

UTILITIES, INC. OF FLORIDA SANLANDO SERVICE AREA SABAL PALM MASTER PUMP STATION



SEMINOLE COUNTY, FLORIDA

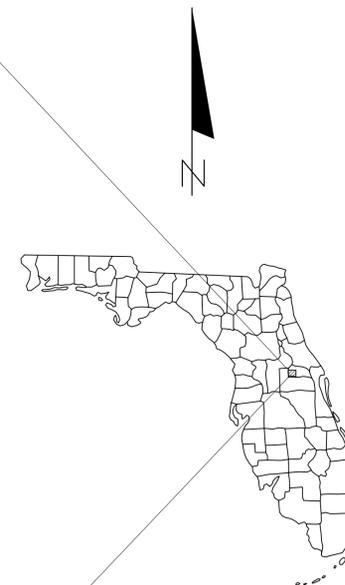
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PROJECT VICINITY MAP
N.T.S.



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THE SITE CONSTRUCTION STAKEOUT SHALL BE PERFORMED UNDER THE DIRECTION OF A FLORIDA REGISTERED SURVEYOR. AUTOCAD FILES WILL BE FURNISHED TO AID IN THE SITE CONSTRUCTION STAKEOUT. ANY DISCREPANCIES FOUND BETWEEN AUTOCAD FILES AND SITE CONSTRUCTION PLANS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR CLARIFICATION PRIOR TO THAT STAKEOUT.

PREPARED BY
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No.	REVISIONS	DATE	BY
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GENERAL PROJECT DATA

FOR IDENTIFICATION OF CONTRACTUAL AGREEMENTS, THIS SET OF DRAWINGS IS DATED **OCTOBER 2016**. ANY REVISIONS THEREAFTER WILL BE NOTED AND DATED ON THE AFFECTED DRAWING(S).

EXISTING UTILITY LOCATION

THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE VARIOUS UTILITIES AND TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATIONS TO THESE UTILITIES WITH THE OWNER OF THE UTILITY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CROSSING AN UNDERGROUND UTILITY, WHETHER SHOWN ON THE PLANS OR LOCATED BY THE UTILITY COMPANY. ALL UTILITIES THAT INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED. ANY COST, DELAY OR INCONVENIENCE CAUSED TO THE CONTRACTOR BY THE RELOCATION OF VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION WILL BE ALLOWED.

A SINGLE POINT UTILITY LOCATION SERVICE HAS BEEN SET UP FOR PARTICIPATING UTILITIES. THE CONTRACTOR IS TO CONTACT THE SUNSHINE STATE ONE CALL CENTER AT LEAST TWO (2) AND NO MORE THAN FIVE (5) WORKING DAYS PRIOR TO THE SPECIFIC CONSTRUCTION ACTIVITY FOR FIELD LOCATION. NOTE THAT NOT ALL UTILITIES PARTICIPATE IN THIS PROGRAM. THE CONTRACTOR SHOULD CONTACT NON-PARTICIPATING UTILITIES SEPARATELY FOR THEIR FIELD LOCATION OF FACILITIES. PER FLORIDA STATUTE 553.851, THE CONTRACTOR OR EXCAVATOR IS REQUIRED TO NOTIFY THE GAS COMPANY TWO (2) WORKING DAYS PRIOR TO STARTING EXCAVATION.

AS-BUILTS

THE CONTRACTOR SHALL PROVIDE AS-BUILT SURVEYED INFORMATION WITH NORTHING AND EASTING DATA FOR ALL VALVES, FITTINGS, AND EVERY 100 FEET OF PIPE. VERTICAL DATA SHALL BE PROVIDED AT ALL VALVES.

PERMITS AND PERMIT REQUIREMENTS

THE CONTRACTOR SHALL OBTAIN FROM THE OWNER COPIES OF ALL REGULATORY AND LOCAL AGENCY PERMITS. THE CONTRACTOR SHALL BE EXPECTED TO REVIEW AND ABIDE BY ALL THE REQUIREMENTS AND LIMITATIONS SET FORTH IN THE PERMITS.

THE CONTRACTOR SHALL BE FURNISHED A COPY OF THE N.P.D.E.S. NOTICE OF INTENT APPLICATION AND REPORT WHICH WAS FURNISHED TO EPA BY THE OWNER. THE CONTRACTOR SHALL REVIEW THE CONTENTS OF THAT SUBMITTAL INCLUDING CONSTRUCTION COMMENCEMENT AND CESSATION DATES AND ALL OTHER ELEMENTS OF THE SUBMITTAL. HE SHALL EXECUTE AND FILE AN N.O.I. TO EPA AS THE ENTITY RESPONSIBLE FOR OPERATING AND MAINTAINING THE EROSION PROTECTION SYSTEM DURING CONSTRUCTION, NOTING ANY CHANGES AND/OR MODIFICATIONS AND/OR AGREEING TO THE ELEMENTS OF THE ORIGINAL SUBMITTAL. HE SHALL SUBMIT THIS AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL KEEP ON-SITE A COPY OF THE WATER MANAGEMENT DISTRICT AND N.P.D.E.S. PERMITS ISSUED TOGETHER WITH THE INSPECTION REPORTS AND CURRENT PLANS, INCLUDING ANY MODIFICATIONS REQUIRED. HE SHALL ALSO PROVIDE A NOTICE OF TERMINATION TO THE N.P.D.E.S. PERMITTING AUTHORITY AT THE CONCLUSION OF THE PROJECT THAT THE DISCHARGE AND EROSION PROTECTION DEVICE AS SHOWN ON THE PLANS HAVE BEEN IMPLEMENTED AND MAINTAINED THROUGHOUT CONSTRUCTION.

QUALITY CONTROL TESTING REQUIREMENTS

ALL TESTING RESULTS SHALL BE PROVIDED TO THE OWNER/OPERATOR, COUNTY, AND THE ENGINEER. TESTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH THE OWNER/OPERATOR'S SPECIFICATIONS AND REQUIREMENTS. ALL TEST RESULTS SHALL BE PROVIDED (PASSING AND FAILING) ON A REGULAR AND IMMEDIATE BASIS. CONTRACTOR SHALL PROVIDE TESTING SERVICES THROUGH A FLORIDA LICENSED GEOTECHNICAL ENGINEERING FIRM ACCEPTABLE TO THE OWNER AND ENGINEER. NO TESTING TO BE SCHEDULED ON MONDAY OR FRIDAY.

SHOP DRAWINGS

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING THE MATERIALS REQUIRED FOR CONSTRUCTION.

EARTHWORK

EARTHWORK QUANTITIES

THE CONTRACTOR SHALL PERFORM HIS OWN INVESTIGATIONS AND CALCULATIONS AS NECESSARY TO ASSURE HIMSELF OF EARTHWORK QUANTITIES. THERE IS NO IMPLICATION THAT EARTHWORK BALANCES AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY IMPORT FILL NEEDED, OR FOR REMOVAL AND DISPOSAL OF EXCESS MATERIALS.

EROSION CONTROL

EROSION AND SILTATION CONTROL MEASURES ARE TO BE PROVIDED AND INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION. THESE MEASURES ARE TO BE INSPECTED BY THE CONTRACTOR ON A REGULAR BASIS AND ARE TO BE MAINTAINED OR REPAIRED ON AN IMMEDIATE BASIS, AS REQUIRED. REFER TO ST. JOHNS RIVER WATER MANAGEMENT DISTRICT PERMIT FOR ADDITIONAL REQUIREMENTS FOR EROSION CONTROL AND SURFACE DRAINAGE.

WETLAND PROTECTION

THE LIMITS OF THE ON-SITE WETLANDS HAVE BEEN PROVIDED TO THE CONTRACTOR ON THE CONSTRUCTION PLANS OR ON PERMIT MATERIALS. THE WETLANDS AREAS ARE TO BE PROTECTED FROM DISTURBANCE AT ALL TIMES. CONTRACTOR SHALL PROVIDE EROSION, SILTATION, AND DIVERSION MEASURES PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN A COPY OF EACH PERMIT RELATING TO WETLANDS AND ADHERE TO ALL PROVISIONS AND CONDITIONS THERETO.

LIMITS OF DISTURBANCE

AT NO TIME SHALL THE CONTRACTOR DISTURB SURROUNDING PROPERTIES OR TRAVEL ON SURROUNDING PROPERTIES WITHOUT WRITTEN CONSENT FROM THE PROPERTY OWNER. REPAIR OR RECONSTRUCTION OF DAMAGED AREAS ON SURROUNDING PROPERTIES SHALL BE PERFORMED BY THE CONTRACTOR ON AN IMMEDIATE BASIS. ALL COSTS FOR REPAIRS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND NO EXTRA COMPENSATION SHALL BE PROVIDED.

TREE REMOVAL

THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER WHEN ALL WORK IS LAID OUT (SURVEY STAKED), SO THAT A DETERMINATION MAY BE MADE OF SPECIFIC TREES TO BE REMOVED. NO TREES SHOWN ON THE CONSTRUCTION PLANS AS BEING SAVED SHALL BE REMOVED WITHOUT PERMISSION FROM THE OWNER AND ENGINEER.

CLEARING AND GRUBBING

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING AND GRUBBING FOR SITE CONSTRUCTION INCLUDING CLEARING FOR PAVING, UTILITIES, DRAINAGE FACILITIES AND BUILDING CONSTRUCTION. SEE PLANS FOR LIMITS OF CLEARING AND GRUBBING. ALL AREAS TO BE CLEARED SHALL BE FIELD STAKED AND REVIEWED BY THE OWNER AND ENGINEER PRIOR TO ANY CONSTRUCTION.

MATERIAL STORAGE / DEBRIS REMOVAL

ALL MATERIALS EXCAVATED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STOCKPILED AT ON-SITE LOCATIONS AS SPECIFIED BY THE OWNER. MATERIALS SHALL BE STOCKPILED SEPARATELY AS TO USABLE (NON ORGANIC) FILL STOCKPILES AND ORGANIC (MUCK) STOCKPILES IF MUCK IS ENCOUNTERED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL UNSUITABLE FILL MATERIALS FROM THE SITE. ALL CLAY ENCOUNTERED SHALL BE EXCAVATED OUT AND REPLACED WITH CLEAN GRANULAR FILL MATERIALS.

FILL MATERIAL

ALL FILL MATERIALS SHALL NOT CONTAIN MUCK, STUMPS, ROOTS, BRUSH, VEGETATIVE MATTER, RUBBISH OR OTHER MATERIAL THAT WILL NOT COMPACT INTO A SUITABLE AND ENDURING BACKFILL. FILL SHALL BE CLEAN, NON-ORGANIC, GRANULAR MATERIAL WITH NOT MORE THAN 10% PASSING THE NO. 200 SIEVE.

COMPACTION

FILL MATERIALS PLACED UNDER ROADWAYS SHALL BE COMPACTED TO AT LEAST 98% OF THE MAXIMUM DENSITY AS SPECIFIED IN AASHTO T-180. ALL OTHER FILL AREAS ARE TO BE COMPACTED TO AT LEAST 95% MAXIMUM DENSITY AS SPECIFIED IN AASHTO T-180. FILL MATERIALS SHALL BE PLACED AND COMPACTED IN A MAXIMUM OF 12" LIFTS. THE CONTRACTOR SHALL PROVIDE THE ENGINEER AND OWNER WITH ALL (PASSING AND FAILING) TESTING RESULTS. RESULTS SHALL BE PROVIDED ON A TIMELY AND REGULAR BASIS PRIOR TO CONTRACTOR'S PAY REQUEST SUBMITTAL FOR THE AFFECTED WORK.

FORCE MAIN

OWNER/OPERATOR

THE ENTITY THAT WILL OWN, OPERATE AND MAINTAIN THE FORCE MAIN SHOWN ON THESE PLANS IS UTILITIES INC. OF FLORIDA. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THAT ENTITY.

MATERIALS

SANITARY SEWER FORCE MAIN SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE (PVC) AND SHALL CONFORM TO ASTM D2241 PLASTIC PIPE (SD PR & CLASS T), ASTM 1784, TYPE I, 2000 PSI DESIGN STRESS. THE PIPE SHALL BE ANSI/AWWA C900, WITH MARKINGS ON EACH SECTION SHOWING CONFORMANCE WITH THE ABOVE SPECIFICATION. JOINTS SHALL BE ELASTOMERIC RUBBER GASKETED CONFORMING TO ASTM D3139 DR 18 PIPE.

FITTINGS FOR FORCE MAIN SHALL BE MECHANICAL JOINT, DUCTILE IRON CONFORMING TO ANSI/AWWA C110/A21.10 350 PSI MINIMUM PRESSURE RATING. FITTINGS SHALL BE POLYETHYLENE LINED (MIN. 30 MILS CONFORMING TO ASTM D-1248).

ALL PLUGS, CAPS, TEES, VALVES, BENDS, ETC., SHALL BE RESTRAINED JOINTS OR THRUST BLOCKED (RESTRAINED JOINT PREFERRED) PER DETAILS ON UTILITY SHEETS. THREE FOOT MINIMUM COVER OVER FORCE MAIN.

STANDARD PLUG VALVES SHALL BE MANUFACTURED BY DEZURIK CORP., PRATT, DRESSER, HOMESTEAD INDUSTRIES, OR APPROVED EQUAL.

VALVES SHALL BE FURNISHED WITH A REPLACEABLE CHEVRON PACKING, CAPABLE OF BEING REPACKED WITH THE LINE UNDER PRESSURE.

VALVES 4 INCHES IN DIAMETER AND SMALLER SHALL BE WRENCH NUT OPERATED. VALVES LARGER THAN 4 INCHES SHALL BE WORM GEAR OPERATED, EXCEPT WHERE AUTOMATIC OPERATION IS SPECIFIED.

AIR RELEASE VALVE DESIGNED FOR SEWAGE SERVICE SHALL BE INSTALLED IN THE TOPS OF PIPES AS INDICATED ON THE DRAWINGS. VALVES SHALL BE DESIGNED TO PERMIT MANUAL RELEASE OF AIR FROM AN EMPTY PIPE DURING FILLING AND SHALL BE CAPABLE OF DISCHARGING ACCUMULATED AIR IN THE LINE WHILE THE LINE IS IN OPERATION AND UNDER PRESSURE. VALVES SHALL BE CAPABLE OF WITHSTANDING OPERATING PRESSURES OF 50 PSI. VALVES SHALL BE VENTED TO THE ATMOSPHERE. THE VALVES SHALL BE VALMATIC, OR APPROVED EQUAL.

CHECK VALVES SHALL BE OF THE WEIGHT AND LEVER TYPE, RESILIENT DISK, GRAY IRON, BRONZE TRIM, HORIZONTAL MOUNTED. VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C508 WITH FLANGED CONNECTIONS. VALVES SHALL HAVE A WORKING PRESSURE OF 200 PSI FOR VALVES 2"-12". VALVES SHALL BE DEZURIK, MUELLER, OR APPROVED EQUAL.

CONSTRUCTION METHODS

TRENCHING SHALL BE IN ACCORDANCE WITH THE TRENCHING DETAILS PROVIDED ON THE CONSTRUCTION PLANS.

COMPACTED BACKFILL FOR ALL PIPE SHALL BE TO 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 FOR UNDER ROADWAYS. OTHER COMPACTION OF BACKFILL SHALL BE TO THE 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.

INSTALLATION OF THE SANITARY SEWER FORCE MAIN SHALL BE IN CONFORMANCE WITH ASTM D2774-72 (LATEST EDITION).

MINIMUM COVER OVER ALL PIPES SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.

THE FORCE MAIN SHALL BE INSTALLED AS NOTED ON THE PLANS. WHERE APPLICABLE, A LATERAL SEPARATION OF AT LEAST 10' SHALL BE MAINTAINED BETWEEN WATER AND SEWER LINES. WHEN WATER AND SEWER LINES CROSS WITH LESS THAN AN 18" VERTICAL SEPARATION, THE PVC SEWER LINE SHALL BE ENCASED IN CONCRETE OR DUCTILE IRON PIPE USED IN LIEU OF PVC PIPE FOR A DISTANCE OF 10' EITHER SIDE OF THE CROSSING.

ALL PLUGS, CAPS, TEES, BENDS, VALVES, ETC., SHALL BE PROVIDED WITH RESTRAINED JOINTS OR THRUST BLOCKS (RESTRAINED JOINTS PREFERRED) PER UTILITY DETAIL SHEET.

GREEN MAGNETIC INDICATOR TAPE SHALL BE BURIED IN THE FORCE MAIN TRENCH 18" DIRECTLY ABOVE THE FORCE MAIN. A CONTINUOUS COPPER DETECTOR WIRE SHALL BE ATTACHED TO THE PIPE AND VALVES AS SHOWN ON THE UTILITY SHEETS.

CONNECTIONS TO MANHOLE WITH FORCE MAINS SHALL BE MADE BY CORE BORE AND LINK SEAL OR OTHER APPROVED CONNECTION. CONNECTIONS SHALL BE MADE WATERTIGHT AND BE INSTALLED ACCORDING TO THE MANUFACTURERS' RECOMMENDATIONS.

TESTING

FORCE MAIN SHALL BE PRESSURE AND LEAKAGE TESTED IN ACCORDANCE WITH AWWA STANDARD M23. FORCE MAIN SYSTEM SHALL BE TESTED FOR TWO (2) HOURS AT 100 PSI. SEVENTY-TWO (72) HOURS WRITTEN ADVANCE NOTIFICATION TO THE ENGINEER AND THE UTILITY COMPANY OF THE TESTING WILL BE REQUIRED. NO TESTING ON MONDAY OR FRIDAY. THE CONTRACTOR SHALL PERFORM SATISFACTORY PROTESTING PRIOR TO NOTIFICATION.

AS-BUILT DRAWINGS

THE CONTRACTOR SHALL PROVIDE VERTICAL AND HORIZONTAL "AS-BUILT" INFORMATION RELATIVE TO ALL CONSTRUCTED UTILITIES AND STRUCTURES.

AS-BUILT INFORMATION FOR THE FORCE MAIN SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

1. LOCATION OF ALL VALVES, FITTINGS, ETC.
2. LOCATION OF THE FORCE MAIN TIED HORIZONTALLY TO THE BACK OF CURB OR EDGE OF PAVEMENT.
3. CERTIFICATION AS TO THE SYSTEM MEETING THE MINIMUM COVER REQUIREMENTS.
4. HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION WHICH DEVIATES FROM THE APPROVED ENGINEERING DRAWINGS.

SANITARY SEWER SYSTEM

OWNER/OPERATOR

THE ENTITY THAT WILL OPERATE AND MAINTAIN THE SEWER SYSTEM SHOWN ON THESE PLANS IS SANLANDO UTILITIES CORPORATION. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THAT ENTITY.

MATERIALS

ALL SANITARY SEWER PIPE SHALL BE PVC SEWER PIPE CONFORMING TO ASTM D3034 SDR-35. INSTALLATION OF PVC SEWER PIPE SHALL CONFORM TO ASTM D2321. SEE ASTM C-12, LATEST EDITION, FOR CONSTRUCTION METHODS, EXCEPT FOR BACKFILLING, WHICH WILL BE AS SHOWN ON THE UTILITY DETAIL SHEET. A HORIZONTAL SEPARATION OF AT LEAST 10' SHALL BE MAINTAINED BETWEEN WATER AND SEWER LINES. WHEN WATER AND SEWER LINES CROSS WITH LESS THAN 18" VERTICAL SEPARATION, OR WHEN THE WATER LINE CROSSES BENEATH THE SEWER LINE AT ANY DEPTH, THE SEWER LINE SHALL BE ENCASED IN CONCRETE OR THE SEWER

IRON SANITARY SEWER GRAVITY PIPE SHALL BE PRESSURE CLASS 350 DUCTILE IRON PIPE SHALL BE DUCTILE IRON PIPE FOR A DISTANCE OF 10' EITHER SIDE OF THE CROSSING. DUCTILE POLYETHYLENE LINED.

ALL SEWER FITTINGS SHALL BE PVC MEETING THE REQUIREMENTS OF ASTM D3034. FITTINGS SHALL BE SUITABLE FOR USE WITH SDR-35 GRAVITY SEWER PIPE. ALL FITTINGS SHALL HAVE ELASTOMERIC SEALING GASKETS.

JOINTS FOR GRAVITY SEWER PIPE AND ALL FITTINGS SHALL BE ELASTOMERIC RUBBER SEALS. GASKETS SHALL CONFORM TO ASTM F477.

SANITARY SEWER MANHOLES SHALL BE PRECAST CONSTRUCTION. THE MINIMUM SIZE DIAMETER OF MANHOLES SHALL BE 48" FOR SEWER LINES 21" IN DIAMETER OR LESS. PRECAST REINFORCED MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C-478 SPECIFICATIONS, WITH PREFORMED FLEXIBLE JOINT SEALS, RAINKOK, OR APPROVED EQUAL. THE INTERIOR SURFACES OF ALL MANHOLES SHALL BE PROTECTED BY THE APPLICATION OF TWO COATS KOPPERS BITUMASTIC 300 M, OR APPROVED EQUAL, APPLIED AT THE RATE OF 120 SQUARE FEET PER GALLON PER COAT MINIMUM. EXTERIOR SURFACES SHALL RECEIVE TWO COATS KOPPERS BITUMASTIC 300 M, OR APPROVED EQUAL, APPLIED AT THE RATE OF 120 SQUARE FEET PER GALLON PER COAT MINIMUM.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO PROVIDE A FLEXIBLE WATERTIGHT SEAL OF THE PIPE TO THE MANHOLE. NO ADHESIVES OR LUBRICANTS SHALL BE EMPLOYED IN THE INSTALLATION OF THE CONNECTOR INTO THE MANHOLE. THE RUBBER FOR CONNECTOR SHALL COMPLY WITH ASTM C443 AND ASTM C923 AND CONSIST OF EPDM AND ELASTOMERS DESIGNED TO BE RESISTANT TO OZONE WEATHER ELEMENT CHEMICALS, INCLUDING ACIDS, ALKALIS, ANIMAL AND VEGETABLE FATS, OILS AND PETROLEUM PRODUCTS FROM SPILLS. ALL STAINLESS STEEL ELEMENTS OF THE CONNECTOR SHALL BE TOTALLY NON-MAGNETIC SERIES 316 STAINLESS. EXCESSIVE TIGHTENING OF THE STEEL BAND AROUND THE PIPE WHICH SHALL BE TORQUED BY A BREAKAWAY TORQUE WRENCH AVAILABLE FROM THE PRECAST MANHOLE SUPPLIER, AND SET FOR 60-70 INCH LBS. THE CONNECTOR SHALL BE INSTALLED IN THE MANHOLE WALL BY ACTIVATING THE EXPANDING MECHANISM IN STRICT ACCORDANCE WITH THE RECOMMENDATION OF THE CONNECTOR MANUFACTURER.

CONSTRUCTION METHODS

INSTALLATION OF GRAVITY SANITARY SEWER SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

IN LAYING OUT THE SANITARY SEWER IN THE FIELD, THE CONTRACTOR SHALL USE THE STREET C/L OR PROPERTY LINE OFFSETS FOR LOCATING THE SANITARY SEWER MANHOLES AND INVERT ELEVATIONS GIVEN ON THE PLAN AND PROFILE SHEET. IN THE EVENT OF ANY MINOR DIFFERENCES IN ACTUAL LENGTHS OF THE SANITARY SEWER LINES BETWEEN MANHOLES FOR THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL ADJUST THE MANHOLE INVERTS TO MAINTAIN A MINIMUM GRADE AS SHOWN. UNDER NO CIRCUMSTANCES WILL PIPE GRADES LESS THAN 0.30% FOR 8" PIPE OR 0.28% FOR 10" PIPE BE ACCEPTED.

THE CONTRACTOR SHALL STAMP AN "S" IN THE CURB TOP AT EACH SANITARY SERVICE LOCATION. STAMPED "S" SHALL BE HIGHLIGHTED WITH GREEN PAINT. SEE ALSO SEWER DETAIL SHEET FOR SEWER LATERAL MARKING. "SAW" CUTS ARE NOT PERMISSIBLE.

DEWATERING

IN THE EVENT THAT GROUNDWATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE SANITARY SEWER SYSTEM, DEWATERING SHALL BE CONDUCTED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, OPERATION, AND SUBSEQUENT REMOVAL OF DEWATERING SYSTEMS AND THEIR SCREW FOR TIGHTENING THE STEEL BAND AROUND THE PIPE. FEDERAL CODES AND REGULATIONS.

AT ALL TIMES DURING CONSTRUCTION, KEEP EXCAVATIONS FREE FROM STANDING WATER. PUMPS, IF REQUIRED, SHALL BE LOCATED OUTSIDE OF LOAD BEARING AREAS SO THAT BEARING SURFACES WILL NOT BE DISTURBED. WATER PUMPED FROM THE EXCAVATION SHALL BE DISCHARGED TO PREVENT RE-ENTRY INTO THE SOIL STRATA BEING DEWATERED. WATER CONTAINING SILT IN SUSPENSION SHALL NOT BE PUMPED INTO SEWER LINES OR ADJACENT STREAMS. THE METHOD OF DISPOSING OF WATER PUMPED FROM THE EXCAVATION SHALL BE APPROVED BY THE ENGINEER, PRIOR TO ACTUAL DISPOSAL.

PIPE EMBEDMENT

SANITARY SEWER PIPE MUST BE BEDDED TRUE TO LINE AND GRADE WITH UNIFORM AND CONTINUOUS LONGITUDINAL SUPPORT FROM A FIRM BASE. BLOCKING MAY NOT BE USED TO BRING THE PIPE TO GRADE. PIPE BED SHALL BE UNDISTURBED EARTH AND, IN THE EVENT OF OVER-EXCAVATION, THE CONTRACTOR SHALL REPLACE OVER-EXCAVATION WITH CLEAN GRANULAR BACKFILL, AS NOTED BELOW, AND COMPACTED TO A DENSITY OF 98% OF THE AASHTO T-180 MAXIMUM DENSITY AND SHAPED TO FIT THE PIPE SO AS TO GIVE IT CONTINUOUS AND UNIFORM LONGITUDINAL SUPPORT.

AT ALL LOCATIONS WHERE PIPING IS TO BE INSTALLED IN AN AREA WHERE MUCK WAS NOTED IN THE SOILS TESTING OR AT ANY OTHER LOCATIONS WHERE MUCK OR ORGANIC SOILS ARE ENCOUNTERED, THE TRENCH SHALL BE OVER-EXCAVATED TO REMOVE ALL MUCK OR ORGANIC SOILS. GRANULAR BACKFILL OR AS NOTED BELOW, PLACED AND COMPACTED IN THE TRENCH BOTTOM TO THE ELEVATIONS AND LOCATIONS NOTED ON THE PLANS. BACKFILL NEEDED TO BRING TRENCH TO THE PROPER GRADE SHALL BE COMPACTED TO A MINIMUM DENSITY OF 98% OF THE AASHTO T-180 MAXIMUM DENSITY.

TRENCH OR EXCAVATION BOTTOM STABILIZATION MATERIAL

- A. SAND
SAND SHALL BE WELL GRADED, ORGANIC FREE, DURABLE, GRANULAR MATERIAL, AND SHALL PASS A NO. 4 SIEVE. NOT MORE THAN 10% SHALL PASS A NO. 200 SIEVE.
- B. PIT RUN GRAVEL
PIT RUN GRAVEL SHALL BE ORGANIC FREE AND SHALL PASS A 3/4-INCH SIEVE.
- C. GRANULAR MATERIAL
GRANULAR MATERIAL SHALL BE WELL GRADED, ORGANIC AND TOPSOIL FREE, DURABLE AGGREGATE AND SHALL PASS A 3/4-INCH SIEVE. NOT MORE THAN 10% SHALL PASS A NO. 200 SIEVE.

TESTING

INFILTRATION TESTING OF THE SANITARY SEWER SYSTEM WILL BE REQUIRED TO BE PERFORMED BY THE CONTRACTOR. INFILTRATION SHALL NOT EXCEED 200 GALLONS PER DAY PER INCH OF DIAMETER PER MILE OF LENGTH. IN THE EVENT THAT GROUNDWATER IS NOT ENCOUNTERED DURING SANITARY SEWER CONSTRUCTION, OR IF THE GROUNDWATER ENCOUNTERED IS NOT 24" ABOVE THE TOP OF PIPE, EXFILTRATION TESTING OF THE SANITARY SEWER WILL BE NECESSARY. THE TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, BUT WILL BE WITNESSED BY THE ENGINEER AND THE UTILITY REPRESENTATIVES. EXFILTRATION SHALL NOT EXCEED 200 GALLONS PER DAY PER INCH OF DIAMETER PER MILE OF LENGTH, INCLUDING MANHOLES.

LINE LAMPING WILL BE REQUIRED TO BE PERFORMED BY THE CONTRACTOR AND WITNESSED BY THE ENGINEER AND OWNER/OPERATOR.

THE CONTRACTOR SHALL PROVIDE AT HIS OWN EXPENSE ALL NECESSARY TEST PUMPING EQUIPMENT, WATER, WATER METERS, PRESSURE GAUGES, AND OTHER EQUIPMENT, MATERIAL AND FACILITIES REQUIRED FOR ALL TESTING. CONTRACTOR SHALL CONTACT THE ENGINEER AND OWNER/OPERATOR IN WRITTEN FORM, SEVENTY-TWO (72) HOURS IN ADVANCE OF PROPOSED TESTING. NO TESTING ON MONDAY OR FRIDAY. THE CONTRACTOR SHALL PERFORM SATISFACTORY PRETESTING PRIOR TO NOTIFICATION.

AS-BUILT DRAWINGS

THE CONTRACTOR SHALL PROVIDE VERTICAL AND HORIZONTAL "AS-BUILT" INFORMATION RELATIVE TO ALL CONSTRUCTED UTILITIES AND STRUCTURES.

AS-BUILT INFORMATION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

1. LOCATIONS AND INVERTS OF ALL GRAVITY SEWER LINES, MANHOLES, LIFT STATION WETWELLS AND SERVICE LATERALS AND RIM ELEVATION OF ALL MANHOLES.
2. HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION WHICH DEVIATES FROM THE APPROVED ENGINEERING PLANS.
3. DISTANCES OF SEWER LINE LAID FROM MANHOLE TO MANHOLE WITH DISTANCE TIES TO LATERALS.

TRENCH SAFETY

THE CONTRACTOR SHALL RECOGNIZE AND ABIDE BY ALL OSHA EXCAVATION SAFETY STANDARDS, INCLUDING THE FLORIDA TRENCH SAFETY ACT (90-96, LAWS OF FLORIDA). ANY MATERIAL, CONSTRUCTION METHODS, OR MATERIAL COST TO COMPLY WITH THESE LAWS SHALL BE INCIDENTAL TO THE CONTRACT.

MINIMUM COVER OVER ALL PIPES SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.

ALL PLUGS, CAPS, TEES, BENDS, VALVES, ETC., SHALL BE PROVIDED WITH RESTRAINED JOINTS OR THRUST BLOCKS (RESTRAINED JOINTS PREFERRED). THRUST BLOCK CONSTRUCTION DETAILS, REFER TO UTILITY DETAIL SHEET.

Always call 811 two full business days before you dig to have underground utilities located and marked.



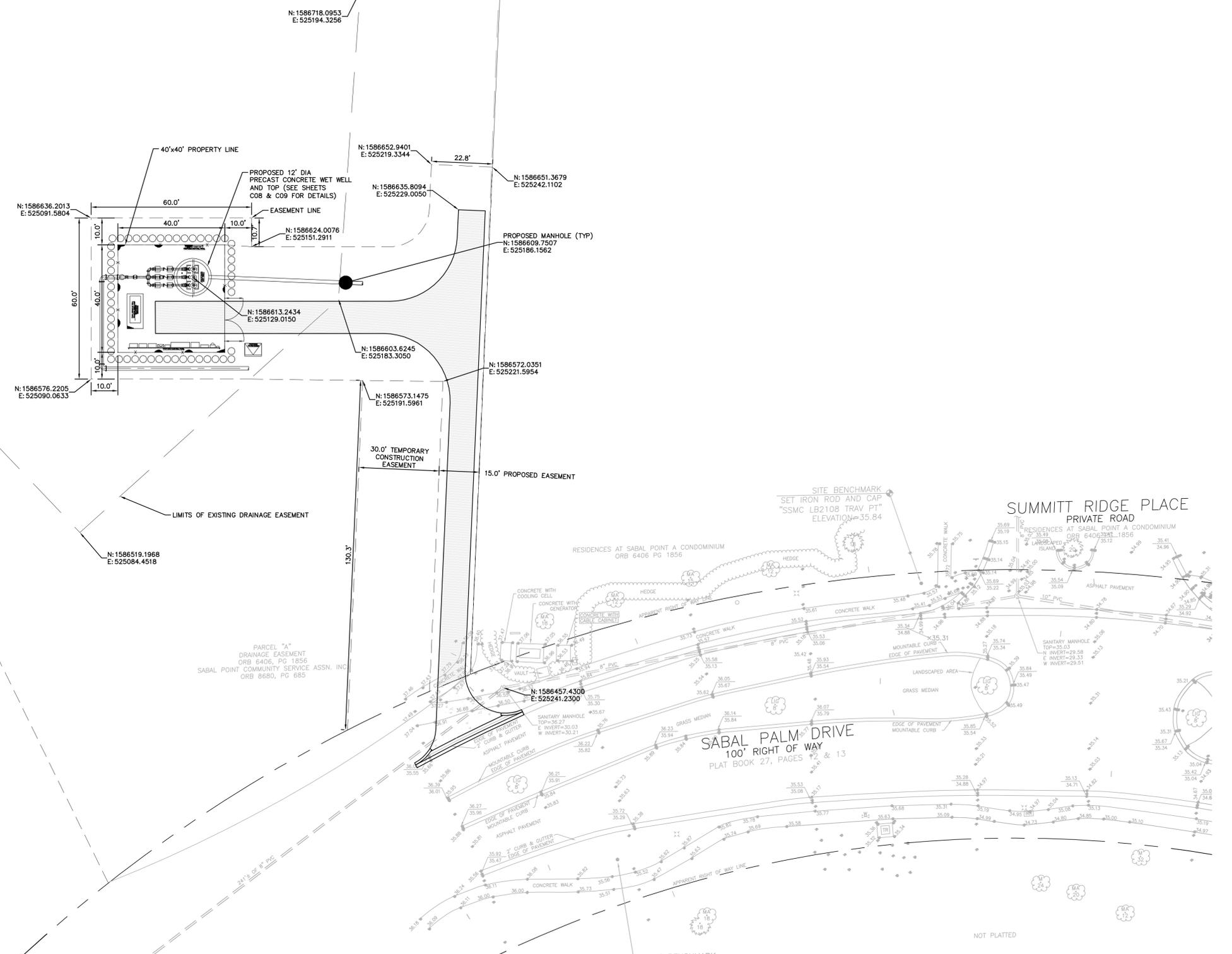
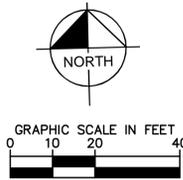
0	ISSUED FOR BID	12/30/16	RLL
No.	REVISIONS	DATE	BY

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SABAL PALM MASTER PUMP STATION
PREPARED FOR
UTILITIES, INC. OF FLORIDA

LICENSED PROFESSIONAL
STEPHEN N. ROMANO, P.E.
FLORIDA LICENSE NUMBER 57579
DATE: 12/30/16

SHEET NUMBER
GENERAL NOTES
G02



Plotted By: Lupo, Robert. Sheet Set: K:\a\Utilities\149685007=sabalpalm\149685007=shadow Hills\CADD\Drawings\sabalpalm\01 DIMENSIONAL PLAN.dwg
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DATE	12/30/16
SCALE	AS SHOWN
DESIGNED BY	SNR
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CHECKED BY	NEQ

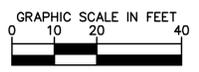
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 STATION**
 PREPARED FOR
UTILITIES, INC. OF FLORIDA

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 STEPHEN N. ROMANO, P.E.
 FLORIDA LICENSE NUMBER
 57579
 DATE: 12/30/16

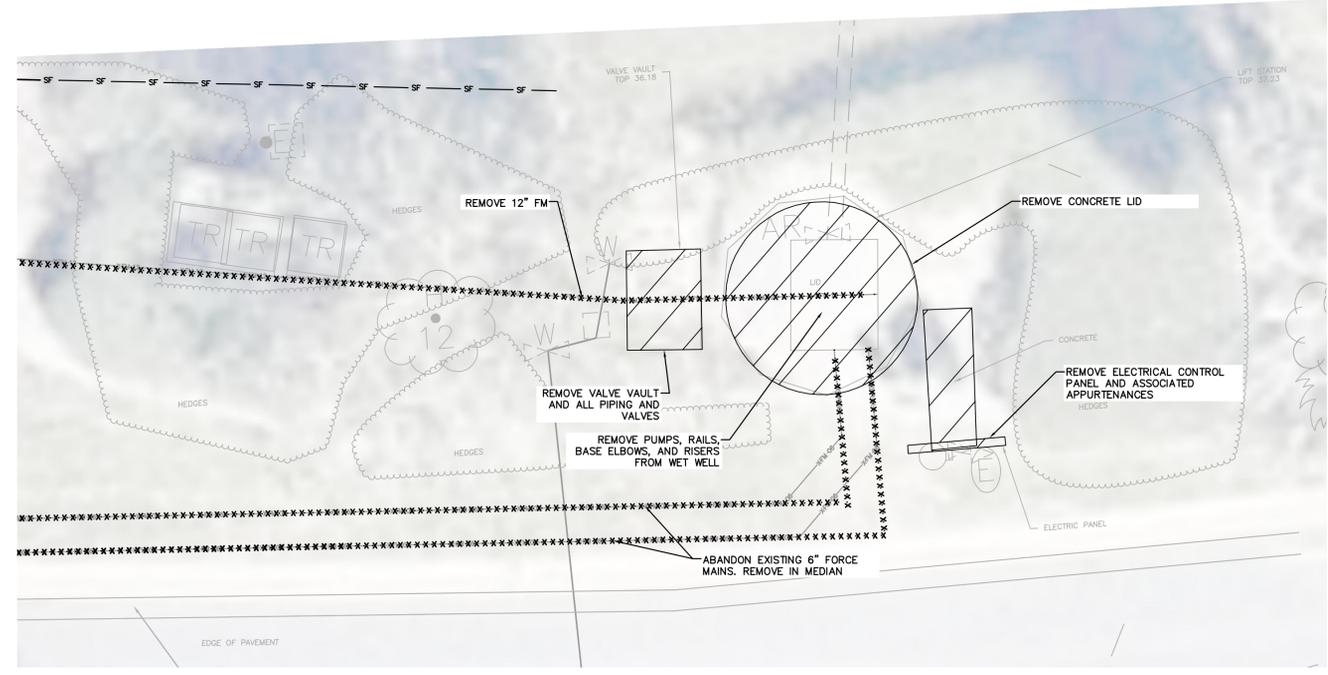
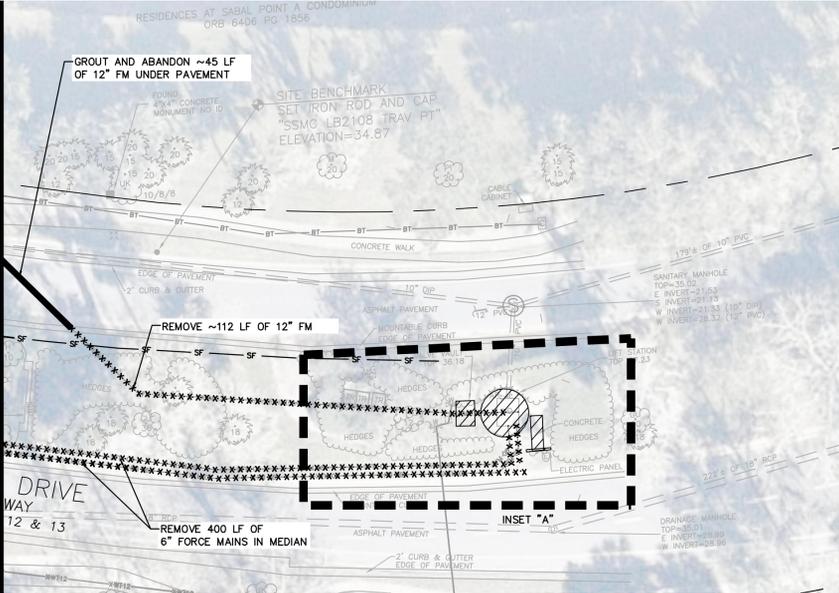
DIMENSIONAL PLAN

SHEET NUMBER
C01

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MATCHLINE - SEE SHEET C03



INSET "A" - LS F2 DEMOLITION PLAN
SCALE: 1"=5'

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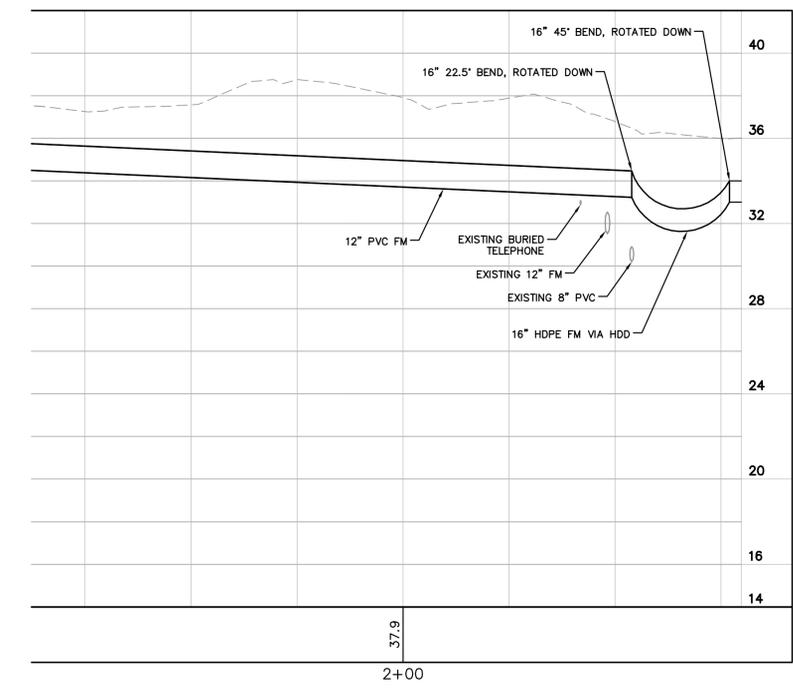
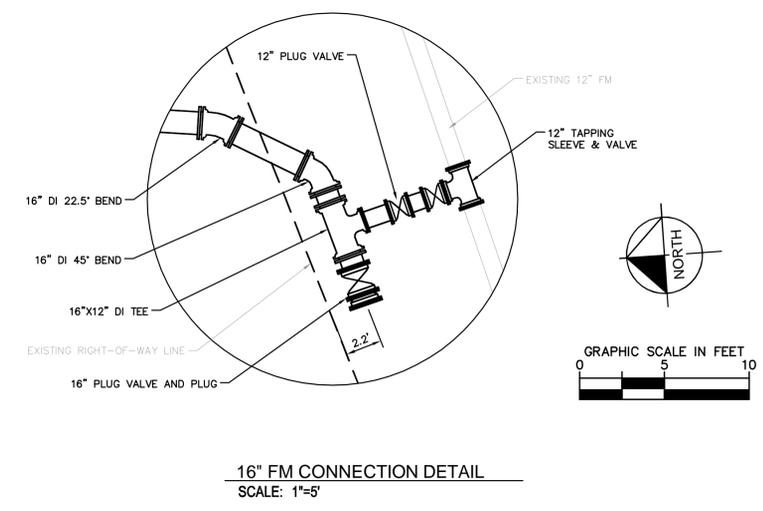
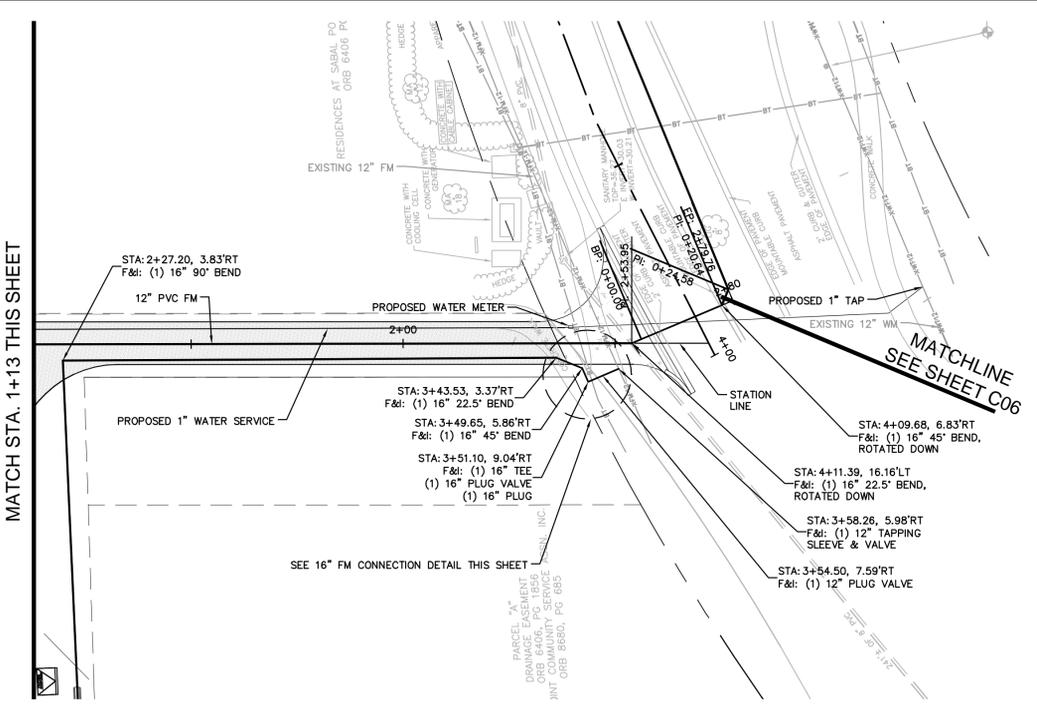
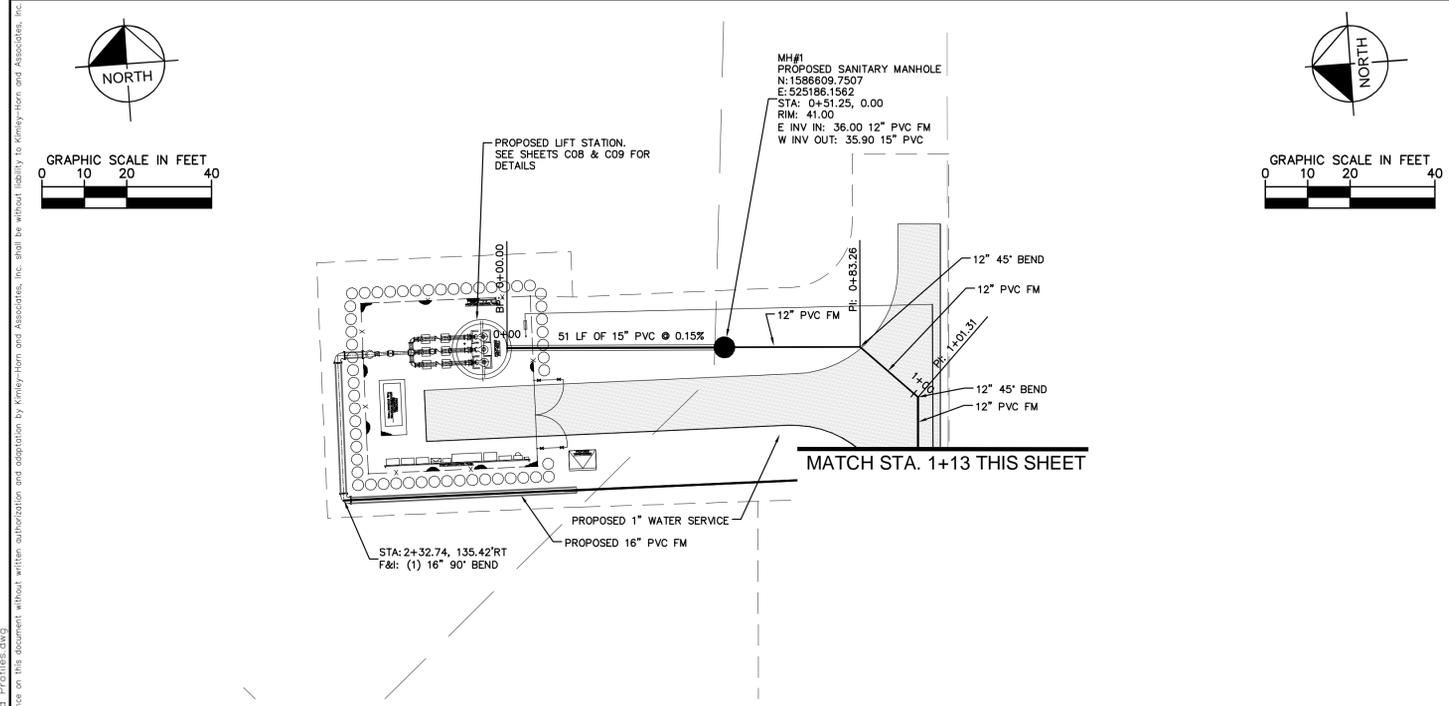
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DEMOLITION PLAN

SHEET NUMBER
C04

Plotted By: Lupo, Robert Sheet Set: K:\CADD\Projects\149685007-Shadow Hills\CADD\plan\sheet\149685007-Shadow Hills\CADD\plan\sheet\C05-D7-plan-and-profiles.dwg
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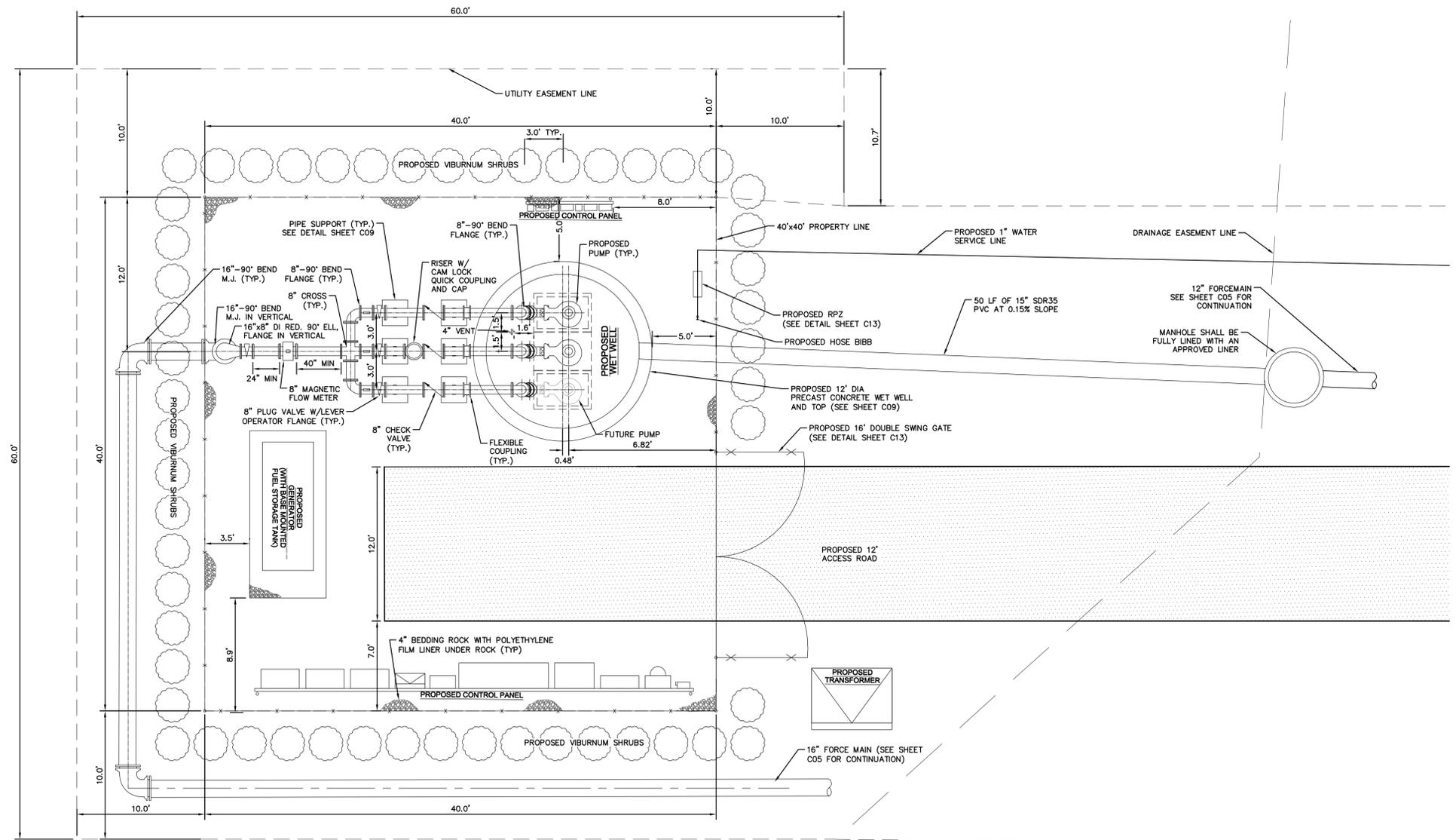
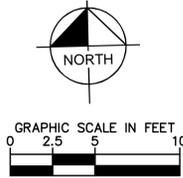
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FORCE MAIN & SEWER PLANS

SHEET NUMBER
C05



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CHECKED BY	NEQ

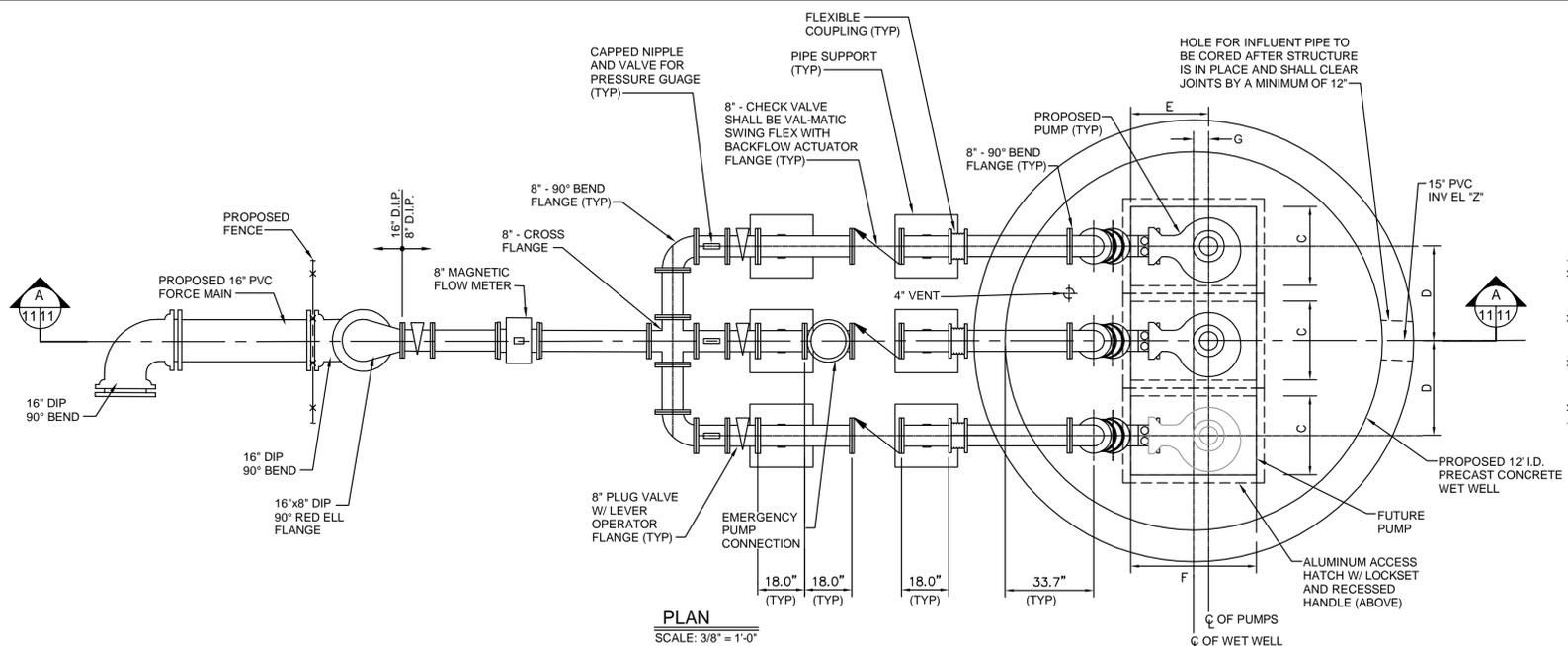
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SABAL PALM SITE PLAN

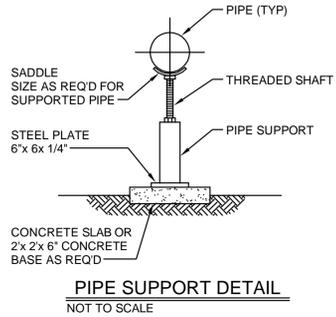
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C08

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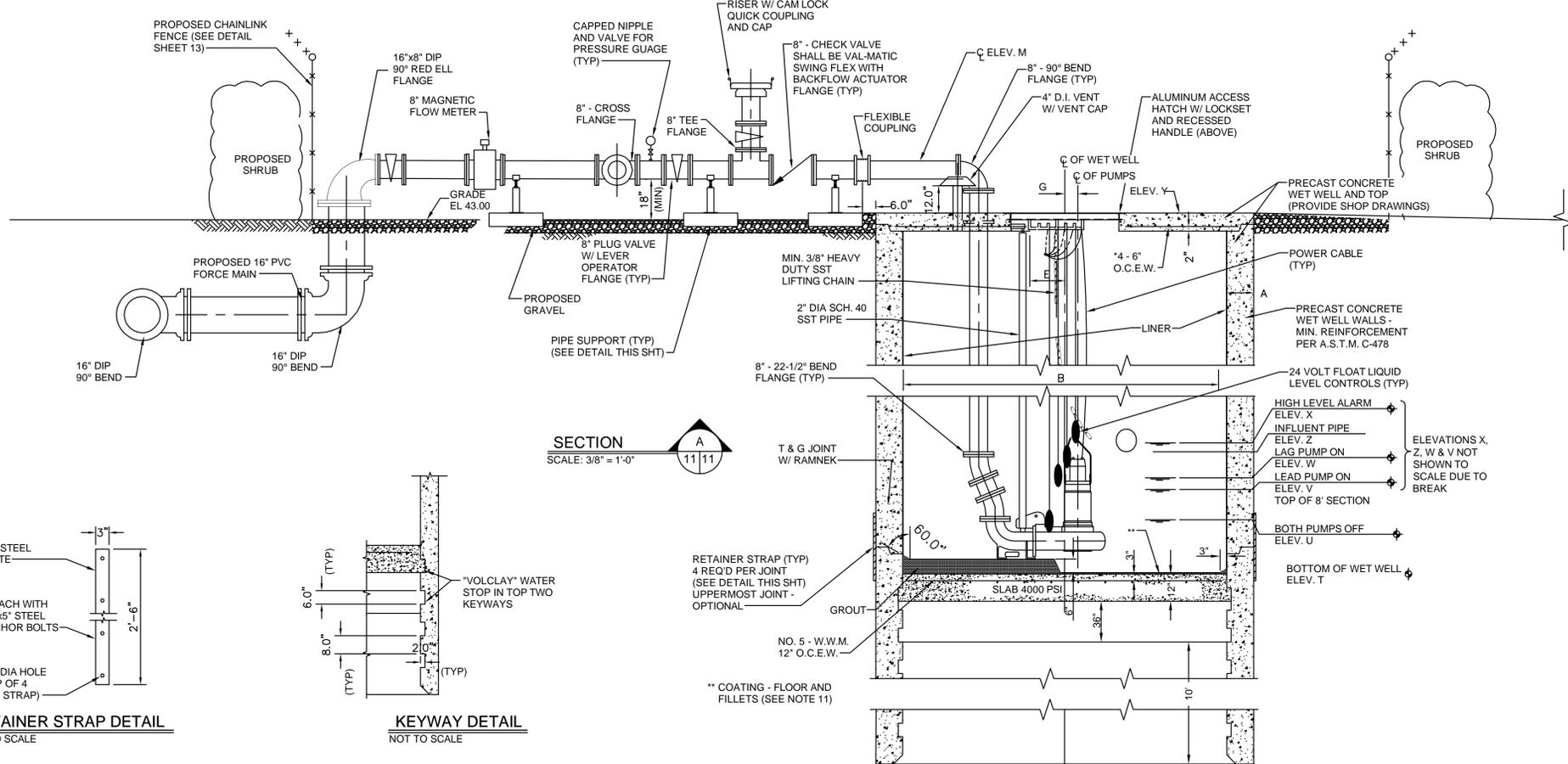


PLAN
SCALE: 3/8" = 1'-0"

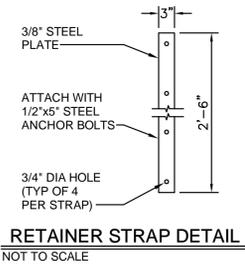
PUMPING STATIONS	DIMENSIONS	ELEV. AT CONSTRUCTION
DIM A	12" MIN.	
DIM B	12'-0" MIN.	
DIM C	30" MIN.	
DIM D	36" MIN.	
DIM E	29'-3/4"	
DIM F	48" MIN.	
DIM G	5'-3/4"	
ELEV M		44.83'
ELEV R		
ELEV T		25.00'
ELEV U		28.00'
ELEV V		32.00'
ELEV W		34.50'
ELEV X		35.50'
ELEV Y		43.25'
ELEV Z		35.70'



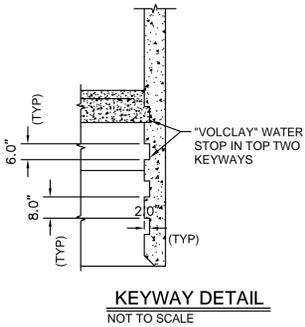
PIPE SUPPORT DETAIL
NOT TO SCALE



SECTION
SCALE: 3/8" = 1'-0"



RETAINER STRAP DETAIL
NOT TO SCALE



KEYWAY DETAIL
NOT TO SCALE

- GENERAL NOTES:**
- ALL EXPOSED METAL SHALL BE PAINTED WITH 2 COATS OF EXTERIOR ENAMEL PAINT.
 - BASE AND FIRST RISER UNIT TO BE CAST MONOLITHIC.
 - ALL LOCATIONS WHERE PIPES ENTER OR LEAVE THE WET WELL OR VALVE VAULT SHALL BE MADE WATERTIGHT WITH WALL SLEEVE OR NON-SHRINK GROUT. ALL ELECTRICAL CONDUITS IN WELL TO BE SEALED.
 - THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN WET WELL. ALL ELECTRICAL CABLES SHALL BE CONTINUOUS TO CONTROL PANEL OR BOX.
 - WET WELL COVER SHALL BE ALUMINUM WITH 316 S.S. HARDWARE AND LOCK BRACKET. SIZE AS REQUIRED BY PUMP MANUFACTURER AND APPROVED BY UTILITIES, INC.
 - FLEXIBLE COUPLING SHALL BE SLEEVE TYPE.
 - PUMPS SHALL BE:
MANUFACTURER: FLYGT; MODEL: NP 3231; IMP: 690; DIA: 430 MM; MM. SPEED: 1185 RPM; DISCHARGE SIZE: 5-7/8" IN.; VOLTAGE: 460; HZ: 60; PHASE: 3; H.P.: 90.
 - OPERATING CONDITIONS SHALL BE 2080 GPM AT 114 FEET TDH.
 - ALL HARDWARE IN WET WELL AND VALVE BOX TO BE STAINLESS STEEL.
 - DISCHARGE PIPING TO BE 8".
 - ALL INTERIOR SURFACES OF THE WET WELL AND MANHOLE SHALL BE LINED.
 - CONCRETE USED FOR TREMIE SEAL AND SLAB BASE MUST BE 3000 P.S.I. AT 28 DAYS. SLAB POUR TO BE 4000 P.S.I.
 - A MINIMUM OF FOUR (4) 2"x6" KEYWAYS ARE REQUIRED, WITH THE TOPMOST KEYWAY WITHIN THE CONCRETE SLAB POUR.
 - THE TREMIE SEAL POUR SHALL BE A MINIMUM OF 120" THICK AND THE SECONDARY POUR SHALL BE A MINIMUM OF 36".
 - THE BASE AND SECOND RISER FROM BOTTOM OF THE WET WELL SHALL BE NOT LESS THAN 8' IN HEIGHT.
 - THE CONTRACTOR SHALL SUBMIT, FOR UTILITIES REVIEW AND APPROVAL, THE WET WELL EXCAVATION PROCEDURES AND EQUIPMENT.
 - THE CONCRETE TREMIE SEAL RAISE RATE SHALL BE MAINTAINED BY THE CONTRACTOR TO INSURE THAT NO VOID POINTS OCCUR IN THE SEAL.
 - PRIOR TO THE SLAB BASE POUR, ALL WATER SHALL BE REMOVED FROM THE WET WELL. THE WET WELL SHALL THEN BE CLEANED AND THE SLAB BASE POUR CONDUCTED IN DRY CONDITIONS.
 - PRECAST SECTIONS SHALL BE PLACED AND ALIGNED TO PROVIDE VERTICAL ALIGNMENT WITH A 1/4-INCH MAXIMUM TOLERANCE PER 5 FEET OF DEPTH.
 - THE TOP BARREL SECTION MAY BE ADDED TO, IN THE FIELD, FOR MINOR ELEVATION AND PLUMBNESS DISCREPANCIES.
 - THE ENGINEER OF RECORD, OR HIS DESIGNATED REPRESENTATIVE SHALL BE PRESENT DURING THE WET WELL INSTALLATION AND TREMIE POUR PROCEDURE.
 - MANHOLE BOTTOM SHALL BE GROUTED ACCORDINGLY TO MAINTAIN PROPER FLOW.
 - ALTERNATIVE BALLAST DESIGNS, SUCH AS BALLAST RING, MUST BE SUBMITTED WITH CALCULATIONS FOR APPROVAL PRIOR TO CONSTRUCTION. A FACTOR OF SAFETY OF 1.2 SHALL BE USED FOR ALL FLOTATION CALCULATIONS.
 - ALL ABOVE GRADE PIPING TO BE PRIMED AND PAINTED.
 - DUCTILE IRON PIPE SHALL BE PROTECTO 401 CERAMIC EPOXY COATED.
 - BIRDCAGE LEVEL TRANSDUCER SHALL BE PRIMARY CONTROL PER ELECTRICAL DESIGN.

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KHA PROJECT	149685007
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SCALE	AS SHOWN
DESIGNED BY	SNR
DRAWN BY	RLI
CHECKED BY	NEQ

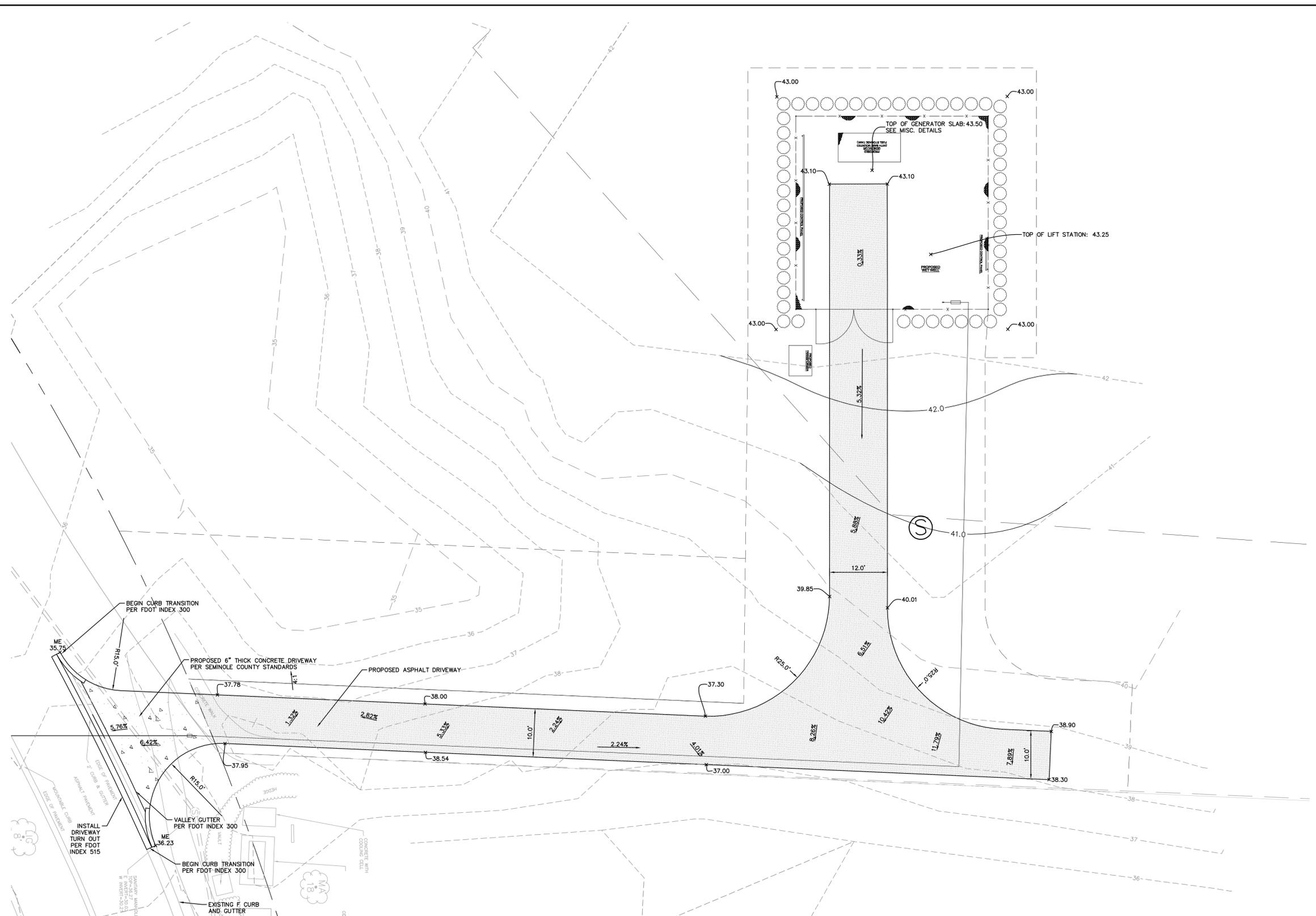
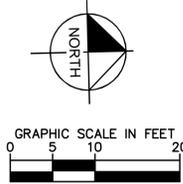
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PREPARED FOR
UTILITIES, INC. OF FLORIDA

LICENSED PROFESSIONAL
STEPHEN N. ROMANO, P.E.
FLORIDA LICENSE NUMBER
57579
DATE: 12/30/16

SABAL PALM MASTER LIFT STATION PLAN & SECTION

SHEET NUMBER
C09

No.	REVISIONS	DATE	BY
0	ISSUED FOR BID	12/30/16	RLI



Plotted By: Lupo, Robert. Sheet: S:\K12\Layout\PAVING GRADING DRAINAGE December 29, 2016 12:07:36pm K:\cor_utilities\149685007-shadow_hills\CADD\plansheets\subplans\C10 LS PGD PLAN.dwg
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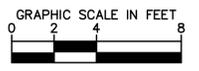
KHA PROJECT	149685007
DATE	12/30/16
SCALE	AS SHOWN
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CHECKED BY	NEQ

**SABAL PALM MASTER PUMP
STATION**
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UTILITIES, INC. OF FLORIDA

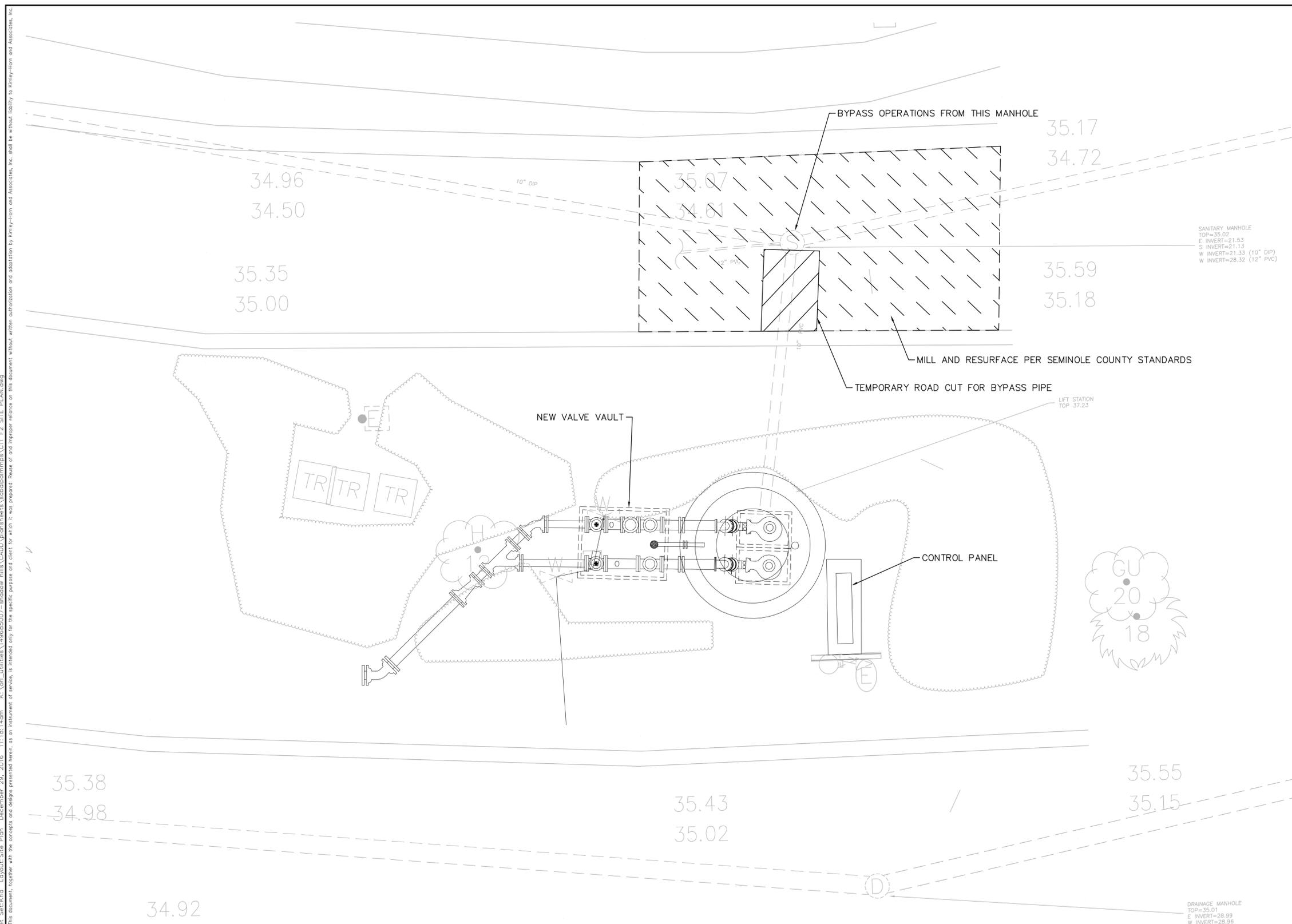
LICENSED PROFESSIONAL	STEPHEN N. ROMANO, P.E.
FLORIDA LICENSE NUMBER	57579
DATE:	12/30/16

**SABAL PALM MASTER LIFT
STATION PAVING GRADING
DRAINAGE PLAN**

SHEET NUMBER
C10



Plotted By: Lupo, Robert Sheet: K11a Layout: Site Plan December 29, 2016 11:18:14am K:\Vot\Utilities\49685007-shadow hills\CADD\plan\sheet\c11\F2 SITE PLAN.dwg
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- NOTES:**
1. CONTRACTOR TO RESTORE LANDSCAPING TO EXISTING CONDITIONS OR BETTER.
 2. CONTRACTOR SHALL PROVIDE F2 BYPASS PLAN.
 3. ANY NECESSARY ROAD CUTS SHALL BE IN ACCORDANCE WITH SEMINOLE COUNTY STANDARDS AND SHALL BE INCLUDED IN BID PRICE.

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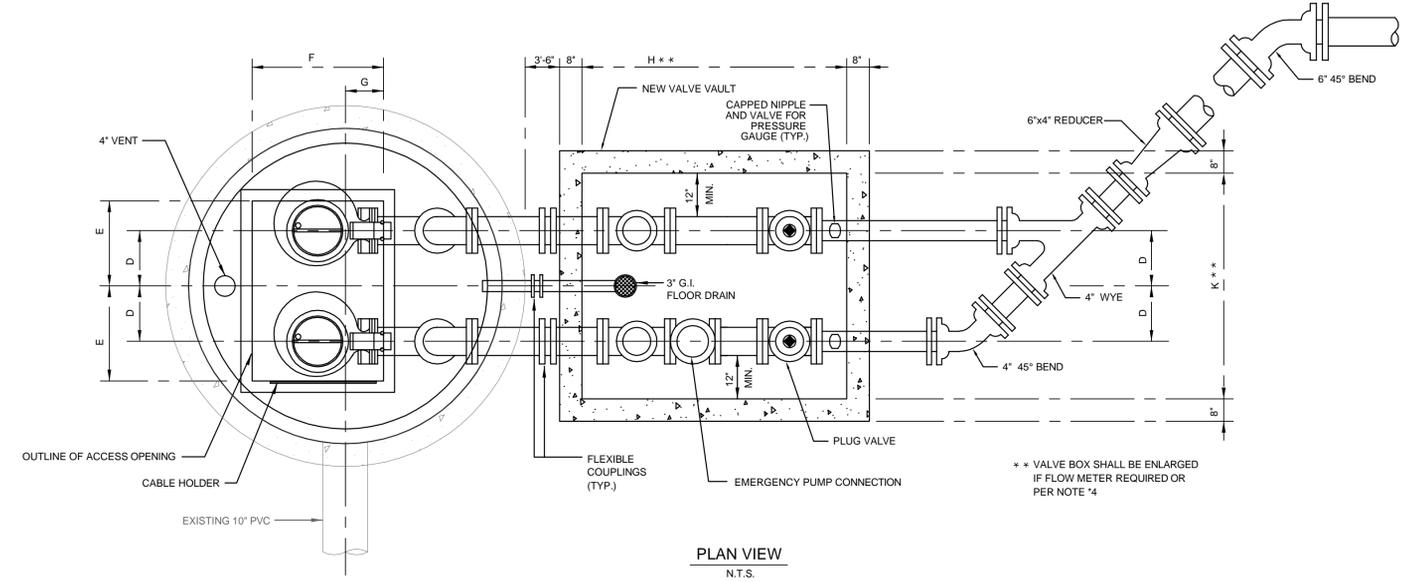
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F2 SITE PLAN

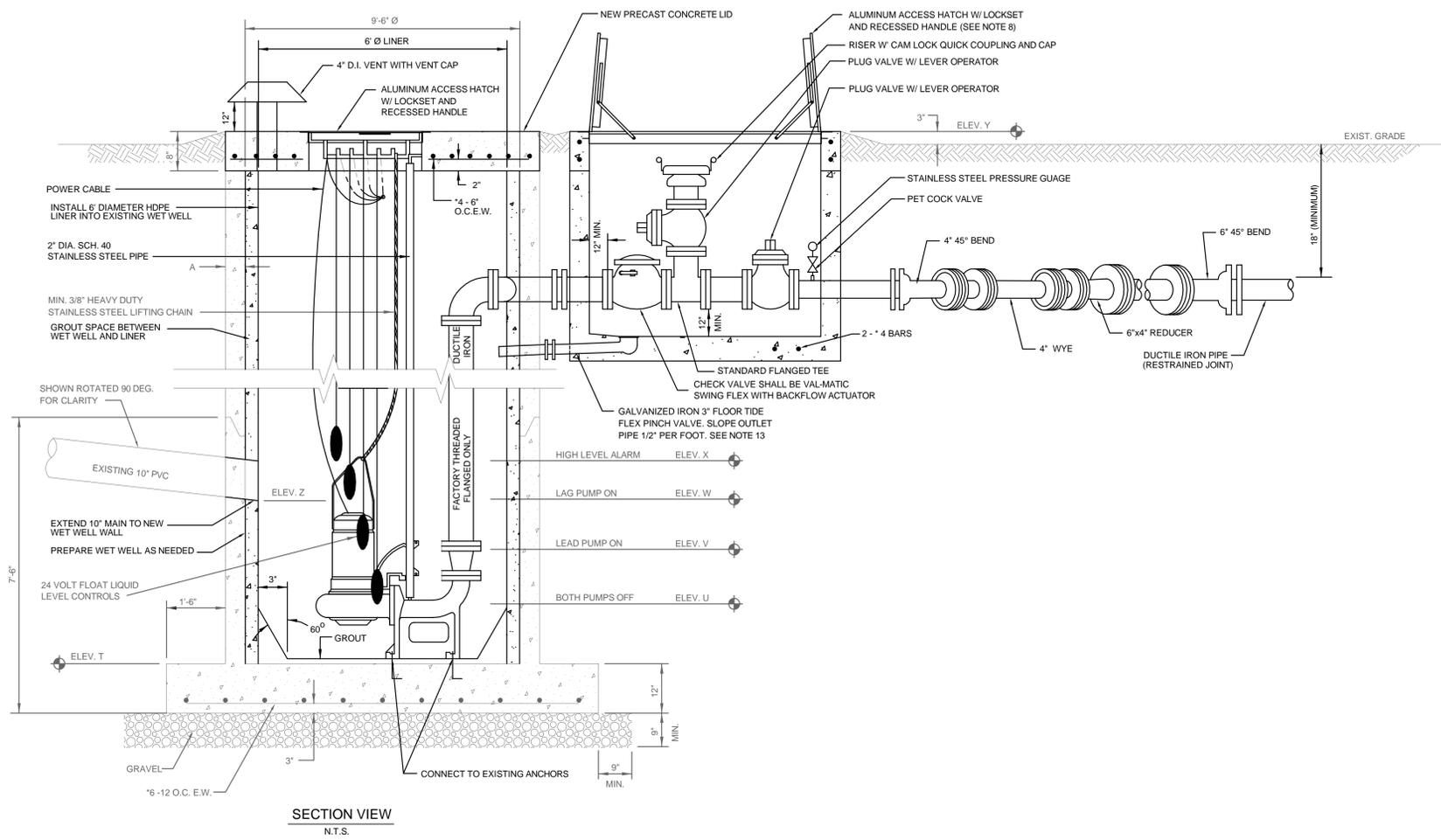
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PUMPING STATIONS	DIMENSIONS	ELEV. AT CONSTRUCTION
DIM A	8" MIN.	
DIM B	9'-6"	
DIM C	*	
DIM D	*	
DIM E	24" MIN.	
DIM F	48" MIN.	
DIM G	*	
DIM H	6'-0" MIN.	
DIM J		
DIM K	4'-8" MIN.	
ELEV T	15.23'	
ELEV U		
ELEV V		
ELEV W		
ELEV X		
ELEV Y	37.23'	
ELEV Z		4'-6" MIN.

* PER PUMP MANUFACTURERS REQUIREMENT



- GENERAL NOTES:
- ALL EXPOSED METAL SHALL BE PAINTED WITH 2 COATS OF EXTERIOR ENAMEL PAINT.
 - VALVE VAULT SHALL BE COATED WITH COAL TAR INSIDE AND OUT. (TWO COATS, 9 MILS EACH)
 - HDPE LINER TO BE ANCHORED TO WALLS AND FLOOR OF EXISTING WET WELL PER MANUFACTURER'S RECOMMENDATIONS.
 - VALVE VAULT SHALL BE SIZED TO PERMIT EASY REMOVAL OF CHECK VALVE SPINDLES WITH MINIMUM CLEARANCES AS SHOWN FOR 6" DIAMETER PIPE AND SMALLER. CLEARANCES SHALL INCREASE AS REQUIRED FOR LARGER PIPE SIZES.
 - VALVE VAULT SHALL HAVE SEALED FLOOR AND DRAIN.
 - ALL LOCATIONS WHERE PIPES ENTER OR LEAVE THE WET WELL OR VALVE VAULT SHALL BE MADE WATERTIGHT WITH WALL SLEEVE OR NON-SHRINK GROUT. ALL ELECTRICAL CONDUITS IN WELL TO BE SEALED.
 - THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN WET WELL. ALL ELECTRICAL CABLES SHALL BE CONTINUOUS TO CONTROL PANEL OR BOX.
 - WET WELL AND VALVE VAULT COVERS SHALL BE ALUMINUM WITH 316 S.S. HARDWARE AND LOCK BRACKET. SIZE AS REQUIRED BY PUMP MANUFACTURER AND APPROVED BY UTILITIES, INC.
 - FLEXIBLE COUPLING SHALL BE SLEEVE TYPE.
 - PUMPS SHALL BE:
 MANUFACTURER: FLYGT ; MODEL: NP 3102 ; IMP: 465 ; DIA: 152 ;
 MM. SPEED: 1745 RPM; DISCHARGE SIZE: 4 IN.; VOLTAGE: 460 ;
 HZ: 60 ; PHASE: 3 ; H.P.: 5 ;
 - OPERATING CONDITIONS SHALL BE 400 GPM AT 20 FEET TDH.
 - ALL HARDWARE IN WET WELL AND VALVE BOX TO BE STAINLESS STEEL.
 - CONTRACTOR MUST INSTALL A TIDE FLEX PINCH VALVE TRAP BETWEEN THE VALVE VAULT AND WET WELL AS AN ALTERNATIVE TO THE FLOOR DRAIN SHOWN.
 - DISCHARGE PIPING TO BE 4" MINIMUM.
 - WET WELL LID INTERIOR TO BE COATED WITH AN APPROVED LINER.

No.	REVISIONS	DATE	BY
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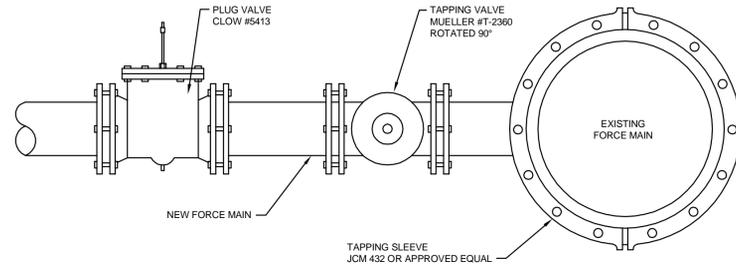

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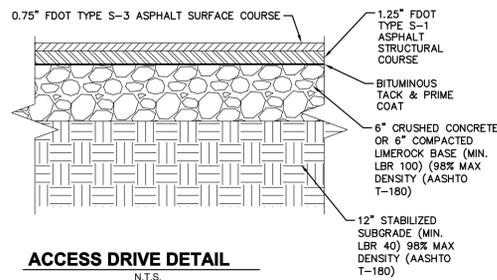
**LIFT STATION F2 REHABILITATION
 PLAN & SECTION**

SHEET NUMBER
C12

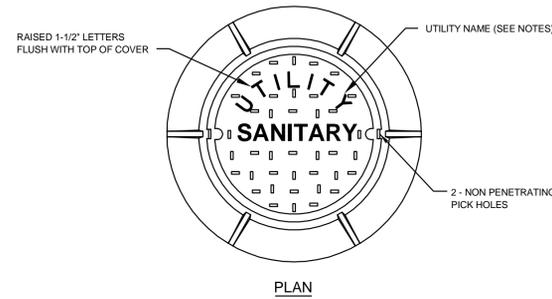


**TYPICAL CONNECTION DETAIL FOR
NEW FORCE MAIN TO EXISTING**

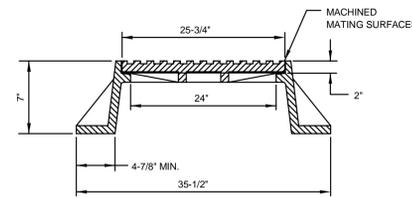
N.T.S.
NOTE: DUE TO TIGHT CONSTRAINTS, A 45° BEND WAS ADDED TO THE PLANS BETWEEN THE TAPPING VALVE AND PLUG VALVE.



ACCESS DRIVE DETAIL
N.T.S.



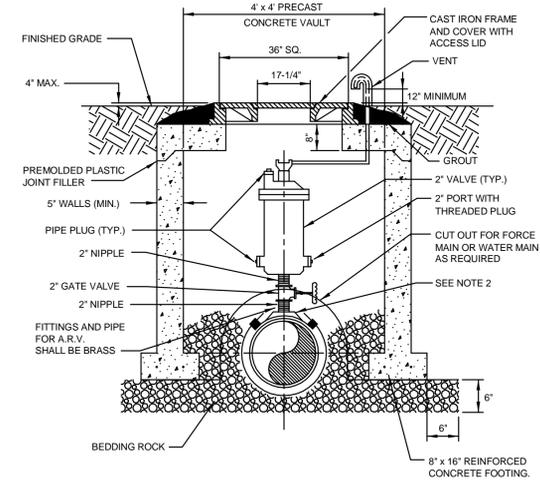
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ELEVATION

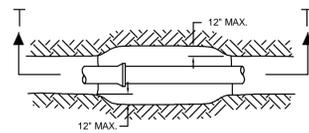
- NOTES:
- MANHOLE FRAME AND COVER SHALL BE USF 227 AS ORS (410 LBS. TOTAL WEIGHT FOR FRAME AND COVER) OR APPROVED EQUAL.
 - UTILITY NAME SHALL BE THE NAME OF THE UTILITY PROVIDING SERVICE DETAIL. SHALL BE SUBMITTED WITH SHOP DRAWINGS FOR UTILITY APPROVAL.

STANDARD MANHOLE FRAME AND COVER
N.T.S.

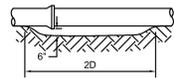


- NOTES:
- ABOVE DETAIL IS BASED ON 2" COMBINATION AIR/VACUUM RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES TO BE DETERMINED BY THE ENGINEER AND APPROVED BY THE UTILITY PRIOR TO INSTALLATION.
 - THE MINIMUM DIMENSION FROM TOP OF PIPE TO FINISHED GRADE SHALL BE 4.0 FEET.
 - IF THE REQUIREMENT FOR AN ABOVE GRADE VENT IS WAIVED BY FDEP, THEN A DOWNTURNED VENT SPOUT MUST BE PLACED INSIDE THE VAULT.

**AIR OR COMBINATION AIR/VACUUM
RELEASE VALVE DETAIL**
N.T.S.



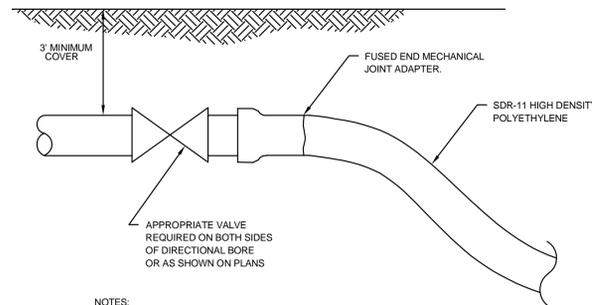
PLAN



SECTION T-T

NOTE:
PIPE SHALL BE CONTINUOUSLY SUPPORTED FOLLOWING BACKFILL. THE MAXIMUM BELL HOLE EXCAVATION WILL BE AS SHOWN.

EXCAVATION AT PIPE BELL
N.T.S.



- NOTES:
- DEPTH OF DIRECTIONAL BORE SHALL BE APPROVED ON A CASE BY CASE BASIS.
 - CONTRACTOR MUST COMPLY WITH ALL APPLICABLE FDOT, FDEP, ACOE, AND WATER MANAGEMENT DISTRICT REQUIREMENTS.

DIRECTIONAL BORE DETAIL
N.T.S.

DIRECTIONAL PULLBACK HEAD SIZE	MINIMUM DEPTH OF COVER FROM LOWEST ELEVATION OF ROADWAY OR CURB
3" OR LESS	48"
3" TO 4"	60"
4" TO 6"	96"
6" TO 12"	120"

*** DEPTHS AND PROCEDURES MUST NOT BE LESS THAN "GUIDE TO UTILITY/FACILITY CONSTRUCTION WITHIN RIGHT-OF-WAY & EASEMENTS UNDER THE JURISDICTION OF SEMINOLE COUNTY, FLORIDA" (JUNE 1ST GUIDE)

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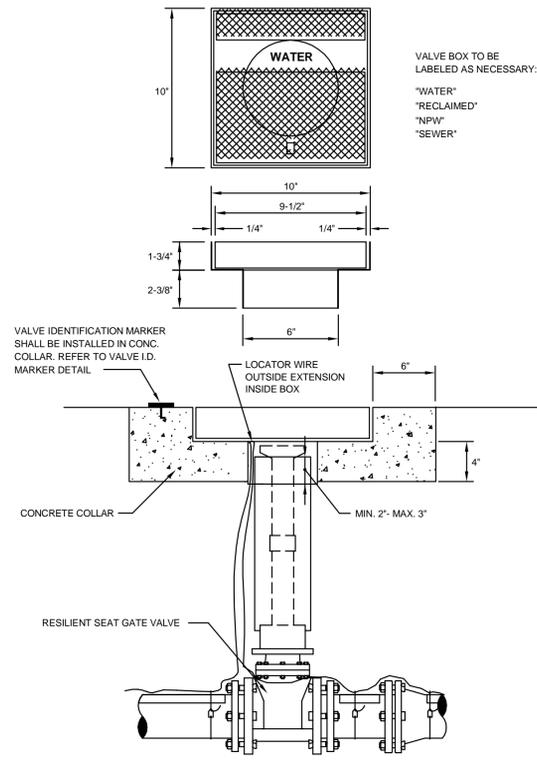
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**SABAL PALM MASTER PUMP
STATION**
 PREPARED FOR
UTILITIES, INC. OF FLORIDA

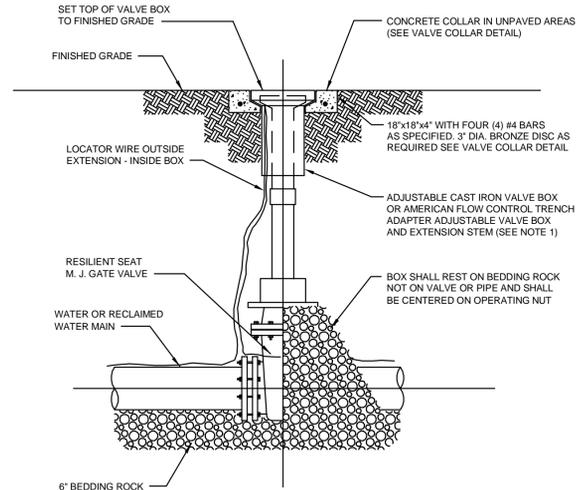
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 FLORIDA LICENSE NUMBER
 57579
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MISCELLANEOUS DETAILS

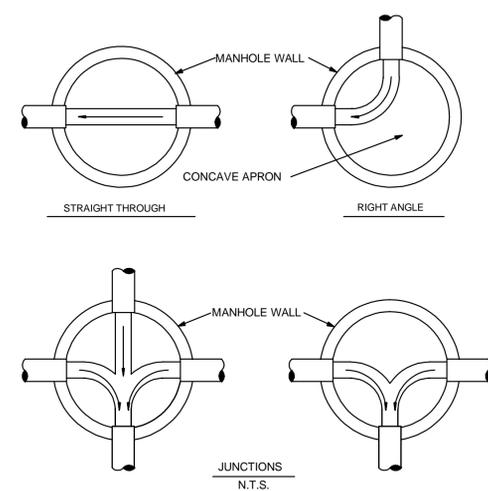
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ALTERNATE VALVE BOX DETAIL
N.T.S.

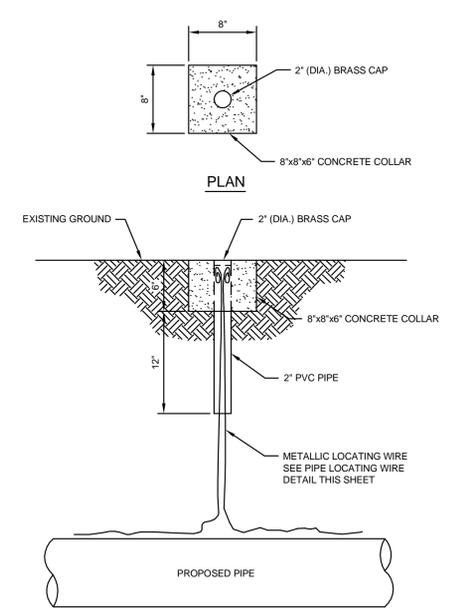


VALVE AND VALVE BOX DETAIL
N.T.S.



NOTES:
 1. MAINTAIN DESIGN SLOPE ACROSS MANHOLE UNLESS OTHERWISE INDICATED.
 2. DEPTH OF ALL CHANNELS TO BE 80% OF PIPE DIAMETER.
 3. FINISH OF ALL CHANNELS TO ALLOW SMOOTH FLOW.
 4. CONCRETE BENCH SHALL BE POURED BEFORE SHUTTING DOWN DEWATERING OPERATIONS TO PREVENT FLOTATION.
 5. BRICK MAY BE USED TO BUILD UP CONCRETE BENCH.
 6. MINIMUM ANGLE BETWEEN INLET AND OUTLET PIPING IS 90 DEGREES.

FLOW CHANNEL DETAIL - SANITARY SEWERS

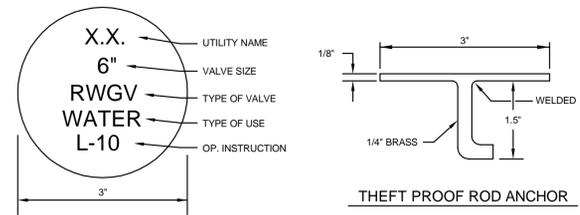


TRACER WIRE PORT DETAIL
N.T.S.

PIPE RESTRAINT FOR PVC PIPE (C-900/C-905 DR 18)										
MINIMUM RESTRAINED LENGTH (FT) - EACH SIDE OF FITTING										
FITTING TYPE	PIPE SIZE - INCHES									
	4	6	8	10	12	14	16	18	20	24
VERT. UP OR HORIZ										
11-1/4 BEND	2	3	4	5	6	6	7	8	9	10
22-1/2 BEND	5	6	8	10	12	13	15	16	17	20
45 BEND	10	13	17	21	24	27	30	33	36	41
90 BEND	23	32	42	50	58	66	73	80	87	100
VERTICAL DOWN										
11-1/4 BEND	6	8	10	12	14	16	18	20	22	25
22-1/2 BEND	11	16	20	24	28	32	36	40	43	50
45 BEND	23	33	42	51	59	67	75	83	91	105
90 BEND	56	79	102	122	143	163	182	201	219	253
BRANCH OF TEE	20	41	63	83	103	129	141	159	177	210
DEAD END	56	79	102	122	143	163	182	201	219	253
REDUCERS										
SIZE	6X4	8X4	8X6	10X6	10X8	12X6	12X8	12X10	14X6	14X8
RESTR. LENGTH	41	74	43	76	41	106	77	42	133	108
SIZE	16X6	16X8	16X12	18X8	18X12	20X12	20X16	24X12	24X16	
RESTR. LENGTH	159	137	79	163	111	41	141	78	194	142

NOTES:
 1. SAND-SILT SOIL (COHESIONLESS SOIL WITH 30° INTERNAL FRICTION ANGLE, PIPE FRICTION/SOIL FRICTION RATIO = 0.6, SOIL DENSITY 90 PCF).
 2. PIPE LAYING CONDITION 3 (NO SELECT BEDDING OR BACKFILL).
 3. 150 PSI DESIGN PRESSURE. FOR 200 PSI DESIGN PRESSURE (FIRE LINES), INCREASE RESTRAINED LENGTH BY 35%.
 4. 3 FOOT MINIMUM COVER ON THE PIPE.
 5. ALL RESTRAINED JOINT LENGTHS IN FEET.

RESTRAINED JOINT PIPE LENGTHS
C900 PVC PIPE
N.T.S.



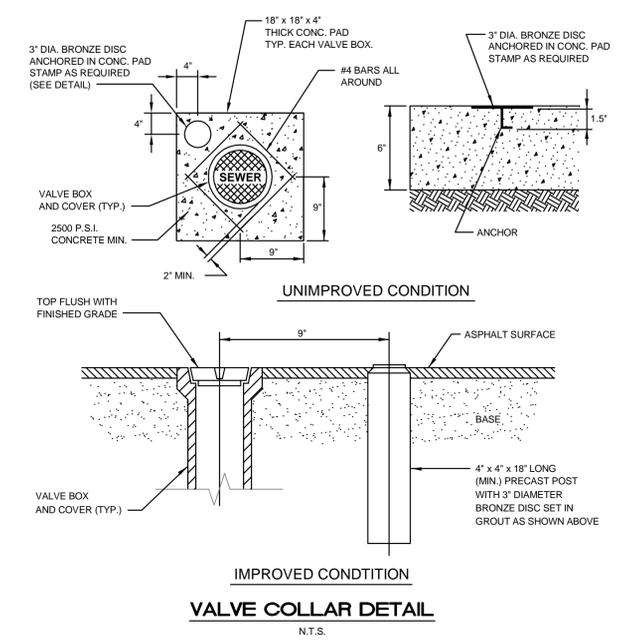
TEXT FOR TYPE OF VALVE
 RSGV RESILIENT SEAT GATE VALVE
 RWGW RESILIENT WEDGE GATE VALVE
 BFV BUTTERFLY VALVE
 PV PLUG VALVE
 CV CHECK VALVE

TEXT FOR TYPE OF USE
 WATER WATER
 SEWER SEWER
 RECLMD RECLAIMED
 NPW NON-POTABLE WATER

TEXT FOR OPERATING INSTRUCTION
 L-10 LEFT NO. TURNS
 R-10 RIGHT NO. TURNS

NOTES:
 1. SHALL BE 3" DIA., 1/8" THICK SOLID HARD BRASS W/1/4" WELDED ROD ANCHOR WITH HOOK END. SURFACE TO BE ENGRAVED WITH 1/4" TO 3/8" CAPITAL LETTERS APPROX. .015 DEPTH (HAND PUNCHED LETTERS NOT ACCEPTABLE). SURFACE TO BE GROUND SMOOTH AND EPOXY-COATED TO PREVENT TARNISHING.
 2. MARKERS SHALL BE WAGCO MARKERS OR APPROVED EQUAL.
 3. MARKERS SHALL BE INSPECTED BY THE UTILITY PRIOR TO INSTALLATION.
 4. REFER TO UTILITY SPECIFICATION AND PAVED VALVE UVI LOCATION DETAIL FOR PLACEMENT.
 5. UTILITY NAME SHALL BE THE INITIALS OF THE UTILITY PROVIDING SERVICE

UNDERGROUND VALVE MARKER (UVI) DETAIL



VALVE COLLAR DETAIL
N.T.S.

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KHA PROJECT	149685007
DATE	12/30/16
SCALE	AS SHOWN
DESIGNED BY	SNR
DRAWN BY	RLI
CHECKED BY	NEQ

SABAL PALM MASTER PUMP STATION

PREPARED FOR
UTILITIES, INC. OF FLORIDA

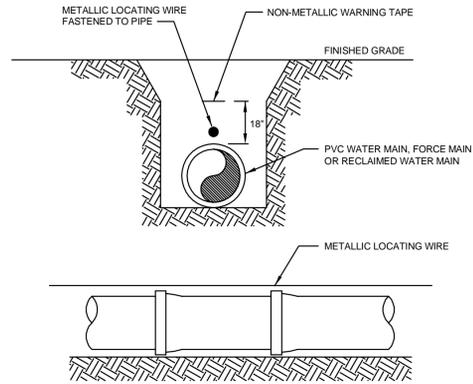
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NOTES:

1. ALL NON-METALLIC PIPE SHALL REQUIRE CONTINUOUS INSULATED METALLIC LOCATING WIRE (14 GAUGE COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE BURIED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
2. THE TRACING WIRE SHALL BE CENTERED ON ALL PIPE (INCLUDING SERVICES) AND TIED INTO ALL HYDRANTS, VALVE BOXES AND METER BOXES. TESTING FOR CONTINUITY IS REQUIRED.
3. USE VINYL TIE-STRAPS AS NECESSARY TO HOLD WIRE DIRECTLY ON THE TOP OF THE PIPE. DUCT TAPE SHALL NOT BE USED.
4. WIRE CONNECTIONS MUST BE CLAMPED TOGETHER AND SEALED FOR MOISTURE.
5. ALL WIRE SPLICE LOCATIONS SHALL BE SHOWN ON THE AS-BUILT DRAWINGS.
6. WIRE AND WARNING TYPE SHALL BE COLOR CODED AS FOLLOWS
 WATER: BLUE
 SEWER: GREEN
 RECLAIMED: PURPLE

PIPE LOCATING WIRE DETAIL

N.T.S.

PROPOSED UTILITY	MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS									
	POTABLE WATER		RECLAIMED WATER*		SANITARY SEWER FORCE MAIN		SANITARY SEWER GRAVITY MAIN		STORM SEWER OR VACUUM TYPE SANITARY SEWER	
	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
POTABLE WATER	--	--	3'	12"	6'	12"	6' **	6" ABOVE 12" BELOW	3'	6" ABOVE 12" BELOW
RECLAIMED WATER	3'	12"	--	--	3'	12"	3'	12"	--	--
SANITARY SEWER FORCE MAIN	6'	12"	3'	12"	--	--	--	--	--	--
SANITARY SEWER GRAVITY MAIN	6' **	6" ABOVE 12" BELOW	3'	12"	--	--	--	--	--	--
FIRE HYDRANTS W/ UNDERGROUND DRAINS	--	--	3'	--	6'	--	6'	--	3'	--

1. THE TABLE REPRESENTS THE MINIMUM SEPARATION REQUIREMENTS AS DESCRIBED IN F.D.E.P. RULES PER THE FLORIDA ADMINISTRATION CODE (F.A.C.). THESE SEPARATION REQUIREMENTS SHALL APPLY BETWEEN NEWLY PROPOSED UTILITY LINES AND EXISTING OR PROPOSED UTILITY LINES.
2. FOR THE PURPOSE OF THIS TABLE RECLAIMED WATER SHALL MEAN UNRESTRICTED PUBLIC ACCESS REUSE WATER AS DEFINED BY F.A.C. 62-610. OTHER TYPES OF RECLAIMED WATER ARE CONSIDERED RAW SEWAGE AND SEPARATION LISTED FOR SANITARY SEWER SHALL APPLY.
3. ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
4. THE MINIMUM HORIZONTAL SEPARATION BETWEEN POTABLE WATER AND GRAVITY SANITARY SEWER MAY BE REDUCED TO 3 FEET IF THE BOTTOM OF THE WATER MAIN IS LOCATED AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SEWER.
5. AT UTILITY CROSSINGS ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED ABOVE OR BELOW THE OTHER UTILITY PIPELINE MAXIMIZING THE SEPARATION OF PIPELINE JOINTS. ALTERNATIVELY, WATER MAIN JOINTS MUST BE:
 - A. AT LEAST 3' FROM ALL JOINTS IN VACUUM TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR UNRESTRICTED PUBLIC ACCESS RECLAIMED WATER.
 - B. AT LEAST 6' FROM ALL JOINTS IN GRAVITY OR PRESSURE SANITARY SEWERS, WASTEWATER FORCE MAINS, AND ALL OTHER TYPES OF RECLAIMED WATER.
6. NO WATER PIPE SHALL PASS THROUGH OR BE CONSTRUCTED TOUCHING ANY PART OF A SANITARY MANHOLE OR STORM SEWER MANHOLE OR INLET STRUCTURE.
7. NEW OR RELOCATED FIRE HYDRANTS WITH UNDERGROUND DRAINS MUST BE AT LEAST 10 FEET FROM ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065 (2), F.S., AND RULE 64E-6.002, F.A.C. (E.G. SEPTIC TANKS, DRAIN FIELDS, AND GREASE TRAPS).
8. THE FOLLOWING ARE ACCEPTABLE ALTERNATIVE CONSTRUCTION VARIANCES WHERE IT IS NOT POSSIBLE TO MEET THE SEPARATION REQUIREMENTS, AND ARE ONLY TO BE IMPLEMENTED UPON RECEIPT OF EXPRESSED WRITTEN CONSENT FROM THE ENGINEER.
 - A. WHERE A WATER MAIN IS BEING LAID LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE AND/OR WHERE A WATER MAIN CROSSING HAS LESS THAN THE MINIMUM REQUIRED DISTANCE BETWEEN JOINTS:
 1. USE OF PRESSURE RATED PIPE CONFORMING TO AWWA STANDARDS, FOR A GRAVITY OR VACUUM TYPE PIPE LINE.
 2. USE OF WELDED, FUSED OR OTHERWISE RESTRAINED JOINTS FOR EITHER PIPE.
 3. USE OF WATERTIGHT CASING PIPE OR CONCRETE ENCASEMENT AT LEAST 4" THICK FOR EITHER PIPE.
 - B. WHERE A WATER MAIN IS BEING LAID LESS THAN 3 FEET HORIZONTALLY FROM ANOTHER PIPE LINE AND/OR WHERE A WATER MAIN IS BEING LAID WITH LESS THAN THE REQUIRED MINIMUM VERTICAL SEPARATION:
 1. USE OF PIPE OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (AT LEAST EQUAL TO 0.25" THICK D.I.P.), OR CONCRETE ENCASEMENT AT LEAST 4" THICK FOR THE WATER MAIN AND THE OTHER PIPE LINE IF THE OTHER PIPE LINE CONVEYS WASTEWATER OR RECLAIMED WATER.

MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS

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