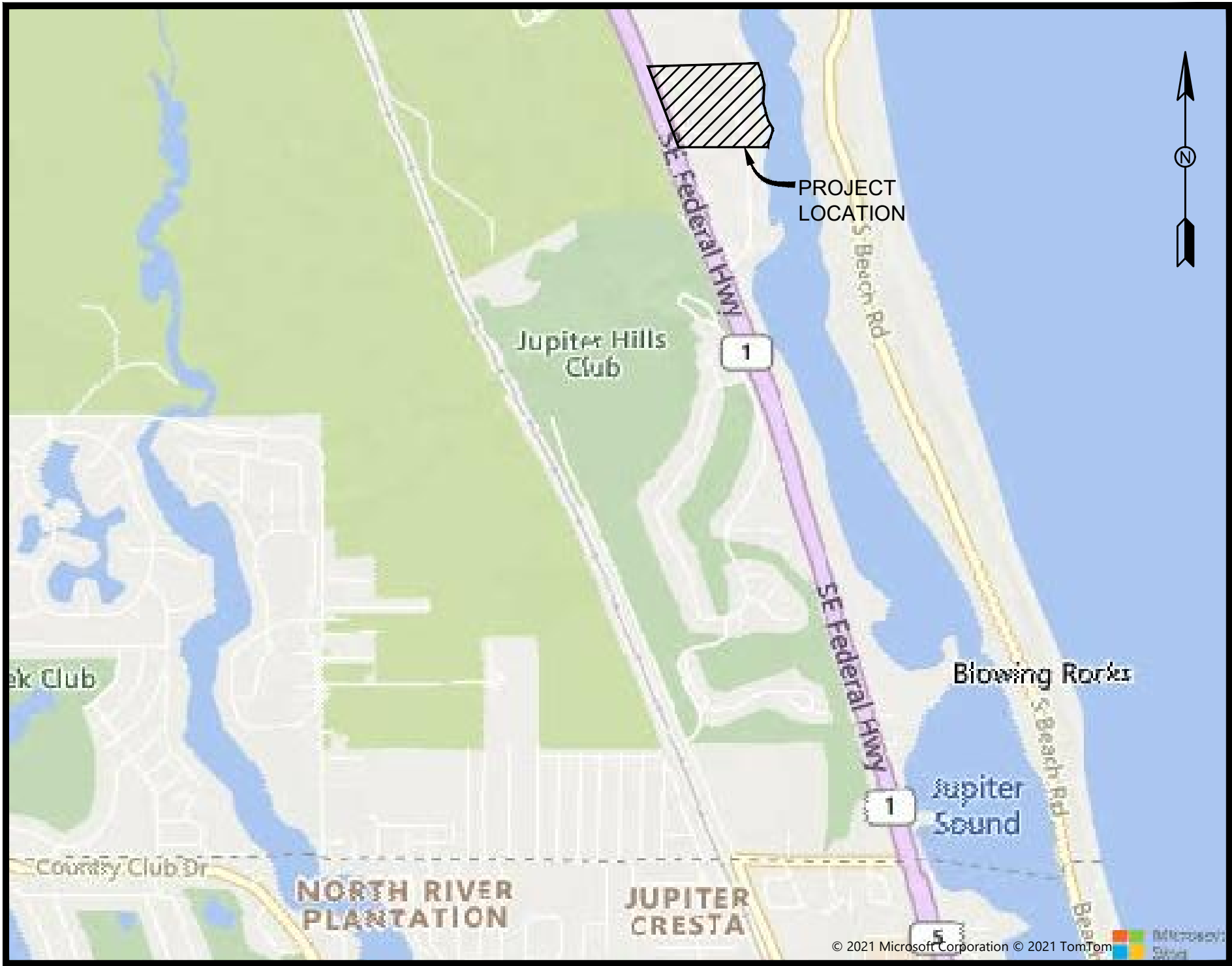
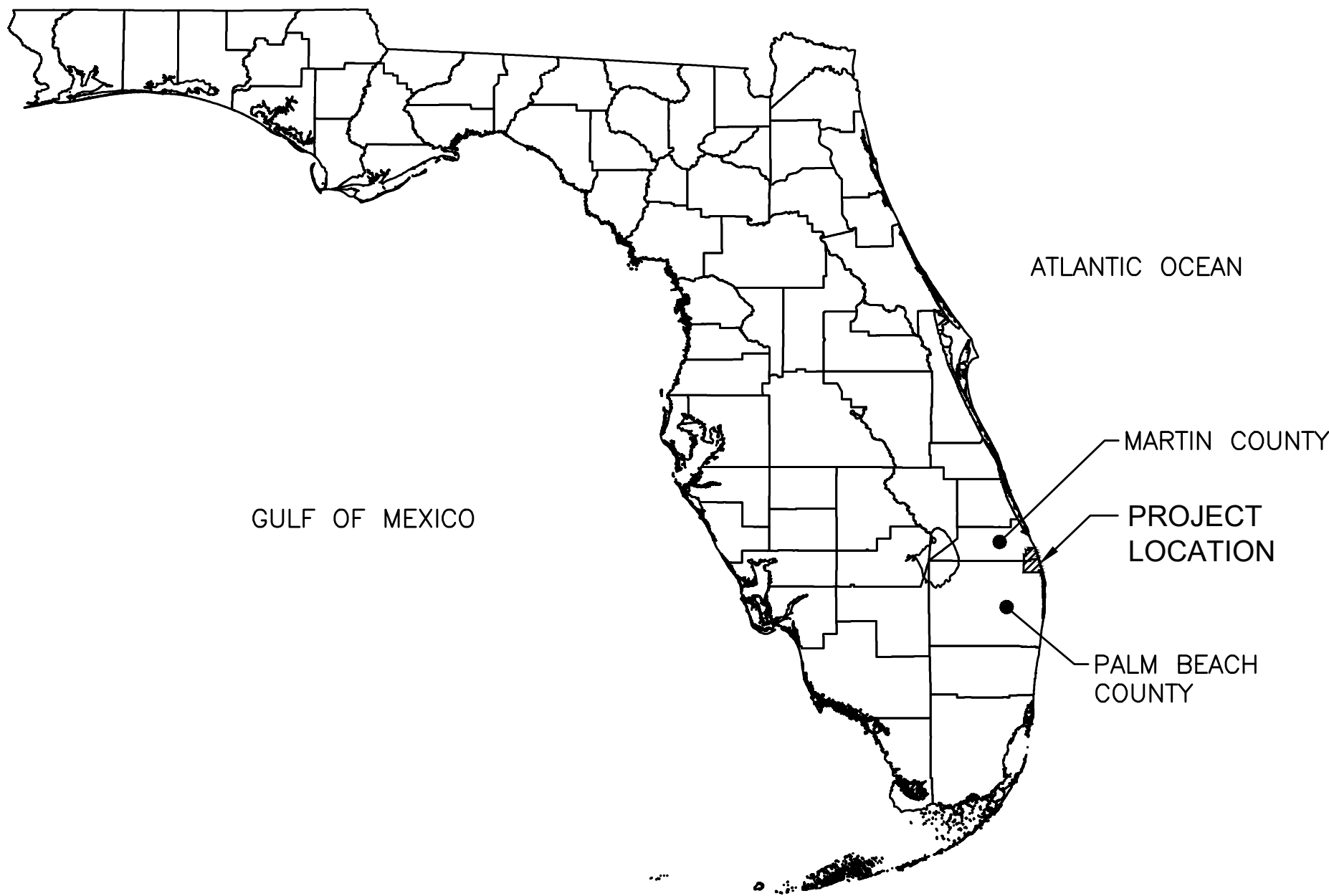


ROLLING HILLS SUBDIVISION GRAVITY SEWER, LIFT STATION, & FORCEMAIN

PREPARED FOR LOXAHATCHEE RIVER DISTRICT

PALM BEACH COUNTY, FLORIDA
SECTION 13, TOWNSHIP 40S, RANGE 42E



VICINITY MAP

NTS



LOXAHATCHEE RIVER DISTRICT GOVERNING BOARD

CHAIRMAN	GORDON M. BOGGIE
VICE CHAIRMAN	JAMES D. SNYDER
TREASURER	DR. MATT H. ROSTOCK
SECRETARY	STEPHEN B. ROCKOFF

OCTOBER 2021

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G-2	LEGEND AND NOTES
G-3	KEYSHEET
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C-2	GRAVITY SEWER MANHOLE(S), SEWER MAINS, & LATERALS REHABILITATION PLAN
C-3	GRAVITY SEWER MANHOLE(S), SEWER MAINS, & LATERALS REHABILITATION PLAN
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G-1

GENERAL ABBREVIATIONS

ABND	Abandon or Abandoned	LSA	Landscape Area
ACP	Asbestos Cement Pipe	MAX	Maximum
ADD'L	Additional	MB	Mailbox
AL, Alum	Aluminum	MECH	Mechanical
APPROX	Approximate	MH	Manhole
ARV	Air Release Valve	MIN	Minimum
ASP, Asph	Asphalt	MISC	Miscellaneous
		MJ	Mechanical Joint
BFP	Backflow Preventer		
BFV	Butterfly Valve	N/D	Nail and Disk
B/L	Base Line	No	Number
BLDG	Building	NTS	Not to Scale
BM	Benchmark		
BO	Blowoff	OC,O/C	On Center
BOP	Bottom of Pipe	OD	Outside Diameter
		OHW	Overhead Wire
		ORB	Official Records Book
CATV	Cable Television		
CB	Catch Basin	PB	Plat Book
CO	Cleanout	PE	Polyethylene Piping
CL	Center Line	PGL	Profile Grade Line
CLF	Chain Link Fence	PVC	Polyvinyl Chloride/Polyvinyl Chloride Pipe
CIP	Cast Iron Pipe / Cast in Place		
CMP	Corrugated Metal Pipe		
CONC	Concrete	RC	Reinforced Concrete
CONST	Construct/Construction	RCP	Reinforced Concrete Pipe
		RCW	Reclaimed Water
		RED	Reducer
DE	Drainage Easement	REINF	Reinforce/Reinforced
DI	Ductile Iron	RJ	Restrained Joint
DIP	Ductile Iron Pipe	RWM	Raw Water Main
DIA	Diameter	R/W,ROW	Right of Way
DR	Driveway		
DWY	Driveway		
		S=	Slope (FT/FT)/(Rise/Run)
EL	Elevation	SAN	Sanitary
EP	Edge of Pavement	SCH/SCHED	Schedule
ESMT	Easement	SEC	Section
EOW	Edge of Water	SF	Silt Fence
EX, EXIST	Existing	SP	Sample Point
		SS	Sanitary Sewer
		STA	Station
FDOT	Florida Department of Transportation		
FH	Fire Hydrant	TBM	Temporary Benchmark
FL	Flanged	TEMP	Temporary
FM	Force Main	TOB	Top of Bank
FND	Found	TON	Top of Nut
FNPT	Female Nominal Pipe Thread	TOP	Top of Pipe
FPL	Florida Power and Light	TOS	Toe of Slope
FW	Finished Water	TYP	Typical
		UE	Utility Easement
GPS	Global Positioning System	UEC	Underground Electric Conduit
GV	Gate Valve	UGE	Underground Electric
		UGT	Underground Telephone
HB	Hose Bibb	UNK	Unknown
HDD	Horizontal Directional Drill		
HDPE	High Density Polyethylene	W/	With (Combined Form)
HYD	Hydrant	WF	Wood Fence
		WM	Water Main or Water Meter
		WPB	Wire Pullbox
ID	Identification/Inside Diameter	WTP	Water Treatment Plant
INV	Invert/Invert Elevation	WV	Water Valve
IRC	Iron Rod & Cap	WWTP	Waste Water Treatment Plant
IRR	Irrigation		
LAE	Limited Access Easement		
LF	Linear Feet		
LP	Light Pole		
LS	Lift Station		

SURVEY LEGEND

	CATCH BASIN
	CATCH BASIN (INLET)
	CLEAN OUT
	CABLE RISER
	CONCRETE UTILITY POLE
	ELECTRIC BOX
	FIRE HYDRANT
	GUY WIRE
	IRRIGATION CONTROL VALVE
	LIGHT POLE
	LANDSCAPE LIGHT
	MAIL BOX
	SIGN
	SANITARY MANHOLE
	STORM MANHOLE
	TELEPHONE RISER
	TREE
	WATER METER
	WATER VALVE
	WOOD UTILITY POLE
	WATER SERVICE
	YARD DRAIN

SURVEY ABBREVIATIONS

(C) = CALCULATED
C.B.S. = CONCRETE BLOCK STRUCTURE
C.M.B. = COMMISSIONERS' MINUTES BOOK
CMH = CONFLICT MANHOLE
CONC. = CONCRETE
D.B. = DEED BOOK
F.H. = FIRE HYDRANT
FND. = FOUND
F.P.L. = FLORIDA POWER & LIGHT
ICV = IRRIGATION CONTROL VALVE
I.P. = IRON PIPE
INV. = INVERT
I.R. = IRON ROD
LB = LICENSE BUSINESS
LP = LIGHT POLE
LS = LICENSE SURVEY
(M) = MEASURED
MH = MANHOLE
M.H.W. = MEAN HIGH WATER
MON. = MONUMENT
O.R.B. = OFFICIAL RECORD BOOK
(P) = PLAT
P.B. = PLAT BOOK
P.R.M. = PERMANENT REFERENCE MONUMENT
R.O.W. = RIGHT-OF-WAY
RCP = REINFORCED CONCRETE PIPE
R.P.B. = ROAD PLAT BOOK
(S) = SURVEY
S.L.P. = STOP LIGHT POLE
SMH = SANITARY MANHOLE
SBTHM = SOUTHERN BELL TELEPHONE MANHOLE
STMH = STORM MANHOLE
TB = TRAFFIC BOX
TLP = TRAFFIC LIGHT POLE
TV = TELEVISION
U.E. = UTILITY EASEMENT
WP = WOOD POLE
WUP = WOOD UTILITY POLE
WV = WATER VALVE

PIPING SYMBOLOGY

	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	UNION
	BALL VALVE (BV)
	GATE VALVE (GV)
	BUTTERFLY VALVE (BFV)/ ODOR CONTROL DAMPENER
	PLUG VALVE (PV)
	CHECK VALVE (CV)
	PLUG/CAP
	CLEAN OUT
	TAPPING VALVE
	LINE STOP
	HOSE BIBB
	EXISTING PIPE
	EXISTING BURIED PIPE
	PROPOSED PIPE
	PROPOSED BURIED PIPE
	MECHANICAL JOINT
	FLANGE JOINT
	FLEXIBLE COUPLING
	FLEXIBLE COUPLING WITH THRUST TIES
	ELBOW UP
	ELBOW DOWN
	90° ELBOW
	TEE UP
	TEE DOWN
	TEE
	CROSS

LINETYPES

	EXISTING*	PROPOSED*
CABLE TV	--- CATV --- CATV ---	
CENTER LINE	---	---
EASEMENT	---	---
ELECTRIC	--- E --- E ---	
FENCE (BARB/FIELD)	--- X --- X ---	--- X --- X ---
FENCE (CHAINLINK)	--- O --- O ---	--- O --- O ---
FENCE (WOOD)	--- WF --- WF ---	--- WF --- WF ---
FIBER OPTIC	--- FOC --- FOC ---	--- FOC --- FOC ---
FIRE MAIN	--- FIRE --- FIRE ---	--- FIRE --- FIRE ---
FORCE MAIN	--- FM --- FM ---	--- FM --- FM ---
FORCE MAIN (LOW PRESSURE)	--- LPF --- LPF ---	--- LPF --- LPF ---
GAS	--- GAS --- GAS ---	
GUARDRAIL	--- G --- G ---	--- G --- G ---
IRRIGATION	--- IRR --- IRR ---	
OVERHEAD UTILITIES	--- OHU --- OHU ---	
RAILROAD TRACK	--- R --- R ---	
RIGHT-OF-WAY	---	---
SANITARY SEWER	--- S --- S --- S ---	--- S --- S --- S ---
SANITARY SEWER SERVICE	--- SS --- SS ---	--- SS --- SS ---
SILT FENCE	---	--- SF --- SF ---
STORM DRAINAGE	--- ST --- ST --- ST ---	--- ST --- ST ---
TELEPHONE	--- T --- T --- T ---	
TOP OF BANK	---	---
TOE OF SLOPE	---	---
TRAFFIC SIGNAL	--- TS --- TS --- TS ---	--- TS --- TS ---
TURBIDITY BARRIER	---	--- TB --- TB ---
UNKNOWN	--- UNK --- UNK ---	
WATER MAIN	--- WM --- WM ---	--- WM --- WM ---
WATER SERVICE	--- WS --- WS ---	--- WS --- WS ---

- * DEPICTS ABOVE GRADE --- TEXT --- TEXT --- TEXT ---
* DEPICTS BELOW GRADE --- TEXT --- TEXT --- TEXT ---

CIVIL SYMBOLOGY

CONSTRUCTION BASE LINE	
DIRECTION OF FLOW	
EXIST. SPOT ELEVATION	
REFERENCE ELEVATION	
NEW CONTOUR ELEV.	
EXIST. UTILITY POLES	
NEW UTILITY POLES	
PIPING CONFLICT LOCATION	
SAMPLE POINT	
WATER SURFACE	
FIRE HYDRANT	
EXIST. MANHOLE, DRAINAGE STRUCTURE	
NEW MANHOLE, DRAINAGE STRUCTURE	
EXISTING SEPTIC TANK	

SECTION/DETAIL SYMBOL

SECTION SCALE:		SECTION LETTER/DETAIL NUMBER
		SHEET/DRAWING NO. ON WHICH SECTION/DETAIL IS SHOWN
		SECTION LETTER/DETAIL NUMBER
		SHEET/DRAWING NO. ON WHICH SECTION/DETAIL IS SHOWN
SECTION CUT		
SECTION CUT ON DETAILS		
PIPE DESIGNATION		8" DIP FORCE MAIN
NOMINAL PIPE DIA.(IN.)		
PIPE MATERIAL (IF SHOWN)		
FLOW STREAM IDENTIFICATION (IF SHOWN)		

Symbols:

#	Pounds/Number
4	Angle
Ø	Round/Diameter



Know what's below.
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Drawn By: RR
Check By: #

LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

LEGEND AND NOTES

HOLTZ CONSULTING ENGINEERS, INC.

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Cert. No. 26960

CHRISTINE J. MIRANDA, PE

License No: 60906



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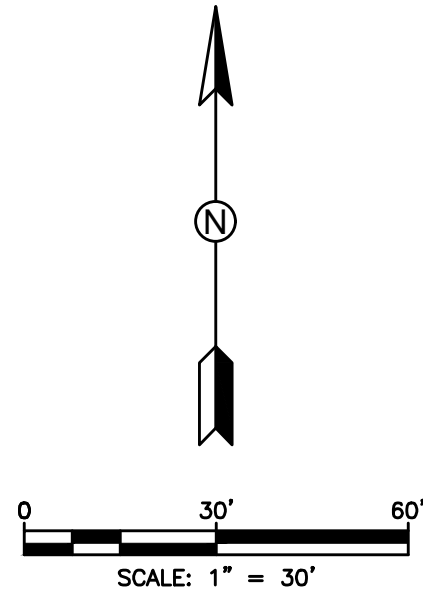
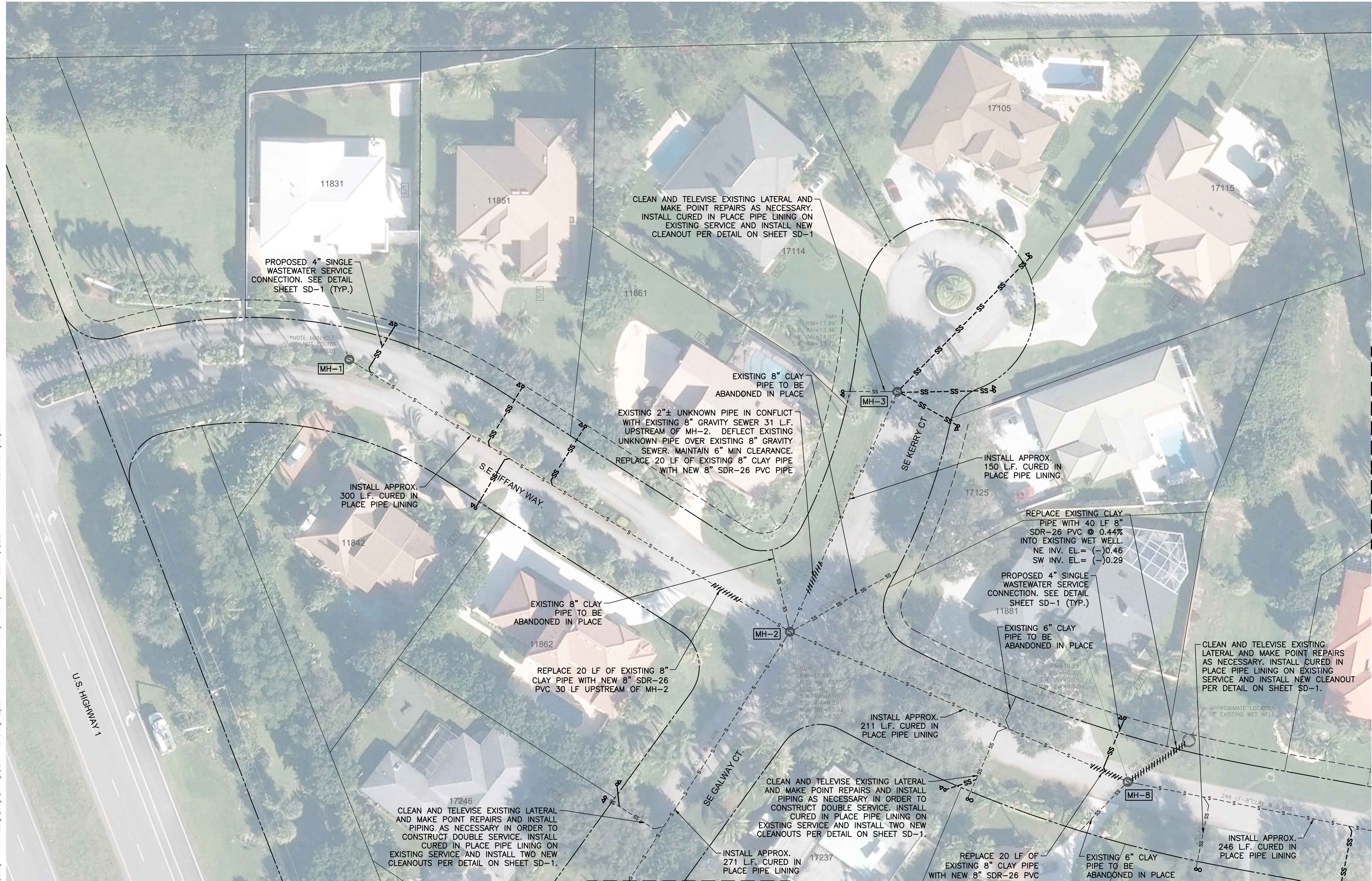
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ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

KEYSHEET

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G-3



MANHOLE #1 (BURIED) SCHEDULE OF REPAIRS

- PRESSURE CLEAN
- MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
- PRESSURE/XYPEX GROUTING
- REFORM BENCH AND CHANNEL
- CHIMNEY ADJUSTMENT
- INSTALL NEW COVER & ADJUSTMENT RING
- INSTALL NEW FRAME & RESTORATION
- SURFACE RESTORATION

MANHOLE #2 SCHEDULE OF REPAIRS

- PRESSURE CLEAN
- MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
- PRESSURE/XYPEX GROUTING
- REFORM BENCH AND CHANNEL

MANHOLE #3 SCHEDULE OF REPAIRS

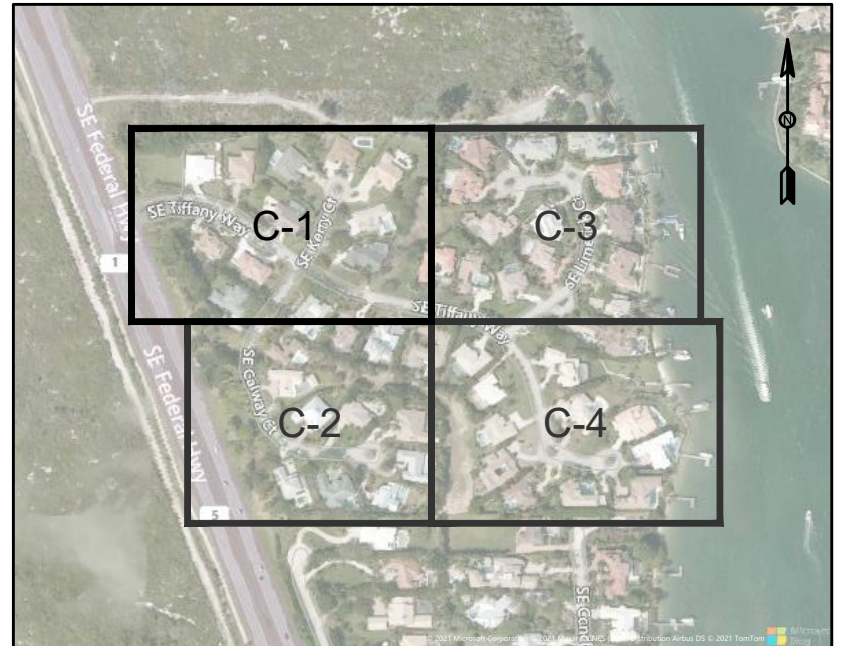
- PRESSURE CLEAN
- MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
- REFORM BENCH AND CHANNEL

MANHOLE #8 SCHEDULE OF REPAIRS

- PRESSURE CLEAN
- MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
- REFORM BENCH AND CHANNEL
- INSTALL NEW ADJUSTMENT RING

NOTES:

- TRENCH PAVEMENT RESTORATION REQUIRED FOR THE INSTALLATION OF NEW GRAVITY SEWER, SEWER SERVICE LATERALS, AND FORCE MAIN SHALL BE IN ACCORDANCE WITH DETAIL SD-2 ON SHEET SD-1.
- ALL EXISTING CURBS AND/OR GUTTERS DISTURBED SHALL BE RESTORED TO EXISTING OR BETTER CONDITION.
- LOCATIONS AS SHOWN ON THE PLANS FOR THE EXISTING SEPTIC TANKS AND BOTH EXISTING AND NEW SERVICE LATERALS ARE APPROXIMATE ONLY AND ARE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY. ALL SEPTIC TANK LOCATIONS AND NEW SERVICE LATERAL LOCATIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLING ANY NEW SERVICE LATERALS.
- ALL CURED IN PLACE LINERS SHALL BE FULL-WRAP CONNECTION OR STYLE.



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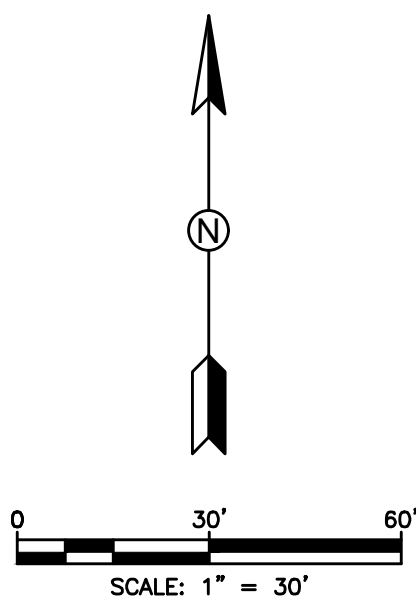
LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

GRAVITY SEWER
MANHOLE(S), SEWER MAINS, & LATERALS
REHABILITATION PLAN

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MANHOLE #4 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL

MANHOLE #5 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL

MANHOLE #6 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW ADJUSTMENT RING

MANHOLE #7 (BURIED) SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
PRESSURE/XYPEX GROUTING
REFORM BENCH AND CHANNEL
CHIMNEY ADJUSTMENT
INSTALL NEW COVER & ADJUSTMENT RING
INSTALL NEW FRAME & RESTORATION
SURFACE RESTORATION

NOTES:

1. TRENCH PAVEMENT RESTORATION REQUIRED FOR THE INSTALLATION OF NEW GRAVITY SEWER, SEWER SERVICE LATERALS, AND FORCE MAIN SHALL BE IN ACCORDANCE WITH DETAIL SD-2 ON SHEET SD-1.
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4. ALL CURED IN PLACE LINERS SHALL BE FULL-WRAP CONNECTION OR STYLE.



PROJECT KEY MAP
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LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

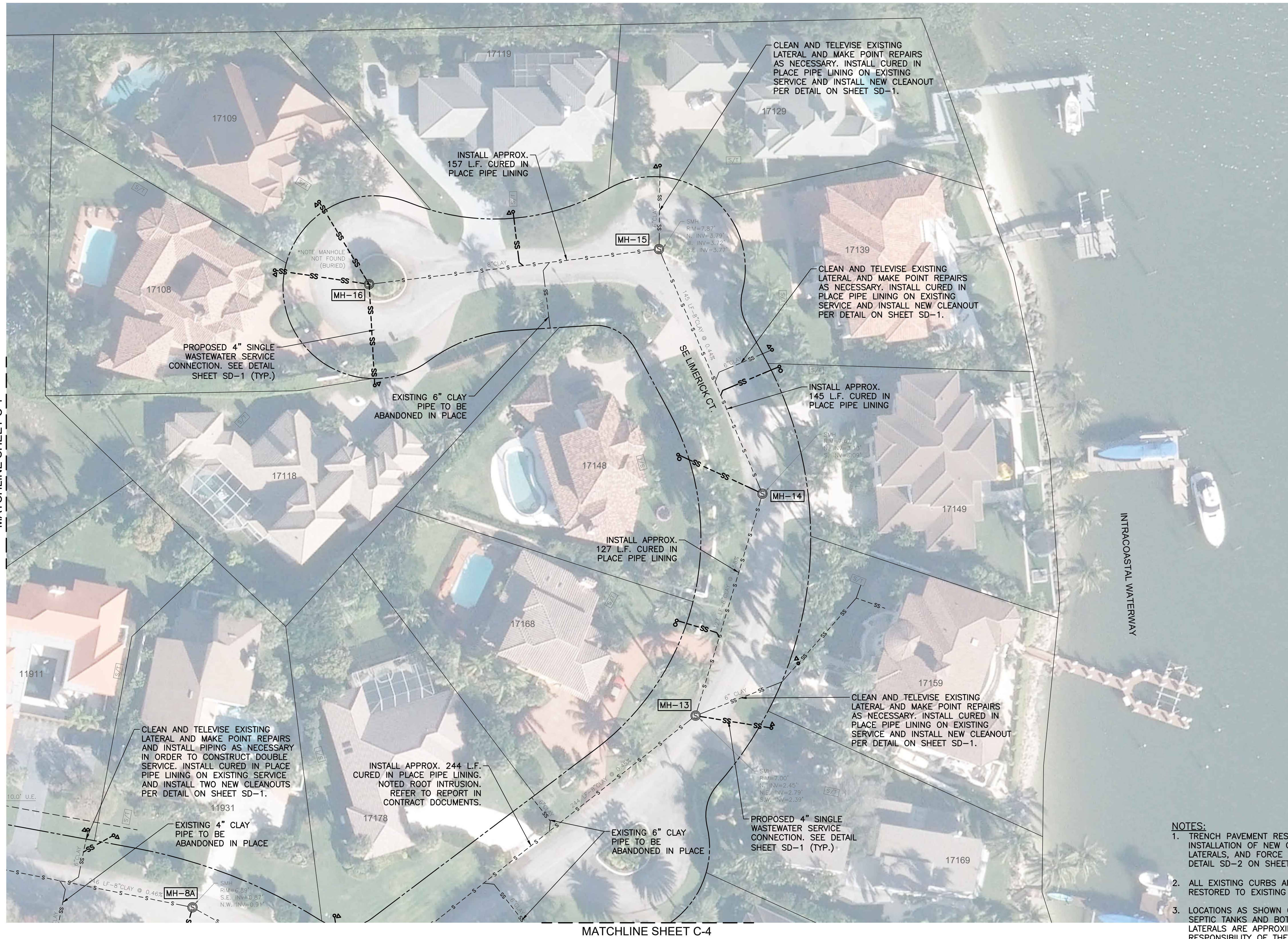
GRAVITY SEWER
MANHOLE(S), SEWER MAINS, & LATERALS
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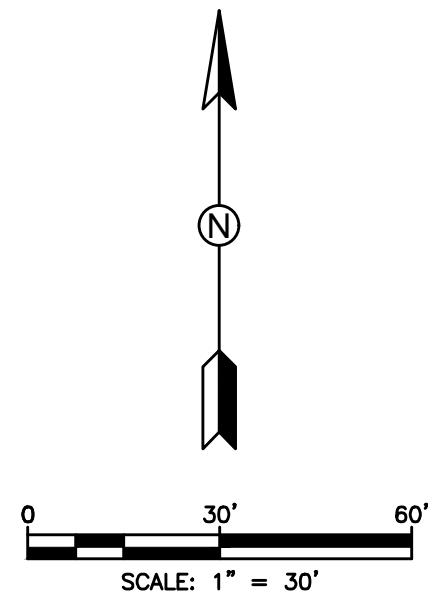
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MATCHLINE SHEET C-1



MATCHLINE SHEET C-4

- NOTES:
1. TRENCH PAVEMENT RESTORATION REQUIRED FOR THE INSTALLATION OF NEW GRAVITY SEWER, SEWER SERVICE LATERALS, AND FORCE MAIN SHALL BE IN ACCORDANCE WITH DETAIL SD-2 ON SHEET SD-1.
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MANHOLE #8A SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW ADJUSTMENT RING

MANHOLE #13 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW COVER & ADJUSTMENT RING

MANHOLE #14 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW COVER & ADJUSTMENT RING

MANHOLE #15 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW COVER & ADJUSTMENT RING
INSTALL NEW FRAME

MANHOLE #16 (BURIED) SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
PRESSURE/XYPEX GROUTING
REFORM BENCH AND CHANNEL
CHIMNEY ADJUSTMENT
INSTALL NEW COVER & ADJUSTMENT RING
INSTALL NEW FRAME & RESTORATION
SURFACE RESTORATION



PROJECT KEY MAP
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LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

GRAVITY SEWER
MANHOLE(S), SEWER MAINS, & LATERALS
REHABILITATION PLAN

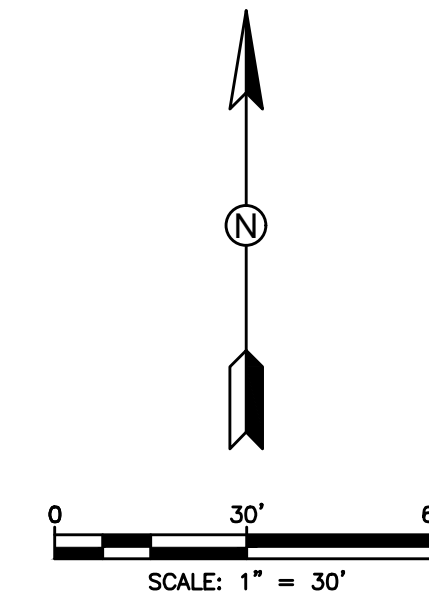
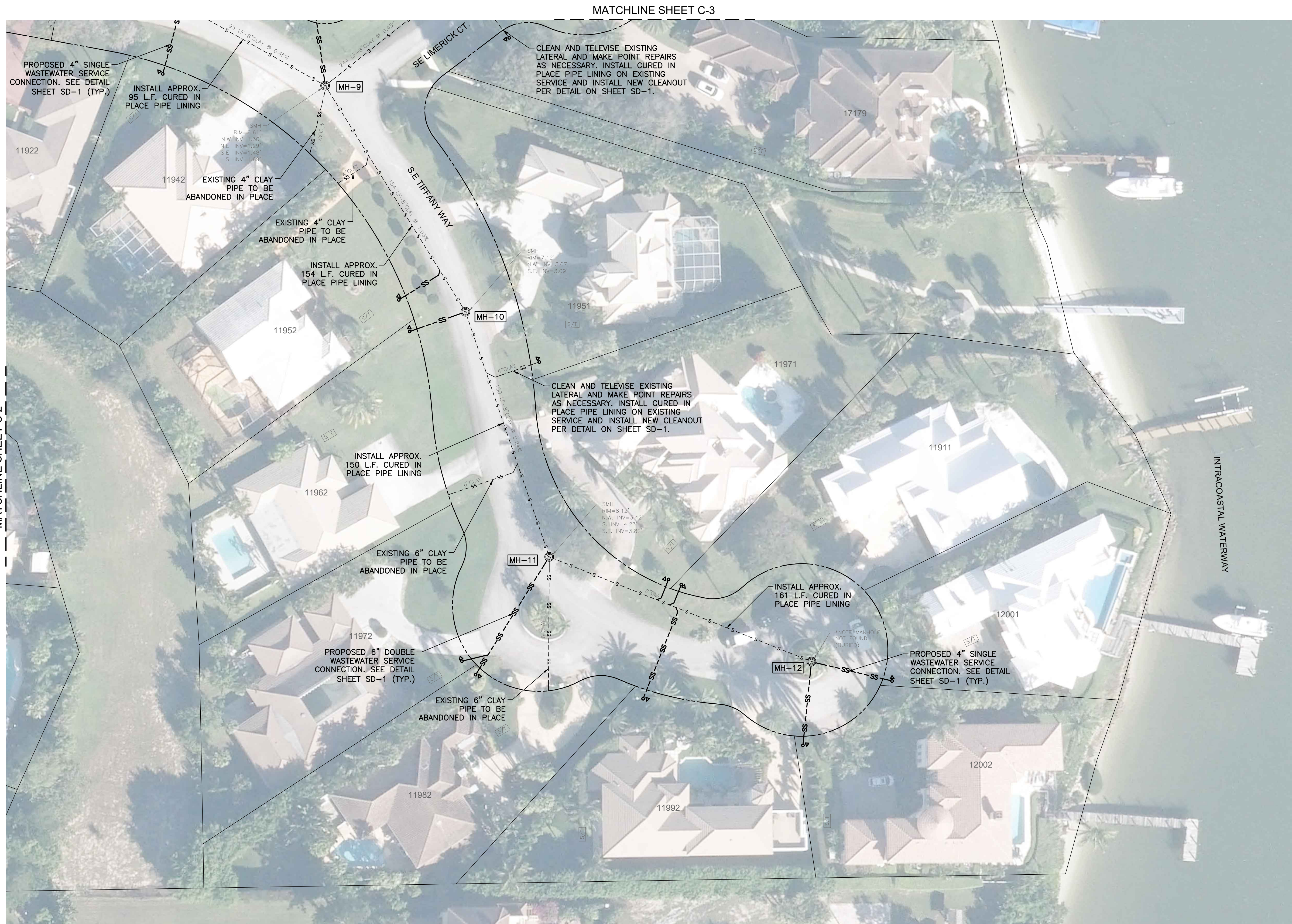
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C-3

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MATCHLINE SHEET C-2



MANHOLE #9 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW ADJUSTMENT RING

MANHOLE #10 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW ADJUSTMENT RING

MANHOLE #11 SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
REFORM BENCH AND CHANNEL
INSTALL NEW ADJUSTMENT RING

MANHOLE #12 (BURIED) SCHEDULE OF REPAIRS

PRESSURE CLEAN
MISC. MANHOLE REPAIRS (INCLUDING MORTAR, PIPE CONNECTION, REINFORCEMENT STEEL, HOLES, CRACKS, JOINTS AND LEAKS)
PRESSURE/XYPEX GROUTING
REFORM BENCH AND CHANNEL
CHIMNEY ADJUSTMENT
INSTALL NEW COVER & ADJUSTMENT RING
INSTALL NEW FRAME & RESTORATION
SURFACE RESTORATION

NOTES:

1. TRENCH PAVEMENT RESTORATION REQUIRED FOR THE INSTALLATION OF NEW GRAVITY SEWER, SEWER SERVICE LATERALS, AND FORCE MAIN SHALL BE IN ACCORDANCE WITH DETAIL SD-2 ON SHEET SD-1.
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4. ALL CURED IN PLACE LINERS SHALL BE FULL-WRAP CONNECTION OR STYLE.



PROJECT KEY MAP
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Drawn By: RR
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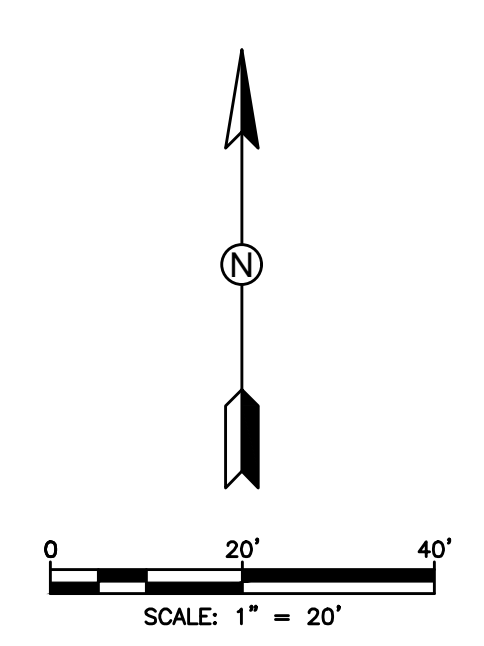
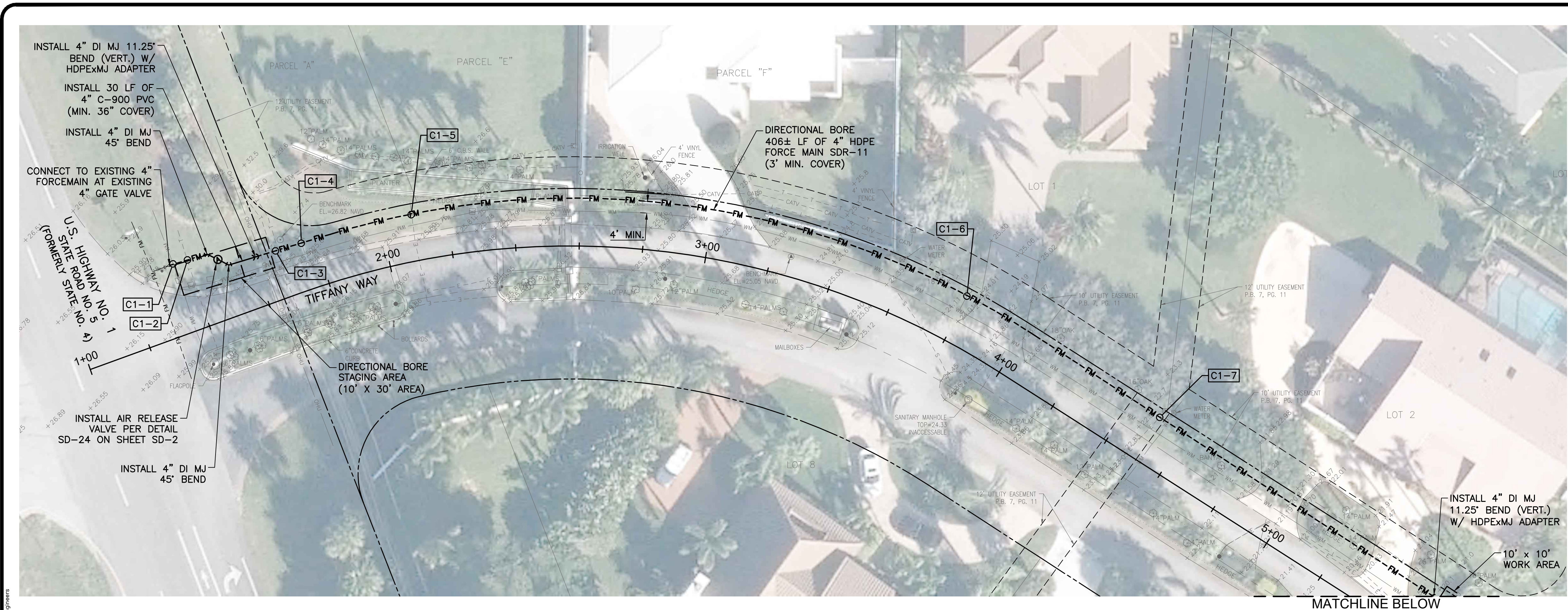
LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

GRAVITY SEWER
MANHOLE(S), SEWER MAINS, & LATERALS
REHABILITATION PLAN

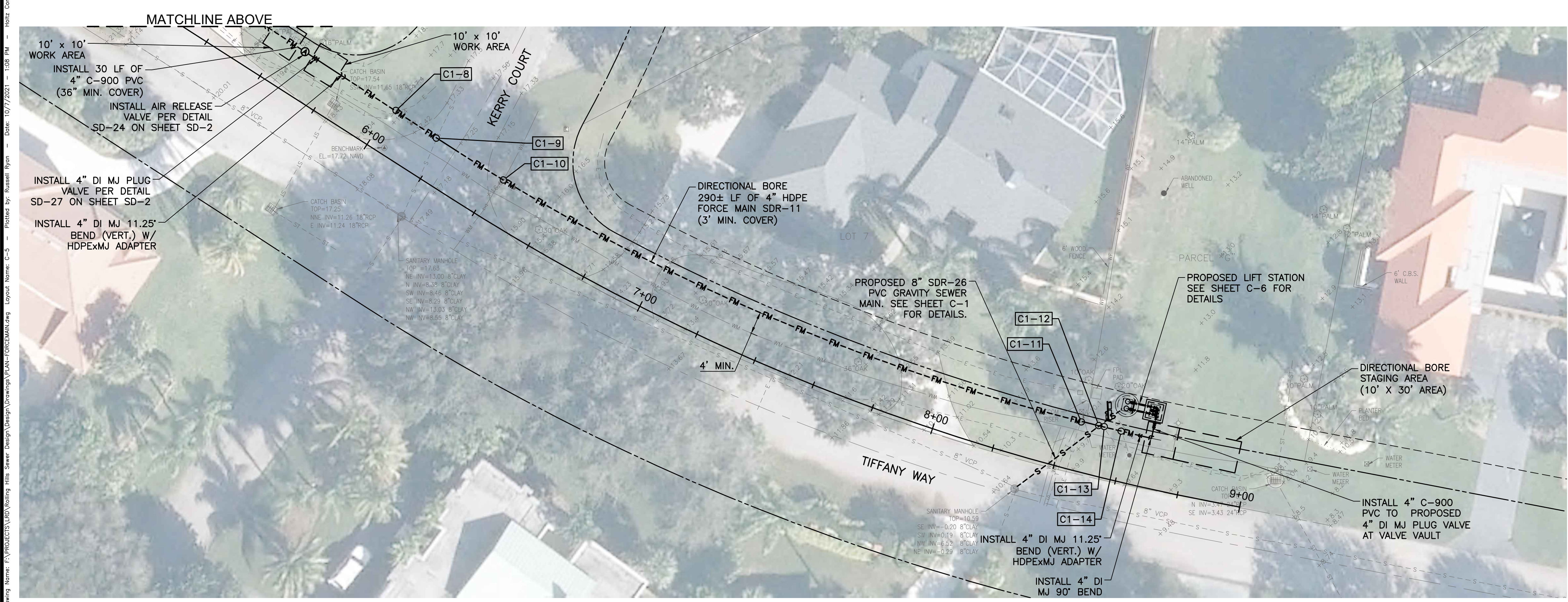
HOLTZ CONSULTING ENGINEERS, INC.
HCE 270 SOUTH CENTRAL BLVD., SUITE 207
JUPITER, FLORIDA 33458
PH. (561) 575-2005
Cert. No. 26960

CHRISTINE J. MIRANDA, PE
License No: 60906

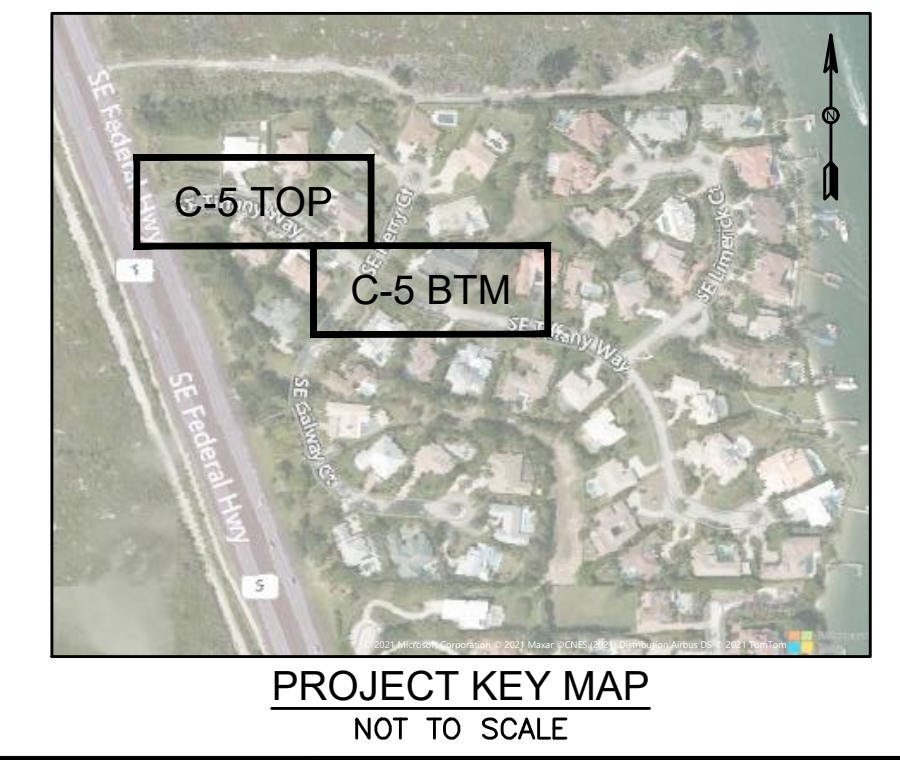
C-4



FORCE MAIN CROSSING TABLE						
CONFLICT	CONFLICT PIPE	ELEVATION	PROPOSED FM	UNDER/OVER	CLEARANCE	ELEVATION
C1-1	6" WM	BOP 22.8±	4" PVC	UNDER	1.0'	TOP 21.8±
C1-2	AT&T	BOP 23.8±	4" PVC	UNDER	2.0'	TOP 21.8±
C1-3	AT&T	BOP 23.8±	4" HDPE	UNDER	2.8'	TOP 21.0±
C1-4	6" WM	BOP 23.0±	4" HDPE	UNDER	4.0'	TOP 19.0±
C1-5	ELEC.	BOP 22.0±	4" HDPE	UNDER	4.0'	TOP 18.0±
C1-6	6" WM	BOP 20.0±	4" HDPE	UNDER	2.0'	TOP 18.0±
C1-7	ELEC.	BOP 20.3±	4" HDPE	UNDER	4.3'	TOP 16.0±
C1-8	AT&T/ELEC.	BOP 15.2±	4" HDPE	UNDER	3.2'	TOP 12.0±
C1-9	8" CLAY	BOP 13.0±	4" HDPE	UNDER	1.0'	TOP 12.0±
C1-10	6" WM	BOP 13.0±	4" HDPE	UNDER	1.0'	TOP 12.0±
C1-11	ELEC.	BOP 7.7±	4" HDPE	UNDER	1.2'	TOP 6.5±
C1-12	8" PVC	TOP 0.3±	4" HDPE	OVER	5.7'	BOP 6.0±
C1-13	AT&T	BOP 7.4±	4" HDPE	UNDER	1.1'	TOP 6.3±
C1-14	ELEC.	BOP 7.4±	4" HDPE	UNDER	1.1'	TOP 6.3±



- NOTES:**
1. TRENCH PAVEMENT RESTORATION REQUIRED FOR THE INSTALLATION OF NEW GRAVITY SEWER, SEWER SERVICE LATERALS, AND FORCE MAIN SHALL BE IN ACCORDANCE WITH DETAIL SD-2 ON SHEET SD-1.
 2. ALL EXISTING CURBS AND/OR GUTTERS DISTURBED SHALL BE RESTORED TO EXISTING OR BETTER CONDITION.
 3. LOCATIONS AS SHOWN ON THE PLANS FOR THE EXISTING SEPTIC TANKS AND BOTH EXISTING AND NEW SERVICE LATERALS ARE APPROXIMATE ONLY AND ARE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY. ALL SEPTIC TANK LOCATIONS AND NEW SERVICE LATERAL LOCATIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLING ANY NEW SERVICE LATERALS.



REV	DATE	REVISIONS	BY

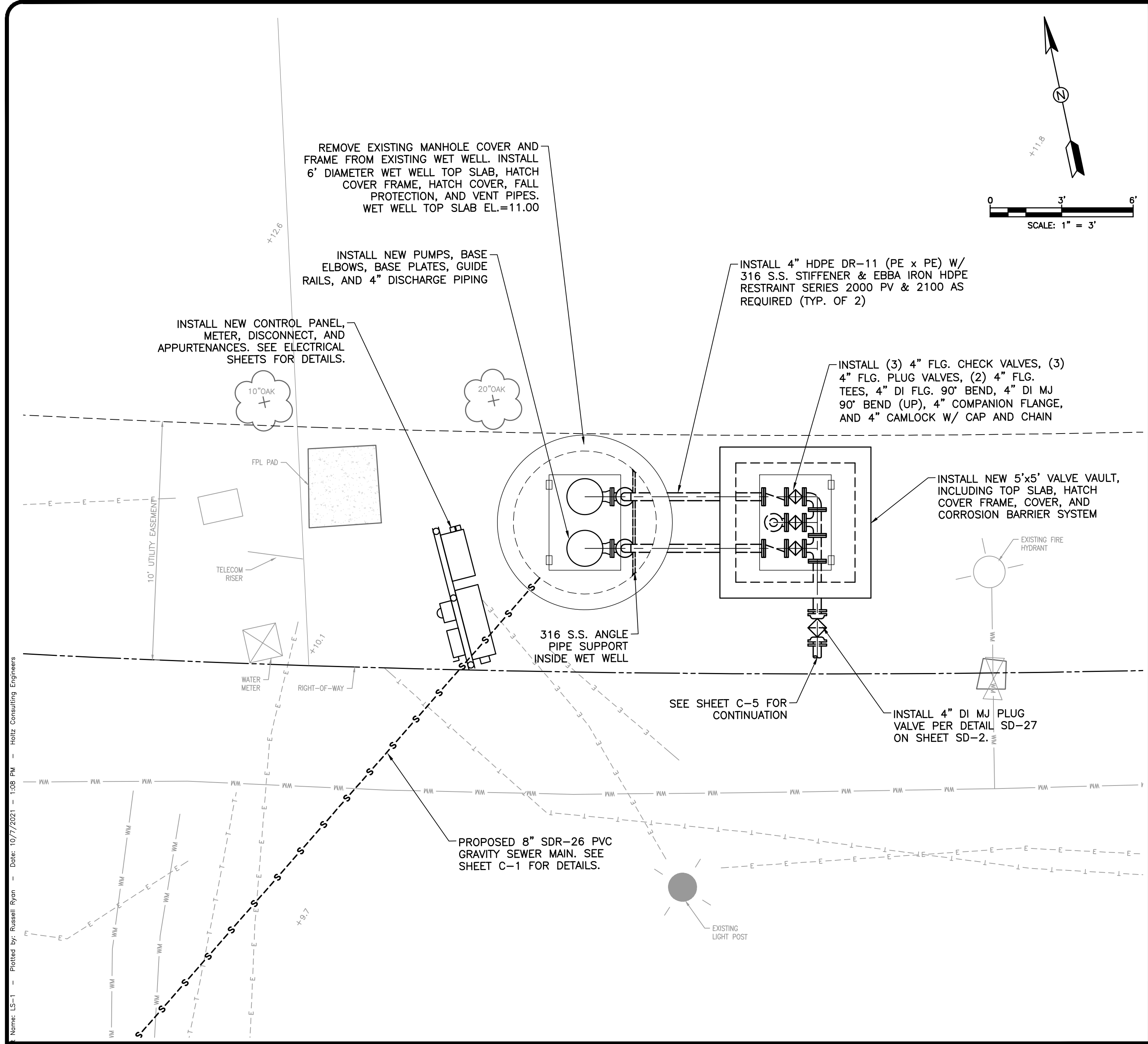
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Design By: CM
Drawn By: RR
Check By: #

LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

PROPOSED FORCE MAIN PLAN

HOLTZ CONSULTING ENGINEERS, INC.
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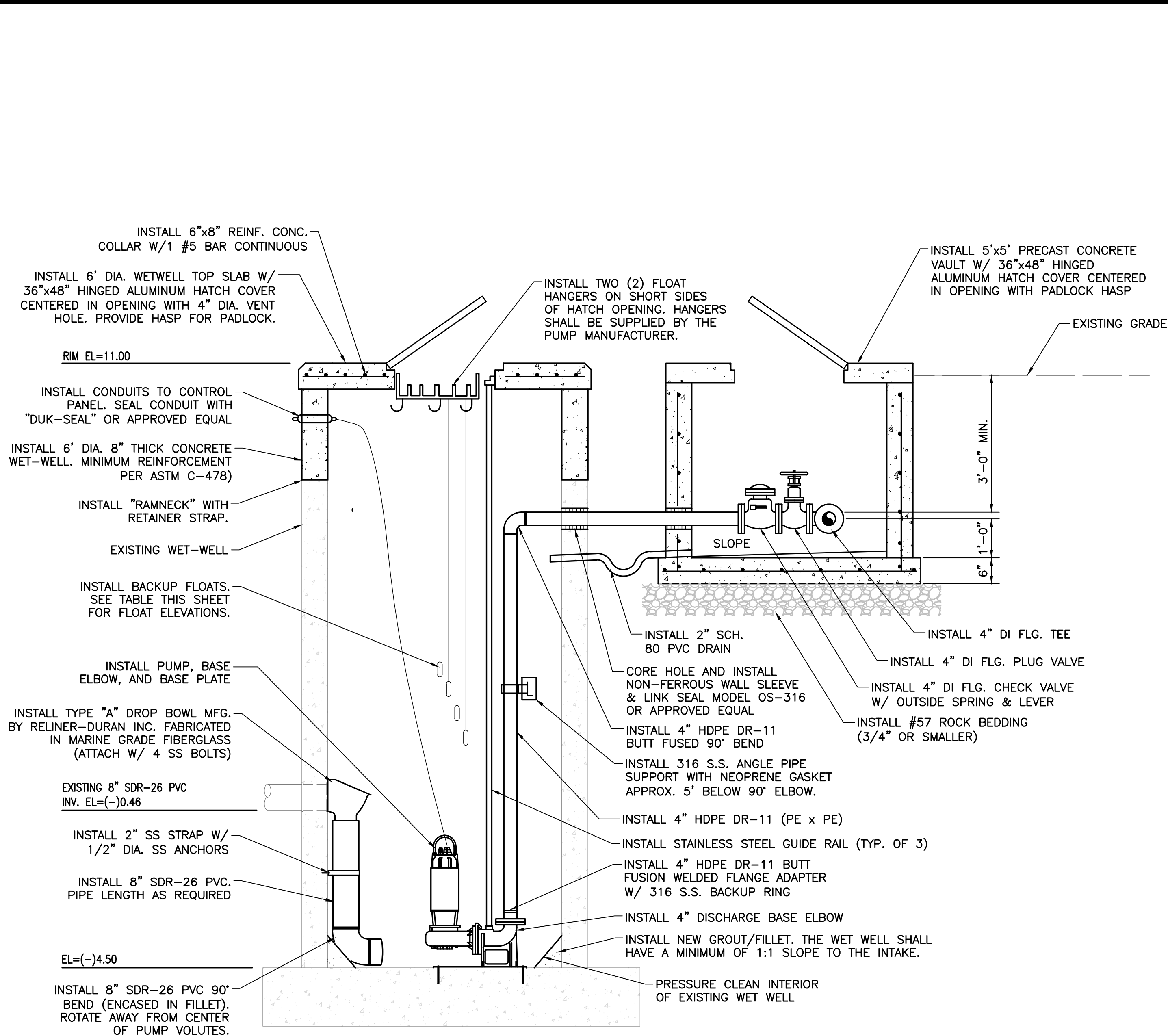


PROPOSED SITE PLAN

- NOTES:
- REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
 - CONTRACTOR SHALL RESTRAIN EXISTING FORCE MAIN AS NECESSARY PRIOR TO PERFORMING TIE-IN.
 - NEW PUMP GUIDE RAILS, BASE ELBOWS, AND APPURTENANCES SHALL BE COMPATIBLE WITH NEW PUMP.
 - PROVIDE 36" MINIMUM COVER FROM FINISHED GRADE TO TOP OF FORCE MAIN.
 - CONTRACTOR SHALL PROTECT ALL VEGETATION AND PRIVATE PROPERTY, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL RESTORE OR REPLACE ANY DAMAGED PROPERTY AT NO COST TO THE OWNER.

PUMP DATA	
MANUFACTURER:	FLYGHTE SEWAGE PUMP
MODEL:	N3102 SH3
SERIES:	455
MOTORS:	5 HP, 200 VOLT, WIRE, 60 HZ.
PUMPS DELIVERING	90 G.P.M. AT 27 FT. T.D.H.
PUMPS DELIVERING	G.P.M. AT FT. T.D.H.

ELEVATION SCHEDULE	
HIGH LEVEL ALARM	(-)0.96
LAG PUMP ON	(-)1.50
LEAD PUMP ON	(-)2.00
PUMPS OFF	(-)3.00



PROPOSED SECTION VIEW

SCALE: 1" = 2'-0"

REV	DATE	REVISIONS	BY
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Date: 09/30/2021
Scale: AS NOTED
Design By: CM
Drawn By: RR
Check By: #

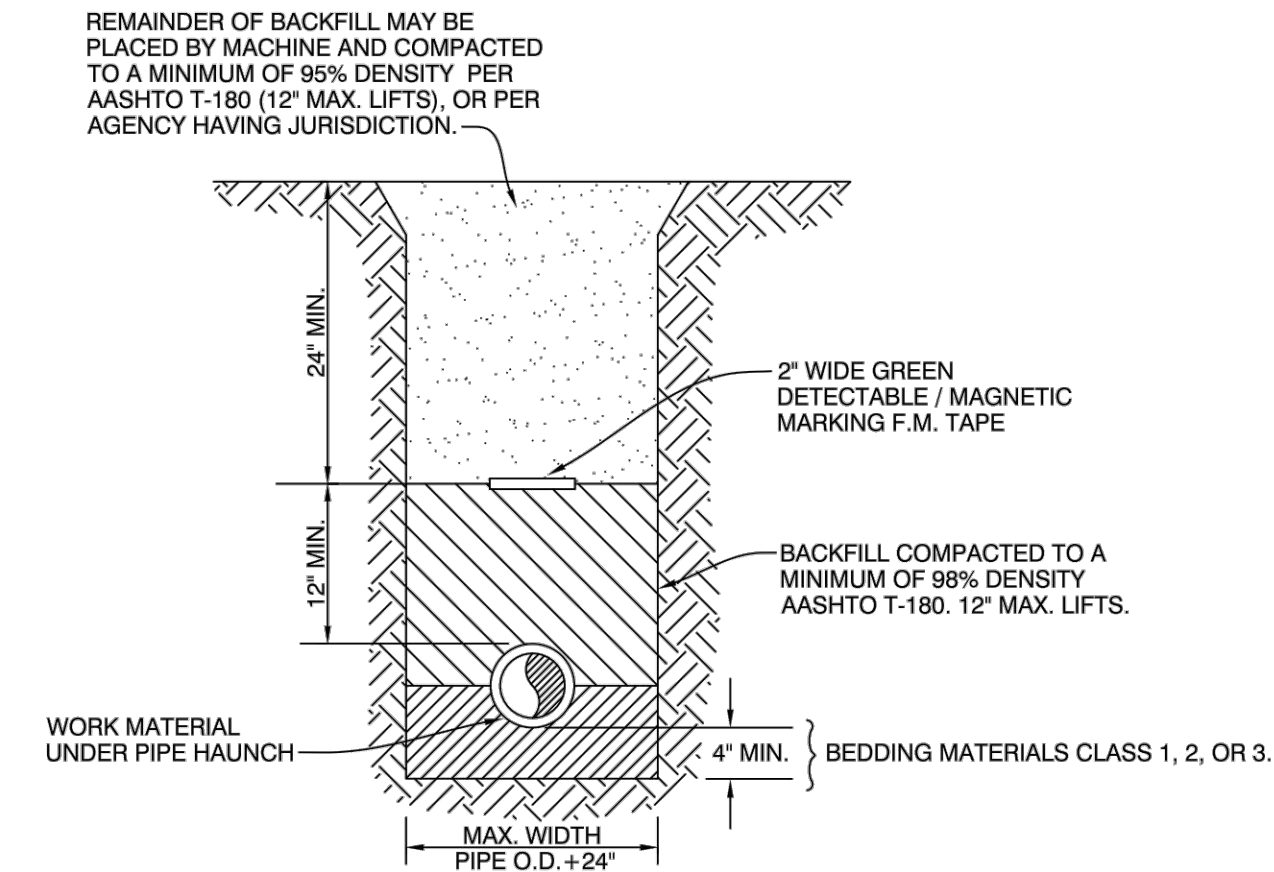
LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

PROPOSED LIFT STATION
PLAN & PROFILE

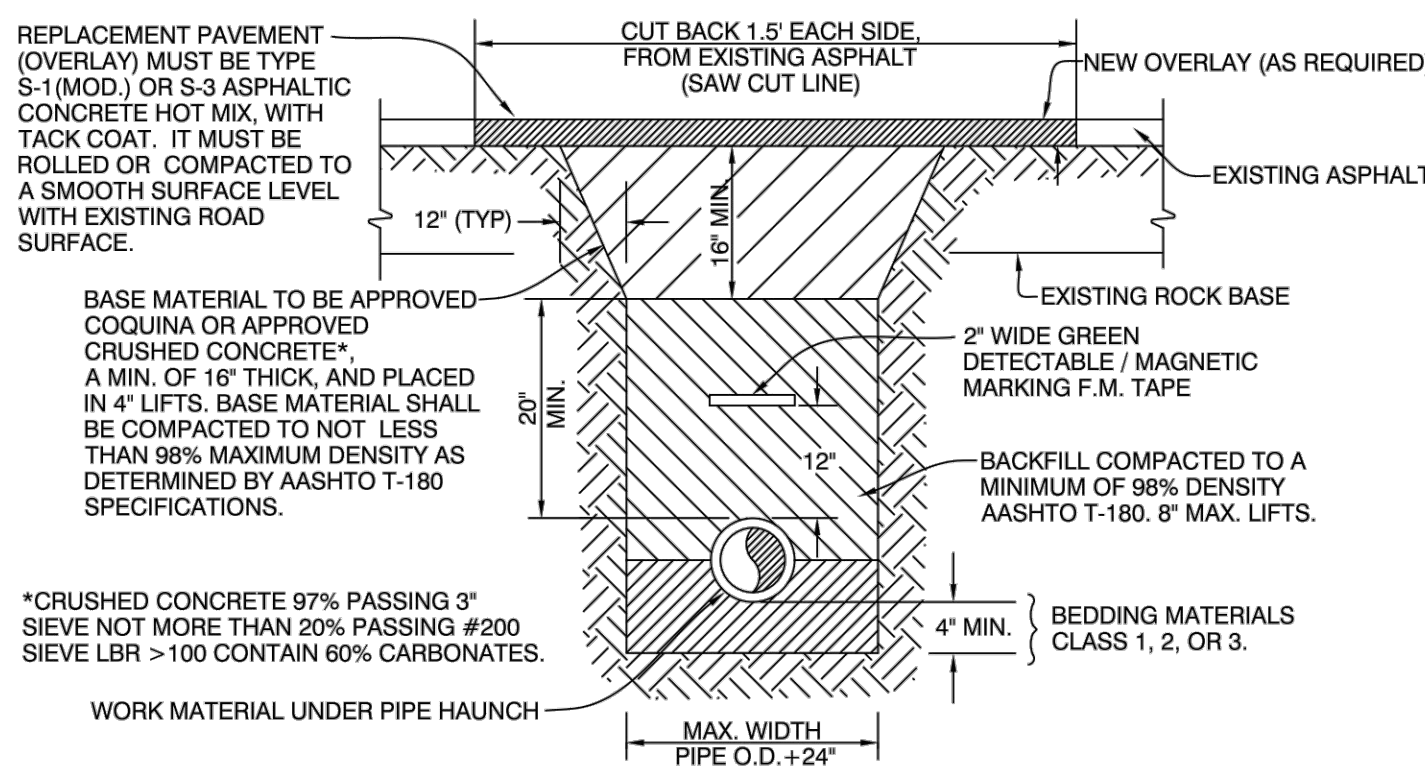
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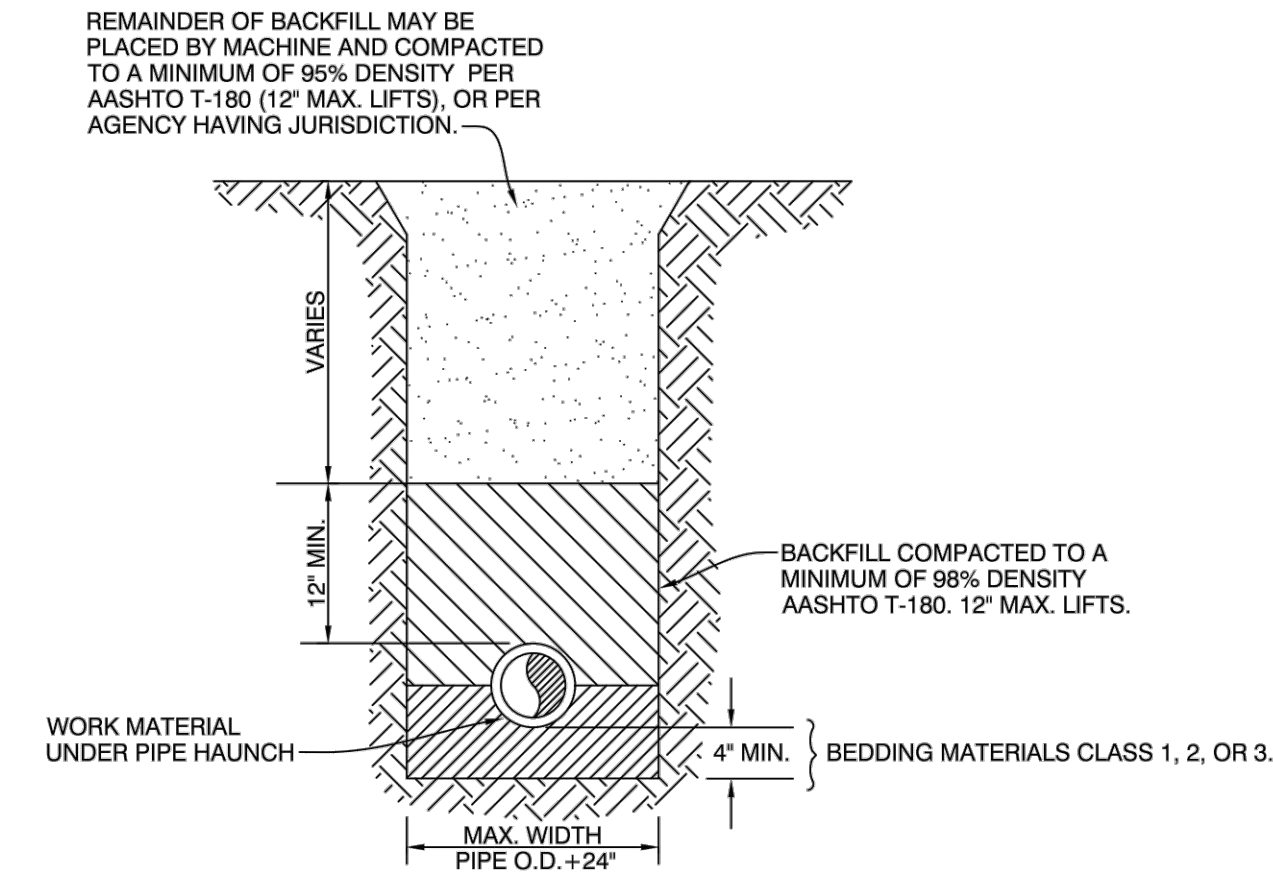
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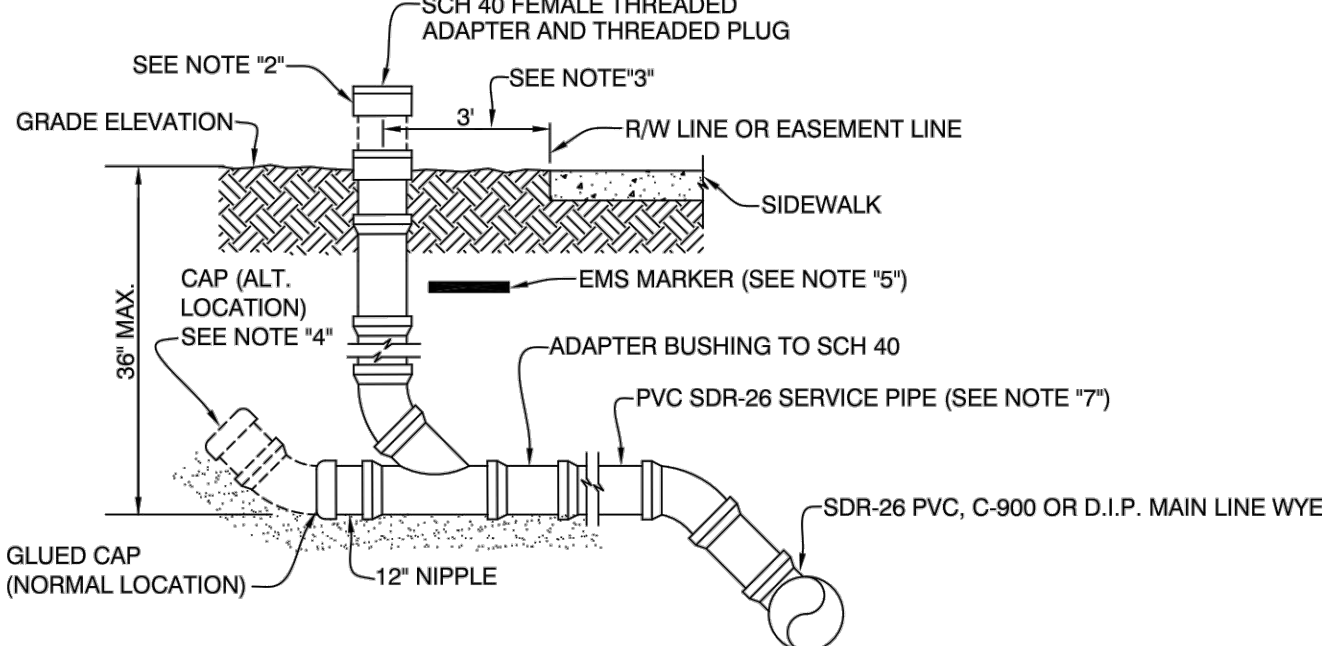
- NOTES:**
- CLASS 1 MATERIAL - ANGULAR .25" TO .75" GRADED STONE SUCH AS CORAL, CRUSHED STONE, OR CRUSHED SHELLS OR BEDDING ROCK (100% PASSING 1" SIEVE).
- CLASS 2 MATERIAL - COURSE SAND AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF .25 INCH WITH SMALL PERCENTAGE OF FINES. COMPACT TO A MIN. 98% DENSITY PER AASHTO T-180.
- CLASS 3 MATERIAL - FINE SAND AND CLAYEY GRAVELS, INCLUDING FINE SANDS, SAND-CLAY MIXTURES AND GRAVEL-CLAY MIXTURES. INCLUDED IN CLASS 3 ARE EXISTING SOIL TYPES CLASSIFIED AS SELECT BACKFILL. COMPACT TO A MIN. 98% DENSITY PER AASHTO T-180.
1. IF CLASS 1 MATERIAL IS USED FOR BEDDING, IT MUST BE USED FOR THE ENTIRE EMBEDMENT. A DRY TRENCH SHALL BE MAINTAINED WHEN USING CLASS 2 AND CLASS 3 MATERIAL.
2. DENSITY TESTING IS REQUIRED IN 1 FOOT LIFTS ABOVE PIPELINE AT INTERVALS OF 400' MAXIMUM.
3. UNSUITABLE IN-SITU MATERIAL SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
4. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT / CONTRACT DOCUMENTS.
5. EMS MARKER REQUIRED MINIMUM EVERY 300 FEET OF PRESSURE PIPELINE.



- NOTES:**
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1. ALL CUTS WILL REQUIRE COMPACTION TO DENSITY SPECIFICATIONS.
2. SAW CUT ASPHALT BEFORE EXCAVATING.
3. COMPACTION MUST BE DONE BY A MECHANICAL VIBRATORY COMPACTOR. EACH LIFT MUST RECEIVE 5 PASSES OF THE COMPACTOR OVER ENTIRE SURFACE. BEFORE COMPACTING EACH LIFT, WATER MUST BE APPLIED AT THE RATE OF 1 GAL. PER LINEAL FOOT OF THE TRENCH FOR BACKFILL AND 0.5 GAL. PER LINEAL FOOT OF TRENCH FOR COQUINA BASE. WATER TO BE SPRINKLED EVENLY OVER TRENCH WIDTH.
4. UNSUITABLE IN-SITU MATERIAL SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
5. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT / CONTRACT DOCUMENTS.
6. EMS MARKER REQUIRED MINIMUM EVERY 300 FEET OF PRESSURE PIPELINE.

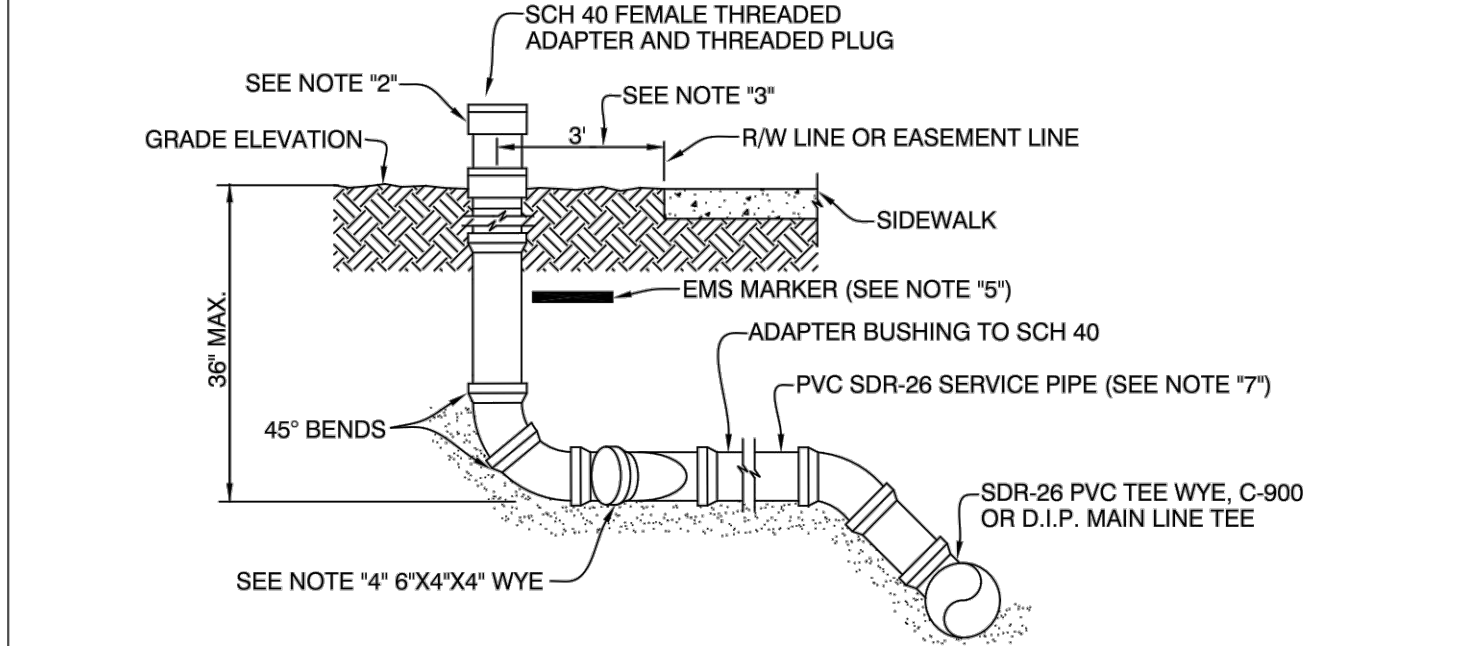


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- CLASS 3 MATERIAL - FINE SAND AND CLAYEY GRAVELS, INCLUDING FINE SANDS, SAND-CLAY MIXTURES AND GRAVEL-CLAY MIXTURES. INCLUDED IN CLASS 3 ARE EXISTING SOIL TYPES CLASSIFIED AS SELECT BACKFILL. COMPACT TO A MIN. 98% DENSITY PER AASHTO T-180.
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4. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT / CONTRACT DOCUMENTS.



- NOTES:**
1. WHERE SEWER LATERALS MAY BE FORCED TO BE INSTALLED AT A DEPTH GREATER THAN 36" DUE TO CONFLICT WITH OTHER UTILITIES, THE WYE FITTING MAY BE PLACED IN A VERTICAL POSITION ON THE CLEAN-OUT RISER PIPE (MAX. 36").
2. LEAVE RISER 18" (MIN.) ABOVE GRADE. WHEN HOUSE RISER CONNECTION IS MADE BY BUILDING PLUMBER, RISER PIPE WILL BE CUT OFF, AND SET 2" ABOVE SOD GRADE (ADAPTER SHALL BE LEFT UNGLUED).
3. IN AREAS WHERE NO SIDEWALK EXISTS OR WHERE NONE ARE PLANNED, THE CLEAN OUT RISER WILL BE SET AT R/W OR EASEMENT LINE.
4. IN AREAS WHERE GROUND WATER TABLE IS LESS THAN 36" FROM FINISHED GRADE, NIPPLE OUT OF WYE WILL BE EXTENDED UP TO A POINT 6" MIN. ABOVE GROUND WATER TABLE.
5. EMS MARKER MODEL NO.1258, SERVICE LINE ELECTRONIC MARKER AS MFG. BY 3M CO., TO REMAIN IN PLACE AFTER CONNECTION OF BUILDING SEWER. BURY IN FRONT OF CLEAN OUT RISER 18" BELOW FINISHED GRADE.
6. 6" SINGLE SERVICES USED ONLY FOR COMMERCIAL OR MULTI-FAMILY RESIDENTIAL UNITS.
7. WHEN MAIN LINE IS C-900 PVC OR DIP (EPOXY COATED), SERVICE PIPE SHALL BE SAME MATERIAL AS MAIN LINE.
8. WHEN APPROVED BY THE DISTRICT, CLEAN-OUTS MAY BE PLACED IN PAVED AREAS, HOWEVER, PROTECTIVE BOXES AS SHOWN ON DETAIL SD-1 MUST BE INSTALLED.
- (PLUMBERS ONLY)**
- WHERE EXISTING SERVICE LATERAL IS VITRIFIED CLAY PIPE, BELL (HUB) WILL BE REMOVED WITH APPROVED SAW AND A "FERNCO" VCP X PVC COUPLING WILL BE USED TO JOIN THE EXISTING AND NEW PIPE. FERNCO COUPLING WILL BE WRAPPED IN STRANDS OF COPPER WIRE AND COUPLING WILL BE BEDDED IN TYPE "57" ROCK TO UNDISTURBED MATERIAL. WHERE EXISTING SERVICE LATERAL IS DIP OR C-900, A DISTRICT APPROVED PVC TRANSITION COUPLING WILL BE USED.

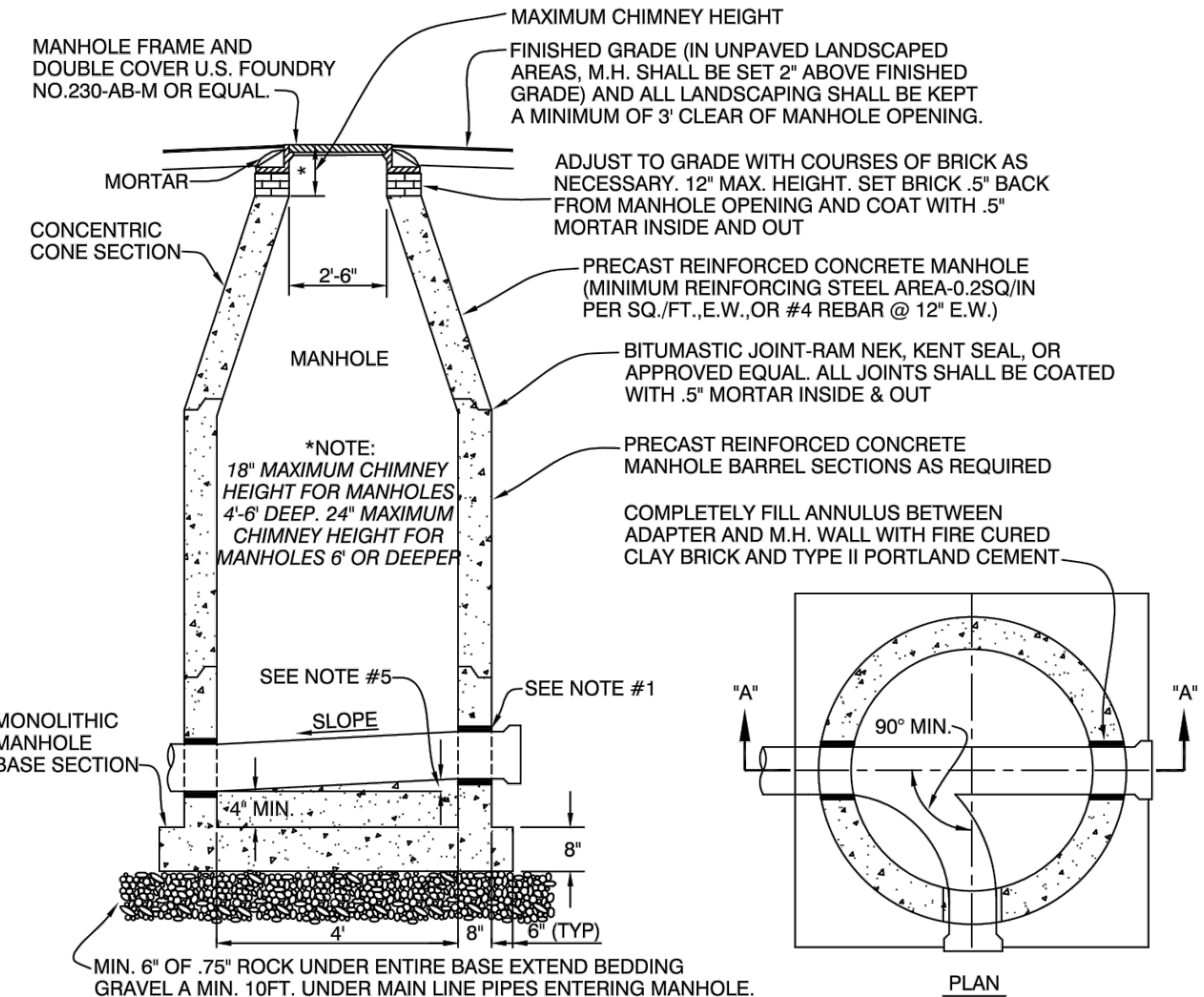
LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: JULY, 2019
TYPICAL TRENCH DETAIL FOR NON - PAVED AREAS	
SD-1	



- NOTES:**
1. WHERE SEWER LATERALS MAY BE FORCED TO BE INSTALLED AT A DEPTH GREATER THAN 36" DUE TO CONFLICT WITH OTHER UTILITIES, THE WYE FITTING MAY BE PLACED IN A VERTICAL POSITION ON THE CLEAN-OUT RISER PIPE (ALTERNATE CONFIGURATION).
2. LEAVE RISER 18" (MIN.) ABOVE GRADE. WHEN HOUSE RISER CONNECTION IS MADE BY BUILDING PLUMBER, RISER PIPE WILL BE CUT OFF, AND SET 2" ABOVE SOD GRADE (ADAPTER SHALL BE LEFT UNGLUED).
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6. 6" SINGLE SERVICES USED ONLY FOR COMMERCIAL OR MULTI-FAMILY RESIDENTIAL UNITS. (SEE SD-3 & SD-4)
7. WHEN MAIN LINE IS C-900 PVC OR EPOXY COATED DIP, SERVICE PIPE SHALL BE SAME MATERIAL AS MAIN LINE.
8. WHEN APPROVED BY THE DISTRICT, CLEAN-OUTS MAY BE PLACED IN PAVED AREAS, HOWEVER, PROTECTIVE BOXES AS SHOWN ON DETAIL SD-1 MUST BE INSTALLED.
- (PLUMBERS ONLY)**
- WHERE EXISTING SERVICE LATERAL IS VITRIFIED CLAY PIPE, BELL (HUB) WILL BE REMOVED WITH APPROVED SAW AND A "FERNCO" VCP X PVC COUPLING WILL BE USED TO JOIN THE EXISTING AND NEW PIPE. FERNCO COUPLING WILL BE WRAPPED IN STRANDS OF COPPER WIRE AND COUPLING WILL BE BEDDED IN TYPE "57" ROCK. WHERE EXISTING SERVICE LATERAL IS DIP OR C-900, A DISTRICT APPROVED PVC TRANSITION COUPLING WILL BE USED.

LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: APRIL, 2012
6" DOUBLE SERVICE CONNECTION DETAIL	
SD-8	

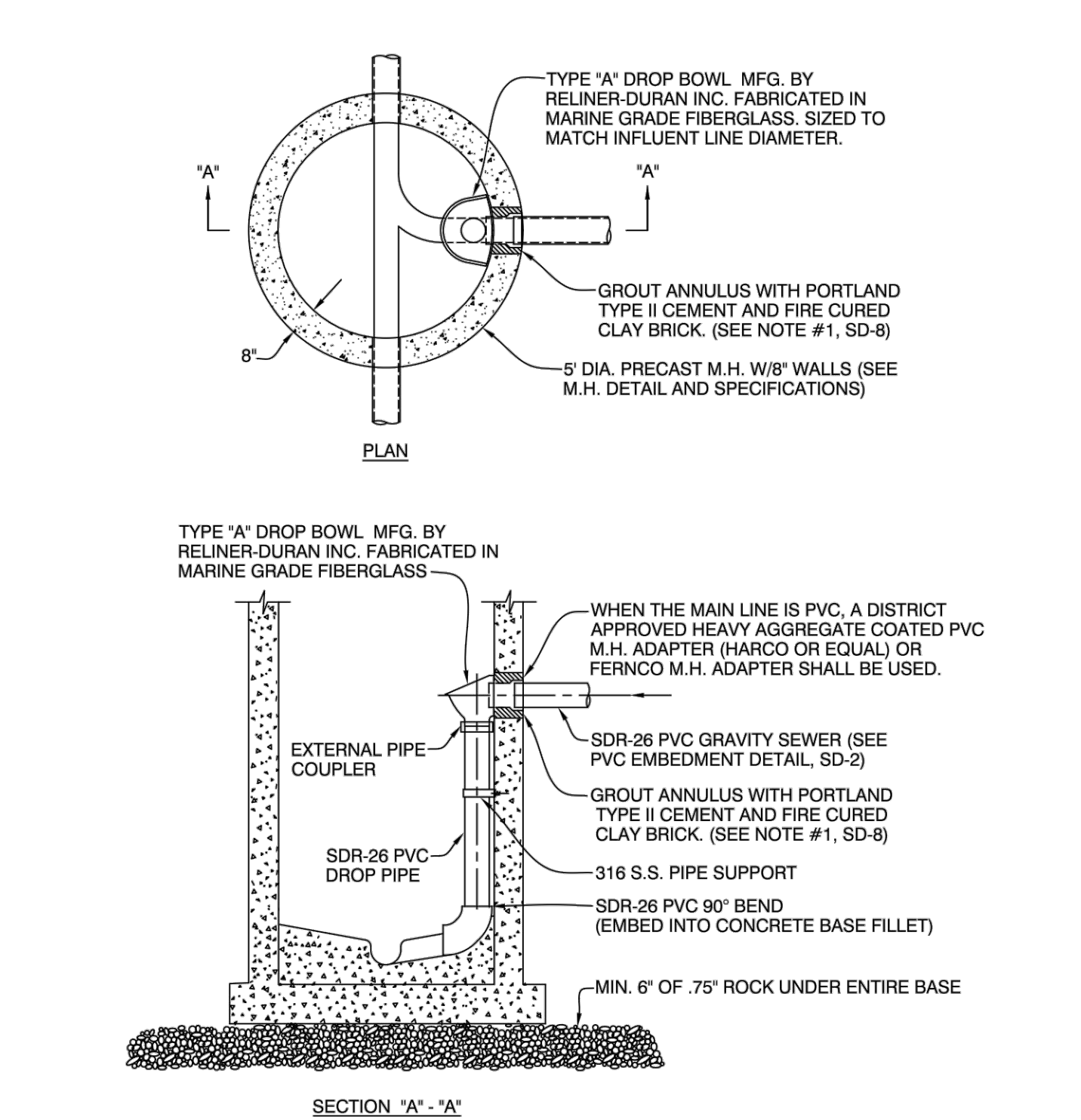
LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: JULY, 2019
TYPICAL TRENCH & PAVEMENT RESTORATION DETAIL	
SD-2	



- NOTES:**
1. WHEN THE MAIN LINE IS PVC, A DISTRICT APPROVED HEAVY AGGREGATE COATED PVC M.H. ADAPTER (HARCO OR EQUAL) OR FERNCO M.H. ADAPTER SHALL BE USED. CAST IN PLACE RUBBER BOOTS WITH STAINLESS STEEL HARDWARE (CAST-A-SEAL 12-08 FOR 8", Z-LOC C-107 FOR ALL OTHER SIZES) MAY BE USED AS AN ALTERNATE.
2. CHANNEL WIDTHS AND INVERT RADI VARY UNIFORMLY FROM END TO END.
3. ALL HOLES FOR PIPES SHALL BE CAST INTO THE MANHOLES. OPENINGS REQUIRED ON ALL EXISTING MANHOLES SHALL BE CORED WITH APPROVED MACHINES.
4. WHEN INVERT DIFFERENTIALS BETWEEN PIPES ENTERING MANHOLES IS 2' OR LESS, A "SLIDE" TYPE FLOW CHANNEL SHALL BE CONSTRUCTED TO FORM A SMOOTH FLOW TRANSITION. WHEN TWO (2) OR MORE "SLIDES" HAVE AN INVERT DIFFERENTIAL OF GREATER THAN .5' AND LESS THAN 2', THE MANHOLE SHALL BE 5'-0". ALL INSIDE DROP MANHOLES SHALL BE 5' I.D. (SEE DETAIL SD-12).
5. A MINIMUM DIFFERENTIAL OF .1' SHALL BE PROVIDED BETWEEN THE INLET AND OUTLET PIPE INVERTS.
6. ALL MANHOLES 14" OR MORE FROM RIM TO LOWEST INVERT, SHALL RECEIVE A MINIMUM 0.5" THICK COATING OF SEWPERCOAT OR APPROVED EQUAL.
7. ALL MANHOLES IN A WELL FIELD PROTECTION ZONE 1 OR 2, SHALL RECEIVE A MINIMUM 1" THICK COATING OF SEWPERCOAT OR APPROVED EQUAL.

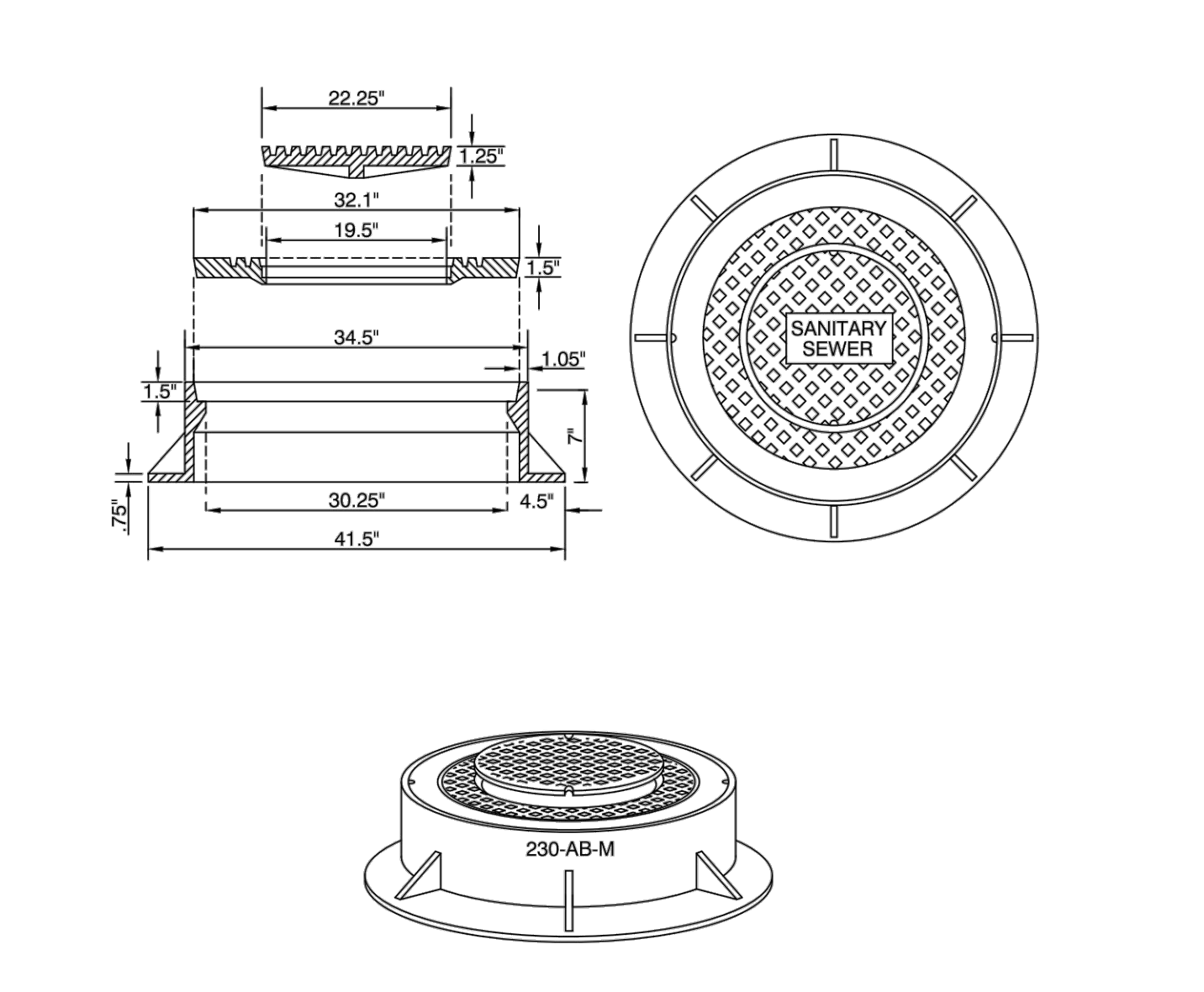
LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: MARCH, 2017
PRECAST MANHOLE DETAIL	
SD-11	

LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: APRIL, 2012
TYPICAL GRAVITY SEWER EMBEDMENT DETAIL	
SD-4	



LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: APRIL, 2012
GRAVITY SEWER INSIDE DROP MANHOLE DETAIL	
SD-12	

LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: APRIL, 2012
4" OR 6" SINGLE SERVICE CONNECTION DETAIL	
SD-6	



- NOTES:**
1. U.S.F. #230-AB-M MANHOLE RING & DOUBLE COVER, APPROXIMATE TOTAL WEIGHT 605 POUNDS
2. IN CASES WHERE A SHALLOW FRAME IS REQUIRED USF MODEL #655 MAY BE SUBSTITUTED FOR MODEL #230-AB-M

LOXAHATCHEE RIVER DISTRICT	
N.T.S.	REVISION: APRIL, 2012
MANHOLE FRAME AND COVER DETAIL	
SD-13	

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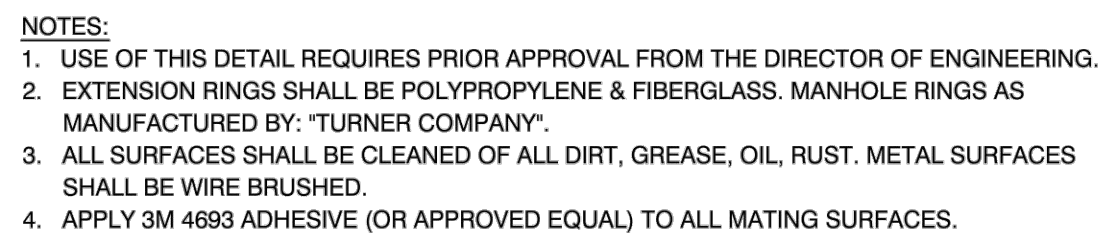
LOXAHATCHEE RIVER DISTRICT	
ROLLING HILLS SUBDIVISION	
GRAVITY SEWER, LIFT STATION, & FORCEMAIN	

STANDARD DETAILS	
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HOLTZ CONSULTING ENGINEERS, INC.	
270 SOUTH CENTRAL BLVD., SUITE 207	
JUPITER, FLORIDA 33458	
PH. (561) 575-2005	
Cert. No. 26960	

CHRISTINE J. MIRANDA, PE	
License No: 60906	

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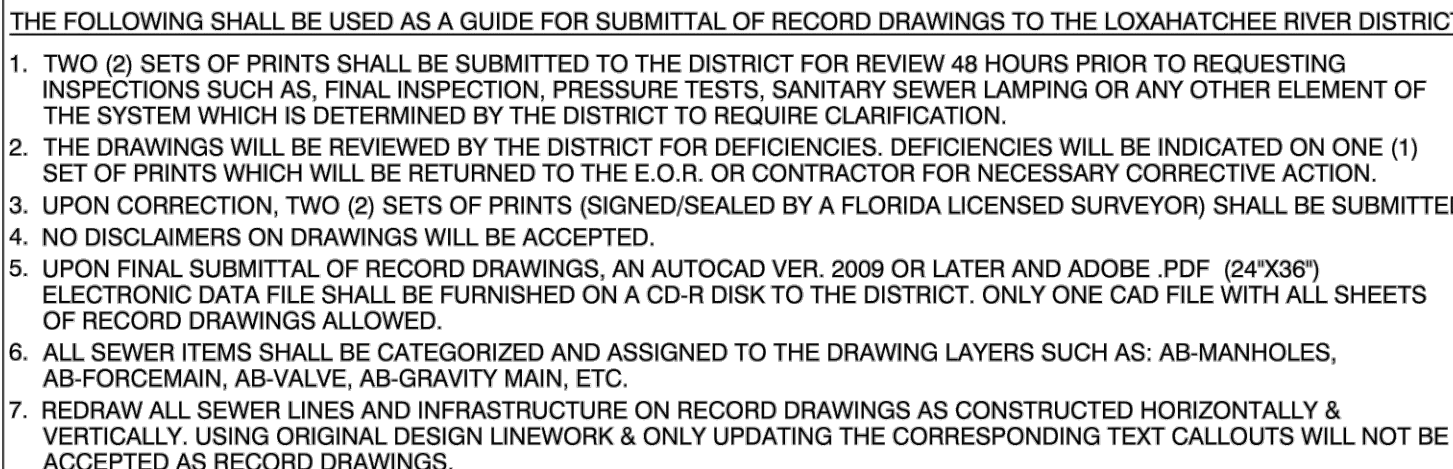
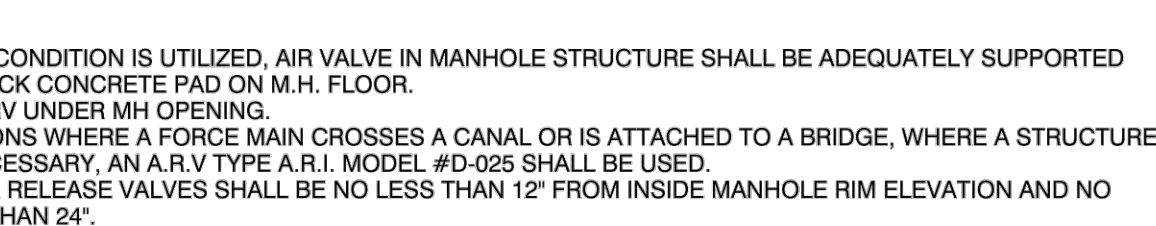
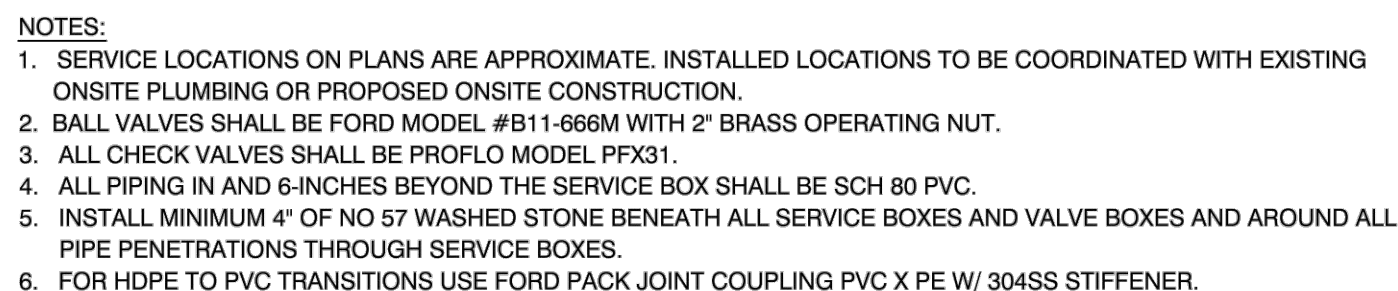
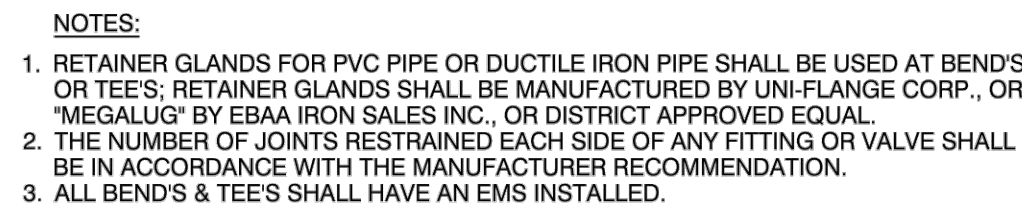


NOTES:

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

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

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



62-555,314 F.A.C. AUGUST 28, 2003

- HORIZONTAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES, AND ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.
- A. NEW OR RELOCATED UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
- B. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER.
- C. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY- OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY-TYPE SANITARY SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.
2. VERTICAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, AND RECLAIMED WATER PIPELINES.
- A. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY- OR VACUUM-TYPE SANITARY SEWER OR STORM SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY 12 INCHES, ABOVE OR AT LEAST 12 INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
- B. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATERMAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
- C. AT THE UTILITY CROSSING DESCRIBED IN PARAGRAPHS (A) AND (B) ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT THE WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C., AND AT LEAST SIX FEET FROM JOINTS IN GRAVITY-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

*REQUIRED BY: HRS, STATE OF FLORIDA, PALM BEACH COUNTY PUBLIC HEALTH UNIT

Drawing Name: F:\PROJECTS\LRD\Rolling Hills Sewer Design\Drawings\DETAILS.dwg Layout Name: SD-2 Plotted by: Russell Ryan Date: 10/7/2021 1:09 PM Holtz Consulting Engineers

LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

STANDARD DETAILS

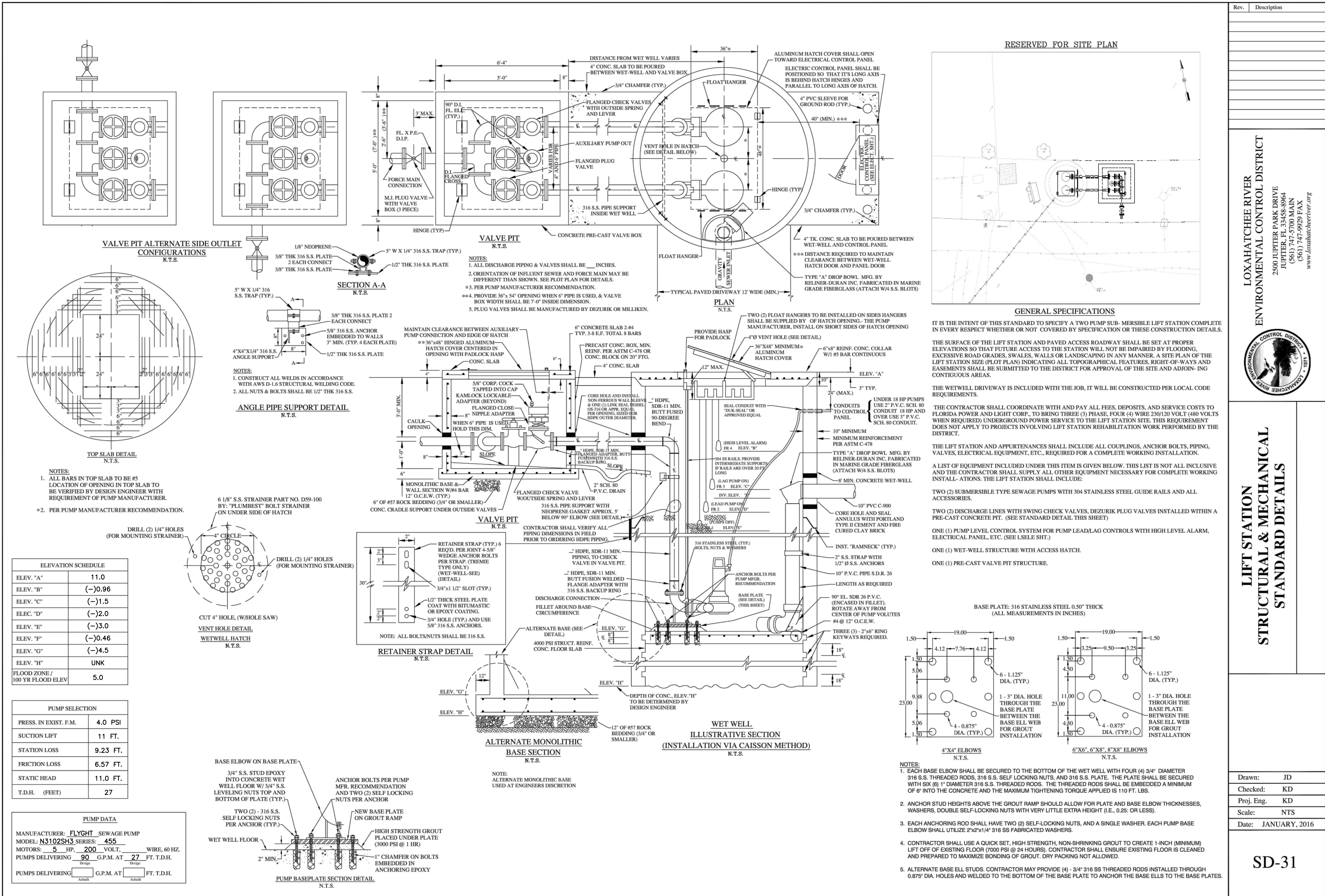
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License No: 60906

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DATE	BY	REVISIONS

Date: 09/30/2021

Scale: AS NOTED

Design By: CM

Drawn By: RR

Check By: #

LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

STANDARD DETAILS

HOLTZ CONSULTING ENGINEERS, INC.

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SD-3

SD-31

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT

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JUPITER, FL 33458-8964
(561) 747-5700 MAIN
(561) 747-5929 FAX
www.loxahatcheeriver.org



LIFT STATION
STRUCTURAL & MECHANICAL
STANDARD DETAILS

Drawn: JD

Checked: KD

Proj. Eng. KD

Scale: NTS

Date: JANUARY, 2016

	RACEWAY EXPOSED		LEVEL SWITCH, FLOAT SWITCH		JUNCTION BOX
	LIGHTING RACEWAY CONCEALED				
	RACEWAY CONCEALED				PANELBOARD, ELECTRICAL EQUIP. ENCL.
	RACEWAY TURNED UP/DOWN		THERMAL SWITCH		
	MOTOR		HEATER		MOTOR OPERATED VALVE
	TRANSFORMER		PILOT LIGHT		
	FUSE		RUN TIME METER		RED, MAINTAINED PUSH BUTTON
	CIRCUIT BREAKER				TIMING CONTACT
	CAPACITOR		SELECTOR SWITCH		
	LIGHTNING ARRESTER		PUSH BUTTON ON-OFF SWITCH		CONTROL RELAY, MOTOR STARTER, ETC.
	SAFETY DISCONNECT SWITCH, HP RATED		NORMALLY OPEN CONTACT		DENOTES SEPARATE CONDUITS WITH SEPARATE WIRE
	GROUND		NORMALLY CLOSED CONTACT		DENOTES PANELBOARD A, CIRCUIT 3
	DUPLEX, 14" AFF				
	METALLIC ETHERNET CAT6e				

LOCATION	CONDUIT	MISC ENCLOSURE MATERIALS	MISC ENCLOSURE NEMA RATING	FASTENERS, STRUT, THREADED ROD, ETC.	REMARKS
INTERIOR					
EXPOSED	PVC SCHED. 80	316 SS	4X	316 SS	
EXTERIOR					
BELOW GRADE	PVC SCHED. 80	CONCRETE BOXES	N/A	316 SS	
BELOW GRADE	PVC SCHED. 80				TO WETWELL
ABOVE GRADE	ALUM.	316 SS	4X	316 SS	NOT TO WETWELL

1. THE SCHEDULE SHALL ESTABLISH THE MINIMUM LEVEL OF QUALITY FOR MATERIALS, UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS
2. THE SCHEDULE SHALL NOT APPLY TO POWER TRANSFORMERS, LIGHT FIXTURES AND THE LIKE, THOSE ELEMENTS ARE NOTED OR INDICATED ELSEWHERE

N/A	NOT APPLICABLE
316 SS	316 STAINLESS STEEL

6 TSP, 1#14, 1-1/2" C

CONDUIT SIZE

1 #14 WIRE

6 TWISTED SHIELDED PAIRS

1. **SCHEMATIC NATURE**
PLAN VIEWS ARE SCHEMATIC IN NATURE AND MEANT TO SHOW THE SCHEMATIC ARRANGEMENT OF EQUIPMENT AND CONDUIT.
2. **APPROVED SHOP DRAWINGS**
USE APPROVED SHOP DRAWINGS FOR LAY OUT OF EQUIPMENT. THE CONTRACT DOCUMENTS WILL VARY FROM THE SHOP DRAWINGS. INFORM THE ENGINEER IMMEDIATELY IF THERE ARE LAY OUT ISSUES OR INADEQUATE SPACE FOR EQUIPMENT OR CLEARANCES. LAND CONDUITS IN OPENINGS OF ENCLOSURES PER THE APPROVED SHOP DRAWINGS, DO NOT USE THE CONTRACT DRAWINGS.
3. **CLEARANCES**
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MEET N.E.C. CLEARANCES ABOUT EQUIPMENT. THE SAME APPLIES TO RACEWAY SUPPORTS.
4. **ROUTING**
CONDUIT ROUTING IS SCHEMATIC IN NATURE. CONDUIT ROUTING IS SHOWN FOR CLARITY ON THE CONTRACT DRAWINGS. ROUTE CONDUITS AS MAY BE REQUIRED.
5. **FIELD VERIFICATIONS**
FIELD VERIFY ALL EXISTING CONDITIONS. MAKE MINOR ADJUSTMENTS AS NEEDED. INFORM OWNER/ENGINEER OF INCONSISTENCIES IMMEDIATELY IF PROBLEMS OR CONFLICTS EXIST.
6. **COMPLETE AND FUNCTIONAL SYSTEMS**
PROVIDE ALL LABOR AND MATERIAL FOR A COMPLETE AND FUNCTIONAL SYSTEM. DEMONSTRATE SYSTEM OPERATION TO THE OWNER/ENGINEER.
7. **LABELING**
THE CONTRACTOR SHALL PROVIDE LAMCROID PRINTED LABELS FOR ALL EQUIPMENT AND TYPED PANELBOARD SCHEDULES AS REQUIRED.
8. **CONTRACTOR MINIMUM REQUIREMENTS**
PROVIDE AND INSTALL A COMPLETE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR A COMPLETE SYSTEM SHALL BE INCLUDED.

THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS AND APPROVALS.

ALL WORK SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE, NFPA, AND THE LOCAL BUILDING CODES. ALL COMPONENTS SHALL BE U.L. APPROVED.

CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL CONCEALED FACILITIES BEFORE ANY WORK BEGINS.
9. **SCOPE OF WORK**
 - A. PROVIDE NEW POWER SERVICE FROM EXISTING PADMOUNT TRANSFORMER.
 - B. NEW LS CONTROL PANEL AND ELECTRICAL EQUIPMENT.
 - C. PROVIDE & INSTALL NEW POWER & CONTROLS RACEWAYS, ELECTRICAL EQUIPMENT, GROUNDING, AND CONTROLS AS INDICATED.
 - D. STARTUP AND TESTING OF PUMPS, AND ALL ELECTRICAL EQUIPMENT.
 - E. TRAINING AND O&M MANUALS.
10. **CONDUIT**
CONDUIT SIZES AS SHOWN ON THE DRAWINGS ARE MINIMUM. THE CONTRACTOR MAY INCREASE AS REQUIRED FOR EASE OF PULLING. ALL UNDERGROUND CONDUITS SHALL BE INSTALLED 24" BELOW FINAL GRADE.
11. **JUNCTION BOXES**
PROVIDE ADDITIONAL BOXES AS MAY BE REQUIRED.
12. **CONDUCTORS**

SEE THE SPECIFICATIONS.
13. **GROUNDING**
PROVIDE GROUND SYSTEM AS INDICATED ON THE DRAWINGS AND AS REQUIRED BY THE NATIONAL ELECTRIC CODE.
14. **FUTURE FACILITIES**
WHERE FUTURE FACILITIES ARE INDICATED. CONDUIT ROUTING SHALL ACCOUNT FOR SUCH FACILITIES.
15. **RESPONSIBILITIES**
BIDDERS, SUPPLIERS, EQUIPMENT VENDORS, GENERAL CONTRACTOR, SUB CONTRACTORS AND OTHER SIMILAR ENTITIES ARE REQUIRED TO READ ALL THE CONTRACT DOCUMENTS INCLUDING DRAWINGS AND SPECIFICATIONS.
16. **HOME RUNS**
CONTRACTOR SHALL COORDINATE HOME RUNS BETWEEN PLAN VIEWS. WHERE ANY CONDUIT IS SHOWN IN ANY PLAN VIEW IT SHALL BE INSTALLED THE ENTIRE LENGTH AS MAY BE REQUIRED.
17. **SEPARATION**
MAINTAIN MIN. 12" SEPARATION BETWEEN 4-20MADC SIGNAL AND OTHER RACEWAYS.
18. **RESTORATION**
CONTRACTOR SHALL RESTORE TO ORIGINAL CONDITION ALL FACILITIES HE DISTURBS. CONTRACTOR SHALL PROVIDE CLEANUP, AND PROPER DISPOSAL, AND PAY ALL FEES FOR ALL DEMOLISHED MATERIALS AND THE LIKE.
19. **WARRANTY**
CONTRACTOR SHALL WARRANT LABOR AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT.
20. **LRD REQUIREMENTS**
PROVIDE MATERIALS AND METHODS PER LOXAHATCHEE RIVER DISTRICT REQUIREMENTS.

CP	CONTROL PANEL	LLA	LOW LEVEL ALARM	RTU	REMOTE TERMINAL UNIT
CM	COMPRESSOR	LSCP	LIFT STATION CONTROL PANEL	SM	SUB-METER
CR	CONTROL RELAY	LRD	LOXAHATCHEE RIVER DISTRICT	SA	SURGE ARRESTER
CP	CONTROL PANEL	M	MOTOR STARTER	SB	SURGE BOX
DISC	DISCONNECT SWITCH	MCC	MOTOR CONTROL CENTER	SC	SURGE CAPACITOR
ETM	ELAPSED TIME METER	MLO	MAIN LUGS ONLY	SCC	SHIELDED CONTROL CABLE
F	FUSE	MP	MAIN PUMP	SS	SELECTOR SWITCH OR
FSA	FIELD SURGE ARRESTOR	OL	OVER LOAD RELAY		316 STAINLESS STEEL
GEN	GENERATOR	OH	OVERHEAD	TB	TERM. BOX
GFI	GROUND FAULT INTERRUPTER	OOX	OFF, OFF, ON	TD	TIME DELAY
HLA	HIGH LEVEL ALARM	PB	PUSH BUTTON	TS	TEST SWITCH
HOA	HAND-OFF-AUTO	PB	PULL BOX	WP	WEATHER PROOF
HOR	HAND-OFF-REMOTE	PDP	POWER DIST. PANEL	XFMR	TRANSFORMER
IPB	INST. PULL BOX	PM	POWER MONITOR	ZSC	POSITION SWITCH CLOSED
JP	JOCKEY PUMP	PSCP	PUMP STATION CONTROL PANEL	ZSO	POSTION SWITCH OPEN
LA	LIGHTNING ARRESTER	R,G,A	RED, GREEN, AMBER PILOT LIGHT		

C&W engineering
ELECTRICAL CONSULTANTS
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 WEST PALM BEACH, FL 33411
 (561) 642-5333

REGISTRATION NUMBERS
 C & W ENGINEERING INC. CA# 33315
 MICHAEL A. GUIDA, P.E. 60755

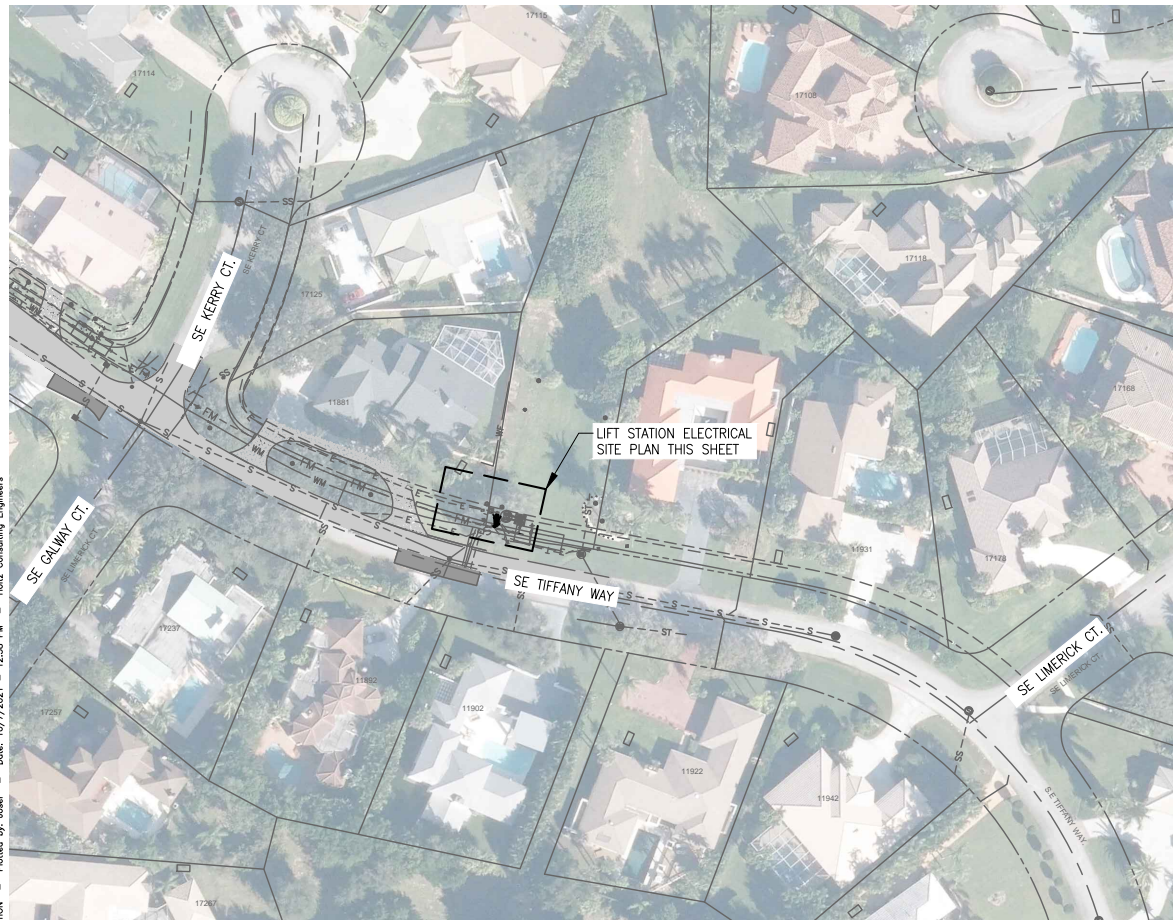
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Design By: JLR
Drawn By: AOD
Check By: MAG

ELECTRICAL NOTES & LEGENDS

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PH. (561) 575-2005 Cert. No. 26960

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LIFT STATION AERIAL SITE PLAN

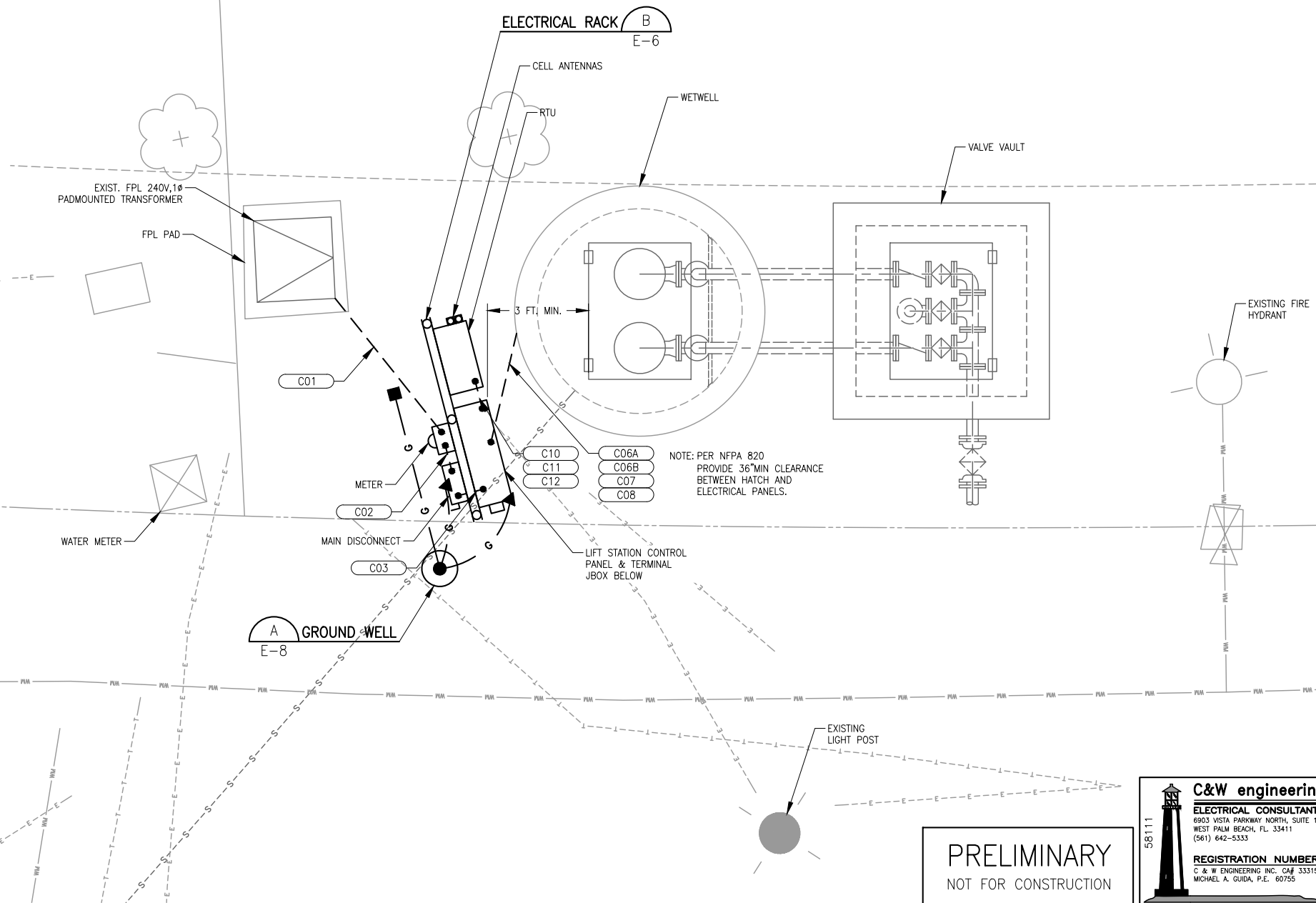
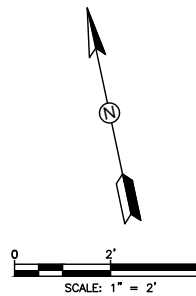
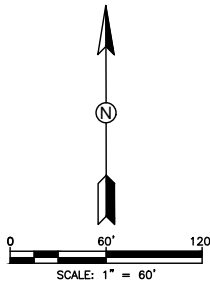
AS NOTED

GROUNDING SYSTEM NOTES

1. PROVIDE A BURIED GROUND CONDUCTOR BELOW GRADE.
2. BOND PIPE STANDS, EQUIP. RACKS AND THE LIKE.
3. ELECTRICAL CONTRACTOR SHALL TEST THE GROUND SYSTEM. THE RESULTS SHALL NOT BE GREATER THAN 5 OHMS.
4. ALL CONNECTIONS TO GROUND SYSTEM SHALL BE MADE IN LINE WITH BENDS NOMINAL 12" RADIUS IN THE DIRECTION OF CURRENT FLOW.
5. ALL BENDS IN GROUND WIRES SHALL BE NOMINAL 12" RADIUS.
6. CONTRACTOR SHALL CONCEAL ALL CONDUCTORS.
7. CONTRACTOR SHALL CUT AND PATCH ALL HARD SURFACES AS MAY BE REQUIRED FOR INSTALLATION OF GROUNDING SYSTEM. CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION.

GROUNDING LEGEND

- BURIED GROUND RODS
- ▲ COMPRESSION CONNECTION OR CADWELDED BOND
- GROUND WELL



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(561) 642-5333
REGISTRATION NUMBERS
C & W ENGINEERING INC. CA# 33315
MICHAEL A. GUIDA, P.E. 60755

REV	DATE	REVISIONS	BY
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Date: 09/30/2021
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LOXAHATCHEE RIVER DISTRICT
ROLLING HILLS SUBDIVISION
GRAVITY SEWER, LIFT STATION, & FORCEMAIN

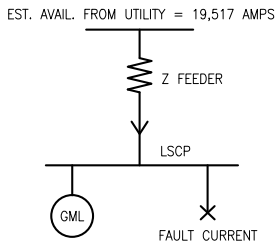
LIFT STATION ELECTRICAL SITE PLANS

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E-2



FAULT CURRENT = A.U. + GML
= 19,517 + 336
= 19,853 AMPS

1. GROUPED MOTOR LOAD = $28A \times 1 \times 6 = 336A$.
2. FUSE LET THRU CURRENT = 3,900A.

FAULT CURRENT

LS SERVICE VOLTAGE DROP

10' #3, 65A LOAD, 240V, 1Ø

$Z = 0.2379/1000' \times 10' = 0.002379$

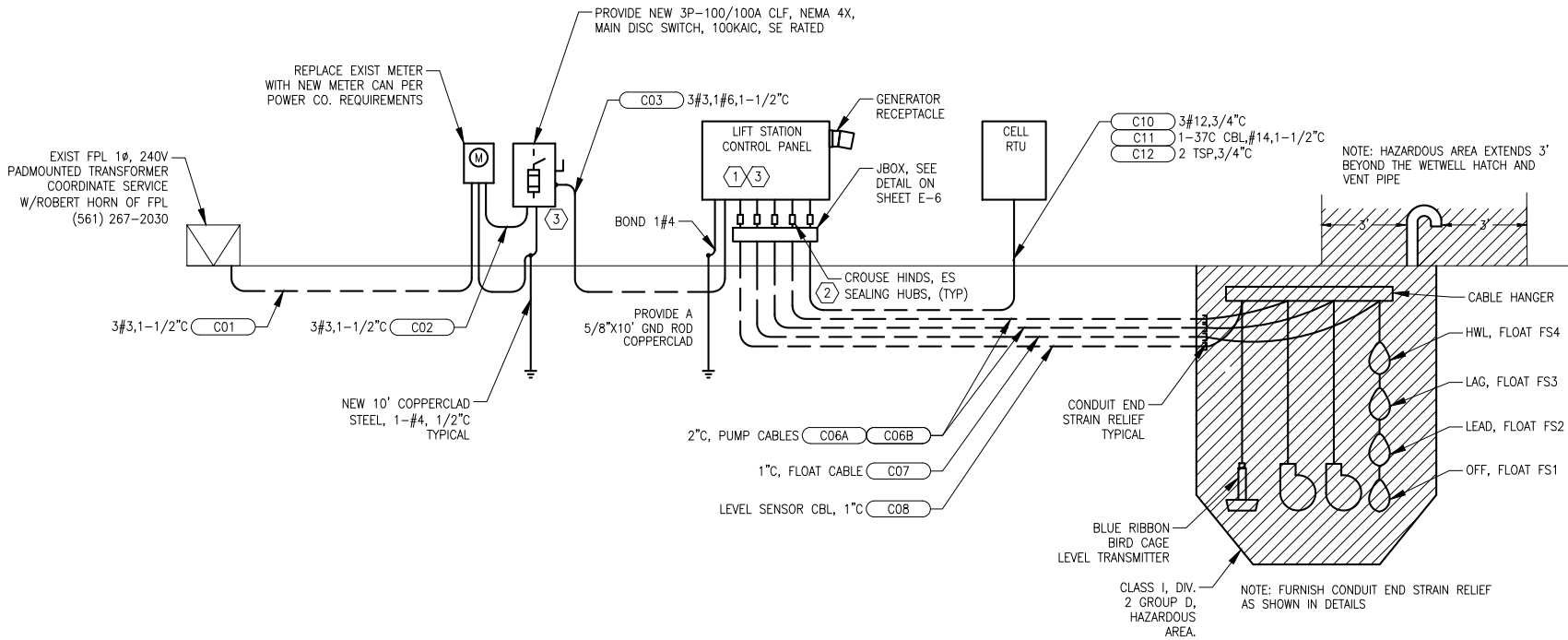
$VDROP = 2 (Z) 65A = 0.30927V$
 $= 0.30927V/240V \times 100 = 0.00199\%$

SPECIFIC ELECTRICAL NOTES

- ① PROVIDE EATON PTX400 WITH INTEGRAL FUSE, 4X HOUSING, OR EQUAL.
② PROVIDE TERMINAL JBOX WITH EXPLOSION PROOF SEALS. SEE CONTROL SCHEMATICS AND SPECIFICATIONS.
③ PROVIDE ARC FLASH PROTECTION WARNING LABEL PER NEC 110.16

240V, 1Ø LOAD CALCULATION

LOAD	AMPS
PUMP NO. 1, 5HP, @ 125%	32
PUMP NO. 2, 5HP	28
MISCELLANEOUS LOADS	5
TOTAL	65
SERVICE PROVIDED: 100A, 1Ø	



240V ELECTRICAL RISER DIAGRAM, CLASS 1, DIV. 2, GROUP D HAZARDOUS AREA

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ELECTRICAL RISER DIAGRAM

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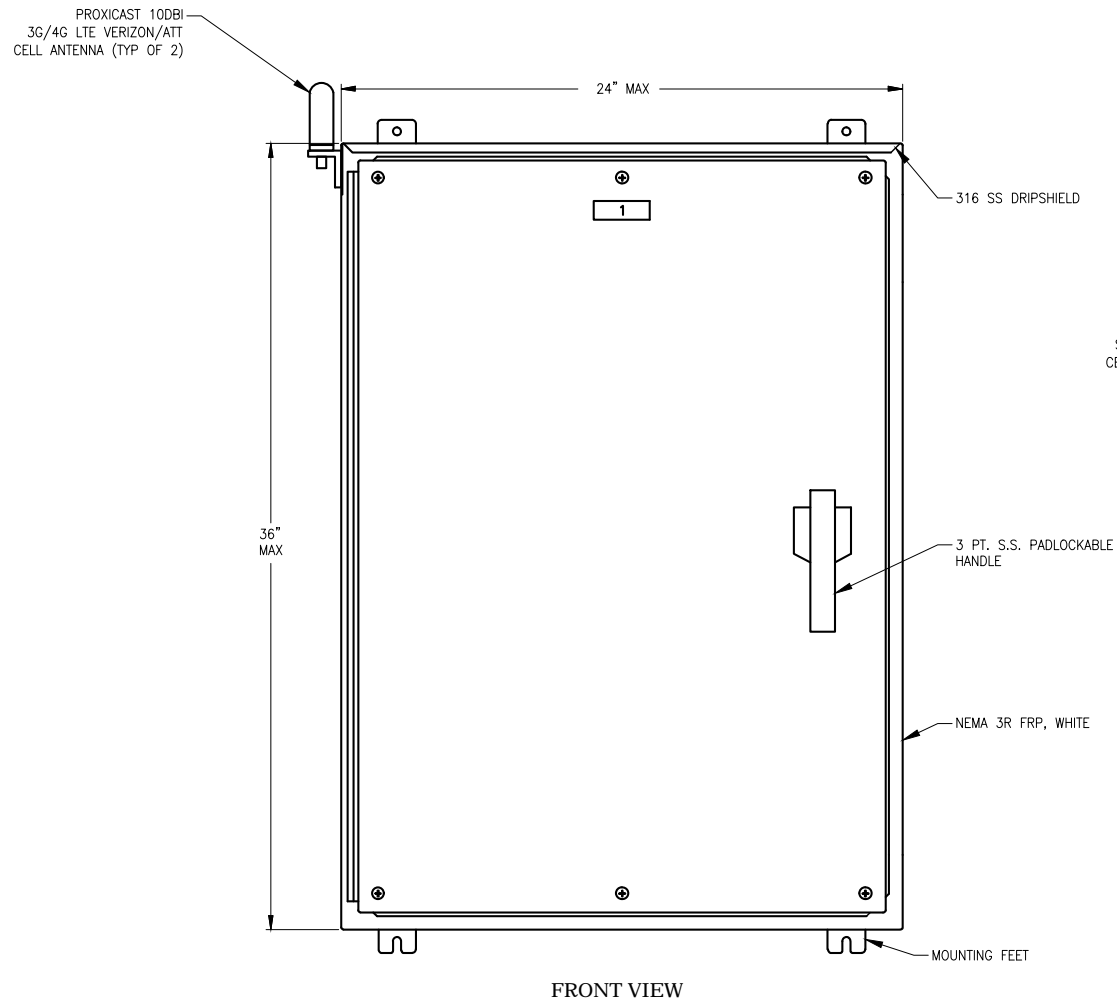
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DATE	BY	REVISIONS

Date: 09/30/2021
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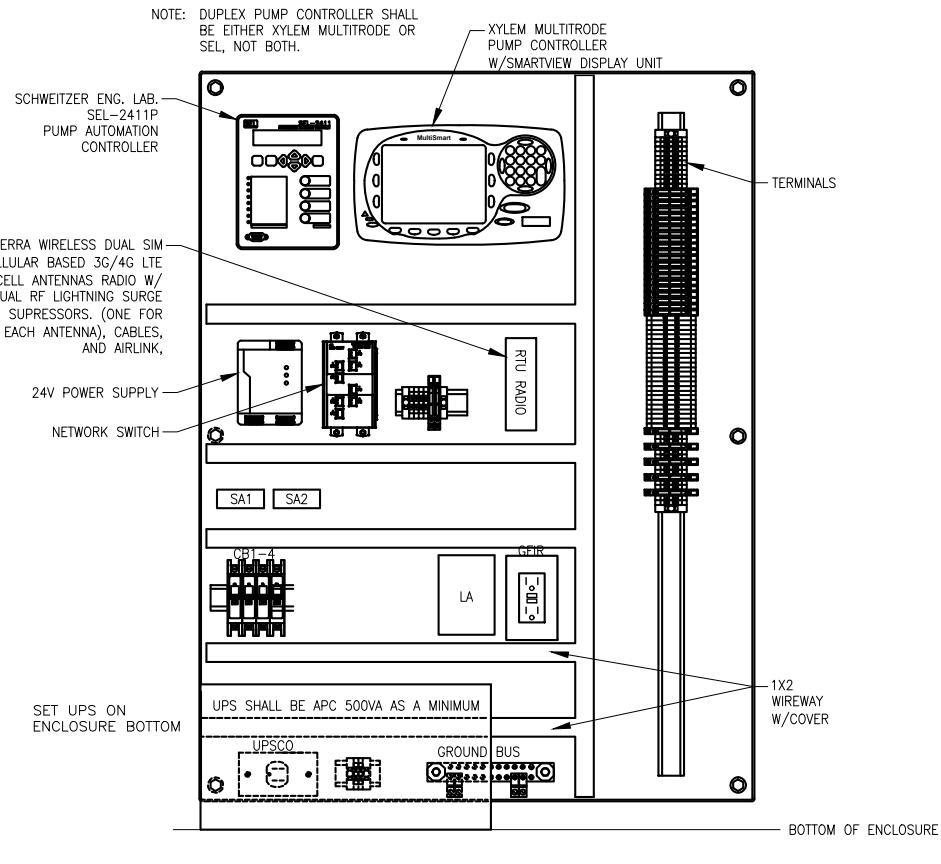
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FRONT VIEW

CELL BASED RTU PANEL DETAIL

NTS

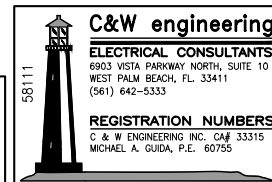


SUBPANEL LAYOUT

NOTES:

1. CELL BASED RTU SHALL BE BASED ON ONE OF TWO PUMP CONTROLLERS, THE SEL PUMP CONTROLLER, OR THE XYLEM MULTISTART PUMP CONTROLLER.
2. INTERNAL RTU COMPONENTS SHALL DEPEND ON PUMP CONTROLLER BEING USED AND INTERFACED WITH, NETWORK SWITCH, 24V POWER SUPPLY, RELAYS, FUSES, BREAKERS AND THE LIKE. SHALL BE THE MODEL AND TYPE AS BEING COMPATIBLE WITH THE PARTICULAR PUMP CONTROLLER. REFER TO RTU SPECIFICATIONS ALSO.
3. DIMENSIONS ARE MAXIMUM, ACTUAL RTU ENCLOSURE SIZE DEPENDING ON PUMP CONTROLLER BEING USED.

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CELL BASED RTU PANEL DETAILS

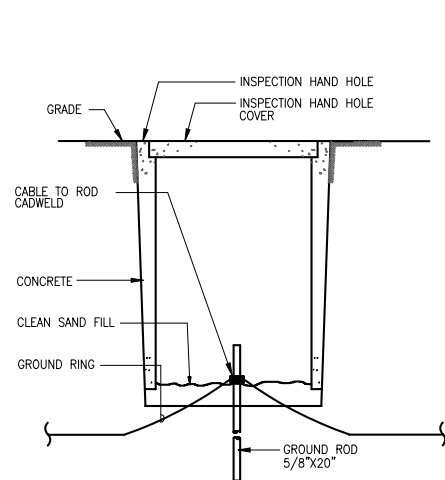
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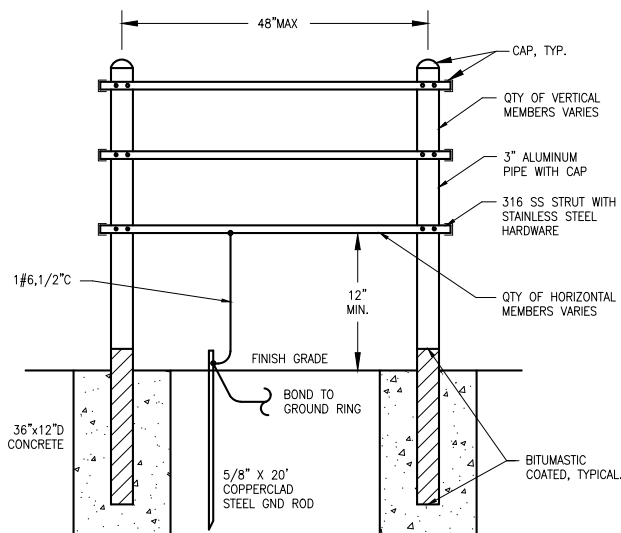
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GROUND WELL DETAIL

NTS

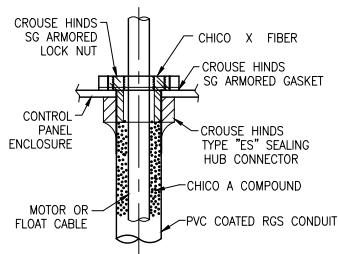
A



PIPE STAND, CONCRETE MOUNT

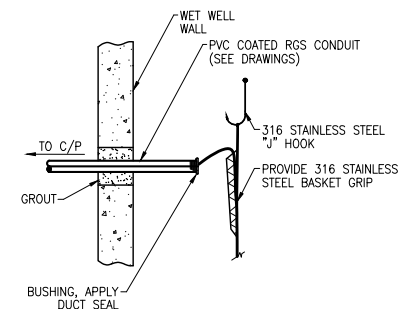
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B



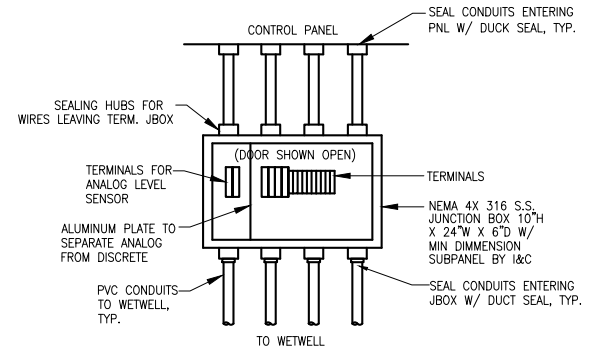
CABINET CONDUIT PENETRATION

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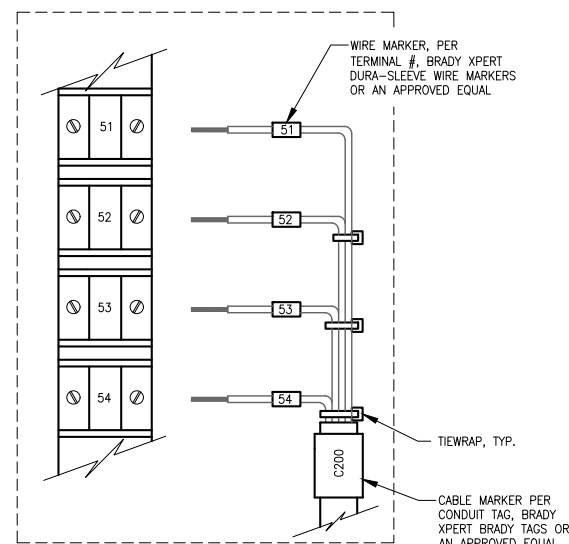
TYPICAL CONDUIT END STRAIN RELIEF

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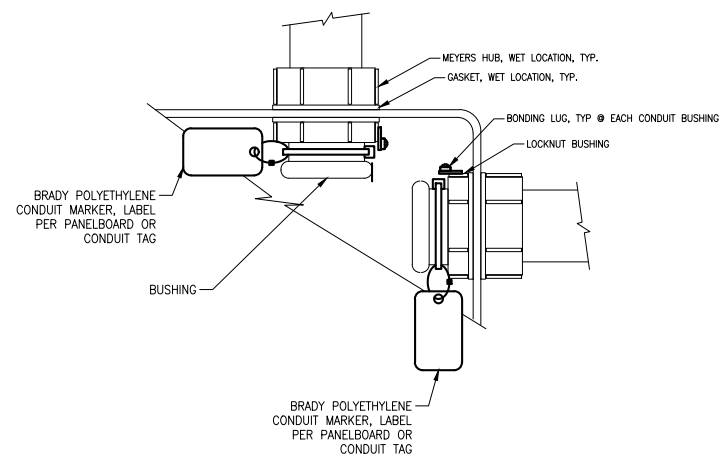
TERMINAL JBOX DETAIL

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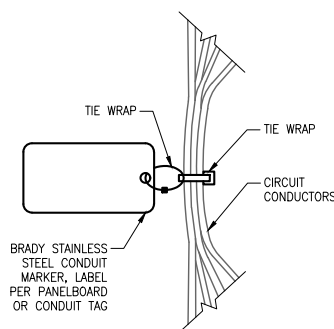
TERMINATION EXAMPLE DETAIL

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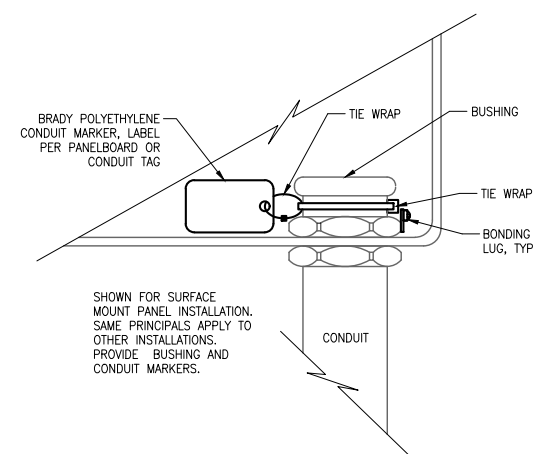
CONDUIT TERMINATION DETAIL

NTS



CIRCUIT MARKER DETAIL

NTS



CONDUIT DETAIL

NTS

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