



# CITY OF ANN ARBOR ENGINEERING

## RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT

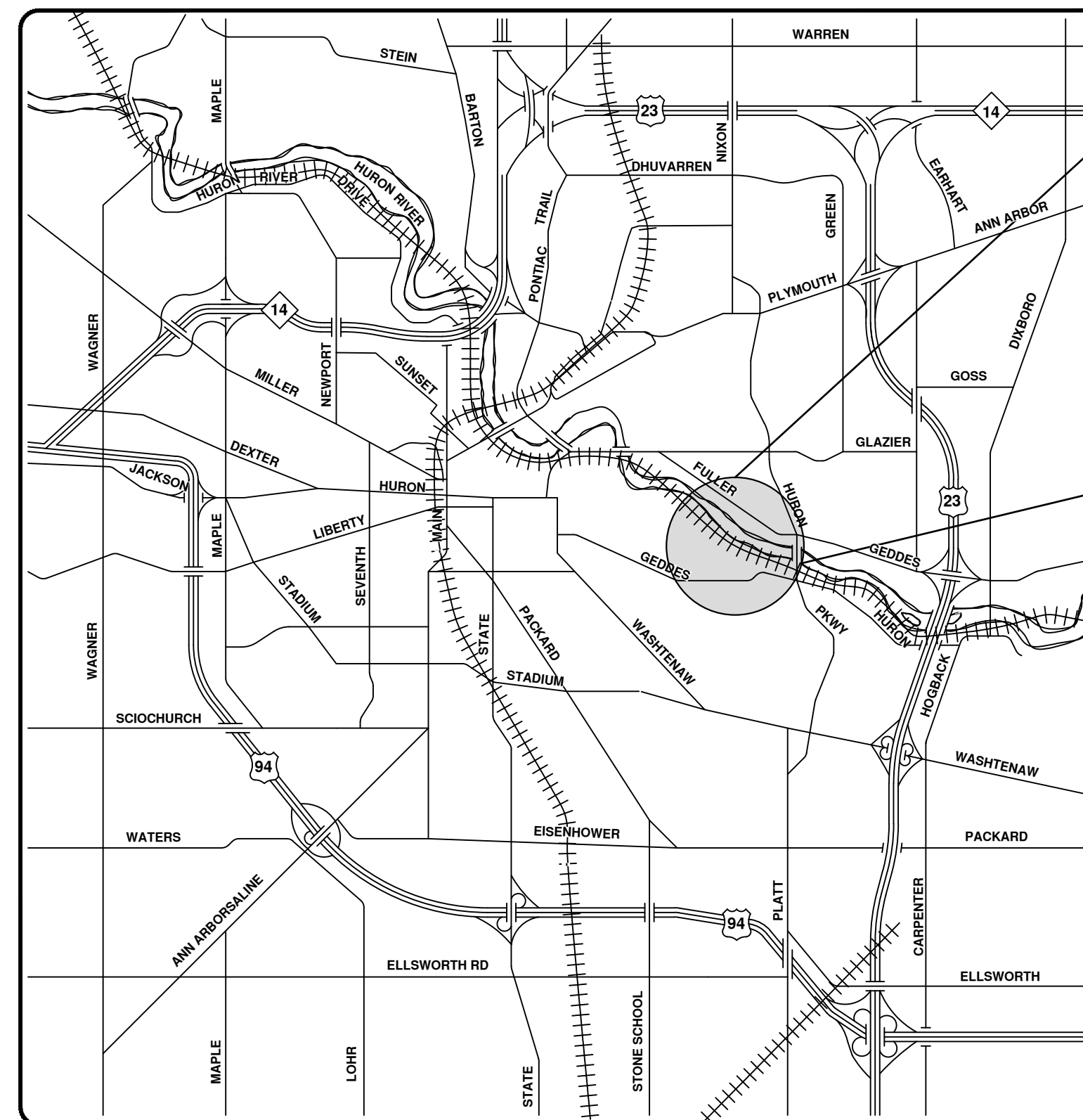
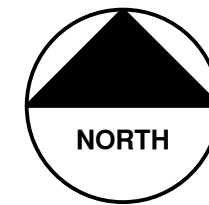
### NOTES

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, 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.

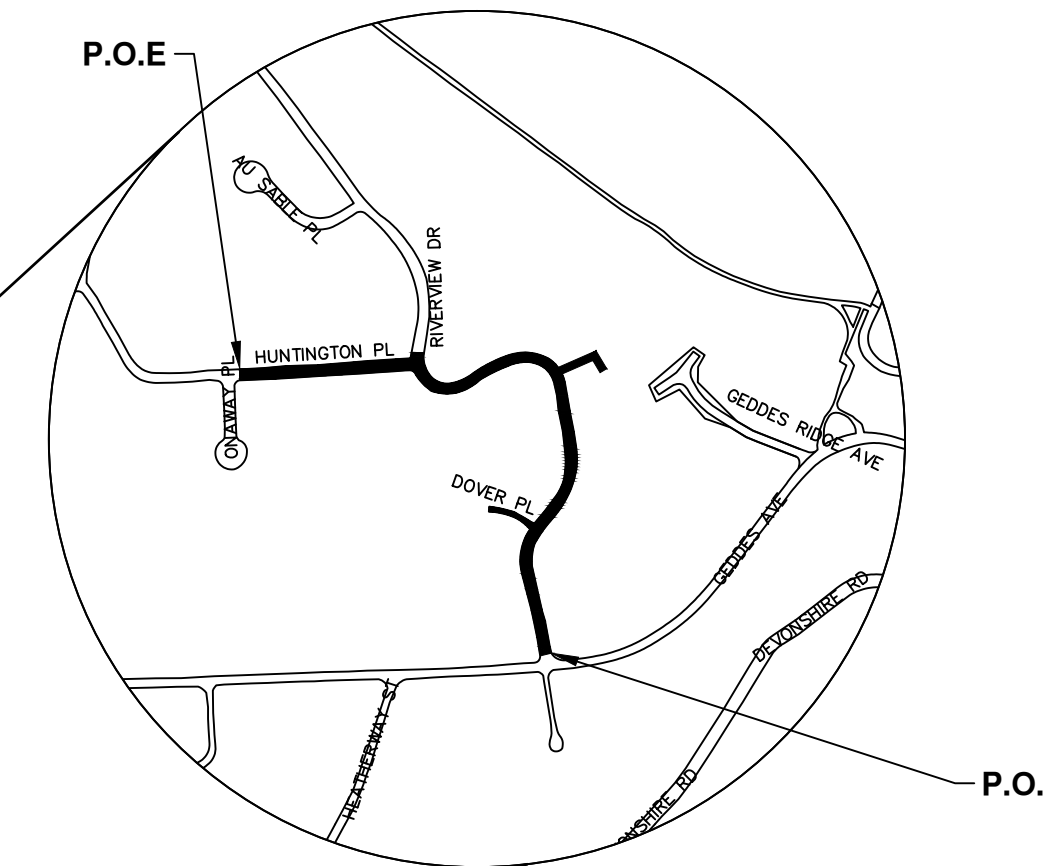
THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS, TELEPHONE, ELECTRICAL POWER, CABLE TV AND FIBER OPTIC LINES ARE APPROXIMATE. THE CITY OF ANN ARBOR ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

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 COMPLYING WITH THESE REQUIREMENTS.

ITB No. 4555, FILE No. 2017-031



VICINITY MAP



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24	PROPOSED PAVING STA 6+00 TO STA 10+00
25	PROPOSED PAVING STA 10+00 TO STA 13+00
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CITY OF ANN ARBOR STANDARD DETAILS		
REQUIRED ON THIS PROJECT	ITEM OF WORK	DETAIL
X	STANDARD MANHOLE (TYPE I)	SD-S-1
X	DROP MANHOLE CONNECTION	SD-S-5
X	SEWER CONNECTION	SD-S-6
X	SANITARY SEWER CONNECTION WITH RISER	SD-S-7
X	THRUST BLOCK	SD-W-2
X	FIRE HYDRANT ASSEMBLY	SD-W-1
X	GATE WELL FOR MAIN 12" AND SMALLER	SD-W-3
X	PERMANENT BLOW-OFF/AIR RELIEF	SD-W-6
X	TEMPORARY TESTING BLOW-OFF	SD-W-7
X	MANHOLE CASTING ADJUSTMENT	SD-GU-6
X	VALVE/MONUMENT BOX ADJUSTMENT	SD-GU-7
X	STRUCTURE PLATE	SD-GU-8
X	MH; VALVE/MONUMENT BOX LOWERING	SD-GU-9

PREPARED UNDER THE SUPERVISION OF

*Vaughn C. Martin*  
VAUGHN C. MARTIN, P.E. - MI LICENSE No. 52002  
PROJECT MANAGER



11/7/2018  
DATE

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

VCN	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	11/7/2018	VCN	CHECKED
MF	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	10/30/2018	MF	DRAWN
VCN	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	10/19/2018	VCN	
MF	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	2/28/2018	MF	
VCN	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	2/23/2018	VCN	
REV.		DESCRIPTION	DATE	REV.	

CITY OF ANN ARBOR PUBLIC SERVICES 301 EAST HURON STREET P.O. BOX 8647 ANN ARBOR MI 48106-8647 www.a2gov.org

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT

SCALE

SHEET No. 1 OF 30

DRAWING No. 2017-031-1

c:\pwwork\d0620002\2 LEGEND.dwg - Plot Date: 11/7/2018 3:51:26 PM

PROJECT NAME BENCHMARKS		
BM #	ELEV	DESCRIPTION
24	847.027	SPIKE IN EAST SIDE OF POWER POLE ACROSS FROM HOUSE #645.
25	843.990	SPIKE IN EAST SIDE OF UTILITY POLE ON WEST SIDE OF RIVERVIEW, ACROSS FROM HOUSE #615.
26	809.801	SPIKE IN WEST SIDE OF 24" TREE BETWEEN HOUSE #519 AND #508 ON EAST SIDE OF RIVERVIEW.
27	827.613	NORTHERLY RIM OF STORM MANHOLE AT CENTERLINE OF RIVERVIEW OPPOSITE HOUSE NORTH OF #580.
28	817.365	NORTHERLY RIM OF STORM MANHOLE AT CENTERLINE OF RIVERVIEW OPPOSITE HOUSE #559.
29	801.362	NORTHERLY RIM OF SANITARY MANHOLE.
30	802.978	SET RAILROAD SPIKE IN NORTHEAST SIDE OF UTILITY POLE ON SOUTHERLY SIDE OF RIVERVIEW AT 90° BEND IN ROAD.
31	806.437	NORTHERLY RIM OF MANHOLE AT CENTERLINE INTERSECTION OF RIVERVIEW AND HUNTINGTON.
50	837.735	SET RAILROAD SPIKE IN NORTH SIDE OF UTILITY POLE ON SOUTH SIDE OF GEDDES AT CENTERLINE OF RIVERVIEW EXTENDED.
51	837.621	NORTHERLY RIM ON STORM MANHOLE OF CENTERLINE OF RIVERVIEW, 25'± SOUTH OF CENTERLINE DOVER.
52	810.010	NORTHERLY RIM OF STORM MANHOLE ON CENTERLINE OF RIVERVIEW, 20'± NORTH OF CENTERLINE DRIVE FOR HOUSE #480.
53	847.262	CENTERLINE OF TOP STEP FOR STEPS AT WEST END OF DOVER LEADING TO HOUSE #3055

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN PROJECT  
CITY OF ANN ARBOR**

**HORIZONTAL DATUM: NAD 83 STATE PLANE COORDINATES  
VERTICAL DATUM: NAVD 88  
UNITS: INTERNATIONAL FEET  
SURVEYED BY: CITY OF ANN ARBOR**

**HORIZONTAL CONTROL POINTS**

- CONTROL POINT: CP50**  
DESCRIPTION: SET PIPE WITH TRAVERSE CAP ON SOUTH SIDE OF GEDDES. PIPE IS 30'± EAST OF CENTERLINE DRIVE FOR HOUSE NUMBERS 3090/3100, AND 3.6'± SOUTH OF SOUTH BACK OF CURB.  
COORDINATES: N=282398.850, E=13302337.400, ELEV=837.26'
- CONTROL POINT: CP25**  
DESCRIPTION: FOUND MAGNAIL IN ASPHALT ON NORTH SIDE OF RIVERVIEW OPPOSITE HOUSE #645.  
COORDINATES: N=282558.810, E=13302272.970, ELEV=844.08'
- CONTROL POINT: CP26**  
DESCRIPTION: FOUND PIPE WITH TRAVERSE CAP ON EAST SIDE OF RIVERVIEW IN FRONT OF HOUSE #615. 2.5' OFF BACK OF CURB.  
COORDINATES: N=282719.540, E=13302280.780, ELEV=838.64'
- CONTROL POINT: CP51**  
DESCRIPTION: SET PIPE WITH TRAVERSE CAP ON NORTH SIDE OF DOVER. PIPE IS 50'± WEST OF CENTERLINE RIVERVIEW AND 9.0'± NORTH OF CENTERLINE DOVER.  
COORDINATES: N=282802.220, E=13302250.120, ELEV=838.97'
- CONTROL POINT: CP52**  
DESCRIPTION: SET PIPE WITH TRAVERSE CAP AT NORTH EDGE OF GRAVEL ON DOVER. PIPE IS 26'± WEST OF WEST EDGE OF BLOCK WALL ON WEST EDGE OF DRIVE FOR HOUSE #3081.  
COORDINATES: N=282827.150, E=13302147.460, ELEV=843.59'
- CONTROL POINT: CP27**  
DESCRIPTION: FOUND PIPE WITH TRAVERSE CAP ON WEST SIDE OF RIVERVIEW. 3' OFF BACK OF CURB AND 28' NORTH OF CENTERLINE DRIVE FOR HOUSE #580.  
COORDINATES: N=282893.590, E=13302350.600, ELEV=823.70'
- CONTROL POINT: CP28**  
DESCRIPTION: FOUND PIPE WITH TRAVERSE CAP ON EASTERLY SIDE OF RIVERVIEW. 2.2' OFF BACK OF CURB AND OPPOSITE CENTERLINE DRIVE FOR HOUSE #480.  
COORDINATES: N=283124.480, E=13302365.980, ELEV=811.92'
- CONTROL POINT: CP29**  
DESCRIPTION: FOUND PIPE WITH TRAVERSE CAP ON NORTH SIDE (AFTER CURB) OF RIVERVIEW. 3.0' OFF BACK OF CURB AND 50'± WEST OF MAILBOX FOR HOUSE #485.  
COORDINATES: N=283231.200, E=13302225.190, ELEV=804.58'
- CONTROL POINT: CP53**  
DESCRIPTION: SET MAGNAIL IN ASPHALT AT BEND IN ROAD. NAIL IS NEAR BM30.  
COORDINATES: N=283125.190, E=13302083.540, ELEV=803.38'

**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)
- END SECTION
- 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
- WATER MAIN ABANDONED
- STORM SEWER
- STORM SEWER ABANDONED
- SANITARY SEWER
- SANITARY SEWER ABANDONED
- GAS MAIN
- GAS MAIN (DEAD)
- ELECTRICAL OVER HEAD
- ELECTRICAL UNDER GROUND
- ELECTRICAL DUCT BANK
- TELEPHONE OVER HEAD
- TELEPHONE UNDER GROUND
- TELEPHONE DUCT BANK
- CABLE TV OVER HEAD
- CABLE TV UNDER GROUND
- FIBER OPTIC
- FIBER OPTIC DUCT BANK
- BOUNDARY
- BUILDING
- CENTERLINE OF DITCH
- CENTERLINE/CROWN OF ROAD
- CONTOUR MAJOR
- CONTOUR MINOR
- EDGE OF WATER
- FLOODPLAIN
- FENCE
- GRAVEL
- GUARDRAIL
- STONE WALL
- R.O.W.
- TREELINE
- WETLAND
- EDGE OF BRUSH
- HEDGE
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)
- SHRUB (DECIDUOUS)
- STUMP
- TREE TO REMAIN & PROTECT (DECIDUOUS)  
CRITICAL ROOT ZONE (C.R.Z.) = DIAMETER BREST HEIGHT (INCHES) X 10
- TREE TO REMAIN & PROTECT (CONIFEROUS)  
CRITICAL ROOT ZONE (C.R.Z.) = DIAMETER BREST HEIGHT (INCHES) X 10

**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
- HAND HOLE

- WATER MAIN
- STORM SEWER
- SANITARY SEWER
- FIBER OPTIC
- ELECTRICAL
- CENTERLINE OF DITCH
- CENTERLINE OF ROAD
- FENCE
- GRAVEL
- SILT FENCE
- PROTECTIVE FENCE
- GUARDRAIL
- LOT/UNIT
- CURB
- TEMPORARY GRADING PERMIT
- CONTOUR MAJOR
- CONTOUR MINOR
- WATER EASMENT
- STORM EASEMENT
- SANITARY EASEMENT
- R.O.W.
- LIMITS OF CONSTRUCTION
- LIMIT OF GRADING
- STONE WALL
- DETECTABLE WARNING
- ASPHALT
- CONCRETE
- SIDEWALK
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)
- TREE TO BE REMOVED (DECIDUOUS)
- TREE TO BE REMOVED (CONIFEROUS)
- STUMP TO BE REMOVED

Know what's below.  
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VCM	VCM	VCM	VCM	VCM	VCM	VCM	VCM	VCM	VCM
11/7/2018	10/30/2018	10/19/2018	2/28/2018	2/23/2018	DATE	DRAWN	CHECKED		

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
 LEGEND, WITNESSES AND BENCHMARKS

SCALE: NTS

DRAWING No. 2017-031-2

SHEET No. 2 OF 30



GENERAL 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 TO ALL PROPERTIES. 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 CONTRACTOR SHALL MAINTAIN REASONABLE ACCESS FOR RESIDENTS TO ACCESS THEIR HOMES AT ALL TIMES. A SAFE ACCESS PATH SHALL BE IDENTIFIED ALONG WITH VEHICLE PARKING IN THE EVENT THAT CONSTRUCTION ACTIVITIES INHIBIT VEHICULAR ACCESS TO THE HOMES.
- THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND SERVICE LEADS ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- DURING NON-WORKING HOURS NO MORE THAN TEN (10) FEET OF TRENCH SHALL REMAIN OPEN. ANY OPEN TRENCH SHALL BE PROPERLY SECURED WITH PROTECTIVE FENCING. THIS WORK SHALL BE INCLUDED IN THE ITEMS OF WORK BEING UNDERTAKEN AND WILL NOT BE PAID FOR SEPARATELY.
- TRENCHES FOR NEW WATER SERVICES SHALL BE EXCAVATED TO MISHA AND CITY OF ANN ARBOR PUBLIC WORKS REQUIREMENTS.
- FOR THE INSTALLATION OF CORPORATIONS, OR ANY OTHER ACTIVITIES RELATED TO THE INSTALLATION OF WATER SERVICES, WATER MAIN SHUTDOWN, OR SIMILAR WORK, THE CONTRACTOR SHALL NOT RECEIVE ADDITIONAL COMPENSATION FOR DELAYS DUE TO THE SCHEDULING OF, OR COORDINATION WITH, CITY OF ANN ARBOR PUBLIC WORKS.
- THE CONTRACTOR SHALL BACKFILL TRENCHES IN ACCORDANCE WITH TRENCH DETAIL(S) SPECIFIED ON PLANS. THIS WORK SHALL BE INCLUDED IN THE ITEM OF WORK BEING PERFORMED.
- ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE POLYETHYLENE WRAPPED PER ANSI/AWWA C105/A21.5.
- ALL FITTINGS, HYDRANTS, VALVES AND CASTINGS REMOVED DURING CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CITY OF ANN ARBOR. THE CONTRACTOR SHALL COORDINATE PICKUP BY THE CITY OF ANN ARBOR FIELD OPERATIONS UNIT.
- FLOUROPOLYMER COATED BOLTS ARE TO BE USED AT ALL MECHANICAL WATER MAIN JOINTS (HYDRANTS AND MEGALUG FITTINGS). SEE DETAILED SPECIFICATION ENTITLED "WATER MAIN AND APPURTENANCES" FOR ADDITIONAL INFORMATION.
- THE CONTRACTOR SHALL CONSTRUCT, FLUSH, AND BACTERIOLOGICALLY TEST THE WATER MAIN PER DETAILED SPECIFICATION "WATER MAIN AND APPURTENANCES" 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 ASSOCIATED ITEMS OF WORK.
- THE CONTRACTOR SHALL PERFORM THE CONSTRUCTION OPERATIONS SUCH THAT POSTAL DELIVERY AND REFUSE PICKUP SERVICE SHALL BE MAINTAINED AT ALL TIMES.
- WHERE CURB AND GUTTER, CURB, PAVEMENT OR SIMILAR ITEMS BECOME UNDERMINED DUE TO THE CONTRACTOR'S OPERATIONS, THEY SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S SOLE EXPENSE.
- 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 COMPLETION OF THE PROJECT. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX. \_\_\_\_\_".
- THE LOCATION OF MATERIAL STOCK PILES AND ON-SITE STAGING AREAS SHALL BE APPROVED BY THE ENGINEER. ALL MATERIAL STOCKPILES SHALL BE MAINTAINED SUCH THAT DRAINAGE AND SIGHT DISTANCES ARE NOT ADVERSELY IMPACTED. SOIL EROSION REQUIREMENTS SHALL APPLY TO ALL MATERIAL STOCKPILES.

- 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.
- 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 MDT GRANULAR MATERIAL, CLASS II.
- SOME STORM SEWER MAY UNAVOIDABLY BECOME DAMAGED DURING CONSTRUCTION OR IT MAY BE DETERMINED BY THE ENGINEER THAT EXISTING STORM SEWER NEEDS TO BE REPLACED. IN EITHER CASE, THE ENGINEER MAY DIRECT THE SEWER TO BE REMOVED AND REPLACED. THE REMOVAL OF THE EXISTING SEWER AND/OR DRAINAGE STRUCTURES SHALL BE INCLUDED IN THE CONTRACT WORK ITEMS "SEWER, ANY SIZE OR DEPTH, REM" OR "DR STRUCTURE, ANY SIZE OR DEPTH, REM", AND THE REPLACEMENT SEWER SHALL BE INSTALLED AND PAID FOR AT THE CORRESPONDING CONTRACT UNIT PRICE, IF CONTAINED WITHIN THE CONTRACT, FOR THE VARIOUS TYPES AND SIZES OF SEWER TO BE REPLACED.
- WHERE EXISTING SEWER AND/OR DRAINAGE STRUCTURES ARE TO BE REMOVED, THEY SHALL BE PROPERLY DISPOSED OF OFF-SITE AND THE EXCAVATION SHALL BE BACKFILLED WITH MDT CLASS II GRANULAR MATERIAL, COMPACTED TO 95% OF ITS MAX. DRY DENSITY. THIS WORK SHALL BE INCLUDED IN THE CONTRACT ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND/OR DR STRUCTURE, ANY SIZE OR DEPTH, REM".
- IF THE CONTRACTOR ENCOUNTERS EXISTING EDGE DRAIN(S) DURING CONSTRUCTION OF THE PROPOSED EDGE DRAINS, INLET LEADS, OR CATCH BASINS, IT SHALL BE CAPPED AT EACH END TO PREVENT MATERIAL FROM ENTERING THE PIPE. THE COST OF THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE PARTICULAR ITEM OF WORK BEING PERFORMED WHEN EXISTING EDGE DRAIN(S) ARE ENCOUNTERED.
- 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 "GENERAL CONDITIONS, MAX. \_\_\_\_\_".
- ALL STRUCTURES SHALL RECEIVE NEW CASTINGS, EITHER TYPE B, TYPE K, TYPE Q, OR TYPE R AS SPECIFIED ON THE STANDARD CASTING SCHEDULE. THE EXISTING CASTINGS SHALL BE NEATLY STACKED ON-SITE IN A SINGLE LOCATION SO THAT THE CITY OF ANN ARBOR FORCES CAN RETRIEVE THEM AT A LATER DATE. THE CONTRACTOR SHALL ASSIST CITY FORCES BY LOADING THEM INTO CITY TRUCKS. ALL COSTS ASSOCIATED WITH STORING, STOCKPILING AND LOADING CASTINGS SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX. \_\_\_\_\_" AND WILL NOT BE PAID FOR SEPARATELY.
- ALL EXCAVATION REQUIRED FOR PROJECT GRADING WITHIN THE PROJECT LIMITS, INCLUDING PROPOSED PAVEMENT, DRIVE APPROACHES, SIDEWALK, AND SIDEWALK RAMPS SHALL BE INCLUDED IN "MACHINE GRADING, MODIFIED, \_\_\_\_\_".
- ALL CURB, SIDEWALK, AND DRIVEWAY APPROACH REMOVALS SHALL BE APPROVED BY THE ENGINEER BEFORE THE WORK IS PERFORMED. ALL CONCRETE AND BITUMINOUS MATERIALS SHALL BE SAW-CUT FULL-DEPTH AT THEIR REMOVAL LIMITS PRIOR TO REMOVAL. SAW-CUTTING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "MACHINE GRADING, MODIFIED, \_\_\_\_\_".

26. PLACE 8" (MINIMUM) 21AA LIMESTONE AGGREGATE COMPACTED TO 98% OF ITS MAX. DRY DENSITY UNDER DRIVE APPROACHES. THIS WORK SHALL BE INCLUDED IN THE CONTRACT ITEM "AGGREGATE BASE, 8 INCH, 21AA MODIFIED".

WATER MAIN AND SANITARY SEWER QUANTITIES

1515	LFT	PC 350 D.I. WATER MAIN, 12-INCH
237	LFT	PC 350 D.I. WATER MAIN, 8-INCH
6	LFT	PC 350 D.I. WATER MAIN, 6-INCH
352	LFT	WATER MAIN, HDPE, 10-INCH, DIRECTIONAL DRILL
205	LFT	WATER MAIN, HDPE, 14-INCH, DIRECTIONAL DRILL
6	EA	FIRE HYDRANT
4	EA	GATE VALVE AND BOX, 12-INCH
1	EA	GATE VALVE AND WELL, 8-INCH
1	EA	PERMANENT BLOW-OFF, 12-INCH
841	LF	SEWER SDR 35 PVC PIPE, 8-INCH
15	VF	SANITARY SEWER, DROP CONNECTION, 8-INCH
8	EA	DR STRUCTURE, MANHOLE, TYPE I, 48 INCH DIA, SANITARY

Basis of Design For Riverview Drive

Single Family Units =		9
9 Units * 3.5 People/Unit * 100 GPD/ Person=	3,150	or 0.00487 CFS
Population =	32	
Peaking Factor = $(18+(P)^{0.5})/(4+(P)^{.5})$ Where P is in Thousands		
Peaking Factor =	4.35	
Peak Flow = 4.35 * 0.00487 CFS=	0.0212 CFS	

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

PERMIT	ISSUING AUTHORITY
LANE CLOSURE PERMIT*	CITY OF ANN ARBOR ENGINEERING
GRADING/SOIL EROSION & SEDIMENTATION CONTROL PERMIT*	CITY OF ANN ARBOR CUSTOMER SERVICE
RIGHT-OF-WAY PERMIT*	CITY OF ANN ARBOR CUSTOMER SERVICE
* 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

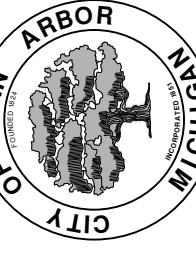
CONTACT INFORMATION

PUBLIC UTILITIES	OWNER	CONTACT
WATER		DAN WOODEN (734) 794-6350
SANITARY		RYAN FERRELL (734) 794-6350
STORM	CITY OF ANN ARBOR PUBLIC WORKS W.R. WHEELER SERVICE CENTER 4251 STONE SCHOOL ROAD ANN ARBOR, MI 48108	PAT MAINO (734) 794-6350
FORESTRY		CHUCK 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	LAURIE FORRESTER (734) 389-7261
ELECTRIC	DTE ENERGY WESTERN WAYNE SERVICE CENTER 8001 HAGGERTY ROAD BELLEVILLE, MI 48111	JULIE GOTTARDI (734) 397-4303
CABLE	COMCAST 25626 TELEGRAPH ROAD SOUTHFIELD, MI 48034	JON LABEAU (248) 809-2704
PHONE	AT&T 550 S. MAPLE ROAD ANN ARBOR, MI 48103	SHAWN BURNSIDE (734) 996-5350
FIBER OPTIC	ANN ARBOR PUBLIC SCHOOLS FIBER LINK 3529 W. GENSEE, SUITE 6 LAPEER, MI 48446	TINA SNOBLEN (810) 667-2891
FIBER OPTIC	MCI/VERIZON 730 W. HENRY STREET INDIANAPOLIS, IN 46225	CHRIS FOWLER (317) 685-8050
FIBER OPTIC	ZAYO GROUP 1060 HARDEES DRIVE, SUITE H ABERDEEN, MD 21001	GEORGE HUSS (443) 403-2023

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Know what's below. Call before you dig.

VCM	VCM	VCM	VCM	VCM	VCM	VCM	VCM	VCM	VCM
11/7/2018	10/30/2018	10/19/2018	2/28/2018	2/23/2018	DATE	DRAWN	CHECKED		
09	08	07	06	05	DESCRIPTION	REV.			
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT NOTES									
CITY OF ANN ARBOR PUBLIC SERVICES 301 EAST HURON STREET P.O. BOX 866 ANN ARBOR, MI 48107-0867 WWW.A2GOV.GOV									
									
SCALE: NTS DRAWING No. 2017-031-3 SHEET No. 3 OF 30									



c:\pwork\0620002\4 OVERALL PLAN.dwg Dwg Created: 29-Oct-18 - \_o2 standard bw.stb - Plot Date: 7-Nov-18



**NOTE:**  
 THE CONTRACTOR SHALL PERFORM THE REQUIRED EXPLORATORY EXCAVATIONS AS SOON AS PRACTICABLE UPON AWARD OF CONTRACT IN ORDER TO ALLOW THE ENGINEER TO REVIEW THE ACQUIRED DATA AND PROVIDE A REVISED PLAN, IF NEEDED, TO RESOLVE THE CONFLICT. THE CONTRACTOR SHALL PROVIDE THE NEEDED TRAFFIC CONTROL AND BACKFILL AND RESTORE THE RESULTANT HOLES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

**NOTE**  
 1: SEE SHEET 30 FOR BORE LOGS.

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERMEAD DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

OVERALL SITE UTILITY PLAN

SCALE: 1" = 60'

DRAWING No. 2017-031-4

SHEET No. 4 OF 30

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

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
09	FINAL PLANS - CITY OF ANN ARBOR	11/7/2018	MF	VCN
08	FINAL REVIEW TO CITY OF ANN ARBOR	10/30/2018	MF	VCN
07	SANITARY AND WATER MAIN PERMIT (REV)	10/9/2018	MF	VCN
06	FINAL PLANS - CITY OF ANN ARBOR	2/28/2018	MF	VCN
05	FINAL REVIEW TO CITY OF ANN ARBOR	2/23/2018	MF	VCN

CITY OF ANN ARBOR  
 PUBLIC SERVICES  
 307 EAST HURON STREET  
 ANN ARBOR, MI 48106-6647  
 ANN ARBOR: 734-754-4410  
 WWW.ANARBOR.MICHIGAN.GOV





**SOIL EROSION NOTES**

- 1: ALL AREAS TO BE PERMANENTLY RESTORED WITH GRASS SHALL RECEIVE TOPSOIL, HYDROSEED, AND STAKED EROSION CONTROL BLANKETS (MULCH BLANKETS).
- 2: STREETS EXTERNAL TO THE PROJECT AREA SHALL BE MONITORED FOR TRACKED MUD AND/OR CONSTRUCTION DEBRIS AND SHALL BE IMMEDIATELY CLEANED FOLLOWING ANY SUCH OCCURRENCE.

**SOIL EROSION SEQUENCE OF CONSTRUCTION\***

- 1: PLACE INLET FILTERS ON EXISTING DRAINAGE FEATURES THAT WILL REMAIN IN PLACE AFTER CONSTRUCTION BEGINS.
- 2: INSTALL SEWERS, WATER MAIN AND PAVEMENT IMPROVEMENTS.
- 3: RESTORE ALL DISTURBED AREAS TO A CONDITION THAT IS BETTER THAN, OR EQUAL TO, THAT WHICH EXISTED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- 4: INSPECT & REPAIR OR REPLACE ALL TEMPORARY SESC MEASURES WEEKLY AND WITHIN 24 HOURS OF A STORM EVENT.
- 5: ESTABLISH VEGETATION FOR ALL DISTURBED AREAS WITHIN CONSTRUCTION LIMITS.
- 6: CLEAN OUT STORM SEWER SYSTEMS.
- 7: REMOVE TEMPORARY SESC FEATURES (CALL FOR FINAL INSPECTION).
- 8: REMEDY ANY NOTED DEFECTS TO THE SATISFACTION OF THE CITY'S SESC OFFICIAL.

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

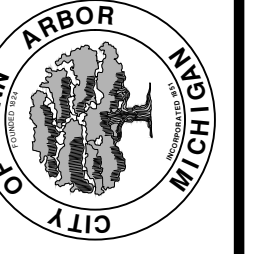
**LEGEND**

- IF(e) INLET FILE (FOR EXISTING STRUCTURE)
- PAVEMENT TO BE REMOVED (WITHIN THE PHASES OF CONSTRUCTION DETAILED WITHIN THE CONTRACT DOCUMENTS)



REV.	DESCRIPTION	DATE	DRAWN	CHECKED
09	FINAL PLANS - CITY OF ANN ARBOR	11/7/2018	MF	VCN
08	FINAL REVIEW TO CITY OF ANN ARBOR	10/30/2018	MF	VCN
07	SANITARY AND WATER MAIN PERMIT (REV)	10/19/2018	MF	VCN
06	FINAL PLANS - CITY OF ANN ARBOR	2/28/2018	MF	VCN
05	FINAL REVIEW TO CITY OF ANN ARBOR	2/23/2018	MF	VCN

CITY OF ANN ARBOR  
PUBLIC SERVICES  
301 EAST HURON STREET  
ANN ARBOR MI 48106-6647  
www.a2gov.org



**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
SOIL EROSION AND SEDIMENTATION CONTROL PLAN

SCALE: 1"=80'  
DRAWING No. 2017-031-5



**GENERAL**  
 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 THE SOIL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND 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/SOIL 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.

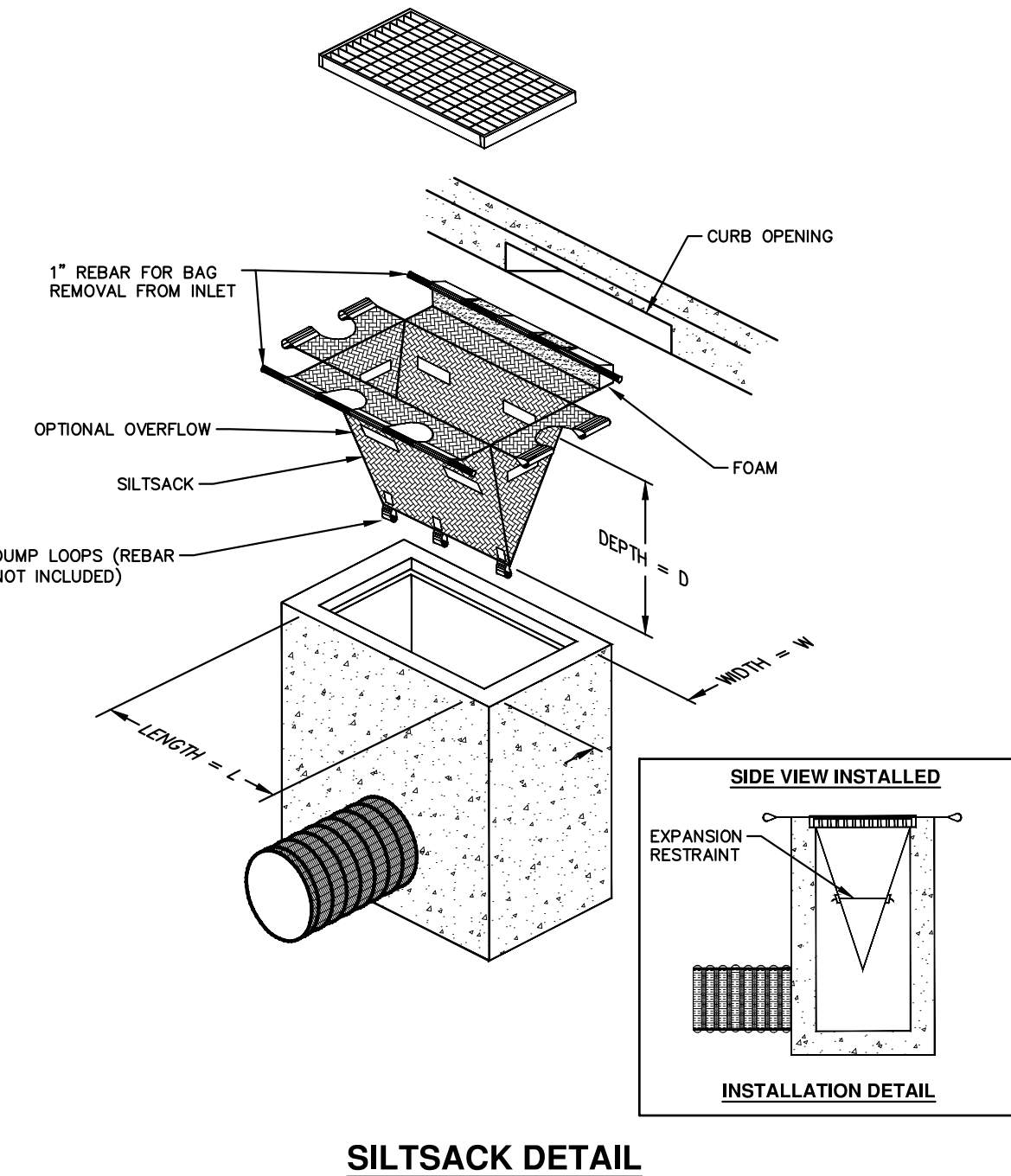
- SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
- PROPER DUST CONTROL SHALL BE MAINTAINED DURING CONSTRUCTION BY USE OF WATER TRUCKS AND/OR DUST PALLATIVE AS REQUIRED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY 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.

ON SITE SOILS PER THE USDA SOIL SURVEY OF WASHTENAW COUNTY, MICHIGAN:  
 • MmD - MIAMI LOAM - 12 TO 18 PERCENT SLOPES.  
 IN BROAD AREAS AND ALONG DRAINAGEWAYS OF TILL PLAINS AND MORAINES. SLOPES IN BROAD AREAS ARE SHORT AND COMPLEX.

TOTAL AREA OF PROPOSED DISTURBANCE = 0.74 AC  
 0.71 AC - RIVERVIEW DRIVE  
 0.03 AC - DOVER PLACE



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-4833	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**

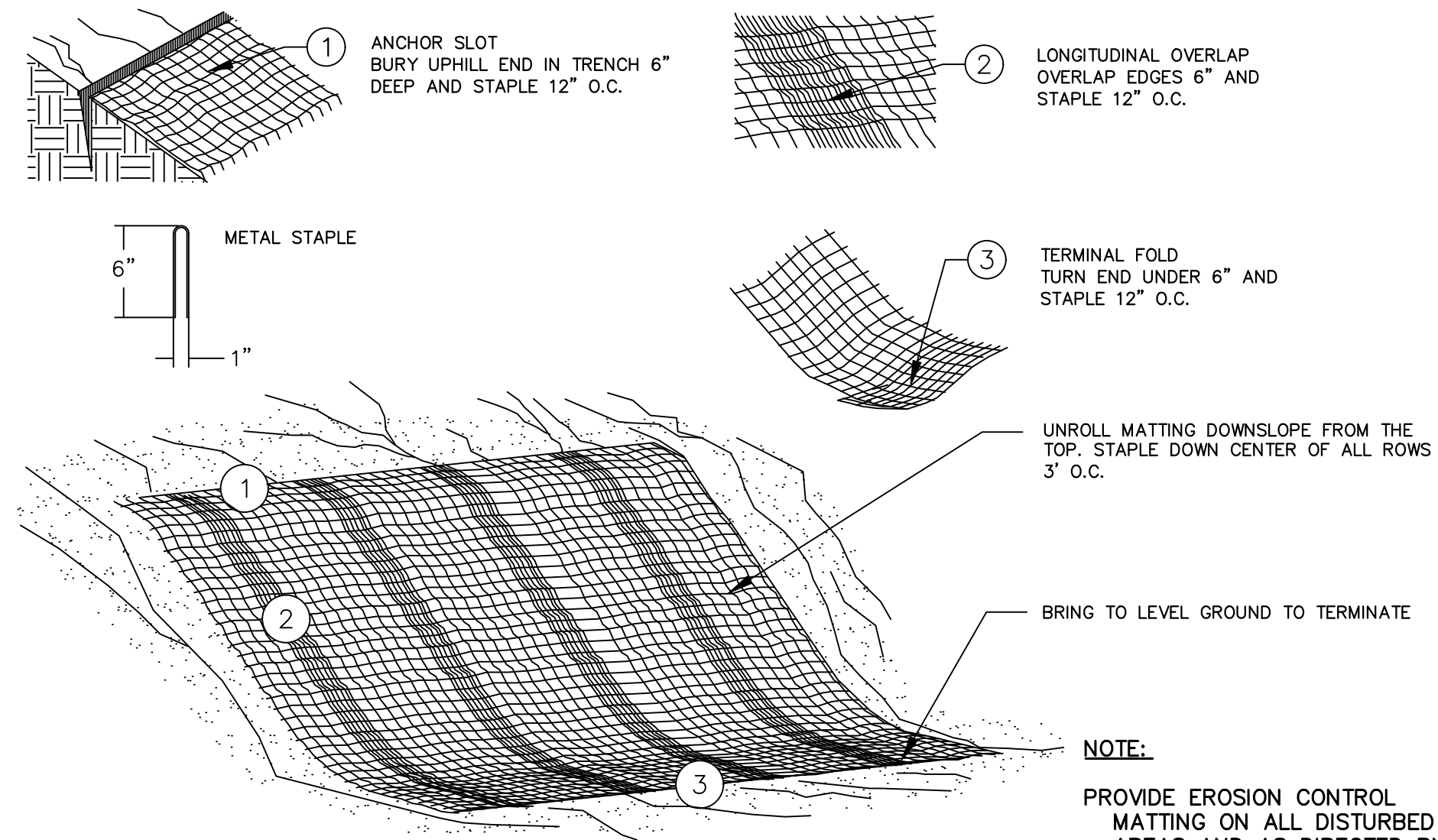
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	REQUIRED VALUE	TEST METHOD
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	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**

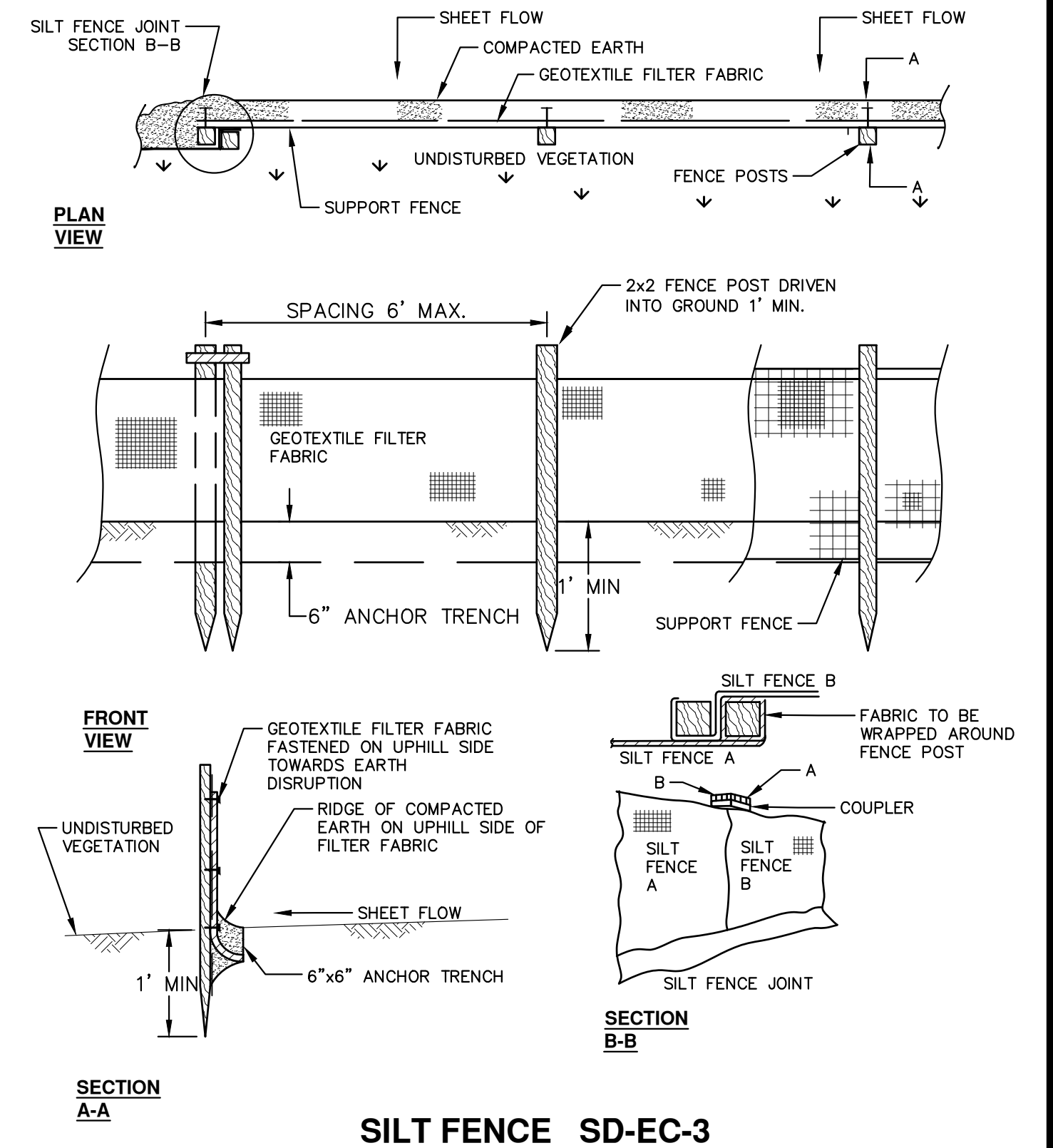
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

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.



**MULCH BLANKET DETAIL**

APPLIES TO ALL AREAS TO BE PERMANENTLY RESTORED WITH GRASS.



**SILT FENCE SD-EC-3**

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

REV.	DATE	DESCRIPTION	DRAWN	CHECKED
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	
06	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	
07	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	MF	
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

**SOIL EROSION DETAILS**

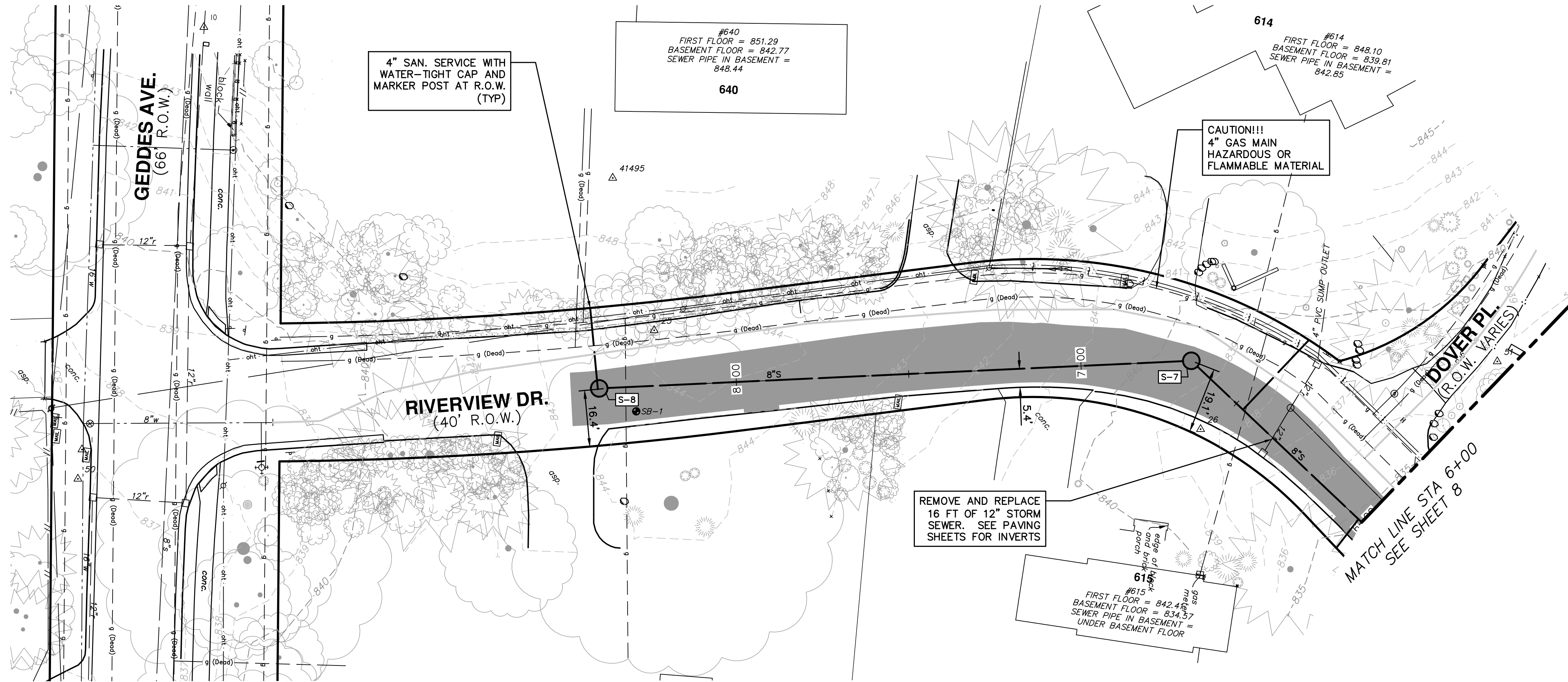
SCALE: NTS

DRAWING No. 2017-031-6

SHEET No. 6 OF 30

CITY OF ANN ARBOR  
 PUBLIC SERVICES  
 301 EAST HURON STREET  
 P.O. BOX 866107-8647  
 ANN ARBOR, MI 48106-6477  
 www.aagov.org





**SANITARY SEWER NOTES**

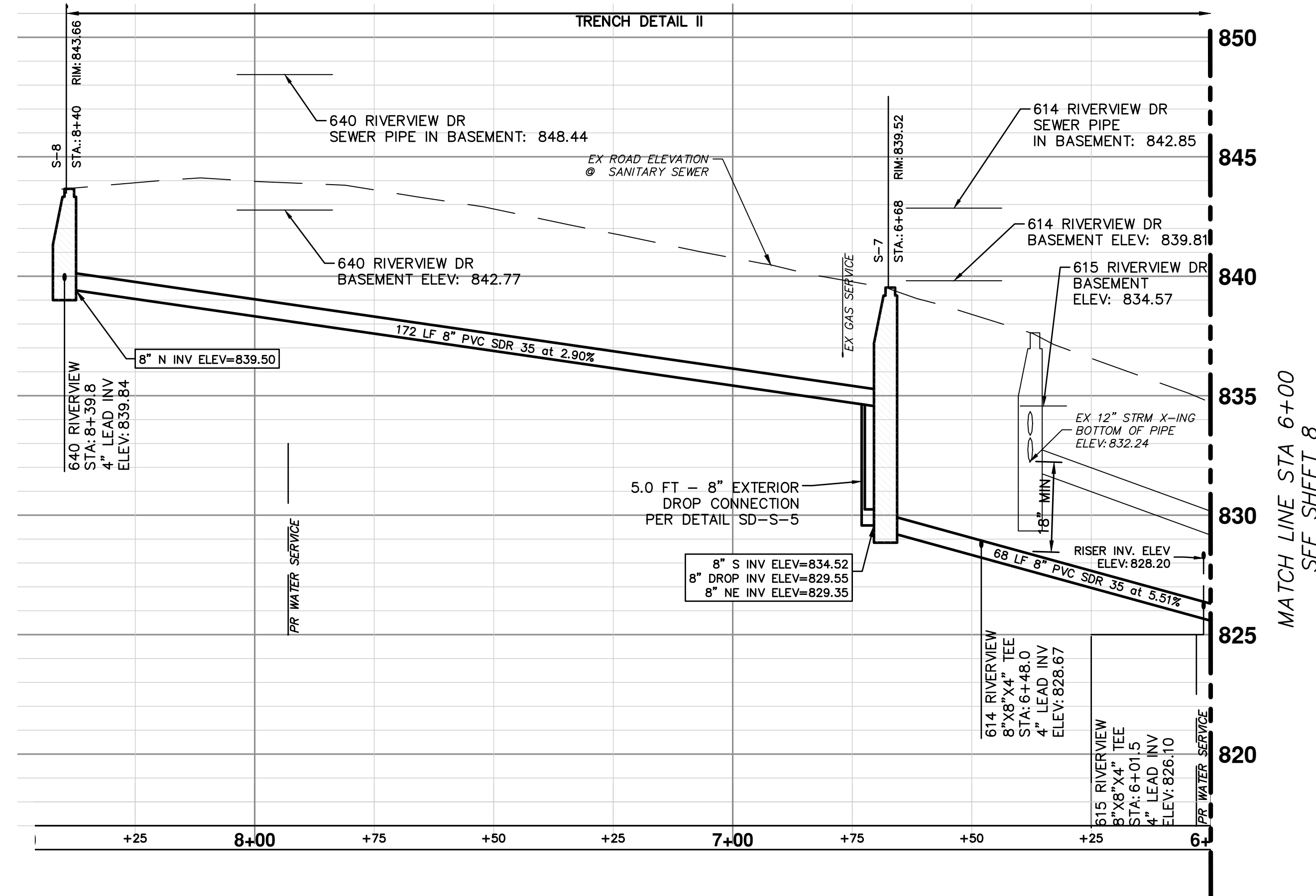
- SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
- NEW SANITARY SEWER SHALL CONSIST OF ASTM D3034 SOLID WALL PVC SDR35 PIPE AND SDR 26 PIPE WITH WATER-TIGHT GASKETED JOINTS, CLASS B STONE BEDDING (UP TO 12 INCHES ABOVE TOP OF PIPE) AND COMPACTED SAND BACKFILL. DEFLECTION OF PVC PIPE AFTER INSTALLATION AND BACKFILL SHALL NOT EXCEED 5.0% OF THE PIPE DIAMETER.
- MANUFACTURED TEES SHALL BE USED AT ALL SERVICE CONNECTIONS.
- NEW SANITARY SERVICES SHALL CONSIST OF PVC SDR26 OR SDR35 PIPE WITH WATER-TIGHT GASKETED JOINTS, STONE BEDDING AND BACKFILLED WITH COMPACTED SAND BACKFILL.
- TERMINATE NEW SANITARY SERVICES WITH A WATER-TIGHT PLUG AND 2" X 2" PRESSURE TREATED HARDWOOD MARKER OR PK NAIL IF IN DRIVEWAY. AS REQUIRED BY SPECIFICATIONS.
- PROVIDE EARTH RESTRAINT AND TRENCH SUPPORT AS NEEDED TO PROTECT ADJOINING UTILITIES, STRUCTURES, ASPHALT CURB AND PAVEMENT AND LANDSCAPING FROM SETTLEMENT OR DAMAGE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SUPPORT TO PRESERVE AND PROTECT UTILITIES CROSSING THE TRENCH DURING CONSTRUCTION. METHODS OF SUPPORT SHALL BE APPROVED BY UTILITY OWNER. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET 1".
- THE CONTRACTOR SHALL PROVIDE DEWATERING AS NEEDED TO MAINTAIN A DRY, SAFE AND STABLE TRENCH BOTTOM DURING CONSTRUCTION. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET 1".
- THE CONTRACTOR SHALL UTILIZE TRENCH BOXES, SHEETING AND RELATED MEANS AND METHODS DURING SEWER AND LEAD INSTALLATION TO PROVIDE A SAFE AND APPROPRIATE EXCAVATION AND TO PROTECT EXISTING UTILITIES, PAVEMENT, CURB, FEATURES, VEGETATION, TREES, ETC. THAT ARE NOT NOTED FOR REMOVAL. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET 1".
- FINAL LOCATION OF SANITARY SERVICE LEAD WILL BE COORDINATED AT THE TIME OF CONSTRUCTION WITH PROPERTY OWNER BY THE ENGINEER. NO ADJUSTMENT IN ANY UNIT PRICE WILL BE ALLOWED AS A RESULT OF ANY ADJUSTMENT IN LOCATION OF PROPOSED SANITARY SEWER LEAD.
- ALL LEAD INVERT ELEVATIONS ARE CALCULATED BASED ON AN 8"x4" TEE ROTATED 45° VERTICALLY. SEE DETAIL ON THIS SHEET.

**LEGEND**

PROPOSED STAGE 1 PAVEMENT REMOVAL LIMITS-18" SECTION OF ASPHALT CURB AND PAVEMENT TO REMAIN IN PLACE AS SHOWN ON THE PLANS. SEE PAVING SHEETS FOR ADDITIONAL REMOVAL DETAILS

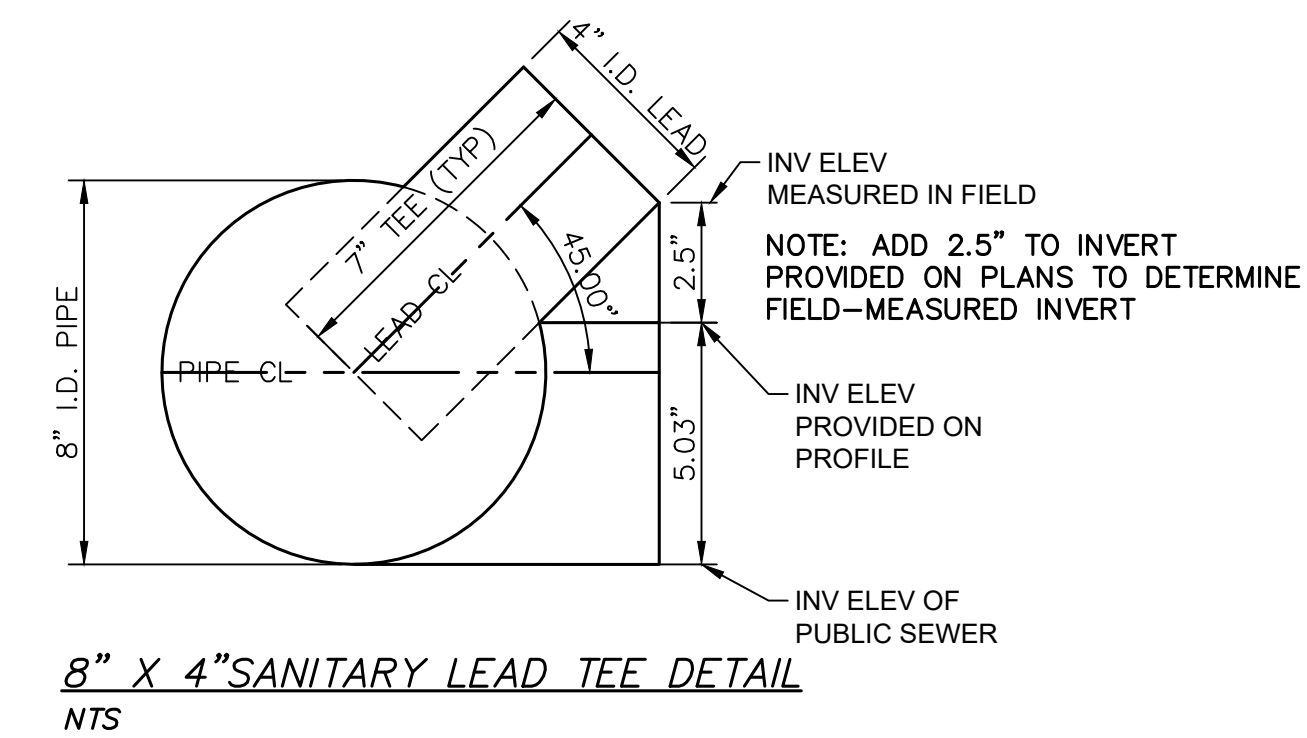
NOTE: A PROVISIONAL QUANTITY OF 200 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND "SEWER, CL C76 IV, 12 INCH, TR DET 1, MODIFIED" TO ACCOUNT FOR POTENTIAL CONFLICTS THAT MAY ARISE DURING THE INSTALLATION OF THE PROPOSED UTILITIES WITH THE EXISTING STORM SEWER SYSTEM. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.

NOTE: A PROVISIONAL QUANTITY OF 400 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "CURB, ANY TYPE OR SIZE, REM" AND "CURB SLOPED, HMA, SPECIAL" TO BE USED IN THE EVENT THAT THE EXISTING CURB NOT IDENTIFIED FOR REMOVAL IN THE PLANS IS DAMAGED BY UNAVOIDABLE CIRCUMSTANCES ENCOUNTERED DURING CONSTRUCTION. THIS PROVISIONAL QUANTITY IS NOT INTENDED TO EXPEDITE THE CONTRACTOR'S OPERATION OR TO DIMINISH TRENCH WIDTH AND/OR SAFETY REQUIREMENTS. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.



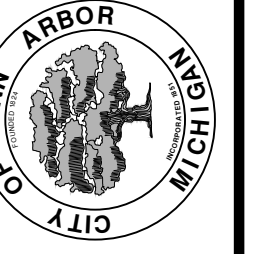
SANITARY LEAD TABLE								
STA	ADDRESS	RISER HEIGHT (FT)	LENGTH TO ROW (FT)	LEAD SLOPE	INV @ ROW	DIRECTION	SIZE	MATERIAL
8+40	640 RIVERVIEW	0.0	23.5	2.5%	840.43	West	4"	PVC SDR 35
6+48	614 RIVERVIEW	0.0	27.8	2.5%	829.57	West	4"	PVC SDR 35
6+01.5	615 RIVERVIEW	2.1	10.5	2.5%	828.46	East	4"	PVC SDR 35

SANITARY SEWER STRUCTURE TABLE						
STRUCTURE	STATION	RIM	DIA.	INVERTS	APPLICATION /CONSTRUCTION/DETAIL	
S-7	6+68.02	839.52	48"	8" S 834.52 8" S 829.55 8" NE 829.35	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER	
S-8	8+39.79	843.66	48"	8" N 839.50	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER	



VCM	MF	DATE	DESCRIPTION	CHECKED
VCM	MF	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	
VCM	MF	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	
VCM	MF	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	
VCM	MF	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	
VCM	MF	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	
			DATE	DRAWN

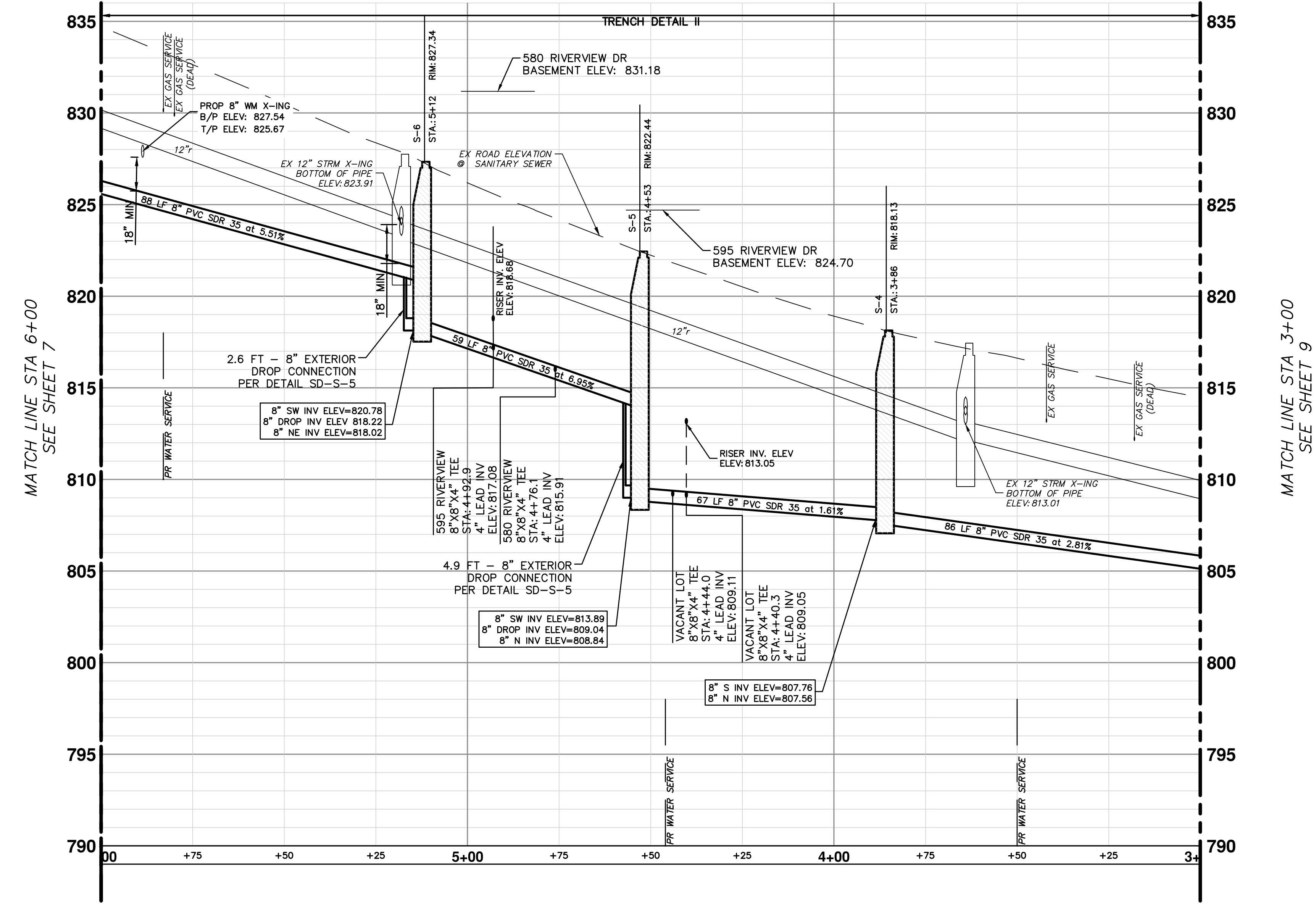
CITY OF ANN ARBOR  
PUBLIC SERVICES  
301 EAST HURON STREET  
PO BOX 8647  
ANN ARBOR MI 48107-8647  
www.aagov.org



**CITY OF ANN ARBOR - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
PROPOSED SANITARY PLAN & PROFILE STA 6+00 TO STA 8+00

SCALE PLAN: 1"=20'  
PROFILE: 1"=4'  
DRAWING NO. 2017-031-7





**SANITARY LEAD TABLE**

STA	ADDRESS	RISER HEIGHT (FT)	LENGTH TO ROW (FT)	LEAD SLOPE	INV @	DIRECTION	SIZE	MATERIAL
4+93	595 RIVERVIEW	1.6	15.8	2.5%	819.07	East	4"	PVC SDR 35
4+76	580 RIVERVIEW	0.0	24.0	2.5%	816.72	West	4"	PVC SDR 35
4+44	595 VACANT LOT	0.0	15.4	2.5%	809.70	East	4"	PVC SDR 35
4+40	580 VACANT LOT	4.0	24.5	2.5%	813.66	West	4"	PVC SDR 35

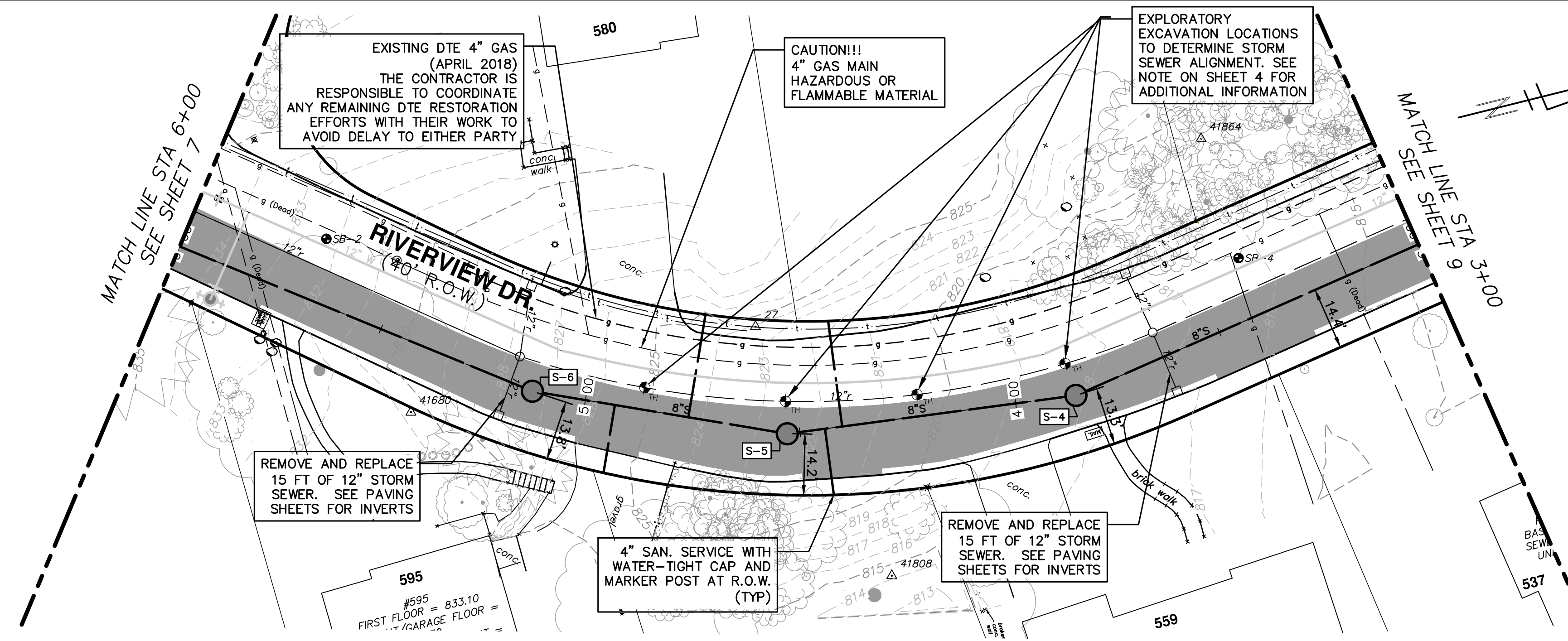
**SANITARY SEWER STRUCTURE TABLE**

STRUCTURE	STATION	RIM	DIA.	INVERTS	APPLICATION/CONSTRUCTION/DETAIL
S-4	3+86.04	818.13	48"	8" S 807.76 8" N 807.56	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER
S-5	4+52.96	822.44	48"	8" SW 813.89 8" N 809.04 8" N 809.84	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER
S-6	5+12.36	827.34	48"	8" SW 820.78 8" SW 818.22 8" NE 818.02	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER

- SANITARY SEWER NOTES**
- SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
  - NEW SANITARY SEWER SHALL CONSIST OF ASTM D3034 SOLID WALL PVC SDR35 PIPE AND SDR 26 PIPE WITH WATER-TIGHT GASKETED JOINTS, CLASS B STONE BEDDING (UP TO 12 INCHES ABOVE TOP OF PIPE) AND COMPACTED SAND BACKFILL. DEFLECTION OF PVC PIPE AFTER INSTALLATION AND BACKFILL SHALL NOT EXCEED 5.0% OF THE PIPE DIAMETER.
  - MANUFACTURED TEES SHALL BE USED AT ALL SERVICE CONNECTIONS.
  - NEW SANITARY SERVICES SHALL CONSIST OF PVC SDR26 OR SDR35 PIPE WITH WATER-TIGHT GASKETED JOINTS, STONE BEDDING AND BACKFILLED WITH COMPACTED SAND BACKFILL.
  - TERMINATE NEW SANITARY SERVICES WITH A WATER-TIGHT PLUG AND 2" X 2" PRESSURE TREATED HARDWOOD MARKER OR PK NAIL IF IN DRIVEWAY, AS REQUIRED BY SPECIFICATIONS.
  - PROVIDE EARTH RESTRAINT AND TRENCH SUPPORT AS NEEDED TO PROTECT ADJOINING UTILITIES, STRUCTURES, ASPHALT CURBS AND PAVEMENT AND LANDSCAPING FROM SETTLEMENT OR DAMAGE DURING CONSTRUCTION.
  - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SUPPORT TO PRESERVE AND PROTECT UTILITIES CROSSING THE TRENCH DURING CONSTRUCTION. METHODS OF SUPPORT SHALL BE APPROVED BY UTILITY OWNER. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET 1".
  - THE CONTRACTOR SHALL PROVIDE DEWATERING AS NEEDED TO MAINTAIN A DRY, SAFE AND STABLE TRENCH BOTTOM DURING CONSTRUCTION. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET 1".
  - THE CONTRACTOR SHALL UTILIZE TRENCH BOXES, SHEETING AND RELATED MEANS AND METHODS DURING SEWER AND LEAD INSTALLATION TO PROVIDE A SAFE AND APPROPRIATE EXCAVATION AND TO PROTECT EXISTING UTILITIES, PAVEMENT, CURB, FEATURES, VEGETATION, TREES, ETC. THAT ARE NOT NOTED FOR REMOVAL. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET 1".
  - FINAL LOCATION OF SANITARY SERVICE LEAD WILL BE COORDINATED AT THE TIME OF CONSTRUCTION WITH PROPERTY OWNER BY THE ENGINEER. NO ADJUSTMENT IN ANY UNIT PRICE WILL BE ALLOWED AS A RESULT OF ANY ADJUSTMENT IN LOCATION OF PROPOSED SANITARY SEWER LEAD.
  - ALL LEAD INVERT ELEVATIONS ARE CALCULATED BASED ON AN 8"x4" TEE ROTATED 45° VERTICALLY. SEE DETAIL ON SHEET 7.

**LEGEND**

PROPOSED STAGE 1 PAVEMENT REMOVAL LIMITS—18" SECTION OF ASPHALT CURB AND PAVEMENT TO REMAIN IN PLACE AS SHOWN ON THE PLANS. SEE PAVING SHEETS FOR ADDITIONAL REMOVAL DETAILS



CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT

PROPOSED SANITARY PLAN & PROFILE STA 3+00 TO STA 6+00

SCALE PLAN: 1" = 20'

PROFILE: 1" = 4'

DRAWING NO. 2017-031-8

SHEET NO. 8 OF 30

CITY OF ANN ARBOR  
PUBLIC SERVICES  
301 EAST HURON STREET  
PO BOX 866  
ANN ARBOR MI 48107-0867  
ANN ARBOR MI 734-794-4410  
WWW.ANARBOR.MI.GOV

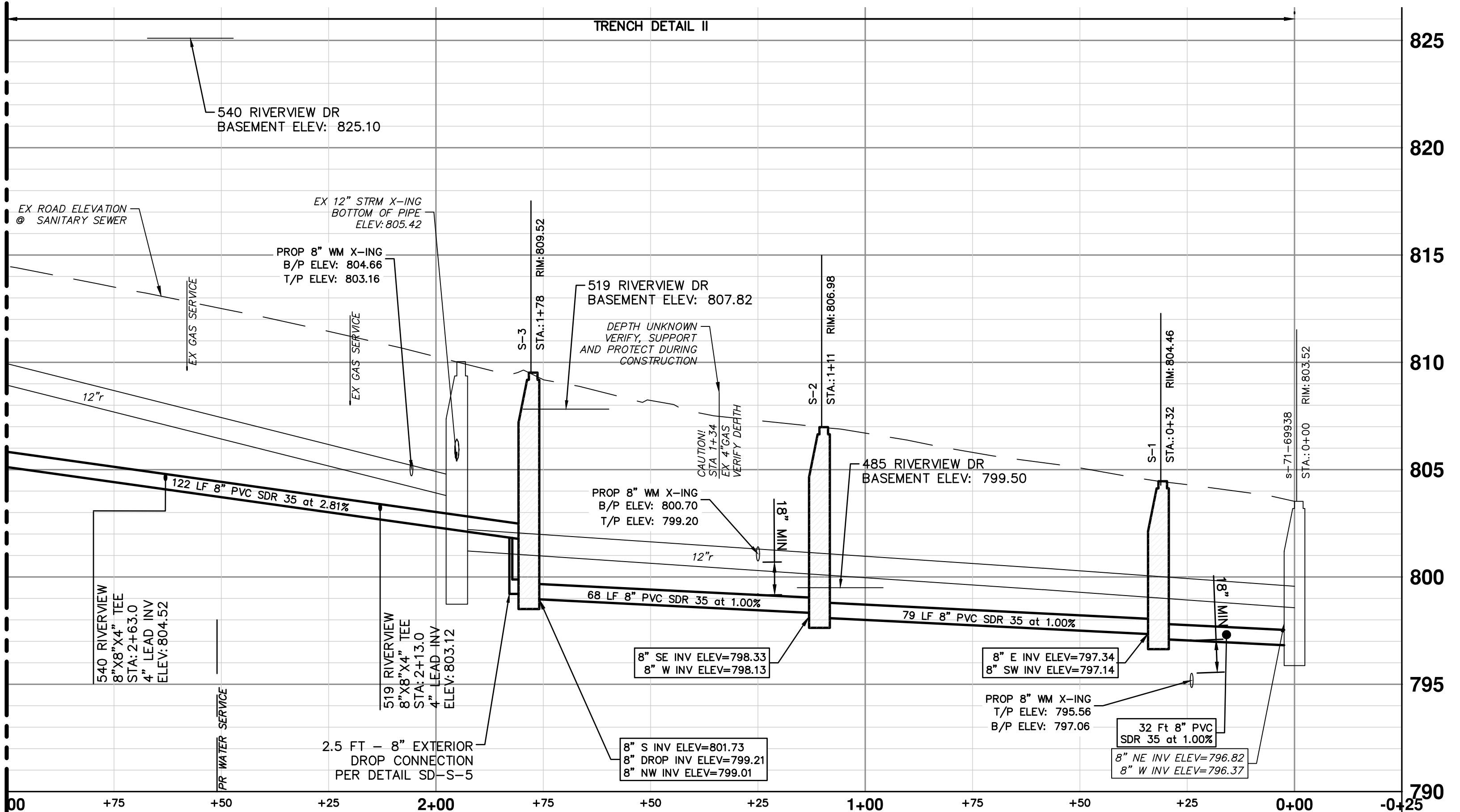
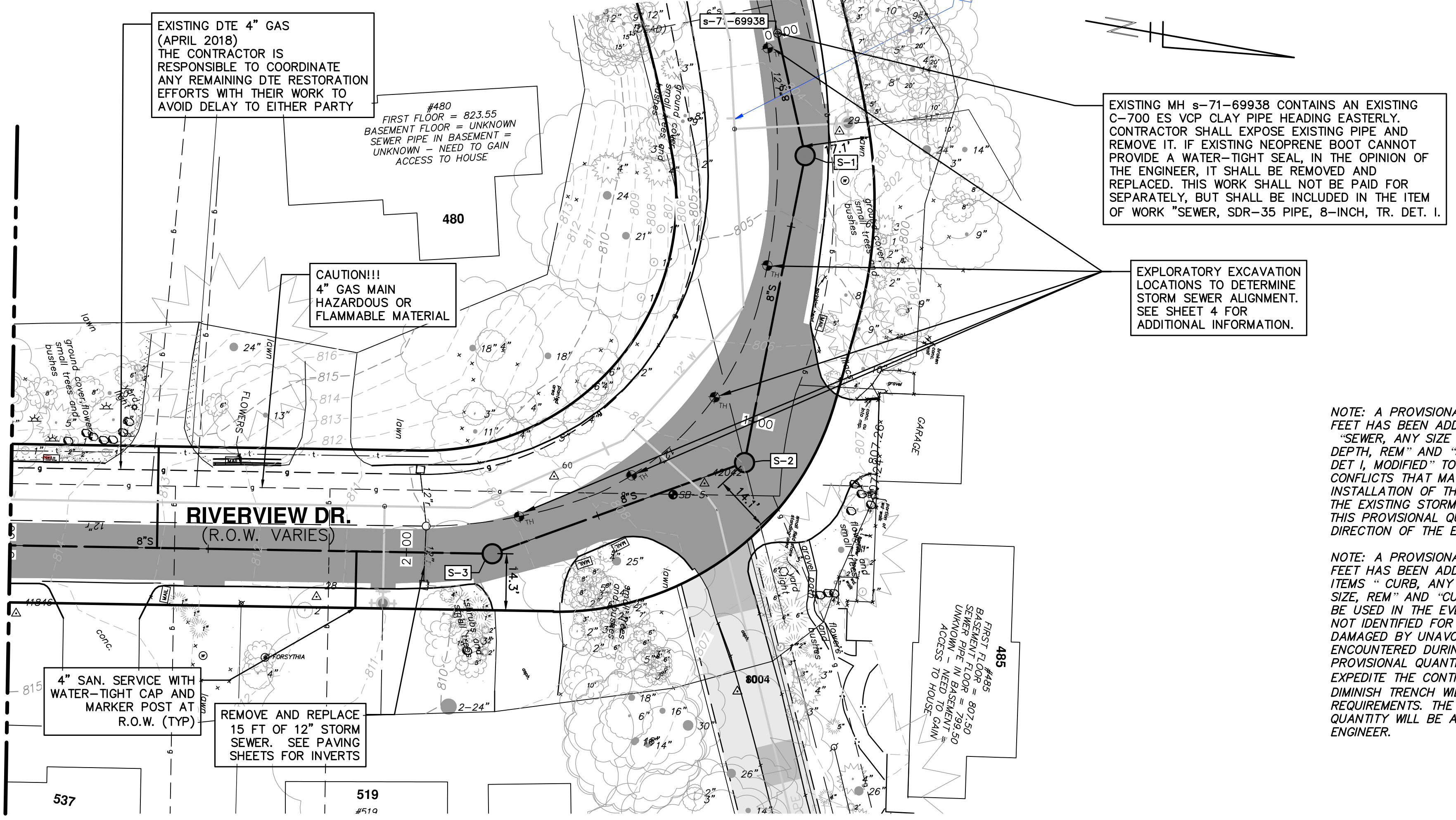
KNOW WHAT'S BELOW. Call Before you Dig.

DATE	DESCRIPTION	DRAWN	CHECKED
11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	MF
10/17/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	MF
10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	MF	MF
2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	MF
2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	MF



MATCH LINE STA 3+00  
SEE SHEET 8

MATCH LINE STA 3+00  
SEE SHEET 8



**SANITARY SEWER NOTES**

- 1: SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
- 2: NEW SANITARY SEWER SHALL CONSIST OF ASTM D3034 SOLID WALL PVC SDR35 PIPE AND SDR 26 PIPE WITH WATER-TIGHT GASKETED JOINTS, CLASS B STONE BEDDING (UP TO 12 INCHES ABOVE TOP OF PIPE) AND COMPACTED SAND BACKFILL. DEFLECTION OF PVC PIPE AFTER INSTALLATION AND BACKFILL SHALL NOT EXCEED 5.0% OF THE PIPE DIAMETER.
- 3: MANUFACTURED TEES SHALL BE USED AT ALL SERVICE CONNECTIONS.
- 4: NEW SANITARY SERVICES SHALL CONSIST OF PVC SDR26 OR SDR35 PIPE WITH WATER-TIGHT GASKETED JOINTS, STONE BEDDING AND BACKFILLED WITH COMPACTED SAND BACKFILL.
- 5: TERMINATE NEW SANITARY SERVICES WITH A WATER-TIGHT PLUG AND 2" X 2" PRESSURE TREATED HARDWOOD MARKER OR PK NAIL IF IN DRIVEWAY, AS REQUIRED BY SPECIFICATIONS.
- 6: PROVIDE EARTH RESTRAINT AND TRENCH SUPPORT AS NEEDED TO PROTECT ADJOINING UTILITIES, STRUCTURES, ASPHALT CURB AND PAVEMENT AND LANDSCAPING FROM SETTLEMENT OR DAMAGE DURING CONSTRUCTION.
- 7: THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SUPPORT TO PRESERVE AND PROTECT UTILITIES CROSSING THE TRENCH DURING CONSTRUCTION. METHODS OF SUPPORT SHALL BE APPROVED BY UTILITY OWNER. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET I".
- 8: THE CONTRACTOR SHALL PROVIDE DEWATERING AS NEEDED TO MAINTAIN A DRY, SAFE AND STABLE TRENCH BOTTOM DURING CONSTRUCTION. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET I".
- 9: THE CONTRACTOR SHALL UTILIZE TRENCH BOXES, SHEETING AND RELATED MEANS AND METHODS DURING SEWER AND LEAD INSTALLATION TO PROVIDE A SAFE AND APPROPRIATE EXCAVATION AND TO PROTECT EXISTING UTILITIES, PAVEMENT, CURB, FEATURES, VEGETATION, TREES, ETC. THAT ARE NOT NOTED FOR REMOVAL. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "SEWER, SDR 35 PVC PIPE, 8-INCH, TR DET I".
- 10: FINAL LOCATION OF SANITARY SERVICE LEAD WILL BE COORDINATED AT THE TIME OF CONSTRUCTION WITH PROPERTY OWNER BY THE ENGINEER. NO ADJUSTMENT IN ANY UNIT PRICE WILL BE ALLOWED AS A RESULT OF ANY ADJUSTMENT IN LOCATION OF PROPOSED SANITARY SEWER LEAD.
- 11: ALL LEAD INVERT ELEVATIONS ARE CALCULATED BASED ON AN 8"x4" TEE ROTATED 45° VERTICALLY. SEE DETAIL ON SHEET 7.

NOTE: A PROVISIONAL QUANTITY OF 200 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "SEWER, ANY SIZE OR "SEWER, CL C76 IV, 12 INCH, TR DET I, MODIFIED" TO ACCOUNT FOR POTENTIAL CONFLICTS THAT MAY ARISE DURING THE INSTALLATION OF THE PROPOSED UTILITIES WITH THE EXISTING STORM SEWER SYSTEM. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.

NOTE: A PROVISIONAL QUANTITY OF 400 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "CURB, ANY TYPE OR SIZE, REM" AND "CURB SLOPED, HMA, SPECIAL" TO BE USED IN THE EVENT THAT THE EXISTING CURB NOT IDENTIFIED FOR REMOVAL IN THE PLANS IS DAMAGED BY UNAVOIDABLE CIRCUMSTANCES ENCOUNTERED DURING CONSTRUCTION. THIS PROVISIONAL QUANTITY IS NOT INTENDED TO EXPEDITE THE CONTRACTOR'S OPERATION OR TO DIMINISH TRENCH WIDTH AND/OR SAFETY REQUIREMENTS. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.

**LEGEND**

PROPOSED STAGE 1 PAVEMENT REMOVAL LIMITS-18" SECTION OF ASPHALT CURB AND PAVEMENT TO REMAIN IN PLACE AS SHOWN ON THE PLANS. SEE PAVING SHEETS FOR ADDITIONAL REMOVAL DETAILS

**SANITARY LEAD TABLE**

STA	ADDRESS	RISER HEIGHT (FT)	LENGTH TO ROW (FT)	LEAD SLOPE	INV @ ROW	DIRECTION	SIZE	MATERIAL
2+63	540 RIVERVIEW	0.0	25.7	2.5%	805.37	West	4"	PVC SDR 35
2+13	519 RIVERVIEW	0.0	14.3	2.5%	803.48	East	4"	PVC SDR 35

**SANITARY SEWER STRUCTURE TABLE**

STRUCTURE	STATION	RIM	DIA.	INVERTS	APPLICATION/CONSTRUCTION/DETAIL
S-1	0+31.70	804.46	48"	8" E 797.34 8" SW 797.14	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER
S-2	1+10.67	806.98	48"	8" SE 798.33 8" W 798.13	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER
S-3	1+78.35	809.52	48"	8" S 801.73 8" NW 799.01	SANITARY MANHOLE; SD-S-1; EJIW 1040 TYPE Q COVER
Ex MH	0+00	803.52	48"	8" NE 796.82 8" W 796.37(EX)	EXISTING SANITARY MANHOLE

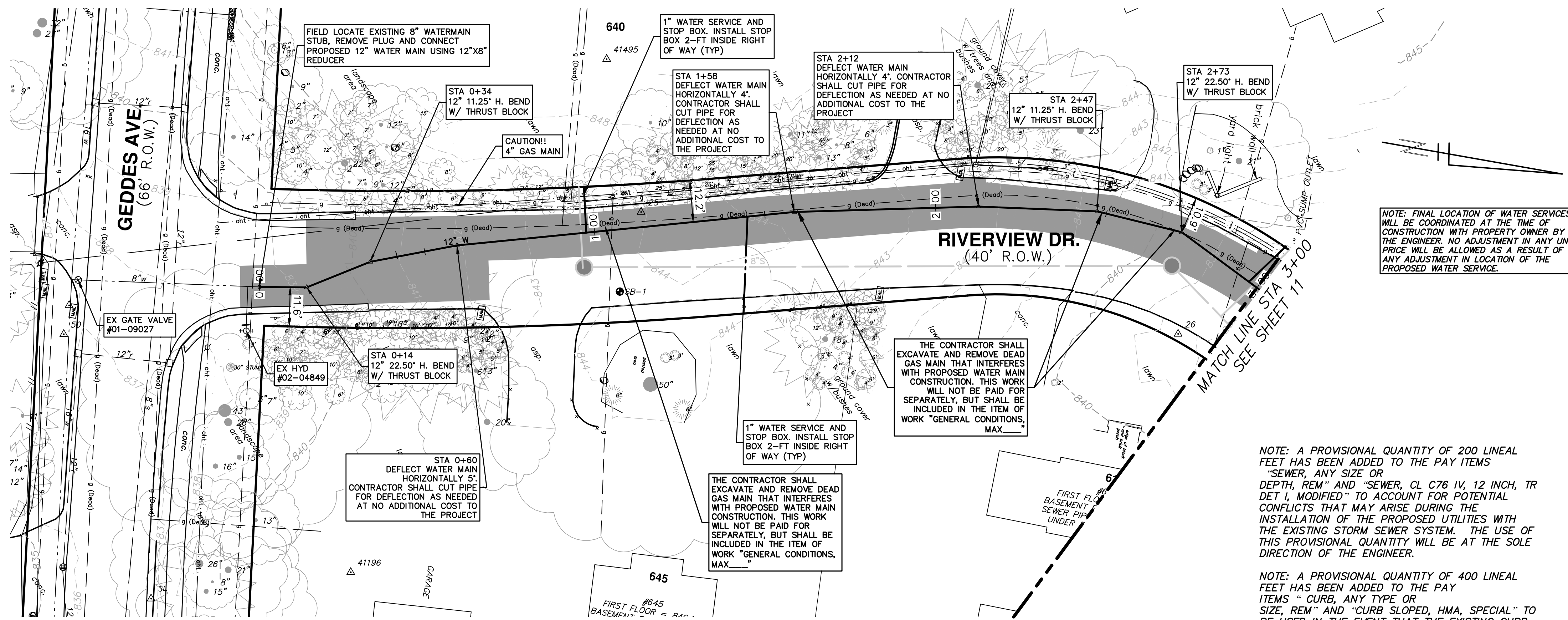


DATE	DESCRIPTION	CHECKED	DRAWN
11/7/2018			
10/30/2018			
10/19/2018			
2/28/2018			
2/23/2018			

CITY OF ANN ARBOR  
PUBLIC SERVICES  
301 EAST HURON STREET  
PO BOX 866  
ANN ARBOR MI 48106-0867  
www.a2gov.org



c:\pwork\0620002\10 PROPOSED WATER MAIN PLAN & PROFILE STA 0+00 TO STA 3+00.dwg Dwg Created: 29-Oct-18 - a2\_standard bw.stb - Plot Date: 7-Nov-18



NOTE: FINAL LOCATION OF WATER SERVICES WILL BE COORDINATED AT THE TIME OF CONSTRUCTION WITH PROPERTY OWNER BY THE ENGINEER. NO ADJUSTMENT IN ANY UNIT PRICE WILL BE ALLOWED AS A RESULT OF ANY ADJUSTMENT IN LOCATION OF THE PROPOSED WATER SERVICE.

NOTE: A PROVISIONAL QUANTITY OF 200 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND "SEWER, CL C76 IV, 12 INCH, TR DET I, MODIFIED" TO ACCOUNT FOR POTENTIAL CONFLICTS THAT MAY ARISE DURING THE INSTALLATION OF THE PROPOSED UTILITIES WITH THE EXISTING STORM SEWER SYSTEM. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.

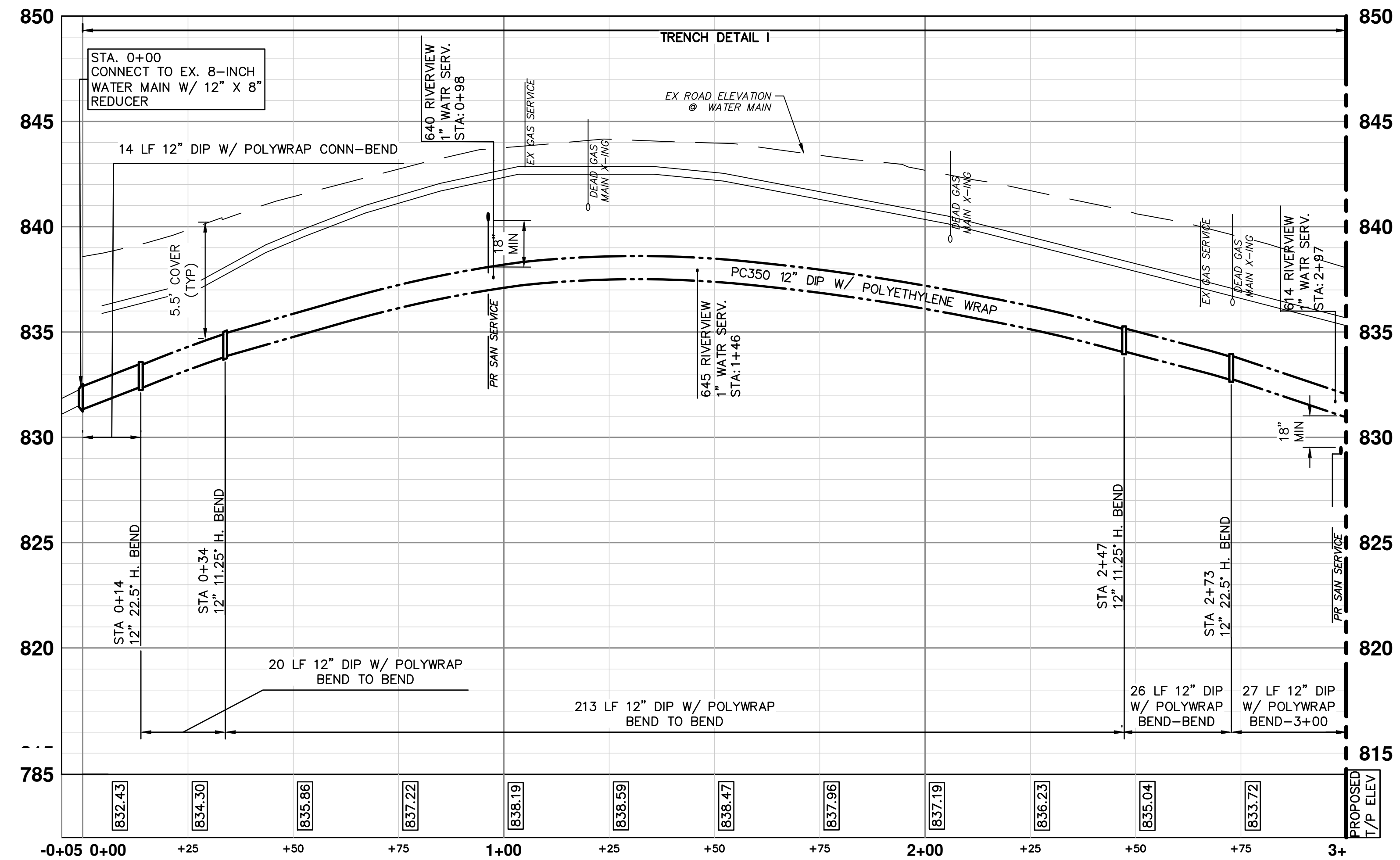
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**WATER MAIN CONSTRUCTION NOTES**

- SEE EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
- THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES, SITE FEATURES, LANDSCAPING, AND OTHER ITEMS NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX...". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT, BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
- THE EXISTING UTILITIES SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED THROUGH SURVEYS AND/OR EXISTING PLANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO EXISTING UTILITIES. IF STORM, SANITARY, OR WATERMAINS CROSS OTHER UTILITIES, CONTACT THEIR RESPECTIVE OWNERS FOR INFORMATION ON HOW TO PROCEED. PAYMENT FOR THE COORDINATION EFFORTS AND ASSOCIATED ITEMS SHALL BE INCLUDED IN ASSOCIATED PROPOSED STORM, SANITARY, OR WATERMAIN ITEMS AND SHALL NOT BE PAID FOR SEPARATELY.
- THE EXISTING 8" WATER MAIN FROM GEDDES MAY BE EXPOSED DURING CONSTRUCTION IN THE VICINITY SHOWN. THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY THE EXISTING WATER MAIN DURING CONSTRUCTION OPERATIONS. ANY DAMAGE TO THIS FACILITY BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE, AS DETERMINED BY THE ENGINEER. PAYMENT FOR PROTECTION OF THE EXISTING WATER MAIN WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX...".
- THE CONTRACTOR SHALL NOT REMOVE OR DAMAGE EXISTING SANITARY SEWER OR WATER MAIN LEADS FOR LEASE OF CONSTRUCTION OF OTHER ASPECTS OF WORK. THE CONTRACTOR SHALL CAREFULLY PROTECT ALL LEADS FROM DAMAGE OR INJURY.
- THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS WHICH ARE INCLUDED BY REFERENCE. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENT. THE WORK SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH CURRENT PUBLIC SERVICE DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
- ALL WATER MAIN SHALL BE PRESSURE CLASS 350 DUCTILE IRON WATER MAIN, CEMENT-LINED (DOUBLE THICKNESS), WITH POLYWRAP UNLESS NOTED OTHERWISE.
- RESTRAINED JOINT SYSTEMS FOR WATER MAIN SHALL BE UTILIZED WHERE INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. RESTRAINED JOINT GASKET SYSTEMS ARE TO BE USED. (FIELD-LOK 350 BY U.S. PIPE, FAST-GRIP BY AMERICAN DUCTILE IRON PIPE, OR APPROVED EQUAL)
- ALL WATER MAIN TO HAVE 5.5 FEET OF COVER. MAINTAIN A MINIMUM OF 18-INCH VERTICAL CLEARANCE FOR STORM AND SANITARY CROSSINGS AND A MINIMUM OF 12-INCH VERTICAL CLEARANCE WITH ALL OTHER UTILITIES.
- UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL UTILIZE STANDARD PIPE DEFLECTIONS FOR FOLLOWING THE PROPOSED ALIGNMENT.
- NEW FIRE HYDRANTS SHALL BE EJIW 5BR-250 WITH 4-INCH STORZ QUICK CONNEX AND 2-2 1/2 HYDRANT OUTLETS.
- FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL NECESSARY HYDRANT EXTENSIONS, THRUST BLOCKS, PIPE AND FITTINGS, INCLUDING ADJUSTMENT OF THE COMPANION VALVE. FIRE HYDRANT ASSEMBLY INCLUDES 6-INCH COMPANION VALVE LOCATED THREE FEET FROM THE HYDRANT.
- ALL WATER MAIN TRENCH BACKFILL SHALL BE MDOT CLASS II GRANULAR MATERIAL (SEE UTILITY TRENCH TYPE I DETAIL).
- CONNECTIONS TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE NEW MAIN HAS BEEN SUCCESSFULLY TESTED AND HAS PASSED ALL HYDROSTATIC AND BACTERIOLOGICAL TESTING. FINAL CONNECTIONS SHALL BE COORDINATED WITH THE ENGINEER.
- THE CONTRACTOR SHALL PERFORM ALL WATER SYSTEM SHUT DOWNS AFTER APPROPRIATE NOTIFICATION TO THOSE AFFECTED AND APPROVAL HAS BEEN GRANTED BY THE ENGINEER.
- THE DRILLING MACHINE IS TO BE PLACED AT THE EAST BORE PIT AND PULL PIPE FROM THE WEST BORE PIT. PIPE TO BE STAGED ALONG RIVERVIEW DRIVE WITHOUT UNDULY INTERFERING WITH TRAFFIC.

**LEGEND**

PROPOSED STAGE 2 PAVEMENT REMOVAL LIMITS-18" SECTION OF ASPHALT CURB AND PAVEMENT TO REMAIN IN PLACE AS SHOWN ON THE PLANS. SEE PAVING SHEETS FOR ADDITIONAL REMOVAL DETAILS



MATCH LINE STA 3+00 SEE SHEET 11



Know what's below. Call before you dig.

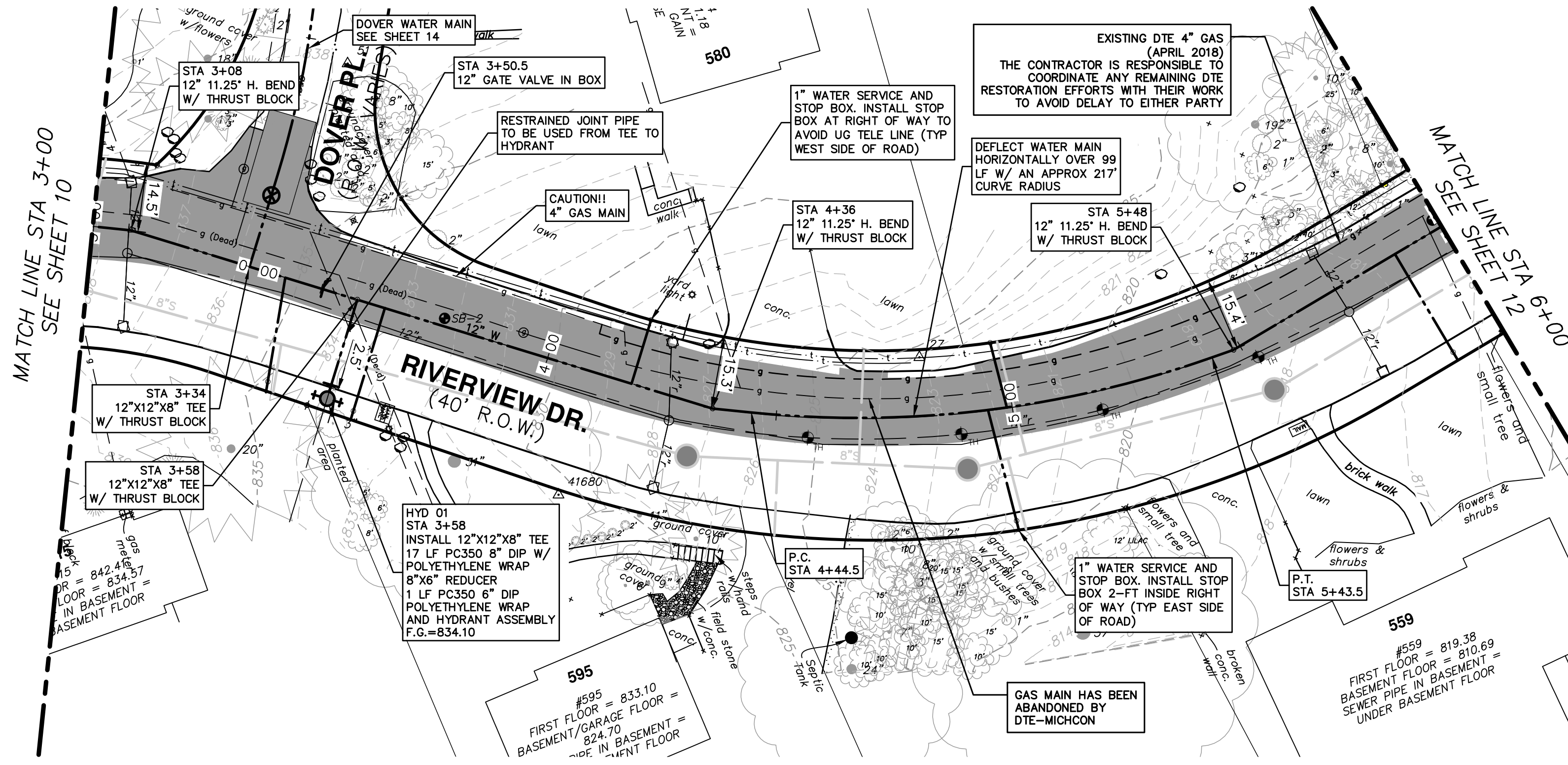
REV.	DATE	DESCRIPTION
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR
06	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR
07	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR

CITY OF ANN ARBOR PUBLIC SERVICES  
301 EAST HURON STREET  
ANN ARBOR MI 48106-0647  
www.a3gov.org



**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
PROPOSED WATER MAIN PLAN & PROFILE STA 0+00 TO STA 3+00  
SCALE PLAN: 1" = 20'  
PROFILE: 1" = 4'  
DRAWING NO. 2017-031-10  
SHEET NO. 10 OF 30

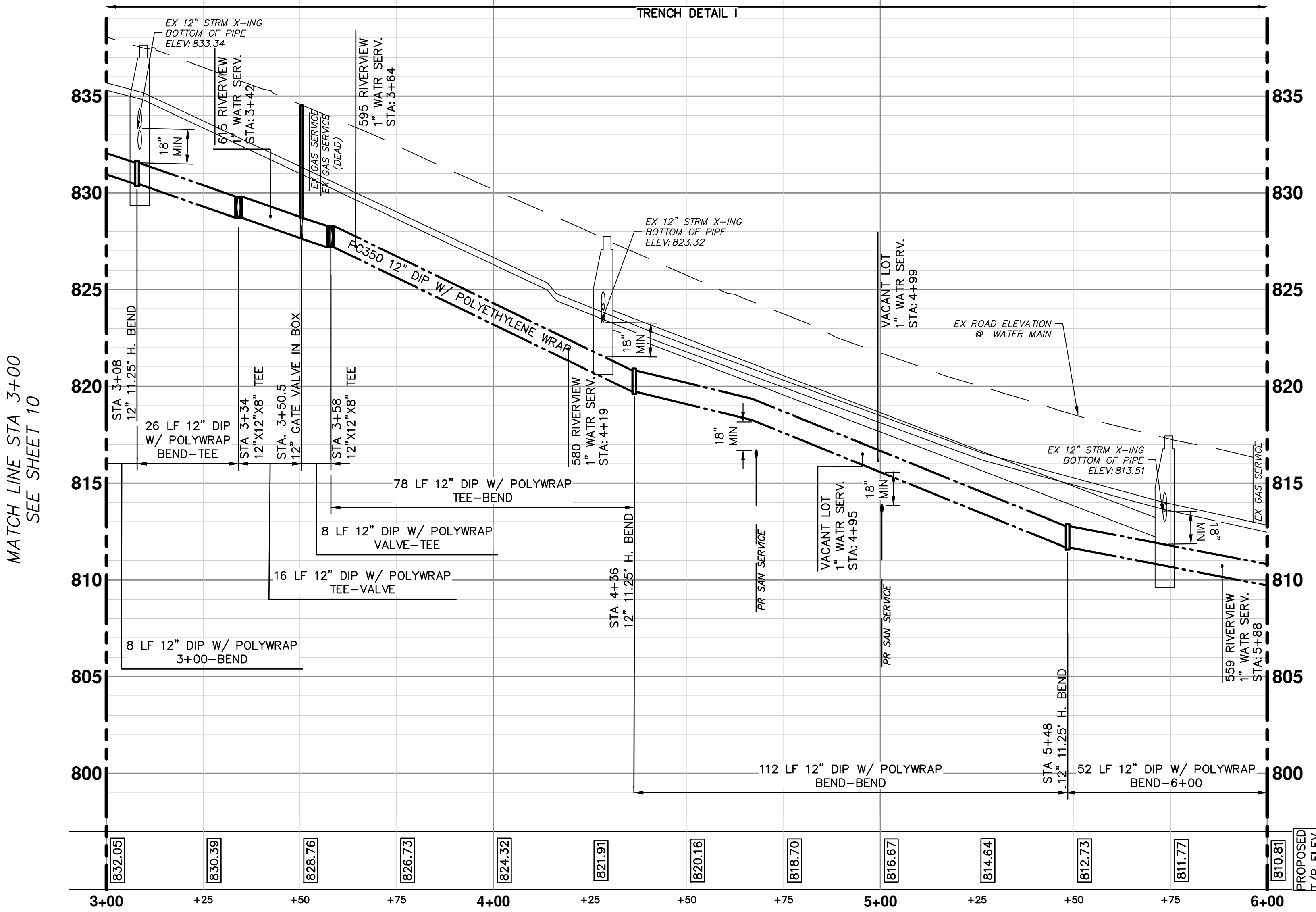




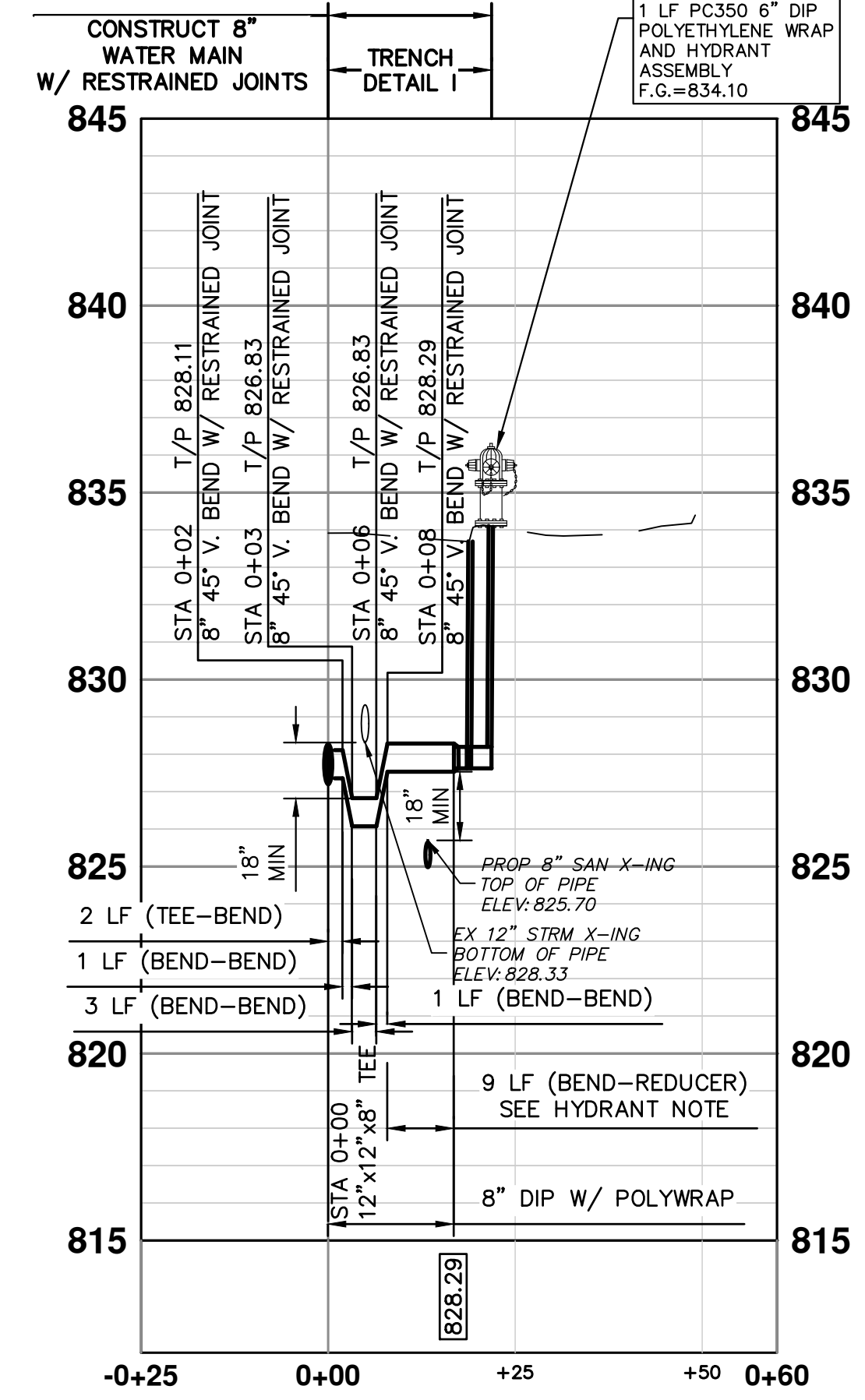
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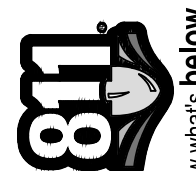
MATCH LINE STA 6+00 SEE SHEET 12



**WATER MAIN CONSTRUCTION NOTES**


- SEE EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
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**LEGEND**  
 PROPOSED STAGE 2 PAVEMENT REMOVAL LIMITS-18" SECTION OF ASPHALT CURB AND PAVEMENT TO REMAIN IN PLACE AS SHOWN ON THE PLANS. SEE PAVING SHEETS FOR ADDITIONAL REMOVAL DETAILS



Know what's below.  
Call before you dig.

09	FINAL PLANS - CITY OF ANN ARBOR	11/7/2018	VCN
08	FINAL REVIEW TO CITY OF ANN ARBOR	10/30/2018	MF
07	SANITARY AND WATER MAIN PERMIT (REV)	10/19/2018	MF
06	FINAL PLANS - CITY OF ANN ARBOR	2/28/2018	VCN
05	FINAL REVIEW TO CITY OF ANN ARBOR	2/23/2018	MF
		DATE	CHECKED
			DRAWN
			REV.



**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

PROPOSED WATER MAIN PLAN & PROFILE STA 3+00 TO STA 6+00

SHEET No. 11 OF 30

SCALE PLAN: 1" = 20'

PROFILE: 1" = 4'

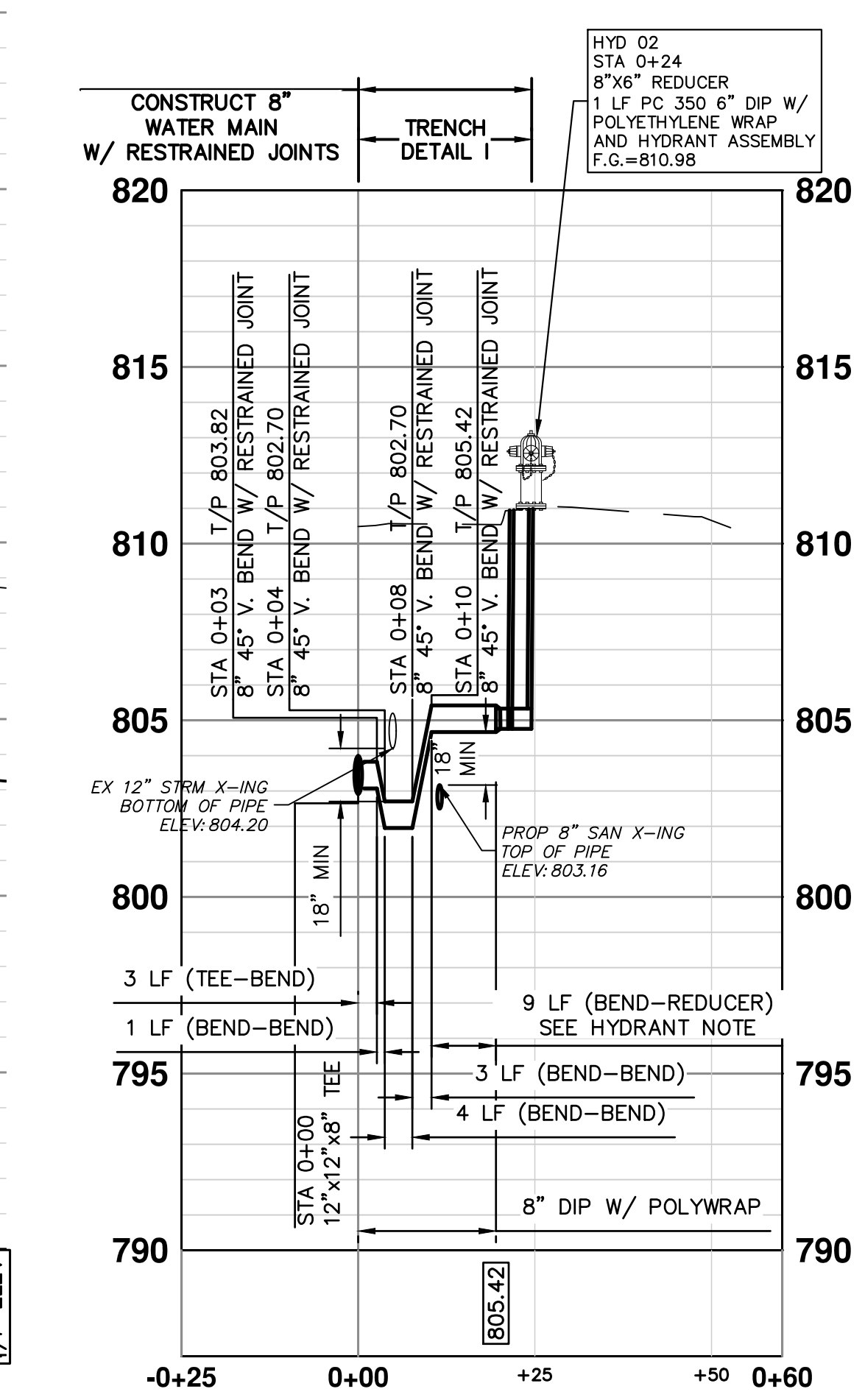
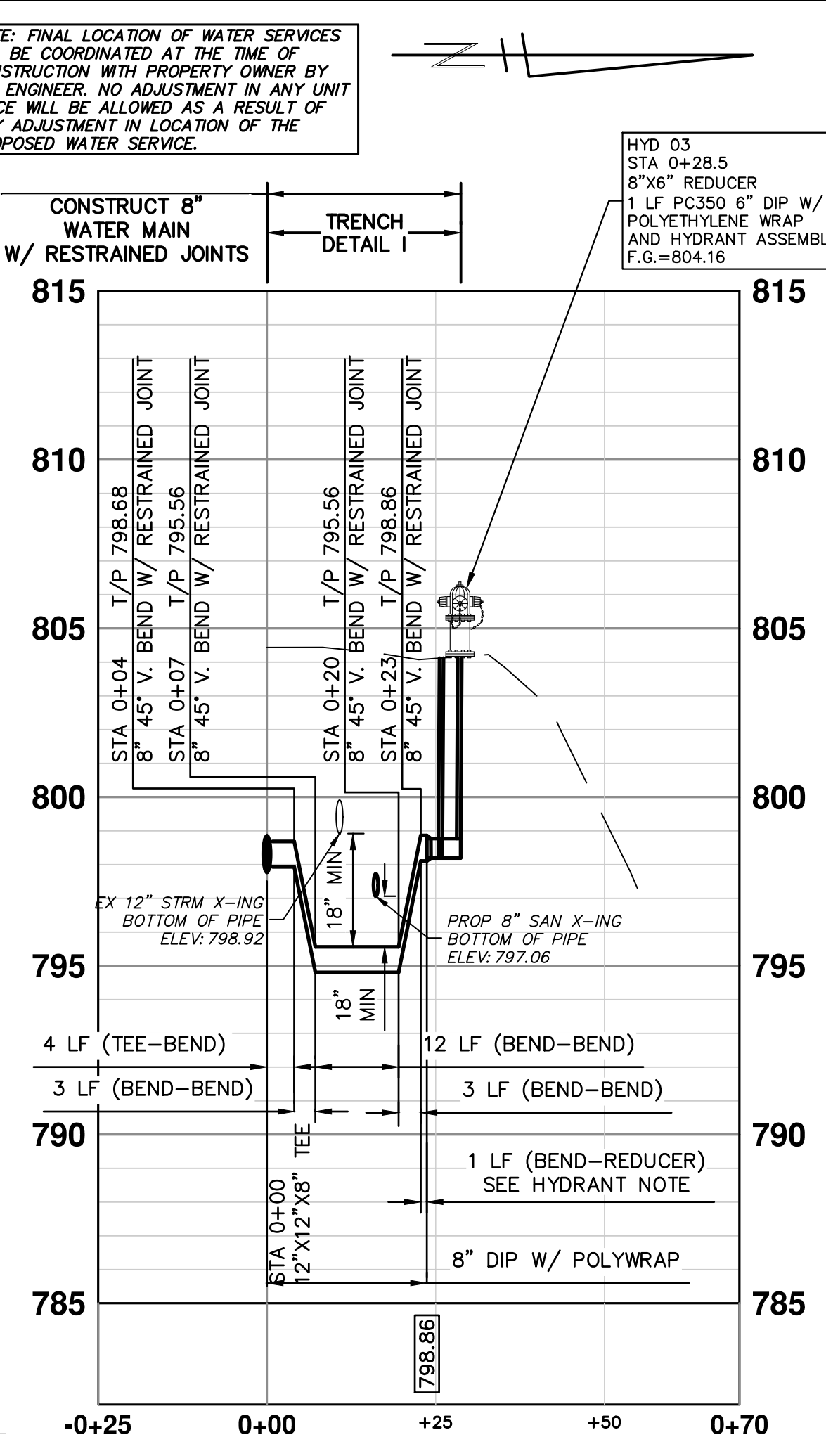
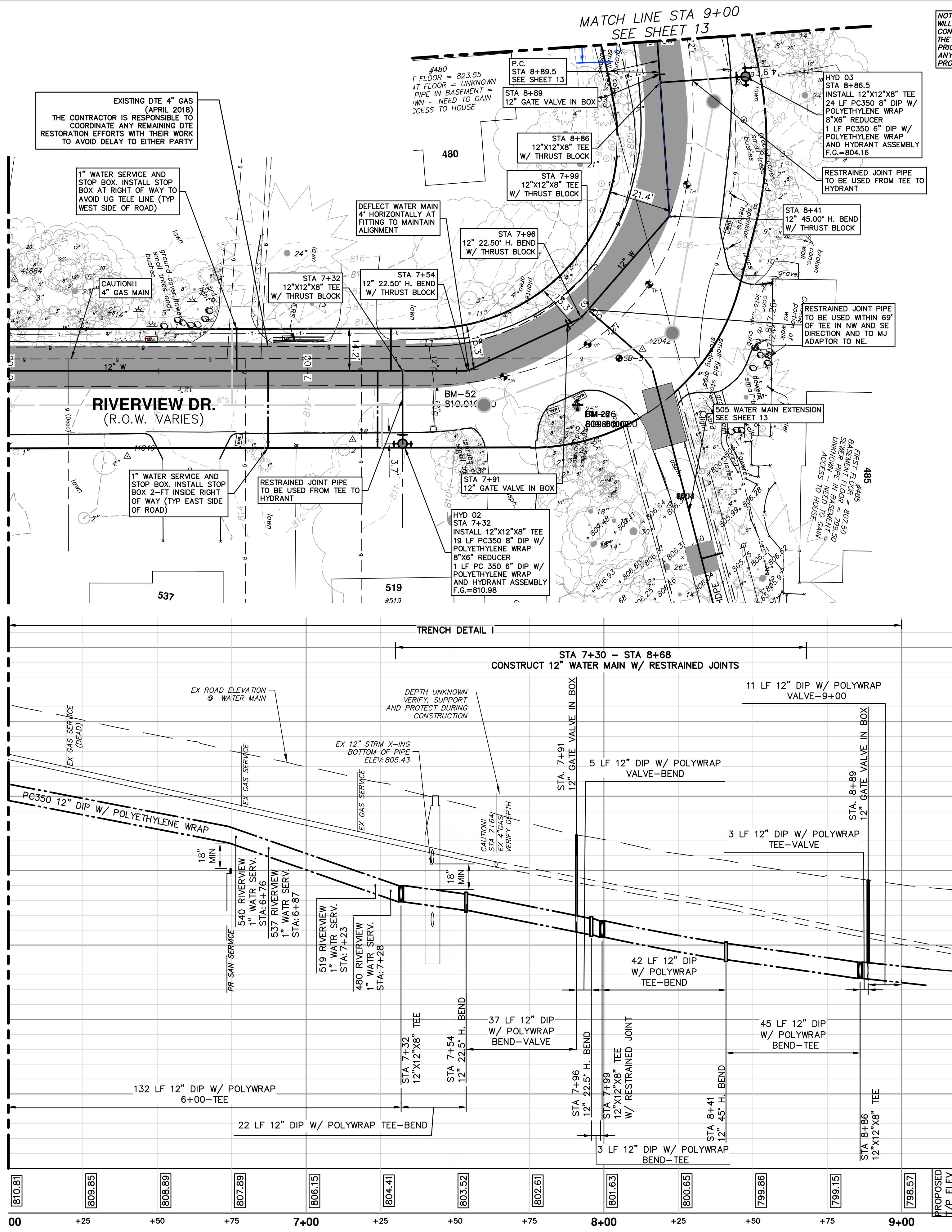
DRAWING No. 2017-031-11



c:\p\_w\work\0820002\12 PROPOSED WATER MAIN PLAN & PROFILE STA 6+00 TO STA 9+00.dwg Dwg Created: 29-Oct-18 - a2\_standard bw.stb - Plot Date: 7-Nov-18

MATCH LINE STA 6+00  
SEE SHEET 11

MATCH LINE STA 6+00  
SEE SHEET 11



**WATER MAIN CONSTRUCTION NOTES**


- SEE EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
- THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES, SITE FEATURES, LANDSCAPING, AND OTHER ITEMS NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX...". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT, BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
- THE EXISTING UTILITIES SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED THROUGH SURVEYS AND/OR EXISTING PLANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES. IF STORM, SANITARY, OR WATERMAINS CROSS OTHER UTILITIES, CONTACT THEIR RESPECTIVE OWNERS FOR INFORMATION ON HOW TO PROCEED. PAYMENT FOR THE COORDINATION EFFORTS AND ASSOCIATED ITEMS SHALL BE INCLUDED IN ASSOCIATED PROPOSED STORM, SANITARY, OR WATERMAIN ITEMS AND SHALL NOT BE PAID FOR SEPARATELY.
- THE EXISTING 8" WATER MAIN FROM GEDDES MAY BE EXPOSED DURING CONSTRUCTION IN THE VICINITY SHOWN. THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY THE EXISTING WATER MAIN DURING CONSTRUCTION OPERATIONS. ANY DAMAGE TO THIS FACILITY BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE, AS DETERMINED BY THE ENGINEER. PAYMENT FOR PROTECTION OF THE EXISTING WATER MAIN WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX...".
- THE CONTRACTOR SHALL NOT REMOVE OR DAMAGE EXISTING SANITARY SEWER OR WATER MAIN LEADS FOR EASE OF CONSTRUCTING OTHER ASPECTS OF WORK. THE CONTRACTOR SHALL CAREFULLY PROTECT ALL LEADS FROM DAMAGE OR INJURY.
- THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS WHICH ARE INCLUDED BY REFERENCE. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENT. THE WORK SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH CURRENT PUBLIC SERVICE DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
- ALL WATER MAIN SHALL BE PRESSURE CLASS 350 DUCTILE IRON WATER MAIN, CEMENT-LINED (DOUBLE THICKNESS), WITH POLYWRAP UNLESS NOTED OTHERWISE.
- RESTRAINED JOINT SYSTEMS FOR WATER MAIN SHALL BE UTILIZED WHERE INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. RESTRAINED JOINT GASKET SYSTEMS ARE TO BE USED. (FIELD-LOK 350 BY U.S. PIPE, FAST-GRIP BY AMERICAN DUCTILE IRON PIPE, OR APPROVED EQUAL)
- ALL WATER MAIN TO HAVE 5.5 FEET OF COVER. MAINTAIN A MINIMUM OF 18-INCH VERTICAL CLEARANCE FOR STORM AND SANITARY CROSSINGS AND A MINIMUM OF 12-INCH VERTICAL CLEARANCE WITH ALL OTHER UTILITIES.
- UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL UTILIZE STANDARD PIPE DEFLECTIONS FOR FOLLOWING THE PROPOSED ALIGNMENT.
- NEW FIRE HYDRANTS SHALL BE EJIW 5BR-250 WITH 4-INCH STORZ QUICK CONNEX AND 2-2 1/2 HYDRANT OUTLETS.
- FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL NECESSARY HYDRANT EXTENSIONS, THRUST BLOCKS, PIPE AND FITTINGS, INCLUDING ADJUSTMENT OF THE COMPANION VALVE. FIRE HYDRANT ASSEMBLY INCLUDES 6-INCH COMPANION VALVE LOCATED THREE FEET FROM THE HYDRANT.
- ALL WATER MAIN TRENCH BACKFILL SHALL BE MDOT CLASS II GRANULAR MATERIAL (SEE UTILITY TRENCH TYPE I DETAIL).
- CONNECTIONS TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE NEW MAIN HAS BEEN SUCCESSFULLY TESTED AND HAS PASSED ALL HYDROSTATIC AND BACTERIOLOGICAL TESTING. FINAL CONNECTIONS SHALL BE COORDINATED WITH THE ENGINEER.
- THE CONTRACTOR SHALL PERFORM ALL WATER SYSTEM SHUT DOWNS AFTER APPROPRIATE NOTIFICATION TO THOSE AFFECTED AND APPROVAL HAS BEEN GRANTED BY THE ENGINEER.

**LEGEND**

PROPOSED STAGE 2 PAVEMENT REMOVAL LIMITS-18" SECTION OF ASPHALT CURB AND PAVEMENT TO REMAIN IN PLACE AS SHOWN ON THE PLANS. SEE PAVING SHEETS FOR ADDITIONAL REMOVAL DETAILS


NOTE: A PROVISIONAL QUANTITY OF 200 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND "SEWER, CL C76 IV, 12 INCH, TR DET I, MODIFIED" TO ACCOUNT FOR POTENTIAL CONFLICTS THAT MAY ARISE DURING THE INSTALLATION OF THE PROPOSED UTILITIES WITH THE EXISTING STORM SEWER SYSTEM. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.

NOTE: A PROVISIONAL QUANTITY OF 400 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS CURB, ANY TYPE OR SIZE, REM" AND "CURB SLOPED, HMA, SPECIAL" TO BE IDENTIFIED FOR REMOVAL IN THE PLANS IS DAMAGED BY UNAVOIDABLE CIRCUMSTANCES ENCOUNTERED DURING CONSTRUCTION. THIS PROVISIONAL QUANTITY IS NOT INTENDED TO EXPEDITE THE CONTRACTOR'S OPERATION OR TO DIMINISH TRENCH WIDTH AND/OR SAFETY REQUIREMENTS. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.



Know what's below.  
Call before you dig.

DATE	DESCRIPTION	REV.
11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	09
10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	08
10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	07
2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	06
2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	05



**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

PROPOSED WATER MAIN PLAN & PROFILE STA 6+00 TO STA 9+00

SCALE PLAN: 1" = 20'

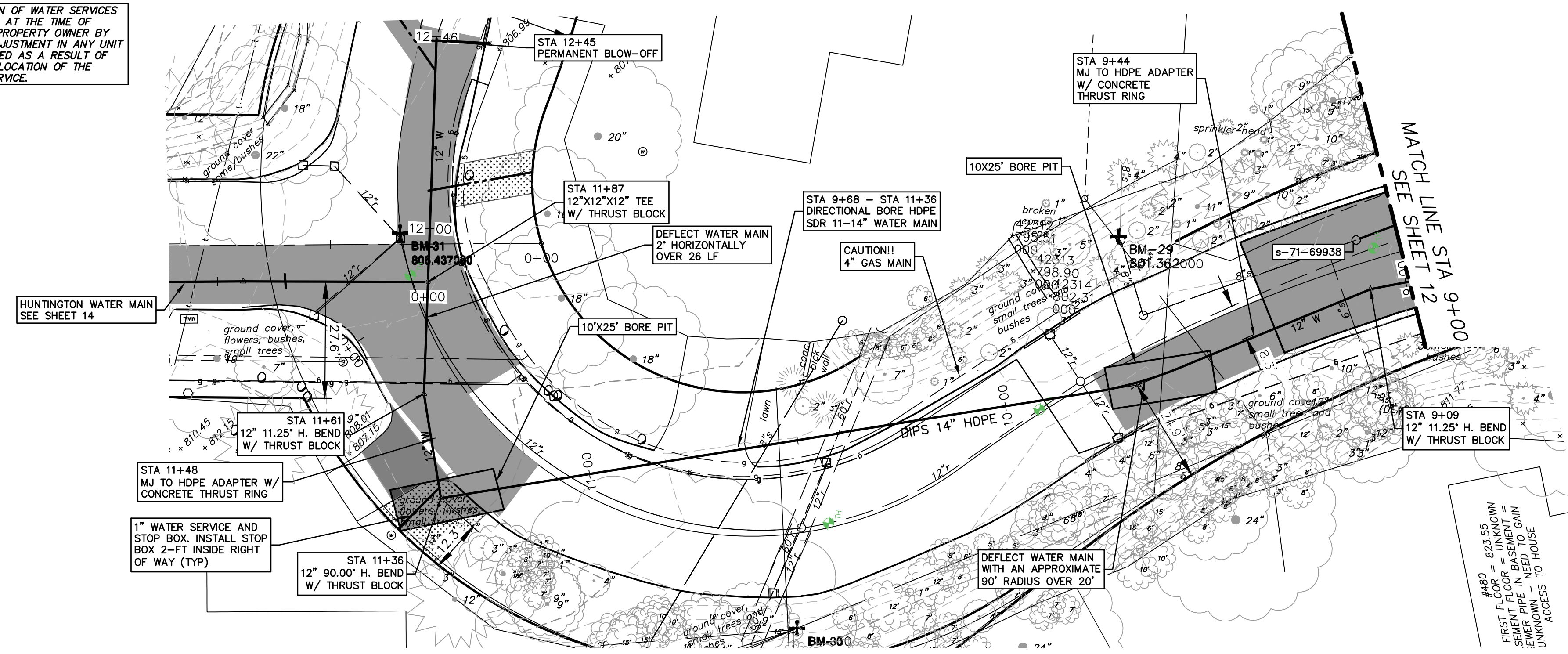
PROFILE: 1" = 4'

DRAWING NO. 2017-031-12

SHEET NO. 12 OF 30



NOTE: FINAL LOCATION OF WATER SERVICES WILL BE COORDINATED AT THE TIME OF CONSTRUCTION WITH PROPERTY OWNER BY THE ENGINEER. NO ADJUSTMENT IN ANY UNIT PRICE WILL BE ALLOWED AS A RESULT OF ANY ADJUSTMENT IN LOCATION OF THE PROPOSED WATER SERVICE.



**WATER MAIN CONSTRUCTION NOTES**

- SEE EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
- THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES, SITE FEATURES, LANDSCAPING, AND OTHER ITEMS NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX...". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT, BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
- THE EXISTING UTILITIES SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED THROUGH SURVEYS AND/OR EXISTING PLANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES. IF STORM, SANITARY, OR WATERMAINS CROSS OTHER UTILITIES, CONTACT THEIR RESPECTIVE OWNERS FOR INFORMATION ON HOW TO PROCEED. PAYMENT FOR THE COORDINATION EFFORTS AND ASSOCIATED ITEMS SHALL BE INCLUDED IN ASSOCIATED PROPOSED STORM, SANITARY, OR WATERMAIN ITEMS AND SHALL NOT BE PAID FOR SEPARATELY.
- THE CONTRACTOR SHALL NOT REMOVE OR DAMAGE EXISTING SANITARY SEWER OR WATER MAIN LEADS FOR EASE OF CONSTRUCTING OTHER ASPECTS OF WORK. THE CONTRACTOR SHALL CAREFULLY PROTECT ALL LEADS FROM DAMAGE OR INJURY.
- THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS WHICH ARE INCLUDED BY REFERENCE. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENT. THE WORK SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH CURRENT PUBLIC SERVICE DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
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- ALL WATER MAIN TO HAVE 5.5 FEET OF COVER. MAINTAIN A MINIMUM OF 18-INCH VERTICAL CLEARANCE FOR STORM AND SANITARY CROSSINGS AND A MINIMUM OF 12-INCH VERTICAL CLEARANCE WITH ALL OTHER UTILITIES UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL UTILIZE STANDARD PIPE DEFLECTIONS FOR FOLLOWING THE PROPOSED ALIGNMENT.
- NEW FIRE HYDRANTS SHALL BE EJIW 5BR-250 WITH 4-INCH STORZ QUICK CONNEX AND 2-2 1/2 HYDRANT OUTLETS.
- FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL NECESSARY HYDRANT EXTENSIONS, THRUST BLOCKS, PIPE AND FITTINGS, INCLUDING ADJUSTMENT OF THE COMPANION VALVE. FIRE HYDRANT ASSEMBLY INCLUDES 6-INCH COMPANION VALVE LOCATED THREE FEET FROM THE HYDRANT.
- CONNECTIONS TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE NEW MAIN HAS BEEN SUCCESSFULLY TESTED AND HAS PASSED ALL HYDROSTATIC AND BACTERIOLOGICAL TESTING. FINAL CONNECTIONS SHALL BE COORDINATED WITH THE ENGINEER.

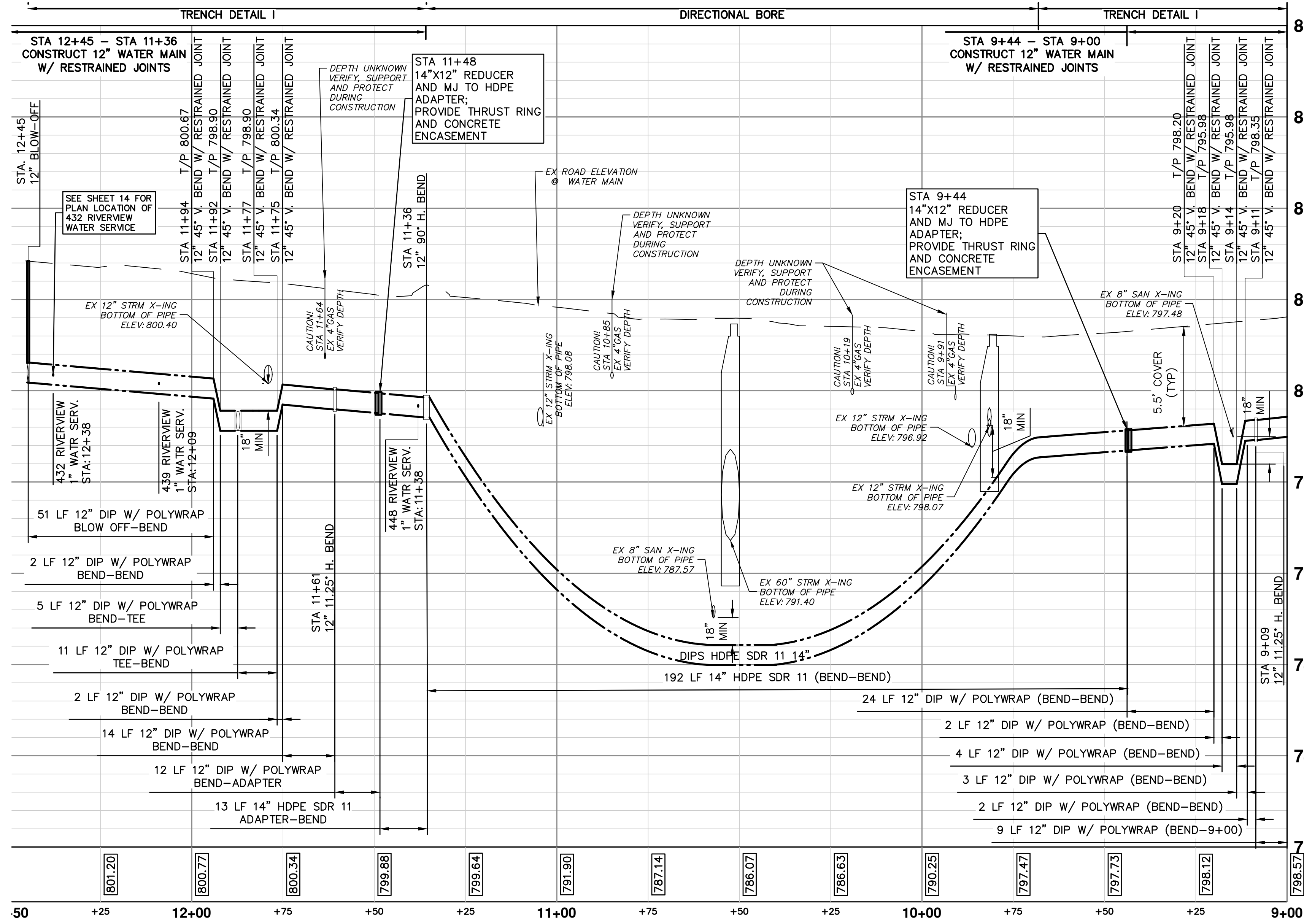
- THE CONTRACTOR SHALL PERFORM ALL WATER SYSTEM SHUT DOWNS AFTER APPROPRIATE NOTIFICATION TO THOSE AFFECTED AND APPROVAL HAS BEEN GRANTED BY THE ENGINEER.
- THE DRILLING MACHINE IS TO BE PLACED AT THE WEST BORE PIT AND PULL PIPE FROM THE EAST BORE PIT. PIPE TO BE STAGED ALONG RIVERVIEW DRIVE WITHOUT UNDULY INTERFERING WITH TRAFFIC.
- THE CONTRACTOR SHALL MAINTAIN REASONABLE ACCESS FOR RESIDENTS TO ACCESS THEIR HOMES AT ALL TIMES. A SAFE ACCESS PATH SHALL BE IDENTIFIED ALONG WITH VEHICLE PARKING IN THE EVENT THAT CONSTRUCTION ACTIVITIES INHIBIT VEHICULAR ACCESS TO THE HOMES.
- AFTER WATER MAIN INSTALLATION HAS BEEN COMPLETED, SUCCESSFULLY TESTED, CONNECTED TO EXISTING MAIN AND ALL LEADS INSTALLED, THE CONTRACTOR SHALL PLACE, GRADE AND COMPACT 4 INCHES OF 23A AGGREGATE ALONG THE ENTIRE UNPAVED SECTION OF DOVER PLACE.

**RESTORATION**

- CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.
- CASE 2 - RESTORE AREA WITH 6-INCHES OF TOPSOIL AND 3-INCHES OF SHREDDED HARDWOOD BARK MULCH.
- NOTE: A PROVISIONAL QUANTITY OF 200 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND "SEWER, CL C76 IV, 12 INCH, TR DET I, MODIFIED" TO ACCOUNT FOR POTENTIAL CONFLICTS THAT MAY ARISE DURING THE INSTALLATION OF THE PROPOSED UTILITIES WITH THE EXISTING STORM SEWER SYSTEM. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.
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**CONSTRUCTION KEY**

DH4	PLACE 4" HMA DRIVE
DC6	PLACE 6" CONCRETE DRIVE APPROACH
RCG-PM	REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
RP	REMOVE EXISTING PAVEMENT - ANY THICKNESS SAWCUT AT REMOVAL LIMITS (INCLUDE IN WORK ITEM "HMA SURFACE, REM")
RLBO	RELOCATE BY OWNER
RRST	REMOVE & REPLACE EXISTING STORM SEWER - SIZE AS SHOWN ON PLAN
PP	PLACE ASPHALT PAVEMENT - MATERIAL AND THICKNESS PER TYPICAL CROSS SECTION



Know what's below. Call before you dig.

09	FINAL PLANS - CITY OF ANN ARBOR	11/7/2018	VCN	CHECKED
08	FINAL REVIEW TO CITY OF ANN ARBOR	10/30/2018	MF	DRAWN
07	SANITARY AND WATER MAIN PERMIT (REV)	10/19/2018	MF	
06	FINAL PLANS - CITY OF ANN ARBOR	2/28/2018	MF	
05	FINAL REVIEW TO CITY OF ANN ARBOR	2/23/2018	MF	

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

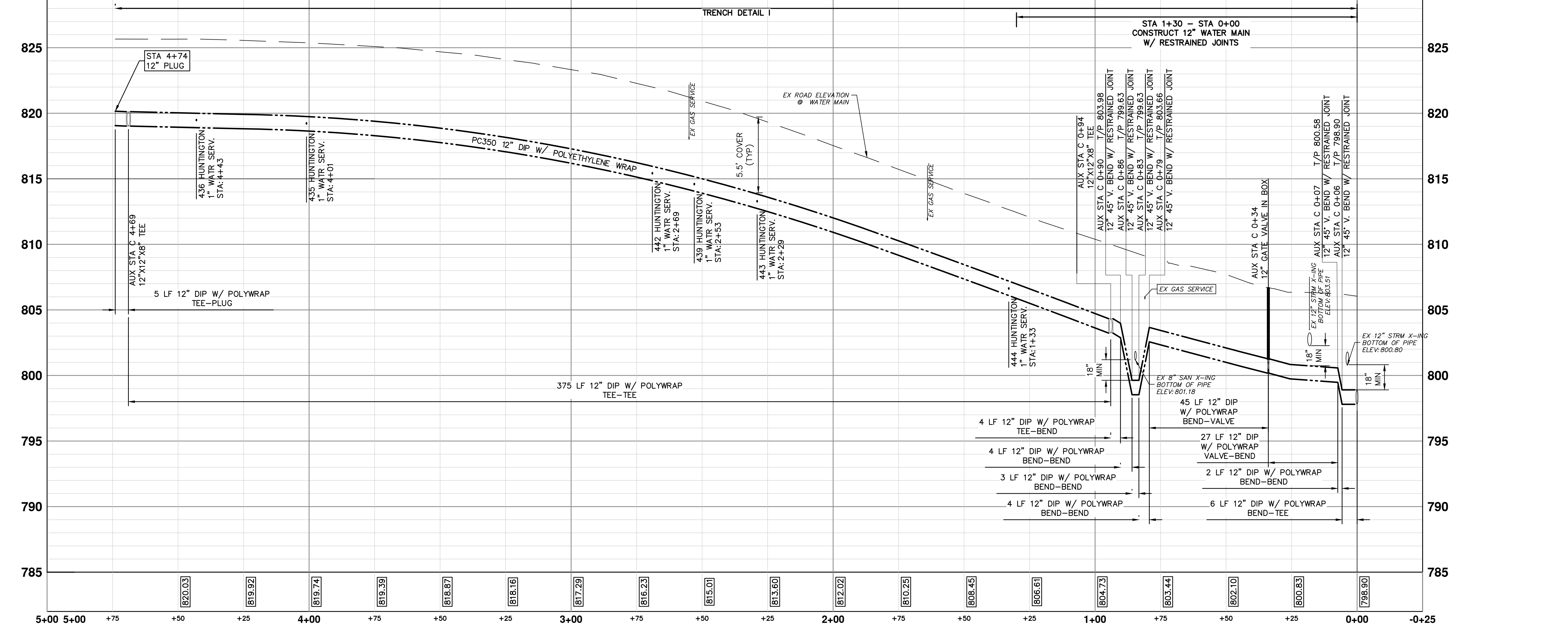
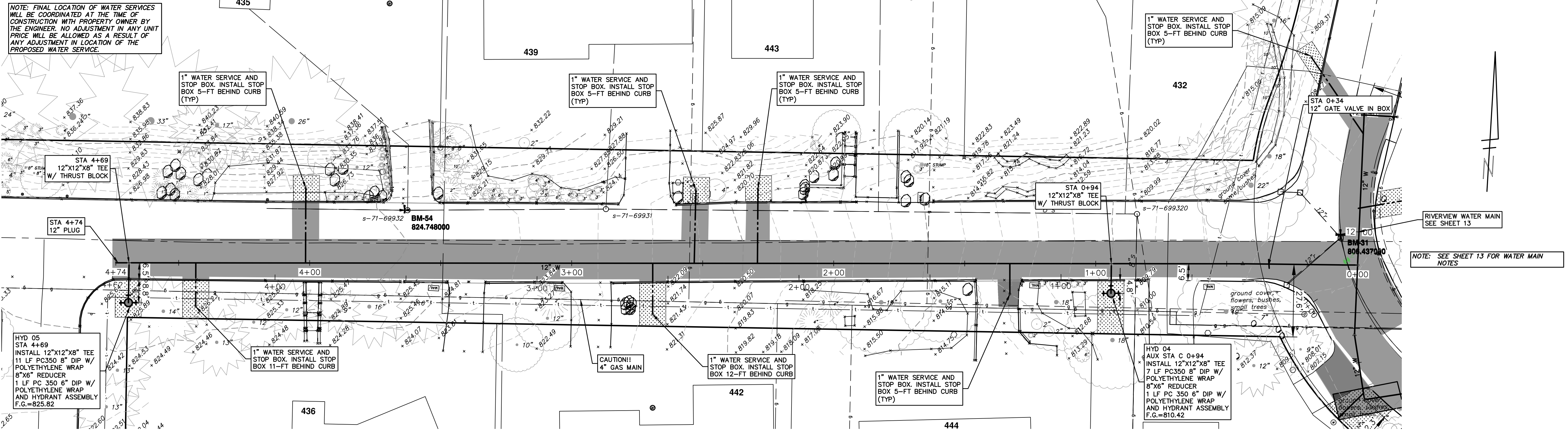
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

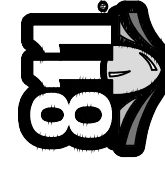
PROPOSED WATER MAIN PLAN & PROFILE STA 9+00 TO STA 12+45

SCALE PLAN: #####  
PROFILE: 1" = X'  
DRAWING NO: 2017-031-13  
SHEET NO: 13 OF 30



c:\pwork\work\0620002\14A PROPOSED WATER MAIN PLAN & PROFILE HUNTINGTON.dwg Dwg Created: 31-Oct-18 --\_o2 standard bw.stb -- Plot Date: 7-Nov-18




  
 Know what's below. Call before you dig.

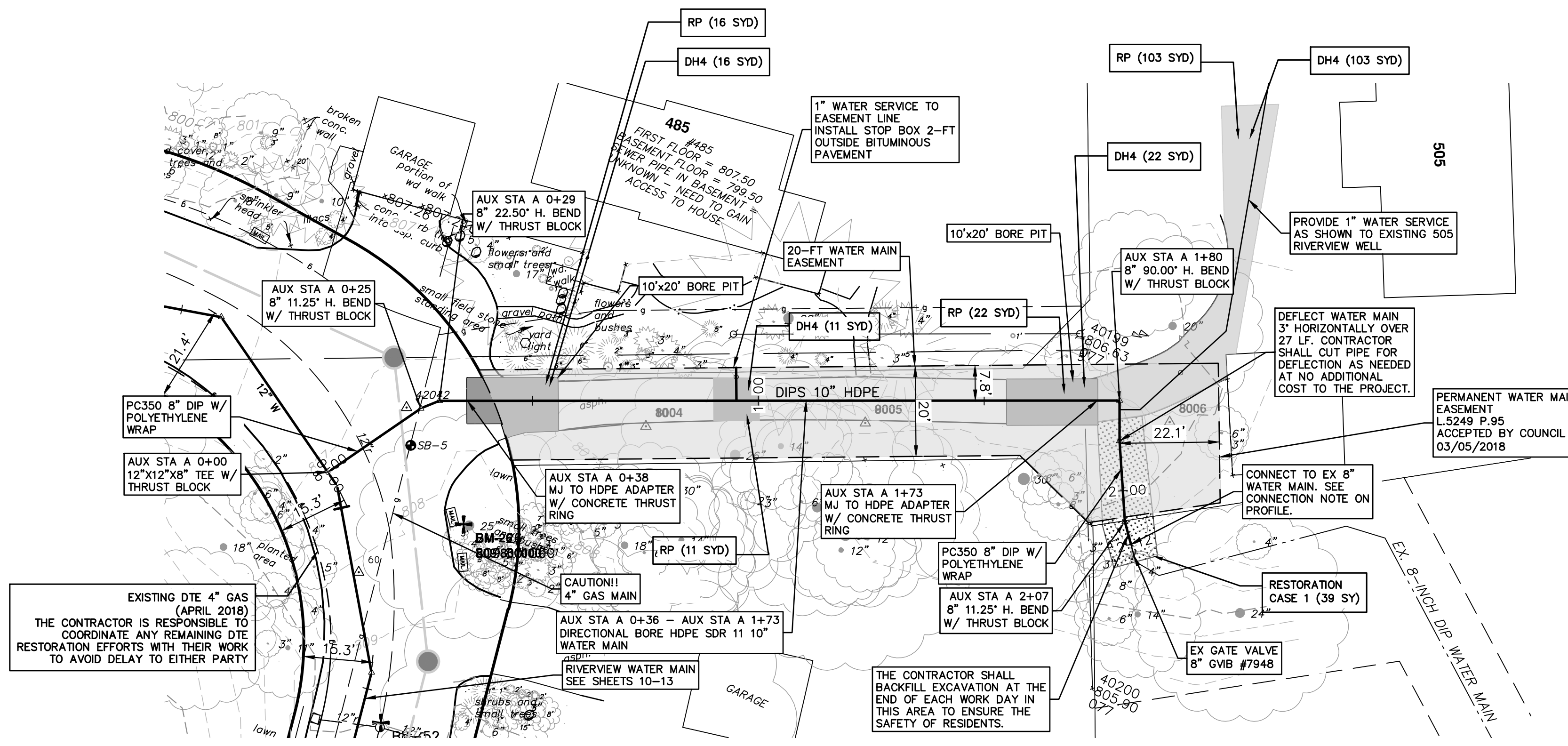
REV.	DATE	DESCRIPTION	DRAWN	CHECKED
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	VCM
06	2/29/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	VCM
07	10/30/2018	SANITARY AND WATER MAIN PERMIT (REV)	MF	VCM
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	VCM
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	VCM

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**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
 PROPOSED WATER MAIN PLAN & PROFILE HUNTINGTON

SCALE PLAN: 1" = 20'  
 PROFILE: 1" = 4'  
 SHEET No. 14 OF 30  
 DRAWING No. 2017-031-14  
 ANN ARBOR PUBLIC SERVICES  
 301 EAST HURON STREET  
 P.O. BOX 886  
 ANN ARBOR MI 48107-0867  
 ANN ARBOR MI 48107-0867  
 www.aagov.org





NOTE: FINAL LOCATION OF WATER SERVICES WILL BE COORDINATED AT THE TIME OF CONSTRUCTION WITH PROPERTY OWNER BY THE ENGINEER. NO ADJUSTMENT IN ANY UNIT PRICE WILL BE ALLOWED AS A RESULT OF ANY ADJUSTMENT IN LOCATION OF THE PROPOSED WATER SERVICE.

**LEGEND**

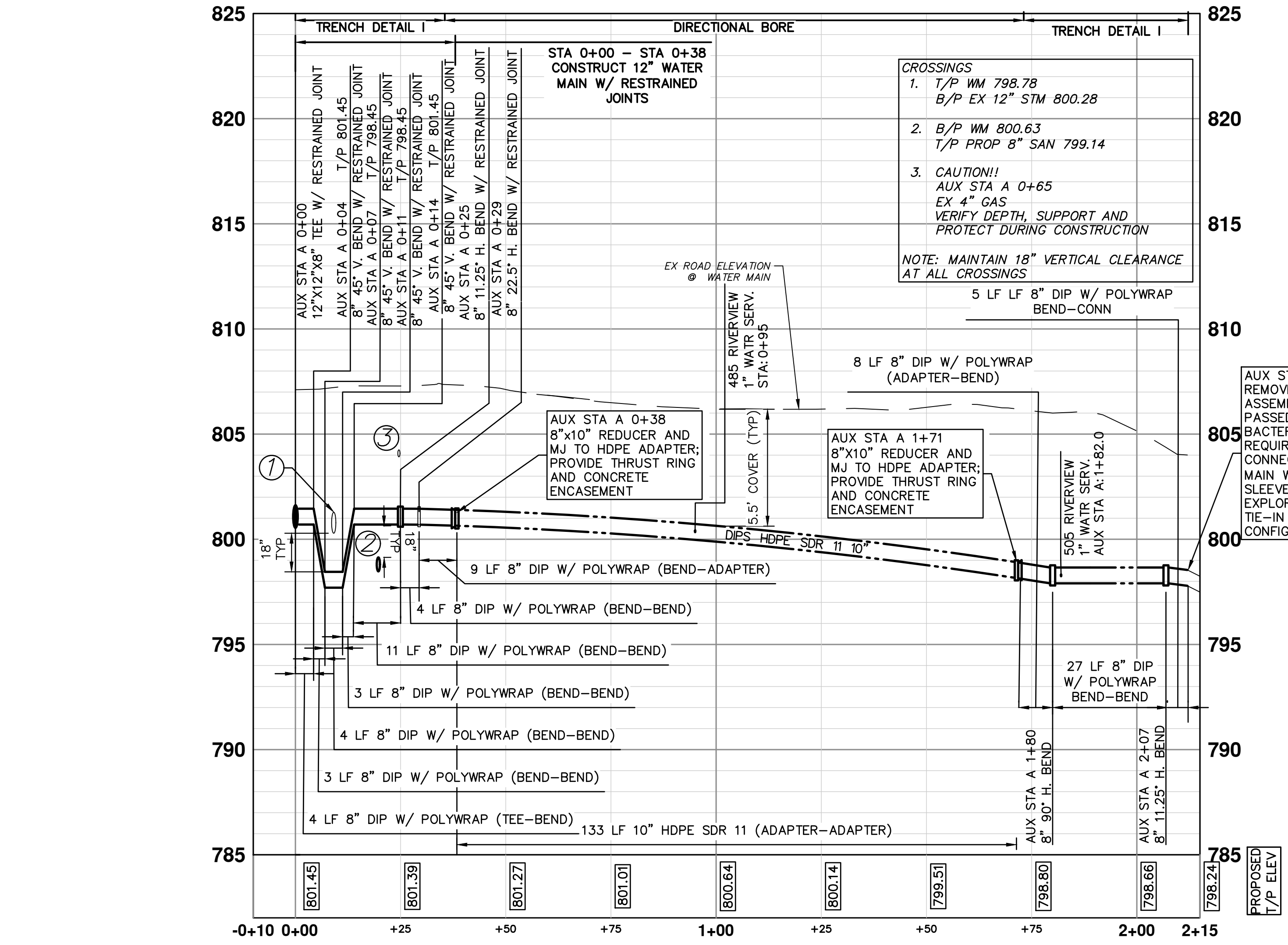


**RESTORATION**

CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.

**WATER MAIN CONSTRUCTION NOTES**

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- UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL UTILIZE STANDARD PIPE DEFLECTIONS FOR FOLLOWING THE PROPOSED ALIGNMENT.
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- EQUIPMENT USED TO INSTALL THE PROPOSED WATER MAIN ON LOT 505 SHALL BE SIZED APPROPRIATELY SUCH THAT THERE IS MINIMUM DISTURBANCE TO EXISTING SITE FEATURES. THE CONTRACTOR SHALL ENSURE THE PROTECTION OF THE EXISTING HMA DRIVEWAY WHEN USING TRACKED EQUIPMENT OR USE RUBBER Tired EQUIPMENT.




NOTE: A PROVISIONAL QUANTITY OF 200 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND "SEWER, CL C76 IV, 12 INCH, TR DET I, MODIFIED" TO ACCOUNT FOR POTENTIAL CONFLICTS THAT MAY ARISE DURING THE INSTALLATION OF THE PROPOSED UTILITIES WITH THE EXISTING STORM SEWER SYSTEM. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE SOLE DIRECTION OF THE ENGINEER.

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NOTE: THE COST ASSOCIATED WITH GRADING AGGREGATE RELATED TO THE PLACEMENT OF PAVEMENT ON THIS SHEET SHALL BE PAID FOR AS MACHINE GRADING MODIFIED "RIVERVIEW DRIVE".


**CONSTRUCTION KEY**

DH4	PLACE 4" HMA DRIVE
DC6	PLACE 6" CONCRETE DRIVE APPROACH
RCG-PM	REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
RP	REMOVE EXISTING PAVEMENT - ANY THICKNESS SAWCUT AT REMOVAL LIMITS (INCLUDE IN WORK ITEM "HMA SURFACE, REM")
RLBO	RELOCATE BY OWNER
RRST	REMOVE & REPLACE EXISTING STORM SEWER - SIZE AS SHOWN ON PLAN
PP	PLACE ASPHALT PAVEMENT - MATERIAL AND THICKNESS PER TYPICAL CROSS SECTION



Know what's below. Call before you dig.

VCM	MF	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	09	REV.	DESCRIPTION
VCM	MF	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	08		
VCM	MF	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	07		
VCM	MF	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	06		
VCM	MF	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	05		



**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

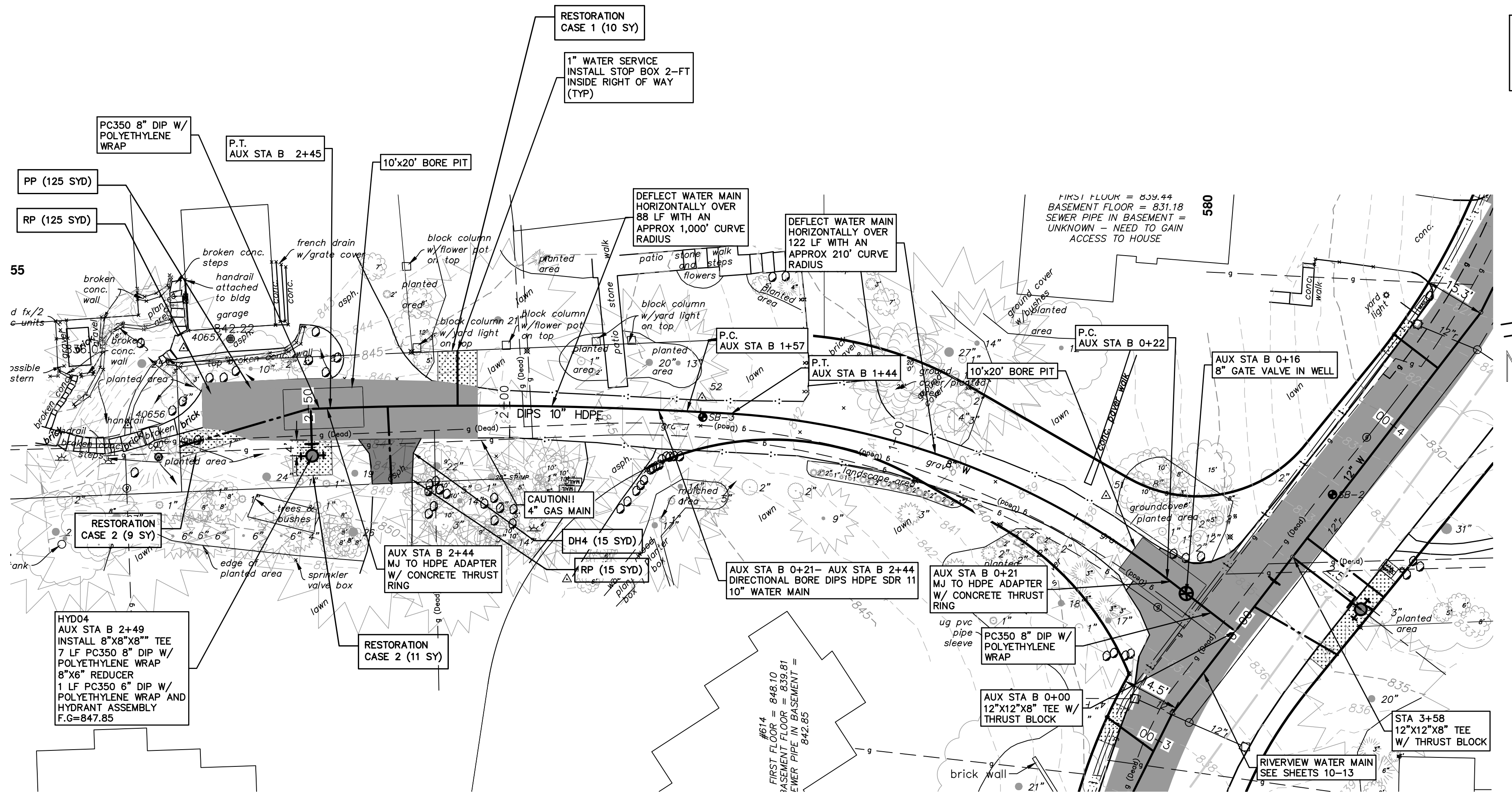
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

PROPOSED WATER MAIN PLAN & PROFILE WM EXTENSION 505

SHEET No. 15 OF 30



c:\pwork\0620002\14 PROPOSED WATER MAIN PLAN & PROFILE DOVER PL.dwg Dwg Created: 29-Oct-18 - \_02 standard bw.stb - Plot Date: 7-Nov-18



NOTE: FINAL LOCATION OF WATER SERVICES WILL BE COORDINATED AT THE TIME OF CONSTRUCTION WITH PROPERTY OWNER BY THE ENGINEER. NO ADJUSTMENT IN ANY UNIT PRICE WILL BE ALLOWED AS A RESULT OF ANY ADJUSTMENT IN LOCATION OF THE PROPOSED WATER SERVICE.

**WATER MAIN CONSTRUCTION NOTES**

- SEE EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
- THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES, SITE FEATURES, LANDSCAPING, AND OTHER ITEMS NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX...". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT, BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
- THE EXISTING UTILITIES SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED THROUGH SURVEYS AND/OR EXISTING PLANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES. IF STORM, SANITARY, OR WATERMAINS CROSS OTHER UTILITIES, CONTACT THEIR RESPECTIVE OWNERS FOR INFORMATION ON HOW TO PROCEED. PAYMENT FOR THE COORDINATION EFFORTS AND ASSOCIATED ITEMS SHALL BE INCLUDED IN ASSOCIATED PROPOSED STORM, SANITARY, OR WATERMAIN ITEMS AND SHALL NOT BE PAID FOR SEPARATELY.
- THE EXISTING 8" WATER MAIN FROM GEDDES MAY BE EXPOSED DURING CONSTRUCTION IN THE VICINITY SHOWN. THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY THE EXISTING WATER MAIN DURING CONSTRUCTION OPERATIONS. ANY DAMAGE TO THIS FACILITY BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE, AS DETERMINED BY THE ENGINEER. PAYMENT FOR PROTECTION OF THE EXISTING WATER MAIN WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX...".
- THE CONTRACTOR SHALL NOT REMOVE OR DAMAGE EXISTING SANITARY SEWER OR WATER MAIN LEADS FOR EASE OF CONSTRUCTING OTHER ASPECTS OF WORK. THE CONTRACTOR SHALL CAREFULLY PROTECT ALL LEADS FROM DAMAGE OR INJURY.
- THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS WHICH ARE INCLUDED BY REFERENCE. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENT. THE WORK SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH CURRENT PUBLIC SERVICE DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
- ALL WATER MAIN SHALL BE PRESSURE CLASS 350 DUCTILE IRON WATER MAIN, CEMENT-LINED (DOUBLE THICKNESS), WITH POLYWRAP UNLESS NOTED OTHERWISE.
- RESTRAINED JOINT SYSTEMS FOR WATER MAIN SHALL BE UTILIZED WHERE INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. RESTRAINED JOINT GASKET SYSTEMS ARE TO BE USED. (FIELD-LOK 350 BY U.S. PIPE, FAST-GRIP BY AMERICAN DUCTILE IRON PIPE, OR APPROVED EQUAL)
- ALL WATER MAIN TO HAVE 5.5 FEET OF COVER. MAINTAIN A MINIMUM OF 18-INCH VERTICAL CLEARANCE FOR STORM AND SANITARY CROSSINGS AND A MINIMUM OF 12-INCH VERTICAL CLEARANCE WITH ALL OTHER UTILITIES.
- UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL UTILIZE STANDARD PIPE DEFLECTIONS FOR FOLLOWING THE PROPOSED ALIGNMENT.
- NEW FIRE HYDRANTS SHALL BE EJIW 5BR-250 WITH 4-INCH STORZ QUICK CONNEX AND 2-2 1/2 HYDRANT OUTLETS.
- FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL NECESSARY HYDRANT EXTENSIONS, THRUST BLOCKS, PIPE AND FITTINGS, INCLUDING ADJUSTMENT OF THE COMPANION VALVE. FIRE HYDRANT ASSEMBLY INCLUDES 6-INCH COMPANION VALVE LOCATED THREE FEET FROM THE HYDRANT.
- ALL WATER MAIN TRENCH BACKFILL SHALL BE MDOT CLASS II GRANULAR MATERIAL (SEE UTILITY TRENCH TYPE I DETAIL).
- CONNECTIONS TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE NEW MAIN HAS BEEN SUCCESSFULLY TESTED AND HAS PASSED ALL HYDROSTATIC AND BACTERIOLOGICAL TESTING. FINAL CONNECTIONS SHALL BE COORDINATED WITH THE ENGINEER.
- THE CONTRACTOR SHALL PERFORM ALL WATER SYSTEM SHUT DOWNS AFTER APPROPRIATE NOTIFICATION TO THOSE AFFECTED AND APPROVAL HAS BEEN GRANTED BY THE ENGINEER.
- THE DRILLING MACHINE IS TO BE PLACED AT THE WEST BORE PIT AND PULL PIPE FROM THE EAST BORE PIT. PIPE TO BE STAGED ALONG RIVERVIEW DRIVE WITHOUT UNDULY INTERFERING WITH TRAFFIC.
- THE CONTRACTOR SHALL MAINTAIN REASONABLE ACCESS FOR RESIDENTS TO ACCESS THEIR HOMES AT ALL TIMES. A SAFE ACCESS PATH SHALL BE IDENTIFIED ALONG WITH VEHICLE PARKING IN THE EVENT THAT CONSTRUCTION ACTIVITIES INHIBIT VEHICULAR ACCESS TO THE HOMES.
- AFTER WATER MAIN INSTALLATION HAS BEEN COMPLETED, SUCCESSFULLY TESTED, CONNECTED TO EXISTING MAIN AND ALL LEADS INSTALLED, THE CONTRACTOR SHALL PLACE, GRADE AND COMPACT 4 INCHES OF 23A AGGREGATE ALONG THE ENTIRE UNPAVED SECTION OF DOVER PLACE.



REV.	DATE	DESCRIPTION
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR
06	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR
07	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR

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**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
PROPOSED WATER MAIN PLAN & PROFILE DOVER PL

SCALE PLAN: 1"=20'  
PROFILE: 1"=4'  
DRAWING NO: 2017-031-16  
SHEET NO.

**LEGEND**  
[Pattern] PROPOSED RESTORATION

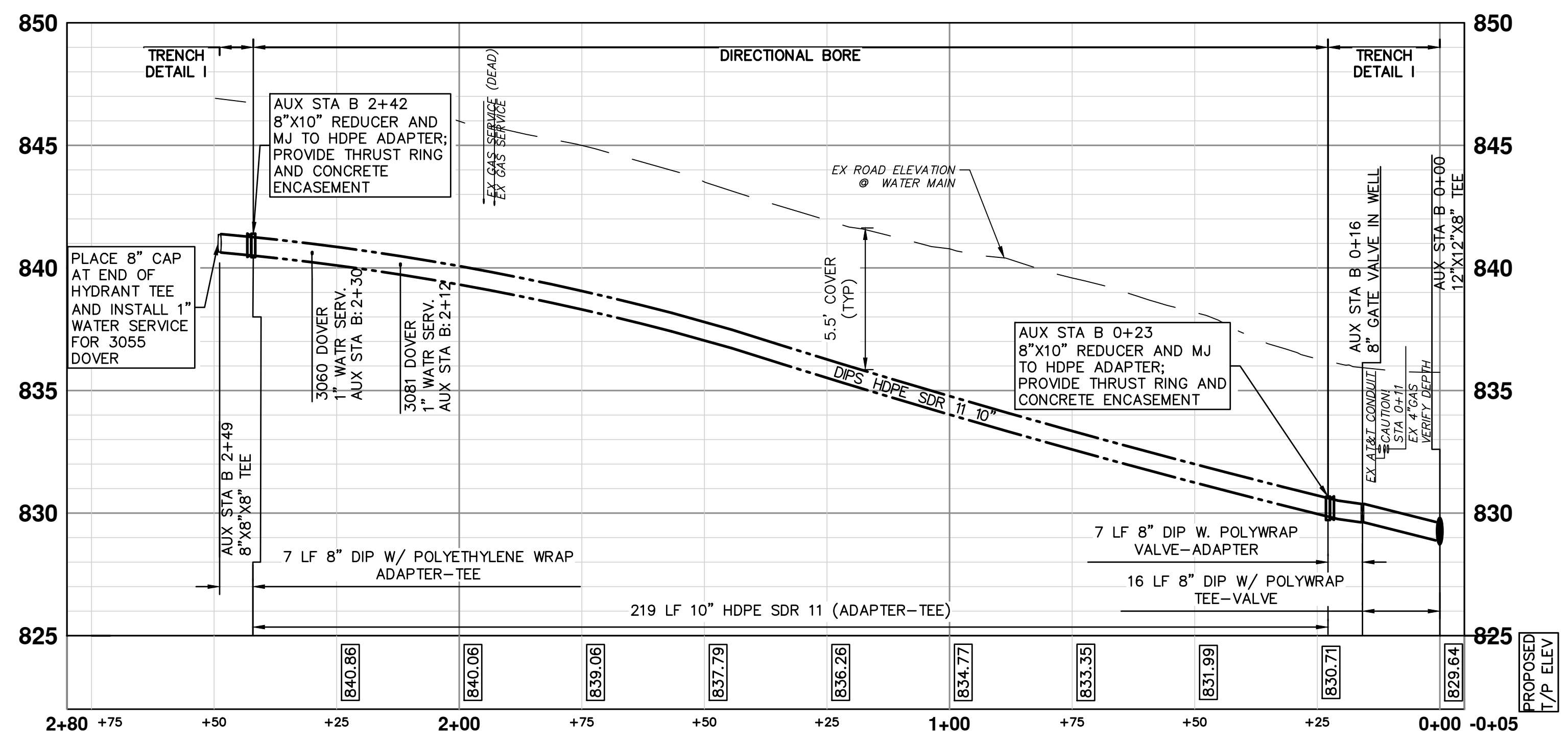
**RESTORATION**  
CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.  
CASE 2 - RESTORE AREA WITH 6-INCHES OF TOPSOIL AND 3-INCHES OF SHREDDED HARDWOOD BARK MULCH.

NOTE: A PROVISIONAL QUANTITY OF 200 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND "SEWER, CL C76 IV, 12 INCH, TR DET II, MODIFIED" TO ACCOUNT FOR POTENTIAL CONFLICTS THAT MAY ARISE DURING THE INSTALLATION OF THE PROPOSED UTILITIES WITH THE EXISTING STORM SEWER SYSTEM. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE DIRECTION OF THE ENGINEER.

NOTE: A PROVISIONAL QUANTITY OF 400 LINEAL FEET HAS BEEN ADDED TO THE PAY ITEMS "CURB, ANY TYPE OR SIZE, REM" AND "CURB SLOPED, HMA, SPECIAL" TO BE USED IN THE EVENT THAT THE EXISTING CURB NOT IDENTIFIED FOR REMOVAL IN THE PLANS IS DAMAGED BY UNAVOIDABLE CIRCUMSTANCES ENCOUNTERED DURING CONSTRUCTION. THIS PROVISIONAL QUANTITY IS NOT INTENDED TO EXPEDITE THE CONTRACTOR'S OPERATION OR TO DIMINISH TRENCH WIDTH AND/OR SAFETY REQUIREMENTS. THE USE OF THIS PROVISIONAL QUANTITY WILL BE AT THE DIRECTION OF THE ENGINEER.

**CONSTRUCTION KEY**

DH4	PLACE 4" HMA DRIVE
DC6	PLACE 6" CONCRETE DRIVE APPROACH
RCG-PM	REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
RP	REMOVE EXISTING PAVEMENT - ANY THICKNESS SAWCUT AT REMOVAL LIMITS (INCLUDE IN WORK ITEM "HMA SURFACE, REM")
RLBO	RELOCATE BY OWNER
RRST	REMOVE & REPLACE EXISTING STORM SEWER-SIZE AS SHOWN ON PLAN
PP	PLACE ASPHALT PAVEMENT-MATERIAL AND THICKNESS PER TYPICAL CROSS SECTION







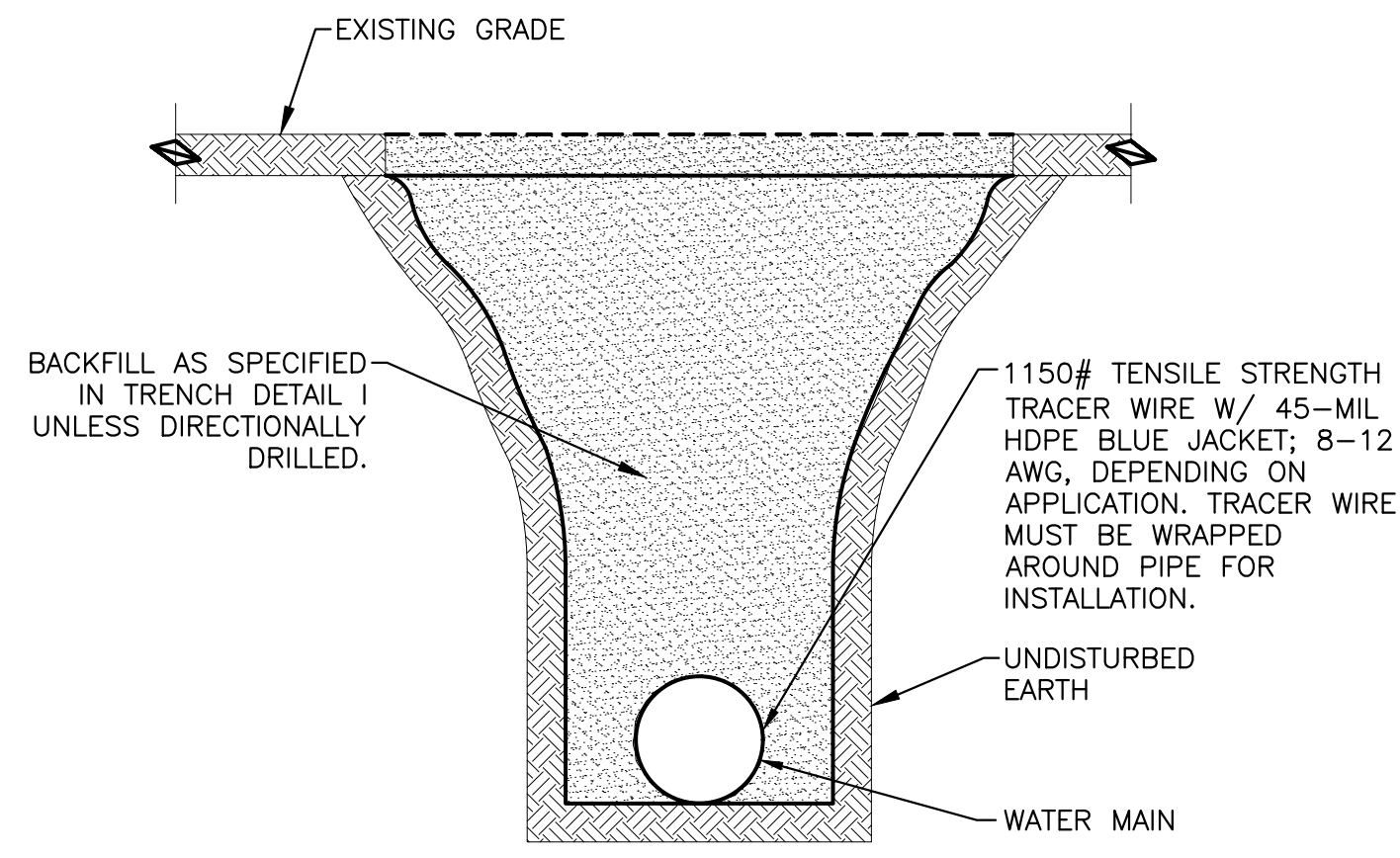
09	FINAL PLANS - CITY OF ANN ARBOR	11/7/2018	VCN	CHECKED
08	FINAL REVIEW TO CITY OF ANN ARBOR	10/30/2018	MF	DRAWN
07	SANITARY AND WATER MAIN PERMIT (REV)	10/9/2018	VCN	
06	FINAL PLANS - CITY OF ANN ARBOR	2/28/2018	MF	
05	FINAL REVIEW TO CITY OF ANN ARBOR	2/23/2018	VCN	

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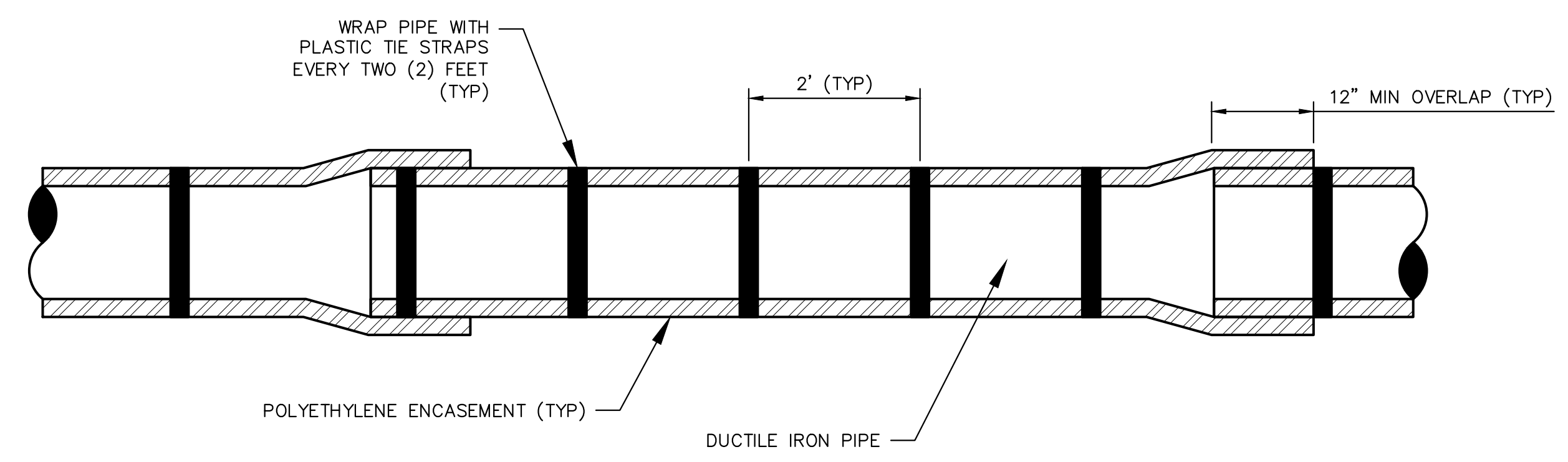


**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
DETAILS

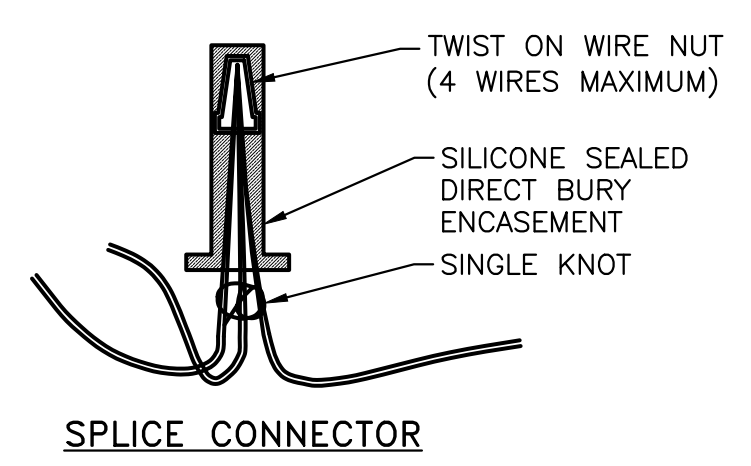
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING  
SCALE: NTS  
DRAWING No. 2017-031-17  
SHEET No.



**TRACER WIRE TRENCH PLACEMENT**



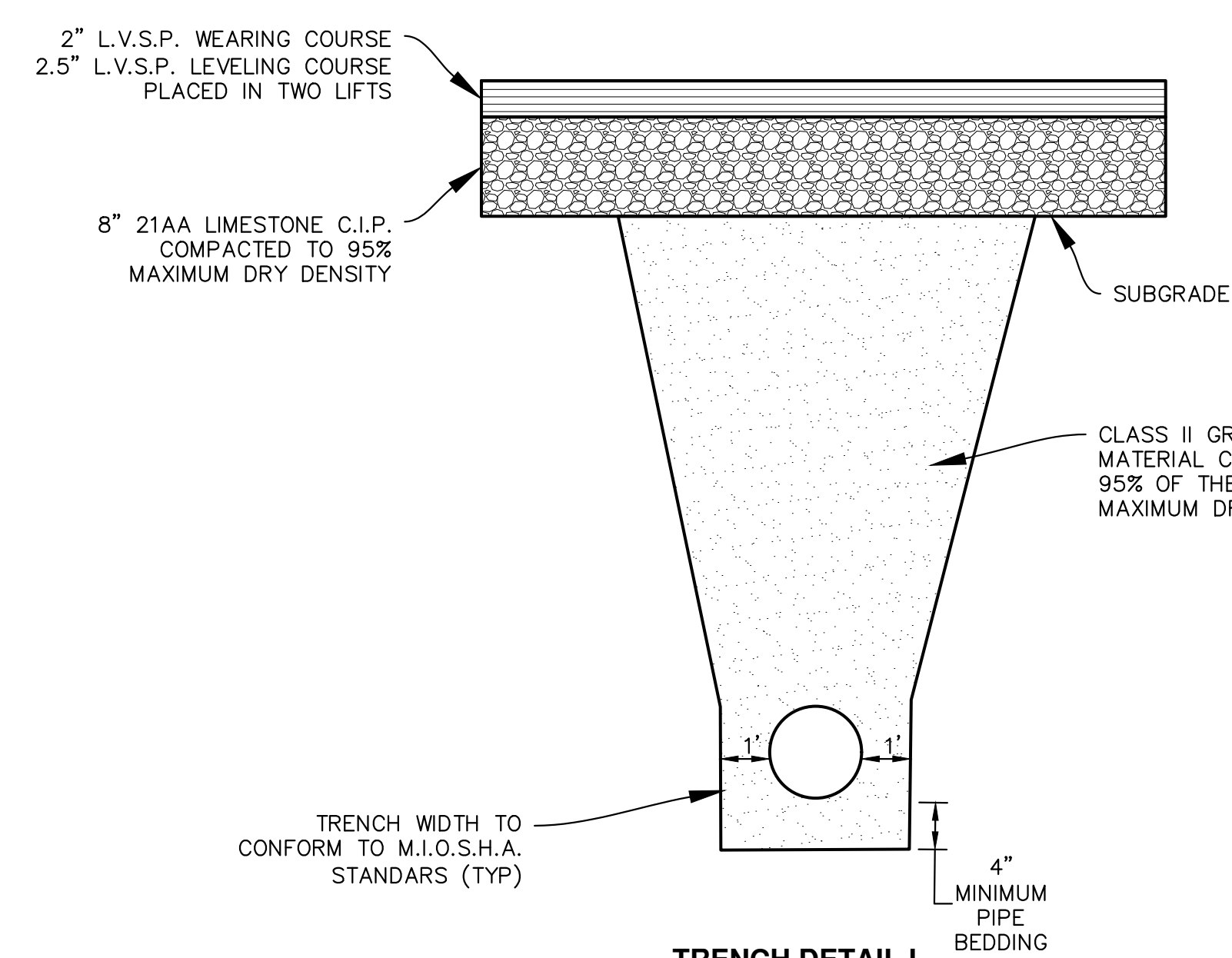
**WATER MAIN W/ POLYWRAP DETAIL**  
APPLIES TO: POLYETHYLENE WRAPPED DIP  
SEE PLANS FOR LOCATIONS



**SPlice CONNECTOR**

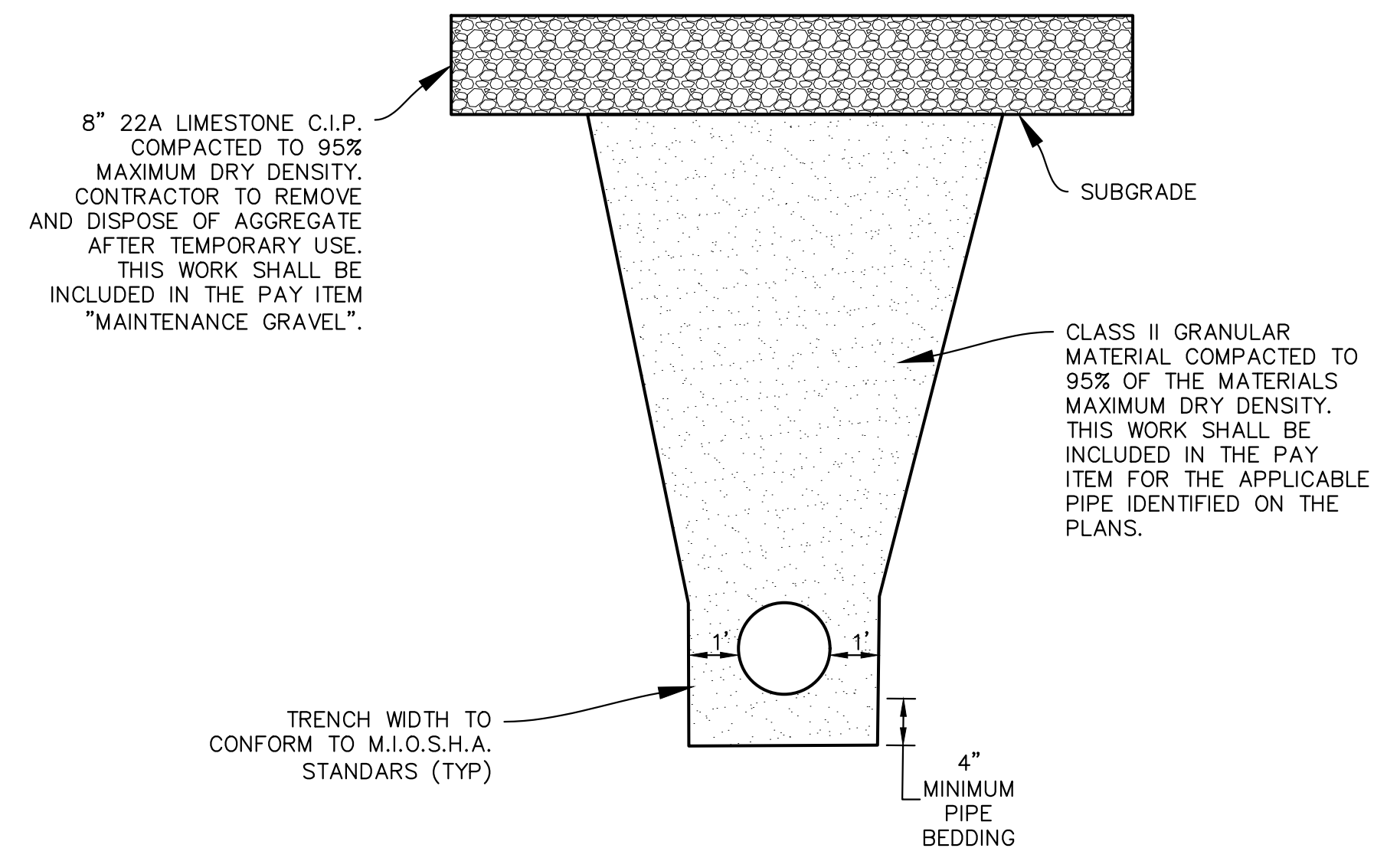
- NOTES:
1. TRACER WIRE TO BE CONTINUOUS FROM END TO END AND TO BE BROUGHT TO THE TOP OF EACH VALVE BOX ON EACH SECTION OF WATER MAIN WITH A 3-FOOT COIL OF WIRE LOOPED IN THE TOP OF THE VALVE BOX.
  2. WIRE SHALL BE CONTINUITY TESTED AFTER INSTALLATION. ANY WIRE WHICH FAILS THE CONTINUITY TEST SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.

**TRACER WIRE DETAIL**  
NTS



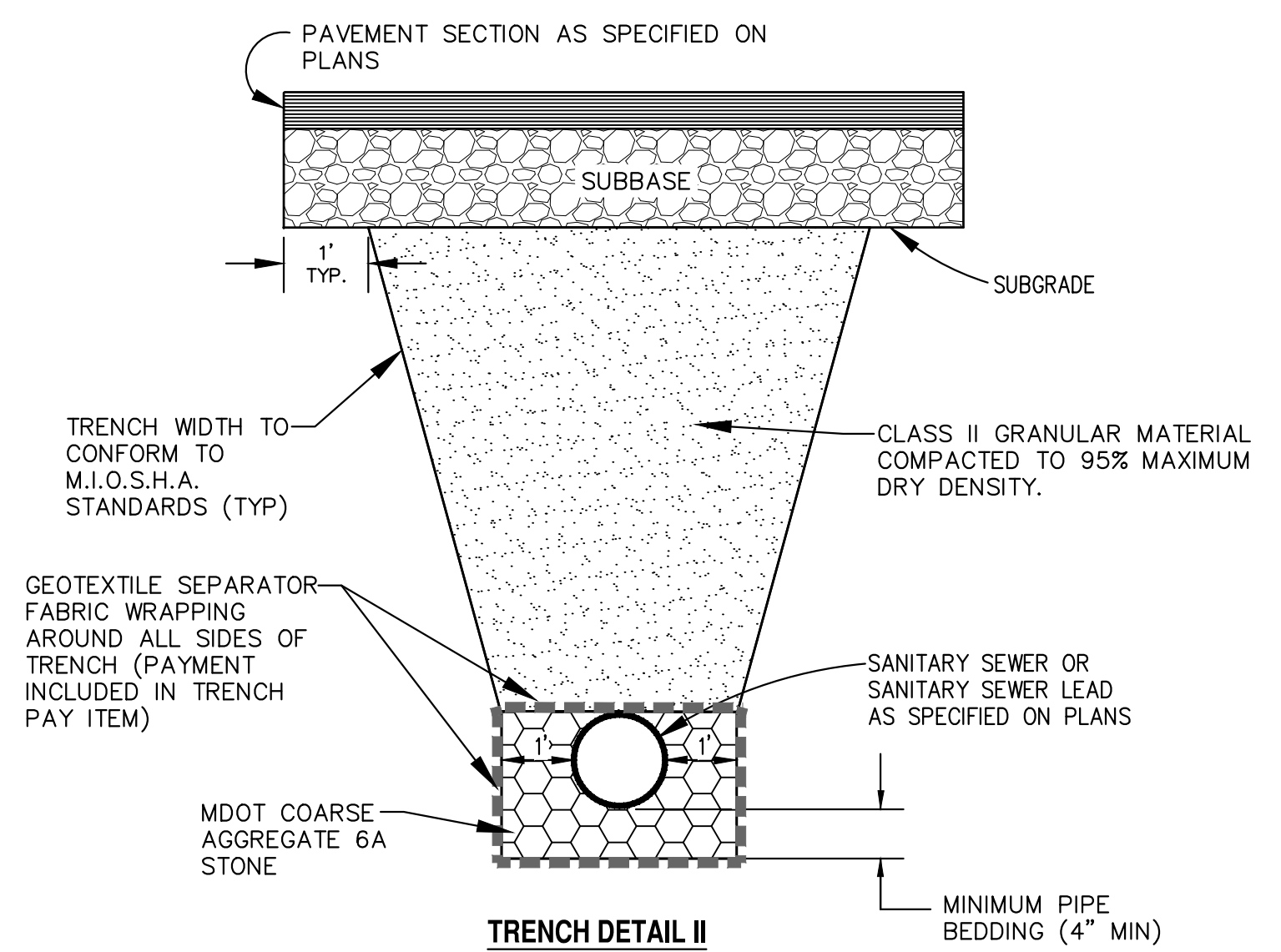
**TRENCH DETAIL I**

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



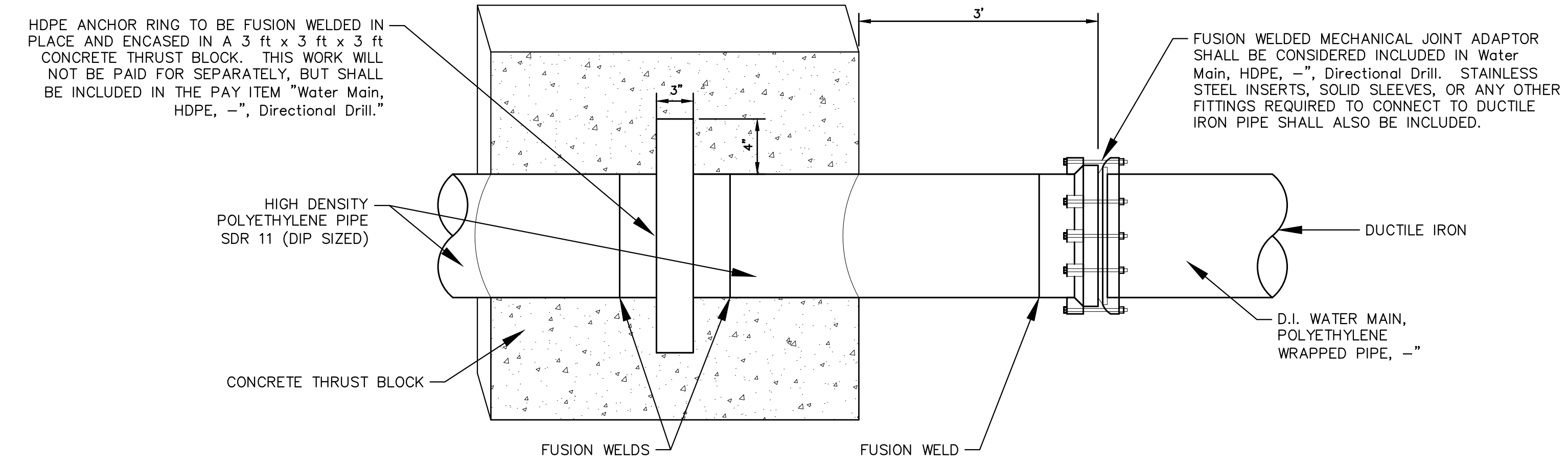
**TEMPORARY TRENCH RESTORATION DETAIL**

(THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT IS INCLUDED IN OTHER CONTRACT PAY ITEMS.)



**TRENCH DETAIL II**

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

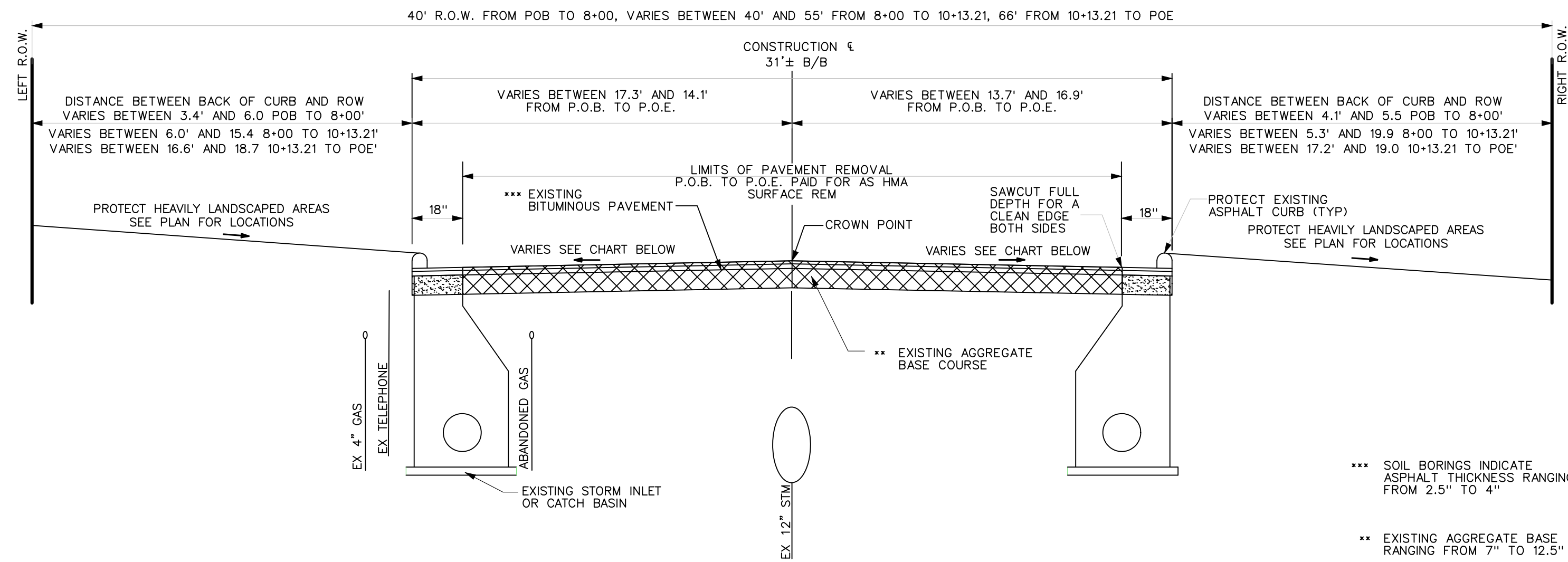


**HDPE/DI WATER MAIN CONNECTION WITH THRUST RING AND RESTRAINT**

c:\pw\_work\d0820002\15 DETAILS.dwg Dwg Created: 29-Oct-18 - \_02 standard bw.stb - Plot Date: 7-Nov-18



c:\pw\_work\d0620002\16 EXISTING TYPICALS.dwg Dwg Created: 29-Oct-18 - \_a2 standard bw.stb - Plot Date: 7-Nov-18



**EXISTING TYPICAL CROSS SECTION  
RIVERVIEW DRIVE**

P.O.B. STA 0+58.00 TO P.O.E. STA 10+00.00

NOT TO SCALE

LEFT GRADE	STATION	RIGHT GRADE
3.1%	0+53	-3.6%
-1.2%	1+00	-3.7%
0.2%	1+50	-1.3%
-1.0%	2+00	-2.7%
-1.0%	2+50	-4.2%
-0.1%	3+00	-3.7%
0%	3+50	-2.5%
1.3%	4+00	-1%
-1.6%	4+50	-0.8%
-1.6%	5+00	-1.3%
-1.2%	5+50	-1.9%
-0.4%	6+00	-3.4%
-1.7%	6+50	-3.6%
0.7%	7+00	-1.2%
-0.7%	7+50	-0.6%
-1.7%	8+00	-0.4%
-1.3%	8+50	2%
-1.8%	9+00	1.6%
-0.2%	9+50	-2.5%
0.2%	10+00	-10.1%

\* EXISTING GRADES ARE RELATIVE TO CROWN ELEVATION

\*\*\* SOIL BORINGS INDICATE ASPHALT THICKNESS RANGING FROM 2.5" TO 4"  
 \*\* EXISTING AGGREGATE BASE RANGING FROM 7" TO 12.5"

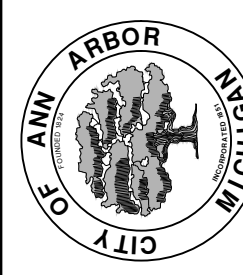
NOTE: THE CONTRACTOR SHALL CONTAIN ALL CONSTRUCTION OPERATIONS TO THE PAVED/GRAVEL ROADWAY AREAS TO THE GREATEST EXTENT POSSIBLE. DAMAGE TO PRIVATE PROPERTY SHALL BE RESTORED BY THE CONTRACTOR TO A CONDITION THAT IS EQUAL TO, OR BETTER THAN, THAT WHICH EXISTED PRIOR TO THE DAMAGE. ALL REPAIRS SHALL BE AT THE CONTRACTOR'S SOLE EXPENSE.



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REV.	DATE	DRAWN	CHECKED
09	11/7/2018	MF	VCM
08	10/30/2018	MF	VCM
07	10/19/2018	MF	VCM
06	2/28/2018	MF	VCM
05	2/23/2018	MF	VCM

FINAL PLANS - CITY OF ANN ARBOR  
 FINAL REVIEW TO CITY OF ANN ARBOR  
 SANITARY AND WATER MAIN PERMIT (REV)  
 FINAL PLANS - CITY OF ANN ARBOR  
 FINAL REVIEW TO CITY OF ANN ARBOR

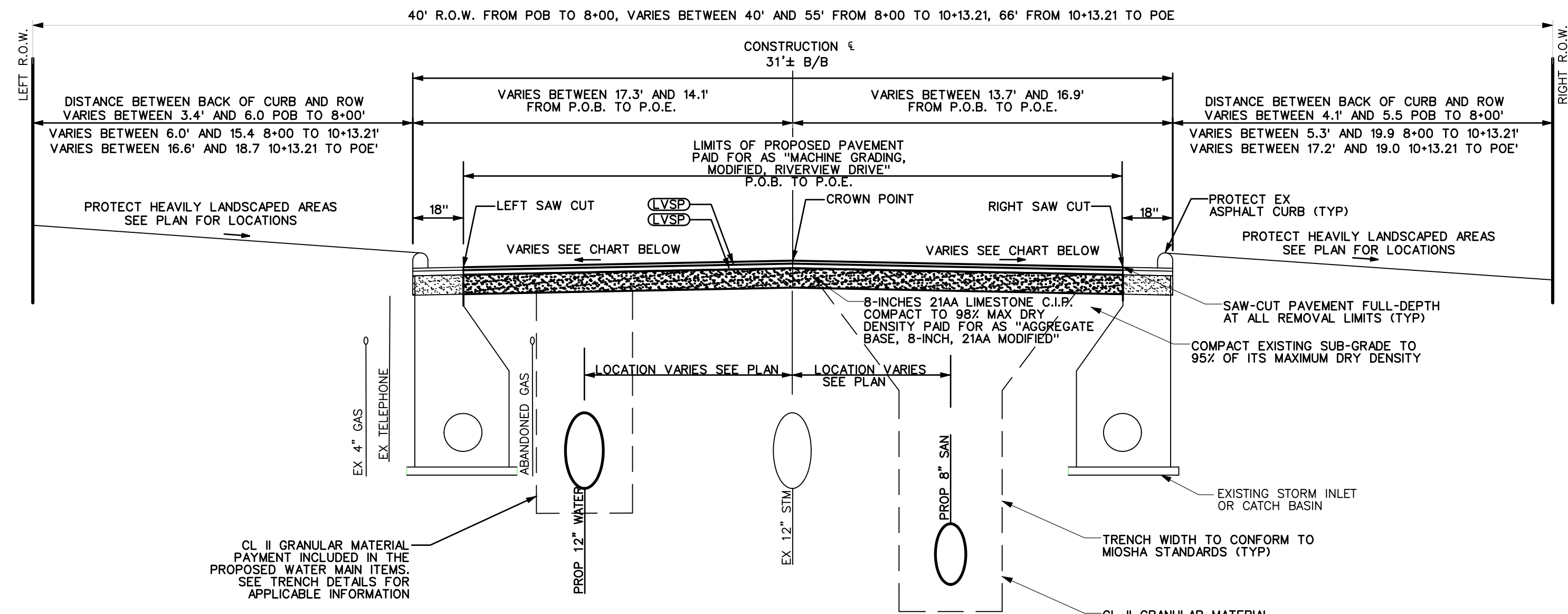


**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**  
 EXISTING TYPICAL CROSS SECTION

SCALE: NTS  
 DRAWING No. 2017-031-18



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**PROPOSED TYPICAL CROSS SECTION  
RIVERVIEW DRIVE**

P.O.B. STA 0+58.00 TO P.O.E. STA 10+00.00

NOT TO SCALE

LEFT GRADE	STATION	RIGHT GRADE
3.1%	0+53	-3.6%
-1.2%	1+00	-3.7%
0.2%	1+50	-1.3%
-1.0%	2+00	-2.7%
-1.0%	2+50	-4.2%
-0.1%	3+00	-3.7%
0%	3+50	-2.5%
1.3%	4+00	-1%
-1.6%	4+50	-0.8%
-1.6%	5+00	-1.3%
-1.2%	5+50	-1.9%
-0.4%	6+00	-3.4%
-1.7%	6+50	-3.6%
0.7%	7+00	-1.2%
-0.7%	7+50	-0.6%
-1.7%	8+00	-0.4%
-1.3%	8+50	2%
-1.8%	9+00	1.6%
-0.2%	9+50	-2.5%
0.2%	10+00	-10.1%

\* PROPOSED GRADES ARE RELATIVE TO CROWN ELEVATION

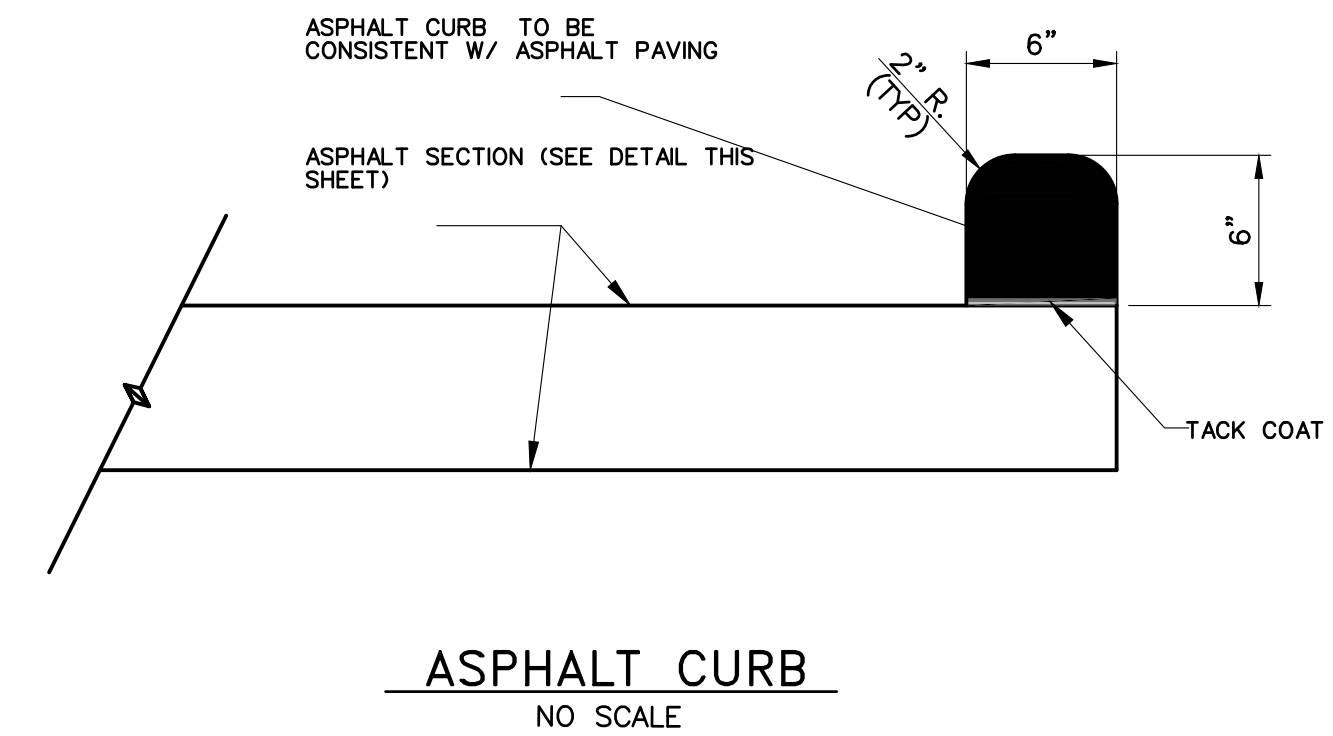
**HMA APPLICATION ESTIMATE**

STREET NAME	PAY ITEM	HMA MIX	APPLICATION RATE	EST. THICKNESS	PERF GRADE	AWI (MIN)
RIVERVIEW DRIVE	HMA, LVSP	LVSP (TOP)	226 LB/SYD	2.0"	PG 58-28	260
	HMA, LVSP	LVSP (BASE)	282.5 LB/SYD	2.5"	PG 58-28	260
HUNTINGTON PLACE	HMA, LVSP	LVSP (TOP)	226 LB/SYD	2.0"	PG 58-28	260
	HMA, LVSP	LVSP (BASE)	282.5 LB/SYD	2.5"	PG 58-28	260
HMA DRIVEWAYS: 485 AND 505 RIVERVIEW DRIVEWAY AREAS	HMA APPROACH	HMA, LVSP (TOP)	452 LB/SYD (2 LIFTS)	4.0"	PG 58-28	260
	HMA APPROACH	HMA, LVSP (TOP)	452 LB/SYD (2 LIFTS)	4.0"	PG 58-28	260

LVSP = LOW VOLUME SUPER PAVE

NOTE:  
AREAS OF HMA PLACEMENT AS DESIGNATED ON THE PLANS AS "DH4" SHALL BE PAID FOR AS THE ITEM OF WORK "HMA APPROACH."

AREAS OF HMA PLACEMENT AS DESIGNATED ON THE PLANS AS "PP" ALONG DOVER PLACE SHALL BE PAID FOR AS THE ITEM OF WORK "HMA APPROACH."



REV.	DATE	DRAWN	CHECKED
09	11/7/2018	MF	VCN
08	10/30/2018	MF	VCN
07	10/19/2018	MF	VCN
06	2/28/2018	MF	VCN
05	2/23/2018	MF	VCN

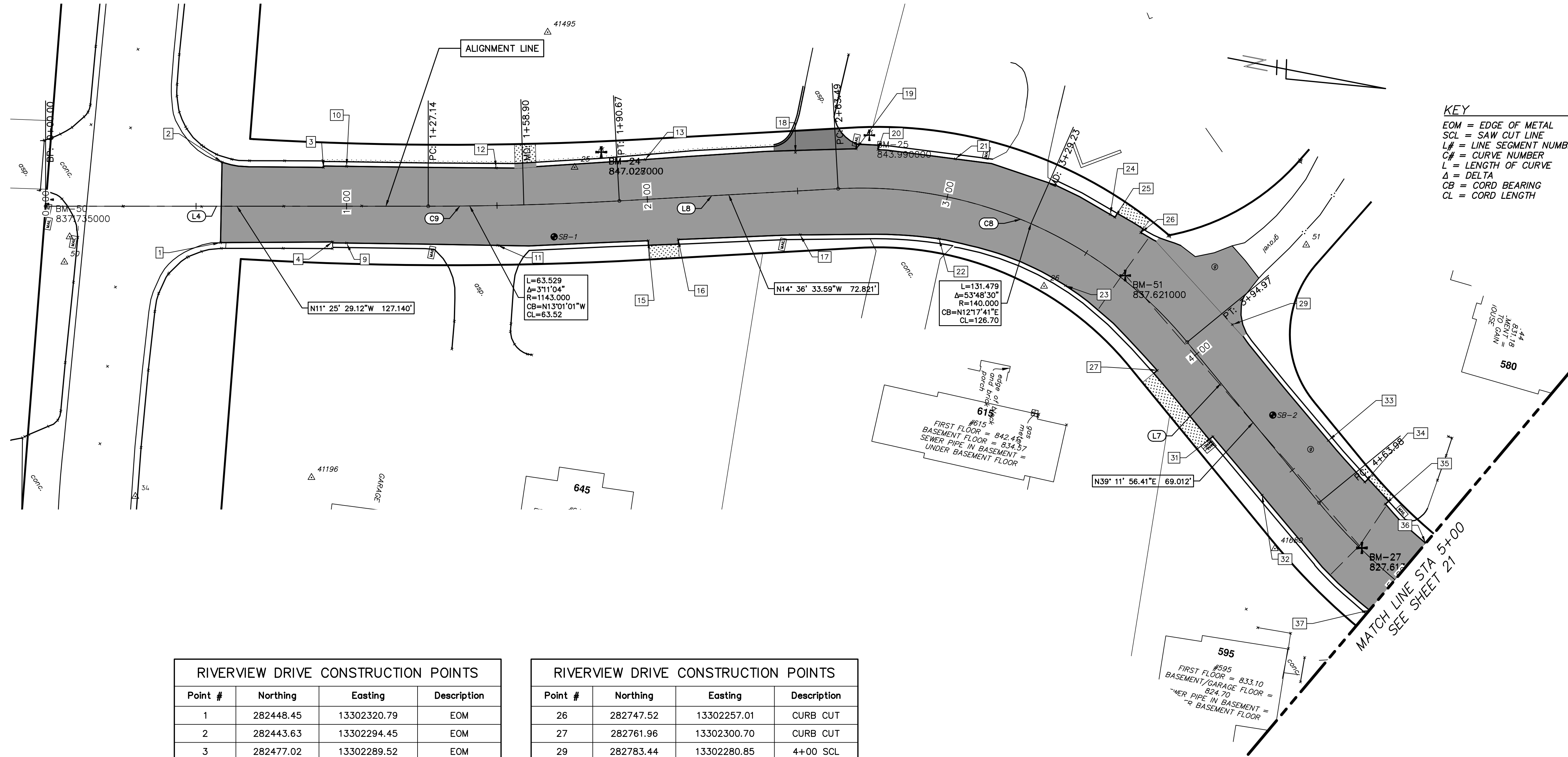
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**RIVERVIEW DRIVE SANITARY SEWER  
AND WATER MAIN EXTENSION PROJECT**  
PROPOSED TYPICAL CROSS SECTION

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING  
SCALE: NTS  
DRAWING No. 2017-031-19





**KEY**  
 EOM = EDGE OF METAL  
 SCL = SAW CUT LINE  
 L# = LINE SEGMENT NUMBER  
 C# = CURVE NUMBER  
 L = LENGTH OF CURVE  
 Δ = DELTA  
 CB = CORD BEARING  
 CL = CORD LENGTH

RIVERVIEW DRIVE CONSTRUCTION POINTS			
Point #	Northing	Easting	Description
1	282448.45	13302320.79	EOM
2	282443.63	13302294.45	EOM
3	282477.02	13302289.52	EOM
4	282484.88	13302313.18	EOM
9	282489.52	13302312.63	1+00 SCL
10	282484.47	13302287.64	1+00 SCL
11	282538.94	13302303.44	1+50 SCL
12	282533.34	13302278.31	1+50 SCL
13	282581.28	13302265.82	2+00 SCL
15	282587.61	13302292.02	CURB CUT
16	282597.32	13302289.65	CURB CUT
17	282636.66	13302280.05	2+50 SCL
18	282629.77	13302253.59	2+50 SCL
19	282649.36	13302248.37	CURB CUT
20	282656.51	13302247.23	CURB CUT
21	282682.25	13302245.17	3+00 SCL
22	282682.25	13302272.28	3+00 SCL
23	282726.51	13302279.17	3+50 SCL
24	282736.39	13302253.07	3+50 SCL
25	282738.11	13302253.65	CURB CUT

RIVERVIEW DRIVE CONSTRUCTION POINTS			
Point #	Northing	Easting	Description
26	282747.52	13302257.01	CURB CUT
27	282761.96	13302300.70	CURB CUT
29	282783.44	13302280.85	4+00 SCL
31	282784.38	13302318.63	CURB CUT
32	282804.28	13302334.41	4+50 SCL
33	282822.32	13302312.30	4+50 SCL
34	282836.96	13302323.44	CURB CUT
35	282844.99	13302329.31	CURB CUT
36	282860.77	13302339.35	5+00 SCL
37	282846.85	13302364.83	5+00 SCL

LINE SEGMENT AND CURVE INFORMATION		
Line #	Start Point	End Point
L4	N = 282389.08 E = 13302320.44,	N = 282513.70 E = 13302295.26
C9	N = 282513.70 E = 13302295.26,	N = 282575.59 E = 13302280.95
L8	N = 282575.59 E = 13302280.95,	N = 282646.05 E = 13302262.59
C8	N = 282646.05 E = 13302262.59,	N = 282769.85 E = 13302289.57
L7	N = 282769.85 E = 13302289.57,	N = 282823.33 E = 13302333.18
C7	N = 282823.33 E = 13302333.18,	N = 282981.65 E = 13302374.10

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

ALIGNMENT PLAN STA 0+00 TO STA 5+00

SCALE PLAN: 1" = 20'

DRAWING No. 2017-031-20

SHEET No. 20 OF 30

11/7/2018  
10/30/2018  
10/19/2018  
2/28/2018  
2/23/2018

FINAL PLANS - CITY OF ANN ARBOR  
FINAL REVIEW TO CITY OF ANN ARBOR  
SANITARY AND WATER MAIN PERMIT (REV)  
FINAL PLANS - CITY OF ANN ARBOR  
FINAL REVIEW TO CITY OF ANN ARBOR

DATE  
DRAWN  
CHECKED

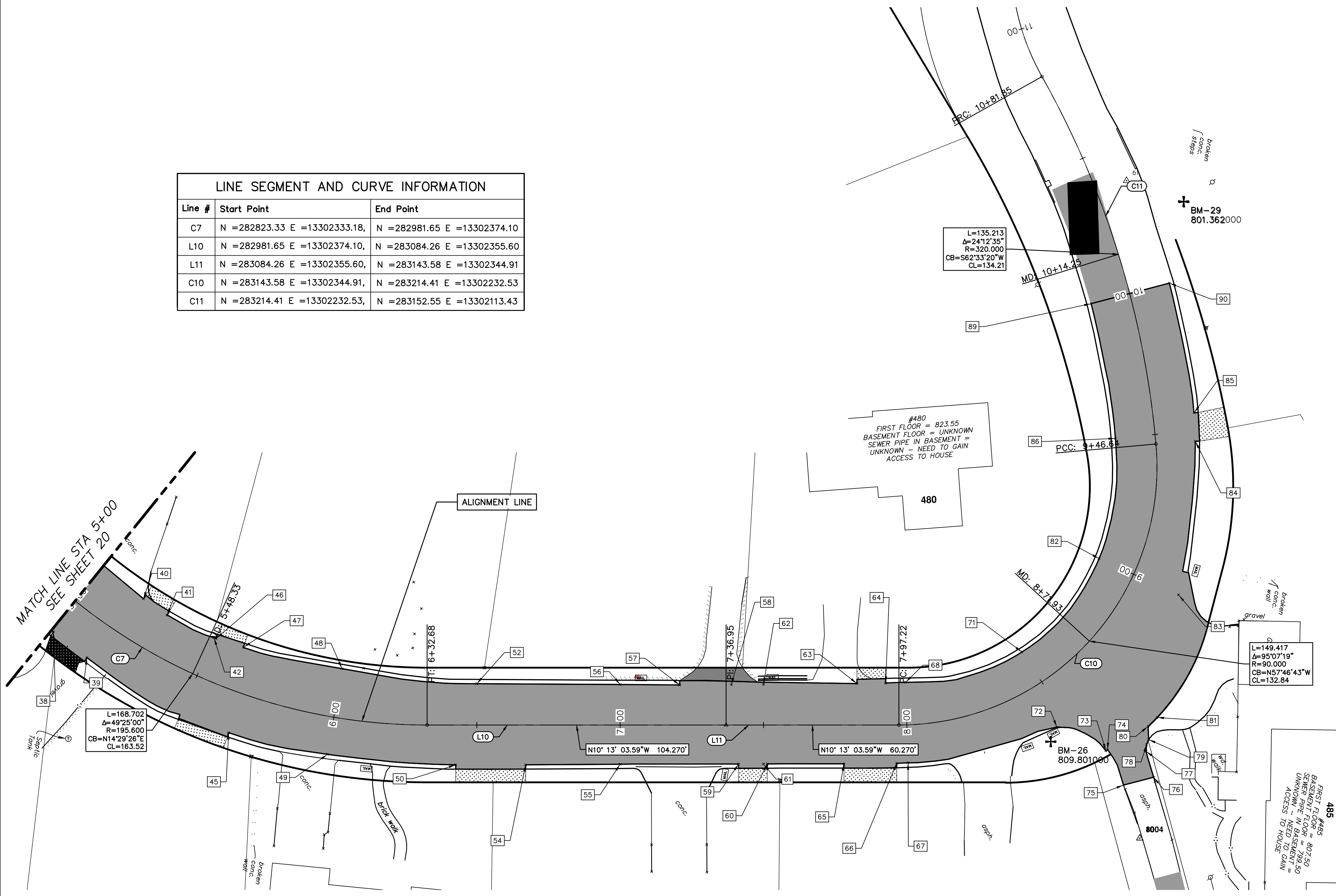
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c:\pwwork\d0820002\19 ALIGNMENT PLAN.dwg Created: 29-Oct-18 - a2 standard bw.stb - Plot Date: 7-Nov-18

LINE SEGMENT AND CURVE INFORMATION		
Line #	Start Point	End Point
C7	N = 282823.33 E = 13302333.18, N = 282981.65 E = 13302374.10	
L10	N = 282981.65 E = 13302374.10, N = 283084.26 E = 13302355.60	
L11	N = 283084.26 E = 13302355.60, N = 283143.58 E = 13302344.91	
C10	N = 283143.58 E = 13302344.91, N = 283214.41 E = 13302232.53	
C11	N = 283214.41 E = 13302232.53, N = 283152.55 E = 13302113.43	



**KEY**  
 EOM = EDGE OF METAL  
 SCL = SAW CUT LINE  
 L# = LINE SEGMENT NUMBER  
 C# = CURVE NUMBER  
 L = LENGTH OF CURVE  
 Δ = DELTA  
 CB = CORD BEARING  
 CL = CORD LENGTH

RIVERVIEW DRIVE CONSTRUCTION POINTS			
Point #	Northing	Easting	Description
38	282847.61	13302365.24	CURB CUT
39	282860.72	13302372.02	CURB CUT
40	282876.49	13302348.29	CURB CUT
41	282885.58	13302352.46	CURB CUT
42	282903.13	13302357.33	5+50 SCL
45	282913.99	13302389.01	CURB CUT
46	282903.86	13302357.44	CURB CUT
47	282913.77	13302358.83	CURB CUT
48	282948.96	13302360.01	6+00 SCL

RIVERVIEW DRIVE CONSTRUCTION POINTS			
Point #	Northing	Easting	Description
49	282949.30	13302390.31	6+00 SCL
50	282993.93	13302386.00	CURB CUT
52	282996.13	13302366.85	6+50 EOM
54	283017.94	13302381.65	CURB CUT
55	283050.32	13302375.61	7+00 SCL
56	283045.39	13302348.25	7+00 SCL
57	283065.88	13302344.74	CURB CUT
58	283083.56	13302341.38	CURB CUT
59	283090.96	13302368.23	CURB CUT
60	283100.80	13302366.42	CURB CUT
61	283099.51	13302366.66	7+50 SCL

RIVERVIEW DRIVE CONSTRUCTION POINTS			
Point #	Northing	Easting	Description
62	283094.58	13302339.31	7+50 SCL
63	283126.63	13302333.27	CURB CUT
64	283136.44	13302331.35	CURB CUT
65	283127.12	13302361.63	CURB CUT
66	283145.19	13302358.21	CURB CUT
67	283149.04	13302357.29	8+00 SCL
68	283143.22	13302329.84	8+00 SCL
71	283181.24	13302312.23	8+50 SCL
72	283197.91	13302335.86	EOP
73	283216.22	13302340.95	EOP
74	283216.70	13302340.47	EOP

RIVERVIEW DRIVE CONSTRUCTION POINTS			
Point #	Northing	Easting	Description
75	283224.37	13302351.64	EOP
76	283234.24	13302347.07	EOP
77	283230.03	13302338.65	EOP
78	283229.80	13302336.34	EOP
79	283230.20	13302334.42	EOP
80	283229.18	13302329.99	EOP
81	283231.72	13302326.36	EOP
82	283201.99	13302275.37	9+00 SCL
83	283231.50	13302282.92	EOP
84	283227.74	13302229.15	CURB CUT
85	283225.59	13302219.40	CURB CUT

RIVERVIEW DRIVE CONSTRUCTION POINTS			
Point #	Northing	Easting	Description
86	283200.14	13302233.11	9+50 SCL
89	283183.47	13302188.33	10+00 SCL
90	283209.04	13302176.47	10+00 SCL

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT

ALIGNMENT PLAN STA 5+00 TO STA 10+00

SHEET No. 21 OF 30

CITY OF ANN ARBOR  
 PUBLIC SERVICES  
 301 EAST HURON STREET  
 ANN ARBOR, MI 48106-0647  
 WWW.A2GOV.GOV

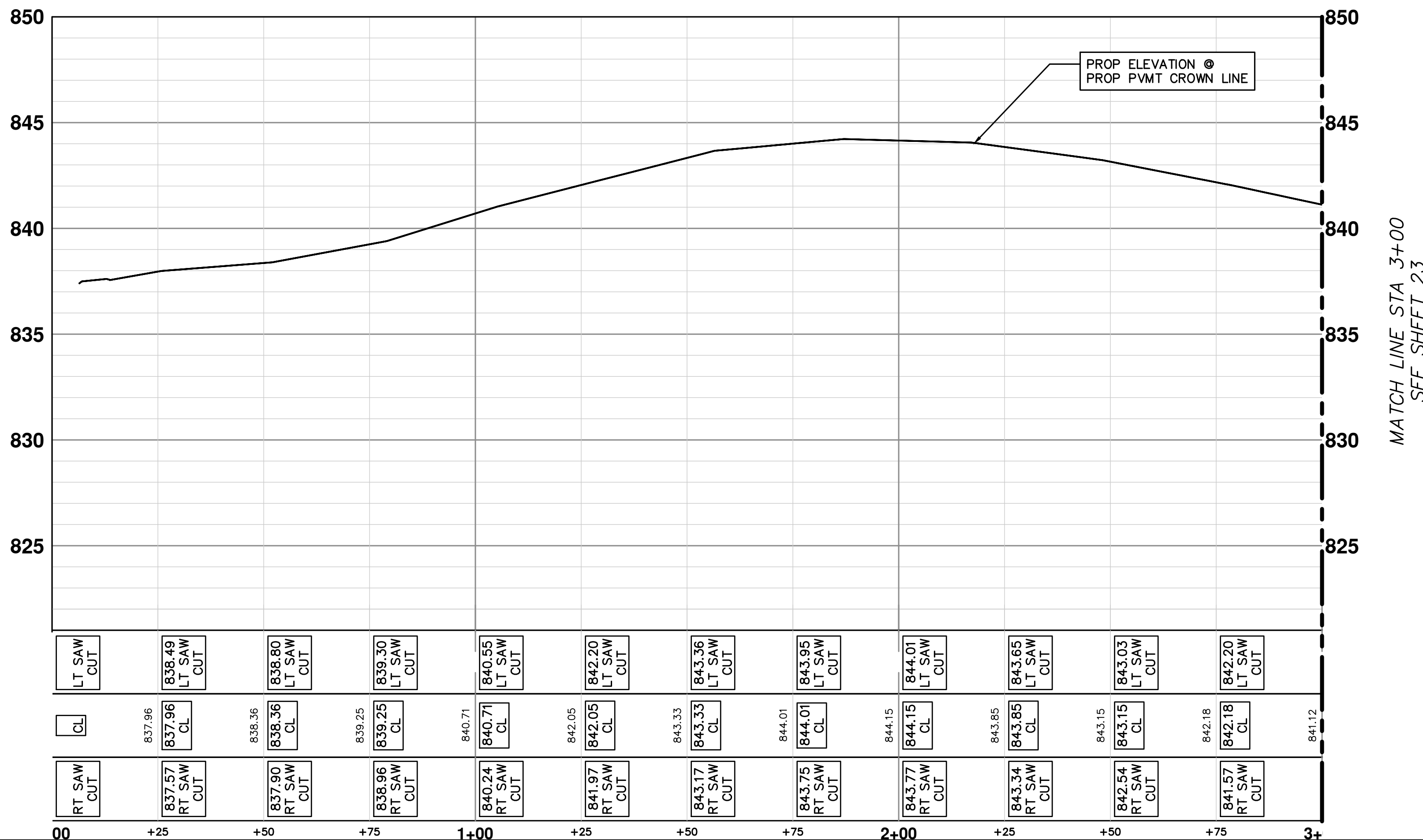
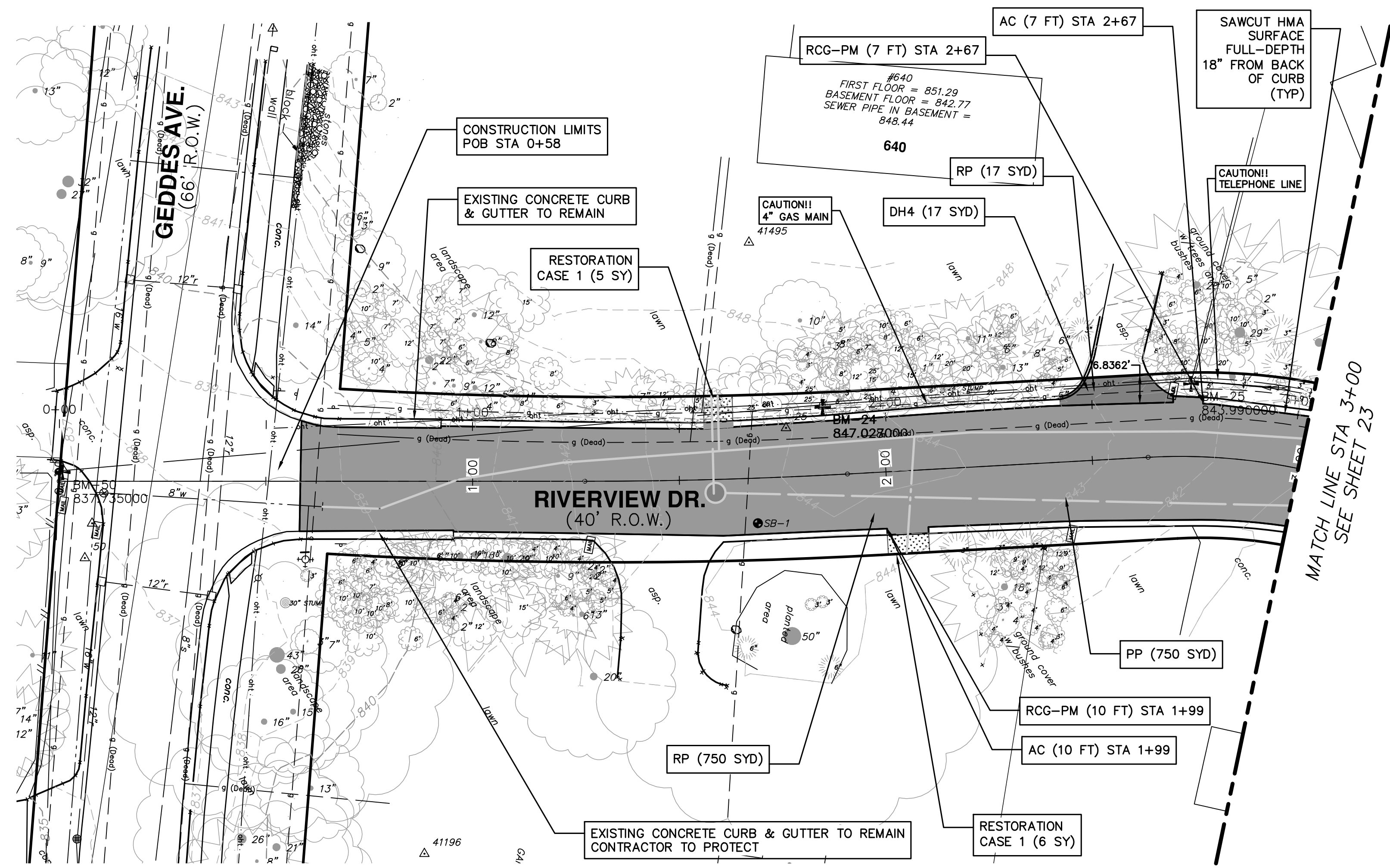
SCALE PLAN: 1"=20'

DRAWING No. 2017-031-21

REV.	DATE	DESCRIPTION
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR
07	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)
06	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR

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





**LEGEND**

- PROPOSED ROAD SURFACE
- PROPOSED HMA DRIVE
- PROPOSED RESTORATION

**CONSTRUCTION KEY**


DH4	PLACE 4" HMA DRIVE
DC6	PLACE 6" CONCRETE DRIVE APPROACH
RCG-PM	REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
RP	REMOVE EXISTING PAVEMENT - ANY THICKNESS SAWCUT AT REMOVAL LIMITS (INCLUDE IN WORK ITEM "HMA SURFACE, REM")
RLBO	RELOCATE BY OWNER
RRST	REMOVE & REPLACE EXISTING STORM SEWER-SIZE AS SHOWN ON PLAN
PP	PLACE ASPHALT PAVEMENT-MATERIAL AND THICKNESS PER TYPICAL CROSS SECTION
AC	PLACE ASPHALT CURB

**RESTORATION**  
 CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.

- NOTES**
- SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
  - SEE UTILITY SHEETS FOR WATER MAIN AND SANITARY STRUCTURE AND PIPE PLACEMENTS.
  - THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX. \_\_\_\_\_". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
  - THE EXISTING UTILITIES SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED THROUGH SURVEYS AND/OR EXISTING PLANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES. IF STORM, SANITARY OR WATER CROSS OTHER UTILITIES CONTACT THEIR RESPECTIVE OWNERS FOR INFORMATION ON HOW TO PROCEED. PAYMENT FOR COORDINATION EFFORTS, AND ASSOCIATED OTHER TASKS SHALL BE INCLUDED IN ASSOCIATED PROPOSED STORM, SANITARY, OR WATER MAIN ITEMS AND SHALL NOT BE PAID FOR SEPARATELY.
  - LANDSCAPING SHALL BE PROTECTED AT ALL TIMES. ANY DAMAGE TO LANDSCAPING OUTSIDE THE WORK ZONE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AND NOT PAID FOR SEPARATELY.
  - THE EXISTING ASPHALT CURB AND IMMEDIATELY ADJACENT PAVEMENT IS TO REMAIN IN PLACE. SEE PLAN FOR LOCATIONS WHERE PORTIONS OF THE CURB AND PAVEMENT ARE BEING REMOVED AND REPLACED. ANY DAMAGE TO THE CURB AND PAVEMENT OTHER THAN WHAT IS CALLED FOR ON THE PLANS AND AS DIRECTED BY THE ENGINEER TO BE REMOVED SHALL BE REPLACED AT THE CONTRACTOR'S SOLE EXPENSE AND NOT PAID FOR SEPARATELY.
  - CONTRACTOR SHALL SAWCUT 18" FROM BACK OF EXISTING ASPHALT CURB FULL DEPTH FOR A CLEAN EDGE. PAVEMENT REMOVAL SHALL BE ACCORDING TO AREAS SHOWN ON PLANS. IF SAWED EDGE IS DAMAGED DURING CONSTRUCTION ACTIVITIES A CLEAN EDGE WILL BE RE-ESTABLISHED AND ALL ADDITIONAL HMA REQUIRED TO ACCOUNT FOR EDGE CHANGE SHALL BE THE CONTRACTOR'S EXPENSE AND NOT PAID FOR SEPARATELY.
  - CONTRACTOR MUST MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION. THIS SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX. \_\_\_\_\_" AND NOT PAID FOR SEPARATELY.
  - PAVEMENT REMOVAL SHALL OCCUR IN STAGES AS PART OF SANITARY AND WATER MAIN INSTALLATION. ALL COSTS NECESSARY TO PERFORM THE PAVEMENT REMOVAL IN A PART-WIDTH MANNER SHALL BE DEEMED TO BE INCLUDED IN THE ITEM OF WORK "HMA SURFACE, REM" AND SHALL NOT BE PAID FOR SEPARATELY.
  - AT THE CONCLUSION OF UNDERGROUND UTILITY CONSTRUCTION, AND IN ACCORDANCE WITH THE DIRECTION OF THE ENGINEER, THE CONTRACTOR SHALL REMOVE THE UPPERMOST 2" LAYER OF MAINTENANCE GRAVEL THAT HAS BEEN PLACED WITHIN THE ROADWAY FOR MAINTENANCE OF TRAFFIC PURPOSES IN ORDER TO REMOVE ALL CONSTRUCTION DEBRIS, TRENCH SPOILS, OR ANY OTHER DELETERIOUS MATERIALS THAT MAY EXIST IN ORDER TO PROVIDE A PROPER SURFACE FOR THE FINE GRADING OF THE AGGREGATE BASE COURSE. THE CONTRACTOR SHALL THEN AUGMENT THE REMAINING MAINTENANCE AGGREGATE WITH ADDITIONAL MAINTENANCE AGGREGATE MATERIAL IN ORDER TO BRING THE AGGREGATE BASE COURSE TO ITS FINAL GRADE. IF IT IS DETERMINED BY THE ENGINEER THAT THE ENTIRE MAINTENANCE AGGREGATE CROSS SECTION HAS BECOME EXCESSIVELY CONTAMINATED BY THE CONTRACTOR'S OPERATION, EXHIBITS SIGNS OF IMPROPER SUBGRADE SUPPORT, OR IS NOT USABLE FOR ANY OTHER REASON, IN THE SOLE OPINION OF THE ENGINEER, IT SHALL BE COMPLETELY REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE PROJECT. THE CONTRACTOR SHALL THEN PROVIDE THE REQUIRED CROSS-SECTION OF AGGREGATE BASE COURSE MATERIAL AND PLACE, COMPACT, AND FINE GRADE IT IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT. CONTRACT TIME SHALL CONTINUE THROUGHOUT THE ENTIRE AGGREGATE REMOVAL AND REPLACEMENT OPERATION IF IT IS DETERMINED BY THE ENGINEER TO BE NECESSARY. IT IS THE INTENT OF THE CITY THAT THE MAINTENANCE AGGREGATE MATERIAL BE RE-USED TO THE EXTENT PRACTICABLE AND ALLOWED BY THE CONTRACTOR'S OPERATIONS.

LEFT GRADE	STATION	RIGHT GRADE
3.1%	0+53	-3.6%
-1.2%	1+00	-3.7%
0.2%	1+50	-1.3%
-1.0%	2+00	-2.7%
-1.0%	2+50	-4.2%
-0.1%	3+00	-3.7%

\* PROPOSED CROSS-SLOPES ARE RELATIVE TO CROWN ELEVATION



**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

PROPOSED PAVING STA 0+00 TO STA 3+00

REV.	DATE	DESCRIPTION
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR
06	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR
07	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR

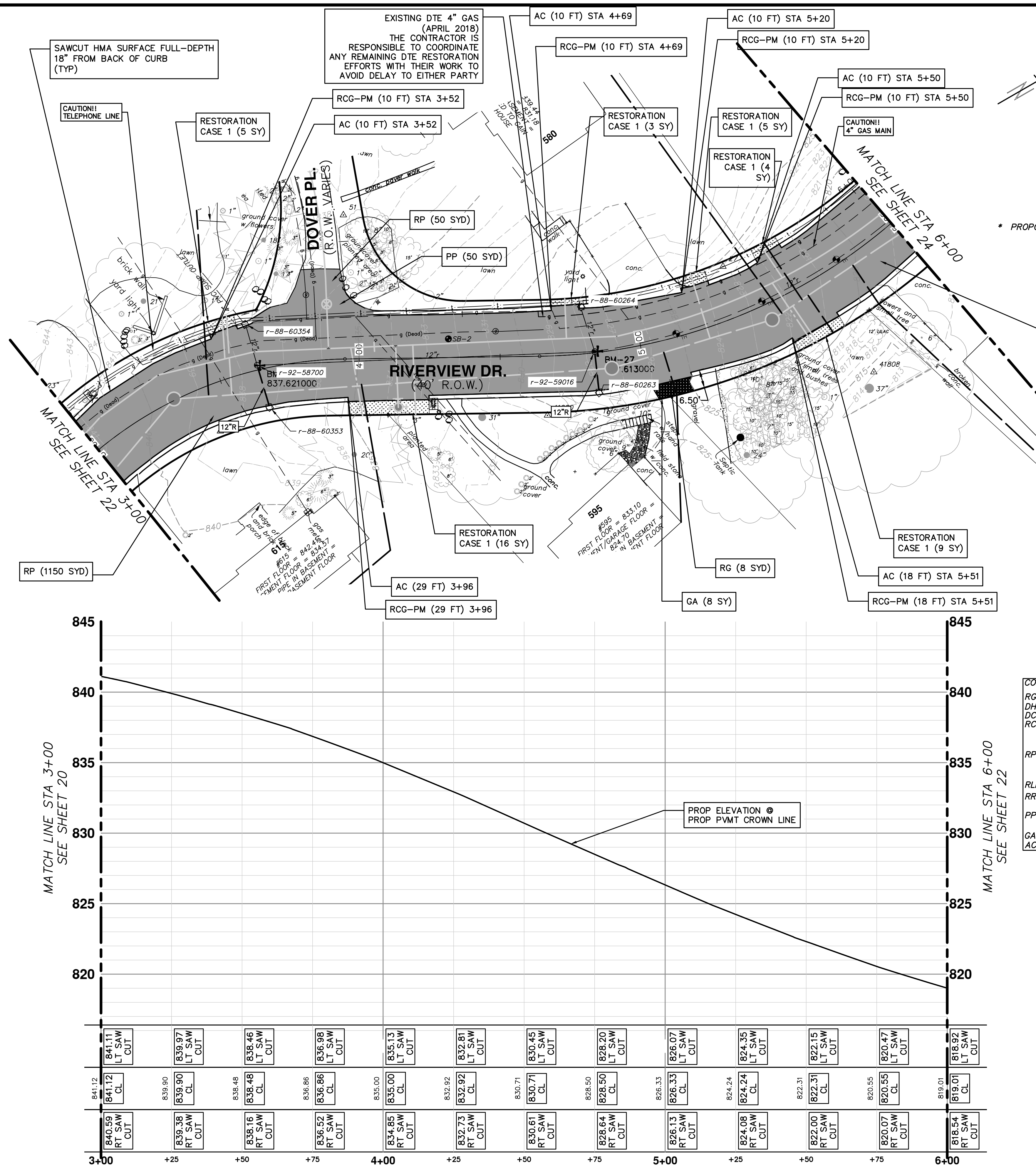
SCALE PLAN: 1" = 20'

PROFILE: 1" = 4'

DRAWING NO: 2017-031-22

SHEET NO: 22 OF 30





LEFT GRADE	STATION	RIGHT GRADE
-0.1%	3+00	-3.7%
0%	3+50	-2.5%
1.3%	4+00	-1%
-1.6%	4+50	-0.8%
-1.6%	5+00	-1.3%
-1.2%	5+50	-1.9%
-0.4%	6+00	-3.4%

\* PROPOSED CROSS-SLOPES ARE RELATIVE TO CROWN ELEVATION

**LEGEND**

- PROPOSED ROAD SURFACE
- PROPOSED GRAVEL
- PROPOSED RESTORATION

**RESTORATION**  
 CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.

**CONSTRUCTION KEY**

- RG REMOVE EXISTING GRAVEL ANY THICKNESS
- DH4 PLACE 4" HMA DRIVE
- DC6 PLACE 6" CONCRETE DRIVE APPROACH
- RCG-PM REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
- RP REMOVE EXISTING PAVEMENT - ANY THICKNESS SAWCUT AT REMOVAL LIMITS (INCLUDE IN WORK ITEM "HMA SURFACE, REM")
- RLBO RELOCATE BY OWNER
- RRST REMOVE & REPLACE EXISTING STORM SEWER-SIZE AS SHOWN ON PLAN
- PP PLACE ASPHALT PAVEMENT-MATERIAL AND THICKNESS PER TYPICAL CROSS SECTION
- GA PLACE GRAVEL APPROACH
- AC PLACE ASPHALT CURB

- NOTES**
- SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
  - SEE UTILITY SHEETS FOR WATER MAIN AND SANITARY STRUCTURE AND PIPE PLACEMENTS.
  - THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX. \_\_\_\_". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
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**STORM SEWER STRUCTURE TABLE**

STRUCTURE	ROAD STATION	INVERT ELEVATION, SIZE & DIRECTION	TOP OF CASTING ELEVATION	DEPTH (Feet)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
88-603541	3+63 -16.87' LT	12" SE 834.38	837.57	5.19	48" Dia.	
92-58700	3+64 -1.68' LT	12" NW 833.34 12" SE 832.24 (P) 12" NE 831.84	837.63 (e) 837.63 (P)	7.79	48" Dia.	STORM MANHOLE/ ADJUST COVER
88-60353	3+65 13.93' RT	12" NW 832.65 (P)	837.21	6.56	48" Dia.	
88-60263	4+84 14.38' RT	12" NW 825.05 (P)	828.01	4.96	48" Dia.	
92-59016	4+84 -0.39' LT	12" SW 823.21 12" NW 823.31 12" SE 823.91 (P) 12" NE 823.11	827.75 (e) 827.75 (P)	6.64	48" Dia.	STORM MANHOLE/ ADJUST COVER
88-60264	4+80 -16.61' LT	12" SE 823.93	827.73	5.80	48" Dia.	

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

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

PROPOSED PAVING STA 3+00 TO STA 6+00

**ANN ARBOR**

CITY OF ANN ARBOR - PUBLIC SERVICES  
 301 EAST HURON STREET  
 P.O. BOX 866  
 ANN ARBOR, MI 48107-0867  
 WWW.A2gov.org

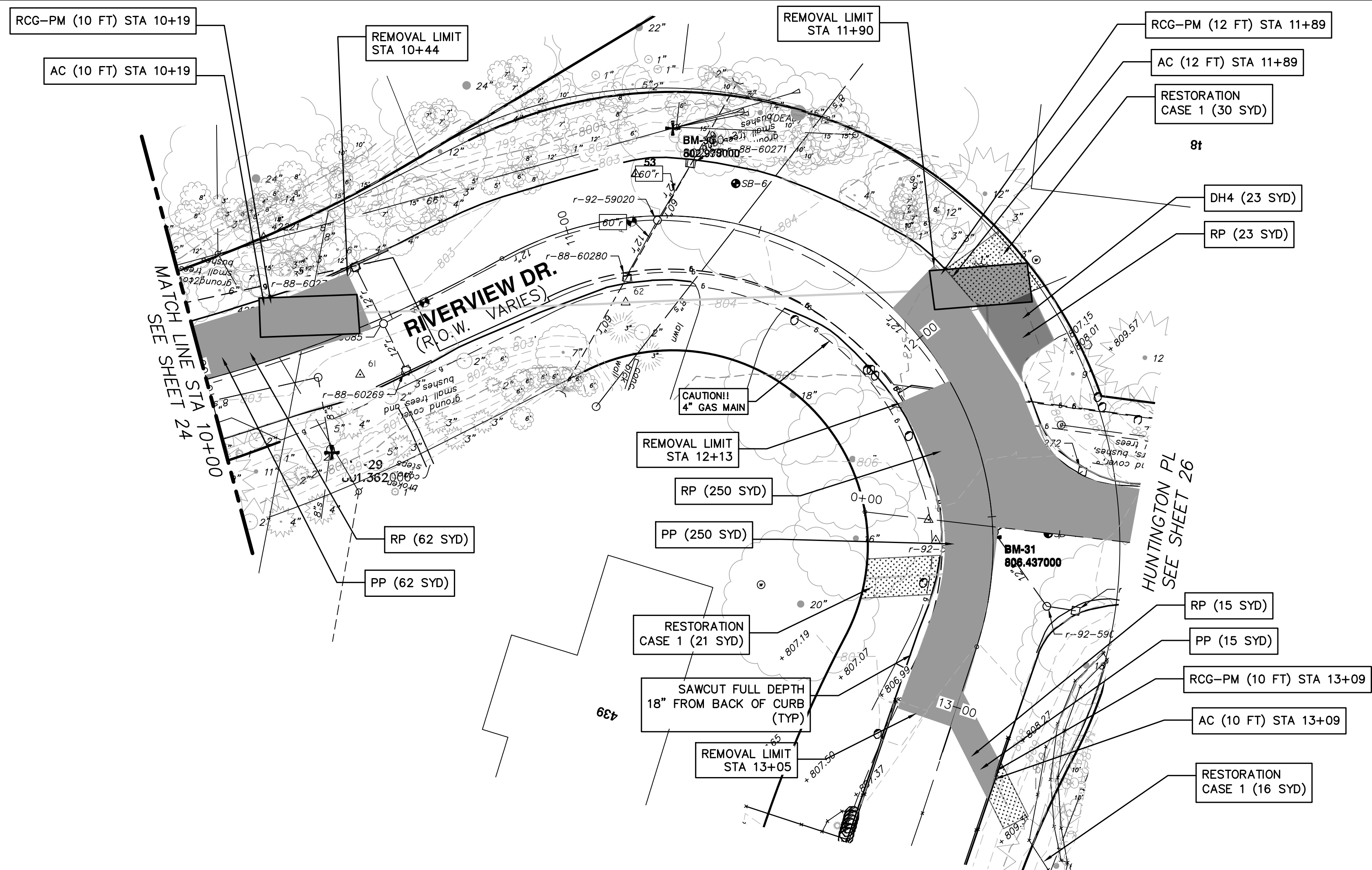
SHEET No. **23 OF 30**

SCALE PLAN: 1" = 20'  
 PROFILE: 1" = 4'  
 DRAWING No. **2017-031-23**









LEFT GRADE	STATION	RIGHT GRADE
0.9%	12+00	
1.0%	12+50	-0.9%
	13+00	-3.6%

\* PROPOSED CROSS-SLOPES ARE RELATIVE TO CROWN ELEVATION

**LEGEND**

- PROPOSED ROAD SURFACE
- PROPOSED GRAVEL
- PROPOSED RESTORATION

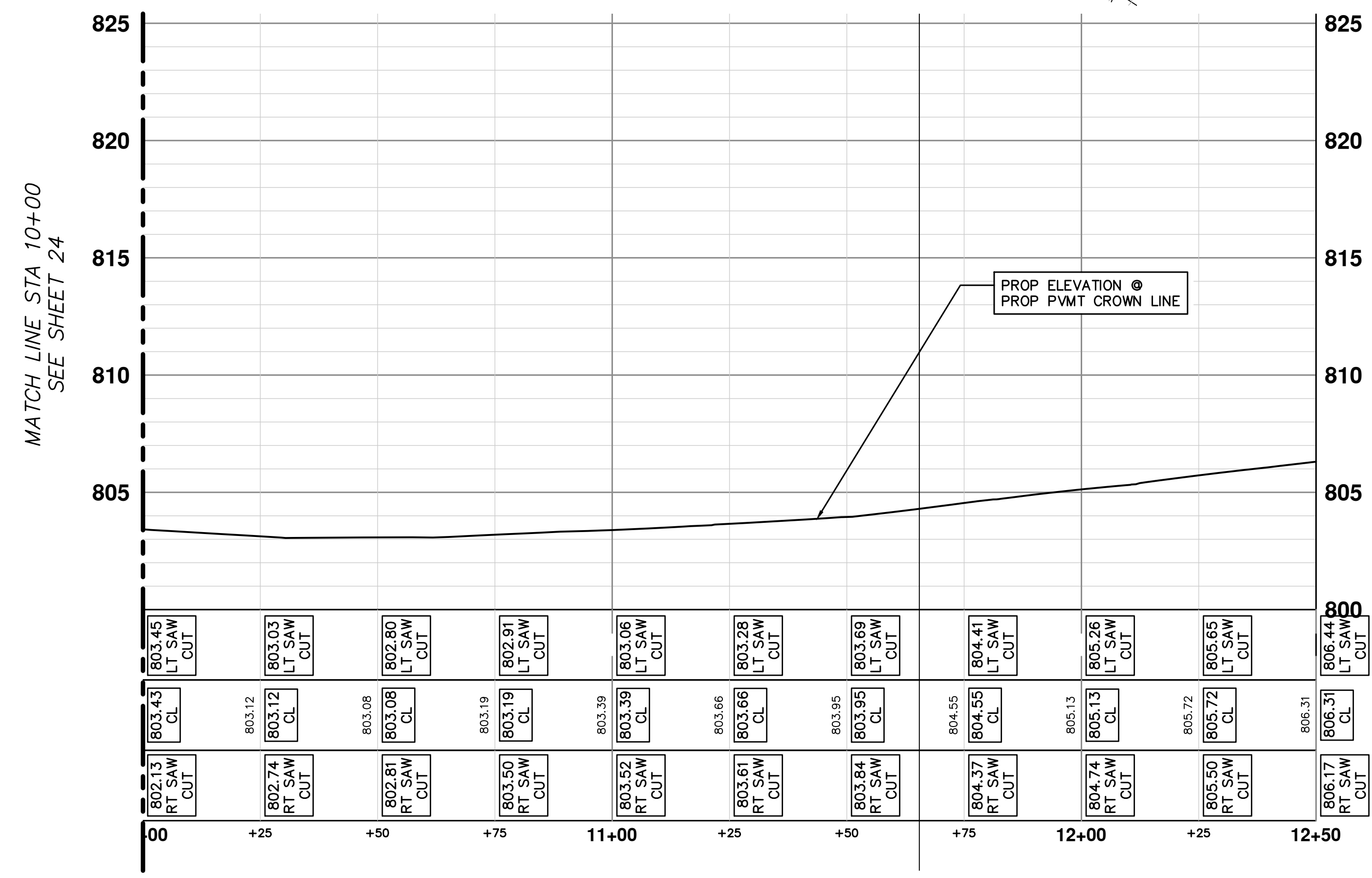
**RESTORATION**  
CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.

**CONSTRUCTION KEY**

- RG REMOVE EXISTING GRAVEL ANY THICKNESS
- DH4 PLACE 4" HMA DRIVE
- DC6 PLACE 6" CONCRETE DRIVE APPROACH
- RCG-PM REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
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- PP PLACE ASPHALT PAVEMENT-MATERIAL AND THICKNESS PER TYPICAL CROSS SECTION
- GA PLACE GRAVEL APPROACH
- AC PLACE ASPHALT CURB

**STORM SEWER STRUCTURE TABLE**

STRUCTURE	ROAD STATION	INVERT ELEVATION, SIZE & DIRECTION	TOP OF CASTING ELEVATION	DEPTH (Feet)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
88-60270	10+46 -14.28' LT	12" N 798.52	802.72	4.20	24" Dia.	
92-59085	10+47 1.44' RT	12" N 798.07 12" E 797.47 12" S 798.07 12" W 796.97	802.97	6.00	48" Dia.	
88-60269	10+48 14.67' RT	12" S 798.71	802.81	4.10	24" Dia.	
88-60271	11+31 -13.77' LT	12" N 792.06	803.16	11.10	24" Dia.	
92-59020	11+23 0.92' RT	12" N 791.80 12" E 796.30 12" S 791.80 12" W 795.50	803.60	11.80	48" Dia.	
88-60280	11+74 15.21' RT	12" S 791.69	803.29	11.60	24" Dia.	



- NOTES**
- SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
  - SEE UTILITY SHEETS FOR WATER MAIN AND SANITARY STRUCTURE AND PIPE PLACEMENTS.
  - THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX. \_\_\_\_\_". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
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**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

PROPOSED PAVING STA 10+00 TO STA 13+00

SCALE PLAN: 1" = 20'  
PROFILE: 1" = 4'

DRAWING NO. 2017-031-25

SHEET NO. 25 OF 30

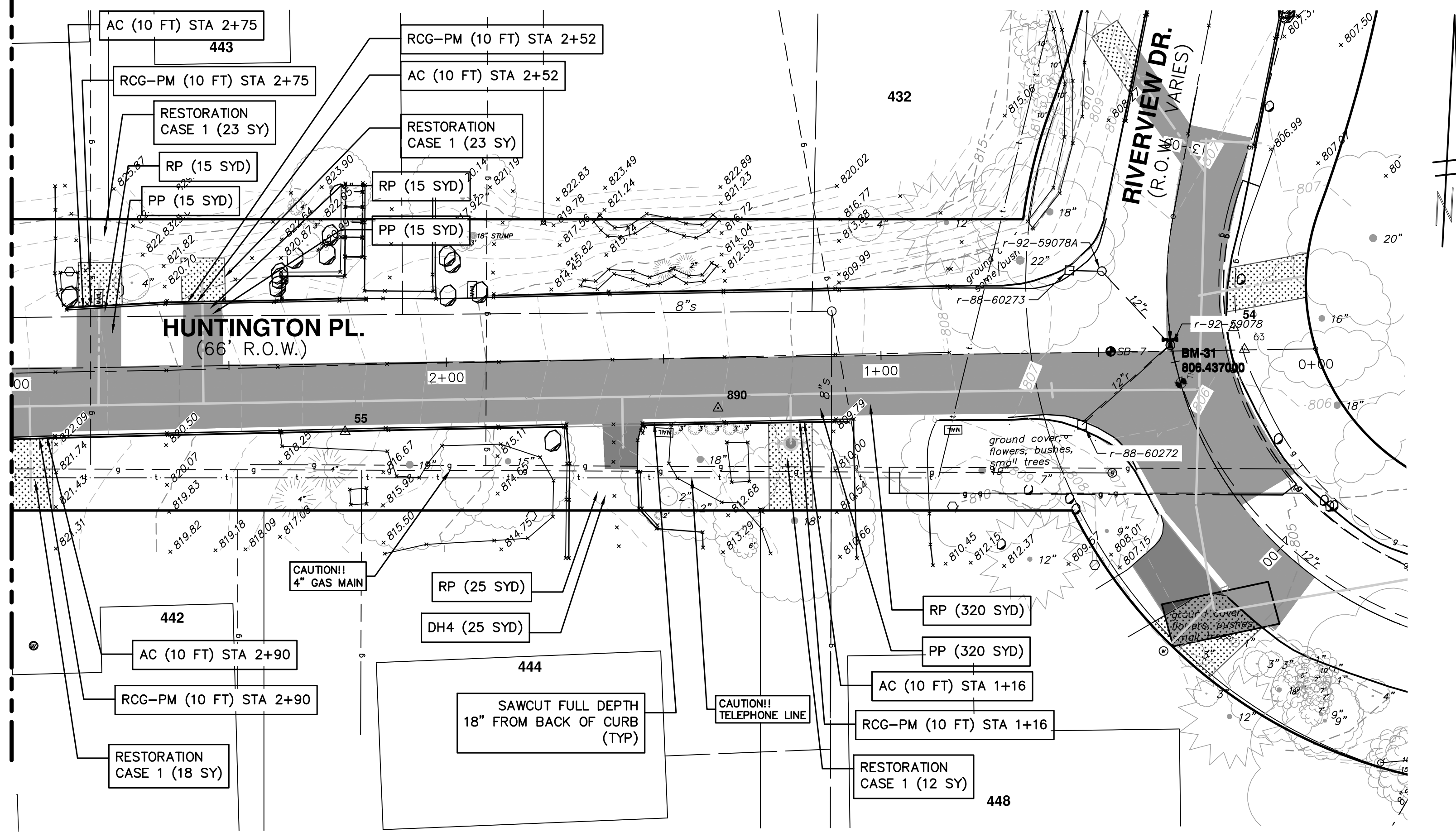
City of Ann Arbor Public Services  
301 East Huron Street  
Ann Arbor, MI 48106-6647  
www.aagov.org

City of Ann Arbor  
301 East Huron Street  
Ann Arbor, MI 48106-6647  
www.aagov.org



MATCH LINE STA 3+00  
SEE SHEET 27

MATCH LINE STA 3+00  
SEE SHEET 27



LEFT GRADE	STATION	RIGHT GRADE
0.1%	1+00	
-2.0%	1+50	
-1.0%	2+00	
-0.1%	2+50	

\* PROPOSED CROSS-SLOPES ARE RELATIVE TO CROWN ELEVATION

**LEGEND**

- PROPOSED ROAD SURFACE
- PROPOSED GRAVEL
- PROPOSED RESTORATION

**RESTORATION**

CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.

**CONSTRUCTION KEY**

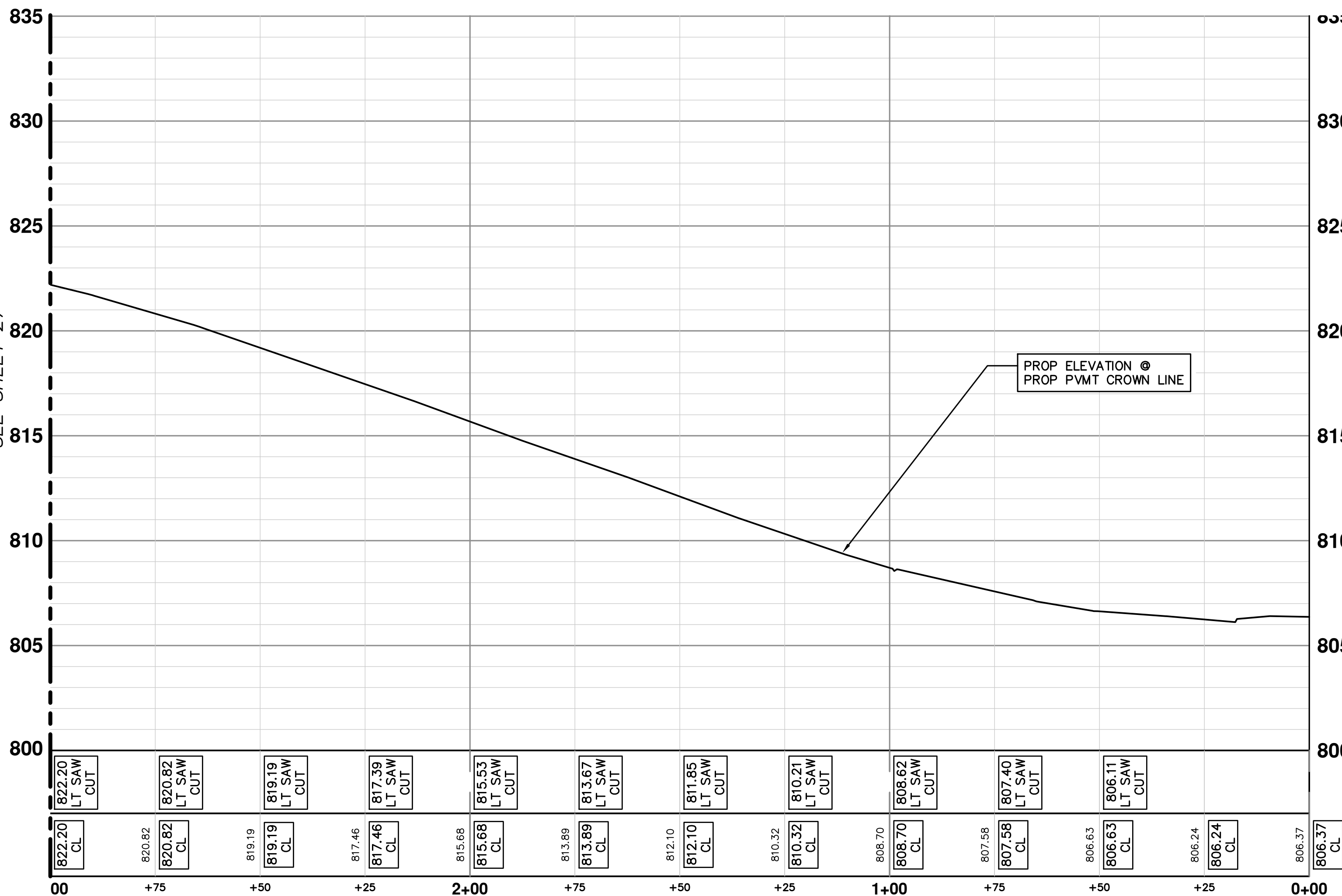
- RG REMOVE EXISTING GRAVEL ANY THICKNESS
- DH4 PLACE 4" HMA DRIVE
- DC6 PLACE 6" CONCRETE DRIVE APPROACH
- RCG-PM REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
- RP REMOVE EXISTING PAVEMENT -ANY THICKNESS SAWCUT AT REMOVAL LIMITS (INCLUDE IN WORK ITEM "HMA SURFACE, REM") RELOCATE BY OWNER
- RLBO REMOVE & REPLACE EXISTING STORM SEWER-SIZE AS SHOWN ON PLAN
- RRST REMOVE & REPLACE EXISTING STORM SEWER-SIZE AS SHOWN ON PLAN
- PP PLACE ASPHALT PAVEMENT-MATERIAL AND THICKNESS PER TYPICAL CROSS SECTION
- GA PLACE GRAVEL APPROACH
- AC PLACE ASPHALT CURB

**NOTES**

- 1: SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
- 2: SEE UTILITY SHEETS FOR WATER MAIN AND SANITARY STRUCTURE AND PIPE PLACEMENTS.
- 3: THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX. \_\_\_\_". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT BUT WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
- 4: THE EXISTING UTILITIES SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED THROUGH SURVEYS AND/OR EXISTING PLANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES. IF STORM, SANITARY, OR WATER CROSS OTHER UTILITIES CONTACT THEIR RESPECTIVE OWNERS FOR INFORMATION ON HOW TO PROCEED. PAYMENT FOR COORDINATION EFFORTS, AND ASSOCIATED OTHER TASKS SHALL BE INCLUDED IN ASSOCIATED PROPOSED STORM, SANITARY, OR WATER MAIN ITEMS AND SHALL NOT BE PAID FOR SEPARATELY.
- 5: LANDSCAPING SHALL BE PROTECTED AT ALL TIMES. ANY DAMAGE TO LANDSCAPING OUTSIDE THE WORK ZONE SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND NOT PAID FOR SEPARATELY.
- 6: THE EXISTING ASPHALT CURBS AND IMMEDIATELY ADJACENT PAVEMENT IS TO REMAIN IN PLACE. SEE PLAN FOR LOCATIONS WHERE PORTIONS OF THE CURB AND PAVEMENT ARE BEING REMOVED AND REPLACED. ANY DAMAGE TO THE CURB AND PAVEMENT OTHER THAN WHAT IS CALLED FOR ON THE PLANS AND AS DIRECTED BY THE ENGINEER TO BE REMOVED SHALL BE REPLACED AT THE CONTRACTORS SOLE EXPENSE AND NOT PAID FOR SEPARATELY.
- 7: CONTRACTOR SHALL SAWCUT 18" FROM BACK OF EXISTING ASPHALT CURB FULL DEPTH FOR A CLEAN EDGE. PAVEMENT REMOVAL SHALL BE ACCORDING TO AREAS SHOWN ON PLANS. IF SAWED EDGE IS DAMAGED DURING CONSTRUCTION ACTIVITIES A CLEAN EDGE WILL BE RE-ESTABLISHED AND ALL ADDITIONAL HMA REQUIRED TO ACCOUNT FOR EDGE CHANGE SHALL BE THE CONTRACTORS EXPENSE AND NOT PAID FOR SEPARATELY.
- 8: CONTRACTOR MUST MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION. THIS SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX. \_\_\_\_" AND NOT PAID FOR SEPARATELY.
- 9: PAVEMENT REMOVAL SHALL OCCUR IN STAGES AS PART OF SANITARY AND WATER MAIN INSTALLATION. ALL COSTS NECESSARY TO PERFORM THE PAVEMENT REMOVAL IN A PART-WIDTH MANNER SHALL BE DEEMED TO BE INCLUDED IN THE ITEM OF WORK "HMA SURFACE, REM" AND SHALL NOT BE PAID FOR SEPARATELY.
- 10: AT THE CONCLUSION OF UNDERGROUND UTILITY CONSTRUCTION, AND IN ACCORDANCE WITH THE DIRECTION OF THE ENGINEER, THE CONTRACTOR SHALL REMOVE THE UPPERMOST 2" LAYER OF MAINTENANCE GRAVEL THAT HAS BEEN PLACED WITHIN THE ROADWAY FOR MAINTENANCE OF TRAFFIC PURPOSES IN ORDER TO REMOVE ALL CONSTRUCTION DEBRIS, TRENCH SPOILS, OR ANY OTHER DELETERIOUS MATERIALS THAT MAY EXIST IN ORDER TO PROVIDE A PROPER SURFACE FOR THE FINE GRADING OF THE AGGREGATE BASE COURSE. THE CONTRACTOR SHALL THEN AUGMENT THE REMAINING MAINTENANCE AGGREGATE WITH ADDITIONAL MAINTENANCE AGGREGATE MATERIAL IN ORDER TO BRING THE AGGREGATE BASE COURSE TO ITS FINAL GRADE. IF IT IS DETERMINED BY THE ENGINEER THAT THE ENTIRE MAINTENANCE AGGREGATE CROSS SECTION HAS BECOME EXCESSIVELY CONTAMINATED BY THE CONTRACTOR'S OPERATION, EXHIBITS SIGNS OF IMPROPER SUBGRADE SUPPORT, OR IS NOT USABLE FOR ANY OTHER REASON, IN THE SOLE OPINION OF THE ENGINEER, IT SHALL BE COMPLETELY REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE PROJECT. THE CONTRACTOR SHALL THEN PROVIDE THE REQUIRED CROSS-SECTION OF AGGREGATE BASE COURSE MATERIAL AND PLACE, COMPACT, AND FINE GRADE IT IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT. CONTRACT TIME SHALL CONTINUE THROUGHOUT THE ENTIRE AGGREGATE REMOVAL AND REPLACEMENT OPERATION IF IT IS DETERMINED BY THE ENGINEER TO BE NECESSARY. IT IS THE INTENT OF THE CITY THAT THE MAINTENANCE AGGREGATE MATERIAL BE RE-USED TO THE EXTENT PRACTICABLE AND ALLOWED BY THE CONTRACTOR'S OPERATIONS.

STORM SEWER STRUCTURE TABLE						
STRUCTURE	ROAD STATION	INVERT ELEVATION, SIZE & DIRECTION	TOP OF CASTING ELEVATION	DEPTH (Feet)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
92-59078	0+33 1.35' RT	12" NW 801.78 12" SW 802.03 12" S 801.28	806.43	5.15	48" Dia.	
88-60272	0+54 -16.62' LT	12" NE 802.43	806.03	5.60	48" Dia.	
92-59078A	0+49 18.83' RT	12" W 802.22 12" SE 802.02	806.77 (e) 806.77 (P)	4.75	48" Dia.	STORM MANHOLE/ ADJUST COVER
88-60273	0+56 19.38' RT	12" E 802.45	806.65	6.20	48" Dia.	

SANITARY SEWER STRUCTURE TABLE						
STRUCTURE	ROAD STATION	INVERT ELEVATION, SIZE & DIRECTION	TOP OF CASTING ELEVATION	DEPTH (Feet)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
71-69930	1+11 10.37' RT	8" W 803.11 8" S 802.01	809.41	7.40	48" Dia.	



CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT

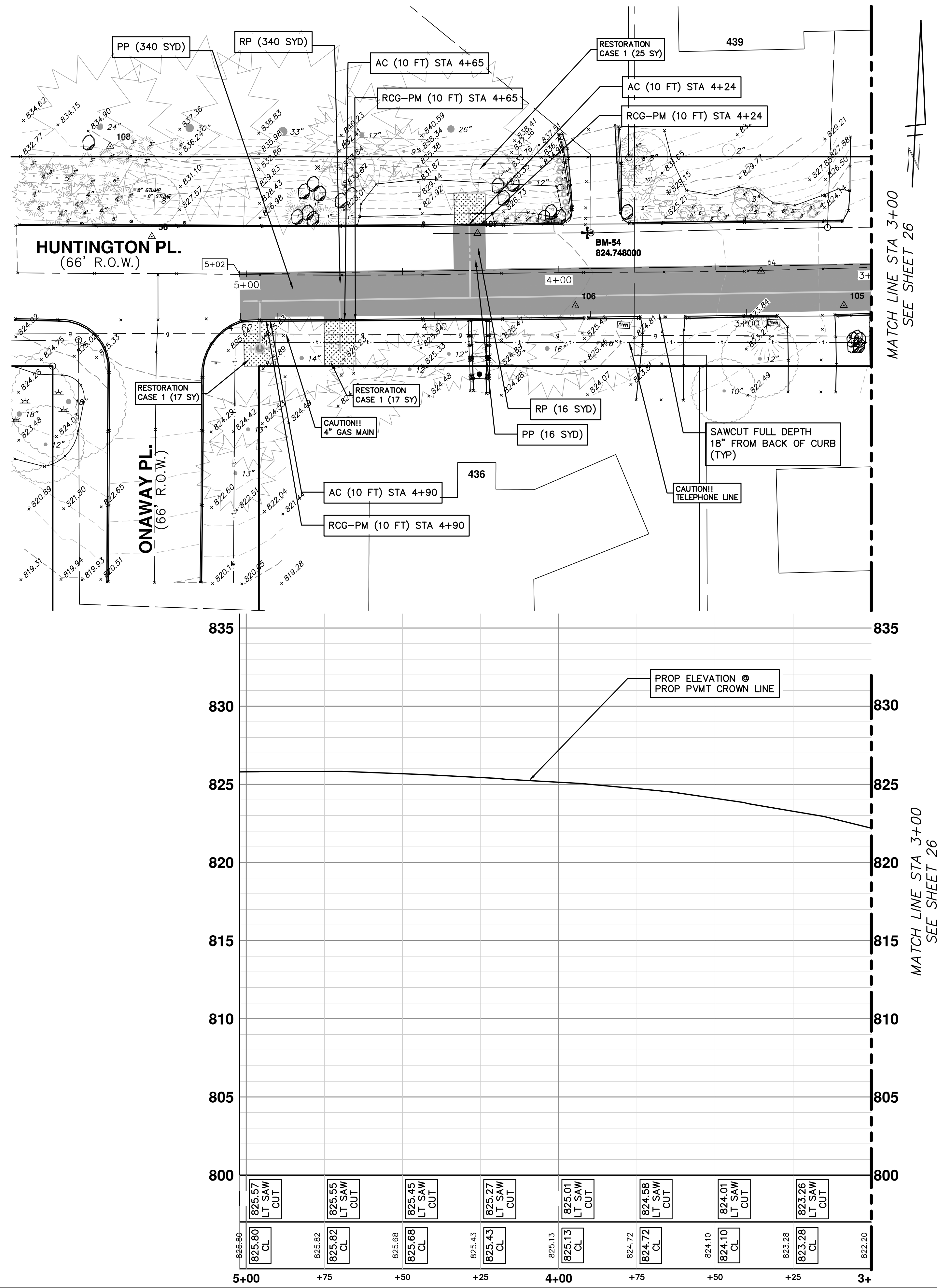
PROPOSED PAVING HUNTINGTON PLACE STA 0+00 TO STA 3+00

SCALE PLAN: 1" = 20' PROFILE: 1" = 4'

DRAWING NO. 2017-031-26

SHEET NO. 26 OF 30





LEFT GRADE	STATION	RIGHT GRADE
0%	3+00	
-0.75%	3+50	
-1.1%	4+00	
-1.6%	4+50	
-1.6%	5+00	

\* PROPOSED CROSS-SLOPES ARE RELATIVE TO CROWN ELEVATION

**LEGEND**

- PROPOSED ROAD SURFACE
- PROPOSED GRAVEL
- PROPOSED RESTORATION

**RESTORATION**  
CASE 1 - AREA TO BE RESTORED WITH 4-INCHES OF TOPSOIL, SEED AND MULCH BLANKET.

**CONSTRUCTION KEY**

- RG REMOVE EXISTING GRAVEL ANY THICKNESS
- DH4 PLACE 4" HMA DRIVE
- DC6 PLACE 6" CONCRETE DRIVE APPROACH
- RCG-PM REMOVE EXISTING ASPHALT CURB AND PAVEMENT, CONCRETE GUTTER OR CONCRETE CURB - ANY TYPE
- RP REMOVE EXISTING PAVEMENT - ANY THICKNESS SAWCUT AT REMOVAL LIMITS (INCLUDE IN WORK ITEM "HMA SURFACE, REM")
- RLBO RELOCATE BY OWNER
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- AC PLACE ASPHALT CURB

**SANITARY SEWER STRUCTURE TABLE**

STRUCTURE	ROAD STATION	INVERT ELEVATION, SIZE & DIRECTION	TOP OF CASTING ELEVATION	DEPTH (Feet)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
71-69931	3+14 11.95' RT	8" N 818.24 8" W 817.44 8" E 817.39	822.84	7.40	48" Dia.	
71-69932	3+89 11.41' RT	8" N 818.34 8" W 818.34 8" E 818.34	824.74	6.40	48" Dia.	

- NOTES**
- SEE SOIL EROSION CONTROL SHEETS FOR DETAILS ON PLACEMENT, MAINTENANCE, AND REMOVAL OF EROSION CONTROL ITEMS.
  - SEE UTILITY SHEETS FOR WATER MAIN AND SANITARY STRUCTURE AND PIPE PLACEMENTS.
  - THE CONTRACTOR SHALL CAREFULLY PROTECT FROM DAMAGE OR INJURY DURING CONSTRUCTION OPERATIONS ALL UTILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT. PAYMENT FOR PROTECTION OF UTILITIES INCLUDED IN "GENERAL CONDITIONS, MAX. \_\_\_\_". EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL OR ABANDONMENT BUT WHICH ARE DAMAGED BY THE CONTRACTORS OPERATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE, AS DETERMINED BY THE ENGINEER.
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**811**  
Know what's below. Call before you dig.

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

PROPOSED PAVING HUNTINGTON PLACE STA 3+00 TO STA 5+02.12

**CITY OF ANN ARBOR PUBLIC SERVICES**  
301 EAST HURON STREET  
PO BOX 8647  
ANN ARBOR MI 48107-8647  
www.aagov.org

**CITY OF ANN ARBOR**

SHEET No. 27 OF 30

SCALE PLAN: 1" = 20'  
PROFILE: 1" = 4'

DRAWING No. 2017-031-27



TRAFFIC CONTROL SIGN

SIGN	NUMBER	QUANTITY
1 ROAD WORK AHEAD	W20-1 48x48	4
2 RIVERVIEW DR	D3-1	4
3 HUNTINGTON PL	D3-1	4
4 ONE LANE ROAD AHEAD	W20-7a 48x48	2
5 BARRICADE, TYPE III, HIGH INTENSITY, LIGHTED	W20-4 48x48	2
6 END ROAD WORK	G20-2 48x24	2

- CHANNELIZING DEVICE
- T TEMPORARY SIGN
- TRAFFIC REGULATOR
- ← LIGHTED ARROW (CAUTION MODE)
- ▨ WORK ZONE
- - - CONSTRUCTION LIMITS



Identifier : D3-1 ;  
1.63" Radius, 0.63" Border, 0.38" Indent, Black on, Orange;  
[RIVERVIEW] C; [DR] C;

Table of widths and spaces

4.93	R	2.74	1.05	0.70	0.85	V	3.04	0.85	E	2.50	0.84	R	2.74	0.84	V	3.05	0.84	I	1.05	E	2.50	0.57	3.75
3.00	D	2.73	1.05	R	2.74	4.93																	



Identifier : D3-1 ;  
1.50" Radius, 0.75" Border, 0.50" Indent, Black on, Orange;  
[HUNTINGTON] C; [PL] C;

Table of widths and spaces

2.54	H	2.73	1.05	U	2.74	1.05	N	2.73	0.85	T	2.50	0.84	I	1.05	N	2.73	1.06	G	2.73	0.85	T	2.50	0.84	O	2.89	1.05	N	2.74
3.00	P	2.73	1.05	L	2.50	2.54																						

- GENERAL NOTES:
- 1: ALL TRAFFIC CONTROL DEVICES SHALL MEET CURRENT MDOT, MMUTCD AND CITY OF ANN ARBOR STANDARDS.
  - 2: CONTRACTOR IS RESPONSIBLE FOR ALL CITY OF ANN ARBOR PERMITS. SEE SHEET NO.3 FOR ADDITIONAL INFORMATION.
  - 3: CONTRACTOR IS TO CONTINUOUSLY MAINTAIN ALL TRAFFIC CONTROL DEVICES.
  - 4: CONTRACTOR TO MAINTAIN 2-WAY TRAFFIC USING FLAGGER OPERATIONS AND AS DETAILED IN THE SPECIFICATIONS AND PLAN SHEETS (SEE DETAILS AND NOTES BELOW).
  - 5: CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES AT ALL TIMES AND PROVIDE ACCESS FOR EMERGENCY VEHICLES, MAIL DELIVERY, GARBAGE PICKUP AND RELATED SERVICES THROUGHOUT THE ENTIRE PROJECT TIMELINE.
  - 6: CONTRACTOR SHALL PROTECT ALL WORK ZONES AT ALL TIMES.

STAGING NOTES:

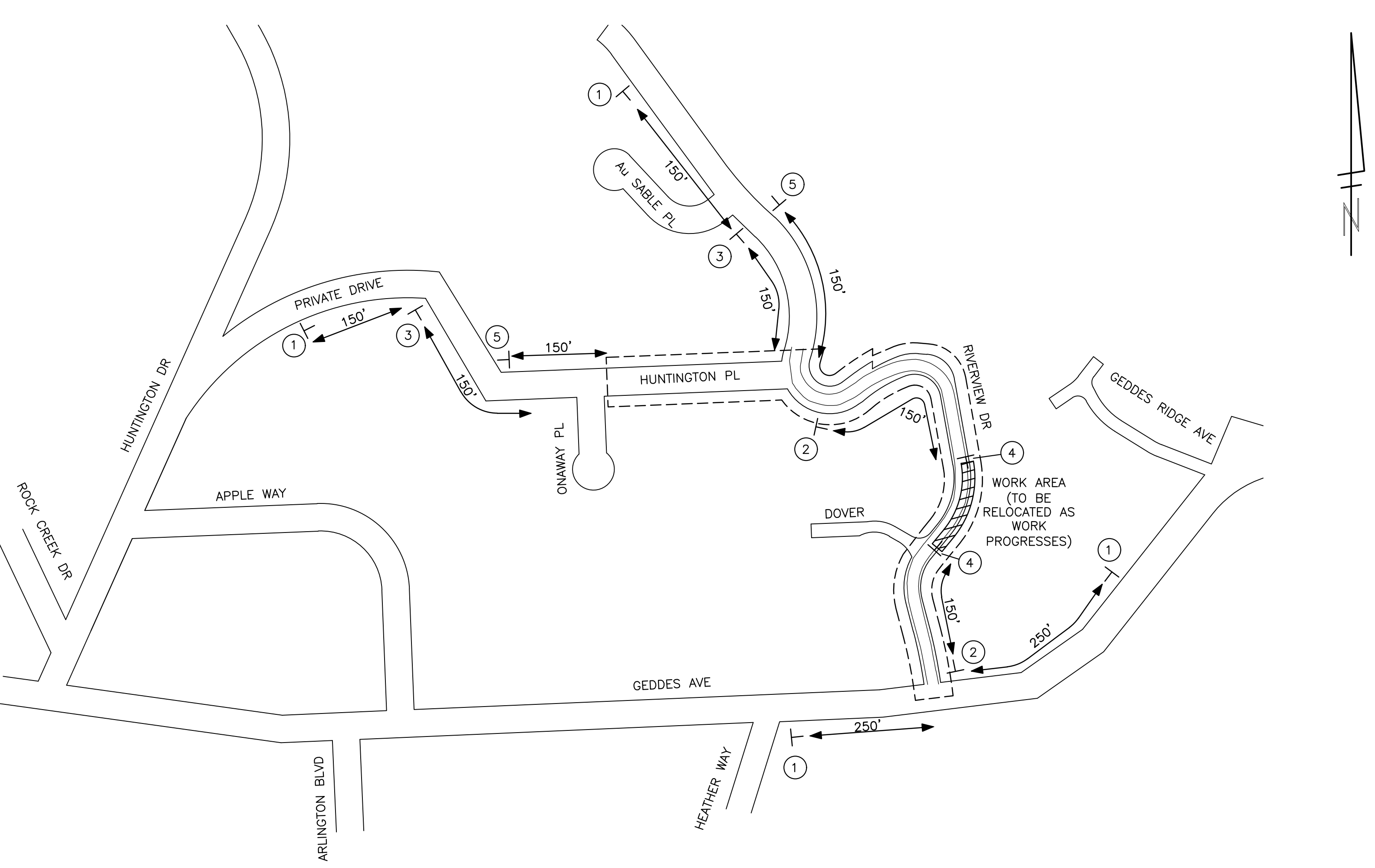
STAGE 1  
CONSTRUCTION OF THE SANITARY SEWER WILL BEGIN AT MH S-71-69938 AND PROGRESS TO THE SOUTH. MAINTAIN TWO-WAY VEHICULAR AND PEDESTRIAN TRAFFIC USING ROLLING LANE CLOSURES AS DETAILED HEREIN. CONSTRUCTION OF THE SEWER WILL BE COMPLETED IN INCREMENTS WITH 50 FOOT BUFFER ZONES.

STAGE 2  
CONSTRUCTION OF THE WATER MAIN WILL BEGIN AT THE SOUTH END OF THE PROJECT AND PROGRESS TO THE NORTH. MAINTAIN TWO-WAY VEHICULAR AND PEDESTRIAN TRAFFIC USING ROLLING LANE CLOSURES AS DETAILED HEREIN. CONSTRUCTION OF THE SEWER WILL BE COMPLETED IN INCREMENTS WITH 50 FOOT BUFFER ZONES.

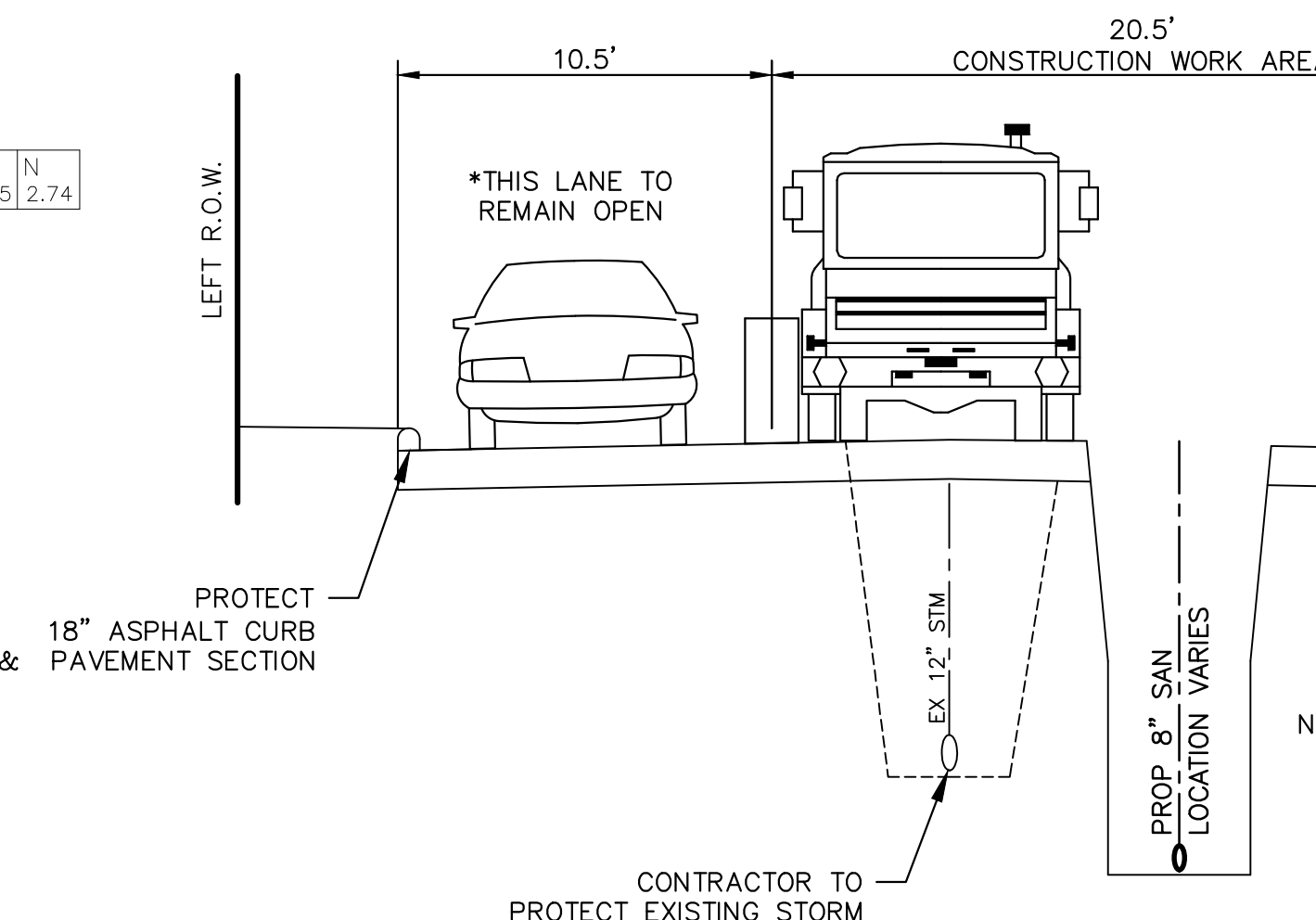
CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS.

PRIOR TO BEGINNING CONSTRUCTION IN EACH PHASE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE, STORE AND PROTECT THE EXISTING ROADWAY GUIDE AND REGULATORY SIGNS THAT ARE WITHIN THE PROJECT CONSTRUCTION LIMITS. THE SIGNS WILL BE REINSTALLED BY THE CITY FORCES AT THE CONCLUSION OF THE PROJECT. THIS WORK SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS, MAX. ....".

REFERENCE THE "DETAILED SPECIFICATION FOR MAINTAINING TRAFFIC AND CONSTRUCTION SEQUENCING" FOR ADDITIONAL PROJECT REQUIREMENTS. THE CONTRACTOR'S ATTENTION IS SPECIFICALLY DIRECTED TO THE SECTION OF THE SAME DETAILED SPECIFICATION REGARDING COORDINATING WITH THE CITY PUBLIC WORKS SIGNS AND SIGNALS UNIT.



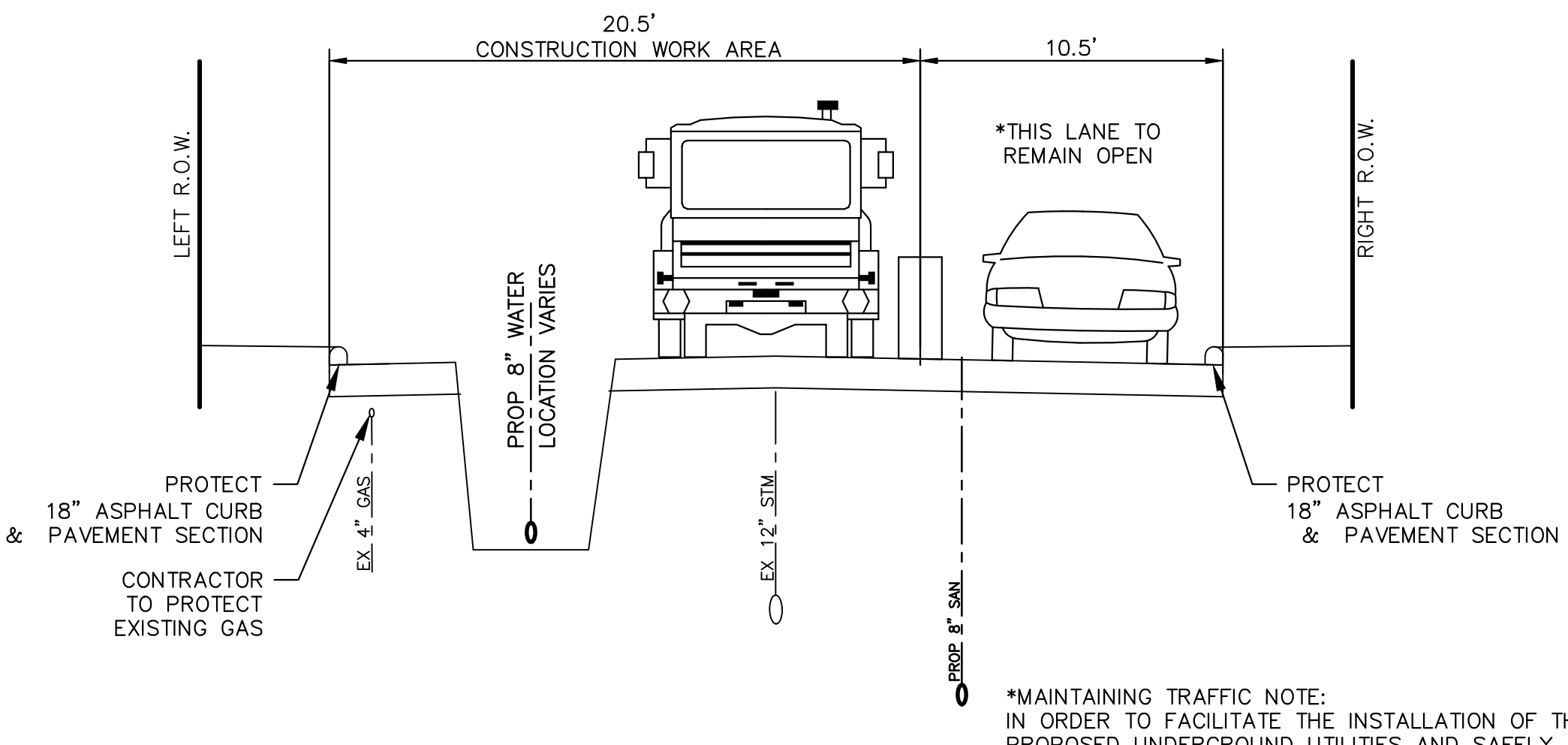
RIVERVIEW DRIVE ROLLING CLOSURE  
NOT TO SCALE



STAGE 1  
SCALE: 1"=5'

NOTE:  
SANITARY DEPTH SHOWN IS TYPICAL. IN AREAS WHERE THE SEWER IS GREATER IN DEPTH, IT MAY NOT BE POSSIBLE TO HAVE THE HAUL TRUCK PARALLEL TO THE TRENCH AS SHOWN. IN THAT EVENT, AN ALTERNATE METHOD TO REMOVE SPOILS SHALL BE EMPLOYED BY THE CONTRACTOR WHILE MAINTAINING ONE LANE OF TWO-WAY TRAFFIC.

REFERENCE THE CONTRACT DOCUMENTS REGARDING THE APPLICABLE PROVISIONS FOR TRENCH SHEETING & SHORING AND PROTECTING THE EXISTING FEATURES, THE WORK, AND ALL EMPLOYED IN THE CONSTRUCTION AND INSPECTION OF THE WORK.



STAGE 2  
SCALE: 1"=5'

\*MAINTAINING TRAFFIC NOTE:  
IN ORDER TO FACILITATE THE INSTALLATION OF THE PROPOSED UNDERGROUND UTILITIES AND SAFELY MAINTAIN TRAFFIC, THE CONTRACTOR SHALL BE ALLOWED TO WORK TO INSTALL THE UNDERGROUND UTILITIES UNINTERRUPTED. HOWEVER, ONCE EVERY 30 MINUTES (AT THE TOP AND BOTTOM OF EACH WORKING HOUR) THE CONTRACTOR SHALL CLEAR HIS EQUIPMENT AND TRUCKS FROM THE REMAINING LANE OF RIVERVIEW DRIVE FOR 5 MINUTES TO ALLOW LOCAL TRAFFIC TO PASS. THE CONTRACTOR SHALL THEN RESUME WORKING UNTIL THE NEXT CLEARANCE INTERVAL OCCURS.

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

REV.	DATE	DESCRIPTION	DRAWN	CHECKED
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	VCN
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	VCN
07	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	MF	VCN
06	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	VCN
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	VCN

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

MAINTENANCE OF TRAFFIC PLAN

SHEET No. **28 OF 30**

SCALE PLAN: 1"=500'

DRAWING No. **2017-031-28**



Line	PayItemCode	SupplementalDescription	Units	Quantity
1	4027050	Exploratory Excavation (0 - 10' deep), Special	Ea	12
2	4037050	Dr Structure Cover, Type B, Special	Ea	1
3	8237001	Excavate & Backfill for Water Service Tap and Lead	Ft	649
4	8237001	PC 350, D.I. Water Main, w/Polyethylene Wrap, 12 inch, Tr Det I, Mod	Ft	1515
5	8237001	PC 350, D.I. Water Main, w/Polyethylene Wrap, 6 inch, Tr Det I, Mod	Ft	6
6	8237001	PC 350, D.I. Water Main, w/Polyethylene Wrap, 8 inch, Tr Det I, Mod	Ft	194
7	8237001	Water Main, HDPE, 10 inch, Directional Drill	Ft	352
8	8237001	Water Main, HDPE, 14 inch, Directional Drill	Ft	205
9	8237050	11.25 deg Bend, 12 inch	Ea	9
10	8237050	11.25 deg Bend, 8 inch	Ea	1
11	8237050	22.5 deg Bend, 12 inch	Ea	5
12	8237050	22.5 deg Bend, 8 inch	Ea	1
13	8237050	45 deg Bend, 12 inch	Ea	15
14	8237050	45 deg Bend, 8 inch	Ea	16
15	8237050	90 deg Bend, 14 inch	Ea	1
16	8237050	90 deg Bend, 8 inch	Ea	1
17	8237050	Cap, 12 inch	Ea	1
18	8237050	Cap, 8 inch	Ea	1
19	8237050	Fire Hydrant Assembly, with Extensions, Complete	Ea	6
20	8237050	Gate Valve-in-Box, 12 inch	Ea	4
21	8237050	Gate Valve-in-Well, 8 inch	Ea	1
22	8237050	Permanent Blow-Off	Ea	1
23	8237050	Reducer, 10 inch x 8 inch	Ea	4
24	8237050	Reducer, 12 inch x 8 inch	Ea	1
25	8237050	Reducer, 14 inch x 12 inch	Ea	2
26	8237050	Reducer, 8 inch x 6 inch	Ea	6
27	8237050	Tee, 12 inch x 12 inch x 12 inch	Ea	1
28	8237050	Tee, 12 inch x 12 inch x 8 inch	Ea	7
29	8237050	Tee, 8 inch x 8 inch x 8 inch	Ea	1
30	8237050	Water Service Connection to HDPE Water Main	Ea	4
31	4037050	Dr Structure Cover, Type Q, Special	Ea	8
32	8507001	Dr Structure, Manhole, Type I, 48 inch dia, Sanitary, Add Depth	Ft	15
33	8507001	Sewer, SDR 35 PVC Pipe, 8 inch, Tr Det I	Ft	841
34	8507001	Sewer, SDR 35 PVC Pipe, Riser, 4 inch	Ft	8
35	8507001	Sewer, SDR 35 PVC, Drop Connection, 8 inch	Ft	15
36	8507001	Sewer, SDR 35 PVC, Service Lead, 4 inch, Tr Det I	Ft	182
37	8507021	Pipe Undercut & Refill (6A Limestone)	Cyd	23
38	8507050	Dr Structure, Manhole, Type I, 48 inch dia, Sanitary	Ea	8
39	8507050	Sewer Tap, 8 inch	Ea	1
40	8507050	Sewer, 8 inch x 8 inch x 4 inch Tee, SDR 35 PVC	Ea	9
41	2037001	Sewer, Any Size or Depth, Rem	Ft	259
42	2047001	Curb, Any Type or Size, Rem	Ft	678
43	2050041	Subgrade Undercutting, Type II	Cyd	120
44	2057002	Machine Grading, Modified, Dover	Sta	2.5
45	2057002	Machine Grading, Modified, Huntington Pl	Sta	7
46	2057002	Machine Grading, Modified, Riverview Drive	Sta	10
47	2080036	Erosion Control, Silt Fence	Ft	200
48	2087050	Erosion Control, Inlet Filter	Ea	14
49	3027011	Aggregate Base, 8 inch, 21AA Modified	Syd	5505
50	3060021	Maintenance Gravel, LM	Cyd	1494
51	3067031	Aggregate Surface Course, 23A	Ton	64
52	3070021	Approach, CI II	Ton	3
53	4027001	Sewer, CI C76 IV, 12 inch, Tr Det I, Modified	Ft	259
54	4037001	Additional Depth Structure Adjust/Repair	Ft	6
55	4037050	Adjust Structure Cover	Ea	6
56	5010005	HMA Surface, Rem	Syd	5205
57	5010703	HMA, LVSP	Ton	1340
58	5017031	HMA Approach, LVSP, Special	Ton	50
59	8027001	Curb, Conc, E4	Ft	20
60	8057001	Curb Sloped, HMA, Special	Ft	678
61	8167011	Double Shredded Hardwood Bark Mulch, 6 inch	Syd	35
62	8167011	Hydroseeding	Syd	520
63	8167011	Topsoil Surface, 4 inch	Syd	520
64	8167011	Topsoil Surface, 6 inch	Syd	35
65	1047051	Audiovisual Recording	LSUM	1
66	1047051	Certified Payroll Compliance and Reporting	LSUM	1
67	1047051	General Conditions, Max xxxx	LSUM	1
68	8087001	Protective Fence, Orange, Plastic, 4 Foot Ht.	Ft	200
69	8120022	Barricade, Type III, High Intensity, Lighted, Furn	Ea	4
70	8120023	Barricade, Type III, High Intensity, Lighted, Oper	Ea	4
71	8120250	Plastic Drum, High Intensity, Furn	Ea	50
72	8120251	Plastic Drum, High Intensity, Oper	Ea	50
73	8120350	Sign, Type B, Temp, Prismatic, Furn	Sft	160
74	8120351	Sign, Type B, Temp, Prismatic, Oper	Sft	160
75	8120370	Traf Regulator Control	LSUM	1
76	8127051	Minor Traffic Devices, Max _____	LSUM	1
77	8167051	Project Clean-Up and Restoration, Special	LSUM	1

**CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING**

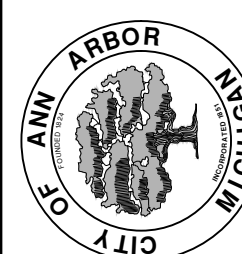
**RIVERVIEW DRIVE SANITARY SEWER AND WATER MAIN EXTENSION PROJECT**

SUMMARY OF QUANTITIES

SCALE: NONE

DRAWING No. 2017-031-29

SHEET No. 29 OF 30

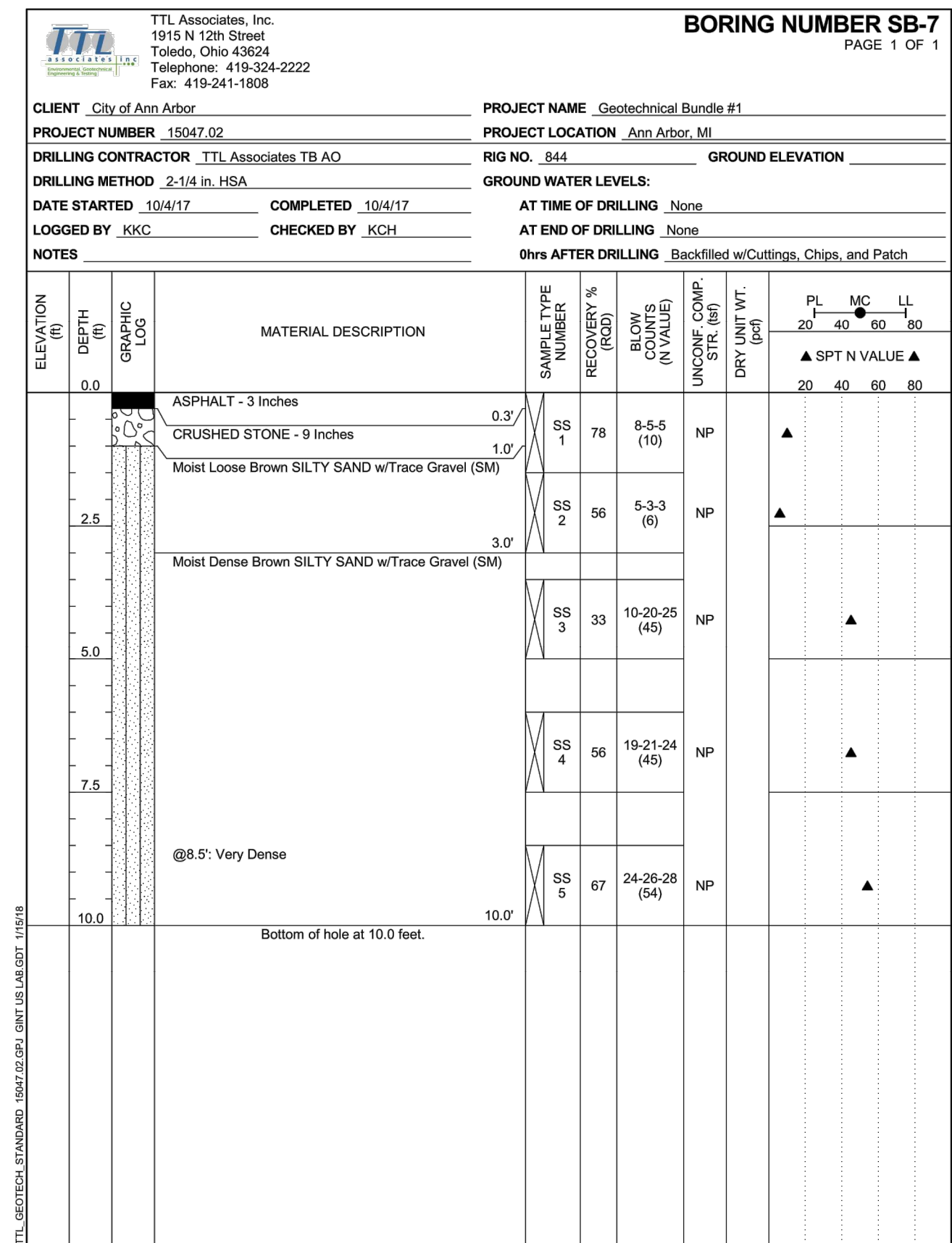
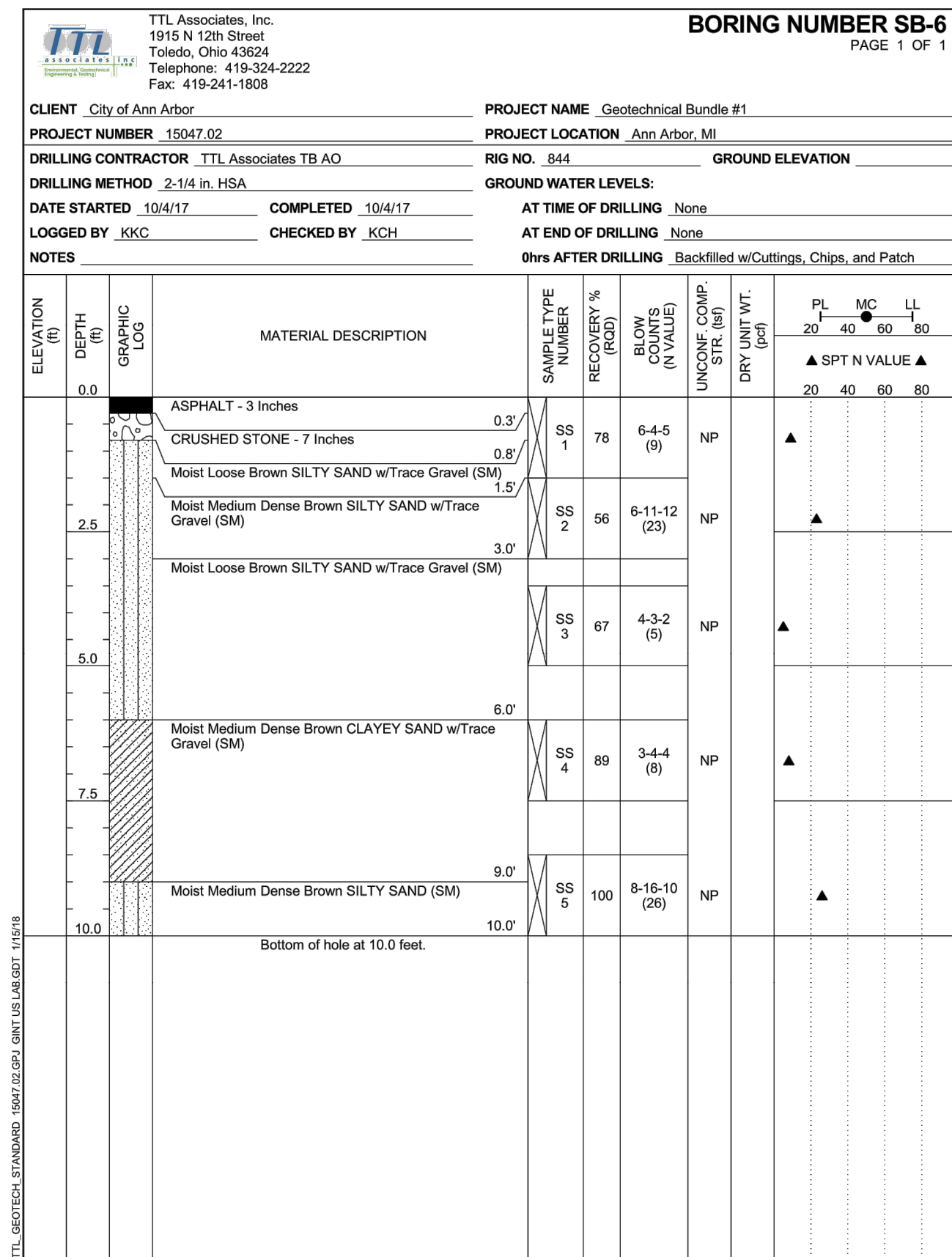
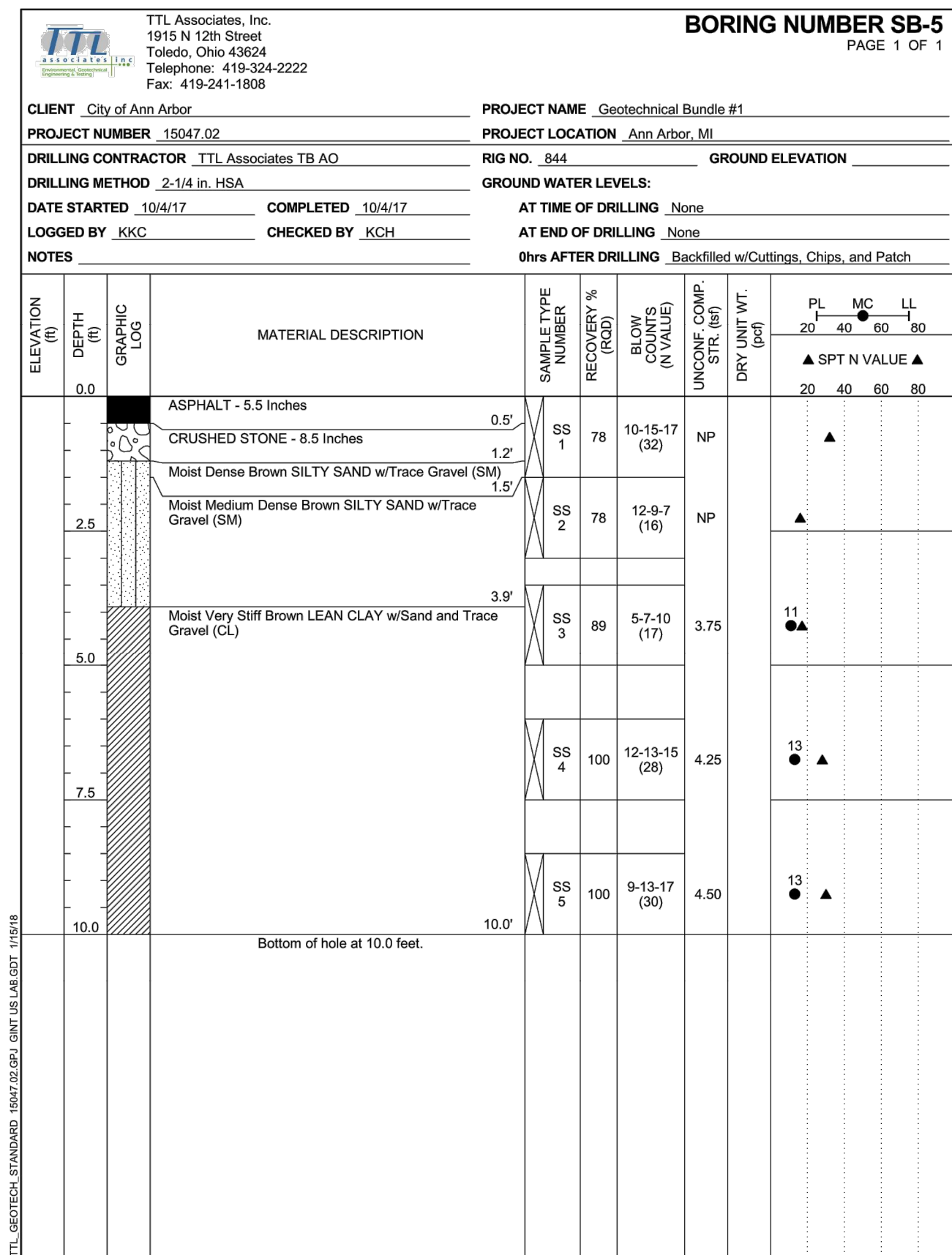
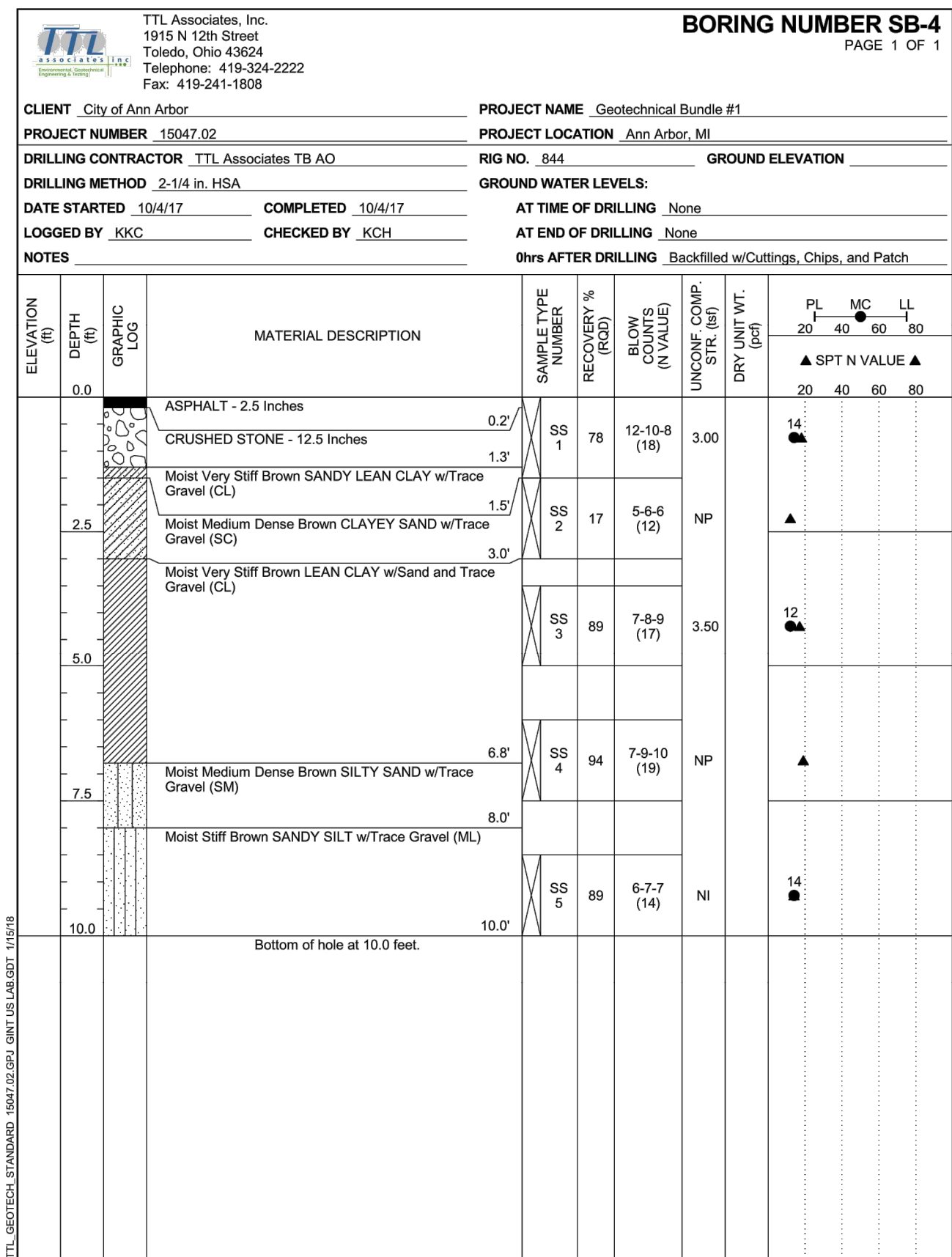
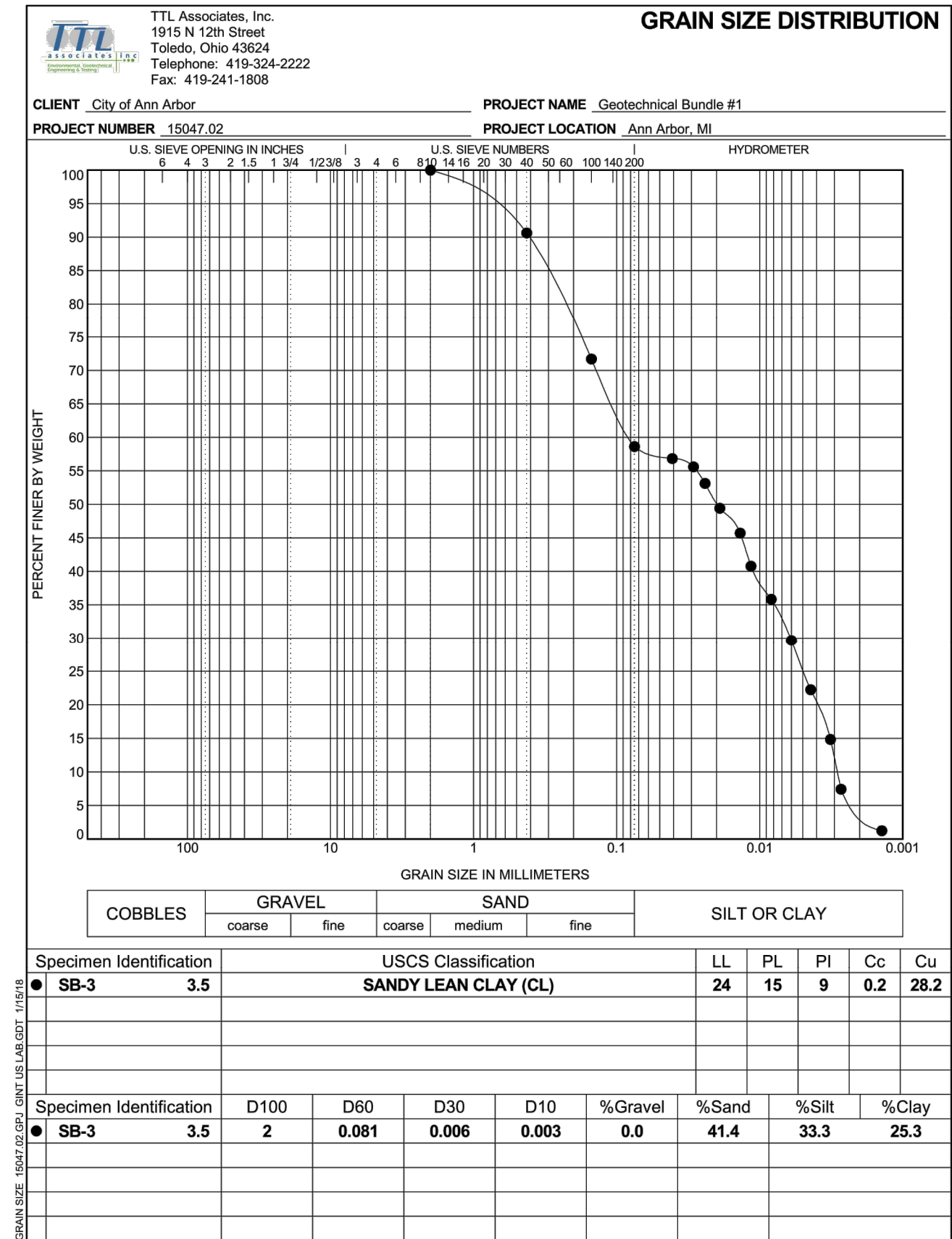
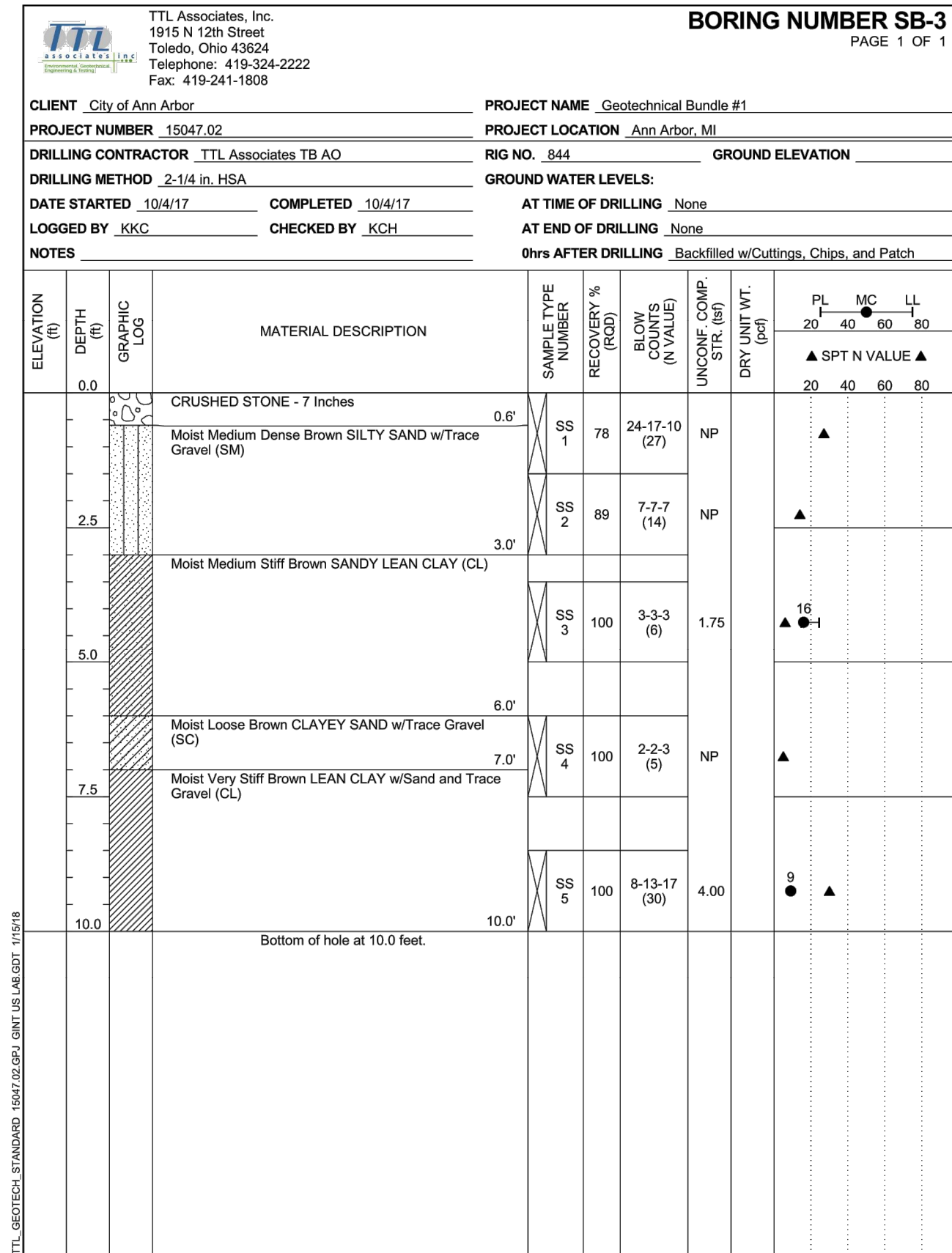
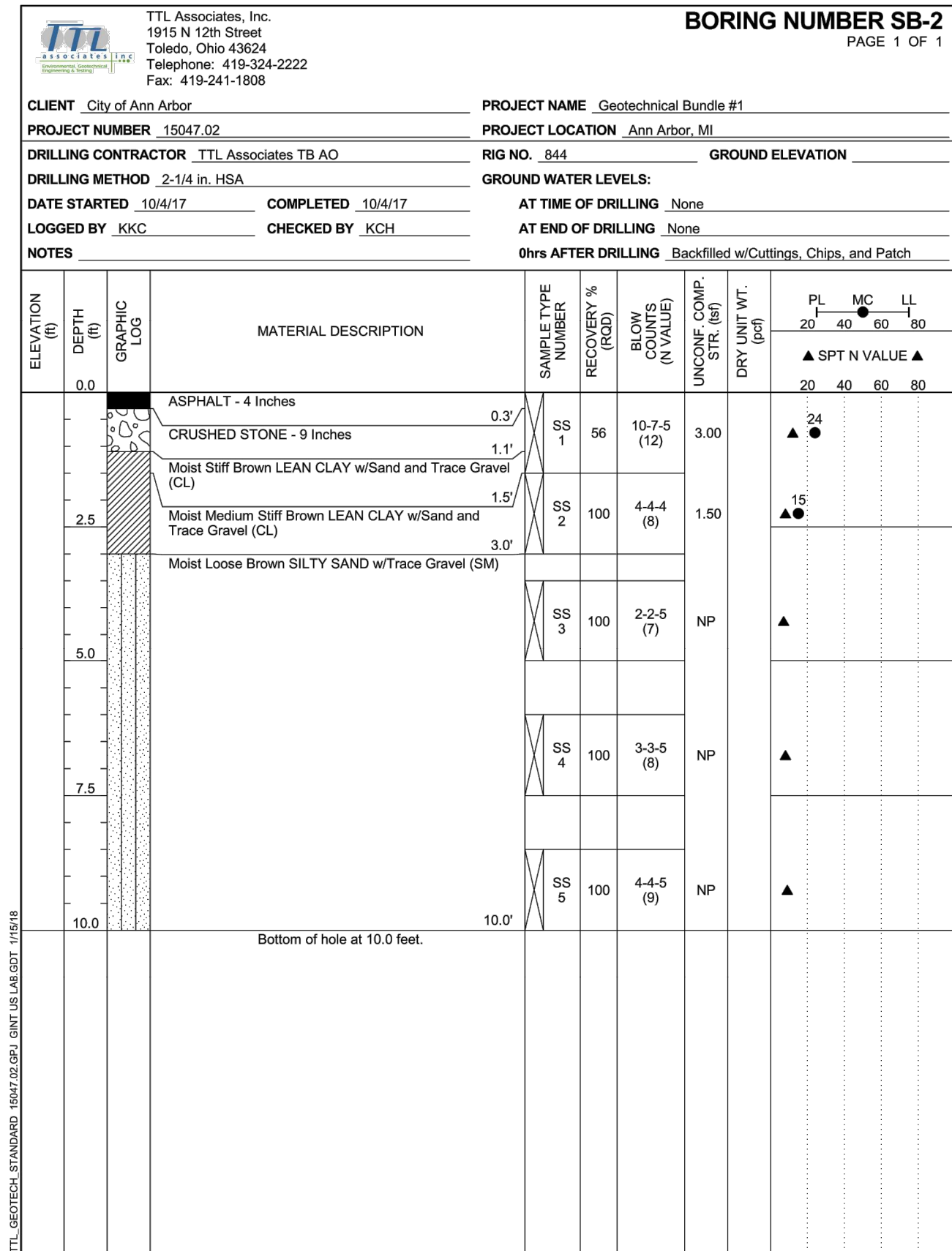
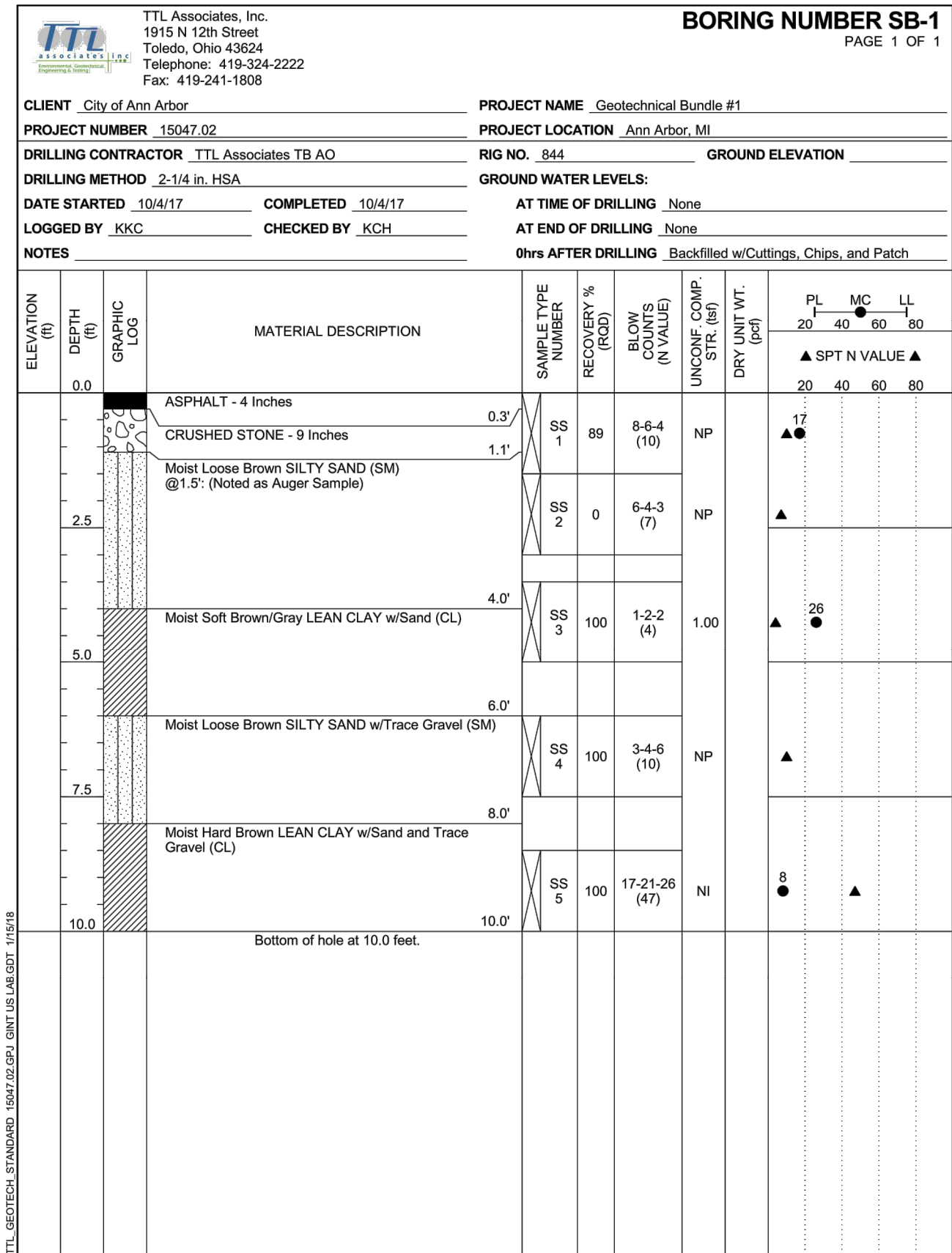


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301 EAST HURON STREET  
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09	FINAL PLANS - CITY OF ANN ARBOR	11/7/2018	MF	VCN
08	FINAL REVIEW TO CITY OF ANN ARBOR	10/30/2018	MF	VCN
07	SANITARY AND WATER MAIN PERMIT (REV)	10/19/2018	MF	VCN
06	FINAL PLANS - CITY OF ANN ARBOR	2/28/2018	MF	VCN
05	FINAL REVIEW TO CITY OF ANN ARBOR	2/23/2018	MF	VCN
REV.	DESCRIPTION	DATE	DRAWN	CHECKED

Know what's below.  
Call before you dig.

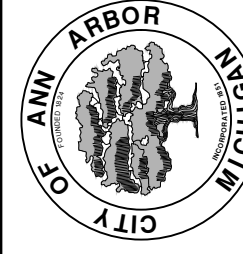




Know what's below. Call before you dig.

REV.	DATE	DESCRIPTION	DRAWN	CHECKED
05	2/23/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	VCM
06	2/28/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	VCM
07	10/19/2018	SANITARY AND WATER MAIN PERMIT (REV)	MF	VCM
08	10/30/2018	FINAL REVIEW TO CITY OF ANN ARBOR	MF	VCM
09	11/7/2018	FINAL PLANS - CITY OF ANN ARBOR	MF	VCM

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**CITY OF ANN ARBOR - ENGINEERING**  
**RIVERVIEW DRIVE SANITARY SEWER**  
**AND WATER MAIN EXTENSION PROJECT**  
SOIL BORING LOG INFORMATION

SCALE PLAN: NONE  
DRAWING NO. 2017-031-30