



CITY OF ANN ARBOR ENGINEERING

NOTES

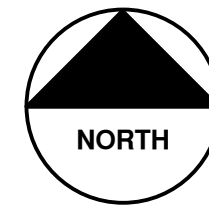
FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CALL 811 OR 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS, PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY 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.

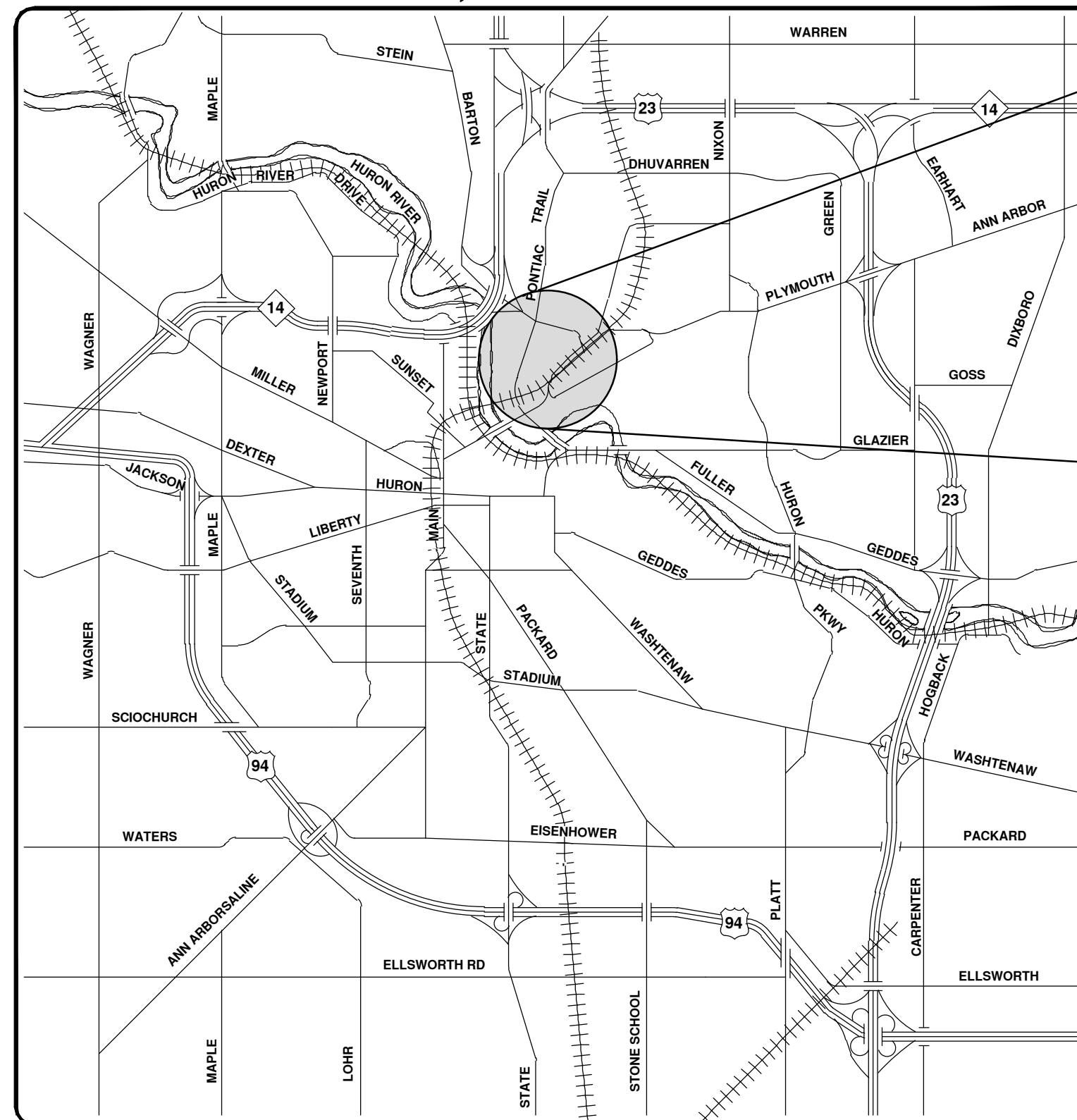
THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE 1994 EDITION OF THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS, ITS DETAILS, WHICH ARE INCLUDED BY REFERENCE, AND THIS PROJECT'S CONTRACT DOCUMENTS. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE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

LONGSHORE INDIANOLA OTTAWA ARGO AMHERST WATERMAIN

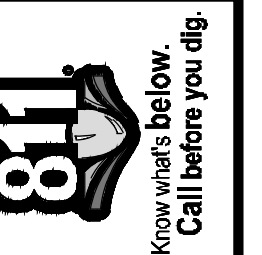
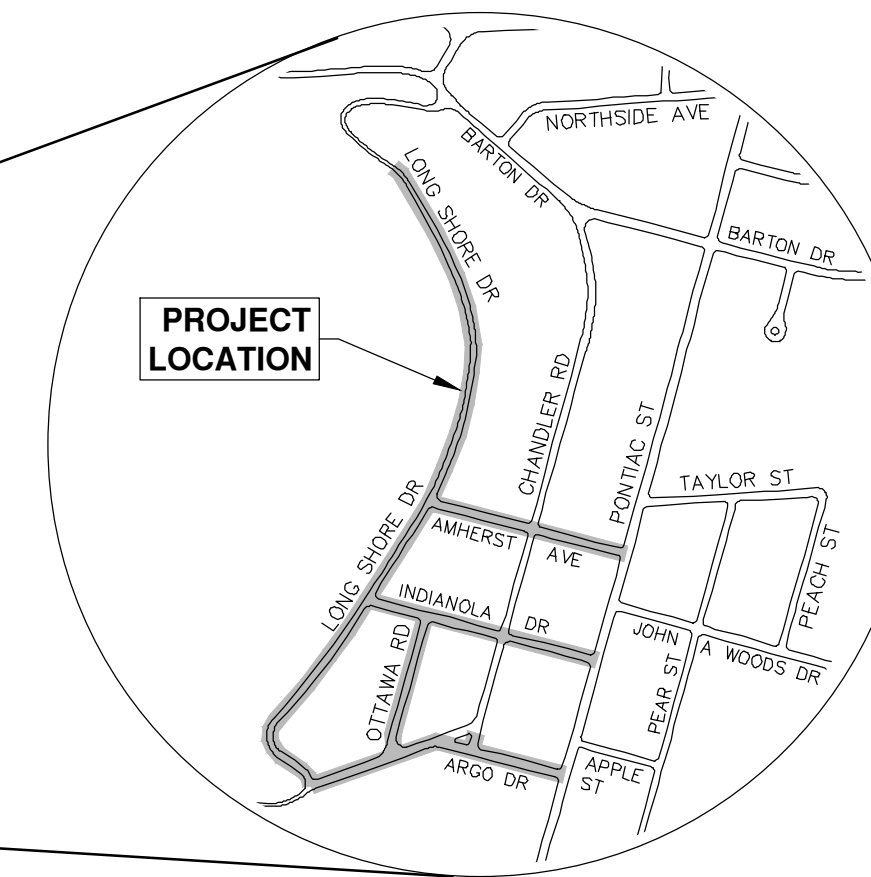
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ITB 4565, FILE No. 2018019

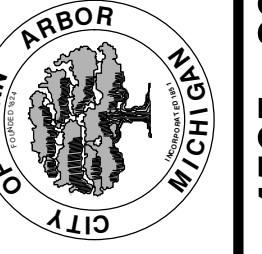


VICINITY MAP



REV.	DATE	DESCRIPTION	CHECKED	DRAWN
01	2-13-19	ADDENDUM No. 1	JKA	JKA
00	1-23-19	OUT FOR BID	JKA	JKA

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
ANN ARBOR, MI 48106-8647
734-794-4410
www.a2gov.org



CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

SCALE
DRAWING No.
2018019-1
SHEET No.
1 OF 54

PREPARED UNDER THE SUPERVISION OF
Jane K. Allen
JANE KATHERINE ALLEN, P.E. - MI LICENSE No. 57254
PROJECT MANAGER
DATE
1 / 23 / 2019



CONSTRUCTION NOTES:

- 1. Driveways and entrances to buildings, real property, and the like shall not be blocked except for short durations and only when approved by the Engineer. Vehicular and pedestrian access shall be maintained at all times. It shall be the Contractor's responsibility to coordinate all necessary driveway closures with the property owner(s) and resident(s) in the areas of construction.
- 2. The location and depth of all existing utilities and service leads are to be field verified by the Contractor prior to construction.
- 3. Location and depth of utilities as depicted on the plans is approximate and shown according to the best information available. It is the Contractor's responsibility to excavate ahead and adjust depth of conflict utilities accordingly. Any damage to utilities is the Contractor's responsibility to avoid and/or repair as necessary.
- 4. The Contractor is to take special care to protect the existing water main and be responsible for maintaining consistent water service.
- 5. During non-working hours no trench shall remain open; any open trench shall be properly secured with protective fencing. This work shall be included in the item of work "General Conditions".
- 6. Trenches for new water services shall be excavated to MIOSHA and City of Ann Arbor Public Works requirements.
- 7. City of Ann Arbor Public Works will install the corporation and copper service lead(s) to transfer the connection(s). If an existing water service is found to be failing or is not copper, the lead will be replaced to the curb box by Public Works.
- 8. For the installation of corporations, or any other related activities, the Contractor shall not receive additional compensation for delays due to the scheduling of or coordination with the City of Ann Arbor Public Works.
- 9. The Contractor shall backfill trenches in accordance with Trench Detail specified on plans. This work shall be included in the item of work "Excavate and Backfill for Water Service Tap and Lead". All concrete removals and replacements required for this work will be paid for separately.
- 10. All ductile iron pipe and fittings shall be polyethylene wrapped per ANSI/AWWA C105/A21.5.
- 11. Cor-blu bolts to be used at all mechanical water main joints at hydrants and Megalug fittings
- 12. The Contractor shall construct, flush, and bacteriologically test the water main per Detailed Specification "Water Main Installation and Testing" and as approved by the Engineer. All chlorinated water shall be discharged directly into an approved sanitary sewer. The Contractor shall supply all necessary hoses, fittings and the like to accomplish this work.
- 13. Water main fittings, other than those specifically listed as separate pay items, which are required to complete the work, such as blow-off assemblies, concrete thrust blocks, solid sleeves and mechanical plugs, shall not be paid for separately, but shall be included in the pipe pay items.
- 14. "No Parking" signs shall be installed by the Contractor at locations as approved or directed by the Engineer. All signs shall be installed in accordance with the detailed specifications.
- 15. Postal delivery and refuse pickup service shall be maintained at all times by the Contractor.
- 16. All fittings, hydrants, valves and castings removed during construction are the property of the City of Ann Arbor. The Contractor within 48 hours shall deliver to City of Ann Arbor Public Works Facility at the W.R. Wheeler Service Center located at 4251 Stone School Road.
- 17. Where street curbs are undermined due to construction activities, they shall be removed and replaced as directed by the Engineer.
- 18. The Contractor shall be responsible for the continuous maintenance of the temporary road surface and soil erosion control measures within the construction area until the full completion of the project. This work shall be included in the item of work "General Conditions".
- 19. All curb, sidewalk, driveway approach removals shall be approved by Engineer before the work is done.
- 20. Sawed sewer pipe connections shall be coupled with a Fernco flexible coupling and a stainless steel shear ring.
- 21. The location of material stock piles and on-site staging areas to be approved by the Engineer.
- 22. 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.
- 23. All structures shall receive new castings as directed by the Engineer, as specified on the standard casting schedule. The existing castings are the property of the City of Ann Arbor. The Contractor shall deliver to City of Ann Arbor Public Works Facility at the W.R. Wheeler Service Center located at 4251 Stone School Road.
- 24. Payment for drainage structure sumps, where specified, shall be included in the payment for the various drainage structure sizes and or types.
- 25. 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.
- 26. Where sewer and water main are to be removed & replaced or added, all pipe shall be installed using Trench Detail detailed in the specifications or shown on Plans. Backfill for sewer and water construction shall be MDOT Granular Material, Class II, Modified.
- 27. Existing street name, guide, and regulatory signs, and mailboxes which conflict with the proposed construction shall be removed prior to construction, stored in a manner which will prevent damage, and re-set in locations as directed by the Engineer. This work will not be paid for separately, but shall be included in "Machine Grading, Modified"
- 28. In areas where edge drain cannot be installed in accordance with City of Ann Arbor Detail SD-TD-11, the edge drain shall be installed at the depth as indicated on the plans, or as directed by Engineer. In no case shall the edge drain be installed at a grade less than 0.50% or at a depth of less than 2' below top of proposed pavement.

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

- 1. 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.
- 2. 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.
- 3. 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.
- 4. 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.
- 5. 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.
- 6. 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.
- 7. 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.
- 8. SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
- 9. PROPER DUST CONTROL SHALL BE MAINTAINED DURING CONSTRUCTION BY USE OF WATER TRUCKS AND/OR DUST PALLATIVE AS REQUIRED.
- 10. 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.
- 11. 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.
- 12. TREE PROTECTION FENCING MUST REMAIN INTACT UNTIL RESTORATION OF THE SITE IS COMPLETE.

SEQUENCE OF EROSION CONTROL MEASURES:

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

SAMPLE SOIL EROSION AND SEDIMENTATION CONTROL INSTALLATION MINIMUM REQUIREMENTS:

- 1.1. INSTALL SILT FENCE, TREE PROTECTION FENCING, MUD MATS, INLET FILTERS ON EXISTING DRAINAGE FEATURES, AND ALL OTHER TEMPORARY SOIL EROSION CONTROLS, PRIOR TO ANY CLEARING OR EARTH MOVING OPERATION.
- 1.2. STRIP AND STOCKPILE TOPSOIL. STABILIZE STOCKPILE AS REQUIRED.
- 1.3. INSTALL WATER MAINS, STORM AND SANITARY SEWERS, AND OTHER ENCLOSED DRAINAGE FEATURES. NEW INLET FILTERS SHALL BE INSTALLED IMMEDIATELY FOLLOWING INSTALLATION OF NEW DRAINAGE INLETS.
- 1.4. PERFORM MACHINE GRADING OPERATIONS AND CONSTRUCT PAVEMENTS (MAINLINE, SIDEWALKS, DRIVES, ETC.).
- 1.5. CONTINUALLY MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES, AS REQUIRED TO ALLOW DRAINAGE AND SEDIMENT REMOVAL. REMOVE ANY ACCUMULATED SEDIMENT IMMEDIATELY.
- 1.6. COMPLETE ALL FINE GRADING.
- 1.7. TEMPORARY SEED AND INSTALL EROSION CONTROL BLANKET IN ALL DISTURBED AREAS.
- 1.8. REFER TO LANDSCAPE PLANTING PLANS FOR PERMANENT SITE STABILIZATION.
- 1.9. CLEAN OUT STORM SEWER SYSTEMS.
- 1.10. REMEDY ANY NOTED DEFECTS TO THE SATISFACTION OF THE CITY OF ANN ARBOR'S SOIL EROSION AND SEDIMENTATION CONTROL OFFICIAL.
- 1.11. ALL TEMP. SOIL EROSION CONTROL MEASURES MUST BE REMOVED, WITH ENGINEERS APPROVAL, PRIOR TO FINAL INSPECTION

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

TEMPORARY SEEDING:

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

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

PERMIT	ISSUING AUTHORITY
LANE CLOSURE PERMIT*	CITY OF ANN ARBOR ENGINEERING
"NO PARKING" SIGNS 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

CONTACT INFORMATION

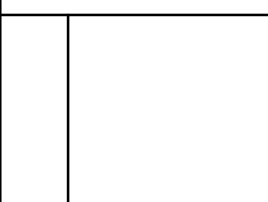
PUBLIC UTILITIES	OWNER	CONTACT
WATER		
SANITARY		
STORM	CITY OF ANN ARBOR PUBLIC WORKS W.R. WHEELER SERVICE CENTER 4251 STONE SCHOOL ROAD ANN ARBOR, MI 48108	(734) 794-6350
FORESTRY		
SIGNS SIGNALS STREET LIGHTS		(734) 794-6361
PRIVATE UTILITIES	OWNER	CONTACT
GAS	DTE ENERGY 3150 E. MICHIGAN AVE, YPSILANTI TOWNSHIP, MI 48198	ROBERT CZAPIEWSKI (734) 544-7818
ELECTRIC	DTE ENERGY WESTERN WAYNE SERVICE CENTER 8001 HAGGERTY ROAD BELLEVILLE, MI 48111	ANTHONY IGNASIAK (734) 397-4447
CABLE	COMCAST 27800 FRANKLIN ROAD SOUTHFIELD, MI 48034	RON SUTHERLAND (313) 999-8300
PHONE	AT&T 550 S. MAPLE ROAD ANN ARBOR, MI 48103	(734) 996-2135
FIBER OPTIC	MCI 2800 N. GLENFILLE ROAD RICHARDSON, TX 75082	DEAN BOYERS (972) 729-6016

LONGSHORE / INDIANOLA / OTTAWA / ARGO / AMHERST BENCHMARKS		
BM #	ELEV	DESCRIPTION
3	835.50	SET CHISELED "X" ON NORTH FLANGE BOLT OF HYDRANT IN CURB ISLAND AT CHANDLER ROAD AND ARGO DRIVE
5	843.40	SET SPIKE IN WEST FACE OF POWER POLE IN THE SOUTHEAST QUADRANT OF ARGO DRIVE AND PONTIAC TRAIL
7	826.93	SET RAILROAD SPIKE IN NORTH FACE OF POWER POLE ON THE SOUTH SIDE OF ARGO DRIVE, FIRST POLE WEST OF OTTAWA ROAD
9	844.49	SET RAILROAD SPIKE IN WESTERLY FACE OF POWER POLE ON THE EAST SIDE OF LONGSHORE DRIVE, FIRST POLE SOUTH OF HOUSE #1516
11	847.75	SET SPIKE IN WEST FACE OF POWER POLE BETWEEN HOUSE #1604 AND #1606 ON THE EAST SIDE OF LONGSHORE DRIVE
14	843.45	SET SPIKE IN WEST FACE OF POWER POLE BETWEEN HOUSE #1810 AND #1812 ON THE EAST SIDE OF LONGSHORE DRIVE
16	841.13	SET CHISELED "X" ON EASTERLY FLANGE BOLT OF HYDRANT AT HOUSE #2000 LONGSHORE DRIVE
17	839.90	SET SPIKE IN WEST FACE OF POWER POLE BETWEEN HOUSE #1502 AND #1508 ON THE EAST SIDE OF OTTAWA ROAD
19	837.21	SET SPIKE IN NORTH FACE OF POWER POLE IN THE NORTHWEST QUADRANT OF INDIANOLA AVENUE AND CHANDLER ROAD
21	845.64	SET CHISELED "X" ON EASTERLY FLANGE BOLT OF HYDRANT IN THE SOUTHWEST QUADRANT OF INDIANOLA AVENUE AND PONTIAC TRAIL
24	850.36	SET RAILROAD SPIKE IN NORTH FACE OF POWER POLE BETWEEN HOUSE #806 AND #1607 ON THE SOUTH SIDE OF AMHERST AVENUE
25	850.48	SET CHISELED "X" ON NORTHERLY FLANGE BOLT OF HYDRANT IN THE NORTHEAST QUADRANT OF AMHERST AVENUE AND CHANDLER ROAD



DATE	DESCRIPTION
2-13-19	CC/DF/RG
1-23-19	CC/DF/RG
	DRAWN
	CHECKED

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



CITY OF ANN ARBOR - ENGINEERING
LONGSHORE INDIANOLA OTTAWA
ARGO AMHERST WATERMAIN

NOTES

SCALE: NTS

DRAWING No. 2018019-2

EXISTING LEGEND

- ⊕ FIRE HYDRANT
- I 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

- w — WATER MAIN
- - - w - - - WATER MAIN ABANDONED
- - - r - - - STORM SEWER
- - - f - - - STORM SEWER ABANDONED
- - - s - - - SANITARY SEWER
- - - s - - - SANITARY SEWER ABANDONED
- - - g - - - GAS MAIN
- - - g (DEAD) - - - GAS MAIN (DEAD)
- e — ELECTRICAL OVER HEAD
- - - e — ELECTRICAL UNDER GROUND
- - - e duct bank — ELECTRICAL DUCT BANK
- - - oht — TELEPHONE OVER HEAD
- - - t — TELEPHONE UNDER GROUND
- - - t duct bank — TELEPHONE DUCT BANK
- - - ohtv — CABLE TV OVER HEAD
- - - tv — CABLE TV UNDER GROUND
- - - fo — FIBER OPTIC
- - - fo duct bank — FIBER OPTIC DUCT BANK
- BOUNDARY
- /// BUILDING
- - - CENTERLINE OF DITCH
- - - CENTERLINE/CROWN OF ROAD
- - - 800 - - - CONTOUR MAJOR
- - - 799 - - - 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
- I 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
- SIGN
- PUSH BUTTON
- HAND HOLE
- W — WATER MAIN
- - - R - - - STORM SEWER
- - - S - - - SANITARY SEWER
- - - FO - - - FIBER OPTIC
- - - E - - - ELECTRICAL
- - - CENTERLINE OF DITCH
- - - CENTERLINE OF ROAD
- - - FENCE
- - - GRAVEL
- - - SILT FENCE
- - - PROTECTIVE FENCE
- - - GUARDRAIL
- - - LOT/UNIT
- - - CURB
- - - TEMPORARY GRADING PERMIT
- - - 800 - - - CONTOUR MAJOR
- - - 799 - - - 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

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

DATE: 2-13-19
DRAWN: JKA
CHECKED: JKA

01 ADDENDUM No. 1
2-13-19

02 OUT FOR BID
1-23-19

DESCRIPTION

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
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REV.

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

LONGSHORE INDIANOLA OTTAWA

ARGO AMHERST WATERMAIN

LEGEND

SCALE: NTS

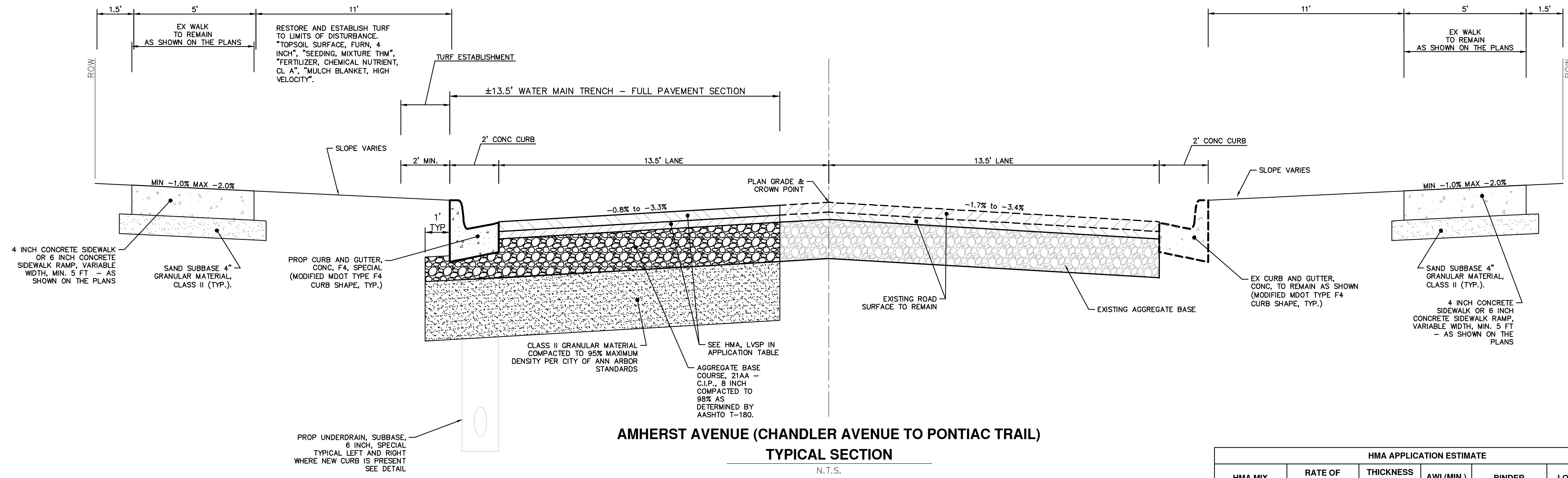
DRAWING No. 2018019-3

SHEET No.

3 OF 54

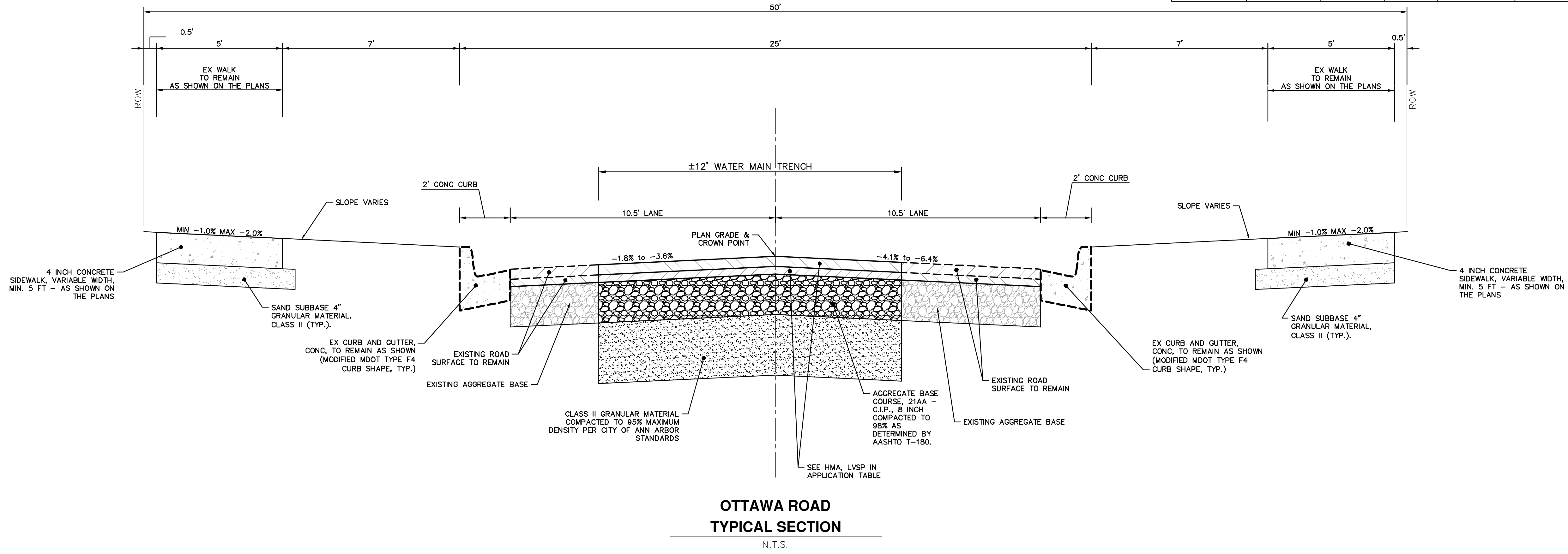
3 OF 54

R:\2018019 Longshore Dr WM\Plan Production\2018019Det.dwg Dwg Created: 11-Feb-19 - _g2 standard bw.stb - Plot Date: 12-Feb-19




AMHERST AVENUE (CHANDLER AVENUE TO PONTIAC TRAIL)
TYPICAL SECTION
N.T.S.

HMA APPLICATION ESTIMATE					
HMA MIX	RATE OF APPLICATION	THICKNESS (INCHES)	AWI (MIN.)	BINDER	LOCATION/NOTES
LVSP	220 LB/SYD	2	260 (TOP)	PG 58-28	TOP COURSE
LVSP	220 LB/SYD	2	-	PG 58-28	LEVELING COURSE
Bond Coat SS-1h	0.05 - 0.15 GAL/SYD	-	-	-	INCLUDE IN COST OF HMA ITEM




OTTAWA ROAD
TYPICAL SECTION
N.T.S.



Know what's below.
Call Before you dig.

01	ADDENDUM No. 1	2-13-19	CC/DF/KB	JKA	CC/DF/KB	JKA	CC/DF/KB	JKA	CHECKED
00	OUT FOR BID	1-23-19							DATE
									DESCRIPTION
									REV.



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LONGSHORE INDIANOLA OTTAWA
ARGO AMHERST WATERMAIN
TYPICAL PROPOSED ROAD SECTIONS

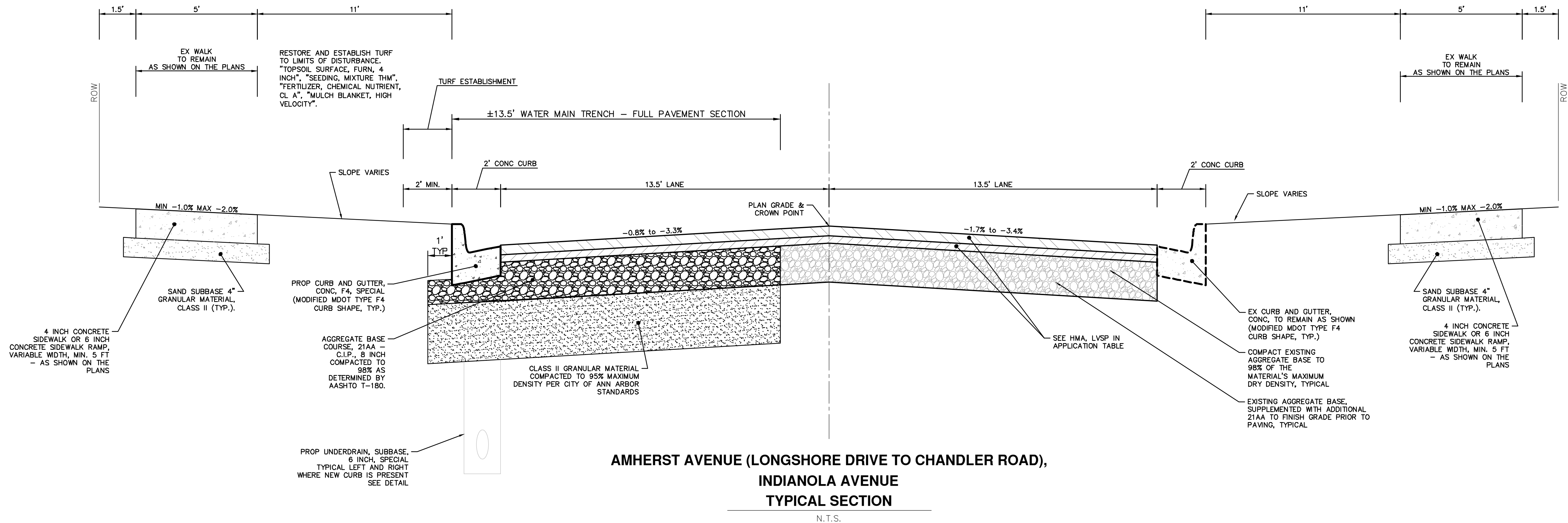
SCALE: NTS

DRAWING No. 2018019-4

SHEET No.

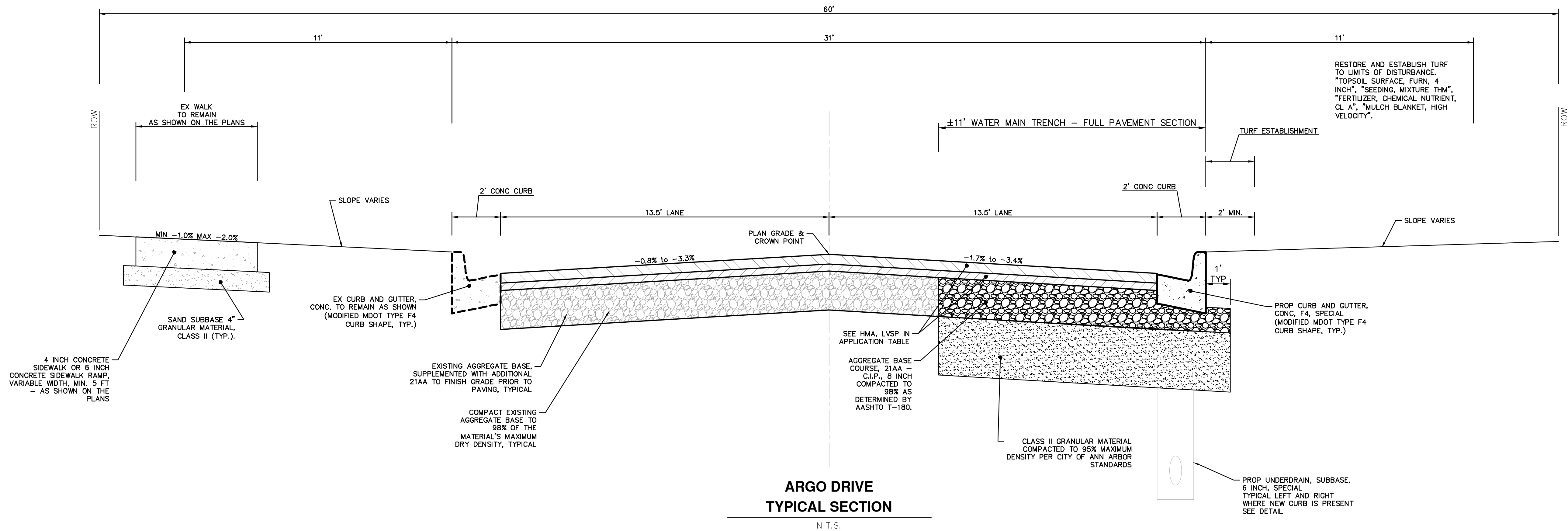
4 OF 54

R:\2018019 Longshore Dr WM\Plan Production\2018019Det.dwg Dwg Created: 11-Feb-19 - _g2 standard bw.stb - Plot Date: 12-Feb-19



**AMHERST AVENUE (LONGSHORE DRIVE TO CHANDLER ROAD),
INDIANOLA AVENUE
TYPICAL SECTION**

N.T.S.



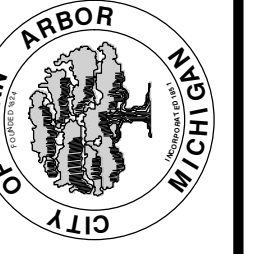
**ARGO DRIVE
TYPICAL SECTION**

N.T.S.



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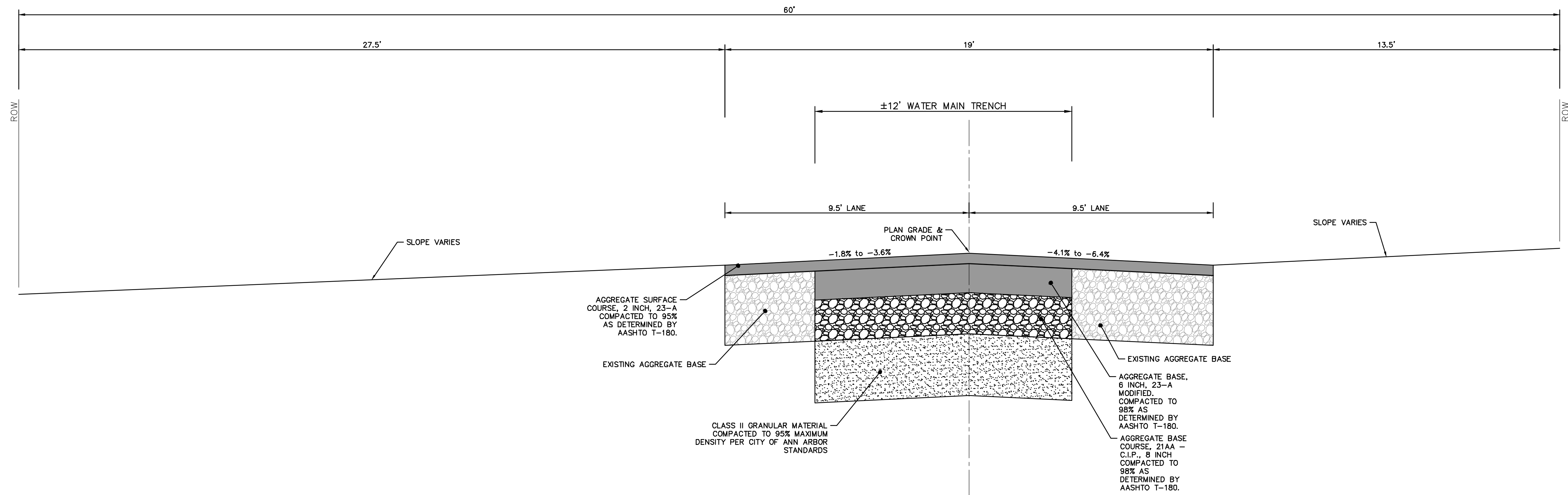
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LONGSHORE INDIANOLA OTTAWA
ARGO AMHERST WATERMAIN
TYPICAL PROPOSED ROAD SECTIONS

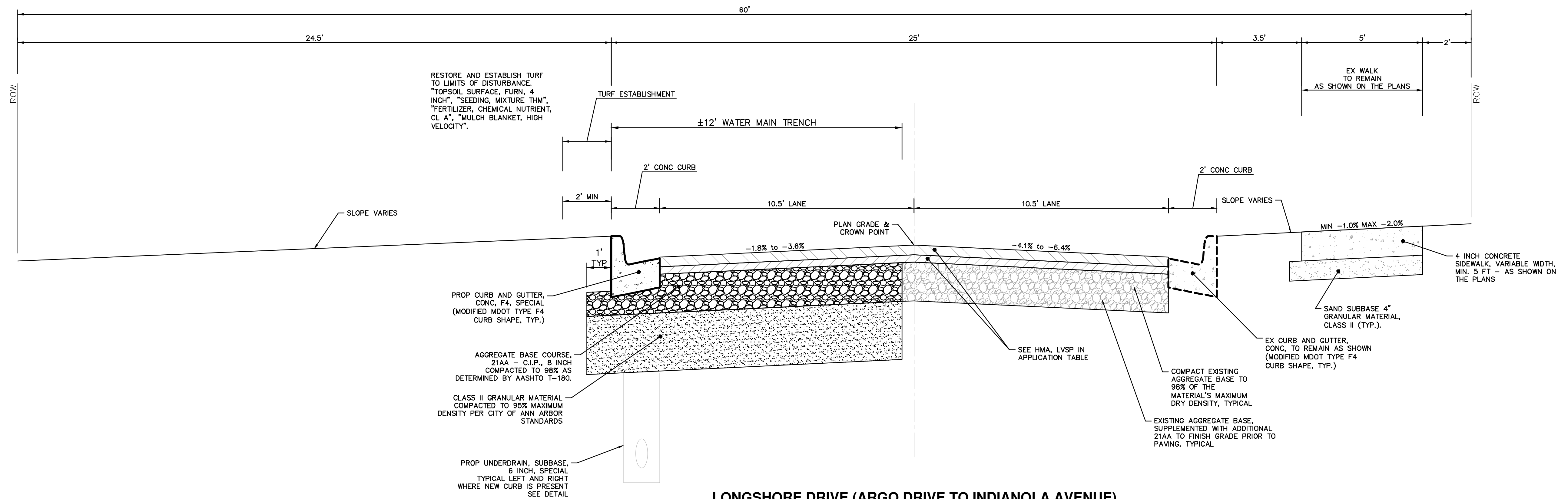
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DRAWING No. 2018019-5

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LONGSHORE DRIVE (INDIANOLA AVENUE TO BARTON DRIVE)
TYPICAL SECTION

N.T.S.



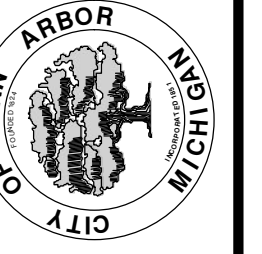
LONGSHORE DRIVE (ARGO DRIVE TO INDIANOLA AVENUE)
TYPICAL SECTION

N.T.S.



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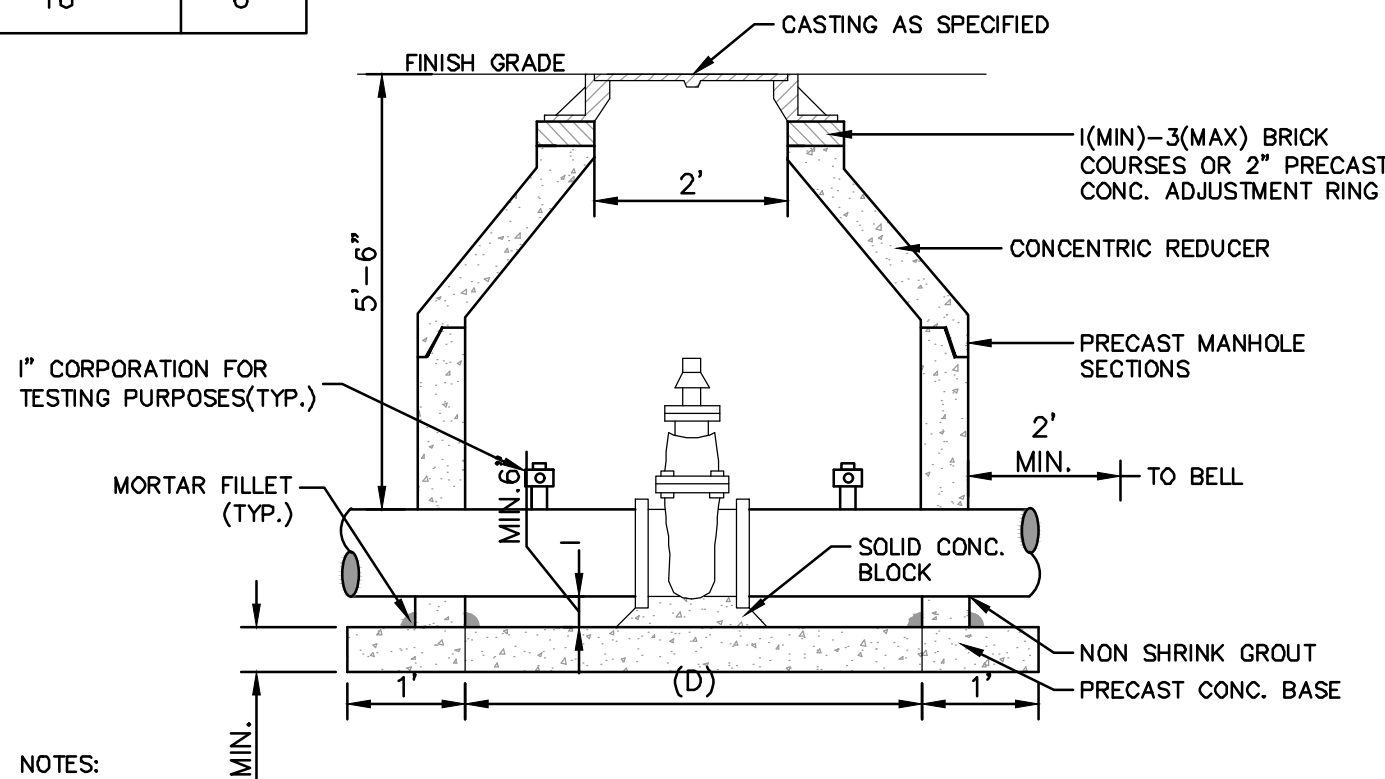
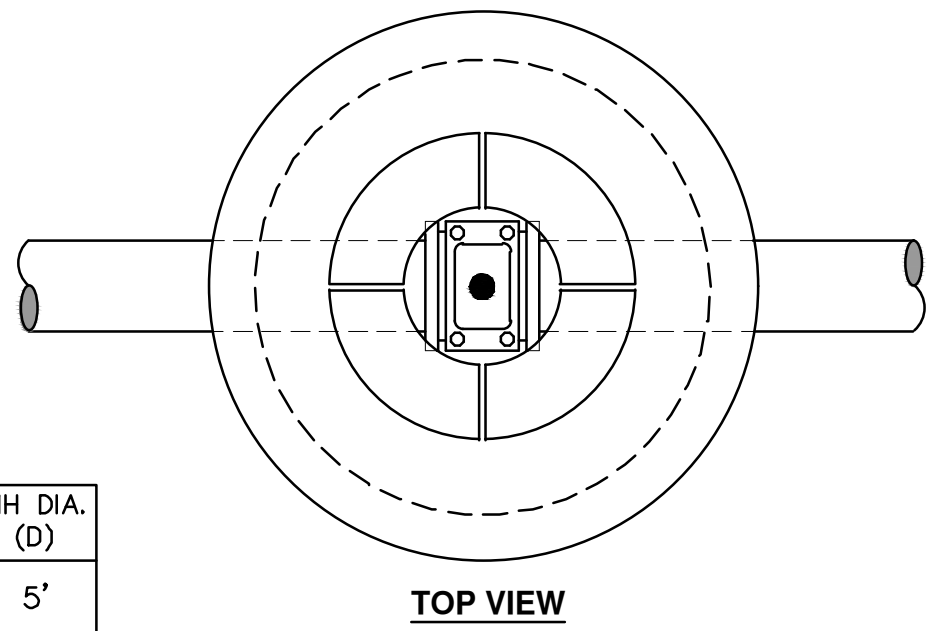
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ARGO AMHERST WATERMAIN
TYPICAL PROPOSED ROAD SECTIONS

SCALE: NTS
DRAWING No. 2018019-6

PIPE SIZE	MH DIA. (D)
12" OR LESS	5'
16"	6'



- NOTES:
1. ALL LIFT HOLES AND JOINTS SHALL BE MORTARED BOTH INSIDE AND OUTSIDE
 2. ALL JOINTS SHALL BE MADE WATER TIGHT WITH RUBBER GASKET JOINTS
 3. NO STEPS ARE PERMITTED
 4. MANHOLE SECTIONS SHALL MEET ASTM C-478

GATE WELL FOR MAIN 16" & SMALLER SD-W-3

MINIMUM STANDARDS

THE MDOT GRADE PI OR P-NC CONCRETE AT THE FITTING FACE SHALL EXTEND TO WITHIN 2 INCHES OF THE BELL AND SHALL EXTEND FROM THE FITTING FACE A MINIMUM OF 2 FEET TO THE UNDISTURBED SOLID GROUND.

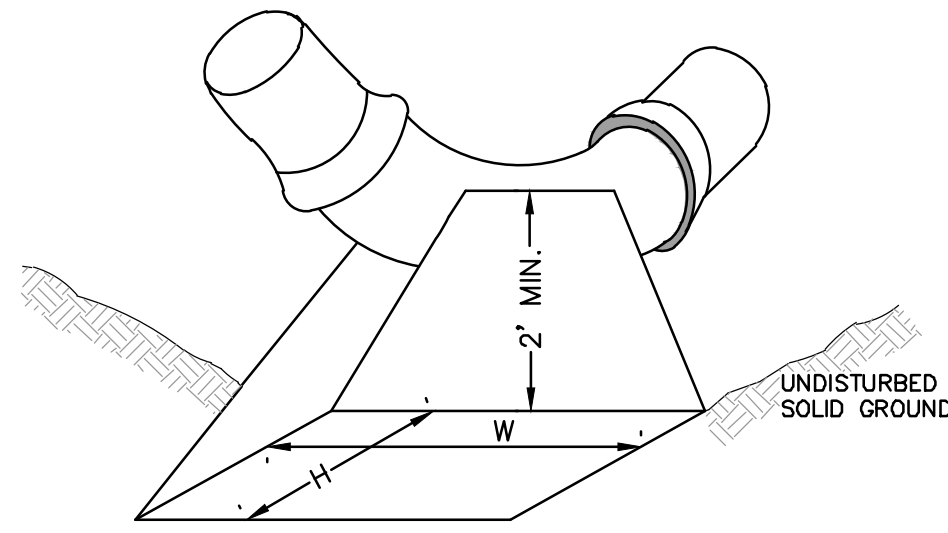
THE DIMENSIONS OF THE THRUST BLOCK AT THE FACE OF THE UNDISTURBED SOLID GROUND SHALL BE AS SHOWN IN THE TABLE BELOW.

IF THERE ISN'T SUFFICIENT SPACE FOR THE INSTALLATION OF THE THRUST BLOCK WITHOUT INTERFERENCE WITH OTHER SERVICES, ANOTHER ARRANGEMENT SATISFACTORY TO THE ENGINEER SHALL BE USED.

FITTINGS I.D.	PLUG TEE CROSS		BENDS				HYDRANT	
	W	H	90°	45°	22 1/2°	11 1/4°	W	H
4	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.5
6	2.0	1.5	2.0	2.0	2.0	1.0	1.0	2.0
8	2.5	2.0	3.5	2.0	2.0	2.0	1.0	2.5
12	3.5	3.0	5.5	3.0	3.5	2.5	2.0	1.0
16	6.0	3.5	6.0	4.0	5.0	3.0	2.5	2.0

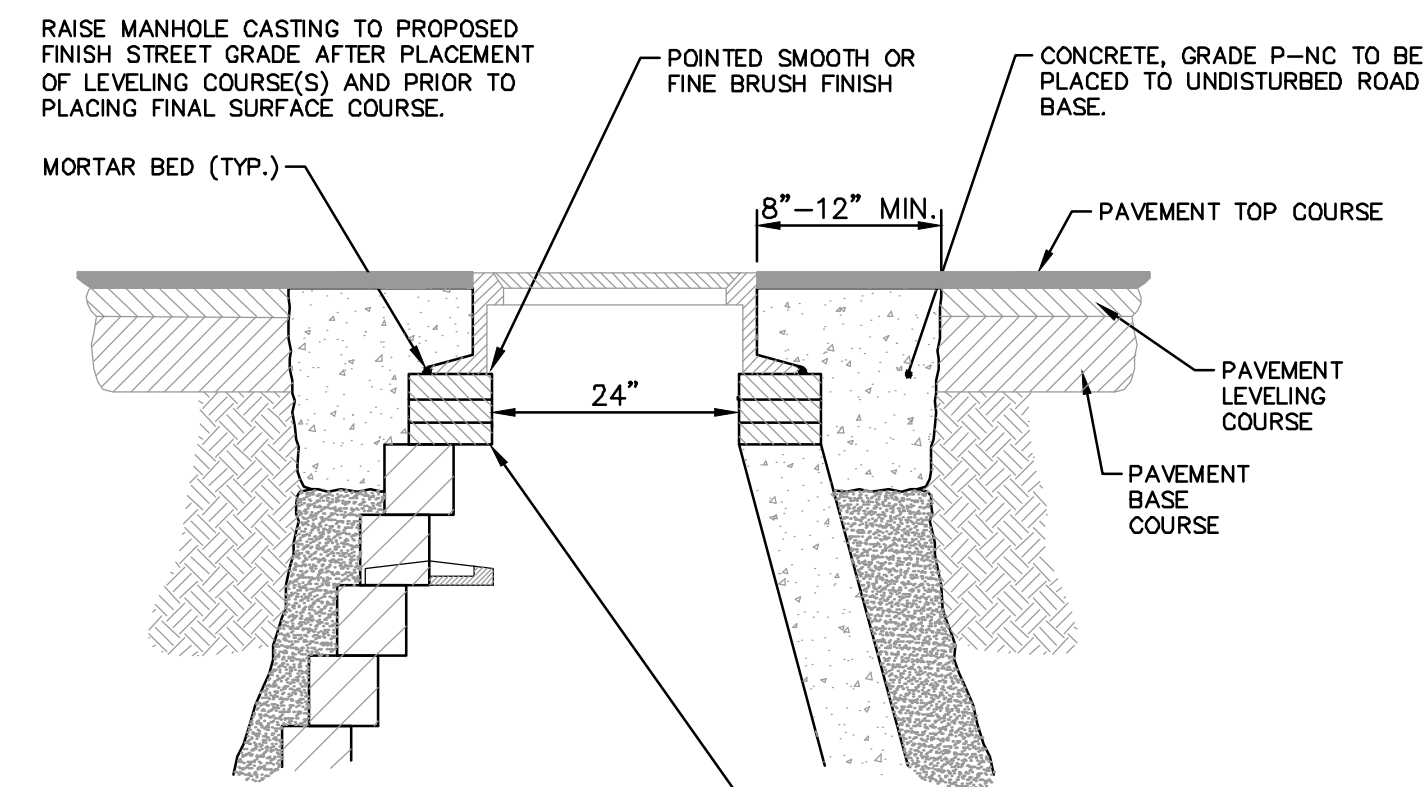
FOR FITTING SIZES LARGER THAN 16", THRUST BLOCK DIMENSIONS SHALL BE AS SPECIFIED BY ENGINEER.

W = WIDTH IN FEET
H = HEIGHT IN FEET



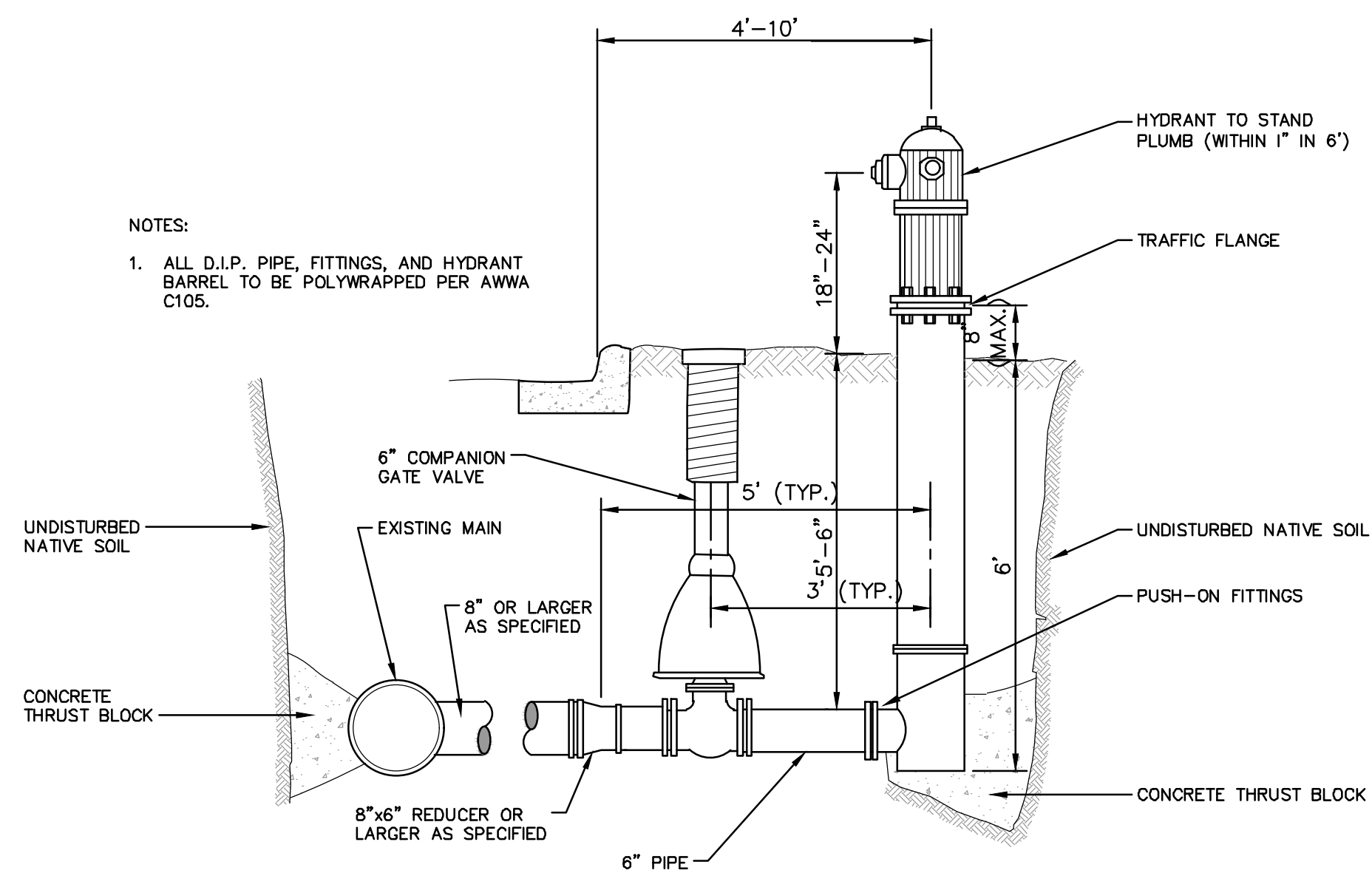
NOTE:
THESE ARE MINIMUM STANDARDS. WHERE SOIL CONDITIONS DICTATE, ADJUSTMENTS IN SIZE SHALL BE MADE AS DIRECTED BY THE PUBLIC SERVICES AREA ADMINISTRATOR.

THRUST BLOCK SD-W-2



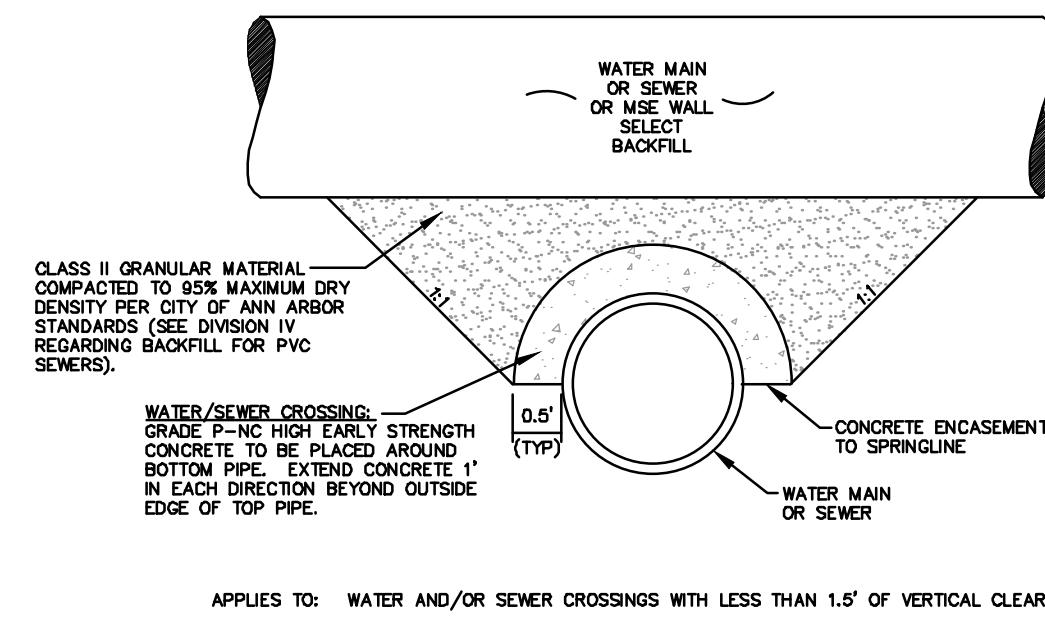
NOTE:
IF MANHOLE WILL BE PLACED IN GRAVEL ROAD, CASTING TO BE SET 6" TO 8" BELOW ROADWAY GRADE. ALL CONSTRUCTION METHODS SHALL REMAIN AS SHOWN ABOVE.
ADDITIONAL REPAIRS NECESSARY BEYOND 15" BELOW GRADE TO BE PAID FOR AS, "ADDITIONAL DEPTH STRUCTURE ADJUST/REPAIR"

MANHOLE CASTING ADJUSTMENT SD-GU-6



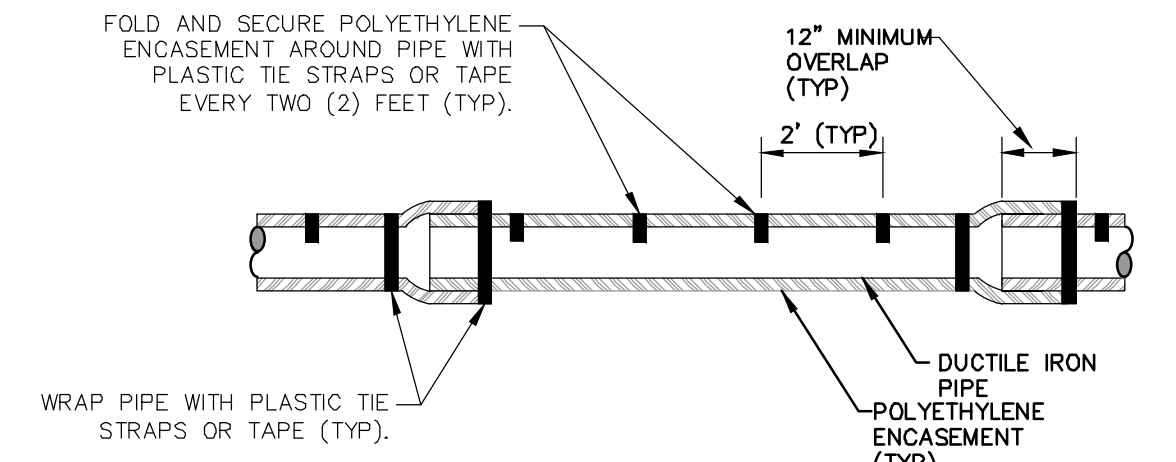
NOTES:
1. ALL D.I.P. PIPE, FITTINGS, AND HYDRANT BARREL TO BE POLYWRAPPED PER AWWA C105.

FIRE HYDRANT ASSEMBLY



APPLIES TO: WATER AND/OR SEWER CROSSINGS WITH LESS THAN 1.5' OF VERTICAL CLEARANCE

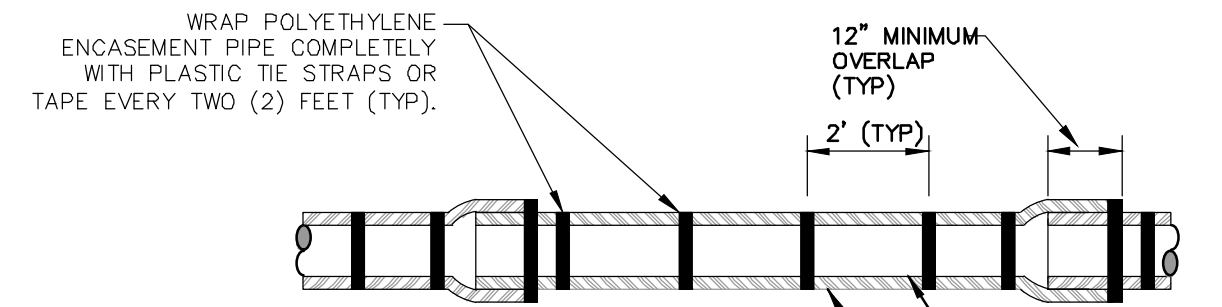
CONCRETE UTILITY SADDLE



NOTE: FOLLOW ANSI/AWWA C105/A21.5-05 REVISION OF ANSI/AWWA C105/A21.5-99 FOR CONSTRUCTION AND INSTALLATION METHODS. USE MODIFIED METHOD A

APPLIES TO: POLYETHYLENE WRAPPED D.I. WATERMAIN SEE PLANS FOR LOCATIONS

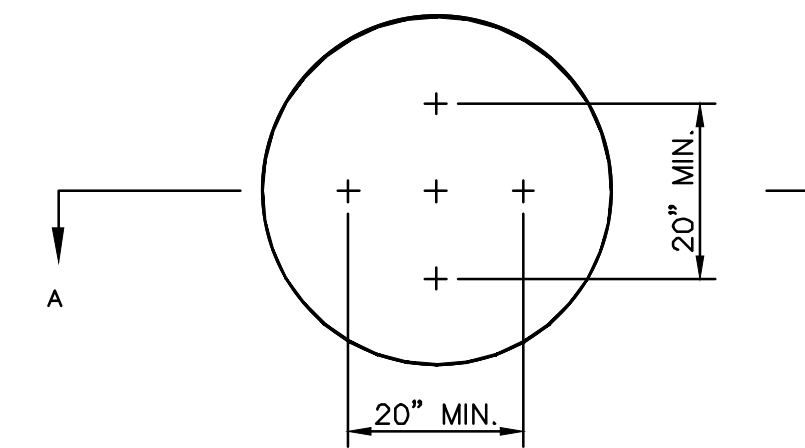
POLYETHYLENE ENCASUREMENT (DRY INSTALLATION)



NOTE: FOLLOW ANSI/AWWA C105/A21.5-05 REVISION OF ANSI/AWWA C105/A21.5-99 FOR CONSTRUCTION AND INSTALLATION METHODS. USE MODIFIED METHOD A

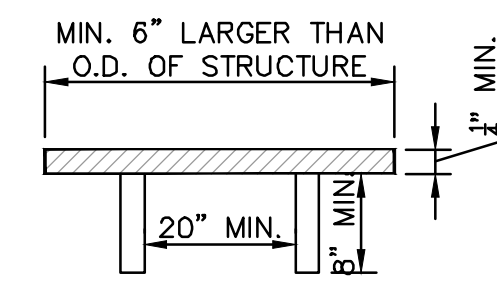
APPLIES TO: POLYETHYLENE WRAPPED D.I. WATERMAIN SEE PLANS FOR LOCATIONS

POLYETHYLENE ENCASUREMENT (WET INSTALLATION)



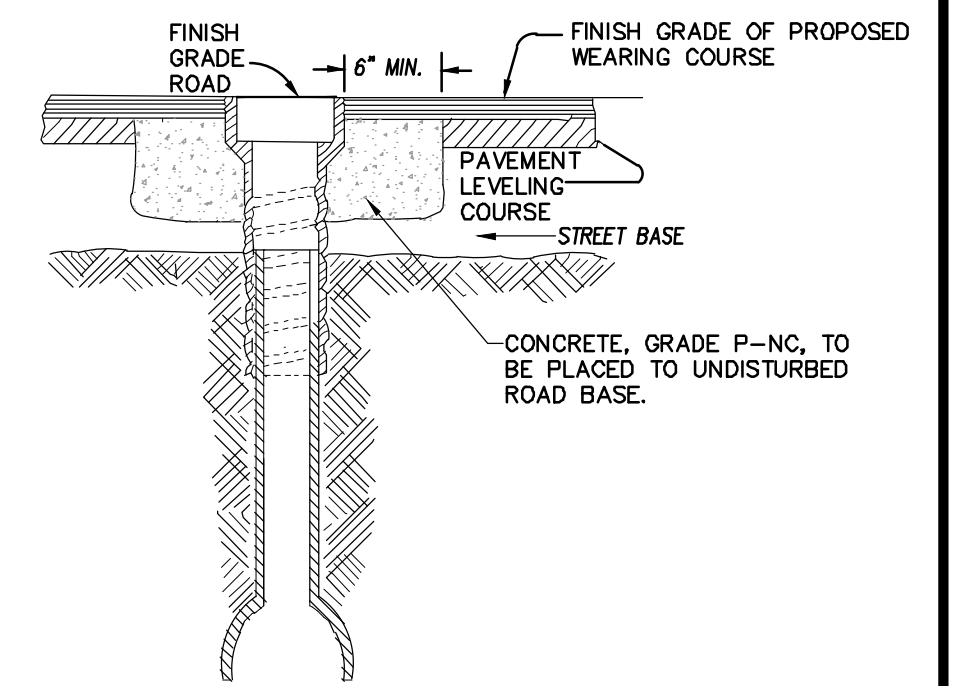
NOTE: PLATE MAY BE CIRCULAR, SQUARE OR RECTANGULAR

SECTION A - A



1/4" MIN. THICKNESS AND SUFFICIENT TO CARRY THE CONSTRUCTION LOAD.

STRUCTURE PLATE SD-GU-8



NOTE: RAISE CASTING TO PROPOSED FINISH STREET GRADE AFTER PLACEMENT OF LEVELING COURSE(S) AND PRIOR TO PLACING FINAL SURFACE COURSE

WATER VALVE BOX ADJUSTMENT

R: \2018019 Longshore Dr. WMA\Plan Production\2018019Det.dwg Dwg Created: 11-Feb-19 - 10:02 standard bw.stb - Plot Date: 12-Feb-19

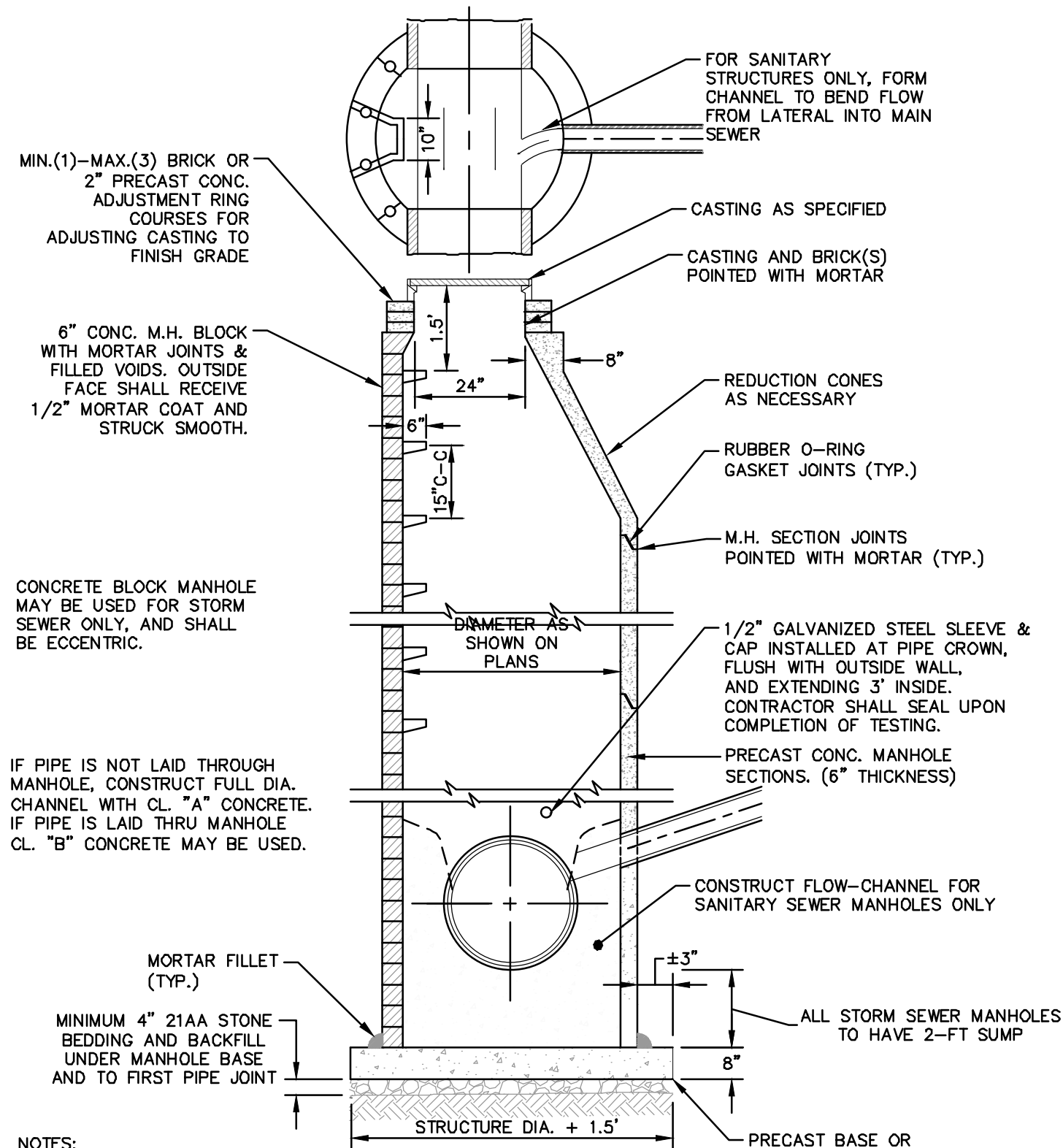


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DATE	2-13-19	DRAWN	JKA
DESCRIPTION	OUT FOR BID	REV.	01
ADDENDUM No. 1			

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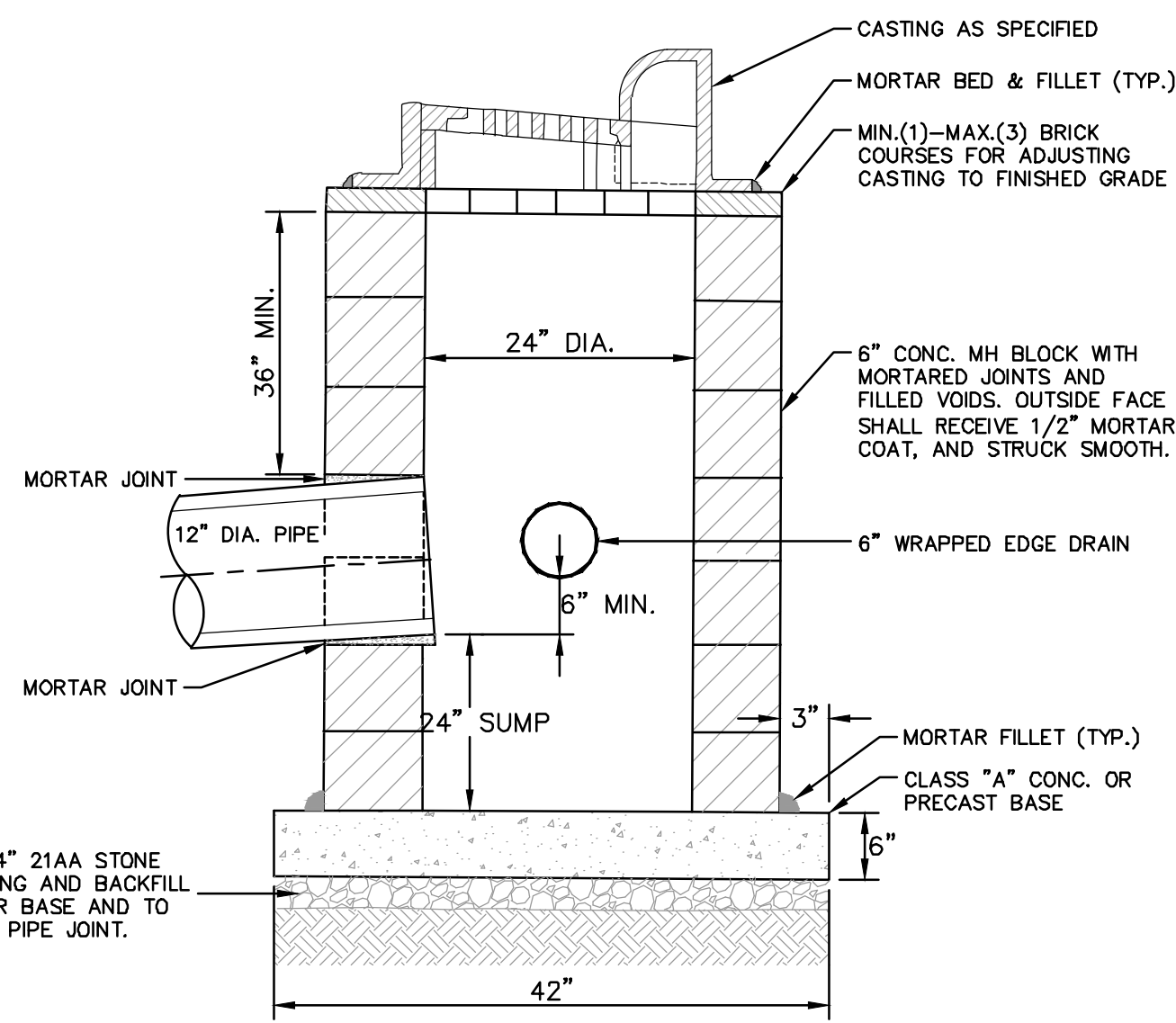
ENGINEERING
LONGSHORE INDIANOLA OTTAWA
ARGO AMHERST WATERMAIN
WATER MAIN DETAILS

SHEET No.	7 OF 54
DRAWING No.	2018019-7



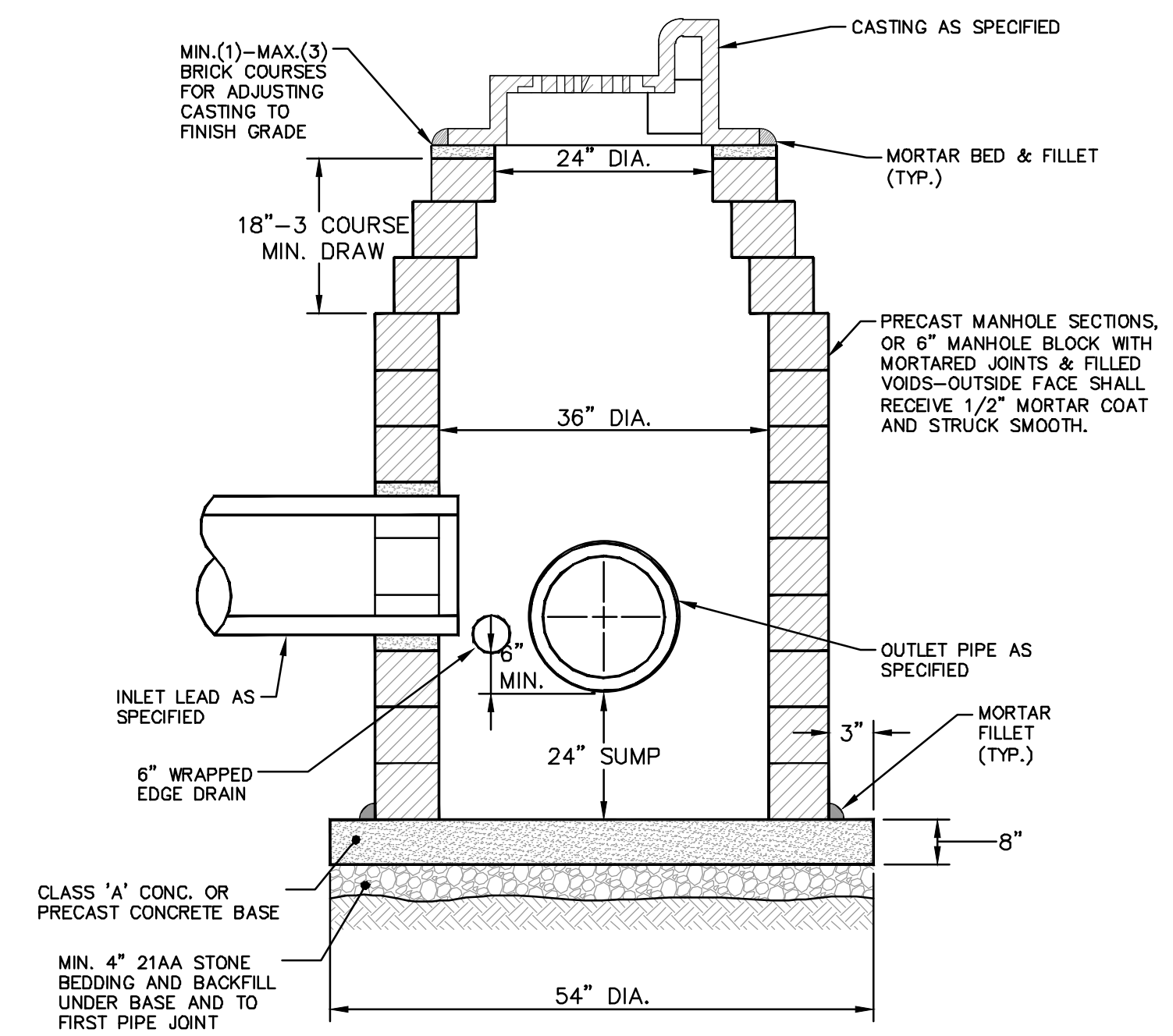
- NOTES:
1. ALL SANITARY MANHOLES SHALL BE PRECAST CONCRETE.
 2. ALL MANHOLES MUST HAVE ECCENTRIC CONES - BOTH STORM AND SANITARY
 3. ALL SANITARY SEWER OPENINGS SHALL BE PRECAST WITH RUBBER BOOT CONNECTIONS.
 4. 2' SUMP REQUIRED ON ALL DRAINAGE STRUCTURES.

STANDARD MANHOLE (TYPE I)



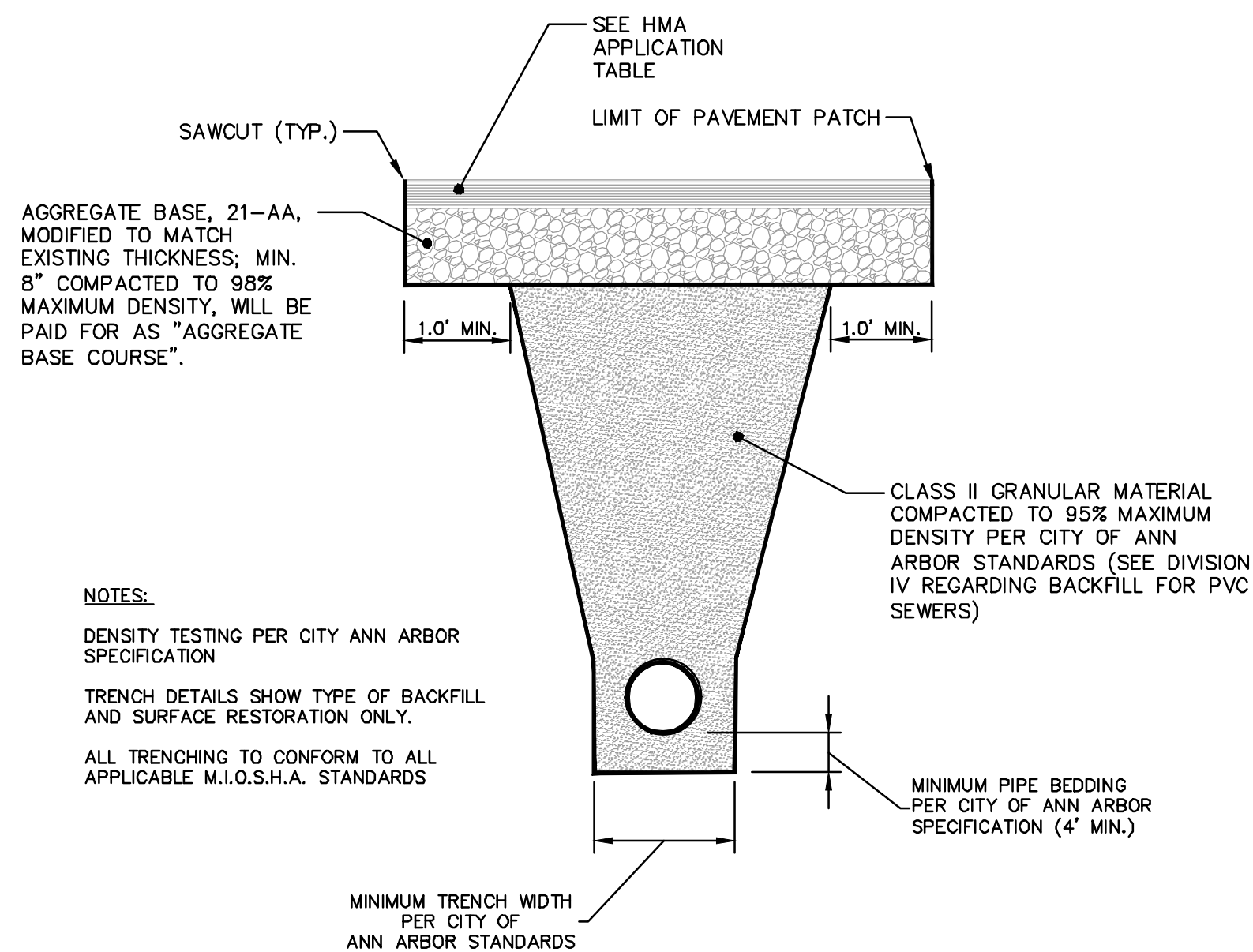
- NOTES:
1. MAY BE USED WITH ONLY SINGLE OUTLET PIPE, AND NO INLET PIPE
 2. FRONT EDGE OF INLET CASTING SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE-OF-METAL)

SINGLE INLET STRUCTURE SD-S-10



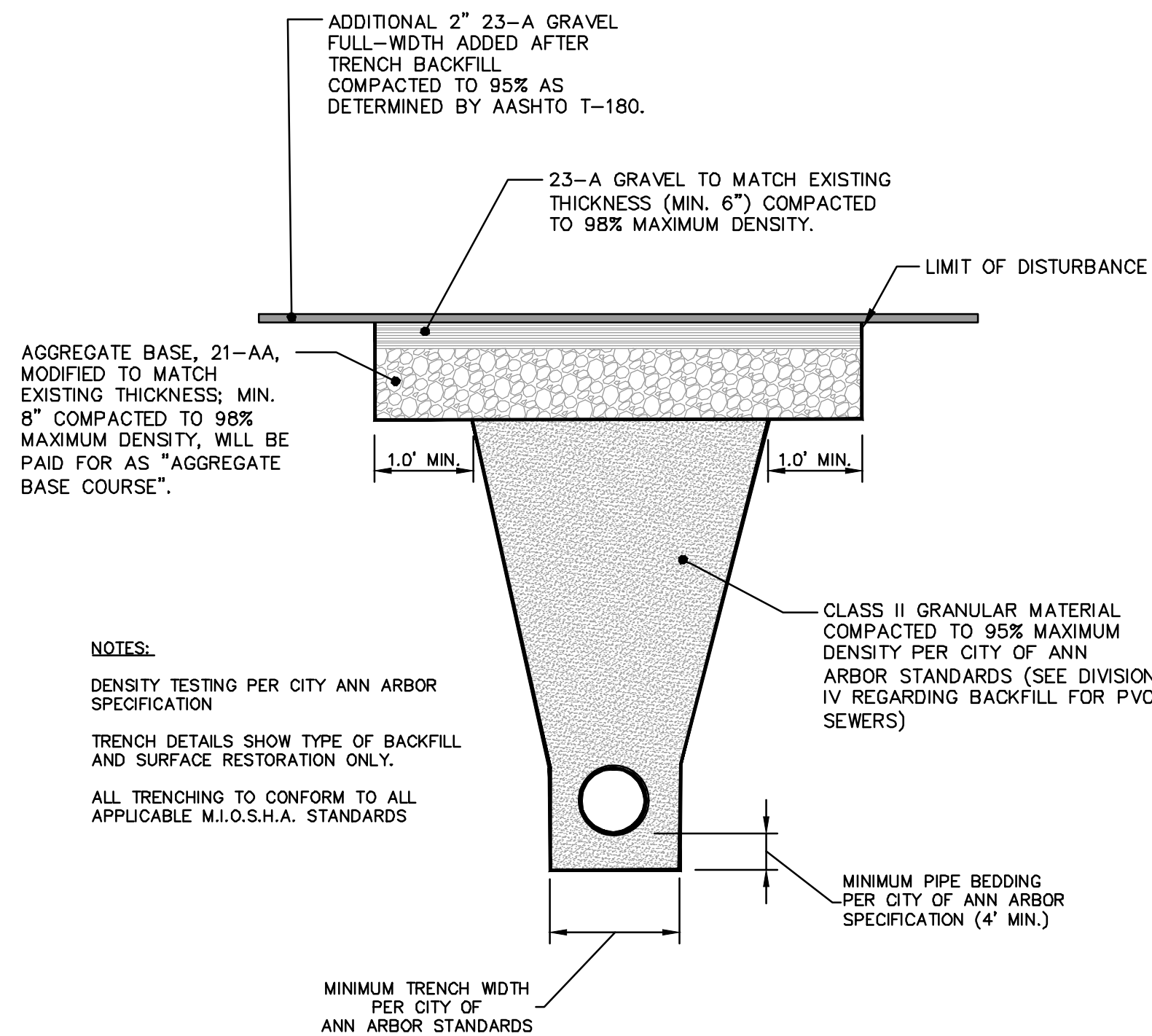
- NOTES:
1. SHALL BE USED IF SINGLE OUTLET PIPE AND SINGLE INLET PIPE.
 2. FRONT EDGE OF INLET CASTING SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE-OF-METAL)

INLET-JUNCTION CHAMBER SD-S-9



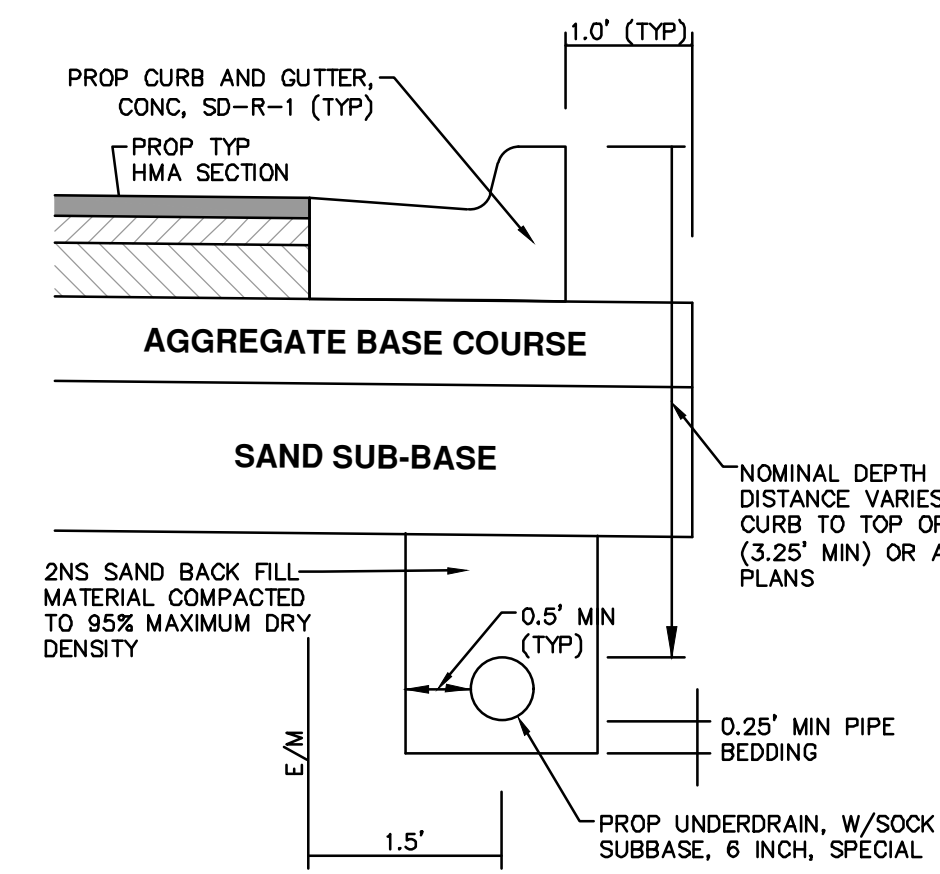
- NOTES:
- DENSITY TESTING PER CITY ANN ARBOR SPECIFICATION
- TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY.
- ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS
- MINIMUM PIPE BEDDING PER CITY OF ANN ARBOR SPECIFICATION (4' MIN.)

UTILITY TRENCH-TYPE I SD-TD-1 (MODIFIED)
(UNDER HMA PAVEMENT)



- NOTES:
- DENSITY TESTING PER CITY ANN ARBOR SPECIFICATION
- TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY.
- ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS
- MINIMUM PIPE BEDDING PER CITY OF ANN ARBOR SPECIFICATION (4' MIN.)

UTILITY TRENCH-TYPE II SD-TD-2 (MODIFIED)
(UNDER GRAVEL ROAD)



BASED ON CITY OF ANN ARBOR STANDARD SD-TD-10 APPLIES TO: HMA PAVEMENT

TRENCH DETAIL FOR UNDER DRAIN
(UNDER HMA PAVEMENT)

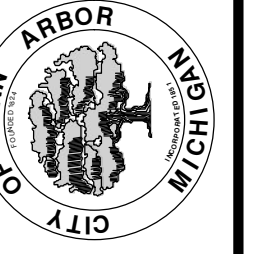
- NOTES:
- IN AREAS WHERE EDGE DRAIN CANNOT BE INSTALLED IN ACCORDANCE WITH THE DETAIL, THE EDGE DRAIN SHALL BE INSTALLED AT THE DEPTH AS INDICATED ON THE PLANS, OR AS DIRECTED BY ENGINEER. IN NO CASE SHALL THE EDGE DRAIN BE INSTALLED AT A GRADE LESS THAN 0.50% OR AT A DEPTH OF LESS THAN 2' BELOW TOP OF PROPOSED PAVEMENT.
- FOR PAVEMENT BASE AND SUBBASE THICKNESS, SEE TYPICAL PAVEMENT CROSS-SECTION(S)
- TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY
- ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS
- EDGE DRAINS SHALL BE CONNECTED TO A DRAINAGE STRUCTURE AND WILL EXTEND A MINIMUM OF 100 FEET UPSLOPE FROM THE STRUCTURE.
- ADDITIONAL LENGTHS OF EDGE DRAIN MAY BE REQUIRED BY THE ENGINEER BASED ON EXISTING SITE CONDITIONS, INCLUDING CONDITION OF THE SUBGRADE.

R: \2018019 Longshore Dr WM\Plan Production\2018019Det.dwg Dwg Created: 11-Feb-19 - 9:2 standard bw.stb - Plot Date: 12-Feb-19



01	ADDENDUM No. 1	CC/DF/KB	JKA	CHECKED
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03	DATE	1-23-19		
04	DESCRIPTION			
05	REV.			

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LONGSHORE INDIANOLA OTTAWA
ARGO AMHERST WATERMAIN
STORM SEWER AND TRENCH DETAILS

SCALE: NTS
DRAWING No.: 2018019-8
SHEET No.

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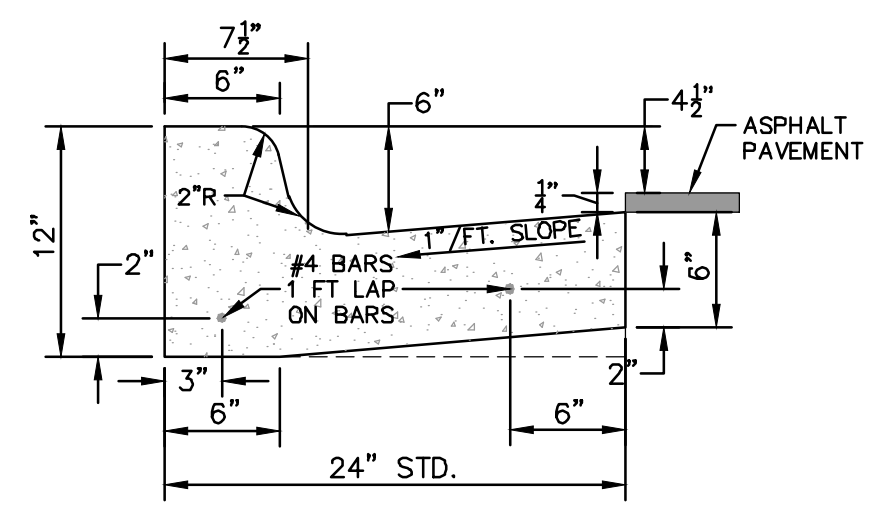
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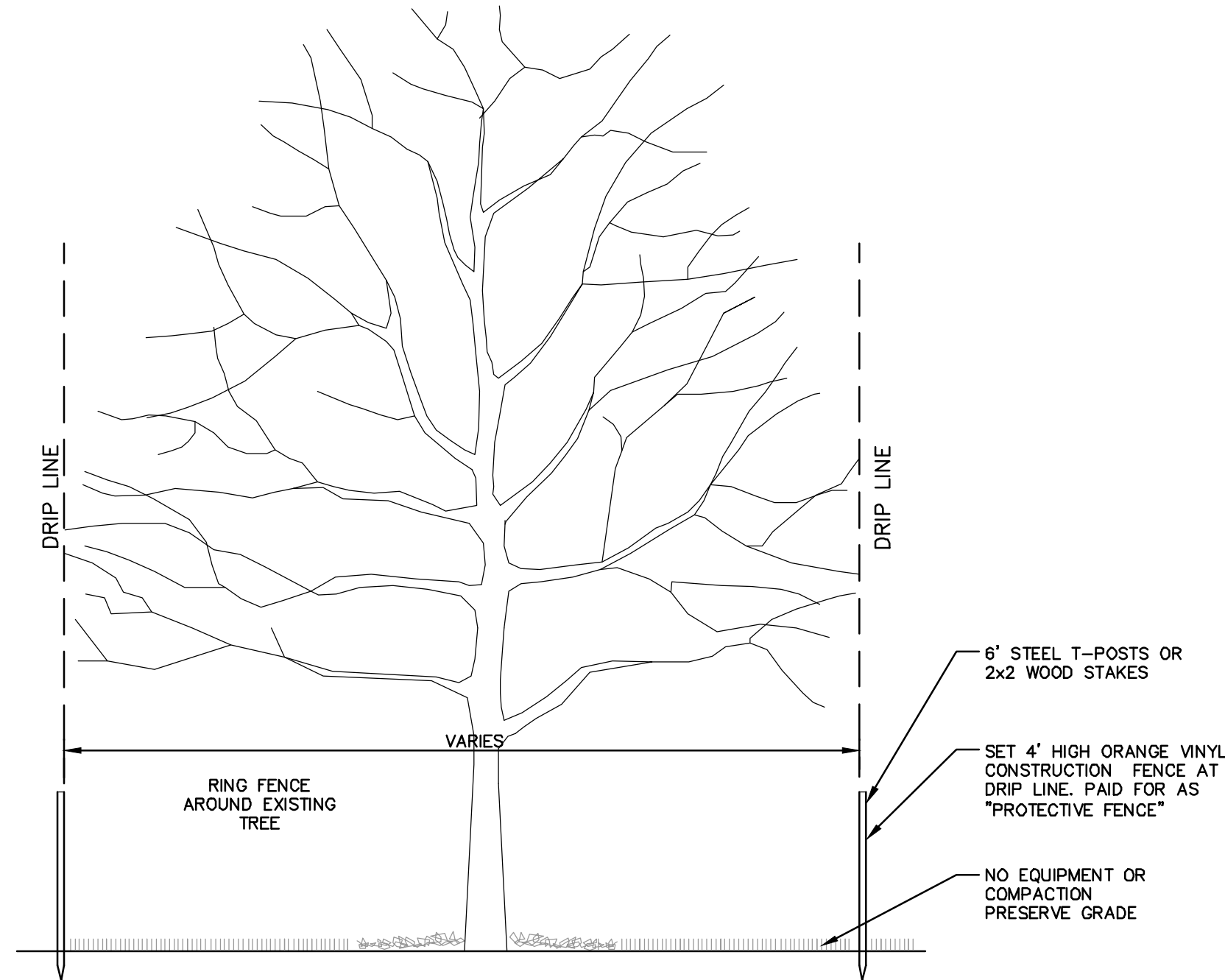


CITY OF ANN ARBOR - ENGINEERING
LONGSHORE INDIANOLA OTTAWA
ARGO AMHERST WATERMAIN
MISC. DETAILS

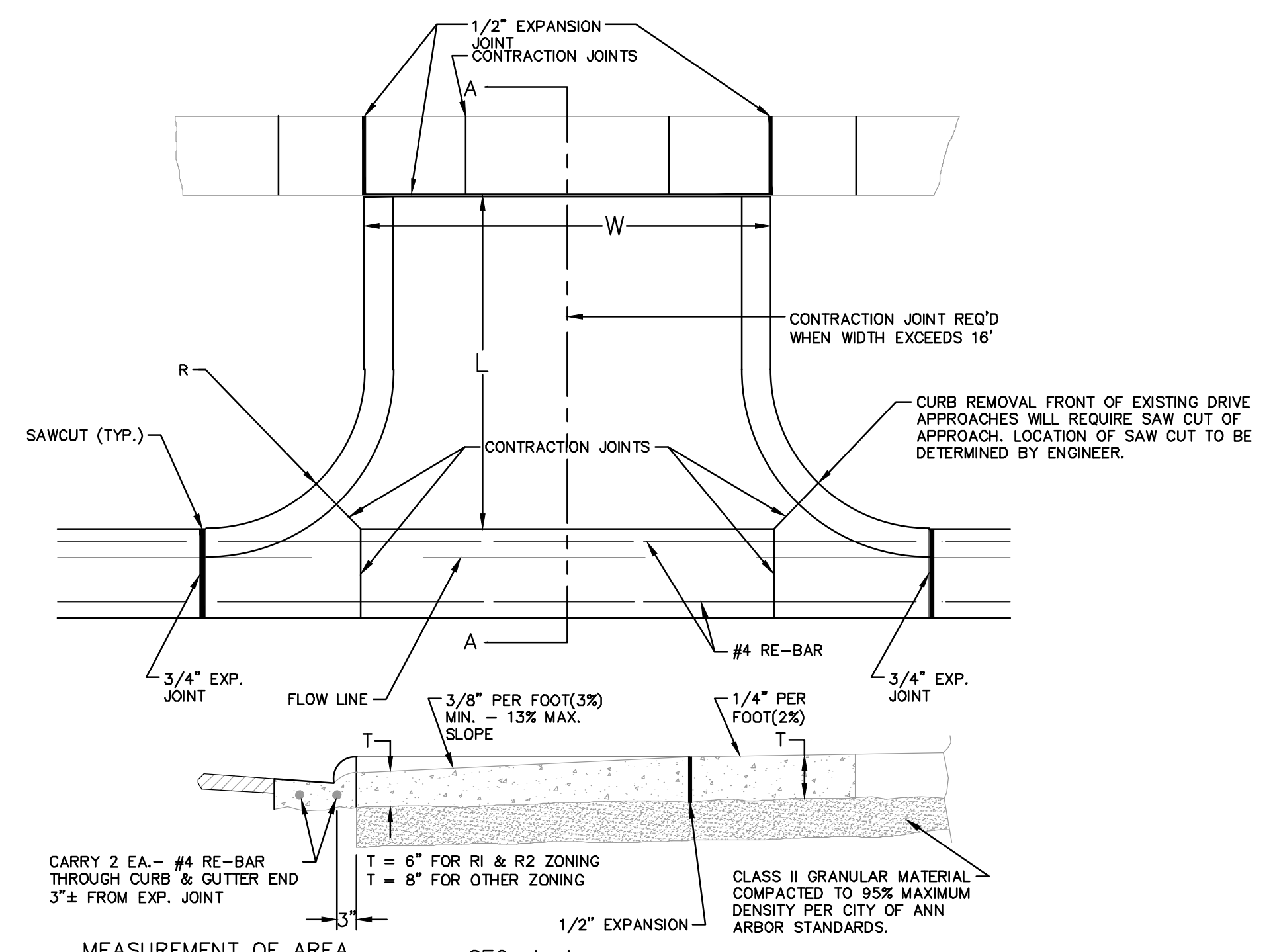
SCALE: NTS
DRAWING No. 2018019-9



CURB AND GUTTER, CONC, DET F4, SPECIAL
NO SCALE



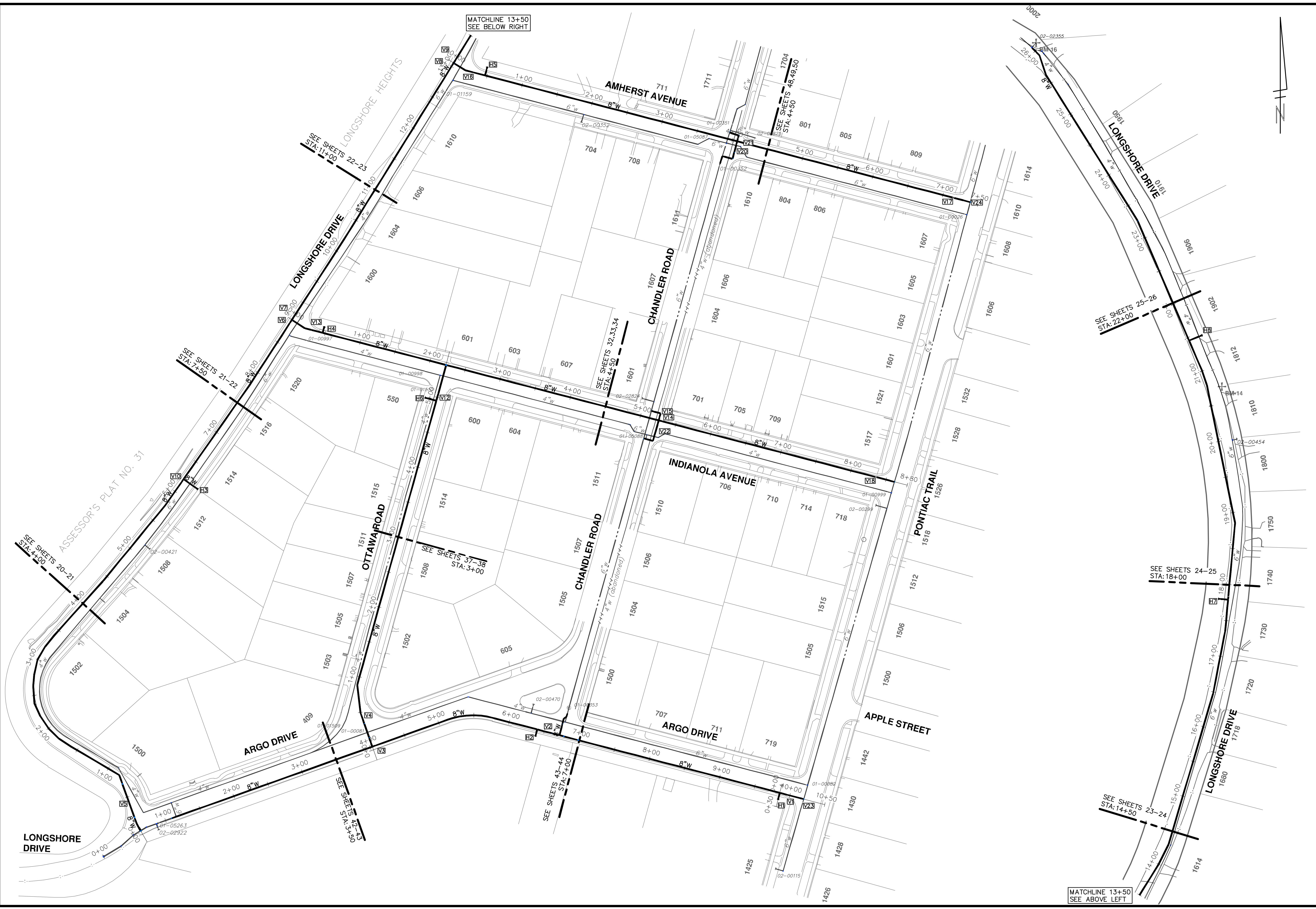
TREE PROTECTION DETAIL





MEASUREMENT OF AREA
 $W \times L = \text{AREA}$
SEC. A-A
NOTE:
1. DRIVE APPROACH TO BE CLASS 'A' CONCRETE.
2. R(RADIUS) AND W(DRIVE WIDTH) AS REQUIRED FOR ZONING BY CITY CODE
3. IF GUTTER IS OVERLAYED, GUTTER OF THE APPROACH SHALL BE AT SAME ELEVATION AS EXISTING GUTTER AND ASPHALT WEDGE SHALL BE PLACED IN THE APPROACH.

TYPE 'M' DRIVE APPROACH SD-R-6

R:\2018019 Longshore Dr WM\Plan Production\2018019WtrOv.dwg Dwg Created: 22-Jan-19 - _a2 standard bw.stb - Plot Date: 12-Feb-19



										
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING LONGSHORE INDIANOLA OTTAWA ARGO AMHERST WATERMAIN OVERALL WATER MAIN LAYOUT										
SCALE PLAN: 1" = 60' DRAWING No.: 2018019-10 SHEET No.: 10 OF 54	<table border="1"> <tr> <th>REV.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>01</td> <td>2-13-19</td> <td>CC/DF/KB</td> </tr> <tr> <td>02</td> <td>1-23-19</td> <td>CC/DF/KB</td> </tr> </table>	REV.	DATE	DESCRIPTION	01	2-13-19	CC/DF/KB	02	1-23-19	CC/DF/KB
REV.	DATE	DESCRIPTION								
01	2-13-19	CC/DF/KB								
02	1-23-19	CC/DF/KB								
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