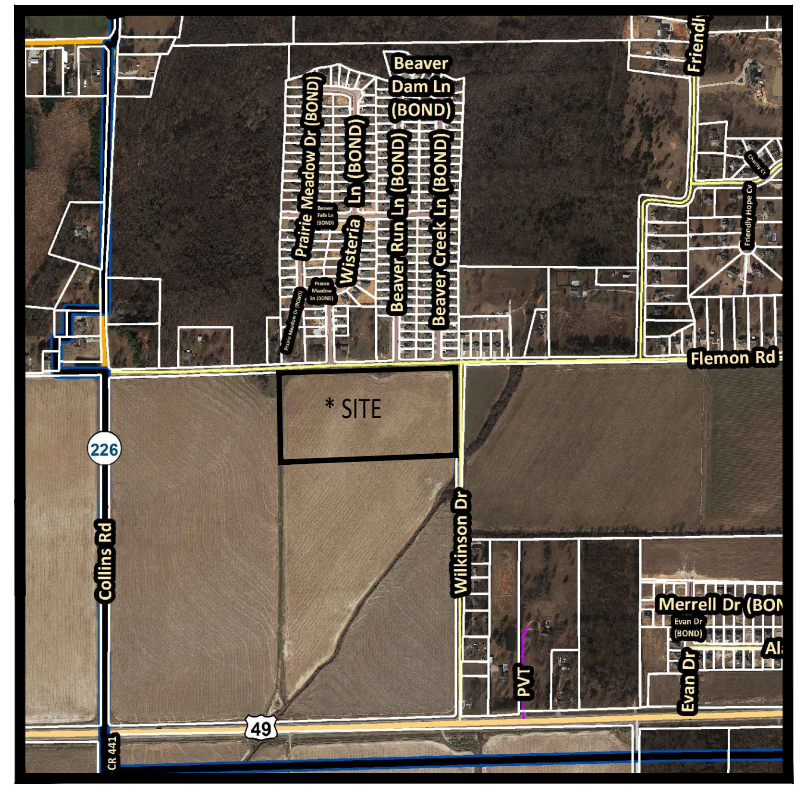
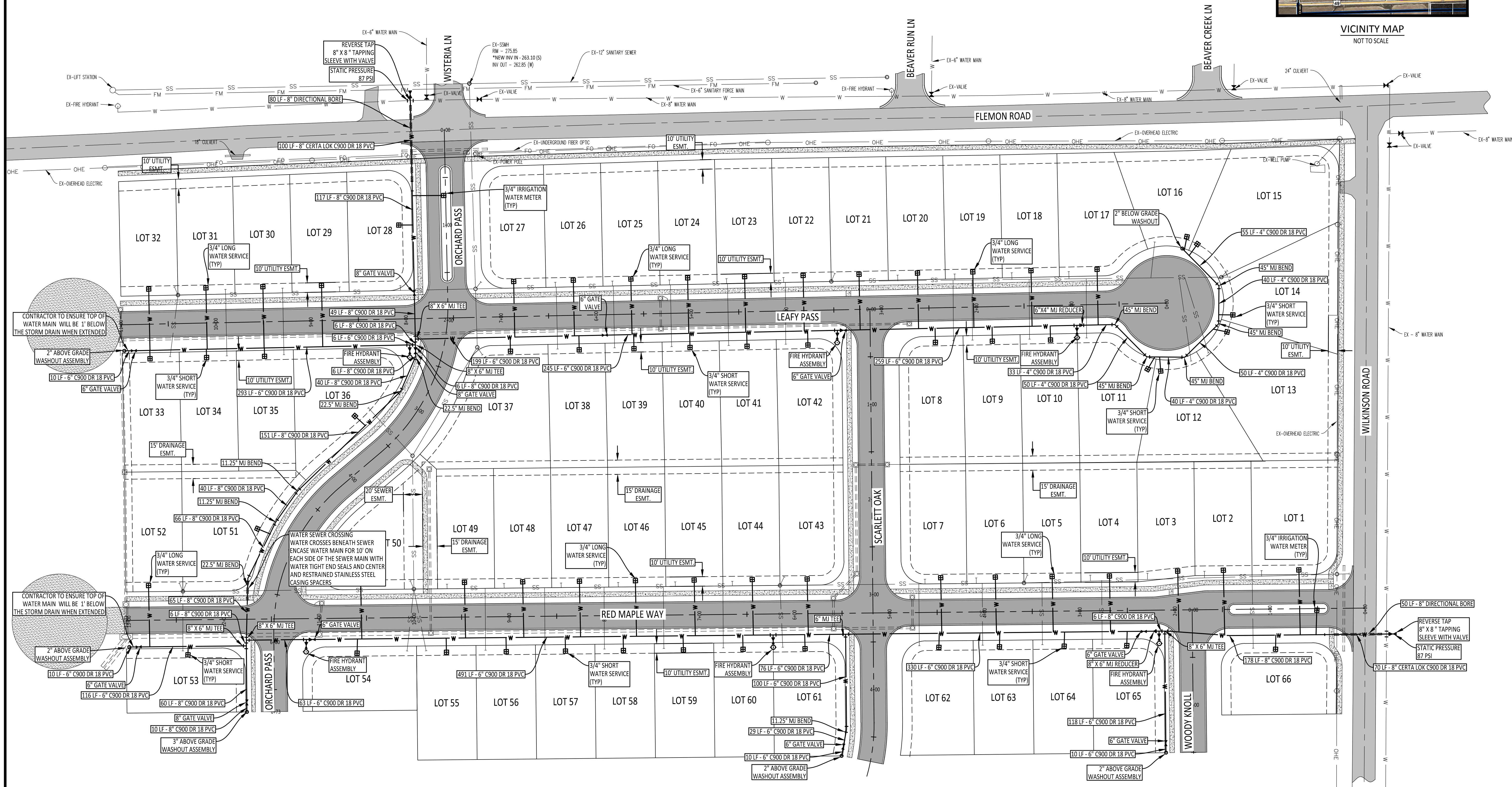




VICINITY MAP
NOT TO SCALE

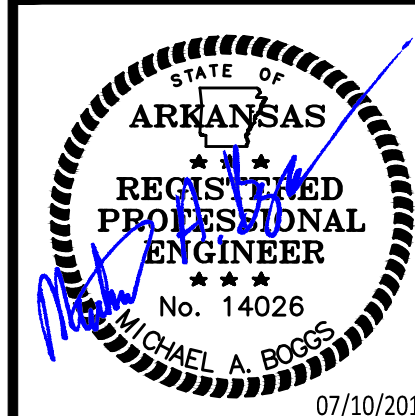
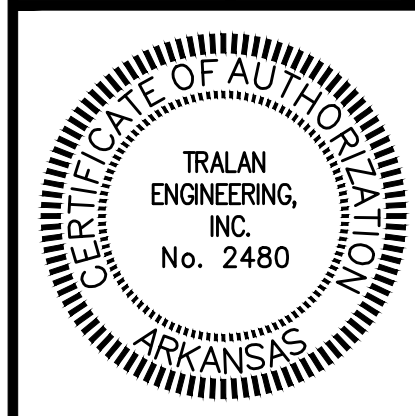


COMPANY INFO:
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PROJECT:
THE ORCHARD, PH-I

CLIENT:
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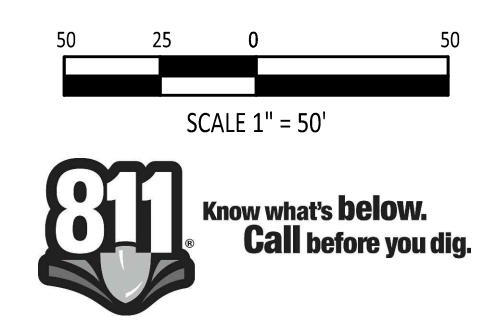
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DRAWN BY:	MAB
DATE:	01/09/2019
SCALE:	1" = 50'
JOB NO.:	18-073
CAD NO.:	

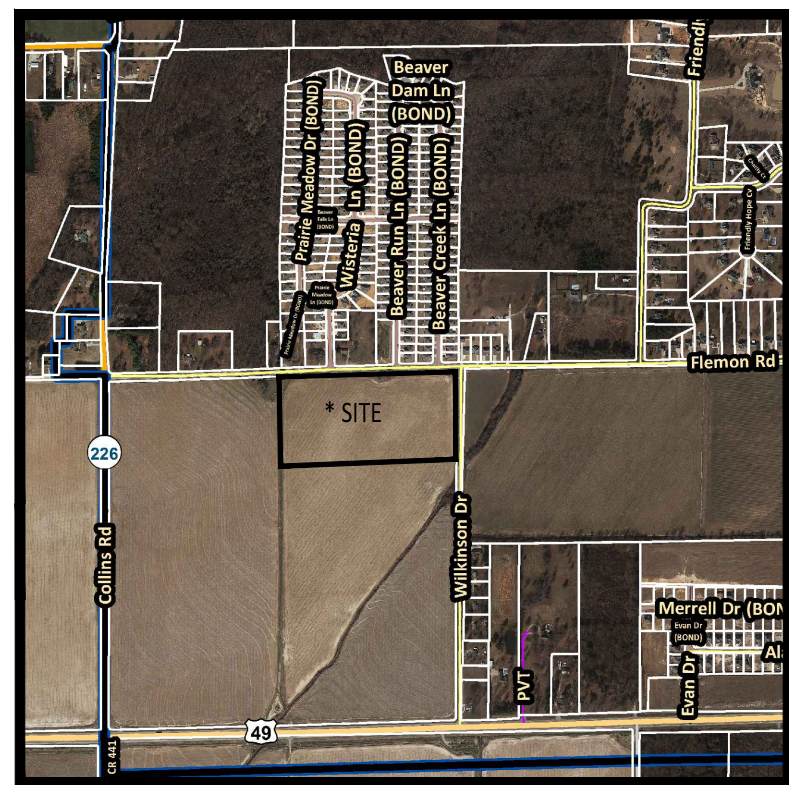
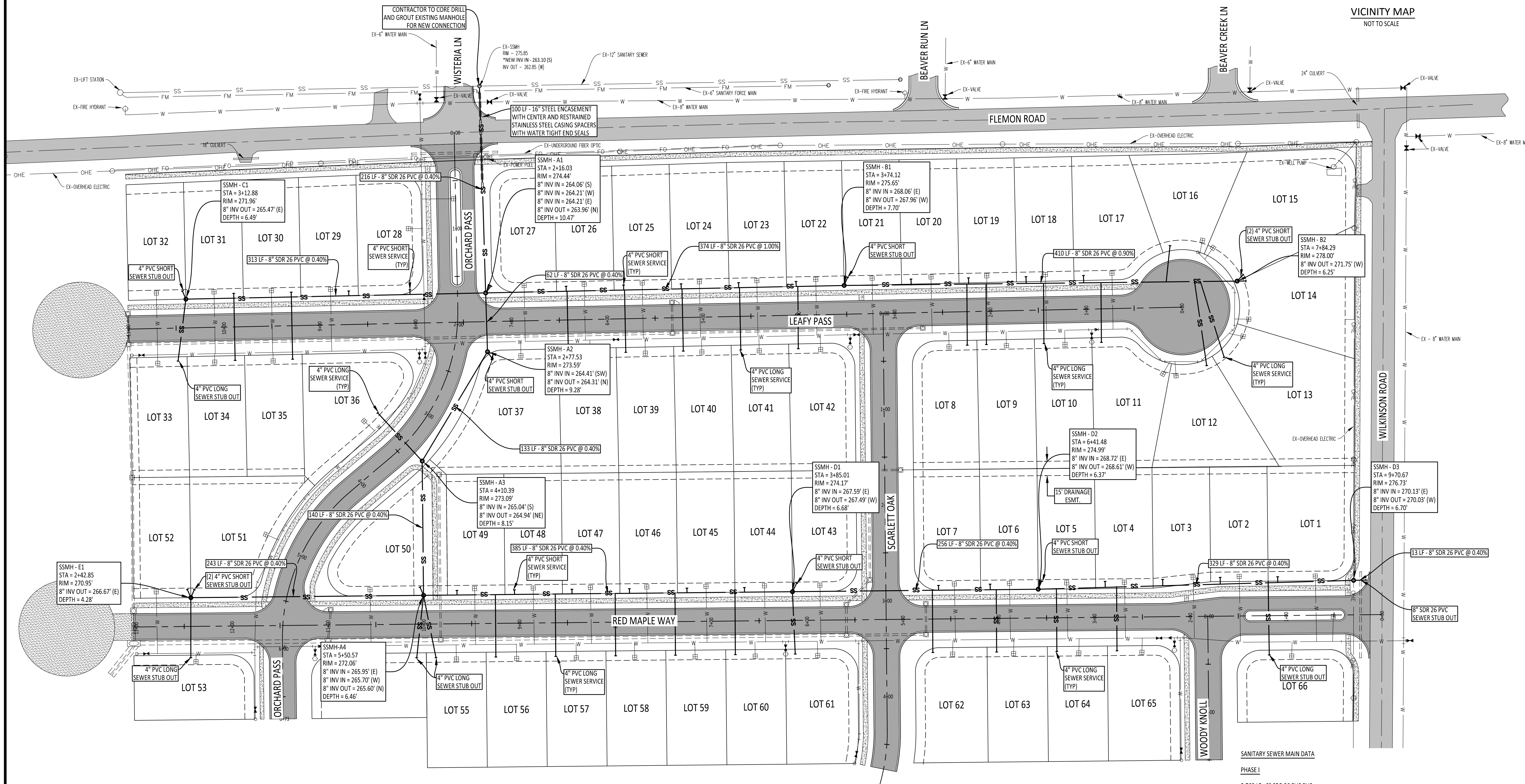
WATER
PLAN

SHEET NUMBER:
10 of 19

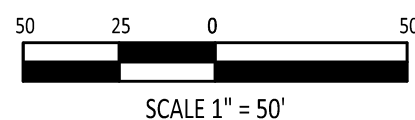
WATER MAIN DATA
PHASE I
806 LF - 8" C900 DR 18 PVC
170 LF - 8" CERTA LOK C900 DR 18 PVC
2,365 LF - 6" C900 DR 18 PVC
268 LF - 4" C900 DR 18 PVC
35 - 3/4" SHORT WATER SERVICE
31 - 3/4" LONG WATER SERVICE
2 - IRRIGATION WATER METERS

NOTE:
1. CITY WATER & LIGHT IS NOT RESPONSIBLE FOR ANY UTILITY TRENCH SETTLEMENT BEFORE OR AFTER THE CONSTRUCTION WARRANTY PERIOD.





VICINITY MAP
NOT TO SCALE



SANITARY SEWER MAIN DATA

PHASE I

2,768 LF - 8" SDR 26 PVC

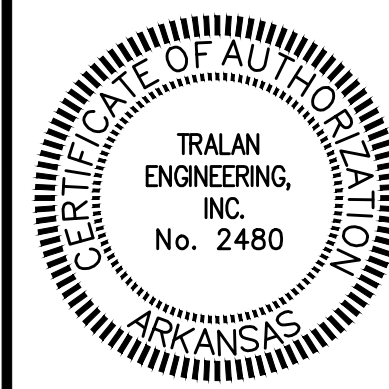
- 12 - 4" PVC SHORT STUB OUT SEWER SERVICE
- 7 - 4" PVC LONG STUB OUT SEWER SERVICE
- 24 - 4" PVC SHORT SEWER SERVICE
- 23 - 4" PVC LONG SEWER SERVICE

NOTE:

- CITY WATER & LIGHT IS NOT RESPONSIBLE FOR ANY UTILITY TRENCH SETTLEMENT BEFORE OR AFTER THE CONSTRUCTION WARRANTY PERIOD.

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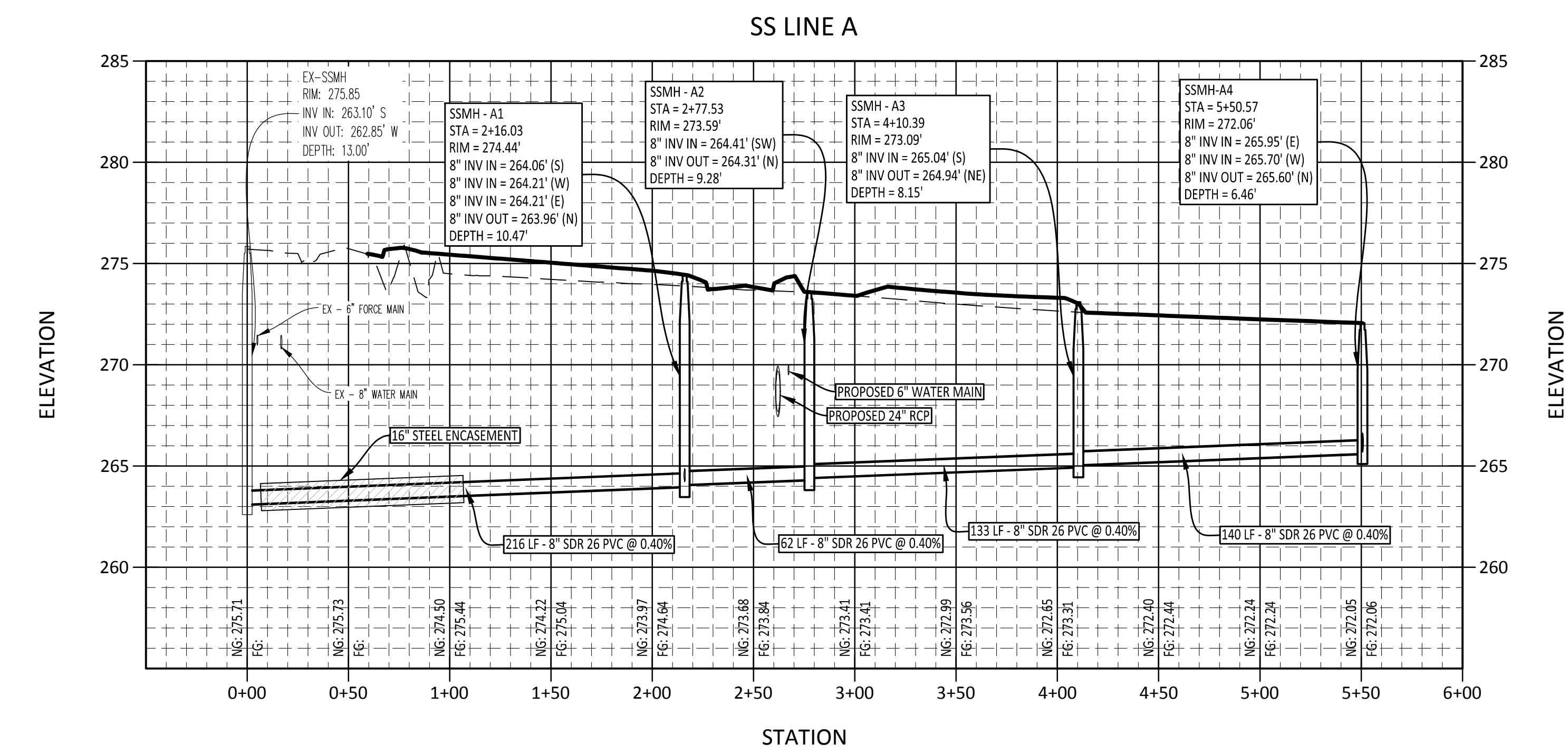
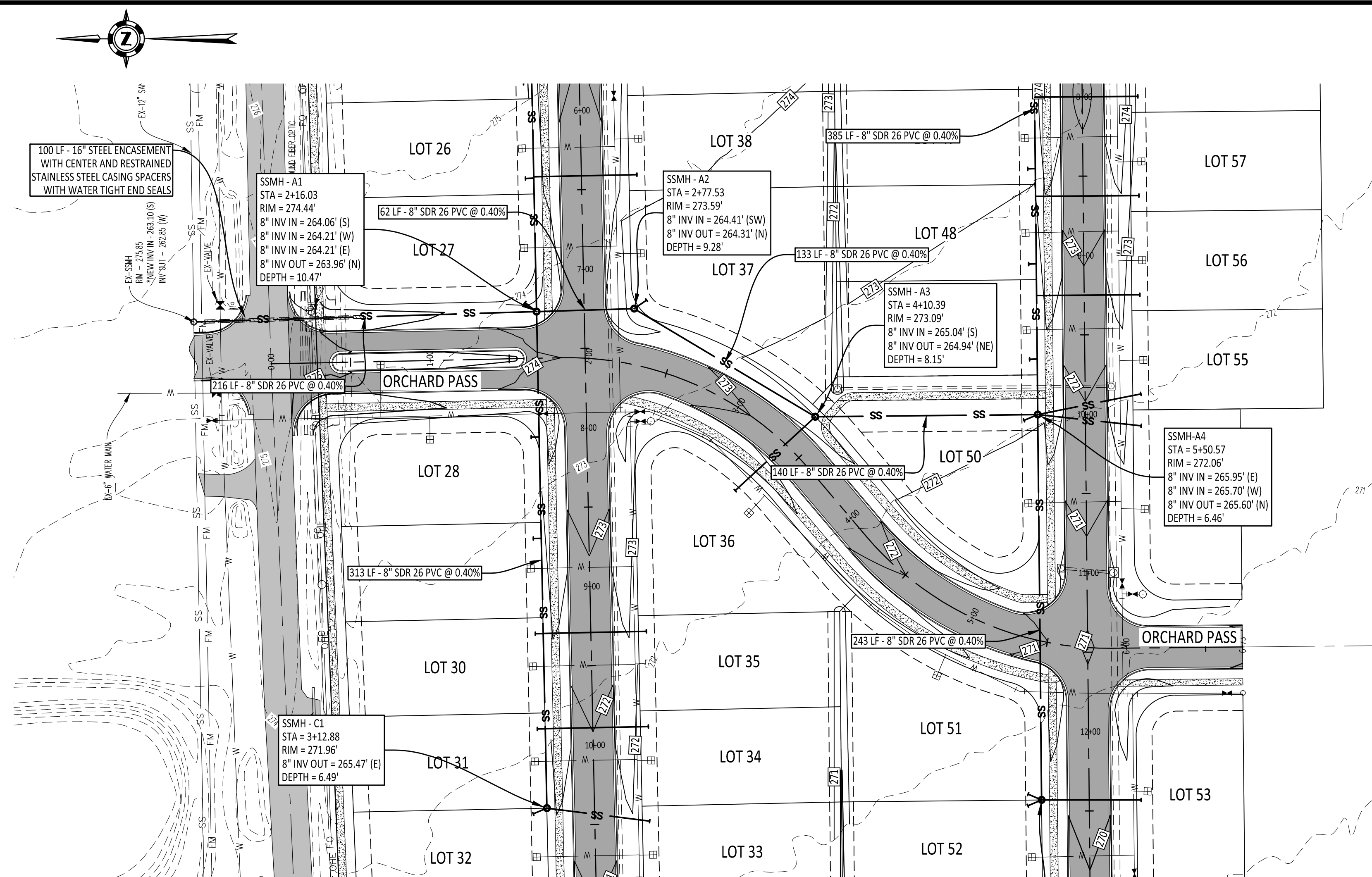


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02/14/2019	MAB	REV PER CIVL
07/10/2019	MAB	ADDED SIDEWALK

DRAWING INFO.	
DRAWN BY:	MAB
DATE:	01/09/2019
SCALE:	1" = 50'
JOB NO.:	18-073
CAD NO.:	

SEWER
PLAN

SHEET NUMBER:
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CERTIFICATE OF AUTHORITY
TRALAN
ENGINEERING,
INC.
No. 2480

STATE OF
ARKANSAS
REGISTERED
PROFESSIONAL
ENGINEER
MICHAEL A. BOSS
No. 14026
02/14/2019

REVISIONS		
DATE	BY	DESCRIPTION
02/14/2019	MAB	REV PER CWL

DRAWING INFO.

DRAWN BY: MAB

DATE: 01/09/2019

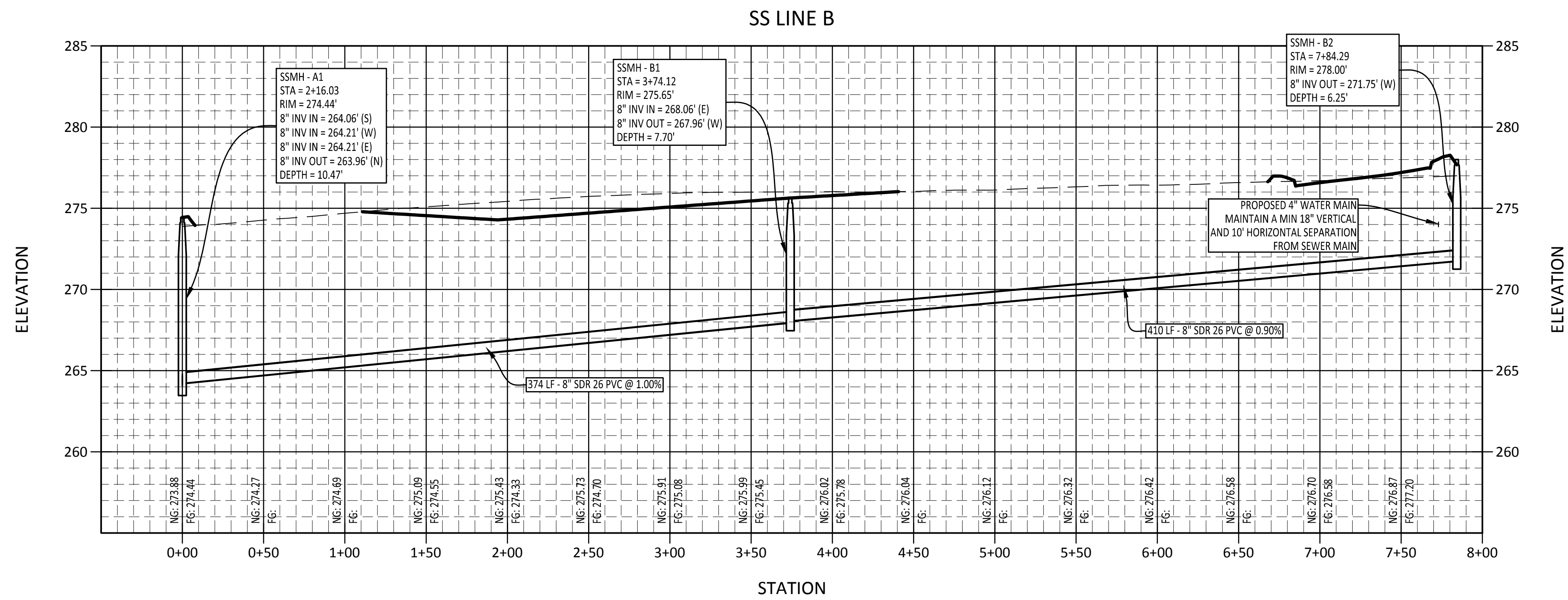
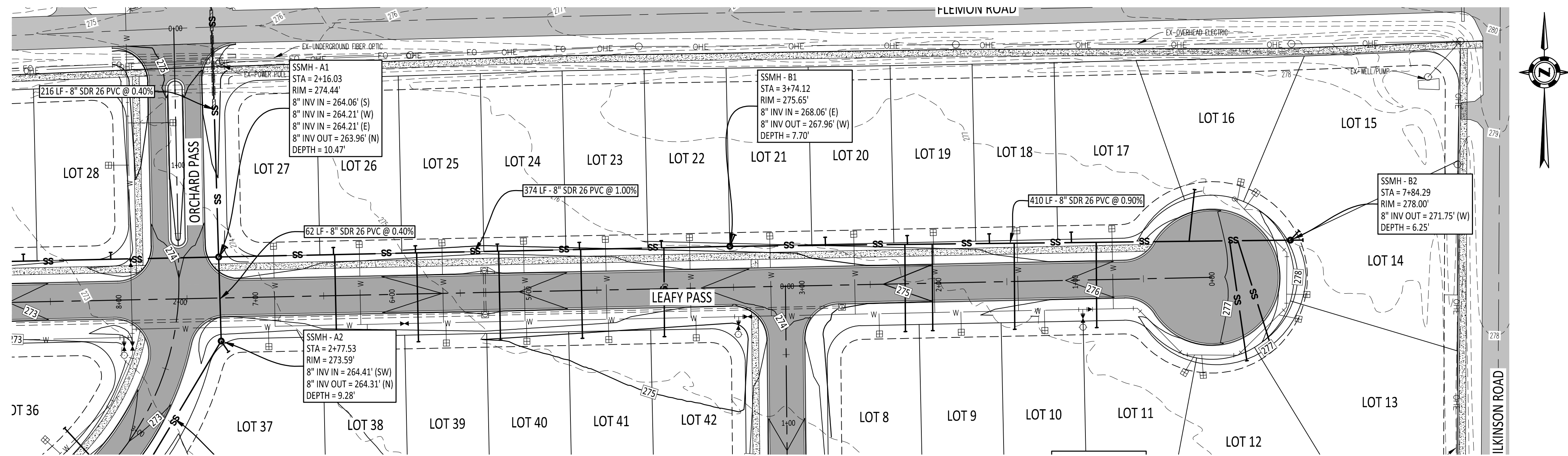
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JOB NO.: 18-073

CAD NO.:

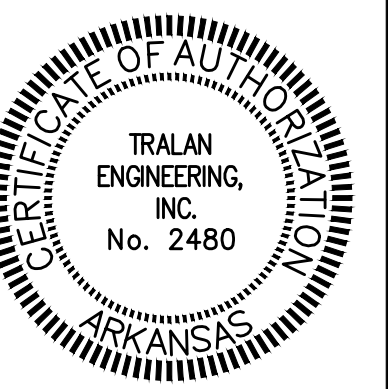
SANITARY SEWER
PLAN AND PROFILE

SHEET NUMBER:
12 of **19**



PROJECT:
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CLIENT:
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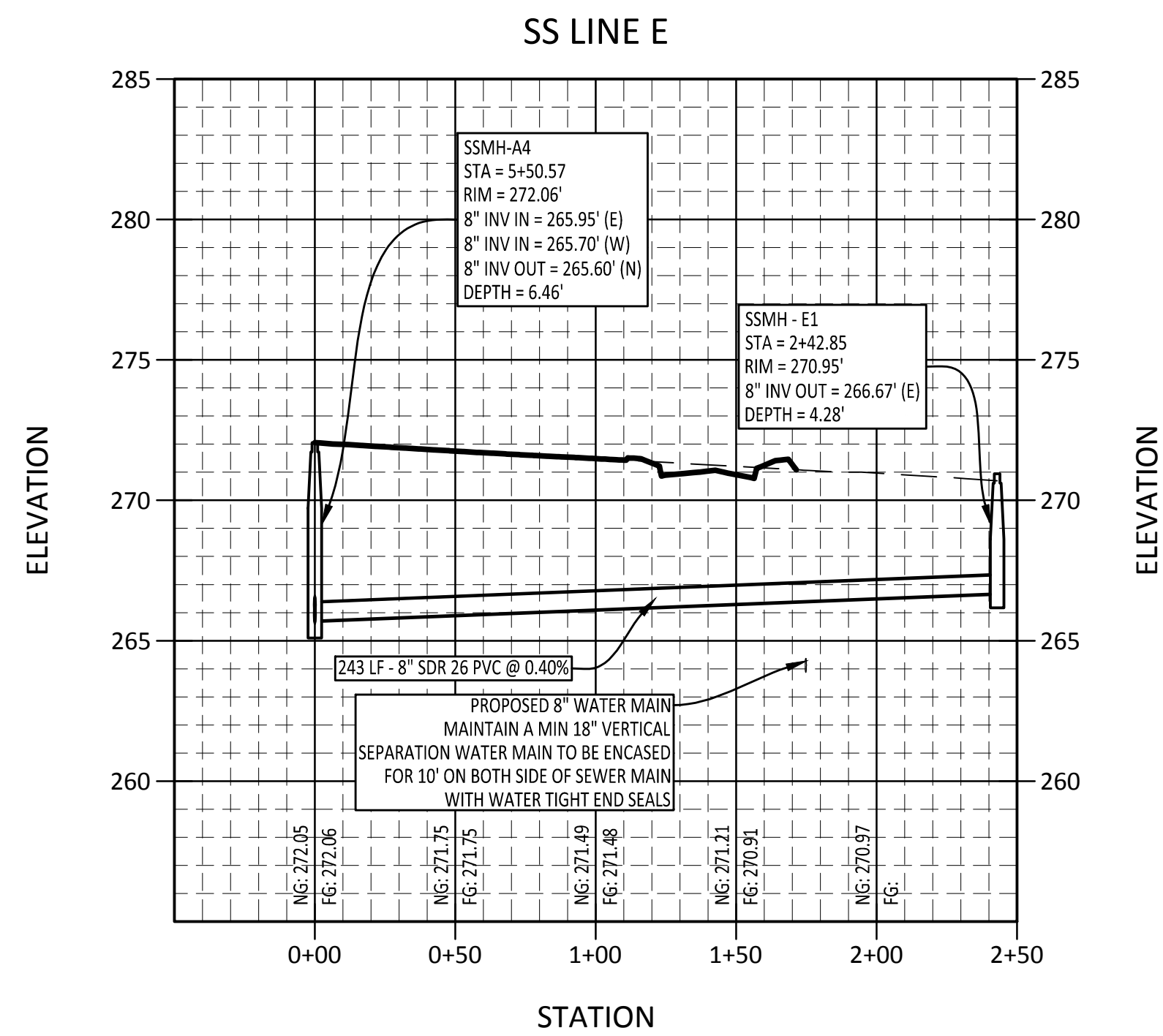
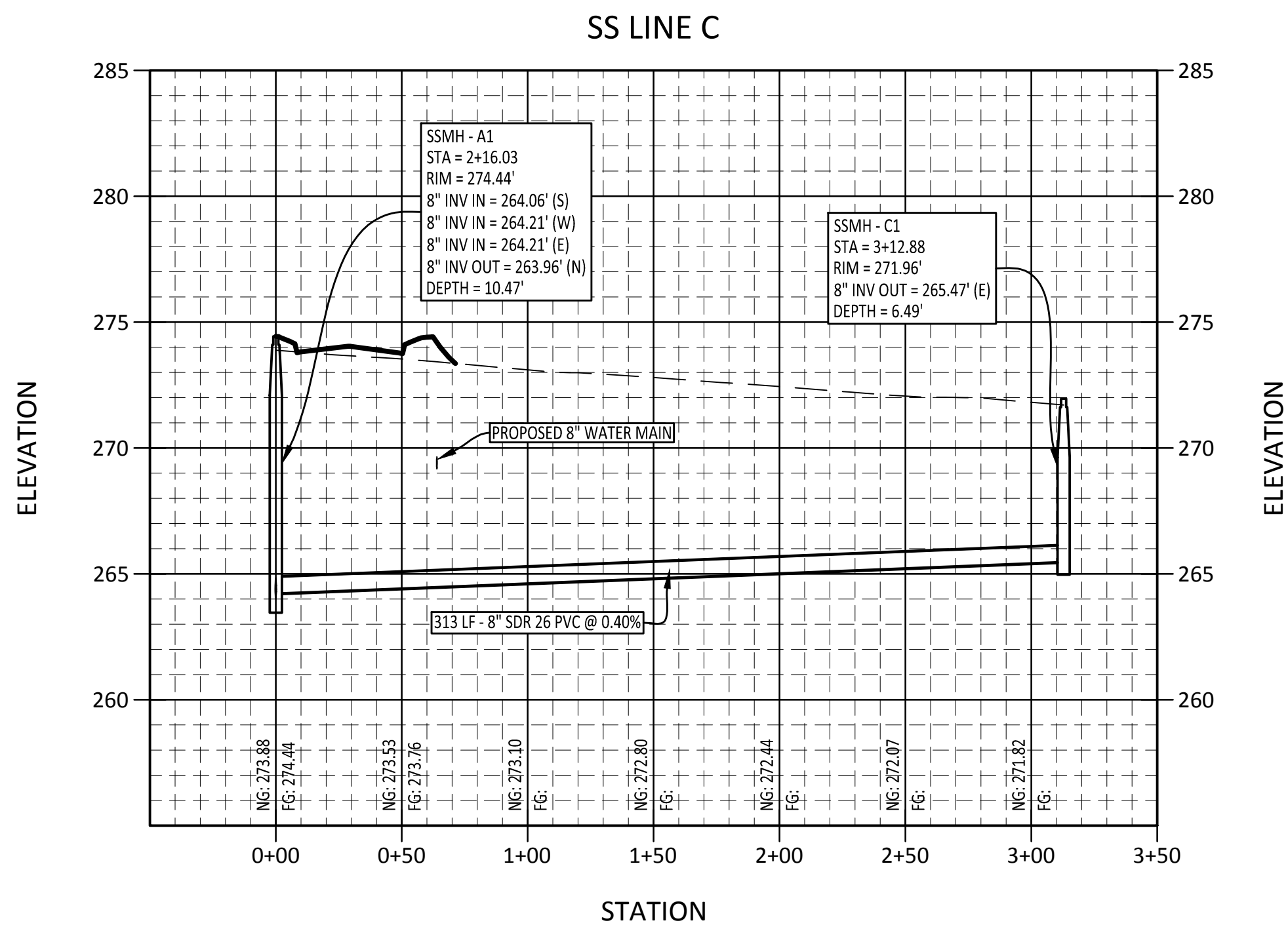
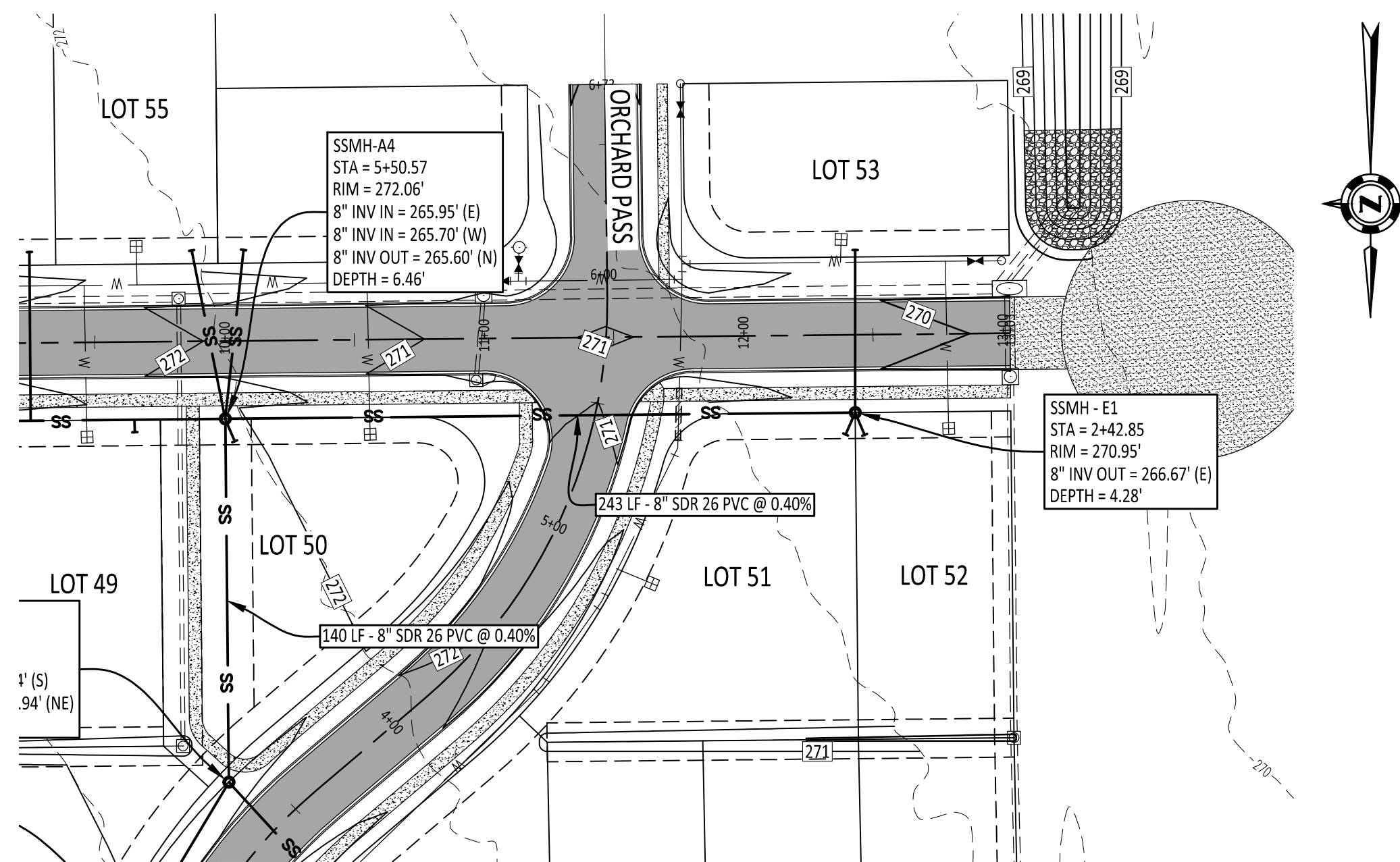
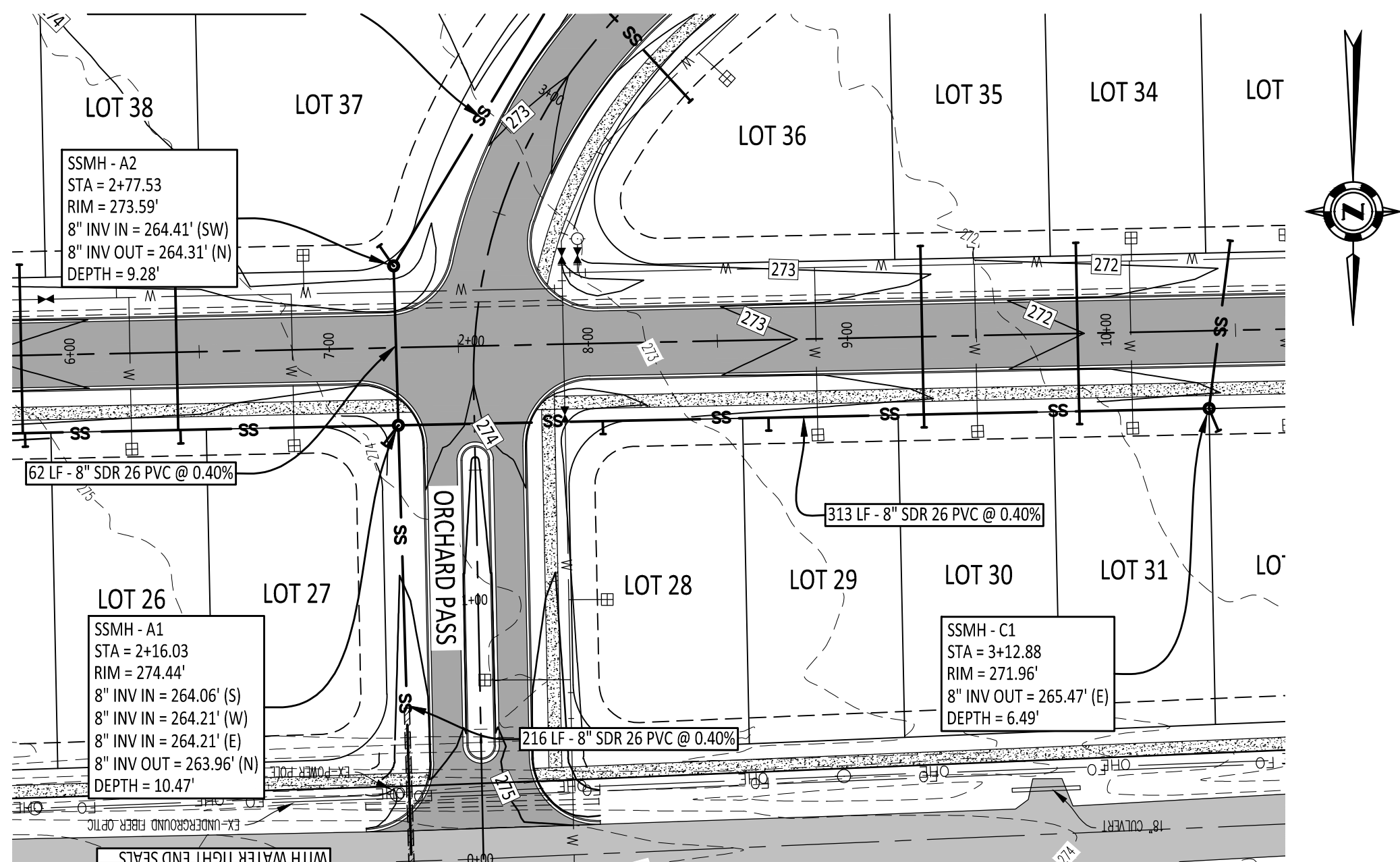


REVISIONS		
DATE	BY	DESCRIPTION
02/14/2019	MAB	REV PER CWL

DRAWING INFO.	
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DATE:	01/09/2019
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CAD NO.:	

SANITARY SEWER
PLAN AND PROFILE

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13 of **19**

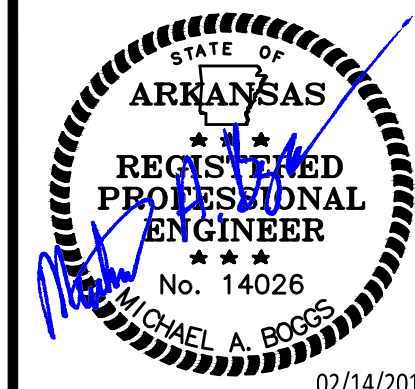
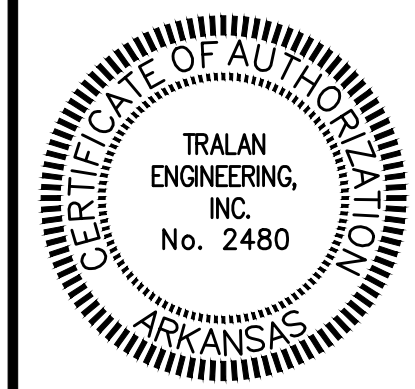


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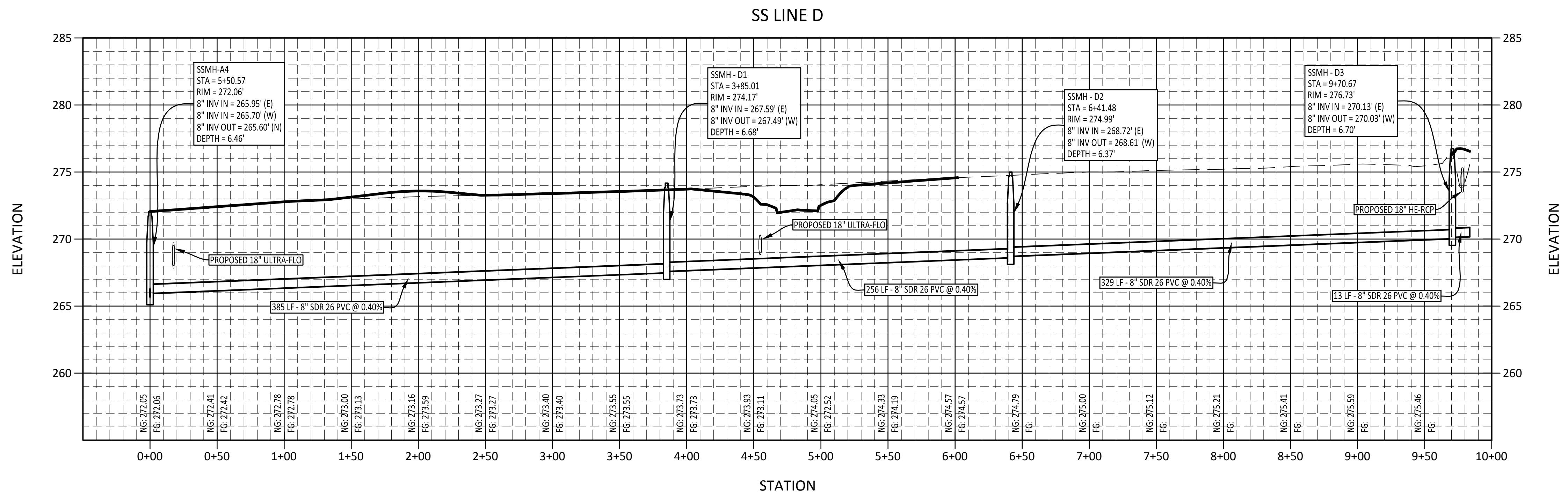
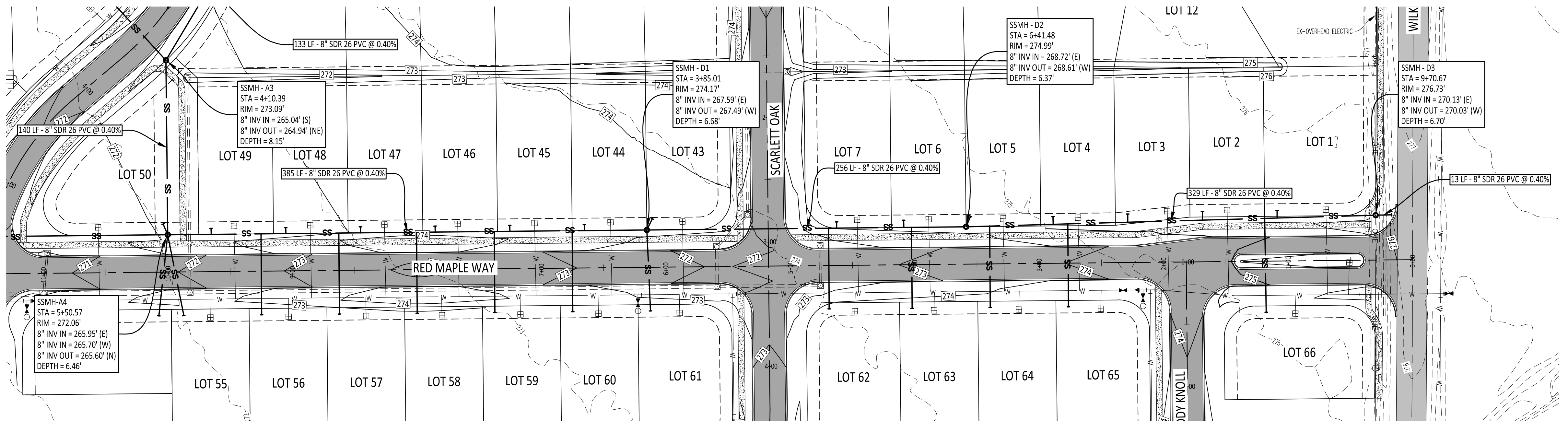


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02/14/2019	MAB	REV PER CWL

DRAWING INFO.	
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DATE:	01/09/2019
SCALE:	1" = 50'
JOB NO.:	18-073
CAD NO.:	

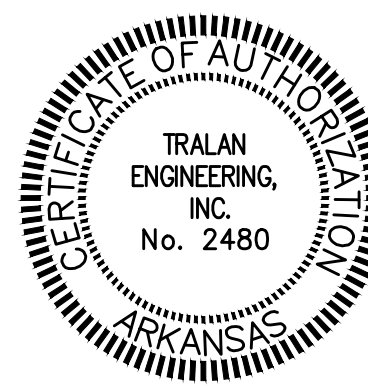
SANITARY SEWER
PLAN AND PROFILE

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14 of **19**



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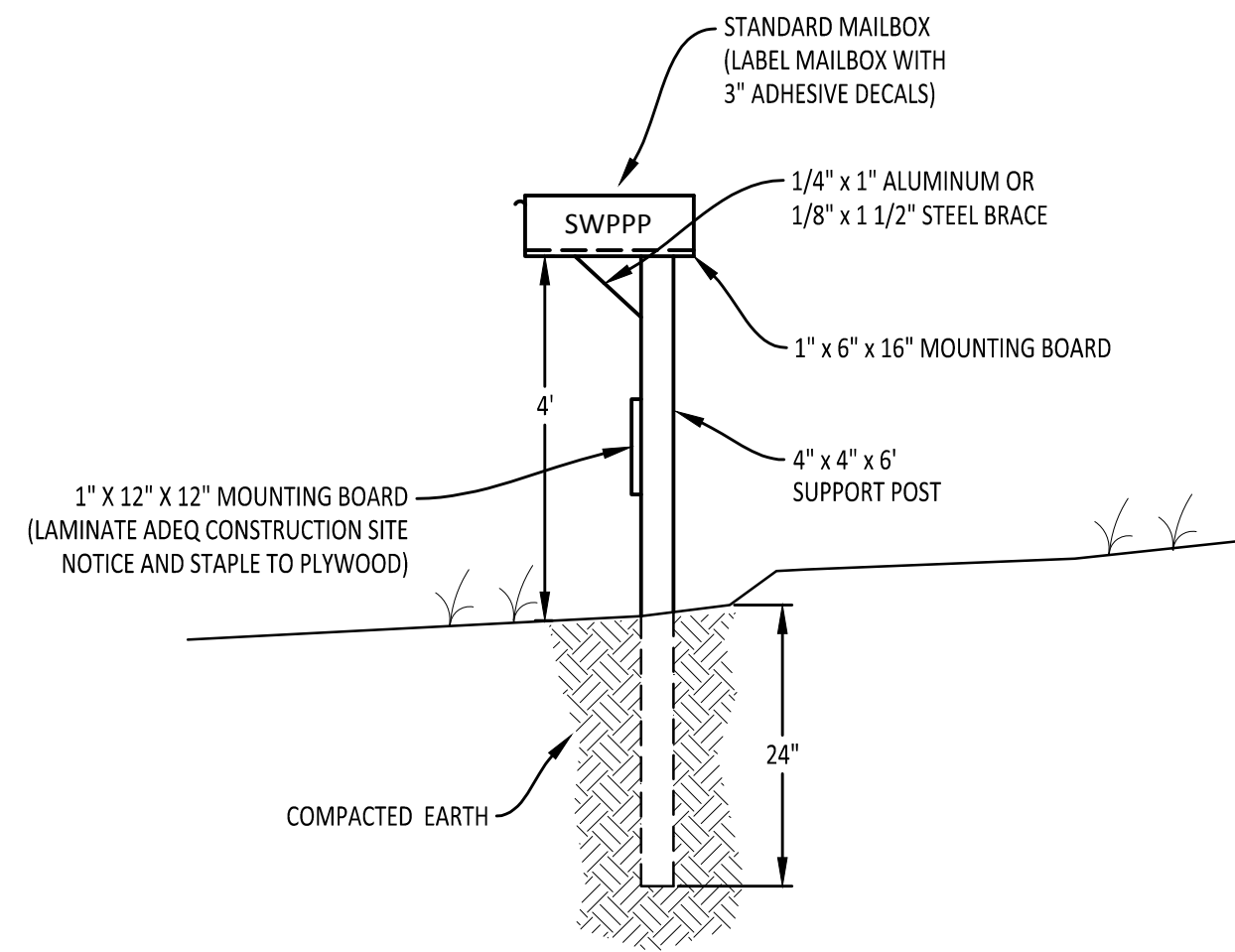
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DATE:	01/09/2019
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JOB NO.:	18-073
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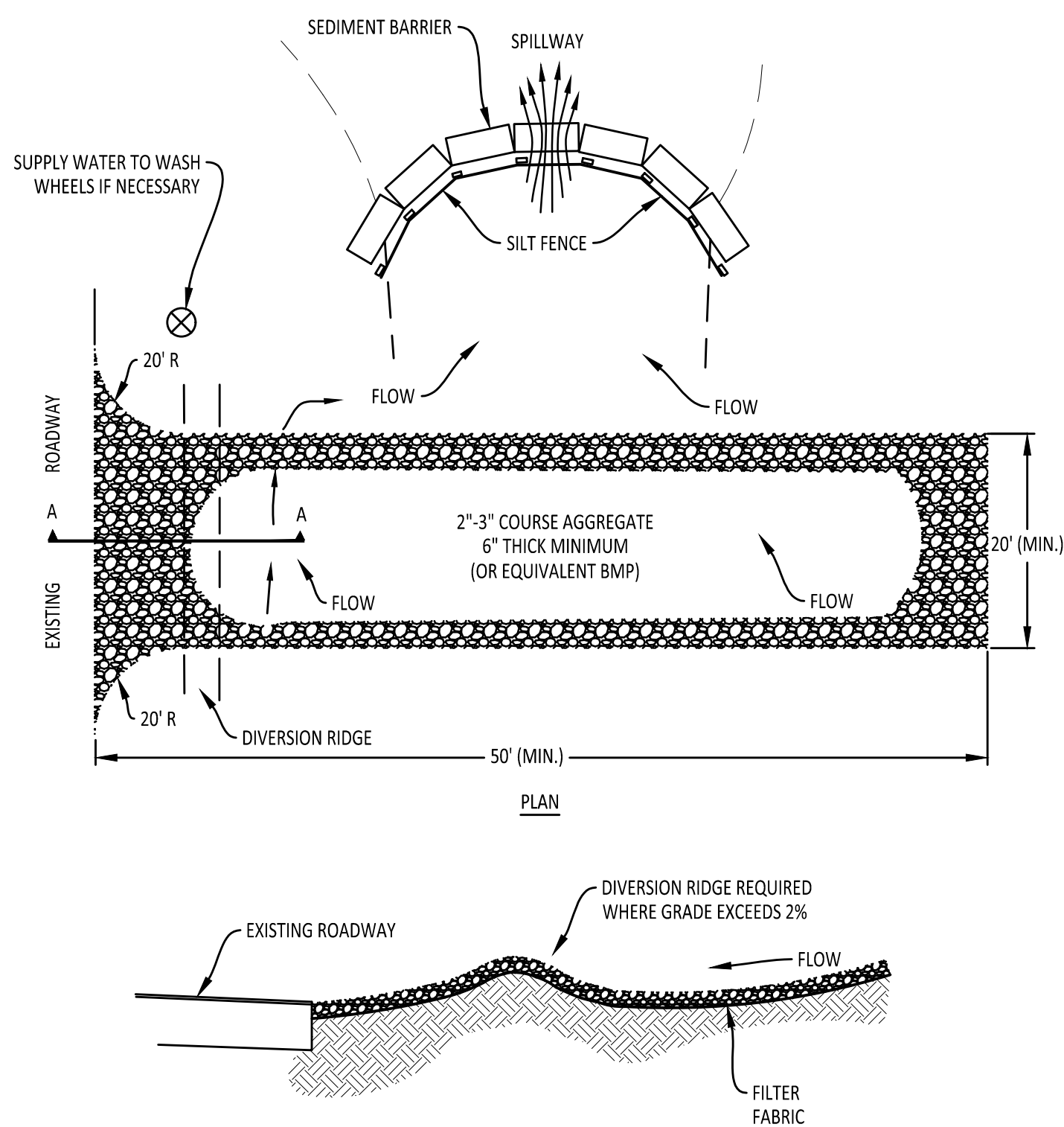
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SWPPP MAILBOX

1

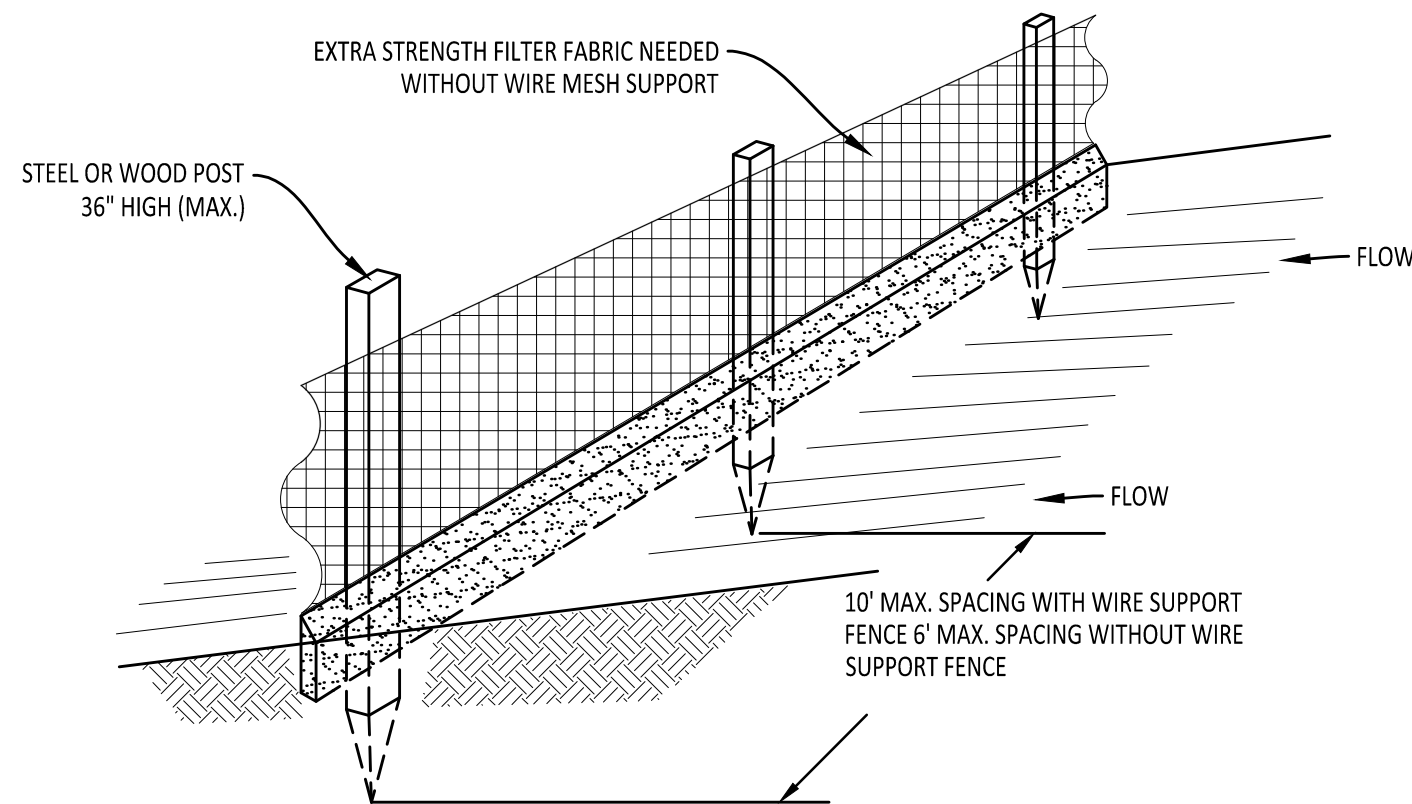
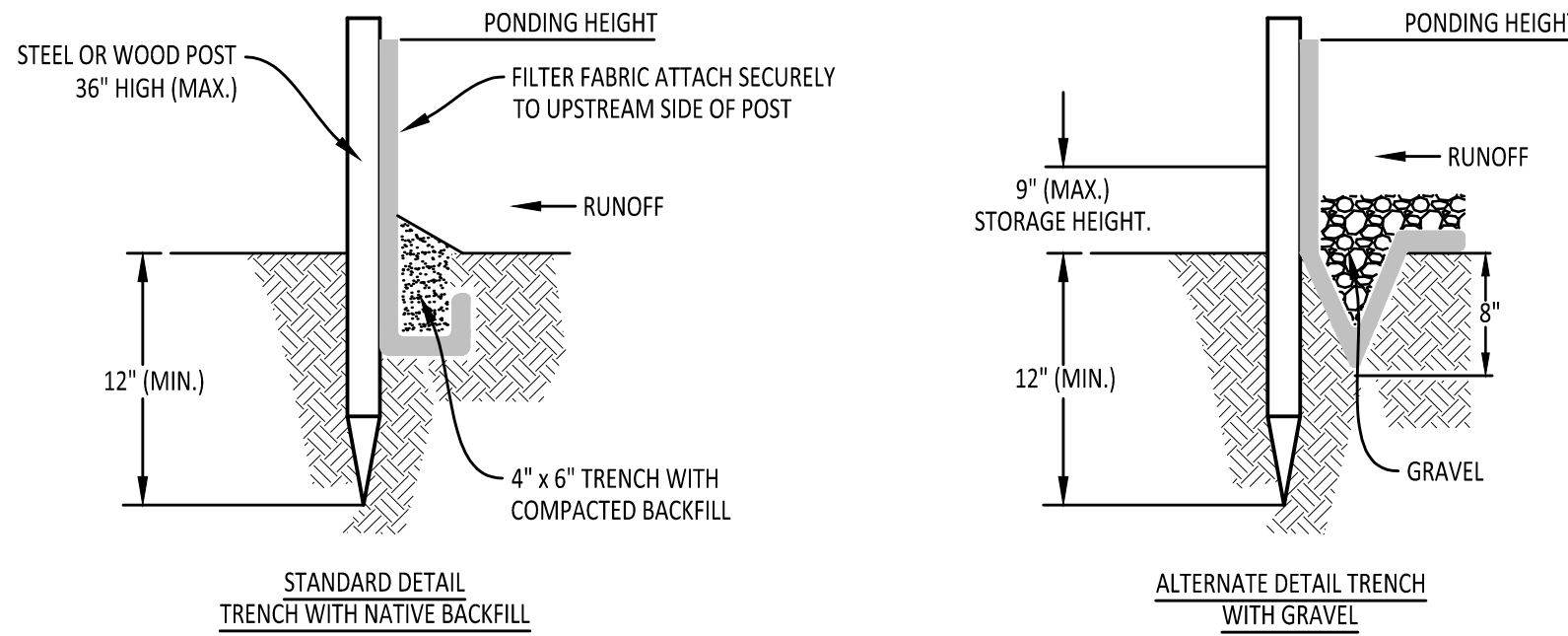


NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANING OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. USE SANDBAGS, STRAW BALES OR OTHER APPROVED METHODS TO CHANNEL RUNOFF TO BASIN AS REQUIRED. WHEN STRAW BALES ARE USED IN THIS APPLICATION A SILT FENCE IS TO BE INCLUDED AS SHOWN ON THE UPSTREAM SIDE OF THE SEDIMENT BARRIER.

CONSTRUCTION EXIT
W/ DIVERSION BERM

2

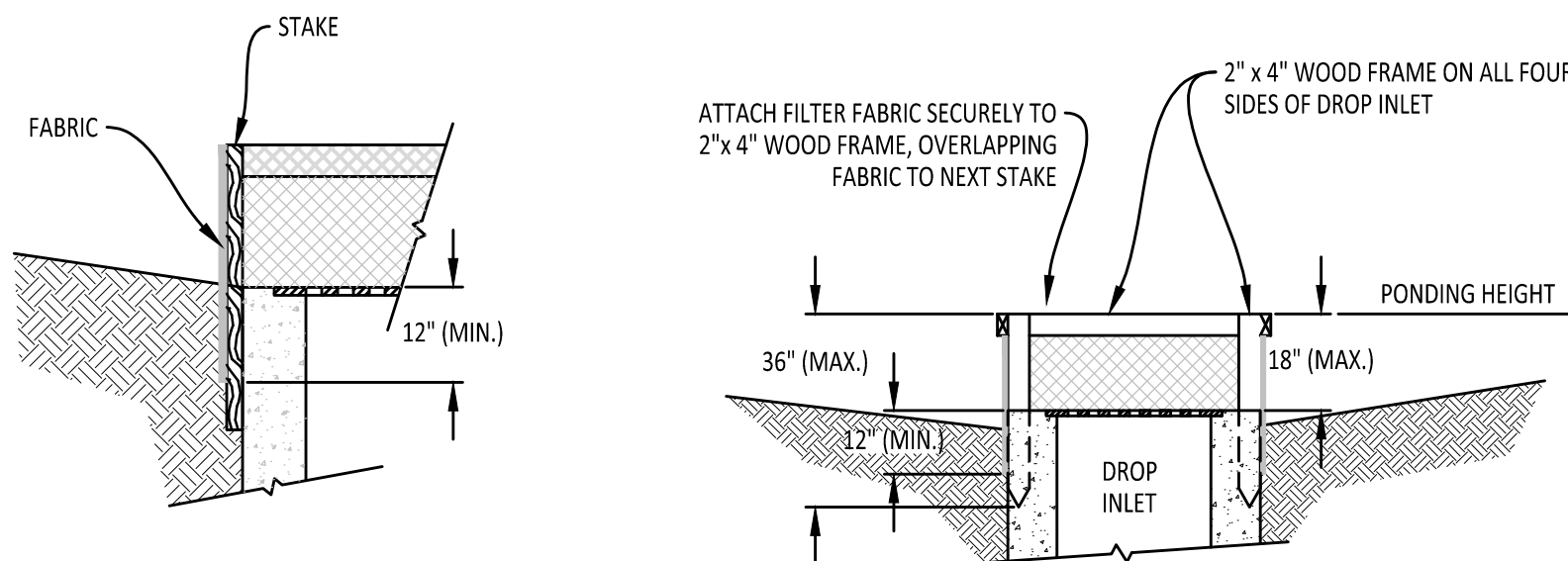
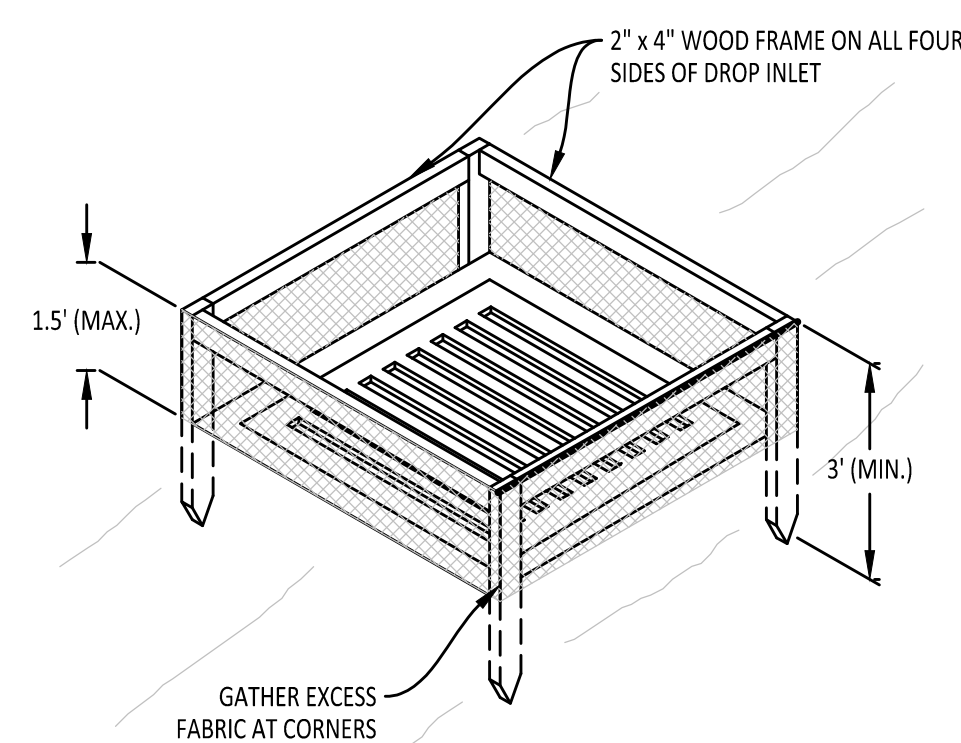


NOTES:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

SILT FENCE

3

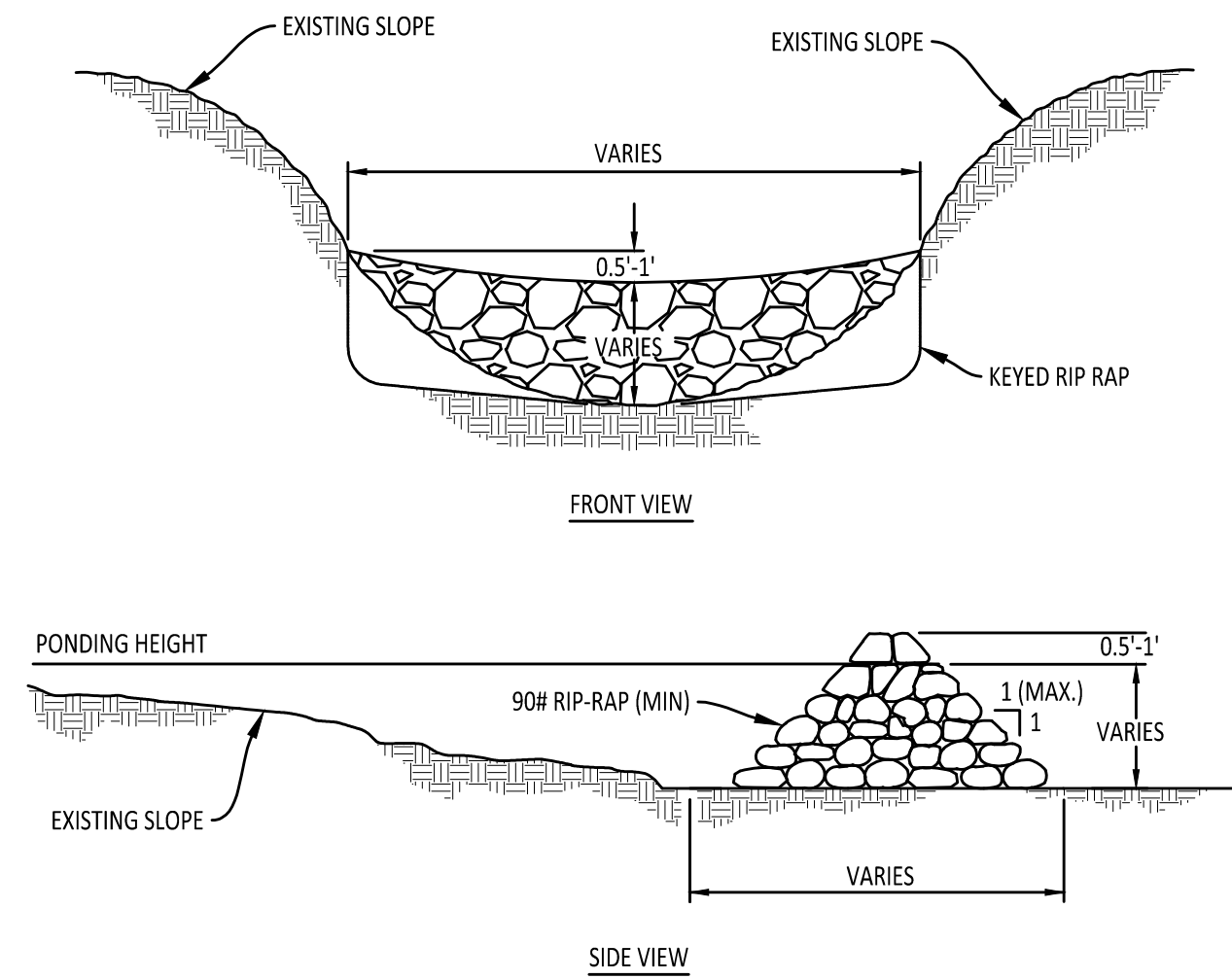


NOTES:

1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. USE 2"x 4" WOOD OR EQUIVALENT METAL STAKES. (3 FT. MIN. LENGTH)
3. INSTALL 2"x 4" WOOD TOP FRAME TO INSURE STABILITY.
4. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

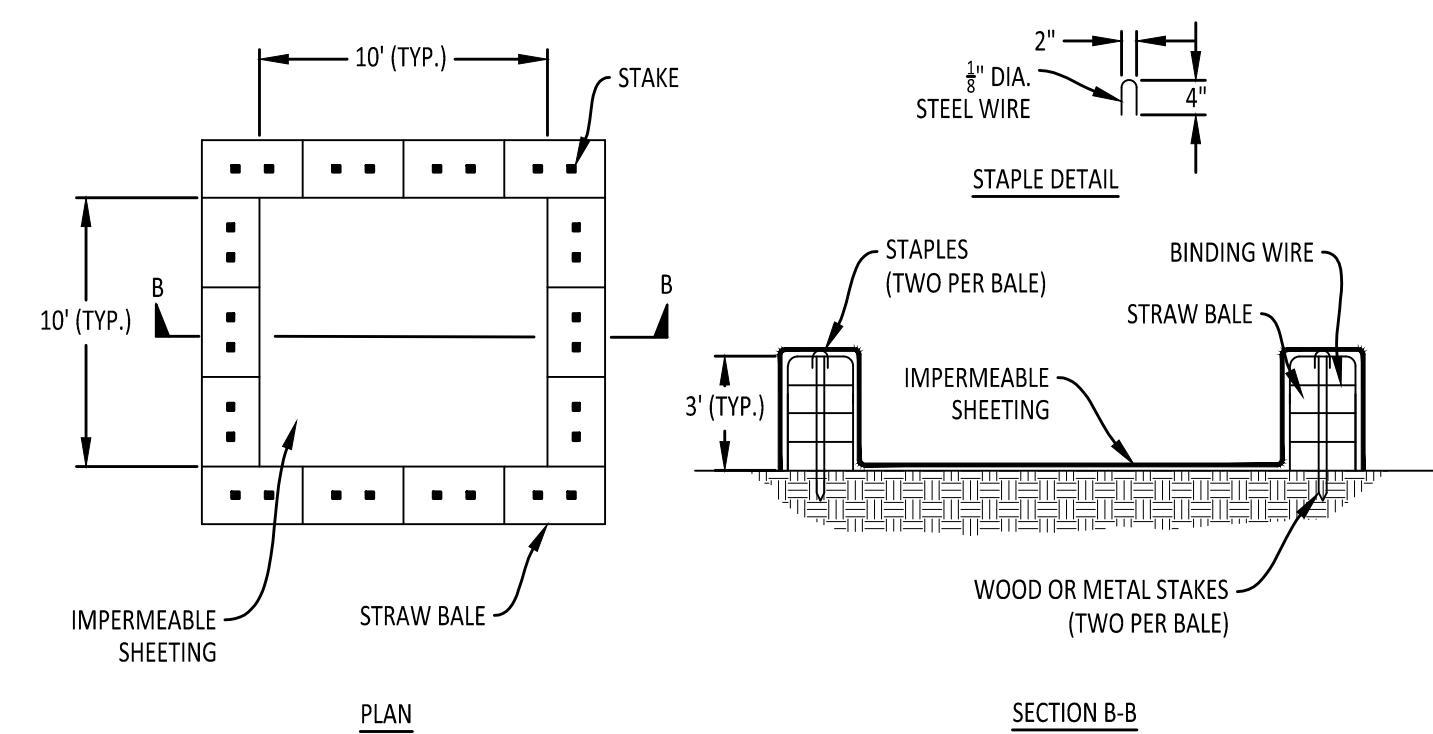
SEDIMENT BARRIER AT DROP INLET

4



RIP RAP CHECK DAM

5

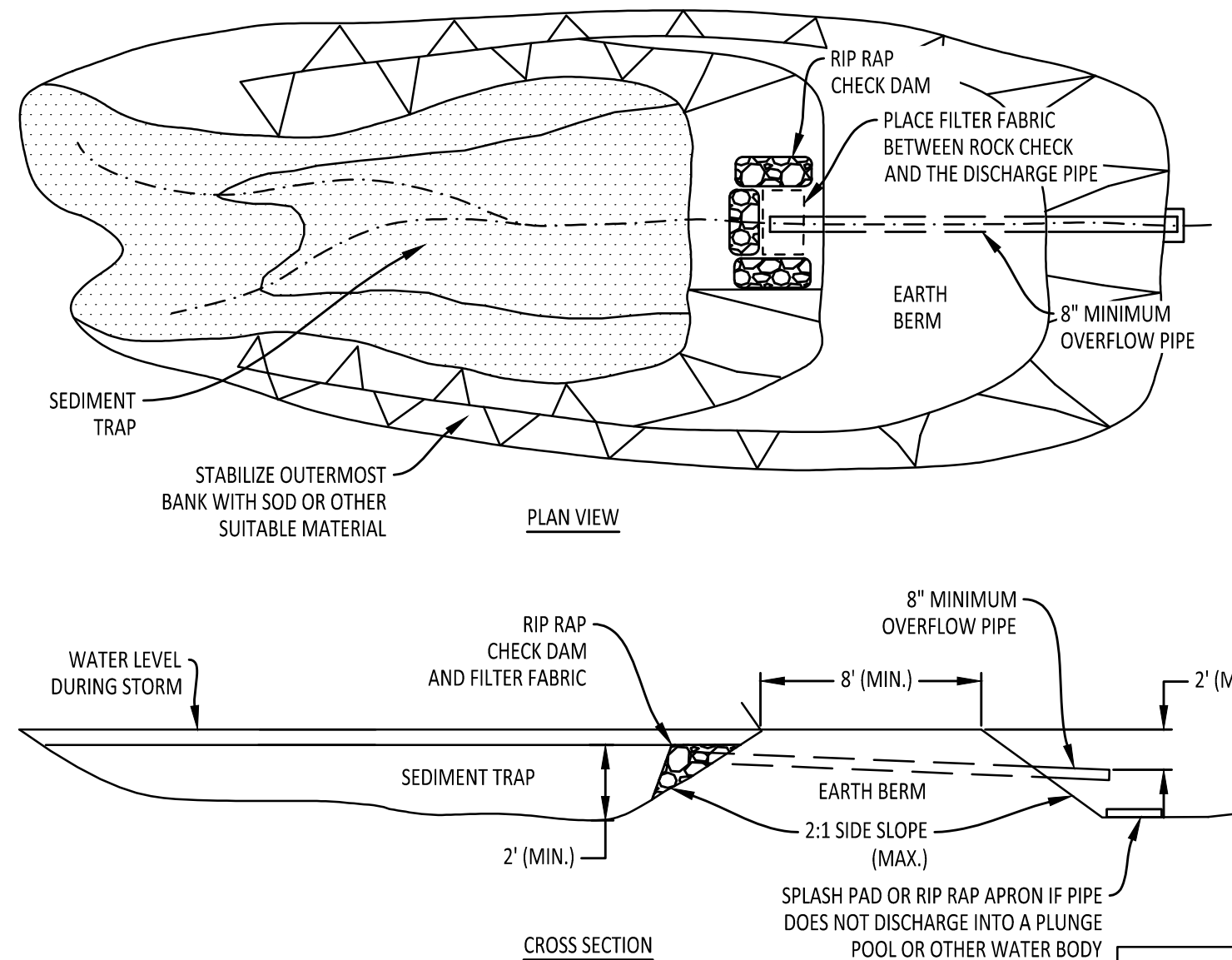


NOTES:

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED [E.G., RIPPED OR PUNCTURED]. EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

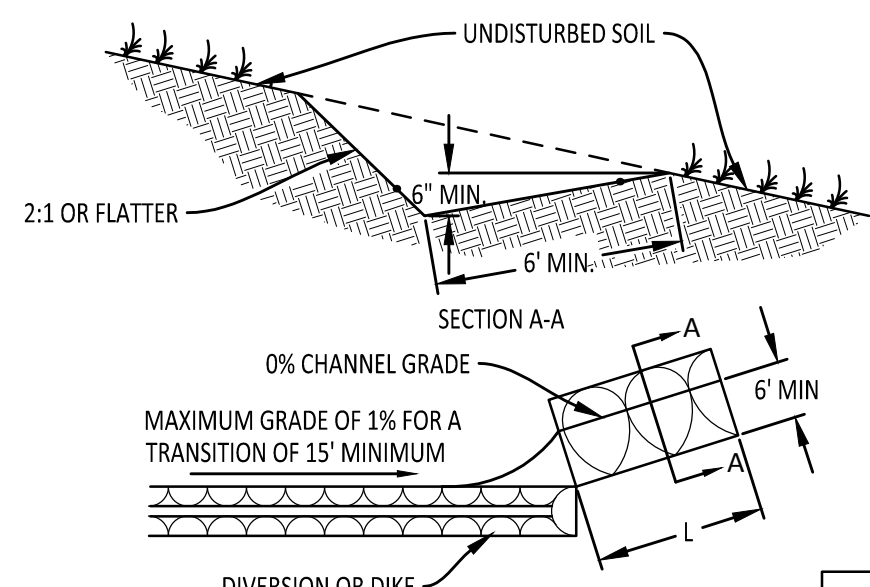
CONCRETE WASHOUT

6



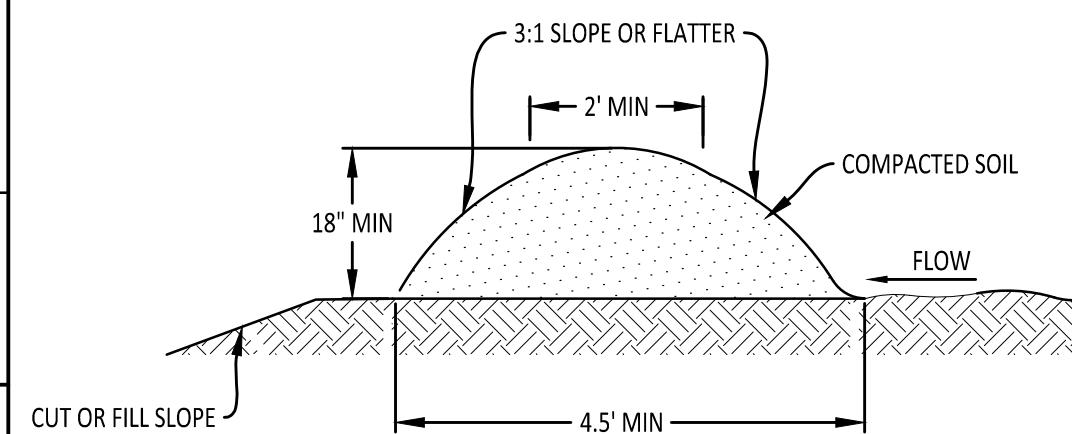
EROSION CONTROL SEDIMENT BASIN

7



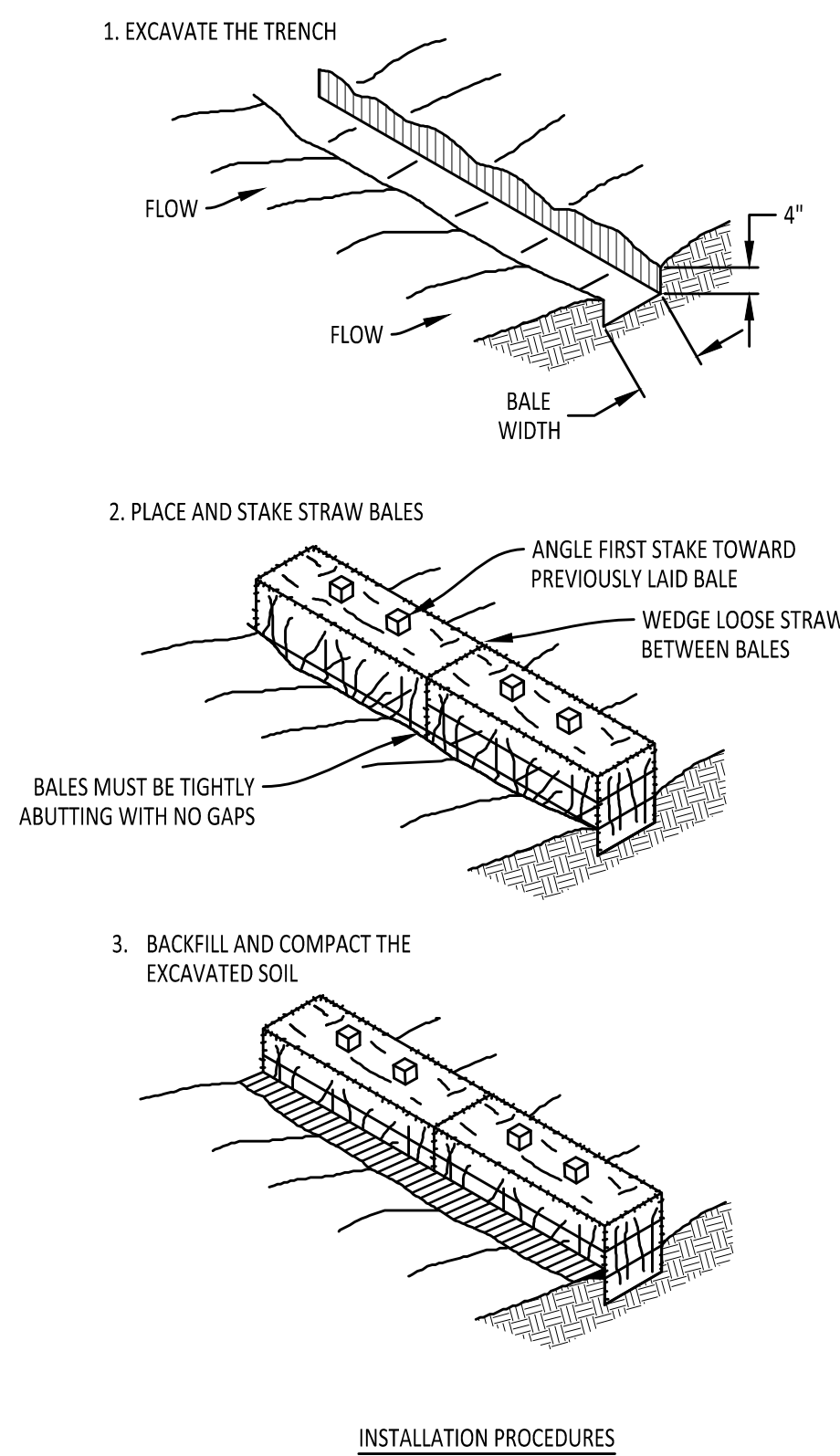
LEVEL SPREADER

8

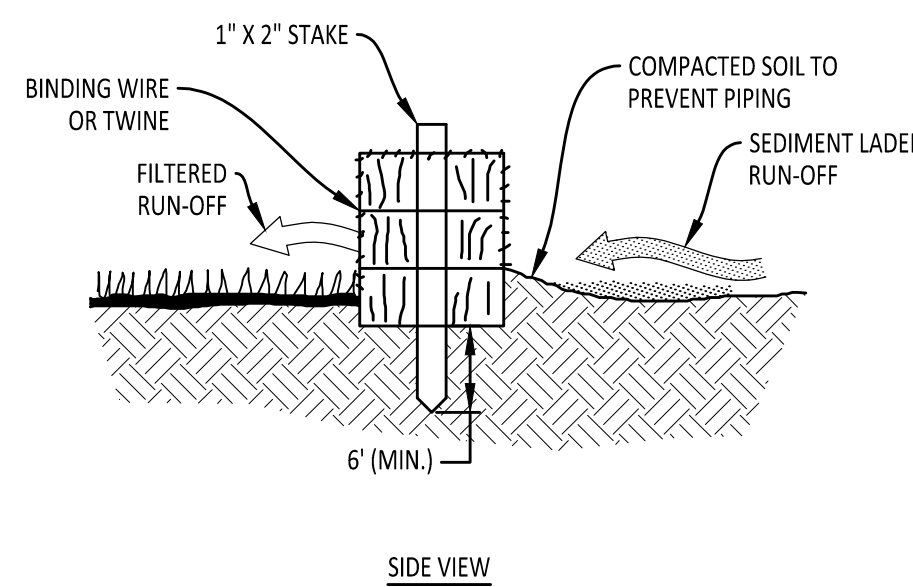


TEMPORARY DIVERSION DIKE

9



INSTALLATION PROCEDURES



STRAW BALE BARRIER

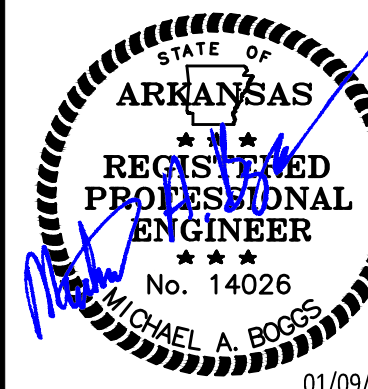
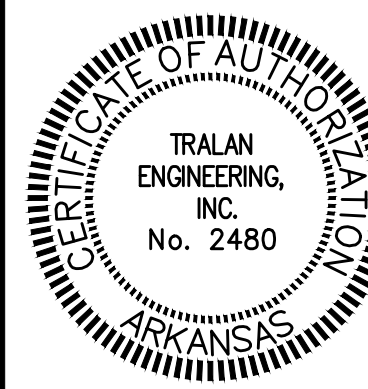
10

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CAD NO.:		

SWPPP
DETAILS

SHEET NUMBER:

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1



2



3



EXPANSION JOINT (EJ)

CONSTRUCTION JOINT DETAILS
N.T.S.

N.T.S.

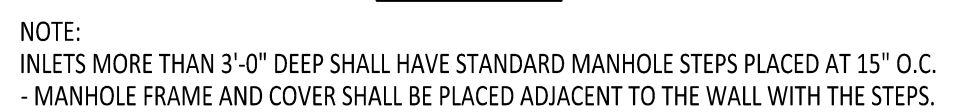
NOTE

1. PROVIDE EXPANSION JOINT WHERE CONCRETE ABUTTS EXISTING CONCRETE, SUCH AS CURB AND NEXT TO STRUCTURES AND DRIVEWAYS.
2. JOINT SPACING ON CURBS TO BE MAXIMUM 15'.
3. JOINT SPACING ON SIDEWALKS TO BE EQUAL TO THE SIDEWALK WIDTH.

4



6



AREA INLET DETAIL

N.T.S.

7



5



8



N.T.S.

AS APPROVED BY ENGINEER, WALLS MAY BE 8" BLOCK WITH 1/2" MORTAR. FILL CELLS WITH CONCRETE AND WITH #4 @ 16" O.C. MINIMUM DISTANCE FROM WALL TO PIPE SHALL BE 8" IF BLOCK WALLS ARE CONSTRUCTED.

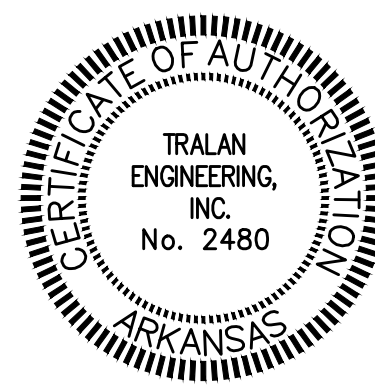
9

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02/14/2019	MAB	REV PER CWL

DRAWING INFO.	
DRAWN BY:	MAB
DATE:	01/09/2019
SCALE:	
JOB NO.:	18-073
CAD NO.:	

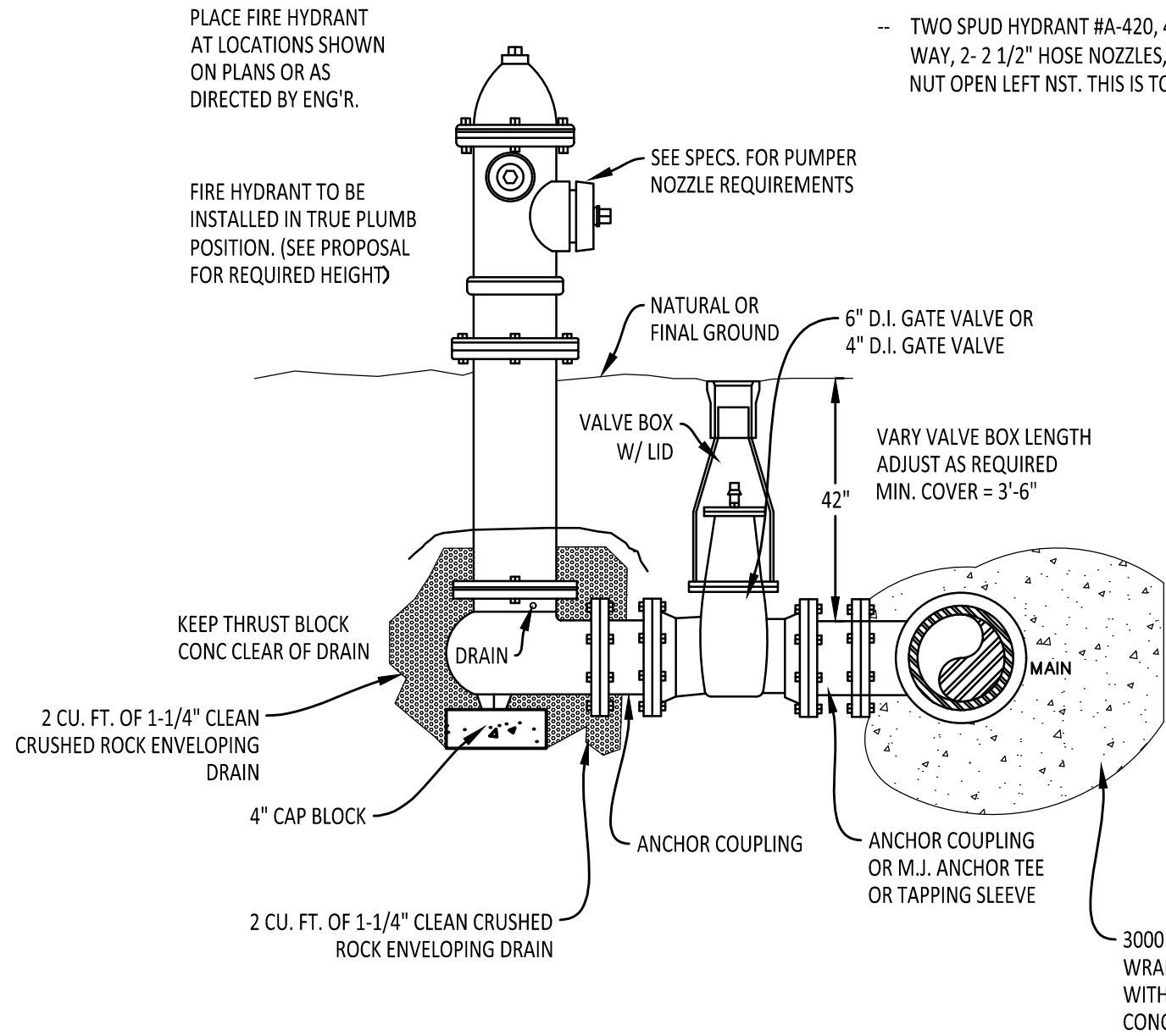
CWL WATER
DETAILS

SHEET NUMBER:

18 of 19

FIRE HYDRANT SHALL BE MULLER TYPE ONLY

- THREE SPUD HYDRANT #A-423, 5-1/4" MAIN VALVE OPENING, 3 WAY, 2- 2 1/2" HOSE NOZZLES, 1-4 1/2" PUMPER NOZZLE, 4"0" BURY, 6" M.J. SHOE PENTAGON NUT OPEN LEFT NST.
- TWO SPUD HYDRANT #A-422, 5-1/4" MAIN VALVE OPENING, 2 WAY, 2- 2 1/2" HOSE NOZZLES, 4"0" BURY, 6" M.J. SHOE PENTAGON NUT OPEN LEFT NST.
- TWO SPUD HYDRANT #A-420, 4-1/2" MAIN VALVE OPENING, 2 WAY, 2- 2 1/2" HOSE NOZZLES, 4"0" BURY, 4" M.J. SHOE PENTAGON NUT OPEN LEFT NST. THIS IS TO BE USED ON 4" MAINS.

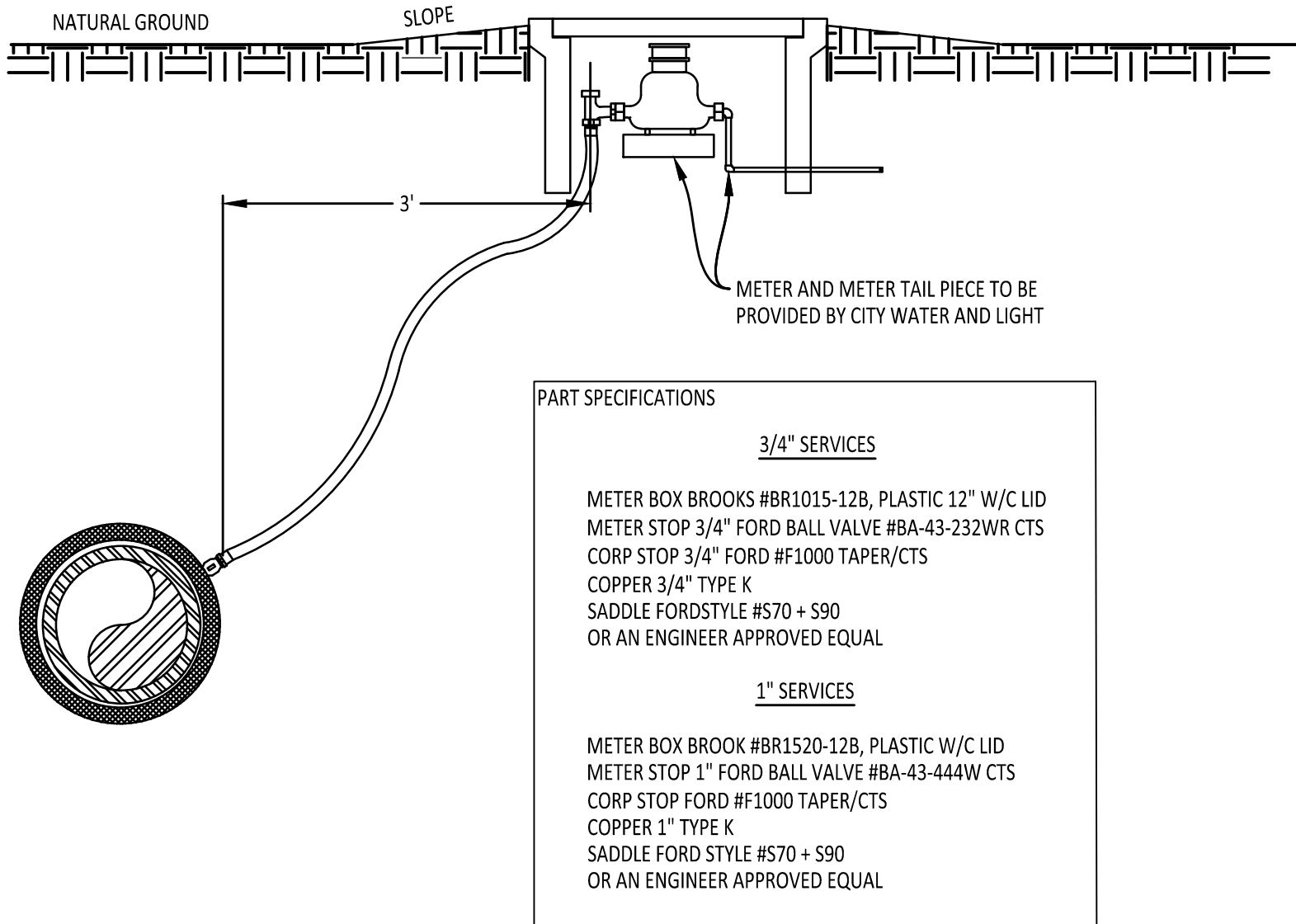


NOTES:
(1) PROVIDE TWO (2) MECHANICAL JOINT ANCHORING COUPLINGS VALVE BOXES AND TEES.

FIRE HYDRANT DETAIL WITH ANCHOR COUPLING

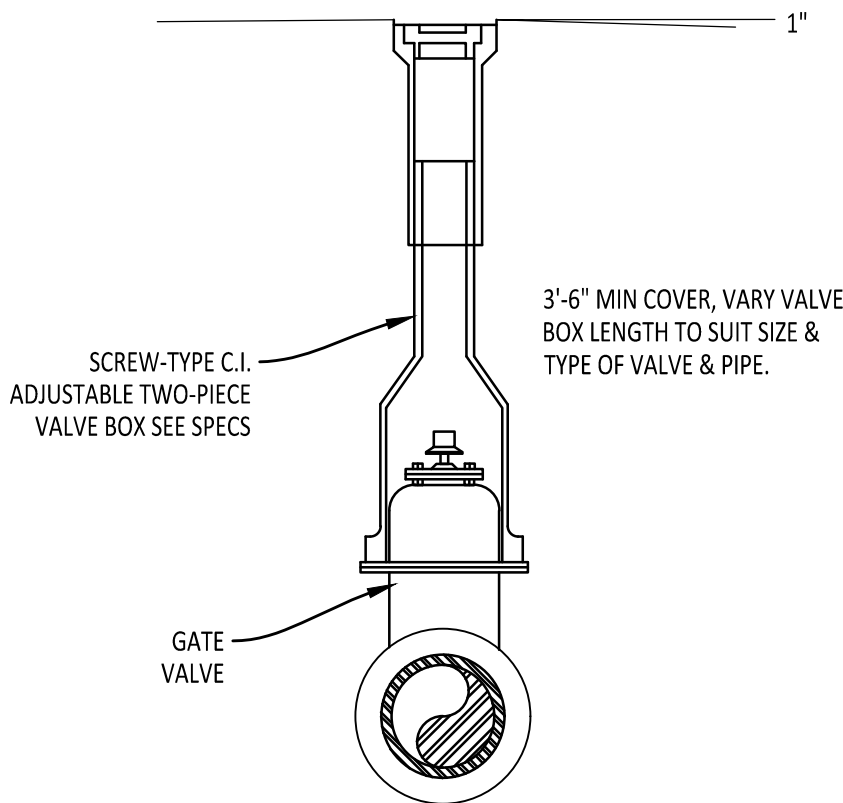
N.T.S.

NOTE: ONLY 3/4" SERVICES TO BE USE OUTSIDE CITY LIMITS
NOTE: 1" SERVICES TO BE USE WHEN WATER PRESSURE IS BELOW 60 PSI



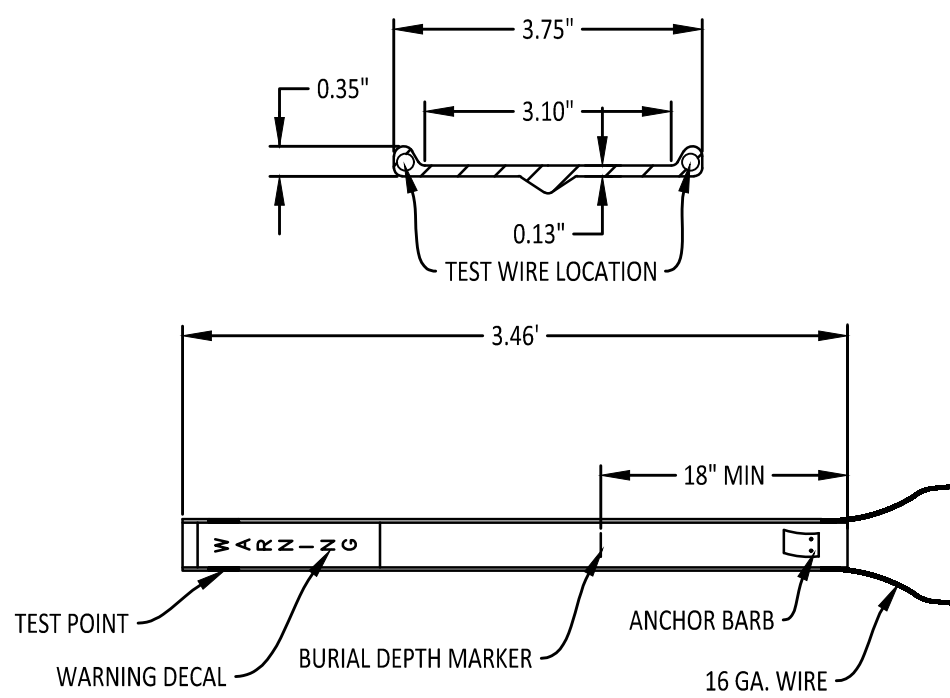
SERVICE CONNECTION AND METER SETTING

N.T.S.



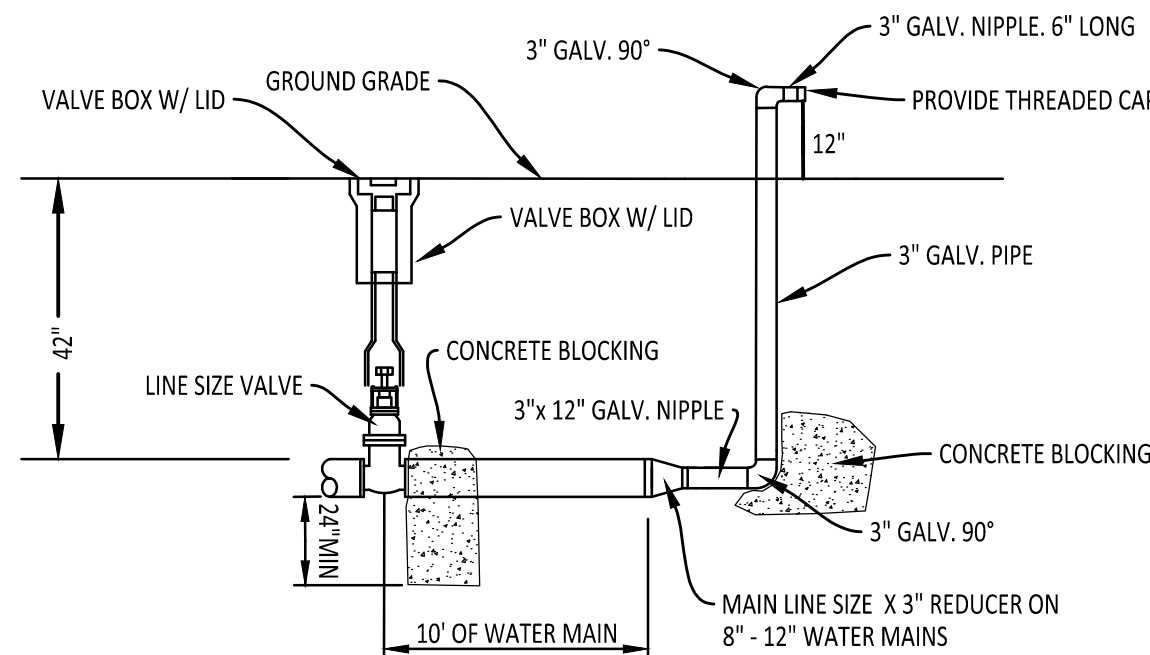
VALVE BOX DETAIL

N.T.S.



WATER LINE & FORCE MAIN MARKER DETAIL

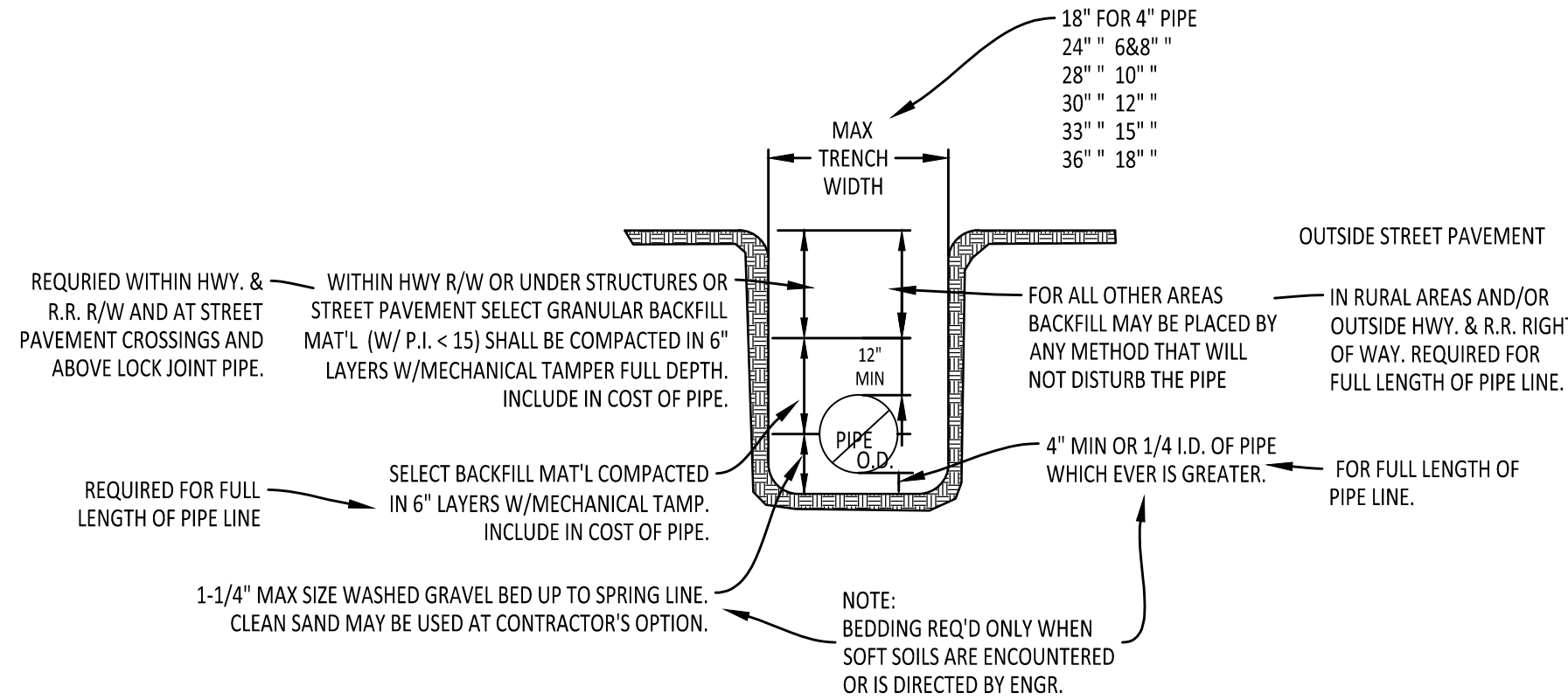
N.T.S.



NOTE: ALL 3\"/>

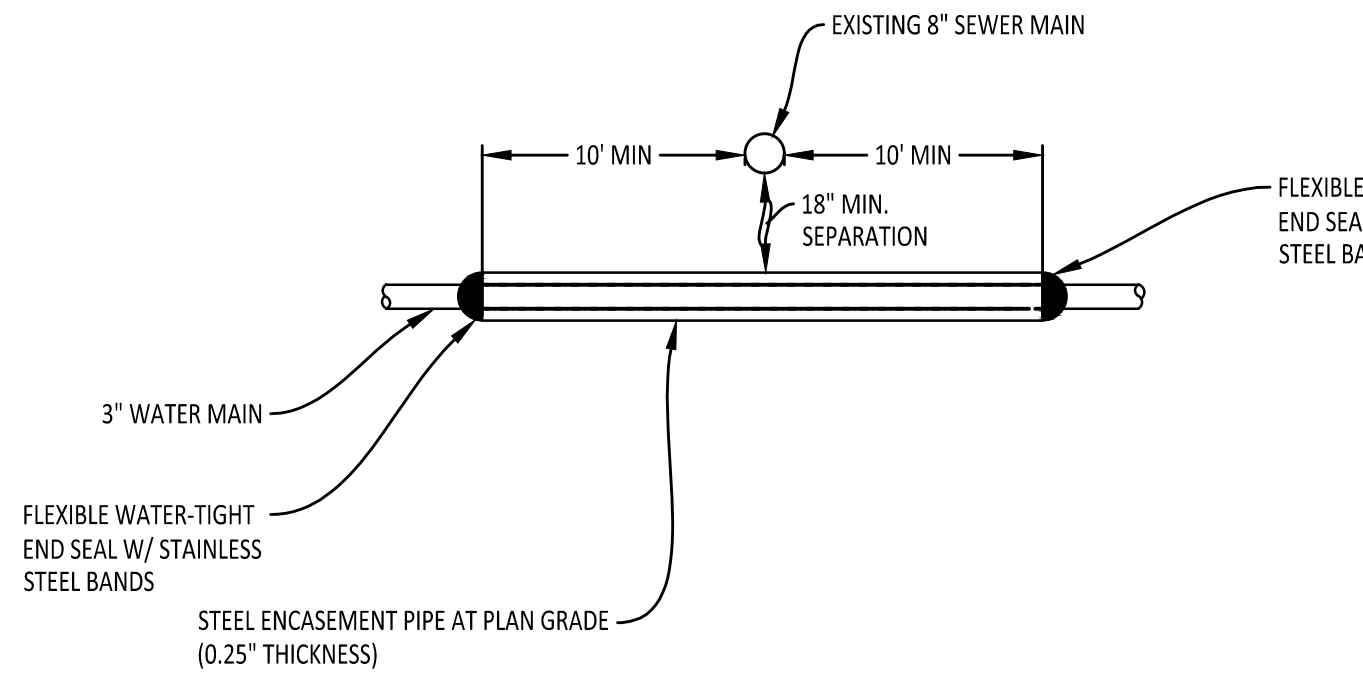
3\"/>

N.T.S.



TYPICAL WATER PIPE BEDDING AND BACKFILL DETAIL

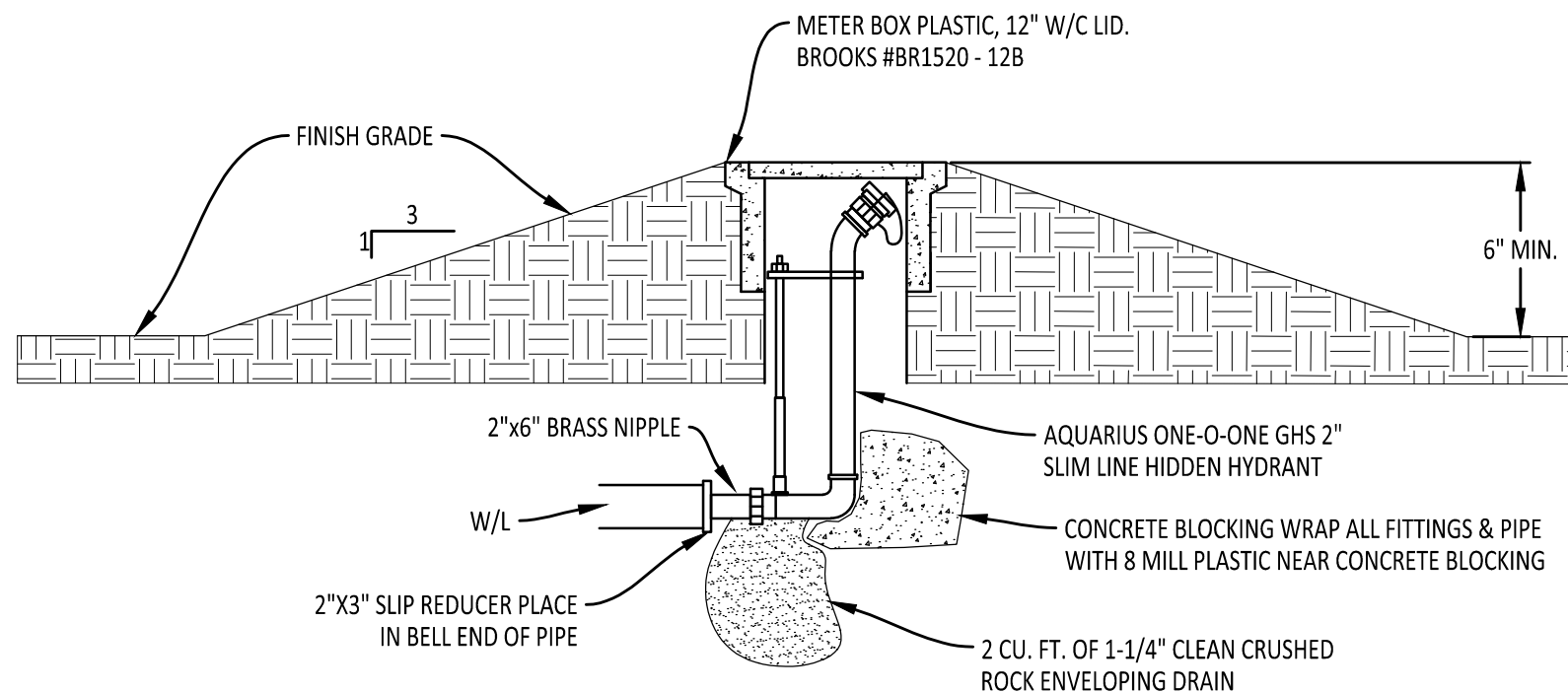
N.T.S.



ENCASED WATER AND SEWER CROSSING

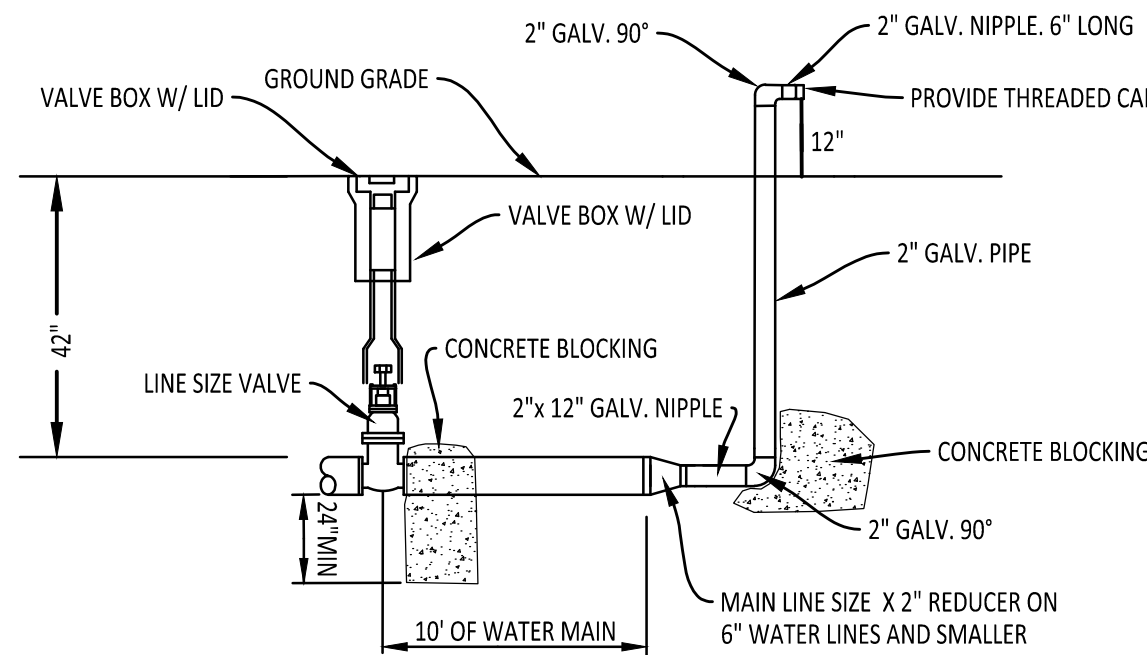
N.T.S.

- NOTE:
- WHEN THE WATER UNAVOIDABLY PASSES BENEATH THE SEWER MAIN A MINIMUM OF 18" OF SEPARATION BETWEEN THE TOP OF THE WATER MAIN AND THE BOTTOM OF THE SEWER MAIN.
 - ENCASEMENT PIPE SHALL AT A MINIMUM EXTEND 10' EITHER SIDE OF SEWER MAIN
 - END SEAL SHALL BE A CASCADE MODEL CCES OR EQUIVALENT



UNDERGROUND WASHOUT ASSEMBLY FOR COVES AND DEAD END LINES WITH NO FUTURE EXTENSION

N.T.S.



NOTE: ALL 2\"/>

2\"/>

N.T.S.

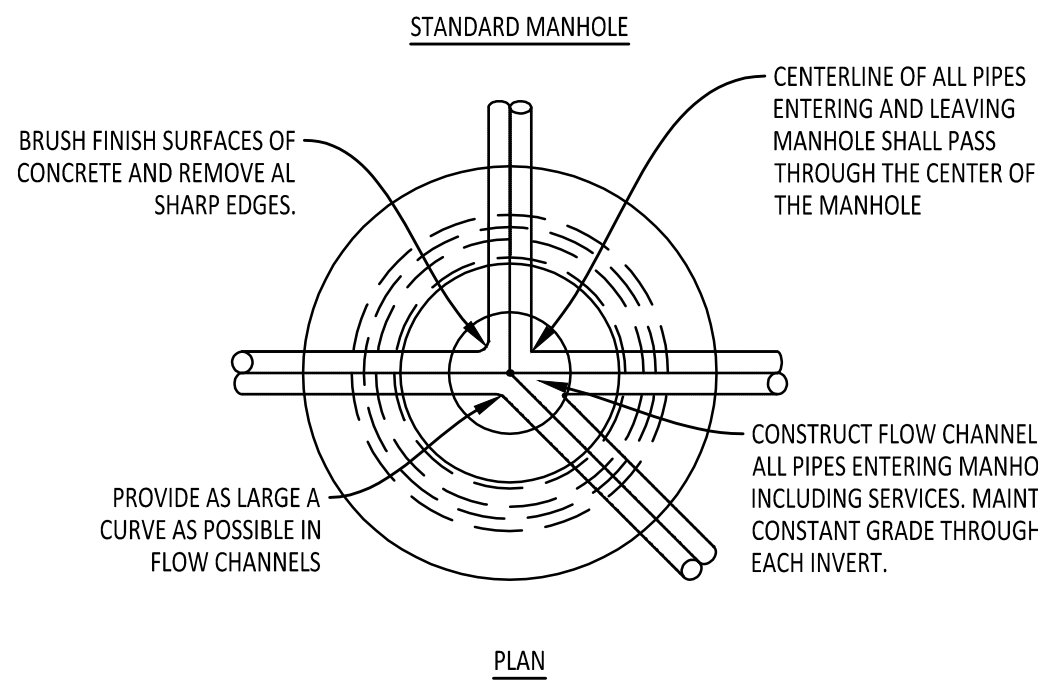
THRUST BLOCKING REQUIREMENTS AT STANDARD FITTINGS											
Thrust Exerted and Minimum Required Thrust Block Area Per 100 PSI of Water Pressure With a Minimum Soil Bearing Capacity of 2000 PSF (Factor of Safety = 1.5)											
Pipe Size (in)	Pipe Area (sq in)	Thrust at Plug/Tee (lb)	Area of Thrust Block (sq ft)	Thrust at 90° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 45° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 22.5° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 11.25° Bend (lb)	Area of Thrust Block (sq ft)
3	7.07	707	0.50	1,000	0.75	541	0.50	276	0.25	139	0.00
4	12.57	1,257	1.00	1,777	1.25	962	0.75	490	0.25	246	0.25
6	28.27	2,827	2.00	3,999	3.00	2,164	1.50	1,103	0.75	554	0.50
8	50.27	5,027	3.75	7,109	5.25	3,847	3.00	1,961	1.50	985	0.75
10	78.54	7,854	6.00	11,107	8.25	6,011	4.50	3,064	2.25	1,540	1.25
12	113.10	11,310	8.50	15,994	12.00	8,656	6.50	4,413	3.25	2,217	1.75
16	201.06	20,106	15.00	28,434	21.25	15,389	11.50	7,845	6.00	3,942	3.00
Thrust Exerted and Minimum Required Thrust Block Area Per 100 PSI of Water Pressure With a Minimum Soil Bearing Capacity of 1500 PSF (Factor of Safety = 1.5)											
Pipe Size (in)	Pipe Area (sq in)	Thrust at Plug/Tee (lb)	Area of Thrust Block (sq ft)	Thrust at 90° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 45° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 22.5° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 11.25° Bend (lb)	Area of Thrust Block (sq ft)
3	7.07	707	0.75	1,000	1.00	541	0.50	276	0.25	139	0.25
4	12.57	1,257	1.25	1,777	1.75	962	1.00	490	0.50	246	0.25
6	28.27	2,827	2.75	3,999	4.00	2,164	2.25	1,103	1.00	554	0.50
8	50.27	5,027	5.00	7,109	7.00	3,847	3.75	1,961	2.00	985	1.00
10	78.54	7,854	7.75	11,107	11.00	6,011	6.00	3,064	3.00	1,540	1.50
12	113.10	11,310	11.25	15,994	16.00	8,656	8.75	4,413	4.50	2,217	2.25
16	201.06	20,106	20.00	28,434	28.50	15,389	15.50	7,845	7.75	3,942	4.00
Thrust Exerted and Minimum Required Thrust Block Area Per 100 PSI of Water Pressure With a Minimum Soil Bearing Capacity of 1000 PSF (Factor of Safety = 1.5)											
Pipe Size (in)	Pipe Area (sq in)	Thrust at Plug/Tee (lb)	Area of Thrust Block (sq ft)	Thrust at 90° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 45° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 22.5° Bend (lb)	Area of Thrust Block (sq ft)	Thrust at 11.25° Bend (lb)	Area of Thrust Block (sq ft)
3	7.07	707	1.00	1,000	1.50	541	0.75	276	0.50	139	0.25
4	12.57	1,257	2.00	1,777	2.75	962	1.50	490	0.75	246	0.25
6	28.27	2,827	4.25	3,999	6.00	2,164	3.25	1,103	1.75	554	0.75
8	50.27	5,027	7.50	7,109	10.75	3,847	5.75	1,961	3.00	985	1.50
10	78.54	7,854	11.75	11,107	16.75	6,011	9.00	3,064	4.50	1,540	2.25
12	113.10	11,310	17.00	15,994	24.00	8,656	13.00	4,413	6.50	2,217	3.25
16	201.06	20,106	30.25	28,434	42.75	15,389	23.00	7,845	11.75	3,942	6.00

THRUST BLOCK DETAIL

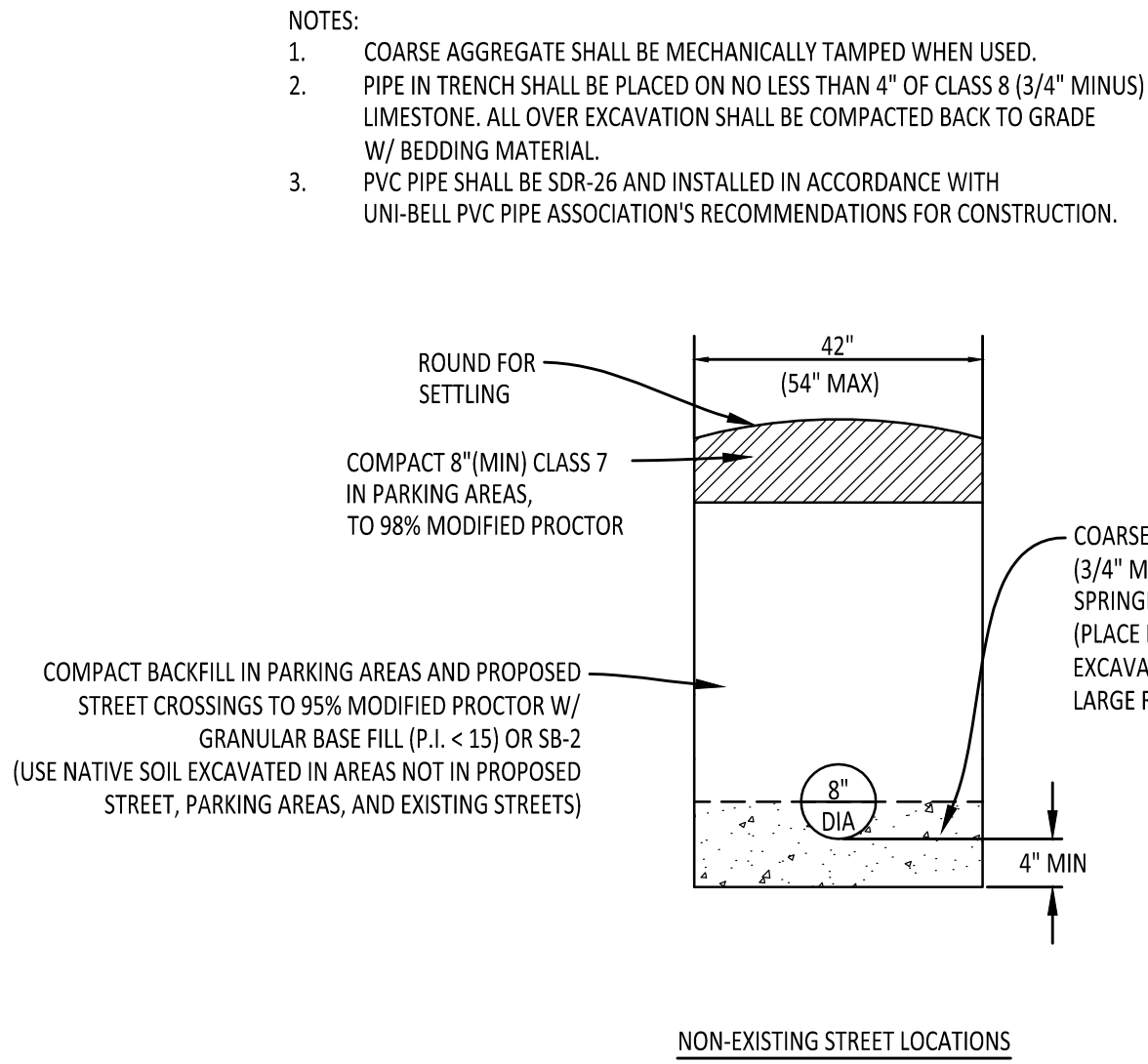
N.T.S.

NOTES TYPICAL TO ALL MANHOLES:

- MANHOLE BASES TO BE 4000 PSI, 28 DAY STRENGTH, LIMESTONE MIX CONCRETE. ON UNDISTURBED SUB-GRADE OR ON COMPACTED SELECT FILL MATERIAL AS AUTHORIZED.
- MANHOLE SIDEWALL MATERIAL TO BE CONCRETE IN ACCORDANCE WITH PROPOSAL FORM REQUIREMENTS.
 - 4" I.D. FOR SEWER SIZES 6" THRU 24"
 - 5" I.D. FOR SEWER SIZES 24" THRU 30"
 - 6" I.D. FOR SEWER SIZES 36" THRU 42"
- SET MANHOLE TOPS AS FOLLOWS:
 - IN STREETS, ROADS, HIGHWAYS, AND OTHER PAVED AREAS: FLUSH WITH FINISHED PAVING GRADE.
 - UNDEVELOPED AREAS, SUCH AS FIELDS, WOODS, ETC.: 12" ABOVE GROUND.
 - OTHER AREAS: 1" ABOVE GROUND.
- MANHOLE FRAMES SHALL HAVE MIN. OPENING OF 22" DIA.

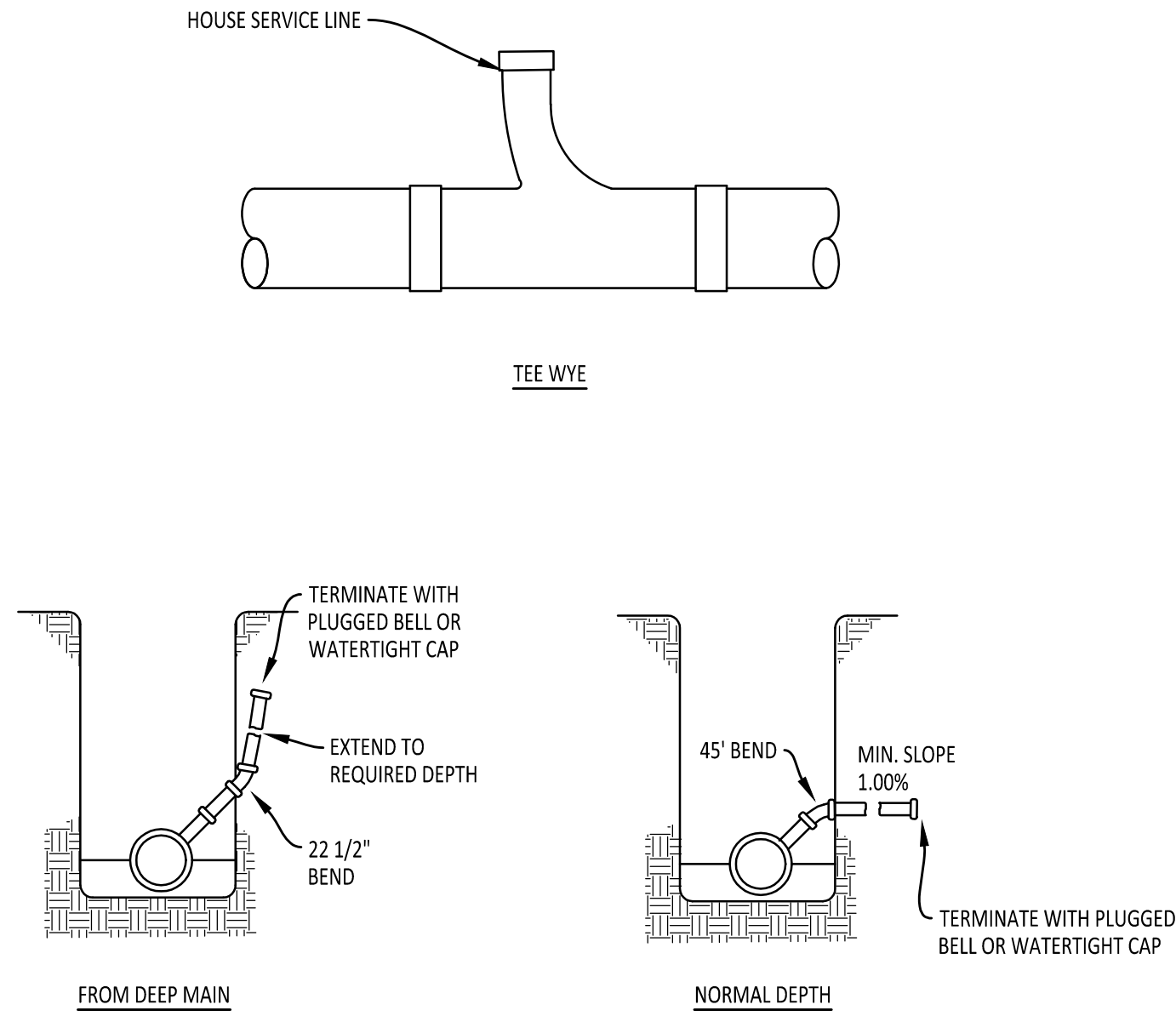
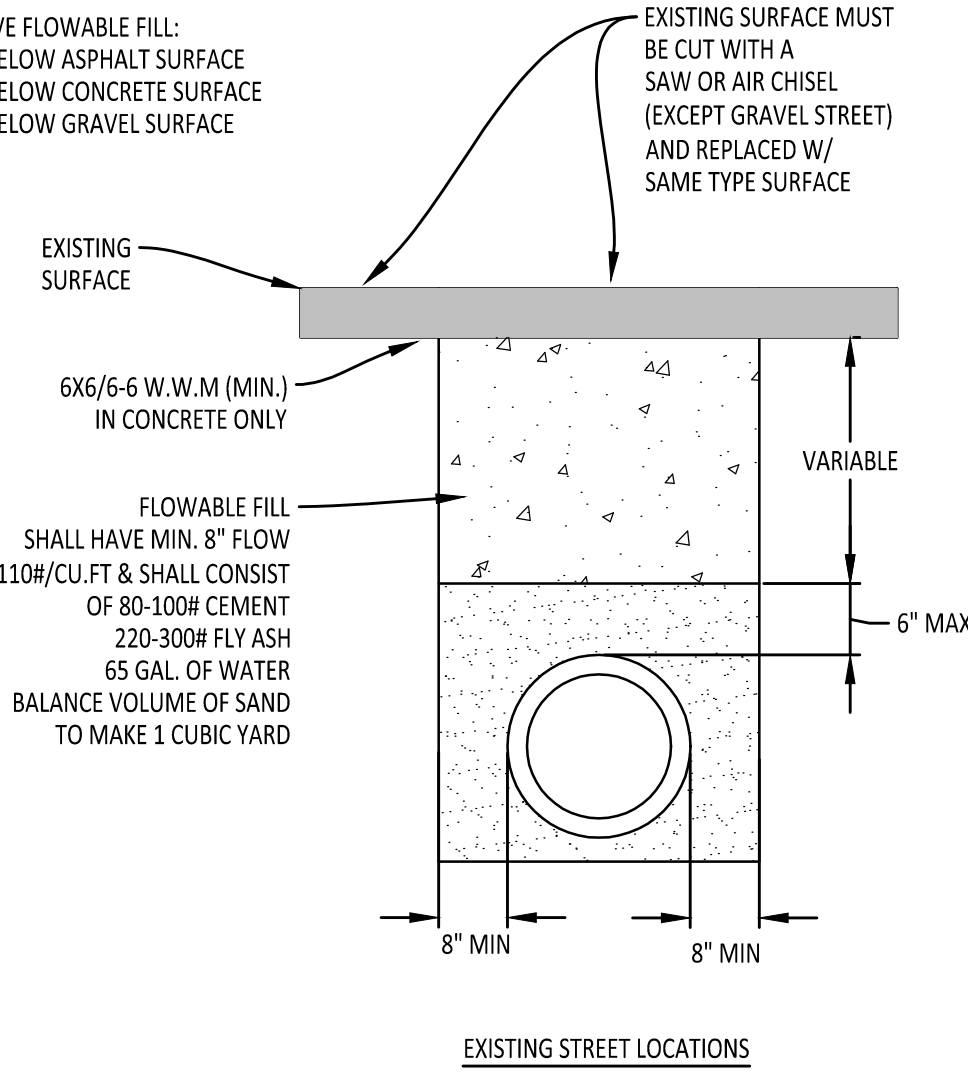


MANHOLE DETAILS
N.T.S.

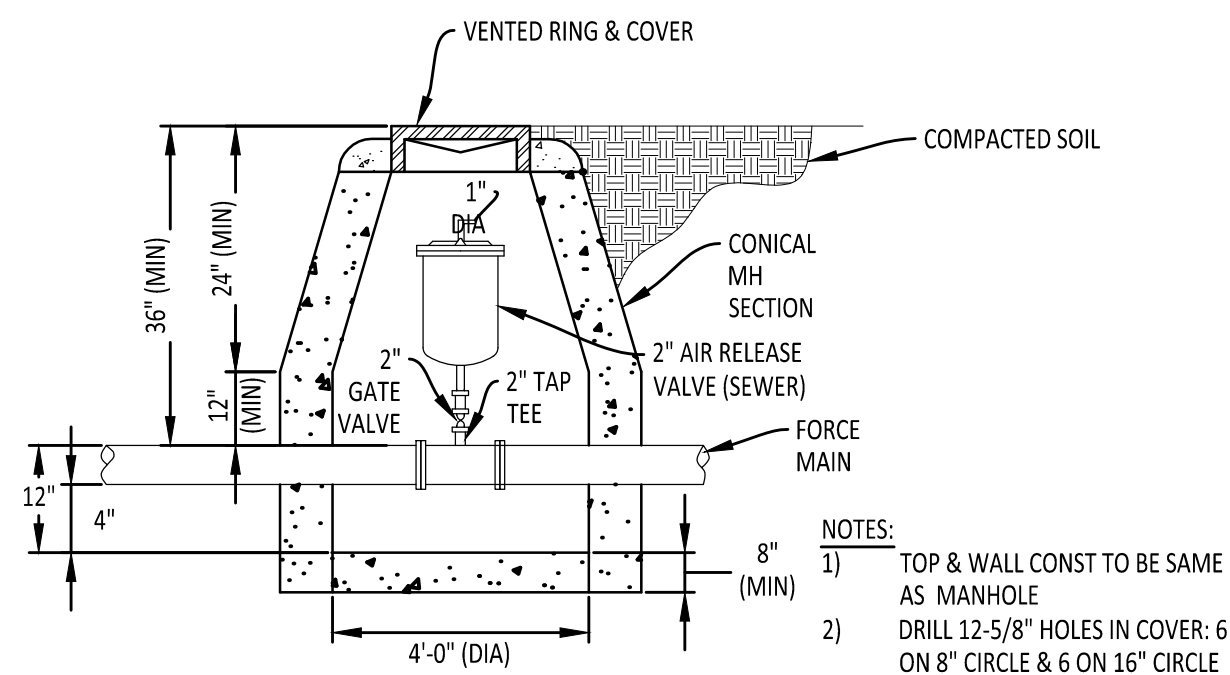


PVC TRENCH DETAIL
N.T.S.

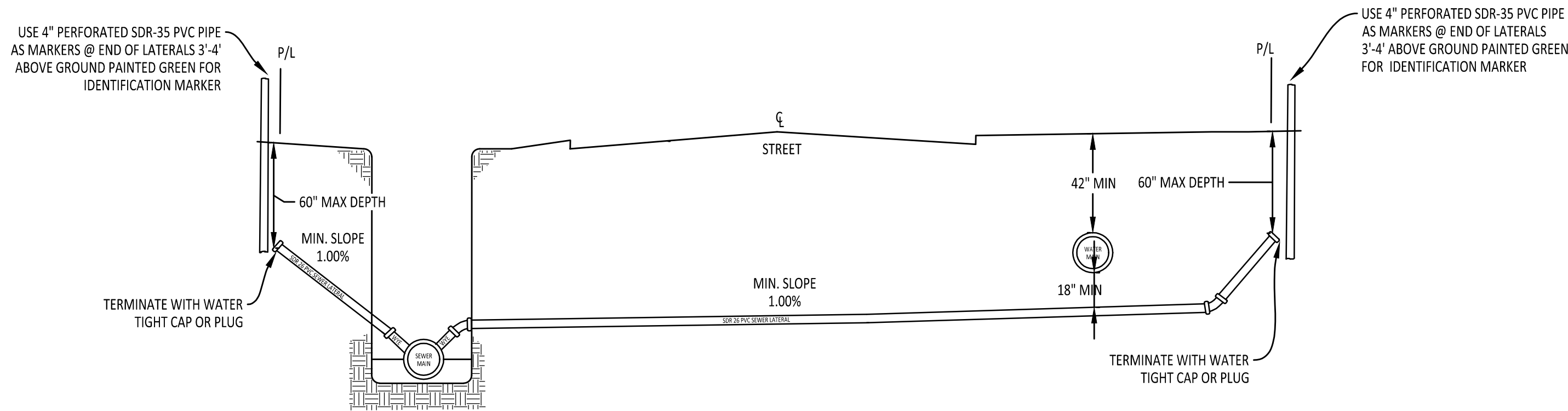
- NOTE:
- CONTRACTOR SHALL OBTAIN A STREET CROSSING PERMIT FROM THE CITY OF JONESBORO PRIOR TO CUTTING STREET.
 - EXCAVATED MATERIAL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR
 - THIS REPAIR DETAIL IS REQUIRED FOR ALL EXCAVATION WITHIN 5' OF PAVED EDGE AND ALL TRANSVERSE EXCAVATIONS TO EXTEND 3' BEYOND PAVED EDGE.



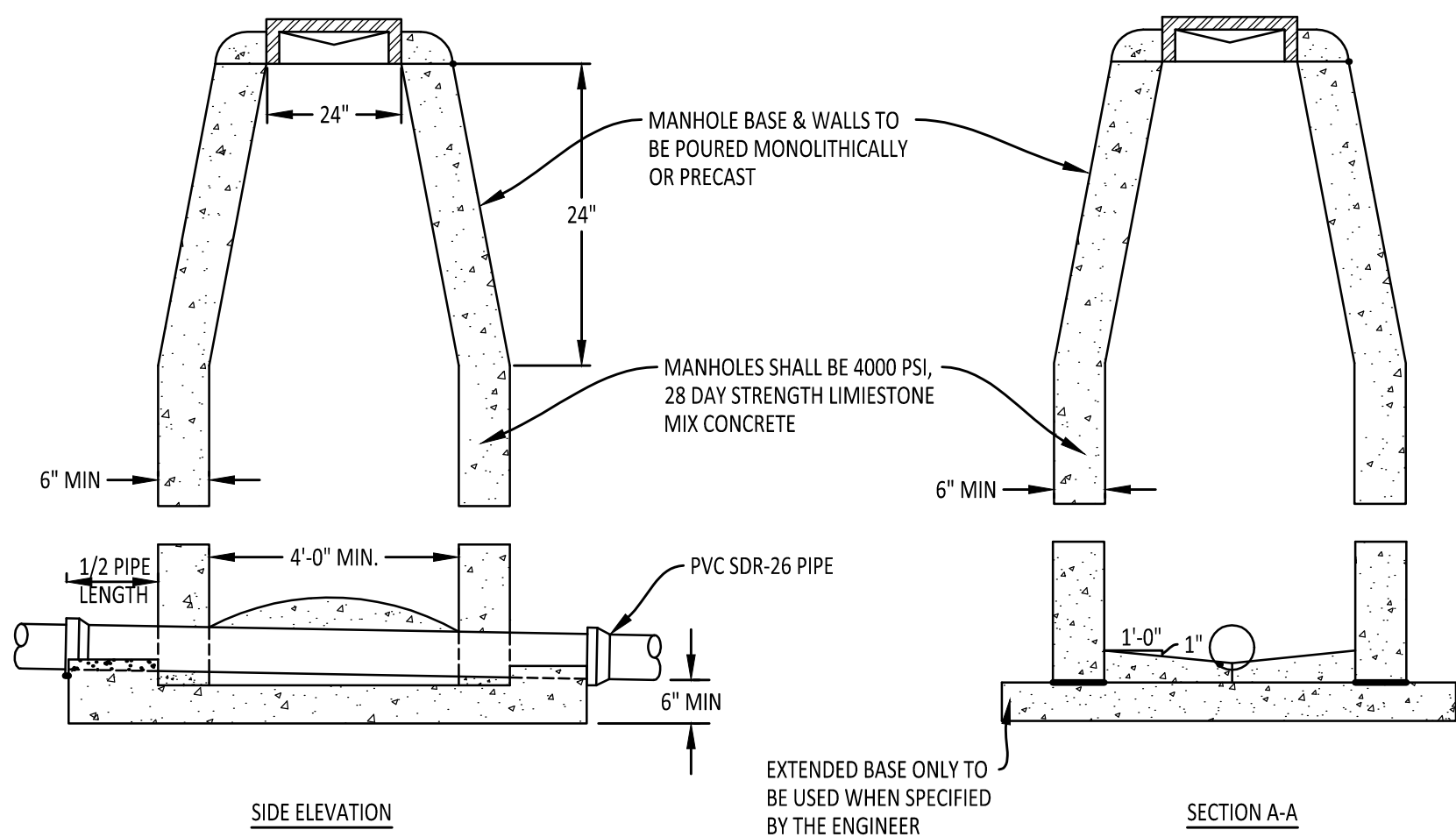
SERVICE CONNECTIONS
N.T.S.



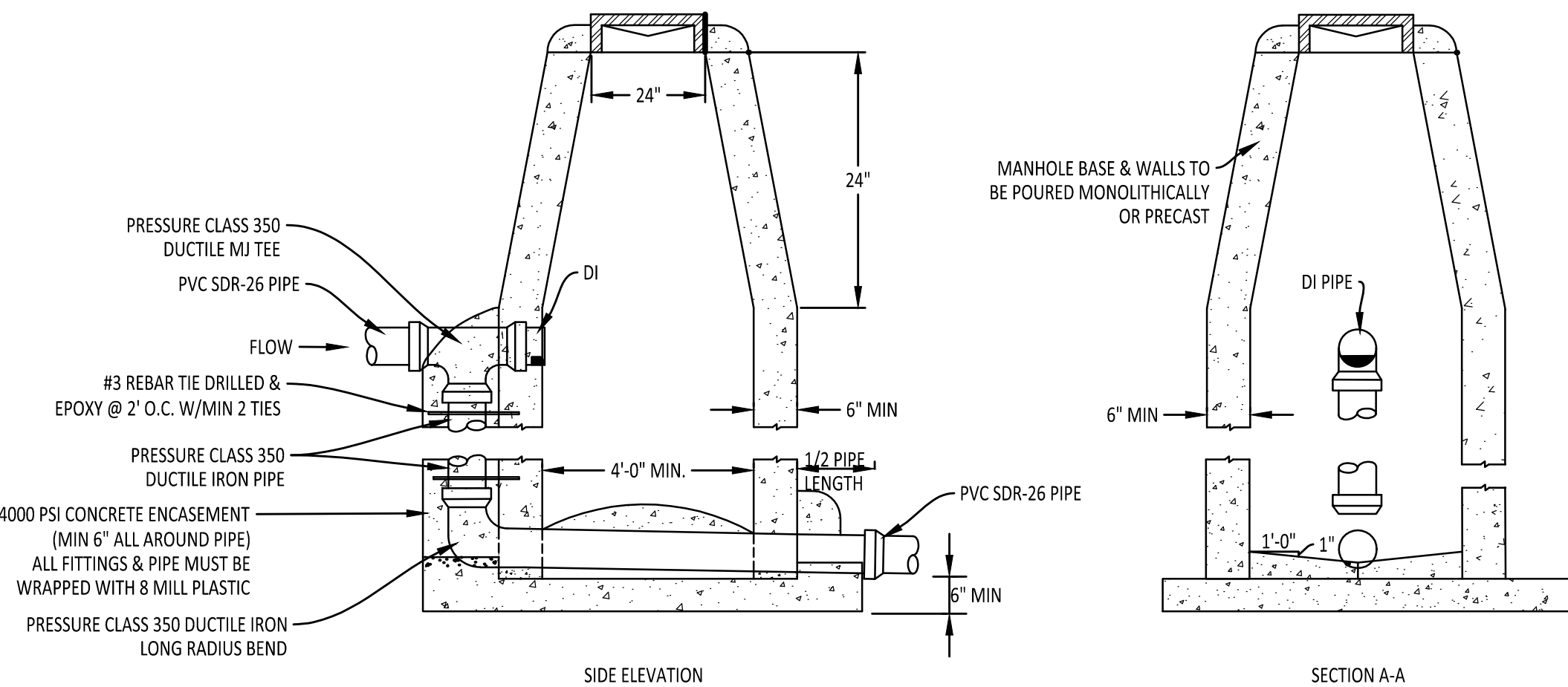
AIR/VACUUM
RELEASE VALVE DETAIL
N.T.S.



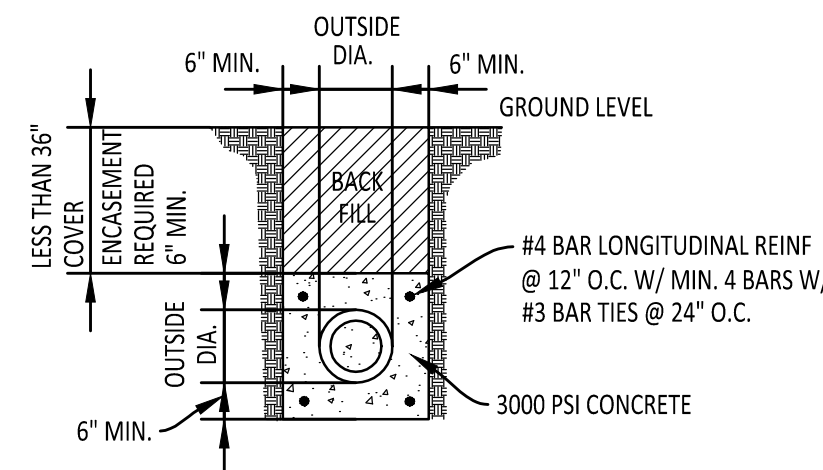
SEWER LATERAL STUBOUT
(PERMITS REQUIRED BEFORE INSTALLATION)
N.T.S.



STANDARD MANHOLE DETAIL
N.T.S.



DROP MANHOLE DETAIL
N.T.S.



CONCRETE ENCASUREMENT
FOR DITCH CROSSINGS
N.T.S.

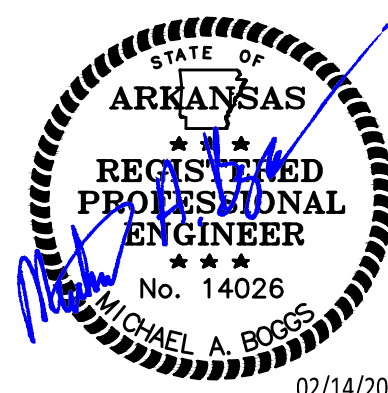
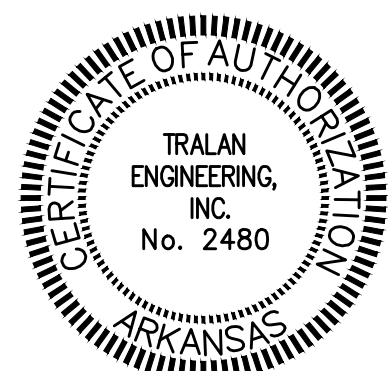
NOTE:
ENCASUREMENT PIPE MUST BE PRESSURE CLASS 350 DUCTILE IRON AND WRAP DUCTILE IRON PIPE WITH 8 MILL PLASTIC. NOTE: WHEN 18" SEPARATION CANNOT BE MAINTAINED, JOINTS SHALL BE LOCATED SUCH THAT THEY ARE EQUAL DISTANCE BEFORE AND AFTER CROSSING.

COMPANY INFO:
2916 WOOD STREET
JONESBORO, AR 72404
PH: 1-870-203-9939
WWW.TRALANENG.COM

TRALAN
ENGINEERING

PROJECT:
THE ORCHARD, PH-I

CLIENT:
NO REST, LLC



REVISIONS		
DATE	BY	DESCRIPTION
02/14/2019	MAB	REV PER CWL
DRAWING INFO.		
DRAWN BY:	MAB	
DATE:	01/09/2019	
SCALE:		
JOB NO.:	18-073	
CAD NO.:		

CWL SEWER
DETAILS

SHEET NUMBER:

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