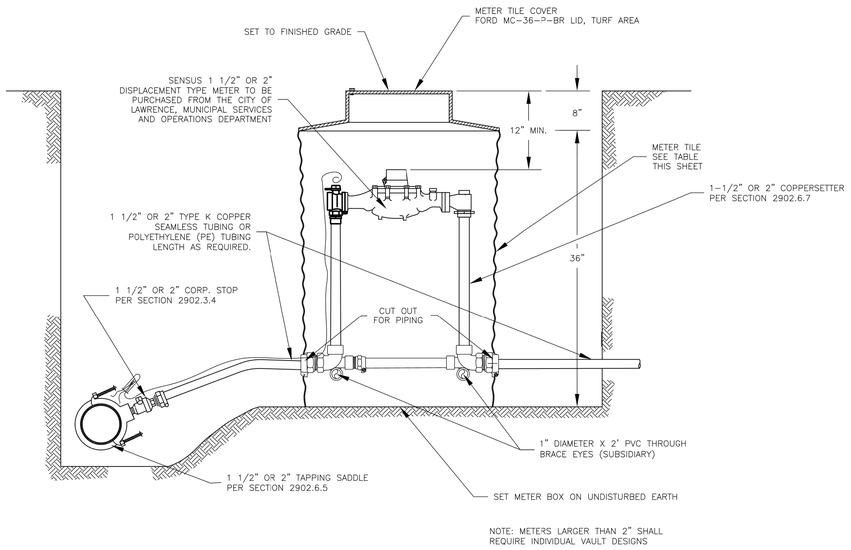
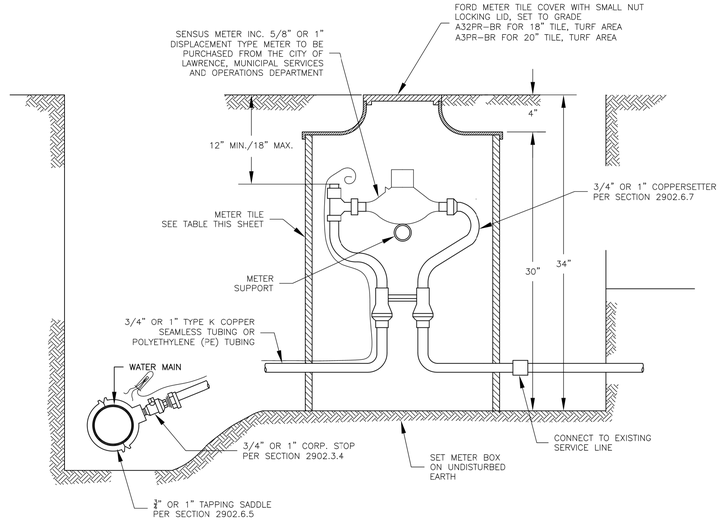


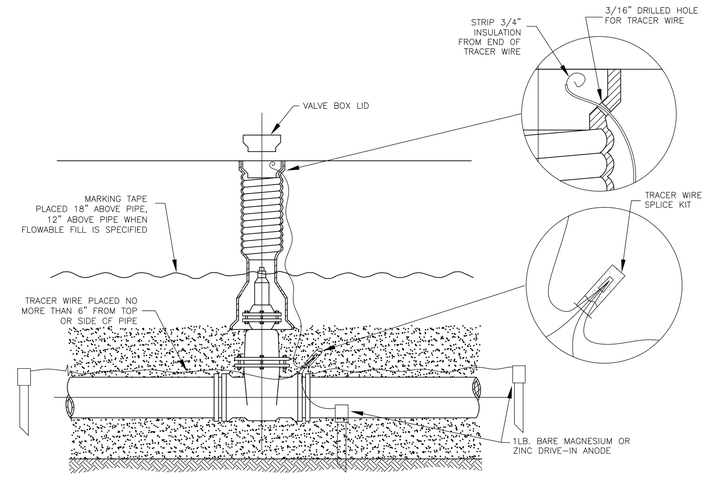
TYPICAL 1-1/2" OR 2" SERVICE CONNECTION
N.T.S.

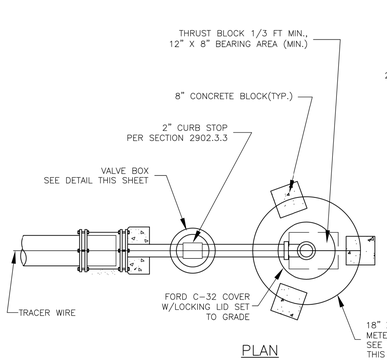


TYPICAL 3/4" AND 1" SERVICE CONNECTION
N.T.S.

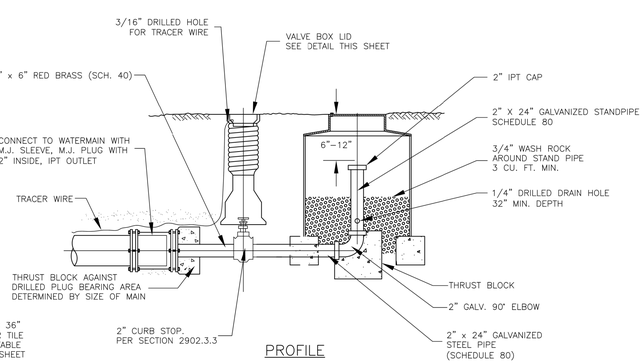
METER SIZE	SERVICE LINE SIZE*	METER SETTER	METER BOX SIZE/ ACCEPTABLE PRODUCTS	METER BOX COVER SIZE/ ACCEPTABLE PRODUCTS
5/8"	3/4"	FORD VB-81W-44-33-NL	18" x 30" / ADS 1805AAH OR ADS 18050012H OR ADS N-12 OR SIGMA RMP1830-SW-W OR CONTECH A2000 OR APPROVED EQUAL	18"/FORD A32PR-BR
1"	1"	FORD VB-84W-44-44-NL	20" / SIGMA RMP2030-W OR APPROVED EQUAL	20"/FORD A3PR-BR
1.5"	1.5"	Ford VBH76-18-44-66-NL	36" / ADS N-12 OR SIGMA RMP2030-W OR CONTECH A2000 PVC OR APPROVED EQUAL	36"/FORD MC-36-P-BR
2"	2"	FORD VBH77-18-44-77-NL		
3"	4"	METERS LARGER THAN 2" SHALL REQUIRE INDIVIDUAL VAULT DESIGNS. THE DESIGN ENGINEER SHALL SUBMIT PLANS FOR THE VAULT DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL ON A CASE-BY-CASE BASIS.		
4" +	MATCH METER DIAMETER			
*PUBLIC SERVICE LINE DIAMETER. CUSTOMER MAY INCREASE SERVICE LINE DIAMETER BEYOND THE SETTER.				

APPROVED WATER SERVICE MATERIALS



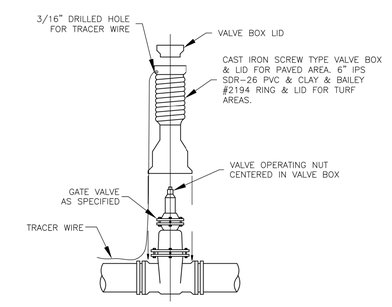


PLAN

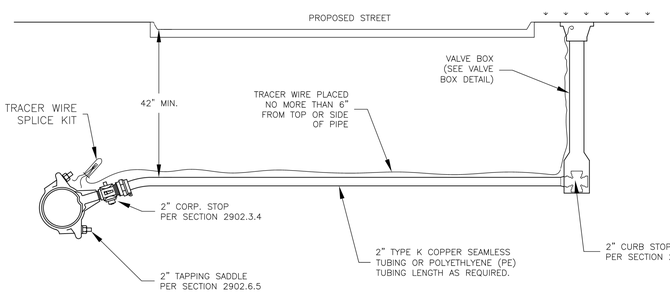


PROFILE

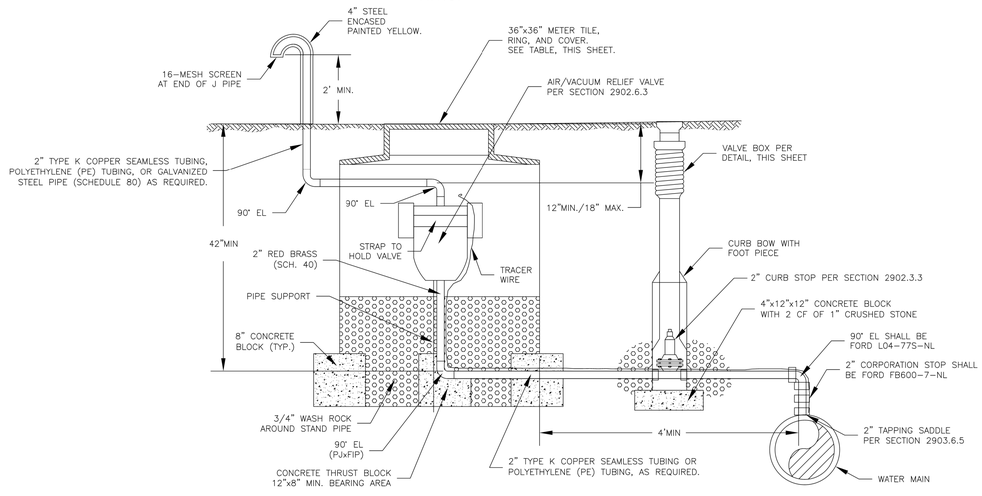
BLOWOFF DETAIL
N.T.S.



VALVE AND VALVE BOX DETAIL
N.T.S.



2" STREET SERVICE CROSSING
N.T.S.



AIR RELEASE VALVE DETAIL
N.T.S.

*NOTE:

1. ANODES SHALL BE A MINIMUM OF ONE POUND (1 LB.) BARE MAGNESIUM OR ZINC DRIVE-IN GROUNDING ANODE ROD AND SHALL BE DRIVEN INTO THE GROUND AT THE SAME ELEVATION AS THE WATERLINE. ANODES SHALL BE PLACED AT THE BEGINNING AND THE END OF THE WATERLINE, AT EVERY VALVE BOX OR TEST STATION, AT ALL DEAD ENDS, AT THE END OF SERVICE LINES , AND/OR AT LEAST EVERY FIVE HUNDRED FEET (500')
2. SPLICE CONNECTIONS SHALL BE COPPERHEAD INDUSTRIES LLC SNAKEBITE LOCKING WIRE CONNECTOR, COPPERHEAD INDUSTRIES SCB-01SR DIRECT BURY, COPPERHEAD INDUSTRIES LLC 3WB-01 DRYCONN THREE-WAY DIRECT BURY LUG CONNECTOR, OR 3M DBR/Y-6 DIRECT BURY.
3. TRACER WIRE SHALL BE 12AWG COPPER CLAD STEEL (CCS), MINIMUM BREAK LOAD OF 280 LBS. WITH BLUE 30MIL HDPE JACKET FOR OPEN TRENCH INSTALLATIONS OR 12AWG COPPER CLAD STEEL (CCS), MINIMUM BREAK LOAD OF 1,100 LBS. WITH BLUE 45 MIL HDPE JACKET FOR DIRECTIONAL DRILL INSTALLATION. TRACER WIRE SHALL BE PLACED NO FURTHER THAN 6" TO THE SIDE OR ABOVE THE WATERLINE. TRACER WIRE SHALL BE ACCESSIBLE AT VALVE BOX OR TEST STATIONS AT LEAST EVERY 500'.
4. MARKING TAPE SHALL BE INSTALLED 18" ABOVE PVC PIPE OR DUCTILE IRON PIPE. MARKER TAPE SHALL BE AT LEAST 3" IN WIDTH, BLUE IN COLOR WITH BLACK LETTERING STATING, "CAUTION BURIED WATERLINE BELOW."
5. TRACER WIRE SHALL BE REQUIRED ON ALL POLYETHYLENE (PE) TUBING SERVICE LINES. SPLICE SERVICE LINE TRACER WIRE TO TRACER WIRE AT THE EXISTING WATERMAIN WITH APPROVED CONNECTOR. IF NO TRACER WIRE IS IN PLACE ON THE EXISTING WATERMAIN, TIE SERVICE LINE TRACER WIRE TO 1LB MIN. ANODE AT EXISTING WATERMAIN.
6. ALL PUBLIC SERVICE LINES SHALL BE INSTALLED IN A MATTER THAT ALLOWS FOR LOCATION OF SAID INFRASTRUCTURE BY THE DEPARTMENT POST-CONSTRUCTION. MIXED MATERIALS (I.E. COPPER AND POLYETHYLENE) FROM THE WATER MAIN TO THE WATER METER SHALL NOT BE PERMITTED WITHOUT THE ADDITION OF A TRACER WIRE.

TRACER WIRE/MARKER TAPE DETAIL
N.T.S.

2022 EDITION

SHEET _____ OF _____

DATE	BY	REVISION
05-01-22	LJM	REPLACES ALL PREVIOUS VERSIONS OF WATERLINE DETAILS
12-01-21	LJM	REPLACES AIR RELEASE VALVE DETAIL

City of Lawrence
MUNICIPAL SERVICES & OPERATIONS

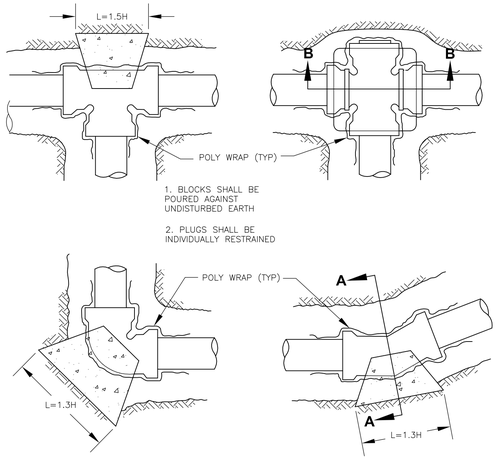
STANDARD DETAILS FOR
WATERLINE

1 OF 2

ANDREW P. ENSZ
PROGRAM MANAGER

CRAIG S. OWENS
CITY MANAGER

ANDREW PAUL ENSZ LICENSED 18805 KANSAS PROFESSIONAL ENGINEER



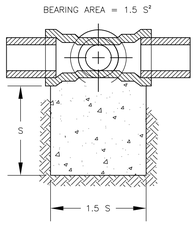
NOTES:
1. BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH. PLUGS SHALL BE INDIVIDUALLY RESTRAINED. ALL CONCRETE USED FOR THRUST BLOCKS AND ENCASEMENT SHALL BE CLASS A CONCRETE.

2. PIPE AND FITTINGS WITHIN 2 FEET OF CONCRETE BLOCKING SHALL BE WRAPPED IN 8 MIL POLY WRAP WITH 18" MINIMUM OVERLAP AT SEAM. (TYPICAL ALL BLOCKING INSTALLATIONS EXCEPT BLOCKING FOR FIRE HYDRANT BASE)

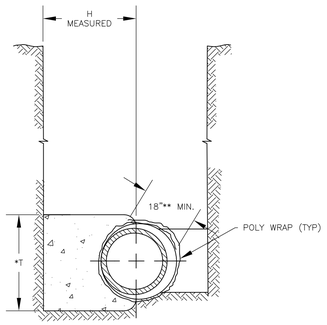
LINE SIZE	BEARING AREA IN SQUARE FEET				
	TEE or DEAD END	90° ELLS	45° ELLS	22 1/2 ° ELLS	11 1/4 ° ELLS
4"	2.7	3.8	2.1	1.1	0.5
6"	5.6	7.9	4.3	2.2	1.1
8"	9.6	13.6	7.4	3.8	1.9
10"	14.5	20.5	11.1	5.7	2.8
12"	20.5	29.0	15.7	8.0	4.0

BEARING AREA BASED ON THE FOLLOWING:
DESIGN PRESSURE: 150 psi
SOIL BEARING CAPACITY: 1500 PSF
SAFETY FACTOR: 1.5

THRUST BLOCK DETAILS
N.T.S.



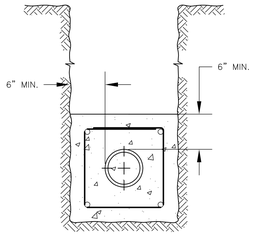
SECTION B–B



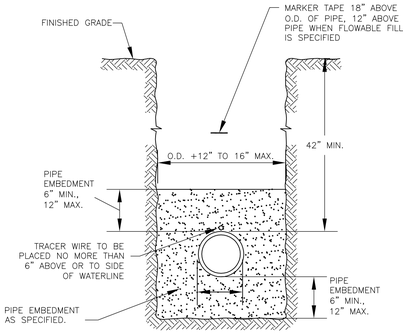
* AS REQUIRED TO OBTAIN THE MINIMUM BEARING AREA SHOWN IN THE TABLE. IN NO CASE SHALL THIS BE LESS THAN THE O.D. OF THE PIPE. BEARING AREA = LxT

** POLYWRAP OVERLAP AT SEAM

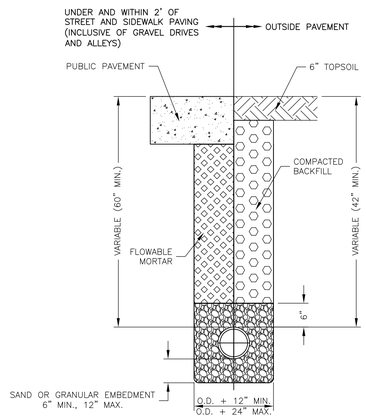
SECTION A–A



CONCRETE ENCASEMENT DETAIL
N.T.S.

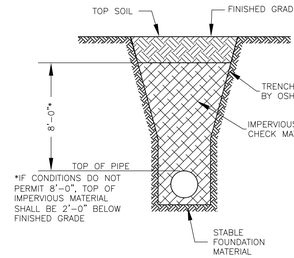


TYPICAL TRENCH SECTION
N.T.S.



NOTES
1. FLOWABLE MORTAR MATERIALS AND PLACEMENT LIMITS SHALL CONFORM TO SECTIONS 1102E AND 1107B OF THE CITY OF LAWRENCE CONSTRUCTION AND MATERIAL SPECIFICATIONS SECTION 1100–GRADING RESPECTIVELY.
2. COMPACTED BACKFILL SHALL CONFORM TO SECTION 1107B AND 1108 OF THE CITY OF LAWRENCE CONSTRUCTION AND MATERIAL SPECIFICATIONS SECTION 1100–GRADING.
3. DETAIL SHOWN SHALL GOVERN IN NEW CONSTRUCTION. THE CITY OF LAWRENCE STANDARD DETAILS FOR STREET REPAIR–PAVEMENT REMOVAL AND REPLACEMENT DETAILS FOR TRENCHING WITHIN EXISTING ROADWAYS SHALL GOVERN WITHIN EXISTING PAVEMENT.

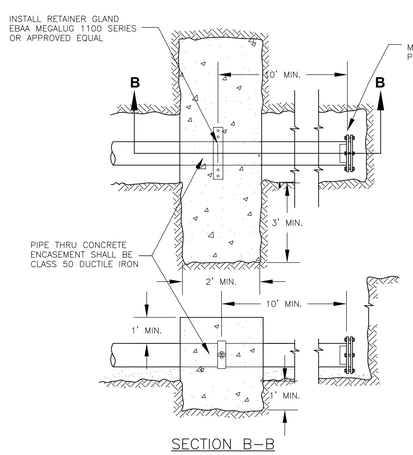
WATERLINE TRENCH DETAILS
N.T.S.



*IF CONDITIONS DO NOT PERMIT 8'–0", TOP OF IMPERVIOUS MATERIAL SHALL BE 2'–0" BELOW FINISHED GRADE

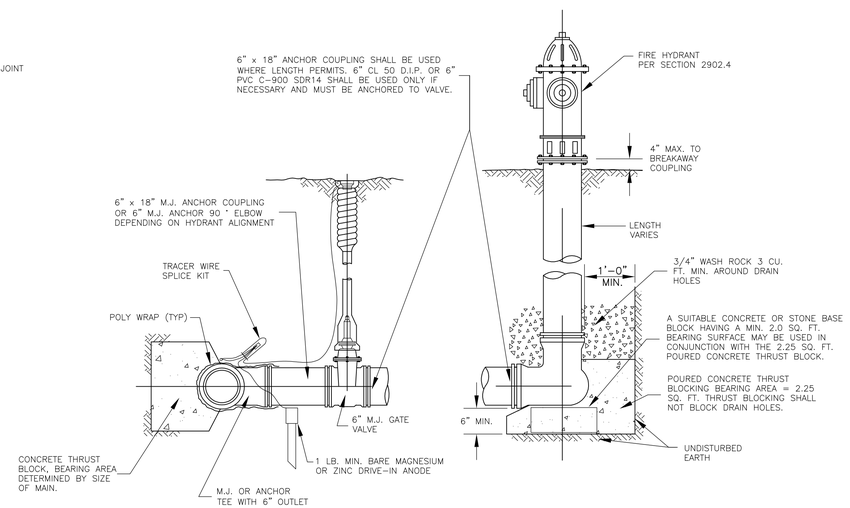
IMPERVIOUS DITCH CHECKS SHALL BE PLACED WHERE SHOWN ON THE PLANS. LENGTHS SHALL BE A MINIMUM OF 10 L.F. FLOWABLE FILL IS REQUIRED FOR PVC PIPE. FOR OTHER PIPE TYPES, CLAY MATERIAL OR FLOWABLE FILL MAY BE USED AT THE CONTRACTORS OPTION. FLOWABLE FILL MATERIAL TO COMPLY WITH CITY OF LAWRENCE CONSTRUCTION AND MATERIALS SPECIFICATION SECTION 1100, CURRENT EDITION. CLAY MATERIAL SHALL BE FREE OF CLODS, CLUMPS, DEBRIS, ORGANIC MATERIAL, AND STONES, COMPACTED SO AS TO OBTAIN 95% OF STANDARD PROCTOR MAXIMUM DENSITY AS DETERMINED BY ASTM D698.

IMPERVIOUS DITCH CHECK
N.T.S.

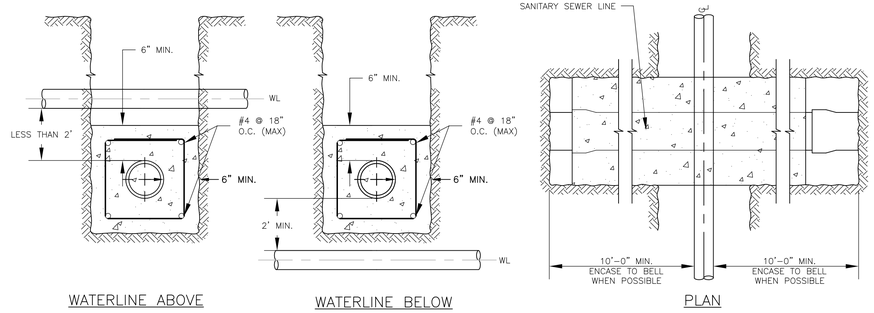


SECTION B–B

STRADDLE OR END BLOCKING
N.T.S.



FIRE HYDRANT ASSEMBLY DETAIL WITH TEST STATION
N.T.S.



WATERLINE ABOVE

WATERLINE BELOW

PLAN

CONCRETE ENCASEMENT OF SANITARY SEWER LINE CROSSING WATER LINE
N.T.S.

2022 EDITION

SHEET _____ OF _____

DATE	BY	REVISION
05–01–22	LJM	REPLACES ALL PREVIOUS VERSIONS OF WATERLINE DETAILS
03–01–21	LJM	REPLACES ALL PREVIOUS VERSIONS OF WATERLINE DETAILS

City of Lawrence
MUNICIPAL SERVICES & OPERATIONS

STANDARD DETAILS FOR
WATERLINE

2 OF 2

ANDREW P. ENSZ
PROGRAM MANAGER

CRAIG S. OWENS
CITY MANAGER

ANDREW PAUL ENSZ LICENSED 18805 KANSAS PROFESSIONAL ENGINEER