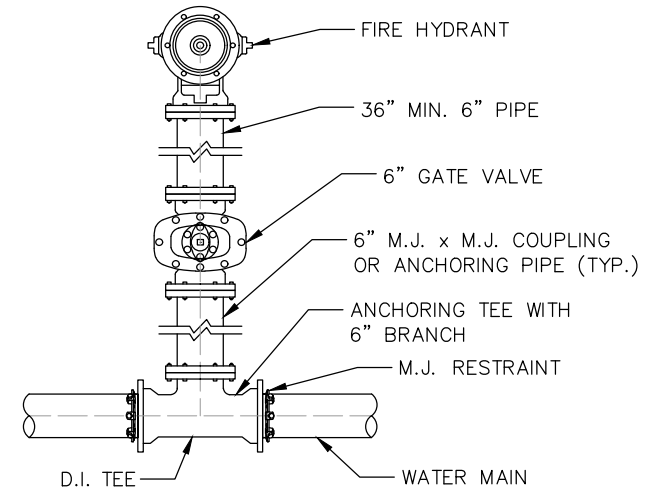
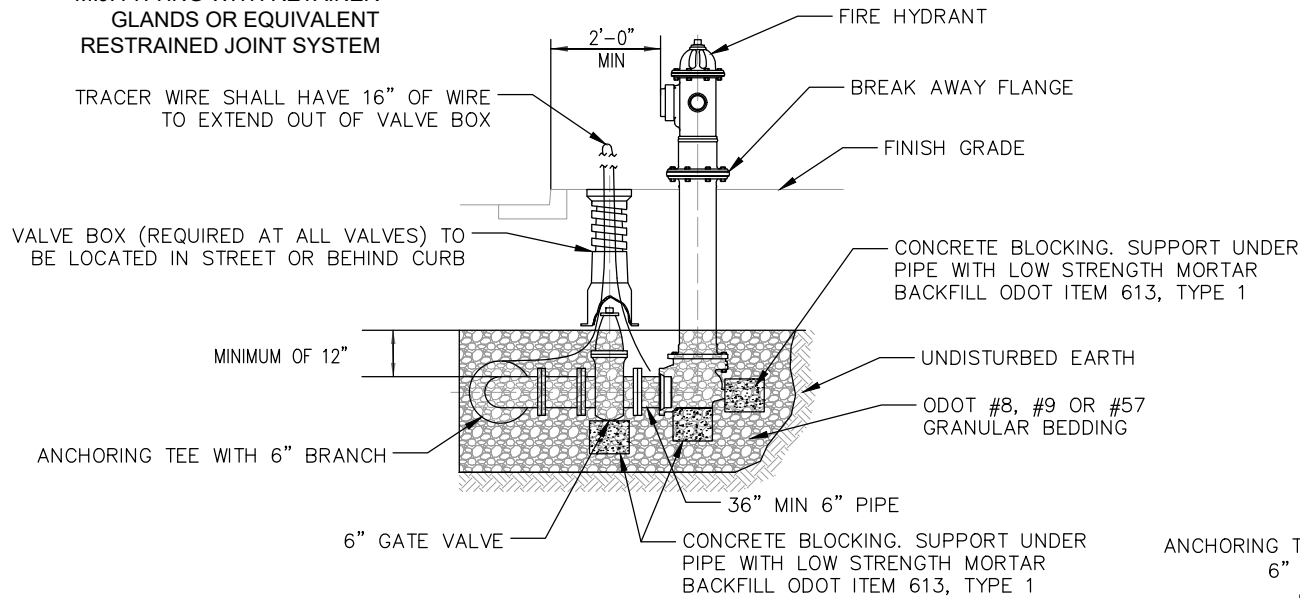
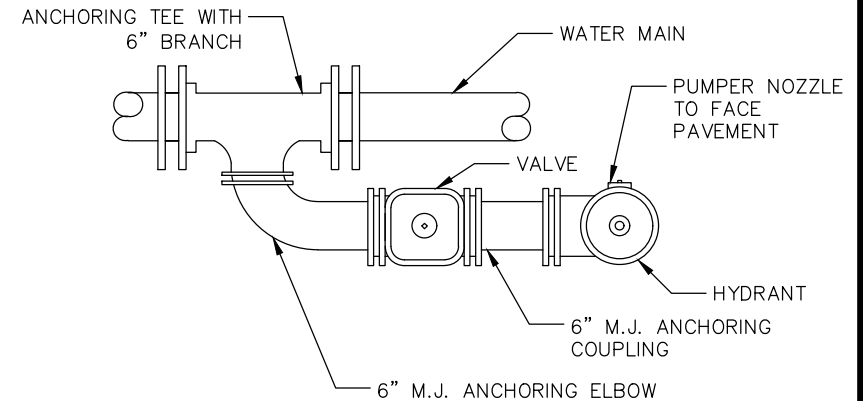




**M.J. FITTING WITH RETAINER
GLANDS OR EQUIVALENT
RESTRAINED JOINT SYSTEM**



BASIC TEE DETAIL PLAN



**SPECIAL MECHANICAL JOINT
HYDRANT TEE DETAIL PLAN**

NOTES

- ALL HYDRANTS REGARDLESS OF MUNICIPALITY SHALL BE EQUIPPED AS FOLLOWS:
1. THE PUMPER NOZZLE WILL BE FITTED WITH A 5" STORZ CONNECTION WITH A PENTAGON NUT CAP.
 2. THE DRAIN VALVE SHALL ALLOW COMPLETE DRAINAGE OF ALL RESIDUAL WATER IN THE HYDRANT. THE CIRCUMFERENTIAL DRAIN PASSAGE INSIDE THE HYDRANT SHALL BE ALL BRONZE.
 3. OPEN DIRECTION SHALL BE "OPEN LEFT" (COUNTERCLOCKWISE).
 4. ALL UNDERGROUND DUCTILE IRON PIPE, VALVES AND FITTINGS SHALL BE WRAPPED IN V-BIO POLYETHYLENE ENCASMENT AS PER AWWA STANDARD C-105.
 5. THE HYDRANT FEED LINE SHALL BE THE SAME MATERIAL AS THE MAINLINE.

FIRE HYDRANT SPECIFIED BY MUNICIPALITY				
MUNICIPALITY	HYDRANT MODEL	HYDRANT DRAIN DESIGN	COLOR	VALVE SIZE
AMERICAN TOWNSHIP	MUELLER, SUPER CENTURION 250, MODEL A423		YELLOW	5 1/4"
AUGLAIZE TOWNSHIP				
BATH TOWNSHIP	CLOW, EDDY MODEL F2640 OR MUELLER, SUPER CENTURION 250, MODEL A423	SELF DRAINING	RED	5 1/4"
		NON DRAINING	YELLOW	
JACKSON TOWNSHIP	CLOW, EDDY MODEL F2640	SELF DRAINING	RED	5 1/4"
MONROE TOWNSHIP				
PERRY TOWNSHIP	CLOW, EDDY MODEL F2640			5 1/4"
RICHLAND TOWNSHIP	MUELLER, SUPER CENTURION 250, MODEL A423			5 1/4"
SHAWNEE TOWNSHIP	CLOW, EDDY MODEL F2640	SELF DRAINING	YELLOW	5 1/4"
VILLAGE OF HARROD	CLOW, EDDY MODEL F2640			5 1/4"
VILLAGE OF LAFAYETTE	CLOW, EDDY MODEL F2640	SELF DRAINING	RED	5 1/4"

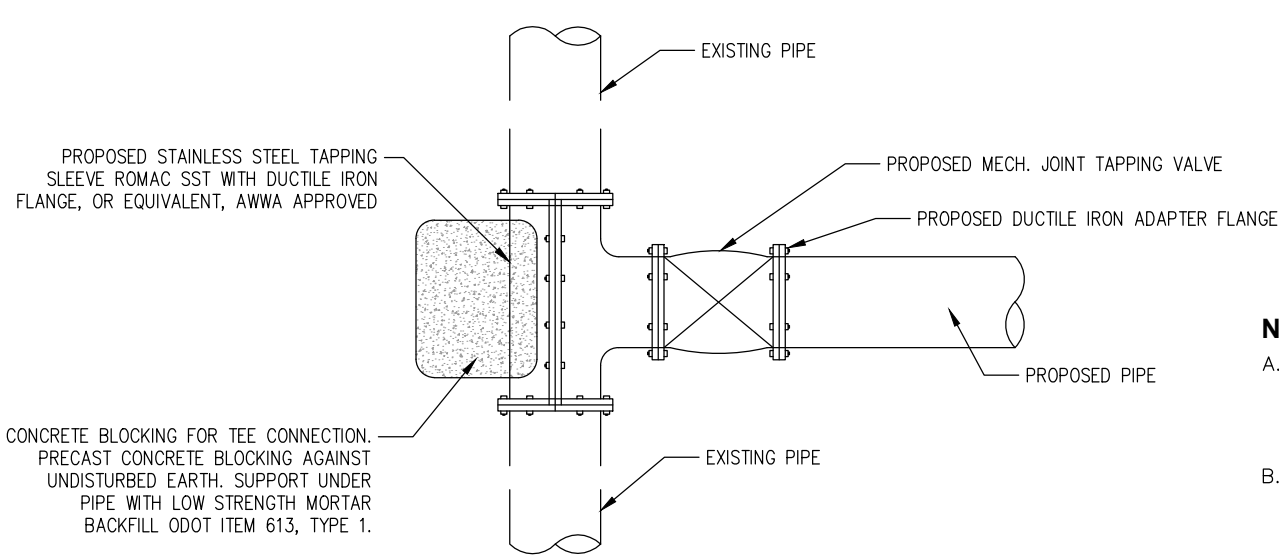
ALLEN WATER DISTRICT

FIRE HYDRANT ASSEMBLY

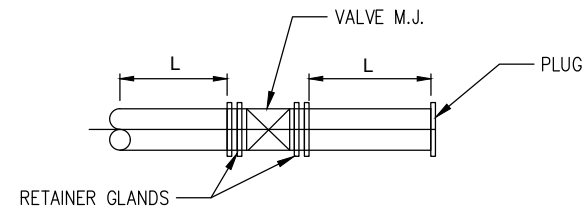
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TAPPING SLEEVE AND VALVE DETAIL

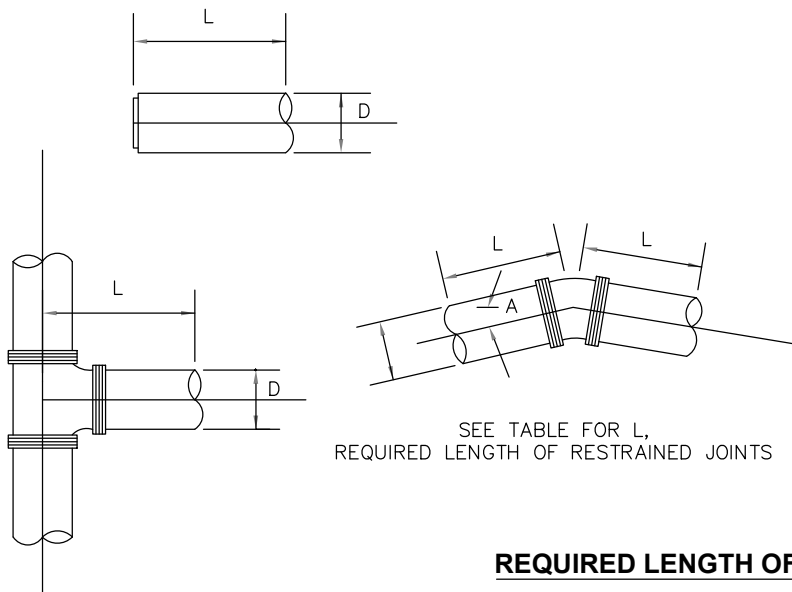


DETAIL - END OF WATER LINE

NOTES

- A. BELL JOINTS RESTRAINTS – RESTRAINTS FOR PVC BELL JOINTS SHALL BE EBAA IRON SERIES 1900 OR EQUAL. ALL BOLTS AND NUTS SHALL BE COR-TEN. ALL OTHER HARDWARE SHALL BE DUCTILE IRON.
- B. MECHANICAL JOINT RESTRAINTS – PIPE SHALL BE ANCHORED AT ALL DEAD ENDS, REDUCERS, BENDS, TEES, VALVES, AND OTHER FITTINGS BY MEANS OF MECHANICAL JOINT RESTRAINT. RESTRAINTS FOR MECHANICAL JOINTS SHALL BE EBAA IRON MEGALUG RETAINER GLAND OR EQUAL. ALL BOLTS AND NUTS SHALL BE COR-TEN. ALL OTHER HARDWARE SHALL BE DUCTILE IRON.
- C. CONTRACTOR TO USE RESTRAINED JOINTS UNLESS THRUST BLOCKING IS PREAPPROVED FOR SPECIAL CONDITIONS BY THE DISTRICT PRIOR TO THE BEGINNING OF CONSTRUCTION.
- D. ALL UNDERGROUND DUCTILE IRON PIPE, VALVES AND FITTINGS SHALL BE WRAPPED IN V-BIO POLYETHYLENE ENCASEMENT AS PER AWWA STANDARD C-105.

CONCRETE BLOCKING FOR TEE CONNECTION. PRECAST CONCRETE BLOCKING AGAINST UNDISTURBED EARTH. SUPPORT UNDER PIPE WITH LOW STRENGTH MORTAR BACKFILL ODOT ITEM 613, TYPE 1.



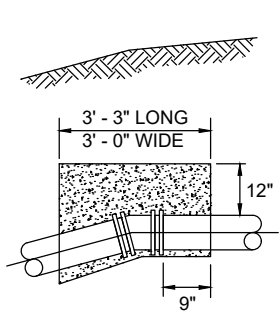
REQUIRED LENGTH OF RESTRAINED JOINTS IN FEET (L)									
D – DIAMETER OF PIPE									
A ~ DEGREE OF DEFLECTION		4"	6"	8"	10"	12"	16"	20"	24"
	11 1/4'	*	*	*	*	*	*	*	*
	22 1/2'	*	2	3	5	6	8	10	12
	45°	4	8	12	14	20	30	36	45
	90°	12	26	38	48	66	98	125	145
	TEE	12	26	38	48	66	98	125	145
	END	12	26	38	48	66	98	125	145

*REQUIRED RESTRAINED JOINT AT FITTING AND ONE BELL JOINT FROM FITTING MINIMUM.

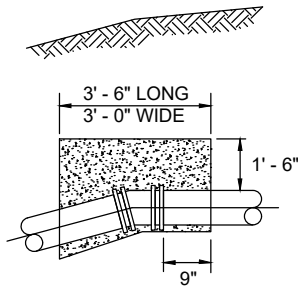
REQUIRED LENGTH OF RESTRAINED JOINTS FOR WATER MAINS

DESIGN PARAMETERS

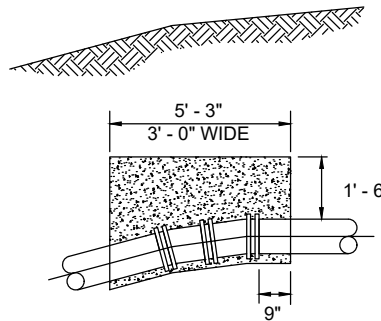
LAYING CONDITIONS – TYPE 5 SOIL DESIGNATION – CLAY
 DEPTH OF COVER – 4.5' MIN
 DESIGN PRESSURE – 80 PSI
 SAFETY FACTOR – 1.50
 BARE PIPE
 IF WORST CONDITIONS EXIST, ADDITIONAL RESTRAINTS WILL BE NECESSARY.



11 1/4°

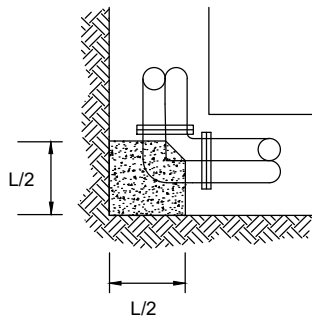


22 1/2°

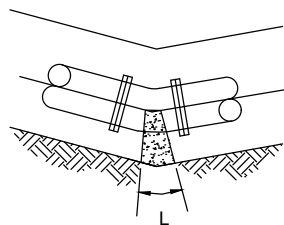


11 1/4° & 22 1/2°

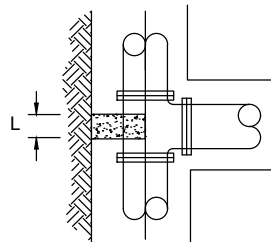
CONCRETE BLOCKING FOR VERTICAL BENDS



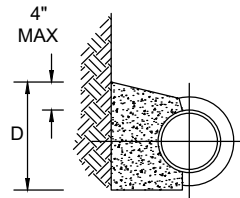
90° BENDS



BENDS
LESS THAN 90°



TEES



TYPICAL
SECTION

CONCRETE BLOCKING FOR HORIZONTAL BENDS

BENDS

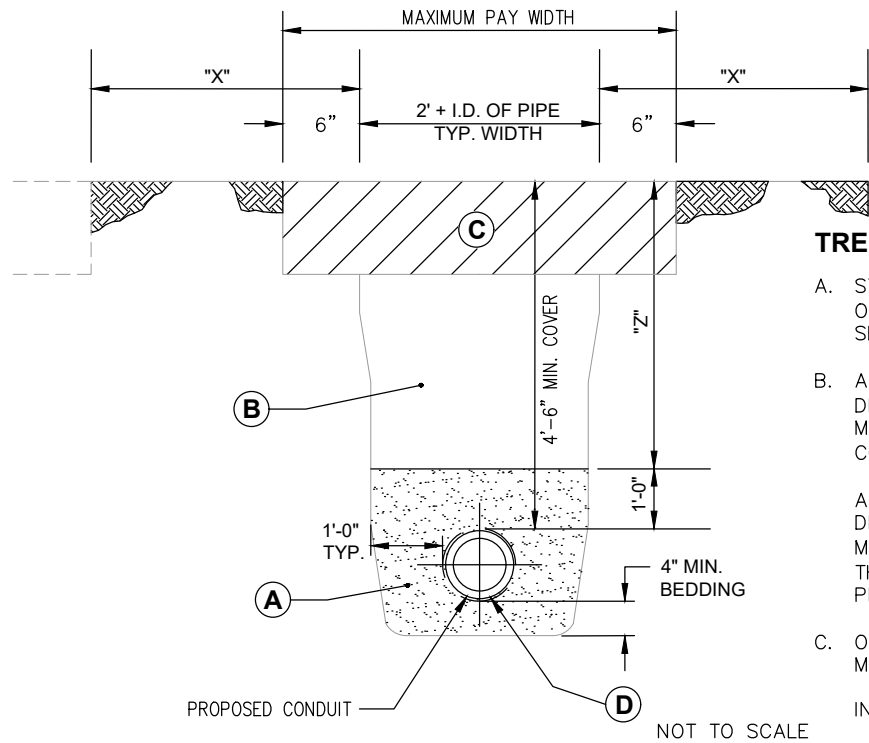
SIZE OF PIPE	DEGREE OF BEND							
	11 1/4°		22 1/2°		45°		90°	
	L	D	L	D	L	D	L	D
3", 4", 6"	8"	6"	10"	6"	20"	6"	36"	6"
8"	9"	8"	14"	8"	24"	9"	50"	8"
12"	14"	12"	22"	12"	30"	16"	60"	15"
16"	18"	16"	24"	18"	33"	36"	70"	22"

TEES

RUN	BRANCH							
	3", 4", 6"		8"		12"		16"	
	L	D	L	D	L	D	L	D
3", 4", 6"	16"	6"						
8"	14"	8"	18"	12"				
12"	9"	12"	18"	12"	24"	18"		
16"	8"	16"	14"	16"	28"	16"	30"	26"

NOTES

- A. CARE SHALL BE TAKEN TO KEEP CONCRETE AWAY FROM MECHANICAL JOINTS BY PLACING V-BIO POLYETHYLENE ENCASMENT OVER PIPE BEFORE PLACING OF CONCRETE.
- B. CONCRETE FOR BLOCKING VALVES AND FITTINGS SHALL CONFORM TO SECTION ODOT 499 CLASS C.
- C. CONTRACTOR SHALL USE THE THRUST BLOCKS AS SHOWN ONLY IF PREAPPROVED FOR SPECIAL CONDITION BY THE DISTRICT PRIOR TO BEGINNING CONSTRUCTION.
- D. EQUIVALENT PRECAST SOLID CONCRETE BLOCKING MAY BE USED.



"X" = DISTANCE FROM EDGE OF TRENCH TO EDGE OF CLOSEST PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA, OR WALKS.

"Z" = DISTANCE FROM TOP OF BEDDING TO FINISH SURFACE.

TRENCH DETAILS NOTES

- A. STRUCTURAL BEDDING SHALL BE COMPACTED GRANULAR BEDDING MATERIAL, ODOT 703.11 TYPE 3 (#57, #9 OR #8), OR OTHER APPROVED EQUIVALENT. THIS BEDDING SHALL BE USED FOR ALL WATER MAIN, SERVICES, FIRE HYDRANTS, AND APPURTENANCES APPLICABLE TO THE WATER SYSTEM.
 - B. ALL TRENCHES WHERE "X" IS GREATER THAN "Z" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS CAN BE COMPACTED EXISTING NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE DISTRICT. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 4" DIAMETER.
- ALL TRENCHES WHERE "Z" IS GREATER THAN "X" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL BE COMPACTED WITH STRUCTURAL BACKFILL MATERIAL ODOT 703.11 TYPE 1 (#304, #411) OR ODOT 703.05 (MANUFACTURED SAND) UNTIL THE TOP OF THE COMPACTED STRUCTURAL BACKFILL, PLACED IN 6" MAXIMUM LIFTS COMPACTED TO 98% OF STANDARD PROCTER VALVE.
- C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659.
- IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS SHOWN ON PAGE W5.
- D. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED TO THE APPROVAL OF THE DISTRICT BEFORE LEAVING THE WORK FOR THE NIGHT.

TRENCH DETAIL

- E. TRACER WIRE SHALL BE 12 GA. COPPER CLAD, BLUE IN COLOR. ANY SPLICES IN TRACER WIRE SHALL BE MADE WITH COPPERHEAD INDUSTRIES MAINLINE TO SERVICE CONNECTOR, 3WB-01 OR DISTRICT APPROVED EQUAL. TRACER WIRE IS NOT REQUIRED IF DUCTILE IRON PIPE IS USED.
- F. 2" BLUE DETECTABLE TRACER TAPE SHALL BE PLACED IN THE TRENCH 24" ABOVE THE TOP OF THE PIPE DURING BACKFILL PROCESS.
- G. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE TESTING SERVICES DURING THE INITIAL STAGES OF TRENCH BACKFILL INSTALLATION TO ENSURE THEY ARE USING A METHOD WHICH IS MEETING THE PROJECT SPECIFICATIONS OF COMPACTION TO 98% OF THE STANDARD PROCTOR VALUE. AN INDEPENDENT SOIL TESTING CONSULTANT MUST DETERMINE THE STANDARD PROCTOR COMPACTION VALUES ON THE SELECTED TRENCH BACKFILL. DURING THE BACKFILL AND COMPACTION WORK ON THE FIRST 250 LINEAL FEET OF TRENCH, THE INDEPENDENT SOIL TESTING CONSULTANT MUST BE ON-SITE PERFORMING DENSITY TESTING TO ENSURE THE CONTRACTOR IS MEETING COMPACTION REQUIREMENTS. THE CONTRACTOR, SOIL TESTING CONSULTANT AND OWNER ARE TO AGREE ON THE MEANS AND METHODS OF TRENCH BACKFILL COMPACTION AT THIS TIME.

DURING THE COURSE OF THE PROJECT THE CONTRACTOR IS REQUIRED TO CONFIRM TRENCH COMPACTION REQUIREMENTS ARE BEING MEET. THE CONTRACTOR IS REQUIRED TO HAVE TESTING DONE AT LEAST THREE OTHER TIMES DURING THE COURSE OF THE PROJECT. IN ADDITION, DURING THE COURSE OF THE PROJECT, IF THE OWNER OR ENGINEER FEEL THAT COMPACTION EFFORTS ARE NOT BEING MADE PROPERLY, ADDITIONAL COMPACTION TESTING CAN BE ORDERED BY THE OWNER OR ENGINEER.

ALL TESTING REQUIREMENTS ARE TO BE A COST TO THE CONTRACTOR AND WILL BE PAID FOR UNDER ITEM – TRENCH BACKFILL COMPACTION TESTING.

- H. ANY WORK WITHIN THE RIGHT-OF-WAY SHALL REQUIRE A PLAN REVIEW WITH THE APPROPRIATE LOCAL AGENCY PRIOR TO BIDDING. COUNTY OR TOWNSHIP MAY REQUIRE ALTERNATE BACKFILL MATERIAL AND COMPACTION REQUIREMENTS.

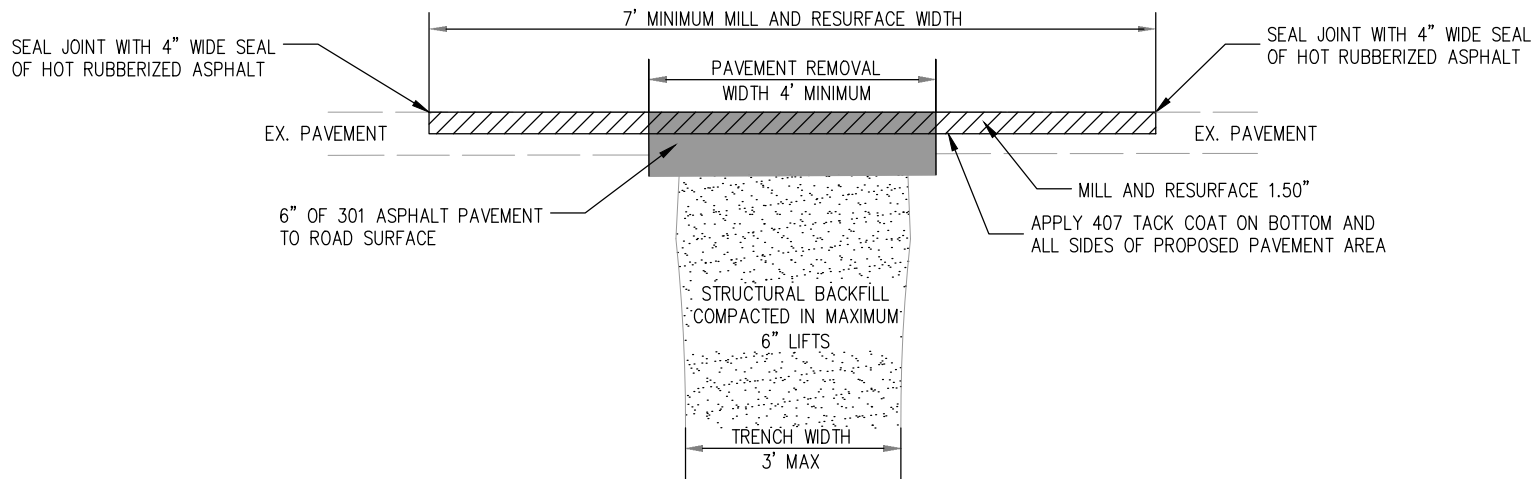
ALLEN WATER DISTRICT

WATER MAIN TRENCH DETAIL

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TYPICAL PAVEMENT RESTORATION DETAIL

PAVEMENT RESTORATION NOTES

1. THE INITIAL STAGE WILL INVOLVE THE REMOVAL AND REPLACEMENT OF THE EXISTING ASPHALT AND STONE FOR A SIX (6") INCH DEPTH, TWELVE (12") INCHES ON EACH SIDE OF THE TRENCH AND FOUR (4') FOOT MINIMUM WIDTH ABOVE THE UTILITY TRENCH. SIX (6") INCHES OF ASPHALT AND STONE MATERIAL IS TO BE CLEANLY REMOVED TO A STRAIGHT EDGED 4 FOOT TRENCH WIDTH BY A MILLING MACHINE, WITH A SAW CUT OF THE TRENCH EDGE, OR OTHER APPROVED METHODS. THE FOUR (4) FOOT WIDE TRENCH IS THEN TO BE COMPACTED WITH A VIBRATORY ROLLER AND BE PREPPED FOR INSTALLATION OF A 6" THICK LAYER OF ODOT 301 ASPHALT BASE IN TWO COMPACTED LIFTS. THIS ASPHALT BASE WILL GO TO THE SURFACE OF THE TRENCH AND WILL BE REQUIRED TO BE DONE WITHIN A REASONABLE TIME FRAME AFTER UTILITY INSTALLATION. PAYMENT WILL BE MADE UNDER ITEM – ASPHALT CONCRETE BASE FOR TONS INSTALLED OF ASPHALT BASE.
2. THE SECOND STAGE OF PAVEMENT REPLACEMENT WILL INVOLVE THE PAVEMENT PLANING OF A MINIMUM OF SEVEN (7) FOOT WIDTH OF ASPHALT IN THE TRENCH AREA TO CREATE A CONSISTENT AND STRAIGHT EDGE FOR THE TRENCH ASPHALT REPLACEMENT. THE PLANING DEPTH IS TO BE 1.5". THE OWNER AND CONTRACTOR ARE TO MEET TO DECIDE ON THE TIMING AND THE LIMITS OF THE PAVEMENT PLANING. PAVEMENT PLANING MAY OCCUR MONTHS AFTER INITIAL TRENCH ASPHALT REPLACEMENT IF THE PROJECT SCHEDULE DICTATES THIS. PAYMENT WILL BE MADE UNDER ITEM – 1-1/2" ASPHALT PAVEMENT PLANING FOR SQUARE YARD OF PAVEMENT PLANING COMPLETED.
3. THE THIRD STAGE OF PAVEMENT REPLACEMENT WILL THE APPLICATION ODOT ITEM 407 TACK COAT AT A RATE OF 0.09 GAL / SY OVER THE PLANED SURFACE. PAYMENT WILL BE MADE UNDER ITEM – TACK COAT FOR GALLONS OF TACK COAT APPLIED.
4. THE FOURTH STAGE WILL BE THE INSTALLATION OF AN 1.5" THICK LAYER OF ODOT ITEM 441 – ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), PG64-22 OVER THE PLANED AND TACKED SURFACE. PAYMENT WILL BE MADE UNDER ITEM – ASPHALT SURFACE COURSE FOR TONS INSTALLED OF ASPHALT SURFACE COURSE.
5. THE FINAL STEP WILL BE THE SEALING OF THE JOINT BETWEEN THE ASPHALT TRENCH REPLACEMENT AND THE EXISTING ASPHALT WITH A 4" WIDTH SEAL OF HOT RUBBERIZED ASPHALT.

ALLEN WATER DISTRICT

WATERLINE TRENCH ASPHALT PAVEMENT RESTORATION DETAIL

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MATERIAL SPECIFICATIONS

- A. WATERLINE – ALL PIPE USED SHALL BE MANUFACTURED OF DUCTILE IRON IN CONFORMANCE WITH ANSI A21.51 (AWWA C151) DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND LINED MOLDS, FOR WATER OR OTHER LIQUIDS AND ANSI A21.50 (AWWA C150) THICKNESS DESIGN OF IRON PIPE. THE PIPE SHALL BE LINED WITH A CEMENT MORTAR IN ACCORDANCE WITH ANSI A21.4 (AWWA C104) "CEMENT-MORTAR LINING FOR CAST IRON AND DUCTILE IRON PIPE AND FITTINGS FOR WATER." DUCTILE IRON PIPE SHALL BE WITH "PUSH-ON" RUBBER GASKET JOINTS IN ACCORDANCE WITH SPECIFICATIONS MEETING ANSI A21.11 (AWWA C111) AND ANSI A21.51 (AWWA C151). DIAMETERS OF DUCTILE IRON PIPE 4 INCH THROUGH 16 INCH SHALL BE IN PRESSURE CLASS 350. OTHER PRESSURE CLASSES (WALL THICKNESS) MAY BE REQUIRED IN SUCH AREAS AS HIGHWAY CROSSINGS, STREAM CROSSINGS, EXTRA DEPTH OR FOR OTHER PIPE SIZES AND UNUSUAL INSTALLATIONS.
- PVC PIPE 8" DIAMETER AND SMALLER MAY BE USED. DISTRICT APPROVAL IS REQUIRED FOR PVC PIPE LARGER THAN 8" DIAMETER.
- IF PVC PIPE WILL BE USED; THE PIPE SHALL MEET THE REQUIREMENTS OF AWWA C909, 150 LB PRESSURE CLASS, WITH CAST IRON EQUIVALENT O.D. PIPE SHALL BE OF THE INTEGRAL WALL – THICKENED BELL END TYPE INCORPORATING ELASTOMERIC GASKETS TO AFFECT THE PRESSURE SEAL. PIPE SHALL BE DESIGNATED FOR DIRECT CONNECTION INTO CAST IRON PIPE FITTINGS.
- B. FITTINGS – FITTINGS AND SPECIALS SHALL BE DUCTILE IRON (COMPACT) IN ACCORDANCE WITH ANSI/AWWA C153 / A21.53 RATED FOR 350 PSI WORKING PRESSURE, SHALL BE CEMENT LINED AND SEAL COATED ON THE OUTSIDE WITH A UNIFORM COATING OF COAL TAR VARNISH OR ENAMEL APPLIED HOT, AND SHALL HAVE MECHANICAL JOINTS. ALL BOLTS AND NUTS SHALL BE COR-TEN.
- C. GASKETS – RUBBER GASKET SHALL BE USED ON ALL MECHANICAL JOINT FITTINGS AND SHALL CONFORM TO AWWA C111.
- D. BELL JOINTS RESTRAINTS – RESTRAINTS FOR PVC BELL JOINTS SHALL BE EBAA IRON SERIES 1900 OR EQUAL. ALL BOLTS AND NUTS SHALL BE COR-TEN. ALL OTHER HARDWARE SHALL BE DUCTILE IRON.
- E. MECHANICAL JOINT RESTRAINTS – PIPE SHALL BE ANCHORED AT ALL DEAD ENDS, REDUCERS, BENDS, TEES, VALVES, AND OTHER FITTINGS BY MEANS OF MECHANICAL JOINT RESTRAINT. RESTRAINTS FOR MECHANICAL JOINTS SHALL BE EBAA IRON MEGALUG RETAINER GLAND OR EQUAL. ALL BOLTS AND NUTS SHALL BE COR-TEN. ALL OTHER HARDWARE SHALL BE DUCTILE IRON.
- F. FIRE HYDRANTS – HYDRANT MANUFACTURE AND MODEL VARIES BY TOWNSHIP AND VILLAGE. SEE DETAIL W1. ALL HYDRANTS REQUIRE A 5" PUMPER NOZZLE WITH A STORZ CONNECTION WITH A PENTAGON NUT CAP.
- G. GATE VALVES – VALVES 4 INCHES THROUGH 16 INCHES SHALL BE OF RESILIENT-SEATED GATE VALVE DESIGN. THE VALVES SHALL BE CONSTRUCTED WITH IRON BODY, FUSION BONDED EPOXY COATING ON ALL INTERIOR AND EXTERIOR SURFACES, NON-RISING VALVE STEM, THE VALVE WEDGE SHALL BE DUCTILE IRON COMPLETELY ENCLOSED IN RUBBER. THE VALVE SHALL OPEN WHEN THE STEM WITH 2 INCH SQUARE NUT IS TURNED COUNTER CLOCKWISE. VALVES SHALL BE DESIGNED FOR A WORKING PRESSURE OF 200 PSI WHEN USED IN NON-SHOCK COLD WATER. SERVICE STEM SEAL TO BE RUBBER-O-RING. VALVES SHALL CONFORM TO ANSI/AWWA STANDARD C509.
- H. VALVE BOXES – BUFFALO TYPE, WITH BASE, 5 1/4 INCH SHAFT, SIZE "B", SCREW TYPE, EXTENDABLE 36 – 48 INCHES, LID TO MARKED "WATER". NOTE: VALVES MORE THAN 5 FOOT DEEP SHALL BE EQUIPPED WITH AN EXTENSION ROD WITH OPERATING NUT AT A DEPTH TO TOP OF NUT NOT MORE THAN 36 INCHES.
- I. SERVICE LINE – MINIMUM 3/4" WATER SERVICE SHALL BE SDR-9 HDPE CTS(200 PSI), BLUE IN COLOR OR TYPE K COPPER WITH PRIOR APPROVAL. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS ON SDR-9 PIPE.
- J. CORPORATION STOP – FORD FB1000-3-G-NL OR EQUAL
- K. CURB STOP – FORD B44-333-G-NL OR EQUAL.
- L. CURB BOXES – BUFFALO TYPE 2 1/2" SHAFT SIZE BINGHAM & TAYLOR OR EQUAL.
- M. TRACER WIRE – TRACER WIRE SHALL BE LAID WITH ALL WATER MAIN, FIRE HYDRANT BRANCHES AND WATER SERVICES DIRECTLY WITH THE PIPE. TRACER WIRE SHALL BE EXTENDED TO THE SURFACE AT EACH VALVE BOX WITH MINIMUM OF 5' OF ADDITIONAL WIRE EXTENDING BEYOND THE TOP OF THE VALVE BOX. TRACER WIRE IS NOT REQUIRED IF DUCTILE IRON PIPE IS USED.
- N. DETECTABLE TRACER TAPE – 2" WIDE DETECTABLE TRACER TAPE SHALL BE LAID APPROXIMATELY 24" ABOVE WATER MAINS AND FIRE HYDRANT BRANCHES DURING THE BACKFILL PROCESS. THE DETECTABLE TRACER TAPE SHALL BLUE IN COLOR.
- O. TRANSITION COUPLING – TRANSITION COUPLINGS TO CONNECT TWO DIFFERING WATERLINE MATERIALS SHALL BE ROMAC ALPHA RESTRAINED JOINT COUPLING OR EQUAL. THE TRANSITION COUPLING SHALL BE SPECIFICALLY DESIGNED FOR THE NEEDED PIPE SIZE AND MATERIAL.
- P. POLY WRAP – ALL DUCTILE IRON PIPE, DUCTILE IRON FITTINGS, SPECIALS, VALVES, HYDRANTS, ETC. (INCLUDING ALL BOLTS) SHALL BE FIELD WRAPPED WITH V-BIO POLYETHYLENE ENCASEMENT MEETING THE REQUIREMENTS OF AWWA C105, WITH THE INSTALLATION IN ACCORDANCE WITH METHOD A AND THE RECOMMENDATIONS OF THE MANUFACTURER. ALL OVERLAPS AND SEAMS SHALL BE COMPLETELY TAPED. ALL RIPS, PUNCTURES AND OTHER DAMAGE TO THE WRAP SHALL BE COMPLETELY REPAIRED. TAPE SHALL BE 2 INCHES WIDE PLASTIC BACKED ADHESIVE TAPE WHICH WILL BOND SECURELY TO BOTH METAL SURFACES AND THE POLYETHYLENE FILM. ALL VALVES, FIRE HYDRANTS AND OTHER APPURTENANCES SHALL ALSO BE PROPERLY WRAPPED TO EITHER THE GROUND LINE OR THE UNDER SIDE OF THE OPERATING NUT OR VALVE.

HYDROSTATIC TESTS

AFTER COMPLETION OF THE LINE CONSTRUCTION, THE CONTRACTOR SHALL UNDER THE SUPERVISION OF THE CITY OF LIMA OR THE AUTHORIZED INSPECTOR, SUBJECT THE LINE TO A PRESSURE TEST.(IN CONFORMANCE WITH ANSI/AWWA STANDARD C600)

EACH VALVED SECTION OF WATER MAIN SHALL BE TESTED INDEPENDENTLY OF ONE ANOTHER UNLESS OTHERWISE APPROVED BY THE CITY OF LIMA. IN NO CASE SHALL THE VALVED SECTION EXCEED 2000 FEET. ANY TESTING AGAINST EXISTING VALVES SHALL BE AT THE CONTRACTORS RISK AND IN STRICT COMPLIANCE WITH THE CITY OF LIMA. IF SATISFACTORY RESULTS CANNOT BE OBTAINED AGAINST AN EXISTING VALVE, THE NEW LINE SHALL BE DISCONNECTED FROM THE EXISTING, PLUGGED AND RETESTED. ANY DAMAGE CAUSED TO EXISTING LINES, VALVES AND SERVICE CONNECTIONS SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL FURNISH THE PUMP, GAUGES AND OTHER APPARATUS FOR THE ABOVE TEST INCLUDING MEASURABLE WATER CONTAINER. SUCH WATER CONTAINER SHALL BE FREE OF FOREIGN MATTER AND DISINFECTED.

THE LINE SHALL NOT BE TESTED BEFORE CONCRETE USED AS THRUST BLOCKING SHALL HAVE TAKEN A PERMANENT SET.

THE FOLLOWING TESTING PROCEDURE SHALL BE FOLLOWED:

THE LINE SHALL BE SLOWLY FILLED WITH WATER ALLOWING AIR TO BE EXPELLED THRU HYDRANTS AND/OR CORPORATION STOPS, INSTALLED AT ALL HIGH POINTS ON THE MAIN. ALL HYDRANT WATCH VALVES WITHIN THE SECTION BEING TESTED SHALL BE IN THE OPEN POSITION. HYDROSTATIC PRESSURE SHALL BE APPLIED BY MEANS OF A PUMP, TAKING WATER FROM A CLEAN AUXILIARY SUPPLY. THE TEST PRESSURE SHALL BE AT LEAST 150 PSI OR 1.5 TIMES THE WORKING PRESSURE AT THE POINT OF TESTING AND THE DURATION OF THE TEST SHALL BE NOT LESS THAN 2 HOURS. ALLOWABLE LEAKAGE SHALL NOT EXCEED THE AMOUNT SHOWN ON THE ENCLOSED TABLE. (TAKEN FROM ANSI/AWWA STANDARD C600-87 PAGE 19)

ALLOWABLE LEAKAGE PER 1000 FT OF PIPELINE* - GPH

AVG. TEST PRESSURE - PSI	NOMINAL PIPE DIAMETER - in.						
	2	4	6	8	10	12	16
250	0.24	0.47	0.71	0.95	1.19	1.42	1.90
225	0.23	0.45	0.68	0.90	1.13	1.35	1.80
200	0.21	0.43	0.64	0.85	1.06	1.28	1.70
175	0.20	0.40	0.59	0.80	0.99	1.19	1.59
150	0.19	0.37	0.55	0.74	0.92	1.10	1.47

*FOR PIPE WITH 18 FT. LENGTHS

DISINFECTION

AFTER THE LINE HAS BEEN FLUSHED AND HAS PASSED THE PRESSURE TEST, THE LINE SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651. A CHLORINE SOLUTION SHALL BE INTRODUCED IN SUFFICIENT STRENGTH SO AS TO ACHIEVE A MINIMUM 50 MG/L(PPM) AVAILABLE CHLORINE IN THE PIPE SECTION TO BE TESTED, AS DETERMINED BY THE UTILITIES DEPT.

THE CHLORINATED WATER SHALL BE RETAINED IN THE MAIN FOR AT LEAST 24 HOURS, DURING WHICH TIME ALL VALVES AND HYDRANTS IN THE SECTION TO BE TESTED SHALL BE OPERATED IN ORDER TO DISINFECT THE APPURTENANCES. AT THE END OF THIS 24 HOUR PERIOD, THE TREATED WATER SHALL CONTAIN NO LESS THAN 25 MG/L(PPM) RESIDUAL CHLORINE THROUGHOUT THE LENGTH OF THE MAIN.

AFTER DETERMINING THAT THE MAIN TO BE TESTED HAS A CHLORINE RESIDUAL OF 25 MG/L(PPM), THE MAIN SHALL BE FLUSHED UNTIL THE CONCENTRATION OF CHLORINE HAS BEEN REDUCED TO THAT IN THE MAINS IN SERVICE IN THE AREA. AFTER THIS HAS BEEN ACCOMPLISHED, BACTERIA TESTS SHALL BE COLLECTED FROM EVERY 1200 FT. OF NEW MAIN, FROM THE END OF THE LINE, AT ALL "DEAD ENDS" AND SECTIONS ISOLATED BY VALVES. TESTS SHALL BE TAKEN ON COPPER SERVICES INSTALLED FOR THE PURPOSE OF CHLORINATION AND BACTERIA TESTING. THE TEST POINTS WILL BE INSTALLED PAST VALVES USED FOR "DEAD ENDS" AND ISOLATING SECTIONS OR AS DIRECTED BY THE UTILITIES DEPT. AT NO TIME SHALL FIRE HYDRANTS BE USED FOR BACTERIA TESTS.

ALL VALVES ON ACTIVE MAINS SHALL BE OPERATED ONLY BY UTILITIES DEPT. PERSONNEL TO ENSURE A POSITIVE FLOW AND TO PREVENT CONTAMINATION OF ACTIVE MAINS. A SECOND SET OF BACTERIA TESTS SHALL BE TAKEN IN 24 HOURS AT THE SAME TEST POINTS. THE ACTUAL TESTING (AS MENTIONED ABOVE) SHALL BE DONE BY THE UTILITIES DEPT. AT NO COST TO THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE TO OPERATE VALVES, HYDRANTS AND TO SUPPLY AND USE A PROPANE TORCH TO HEAT THE COPPER TEST POINTS AT TIME OF TESTING. IF BACTERIA TESTS INDICATE THAT WATER FROM THE LINE IS NOT OF SATISFACTORY SANITARY QUALITY, THE ABOVE PROCEDURES SHALL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED. THIS ADDITIONAL TESTING SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

AFTER COMPLETION OF BACTERIA TESTING, ALL TEST COPPER MUST BE REMOVED AND EXCAVATIONS FILLED BEFORE WATER MAIN IS PUT IN SERVICE.

NOTES

- A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE DISTRICT UNLESS 2 WORKING DAYS NOTICE OF COMMENCING WORK IS GIVEN TO THE DISTRICT AND THE CITY OF LIMA.
- B. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR THE DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE DISTRICT.
- C. ALL CUSTOMERS SHALL MEET BACKFLOW PREVENTION REQUIREMENTS AS PER STATE OF OHIO, EPA REGULATIONS, AND CITY OF LIMA.
- D. ALL WATERLINE CONSTRUCTION SHALL FOLLOW THE DISTRICT STANDARDS, OHIO DEPARTMENT OF TRANSPORTATION ITEM 638, AND AWWA STANDARDS WHICHEVER IS MORE RESTRICTIVE AS DETERMINE BY THE DISTRICT.

CONNECTIONS TO EXISTING WATERLINES

- A. CONTRACTOR SHALL DIG TEST HOLES AT CONNECTION POINTS PRIOR TO ANY OTHER WORK TO ESTABLISH THE EXACT CONNECTION REQUIREMENTS.
- B. CONTRACTOR MAY NOT INTERRUPT WATER SERVICE. IF EXISTING WATERLINE IS TO REMAIN, IT SHALL BE PROTECTED FROM DAMAGE DURING ALL PHASES OF THE WORK.

MAINTAINING EXISTING WATER SYSTEM

- A. THE EXISTING WATER SYSTEM IS TO REMAIN IN SERVICE AS MUCH AS POSSIBLE DURING CONSTRUCTION. BEFORE ANY TEMPORARY SHUT DOWN OF THE SYSTEM THE OWNER IS TO BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE. THE EXISTING SYSTEM IS TO REMAIN IN SERVICE UNTIL THE NEW SYSTEM HAS PASSED ALL BACTERIA AND PRESSURE TESTS AND ALL HOUSE SERVICES HAVE BEEN SWITCHED TO THE NEW SYSTEM.
- B. IF TEMPORARY SERVICES ARE NEEDED TO KEEP WATER SERVICE TO A HOUSE, THE METHOD OF PROVIDING TEMPORARY SERVICE MUST BE APPROVED BY OWNER.

FIELD DRAIN, SEWER AND WATERLINE CROSSINGS

- A. WHEN A PROPOSED SEWER AND/OR WATERLINE CROSSES UNDER AN EXISTING FIELD DRAIN, SEWER OR WATERLINE, THE ENTIRE TRENCH AREA UNDER EXISTING FIELD DRAIN, SEWER OR WATERLINE SHALL BE BACKFILLED WITH GRANULAR BEDDING MATERIAL TO 6" ABOVE THE TOP OF THE EXISTING FIELD DRAIN, SEWER OR WATERLINE.

EXISTING WATERLINE REPAIR

- A. THE EXISTING WATERLINE IN THE PROJECT AREA SHALL REMAIN IN SERVICE DURING CONSTRUCTION. IF THE WATERLINE IS DAMAGED DURING CONSTRUCTION OR THE WATERLINE DEVELOPS A LEAK IN THE CONSTRUCTION, EVEN IF IT IS AFTER WORKING HOURS OR ON THE WEEKEND; THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIRING THE WATERLINE IN A TIMELY MANNER. THE CONTRACTOR IS TO PROVIDE 24 HOUR CONTACT INFORMATION TO THE OWNER PRIOR TO THE BEGINNING OF THE PROJECT. THE CONTRACTOR IS TO THE HAVE ON SITE AT ALL TIMES TWO APPROPRIATELY SIZED REPAIR CLAMPS, PIPE LENGTHS, FITTINGS, ETC. FOR EACH TYPE OF EXISTING WATERLINE IN THE PROJECT AREA.

WATERLINE INSTALLATION WITHIN ROADWAY

- A. ALL ROADWAY CROSSINGS PERPENDICULAR TO THE ROADWAY FOR ALL STATE OF OHIO HIGHWAYS, ALLEN COUNTY, TOWNSHIP, OR VILLAGE ROADWAY SHALL BE DIRECTIONAL DRILLED ACCORDING TO DETAIL SHEET (W9). OPEN CUT MAY BE ALLOWED IF APPROVED BY OWNER.
- B. WATERLINE INSTALLATIONS LONGITUDINALLY WITHIN ROADWAY SHALL FOLLOW WATERLINE TRENCH ASPHALT PAVEMENT RESTORATION DETAIL SHEET (W5).

WATERLINE PIPE - DIRECTIONAL DRILL INSTALLATION

WATERLINE PIPE DESIGNATED TO BE INSTALLED BY DIRECTIONAL DRILL METHODS IS TO BE DR-18 C900 CERTA-LOK PVC MEETING AWWA C900 SPECIFICATIONS WITH ASTM D1784/D3139 JOINT SPECIFICATIONS AND INSTALLED PER ASTM F1962 FOR DIRECTIONAL BORING.

DIRECTIONAL DRILLING NOTES

CONTRACTOR SHALL VERIFY THAT AREA FOR TRENCHLESS INSTALLATION IS READY TO RECEIVE WORK, AND EXCAVATIONS, DIMENSIONS, AND ELEVATIONS ARE AS INDICATED ON DRAWINGS. CONTRACTOR ACCEPTS FULL RESPONSIBILITY FOR CONTRACTOR'S CONCLUSIONS RELATIVE TO THE NATURE AND PROBABLE DIFFICULTIES OF THE WORK DUE TO UNDERGROUND STRUCTURES AND SOIL CONDITIONS. BEGINNING OF INSTALLATION MEANS ACCEPTANCE OF EXISTING CONDITIONS.

DIRECTIONAL DRILLING SHALL BE ACCOMPLISHED VIA A DRILLING RIG MOUNTED ON A VARIABLE BUT SHALLOW SLOPED BED WHICH PUSHES THE DRILL HEAD THROUGH THE SOIL ALONG THE ROUTE OF THE PROPOSED WATER MAIN. STIFF ROD SECTIONS ARE ADDED TO EXTEND THE HOLE. THE ROUTE/DEPTH IS CONTROLLED BY LOCATING THE DRILL HEAD ELECTRONICALLY AND ROTATING THE DRILL HEAD TO A POSITION THAT FORCES REDIRECTION. THE HOLE IS KEPT FULL WITH BENTONITE TO PREVENT COLLAPSE AND FACILITATE DRAWING THE PIPE BACK THROUGH THE HOLE, CONNECTED TO THE RODS.

PROVIDE SUCH MEANS AS NECESSARY TO FACILITATE THE INSTALLATION OF THE PIPE AND APPURTENANCES IN ACCORDANCE WITH LINES, GRADES, AND LOCATIONS AS SHOWN ON THE DRAWINGS. DRILL THE DRILLING RODS AND HEAD AT A DOWNWARD ANGLE TO A MINIMUM DEPTH OF 4 FEET OR AS APPROVED BY THE OWNER AND CONTINUE TO DRILL HORIZONTALLY AT THE SPECIFIED DEPTH ALONG THE PROPER ALIGNMENT. WHEN CONNECTING TWO SEPARATE LENGTHS OF PIPE TOGETHER, MAINTAIN MINIMUM BURIAL DEPTH DRILLING IN A HORIZONTAL DIRECTION BEYOND THE POINT AT WHICH THE EXISTING PIPE BEGINS ITS UPWARD ASCENT BEFORE BRINGING THE DRILL HEAD TO THE SURFACE. ATTACH PIPING TO DRILL RODS PER MANUFACTURER'S INSTRUCTIONS AND THEN PULL THE RODS AND PIPE THROUGH THE HOLE CREATED. AFTER PULLING THE PIPE THROUGH THE CREATED HOLE WITH THE DRILLING UNIT, EXCAVATE THE LOCATION OF THE CONNECTION.

IF OBSTRUCTIONS ARE ENCOUNTERED, BACK UP DRILLING HEAD AND DEFLECT AROUND OBSTRUCTION. AT NO TIME SHALL A DEFLECTION AROUND AN OBJECT CAUSE THE PIPE TO LEAVE A ROAD RIGHT-OF-WAY OR EASEMENT LIMITS.

MAINTAIN A DATA SHEET FOR ALL DIRECTIONALLY DRILLED PIPE. THE DATA SHEETS SHALL AT A MINIMUM CONTAIN NAME OR DRILLER, DATE OF WORK, LOCATION OF WORK, FOOTAGE OF DRILLED PIPE, DEPTH OF BURIAL, SLOPE OF DRILL HEAD, ALL UPDATED AT 5 FOOT INTERVALS AND COMMENTS REGARDING INSTALLATION. PERFORM ALL REQUIRED BACKFILL AS SUBSEQUENTLY SPECIFIED.

PIPE SHALL BE MARKED WITH SIZE, PIPE MATERIAL DESIGNATION, REFERENCE TO APPLICABLE ASTM OR COMMERCIAL STANDARD, PRESSURE RATING, APPROVAL, MANUFACTURER'S IDENTIFICATION AND DATE OF MANUFACTURE.

JOINTS: PIPING SHALL BE JOINED AS RECOMMENDED BY THE PIPE SUPPLIER. ALL JOINING METHODS SHALL BE CAPABLE OF CONVEYING LIQUID AT NOT LESS THAN THE DESIGN PRESSURE OF THE PIPING SYSTEM AND SHALL BE RECOMMENDED FOR USE BY THE PIPE MANUFACTURER.

LOCATE SO AS NOT TO INTERFERE WITH UNDERGROUND UTILITY LINE, IDENTIFY AND PROTECT UTILITIES THAT REMAIN FROM DAMAGE.

THE REQUIRED PIPING SHALL BE ASSEMBLED IN A MANNER THAT DOES NOT OBSTRUCT ADJACENT ROADWAYS OR PUBLIC ACTIVITIES. THE CONTRACTOR SHALL ERECT TEMPORARY FENCING AROUND THE ENTRY AND EXIT PIPE STAGING AREAS.

IF A CASING PIPE IS REQUIRED, AS PER THE DRAWINGS, AFTER THE CARRIER PIPE IS INSTALLED, VOID SPACES BETWEEN THE PIPES SHALL BE COMPLETELY FILLED WITH DRY SAND. SAND SHALL BE PLACED PNEUMATICALLY THROUGH A DISCHARGE PIPE ENTERED INTO THE HOLE AND WITHDRAWN AS THE VOID SPACES ARE FILLED.

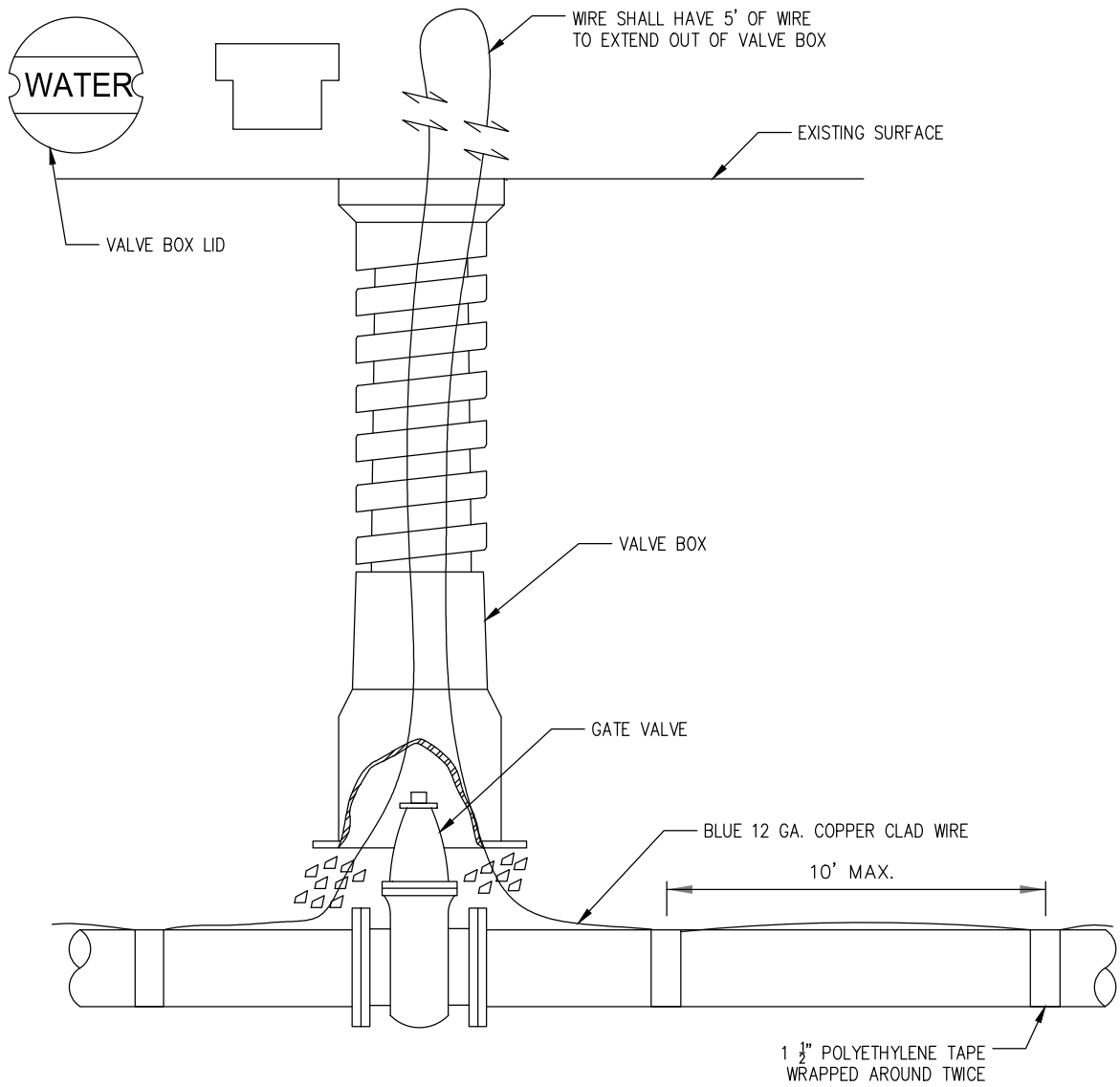
ALLEN WATER
DISTRICT

WATER MAIN DIRECTIONAL DRILLING NOTES

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TRACER WIRE NOTES

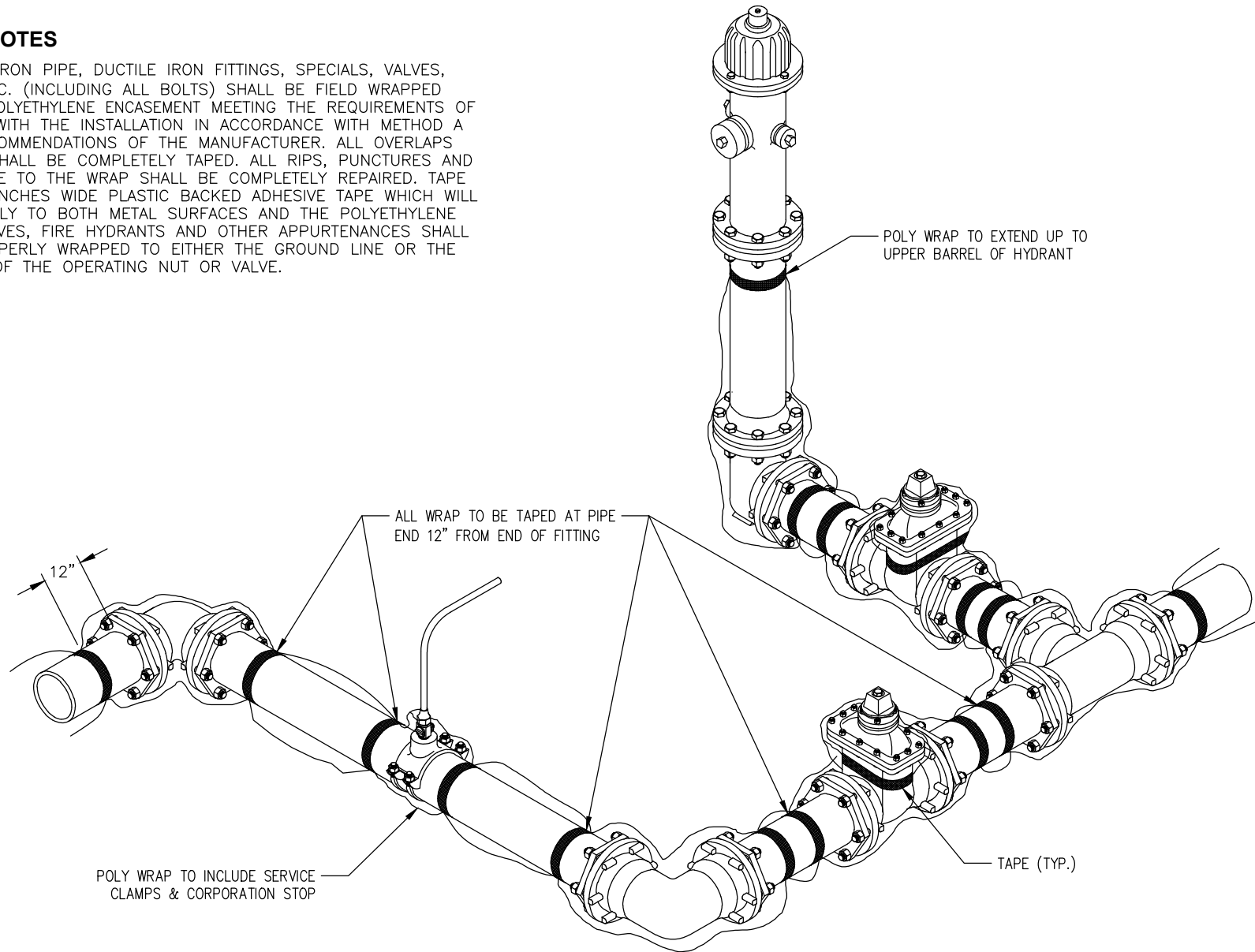
- A. THE CONTRACTOR WILL FURNISH AND INSTALL A COATED, COPPER CLAD TRACER WIRE ON ALL WATER LINES. WIRE COLOR WILL BE BLUE FOR WATER. TRACER WIRE IS NOT REQUIRED IF DUCTILE IRON PIPE IS USED.
- B. TRACER WIRE MUST BE BLUE SOLID 12 GAUGE MINIMUM AND RUN ON TOP OF THE WATER MAIN CONTINUOUSLY WITHOUT SPLICES FOR THE FULL LENGTH OF THE WATER MAIN. THE TRACER WIRE SHALL BE FASTENED TO THE TOP OF THE WATER LINE WITH 1 1/2" POLYETHYLENE TAPE WRAPPED AROUND TWICE AT A MAXIMUM DISTANCE OF 10'.
- C. ALL SPLICING SHALL BE MADE WITH COPPERHEAD INDUSTRIES MAINLINE TO SERVICE CONNECTOR, 3WB-01 OR A DISTRICT APPROVED EQUAL.
- D. TRACER WIRE WILL BE INSTALLED ON ALL NEW PVC WATER MAIN INSTALLATIONS AND WILL COME TO THE SURFACE AT EVERY VALVE BOX FOR A FIRE HYDRANT AND ALL OTHER VALVE BOXES FOR TERMINATION.
- E. 2" WIDE DETECTABLE TRACER TAPE SHALL BE LAID APPROXIMATELY 24" ABOVE WATER MAINS AND FIRE HYDRANT BRANCHES DURING THE BACKFILL PROCESS. THE DETECTABLE TRACER TAPE SHALL BE BLUE IN COLOR.

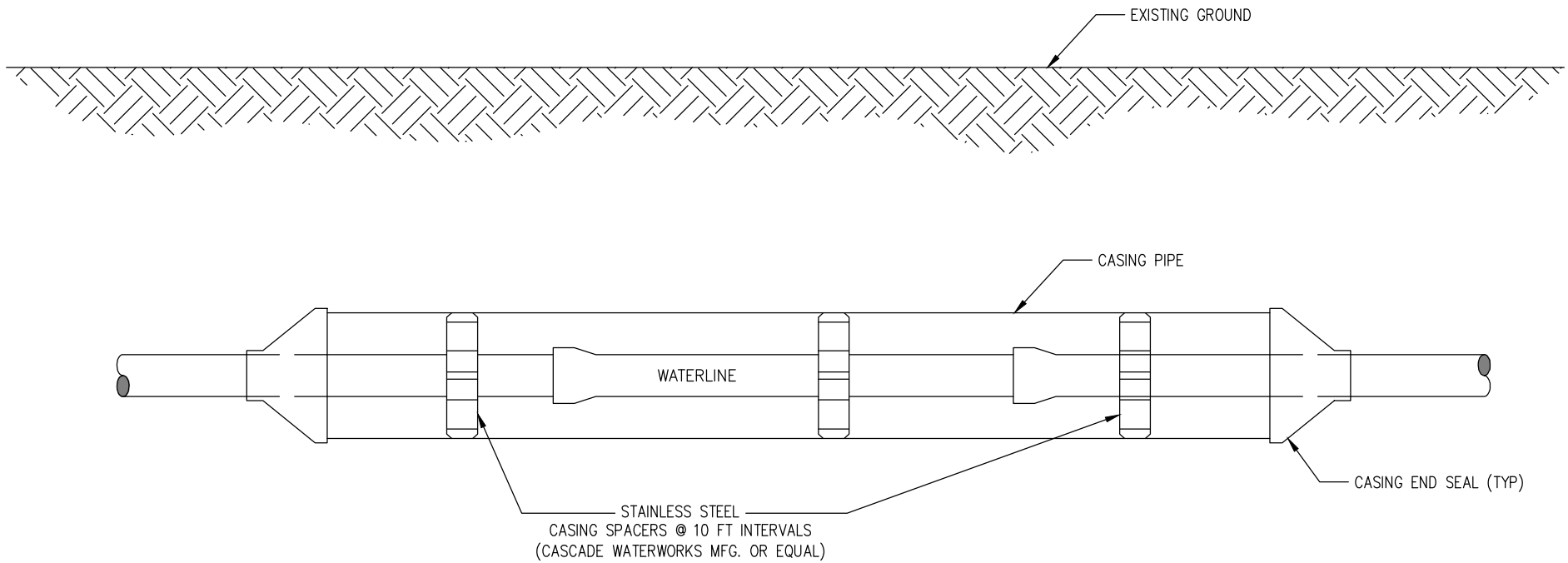
VALVE NOTES

- A. GATE VALVES – VALVES 4 INCHES THROUGH 16 INCHES SHALL BE OF RESILIENT-SEATED GATE VALVE DESIGN. THE VALVES SHALL BE CONSTRUCTED WITH IRON BODY, FUSION BONDED EPOXY COATING ON ALL INTERIOR AND EXTERIOR SURFACES, NON-RISING VALVE STEM, THE VALVE WEDGE SHALL BE DUCTILE IRON COMPLETELY ENCLOSED IN RUBBER. THE VALVE SHALL OPEN WHEN THE STEM WITH 2 INCH SQUARE NUT IS TURNED COUNTER CLOCKWISE. VALVES SHALL BE DESIGNED FOR A WORKING PRESSURE OF 200 PSI WHEN USED IN NON-SHOCK COLD WATER. SERVICE STEM SEAL TO BE RUBBER-O-RING. VALVES SHALL CONFORM TO ANSI/AWWA STANDARD C509.
- B. VALVE BOXES – BUFFALO TYPE, WITH BASE, 5 1/4 INCH SHAFT, SIZE "B". SCREW TYPE, EXTENDABLE 36 – 48 INCHES, LID TO MARKED "WATER". NOTE: VALVES MORE THAN 5 FOOT DEEP SHALL BE EQUIPPED WITH AN EXTENSION ROD WITH OPERATING NUT AT A DEPTH TO TOP OF NUT NOT MORE THAN 36 INCHES.

POLY WRAP NOTES

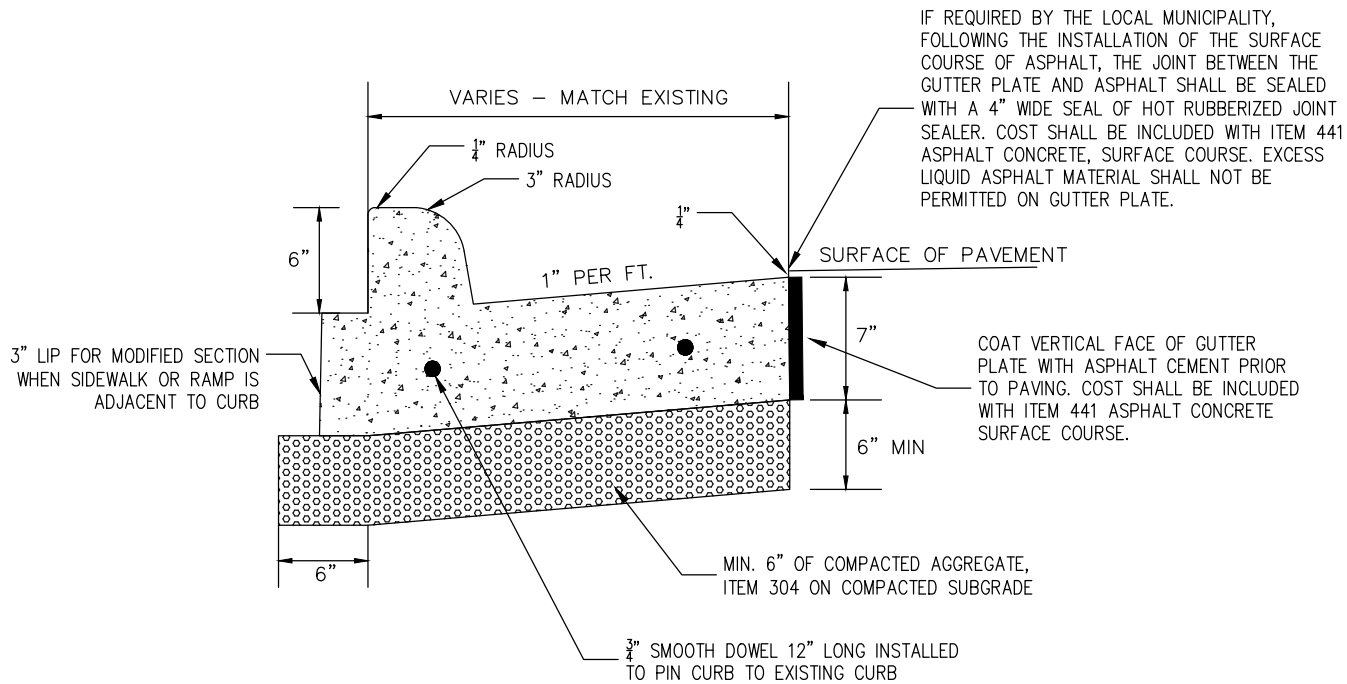
- A. ALL DUCTILE IRON PIPE, DUCTILE IRON FITTINGS, SPECIALS, VALVES, HYDRANTS, ETC. (INCLUDING ALL BOLTS) SHALL BE FIELD WRAPPED WITH V-BIO POLYETHYLENE ENCASUREMENT MEETING THE REQUIREMENTS OF AWWA C105, WITH THE INSTALLATION IN ACCORDANCE WITH METHOD A AND THE RECOMMENDATIONS OF THE MANUFACTURER. ALL OVERLAPS AND SEAMS SHALL BE COMPLETELY TAPED. ALL RIPS, PUNCTURES AND OTHER DAMAGE TO THE WRAP SHALL BE COMPLETELY REPAIRED. TAPE SHALL BE 2 INCHES WIDE PLASTIC BACKED ADHESIVE TAPE WHICH WILL BOND SECURELY TO BOTH METAL SURFACES AND THE POLYETHYLENE FILM. ALL VALVES, FIRE HYDRANTS AND OTHER APPURTENANCES SHALL ALSO BE PROPERLY WRAPPED TO EITHER THE GROUND LINE OR THE UNDER SIDE OF THE OPERATING NUT OR VALVE.





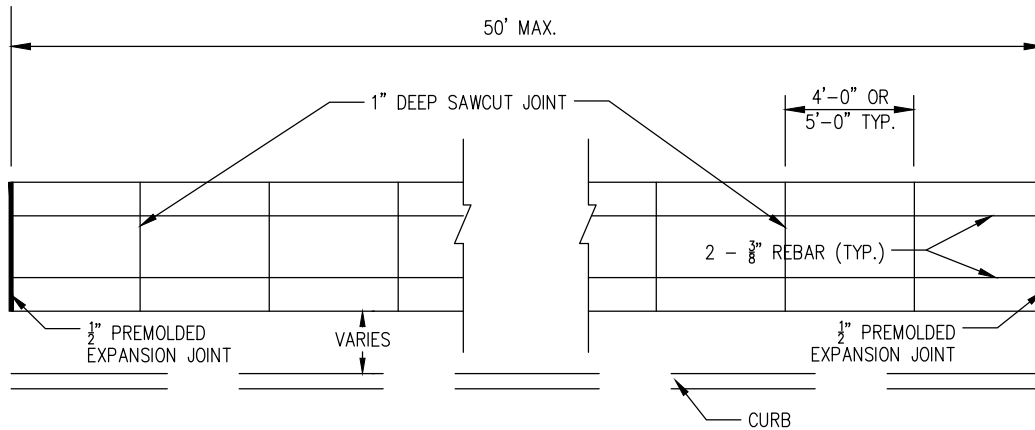
JACK AND BORE NOTES

- A. ALL BORINGS SHALL COMPLY WITH CURRENT ODOT STANDARDS. STAINLESS STEEL CASING SPACERS LIKE THOSE MANUFACTURED BY CASCADE WATERWORKS MFG. OR AN APPROVED EQUAL SHALL BE USED. THE SPACERS ARE TO BE PLACED AT 10 FT. INTERVALS. THE ENDS OF THE CASING SHALL BE SEALED WITH 8 INCH BRICKS AND MORTAR OR APPROVED RUBBER END SEALS. THE FOLLOWING CASING SIZES SHALL BE USED:
 - 6" PIPE – 16" CASING
 - 8" PIPE – 18" CASING
 - 10" PIPE – 22" CASING
 - 12" PIPE – 24" CASING
 - 16" PIPE – 30" CASING

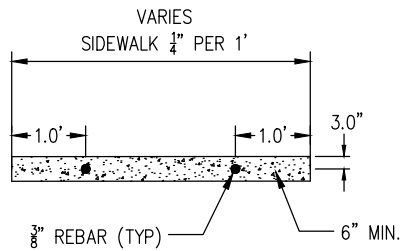


COMBINATION CURB AND GUTTER NOTES:

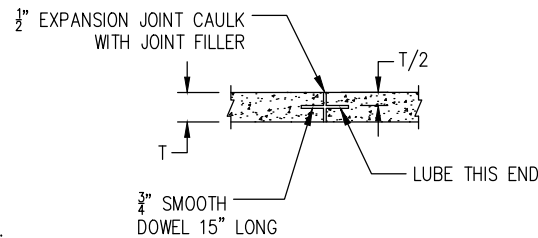
- A. CONCRETE SHALL CONFORM TO ODOT ITEMS 499 AND 609.
- B. ALL CURB SHALL BE PLACED USING STEEL FORMS OR BYSLIP FORMING. CURB SHALL BE BLOCKED OUT OF A MIN. OF 5' ON EACH SIDE OF NEW CATCH BASIN INSTALLATION.
- C. ALL EXPOSED SURFACE SHALL BE EDGE AND HAVE A BROOM FINISH.
- D. CURBING SHALL HAVE CONTRACTION JOINTS SAW CUT EVERY 10' TO A DEPTH NOT LESS THAN 1/4 THE TOTAL THICKNESS OF THE CURB AS SOON AS IT IS POSSIBLE TO DO SO WITHOUT DAMAGING THE CONCRETE. CRACKING OUTSIDE OF CONTROL JOINTS SHALL BE REMOVED AND REPLACED AT NO COST TO THE OWNER.
- E. EXPANSION JOINTS SHALL BE INSTALLED EVERY 100' AND 50' EACH DIRECTION FROM INLETS.
- F. USE CURING COMPOUND AND APPLY ON ALL EXPOSED SURFACES IMMEDIATELY AFTER FINISHING THE SURFACES AT A RATE OF 150 SF/GAL. PIGMENTED CURING COMPOUND TO MATCH EXISTING SURFACE FINISH.
- G. ALL CURBING SHALL BE BACKFILLED AS SOON AS IT IS POSSIBLE TO DO SO WITHOUT DAMAGING THE CONCRETE.



EXPANSION JOINT REQUIRED AT THE END OF EACH POUR, MAXIMUM SPACING BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 50 FEET.



SECTION



EXPANSION JOINT DETAIL

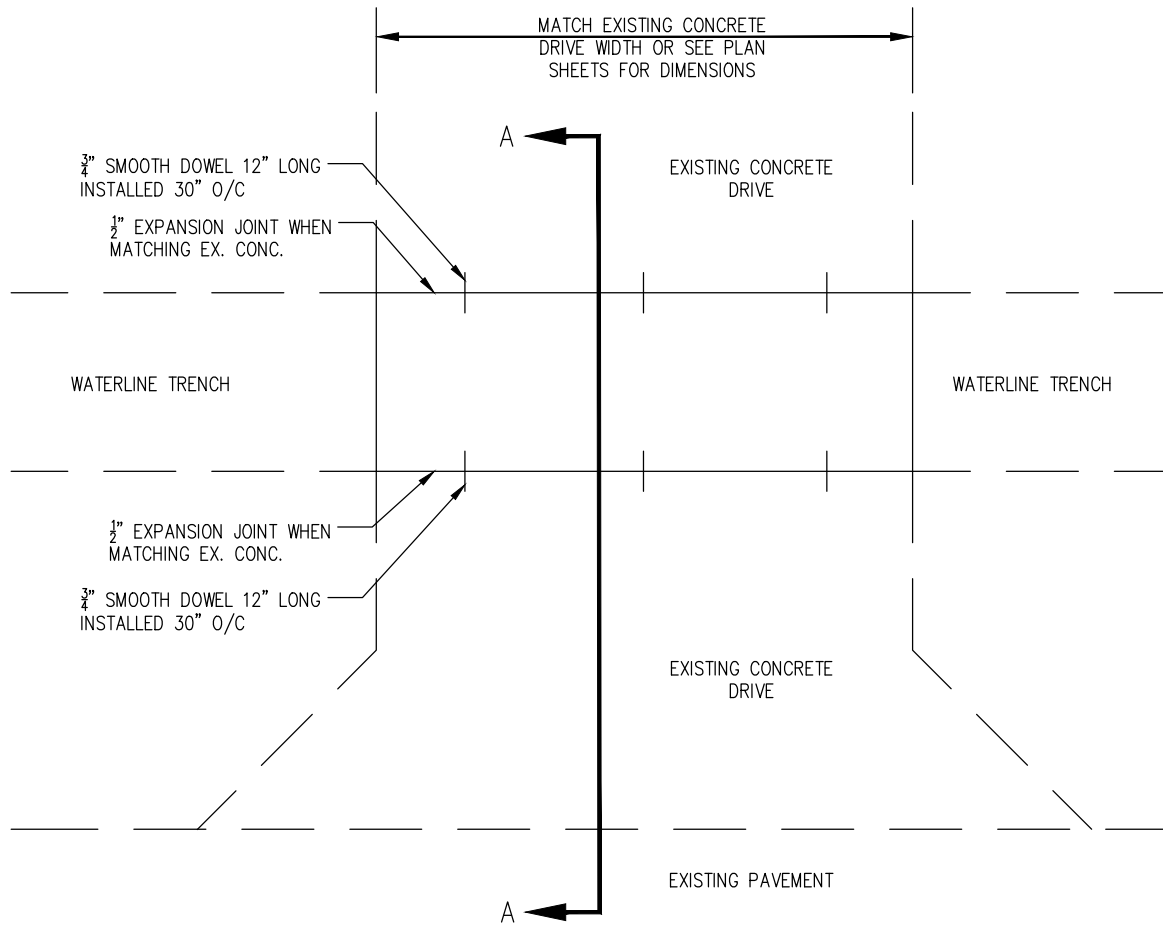
CONCRETE SIDEWALK REPLACEMENT NOTES:

- A. WALK TO BE POURED ON 4" OF COMPACTED GRANULAR BEDDING. ALL COSTS ASSOCIATED WITH GRANULAR BEDDING SHALL BE INCLUDED IN THE UNIT COSTS OF THE SIDEWALK.
- B. PROVIDE BROOM FINISH TO ALL EXPOSED SURFACE.
- C. CONCRETE SHALL CONFORM TO ODOT ITEM 499 CONCRETE. SIDEWALK WORK SHALL CONFORM TO ODOT ITEM 608, UNLESS OTHERWISE SPECIFIED WITHIN.
- D. USE CURING COMPOUND AND APPLY ON ALL EXPOSED SURFACES IMMEDIATELY AFTER FINISHING THE SURFACES AT A RATE OF 150 SF/GAL. PIGMENTED CURING COMPOUND TO MATCH EXISTING SURFACE FINISH.
- E. CONCRETE SHALL BE ODOT CLASS C (4000 PSI, 600LB/CY CEMENT) PROPORTIONING OPTIONS 1 AND 2 NOT ALLOWED.
- F. CONCRETE SHALL CONTAIN 6% +/- 1% OF TOTAL AIR.
- G. ALL SIDEWALKS ARE TO BE REINFORCED WITH 3/8" REBAR CENTERED WITHIN SIDEWALK THICKNESS.
- H. SIDEWALKS TO BE THICKENED THROUGH DRIVE APPROACHES.
- I. PROVIDE SLEEVES FOR SIGNAGE WHERE APPLICABLE.
- J. TRUNCATED DOMES: INSTALL DETECTABLE WARNING (TRUNCATED DOMES) IN LOCATIONS WHERE REMOVED. TRUNCATED DOME COLOR SHALL MATCH THAT OF EXISTING RAMPS IN THE AREA

ACCEPTABLE MANUFACTURERS AND PRODUCTS ARE:

ENGINEERED PLASTICS/POLYMER COMPOSITES:

- 1. ACCESS PRODUCT, INC
- 2. ACO
- 3. ADA
- 4. ALERTTILE
- 5. ARMOR-TILE
- 6. ARMORCAST

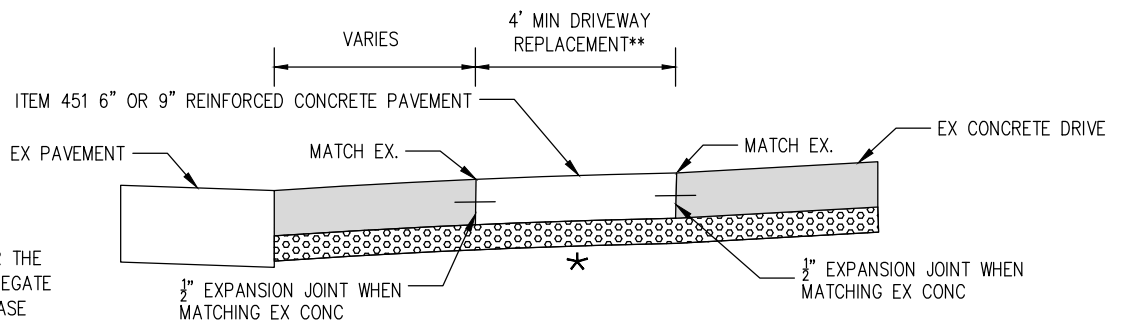


CONCRETE DRIVE REPLACEMENT NOTES:

- A. IN ALL LOCATIONS WHERE DRIVEWAYS HAVE BEEN REMOVED OR DAMAGED DURING ANY PART OF CONSTRUCTION OPERATIONS, DRIVE REPLACEMENT SHALL BE MADE TO MATCH THE EXISTING THICKNESS WITH A MINIMUM REPLACEMENT AS DESCRIBED HEREIN. ALL TRENCH AREAS WITHIN THE EDGE OF PAVEMENT SHALL BE BACKFILLED WITH GRANULAR MATERIAL.
- B. PROVIDE BROOM FINISH TO ALL EXPOSED SURFACES
- C. SAWCUT OR TOOL JOINTS TO MATCH EXISTING
- D. CONCRETE SHALL CONFORM TO ODOT ITEMS 499 AND 452
- E. EXPANSION JOINT MATERIAL SHALL BE PROFLEX VINYL EXPANSION JOINT AS MANUFACTURED BY OSCODA PLASTICS, INC. OR APPROVED EQUAL.
- F. USE CURING COMPOUND AND APPLY ON ALL EXPOSED SURFACES IMMEDIATELY AFTER FINISHING THE SURFACES AT A RATE OF 150 SF/GAL. PIGMENTED CURING COMPOUND TO MATCH EXISTING SURFACE FINISH.
- G. CONCRETE SHALL BE ODOT CLASS QC 1 (4,000PSI).
- H. CONCRETE SHALL CONTAIN 6% OF TOTAL AIR.
- I. ALL DRIVES ARE TO BE REINFORCED CONCRETE DRIVES. REINFORCEMENT SHALL BE #4 BARS (GRADE 60), 18" C/C BOTH DIRECTIONS, PLACED AT THE CENTER OF THE POUR DEPTH, OR THE PRE-APPROVED EQUAL IN WELDED STEEL WIRE REINFORCING FABRIC. REBAR CHAIRS SHALL BE USED TO HOLD THE REBAR UP IN THE PROPER POSITION PRIOR TO THE POUR.
- J. ALL RESIDENTIAL DRIVES ARE TO BE 6" THICK MINIMUM. ALL COMMERCIAL DRIVES AND ALLEY APPROACHES ARE TO BE 9" THICK MINIMUM. DRIVEWAY REPLACEMENT THICKNESS MAY VARY TO MATCH EXISTING DRIVEWAY THICKNESS.

** DRIVEWAY REPLACEMENT WIDTH SHALL BE 4' MINIMUM. DRIVEWAY REPLACEMENT WIDTH WILL VARY DEPENDING ON EXISTING DRIVEWAY CONDITION AND JOINT LOCATION.

* THE CONTRACTORS SHALL PERFORM SUBGRADE COMPACTION ON THE AREA UNDER THE PROPOSED CONCRETE DRIVE AND INSTALL A MINIMUM OF 4" OF COMPACTED AGGREGATE BASE (ODOT 304). THE COST OF THE SUBGRADE COMPACTION AND AGGREGATE BASE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 452.



SECTION A-A

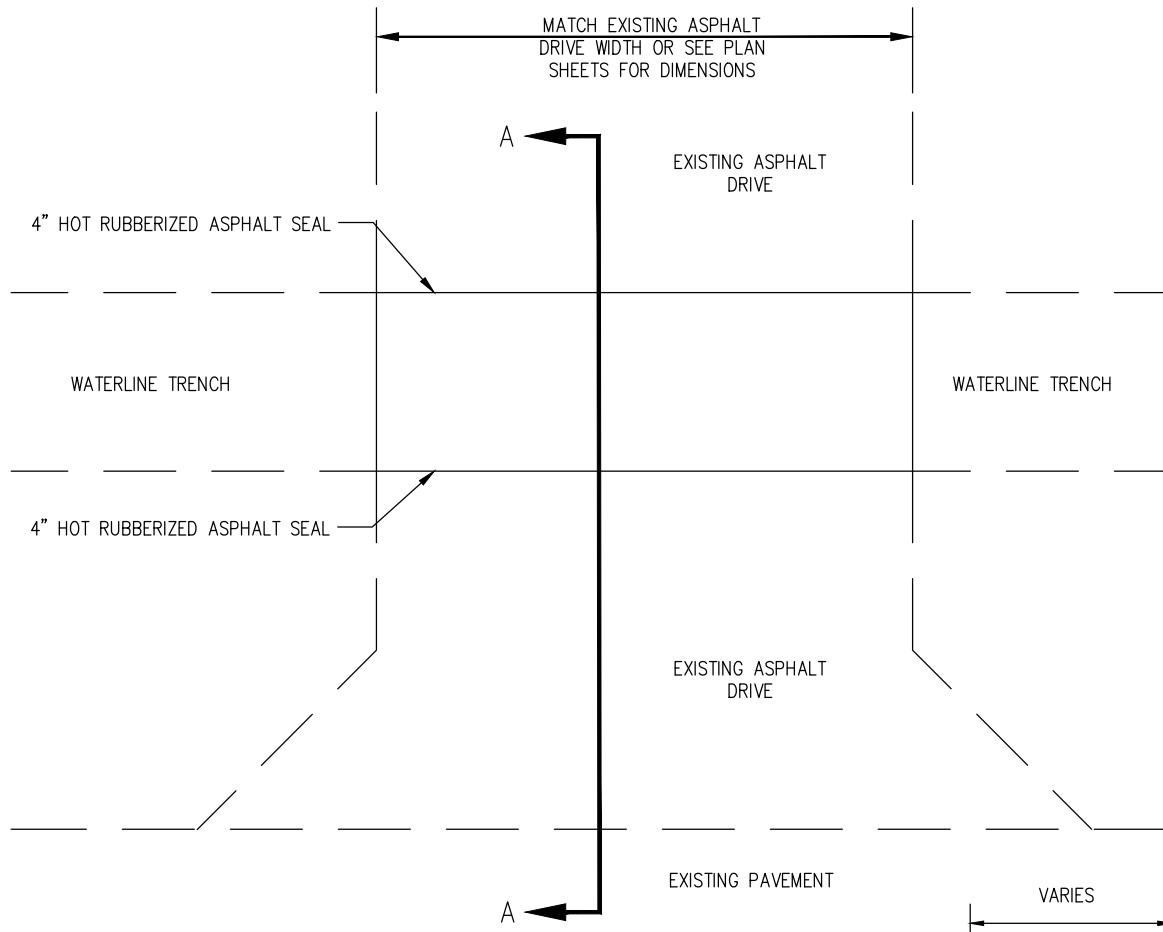
ALLEN WATER DISTRICT

CONCRETE DRIVEWAY REPLACEMENT DETAIL

REVISIONS:

DATE APPROVED: FEB 2026

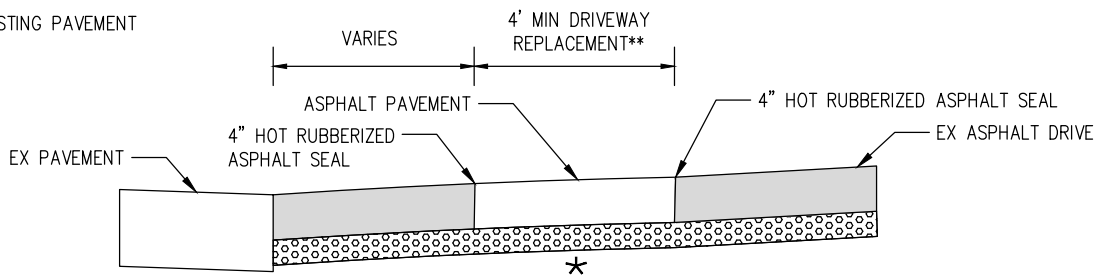
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ASPHALT DRIVE REPLACEMENT NOTES:

- A. IN ALL LOCATIONS WHERE DRIVEWAYS HAVE BEEN REMOVED OR DAMAGED DURING ANY PART OF CONSTRUCTION OPERATIONS, DRIVE REPLACEMENT SHALL BE MADE TO MATCH THE EXISTING THICKNESS WITH A MINIMUM REPLACEMENT AS DESCRIBED HEREIN. ALL TRENCH AREAS WITHIN THE EDGE OF PAVEMENT SHALL BE BACKFILLED WITH GRANULAR MATERIAL.
- B. JOINTS SHALL BE STRAIGHT AND SAWCUT
- C. THE JOINT BETWEEN THE ASPHALT TRENCH REPLACEMENT AND THE EXISTING ASPHALT SHALL BE SEALED WITH A 4" WIDTH SEAL OF HOT RUBBERIZED ASPHALT.
- D. ASPHALT SHALL CONFORM TO ODOT ITEMS 441 AND 301
- E. RESIDENTIAL DRIVES SHALL BE:
 ITEM 441 - 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449) PG64-22
 ITEM 301 - 3" ASPHALT CONCRETE BASE
 ITEM 304 - 6" AGGREGATE BASE (TWO LIFTS)
- F. COMMERCIAL DRIVES SHALL BE:
 ITEM 441 - 2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449) PG64-22
 ITEM 301 - 4" ASPHALT CONCRETE BASE
 ITEM 304 - 8" AGGREGATE BASE (TWO LIFTS)
- G. ALL RESIDENTIAL DRIVES ARE TO BE 4-1/2" THICK MINIMUM. ALL COMMERCIAL DRIVES AND ALLEY APPROACHES ARE TO BE 6" THICK MINIMUM. DRIVEWAY REPLACEMENT THICKNESS MAY VARY TO MATCH EXISTING DRIVEWAY THICKNESS.

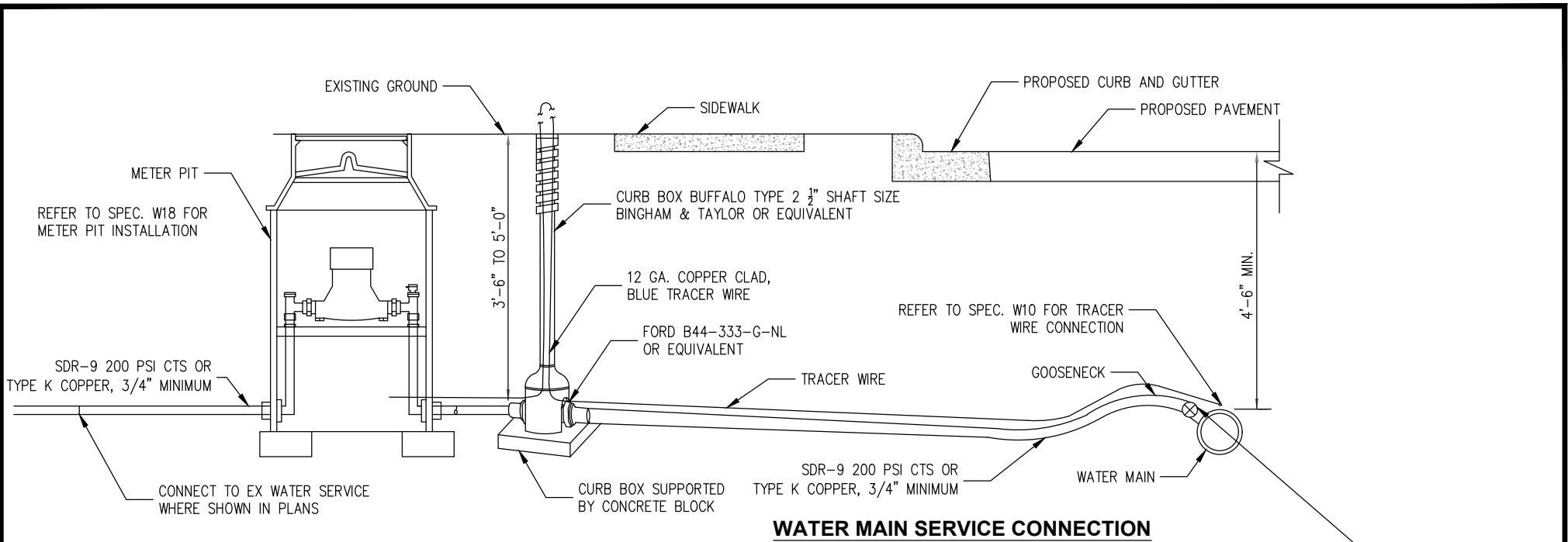
** DRIVEWAY REPLACEMENT WIDTH SHALL BE 4' MINIMUM. DRIVEWAY REPLACEMENT WIDTH WILL VARY DEPENDING ON EXISTING DRIVEWAY CONDITION.



SECTION A-A

* THE CONTRACTORS SHALL PERFORM SUBGRADE COMPACTION ON THE AREA UNDER THE PROPOSED ASPHALT DRIVE AND INSTALL A MINIMUM OF 6" FOR RESIDENTIAL AND 8" FOR COMMERCIAL OF COMPACTED AGGREGATE BASE (ODOT 304). THE COST OF THE SUBGRADE COMPACTION AND AGGREGATE BASE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 452.

ALLEN WATER DISTRICT	ASPHALT DRIVEWAY REPLACEMENT DETAIL	REVISIONS:	DATE APPROVED: FEB 2026
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WATER MAIN SERVICE CONNECTION

NOTES

- A. SERVICE LINE – MINIMUM 3/4" WATER SERVICE SHALL BE SDR-9 HDPE CTS(200 PSI), BLUE IN COLOR OR TYPE K COPPER. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS ON SDR-9 PIPE.
- B. WATER SERVICE LATERALS SHOWN ON THE PLANS ARE APPROXIMATE LOCATIONS. EXACT LOCATIONS TO BE VERIFIED WITH THE CITY OF LIMA.
- C. METER PIT AND CURB STOP TO BE LOCATED AS DIRECTED BY THE DISTRICT.
- D. ALL LONG SIDE LATERALS OUTSIDE OF WATERLINE TRENCH ARE TO BE BORED. ALL SHORT SIDE LATERALS MAY BE OPEN CUT.
- E. WATER SERVICE SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER SERVICE AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN. WATER SERVICE MAY BE LAID ON BENCH IN THE SEWER LATERAL TRENCH IF CROWN IS A LEAST 18" BELOW INVERT OF WATER SERVICE, AND THE MINIMUM DISTANCE BETWEEN THE WATER SERVICE AND THE SEWER LATERAL IS 5'-0".
- F. TRACER WIRE MUST BE INSTALLED ON ALL WATER SERVICES, REGARDLESS OF SERVICE LINE MATERIAL
- G. ALL SERVICE BRASS SHALL BE LOW LEAD BRASS AND COMPLY WITH AWWA C-800. COMPONENTS IN CONTACT WITH POTABLE WATER WILL ALSO COMPLY WITH LATEST REQUIREMENTS OF THE FEDERAL SAFE DRINKING WATER ACT.

CORPORATION STOP SHALL BE FORD FB1000-3-G-NL, OR EQUIVALENT. CORPORATION STOP SHALL BE TAPPED INTO MAIN AT 45'. TAP TO BE MADE UNDER PRESSURE WITH ACCEPTABLE TAPPING MACHINE. STAINLESS STEEL SADDLE SHALL BE ROMAC 101N, OR EQUIVALENT, FOR 1 1/2" TAPS, AND ROMAC 202N, OR EQUIVALENT, FOR 2" AND LARGER TAPS

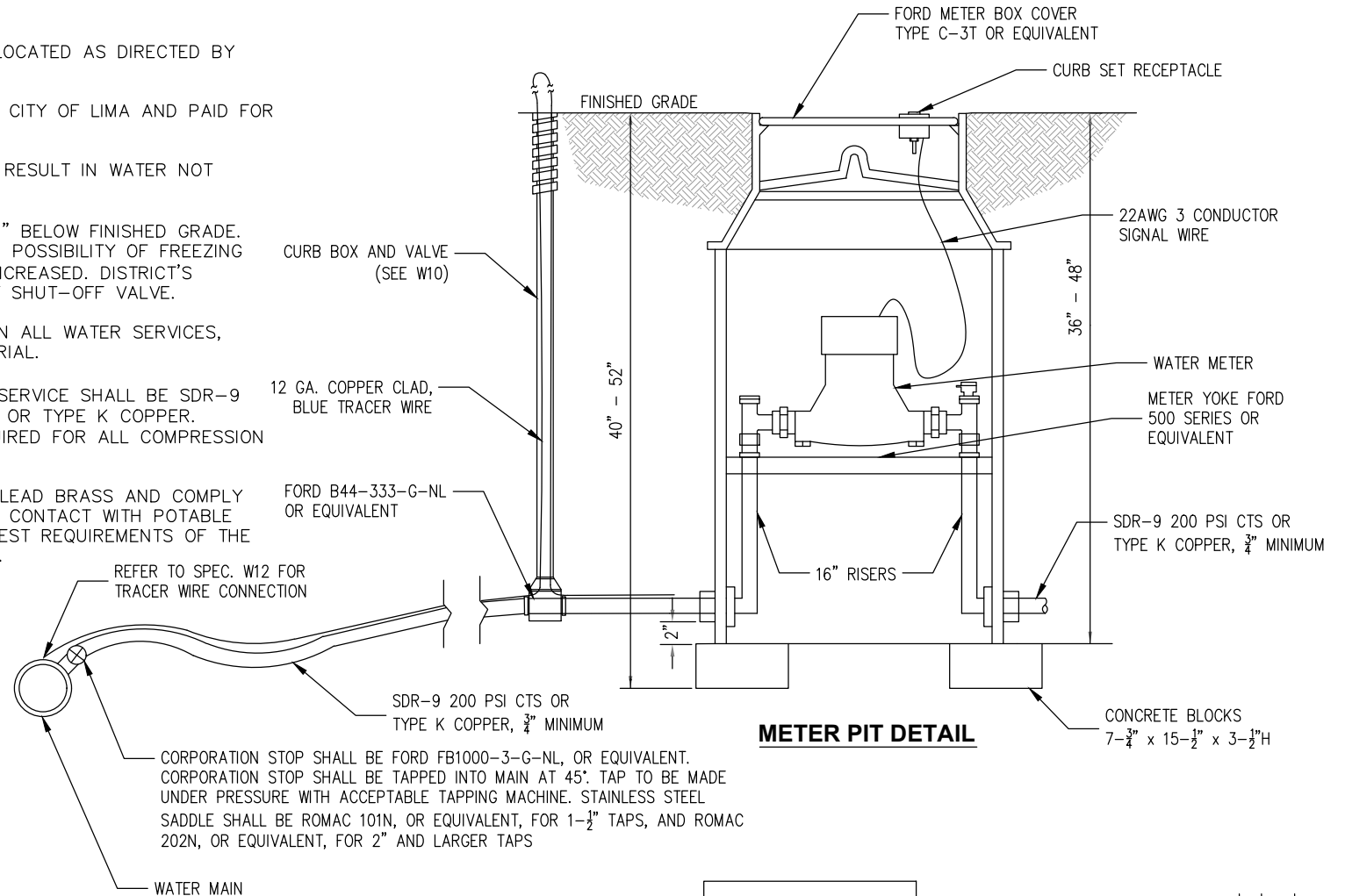
DIRECTIONAL DRILL NOTE

WHERE POSSIBLE, ALL INSTALLATION UNDER ROADWAY IS TO BE DONE BY DIRECTIONAL DRILL METHODS.

<p>ALLEN WATER DISTRICT</p>	<p>WATER MAIN SERVICE CONNECTION</p>	<p>REVISIONS:</p>	<p>DATE APPROVED: FEB 2026</p>
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NOTES

- A. METER PIT AND CURB STOP TO BE LOCATED AS DIRECTED BY THE DISTRICT.
- B. METER PIT AND METER PROVIDED BY CITY OF LIMA AND PAID FOR THROUGH TAPPING FEE.
- C. UNSATISFACTORY INSTALLATION WILL RESULT IN WATER NOT BEING TURNED ON.
- D. METER PIT LID MUST BE FLUSH OR 1" BELOW FINISHED GRADE. IF FRAME OF METER LID IS SHOWING, POSSIBILITY OF FREEZING OF METERS AND SERVICE LINES IS INCREASED. DISTRICT'S RESPONSIBILITY STOPS AT THE FIRST SHUT-OFF VALVE.
- E. TRACER WIRE MUST BE INSTALLED ON ALL WATER SERVICES, REGARDLESS OF SERVICE LINE MATERIAL.
- F. SERVICE LINE - MINIMUM 3/4" WATER SERVICE SHALL BE SDR-9 HDPE CTS(200 PSI), BLUE IN COLOR OR TYPE K COPPER. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS ON SDR-9 PIPE.
- G. ALL SERVICE BRASS SHALL BE LOW LEAD BRASS AND COMPLY WITH AWWA C-800. COMPONENTS IN CONTACT WITH POTABLE WATER WILL ALSO COMPLY WITH LATEST REQUIREMENTS OF THE FEDERAL SAFE DRINKING WATER ACT.



METER PIT INSTALLATION

ALLEN WATER DISTRICT

REVISIONS:

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