

MORGAN COUNTY, GEORGIA

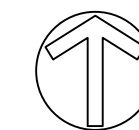
	W	EXISTING WATER LINES
		EXISTING FIRE HYDRANT
		EXISTING VALVE
		PROPOSED VALVE
	W	PROPOSED WATER LINES
		PROPOSED FIRE HYDRANT
	(Cd-Hb)	HAY BALE CHECK DAM
	Sf1	SILT FENCES
	ST	STONE FILTER RING

STUBB GEOMATICS, LLC
SURVEYORS PLANNERS CONSULTANTS
2441 US HWY 80 E MUSELLA, GA 31066

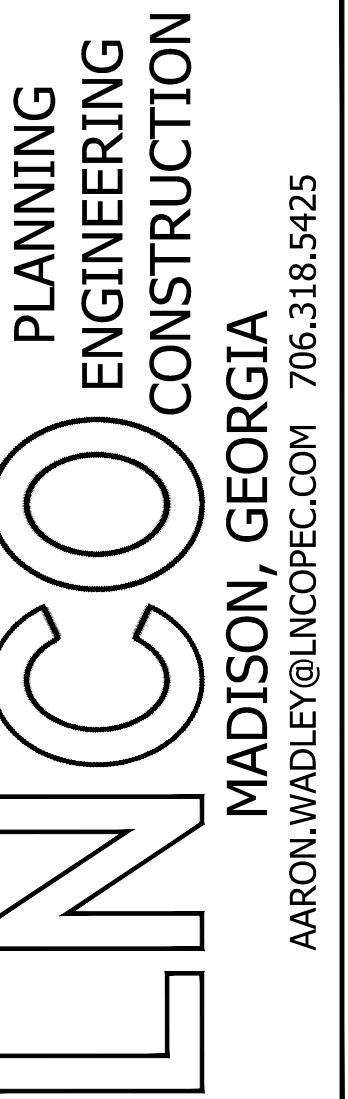
1. THE LAND SURVEYOR WHOSE SEAL IS AFFIXED HEREON DO NOT GUARANTEE THAT ALL EASEMENTS WHICH MAY AFFECT THIS PROPERTY ARE SHOWN.
2. THIS DRAWING HAS BEEN GENERATED ELECTRONICALLY. THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT UNLESS IT HAS BEEN PROPERLY SEALED AND ORIGINALLY SIGNED BY THE REGISTERED LAND SURVEYOR WHOSE SEAL IS AFFIXED HEREON, AUTHORITY OF O.C.G.A. 43-15-22.
3. THE LOCATION OF THE ABOVE GROUND AND UNDERGROUND UTILITIES SHOWN ON THE DRAWING IS SHOWN FROM FIELD OBSERVATIONS AND/OR PHYSICAL MARKINGS FOUND ALONG THE SUBJECT ROUTE. THIS INFORMATION MAY BE INACCURATE OR INCOMPLETE. VERIFICATION OF THE UTILITY LOCATIONS SHOULD BE MADE PRIOR TO ANY CONSTRUCTION OR EXCAVATION. A PRIVATE UTILITY LOCATE WAS NOT PERFORMED ON THE SUBJECT SITE AREA.
4. RIGHT-OF-WAY LINES ARE SHOWN FROM A COMPILATION OF RECORDED DEEDS AND PLATS ALONG THE ROUTE. A BOUNDARY RETRACEMENT SURVEY OF EACH OF THE ADJACENT PROPERTIES HAS NOT BEEN PERFORMED BY THIS SURVEYOR.
5. HORIZONTAL DATA IS TIED TO THE GEORGIA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD83 AND IS BASED UPON RAPID STATIC GPS OBSERVATIONS.



OVERVIEW/KEY MAP
SCALE: 1" = 500'



SHEET NO.	DESCRIPTION
1.0	COVER SHEET
2.0-2.1	NOTES
3.0-3.9	WATER PLAN & PROFILE
4.0-4.1	DETAILS
4.2	EROSION AND SEDIMENT CONTROL DETAILS



BOSTWICK WATER LINE REPLACEMENT
MORGAN COUNTY, GEORGIA



ARON WADLEY, PE
LEVEL II CERTIFIED
IGN PROFESSIONAL
#0000011490
EXPIRES 02-01-2026

SHEET NUMBER:
1.0

IT IS EXPRESSLY STIPULATED THAT THIS PERMIT IS A LICENSE FOR PERMISSIVE USE ONLY AND THE PLACING OF UTILITY FACILITIES UPON PUBLIC PROPERTY PURSUANT TO THIS PERMIT SHALL NOT OPERATE TO CREATE OR VEST ANY PROPERTY RIGHT IN THE HOLDER.

WHENEVER NECESSARY FOR THE CONSTRUCTION, REPAIR, IMPROVEMENT, MAINTENANCE, SAFE AND EFFECTIVE OPERATION, ALTERATION OR RELOCATION OF ALL OR ANY PORTION OF THE HIGHWAY, AS DETERMINED BY THE DEPARTMENT, ANY OR ALL OF SAID FACILITIES AND APPURTENANCES AUTHORIZED HEREUNDER SHALL BE IMMEDIATELY REMOVED FROM THE RIGHT-OF-WAY, OR RESET OR RELOCATED THEREON, AS REQUIRED BY THE CHIEF ENGINEER, AND AT THE SOLE EXPENSE OF THE UTILITY UNLESS REIMBURSEMENT IS AUTHORIZED BY SEPARATE AGREEMENT. SHOULD THE UTILITY FAIL TO REMOVE OR RELOCATE ITS FACILITIES, UPON DUE NOTICE FROM THE DEPARTMENT, THE UTILITY SHALL BE LIABLE FOR ANY EXTRAORDINARY COSTS OR DAMAGES INCURRED BY THE DEPARTMENT AS A RESULT THEREOF.

IF THE DEPARTMENT UNDERTAKES TO IMPROVE THIS HIGHWAY IT SHALL BE THE RESPONSIBILITY OF THE UTILITY TO PLAN WITH THE DEPARTMENT AND ITS CONTRACTOR A SCHEDULE WHICH WILL CLEARLY SET FORTH AT WHICH STAGE OF OPERATIONS THE UTILITY WILL BE REQUIRED TO PERFORM ANY ADJUSTMENT TO ITS FACILITIES NECESSARY TO ACCOMMODATE THE HIGHWAY IMPROVEMENTS.

DURING THE INITIAL INSTALLATION OR CONSTRUCTION OF FACILITIES AUTHORIZED BY THIS PERMIT, OR DURING ANY FUTURE REPAIR, REMOVAL OR RELOCATION THEREOF OR ANY MISCELLANEOUS OPERATIONS, THE UTILITY SHALL, AT ALL TIMES, MAINTAIN FLAGMEN, SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER SAFETY DEVICES IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, AND AS MAY BE NECESSARY TO PROPERLY PROTECT TRAFFIC UPON THE HIGHWAY AND TO WARN AND SAFEGUARD THE PUBLIC AGAINST INJURY OR DAMAGE.

IT IS EXPRESSLY PROVIDED THAT WITH RESPECT TO ANY LIMITED ACCESS HIGHWAY, THE UTILITY SHALL NOT HAVE OR GAIN DIRECT ACCESS, EITHER INGRESS OR EGRESS, FROM THE MAIN TRAVELED WAY OF SAID HIGHWAY OR ITS ON OR OFF RAMP TO ANY FACILITIES AUTHORIZED BY THE PERMIT EXCEPT UPON SPECIFIC APPROVAL BY THE DEPARTMENT.

IT IS THE UTILITY'S RESPONSIBILITY TO VERIFY THE LIMITS OF RIGHT-OF-WAY FOR LOCATION OF THE UTILITY FACILITIES AUTHORIZED HEREBY.

NO INHERENT OR RETAINED RIGHT OR PRIVILEGE OF ANY ABUTTING PROPERTY OWNER IS AFFECTED BY THIS PERMIT NOR IS THE DEPARTMENT RESPONSIBLE FOR ANY CLAIM WHICH MAY DEVELOP BETWEEN THE UTILITY AND ANY PROPERTY OWNER CONCERNING USE OF THE RIGHT OF WAY. THE UTILITY IS RESPONSIBLE FOR MAINTAINING REASONABLE ACCESS TO PRIVATE DRIVEWAYS DURING INSTALLATION OF ITS FACILITIES AND FOR RESTORATION OF DRIVEWAYS TO THE PROPERTY OWNER'S SATISFACTION.

APPROVAL OF THIS PERMIT DOES NOT CONSTITUTE APPROVAL OF DESIGN OR CONSTRUCTION DETAILS FOR THE PROPOSED UTILITY FACILITIES. THE UTILITY IS RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE GOVERNMENTAL CODES AND REGULATIONS.

USE OF EXPLOSIVES WITHIN THE RIGHT OF WAY IS PROHIBITED UNLESS APPROVED BY SEPARATE PERMIT

THE UTILITY SHALL GIVE THE DEPARTMENT A MINIMUM OF 24 HOURS NOTICE PRIOR TO BEGINNING ANY WORK UNDER THIS PERMIT.

THIS PERMIT SHALL BE VOID UNLESS WORK HEREUNDER IS BEGUN WITHIN TWELVE (12) MONTHS OF THE DATE OF ITS APPROVAL.

THE PROVISIONS OF THIS PERMIT ARE REGULATORY AND NOT CONTRACTUAL. NO INTEREST OR RIGHT OF A UTILITY GRANTED BY THIS PERMIT MAY BE TRANSFERRED TO ANOTHER EXCEPT BY WRITTEN CONSENT OF THE DEPARTMENT.

THIS PERMIT MAY BE REVOKED AT THE PLEASURE OF THE DEPARTMENT UPON THIRTY (30) DAYS WRITTEN NOTICE TO THE UTILITY.

FOR DEPARTMENT USE ONLY		FOR DEPARTMENT USE ONLY	

THE INSTALLATION COVERED BY THIS PERMIT HAS BEEN COMPLETED IN ACCORDANCE WITH THE PROVISIONS OF THE PERMIT AND THE PLANS ATTACHED HERETO.

DATE: _____ SIGNED: _____



Know what's **below**.
Call before you dig

WATER DISTRIBUTION SYSTEMS SHALL BE DESIGNED TO SUSTAIN EPD'S STANDARDS FOR SAFE DRINKING WATER QUALITY. SPECIAL CONSIDERATION SHOULD BE GIVEN TO DISTRIBUTION MAIN SIZING, PROVIDING FOR DESIGN OF MULTIDIRECTIONAL FLOW, ADEQUATE VALVING FOR DISTRIBUTION SYSTEM CONTROL, AND PROVISIONS FOR ADEQUATE FLUSHING. DISTRIBUTION SYSTEMS SHOULD BE DESIGNED TO MAXIMIZE TURNOVER AND TO MINIMIZE RESIDENCE TIMES WHILE DELIVERING ACCEPTABLE PRESSURES AND FLOWS

- a. ALL MATERIALS THAT COME INTO CONTACT WITH THE DRINKING WATER DURING ITS TREATMENT, STORAGE, TRANSMISSION OR DISTRIBUTION SHALL NOT ADVERSELY AFFECT DRINKING WATER QUALITY AND PUBLIC HEALTH AND MUST BE CERTIFIED FOR CONFORMANCE WITH AMERICAN NATIONAL STANDARDS INSTITUTE/ NATIONAL SANITATION FOUNDATION STANDARD #61 (ANSI/NSF STANDARD #61)
- b. PIPE FITTINGS FOR FIRE HYDRANTS SELECTED SHALL CONFORM WITH THE LATEST AWWA STANDARDS. IN THE ABSENCE OF SUCH STANDARDS, PIPE MEETING APPLICABLE ASTM AND ANSI CRITERIA AND ACCEPTABLE TO THE DIVISION MAY BE SELECTED
- c. SPECIAL ATTENTION SHALL BE GIVEN TO SELECTING PIPE MATERIALS WHICH WILL PROTECT AGAINST BOTH INTERNAL AND EXTERNAL CORROSION.
- d. USED WATER MAINS THAT MEET THESE STANDARDS MAY BE USED AGAIN AFTER THE PIPE HAS BEEN THOROUGHLY CLEANED AND RESTORED PRACTICALLY TO ITS ORIGINAL CONDITION.
- e. PIPE HAVING MECHANICAL JOINTS OR SLIP-ON JOINTS WITH RUBBER GASKETS SHALL BE USED. LEAD-PIG GASKETS SHALL NOT BE USED.
- f. IN GENERAL, PACKING AND JOINTING MATERIALS USED MUST MEET THE LATEST EDITION OF THE AWWA STANDARDS. JOINTS SHALL CONFORM TO AWWA STANDARD C111.
- g. DUCTILE IRON AND CAST IRON PIPE SHALL MEET THE LATEST EDITION OF ANSI/AWWA STANDARD C106 OR C108 FOR CAST IRON PIPE AND C151 FOR DUCTILE IRON PIPE
- h. PIPE AND FITTINGS SHALL BE CEMENT LINED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA STANDARD C104
- i. FITTINGS SHALL MEET THE LATEST EDITION OF AWWA STANDARD C106 OR THE LATEST EDITION OF AWWA STANDARD C110 OR C153.
- j. CONCRETE PIPE SHALL MEET THE LATEST EDITION OF AWWA STANDARD C300
- k. ANY PIPE MATERIAL WHICH IS NOT SPECIFICALLY STATED IN THIS SECTION SHALL BE CONSIDERED ON AN INDIVIDUAL BASIS
- l. FIRE HYDRANTS SHALL MEET THE CURRENT AWWA STANDARD C502

- a. PVC PIPE MEETING THE STANDARDS SET FORTH IN AWWA C-900 (LATEST EDITION) SHALL BE ACCEPTABLE FOR THOSE WORKING PRESSURES AS DESIGNATED BY CLASS. (NOTE THAT C-900 REFERS TO 4-INCH THROUGH 60-INCH PIPE).
- b. THE PIPE SHALL MEET ALL THE REQUIREMENTS SET FORTH IN ASTM STANDARD D 2241, WITH A MINIMUM PRESSURE CLASS RATING OF C 80,200. THE PIPE MUST BEAR THE SEAL OF APPROVAL FOR POTABLE WATER USE AND FOR CONFORMANCE WITH NSF STANDARD 61.
- c. PROVISIONS MUST BE MADE FOR CONTRACTION AND EXPANSION AT EACH JOINT WITH FLEXIBLE RING GASKETS MADE FROM RUBBER OR OTHER SUITABLE MATERIAL. GASKET MATERIALS SHALL MEET THE REQUIREMENTS ESTABLISHED IN ASTM F477.
- d. ALL FITTINGS SUCH AS TEES, ELLS, ETC. USING WELDED JOINTS SHALL BE FACTORY WELDED AND SHALL MEET THE SAME SPECIFICATIONS AS THE WELDED BELL SECTION.
- e. LUBRICANTS SHALL BE NON-TOXIC, SHALL NOT PROMOTE BIOLOGICAL GROWTH, AND SHALL BE CERTIFIED FOR CONFORMANCE WITH NSF STANDARD 61.
- f. SOLVENT CEMENTED JOINTS ARE NOT ALLOWED FOR BURIED PIPES.
- g. DETECTION TAPE SHALL BE PLACED ALONG ALL PVC WATER MAINS.

THE WATER DISTRIBUTION SYSTEM MUST BE DESIGNED TO MEET THE REQUIREMENTS OF RULE SECTION 391-3-5-.10.

- a. THE WATER DISTRIBUTION SYSTEM MUST BE DESIGNED AND THE WATER LINES SIZED TO FURNISH AT ALL TIMES THE INSTANTANEOUS DEMAND FLOW OF WATER REQUIRED AND TO MAINTAIN AT ALL TIMES A PRESSURE OF TWENTY (20) POUNDS PER SQUARE INCH AT EACH SERVICE CONNECTION IN THE DISTRIBUTION SYSTEM UNDER ALL CONDITIONS OF FLOW.
- b. THE MINIMUM SIZE OF PIPE FOR PRINCIPAL WATER MAINS AND FOR WATER MAINS WHERE FIRE HYDRANTS ARE TO BE ATTACHED SHALL BE 6-INCH DIAMETER. LARGER SIZE MAINS WILL BE REQUIRED IF NECESSARY, TO ALLOW THE WITHDRAWAL OF THE REQUIRED FIRE FLOW WHILE MAINTAINING THE MINIMUM RESIDUAL PRESSURE OF 20 PSI (140 KPA).
- c. THE MINIMUM SIZE WATER MAIN SHALL BE 2-INCH IN NOMINAL DIAMETER. HOWEVER, THE SIZE OF WATER MAINS SHALL BE JUSTIFIED BY HYDRAULIC ANALYSIS, PERFORMED BY A PROFESSIONAL ENGINEER. THE 2-INCH WATER MAINS SHALL BE CONSIDERED FOR SHORT CUL-DE-SACS AND PERMANENT DEAD-ENDS WHERE FUTURE GROWTH IS NOT FEASIBLE. (ANY DEPARTURE FROM MINIMUM REQUIREMENTS SHALL BE JUSTIFIED BY THE HYDRAULIC ANALYSIS AND FUTURE WATER USE, AND CAN BE CONSIDERED ONLY IN SPECIAL CIRCUMSTANCES.).
- d. GENERALLY, NOT MORE THAN 20, OR THE EQUIVALENT OF 20, RESIDENCES SHALL BE CONNECTED TO A 2-INCH DIAMETER WATER LINE, UNLESS THE MAIN IS LOOPED OR OTHERWISE SUPPLIED FROM TWO CONNECTIONS WITH MAINS OF ADEQUATE CAPACITIES. A LOOPED 2-INCH MAIN SHALL SERVE NO MORE THAN 40 RESIDENCES, OR THE EQUIVALENT WATER DEMAND OF 40 RESIDENCES. A 2-INCH DIAMETER MAIN SHALL NOT EXCEED 1000 FEET IN LENGTH.
- e. ALL WATER MAINS, INCLUDING THOSE NOT DESIGNED TO PROVIDE FIRE PROTECTION, SHALL BE SIZED AFTER A HYDRAULIC ANALYSIS BASED ON FLOW DEMANDS AND PRESSURE REQUIREMENTS HAS BEEN COMPLETED.
- f. THE SYSTEM MUST BE DESIGNED TO MAINTAIN A MINIMUM PRESSURE OF 20 PSI (140 KPA) AT EACH SERVICE CONNECTION AND AT ALL POINTS IN DISTRIBUTION SYSTEM UNDER ALL CONDITIONS OF FLOW. THE NORMAL WORKING PRESSURE IN THE DISTRIBUTION SYSTEM SHOULD BE APPROXIMATELY 60 TO 80 PSI) (410-550 KPA) AND SHALL NOT BE LESS THAN 35 PSI.
- g. WIDE VARIATIONS IN PRESSURE ABOVE THE MINIMUM REQUIREMENT OF 20 PSI MAY BE INHERENT IN THE DESIGN OF A DISTRIBUTION SYSTEM BUT PRESSURES NO GREATER THAN 100 PSI SHOULD BE DELIVERED TO THE CUSTOMER (UNLESS HIGHER PRESSURES ARE REQUESTED). THE 100 PSI MAXIMUM PRESSURES CAN BE MET BY PRESSURE REDUCING VALVES LOCATED AT EACH CUSTOMER'S SOURCE LINE, OR BY DESIGNING THE DISTRIBUTION SYSTEM TO LIMIT THE MAXIMUM PRESSURE.
- h. ALL ASSUMPTIONS AND ANY FLOW DATA USED MUST BE CLEARLY DOCUMENTED AND SUBMITTED WITH THE HYDRAULIC ANALYSIS. IF ACTUAL FLOW DATA IS NOT AVAILABLE, THEORETICAL CALCULATIONS SHALL BE BASED ON ALL STORAGE FACILITIES HALF-FULL AND THE HAZEN-WILLIAMS FRICTION FACTOR APPROPRIATE FOR TYPE OF PIPE BEING USED BUT IN NO CASE GREATER THAN 130.
- i. WATER MAINS AND DISTRIBUTION SYSTEMS SHOULD BE SIZED TO MEET INSTANTANEOUS PEAK DEMAND FLOWS. WHEN FIRE PROTECTION IS TO BE PROVIDED, SYSTEM DESIGN SHOULD CONSIDER THE RECOMMENDATIONS OF INSURANCE UNDERWRITERS ORGANIZATION.

- a. DEAD ENDS SHOULD BE MINIMIZED BY MAKING APPROPRIATE TIE-INS WHENEVER PRACTICAL.
- b. WHERE DEAD-END MAINS OCCUR, THEY SHALL BE PROVIDED WITH A FIRE HYDRANT, WHEN FIRE FLOWS ARE AVAILABLE, OR WITH AN ACCEPTABLE FLUSHING HYDRANT OR BLOW-OFF FOR FLUSHING PURPOSES. THE BLOW-OFF SHALL BE AT LEAST 2 INCHES IN DIAMETER BUT MUST BE APPROPRIATELY SIZED TO PROVIDE FLUSHING VELOCITIES OF 2.5 FEET PER SECOND OR GREATER IN THE WATER MAIN BEING FLUSHED.
- c. NO FLUSHING DEVICE SHALL BE DIRECTLY CONNECTED TO ANY SEWER NOR BE SUBJECTED TO FLOODING OR PLUGGING.

- a. SEDIMENT ACCUMULATIONS MAY BE REMOVED THROUGH A STANDARD FIRE HYDRANT. IN ADDITION, COMPRESSED AIR AND PUMPING MAY BE USED FOR DEWATERING MAINS THROUGH HYDRANTS.
- b. AT HIGH POINTS IN WATER MAINS WHERE AIR CAN ACCUMULATE, PROVISIONS SHALL BE MADE TO REMOVE THE AIR BY MEANS OF HYDRANTS OR AIR RELIEF VALVES. AUTOMATIC AIR RELIEF VALVES SHALL NOT BE USED IN AREAS WHERE FLOODING OF THE MANHOLE OR CHAMBER MAY OCCUR.
- c. THE OPEN END OF AIR RELIEF PIPE OR AIR RELIEF VALVES SHALL BE EXTENDED TO AT LEAST ONE (1) FOOT ABOVE GRADE AND PROVIDED WITH A SCREENED, DOWNWARD-FACING ELBOW. THE PIPE FROM A MANUALLY OPERATED VALVE SHOULD BE EXTENDED TO THE TOP OF THE PIT.
- d. WHEREVER POSSIBLE, CHAMBERS, PITS OR MANHOLES CONTAINING VALVES, BLOW-OFFS, METERS, OR OTHER SUCH APPURTENANCES TO A DISTRIBUTION SYSTEM, SHALL NOT BE LOCATED IN AREAS SUBJECT TO FLOODING OR IN AREAS OF HIGH GROUNDWATER. SUCH CHAMBERS OR PITS SHOULD DRAIN TO THE GROUND SURFACE, OR TO ABSORPTION PITS UNDERGROUND. THE CHAMBERS, PITS AND MANHOLES SHALL NOT CONNECT DIRECTLY TO ANY STORM DRAIN OR SANITARY SEWER. BLOW-OFFS SHALL NOT CONNECT DIRECTLY TO ANY STORM DRAIN OR SANITARY SEWER.
- e. VALVE PLACEMENT SHALL BE SUCH THAT INTERSECTIONS OF WATER MAINS VALVES SHALL BE LOCATED AT MORE THAN 500 FEET INTERVALS IN COMMERCIAL DISTRICTS AND AT NOT MORE THAN ONE BLOCK OR 800 FEET INTERVALS IN OTHER DISTRICTS. WHERE SYSTEMS SERVE WIDELY SCATTERED CUSTOMERS, THE VALVE SPACING SHOULD NOT EXCEED 4000 FEET.
- f. VALVES SHALL MEET THE CURRENT AWWA STANDARDS.

THE APPLICABLE DESIGN STANDARDS OF THIS DOCUMENT SHALL BE FOLLOWED FOR DISTRIBUTION STORAGE

- a. THE PURPOSE OF SYSTEM STORAGE IS TO HAVE SUFFICIENT WATER AVAILABLE TO PROVIDE ADEQUATE FLOW AND PRESSURE AT PEAK DEMAND AS WELL AS TO PROVIDE FOR FIRE FLOWS WHEN NEEDED. FOR MOST WATER SYSTEMS A SATISFACTORY RULE-OF-THUMB TO MEET THESE NEEDS IS TO PROVIDE AT LEAST THE AVERAGE 24-HOUR DEMAND IN ELEVATED STORAGE. AN ENGINEERING STUDY SHOULD BE PERFORMED TO DETERMINE THE SYSTEM'S ACTUAL ELEVATED STORAGE CAPACITY NEEDS.
- b. PRESSURE VARIATION - SYSTEM PRESSURE VARIATION ON ACCOUNT OF CHANGES IN LEVEL OF WATER IN STORAGE STRUCTURES SHOULD BE MINIMIZED. ELEVATED STORAGE TANKS OR LARGE DIAMETER GROUND TANKS LOCATED ON HIGH GROUND SHOULD BE THE USUAL CHOICES. NORMALLY, STANDPIPES SHOULD NOT BE CONSIDERED FOR DISTRIBUTION STORAGE, UNLESS COMPLETELY JUSTIFIED. THE MAXIMUM VARIATION BETWEEN HIGH AND LOW LEVELS IN STORAGE STRUCTURES PROVIDING PRESSURE TO A DISTRIBUTION SYSTEM SHOULD NOT EXCEED 30 FEET. THE MINIMUM WORKING PRESSURE IN THE DISTRIBUTION SYSTEM SHOULD BE 20 PSI AND THE NORMAL WORKING PRESSURE SHOULD BE APPROXIMATELY 60 TO 80 PSI. WHEN STATIC PRESSURE EXCEEDS 100 PSI, PRESSURE REDUCING DEVICES SHOULD BE PROVIDED ON MAINS OR AS PART OF THE METER SETTING ON INDIVIDUALS SERVICE LINES IN THE DISTRIBUTION SYSTEM.
- c. DRAINAGE - STORAGE STRUCTURES WHICH FLOAT ON THE DISTRIBUTION SYSTEM SHOULD BE DESIGNED TO DRAIN FOR CLEANING OR MAINTENANCE WITHOUT NECESSITATING LOSS OF PRESSURE IN THE DISTRIBUTION SYSTEM. THE DRAINS SHOULD DISCHARGE TO THE GROUND SURFACE WITH NO DIRECT CONNECTION TO A SEWER OR STORM DRAIN. A NEARBY FIRE HYDRANT MAY BE CONSIDERED AS A DRAIN AS LONG AS SERVICE IS NOT INTERRUPTED, AND SUITABLE EROSION PROTECTION IS PROVIDED.
- d. LEVEL CONTROLS - ADEQUATE CONTROLS SHALL BE PROVIDED TO MAINTAIN LEVELS IN DISTRIBUTION SYSTEM STORAGE STRUCTURES.
1. TELEMETRY EQUIPMENT SHOULD BE USED WHEN PRESSURE-TYPE CONTROLS ARE EMPLOYED, AND ANY APPRECIABLE HEAD LOSS OCCURS IN THE DISTRIBUTION SYSTEM BETWEEN THE SOURCE AND THE STORAGE STRUCTURE.
2. ALTITUDE VALVES OR EQUIVALENT CONTROLS MAY BE REQUIRED FOR A SECOND AND SUBSEQUENT STRUCTURES ON THE SYSTEM
3. OVERFLOW AND LOW-LEVEL WARNINGS OR ALARMS SHOULD BE LOCATED AT PLACES IN THE COMMUNITY WHERE THEY COULD BE UNDER RESPONSIBLE SURVEILLANCE ON A 24 HOUR BASIS.
- e. FOR MORE DETAILS PLEASE REFER TO PART 10 FINISHED WATER STORAGE OF THIS DOCUMENT.

- a. WATER LINES MUST NOT BE INSTALLED IN CONTAMINATED AREAS SUCH AS SANITARY LANDFILL OR DUMP AREAS.
- b. NO WATER MAIN OR PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE
- c. A CONTINUOUS AND UNIFORM BEDDING SHALL BE PROVIDED IN THE TRENCH FOR ALL BURIED PIPE
- d. BACKFILL MATERIAL SHALL BE TAMPED IN LAYERS ABOVE THE PIPE AND TO A SUFFICIENT HEIGHT ABOVE THE PIPE TO ADEQUATELY SUPPORT AND PROTECT PIPE.
- e. THRUST RESTRAINT SHALL BE PROVIDED AT ALL POINTS WHERE HYDRAULIC THRUST MAY DEVELOP. THIS WILL INCLUDE PROVIDING REACTION BLOCKING, THE RODS OR JOINTS DESIGNED TO PREVENT MOVEMENT TO ALL BENDS, TEES, VALVES, PLUGS, HYDRANTS AND OTHER POINTS WHERE THRUST MAY DEVELOP. ADDITIONAL RESTRAINTS MAY BE NECESSARY ON FUSIBLE PIPE AT THE CONNECTION TO APPURTENANCES OR TRANSITIONS TO DIFFERENT PIPE MATERIALS TO PREVENT SEPARATION OF JOINTS. THE RESTRAINT MAY BE PROVIDED IN THE FORM OF AN ANCHOR RING ENCASED IN CONCRETE OR OTHER METHODS AS APPROVED BY THE DIVISION.
- f. WHENEVER A STATE ROUTE OR HEAVILY TRAVELED OFF-SYSTEM ROAD OR A RAILROAD IS CROSSED, THE AGENCY THAT HAS JURISDICTION OVER THE ROAD OR THE RAILROAD MUST BE NOTIFIED, PRIOR TO THE INSTALLATION OF THE MAINS. AT THE CROSSING, A STEEL CASING WITH SUFFICIENT DIAMETER MUST BE JACKED AND BORED TO ACCOMMODATE THE CARRIER PIPE, ANY FREE BORING AT LOW TRAFFIC CITY STREETS AND COUNTY ROADS MUST CONFORM TO THE APPLICABLE LOCAL AND/OR STATE REQUIREMENTS.
- g. INSTALLATION OF WATER LINES AND APPURTENANCES ALONG HIGHWAYS, STREETS AND ROADWAYS MUST COMPLY WITH THE APPLICABLE REGULATIONS OF, AND PERMITS ISSUED BY, THE GEORGIA DEPARTMENT OF TRANSPORTATION, LOCAL COUNTY AND MUNICIPALITY WITH REFERENCE TO CONSTRUCTION OPERATIONS, SAFETY, TRAFFIC CONTROL, ROAD MAINTENANCE AND REPAIR.
- h. WHEN NON-METALLIC PIPE IS INSTALLED, DETECTION TAPE SHALL BE INSTALLED.
- i. ANY PIPE, PIPE FITTINGS, PLUMBING FITTINGS OR FIXTURES, SOLDER, OR FLUX USED IN THE INSTALLATION OR REPAIR OF A PUBLIC WATER SYSTEM MUST MEET THE NEW DEFINITION OF LEAD FREE MEANING: (A) NOT CONTAINING MORE THAN 0.2 PERCENT LEAD WHEN USED WITH RESPECT TO SOLDER; AND (B) NOT MORE THAN A WEIGHTED AVERAGE OF 0.25 PERCENT LEAD WHEN USED WITH RESPECT TO THE WETTED SURFACES OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES. IF SOILS ARE FOUND TO BE AGGRESSIVE, THE WATER MAIN SHALL BE PROTECTED BY ENCASEMENT IN POLYETHYLENE, THE PROVISION OF CATHODIC PROTECTION (IN VERY SEVERE INSTANCES), OR THE USE OF CORROSION RESISTANT WATER MAIN MATERIALS.
- j.

STONES FOUND IN THE TRENCH SHALL BE REMOVED FOR A DEPTH OF AT LEAST SIX (6) INCHES BELOW THE BOTTOM OF THE PIPE.

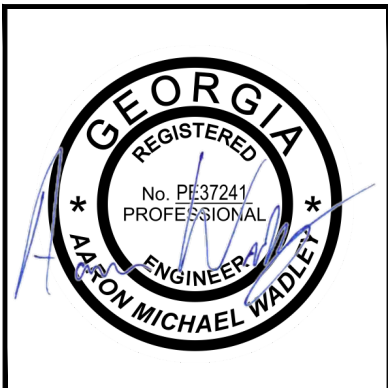
ALL DISTRIBUTION MAINS SHALL BE PROVIDED WITH SUFFICIENT EARTH AND OTHER SUITABLE COVER TO PREVENT FREEZING. THIS SHALL BE NOT LESS THAN 24 INCHES MEASURED ABOVE THE TOP OF PIPE.

a PRESSURE AND LEAKAGE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA STANDARD C600

- THE TEST PRESSURE OF THE INSTALLED PIPE SHALL BE A MINIMUM 1.5 TIMES THE WORKING PRESSURE, BUT NOT LESS THAN 150 PSI, WHICHEVER IS GREATER.
- d. FOR DIP: ALLOWABLE LEAKAGE SHALL BE NO GREATER THAN AS CALCULATED IN $L=SD(P)^{1/2}/133,200$ WHERE L IS ALLOWABLE LEAKAGE IN GALLONS/HOUR, S IS THE LENGTH OF PIPE TESTED IN FEET, D IS THE NOMINAL DIAMETER OF THE PIPE IN INCHES AND P IS AVERAGE TEST PRESSURE DURING THE LEAKAGE TEST IN POUNDS PER SQUARE INCH (PSI GAUGE).
- d. FOR PVC: ALLOWABLE LEAKAGE SHALL BE NO GREATER THAN AS CALCULATED IN $L=ND(P)^{1/2}/7,400$ WHERE L IS ALLOWABLE LEAKAGE IN GALLONS/HOUR, N IS THE NUMBER OF JOINTS IN THE LENGTH OF PIPE TESTED, D IS THE NOMINAL DIAMETER OF THE PIPE IN INCHES AND P IS AVERAGE TEST PRESSURE DURING THE LEAKAGE TEST IN POUNDS PER SQUARE INCH (PSI-GAUGE).
- ## 1.5.4 DISINFECTION OF NEWLY INSTALLED WATER MAINS
- a. ALL NEW WATER MAINS SHALL BE DISINFECTED BEFORE THEY ARE PLACED IN OR RETURNED TO SERVICE.
- b. DISINFECTION OF THE NEW MAINS AND THE DISPOSAL OF THE HEAVILY CHLORINATED WATER, FOLLOWING THE DISINFECTION, SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA STANDARD C651.
- c. THE "TABLET METHOD" OF DISINFECTION WHICH CONSISTS OF PLACING CALCIUM HYPOCHLORITE GRANULES OR TABLETS IN THE WATER MAIN AS IT IS BEING INSTALLED AND THEN FILLING THE MAIN WITH POTABLE WATER WHEN INSTALLATION IS COMPLETE IS NOT ALLOWED.
- d. BEFORE THE MAIN IS CHLORINATED, IT SHALL BE FILLED TO ELIMINATE AIR POCKETS AND SHALL BE FLUSHED TO REMOVE PARTICULATES. A FLUSHING VELOCITY OF NOT LESS THAN 2.5 FEET/SECOND IS USUALLY MAINTAINED IN PIPE SIZES LESS THAN 24 INCHES IN DIAMETER. FOR LARGER DIAMETER MAINS, AN ALTERNATIVE TO FLUSHING, SUCH AS BROOM-SWEEPING OF THE MAIN, IS ACCEPTABLE PRIOR TO CHLORINATING THE MAIN.
- e. DURING DISINFECTION OF THE WATER MAINS, AN APPROPRIATE CROSS-CONNECTION CONTROL DEVICE, CONSISTENT WITH THE DEGREE OF HAZARD, SHALL BE PROVIDED FOR BACKFLOW PROTECTION OF THE ACTIVE DISTRIBUTION SYSTEM.
- f. THE QUALITY OF THE WATER USED DURING THE DISINFECTION PROCEDURES SHALL MEET THE REQUIRED DRINKING WATER STANDARDS.
- g. THE CHLORINE SOLUTION USED FOR THE "CONTINUOUS FLOW" METHOD OF DISINFECTION OF WATER MAINS SHALL HAVE A FREE CHLORINE RESIDUAL CONCENTRATION NOT LESS THAN 25 MG/L. THIS HEAVILY CHLORINATED WATER SHALL BE RETAINED IN THE MAIN FOR AT LEAST 24 HOURS, DURING WHICH TIME ALL VALVES AND HYDRANTS SHALL BE OPERATED TO ENSURE DISINFECTION OF THE APPURTENANCES. AT THE END OF THE 24-HOUR PERIOD, THE TREATED WATER IN ALL PORTIONS OF THE MAIN SHALL HAVE A RESIDUAL OF NOT LESS THAN 10 MG/L FREE CHLORINE. RE-CHLORINATE IF REQUIRED RESULTS ARE NOT OBTAINED ON ALL SAMPLES.
- h. AFTER THE APPLICABLE RETENTION PERIOD, THE HEAVILY CHLORINATED WATER MUST NOT BE DISPOSED IN A MANNER THAT WILL HARM THE ENVIRONMENT. NEUTRALIZING CHEMICALS, SUCH AS SULFUR DIOXIDE, SODIUM BISULFITE, SODIUM SULFITE OR SODIUM THIOSULFATE CAN BE USED TO NEUTRALIZE THE CHLORINE RESIDUAL REMAINING IN THE WATER TO BE WASTED.
- i. FLUSH ALL LINES UNTIL RESIDUAL IS EQUAL TO EXISTING SYSTEM. AFTER FINAL FLUSHING AND BEFORE THE WATER MAIN IS PLACED INTO SERVICE, WATER SAMPLES SHALL BE COLLECTED FROM THE MAIN AND TESTED FOR MICROBIOLOGICAL QUALITY IN ACCORDANCE WITH THE GEORGIA RULES FOR SAFE DRINKING WATER, CHAPTER 391-3-5. THE LABORATORY RESULTS MUST SHOW THE ABSENCE OF COLIFORM ORGANISMS IN THE WATER. REFRESH AND REDISINFECT THE LINES, AS NECESSARY, UNTIL SATISFACTORY BACTERIOLOGICAL RESULTS ARE OBTAINED.

 PLANNING ENGINEERING CONSTRUCTION MADISON, GEORGIA AARON.WADLEY@LNCOPC.COM 706.318.5425	DATE:	6/1/2026
	DESIGNED BY:	AARON WADLEY
	DRAWN BY:	AZCE
	CHECKED BY:	AARON WADLEY
	NO.	
	DATE	
	DESCRIPTION	

BOSTWICK WATER LINE REPLACEMENT
MORGAN COUNTY, GEORGIA



AARON WADLEY, PE
LEVEL II CERTIFIED
DESIGN PROFESSIONAL
#0000011490
EXPIRES 02-01-2026

SHEET NUMBER: 2.0

1.5.5 DISINFECTION WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

- a. ALL WATER MAINS THAT ARE DEPRESSURIZED AND/OR WHOLLY OR PARTIALLY DEWATERED SHALL BE DISINFECTED IN ACCORDANCE WITH THE CURRENT AWWA C651 STANDARDS, INCLUDING SWABBING WITH HYPOCHLORITE SOLUTION, FLUSHING, AND/OR SLUG CHLORINATION AS APPROPRIATE.
- b. BACTERIOLOGICAL TESTING SHALL BE PERFORMED AFTER THE REPAIRS ARE COMPLETE. HOWEVER, DEPENDING UPON THE CIRCUMSTANCES, THE WATER MAIN MAY BE RETURNED TO SERVICE PRIOR TO COMPLETION OF TESTING TO MINIMIZE THE TIME THE CUSTOMERS ARE OUT OF SERVICE.
- c. LEAKS OR BREAKS THAT ARE REPAIRED WITH CLAMPING DEVICES WHILE THE MAINS REMAIN FULL OF WATER UNDER PRESSURE MAY REQUIRE NO DISINFECTION.

1.5.5.1 AMOUNT OF CHLORINE NECESSARY FOR DISINFECTION

- a. CHLORINE REQUIRED TO PRODUCE 25 MG/L CONCENTRATION IN 100 FEET OF PIPE BY DIAMETER:

PIPE DIAMETER (INCHES)	100% CHLORINE		1% CHLORINE SOLUTION	
	(LBS.)	(G)	(GAL)	(L)
4	0.013	5.9	0.16	0.6
6	0.030	13.6	0.36	1.4
8	0.054	24.5	0.65	2.5
10	0.085	38.6	1.02	3.9
12	0.120	54.4	1.44	5.4
16	0.217	98.4	2.60	9.8

NOTE: 1% CHLORINE SOLUTION MAY BE PREPARED WITH SODIUM HYPOCHLORITE (CONTAINS 5% TO 15% AVAILABLE CHLORINE) OR CALCIUM HYPOCHLORITE (CONTAINS APPROXIMATELY 65% AVAILABLE CHLORINE BY WEIGHT). TO PREPARE 1% CHLORINE SOLUTION USING CALCIUM HYPOCHLORITE, ADD ONE (1) POUND (454 GRAMS) OF CALCIUM HYPOCHLORITE IN APPROXIMATELY 8 GALLONS OF WATER.

- b. AMOUNTS AND TYPES OF CHEMICALS ADVISED TO BE USED FOR NEUTRALIZING VARIOUS RESIDUAL CHLORINE CONCENTRATION IN 100,000 GALLONS OF WATER

RESIDUAL CHLORINE CONCENTRATION	CHEMICALS							
	SULFUR DIOXIDE (SO2)		SODIUM BISULFATE (NAHSO3)		SODIUM SULFITE (NA2SO3)		SODIUM THIOSULFATE (NA2S2O3.5H2O)	
MG/L	LB.	KG	LB.	KG	LB.	KG	LB.	KG
1	0.8	0.36	1.2	0.54	1.4	0.64	1.2	0.54
2	1.7	0.77	2.5	1.13	2.9	1.32	2.4	1.09
10	8.3	3.76	12.5	5.67	14.6	6.62	12.0	5.44
50	41.7	18.91	62.6	28.39	73.0	33.11	60.0	27.22

1.6 SEPARATION OF WATER MAINS (RECLAIMED AND POTABLE) AND SEWERS

1.6.0 GENERAL

THE FOLLOWING FACTORS SHOULD BE CONSIDERED IN PROVIDING ADEQUATE SEPARATION:

- a. MATERIALS AND TYPE OF JOINTS FOR WATER AND SEWER PIPES;
- b. SOIL CONDITIONS;
- c. SERVICE AND BRANCH CONNECTIONS INTO THE WATER MAIN AND SEWER LINE;
- d. COMPENSATING VARIATIONS IN THE HORIZONTAL AND VERTICAL SEPARATIONS;
- e. SPACE FOR REPAIR AND ALTERATIONS OF WATER AND SEWER PIPES;
- f. OFF-SETTING OF PIPES AROUND MANHOLES; AND
- g. WATER MAINS AND SANITARY OR STORM SEWERS SHALL NOT BE LAID IN THE SAME TRENCH.

1.6.1 PARALLEL INSTALLATION

- a. WATER MAINS AND WATER SERVICE LINES (BEFORE THE CURB STOP AND CUSTOMER METER) OWNED BY THE PUBLIC WATER SYSTEMS SHALL BE LAID AT LEAST TEN (10) FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SANITARY SEWER, STORM SEWER, SEPTIC TANK, SUBSOIL TREATMENT SYSTEM OR SEWER MANHOLE. THE DISTANCE SHALL BE MEASURED EDGE-TO-EDGE.
- b. WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF 10 FEET, THE WATER MAIN MAY BE LAID CLOSER TO A SEWER (ON A CASE-BY-CASE BASIS) PROVIDED THE WATER MAIN IS LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER. IT IS ADVISED THAT THE SEWER BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION AND BE PRESSURE TESTED TO ASSURE WATER-TIGHTNESS PRIOR TO BACKFILLING.

1.6.2 CROSSINGS

- a. WATER MAINS AND WATER SERVICE LINES (BEFORE THE CURB STOP AND CUSTOMER METER) OWNED BY THE PUBLIC WATER SYSTEMS CROSSING HOUSE SEWERS, STORM SEWERS OR SANITARY SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE SEWER. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. SPECIAL STRUCTURAL SUPPORT FOR THE WATER AND SEWER PIPES MAY BE REQUIRED.
- b. WHEN LOCAL CONDITIONS PREVENT A VERTICAL SEPARATION OF 18 INCHES, THE SEWER PASSING OVER OR UNDER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION AND SHALL BE PRESSURE TESTED TO ASSURE WATER-TIGHTNESS PRIOR TO BACKFILLING.
- c. WHEN WATER MAINS AND WATER SERVICE LINES (BEFORE THE CURB STOP AND CUSTOMER METER) OWNED BY THE PUBLIC WATER SYSTEMS CROSS UNDER SEWERS, ADDITIONAL MEASURES SHALL BE TAKEN BY PROVIDING:
1. A VERTICAL SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE SEWER AND THE TOP OF THE WATER MAIN;
2. ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING ON AND BREAKING THE WATER MAINS;
3. THAT THE LENGTH OF WATER PIPE BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER; AND
4. BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF WATER MAIN MATERIALS EXTENDING ON EACH SIDE OF THE CROSSING UNTIL AT LEAST 10 FEET SEPARATES THE TWO PIPES AND SUBJECTED TO HYDROSTATIC TESTS, AS PRESCRIBED IN THIS DOCUMENT. OTHER OPTIONS THAT ARE ACCEPTABLE INCLUDE:
- ENCASEMENT OF THE WATER MAIN OR SEWER IN A CARRIER PIPE CONSTRUCTED OF WATER MAIN MATERIALS, EXTENDING ON EACH SIDE OF THE CROSSING UNTIL AT LEAST 10 FEET SEPARATES THE TWO PIPES.
- THE SEWER HAS A STRUCTURAL LINING THAT MEETS ASTM F1216 EXTENDING ON EACH SIDE OF THE CROSSING UNTIL AT LEAST 10 FEET SEPARATES THE TWO PIPES.
- d. MAXIMUM OBTAINABLE SEPARATION OF RECLAIMED WATER LINES AND POTABLE WATER LINES SHALL BE PRACTICED. A MINIMUM HORIZONTAL SEPARATION OF THREE (3) FEET OUTSIDE OF PIPE TO OUTSIDE OF PIPE SHALL BE MAINTAINED BETWEEN RECLAIMED WATER LINES AND EITHER POTABLE WATER MAINS OR SEWAGE COLLECTION LINES. A MINIMUM OF 18 INCHES SHALL BE PROVIDED BETWEEN THE BOTTOM OF ANY POTABLE WATER SUPPLY LINE AND THE TOP OF THE REUSE LINE.

1.7 SURFACE WATER CROSSINGS

SURFACE WATER CROSSINGS, BOTH OVER AND UNDER WATER, MAY PRESENT SPECIAL CONCERNS AND SHOULD BE DISCUSSED WITH THE DIVISION BEFORE THE FINAL PLANS ARE PREPARED.

- a. AT ABOVE WATER CROSSINGS, THE PIPE SHALL BE ADEQUATELY SUPPORTED AND ANCHORED, PROTECTED FROM VANDALISM, DAMAGE AND FREEZING, AND ACCESSIBLE FOR REPAIRS OR REPLACEMENT.
- b. AT UNDERWATER CROSSINGS, A MINIMUM OF 3 FEET OF COVER SHALL BE PROVIDED OVER THE PIPE.
- c. THE INSTALLATION OF DUCTILE IRON PIPE WITH RESTRAINED PUSH-ON JOINTS AND ENCASED IN CONCRETE, MAY BE CONSIDERED WITH THE PRIOR APPROVAL OF THE DIVISION. OTHERWISE, WHEN CROSSING WATER COURSES WHICH ARE GREATER THAN 15 FEET IN WIDTH, ONLY PIPES OF SPECIAL CONSTRUCTION, HAVING FLEXIBLE, WATERTIGHT JOINTS SHALL BE INSTALLED.
- d. VALVES SHALL BE PROVIDED AT BOTH ENDS OF WATER CROSSINGS SO THAT THE SECTION CAN BE ISOLATED FOR TESTING OR REPAIR; VALVES SHALL BE EASILY ACCESSIBLE AND NOT SUBJECT TO FLOODING.
- e. SAMPLING TAPS SHALL BE INSTALLED AT EACH END OF THE CROSSING, AND PERMANENT TAPS SHALL BE MADE FOR TESTING AND DETERMINING LEAKS.

1.8 CROSS CONNECTION

THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN THE DISTRIBUTION SYSTEM AND ANY PIPES, PUMPS, HYDRANTS, OR TANKS WHEREBY UNSAFE WATER AND OTHER CONTAMINATING MATERIALS MAY BE DISCHARGED OR DRAWN INTO THE SYSTEM.

- a. THE APPROVAL OF THE DIVISION SHALL BE OBTAINED FOR INTERCONNECTIONS BETWEEN POTABLE WATER SUPPLIES.
- b. NEITHER STEAM CONDENSATE NOR COOLING WATER FROM ENGINE JACKETS OR OTHER HEAT EXCHANGE DEVICES SHALL BE RETURNED TO THE POTABLE WATER SUPPLY.

1.9 WATER SERVICES AND PLUMBING

- a. WATER SERVICES AND PLUMBING SHOULD CONFORM TO RELEVANT LOCAL AND/OR STATE PLUMBING CODES, OR TO THE STANDARD PLUMBING CODE, AS APPLICABLE WITHIN THE JURISDICTION IN WHICH THE SYSTEM IS LOCATED.
- b. THE PRODUCT THAT IS USED FOR THE SERVICE LINE MUST BE LISTED AS BEING CERTIFIED FOR CONFORMANCE WITH THE NSF STANDARD 61.
- c. ALL NEW AND EXISTING SERVICES CONNECTED TO COMMUNITY AND NON-TRANSIENT NONCOMMUNITY WATER SYSTEMS SHALL BE INDIVIDUALLY METERED.
- d. INDIVIDUAL BOOSTER PUMP(S) SHALL NOT BE ALLOWED FOR ANY INDIVIDUAL RESIDENTIAL SERVICE FROM THE PUBLIC WATER SUPPLY MAINS. WHERE PERMITTED FOR OTHER TYPES OF SERVICES, BOOSTER PUMPS SHALL BE DESIGNED IN ACCORDANCE WITH AWWA STANDARDS.

1.10 WATER LOADING STATIONS

WATER LOADING STATIONS PRESENT SPECIAL PROBLEMS SINCE THE FILL LINE MAY BE USED FOR FILLING BOTH POTABLE WATER VESSELS AND OTHER TANKS OR CONTAMINATED VESSELS. TO PREVENT CONTAMINATION OF BOTH THE PUBLIC SUPPLY AND POTABLE WATER VESSELS BEING FILLED, THE FOLLOWING PRINCIPLES SHALL BE MET IN THE DESIGN OF WATER LOADING STATIONS:

- a. THERE SHALL BE NO BACKFLOW TO THE PUBLIC WATER SUPPLY;
- b. THE PIPING ARRANGEMENT SHALL PREVENT CONTAMINANT BEING TRANSFERRED FROM A HAULING VESSEL TO OTHERS SUBSEQUENTLY USING THE STATION; AND
- c. HOSES SHALL NOT BE CONTAMINATED BY CONTACT WITH THE GROUND.



Know what's below.
Call before you dig.

DESCRIPTION

DATE

NO.

DATE: 6/1/2026

DESIGNED BY: AARON WADLEY

DRAWN BY: A2ZCE

CHECKED BY: AARON WADLEY

PLANNING
ENGINEERING
CONSTRUCTION

LNCO

MADISON, GEORGIA

AARON.WADLEY@LNCOPEC.COM 706.318.5425

BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

GEORGIA

REGISTERED

No. PE37241

PROFESSIONAL

ENGINEER

AARON MICHAEL WADLEY

AARON WADLEY, PE

LEVEL II CERTIFIED

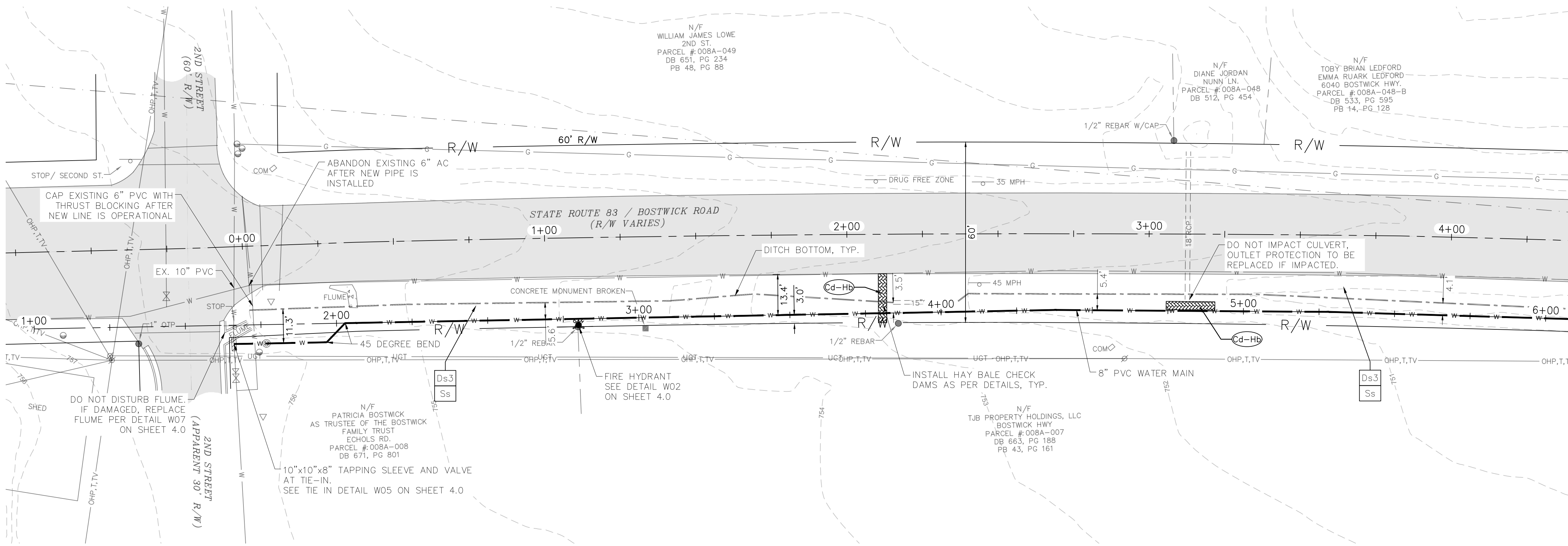
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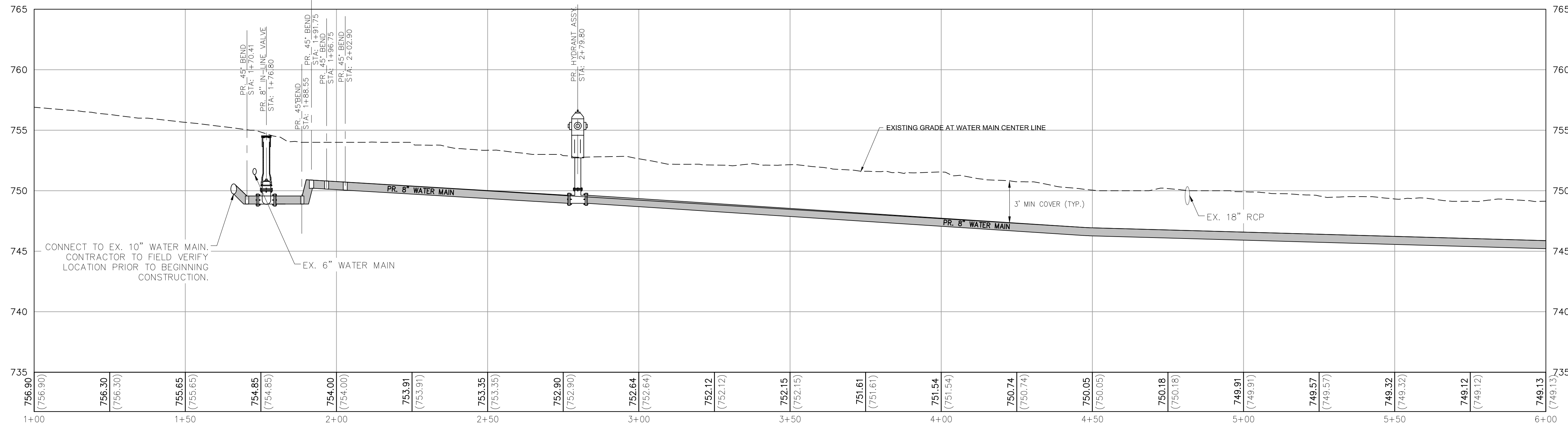
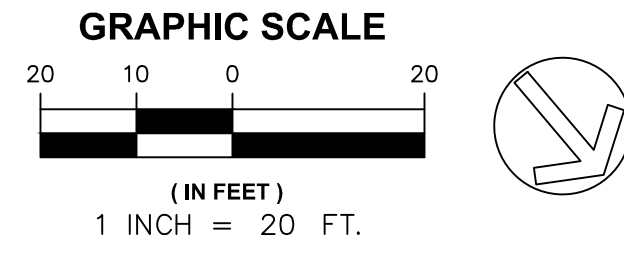
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SHEET NUMBER:

2.1



- NOTES:
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 - CONTRACTOR TO CONNECT ALL METERS AND SERVICES TO NEW WATER MAIN. ALL LONG SIDE SERVICES TO BE REPLACED AND CONNECTED TO EXISTING METER. COST, PER EACH, TO INCLUDE ALL MATERIALS AND INCIDENTALS.
 - CONTRACTOR TO VERIFY LOCATION OF EXISTING WATER MAIN THAT WILL BE ABANDONED.
 - ALL DRIVEWAYS WILL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
 - PROPOSED WATER LINE TO BE INSTALLED AS CLOSE TO THE RIGHT OF WAY AS FEASIBLE. ANY ALTERNATE LOCATION TO BE COORDINATED WITH ENGINEER AND GDOT.



WATER MAIN
VERT: 1"=5'
HORZ: 1"=20'

GDOT ROW SUMMARY	
8" PVC WATER MAIN	437LF
6" PVC WATER MAIN	0 LF
8" 45° BEND	5 EA
8"x6" REDUCER	0 EA
FIRE HYDRANT ASSEMBLY	1 EA
10"x10"x8" TAPPING SLEEVE AND VALVE	1 EA
IN-LINE VALVE	0 EA



Know what's below.
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DESCRIPTION

DATE

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DATE: 6/1/2026

DESIGNED BY: AARON WADLEY

DRAWN BY: AZZCE

CHECKED BY: AARON WADLEY

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ENGINEERING
CONSTRUCTION

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BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

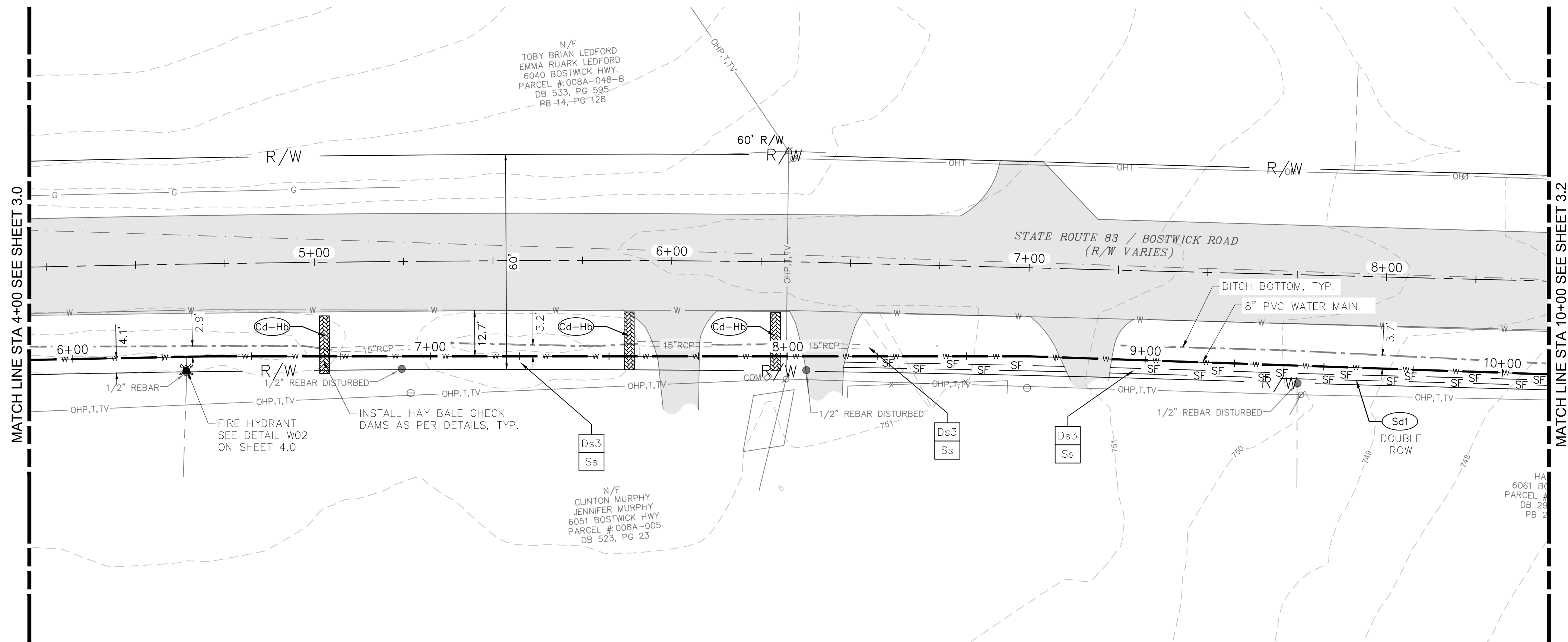
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No. PE37241
PROFESSIONAL
ENGINEER

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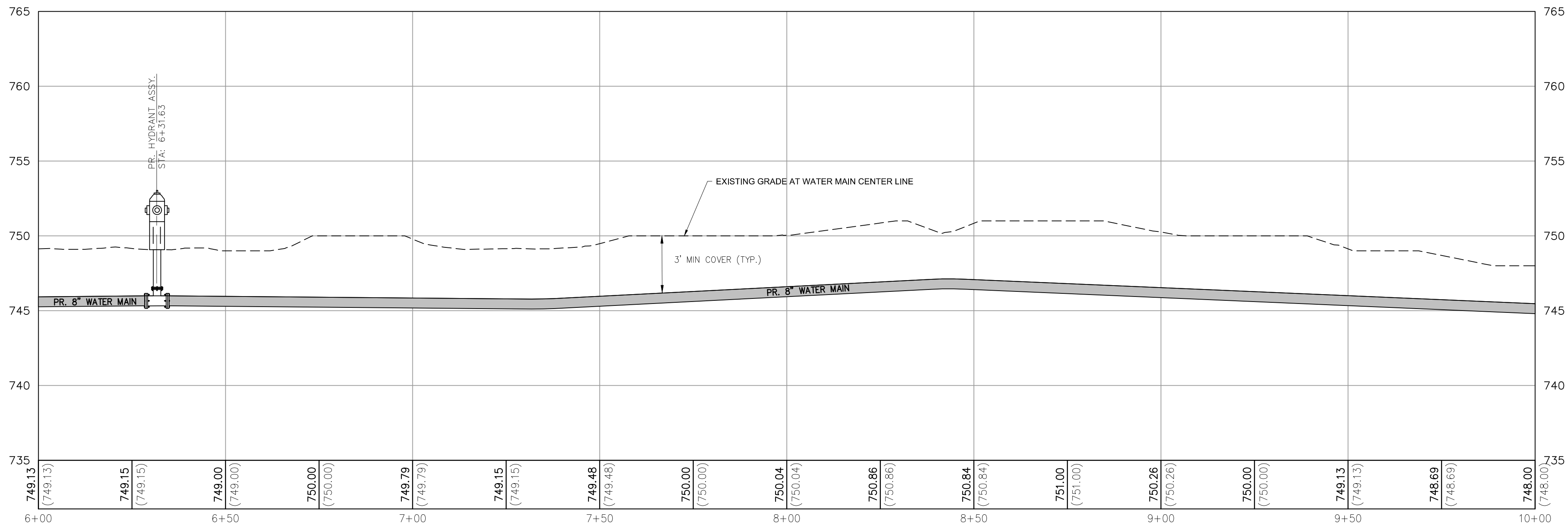
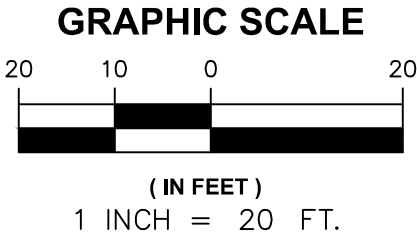
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EXPIRES 02-01-2026

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WATER MAIN
VERT: 1"=5'
HORZ: 1"=20'

GDOT ROW SUMMARY	
8" PVC WATER MAIN	400 LF
6" PVC WATER MAIN	0 LF
8" 45° BEND	0 EA
8"x6" REDUCER	0 EA
FIRE HYDRANT ASSEMBLY	1 EA
IN-LINE VALVE	0 EA

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MADISON, GEORGIA

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BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

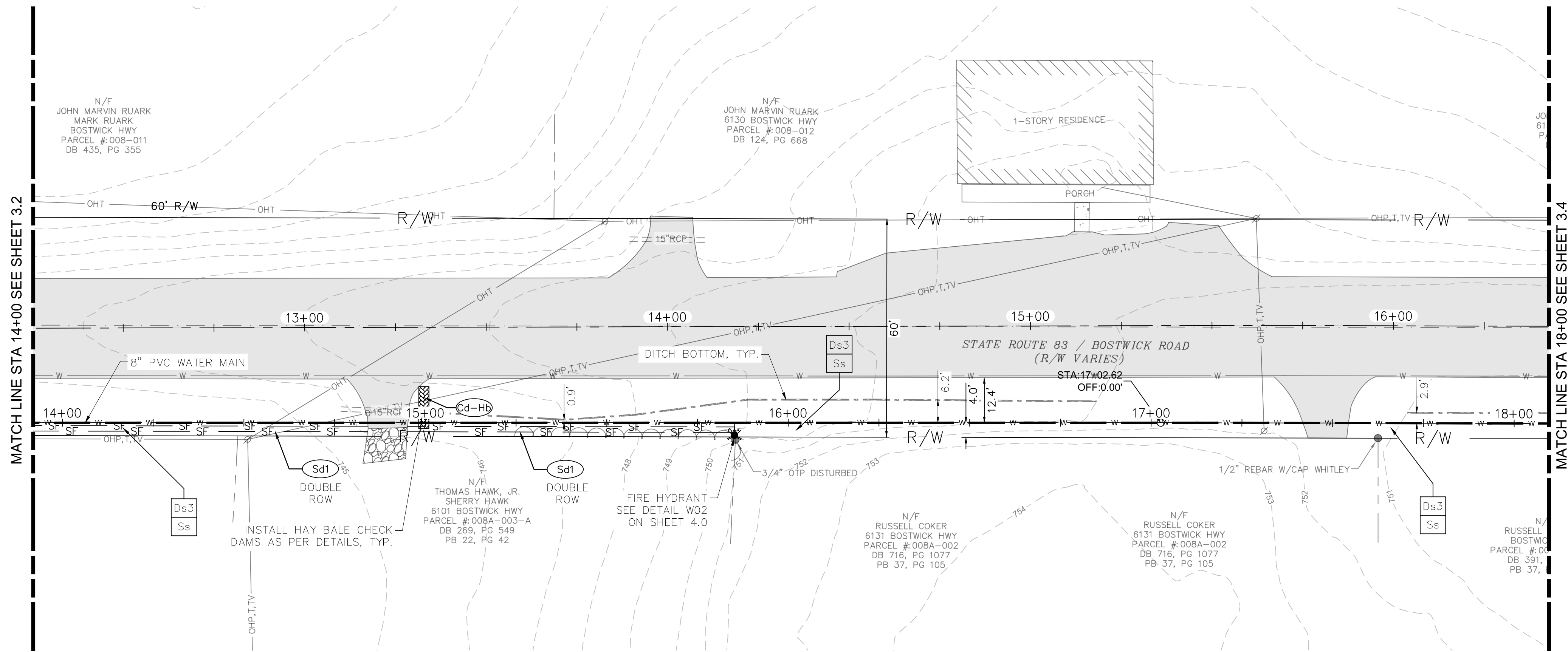


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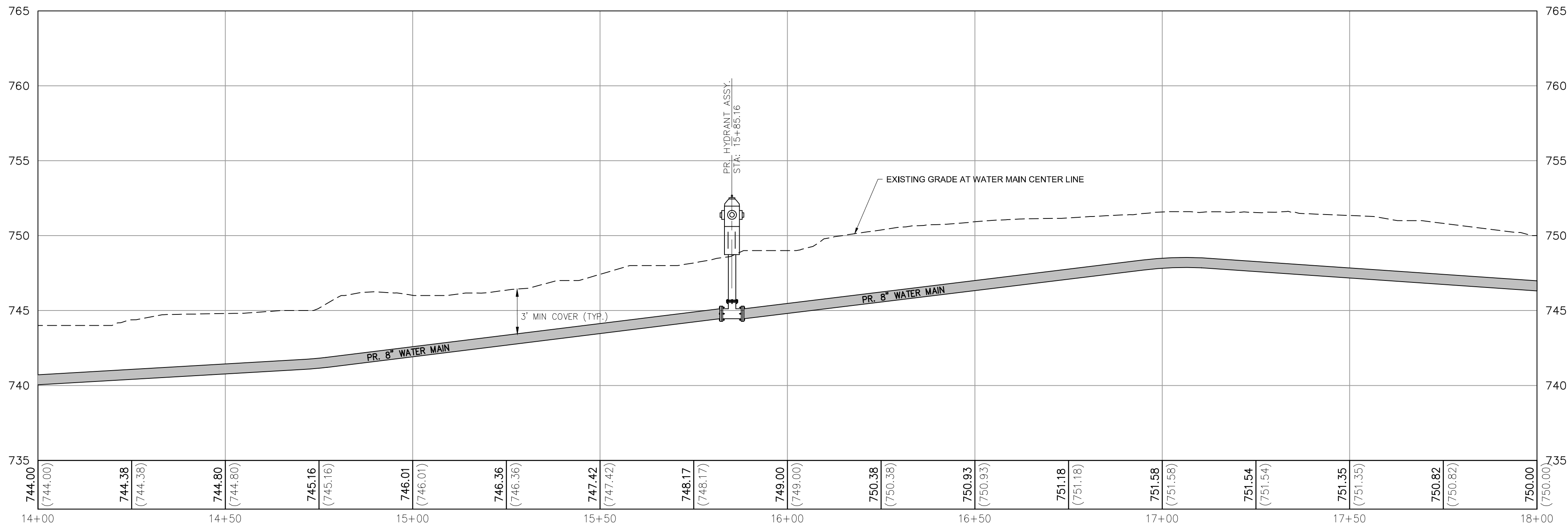
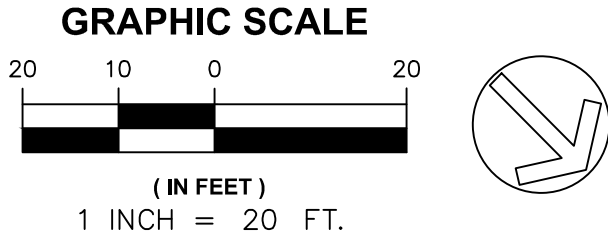
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WATER MAIN
VERT: 1"=5'
HORIZ: 1"=20'

GDOT ROW SUMMARY	
8" PVC WATER MAIN	400 LF
6" PVC WATER MAIN	0 LF
8" 45° BEND	0 EA
8"x6" REDUCER	0 EA
FIRE HYDRANT ASSEMBLY	1 EA
IN-LINE VALVE	0 EA



DESCRIPTION

DATE

NO.

DATE: 6/1/2026

DESIGNED BY: AARON WADLEY

DRAWN BY: AZZCE

CHECKED BY: AARON WADLEY

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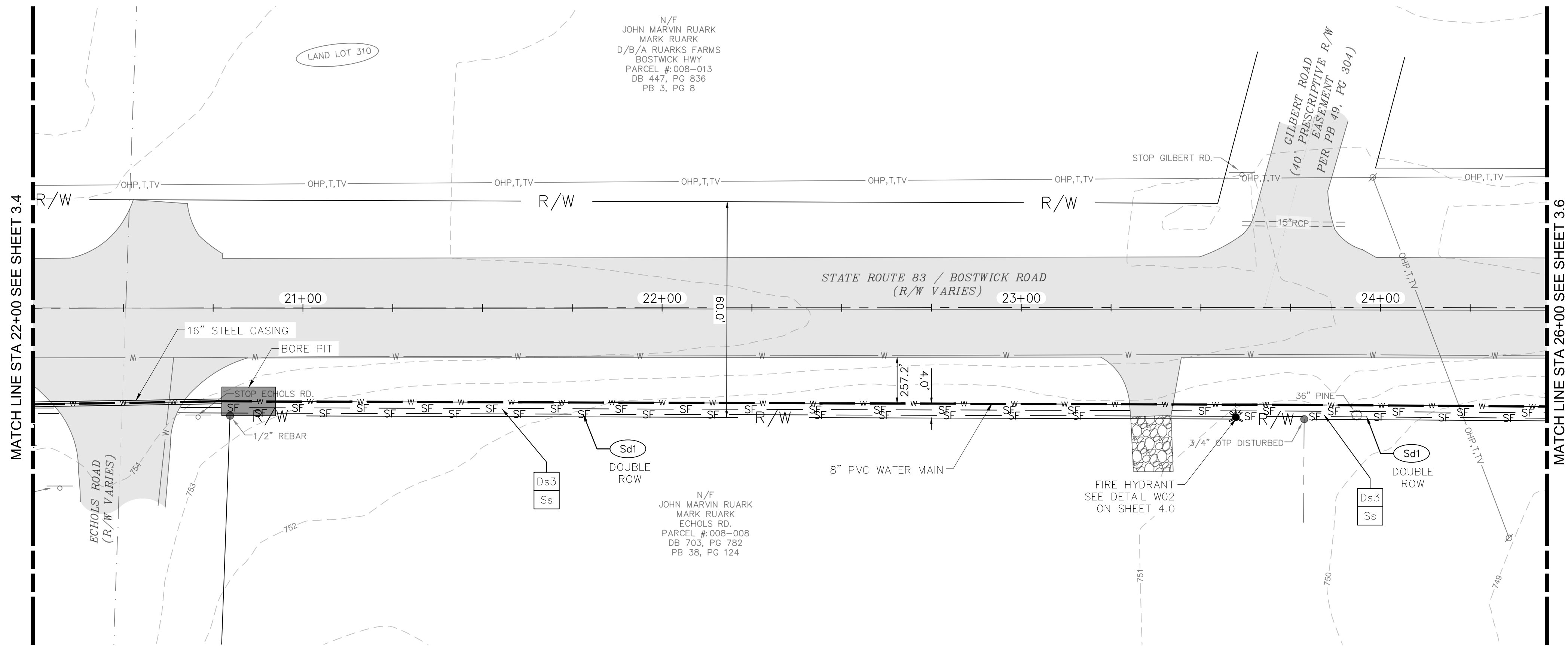
BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

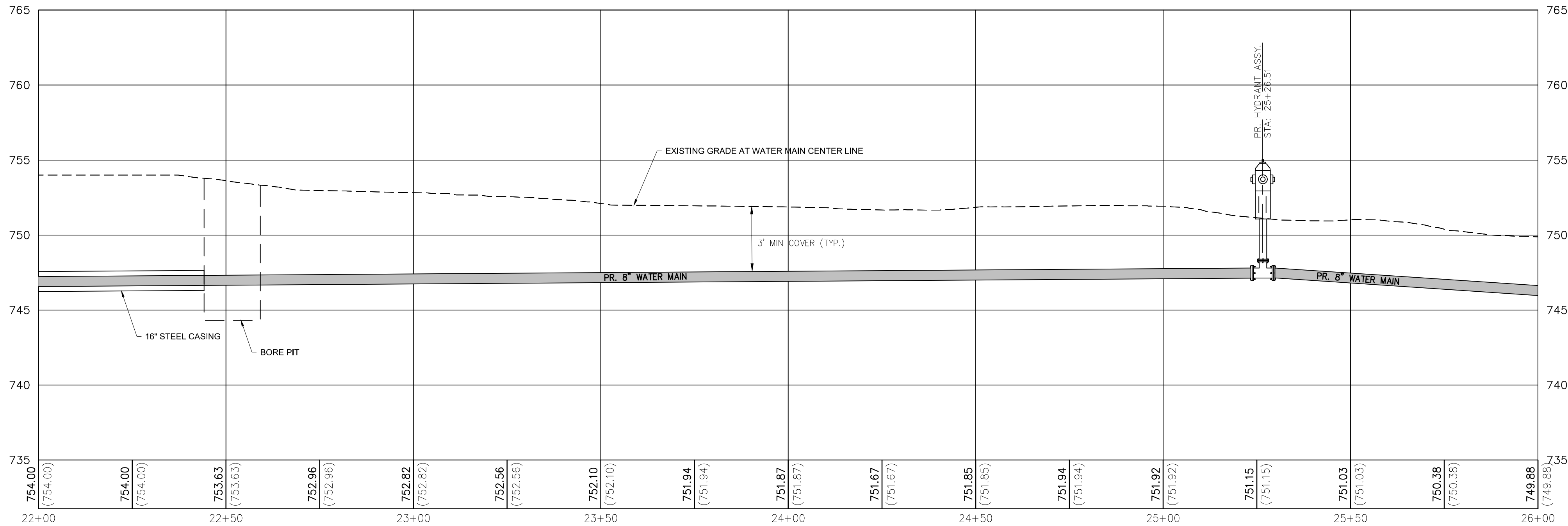
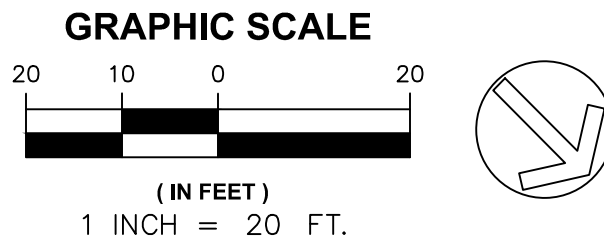
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AARON WADLEY, PE
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DESIGN PROFESSIONAL
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SHEET NUMBER:
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 4. ALL DRIVEWAYS WILL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
 5. PROPOSED WATER LINE TO BE INSTALLED AS CLOSE TO THE RIGHT OF WAY AS FEASIBLE. ANY ALTERNATE LOCATION TO BE COORDINATED WITH ENGINEER AND GDOT.



WATER MAIN
VERT: 1"=5'
HORZ: 1"=20'

GDOT ROW SUMMARY	
8" PVC WATER MAIN	400 LF
6" PVC WATER MAIN	0 LF
8" 45° BEND	0 EA
8"x6" REDUCER	0 EA
FIRE HYDRANT ASSEMBLY	1 EA
IN-LINE VALVE	0 EA
16" STEEL CASING	44 LF



DESCRIPTION

DATE

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DATE: 6/1/2026

DESIGNED BY: AARON WADLEY

DRAWN BY: AZZCE

CHECKED BY: AARON WADLEY

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BOSTWICK WATER LINE REPLACEMENT

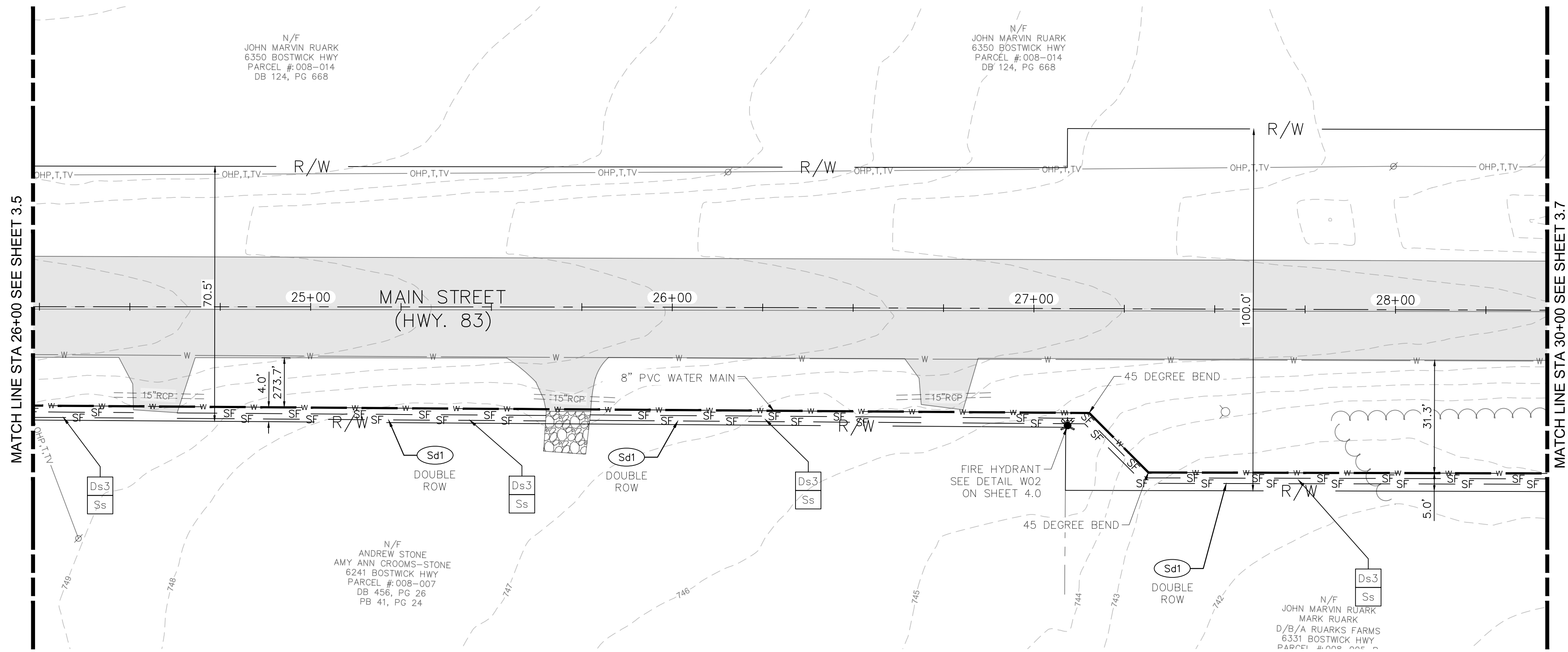
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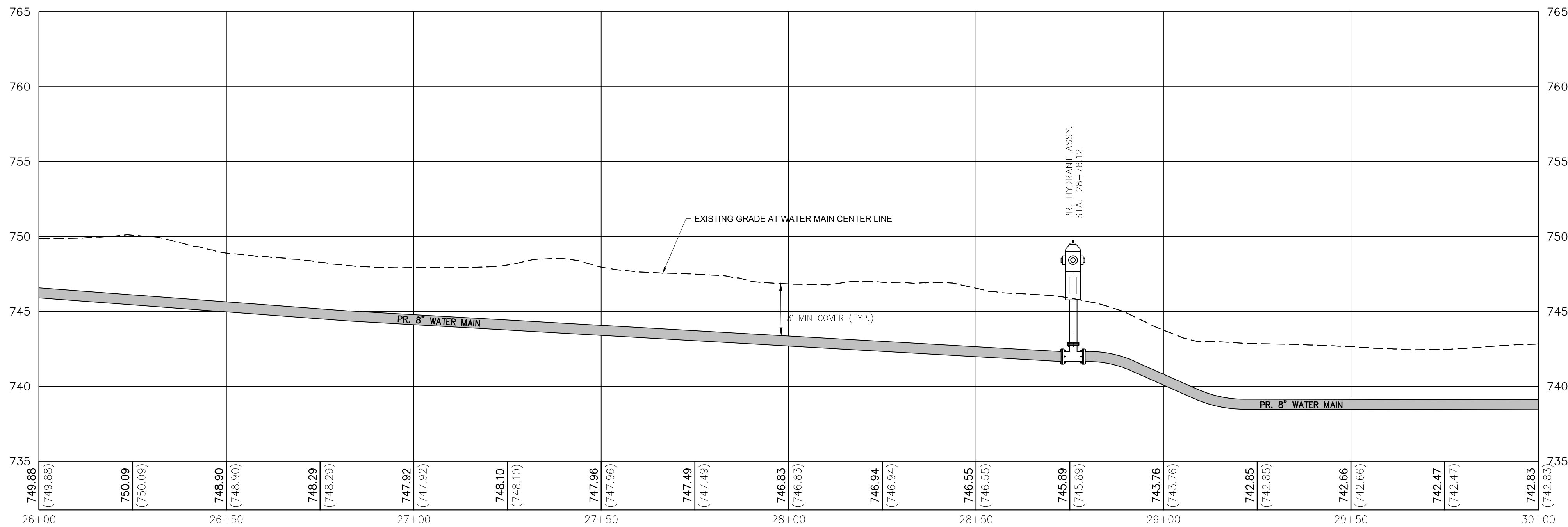
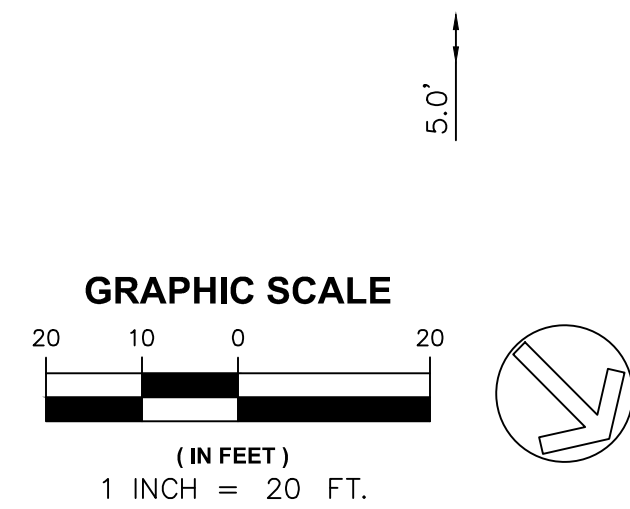
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WATER MAIN
VERT: 1"=5'
HORZ: 1"=20'

GDOT ROW SUMMARY	
8" PVC WATER MAIN	400 LF
6" PVC WATER MAIN	0 LF
8" 45° BEND	2 EA
8"x6" REDUCER	0 EA
FIRE HYDRANT ASSEMBLY	1 EA
IN-LINE VALVE	0 EA



DESCRIPTION

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DESIGNED BY: AARON WADLEY

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CHECKED BY: AARON WADLEY

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MADISON, GEORGIA

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BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

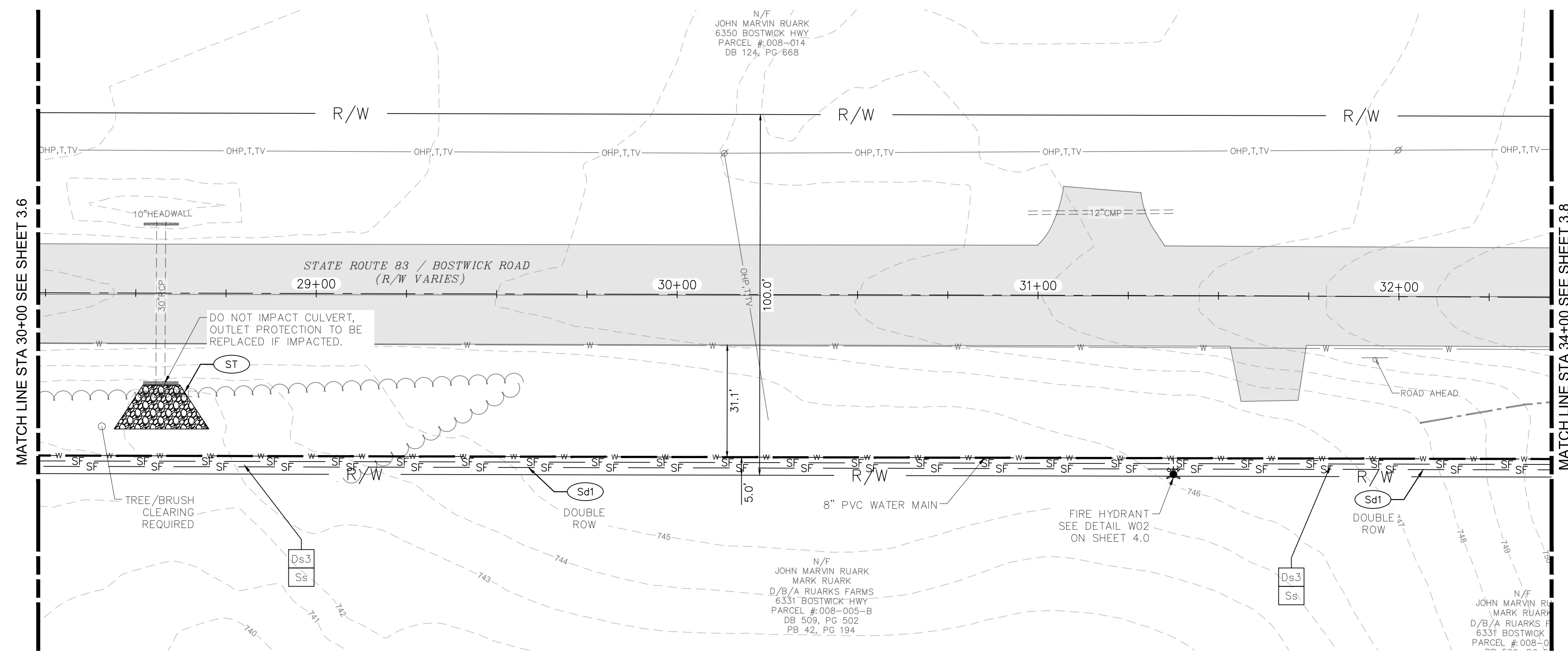
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AARON MICHAEL WADLEY

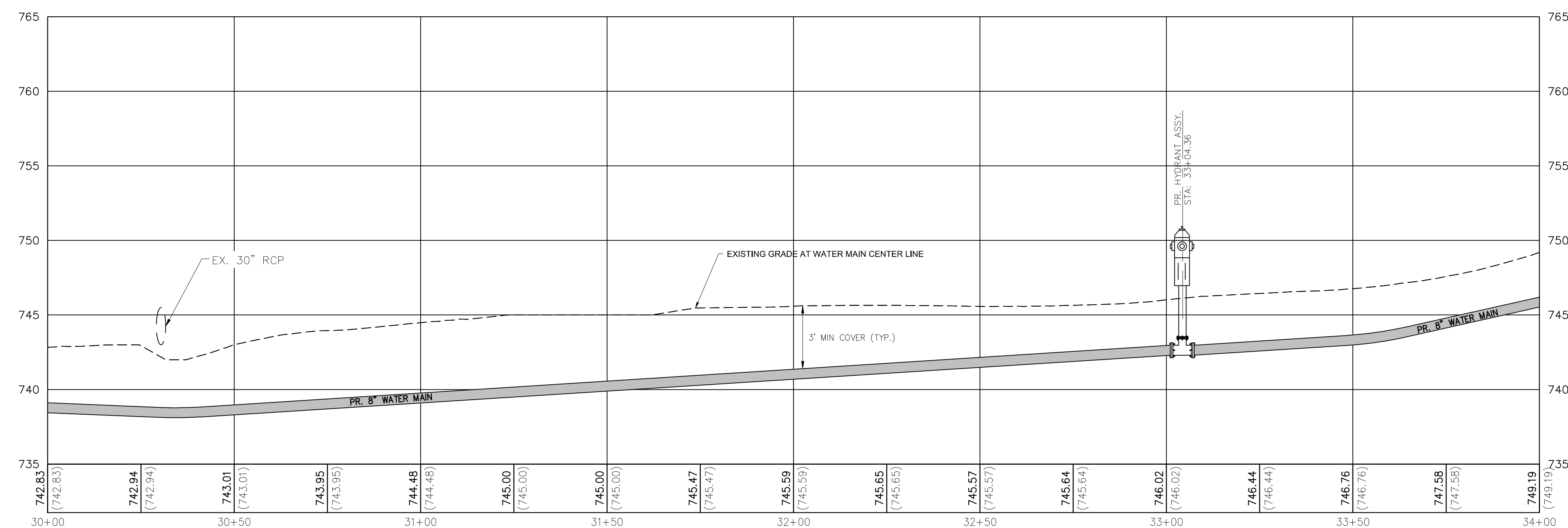
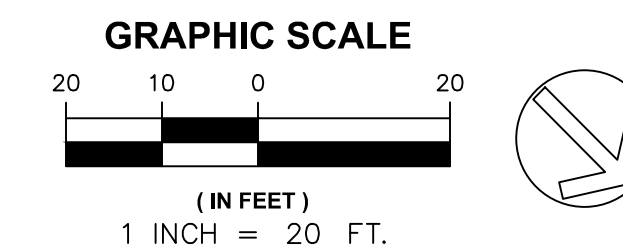
AARON WADLEY, PE
LEVEL II CERTIFIED
DESIGN PROFESSIONAL
#0000011490
EXPIRES 02-01-2026

SHEET NUMBER:

3.6



- NOTES:**
1. REFER TO SHEET 4.2 FOR EROSION CONTROL DETAILS.
 2. CONTRACTOR TO CONNECT ALL METERS AND SERVICES TO NEW WATER MAIN. ALL LONG SIDE SERVICES TO BE REPLACED AND CONNECTED TO EXISTING METER. COST PER EACH, TO INCLUDE ALL MATERIALS AND INCIDENTALS.
 3. CONTRACTOR TO VERIFY LOCATION OF EXISTING WATER MAIN THAT WILL BE ABANDONED.
 4. ALL DRIVEWAYS WILL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
 5. PROPOSED WATER LINE TO BE LOCATED AS CLOSE TO THE RIGHT OF WAY AS FEASIBLE. ANY ALTERNATE LOCATION TO BE COORDINATED WITH ENGINEER AND GDOT.

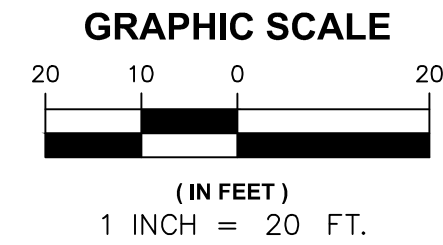
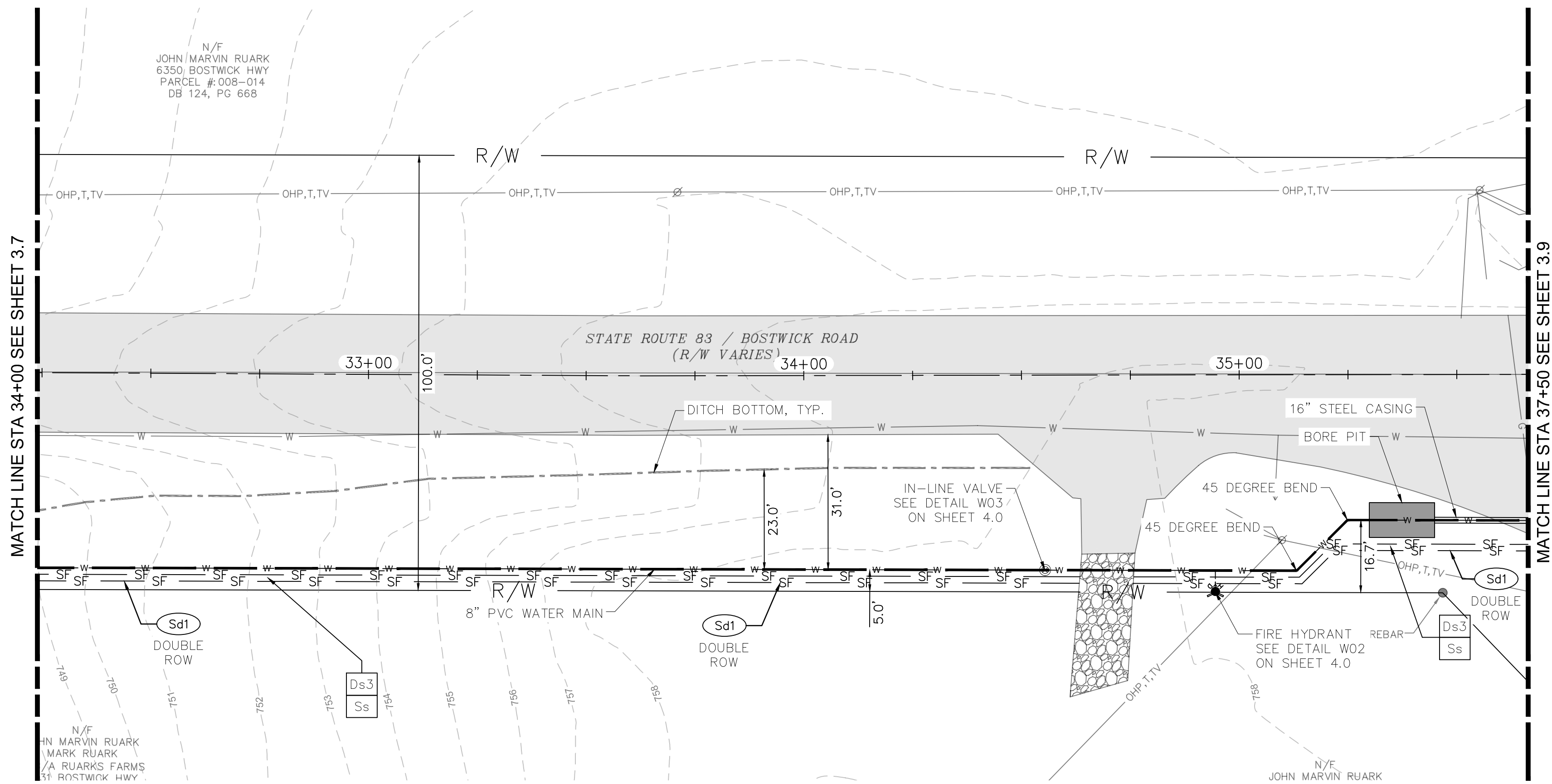


GDOT ROW SUMMARY	
8" PVC WATER MAIN	400 LF
6" PVC WATER MAIN	0 LF
8" 45° BEND	0 EA
8"x6" REDUCER	0 EA
FIRE HYDRANT ASSEMBLY	1 EA
IN-LINE VALVE	0 EA

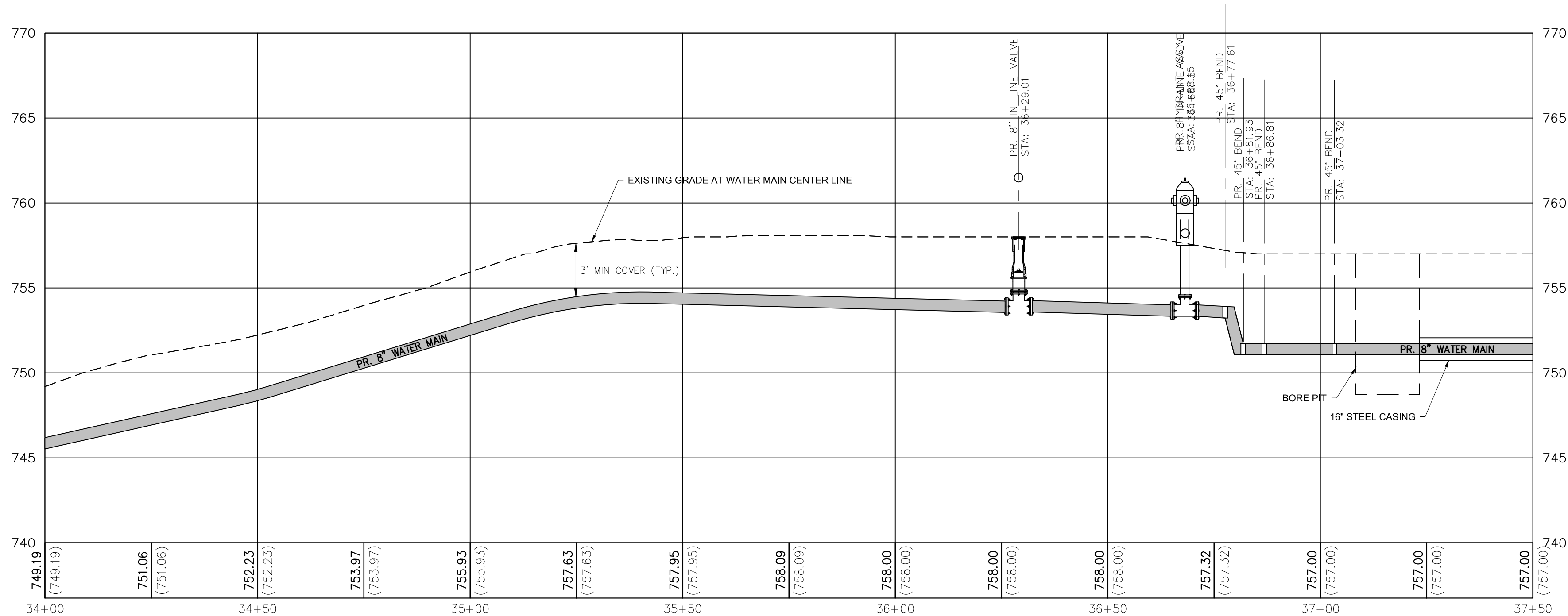




Know what's below.
Call before you dig.



- NOTES:
1. REFER TO SHEET 4.2 FOR EROSION CONTROL DETAILS.
 2. CONTRACTOR TO CONNECT ALL METERS AND SERVICES TO NEW WATER MAIN. ALL LONG SIDE SERVICES TO BE REPLACED AND CONNECTED TO EXISTING METER. COST, PER EACH, TO INCLUDE ALL MATERIALS AND INCIDENTALS.
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WATER MAIN
VERT: 1"=5'
HORZ: 1"=20'

GDOT ROW SUMMARY	
8" PVC WATER MAIN	350 LF
6" PVC WATER MAIN	0 LF
8" 45° BEND	4 EA
8"x6" REDUCER	0 EA
FIRE HYDRANT ASSEMBLY	1 EA
IN-LINE VALVE	1 EA
16" STEEL CASING	27 LF

DESCRIPTION

DATE

NO.

DATE: 6/1/2026

DESIGNED BY: AARON WADLEY

DRAWN BY: AZZCE

CHECKED BY: AARON WADLEY

PLANNING
ENGINEERING
CONSTRUCTION

LNCO

MADISON, GEORGIA

AARON.WADLEY@LNCOPEC.COM 706.318.5425

BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

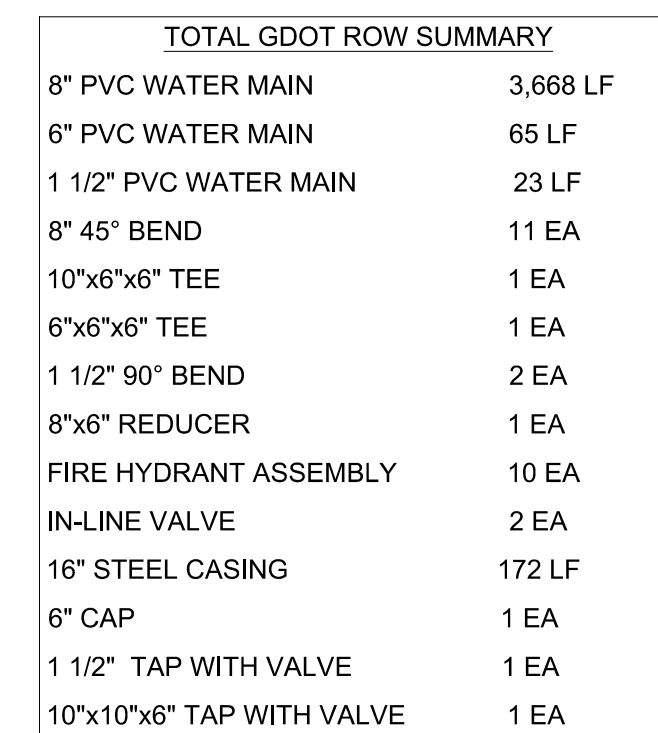
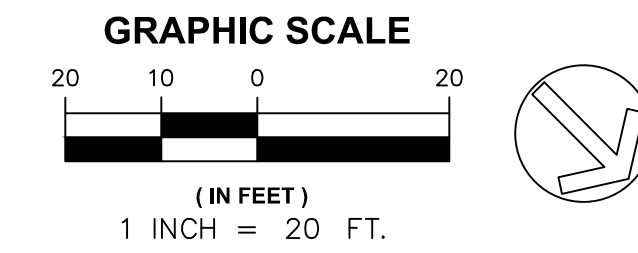
REGISTERED
No. PE3724Y
PROFESSIONAL
ENGINEER

AARON MICHAEL WADLEY

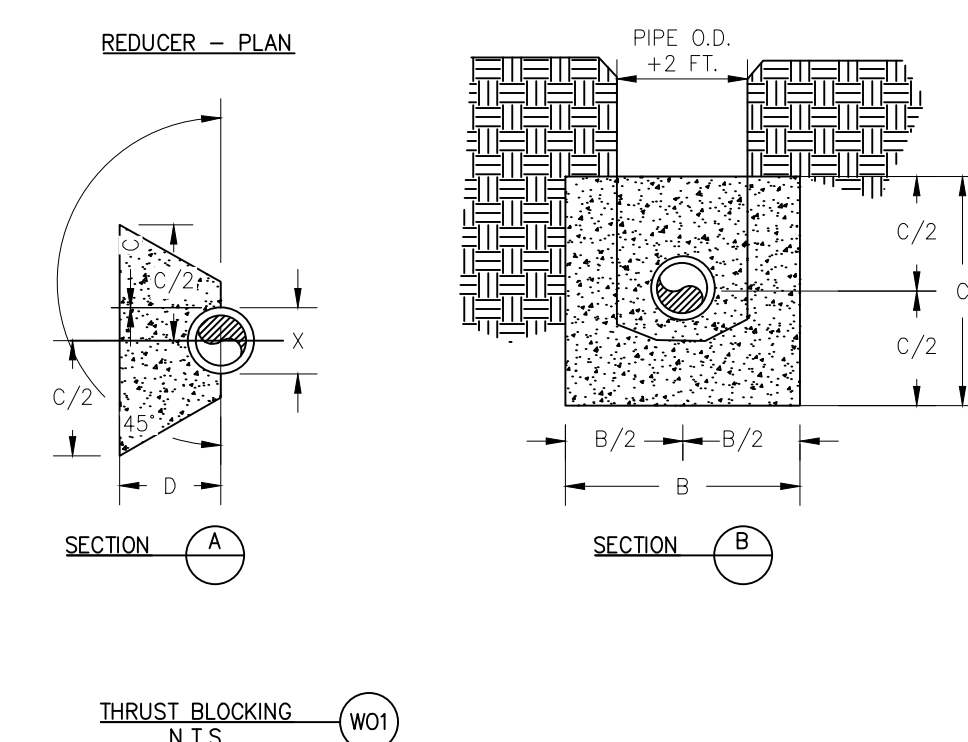
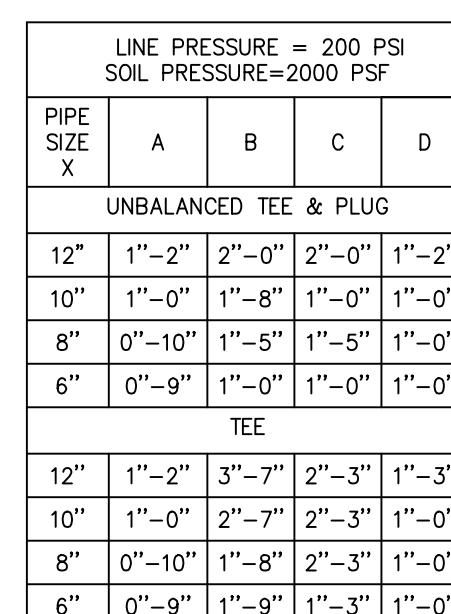
AARON WADLEY, PE
LEVEL II CERTIFIED
DESIGN PROFESSIONAL
#0000011490
EXPIRES 02-01-2026

SHEET NUMBER:

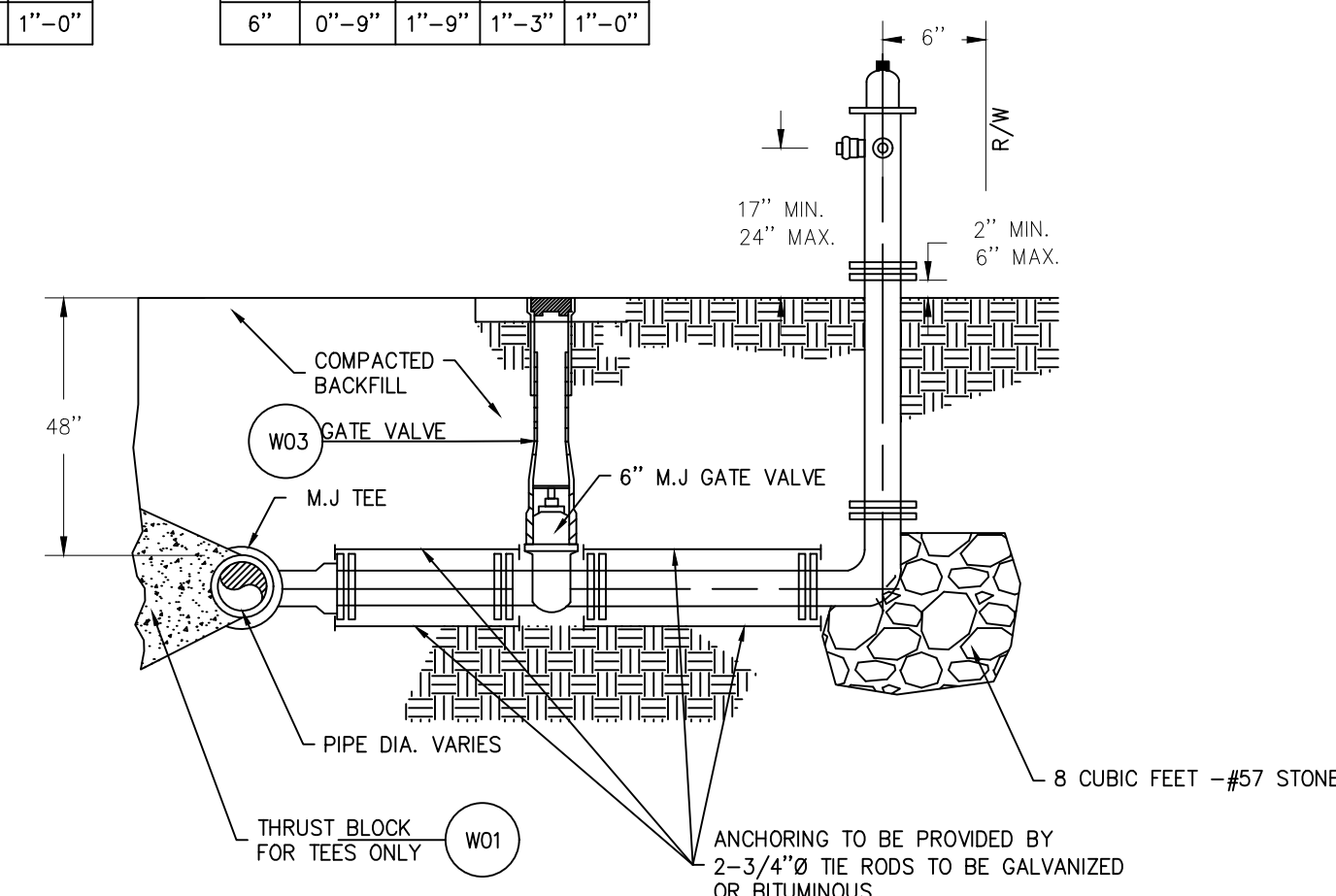
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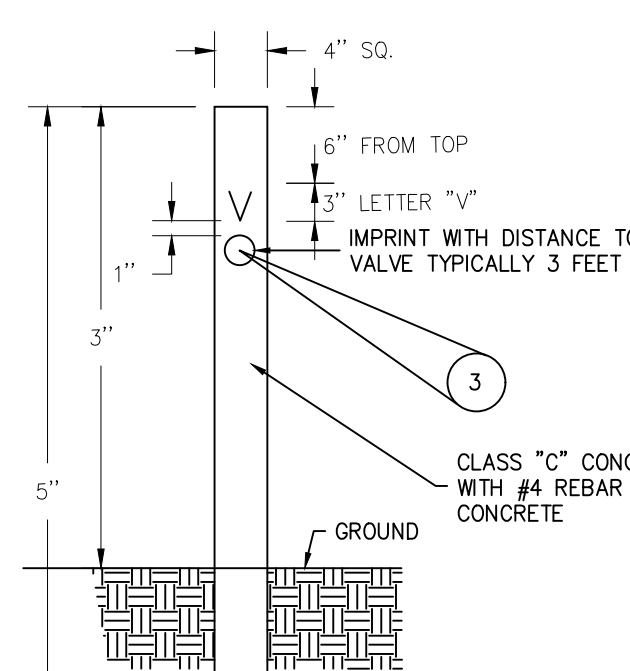
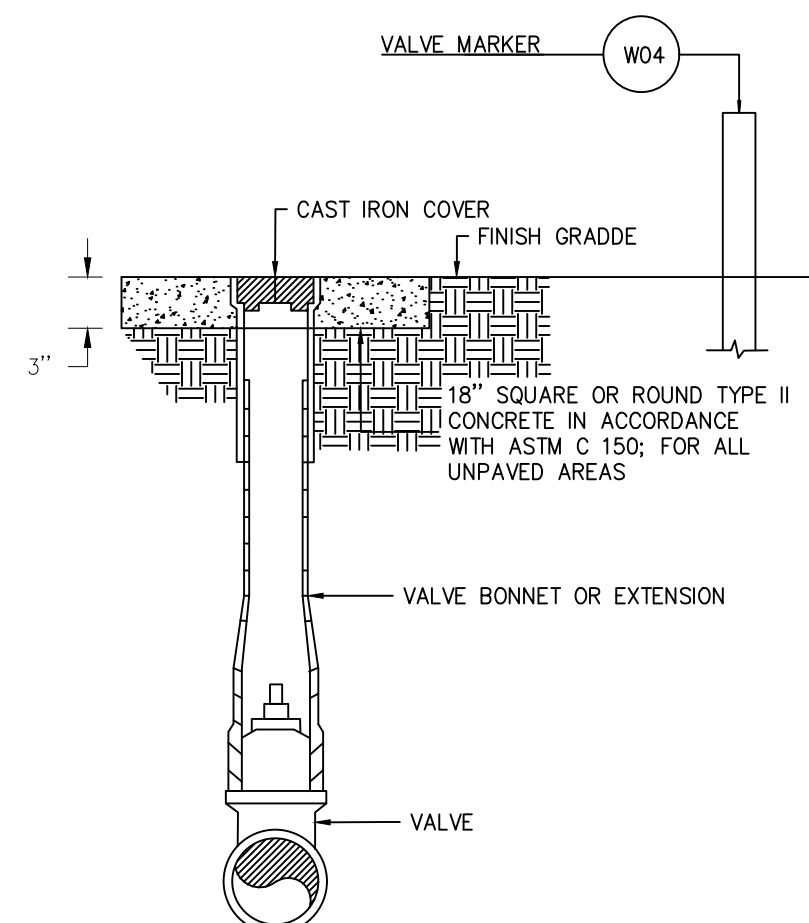
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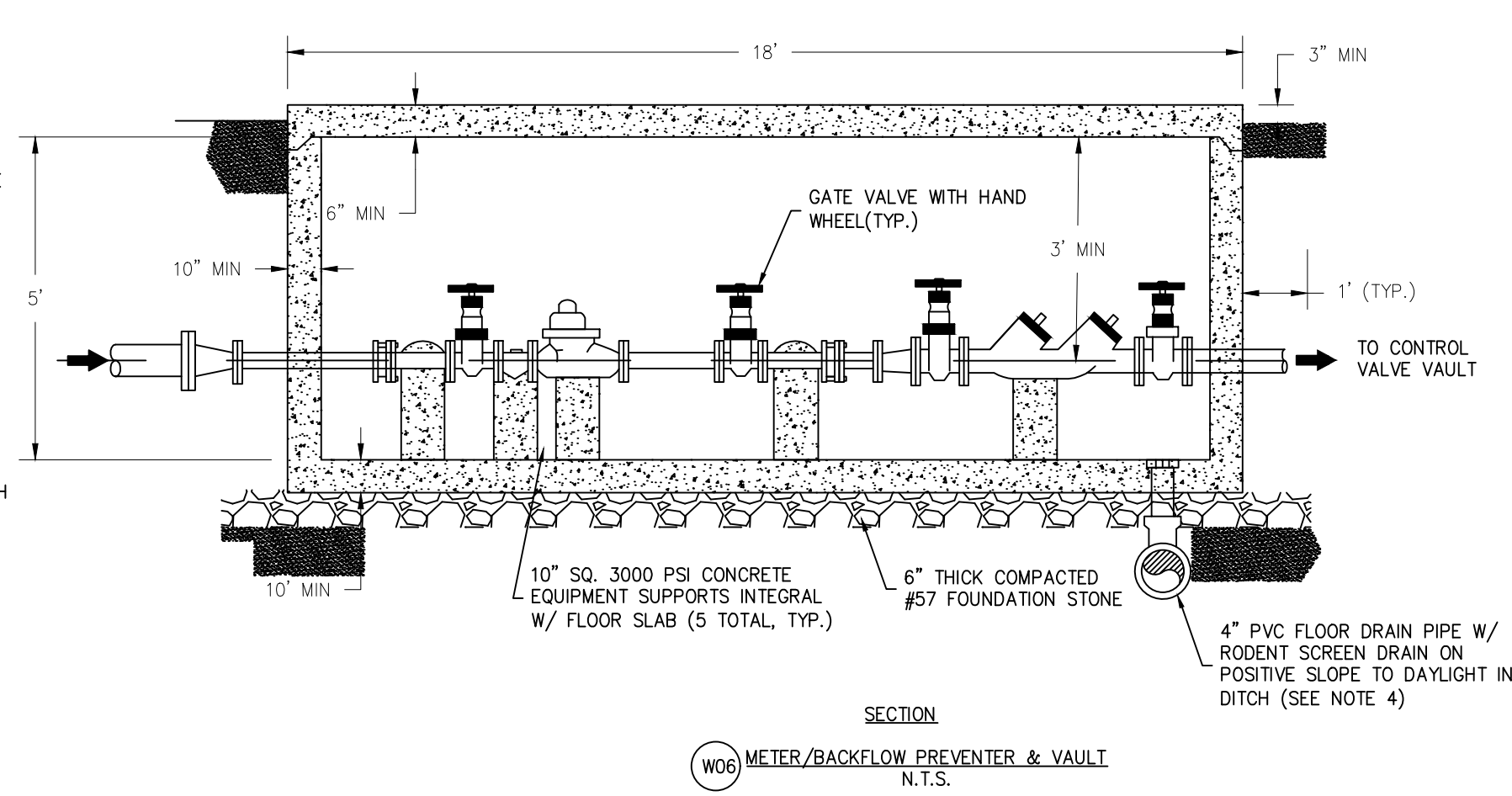
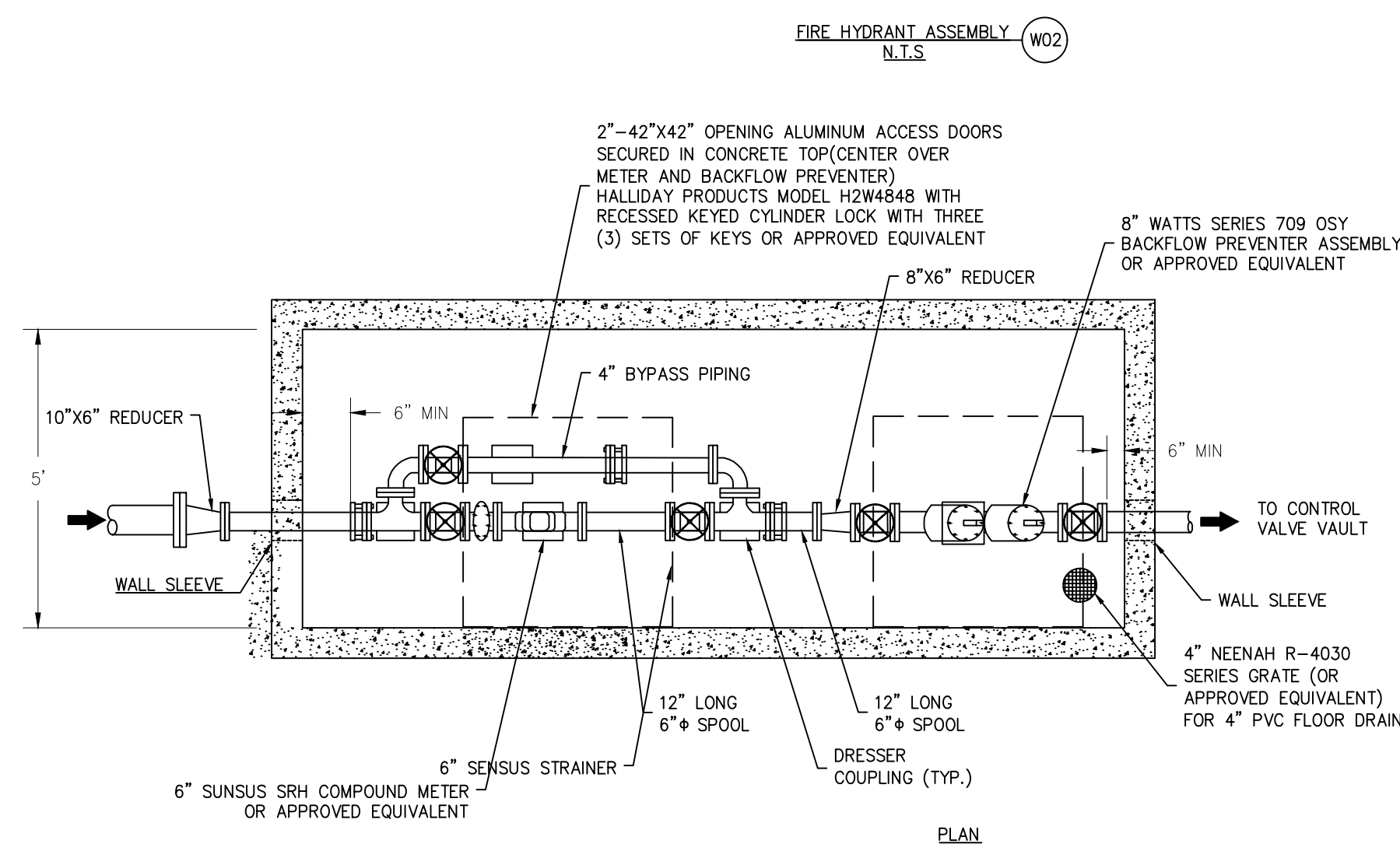
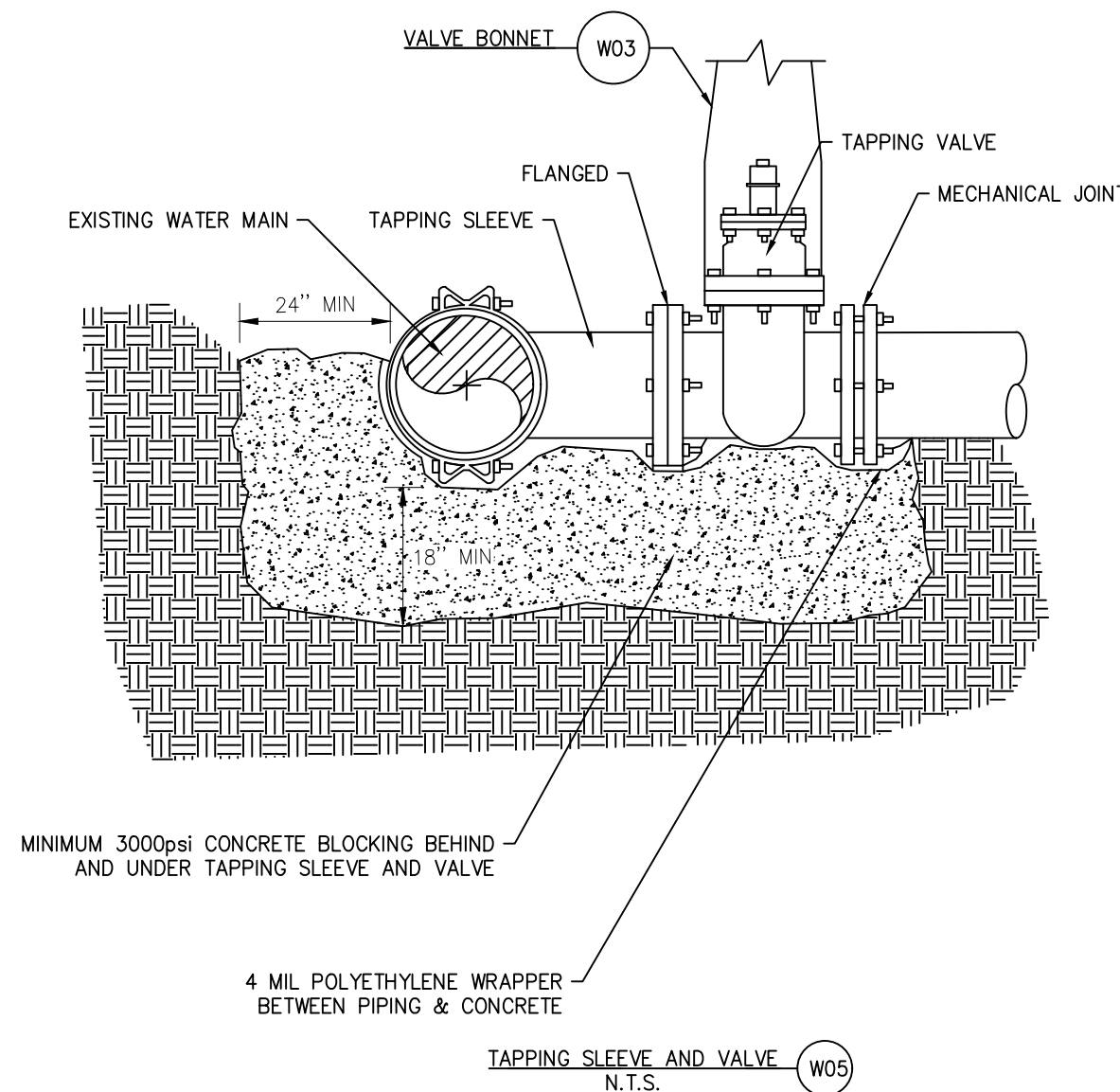
LINE PRESSURE = 200 PSI SOIL PRESSURE=2000 PSF				
REDUCER SIZE	A	B	C	D
REDUCER				
12"x10"	1"-4"	4"-0"	3"-9"	0"-11"
12"-8"	1"-0"	4"-0"	4"-0"	2"-0"
12"-6"	1"-0"	4"-9"	4"-0"	2"-0"



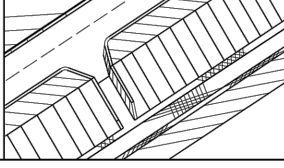
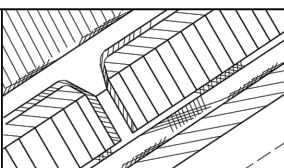
*MAY BE EXTENDED AT THE ENGINEERS DISCRETION TO AVOID EXISTING SITE CONSTRAINTS

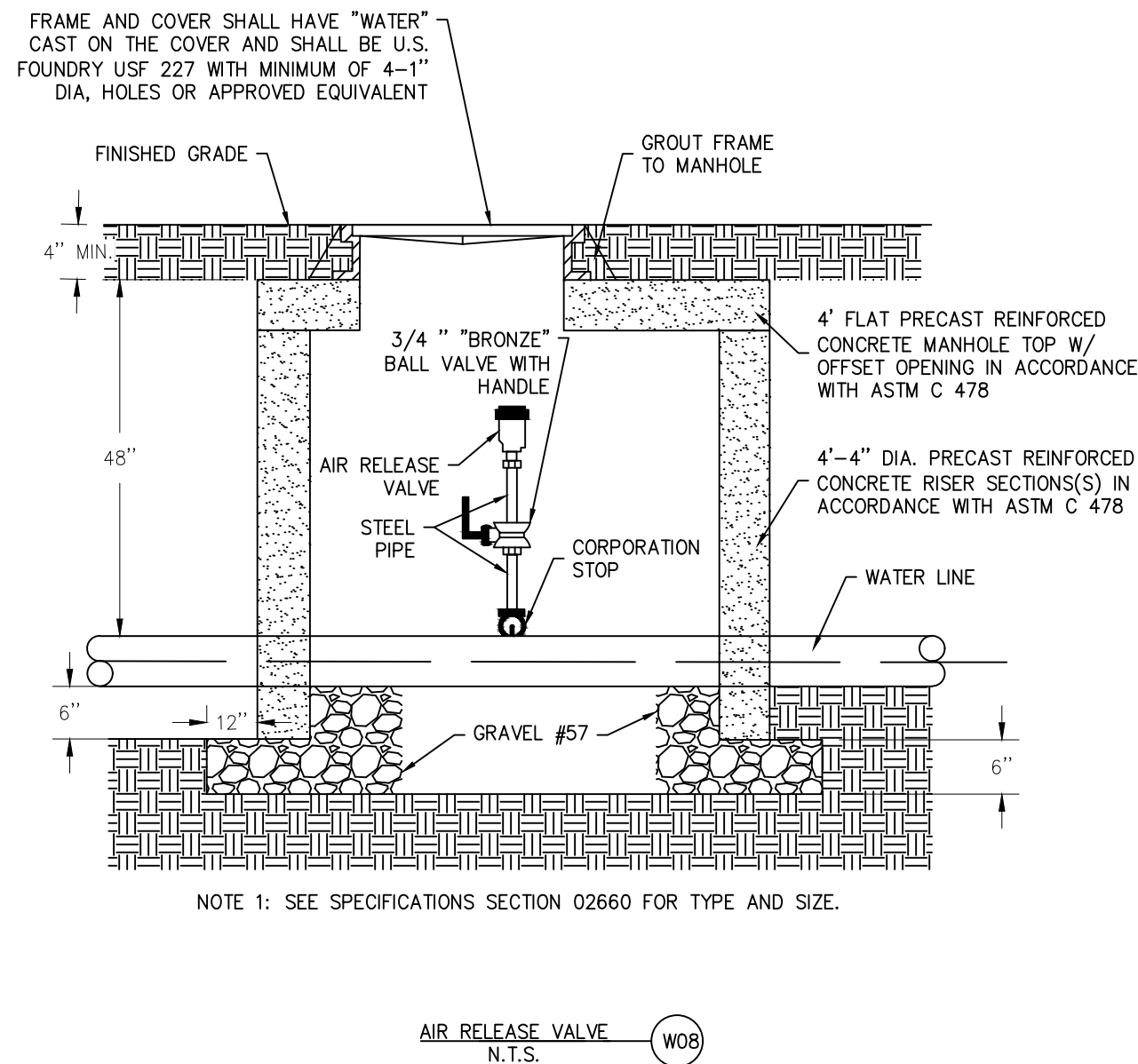


NOTE: VALVE MARKER TO BE PLACED WITHIN 3' OF VALVE (TYP.)



- NOTES:
1. ALL PIPING WITHIN 10' OF VAULT TO BE DIP EXCEPT FOR STEEL BYPASS PIPING
2. VAULT SHALL BE REINFORCED CONCRETE (MIN. 4000 P.S.I.) IN ACCORDANCE WITH ACI 308 AND ASTM C913 FOR HS 20-44. WHEEL LOADING. SUBMIT SHOP DRAWINGS FOR VAULT STAMPED BY A GEORGE REGISTERED PROFESSIONAL ENGINEER
3. INSTALL ALUMINUM ACCESS DOORS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
4. IF INSUFFICIENT SLOPE AVAILABLE, NEARBY CONTRACTOR MAY INSTALL A MINIMUM OF 4" LF OF LEACHATE PIPE BEGINNING A MIN. 40' FROM VAULT. USE #4 PERFORATED PVC PIPE ENCASED WITH 2" MIN. CONCRETE OR 1" MIN. FIBERGLASS WITH NONWOVEN GEOTEXTILE FIBRELY (SEE NM10 OR APPROVED EQUIVALENT) CONNECTED TO #4 SOLID WALL DRAIN PIPE.
5. MANHOLE STEPS SHALL BE INSTALLED AT EACH HATCH OPENING.

CODE	PRACTICE STD : SPC'S SECTION	DETAIL	DESCRIPTION
(Dn2-A)	PERMANENT DOWN DRAIN STRUCTURE CONCRETE CONSTRUCTION DETAIL SECTION 441		A CONCRETE FLUME TYPE "A" IS USED TO DIRECT SURFACE RUNOFF DOWN A ROADWAY SLOPE INTO ANOTHER FORM OF DRAINAGE CONTROL. IT IS USED IN ALL DEPRESSED AREAS WHERE WATER WILL FLOW DOWN THE SLOPE. IT IS DESIGNED FOR A 25 YEAR STORM AND MUST HAVE SOME FORM OF OUTLET PROTECTION. ADDITIONAL LABELING IS NOT REQUIRED IF SHOWN AS A PERMANENT DRAINAGE STRUCTURE ON THE CONSTRUCTION PLANS. INLETS SHALL BE SPACED ACCORDING TO GDOT GUIDELINES (REGARDING GUTTER SPREAD AND ON OTHER CRITERIA).
		LINE CODE _____ (Dn2-A) _____	
(Dn2-B)	PERMANENT DOWN DRAIN STRUCTURE CONCRETE CONSTRUCTION DETAIL SECTION 441		A CONCRETE FLUME TYPE "B" IS USED TO DIRECT SURFACE DITCH RUNOFF DOWN A BACK SLOPE INTO ANOTHER FORM OF CONTROL. IT IS USED IN DEPRESSION AREAS WHERE CONCENTRATED OFFSIDE WATER REACHES THE CUT SLOPE. IT IS DESIGNED TO SAFELY CONVEY WATER DOWN THE SLOPE. IT IS DESIGNED FOR A 25 YEAR STORM AND MUST HAVE SOME FORM OF OUTLET PROTECTION. ADDITIONAL LABELING IS NOT REQUIRED IF SHOWN AS A PERMANENT DRAINAGE STRUCTURE ON THE CONSTRUCTION PLANS. INLETS SHALL BE SPACED ACCORDING TO GDOT GUIDELINES (REGARDING GUTTER SPREAD AND ON OTHER CRITERIA).
		LINE CODE _____ (Dn2-B) _____	



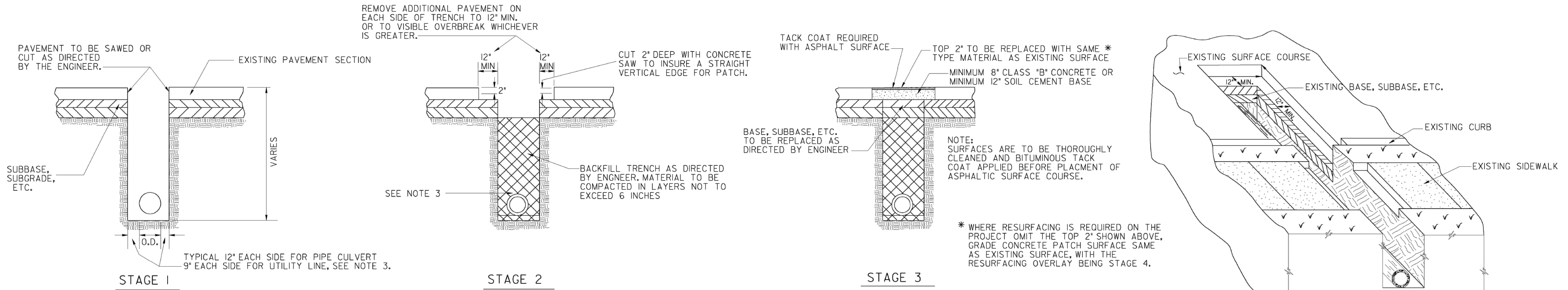
NOTE 1: SEE SPECIFICATIONS SECTION 03660 FOR TYPE AND SIZE

AIR RELEASE VALVE
N.T.S.

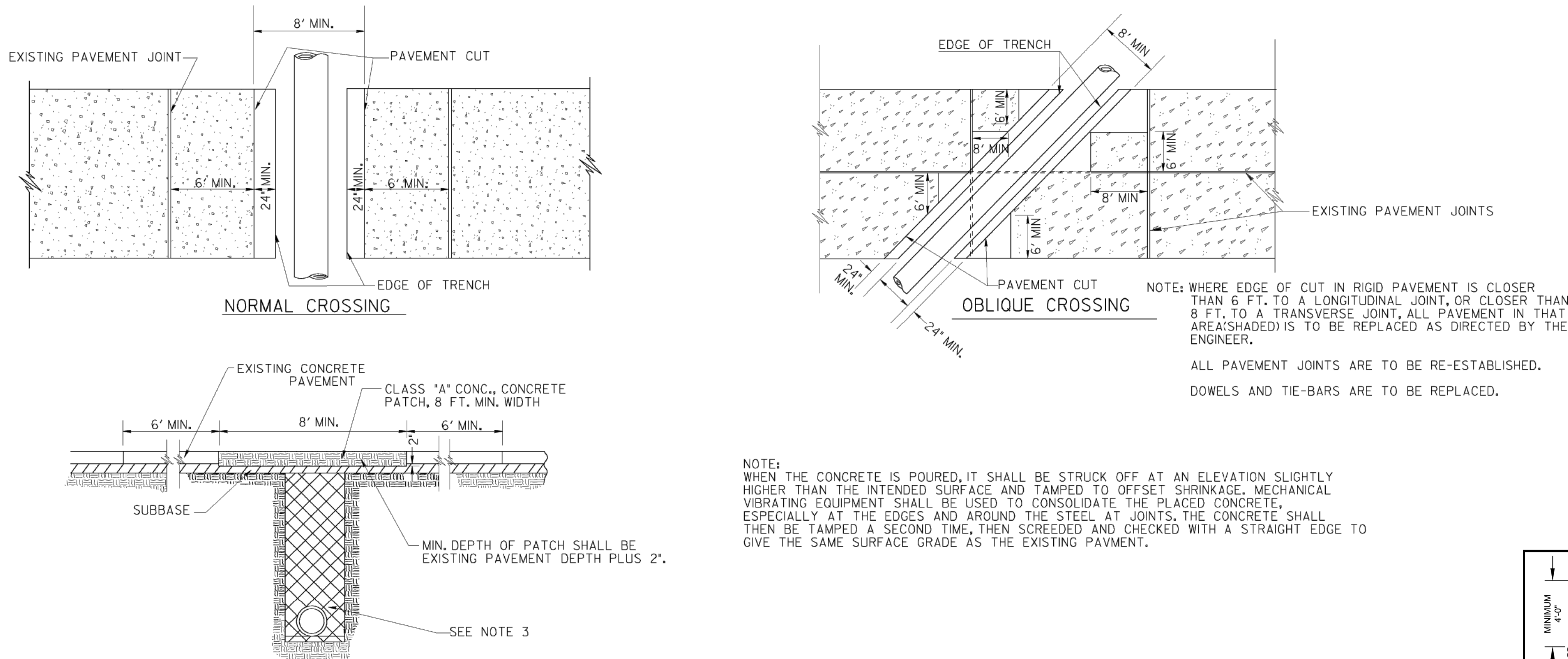


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STORM DRAIN AND UTILITY INSTALLATION BY OPEN CUT - GENERAL



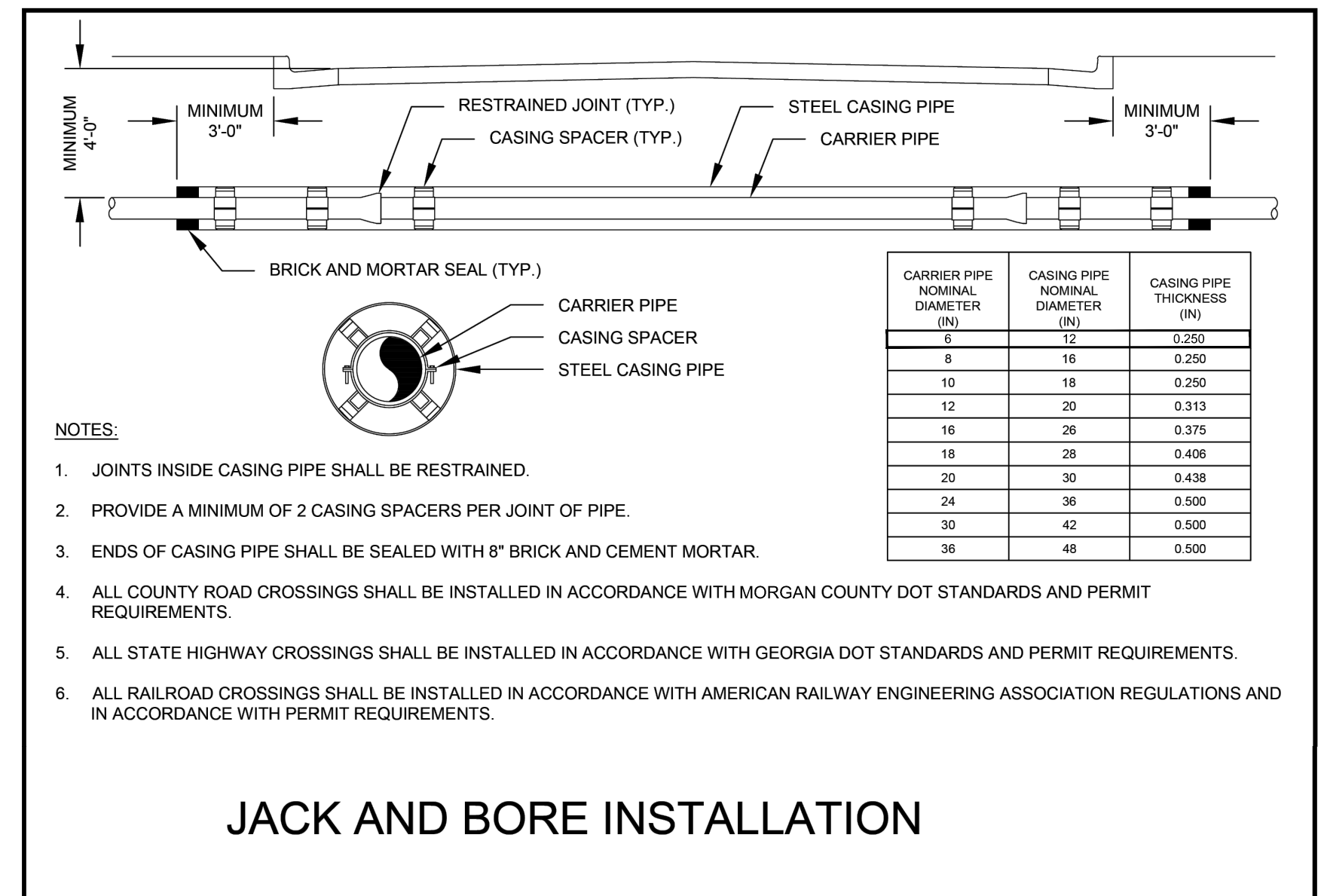
STORM DRAIN AND UTILITY INSTALLATION BY OPEN CUT ACROSS P.C. CONCRETE PAVING



GENERAL NOTES:

- SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION & SUPPLEMENTS THERETO.
- (a) OTHER PAVEMENT REPLACEMENT MATERIALS, SUCH AS HIGH EARLY STRENGTH CONCRETE, MAY BE SUBSTITUTED FOR MATERIALS SHOWN WHEN CALLED FOR IN THE PLANS OR BY THE ENGINEER.
(b) PAYMENT FOR PIPE CULVERT OR UTILITY SHALL INCLUDE SAWING AND/OR CUTTING AND REMOVING EXISTING PAVEMENT AND REPLACING THE PAVEMENT AS SPECIFIED. PAYMENT FOR PIPE OR UTILITY INCLUDES THIS PAVEMENT REPLACEMENT MATERIAL, REGARDLESS OF WHERE MATERIALS SHOWN ARE USED OR WHERE OTHER MATERIALS SUCH AS HIGH EARLY STRENGTH CONCRETE ARE USED.
(c) PAYMENT FOR PIPE CULVERT OR UTILITY INSTALLATION SHALL INCLUDE REPLACING IN KIND ANY PORTIONS OF SIDEWALK, CURB, CURB & GUTTER, MEDIAN PAVING, DRIVEWAYS, ETC., WHICH ARE DISTURBED DUE TO THE INSTALLATION.
- TRENCH DETAIL SHOWN IS GENERAL, SEE STANDARD I030D FOR DETAILS REQUIRED FOR PIPE CULVERT INSTALLATIONS. SEE THE UTILITIES MANUAL FOR UTILITY INSTALLATION REQUIREMENTS.
- AFTER REMOVING EXISTING PAVEMENT, THE SUBBASE AND VERTICAL FACE OF EXISTING PAVING SHALL BE DAMPED (BUT NOT WET), ADDITIONALLY, THE VERTICAL FACE OF THE EXISTING PAVEMENT SHALL BE PAINTED WITH A SOLUTION OF PORTLAND CEMENT AND WATER MIXED TO THE CONSISTENCY OF HEAVY PAINT. THE CONCRETE MIX SHALL THEN BE POURED BEFORE THIS SURFACE DRIES OUT. AFTER CONCRETE IS POURED, IT SHALL BE WORKED INTO ALL CORNERS AND INTO ALL ROUGH SURFACES OF THE EXISTING PAVEMENT.
- WHERE PIPE IS REMOVED, BUT NOT REPLACED, PAYMENT FOR PIPE REMOVAL INCLUDES ALL ITEMS DESCRIBED IN GENERAL NOTE 2., WITH ALL OTHER NOTES AND DETAILS ALSO BEING APPLICABLE.

NOTE: THIS STANDARD IS FOR USE WHERE PERMANENT PAVEMENT PATCHING IS REQUIRED. TEMPORARY PATCHING, IF REQUIRED, SHALL BE ACCORDING TO OTHER DETAILS, SPECIFICATIONS, AND/OR AS DIRECTED BY THE ENGINEER.



DESCRIPTION

DATE

NO.

DATE: 6/1/2026

DESIGNED BY: AARON WADLEY

DRAWN BY: A2ZCE

CHECKED BY: AARON WADLEY

PLANNING
ENGINEERING
CONSTRUCTION

LNCO

MADISON, GEORGIA

AARON.WADLEY@LNCOPEC.COM 706.318.5425

BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

REGISTERED
No. PE27241
PROFESSIONAL
ENGINEER
AARON MICHAEL WADLEY

AARON WADLEY, PE
LEVEL II CERTIFIED
DESIGN PROFESSIONAL
#0000011490
EXPIRES 02-01-2026

SHEET NUMBER:
4.1

DEFINITION

Applying plant residues or other suitable materials, produced on the site if possible, to the soil surface.

CONDITIONS

Mulch or temporary grazing shall be applied to all exposed areas within 14 days of disturbance. Mulch can be used as a singular erosion control device for up to six months, but it shall be applied at the appropriate depth, depending on the material used, anchored, and have a continuous 90% cover or greater of the soil surface. Maintenance shall be required to maintain appropriate depth and 90% cover. Temporary vegetation may be employed instead of mulch if the area will remain undisturbed for greater than six months. If an area will remain undisturbed for greater than six months, permanent vegetative techniques shall be employed.

SPECIFICATIONS

MULCHING WITHOUT SEEDING

This standard applies to graded or cleared areas where seedings may not have a suitable growing season to produce an erosion retardant cover, but can be stabilized with a mulch cover.

Site Preparation

1. Grade to permit the use of equipment for applying and anchoring mulch.
2. Install needed erosion control measures as required such as dikes, diversions, berms, terraces and sediment barriers.
3. Loosen compact soil to a minimum depth of 3 inches.

Mulching Materials

Select one of the following materials and apply at the depth indicated:

1. Dry straw or hay shall be applied at a depth of 2 to 4 inches providing complete soil coverage. One advantage of this material is easy application.

depth of 2 to 3 inches. Organic material from the clearing stage of development should remain on site, be chipped, reduce erosion control costs.

3. Cutback asphalt (slow curing) shall be applied at 1200 gallons per acre (or 1/4 gallon per sq. yd.).
4. Polyethylene film shall be secured over banks or stockpiled soil material for temporary protection. This material can be salvaged and reused.

Applying Mulch

When mulch is used without seeding, mulch shall be applied to provide full coverage of the exposed area.

1. Dry straw or hay mulch and wood chips shall be applied uniformly by hand or by mechanical equipment.
2. If the area will eventually be covered with permanent

the normal amount shall be applied to offset the uptake of nitrogen caused by the decomposition of the organic mulches.

3. Cutback asphalt shall be applied uniformly. Care should be taken in areas of pedestrian traffic due to problems of "tracking in" or damage to shoes, clothing, etc.
4. Apply polyethylene film on exposed areas.

Anchoring Mulch

1. Straw or hay mulch can be pressed into the soil with a disk harrow with the disk set straight or with a special

The edges of the disk should be dull enough not to cut the mulch but to press it into the soil leaving much of it in an erect position. Straw or hay mulch shall be anchored immediately after application. Straw or hay mulch spread with special blower-type equipment may be anchored with emulsified asphalt (Grade AE-5 or SS-1). The asphalt emulsion shall be sprayed onto the mulch as it is ejected from the machine. Use

100 gallons of emulsified asphalt and 100 gallons of water per ton of mulch. Tackifiers and binders can be substituted for emulsified asphalt. Please refer to specification Tt - Tackifiers and Binders. Plastic mesh or netting with mesh no larger than one inch by one inch shall be installed according to manufacturer's specifications.

2. Netting of the appropriate size shall be used to anchor wood waste. Openings of the netting shall not be larger than the average size of the wood waste chips.
3. Polyethylene film shall be anchored trenches at the top as well as incrementally as necessary.

DEFINITION

The planting of perennial vegetation such as trees, shrubs, vines, grasses, or legumes on exposed areas for final permanent stabilization. Permanent perennial vegetation shall be used to achieve final stabilization..

CONDITIONS

Permanent perennial vegetation is used to provide a protective cover for exposed areas including cuts, fills, dams, and other denuded areas.

SPECIFICATIONS

Grading and Shaping

Grading and shaping may not be required where hydraulic seeding and fertilizing equipment is to be used. Vertical banks shall be sloped to enable plant establishment.

When conventional seeding and fertilizing are to be done, grade and shape where feasible and practical, so that equipment can be used safely and efficiently during seedbed preparation, seeding, mulching and maintenance of the vegetation.

concentrations of water that will cause excessive soil erosion shall be diverted to a safe outlet. Diversions and other treatment practices shall conform with the appropriate standards and specifications.

Seedbed Preparation

Seedbed preparation may not be required where hydraulic seeding and fertilizing equipment is to be used. When conventional seeding is to be used, seedbed preparation will be done as follows:

Broadcast plantings

1. Tillage at a minimum, shall adequately loosen the soil to a depth of 4 to 6 inches; alleviate compaction; incorporate line and fertilizer; smooth and firm the soil; allow for the proper placement of seed, sprigs, or plants; and allow for the anchoring of straw or hay mulch if a disk is to be used.
2. Tillage may be done with any suitable equipment.
3. Tillage should be done on the contour where feasible.

surface shall be pitted or trenched across the slope with appropriate hand tools to provide two places 6 to 8 inches apart in which seed may lodge and germinate. Hydraulic seeding may also be used.

Individual Plants

1. Where individual plants are to be set, the soil shall be prepared by excavating holes, opening furrows or dibble planting.
2. For nursery stock plants, holes shall be large enough to accommodate roots without crowding.
3. Where pine seedlings are to be planted, subsoil under the row 36 inches deep on the contour four to six months prior to planting. Subsoiling should be done when the soil is dry, preferably in August or September.

Planting

Hydraulic Seeding

Mix the seed (inoculated if needed), fertilizer, and wood cellulose or wood pulp fiber mulch with water and apply in a slurry uniformly over the area to be treated. Apply within one hour after the mixture is made.

Conventional Seeding

Seeding will be done on a freshly prepared and firmed seedbed. For broadcast planting, use a cultipacker seeder, drill, rotary seeder, other mechanical seeder, or hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with 1/8 to 1/4 inch of soil for small seed and 1/2 to 1 inch for large seed when using a cultipacker or other suitable equipment.

No-Till Seeding

No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent (perennial) species. No-till seeding shall be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth.

Individual Plants

Shrubs, vines and sprigs may be planted with appropriate planters or hand tools. Pine trees shall be planted manually in the subsoil furrow. Each plant shall be set in a manner that will avoid crowding the roots. Nursery stock plants shall be planted at the same depth or slightly deeper than they grew at the nursery. The tips of vines and sprigs must be at or slightly above the ground surface. Where individual holes are dug, fertilizer shall be placed in the bottom of the hole, two inches of soil shall be added and the plant shall be set in the hole.

Mulching

Mulch is required for all permanent vegetation applications. Mulch applied to seeded areas shall achieve 75% soil cover. Select the mulching material from the following and apply as indicated:

1. Dry straw or dry hay of good quality and free of weed seeds can be used. Dry straw shall be applied at the rate of 2 tons per acre. Dry hay shall be applied at a rate of 2 1/2 tons per acre.
2. Wood cellulose mulch or wood pulp fiber shall be used with hydraulic seeding. It shall be applied at the rate of 500 pounds per acre. Drystraw or dry hay shall be applied (at the rate indicated above) after hydraulic seeding.
3. One thousand pounds of wood cellulose or wood pulp fiber, which includes a tackifier, shall be used with hydraulic seeding on slopes 3/4:1 or steeper.
4. Serious Lespedeza hay containing mature seed shall be applied at a rate of three tons per acre.
5. Pine straw or pine bark shall be applied at a thickness of 3 inches for bedding purposes. Other suitable materials in sufficient quantity may be used where ornamentals or other ground covers are planted. This is not appropriate for seeded areas.
6. When using temporary erosion control blankets or block sod, mulch is not required.
7. Bituminous treated roving may be applied on planted areas on slopes, in ditches or dry waterways to prevent erosion. Bituminous treated roving shall be applied within 24 hours after an area has been planted. Application rates and materials must meet Georgia Department of Transportation specifications.

Wood cellulose and wood pulp fibers shall not contain germination or growth inhibiting factors. They shall be evenly dispersed when agitated in water. The fibers shall contain a dye to allow visual metering and aid in uniform application during seeding.

Applying Mulch

Straw or hay mulch will be spread uniformly within 24 hours after seeding and/or planting. The mulch may be spread by blower-type spreading equipment, other spreading equipment or by hand. Mulch shall be applied to cover 75% of the soil surface.

Wood cellulose or wood pulp fibers shall be applied uniformly with hydraulic seeding equipment.

Anchoring Mulch

Anchor straw or hay mulch immediately after application by one of the following methods:

1. Emulsified asphalt can be (a) sprayed uniformly onto the mulch as it is ejected from the blower machine or (b) sprayed on the mulch immediately following mulch application when straw or hay is spread by methods other than special blower equipment.

The combination of asphalt emulsion and water shall consist of a homogeneous mixture satisfactory for spraying. The mixture shall consist of 100 gallons of grade SS-1h or CSS-1h emulsified asphalt and 100 gallons of water per ton of mulch.

Care shall be taken at all times to protect state waters, the public, adjacent property, pavements, curbs, sidewalks, and all other structures from asphalt discoloration.

2. Hay and straw mulch shall be pressed into the soil immediately after the mulch is spread. A special "packer disk" or disk harrow with the disks set straight may be used. The disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disks shall be dull enough to press the mulch into the ground without cutting it, leaving much of it in an erect position. Mulch shall not be plowed into the soil.
3. Synthetic tackifiers or binders approved by GDOT shall be applied in conjunction with or immediately after the mulch is spread. Synthetic tackifiers shall be mixed and applied according to manufacturer's specifications. Refer to Tt - Tackifiers and Binders.
4. Rye or wheat straw may be included with Fall and Winter plantings to stabilize the mulch. They shall be applied at a rate of one-quarter to one half bushel per acre.
5. Plastic mesh or netting with mesh no larger than one inch by one inch may be needed to anchor straw or hay mulch on unstable soils and concentrated flow areas. These materials shall be installed and anchored according to manufacturer's specifications.

Irrigation

Irrigation shall be applied at a rate that will not cause runoff.

SEEDING RATES FOR PERMANENT SEEDING

SPECIES	RATE Per 1,000 sq.ft.	RATE Per Acre *	PLANTING DATES **
BAHIA	1.4 POUNDS	60 LBS.	1/1-12/31
BERMUDA	0.2 POUND	10 LBS.	2/15-7/1
CENTAUDE	BLOCK SOD ONLY	BLOCK SOD ONLY	4/1-7/1
LESPEDEZA	1.7 POUNDS	75 LBS.	1/1-12/31
WEEPING LOVE GRASS	0.1 POUND	4 LBS.	2/1-6/15
SWITCH GRASS	0.9 POUND	40 LBS.	3/15-6/1

* Unusual site conditions may require heavier seeding rates.
** Seeding dates may need to be altered to fit temperature variations and conditions.

DEFINITION

The establishment of temporary vegetative cover with fast growing seedlings for seasonal protection on disturbed or denuded areas.

CONDITIONS

Temporary grazing, instead of mulch, can be applied to rough graded areas that will be exposed for less than six months. Temporary vegetative measures should be coordinated with permanent measures to assure economical and effective stabilization. Most types of temporary vegetation are ideal to use as companion crops until the permanent vegetation is established.

SEEDING RATES FOR TEMPORARY SEEDING

SPECIES	RATE Per 1,000 sq.ft.	RATE Per Acre *	PLANTING DATES **
Rye	3.9 pounds	3 bu.	9/1-3/1
Reygrass	0.9 pound	40 lbs.	8/15-4/1
Annual Lespedeza	0.9 pound	40 lbs.	1/15-3/15
Weeping Lovegrass	0.1 pound	4 lbs.	2/15-6/15
Sudangrass	1.4 pounds	60 lbs.	3/1-8/1
Brownt Nitel	0.9 pound	40 lbs.	4/1-7/15
Wheat	4.1 pounds	3 bu.	9/15-2/1

* Unusual site conditions may require heavier seeding rates
** Seeding dates may need to be altered to fit temperature variations and conditions.

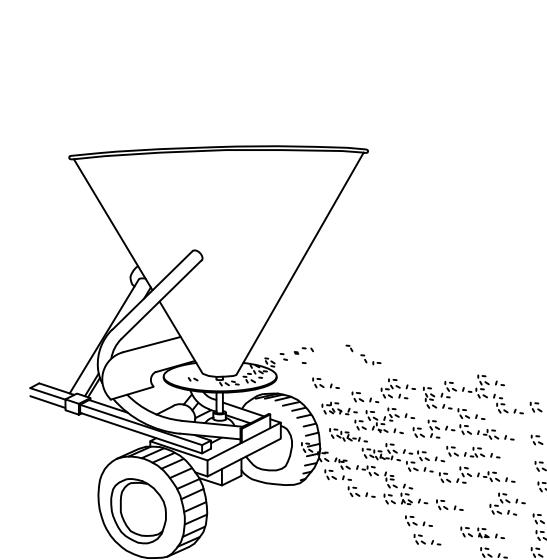
SEDIMENT & EROSION CONTROL NOTES & CONSTRUCTION SEQUENCING

1. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES FOR ALL ROAD AND DRIVE ENTRANCES. STREETS SHALL BE CLEARED DAILY.
2. INSTALL SEDIMENT BARRIERS/SWALES/DITCHES/DIKES AT DOWN SLOPE AREAS FROM ALL PROPOSED GRADING OPERATIONS, AND INSTALL OTHER SEDIMENTATION AND EROSION CONTROL STRUCTURES OR MEASURES AS SHOWN ON THE DRAWINGS.
3. LAND DISTURBANCE SHALL BE LIMITED TO ONLY THAT AREA NECESSARY FOR DEVELOPMENT. NO MORE THAN FIVE (5) ACRES OF UNPROTECTED SOIL SHALL BE DISTURBED AT ONE TIME. PREVIOUS EARTHWORK SHALL BE STABILIZED AS SPECIFIED BEFORE ADDITIONAL AREA IS EXPOSED.
4. CLEAR EXISTING TREES AND VEGETATION FROM AREAS TO BE EXCAVATED OR FILLED, THEN STRIP AND STOCKPILE TOPSOIL FROM ALL AREAS TO BE DISTURBED. SEED STOCKPILED TOPSOIL WITH TEMPORARY RYEGRASS COVER AS SPECIFIED BELOW (SEE NOTE 8), AND ERECT A SILT FENCE AROUND THE STOCKPILE.
5. PROTECT ALL TREES WHICH ARE TO REMAIN AND WHICH ARE IN OR NEAR CONSTRUCTION AREAS.
6. PERFORM NECESSARY EXCAVATION OR FILL OPERATIONS TO BRING SITE TO DESIRED SUBGRADE.
7. INSTALL SEDIMENT BARRIERS AROUND ALL STORM DRAIN INLETS, OR MODIFY SEDIMENT CONTROL MEASURES INSTALLED IN #2 ABOVE, AND MAINTAIN UNTIL ALL DISTURBED AREAS ARE STABILIZED WITH VEGETATION AND ALL PAVEMENTS ARE PAVED WITH A BASE COURSE.
8. TEMPORARILY SEED ALL DISTURBED AREAS WHICH WILL REMAIN UNDISTURBED FOR A PERIOD OF 14 DAYS OR MORE AND WHICH WILL NOT BE UNDER CONSTRUCTION WITHIN 30 DAYS IN ACCORDANCE WITH SPECIFICATION FOR VEGETATIVE ESTABLISHMENT.
9. IF CONSTRUCTION IS SUSPENDED OR COMPLETED, ALL DISTURBED AREAS SHALL BE SEEDDED AND MULCHED IMMEDIATELY. ALL SLOPES STEEPER THAN ONE ON THREE (V/H) AND PERIMETER TRENCHES AND TRAP EMBANKMENTS SHALL, ON COMPLETION, BE IMMEDIATELY STABILIZED WITH TEMPORARY SEEDING AND MULCHING.
10. AFTER COMPLETION OF SITE CONSTRUCTION, FINE GRADE AND SPREAD TOPSOIL ON ALL LAWN AREAS AND SEED WITH PERMANENT LAWN MIX AS DISCUSSED ON THE SPECIFICATIONS FOR VEGETATIVE ESTABLISHMENT ON THIS SHEET.
11. DURING THE PROGRESS OF CONSTRUCTION, MAINTAIN ALL SEDIMENT TRAPS, BARRIERS, AND FILTERS AS NECESSARY TO PREVENT THEIR BEING CLOGGED UP WITH SEDIMENT.
12. AFTER PAVEMENTS ARE INSTALLED AND PERMANENT VEGETATIVE COVER AND PLANTINGS ARE ESTABLISHED, REMOVE SEDIMENT BARRIERS AND SEED THOSE DISTURBED AREAS.
13. MAINTAIN ALL SEEDDED AND PLANTED AREAS TO INSURE A VIABLE STABILIZED VEGETATIVE COVER.
14. STRUCTURAL MEASURES MUST BE MAINTAINED TO BE EFFECTIVE. IN GENERAL, THESE MEASURES MUST BE PERIODICALLY INSPECTED TO INSURE STRUCTURAL INTEGRITY, TO DETECT VANDALISM DAMAGE, AND FOR CLEANING AND REPAIR WHENEVER NECESSARY.
15. DURING CONSTRUCTION, ALL STRUCTURES SHOULD BE INSPECTED WEEKLY AND AFTER EVERY RAIN. REMOVE ACCUMULATED SEDIMENT AND STOCKPILE AND STABILIZE IN AN AREA NOT SUBJECT TO FURTHER EROSION.
16. AFTER CONSTRUCTION IS COMPLETED, PERMANENT SEDIMENT OR EROSION CONTROL STRUCTURES SHOULD BE INSPECTED AT LEAST SEMI-ANNUALLY AND AFTER EVERY RAIN.

EROSION CONTROL STANDARD NOTES PER GSWCC

1. THE PRIMARY PERMITTEE MUST RETAIN THE DESIGN PROFESSIONAL WHO PREPARED THE PLAN, EXCEPT WHEN THE PRIMARY PERMITTEE HAS REQUESTED IN WRITING AND GAEPD HAS AGREED TO AN ALTERNATE DESIGN PROFESSIONAL, TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WHICH THE DESIGN PROFESSIONAL DESIGNED WITHIN SEVEN (7) DAYS AFTER INSTALLATION. THE DESIGN PROFESSIONAL SHALL DETERMINE IF THESE BMPs HAVE BEEN INSTALLED AND ARE BEING MAINTAINED AS DESIGNED. THE DESIGN PROFESSIONAL SHALL REPORT THE RESULTS OF THE INSPECTION TO THE FUTURE PERMITTEE WITHIN SEVEN (7) DAYS AND THE PERMITTEE MUST CORRECT ALL DEFICIENCIES WITHIN TWO (2) BUSINESS DAYS OF RECEIPT OF THE INSPECTION REPORT FROM THE DESIGN PROFESSIONAL UNLESS WEATHER RELATED SITE CONDITIONS ARE SUCH THAT ADDITIONAL TIME IS REQUIRED.
2. NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS.
3. NO VARIANCES ARE REQUESTED AT THIS TIME
4. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.
5. WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.
6. FUEL AND PETROLEUM PRODUCTS AND CONTAINERS MAY NOT BE KEPT ON-SITE, EXCEPT DURING ACTIVE WORK. RE-FUELING SHOULD BE PERFORMED SAFELY AND AVOID SPILLING OR OVER-TOPPING. IF ANY FUEL IS SPILLED, THE AFFECTED SOIL MUST BE REMOVED AND DISPOSED OF IN AN APPROPRIATE MANNER.
7. ALL DISTURBED AREAS THAT HAVE NOT OBTAINED 85% VEGETATION WITH PERENNIAL GRASS WILL BE SODDED UPON FINAL COMPLETION TO MINIMIZE AND CONTRIBUTE FUTURE POLLUTANTS INTO THE RECEIVING WATERS.
8. POTENTIAL POLLUTANT SOURCES INCLUDE, BUT ARE NOT LIMITED TO: PORTABLE TOILET, FUEL, FERTILIZER, CONCRETE WASHOUT, PESTICIDE, AND VARIOUS CHEMICALS USED IN CONSTRUCTION AND CLEANING. THESE SHOULD NEVER BE LEFT UNATTENDED AND NEVER USED IN A LOCATION THAT COULD DIRECTLY IMPACT A STATE WATERS. A DOUBLE ROW, TYPE C SILT FENCE IS BEING UTILIZED TO CAPTURE ANY SOIL. EXISTING GRASSING SHOULD BE CUT HIGH TO FURTHER CAPTURE ANY POLLUTANTS.
9. ALL CONSTRUCTION AND LANDSCAPE MATERIAL MUST REMAIN COVERED WHEN NOT IN ACTIVE USE. IF PLASTIC OR OTHER LIGHTWEIGHT MATERIAL IS USED, IT MUST BE WEIGHED DOWN OR STRAPPED.
10. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.
11. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
12. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
13. WASHOUT OF THE CONCRETE TRUCK DRUM AT THE CONSTRUCTION SITE IS PROHIBITED.
14. POND WILL BE USED DURING CONSTRUCTION AS A TEMPORARY SEDIMENT POND TO HANDLE 67 CUBIC YARDS OF SEDIMENT, TO BE CLEARED OUT AT 2/3 FULL.

Ds1 DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)



DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)

ESTABLISHING TEMPORARY VEGETATIVE COVER WITHOUT GROWING GROUND COVER ON DISTURBED OR BARE LAND

Ds2

ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING OR MULCH

SITE PREPARATION

- GRADING AND SHAPING
- SEEDBED PREPARATION
- APPLY LIME AND FERTILIZER
- PLANT SEEDING, AS SPECIFIED BY REGION AND SEASON
- APPLY MULCHING MATERIAL IF NEEDED
- IRRIGATE IF NEEDED WITHOUT CAUSING EROSION

* PLANTING DATES DEPEND ON SPECIES AND REGION (MOUNTAIN, PIEDMONT OR COASTAL)

* ALL SEEDING NUMBERS ARE ALONE FOR MIXTURE NUMBER SEE MANUAL FOR EROSION AND SEDIMENT TABLE 6-24.1 PAGES 6-134 - 6-136

* UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES.

SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

TEMPORARY SEEDING DETAIL NTS

SLOPE STABILIZATION, SEEDING METHOD & MULCHING

SLOPES OR 4:1 OR GREATER (HORIZONTAL : VERTICAL)

SLOPES SHALL BE HYDROSEEDING WITH THE MIXTURES AND RATES INDICATED IN THE PERMANENT SEEDING MIXTURE SCHEDULE. STRAW OR HAY MULCH SHALL BE APPLIED AT A RATE OF 2,000 LBS./ACRE. STRAW OR HAY MULCH SHALL BE ANCHORED WITH Bio-Mesh60 NETTING AS MANUFACTURED BY ROLANKA INTERNATIONAL OR APPROVED EQUIVALENT. NETTING TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.

GENTLE SLOPE AND FLAT AREAS

AREA SHALL BE SEEDDED BY HYDROSEEDING OR BROADCASTING WITH THE MIXTURES AND RATES INDICATED ON THE PERMANENT SEEDING MIXTURE SCHEDULE. HYDROSEEDING AREAS SHALL BE MULCHED WITH A WOOD FIBER MULCH APPLIED AT A RATE OF 500 LBS./ACRE. BROADCAST AREAS SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 2,000 LBS./ACRE. AREAS SEEDDED BY BROADCASTING SHALL BE LIGHTLY RAKED AND PACED PRIOR TO PLACING MULCH.

AREAS REMAINING DISTURBED FOR 14 DAYS OR MORE SHALL BE STABILIZED AS FOLLOWS:

SCARIFY SOILS IF COMPACTED, LIME TO pH OF 6.0 IF REQUIRED, FERTILIZE WITH 600 LBS./ACRE. 5-10-10 FERTILIZER IF REQUIRED. SEED WITH SPECIES AND RATE SHOWN BELOW. MULCH WITH HAY OR STRAW AT A RATE OF 2,000 LBS./ACRE. ANCHOR MULCH WITH NETTING OF WOOD FIBER OR JUTE IF STEEP SLOPE OR HIGH POTENTIAL FOR EROSION.

SPECIES APPLICATION RATE
RYEGRASS (ANNUAL OR PERENNIAL) 30 LBS./ACRE
(USE WINTER RYE IF SEEDING IN OCT./NOV.) (0.7 LBS./1,000 SF)

SOIL SERIES

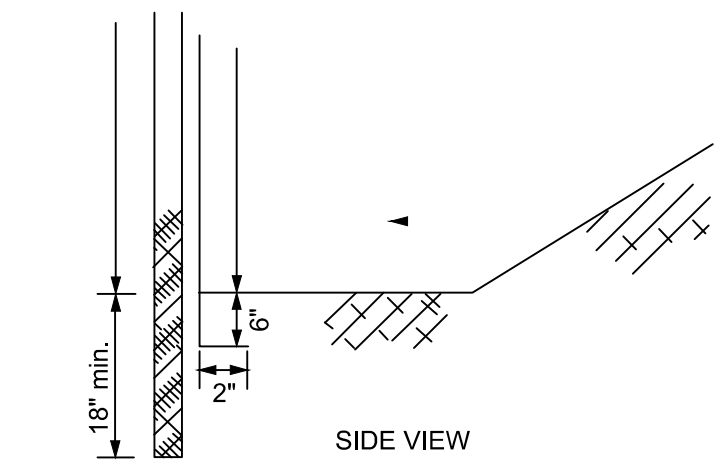
Ur - URBAN LAND.



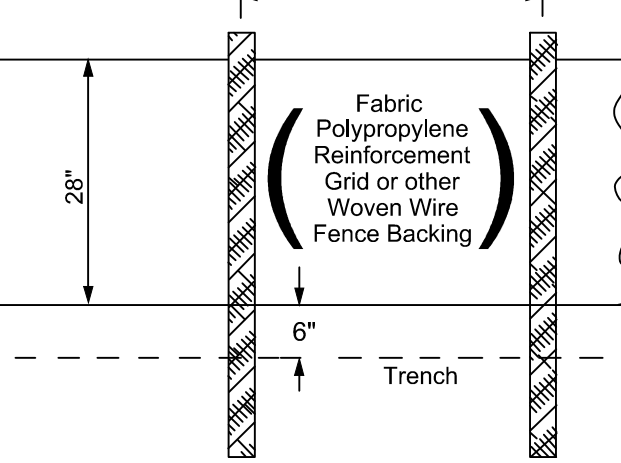
Know what's below.
Call before you dig.

MULCH, LIME, SEEDING AND FERTILIZER APPLICATION RATES

	Area	Sowing Season	Species	Seed	Fertilizer	Lime	Mulch-Ds1
Ds3	Flat to rolling terrain with slopes less than 3:1	1/1-3/1 3/2-6/1 6/2-9/1 9/2-12/31	Common Bermuda Common Bermuda Common Bermuda Common Bermuda	5 lb/acre unhulled and 5 lb/acre hulled 10 lb/acre unhulled and 5 lb/acre hulled 5 lb/acre unhulled and 5 lb/acre hulled 10 lb/acre unhulled	35 lb/1000 sq. ft (6-12-12)	1-2 tons/acre dry straw 2.5 tons/acre-dry hay	



FRONT VIEW



SILT FENCE - TYPE C-POP NTS

SD1

ESTABLISHING A PERMANENT VEGETATIVE COVER WITH FAST GROWING SEEDINGS



APPLICABLE ON HIGHLY ERODIBLE OR SEVERELY ERODED AREAS, SOMETIMES CALLED "CRITICAL AREAS" INCLUDING:

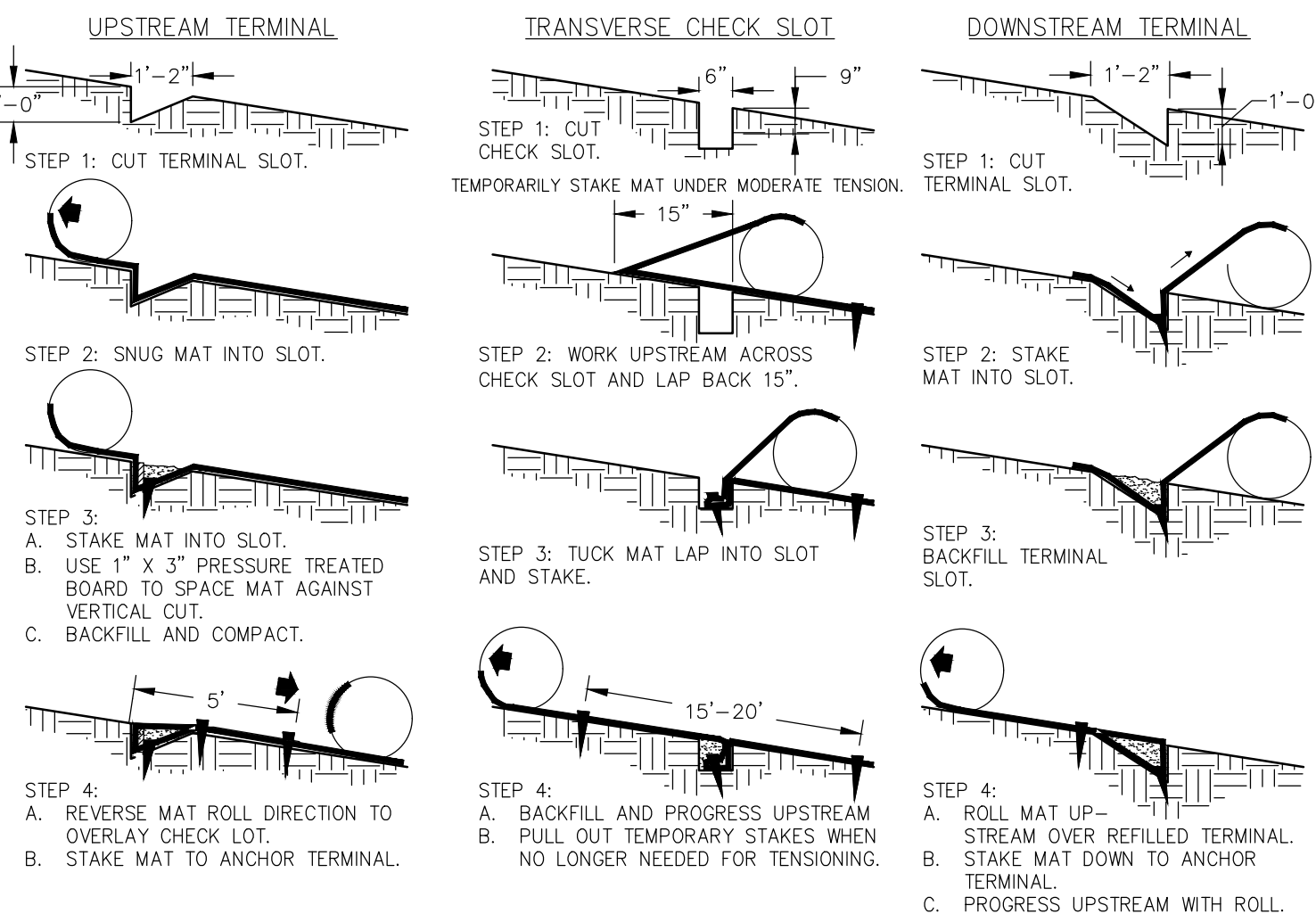
- CUT OR FILL SLOPES
- EARTH SPILLWAYS
- BORROW AREAS
- CHANNEL BANKS
- BERMS
- ROADSIDES
- SPILL AREAS
- GULLED LANDS

Ds3

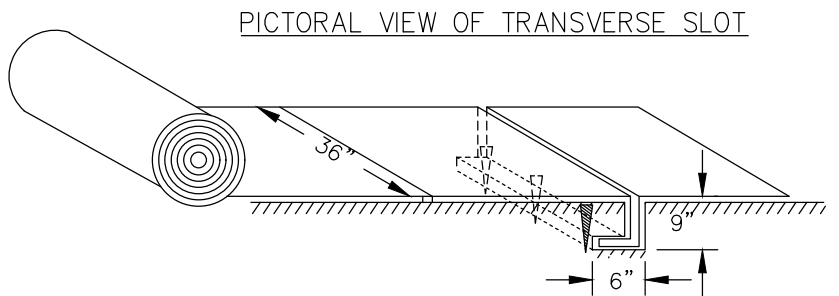
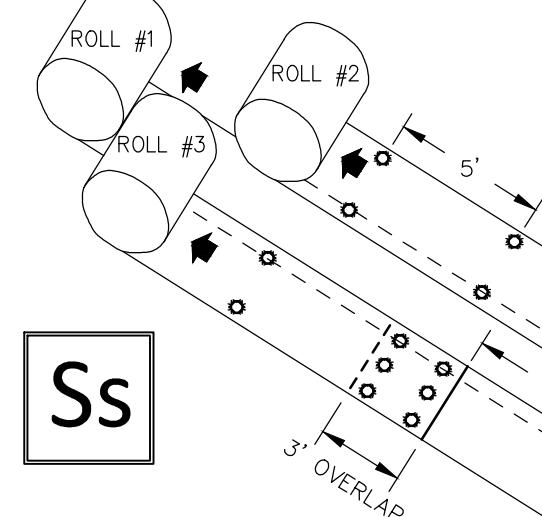
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDINGS) NTS

TYPICAL INSTALLATION GUIDELINES FOR ROLLED EROSION CONTROL PRODUCTS (RECP)

BLANKET AND MATTING CROSS-SECTIONS



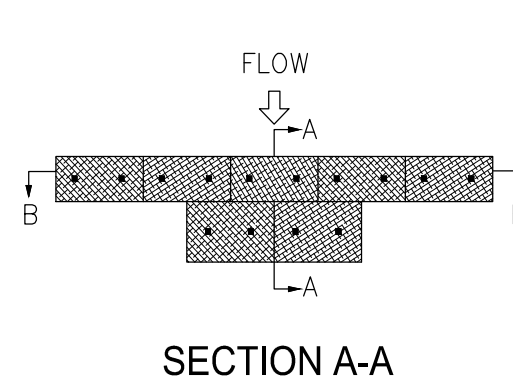
SEQUENTIAL ROLL RUN OUT IN CHANNELS



NOTES:

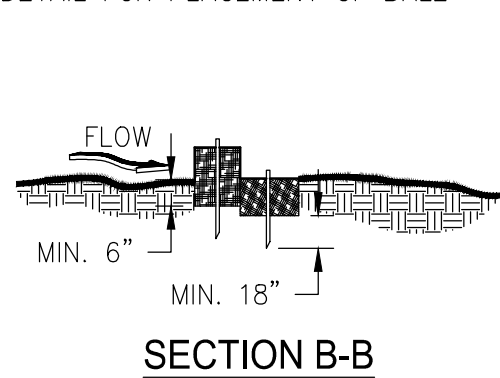
1. START AT DOWNSTREAM TERMINAL AND PROGRESS UPSTREAM.
2. FIRST ROLL IS CENTERED LONGITUDINALLY IN MID-CHANNEL AND PINNED WITH TEMPORARY STAKES TO MAINTAIN ALIGNMENT.
3. SUBSEQUENT ROLLS FOLLOW IN STAGGERED SEQUENCE BEHIND THE FIRST ROLL. USE THE CENTER ROLL FOR ALIGNMENT TO THE CHANNEL CENTER.
4. WORK OUTWARDS FROM THE CHANNEL CENTER TO THE EDGE.
5. USE 3" OVERLAPS AND STAKE AT 5' INTERVALS ALONG THE SEAMS.
6. USE 3" OVERLAPS AND SINGLE DOWNSTREAM TO CONNECT THE LINING AT THE ROLL ENDS.

PLAN



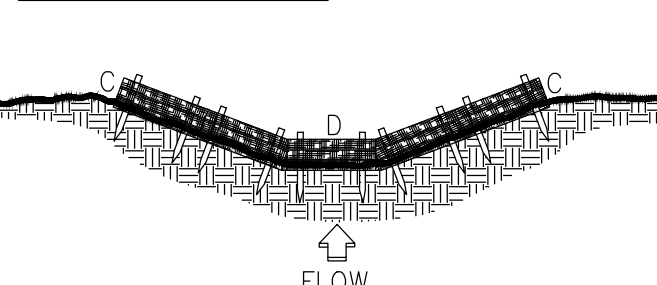
SECTION A-A

SEE DETAIL FOR PLACEMENT OF BALE



SECTION B-B

Cd-Hb



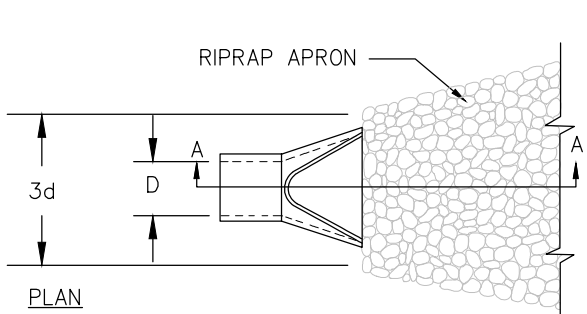
NOTES:

1. BALES SHOULD BE BOUND WITH WIRE OR NYLON STRING AND SHOULD BE PLACED IN ROWS WITH BALE ENDS TIGHTLY ADJUTING THE ADJACENT BALES.
2. REMOVE #4 REBAR AFTER STRAW BALES ARE NO LONGER IN PLACE.
3. POINT C OF SECTION B-B SHOULD ALWAYS BE HIGHER THAN POINT D.

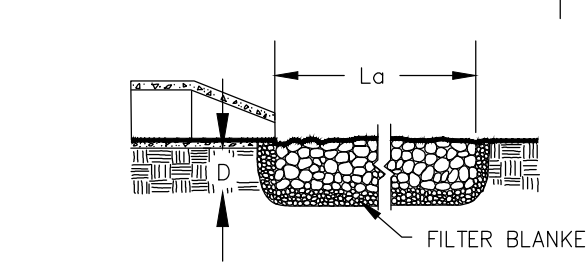
RIPRAP OUTLET PROTECTION

PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL

PIPE OUTLET TO WELL DEFINED CHANNEL



PLAN

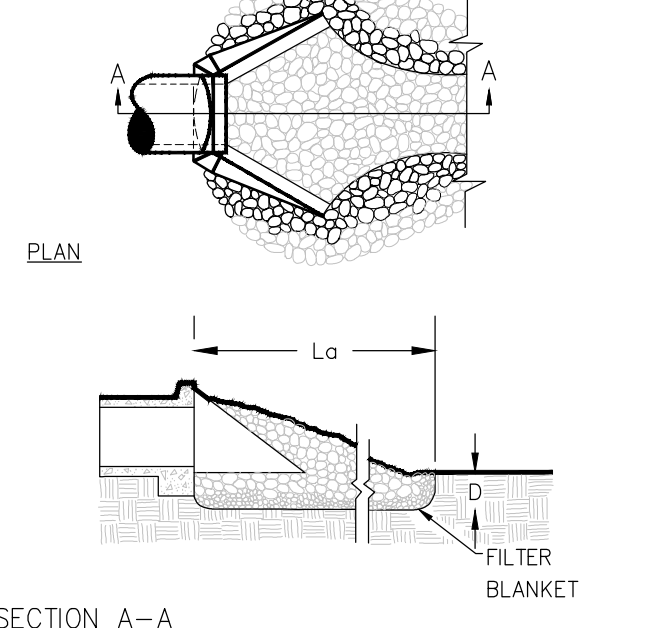


SECTION A-A

NOTES:

1. L_a IS THE LENGTH OF THE RIPRAP APRON.
2. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".
3. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK (WHICHEVER IS LESS).
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND THE SOIL FOUNDATION.

St



SECTION A-A

PLANNING
ENGINEERING
CONSTRUCTION

LNC

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BOSTWICK WATER LINE REPLACEMENT

MORGAN COUNTY, GEORGIA

GEORGIA REGISTERED PROFESSIONAL ENGINEER

NO. PE37241

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DESIGN PROFESSIONAL
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EXPIRES 02-01-2026