

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

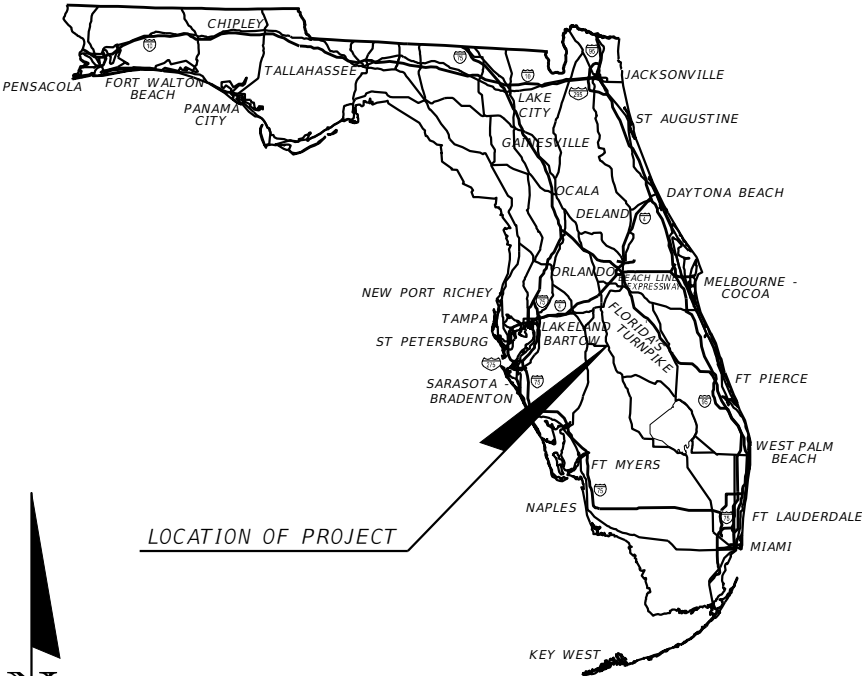
CONTRACT PLANS

This project to let to contract with
Financial Projects 437300-1-52-01,
and 437300-2-52-01

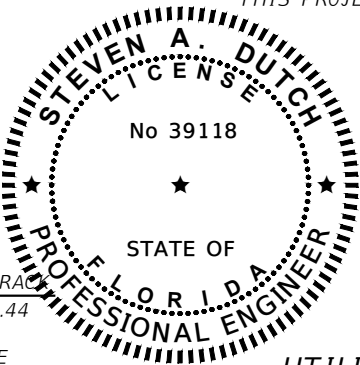
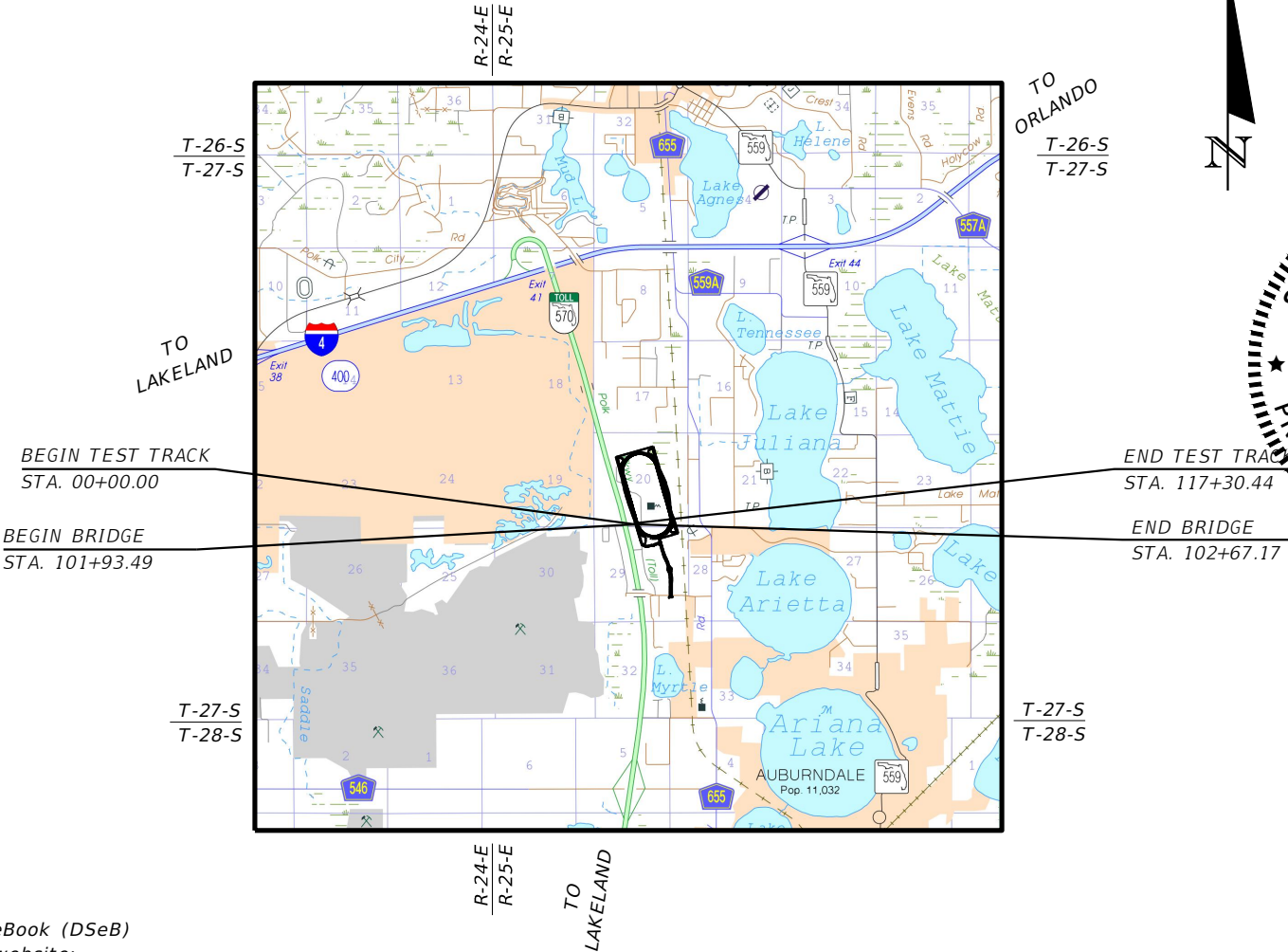
INDEX OF UTILITY PLANS

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FINANCIAL PROJECT ID 437300-1-56-01
POLK COUNTY (16470)
SUNTRAX TEST FACILITY



LOCATION OF PROJECT



"THIS PROJECT IS DESIGNED TO NAVD, 1988 DATUM."

UTILITY PLANS
ENGINEER OF RECORD:
STEVEN A. DUTCH, P.E.
P.E. NO. 39118
CHASTAIN-SKILLMAN
4705 OLD HWY 37
P.O. BOX 5710
LAKELAND, FL 33803-5710
CONTRACT NO. C9L54
VENDER NO. F590619876003
CERTIFICATE OF AUTHORIZATION NO. 262

FDOT PROJECT MANAGER:
PATRICK_M._MUENCH,_P.E.
GEC PROJECT MANAGER:
JOSH_PEDERSEN,_P.E.

GOVERNING DESIGN STANDARDS:
Florida Department of Transportation, FY2016-17 Design Standards eBook (DSeB)
and applicable Design Standards Revisions (DSRs) at the following website:
<http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm>

APPLICABLE DSRs:

GOVERNING STANDARD SPECIFICATIONS:
Florida Department of Transportation, January 2017 Standard Specifications
for Road and Bridge Construction at the following website:
<http://www.dot.state.fl.us/programmanagement/Implemented/SpecBooks>

REVISIONS:

KEY SHEET REVISIONS	
DATE	DESCRIPTION

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
E8Q39	17	UA-001

\\caladred001\Projects\Projects\9185.30A\CAD\Drawings\Production Drawings\9185.30A-S&D-16-G.dwg UA-002 PAY ITEMS Dec 05, 2016 1:43pm by: rcoy28

TABULATION OF QUANTITIES

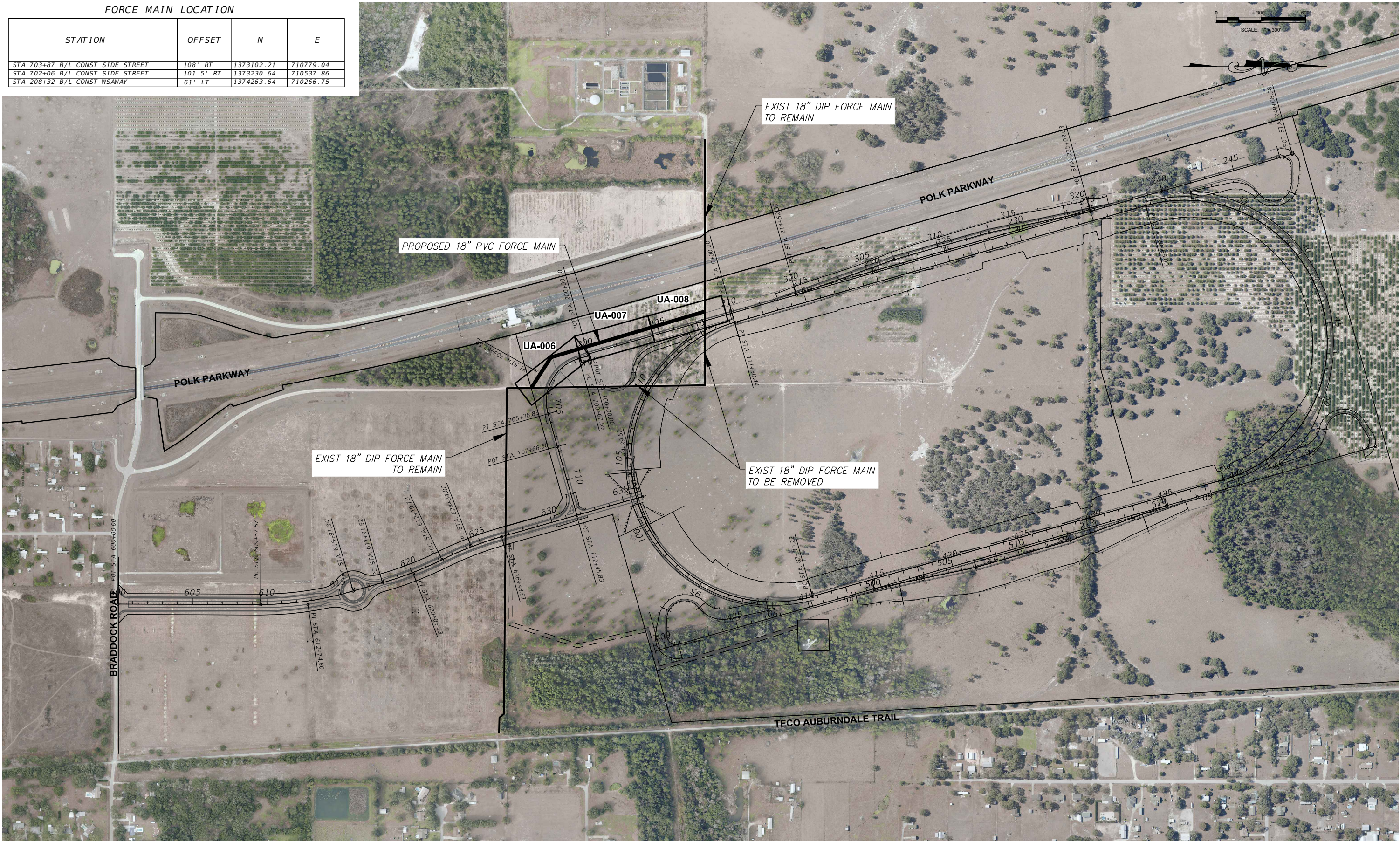
PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY		DESIGN NOTES	CONSTRUCTION REMARKS
			PLAN	FINAL		
	STRUCTURES PAY ITEMS					
570 1 1	TURF	SY	3600			
1050 11224	UTILITY PIPE, F & I, PVC WATER/SEWER, 8 - 19.9"	LF	1320			
1050 16004	UTILITY PIPE REMOVE AND DISPOSE, 8 - 19.9"	LF	1900			
1055 11454	UTILITY FITTINGS, FI, DI/CI, CAP & PLUG, 8 - 19.9"	EA	2			
1055 11 414	UTILITY FITTINGS, F & I, DI/CI ELBOW, 8 - 19.9"	EA	4			
1060 11 211	UTILITY STRUCTURE, BELOW GROUND, F & I, WATER/SEWER, 0 - 80 FT3, 0 - 6'	EA	2			
1080 11404	UTILITY FIXTURES, F & I, 8 - 19.9", VALVE ASSEMBLY	EA	2		TAPPING SLEEVE AND VALVE	
1080 11409	UTILITY FIXTURES, F & I, 8 - 19.9", MECHANICAL JOINT RESTRAINT	EA	16			
999 25	INITIAL CONTINGENCY AMOUNT	LS	1			

REVISIONS				STEVEN A. DUTCH, P.E. P.E. LICENSE NUMBER 39118 CHASTAIN-SKILLMAN 4705 OLD HWY 37 P.O. BOX 5710 LAKELAND, FL 33803-5710 CERTIFICATE OF AUTHORIZATION NO. 262 PROJECT NO. 9185.30A	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION SUMMARY OF PAY ITEMS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		UA-002
					N/A	POLK	437300-1-56-01		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

FORCE MAIN LOCATION

STATION	OFFSET	N	E
STA 703+87 B/L CONST SIDE STREET	108' RT	1373102.21	710779.04
STA 702+06 B/L CONST SIDE STREET	101.5' RT	1373230.64	710537.86
STA 208+32 B/L CONST WSAWAY	61' LT	1374263.64	710266.75



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN A. DUTCH, P.E.
P.E. LICENSE NUMBER 39118
CHASTAIN-SKILLMAN
4705 OLD HWY 37
P.O. BOX 5710
LAKELAND, FL 33803-5710
CERTIFICATE OF AUTHORIZATION NO. 262
PROJECT NO. 9185.30A

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	437300-1-56-01

CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION PROJECT LAYOUT	SHEET NO.
	UA-003

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GENERAL UTILITY NOTES:

1. TRENCH EXCAVATION WORK SHALL CONFORM TO THE LATEST OSHA STANDARDS.
2. CALL 811 TO NOTIFY THE LOCAL UTILITY COMPANIES TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION FOR LINE LOCATION.
3. REFER TO ROADWAY COMPONENT SET FOR A LIST OF UTILITY CONTACTS.
4. ALL PIPE TO BE COLOR-CODED AS FOLLOWS:
GREEN - WASTEWATER
BLUE - WATER
PURPLE - REUSE WATER
5. INSTALL VALVE BOXES WITH ALL VALVES. VALVE BOXES UNDER THE PAVEMENTS SHALL HAVE TRAFFIC BEARING COVERS AND CONCRETE COLLARS.
6. POTABLE WATERMAINS WITH LESS THAN 1.5 FEET OF VERTICAL SEPARATION FROM SANITARY WASTEWATER MAINS SHALL REQUIRE ONE JOINT (20 LINEAR FEET) OF CLDIP WATERMAIN AND ONE JOINT (20 LINEAR FEET) OF WASTEWATER MAIN CENTERED AT THE POINT OF CROSSING.
7. PROVIDE AND MAINTAIN A MINIMUM VERTICAL SEPARATION OF 0.5 FEET FOR WATER MAINS CROSSING STORM, AND A MINIMUM OF 1.5 FEET FOR WATER MAINS CROSSING WASTEWATER MAINS. NOTE THE WATER SERVICE LATERALS SHALL BE INSTALLED WITHIN 3 INCH SLEEVES.
8. POTABLE OR RECLAIMED MAINS ROUTED WITHIN 10 FEET OF AN ELECTRIC TRANSFORMER SHALL REQUIRE 20 FEET LENGTH OF D.I.P. CENTERED ON THE TRANSFORMER WITH MECHANICAL RESTRAINT AT EACH END.
9. NO POTABLE OR RECLAIMED MAIN FITTINGS OR VALVES SHALL BE INSTALLED WITHIN 10 FEET OF THE NEAREST EDGE OF AN ELECTRIC TRANSFORMER.
10. ANCHORING TEES, COUPLINGS, AND BENDS SHALL BE USED ON ALL FIRE HYDRANT ASSEMBLIES.
11. WASTEWATER CLEANOUT COVERS LOCATED WITHIN PAVEMENT AND SIDEWALKS ADJACENT TO PAVED AREAS SHALL BE RATED FOR TRAFFIC LOAD BEARING. WASTEWATER CLEANOUT COVERS IN OTHER SIDEWALKS/WALKWAYS SHALL BE BRASS WITH A SQUARE RECESS.
12. MANHOLES WHICH ARE NOT INSTALLED UNDER THE PAVEMENT SHALL HAVE A RIM ELEVATION AT LEAST 6" ABOVE FINISHED GRADE, AND A 10:1 SLOPE TO FINISHED GRADE.

CITY OF AUBURNDALE UTILITY NOTES:

1. REFER TO THE CITY OF AUBURNDALE'S ADMINISTRATION AND PROCEDURE MANUAL, 2005, FOR UTILITY SYSTEM REQUIREMENTS AND SPECIFICATIONS.
2. ALL CONNECTIONS TO THE EXISTING CITY SYSTEM SHALL BE MADE BY THE CITY AND SHALL BE PAID IN ADVANCE BY THE DEVELOPER. IN THE EVENT THERE IS AN EXISTING STUB FROM PREVIOUS CONSTRUCTION, NO CHARGE WILL BE MADE. THE CITY WILL PROVIDE ALL WET TAPS THROUGH 2 INCHES IN SIZE. SIZES LARGER THAN 2 INCHES WILL BE MADE BY THE CONTRACTOR AT THE DEVELOPER'S EXPENSE TO CITY STANDARDS, AND UNDER THE CITY'S INSPECTION AND CONTROL. NO CHARGES WILL BE ASSESSED BY THE CITY FOR CONTRACTOR INSTALLED CONNECTIONS.
3. FORMAL APPLICATION FOR UTILITIES SERVICE (PETITION FOR UTILITY SERVICE) SHALL BE MADE BY THE OWNER. NO SEWER AND/OR WATER SYSTEM PERMIT APPLICATIONS SHALL BE SIGNED BY THE CITY UNTIL THE APPLICATION IS RECEIVED AND APPROVED.
4. THE CONTRACTOR MUST EXHIBIT A GOOD WORKING KNOWLEDGE AND EXPERIENCE IN THE INSTALLATION OF UNDERGROUND UTILITY SYSTEMS. CONTRACTOR SHALL BE LICENSED BY THE STATE OF FLORIDA AS EITHER AN UNDERGROUND CONTRACTOR OR A GENERAL CONTRACTOR.
5. THE CONTRACTOR SHALL CONDUCT PRESSURE, INFILTRATION, AND LEAKAGE TESTS AS REQUIRED BY THE ENGINEER OF RECORD AND CONFORMING TO APPROVED STANDARDS. THE CONTRACTOR SHALL HAVE ALL GRAVITY SEWER LINES TELEVIEWED IN ACCORDANCE WITH CITY STANDARDS. CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTIFICATION TO PUBLIC UTILITIES DEPARTMENT PERSONNEL BEFORE ANY TEST.
6. THE NAME OF THE CONTRACTOR TO PERFORM THE CONSTRUCTION, THE CONSTRUCTION PROJECT MANAGER, AND THE TELEPHONE NUMBER AT WHICH HE CAN BE REACHED MUST BE SUBMITTED TO THE CITY PRIOR TO COMMENCING CONSTRUCTION.
7. THE CONTRACTOR SHALL SUBMIT PROOF OF INSURANCE MEETING THE REQUIREMENTS OF THE CITY FOR ANY WORK DONE ON PORTIONS OF THE PROJECT WHERE THE CITY IS SIGNER OR CO-SIGNER TO USE A PERMIT. THIS INCLUDES COUNTY, DOT, OR CSX RAILROAD PERMIT APPLICATIONS. THE CITY SHALL BE LISTED AS ADDITIONAL INSURED'S ON THE CONTRACTOR'S POLICY.
8. RECORD DRAWINGS SHALL BE A COMPLETE, ACCURATE VISUAL REPRESENTATION OF THE EXACT LOCATION OF ANY AND ALL FACILITIES INSTALLED FOR USE BY THE CITY PUBLIC UTILITIES DEPARTMENT. THE RECORD DRAWINGS SHALL INCLUDE, BUT NOT BE LIMITED TO:
 - A. AN ACCURATE SCALE.
 - B. ALL DIMENSIONS NECESSARY TO EASILY LOCATE A FACILITY. MEASUREMENTS SHALL BE FROM A PERMANENT, ABOVE-GROUND FACILITY TO THE CITY'S FACILITIES OR TO A POINT DIRECTLY ABOVE AN UNDERGROUND FACILITY. ALL VALVES, SERVICES, MANHOLES, AIR RELEASE VALVES, ETC, SHALL BE INDICATED BY ACCURATE DIMENSIONS.
 - C. FOR UNDERGROUND FACILITIES, DEPTH FROM FINAL GRADE OR OTHER FIXED POINT OF REFERENCE SHALL BE SHOWN. THE LOCATION WHERE DEPTH FROM FINAL GRADE IS REQUIRED WILL BE DETERMINED BY THE UTILITY'S REPRESENTATIVE. AS AN ALTERNATIVE, DEPTHS MAY BE REFERENCED TO USGS STANDARD DATUM.
 - D. LOCATION DIMENSIONS ON PIPE RUNS SHALL BE INDICATED AS NECESSARY TO ACCURATELY DEFINE THE PERMANENT LOCATION AT TERMINATIONS, AT SERVICE WYES, AND AT ANY DEFLECTION, VERTICALLY OR HORIZONTALLY.

REVISIONS				STEVEN A. DUTCH, P.E. P.E. LICENSE NUMBER 39118 CHASTAIN-SKILLMAN 4705 OLD HWY 37 P.O. BOX 5710 LAKELAND, FL 33803-5710 CERTIFICATE OF AUTHORIZATION NO. 262 PROJECT NO. 9185.30A	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					N/A	POLK	437300-1-56-01	PROJECT NOTES (1)	UA-004

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CITY OF AUBURNDALE FORCE MAIN CONSTRUCTION NOTES:

1. MALLEABLE IRON FITTINGS SHALL BE GALVANIZED CONFORMING TO THE APPLICABLE PROVISION OF FEDERAL SPECIFICATION WVV-P-521D, TYPE II, AND MAY BE USED IN SIZE 2 INCHES AND UNDER ONLY.
2. POLYVINYL CHLORIDE (PVC) FITTINGS SHALL BE MINIMUM SCHEDULE 40 AND MAY BE USED IN SIZE 2 INCHES AND UNDER ONLY.
3. PLUG VALVES: PLUG VALVES SHALL BE OF THE ECCENTRIC PLUG TYPE, NONLUBRICATED, WITH PORT AREA EQUAL TO A MINIMUM OF 100% OF PIPE AREA. MINIMUM PRESSURE RATING SHALL BE 150 PSI. VALVE BODIES TO BE CAST IRON ASTM A126, CLASS B. PLUGS SHALL BE CAST IRON WITH NEOPRENE FACING AND SHALL BE OF THE SINGLE PIECE DESIGN. PLUG SHALL BE OF SAME CONFIGURATION FOR ALL VALVES AND SHALL REQUIRE NO STIFFENING MEMBER OPPOSITE THE PLUG FOR BALANCE OR SUPPORT. VALVE BODY SEATS SHALL HAVE A WELDED IN OVERLAY NOT LESS THAN 90°, 4 NICKEL. PACKING SHALL BE ADJUSTABLE AND SHALL BE REPLACEABLE WITHOUT REMOVING THE VALVE FROM SERVICE, DEPRESSURIZING THE LINE, OR REMOVING THE VALVE OPERATOR. BUSHINGS IN BOTH UPPER AND LOWER JOURNALS TO BE TYPE 316 STAINLESS STEEL. VALVE SHALL BE DRIP TIGHT IN BOTH DIRECTIONS TO THE FULL PRESSURE RATING. ALL EXPOSED NUTS, BOLTS, SPRINGS AND WASHERS TO BE STAINLESS STEEL. ALL PLUG VALVES TO BE DEZURIK FIGURE 118 OR EQUAL. COAT VALVE EXTERIOR WITH 2 COATS OF KOPPERS 300M, 12 MILS EACH COAT, IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS.
4. SEWAGE COMBINATION AIR VALVES SHALL BE APCO SERIES 440 SCAV AS MANUFACTURED BY VALVE & PRIMER CORPORATION, SCHAUMBURG, IL OR APPROVED EQUAL. THE COMBINATION AIR VALVES SHALL BE FITTED WITH INLET ISOLATION VALVES, BLOW OFF VALVES, FLUSH VALVES AND MINIMUM OF FIVE (5) FEET OF RUBBER HOSE WITH DISCONNECTS FOR BACK FLUSHINGS. ISOLATION VALVES SHALL BE BRONZE GATE VALVES. VALVES SHALL HAVE PHENOLIC RED OXIDE PRIMER AND SHALL BE COATED WITH 2 COATS KOPPERS TOREX 800, OR EQUAL, CHLORINATED RUBBER BASE COATING TO A MINIMUM DRY FILM THICKNESS OF 2.0 MILS.
5. PROVIDE SUITABLE HAND WHEELS FOR GATE, GLOBE, ANGLE, AND DRAIN VALVES AND INSIDE HOSE BIBBS MOUNTED ABOVE-GROUND. PROVIDE WRENCH OPERATOR HAVING ADJUSTABLE, OPEN STOP MEMORY POSITIONS FOR EXPOSED PLUG VALVES SMALLER THAN 4 INCHES.
6. PROVIDE 2 INCH AWWA OPERATING NUT FOR ALL BURIED VALVES.
7. PROVIDE GEAR OPERATORS FOR PLUG VALVES 4 INCHES AND LARGER. GEAR OPERATORS FOR PLUG VALVES 4 INCHES THROUGH 20 SHALL BE OF THE WORM AND GEAR TYPE. OPERATOR SHALL INCLUDE SPUR GEARS, AWWA INPUT STOPS, STAINLESS STEEL BOLTING, AND SHALL BE OUTFITTED FOR BURIED SERVICE, IF APPLICABLE.
8. GEAR OPERATORS SHALL BE ENCLOSED, SUITABLE FOR RUNNING IN OIL, WITH SHAFT SEALS TO PREVENT ENTRY OF DIRT AND/OR WATER. THE ACTUATOR SHAFT AND SECTOR GEAR SHALL BE SUPPORTED ON PERMANENTLY LUBRICATED BRONZE BUSHINGS. ACTUATORS WITHOUT BRONZE BUSHINGS WILL NOT BE ALLOWED.
9. GEAR OPERATORS SHALL BE OF THE TOTALLY ENCLOSED DESIGN AND SHALL BE PROPORTIONED TO PERMIT OPERATION OF THE VALVE UNDER FULL RATED PRESSURE IN EITHER DIRECTION WITH A MAXIMUM FORCE OF 80 POUNDS ON THE HAND WHEEL OR CRANK. PROVIDE STOP LIMITING DEVICES IN THE OPERATOR AT THE OPEN AND CLOSED POSITIONS. OPERATORS SHALL BE OF THE SELF-LOCKING TYPE TO PREVENT CREEPING. DESIGN COMPONENTS BETWEEN INPUT AND STOP LIMITING DEVICES TO WITHSTAND WITHOUT DAMAGE A PULL OF 200 POUNDS FOR HAND WHEEL AND CRANK OPERATORS AND AN INPUT TORQUE OF 300 FOOT-POUNDS FOR OPERATING.
10. WORM GEAR SHALL BE ONE-PIECE DESIGN OF GEAR BRONZE MATERIAL (ASTM B427), ACCURATELY MACHINE CUT. SECTOR GEAR SHALL BE HARDENED ALLOY STEEL. REDUCTION GEARING SHALL RUN IN PROPER LUBRICANT. OPERATORS SHALL BE LIMITORQUE OR ELM.
11. GEAR OPERATORS FOR ABOVE GROUND SERVICE SHALL BE HAND WHEELS WITH A MINIMUM DIAMETER OF TWELVE (12) INCHES. OPERATOR SHALL CONTAIN A DIAL INDICATING POSITION OF THE VALVE PLUG. CHAIN OPERATORS SHALL BE REQUIRED.
12. GEAR OPERATORS FOR UNDERGROUND SERVICE SHALL HAVE TWO INCH AWWA OPERATING NUT. PROVIDE WATERTIGHT SHAFT SEALS AND ACTUATOR COVER GASKETS. PROVIDE OPERATORS DESIGNED FOR BURIED SERVICE.
13. ALL OPERATORS TO OPEN BY TURNING COUNTER CLOCKWISE.
14. VALVE BOXES SHALL BE CAST IRON OF STANDARD DESIGN WITH ADJUSTABLE DROP SECTION TO FIT DISK OR COVER OVER VALVE. INTERIOR DIAMETER SHALL BE NOT LESS THAN 5 INCHES, WITH CAST IRON COVER MARKED "SEWER".

15. ALL CONSTRUCTION PROJECTS REQUIRING STILL SLEEVES SHALL CONFORM TO THE MINIMUM DOT REQUIREMENTS FOR ROADWAY CROSSINGS.
16. MARKER WIRE SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SHALL BE INSTALLED ON ALL PVC PIPE.
17. VARIATION OF PRODUCT REQUIREMENTS BY BRAND NAME OR SPECIFICATION NUMBER MAY BE MADE BY THE ADMINISTRATIVE OFFICIAL WHEN IT CAN BE DETERMINED BY THE ADMINISTRATIVE OFFICIAL THAT THE SUBSTITUTE IS EQUAL TO OR BETTER THAN THE PRODUCT REQUIRED OR THAT THE SUBSTITUTE PRODUCT WILL BETTER MEET THE PUBLIC NEED AND THAT INTENT OF THESE REGULATIONS ARE BEING MET.
18. THE TRENCH SHALL BE DUG SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND DEPTH REQUIRED, AND IT SHALL BE EXCAVATED ONLY SO FAR IN ADVANCE OF PIPE LAYING AS PERMITTED BY THE CITY (CONSULTING) ENGINEER. THE TRENCH SHALL BE SO BRACED AND DRAINED THAT THE WORKMEN MAY WORK THEREIN SAFELY AND EFFICIENTLY.
19. THE WIDTH OF THE TRENCH SHALL BE AMPLE TO PERMIT THE PIPE TO BE LAID AND JOINTED PROPERLY, AND THE BACKFILL TO BE PLACES AND COMPACTED AS SPECIFIED. TRENCHES SHALL BE OF SUCH EXTRA WIDTH, WHEN REQUIRED, AS WILL PERMIT THE CONVENIENT PLACING OF TIMBER SUPPORTS, SHEETING AND BRACING, AND HANDLING OF SPECIALS.
20. PIPE TRENCH SHALL BE PREPARED IN ACCORDANCE WITH PIPE MANUFACTURER RECOMMENDATIONS.
21. THE FOLLOWING ARE MINIMUM TRENCH WIDTHS MEASURED AT THE HORIZONTAL CENTERLINE OF THE PIPE WITHOUT UNDERCUTTING:

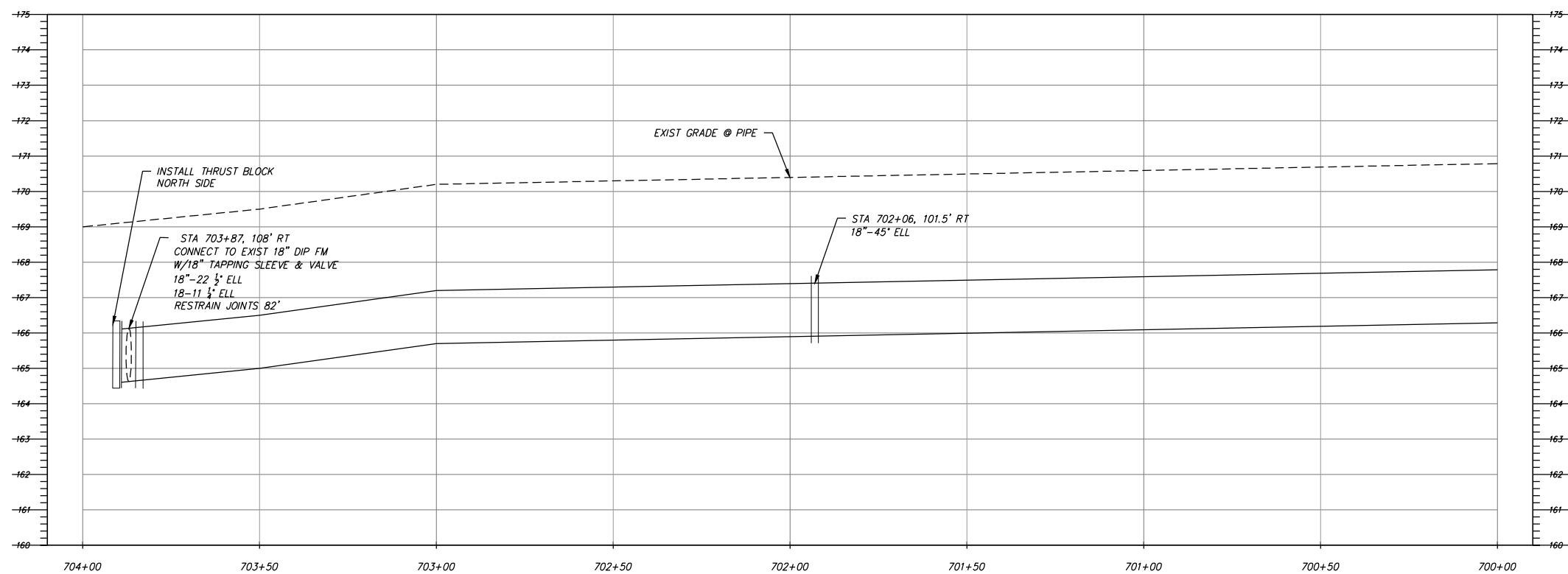
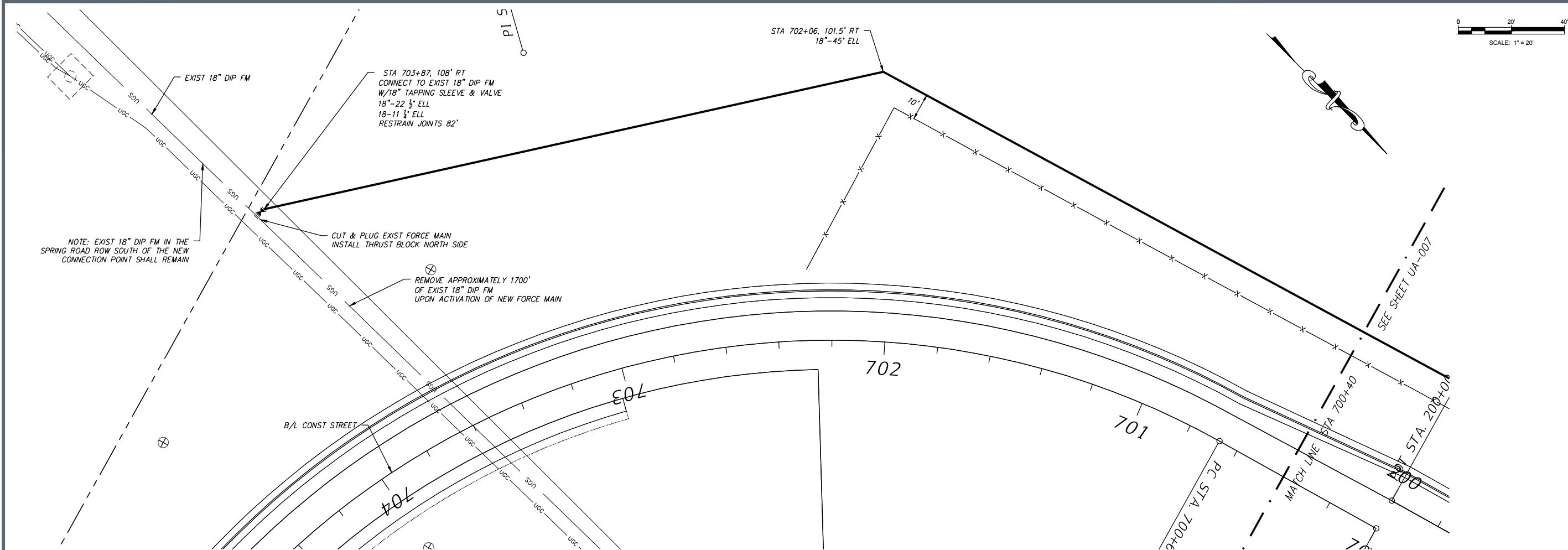
PIPE DIAMETER	MINIMUM TRENCH WIDTH
18"	36"
22. BELL HOLES SHALL BE PROVIDED AT EACH JOINT TO PERMIT THE JOINTING TO BE MADE PROPERLY.
23. OPEN-CUT TRENCHES SHALL BE SHEETED AND BRACED AS REQUIRED BY ANY GOVERNING FEDERAL AND STATE LAWS AND MUNICIPAL ORDINANCES, AND AS MAY BE NECESSARY TO PROTECT LIFE, PROPERTY, OR THE WORK. COMPLY WITH REQUIREMENTS OF 29CFR.S.1926.650 PART P. WHEN CLOSE SHEETING IS REQUIRED, IT SHALL BE SO DRIVEN AS TO PREVENT ADJACENT SOIL FROM ENTERING THE TRENCH EITHER BELOW OR THROUGH SUCH SHEETINGS. WHERE SHEETING AND BRACING ARE USED, THE TRENCH WIDTH SHALL BE INCREASED ACCORDINGLY.
24. SHEETING AND BRACING WHICH HAVE BEEN ORDERED LEFT IN PLACED MUST BE REMOVED FOR A DISTANCE OF 3 FEET BELOW THE ESTABLISHED STREET GRADE OR THE EXISTING SURFACE OF THE STREET, WHICHEVER IS LOWER. TRENCH BRACING, EXCEPT THAT WHICH MUST BE LEFT IN PLACE, MAY BE REMOVED WHEN THE BACKFILLING HAS REACHED THE RESPECTIVE LEVELS OF SUCH BRACING. SHEETING, EXCEPT THAT WHICH HAS BEEN LEFT IN PLACE, MAY BE REMOVED AFTER THE BACKFILLING HAS BEEN COMPLETED OR HAS BEEN BROUGHT UP TO SUCH AN ELEVATION TO PERMIT ITS SAFE REMOVAL.
25. SHEETING AND BRACING MAY BE REMOVED BEFORE FLOODING THE TRENCH, BUT ONLY IN SUCH MANNER AS WILL ENSURE THAT ADEQUATE PROTECTION OF THE COMPLETED STRUCTURES AND ADJACENT UNDERGROUND OR SURFACE STRUCTURES, AND PREVENT THE DISTURBANCE OF ADJACENT GROUND.
26. ALL PIPE AND ACCESSORIES SHALL BE LOADED AND UNLOADED BY LIFTING WIDTH HOISTS OR SKIDDING IN A MANNER THAT WILL AVOID SHOCK OR DAMAGE. UNDER NO CIRCUMSTANCES WILL SUCH MATERIALS BE DROPPED. PIPE HANDLED ON SKID WAYS SHALL NOT BE SKIDDED OR ROLLED AGAINST PIPE ALREADY ON THE GROUND.
27. GRAVITY SEWERS SHALL BE LAID TO EXACT LINE AND GRADE BY THE USE OF THE GRADE LINE SUPPORTED ON BATTER BOARDS SPACED AT NOT MORE THAN 35 FOOT CENTERS OR BY LASER BEAM. SEWERS WILL BE INSPECTED WITH A LIGHT AT EACH MANHOLE WHEN THE LINE IS COMPLETED AND BACKFILL HAS BEEN PLACED TO A DEPTH OF ONE-FOOT OVER THE PIPE. BACKFILL MAY BE COMPLETED ONLY AFTER APPROVAL OF EACH SECTION IS GIVEN FOR ALIGNMENT AND GRADE. LASER BEAM CONTROL IS ENCOURAGED. FAULTY SECTIONS OF SEWER LINES REJECTED BY THE CITY SHALL BE REMOVED AND RE-LAID BY THE CONTRACTOR AT HIS OWN EXPENSE.
28. THE PIPE FITTINGS SHALL BE INSPECTED FOR DEFECTS AND WHILE SUSPENDED ABOVE GRADE.

29. EVERY PRECAUTION SHALL BE TAKEN TO PREVENT FOREIGN MATERIAL FROM ENTERING THE PIPE WHILE IT IS BEING PLACED IN THE LINE. IF THE PIPE LAYING CREW CANNOT PUT THE PIPE INTO THE TRENCH AND IN PLACE WITHOUT GETTING EARTH INTO IT, THE ENGINEER MAY REQUIRE THAT BEFORE LOWERING THE PIPE INTO THE TRENCH, A HEAVY, TIGHTLY WOVEN CANVAS BAG OF SUITABLE SIZE SHALL BE PLACED OVER EACH END AND LEFT THERE UNTIL CONNECTION IS TO BE MADE TO THE PRECEDING JOINT. DURING LAYING OPERATIONS, NO DEBRIS, TOOLS, CLOTHING, OR OTHER MATERIAL SHALL BE PLACED INTO THE PIPE.
30. AFTER PLACING A LENGTH OF PIPE INTO THE TRENCH, THE END SHALL BE CENTERED IN THE COUPLING AND THE PIPE FORCED HOME AND BROUGHT TO CORRECT LINE AND GRADE. THE PIPE SHALL BE SECURED IN PLACE WITH APPROVED BACKFILL MATERIAL, TAMPED UNDER IT EXCEPT AT THE JOINTS. PIPE AND FITTINGS WHICH DO NOT ALLOW A SUFFICIENT AND UNIFORM SPACE FOR JOINT SHALL BE REMOVED AND REPLACED WITH PIPE FITTINGS OF PROPER DIMENSIONS TO ENSURE SUCH UNIFORM SPACE. PRECAUTIONS SHALL BE TAKEN TO PREVENT DIRT FROM ENTERING THE JOINT SPACE.
31. THE CUTTING OF PIPE FOR INSERTING FITTINGS OR CLOSURE SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER WITHOUT DAMAGE TO THE PIPE SO AS TO LEAVE A SMOOTH END AT RIGHT ANGLES TO THE AXIS OF THE PIPE.
32. INSTALL TRACE WIRE WITH ALL FORCE MAIN INSTALLATIONS IN ACCORDANCE WITH CITY REQUIREMENTS.
33. ALL PLUGS, CAPS, TEES, AND BENDS DEFLECTING 22 1/2 DEGREES OR MORE ON MAIN 4 INCHES IN DIAMETER OR LARGER SHALL BE PROVIDED WITH RESTRAINING GLANDS AND THRUST BLOCKS IN ACCORDANCE WITH CITY STANDARDS.
34. REACTION BACKING SHALL BE READY-MIX CONCRETE HAVING A COMPRESSIVE STRENGTH OF NOT LESS THAN 2,500 PSI IN 28 DAYS. HAND MIXING WILL NOT BE PERMITTED. BACKING SHALL BE PLACED BETWEEN SOLID GROUND AND THE FITTING TO BE ANCHORED. THE BACKING SHALL, UNLESS APPROVED BY THE CITY (CONSULTING) ENGINEER, BE SO PLACED THAT THE PIPE AND FITTING JOINTS WILL BE ACCESSIBLE FOR REPAIR.
35. BEFORE PRESSURE TESTING FORCE MAIN, PLACE A MINIMUM COVER OF 6 INCHES ABOVE THE TOP OF PIPE BUT LEAVE ALL JOINTS EXPOSED. THE BACKFILL SHOULD BE FREE OF STONES AND HARD EARTH. PRESSURE TEST THE PIPE IN THE PRESENCE OF THE CITY INSPECTOR AND CAREFULLY EXAMINE JOINTS FOR LEAKS. AFTER PRESSURE TESTING, JOINTS SHOULD BE COVERED WITH SAME SELECT BACKFILL AS USED FOR PIPE.
36. EACH VALVED SECTION OF FORCE MAIN SHALL BE SLOWLY FILLED WITH WATER AND THE SPECIFIED TEST PRESSURE, BASED ON THE ELEVATION OF THE LOWEST POINT OF THE LINE OR SECTION UNDER TEST, AND CORRECTED TO THE ELEVATION OF THE TEST GAGE, SHALL BE APPLIED BY THE MEANS OF A GASOLINE DRIVEN TEST PUMP CONNECTED TO THE PIPE IN A MANNER SATISFACTORY TO THE CITY. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR METERING THE AMOUNT OF WATER USED DURING THE TEST.
37. ALL JOINTS SHALL BE LEFT UNCOVERED DURING FORCE MAIN TESTING. IF THEY BECOME COVERED THEY SHALL BE RE-DUG. IF THE DITCH IS WET, EACH JOINT SHALL BE PUMPED DRY FOR INSPECTION OF LOOSE BOLTS AND LEAKS. SUFFICIENT MANPOWER SHALL BE EMPLOYED TO ENSURE THE INSPECTION OF EACH JOINT DURING THE TWO-HOUR TEST PERIOD.
38. BEFORE APPLYING THE SPECIFIED FORCE MAIN TEST PRESSURE, ALL AIR SHALL BE EXPELLED FROM THE PIPE. TAPS AT POINT OF HIGHEST ELEVATION SHALL BE MADE BEFORE THE TEST IS MADE AND PLUGS INSERTED AFTER THE LINE HAS BEEN FLOODED.
39. ALL EXPOSED PIPES, FITTINGS AND JOINTS WILL BE CAREFULLY EXAMINED DURING THE OPEN TRENCH TEST OF FORCE MAINS. ANY CRACKED OR DEFECTIVE PIPES OR FITTING DISCOVERED IN CONSEQUENCE OF THIS PRESSURE TEST SHALL BE REMOVED AND REPLACED WITH SOUND MATERIAL AND THE TEST SHALL BE REPEATED UNTIL SATISFACTORY TO THE ENGINEER.
40. WHERE ANY SECTION OF MAIN IS PROVIDED WITH CONCRETE REACTION BACKING, THE HYDROSTATIC PRESSURE TEST SHALL NOT BE MADE UNTIL AT LEAST FIVE DAYS HAVE ELAPSED AFTER THE CONCRETE REACTION BACKING WAS INSTALLED. IF HIGH EARLY STRENGTH CEMENT IS USED IN THE CONCRETE REACTION BACKING, THE HYDROSTATIC PRESSURE TEST SHALL NOT BE MADE UNTIL AT LEAST TWO DAYS HAVE ELAPSED.

REVISIONS				STEVEN A. DUTCH, P.E. P.E. LICENSE NUMBER 39118 CHASTAIN-SKILLMAN 4705 OLD HWY 37 P.O. BOX 5710 LAKELAND, FL 33803-5710 CERTIFICATE OF AUTHORIZATION NO. 262 PROJECT NO. 9185.30A	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					N/A	POLK	437300-1-56-01		
								UA-005	

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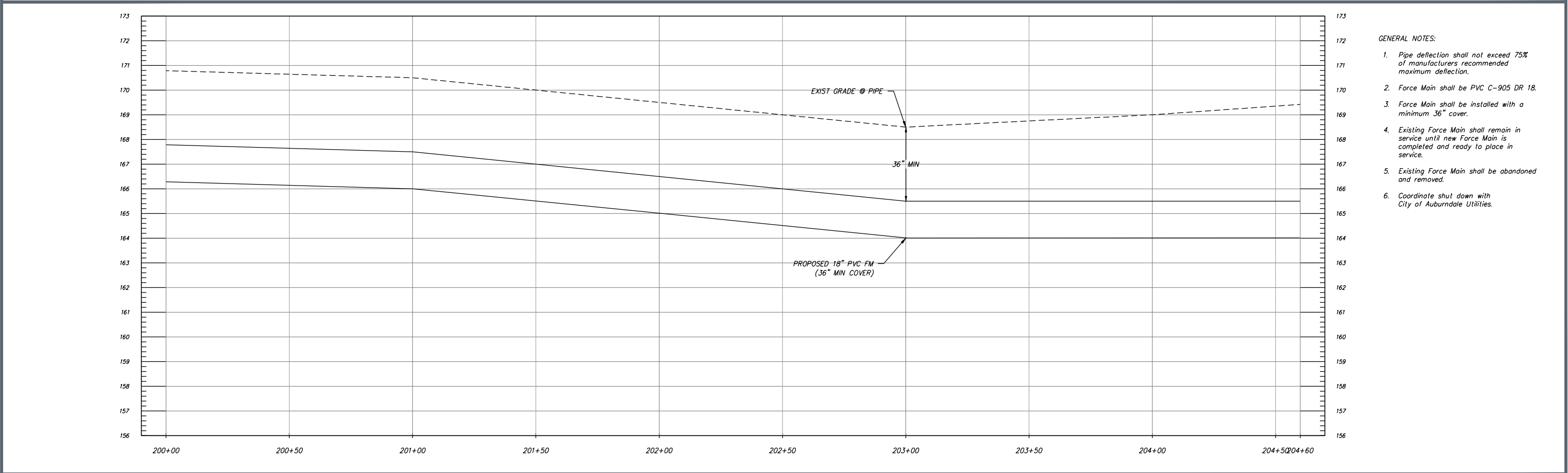
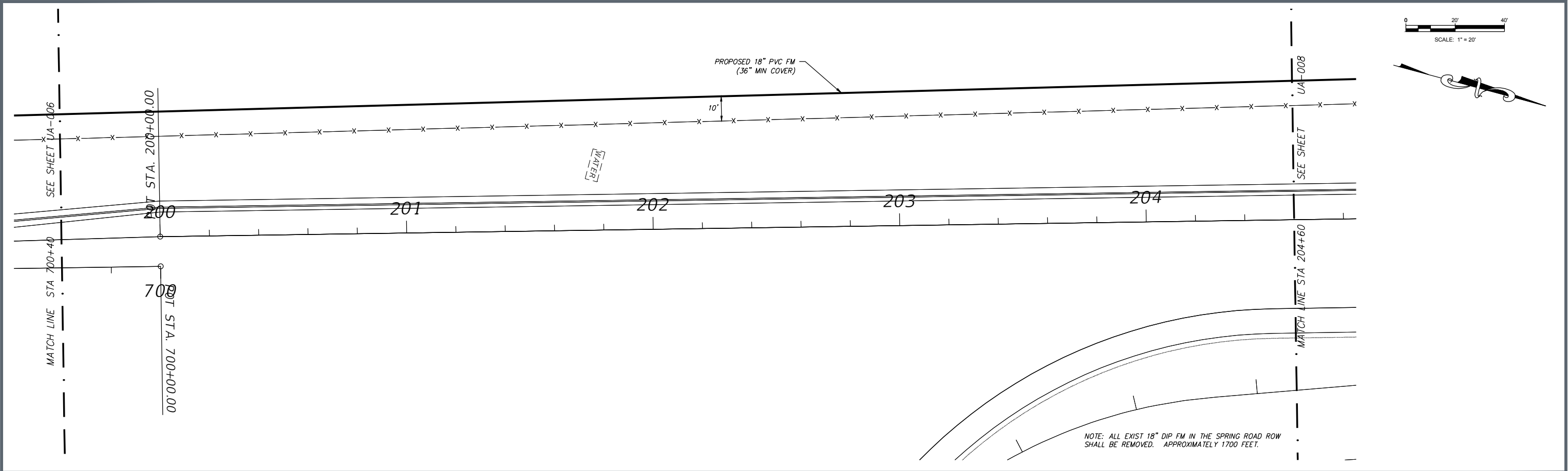
- GENERAL NOTES:
1. Pipe deflection shall not exceed 75% of manufacturers recommended maximum deflection.
 2. Force Main shall be PVC C-905 DR 18.
 3. Force Main shall be installed with a minimum 36" cover.
 4. Existing Force Main shall remain in service until new Force Main is completed and ready to place in service.
 5. Existing Force Main shall be abandoned and removed.
 6. Coordinate shut down with City of Auburndale Utilities.

REVISIONS				STEVEN A. DUTCH, P.E. P.E. LICENSE NUMBER 39118 CHASTAIN-SKILLMAN 4705 OLD HWY 37 P.O. BOX 5710 LAKELAND, FL 33803-5710 CERTIFICATE OF AUTHORIZATION NO. 262 PROJECT NO. 9185.30A	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION UTILITY PLAN & PROFILE	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					N/A	POLK	437300-1-56-01		UA-006

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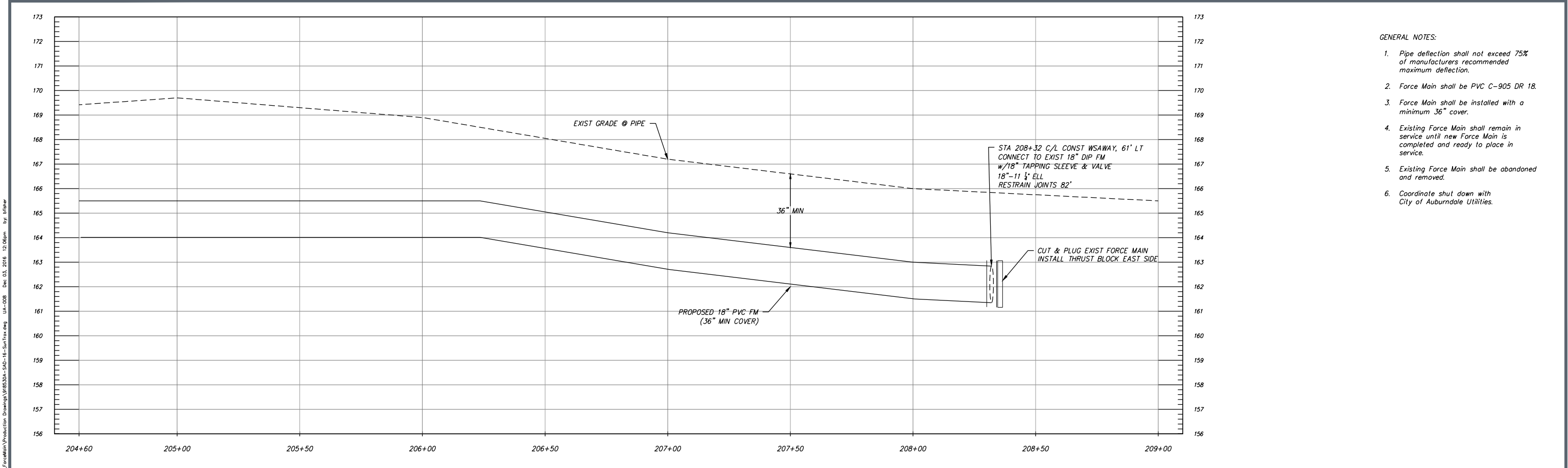
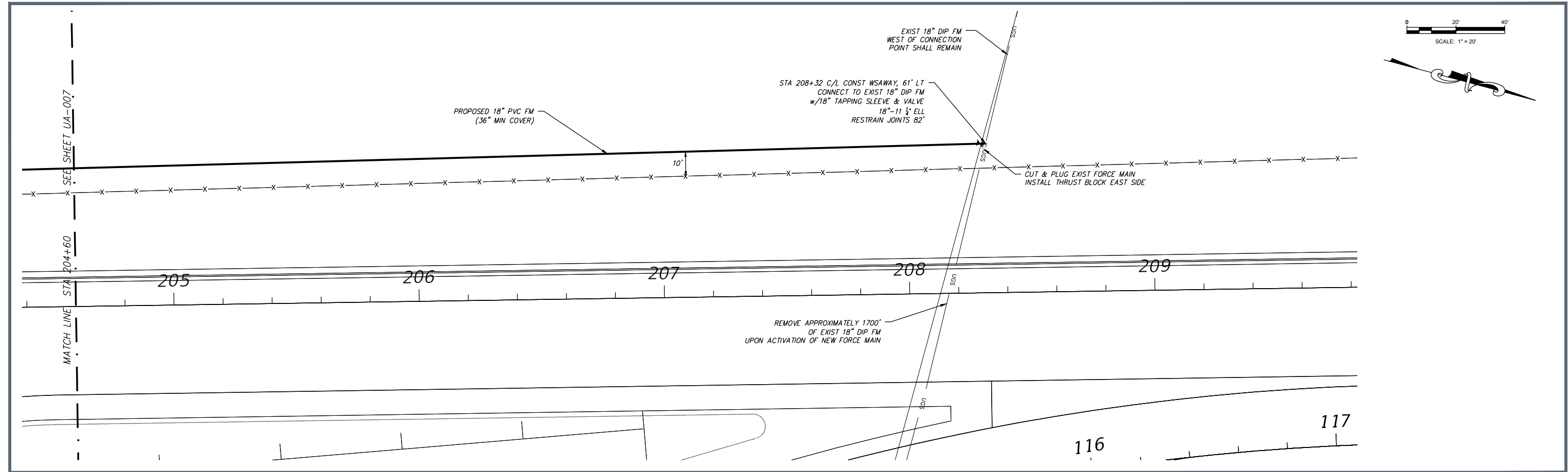
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- GENERAL NOTES:
1. Pipe deflection shall not exceed 75% of manufacturers recommended maximum deflection.
 2. Force Main shall be PVC C-905 DR 18.
 3. Force Main shall be installed with a minimum 36" cover.
 4. Existing Force Main shall remain in service until new Force Main is completed and ready to place in service.
 5. Existing Force Main shall be abandoned and removed.
 6. Coordinate shut down with City of Auburndale Utilities.

REVISIONS				STEVEN A. DUTCH, P.E. P.E. LICENSE NUMBER 39118 CHASTAIN-SKILLMAN 4705 OLD HWY 37 P.O. BOX 5710 LAKELAND, FL 33803-5710 CERTIFICATE OF AUTHORIZATION NO. 262 PROJECT NO. 9185.30A	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION UTILITY PLAN & PROFILE		SHEET NO. UA-007
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
					N/A	POLK	437300-1-56-01			

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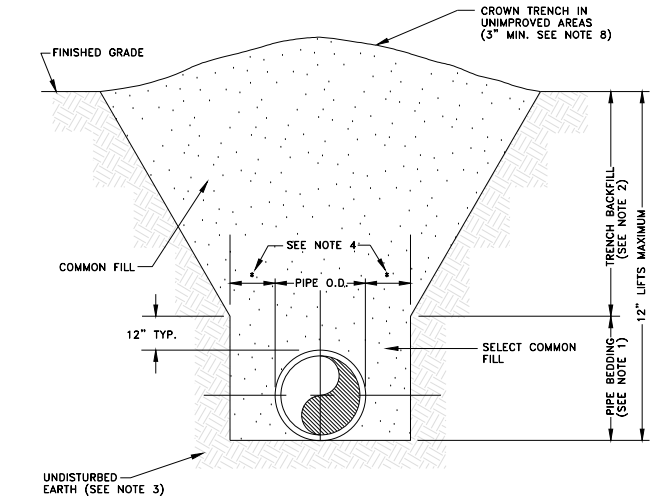


- GENERAL NOTES:
1. Pipe deflection shall not exceed 75% of manufacturers recommended maximum deflection.
 2. Force Main shall be PVC C-905 DR 18.
 3. Force Main shall be installed with a minimum 36" cover.
 4. Existing Force Main shall remain in service until new Force Main is completed and ready to place in service.
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REVISIONS				STEVEN A. DUTCH, P.E. P.E. LICENSE NUMBER 39118 CHASTAIN-SKILLMAN 4705 OLD HWY 37 P.O. BOX 5710 LAKELAND, FL 33803-5710 CERTIFICATE OF AUTHORIZATION NO. 262 PROJECT NO. 9185.30A	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION UTILITY PLAN & PROFILE		SHEET NO. UA-008
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
					N/A	POLK	437300-1-56-01			

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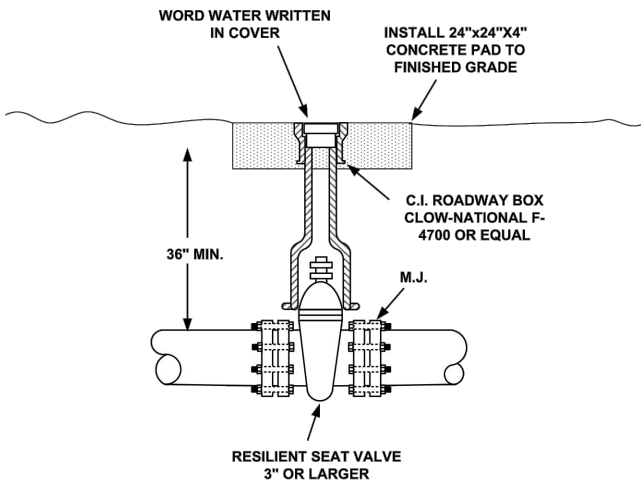
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- NOTES:
- PIPE BEDDING: SELECT COMMON FILL COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
 - TRENCH BACKFILL: COMMON FILL COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
 - USE TYPE "B" BEDDING IN AREAS NOT REQUIRING OVER-EXCAVATION.
 - (*): 15" MAXIMUM FOR PIPE DIAMETER LESS THAN 24", AND 24" MAXIMUM FOR PIPE DIAMETER 24" AND LARGER.
 - TRENCHES MUST BE FREE OF WATER AT ALL TIMES DURING CONSTRUCTION.
 - ALL PIPE TO BE INSTALLED WITH BELL HOUSING FACING UPSTREAM TO THE DIRECTION OF FLOW.
 - REFER TO THE MANUAL FOR SHEETING AND BRACING EXCAVATIONS. ALL SHEETING AND BRACING SHALL CONFORM TO OSHA AND STATE REQUIREMENTS.
 - FINAL RESTORATION SHALL BE IN COMPLIANCE WITH REGULATIONS OF GOVERNING LOCAL, STATE, AND FEDERAL AGENCIES.

TRENCHING TYPE B

CITY OF AUBURNDALE TYPICAL NON-ROADWAY VALVE



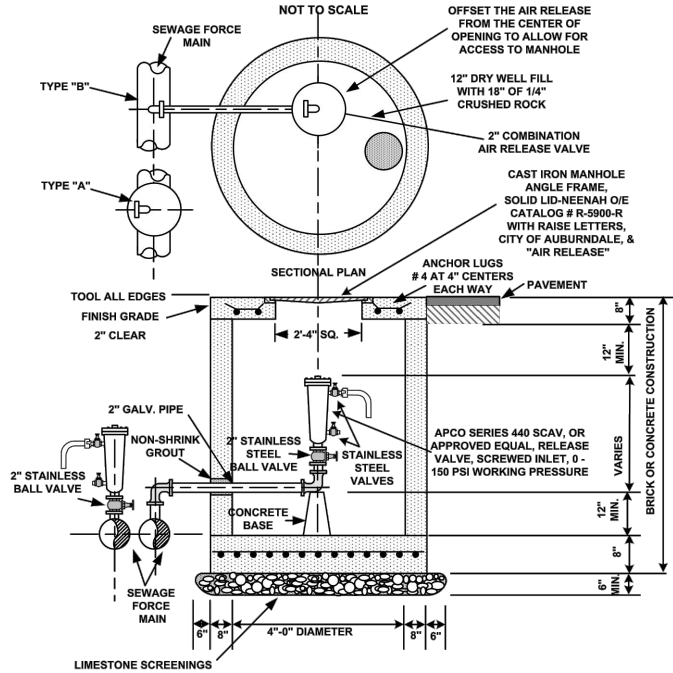
PROPOSED UTILITY	HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS								ACCEPTABLE VARIANCES
	POTABLE WATER (PW)		RECLAIMED WATER (RW)		SAN SEWER (SS) GRAVITY & FM)		STORM SEWER		
	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	
POTABLE WATER	-	-	3'	12"	6'	12"	3'	12"	REFER TO GENERAL NOTE #4
RECLAIMED WATER	3'	12"	-	-	3'	12"	*	*	
SANITARY SEWER	6'	12"	3'	12"	-	-	*	*	

* MINIMUM SEPARATION SHALL BE AS SPECIFIED BY THE ENTITY HAVING JURIDICTION.

- GENERAL NOTES:
- THE TABLE MEETS SEPARATION REQUIREMENTS AS DESCRIBED BY FDEP IN THE FLORIDA ADMINISTRATION CODE (FAC). THESE SEPARATION REQUIREMENTS SHALL APPLY BETWEEN NEWLY PROPOSED UTILITY LINES AND EXISTING OR PROPOSED UTILITY LINES.
 - FOR THE PURPOSE OF THIS TABLE, RECLAIMED WATER SHALL MEAN UNRESTRICTED PUBLIC ACCESS RECLAIMED WATER AS DEFINED BY F.A.C. 62-610. RAW WATER AND OTHER TYPES OF RECLAIMED WATER SHALL BE CONSIDERED RAW SEWAGE AND SEPARATION LISTED FOR SANITARY SEWER SHALL APPLY.
 - ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
 - ACCEPTABLE VARIANCES:
 - WHERE HORIZONTAL SEPARATION IS NOT ATTAINABLE FOR NEW INSTALLATIONS OF PW AND SS, THE PIPES WILL BE INSTALLED IN SEPARATE TRENCHES AND THE BOTTOM OF THE PW MAIN WILL BE 12" HIGHER THAN THE TOP OF THE SS.
 - WHERE HORIZONTAL SEPARATION IS NOT ATTAINABLE FOR NEW SS AND A NEW OR EXISTING PW MAIN, THE SS WILL BE UPGRADED TO A DR OF 18.
 - WHERE INSTALLATION OF A NEW PW MAIN IS IN CONFLICT WITH EXISTING SS, THE FOLLOWING SHALL BE MAINTAINED:
 - VERTICAL CONFLICT: DEFLECT NEW PW MAIN 12" ABOVE THE EXISTING SS WITH SUFFICIENT COVER FOR THE PW OR 12" BELOW THE EXISTING SS. WHERE DEFLECTION IS NOT POSSIBLE OR MINIMUM COVER NOT MET, THE PW MAIN SHALL BE UPGRADED TO DIP AND CENTERED AT CROSSING.
 - HORIZONTAL CONFLICT: PW MAIN SHALL BE INSTALLED 18" HIGHER THAN THE EXISTING SS WITH SUFFICIENT COVER OR THE PW WILL BE DIP.
 - SEPARATION REQUIREMENTS BETWEEN PW AND STORM SEWER ARE THE SAME AS WITH PW AND SS. SPECIAL SUPPORT MAY BE REQUIRED.
 - WHERE VERTICAL AND HORIZONTAL SEPARATIONS ARE NOT ATTAINABLE FOR PW AND FM, THE FOLLOWING SHALL BE MAINTAINED:
 - FM UPGRADED TO DR 14 (12" DIA AND UNDER) AND DR 18 (14" DIA AND OVER). WHERE FM IS EXISTING, PW SHALL BE UPGRADED TO DIP.
 - STAGGER THE LOCATION OF JOINTS FOR EACH PIPE.
 - NO POTABLE WATER MAIN SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SANITARY OR STORM WATER MANHOLE OR STRUCTURE.

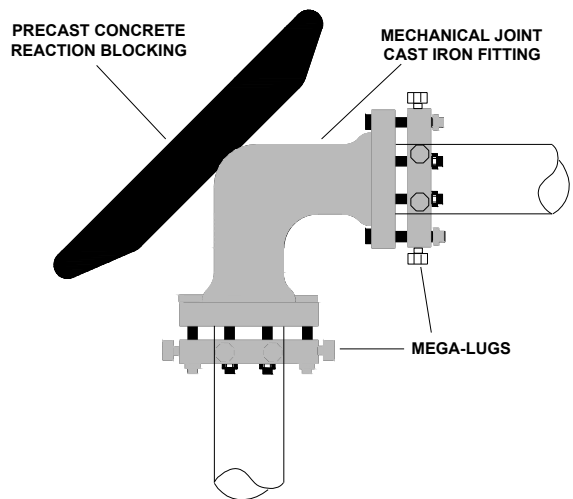
MINIMUM SEPARATION REQUIREMENTS

CITY OF AUBURNDALE SEWAGE COMBINATION AIR RELEASE VALVE & BOX



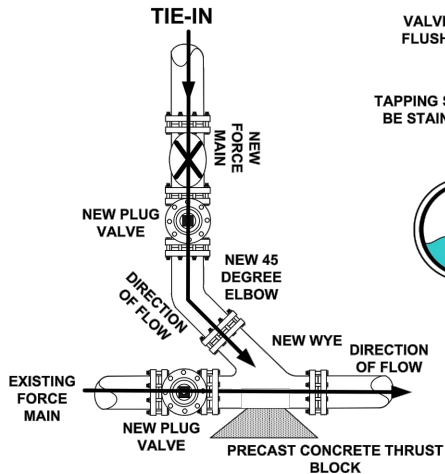
CITY OF AUBURNDALE TYPICAL RESTRAINING CLAMPS AND RODS

(use for all bends and tees)

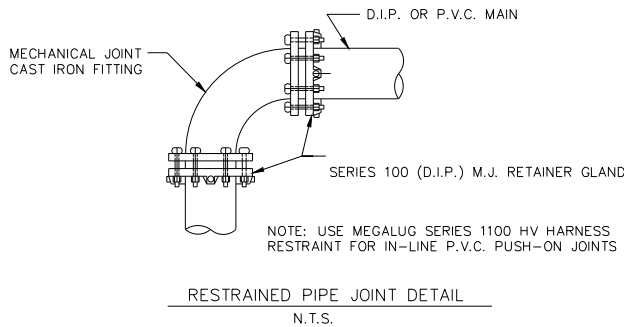
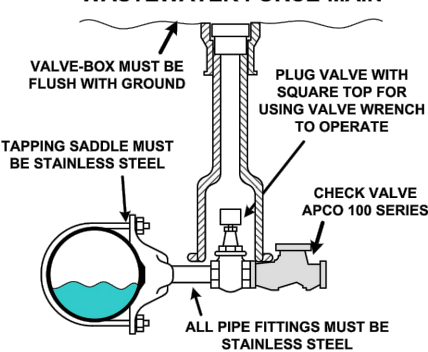


PRECAST CONCRETE REACTION BLOCKING MUST BE USED UNLESS PIPES ARE RESTRAINED AT LEAST 3 JOINTS BACK FROM FITTING IN ALL DIRECTIONS.

CITY OF AUBURNDALE TYPICAL FORCE MAIN TIE-IN



CITY OF AUBURNDALE WET TAP TIE-IN TO WASTEWATER FORCE-MAIN



THRUST RESTRAINT:

All force main valves and fittings shall be restrained against thrust from 150 PSI test pressure by using flanged or "megalog" type connectors. All pipe joints lying within the listed minimum distance of any fitting or valve shall also be restrained. When casings fall within the minimum distance from a fitting, restrain all joints inside the casing in addition to the required minimum length of buried pipe.

The following table describes the minimum length of pipe that shall be continuously restrained on both sides of different types and sizes of force main fittings:

FITTING TYPE	DUCTILE IRON PIPE SIZE				POLYVINYL CHLORIDE PIPE SIZE			
	6"	8"	10"	12"	6"	8"	10"	12"
TEE (BRANCH)	35'	56'		89'	63'	102'		164'
22 1/2' ELL				11'				15'
45' ELL			20'	23'			26'	31'
90' ELL		39'	47'	55'		53'	63'	73'
DEAD END	54'	70'	84'	98'	99'	129'	154'	182'

NOTE:

- DEAD END VALVES FOR FUTURE EXPANSION WILL BE RESTRAINED BACK TO THE FITTING.
- ENGINEER TO SPECIFY RESTRAINT FOR REDUCERS
- RESTRAIN THE RUN LEGS OF ALL TEES AT THE FITTING, RESTRAIN BRANCH AS SHOWN.
- RESTRAINED LENGTHS SHOWN ARE BASED ON A TEST PRESSURE OF 150 P.S.I., A TRENCH TYPE 3 (ANSI/AWWA C150/A21.5) OR BETTER TRENCH CONDITION, A SOIL TYPE ML (USCS) OR BETTER, A MINIMUM DEPTH OF BURY OF 36" AND A SAFETY FACTOR OF 2:1. IF INSTALLATION CONDITIONS VARY FROM THOSE SPECIFIED, THE ENGINEER SHALL BE NOTIFIED PRIOR TO CONSTRUCTION.
- RESTRAINED LENGTHS SHOWN ARE FOR P.V.C. PIPE.

CITY OF AUBURNDALE SUN TRAX TEST LOCATION FORCE MAIN RELOCATION

STANDARD DETAILS

SHEET
NO.

UA-009