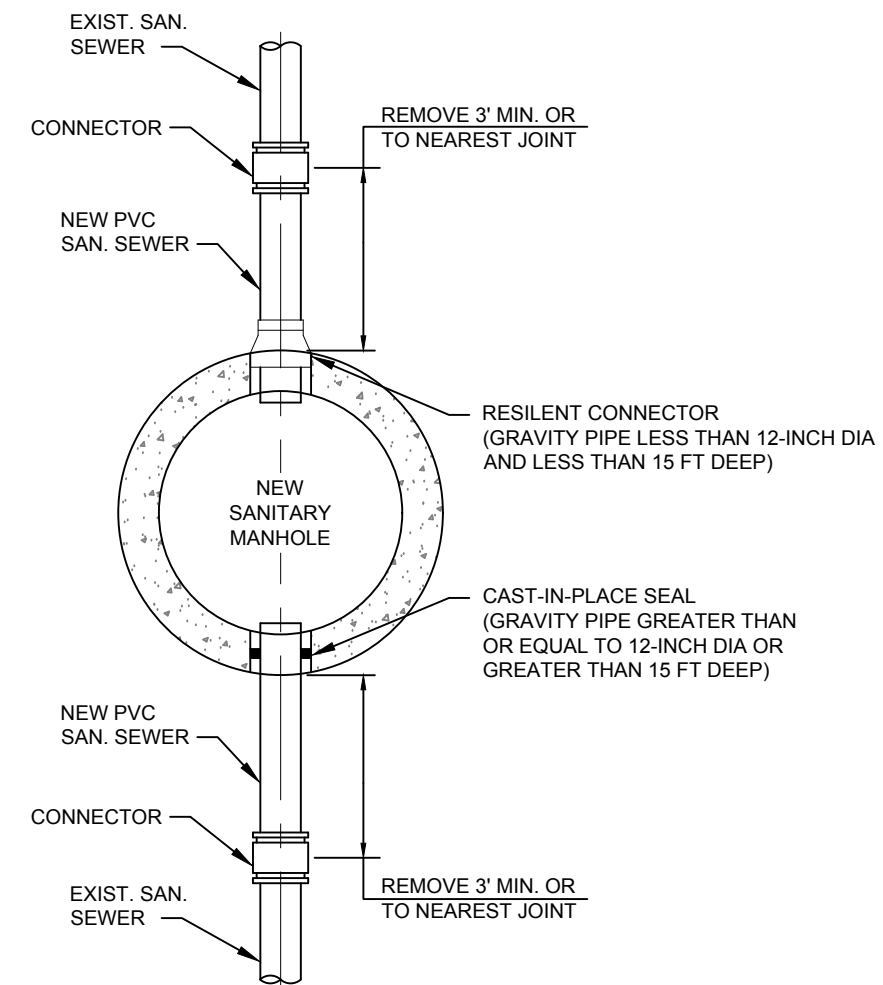
NOTES:

1. CONTRACTOR SHALL REPAIR DETERIORATION ON INSIDE CIRCUMFERENCE OF PIPE WALL TO FORM A SMOOTH SURFACE FOR THE END OF CIPP LINER.
2. POLYMERIC EPOXY SHALL BE RAVEN 405 OR AQUATAPOXY A-6 EPOXY MORTAR SYSTEMS, BY RAVEN LINING SYSTEMS OR APPROVED EQUIVALENT.
3. IF POLYETHYLENE IS USED FOR INTERIOR OF LINING, CONTRACTOR SHALL ABRASE THE POLYETHYLENE LAYER PRIOR TO APPLYING THE EPOXY.

APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 2012 SERVICE LATERAL LINER FIGURE A-605



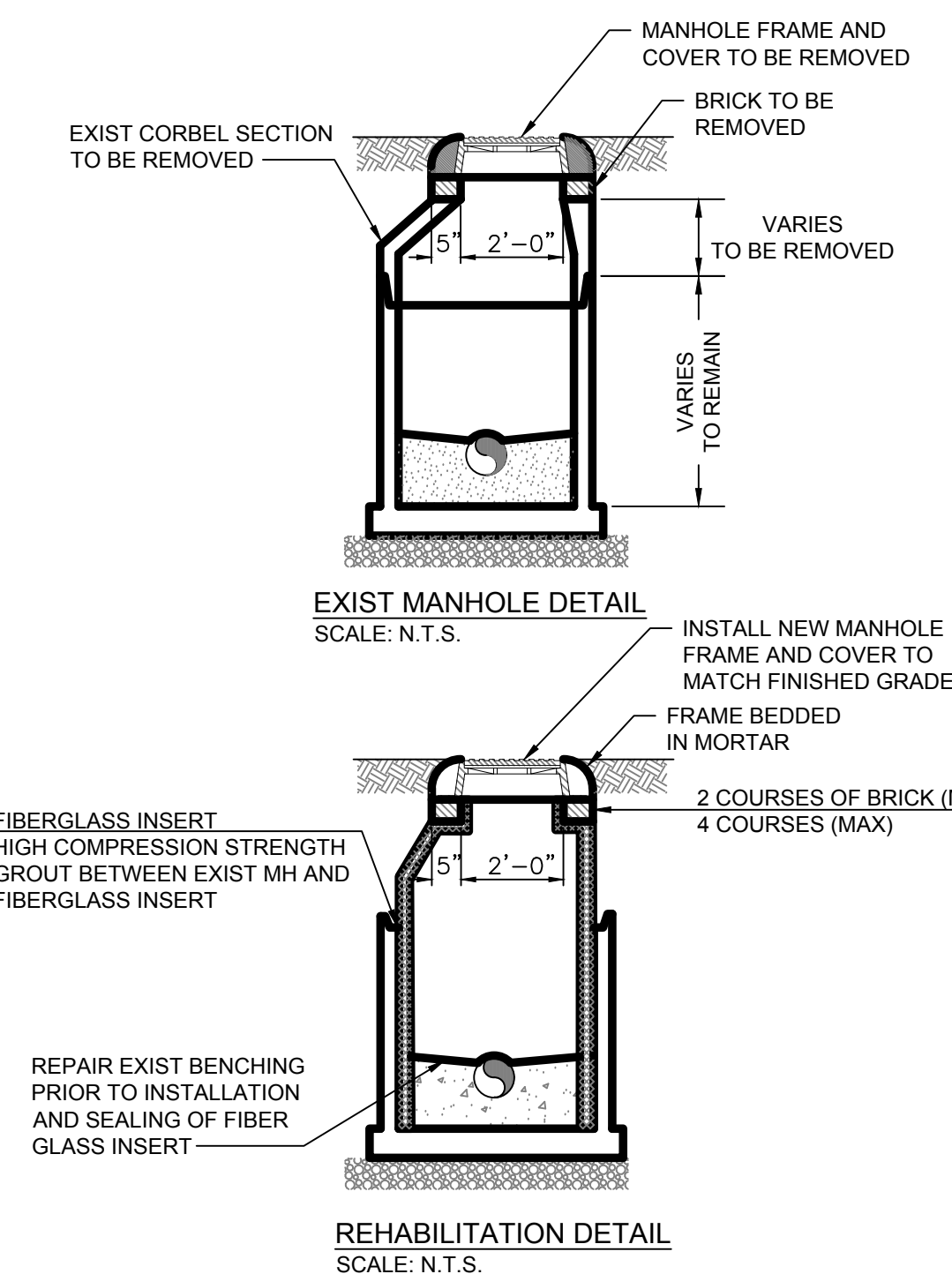
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 2012 MANHOLE REPLACEMENT FIGURE A-606



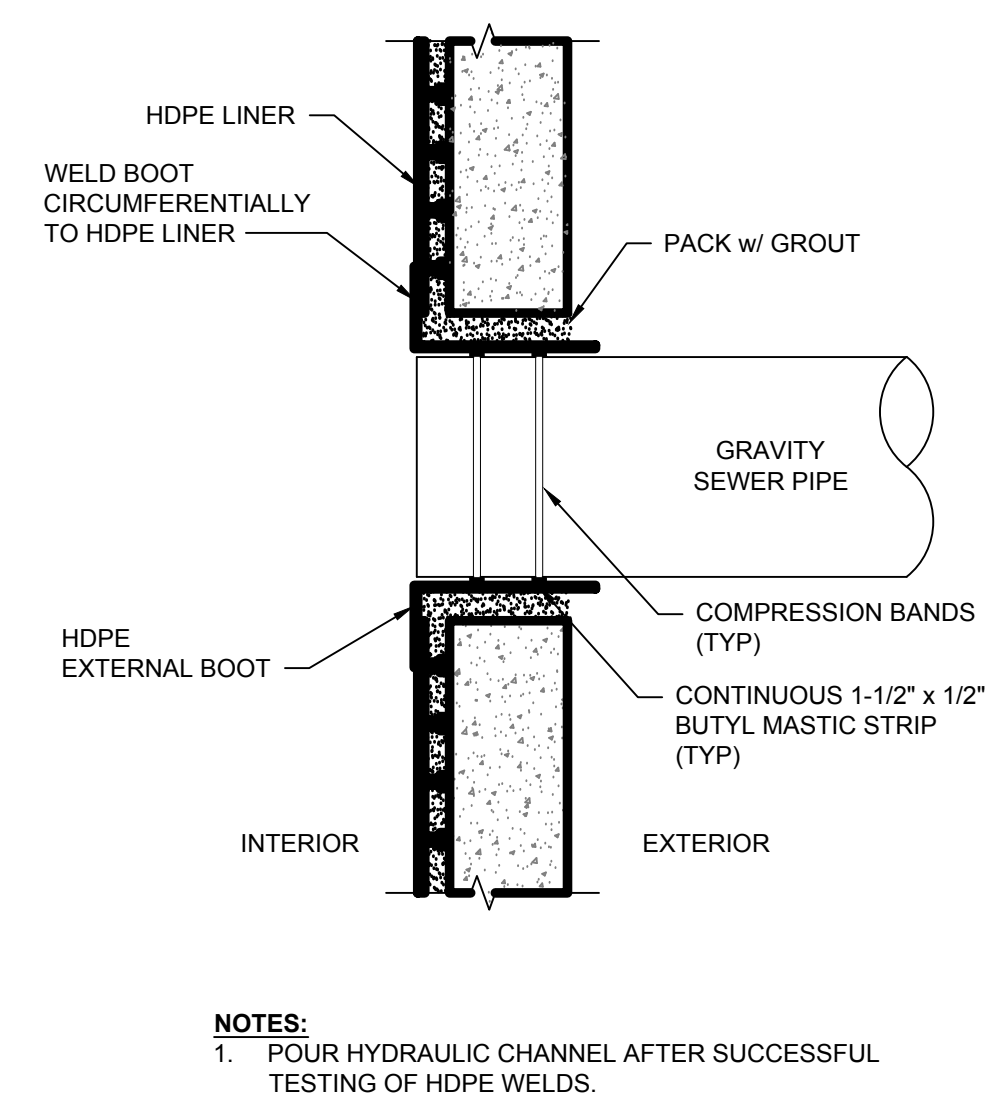
NOTES:

1. NEW MANHOLE SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAIL "PRECAST CONCRETE MANHOLE - FIGURE A301".

APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: February 2013 FIBERGLASS MANHOLE INSERT SYSTEM FIGURE A-607



APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 2012 FLEXIBLE PIPE CONNECTION TO HDPE LINED MANHOLE FIGURE A-608

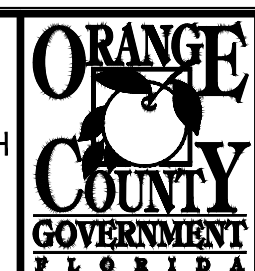


NOTES:

1. POUR HYDRAULIC CHANNEL AFTER SUCCESSFUL TESTING OF HDPE WELDS.

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)



ORANGE COUNTY
UTILITIES DEPARTMENT
ENGINEERING DIVISION

9150 CURRY FORD ROAD ORLANDO, FL. 32825

SITE CIVIL DETAILS

OCU FILE NO.: 82146

DESIGNED BY:

DRAWN BY: KM

CHECKED BY: SJR

CADD FILE:

KIRSTEN MCELHINNEY, P.E.
PROFESSIONAL ENGINEER
FLORIDA LICENSE # 85880

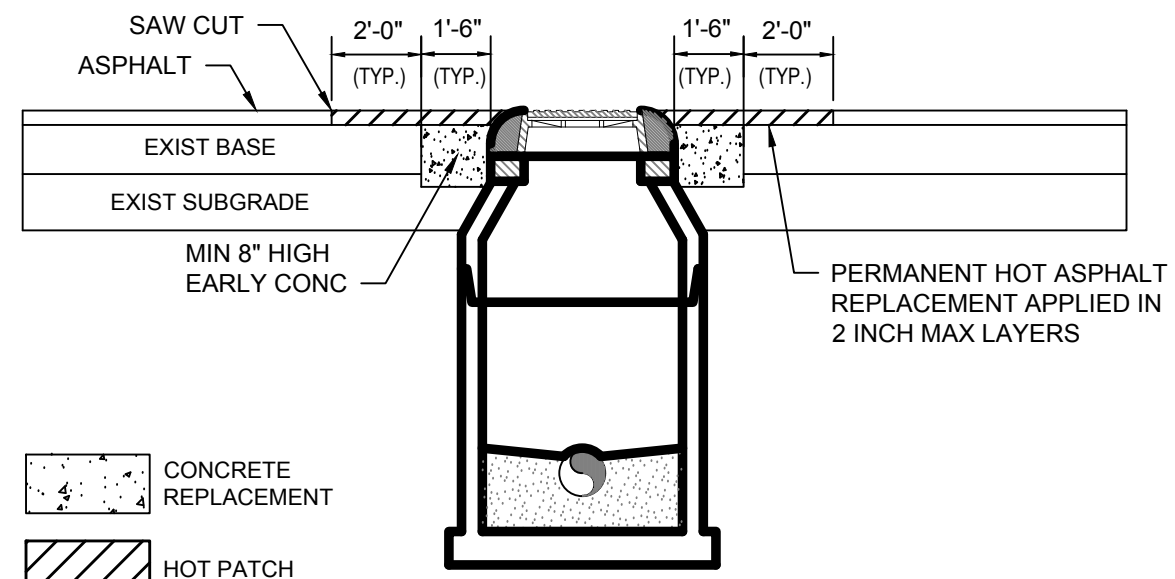
SCALE: N.T.S.

DRAWING NO.:

CD-1

SHEET: 45 OF 47

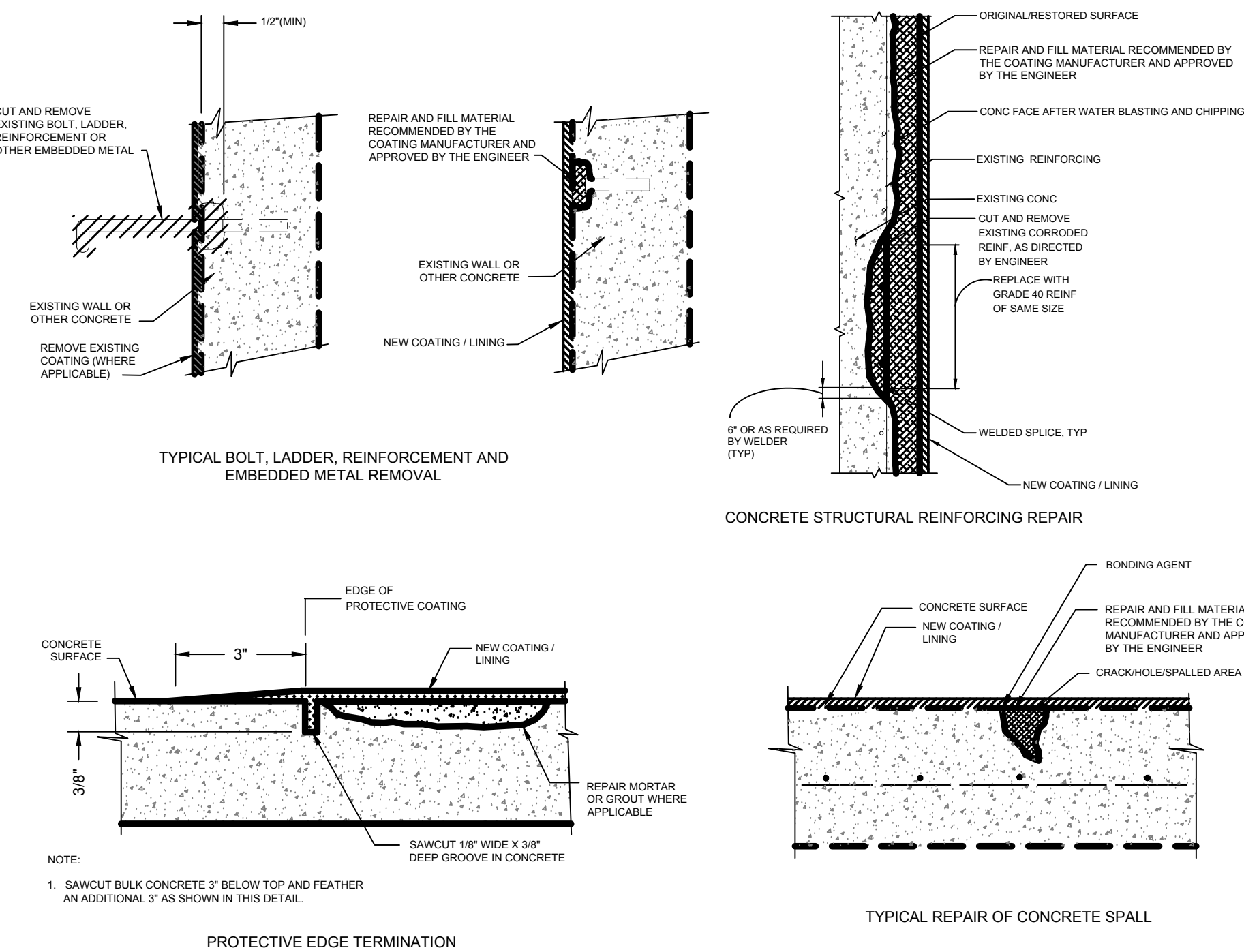
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 2012 **ASPHALT PAVEMENT RESTORATION AT MANHOLE LINER INSTALLATION FRAME AND COVER REPLACEMENT** FIGURE A-609



GENERAL NOTES: PAVEMENT RESTORATION

- BASE REPLACEMENT SHALL BE 3000 PSI HIGH EARLY STRENGTH CONCRETE.
- ASPHALTIC CONCRETE SURFACE MATERIAL SHALL BE REPLACED WITH THE SAME TYPE OF MATERIAL THAT EXISTED AT THE TIME OF REMOVAL.
- MINIMUM ASPHALTIC CONCRETE SURFACE OVERLAY THICKNESS SHALL BE (1'-5") INCHES, TO MATCH EXIST ASPHALT THICKNESS.
- ALL JOINT CUTS SHALL BE MECHANICALLY SAW-CUT.
- SUB-GRADE TO BE COMPACTED TO 98% MAX. DENSITY AS DETERMINED BY AASHTO T-180.
- CUT AREA TO BE PLATED OR PROTECTED ON DAY OF POUR.

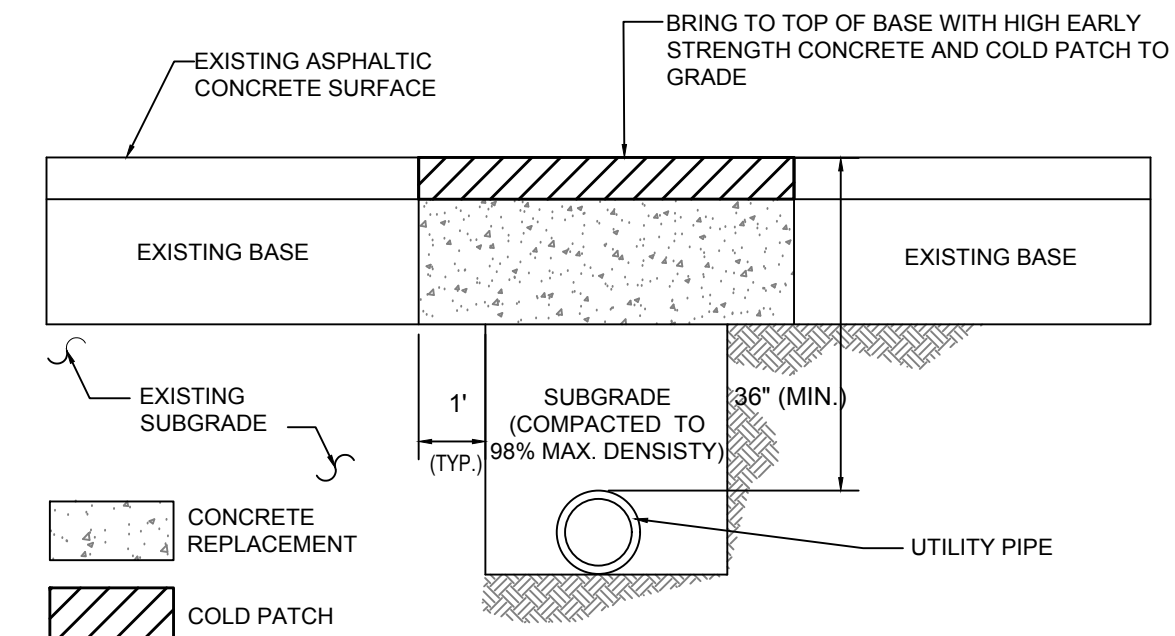
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 2012 **CONCRETE RESTORATION AT MANHOLE OR WETWELL** FIGURE A-610



MODIFICATIONS OF EXISTING CONCRETE

- THE FOLLOWING NOTES ON MODIFICATION OF EXISTING CONCRETE ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.
- WHERE "TIE TO EXISTING STRUCTURE" IS INDICATED, CONTRACTOR SHALL STRAIGHTEN AND SANDBLAST REINFORCEMENT AND SPLICE WITH NEW REINFORCEMENT AS DETAILED ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER. IF CONDITIONS WARRANT WELDING OF REINFORCING, WELDING WILL BE SUBJECT TO ENGINEER'S APPROVAL.
- EXISTING CONCRETE SURFACES TO BE JOINED WITH NEW CONCRETE SHALL BE THOROUGHLY CLEANED BY SANDBLASTING AND COATED WITH EPOXY BONDING COMPOUND JUST PRIOR TO PLACEMENT OF NEW CONCRETE.
- SURFACES SHALL BE MEATLY SAW CUT TO A DEPTH OF 1/2 INCH PRIOR TO REMOVING THE EXISTING CONCRETE.
- WHERE WATERSTOP BETWEEN NEW AND EXISTING CONCRETE IS REQUIRED, CONTRACTOR SHALL CUT SUITABLE GROOVE IN THE EXISTING CONCRETE AND INSTALL WATERSTOP WITH EPOXY AND BONDING COMPOUND PRIOR TO CONCRETE WORK.
- STRUCTURAL DIMENSIONS RELATED TO OR CONTROLLED BY EXISTING STRUCTURES SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONCRETE WORK.

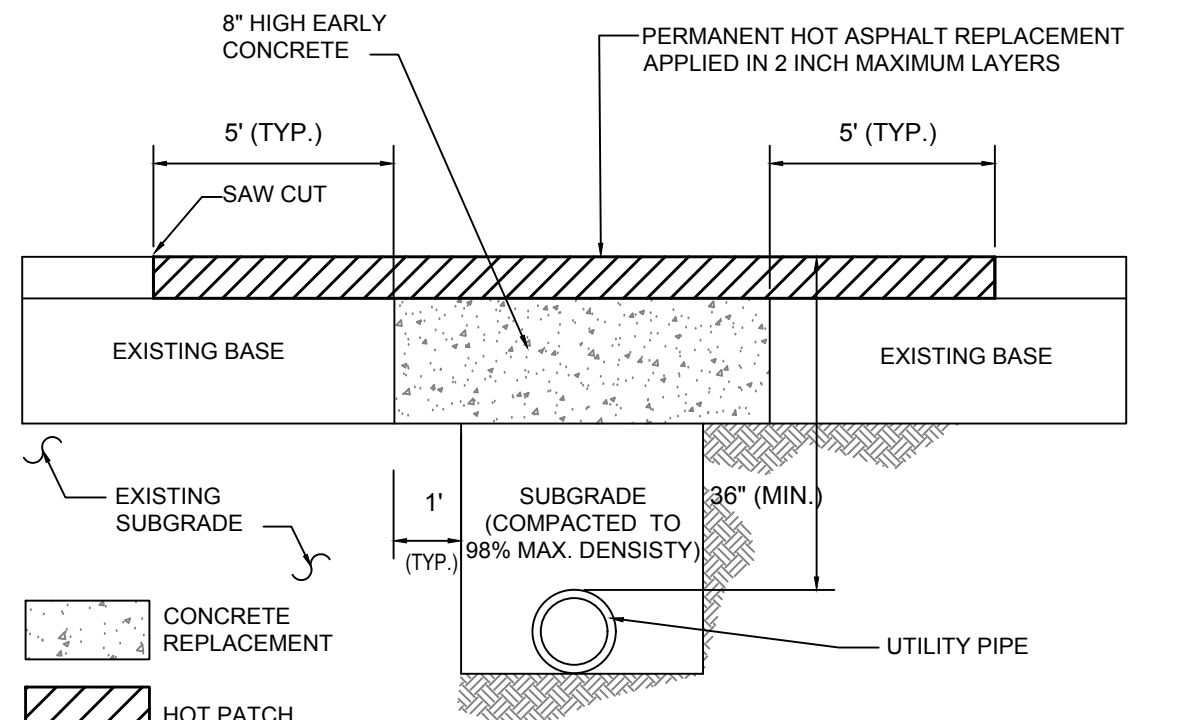
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 1, 2006 **TEMPORARY ASPHALT PAVEMENT RESTORATION** FIGURE A703



GENERAL NOTES:

- BASE REPLACEMENT SHALL BE 3000 PSI HIGH EARLY STRENGTH CONCRETE.
- ASPHALTIC CONCRETE SURFACE MATERIAL SHALL BE REPLACED WITH THE SAME TYPE OF MATERIAL THAT EXISTED AT THE TIME OF REMOVAL.
- MINIMUM ASPHALTIC CONCRETE SURFACE OVERLAY THICKNESS SHALL BE (1'-5") INCHES.
- ALL JOINT CUTS SHALL BE MECHANICALLY SAW-CUT.
- SUB-GRADE TO BE COMPACTED TO 98% MAX. DENSITY AS DETERMINED BY AASHTO T-180. CUT TO BE REPLACED WITH 3000 PSI HIGH EARLY CONCRETE TO TOP OF EXISTING BASE. CUT AREA TO BE PLATED OR PROTECTED ON DAY OF POUR. TEMPORARY COLD PATCH TO BE APPLIED AND BROUGHT TO GRADE NEXT DAY.

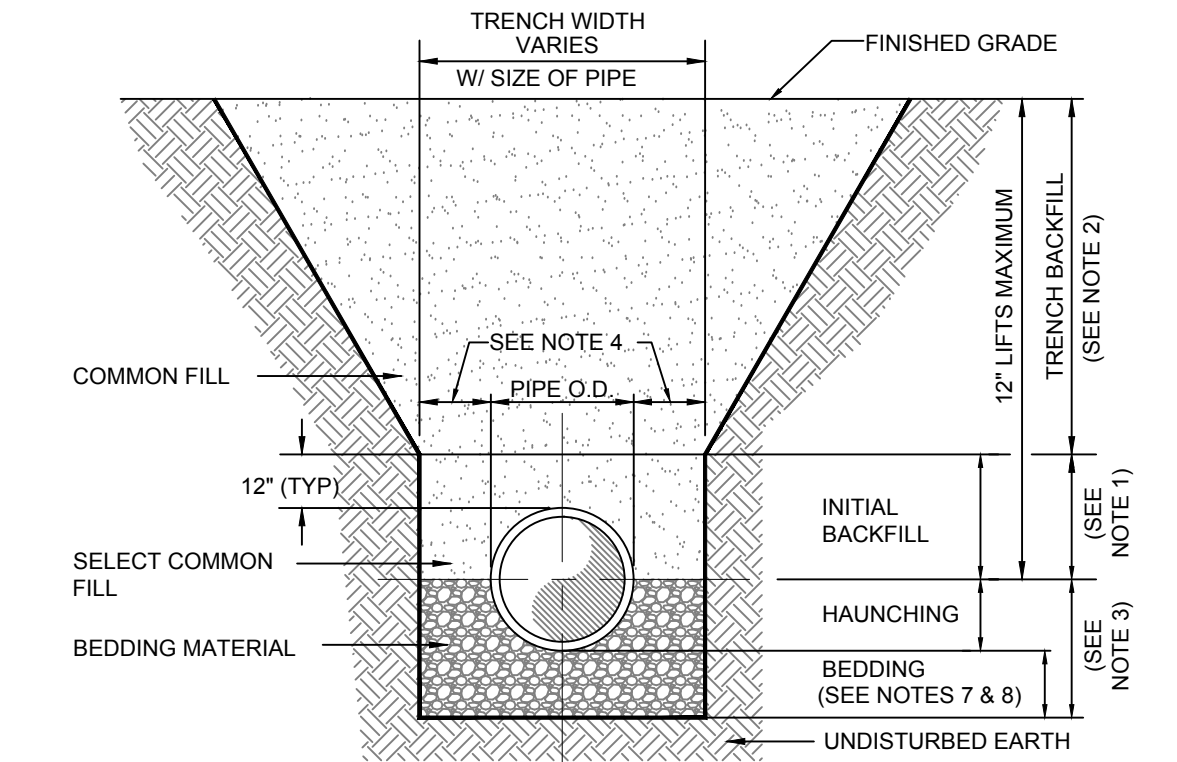
APPENDIX A STANDARD DRAWINGS GRAVITY R/R
DATE: August 1, 2006 **PERMANENT ASPHALT PAVEMENT RESTORATION** FIGURE A702



GENERAL NOTES: PAVEMENT RESTORATION

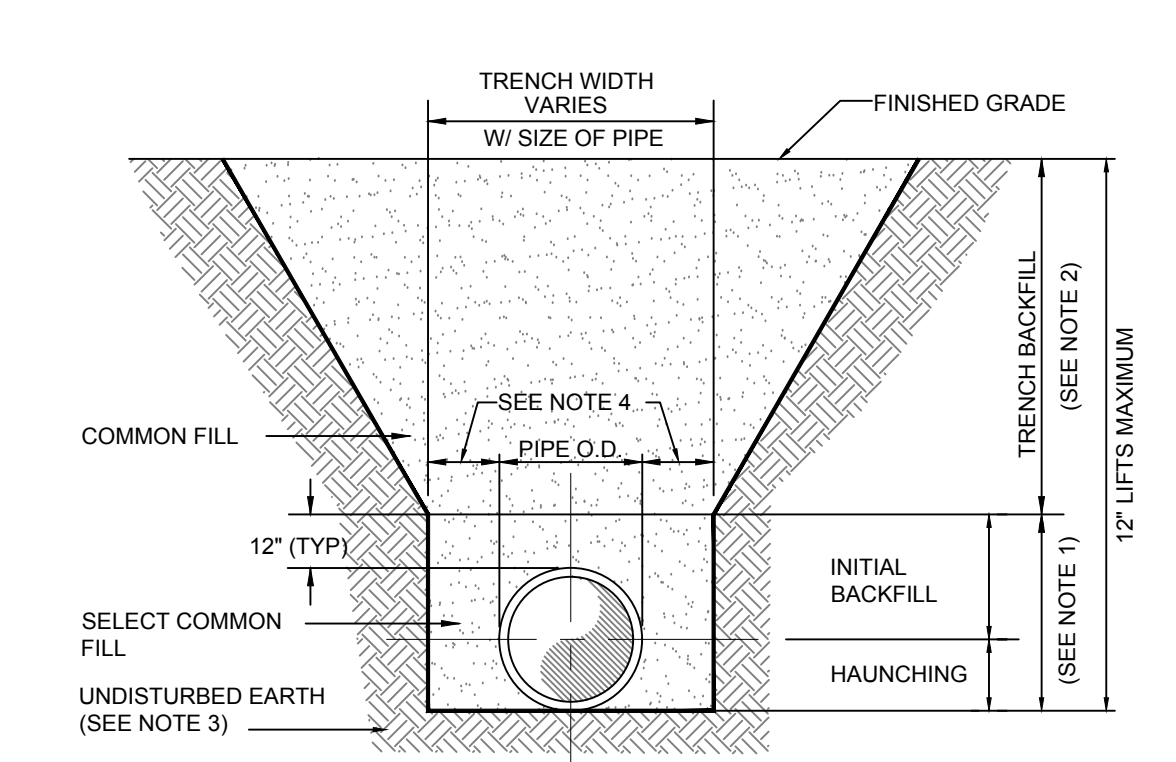
- BASE REPLACEMENT SHALL BE 3000 PSI HIGH EARLY STRENGTH CONCRETE.
- ASPHALTIC CONCRETE SURFACE MATERIAL SHALL BE REPLACED WITH THE SAME TYPE OF MATERIAL THAT EXISTED AT THE TIME OF REMOVAL.
- MINIMUM ASPHALTIC CONCRETE SURFACE OVERLAY THICKNESS SHALL BE (1'-5") INCHES, OR AS APPROVED BY THE COUNTY ENGINEER.
- ALL JOINT CUTS SHALL BE MECHANICALLY SAW-CUT.
- SUB-GRADE TO BE COMPACTED TO 98% MAX. DENSITY AS DETERMINED BY AASHTO T-180. CUT TO BE REPLACED WITH 3000 PSI HIGH EARLY CONCRETE TO TOP OF EXISTING BASE. CUT AREA TO BE PLATED OR PROTECTED ON DAY OF POUR. EXISTING SURFACE TO BE SAW CUT TO AN AREA 5 FEET BEYOND BASE CUT.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 **BEDDING AND TRENCHING - TYPE A** FIGURE A101



- NOTES:
- INITIAL BACKFILL: SELECT COMMON FILL COMPACTED TO 95% (98% UNDER PAVEMENT) OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
 - TRENCH BACKFILL: COMMON FILL COMPACTED TO 95% (98% UNDER PAVEMENT) OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
 - TYPE A BEDDING MATERIAL SHALL CONFORM TO FDOT NO. 57 AGGREGATE.
 - 15" MAX. (12" MIN.) FOR PIPE DIAMETER LESS THAN 24" AND 24" MAX (12" MIN) FOR PIPE DIAMETER 24" AND LARGER.
 - WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
 - ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
 - BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER UP TO 12" AND 6" MINIMUM FOR PIPE DIAMETER 16" AND LARGER.
 - DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING ROCK BELOW THE PIPE. UTILITIES SHALL DETERMINE IN THE FIELD REQUIRED REMOVAL OF UNSUITABLE MATERIAL TO REACH SUITABLE FOUNDATION.
 - FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES. SURFACE RESTORATION WITHIN ORANGE COUNTY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF R/W UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 **BEDDING AND TRENCHING - TYPE B** FIGURE A102

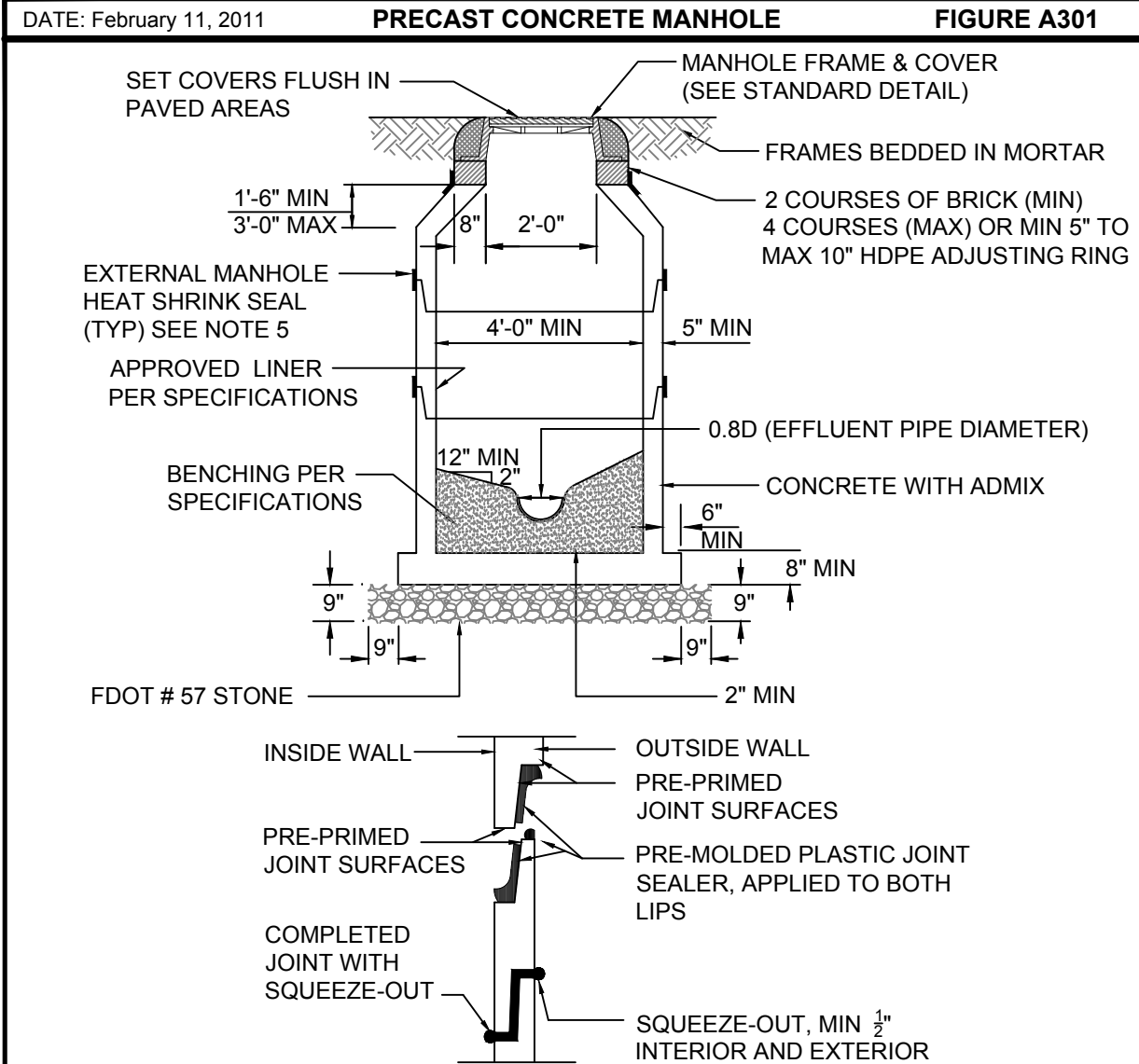


- NOTES:
- INITIAL BACKFILL AND HAUNCHING: SELECT COMMON FILL COMPACTED TO 95% (98% UNDER PAVEMENT) OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
 - TRENCH BACKFILL: COMMON FILL COMPACTED TO 95% (98% UNDER PAVEMENT) OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
 - PIPE BEDDING UTILIZING SELECT COMMON FILL OR BEDDING ROCK IN ACCORDANCE WITH TYPE A BEDDING AND TRENCHING DETAIL MAY BE REQUIRED AS DIRECTED BY UTILITIES.
 - 15" MAX. (12" MIN.) FOR PIPE DIAMETER LESS THAN 24" AND 24" MAX (12" MIN) FOR PIPE DIAMETER 24" AND LARGER.
 - WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
 - ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
 - FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES. SURFACE RESTORATION WITHIN ORANGE COUNTY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF RIGHT-OF-WAY UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS.

REV	DATE	DESCRIPTION

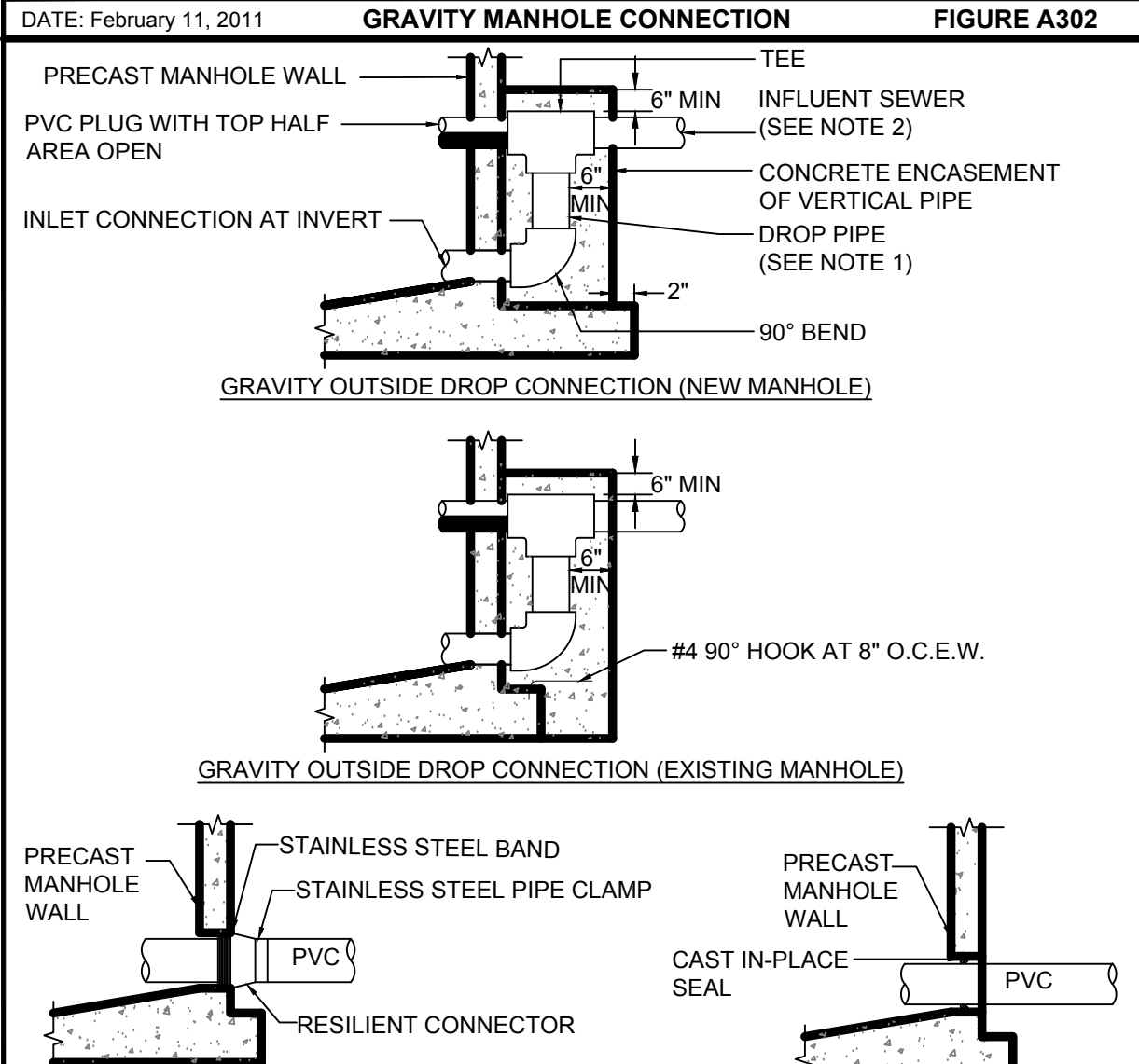
LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 PRECAST CONCRETE MANHOLE FIGURE A301



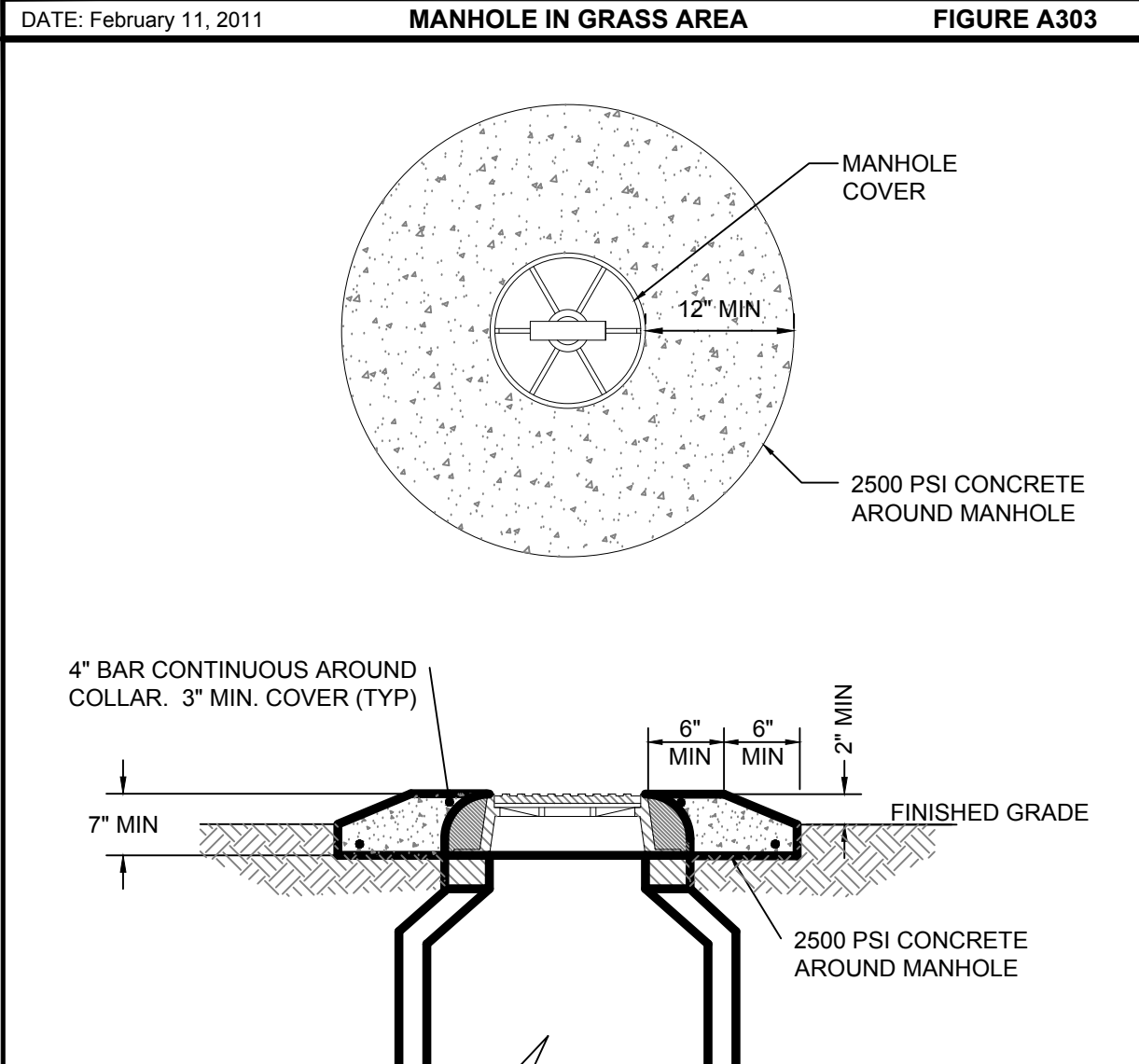
- NOTES:
- DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAIL.
 - ECCENTRIC CONE DESIGN MAY BE USED FOR CONFLICT RESOLUTION WITH OCU APPROVAL.
 - A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MANHOLE TO DIRECT INFLUENT INTO FLOW STREAM.
 - LIFT HOLES THROUGH STRUCTURE ARE NOT PERMITTED.
 - WRAP TIGHTLY AROUND CASTING JOINTS AND APPLY HIGH INTENSITY PROPANE TORCH TO EFFECTIVELY SEAL THEM FROM GROUND WATER INFILTRATION.
 - HDPE ADJUSTING RINGS MAY BE SUBSTITUTED FOR BRICK RISERS.
 - SECTION HEIGHTS VARY AS REQUIRED, AND AS AVAILABLE, FROM APPROVED MANUFACTURERS LISTED IN APPENDIX D.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 GRAVITY MANHOLE CONNECTION FIGURE A302



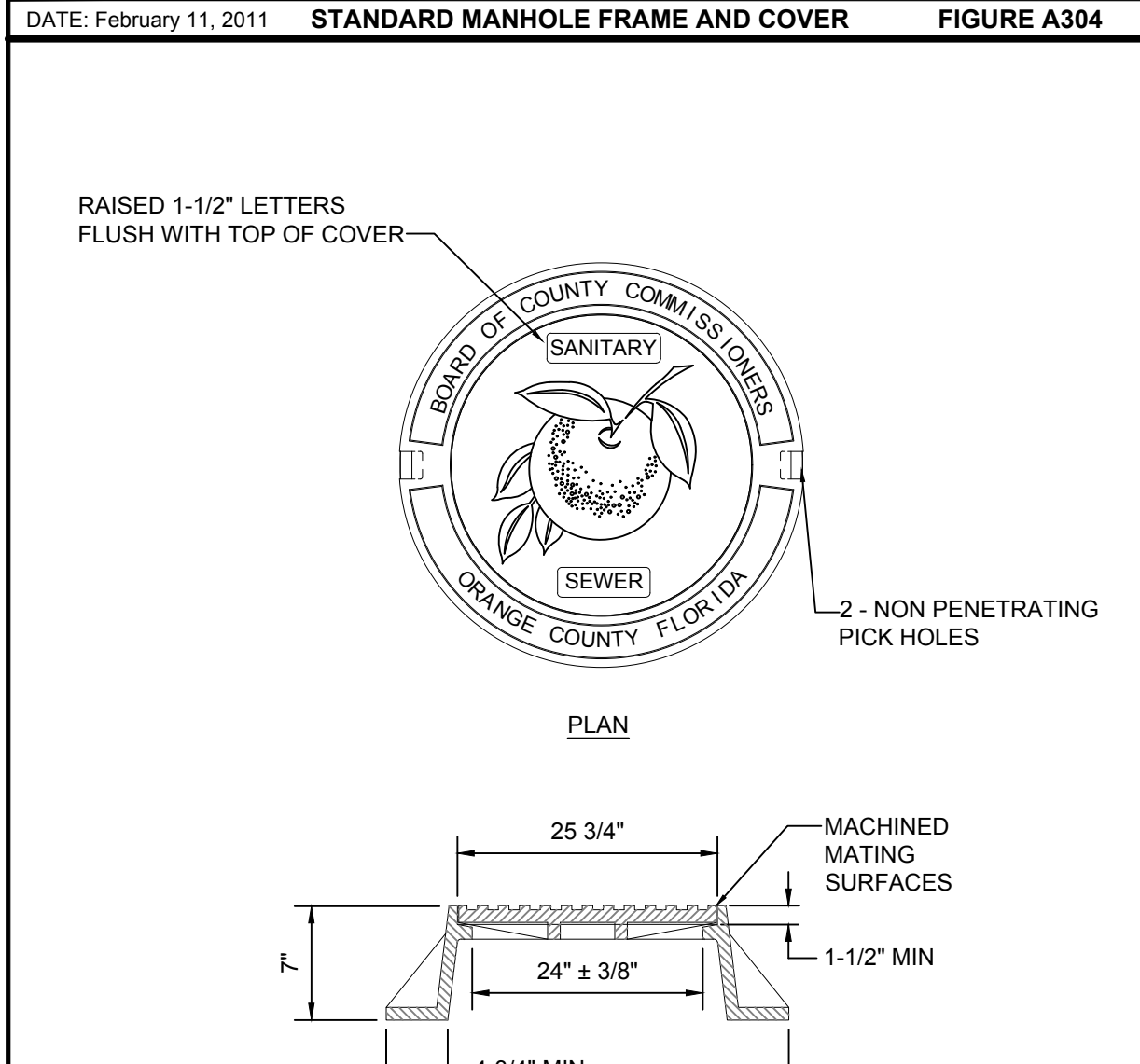
- NOTES:
- DROP PIPE AND FITTINGS SHALL BE OF EQUAL SIZE AND MATERIAL AS THE INFLUENT SEWER.
 - AN OUTSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT LINES WHICH HAVE AN INVERT 2' OR MORE ABOVE THE MANHOLE INVERT.
 - CONTRACTOR TO COORDINATE THE PRESENCE OF UTILITIES INSPECTOR DURING CORING AND CONNECTIONS TO EXISTING MANHOLES.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 MANHOLE IN GRASS AREA FIGURE A303



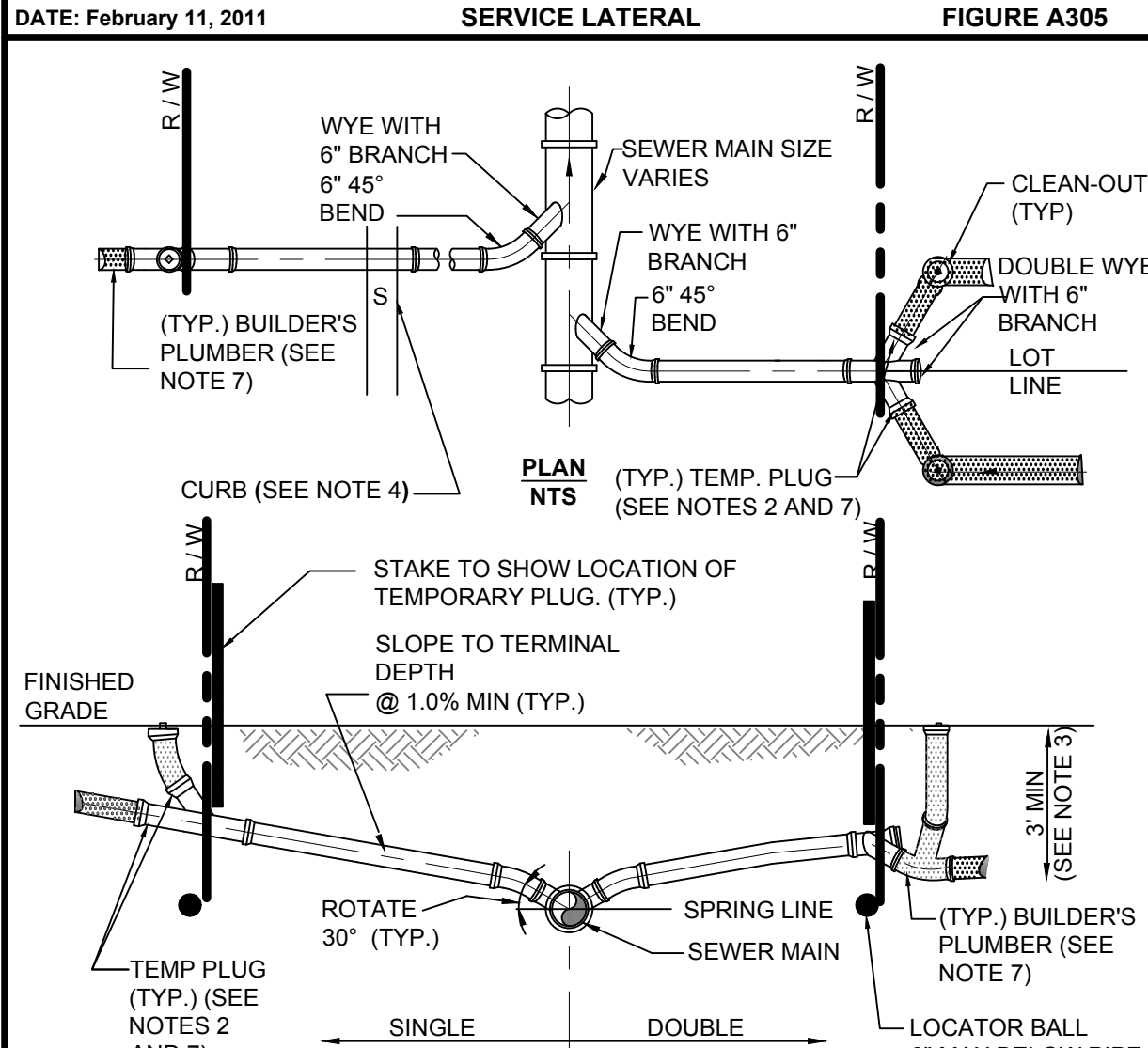
- NOTES:
- CLEARANCE OF 30" FREE FROM OBSTRUCTIONS IN ALL DIRECTIONS.
 - AREAS SUPPORTING CONCRETE COLLAR OR SLAB SHALL BE PROPERLY COMPACTED.
 - TOP OF MANHOLE SHALL BE 2" ABOVE FINISHED GRADE, CROWN OF ADJACENT ROADWAY, OR 100 YEAR FLOOD ELEVATION, WHICHEVER IS GREATER.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 STANDARD MANHOLE FRAME AND COVER FIGURE A304



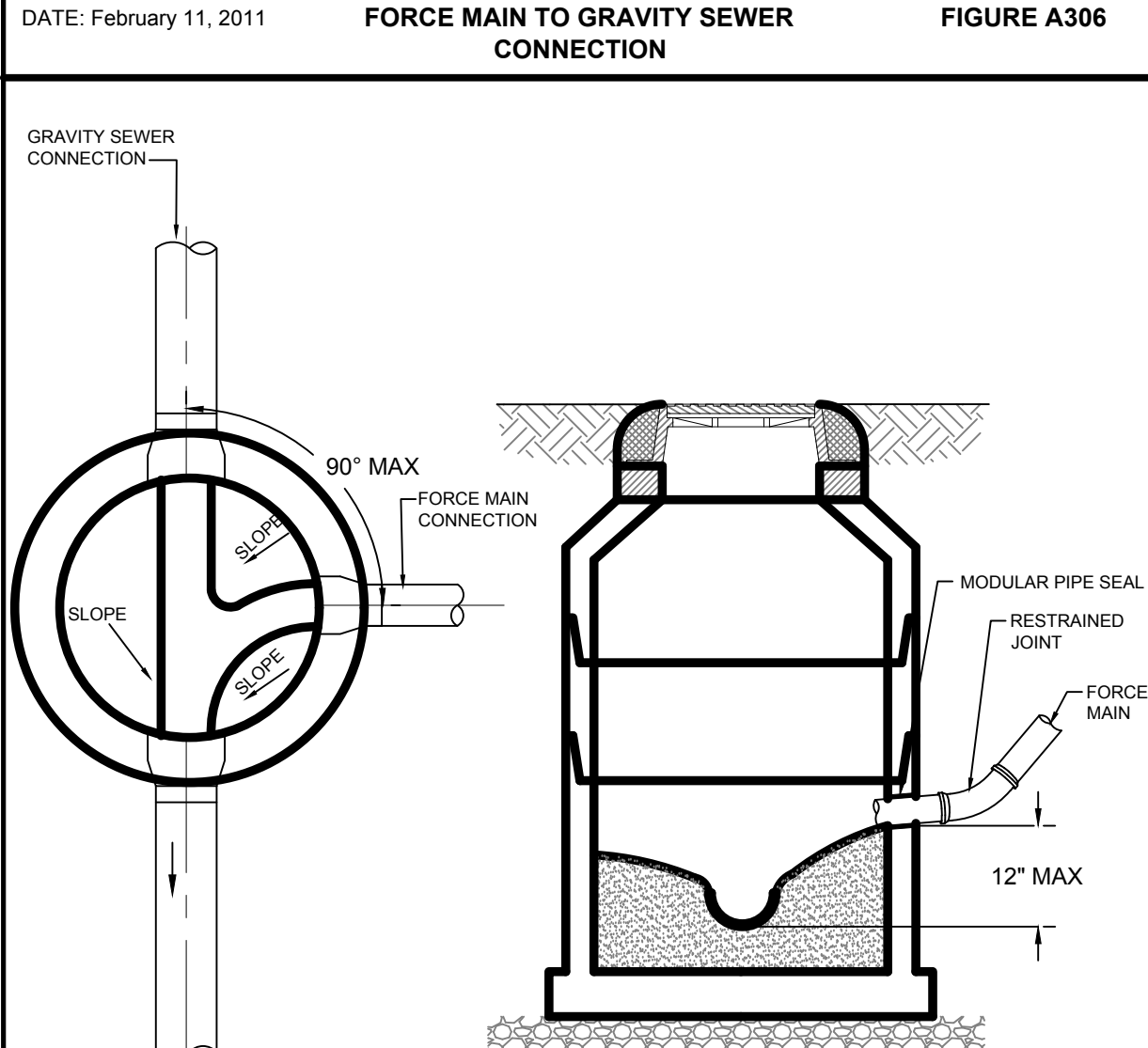
- NOTES:
- ONLY APPLIES TO UTILITIES OWNED AND MAINTAINED MANHOLES. "ORANGE COUNTY" SHALL NOT APPEAR ON PRIVATE MANHOLES.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 SERVICE LATERAL FIGURE A305



- NOTES:
- INVERT OF SERVICE LATERAL SHALL NOT ENTER SEWER MAIN BELOW SPRING LINE.
 - SERVICE LATERAL SHALL BE CAPPED BY DEVELOPER'S SITE-WORK CONTRACTOR.
 - WYE TO BE NO SHALLOWER THAN 3- FEET AND NO DEEPER THAN 5- FEET.
 - LOCATOR BALLS TO BE INSTALLED BY DEVELOPER'S SITE-WORK CONTRACTOR, ONE PER SERVICE.
 - ALL FITTINGS SHOWN ARE TO BE INSTALLED.
 - SERVICE CONNECTIONS SHALL BE PERMANENTLY MARKED BY CUTTING AN "S" IN THE CURB DIRECTLY OVER THE LATERAL.
 - BUILDER'S PLUMBER WILL REMOVE PLUG, INSTALL CLEANOUT, AND CONNECT SERVICE LATERAL TO HOUSE.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 FORCE MAIN TO GRAVITY SEWER CONNECTION FIGURE A306



- NOTES:
- FORCE MAIN ORIENTED TO FACILITATE FLOW AND SHALL ENTER MANHOLE WITHIN 1' ABOVE INVERT OF THE EFFLUENT PIPE.
 - BENCH AS REQUIRED FOR NEW FORCE MAIN.
 - MANHOLE RECEIVING FORCE MAIN AND NEXT MANHOLE SHALL BE LINED. FOR CONNECTIONS TO EXISTING MANHOLES, MANHOLE RECEIVING FORCE MAIN AND NEXT MANHOLE SHALL BE COATED OR LINED PER APPENDIX D.
 - CONTRACTOR TO COORDINATE THE PRESENCE OF UTILITIES INSPECTOR DURING CORING AND CONNECTIONS TO EXISTING MANHOLES.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 SEPARATION REQUIREMENTS FOR WATER, WASTEWATER AND RECLAIMED WATER MAINS FIGURE A116

PROPOSED UTILITY	HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS							
	POTABLE WATER		RECLAIMED WATER		WASTEWATER (GRAVITY & FM)		STORM SEWER	
	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT
POTABLE WATER	3' NOTE 1	12"	3' NOTE 1 & 3	12" NOTE 3	6' NOTE 3	12" NOTE 3	3' NOTE 1 & 3	12"/18" NOTE 2 & 3
RECLAIMED WATER	3' NOTE 1 & 3	12" NOTE 3	3' NOTE 1	12"	3' NOTE 1	12"	3' NOTE 1	12"/18" NOTE 2
WASTEWATER (GRAVITY AND FM)	6' NOTE 3	12" NOTE 3	3' NOTE 1	12"	3' NOTE 1	12"	3' NOTE 1	12"/18" NOTE 2
RIGHT OF WAY	3' NOTE 1	N/A	3' NOTE 1	N/A	3' NOTE 1	N/A	N/A	N/A

- NOTES:
- THIS SEPARATION REQUIREMENT IS TO PROVIDE ACCESSIBILITY FOR CONSTRUCTION AND MAINTENANCE. THREE FEET OF HORIZONTAL SEPARATION IS THE MINIMUM FOR PIPES WITH THREE FEET OF COVER. FOR PIPES INSTALLED AT GREATER DEPTHS, PROVIDE AN ADDITIONAL FOOT OF SEPARATION FOR EACH ADDITIONAL FOOT OF DEPTH.
 - THE 18-INCH SEPARATION REQUIREMENT APPLIES WHEN THE STORM PIPE CROSSES ABOVE THE OCU MAIN, AND WHEN THE STORM PIPE HAS A DIAMETER EQUAL TO OR GREATER THAN 24 INCHES. OTHERWISE, THE REQUIRED SEPARATION IS 12 INCHES.
 - THIS SEPARATION REQUIREMENT COMPLIES WITH MINIMUM FDEP SEPARATION REQUIREMENTS OUTLINED IN 62-555.314, FAC. VARIANCES FROM THE FDEP REQUIREMENTS MUST COMPLY WITH 62-555.314(5), FAC AND MUST BE APPROVED INDIVIDUALLY BY BOTH FDEP AND OCU.
 - DISTANCES GIVEN ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
 - NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF SANITARY OR STORM WATER MANHOLE OR STRUCTURE.

APPENDIX A STANDARD DRAWINGS GENERAL
DATE: February 11, 2011 RESTRAINED PIPE TABLE WASTEWATER FORCE MAINS FIGURE A104-2

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

- NOTES:
- FITTINGS SHALL HAVE RESTRAINED JOINTS UNLESS OTHERWISE INDICATED.
 - INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO OR GREATER THAN LENGTH SHOWN IN THE TABLE.
 - WHERE TWO OR MORE FITTINGS ARE IN SERIES, SELECT FITTING RESTRAINT LENGTH THAT YIELDS THE LONGEST RESTRAINT DISTANCE.
 - ALL INLINE VALVES SHALL BE RESTRAINED.
 - WHERE INTERNAL RESTRAINED JOINTS ARE USED, THE ENTIRE BELL SHALL BE PAINTED RED.
 - LENGTHS SHOWN IN THE TABLE WERE CALCULATED IN ACCORDANCE WITH PROCEDURES OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" GUIDELINES PUBLISHED BY DIPRA, USING THE ASSUMPTIONS SHOWN BELOW:
- WORKING PRESSURE: 100 PSI
SOIL DESIGNATION: SM (SAND SILT)
LAYING CONDITIONS: 3
DEPTH OF COVER: 3 FT
SAFETY FACTOR: 1.5
CONVERSION FACTOR FOR PVC PIPE: 1.25
- THE DESIGN ENGINEER SHALL INCREASE THE VALUES IN THE TABLE AS WARRANTED BY SITE-SPECIFIC PARAMETERS, SUCH AS SOIL DESIGNATIONS AND LAYING CONDITIONS.

REV	DATE	DESCRIPTION

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

ORANGE COUNTY UTILITIES DEPARTMENT ENGINEERING DIVISION
9150 CURRY FORD ROAD ORLANDO, FL. 32825

SITE CIVIL DETAILS

OCU FILE NO.: 82146	SCALE: N.T.S.
DESIGNED BY:	DRAWING NO.:
DRAWN BY: KM	CD-3
CHECKED BY: SJR	SHEET: 47 OF 47
CADD FILED:	