

SEWER FORCE MAIN CONSTRUCTION SPECIFICATIONS

- ALL IMPROVEMENTS SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, MARICOPA ASSOCIATION OF GOVERNMENTS AND THE UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, MARICOPA ASSOCIATION OF GOVERNMENTS, LATEST EDITION; THE ARIZONA ADMINISTRATIVE CODE, TITLE 18, CHAPTER 9, ARTICLE 3, PART E. "TYPE 4 GENERAL PERMITS" (R18-9-E301); AND THE REQUIREMENTS OF GREEN VALLEY WATER (GVW).
- ALL FACILITIES, MATERIALS, AND WORKMANSHIP ARE SUBJECT TO THE INSPECTION, APPROVAL AND ACCEPTANCE OF THE DISTRICT MANAGER OF GREEN VALLEY WATER IN ORDER TO ASSURE THE INTEGRITY OF THE GREEN VALLEY WATER COLLECTION SYSTEM. ANY WORK AND MATERIALS NOT IN CONFORMANCE WITH THE SPECIFICATIONS AND DETAILS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE. ALL WORK WILL BE WARRANTED BY THE CONTRACTOR FOR A PERIOD OF TWO (2) YEARS FROM ISSUANCE OF FINAL ACCEPTANCE.
- ANY DEVIATION FROM THE PLANS, SPECIFICATIONS OR STANDARD DETAILS MUST BE APPROVED IN WRITING BY THE ENGINEER AND THE DISTRICT MANAGER OF GREEN VALLEY WATER, PRIOR TO INSTALLATION AND ACCEPTANCE.
- WHEN WATER LINES AND SEWER FORCE MAINS ARE LAID PARALLEL TO EACH OTHER, THE PIPE SHALL BE LAID IN ACCORDANCE WITH AAC R18-5-502.C.
- WHEN A SEWER FORCE MAIN CROSSES UNDER A WATER LINE THAT IS WITHIN 6-FEET OF THE SEWER FORCE MAIN, THE SEWER FORCE MAIN SHALL BE ENCASED IN ACCORDANCE WITH ARIZONA ADMINISTRATIVE CODE R18-5-502 AND WATER AND SANITARY SEWER CROSSING DETAIL THIS SHEET. SEWER FORCE MAINS SHALL NOT BE CONSTRUCTED ABOVE WATER LINES.
- ALL SEWER TRENCH EXCAVATION, BACK FILLING, AND COMPACTION SHALL BE IN ACCORDANCE WITH MAG SPEC. SECTION 601. BACKFILL TYPE SHALL CONFORM TO TABLE 601-2 OF THE MAG SPEC AND AS APPROVED BY THE ENGINEER. SEE TYPICAL SEWER TRENCH DETAIL, THIS SHEET. BACKFILL COMPACTION TESTING WILL BE THE RESPONSIBILITY OF CONTRACTOR.
- ALL PAVEMENT REPLACEMENT SHALL BE IN ACCORDANCE WITH MAG SPEC., SECTION 336. REPLACEMENT TYPE SHALL CONFORM TO MAG STANDARD DETAIL 200 AND THE TOWN OF PAYSON STREET PAVEMENT & SURFACE REPLACEMENT DETAILS.
- ALL SEWER FORCE MAIN TESTING SHALL BE IN CONFORMANCE WITH GREEN VALLEY WATER SPECIFICATIONS. 100% OF ALL SEWER FORCE MAINS WILL BE TESTED USING HYDROSTATIC TESTING IN ACCORDANCE WITH AAC R18-9-E301.D.4.f, AT A PRESSURE 50 POUND PER SQUARE INCH OR MORE ABOVE DESIGN WORKING PRESSURE. GREEN VALLEY WATER SHALL WITNESS AND APPROVE ALL SEWER FORCE MAIN FOR LEAKAGE. ANY DEFICIENCIES MUST BE CORRECTED PRIOR TO USE OF THE SYSTEM AND FINAL ACCEPTANCE.
- ALL SEWER FORCE MAIN CONSTRUCTION SHALL BE IN CONFORMANCE WITH AAC R18-9-E301.
- ALL LOW PRESSURE SEWER LINE SHALL BE POLYVINYL CHLORIDE (PVC), HIGH DENSITY POLYETHYLENE (HDPE), OR DUCTILE IRON PIPE (D.I.), ACCORDING TO THE FOLLOWING SCHEDULE:

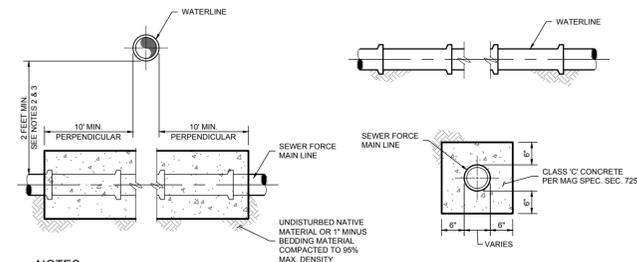
DIAMETER	MATERIAL	SPECIFICATION
1.5" - 3"	HDPE	OUTSIDE DIAMETER CONTROLLED, DR-11, 200 PSI MIN. PRESSURE RATED, MEETING ASTM D3035
> 3"	PVC	PVC PIPE SHALL BE SINGLE GASKET, INTEGRAL BELL, C900, DR-14, 305 PSI PRESSURE CLASS, AND BE APPROVED BY THE NATIONAL SANITATION FOUNDATION.
	D.I.	D.I. PIPE AND FITTINGS SHALL BE CLASS 50, EPOXY LINED, STANDARD THICKNESS, AND BITUMINOUS COATED IN ACCORDANCE WITH AWWA C104, TY-TOTE TYPE MECHANICAL JOINT OR C.I.-PVC TYPE. A

A CERTIFICATE SHALL BE SUPPLIED BY THE MANUFACTURER ATTESTING THE PIPE MEETS THE REQUIRED ASTM SPECIFICATIONS.

- CERTIFICATE SHALL BE SUPPLIED BY THE MANUFACTURER ATTESTING THAT THE PIPE MEETS THE REQUIRED ASTM REQUIREMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL LOCATIONS OF EXISTING UNDERGROUND UTILITIES WHICH MAY CONFLICT WITH THE SEWER FORCE MAIN CONSTRUCTION.
- ALL APPURTENANCES LOCATED ON PRIVATE PROPERTY REQUIRED TO BE REMOVED FOR CONSTRUCTION SHALL BE REPLACED TO THEIR PRIOR CONDITION.
- THE CONTRACTOR SHALL OBTAIN PERMITS AS REQUIRED, WITH THE EXCEPTION OF PERMITS NECESSARY FOR BLASTING.
- THE CONSTRUCTION PROJECT OWNER/CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY CONSTRUCTION STAKING TO CONSTRUCT THIS PROJECT AND THE ACCURACY THEREOF. THE ENGINEER WILL PROVIDE SURVEY CONTROL POINTS AS MAY BE NECESSARY FOR CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS (TWO WORKING DAYS) IN ADVANCE OF STAKING. THE CONTRACTOR SHALL NOTIFY GREEN VALLEY WATER THAT CONSTRUCTION IS COMMENCING AT A MINIMUM OF TWO WORKING DAYS PRIOR TO CONSTRUCTION START.
- ONE SET FULL SIZE SET OF "RECORD DRAWINGS" IN A .PDF FILE FORMAT, MIN. 400 DPI, FOR THE SEWER FORCE MAIN IMPROVEMENTS SHALL BE SUBMITTED TO GREEN VALLEY WATER BEFORE THEIR FINAL ACCEPTANCE.
- ALL SEWER FORCE MAINS SHALL HAVE A TRACE WIRE PER DETAIL ON THIS SHEET.
- ALL SEWER FORCE MAINS LINES SHALL HAVE MINIMUM COVER OF 3.0 FEET OVER THE TOP OF THE PIPE.
- TRAFFIC CONTROL WILL BE ESTABLISHED FOR ALL CONSTRUCTION WITHIN PUBLIC RIGHTS-OF-WAY, IN CONFORMANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD), AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THRUST BLOCKING PER MAG STANDARD DETAILS 380 AND 381 SHALL BE PLACED AT CHANGES IN DIRECTION OF THE SEWER FORCE MAIN. "MEG-A-LUGS" APPLIED IN ACCORDANCE WITH MAG STANDARD DETAILS 303-1 AND 303-2 MAY BE USED IN LIEU OF CONCRETE THRUST BLOCKING.
- ALL PLUG VALVES SHALL BE PRATT 'BALLCENTRIC' SERIES 601S STAINLESS STEEL, STAINLESS SEAT, BUNA-NITRILE, MECHANICAL JOINT END PLUG VALVES WITH BURIED SERVICE WORM GEAR ACTUATORS WITH 2" NUT.
- VALVE BOXES SHALL BE SLIDING, ADJUSTABLE, CAST IRON, MIN. 30,000 PSI EXTENSION TYPE ROADWAY BOXES WHEN NOT LOCATED IN TRAFFIC AREAS. VALVE BOXES LOCATED OUT OF TRAFFIC AREAS SHALL PROTRUDE 2" ABOVE FINISHED GRADE, PER DETAIL THIS SHEET. ALL VALVE BOXES TO BE LOCATED IN TRAFFIC AREAS SHALL BE MAG STD. DTL. 391-1, TYPE "C". ALL VALVE BOX COVERS SHALL BE CLEARLY MARKED "SEWER".
- THE ALLOWABLE BENDING OF PVC PIPE BASED ON C900, DR-14, 305 PSI PRESSURE CLASS PIPE IN 20 FOOT LENGTH IS AS FOLLOWS:

PIPE DIAMETER (IN.)	MIN. RADIUS (FT.)*
4	100
6	144
8	189
10	231

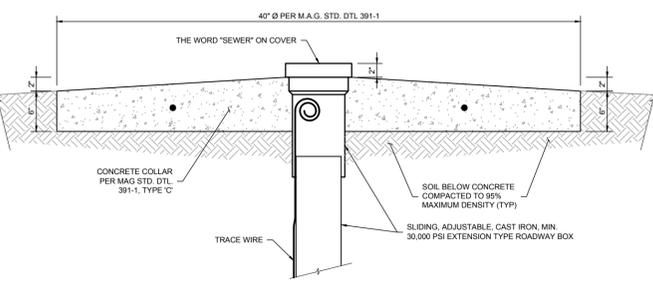
* FOR SMALLER RADII, BENDS MUST BE USED



NOTES:

- THE ENCASEMENT SHALL EXTEND ALONG THE SEWER FORCE MAIN AT LEAST 10' ON EACH SIDE OF THE WATER LINE PER AAC R18-5-502.C.3.
- THE MINIMUM SEPARATION BETWEEN A SEWER FORCE MAIN AND A WATER LINE IS 2-FEET. SEWER FORCE MAINS SHALL NOT BE CONSTRUCTED ABOVE WATER LINES.
- EXTRA PROTECTION IS REQUIRED WHEN THE DISTANCE FROM THE BOTTOM OF THE WATER TO THE TOP OF THE SEWER FORCE MAIN IS 6 FEET OR LESS. MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE MAY BE USED AS AN ALTERNATE. (A.A.C. R18-5-502.C.3)

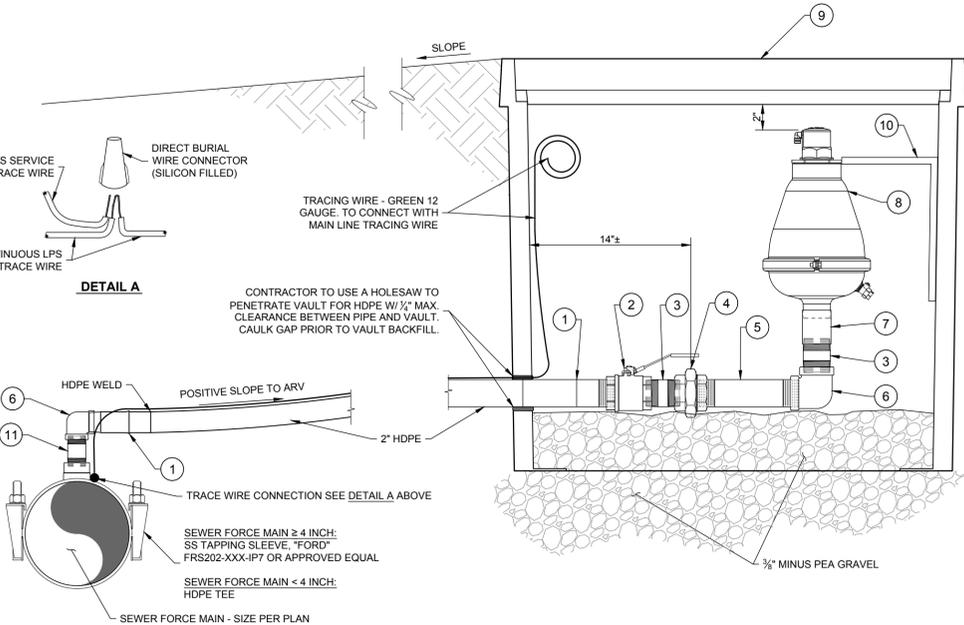
DETAIL NO. 404-3 MOD.	STANDARD DETAIL ENGLISH	WATER AND SEWER FORCE MAIN CROSSING - MODIFIED	DETAIL NO. 404-3 MOD.
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VALVE BOX INSTALLATION DETAILS FOR NON-TRAFFIC AREA

GENERAL NOTES

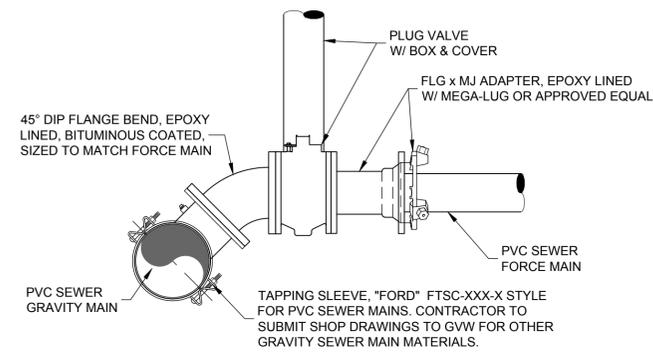
- REFER TO MAG SPEC SECTION 101 FOR ABBREVIATIONS AND DEFINITIONS.
- SEE BID DOCUMENTS AND SUPPLEMENTARY GENERAL CONDITIONS FOR REQUIREMENTS FOR BLASTING AND OTHER SPECIAL CONDITIONS.
- EXISTING UTILITIES AND OTHER FACILITIES HAVE BEEN PLACED ON THE PLANS FROM FIELD SURVEYS, EXISTING MAPS, AND OTHER CURRENT PLANS WITHIN THE AREA OF THIS PROJECT. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND/OR ELEVATION OF EXISTING UTILITIES WHICH PERTAIN TO AND AFFECT THE CONSTRUCTION OF THE PROJECT.
- TWO WORKING DAYS PRIOR TO EXCAVATING, THE CONTRACTOR SHALL CONTACT 'ARIZONA 811' - TELEPHONE: 811 OR 1-800-782-5348.



- 2" IPS SDR11 Butt Fusion x 2" Male 316 Stainless Steel Threaded Transition MPT
- Standard-Port 316 Stainless Steel Body On/Off Valve with Lockable Lever Handle, 2" NPT Female.
- Standard-Wall 316/316L Stainless Steel Pipe Nipple, Threaded on Both Ends, 2" NPT, 3" Long
- 316 Stainless Steel Threaded Pipe Fitting, Low-Pressure, Union Connector, 2" NPT Female
- Standard-Wall 316/316L Stainless Steel Pipe Nipple, Threaded on Both Ends, 2" NPT, 10" Long
- 316 Stainless Steel Threaded Pipe Fitting, Low-Pressure, 90 Degree Elbow Connector, 2" NPT Female
- 316 Stainless Steel Threaded Pipe Fitting, Low-Pressure, Straight Connector, 2" NPT Female
- S-025 Automatic Air Release Valve for Wastewater - Short Version as manufactured by A.R.I. Flow Control Accessories
- 36" x 36" x 36" FRP Vault Assembly, 20K Load Rating, with 2-Piece Cover, Model A6001441 as manufactured by Armorcast Products Company, or Approved Equal.
- Support Bracket supplied by Green Valley Water and installed by Contractor with stainless steel hardware
- Standard-Wall 316/316L Stainless Steel Pipe Nipple, Threaded on Both Ends, 2" NPT, 4" Long

SEWER FORCE MAIN TO GRAVITY SEWER MAIN CONNECTION

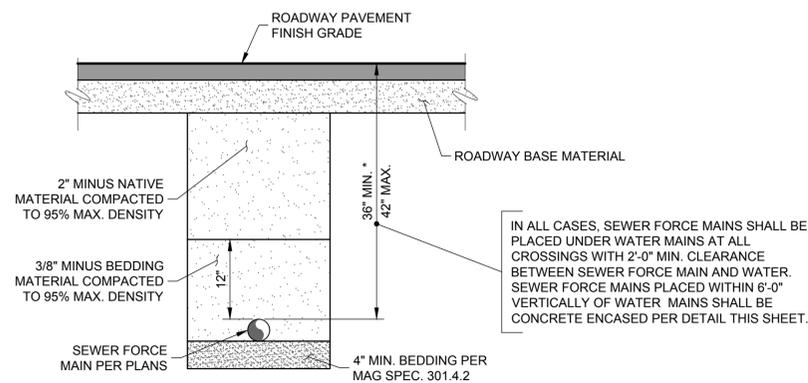
N.T.S.



- * SEWER FORCE MAIN SHALL HAVE A MINIMUM COVER OF 36" AND A MAXIMUM COVER OF 42" EXCEPT IN THE VICINITY OF AIR RELEASE VALVES AND WATER MAIN CROSSINGS.
- ** INSTALLATION OF OTHER UTILITIES IN A COMMON TRENCH WITH A SEWER FORCE MAIN SHALL BE LIMITED TO GAS ONLY AND SHALL BE APPROVED BY THE DISTRICT MANAGER OF GREEN VALLEY WATER PRIOR TO INSTALLATION.

TYPICAL SEWER FORCE MAIN TRENCH DETAIL

N.T.S.



IN ALL CASES, SEWER FORCE MAINS SHALL BE PLACED UNDER WATER MAINS AT ALL CROSSINGS WITH 2'-0" MIN. CLEARANCE BETWEEN SEWER FORCE MAIN AND WATER. SEWER FORCE MAINS PLACED WITHIN 6'-0" VERTICALLY OF WATER MAINS SHALL BE CONCRETE ENCASED PER DETAIL THIS SHEET.



Sewer Force Main Standard Details and Specifications



REVISED: JUNE 10, 2024

TYPICAL AUTOMATIC SEWAGE AIR RELEASE VALVE FOR SEWER FORCE MAIN