



# CITY OF ANN ARBOR PROJECT MANAGEMENT

## LAWRENCE ST. WATER MAIN REPLACEMENT

BID No. ITB 4367, FILE No. 2014032

**NOTES**

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, THE CONTRACTOR SHALL CALL 811 OR 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS, PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

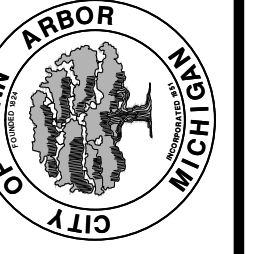
THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS, TELEPHONE, ELECTRICAL POWER, CABLE TV AND FIBER OPTIC LINES ARE APPROXIMATE. THE CITY OF ANN ARBOR ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE 1994 EDITION OF THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS, ITS DETAILS, WHICH ARE INCLUDED BY REFERENCE, AND THIS PROJECT'S CONTRACT DOCUMENTS. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THIS REQUIREMENT.



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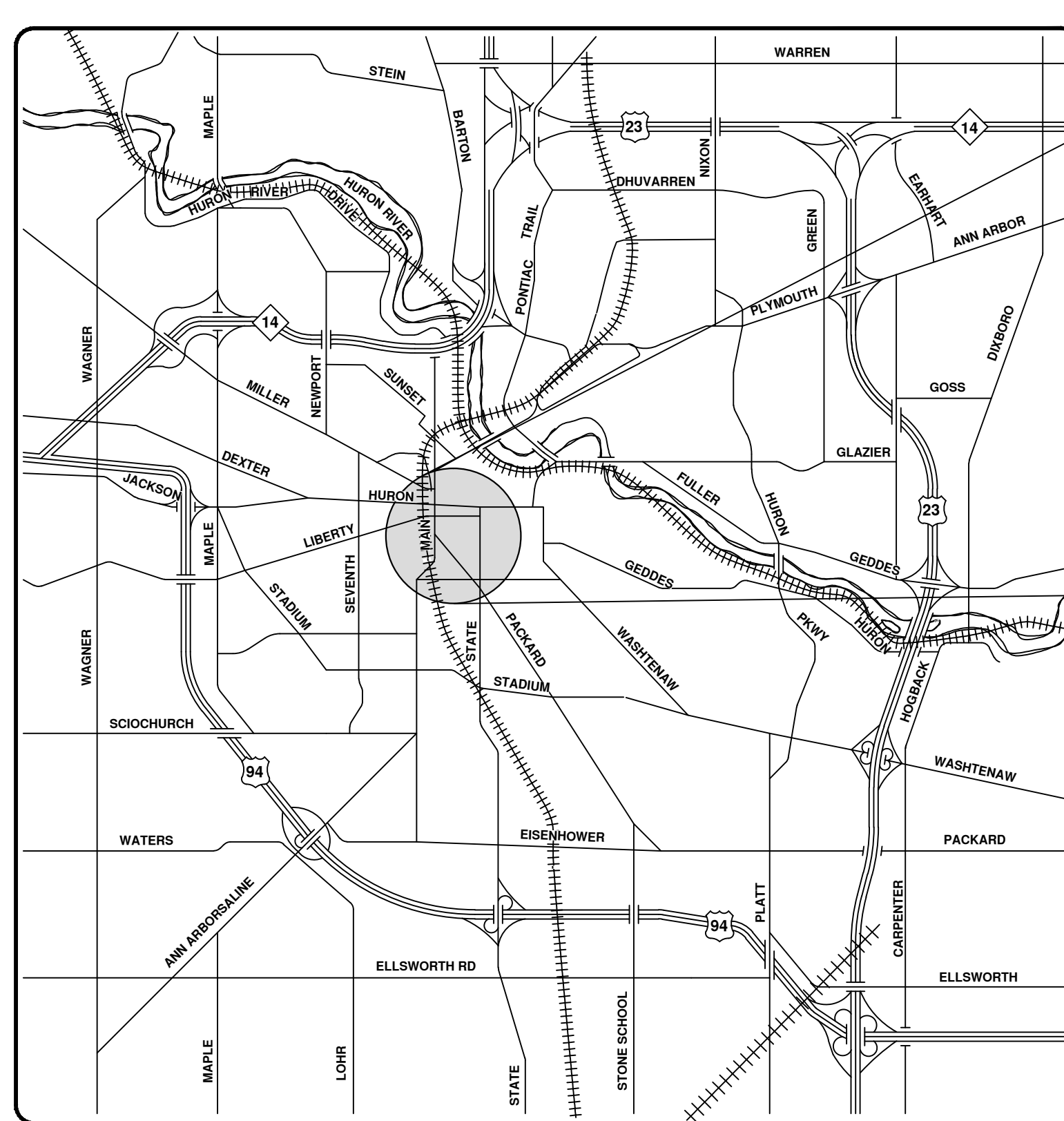
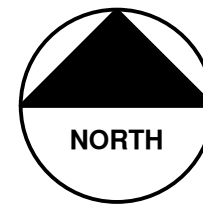
CITY OF ANN ARBOR  
PUBLIC SERVICES  
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ANN ARBOR, MI 48106-0667  
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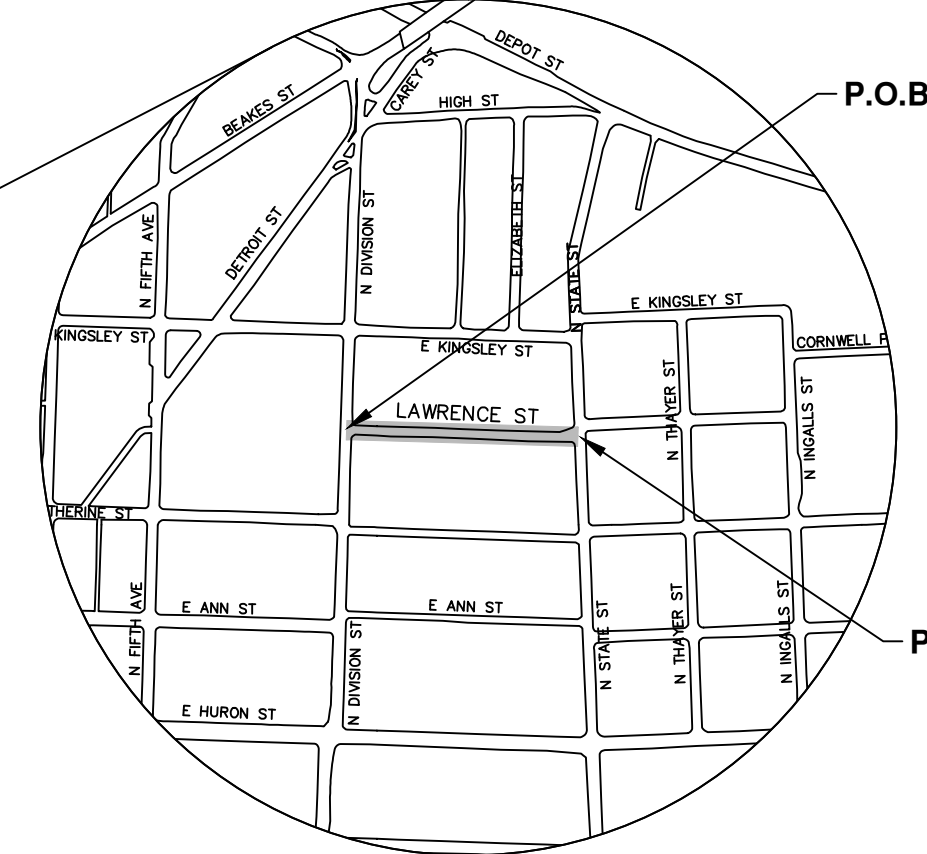
**PROJECT MANAGEMENT - CITY OF ANN ARBOR**  
CONTRACT FOR WATER MAIN REPLACEMENT ON LAWRENCE STREET  
BETWEEN STATE STREET AND DIVISION STREET  
SCALE  
DRAWING No. 2014032-1  
SHEET No. 1 OF 11


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SHEET LIST TABLE	
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1	COVER SHEET
2	NOTES AND CONTACTS
3	LEGENDS, BENCHMARKS AND CASTING SCHEDULES
4	ROAD SECTION, TRENCH DETAIL, INLET DETAIL
5	TRAFFIC CONTROL
6	DETOUR PLAN
7	REMOVALS
8-9	WATER MAIN PLAN AND PROFILE
10-11	ROAD & STORM SEWER



VICINITY MAP



PROJECT MANAGEMENT SERVICE UNIT	
 NICHOLAS HUTCHINSON, P.E. - MI LICENSE No. 46789 CITY ENGINEER _____ / ____ / 2015 DATE	ENGINEER'S SEAL
PREPARED UNDER THE SUPERVISION OF IGOR V. KOTLYAR, P.E. - MI LICENSE No. 43287 PROJECT ENGINEER _____ / ____ / 2015 DATE	ENGINEER'S SEAL

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**CONSTRUCTION NOTES:**

- DRIVEWAYS AND ENTRANCES TO BUILDINGS, REAL PROPERTY, AND THE LIKE SHALL NOT BE BLOCKED EXCEPT FOR SHORT DURATIONS AND ONLY WHEN APPROVED BY THE ENGINEER. VEHICULAR AND PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL NECESSARY DRIVEWAY CLOSURES WITH THE PROPERTY OWNER(S) AND RESIDENT(S) IN THE AREAS OF CONSTRUCTION.
- THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND SERVICE LEADS ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- LOCATION AND DEPTH OF UTILITIES AS DEPICTED ON THE PLANS IS APPROXIMATE AND SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXCAVATE AHEAD AND ADJUST DEPTH OF CONFLICT UTILITIES ACCORDINGLY. ANY DAMAGE TO UTILITIES IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID AND/OR REPAIR AS NECESSARY.
- THE CONTRACTOR IS TO TAKE SPECIAL CARE TO PROTECT THE EXISTING WATER MAIN AND BE RESPONSIBLE FOR MAINTAINING CONSISTENT WATER SERVICE.
- DURING NON-WORKING HOURS NO TRENCH SHALL REMAIN OPEN; ANY OPEN TRENCH SHALL BE PROPERLY SECURED WITH PROTECTIVE FENCING. THIS WORK SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS".
- TRENCHES FOR NEW WATER SERVICES SHALL BE EXCAVATED TO MIOSHA AND CITY OF ANN ARBOR FIELD SERVICES REQUIREMENTS.
- CITY OF ANN ARBOR FIELD SERVICES WILL INSTALL THE CORPORATION AND COPPER SERVICE LEAD(S) TO TRANSFER THE CONNECTION(S). IF AN EXISTING WATER SERVICE IS FOUND TO BE FAILING OR IS NOT COPPER, THE LEAD WILL BE REPLACED TO THE CURB BOX BY FIELD SERVICES.
- FOR THE INSTALLATION OF CORPORATIONS, OR ANY OTHER RELATED ACTIVITIES, THE CONTRACTOR SHALL NOT RECEIVE ADDITIONAL COMPENSATION FOR DELAYS DUE TO THE SCHEDULING OF OR COORDINATION WITH THE CITY OF ANN ARBOR FIELD SERVICES.
- THE CONTRACTOR SHALL BACKFILL TRENCHES IN ACCORDANCE WITH TRENCH DETAIL SPECIFIED ON PLANS. THIS WORK SHALL BE INCLUDED IN THE ITEM OF WORK "EXCAVATE AND BACKFILL FOR WATER SERVICE TAP AND LEAD". ALL CONCRETE REMOVALS AND REPLACEMENTS REQUIRED FOR THIS WORK WILL BE PAID FOR SEPARATELY.
- ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE POLYETHYLENE WRAPPED PER ANSI/AWWA C105/A21.5.
- COR-BLU BOLTS TO BE USED AT ALL MECHANICAL WATER MAIN JOINTS AT HYDRANTS AND MEGALUG FITTINGS
- THE CONTRACTOR SHALL CONSTRUCT, FLUSH, AND BACTERIOLOGICALLY TEST THE WATER MAIN PER DETAILED SPECIFICATION "WATER MAIN INSTALLATION AND TESTING" AND AS APPROVED BY THE ENGINEER. ALL CHLORINATED WATER SHALL BE DISCHARGED DIRECTLY INTO AN APPROVED SANITARY SEWER. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY HOSES, FITTINGS AND THE LIKE TO ACCOMPLISH THIS WORK.
- WATER MAIN FITTINGS, OTHER THAN THOSE SPECIFICALLY LISTED AS SEPARATE PAY ITEMS, WHICH ARE REQUIRED TO COMPLETE THE WORK, SUCH AS BLOW-OFF ASSEMBLIES, CONCRETE THRUST BLOCKS, SOLID SLEEVES AND MECHANICAL PLUGS, SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE PIPE PAY ITEMS.
- "NO PARKING" SIGNS SHALL BE INSTALLED BY THE CONTRACTOR AT LOCATIONS AS APPROVED OR DIRECTED BY THE ENGINEER. ALL SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILED SPECIFICATIONS.
- POSTAL DELIVERY AND REFUSE PICKUP SERVICE SHALL BE MAINTAINED AT ALL TIMES BY THE CONTRACTOR.
- ALL FITTINGS, HYDRANTS, VALVES AND CASTINGS REMOVED DURING CONSTRUCTION ARE THE PROPERTY OF THE CITY OF ANN ARBOR. THE CONTRACTOR WITHIN 48 HOURS SHALL DELIVER TO CITY OF ANN ARBOR FIELD OPERATIONS AND MAINTENANCE FACILITY AT THE W.R. WHEELER SERVICE CENTER LOCATED AT 4251 STONE SCHOOL ROAD.

- WHERE STREET CURBS ARE UNDERMINED DUE TO CONSTRUCTION ACTIVITIES, THEY SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUOUS MAINTENANCE OF THE TEMPORARY ROAD SURFACE AND SOIL EROSION CONTROL MEASURES WITHIN THE CONSTRUCTION AREA UNTIL THE FULL COMPLETION OF THE PROJECT. THIS WORK SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS".
- ALL CURB, SIDEWALK, DRIVEWAY APPROACH REMOVALS SHALL BE APPROVED BY ENGINEER BEFORE THE WORK IS DONE.
- SAWED SEWER PIPE CONNECTIONS SHALL BE COUPLED WITH A FERNCO FLEXIBLE COUPLING AND A STAINLESS STEEL SHEAR RING.
- THE LOCATION OF MATERIAL STOCK PILES AND ON-SITE STAGING AREAS TO BE APPROVED BY THE ENGINEER.
- FOR MAINLINE PAVING, THE WIDTH OF THE MAT FOR EACH PASS OF THE PAVER SHALL BE NOT LESS THAN 10.5' OR GREATER THAN 15', AS DIRECTED BY THE ENGINEER. THE ENGINEER WILL DIRECT THE LAYOUT OF THE LONGITUDINAL JOINTS DURING CONSTRUCTION.
- ALL STRUCTURES SHALL RECEIVE NEW CASTINGS AS DIRECTED BY THE ENGINEER, AS SPECIFIED ON THE STANDARD CASTING SCHEDULE. THE EXISTING CASTINGS ARE THE PROPERTY OF THE CITY OF ANN ARBOR. THE CONTRACTOR SHALL DELIVER TO CITY OF ANN ARBOR FIELD OPERATIONS AND MAINTENANCE FACILITY AT THE W.R. WHEELER SERVICE CENTER LOCATED AT 4251 STONE SCHOOL ROAD.
- PAYMENT FOR DRAINAGE STRUCTURE SUMPS, WHERE SPECIFIED, SHALL BE INCLUDED IN THE PAYMENT FOR THE VARIOUS DRAINAGE STRUCTURE SIZES AND OR TYPES.
- WHERE SEWER PIPES OF DIFFERENT SIZES OR MATERIALS ARE JOINED, FERNCO FLEXIBLE COUPLINGS WITH STAINLESS STEEL SHEAR RINGS SHALL BE USED. THE CONTRACTOR'S PURCHASE PRICE FOR THESE DEVICES, INCLUDING SHIPPING, SHALL BE PAID AS AN EXTRA. PRIOR TO PAYMENT FOR THIS ITEM, THE CONTRACTOR SHALL SUBMIT RECEIPTS FOR THE ENGINEER'S REVIEW AND APPROVAL. ALL OTHER COSTS ASSOCIATED WITH THE INSTALLATION OF THESE DEVICES SHALL BE INCLUDED IN THE PAYMENT FOR THE SEWER.
- WHERE SEWER AND WATER MAIN ARE TO BE REMOVED & REPLACED OR ADDED, ALL PIPE SHALL BE INSTALLED USING TRENCH DETAIL DETAILED IN THE SPECIFICATIONS OR SHOWN ON PLANS. BACKFILL FOR SEWER AND WATER CONSTRUCTION SHALL BE MDOT GRANULAR MATERIAL, CLASS II, MODIFIED.
- EXISTING STREET NAME, GUIDE, AND REGULATORY SIGNS, AND MAILBOXES WHICH CONFLICT WITH THE PROPOSED CONSTRUCTION SHALL BE REMOVED PRIOR TO CONSTRUCTION, STORED IN A MANNER WHICH WILL PREVENT DAMAGE, AND RE-SET IN LOCATIONS AS DIRECTED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN "MACHINE GRADING, MODIFIED"
- IN AREAS WHERE EDGE DRAIN CANNOT BE INSTALLED IN ACCORDANCE WITH CITY OF ANN ARBOR DETAIL SD-TD-11, THE EDGE DRAIN SHALL BE INSTALLED AT THE DEPTH AS INDICATED ON THE PLANS, OR AS DIRECTED BY ENGINEER. IN NO CASE SHALL THE EDGE DRAIN BE INSTALLED AT A GRADE LESS THAN 0.50% OR AT A DEPTH OF LESS THAN 2' BELOW TOP OF PROPOSED PAVEMENT.

SOIL EROSION & SEDIMENT CONTROL GENERAL NOTES:

NOTIFY THE CITY OF ANN ARBOR SOIL EROSION CONTROL OFFICE 48 HOURS PRIOR TO BEGINNING WORK ON THE PROJECT. PHONE: 734-794-6265.

- THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN SOIL EROSION CONTROL MEASURES AS DIRECTED BY THE ENGINEER AT ALL TIMES DURING CONSTRUCTION. ANY MODIFICATIONS OR ADDITIONS TO THE SOIL EROSION CONTROL MEASURES DUE TO CONSTRUCTION OR CHANGED CONDITIONS SHALL BE AS DIRECTED AND APPROVED BY THE ENGINEER.
- ALL SOIL EROSION AND SEDIMENTATION CONTROL WORK SHALL CONFORM TO THE PERMIT REQUIREMENTS OF THE CITY OF ANN ARBOR, CITY ORDINANCE CHAPTER 63, CITY OF ANN ARBOR STANDARDS DIVISION VII, THE LAWS OF THE STATE OF MICHIGAN, AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- DAILY, OR AFTER ANY STORM EVENT, INSPECTIONS OF EROSION CONTROL MEASURES SHALL BE MADE BY THE CONTRACTOR. PERIODIC INSPECTIONS MAY BE MADE BY THE ENGINEER TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES. ANY NECESSARY CORRECTIONS SHALL BE MADE WITHOUT DELAY, AND WITHOUT ADDITIONAL COST TO THE CITY OF ANN ARBOR.
- EROSION AND SEDIMENTATION FROM WORK ON THE SITE SHALL BE CONTAINED ON THE SITE AND NOT BE ALLOWED TO COLLECT ON ANY OFF-SITE AREAS, ROADWAYS OR WATERWAYS.
- ALL MUD/DIRT TRACKED ONTO ROADWAYS FROM THE SITE DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR. IF SO ORDERED, THE CONTRACTOR SHALL PROVIDE AND OPERATE A VACUUM-TYPE STREET SWEEPER, AT NO ADDITIONAL COST TO THE CITY OF ANN ARBOR, WITHIN FOUR (4) HOURS OF BEING SO ORDERED.
- RESTORATION OF ALL DISTURBED AREAS, INCLUDING PLACEMENT OF TOPSOIL, SEED, FERTILIZER AND MULCH AND/OR SOD SHALL BE PERFORMED WITHIN FIVE (5) DAYS OF THE COMPLETION OF FINAL GRADE.
- CONSTRUCTION OPERATIONS SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE SOIL EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION IN CRITICAL AREAS AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING BACKFILLING OPERATIONS.
- SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
- PROPER DUST CONTROL SHALL BE MAINTAINED DURING CONSTRUCTION BY USE OF WATER TRUCKS AND/OR DUST PALLATIVE AS REQUIRED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND REMOVAL OF SOME MEASURES UPON AUTHORIZED COMPLETION OF THE PROJECT. FINAL COMPLETION OF PROJECT WILL NOT BE AUTHORIZED UNTIL ALL SITE WORK AND UTILITY CONSTRUCTION IS COMPLETE AND ALL SOILS ARE STABILIZED.
- THE CONTRACTOR SHALL NOT GRADE INTO ADJACENT PROPERTIES. SILT AND PROTECTIVE FENCE SHALL BE INSTALLED AND MAINTAINED TO PREVENT GRADING, EROSION AND SEDIMENTATION INTO THE ADJACENT PROPERTIES.
- TREE PROTECTION FENCING MUST REMAIN INTACT UNTIL RESTORATION OF THE SITE IS COMPLETE.

SEQUENCE OF EROSION CONTROL MEASURES:

- THE CONTRACTOR IS TO SUBMIT TO THE ENGINEER, A SEQUENCE OF CONSTRUCTION WITH RESPECT TO THE SOIL EROSION CONTROL MEASURES FOR REVIEW, COMMENT AND APPROVAL. THIS SCHEDULE IS TO INCLUDE INSPECTION AND REPAIR OF ALL TEMPORARY EROSION CONTROL MEASURES DAILY AND WITHIN 24 HOURS OF A STORM EVENT.

SAMPLE SOIL EROSION AND SEDIMENTATION CONTROL INSTALLATION MINIMUM REQUIREMENTS:

- INSTALL SILT FENCE, TREE PROTECTION FENCING AND INLET FILTERS ON EXISTING DRAINAGE FEATURES PRIOR TO ANY CLEARING OR EARTH MOVING OPERATION.
- STRIP AND STOCKPILE TOPSOIL. STABILIZE STOCKPILE AS REQUIRED.
- INSTALL WATER MAINS, STORM AND SANITARY SEWERS, AND OTHER ENCLOSED DRAINAGE FEATURES. NEW INLET FILTERS SHALL BE INSTALLED IMMEDIATELY FOLLOWING INSTALLATION OF NEW DRAINAGE INLETS.
- PERFORM MACHINE GRADING OPERATIONS AND CONSTRUCT PAVEMENTS (MAINLINE, SIDEWALKS, DRIVES, ETC.).
- CONTINUALLY MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES, AS REQUIRED TO ALLOW DRAINAGE AND SEDIMENT REMOVAL. REMOVE ANY ACCUMULATED SEDIMENT IMMEDIATELY.
- COMPLETE ALL GRADING AND FINE GRADING.
- TEMPORARY SEED AND INSTALL EROSION CONTROL BLANKET IN ALL DISTURBED AREAS.
- CLEAN OUT STORM SEWER SYSTEMS.
- REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES UPON FINAL INSPECTION AND APPROVAL BY THE ENGINEER.
- REMEDY ANY NOTED DEFECTS TO THE SATISFACTION OF THE CITY OF ANN ARBOR'S SOIL EROSION AND SEDIMENTATION CONTROL OFFICIAL.

NOTE: THIS SEQUENCE IS FOR INFORMATION ONLY. IT IS INTENDED TO SHOW THE SEQUENCE OF CONSTRUCTION WITH RESPECT TO THE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING THEIR OWN DETAILED CONSTRUCTION SEQUENCE AND SCHEDULE TO THE ENGINEER FOR REVIEW, COMMENT, AND APPROVAL.

TEMPORARY SEEDING:

- SEED IN ACCORDANCE WITH PROJECT DRAWINGS AND SPECIFICATIONS.
- ANY DISTURBED AREA NOT PAVED, SEEDED, MULCHED, SODDED OR BUILT UPON BY NOVEMBER 15TH OR JUNE 30TH IS TO BE TEMPORARILY STABILIZED PER SPECIFICATIONS.

**PERMITS REQUIRED TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE BEGINNING OF CONSTRUCTION.**

PERMIT	ISSUING AUTHORITY
LANE CLOSURE PERMIT	CITY OF ANN ARBOR PROJECT MANAGEMENT UNIT
"NO PARKING" SIGNS PERMIT	CITY OF ANN ARBOR PROJECT MANAGEMENT UNIT
GRADING/SOIL EROSION & SEDIMENTATION CONTROL PERMIT	CITY OF ANN ARBOR CUSTOMER SERVICE
RIGHT-OF-WAY PERMIT	CITY OF ANN ARBOR CUSTOMER SERVICE
ALL PERMITS LIST ARE AT NO COST TO CONTRACTOR	

**PERMITS REQUIRED TO BE OBTAINED BY THE CITY OF ANN ARBOR PRIOR TO THE BEGINNING OF CONSTRUCTION.**

PERMIT	ISSUING AUTHORITY
M.D.E.Q. WATER MAIN CONSTRUCTION PERMIT	MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
M.D.E.Q. SANITARY SEWER CONSTRUCTION PERMIT	MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

**CONTACT INFORMATION**

PUBLIC UTILITIES	OWNER	CONTACT
WATER		DAN WOODEN (734) 794-6350
SANITARY		MARK COZART (734) 794-6350
STORM	CITY OF ANN ARBOR FIELD OPERATIONS SERVICE UNIT W.R. WHEELER SERVICE CENTER 4251 STONE SCHOOL ROAD ANN ARBOR, MI 48108	KEVIN ERNST (734) 794-6350
FORESTRY		STEVEN GOEBEL (734) 794-6350
SIGNS SIGNALS STREET LIGHTS		CHUCK FOJTIK (734) 794-6361
PRIVATE UTILITIES	OWNER	CONTACT
GAS	DTE ENERGY 3150 E. MICHIGAN AVE, YPSILANTI TOWNSHIP, MI 48198	ROBERT CZAPIEWSKI (734) 544-7818
ELECTRIC	DTE ENERGY WESTERN WAYNE SERVICE CENTER 8001 HAGGERTY ROAD BELLEVILLE, MI 48111	CLAY COMBEE (734) 397-4112
CABLE	COMCAST 27800 FRANKLIN ROAD SOUTHFIELD, MI 48034	RON SUTHERLAND (313) 999-8300
PHONE	AT&T 550 S. MAPLE ROAD ANN ARBOR, MI 48103	(734) 996-2135
FIBER OPTIC	MCI 2800 N. GLENFILLE ROAD RICHARDSON, TX 75082	DEAN BOYERS (972) 729-6016



DATE	DRAWN	CHECKED

CITY OF ANN ARBOR  
PUBLIC SERVICE  
301 EAST HURON STREET  
PO BOX 866  
ANN ARBOR MI 48107-0867  
www.a2gov.org



PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR  
LAWRENCE ST. WATER MAIN REPLACEMENT

NOTES & CONTACTS

SCALE: N/A  
DRAWING No. 2014032-2  
SHEET No. 2 OF 11

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BM #	ELEV	DESCRIPTION
1	860.703	RR spike in W side of LP @ SE corner of State and Lawrence.
2	854.268	RR spike in N side of LP on S side of Lawrence in front of hse #514
3	849.435	RR spike in S side of LP on N side of Lawrence in front of hse #503
4	842.277	RR spike in S side of LP @ NE corner of Division & Lawrence

SANITARY SEWER STRUCTURE TABLE							
STRUCTURE	STATION	RIM	DEPTH	DIA.	TYPE	INVERTS	NOTES
s1	-0+22.25	848.83	10.55	48	4' MH	8" N 838.28	ex 4' mh
s2	-0+21.87	840.83	9.00	48	4' MH	8" S 831.93 8" E 832.38 8" N 831.83	ex 4' mh
s3	-0+21.80	835.17	10.95	48	4' MH	8" S 824.22	ex 4' mh
s4	1+62.93	846.45	8.75	48	4' MH	8" E 837.70 8" W 837.70	ex 4' mh
s5	2+99.98	851.26	9.35	48	4' MH	8" E 841.91 8" W 841.91	ex 4' mh
s6	4+44.54	854.43	9.90	48	4' MH	8" E 844.53 8" W 844.53	ex 4' mh
s7	6+13.27	856.52	8.60	48	4' MH	8" W 847.92	ex. 4' mh
s8	7+13.34	862.22	10.55	48	4' MH	10" N 851.67	ex 4' mh
s9	7+08.81	857.83	10.20	48	4' MH	10" S 847.63 8" E 848.18 10" N 847.63	ex 4' mh
s10	7+10.04	842.00	9.05	48	4' MH	10" S 832.95	ex 4' mh
s11		860.64	9.80	48	4' MH	8" W 850.84	ex 4' mh

STORM SEWER STRUCTURE TABLE						
STRUCTURE	UTILITY STATION	INVERT ELEVATION, SIZE & DIRECTION	TOP OF CASTING ELEVATION	DEPTH (Feet)	SIZE	APPLICATION/CONSTRUCTION
r1	7+14	24" N 858.09	865.59	9.50	48" Dia.	ex. 4' mh
r2	6+98	12" N 856.15	859.35	5.20	24" Dia.	ex. 2' inlet
r3	7+20	24" S 850.67 24" N 850.67 12" S 852.77 12" SE 852.77 12" E 852.77 12" NE 852.77 12" E 852.77	858.62	9.95	48" Dia.	ex. 4' mh
r4	7+31	12" NW 855.51	859.11	5.60	24" Dia.	ex. 2' inlet
r5		12" W 855.93	859.03	5.10	24" Dia.	ex. drop
r6		12" SW 855.45	858.35	4.90	24" Dia.	ex. 2' inlet
r7	7+23	24" S 837.12	845.42	10.30	48" Dia.	ex. 4' mh
r8	-0+13	15" N 842.98	848.78	7.80	48" Dia.	ex. 4' mh
r9	-0+13	15" S 835.68 15" N 835.68 12" SW 836.28 12" S 836.28 12" SE 836.28 12" SE 836.28 12" E 836.28	841.08	7.40	48" Dia.	ex. 4' mh
r10	-0+34	12" NE 842.34	844.09	3.75	24" Dia.	ex. 2' inlet
r11	-0+01	12" N 838.85	841.45	2.60	24" Dia.	ex. drop
r12	0+03	12" NW 839.05	841.14	2.09	24" Dia.	ex. drop
r13	0+19	12" NW 838.75	841.52	2.77	24" Dia.	ex. drop
r14	0+20	12" W 839.25	841.12	1.87	24" Dia.	Cylindrical Structure Slab Top Circular Frame
r15	-0+12	15" S 829.35	835.15	7.80	48" Dia.	ex. 4' mh

WATER MAIN STRUCTURE TABLE				
STRUCTURE	TYPE	STATION	RIM	DEPTH
01-00513	gviw	-0+07	835.57	5.50
01-00511	gviw	-0+09	848.35	5.50
01-01098	gviw		858.74	5.50
02-00076	hydrant	0+04	842.29	5.44
01-01099	gviw (REMOVE)	6+78	858.35	5.50
01-01161	gviw	7+25	839.55	5.50
01-01913	gvib	7+26	860.11	7.59
01-01912	gviw	7+27	857.09	5.50
02-00097	hydrant	7+39	859.99	5.40

**EXISTING LEGEND**

- FIRE HYDRANT
- GATE VALVE IN BOX
- GATE VALVE IN WELL
- STOP BOX
- WATER VAULT
- WELL
- CATCH BASIN (SQ)
- CATCH BASIN (RD)
- STORM MANHOLE
- NON-CURB CATCH BASIN (SQ)
- SANITARY MANHOLE
- CLEAN-OUT
- POST
- PEDESTRIAN SIGNAL
- SIGN
- HAND HOLE
- ORNAMENTAL LIGHT
- FLOOD LIGHT
- UNKNOWN MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- GAS VALVE
- GAS VENT
- GAS BOX
- ELECTRICAL RISER
- TRANSFORMER
- UTILITY POLE
- LAMP POLE
- GUY ANCHOR
- GUY POLE
- MONITORING WELL
- MAILBOX
- SOIL BORING
- TRAVERSE POINT
- BENCH MARK
- IRON PIPE
- MON BOX
- WATER MAIN
- STORM SEWER
- SANITARY SEWER
- GAS MAIN
- ELECTRICAL OVER HEAD
- ELECTRICAL UNDER GROUND
- BOUNDARY
- BUILDING
- CENTERLINE OF DITCH
- CENTERLINE/CROWN OF ROAD
- EDGE OF WATER
- FENCE
- GRAVEL
- STONE WALL
- R.O.W.
- TREELINE
- WETLAND
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)
- STUMP
- SHRUB (DECIDUOUS)

**PROPOSED LEGEND**

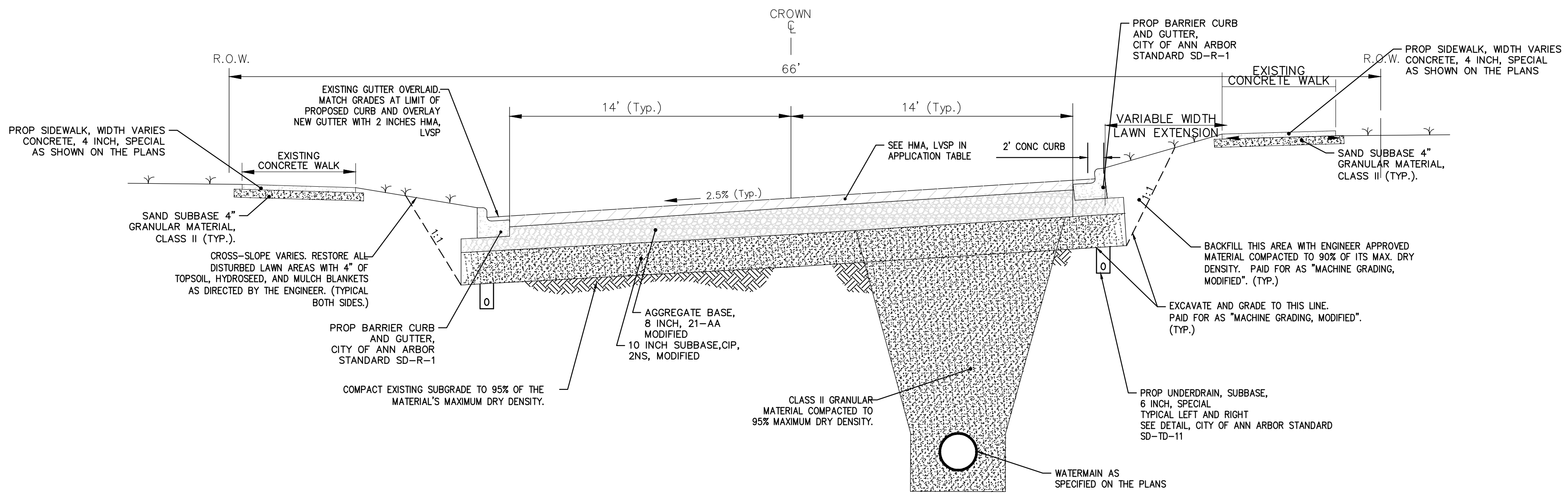
- HYDRANT (PLAN)
- WATER GATE WELL
- REDUCER
- WATER GATE VALVE
- WATER STOP BOX
- WATER VAULT
- INLET
- DOUBLE INLET
- INLET JUNCTION CHAMBER
- ROUND CATCH BASIN
- STORM MANHOLE
- DRAIN ARROW
- FLARED END SECTION
- SANITARY MANHOLE
- CLEAN-OUT
- BARREL
- SIGN
- PUSH BUTTON
- WATER MAIN
- STORM SEWER
- SANITARY SEWER
- CENTERLINE OF DITCH
- CENTERLINE OF ROAD
- FENCE
- SILT FENCE
- LOT/UNIT
- CURB
- TEMPORARY GRADING PERMIT
- WATER EASEMENT
- STORM EASEMENT
- SANITARY EASEMENT
- R.O.W.
- LIMITS OF CONSTRUCTION
- STONE WALL
- DETECTABLE WARNING
- ASPHALT
- CONCRETE
- SIDEWALK
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)



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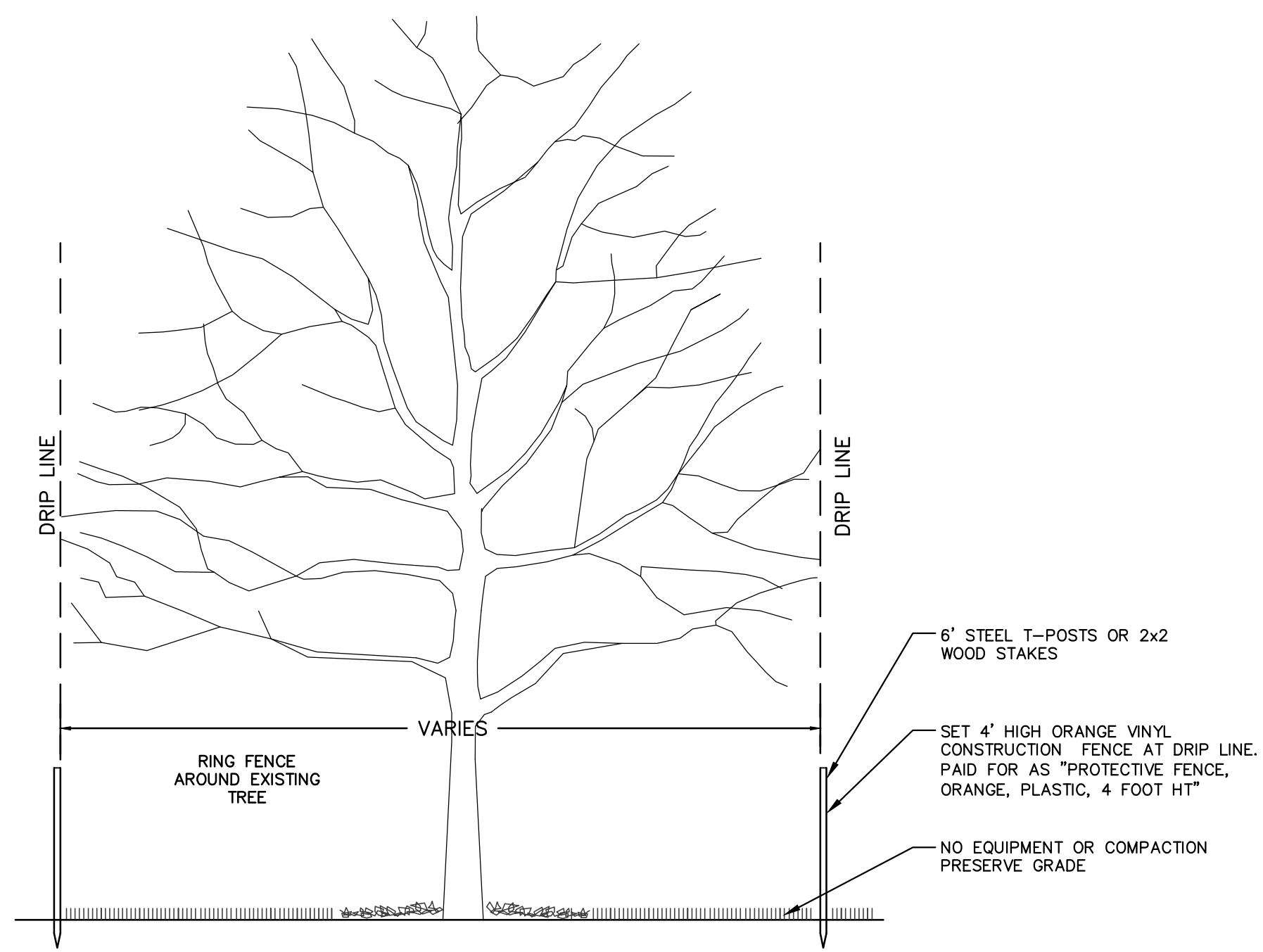


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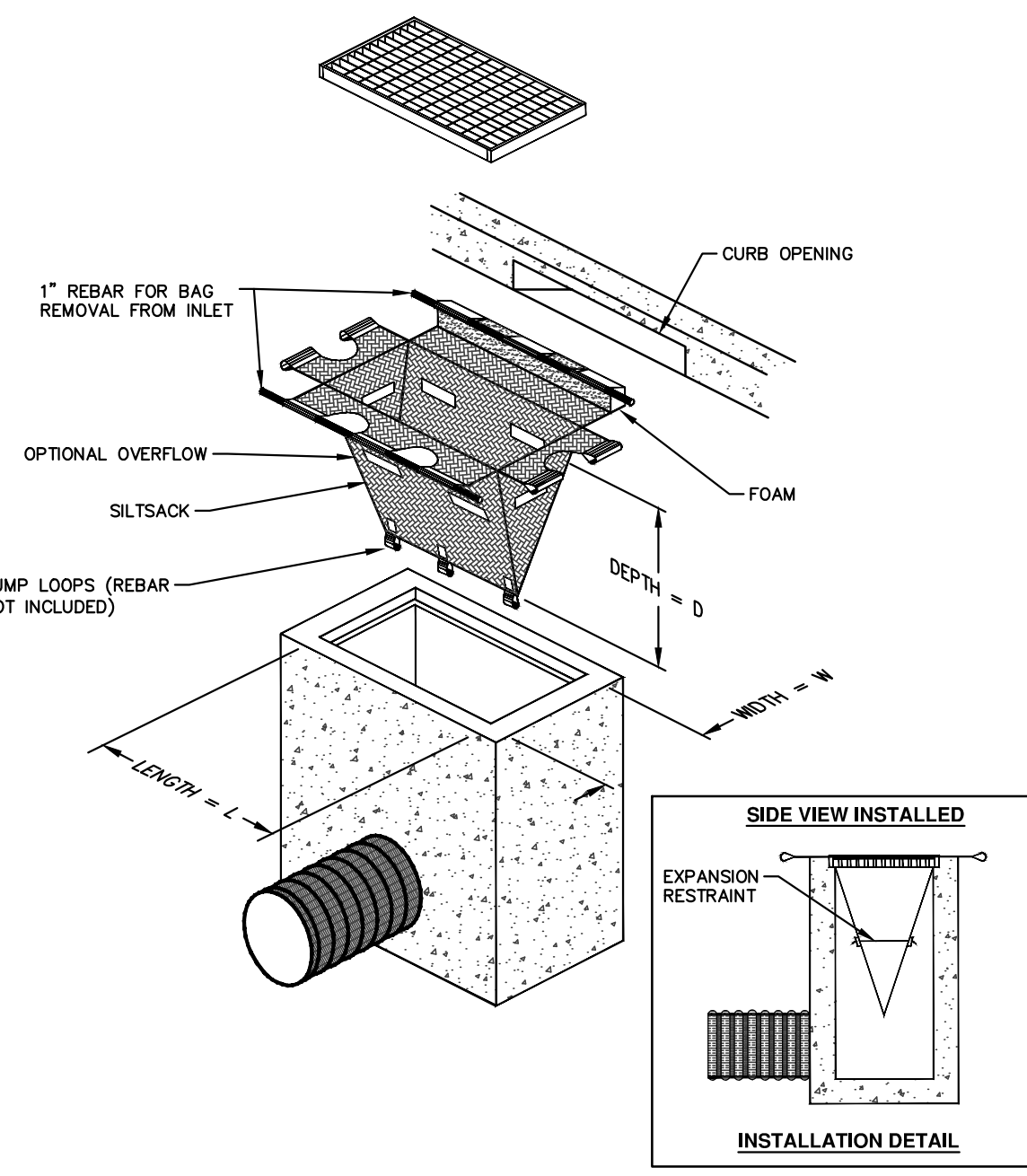


**LAWRENCE STREET  
PROPOSED TYPICAL CROSS SECTION**  
N.T.S.

HMA APPLICATION ESTIMATE					
HMA MIX	RATE OF APPLICATION	THICKNESS (INCHES)	AWI (MIN.)	BINDER	LOCATION/NOTES
LVSP	220 LB/SYD	2.0	260 (TOP)	PG 58-28	TOP COURSE
LVSP	220 LB/SYD	2.0	260 (TOP)	PG 58-28	LEVELING COURSE
Bond Coat SS-1h	0.05 GAL/SYD	-	-	-	INCLUDE IN COST OF HMA ITEM



**TREE PROTECTION DETAIL**



**SILTSACK DETAIL**

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

**REGULAR FLOW SILTSACK**

(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	REQUIRED VALUE	TEST METHOD
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4633	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80%
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

**HI-FLOW SILTSACK**

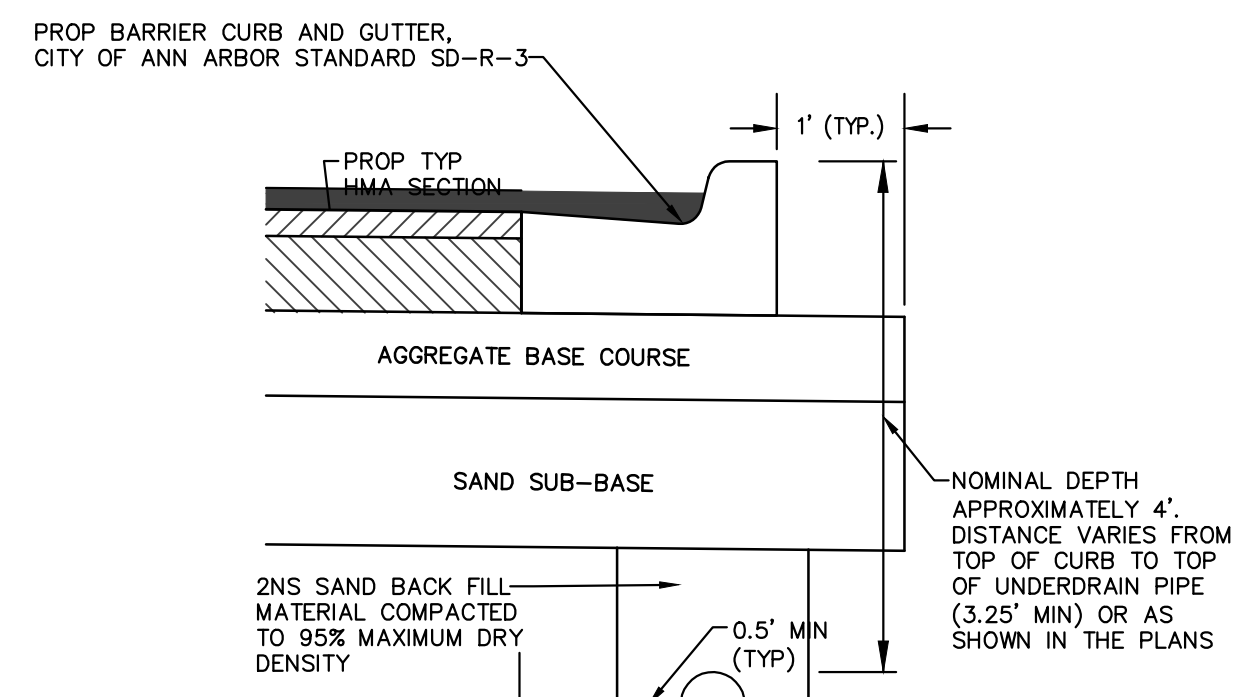
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	REQUIRED VALUE	TEST METHOD
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4633	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90%
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC-1

**OIL-ABSORBANT SILTSACK**

(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

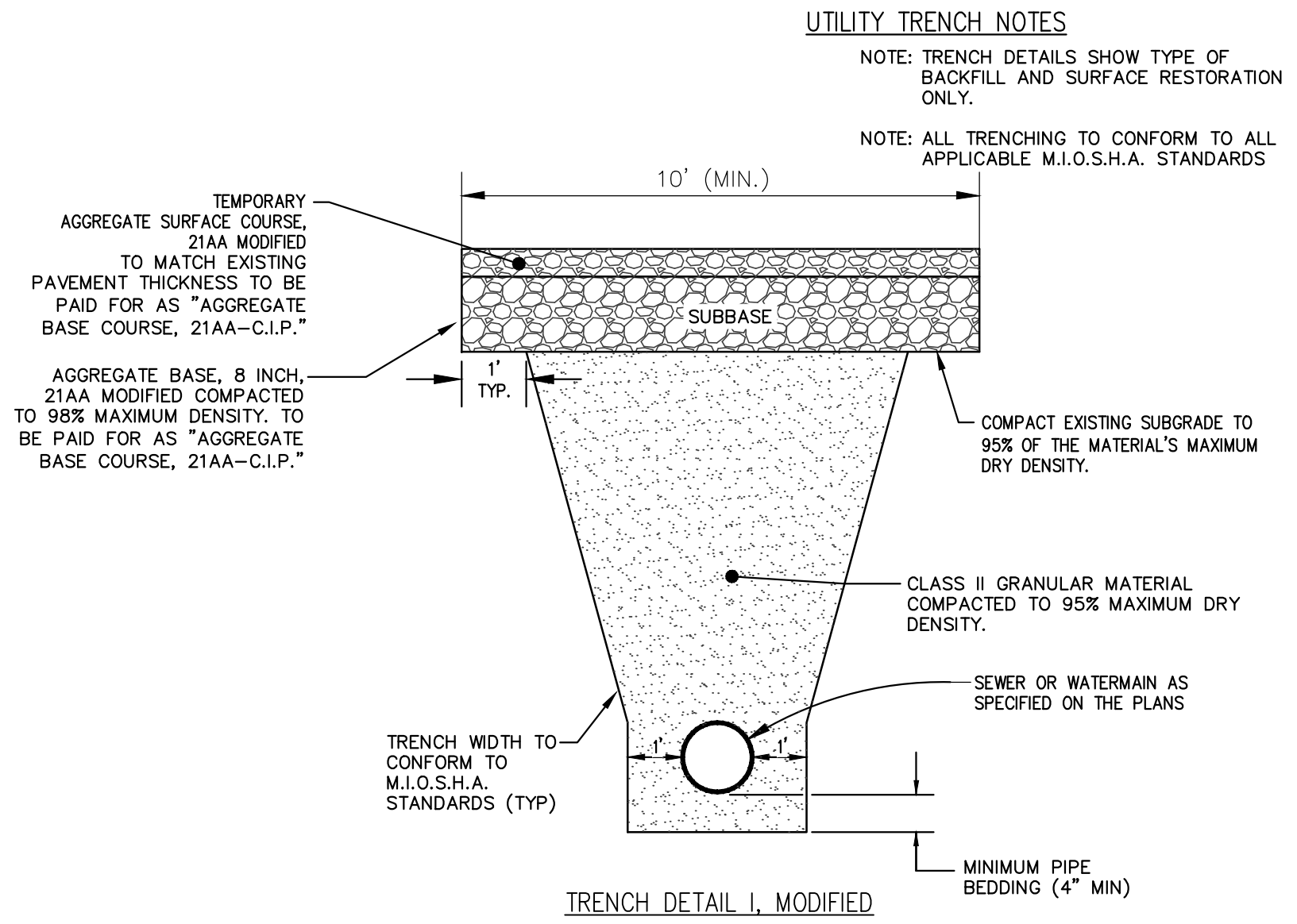
IT IS THE INTENT OF THE PLANS AND SPECIFICATIONS THAT THE CONTRACTOR INSTALL THE REBAR AS SHOWN IN THIS DETAIL TO PROVIDE A FULLY FUNCTIONING UNIT. ALL COSTS ASSOCIATED WITH FURNISHING, CLEANING AS MANY TIMES AS REQUIRED, DISPOSAL OF SEDIMENT, AND REMOVING THE INLET FILTER WHEN NO LONGER NEEDED IS INCLUDED IN THE ITEM OF WORK AND WILL NOT BE PAID FOR SEPARATELY.



**UNDERDRAIN TRENCH NOTES**

- NOTE: FOR PAVEMENT BASE AND SUBBASE THICKNESS, SEE TYPICAL PAVEMENT CROSS-SECTION(S)
- NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY
- NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS

**TRENCH DETAIL FOR UNDERDRAIN**




**UTILITY TRENCH NOTES**

- NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY.
- NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS
- NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY
- NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS

**TRENCH DETAIL I, MODIFIED**

APPLIES TO: SEWER OR WATERMAIN UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED - SEE PLANS FOR LOCATIONS



Know what's below. Call Before you dig.


REV.	DATE	DRAWN	CHECKED

DESCRIPTION

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR  
LAWRENCE ST. WATER MAIN REPLACEMENT

ROAD SECTION, TRENCH DETAIL, INLET DETAIL

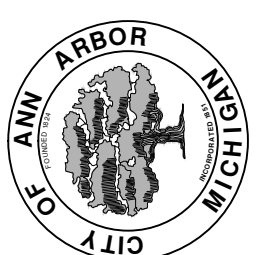
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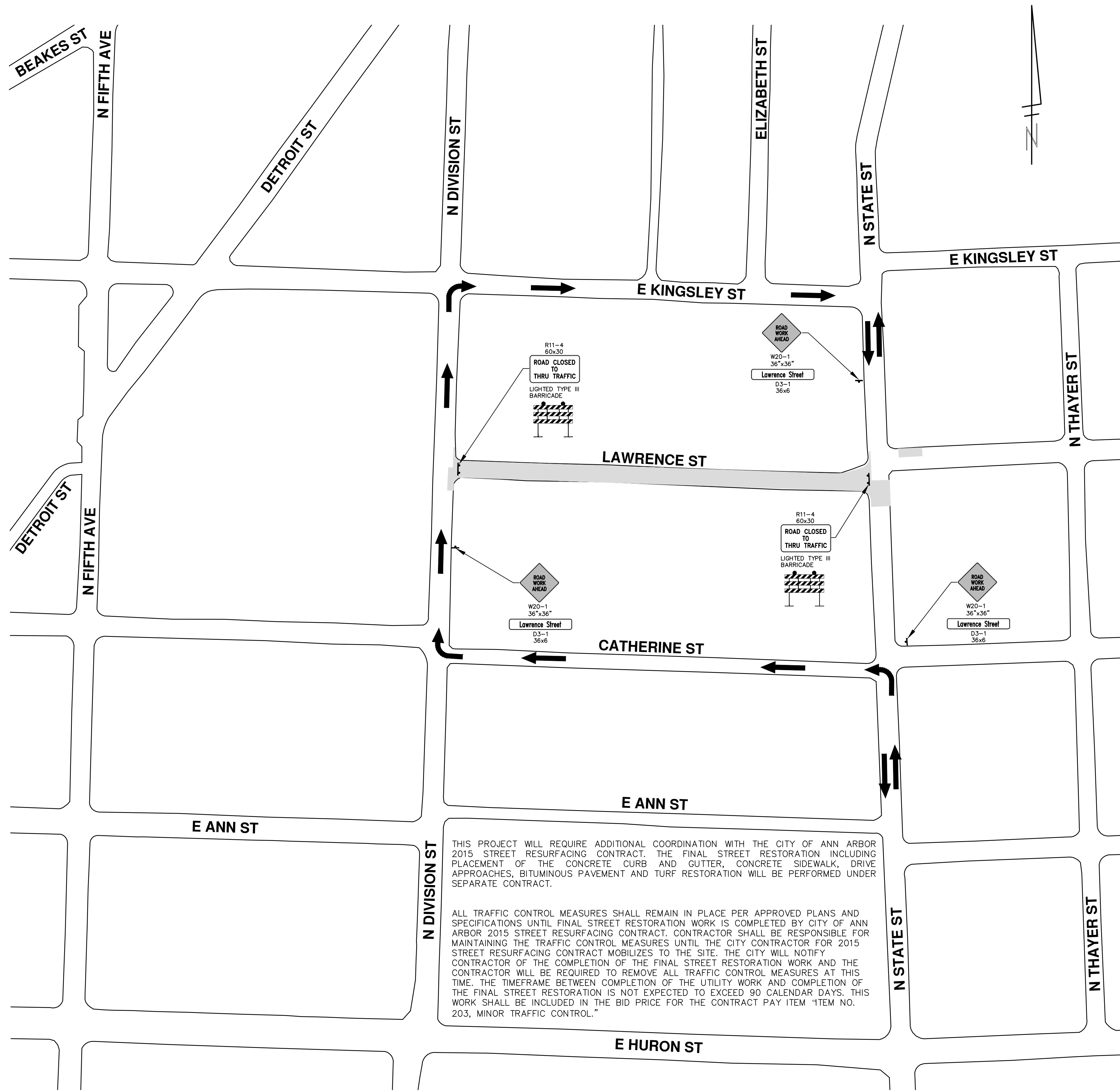
DRAWING No. 2014032-4

SHEET No. 4 OF 11

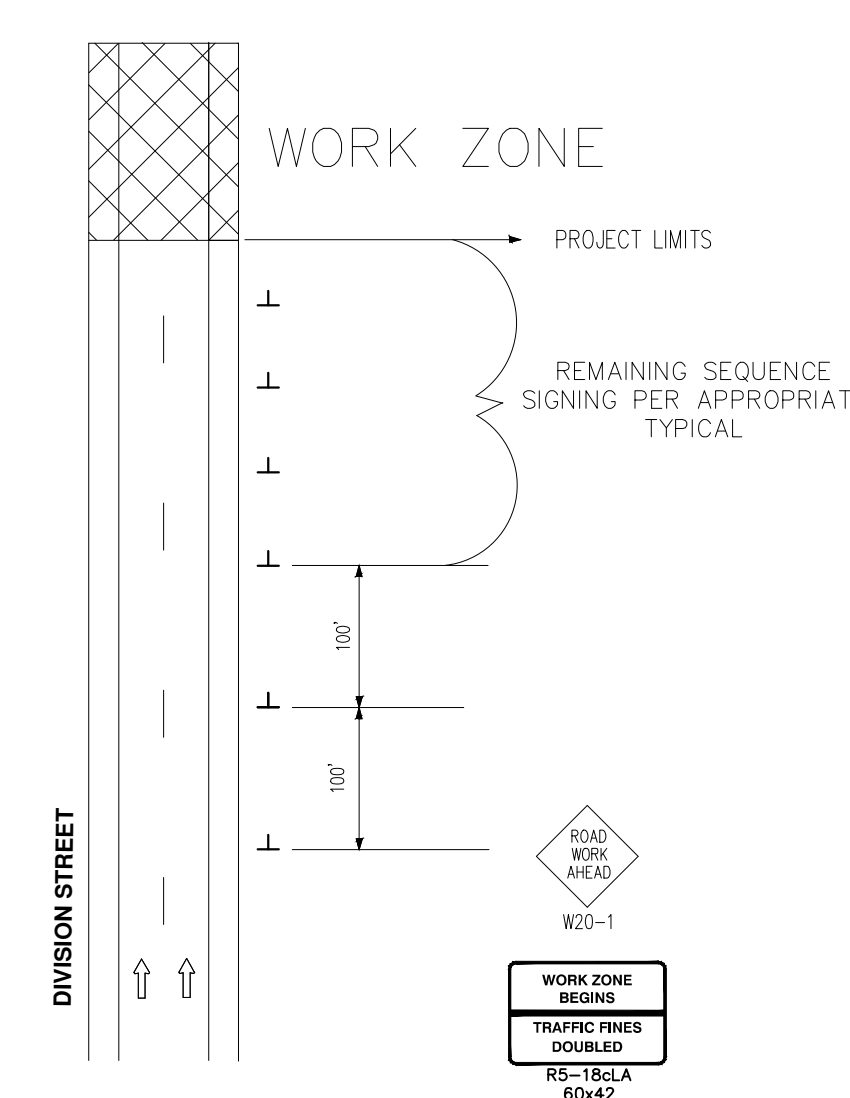
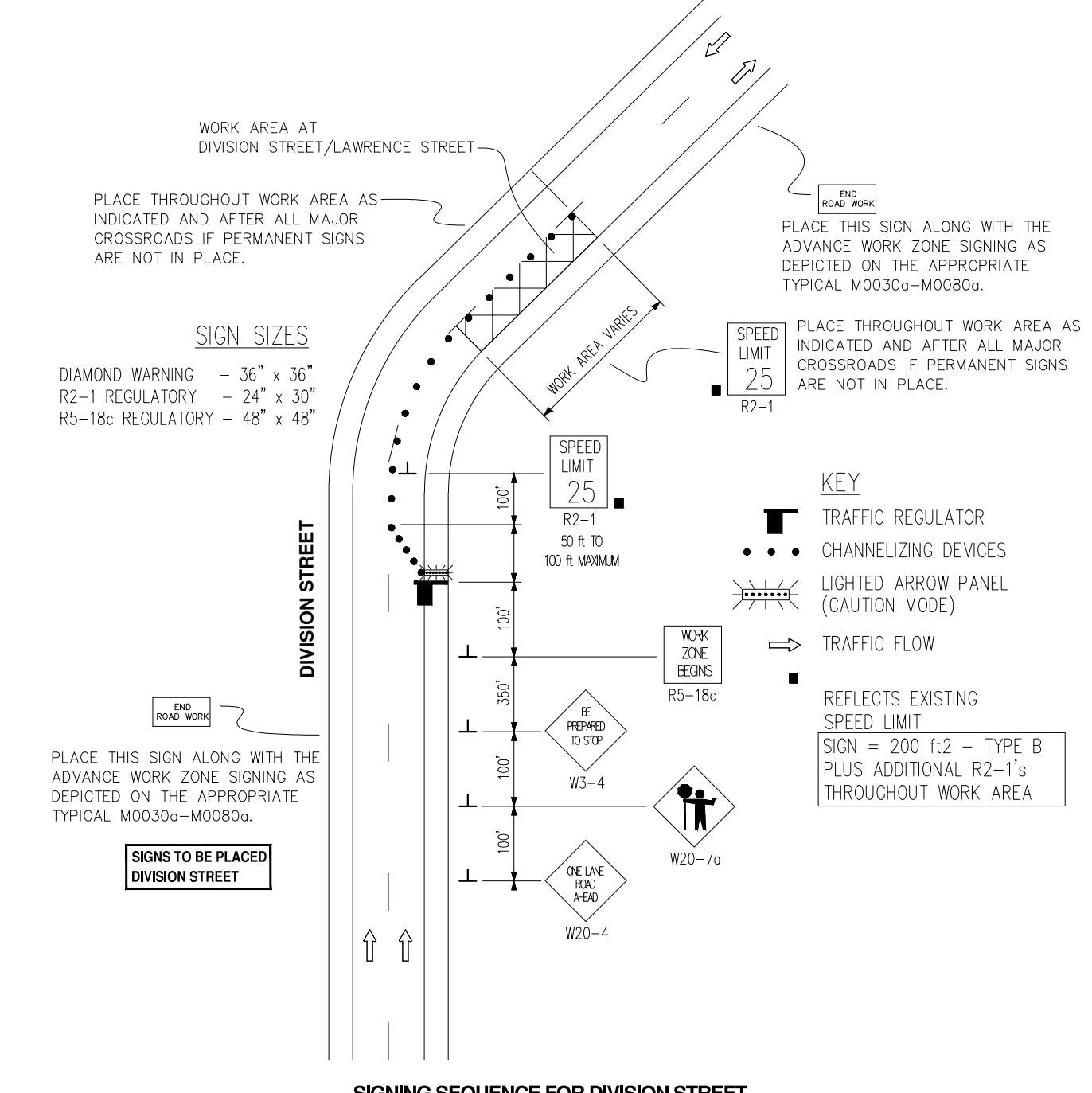
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**TRAFFIC CONTROL TO BE FOLLOWED DURING WATER MAIN WORK IN DIVISION STREET / LAWRENCE STREET INTERSECTION**



TYPICAL ADVANCE SIGNING TREATMENT FOR LONG, INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS OF LESS THAN TWO MILES IN LENGTH WHERE TRAFFIC CONTROL DEVICES MAY REMAIN AT END OF WORK DAY ON AN UNDIVIDED TWO-WAY ROADWAY

**LEGEND:**  
ONE WAY STREET.

**MAINTAINING TRAFFIC AND TRAFFIC CONTROL**

1. THE NECESSARY SIGNS AND SIGN SUPPORT STANDARDS, BARRICADES, AND TRAFFIC CONTROL DEVICES NECESSARY FOR THE PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS APPROVED BY THE CITY OF ANN ARBOR. ALL SUCH DEVICES SHALL BE FURNISHED, INSTALLED, AND MAINTAINED BY THE CONTRACTOR.
2. REFER TO CITY SPECIFICATIONS FOR DETAILS ON MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS.
3. ALL POSTS TO BE DRIVEN INTO GROUND.
4. CONTRACTOR TO FIELD STAKE ALL SIGNS AND CONTACT CITY FOR REVIEW AND APPROVAL OF SIGN PLACEMENT PRIOR TO INSTALLATION.

**811**  
Know what's below. Call before you dig.

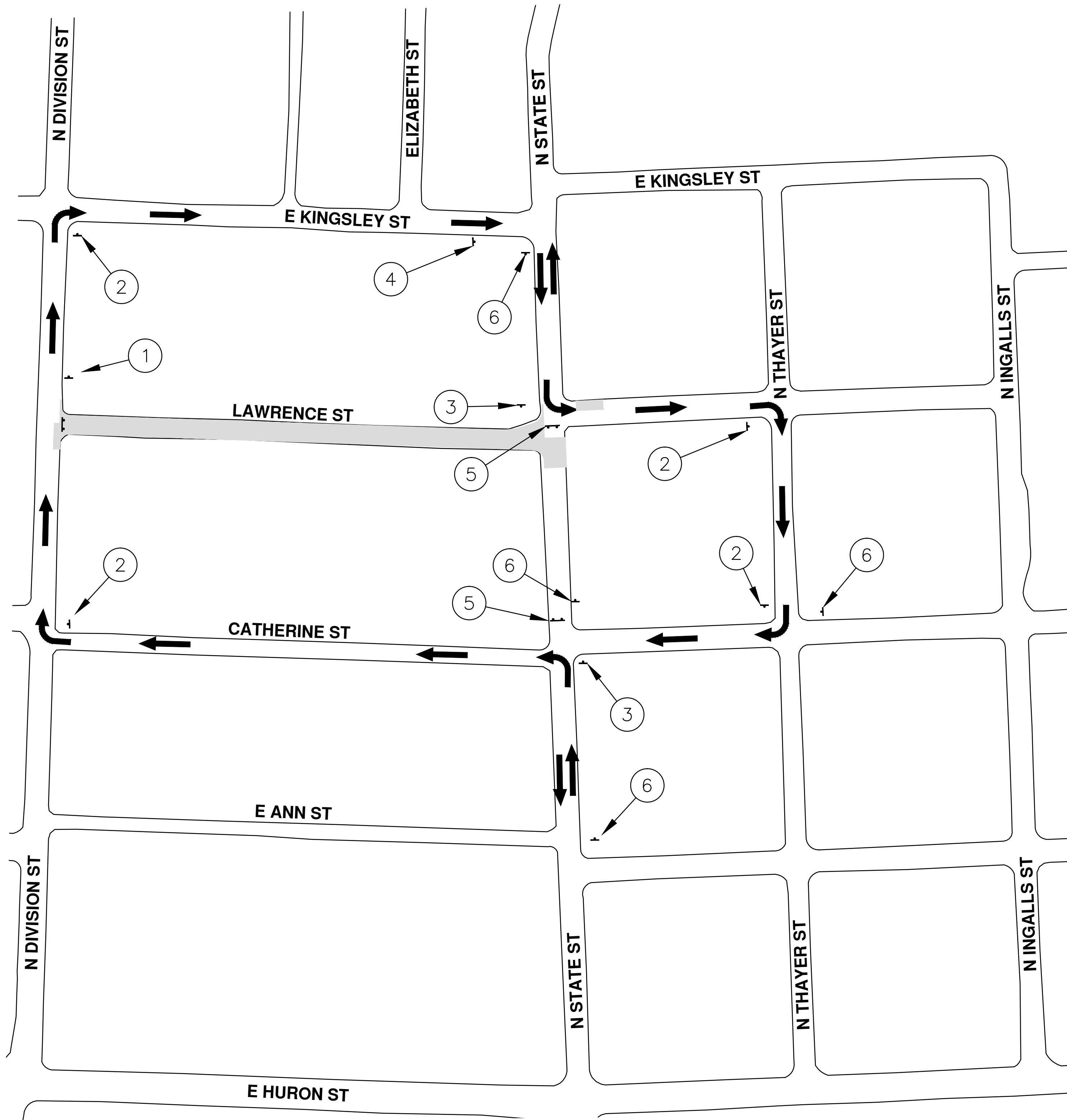
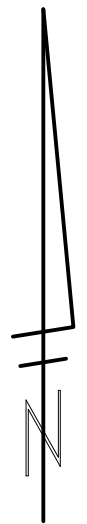
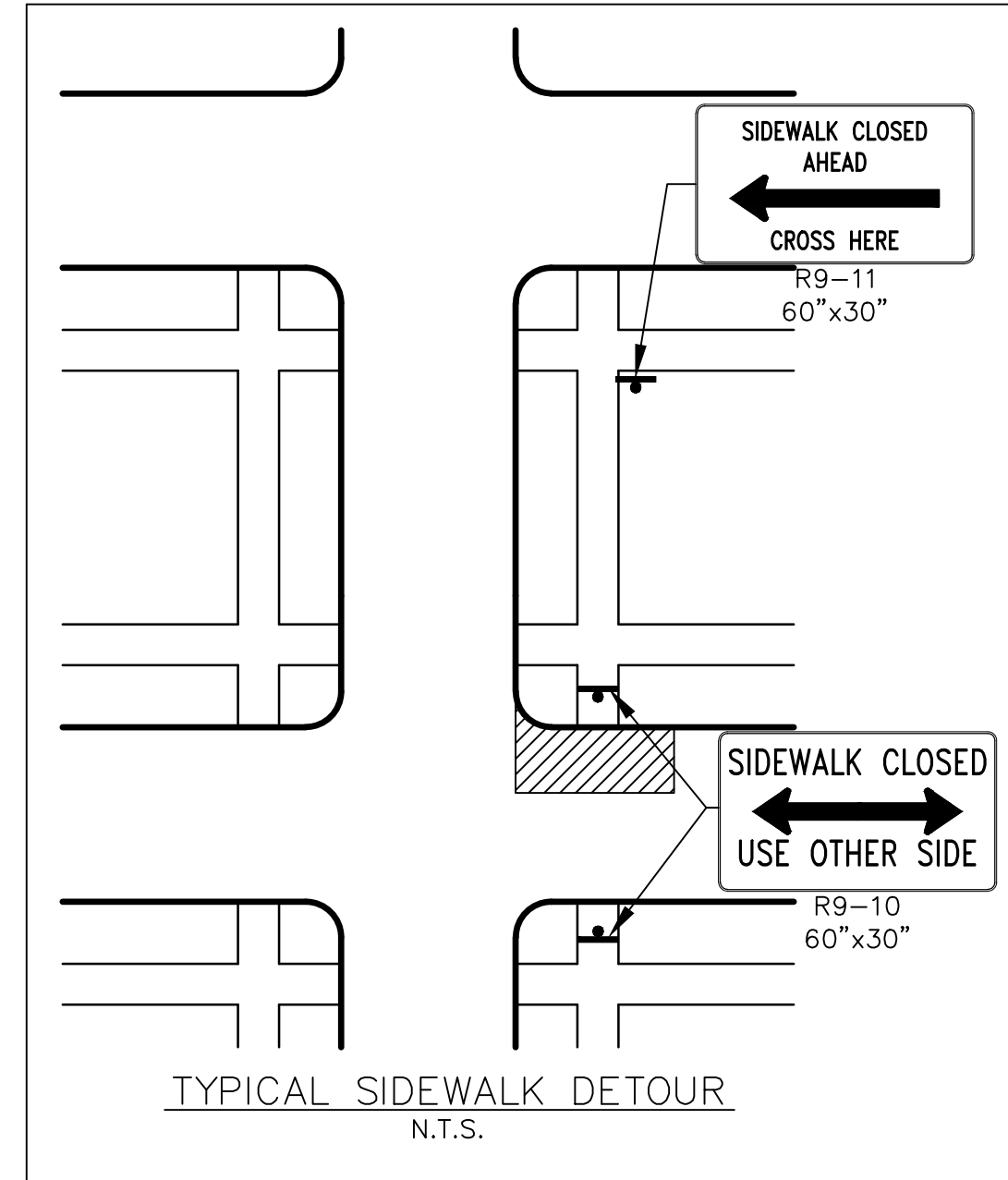
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**PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR**  
**LAWRENCE ST. WATER MAIN REPLACEMENT**

TRAFFIC CONTROL

SCALE PLAN: 1" = 100'  
DRAWING No. 2014032-5  
SHEET No. 5 OF 11



**MAINTAINING TRAFFIC AND TRAFFIC CONTROL**

THE NECESSARY SIGNS AND SIGN SUPPORT STANDARDS, BARRICADES, AND TRAFFIC CONTROL DEVICES NECESSARY FOR THE PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS APPROVED BY THE CITY OF ANN ARBOR. ALL SUCH DEVICES SHALL BE FURNISHED, INSTALLED, AND MAINTAINED BY THE CONTRACTOR.

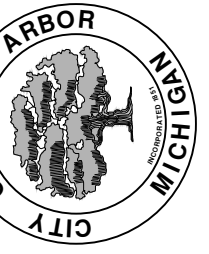
**NOTES:**

1. ONLY ONE CORNER OF AN INTERSECTION CAN BE CLOSED AT A TIME TO PEDESTRIAN TRAFFIC. MISCELLANEOUS QUANTITIES FOR FURNISHING AND PLACING TYPE B SIGNS HAVE BEEN PROVIDED
2. CONTRACTOR TO NOTIFY CITY 1 WEEK IN ADVANCE TO SCHEDULE CLOSURE OF N. STATE STREET.
2. COVER CONFLICTING SIGNS AS NEEDED OR AS DIRECTED BY ENGINEER.
3. REMOVE OR OBSCURE AS DIRECTED CONFLICTING PAVEMENT MARKINGS AND SYMBOLS
4. ALL TRAFFIC CONTROL DEVICES MUST MEET CURRENT MMUTCD PART 6 STANDARDS.
5. PARKING METERS IN WORK ZONE TO BE BAGGED OR REMOVED AS DIRECTED BY ENGINEER.
6. CONTRACTOR TO PROVIDE TRAFFIC REGULATORS AS DIRECTED BY ENGINEER.

TRAFFIC CONTROL SIGNS				
	SIGN	NUMBER	QUANTITY	TOTAL AREA (SFT)
①	N STATE ST	D3-1	1	1.5
	DETOUR	M4-9S 30x30	1	7
②	N STATE ST	D3-1	4	6
	DETOUR	M4-9R 30x24	4	28
③	N STATE ST	D3-1	2	3
	DETOUR	M4-9L 30x24	2	14
④	N STATE ST	D3-1	1	1.5
	DETOUR ENDS	M4-8a 24x18	1	3
⑤	ROAD CLOSED	R11-2 60x30	2	25
⑥	N STATE ST CLOSED TO THRU TRAFFIC FOLLOW DETOUR	SPECIAL 48x60	4	80
	END ROAD WORK	G20-2 48"x24"	1	
	SIDEWALK CLOSED USE OTHER SIDE	R9-10 60x30	2	25
	DETOUR	M4-9B 30x24	2	10
	SIDEWALK CLOSED CROSS HERE	R9-11 60x30	2	25
	SIDEWALK CLOSED	R9-9 30x18	2	8
	SIDEWALK CLOSED AHEAD CROSS HERE	R9-11 48x36	2	24
	ROAD WORK AHEAD	W20-1 48 X 48	4	
	LAWRENCE ST	D3-1	4	23
	ROAD CLOSED TO THRU TRAFFIC	R11-4 60x30	3	
	SPEED LIMIT 25	R2-1 24"x30"	2	
	BE PREPARED TO STOP	W3-4 48"x48"	1	
	ONE LANE ROAD AHEAD	W20-4 48"x48"	1	
	WORK ZONE BEGINS TRAFFIC FINES DOUBLED	R5-18cLA 60x42	1	
	WORK ZONE BEGINS	R5-15c 30"x36"	1	



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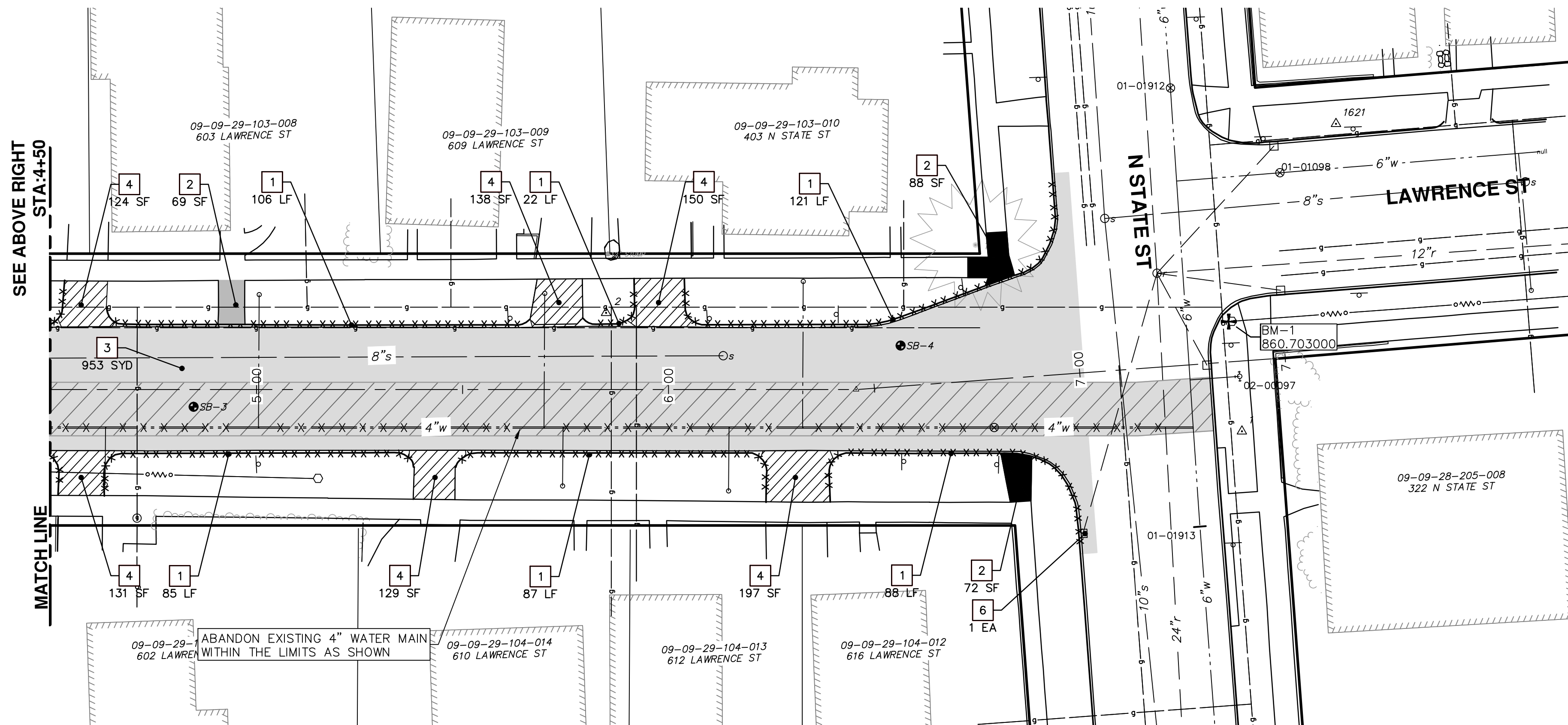
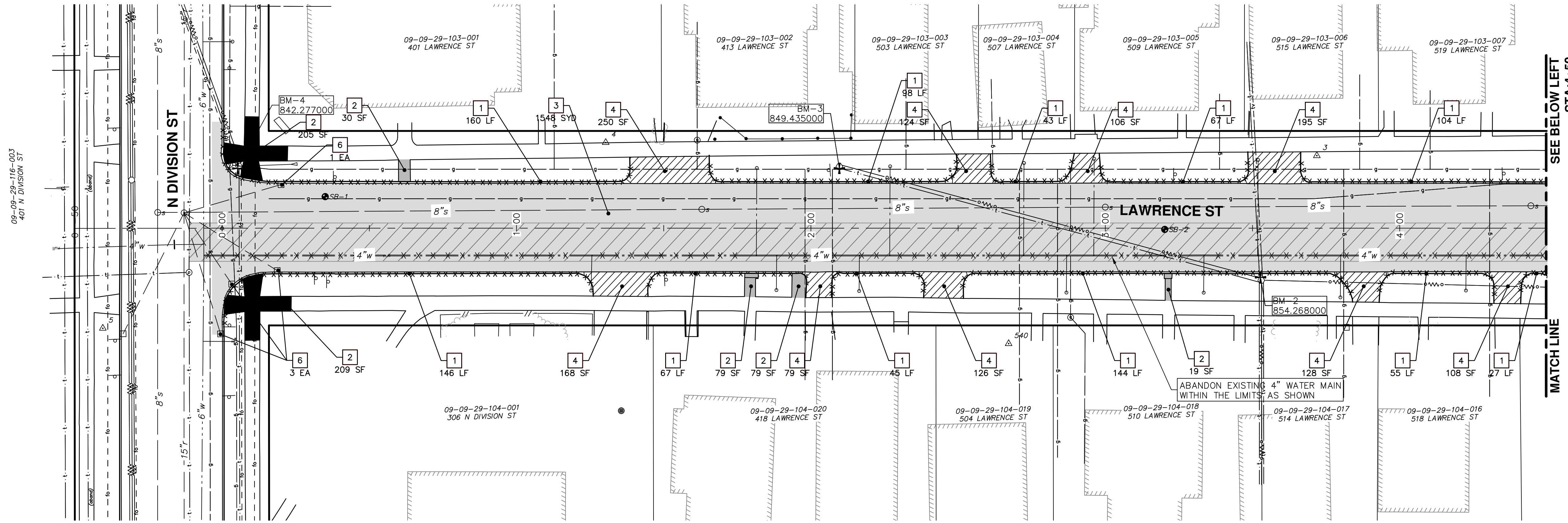
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**LAWRENCE ST. WATER MAIN REPLACEMENT**

DETOUR PLAN

SCALE PLAN: 1" = 100'  
DRAWING No. 2014032-6

SHEET No.

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REMOVAL KEY	
KEY	DESCRIPTION
1	REMOVE EXISTING CURB AND GUTTER - ANY TYPE
2	REMOVE EXISTING SIDEWALK OR RAMP - ANY TYPE OR THICKNESS
3	REMOVE EXISTING PAVEMENT - ANY THICKNESS, SAWCUT FULL DEPTH AT REMOVAL LIMITS
4	REMOVE EXISTING 6-INCH DRIVEWAY
5	ABANDON WATERMAIN AND APPURTENANCES-SEE NOTES
6	REMOVE DROP INLET & INSTALL SINGLE INLET STRUCTURE
7	REMOVE TREE
8	PROTECTIVE FENCING

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**LAWRENCE ST. WATER MAIN REPLACEMENT**

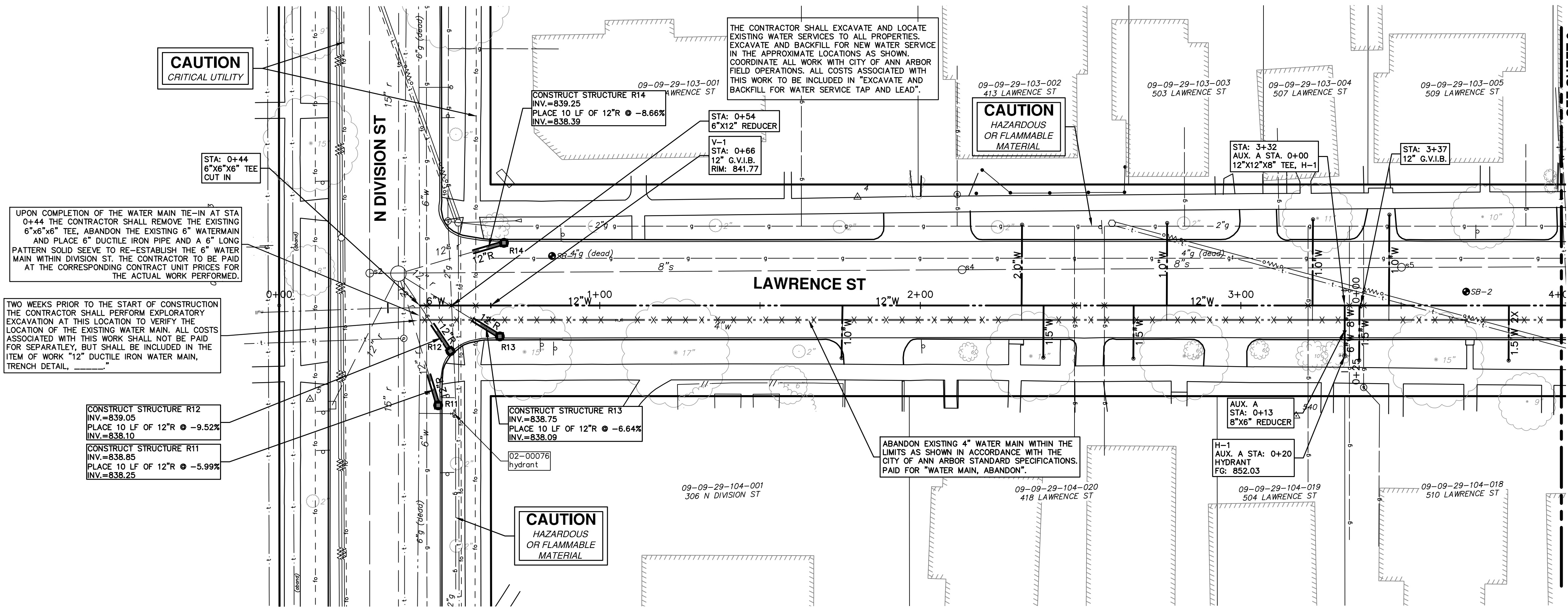
SCALE PLAN: 1" = 20'  
 DRAWING No. 2014032-7  
 SHEET No. 7 OF 11

REV.	DESCRIPTION	DATE	DRAWN	CHECKED

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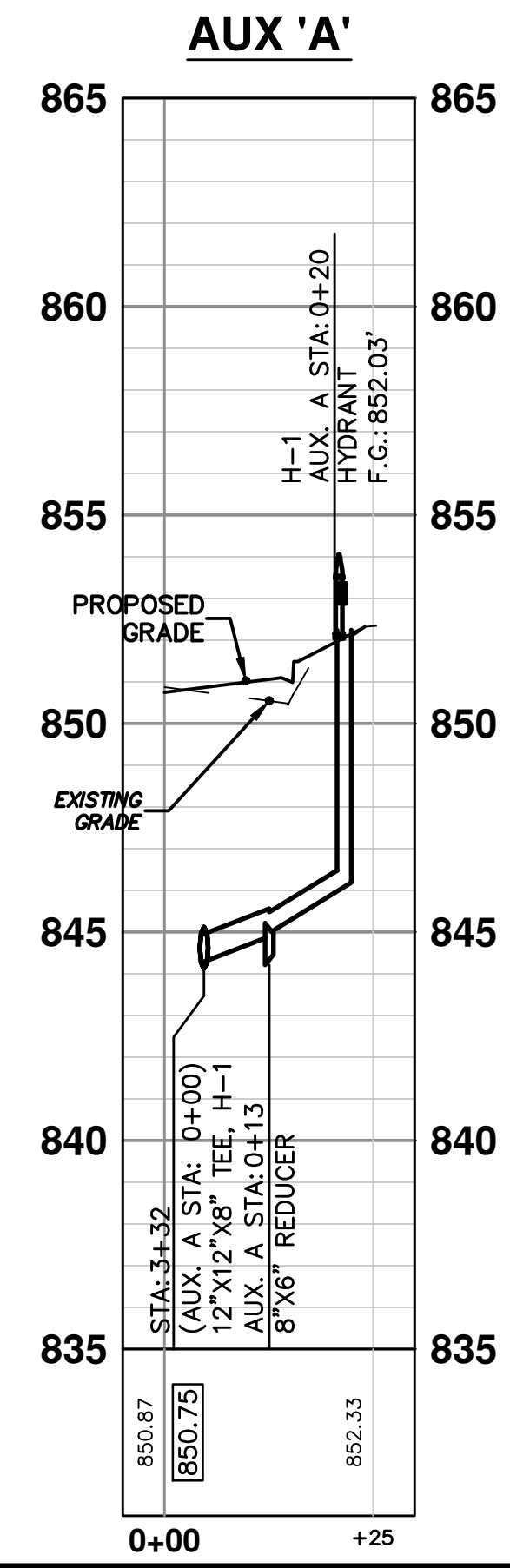
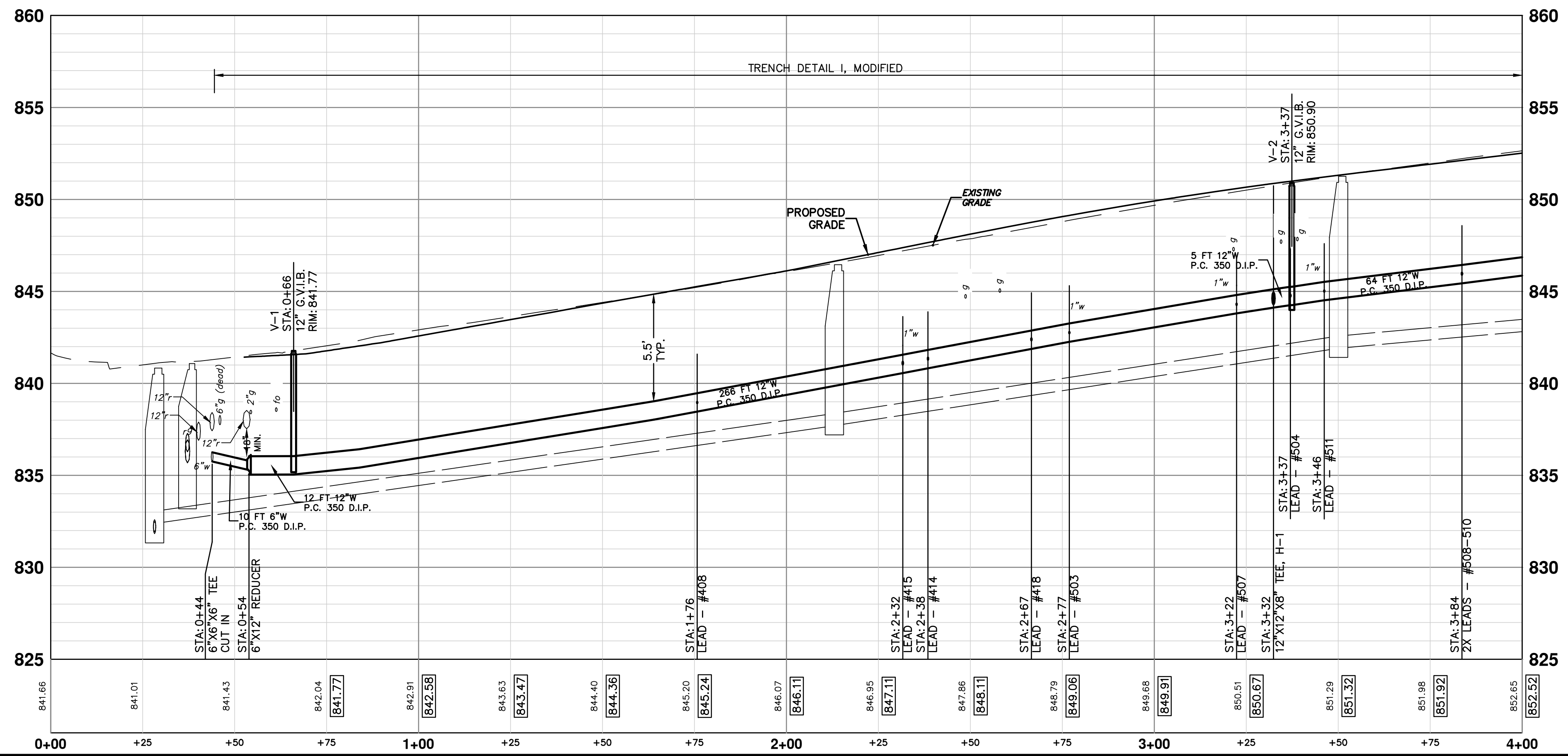
**REMOVALS**

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**WATER MAIN STRUCTURE TABLE**

STRUCTURE	TYPE	STATION	RIM	DEPTH
V-1	12" G.V.I.B.	0+66	841.77	6.51
H-1	HYDRANT	3+32	852.03	6.00
V-2	12" G.V.I.B.	3+37	850.90	6.74
V-3	12" G.V.I.W.	7+31	858.45	6.71



**PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR**  
**LAWRENCE ST. WATER MAIN REPLACEMENT**  
 WATER MAIN PLAN & PROFILE  
 STA. 0+00 TO 4+00

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 Know what's below.  
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SCALE PLAN: 1" = 20'  
 PROFILE: 1" = 4'

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**8 OF 11**

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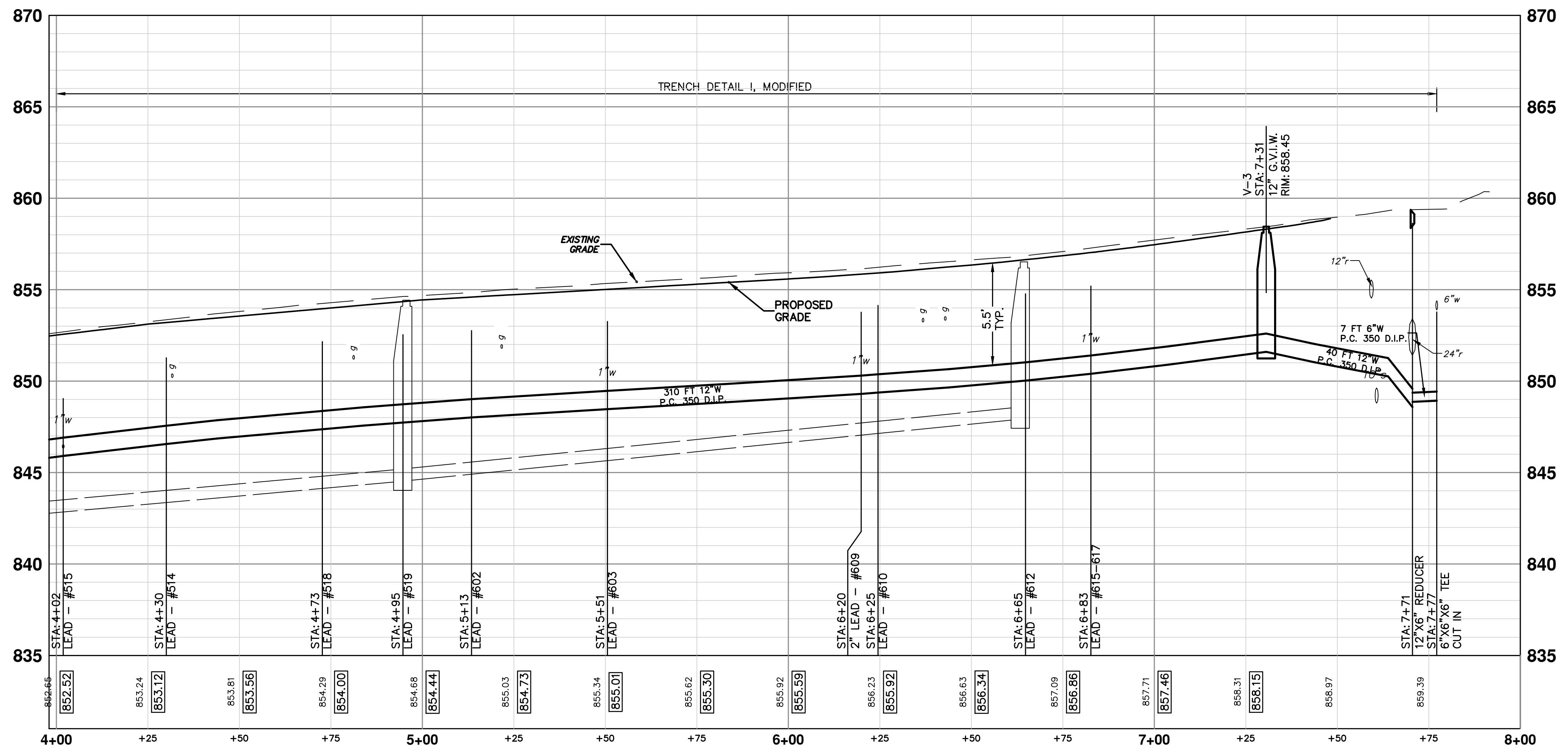
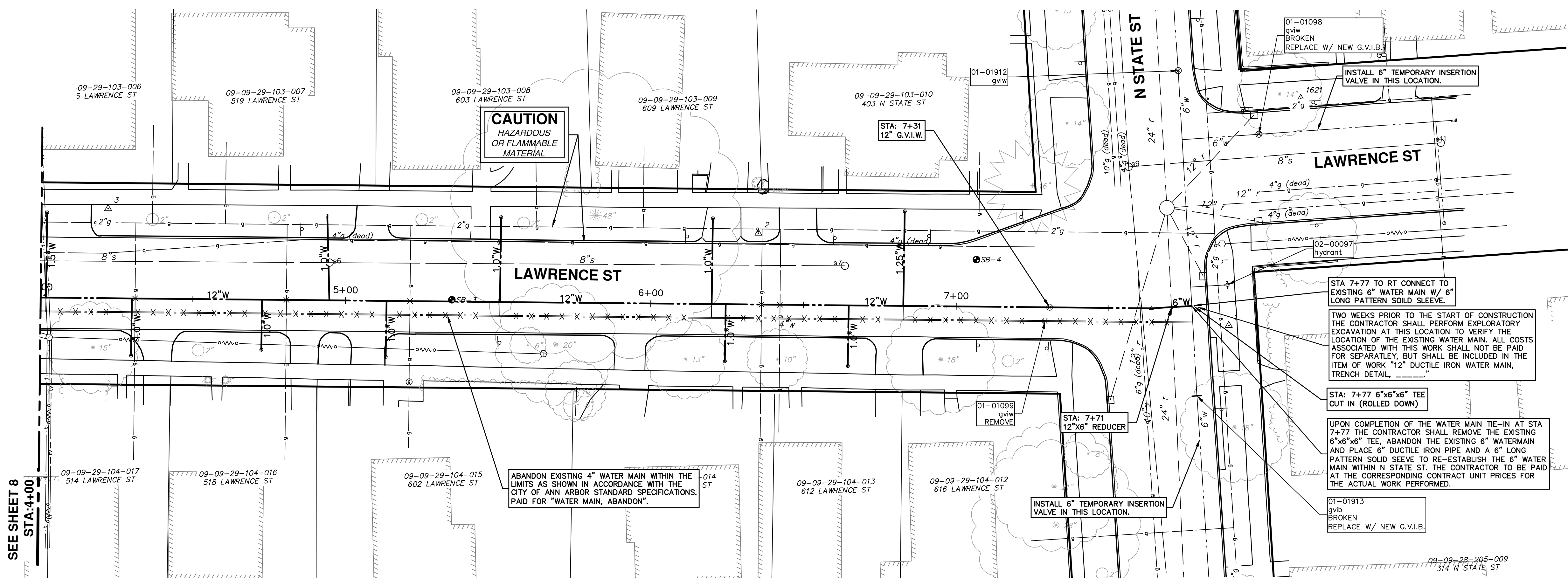
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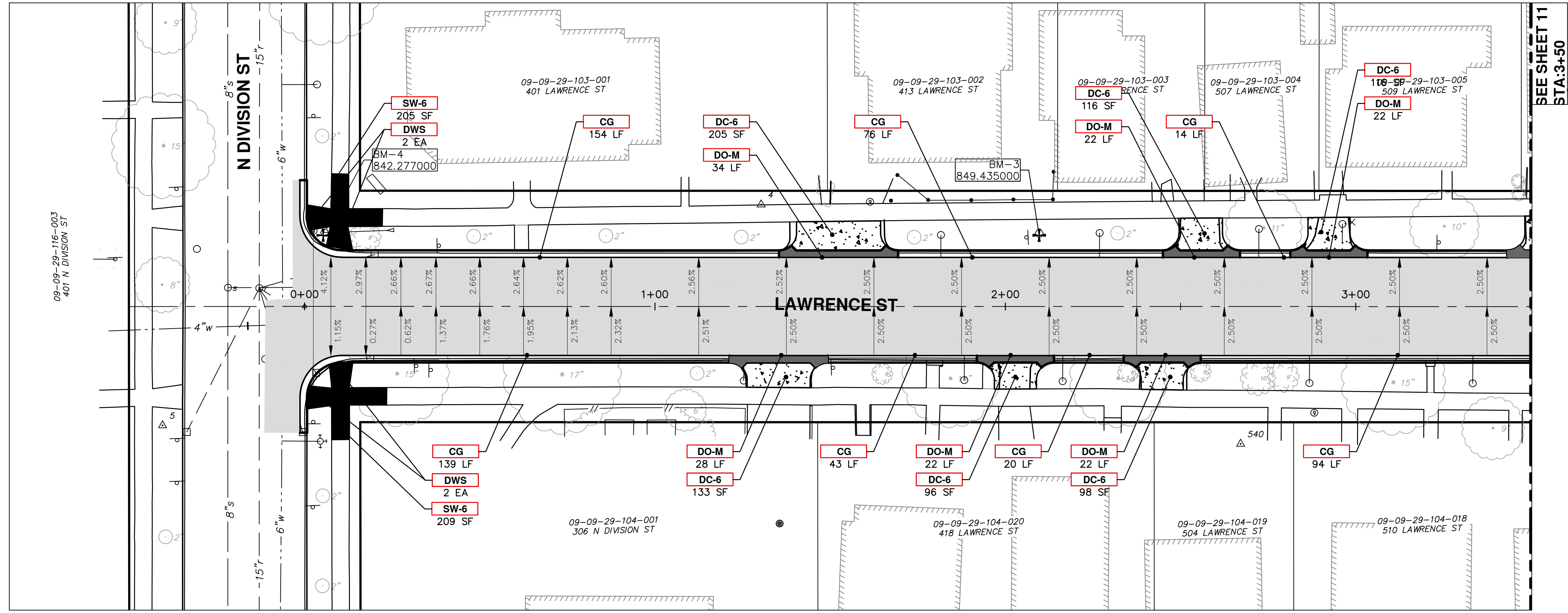


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LAWRENCE ST. WATER MAIN REPLACEMENT  
WATER MAIN PLAN & PROFILE

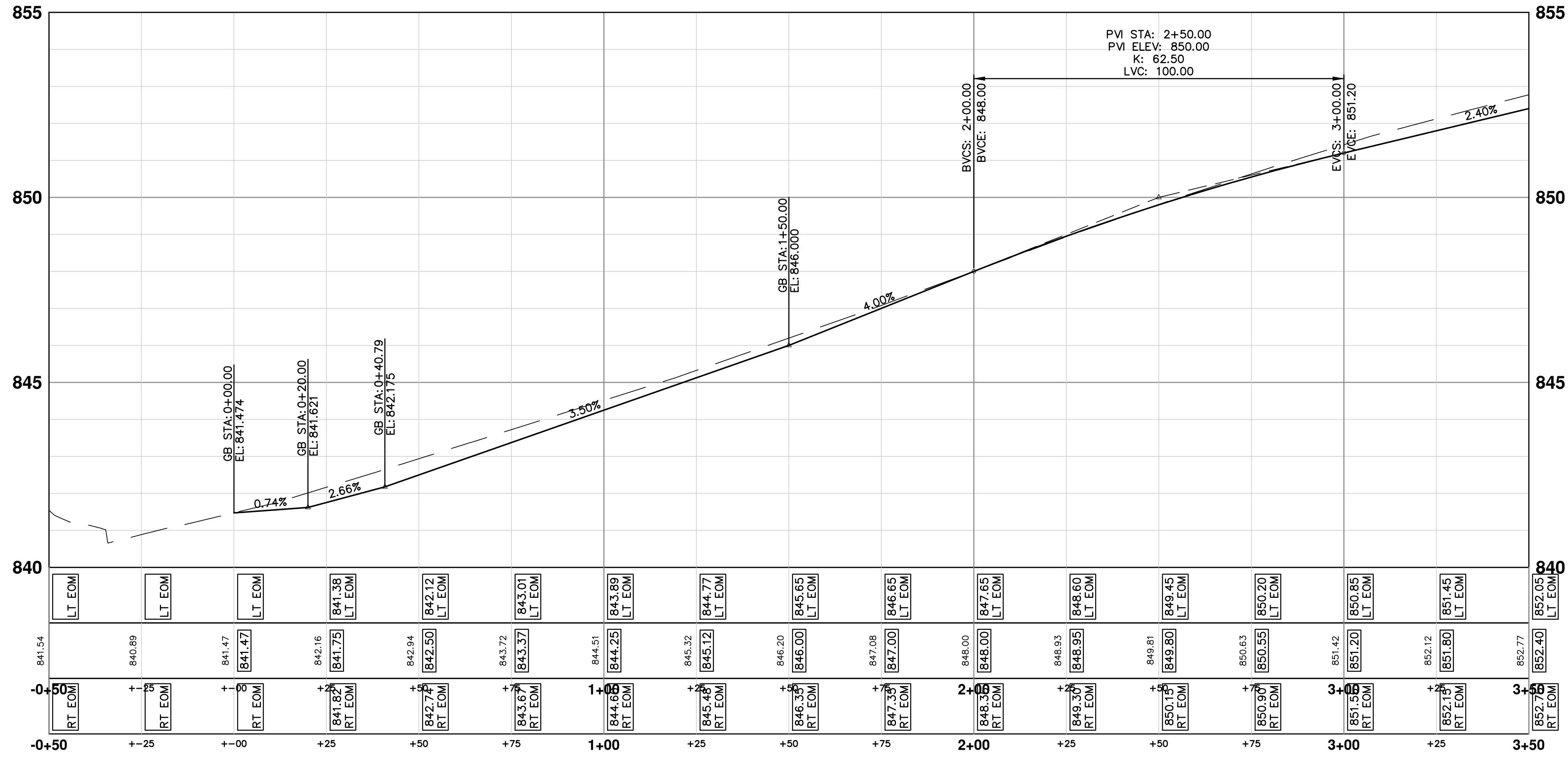
SCALE PLAN: 1" = 20'  
PROFILE: 1" = 4'  
DRAWING No.  
2014032-9



STA. 4+00 TO POE



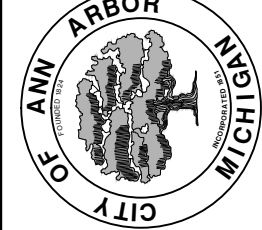
SEE SHEET 11  
BTA:3+50



CONSTRUCTION KEY	
KEY	DESCRIPTION
CG	PLACE CURB AND GUTTER, CONC, F4, SPECIAL
DO-M	PLACE DRIVEWAY OPENING, CONC, DETAIL M, P-NC
DC-6	PLACE CONC, DRIVE APPROACH, NON-REINFORCED, P-NC, 6 INCH
DWS	PLACE DETECTABLE WARNING SURFACE
SW-6	PLACE 6" CONC, ADA RAMP WITH DETECTABLE WARNING STRIP
1	ADJUST GATE VALVE BOX, MONUMENT BOX, OR GAS BOX.
2	ADJUST INLET STRUCTURE COVER
3	ADJUST MANHOLE COVER



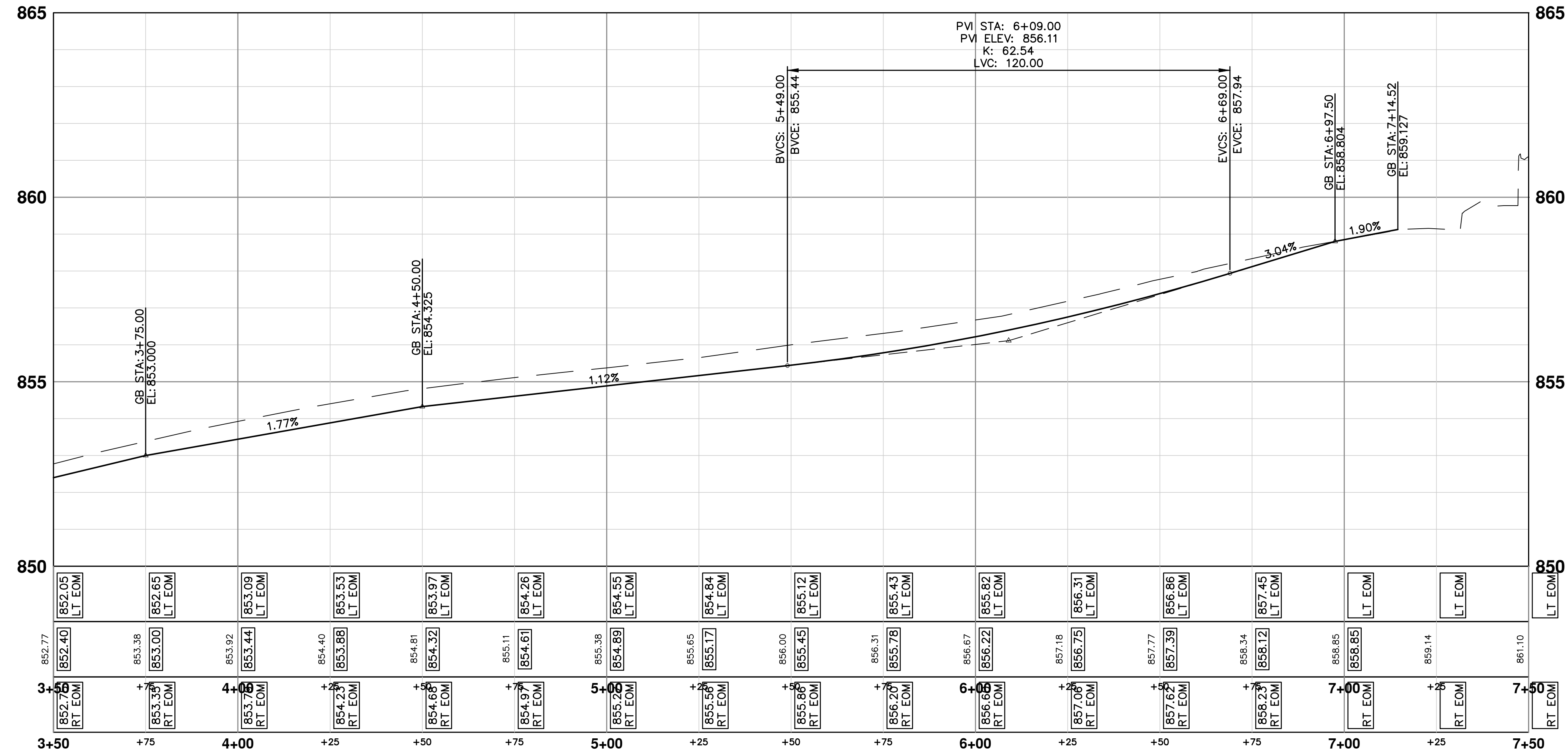
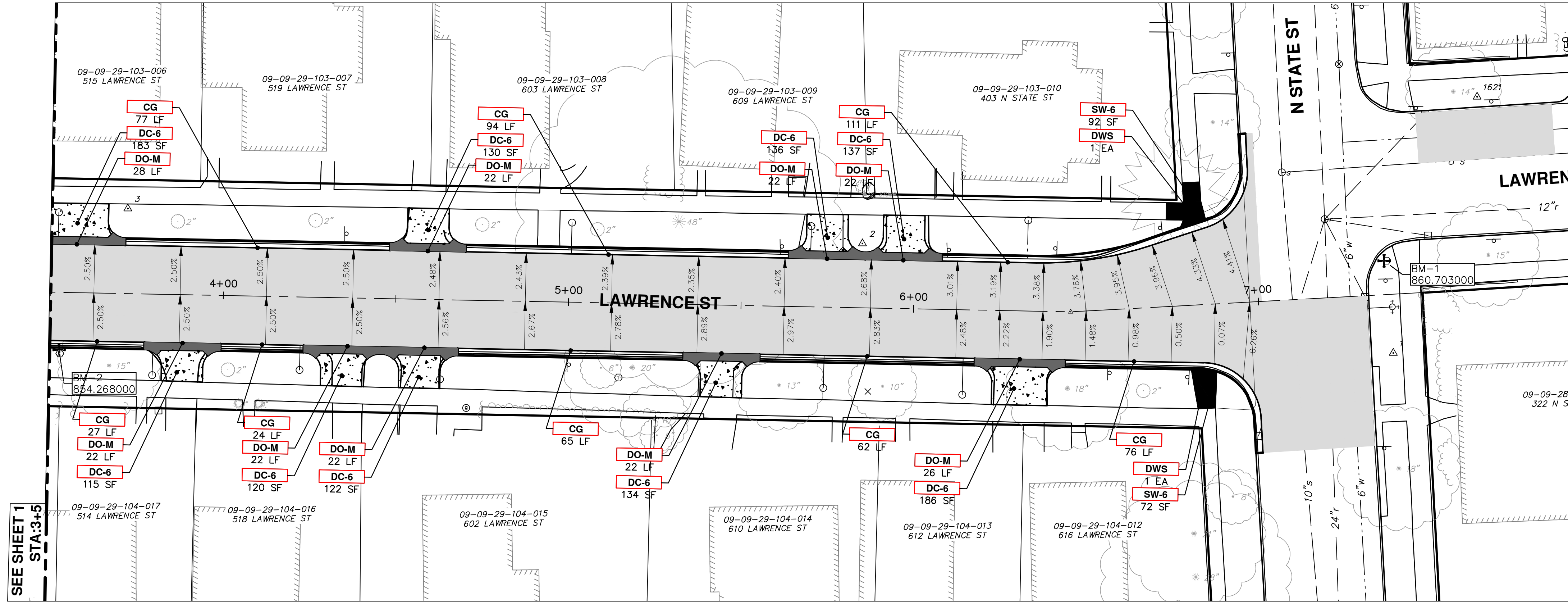
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LAWRENCE ST. WATER MAIN REPLACEMENT

SCALE PLAN: 1" = 20'  
PROFILE: 1" = 2'  
DRAWING No. 2014032-10

REV.	DESCRIPTION	DATE	DRAWN	CHECKED



CONSTRUCTION KEY	
KEY	DESCRIPTION
CG	PLACE CURB AND GUTTER, CONC, F4, SPECIAL
DO-M	PLACE DRIVEWAY OPENING, CONC, DETAIL M, P-NC
DC-6	PLACE CONC, DRIVE APPROACH, NON-REINFORCED, P-NC, 6" INCH
DWS	PLACE DETECTABLE WARNING SURFACE
SW-6	PLACE 6" CONC, ADA RAMP WITH DETECTABLE WARNING STRIP
1	ADJUST GATE VALVE BOX, MONUMENT BOX, OR GAS BOX.
2	ADJUST INLET STRUCTURE COVER
3	ADJUST MANHOLE COVER

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**LAWRENCE ST. WATER MAIN REPLACEMENT**

SCALE PLAN: 1" = 20'  
PROFILE: 1" = 2'

ROAD & STORM SEWER

DRAWING No.  
**2014032-11**

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SHEET No.  
**11 OF 11**

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