

CONSTRUCTION PLANS
FOR
LOWENSTEIN DRIVE & BLACK TWIG LANE
WATER LINE REPLACEMENT
STREETS OF WEST PRYOR
LEE'S SUMMIT, MISSOURI

JANUARY 2019

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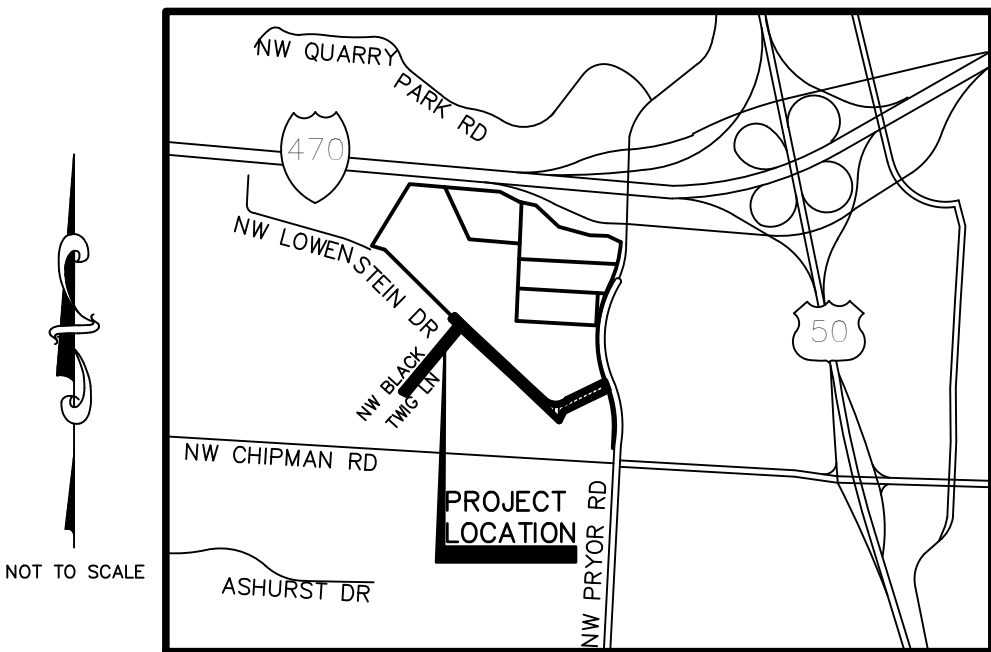
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MISSOURI ONE CALL SYSTEM, INC.



LOCATION MAP
CITY OF LEE'S SUMMIT, MISSOURI

Sheet List Table

- C-1 TITLE SHEET
- C-2 GENERAL LAYOUT SHEET
- C-3 WATER LINE A - PLAN & PROFILE
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- C-12 DETAIL SHEET
- C-13 DETAIL SHEET
- C-14 DETAIL SHEET

UTILITY STATEMENT:
THE UNDERGROUND UTILITIES SHOWN HEREON ARE FROM FIELD SURVEY INFORMATION OF ONE-CALL LOCATED UTILITIES, FIELD SURVEY INFORMATION OF ABOVE GROUND OBSERVABLE EVIDENCE, AND/OR THE SCALING AND PLOTTING OF EXISTING UTILITY MAPS AND DRAWINGS AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES BY EXCAVATION UNLESS OTHERWISE NOTED ON THIS SURVEY.

CAUTION - NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

SAFETY NOTICE TO CONTRACTOR
IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

WARRANTY / DISCLAIMER
THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A TEMPORARY BASIS AT THE SITE.



LEON D. OSBOURN
PROFESSIONAL ENGINEER

APPROVED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, \_\_\_\_\_.
OWNER: MATT PENNINGTON

APPROVED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, \_\_\_\_\_.
CITY APPROVAL

OWNER:
STREETS OF WEST PRYOR, LLC
12701 METCALF AVENUE
OVERLAND PARK, KS 66213
CONTACT: MATT PENNINGTON
email: matt@drakekc.com

DEVELOPER:
DRAKE DEVELOPMENT, LLC
12701 METCALF AVENUE
OVERLAND PARK, KS 66213
AGENT: DAVID N. OLSON
email: daveolson@monarchprojectllc.com

PREPARED BY:
KAW VALLEY ENGINEERING, INC.
2319 N. JACKSON
JUNCTION CITY, KS 66441
785-762-5040
CONTACT: LEON D OSBOURN
EMAIL: ldo@kveng.com

DATUM BENCHMARK:
VERTICAL DATUM IS NAVD 88 ESTABLISHED USING OPUS PROJECTS ON PROJECT CONTROL.

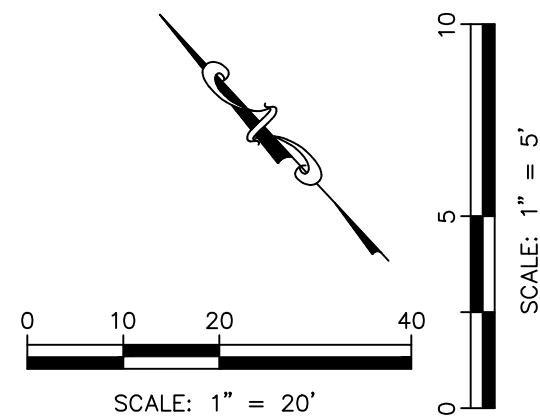
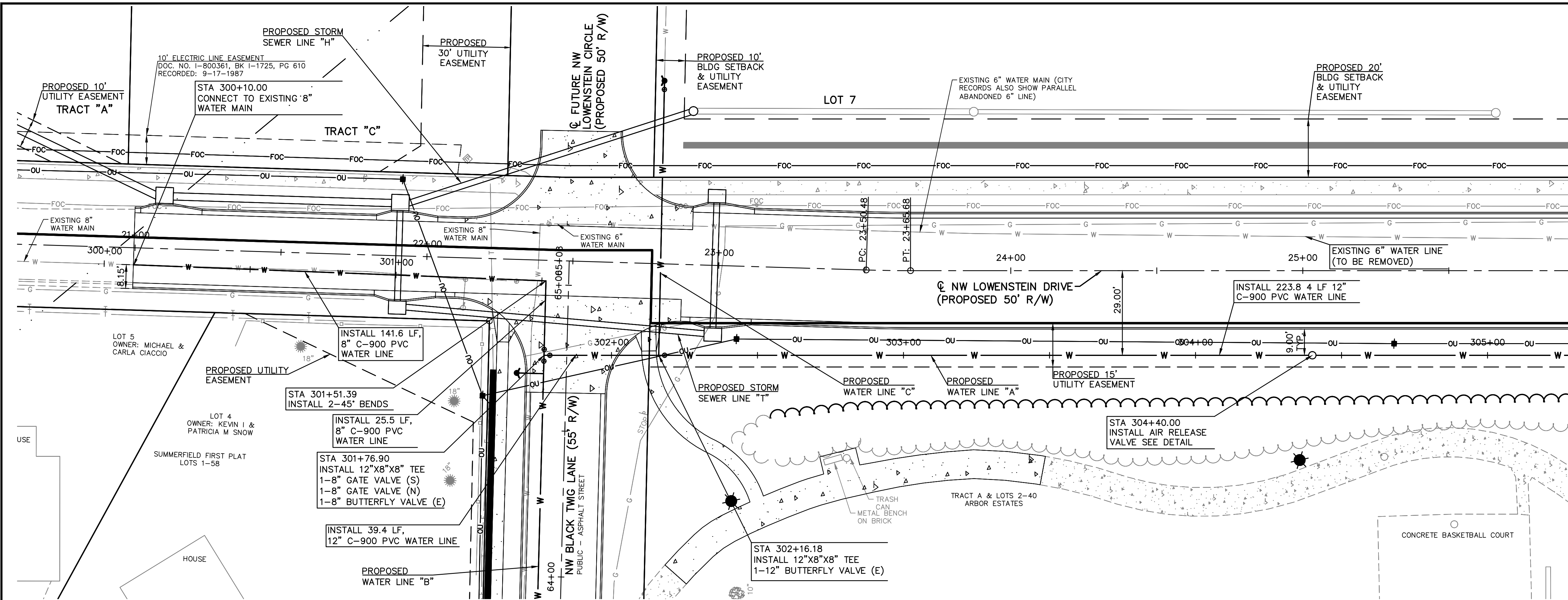
BENCHMARKS:
BM #1: CHISELED "SQUARE" ON TOP OF CURB POINT OF INTERSECTION OF WEST PARK PARKING LOT AT EAST DRIVE ENTRANCE. ELEV=985.05
BM #2: CHISELED "SQUARE" ON NORTHWEST CORNER AREA INLET, 25'± EAST OF CURB LINE AND ON-LINE WITH SOUTH CURB OF LOWENSTEIN DRIVE AT 90' BEND IN ROAD. ELEV=971.06

Revision table and project information including: LEON D. OSBOURN ENGINEER MO # 021726, KAW VALLEY ENGINEERING, 2319 N. JACKSON | P.O. BOX 1304 JUNCTION CITY, KANSAS 66441, and project title: STREETS OF WEST PRYOR NW/ Q NW PRYOR ROAD & NW LOWENSTEIN DRIVE LEE'S SUMMIT, MISSOURI WATER LINE PLANS TITLE SHEET.

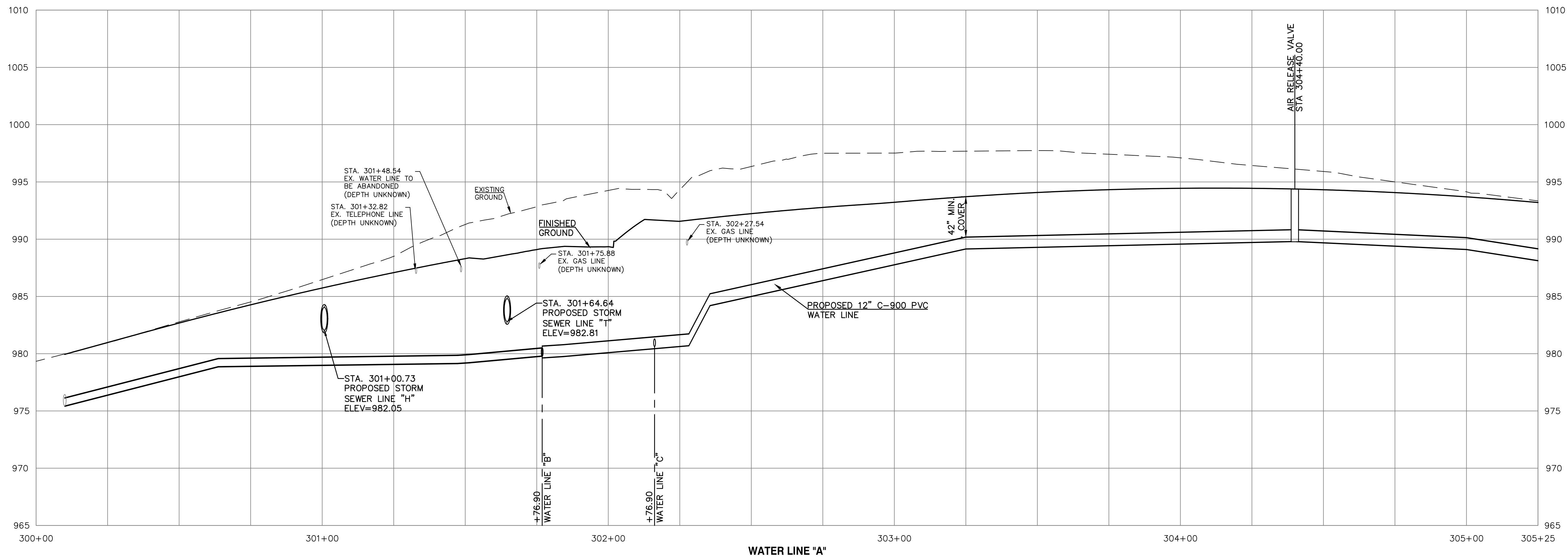








NOTE:  
AT ALL SANITARY SEWER AND STORMWATER CROSSINGS, THE WATER LINE SHALL BE INSTALLED WITH A MINIMUM VERTICAL CLEAR DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. A FULL LENGTH OF WATER PIPE (MINIMUM 20 FT) SHALL BE LOCATED WITH THE CENTER OF PIPE AT THE CROSSINGS SO THAT BOTH JOINTS ARE AS FAR FROM THE SEWER AS POSSIBLE.



WATER LINE "A"

LDO	CHK	LDO	DWN	DSN	DESCRIPTION	REV	DATE	0	1-4-19	INITIAL ISSUE

LEON D. OSBOURN  
ENGINEER  
MO # 021726

2319 N. JACKSON | P.O. BOX 1304  
JUNCTION CITY, KANSAS 66441  
PH. (785) 762-5040 | FAX (785) 762-7744  
jke@kve.com | www.kve.com

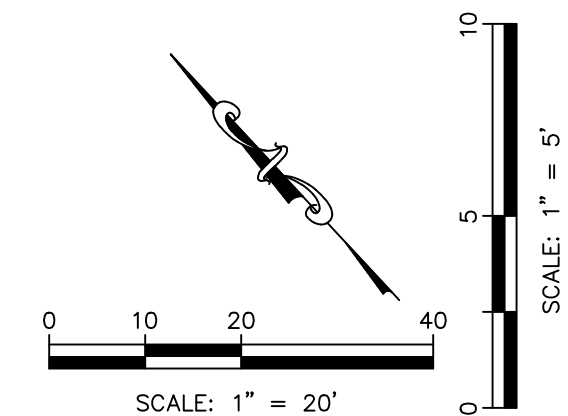
**KAW VALLEY ENGINEERING**  
KAW VALLEY ENGINEERING, INC. IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/19

**STREETS OF WEST PRYOR**  
NW/4 NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

**WATER LINE PLANS**  
WATER LINE A - PLAN & PROFILE

PROJ. NO. <b>A14-7067-1</b>	
DESIGNER <b>LDO</b>	DRAWN BY <b>JT/BKR</b>
CFN <b>7067-1W_WPP</b>	
SHEET <b>C-3</b>	REV <b>0</b>



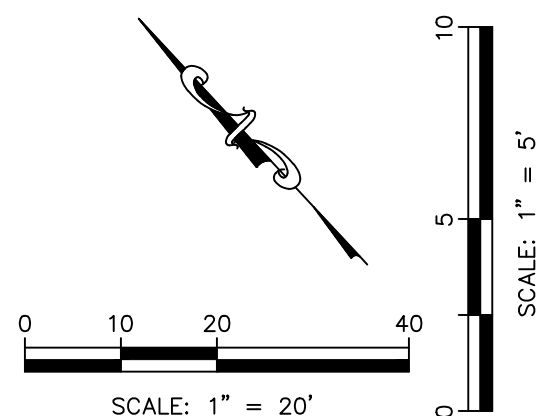
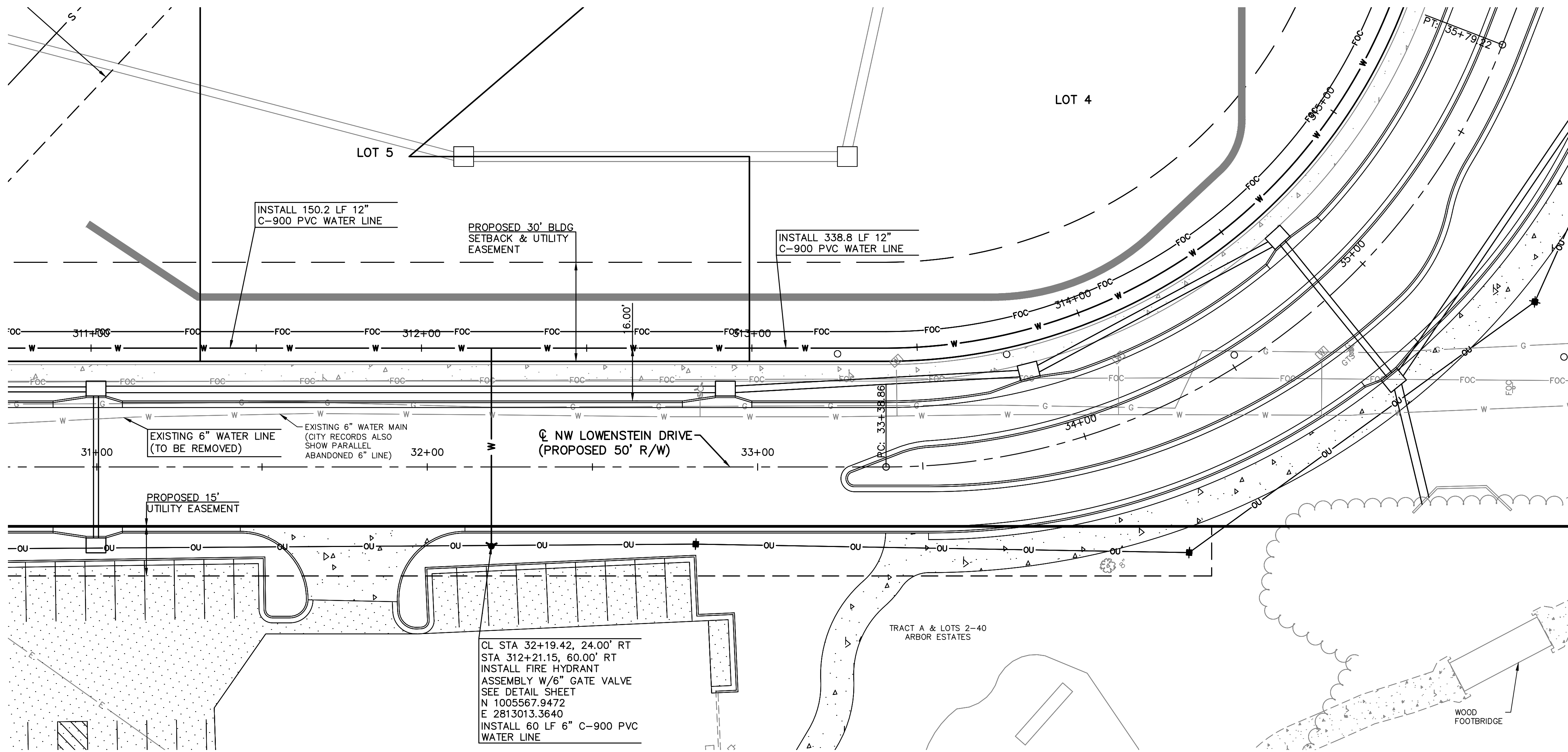


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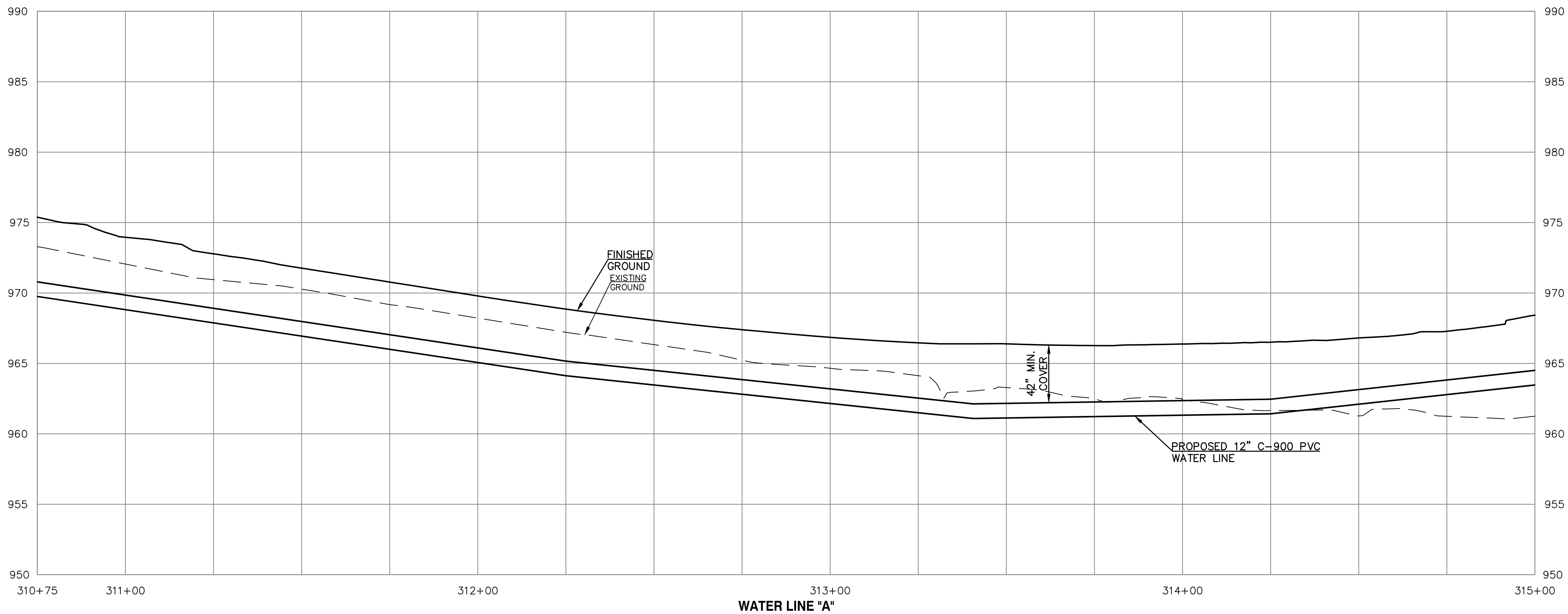


STREETS OF WEST PRYOR NWQ NW PRYOR ROAD & NW LOWENSTEIN DRIVE LEE'S SUMMIT, MISSOURI						WATER LINE PLANS WATER LINE A - PLAN & PROFILE					
PROJ. NO.											
A14_7067-1											
DESIGNER						DRAWN BY					
LDO						JT/BKR					
CFN											
7067-1W_WPP											
SHEET											
C-4											
REV											





NOTE:  
AT ALL SANITARY SEWER AND STORMWATER CROSSINGS,  
THE WATER LINE SHALL BE INSTALLED WITH A MINIMUM  
VERTICAL CLEAR DISTANCE OF 18 INCHES BETWEEN THE  
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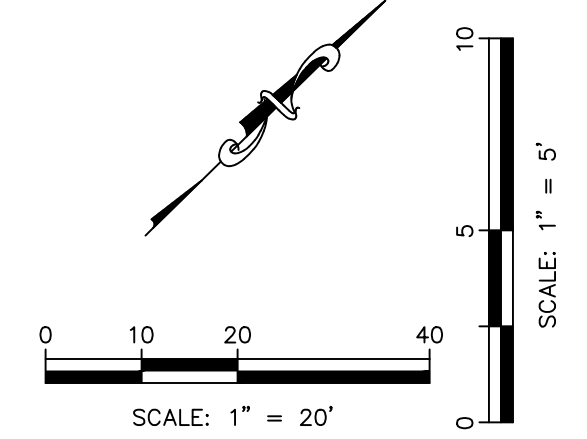
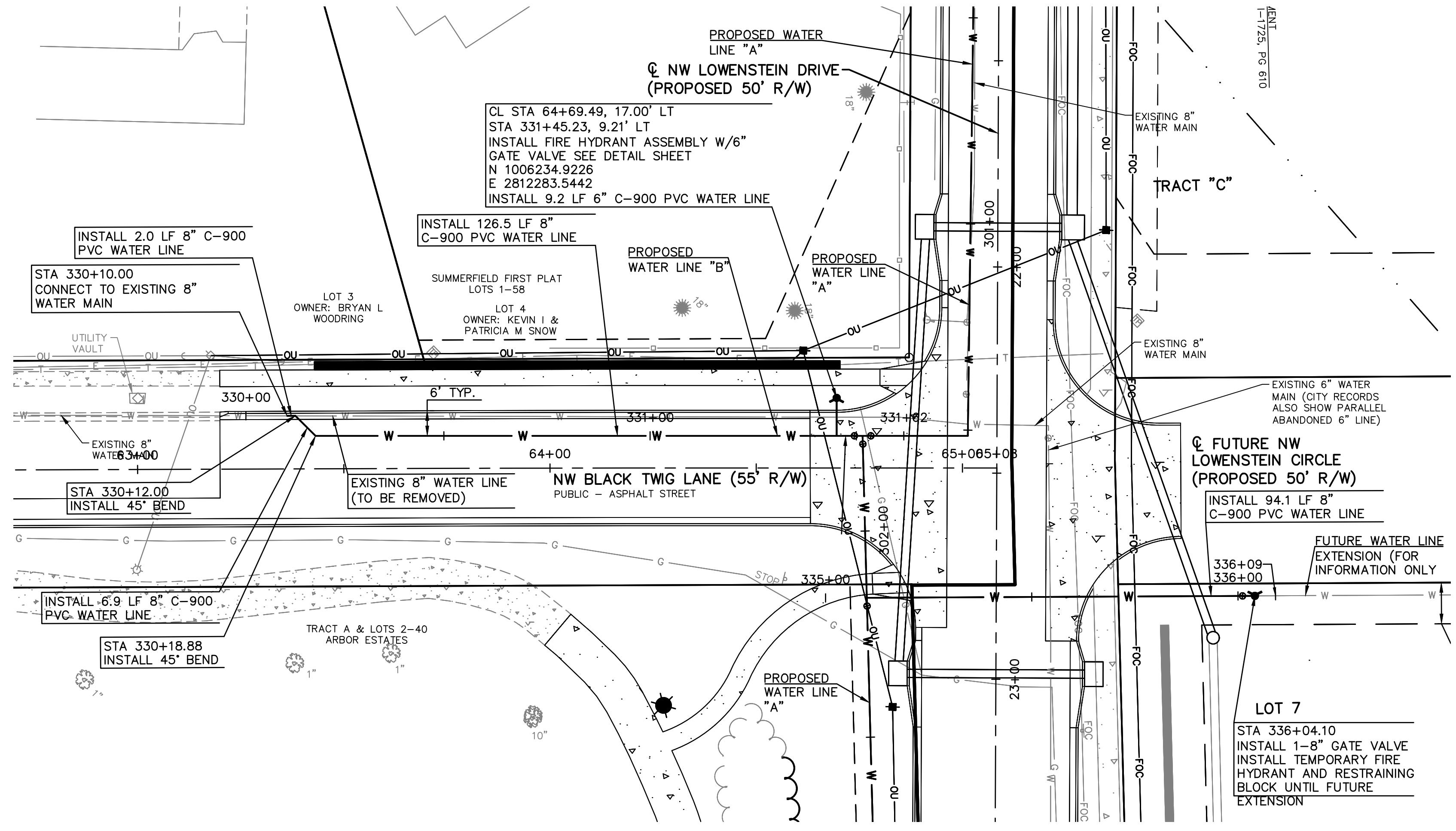
WATER LINE "A"

		LDO	CHK
		JT/BKR	DWN
		LDO	DSN
		INITIAL ISSUE	DESCRIPTION
0	1-4-19	REV	DATE
LEON D. OSBOURN ENGINEER MO # 021726			
2319 N. JACKSON   P.O. BOX 1304 JUNCTION CITY, KANSAS 66441 PH. (785) 762-5040   FAX (785) 762-7744 jke@kve.com   www.kve.com <b>KAW VALLEY ENGINEERING</b> KAW VALLEY ENGINEERING, INC. IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/19			
<b>STREETS OF WEST PRYOR</b> NW/4 NW PRYOR ROAD & NW LOWENSTEIN DRIVE LEE'S SUMMIT, MISSOURI <b>WATER LINE PLANS</b> WATER LINE A - PLAN & PROFILE			
PROJ. NO. <b>A14-7067-1</b> DESIGNER <b>LDO</b> DRAWN BY <b>JT/BKR</b> CFN <b>7067-1W_WPP</b> SHEET <b>C-5</b> REV <b>0</b>			

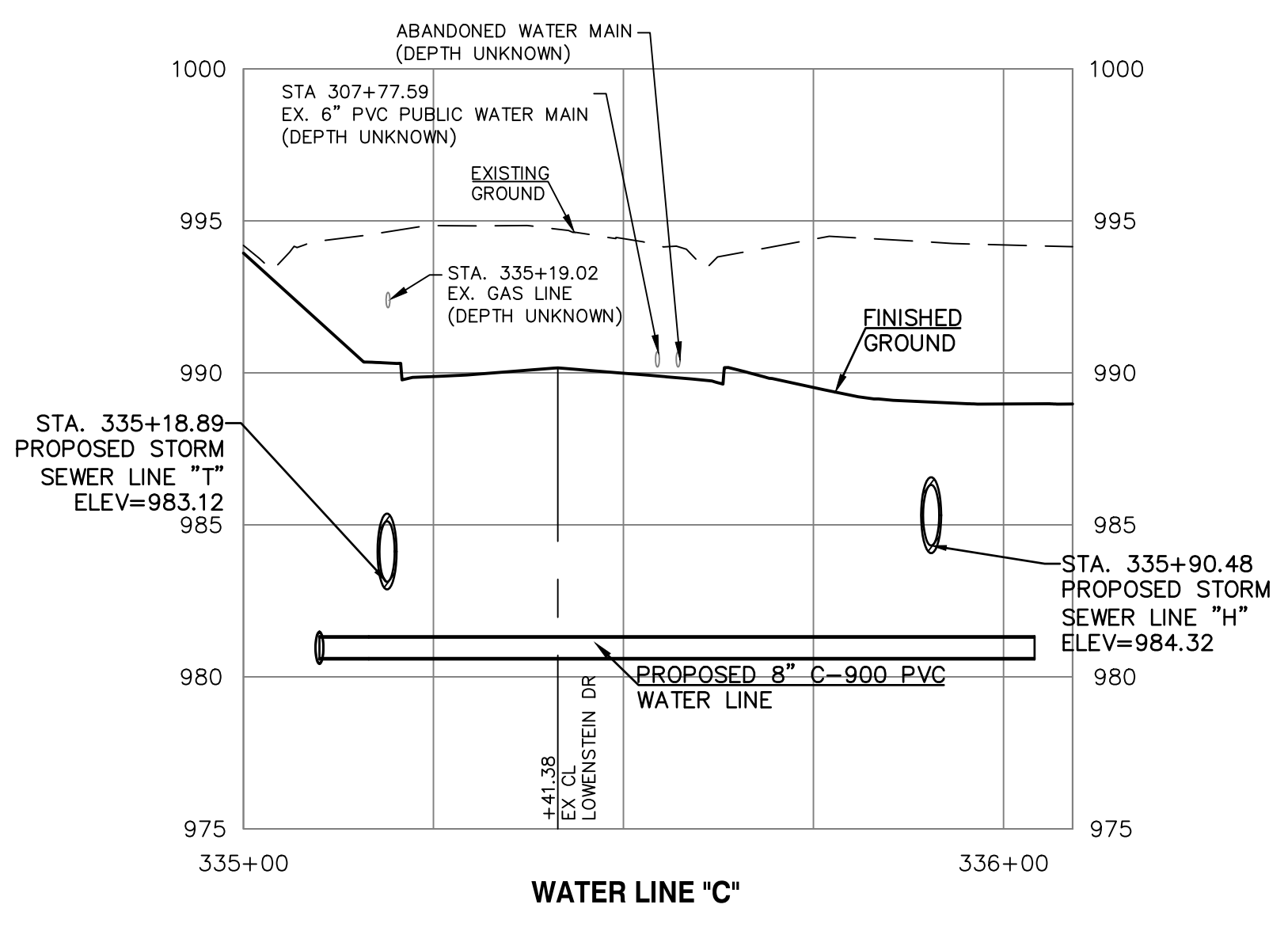
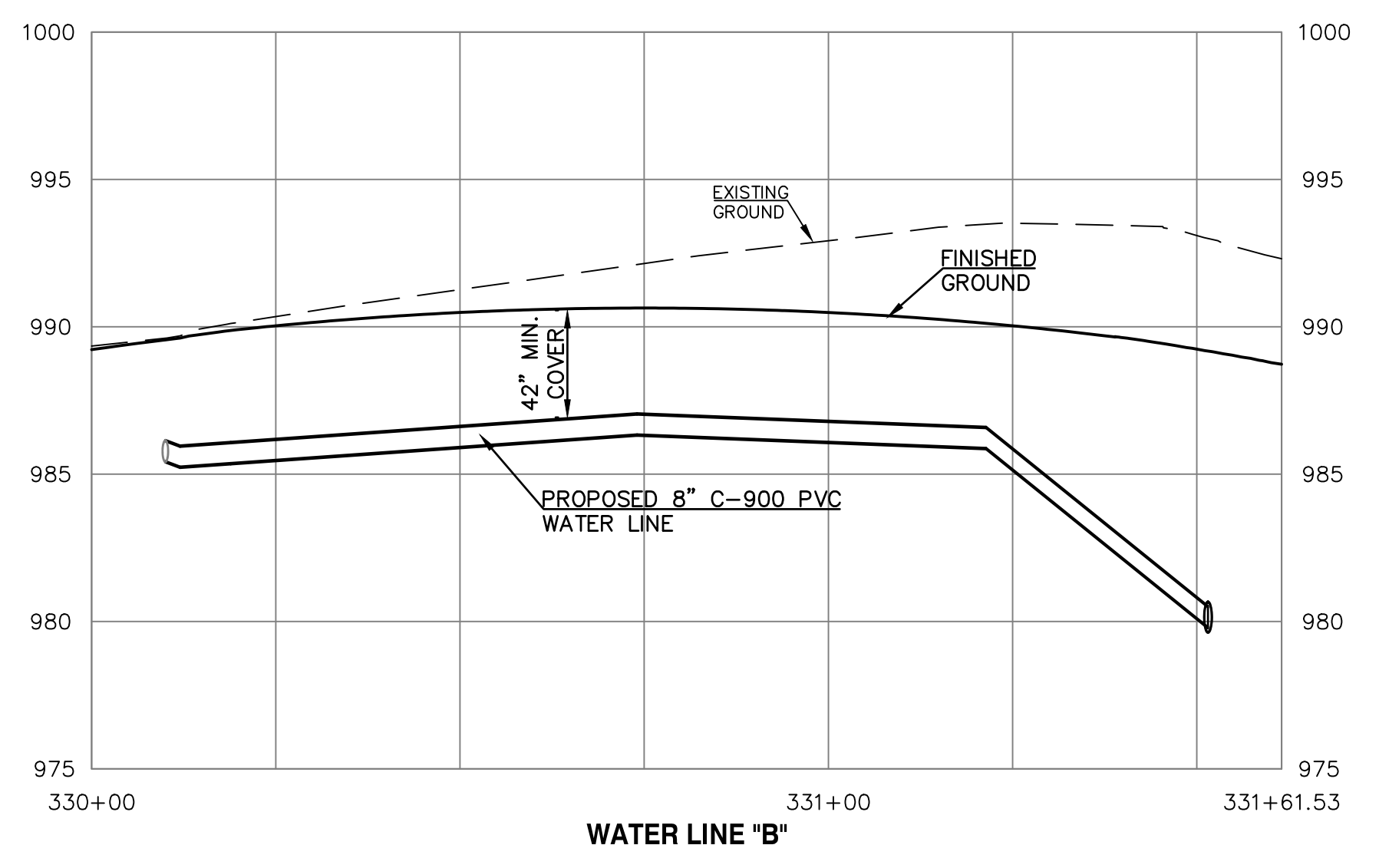






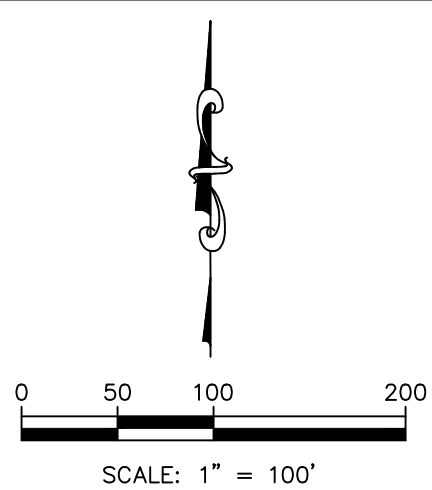
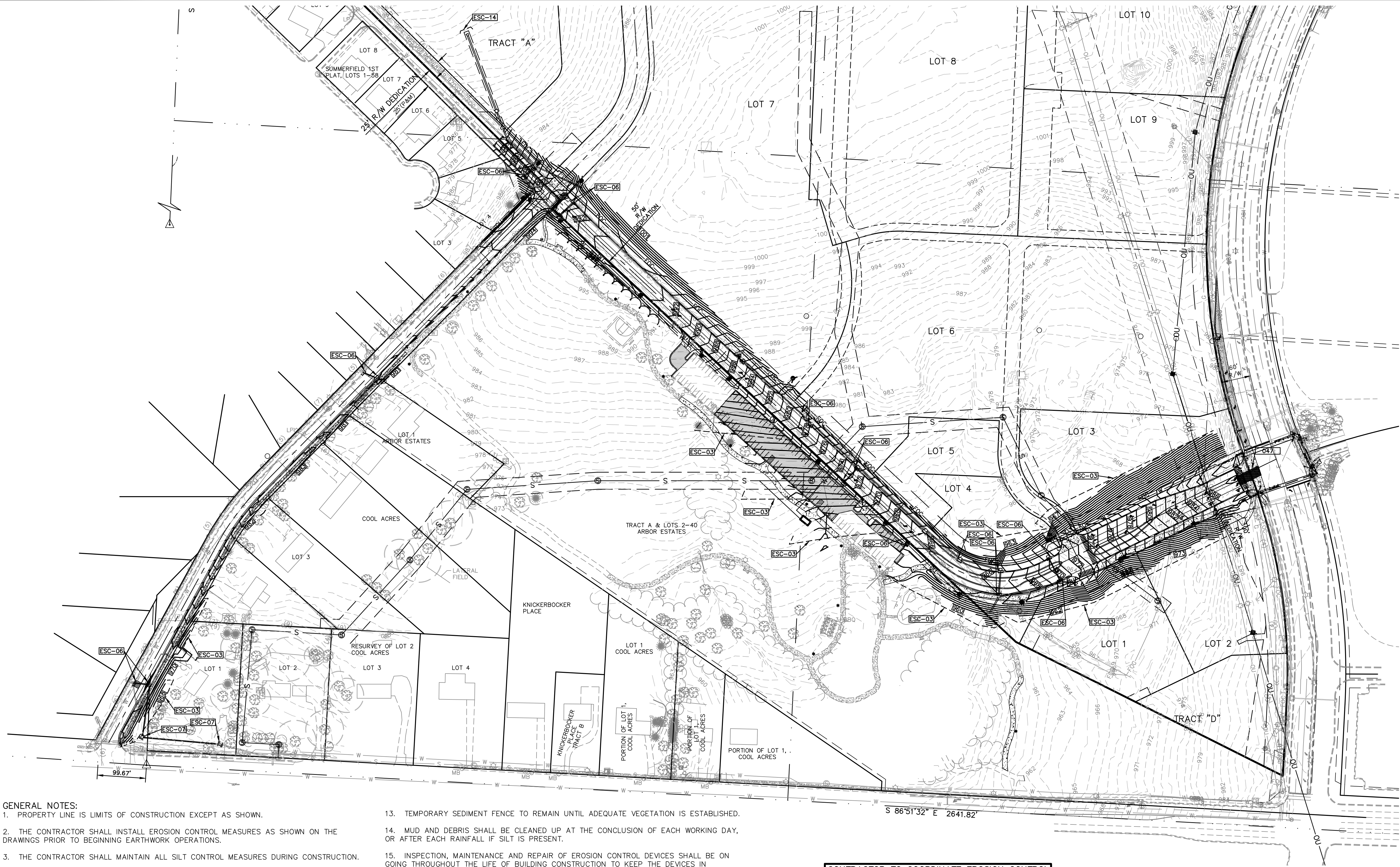


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STREETS OF WEST PRYOR NW/Q NW PRYOR ROAD & NW LOWENSTEIN DRIVE LEE'S SUMMIT, MISSOURI		WATER LINE PLANS WATER LINE B & C - PLAN & PROFILE	
PROJ. NO. A14-7067-1		DESIGNER LDO	
DRAWN BY JT/BKR		CFN	
7067-1W_WPP		SHEET	
C-7		REV	
0		LDO	
JT/BKR		LDO	
DSN		DWN	
CHK		LDO	
REV		DATE	
0		1-4-19	
INITIAL ISSUE		DESCRIPTION	
LEON D. OSBOURN ENGINEER MO # 021726			
2319 N. JACKSON   P.O. BOX 1304 JUNCTION CITY, KANSAS 66441 PH. (785) 762-5040   FAX (785) 762-7744 jke@kvw.com   www.kvw.com			
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GENERAL NOTES:

1. PROPERTY LINE IS LIMITS OF CONSTRUCTION EXCEPT AS SHOWN.

2. THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE DRAWINGS PRIOR TO BEGINNING EARTHWORK OPERATIONS.

3. THE CONTRACTOR SHALL MAINTAIN ALL SILT CONTROL MEASURES DURING CONSTRUCTION.

4. ALL SILT SHALL REMAIN ON SITE AND SURROUNDING STREETS SHALL BE KEPT CLEAR OF ALL MUD AND DEBRIS.

5. A SEDIMENTATION BARRIER IS TO BE INSTALLED AS SHOWN.

6. ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE SEDIMENTATION BARRIERS MAINTAINED AS NEEDED TO PREVENT SEDIMENTATION BYPASS OF THE BARRIER.

7. SLOPES ARE TO BE LEFT IN A ROUGH CONDITION DURING GRADING.

8. CURB INLET SEDIMENTATION BARRIERS ARE TO BE INSTALLED AROUND INLETS AND WEIRS WHERE SEDIMENTATION IS A CONCERN. INLET BARRIERS SHALL BE EITHER BLOCK AND GRAVEL, OR SECURED STRAW BALES, OR SILT FENCE.

9. SEDIMENT IS TO BE REMOVED FROM STORM WATER DRAINAGE SYSTEMS.

10. RIPRAP IS TO BE INSTALLED AT AREAS OF CONCENTRATED FLOW (I.E. CULVERT OUTLETS).

11. CONTRACTOR IS RESPONSIBLE FOR INSTALLING ANY ADDITIONAL EROSION CONTROL AS HE/SHE DEEMS NECESSARY.

12. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS, EQUIPMENT AND LABOR AS NECESSARY TO INSTALL AND MAINTAIN ADEQUATE EROSION AND SILTATION CONTROLS REQUIRED TO PREVENT SOIL EROSION FROM LEAVING THE PROJECT SITE. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THAT METHODS UTILIZED ARE ADEQUATE AND COMPLY WITH REQUIREMENTS OF THE SPECIFICATIONS AND GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER THE WORK.
13. TEMPORARY SEDIMENT FENCE TO REMAIN UNTIL ADEQUATE VEGETATION IS ESTABLISHED.

14. MUD AND DEBRIS SHALL BE CLEANED UP AT THE CONCLUSION OF EACH WORKING DAY, OR AFTER EACH RAINFALL IF SILT IS PRESENT.

15. INSPECTION, MAINTENANCE AND REPAIR OF EROSION CONTROL DEVICES SHALL BE ON GOING THROUGHOUT THE LIFE OF BUILDING CONSTRUCTION TO KEEP THE DEVICES IN OPERABLE CONDITION AT ALL TIMES. ADDITIONAL MEASURES SHALL BE INSTALLED AS REQUIRED BY ACTUAL FIELD CONDITIONS AND/OR GOVERNING INSPECTION AGENCIES.

16. INSTALL CONSTRUCTION ENTRANCE AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING THE SITE AND AS SHOWN ON PLANS.

17. AT COMPLETION OF SITE GRADING AND OTHER RELATED CONSTRUCTION ACTIVITIES, ALL DISTURBED AREAS WITHIN THE PROJECT SITE SHALL BE SEEDED, SODDED, OR LANDSCAPED AS SHOWN ON THE LANDSCAPE PLAN WITHIN 14 DAYS.

18. TOPSOIL IS TO BE PLACED IN AREAS UNSUITABLE FOR VEGETATIVE GROWTH.

19. STRIP TOPSOIL PRIOR TO EXCAVATION, STOCKPILE AND SPREAD ONTO DISKED SUBGRADE (4" MIN) A THICKNESS OF 4 INCHES.

20. ROCK LINING (RIPRAP) SHALL BE DURABLE STONE CONTAINING A COMBINED TOTAL OF NOT MORE THAN 10 PERCENT OF EARTH, SAND, SHALE AND NON-DURABLE ROCK. AT LEAST 60 PERCENT OF THE MASS SHALL BE OF PIECES HAVING A MINIMUM WEIGHT OF 150 POUNDS OR MORE PER CUBIC FOOT.

21. THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY FOR RESOLVING COMPLAINTS IN THE EVENT THAT COMPLAINTS OR DAMAGE CLAIMS ARE FILED DUE TO DAMAGES OCCURRING ADJACENT TO OR DOWNSTREAM FROM PROPERTY BY SEDIMENT RESULTING FROM EROSION ON THE PROJECT SITE.

22. GOOD HOUSEKEEPING PRACTICES SHALL BE MAINTAINED ON SITE TO KEEP SOLID WASTE FROM ENTRY INTO WATERS.

CONTRACTOR TO COORDINATE EROSION CONTROL WITH MASS GRADING CONSTRUCTION AND LOWENSTEIN DRIVE IMPROVEMENTS IN PHASES

23. ALL FUELING FACILITIES PRESENT ON SITE SHALL ADHERE TO APPLICABLE FEDERAL AND STATE REQUIREMENTS CONCERNING UNDERGROUND STORAGE, ABOVE GROUND STORAGE AND DISPENSERS, INCLUDING SPILL PREVENTION, CONTROL AND COUNTER MEASURES.
24. RIGHT OF WAY TO BE STABILIZED AS REQUIRED BY APWA SECTION 2400.
25. EROSION CONTROL IS TO BE PLACED IN PHASING AS CONSTRUCTION PROGRESSES.
26. MINIMAL WASHING OF CONCRETE EQUIPMENT ALLOWED, CHUTE ETC. CONCRETE WASHOUT OF THE DRUM IS NOT ALLOWED. ANY PIT/WASHOUT AREA NEEDS TO BE MAINTAINED IN A NON-DISCHARGING MANNER AND ANY WASTE RESIDUE WILL NEED TO BE CLEANED OUT AND REMOVED AT THE END OF PROJECT.
27. EROSION CONTROL SEDIMENT FENCE TO BE INSTALLED 1'-0" BEHIND CURB & GUTTER UPON COMPLETION OF BACKFILL OF CURB IN ALL AREAS WHERE SLOPES FROM LOT DRAIN TOWARDS CURB. UPON COMPLETION OF FINAL GRADING THE TOES OF ALL EMBANKMENTS IN EXCESS OF TWO FEET IN HEIGHT WILL HAVE EROSION CONTROL SEDIMENT FENCE INSTALLED.

- DETAILS - SEE EROSION CONTROL DETAIL SHEETS FOR THE FOLLOWING DETAILS
- 047 CONSTRUCTION ENTRANCE DETAIL
- ESC-03 SILT FENCE
- ESC-06 CURB INLET PROTECTION
- ESC-07 AREA INLET AND JUNCTION BOX PROTECTION
- ESC-14 OUTLET PROTECTION

EROSION & PROPOSED IMPROVEMENTS LEGEND:

- 970

---

EXISTING GROUND CONTOUR (1' INTERVALS)
- 970

---

PROPOSED FINISHED GROUND CONTOUR (1' INTERVALS)
- SILT FENCE
- INLET PROTECTION



REQUIRED CONCRETE VOLUME (CUBIC FEET – CF)

NOM. DIA. (INCHES)	180	90	45	22.5	11.25
	TEE, PLUG	BEND	BEND	BEND	BEND
6	50.5	71.4	38.6	19.7	9.9
8	89.8	126.9	68.7	35.0	17.6
10	140.2	198.3	107.3	54.7	27.5
12	202.0	287.1	154.6	78.8	39.6
14	275.7	395.3	210.4	107.3	53.9
16	357.5	514.1	271.1	140.1	70.4
18	447.1	643.7	337.7	177.3	89.1
20	544.5	784.1	410.1	219.0	110.0
24	738.1	1066.1	558.1	287.1	145.4

NOTES:

1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.  
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.  
3. BEARING MUST BE AGAINST UNDISTURBED SOIL.  
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

#4 EPOXY COATED GR. 60 REBAR WITH 6" HOOK & 12" MIN. CONCRETE EMBEDMENT DEPTH

UNDISTURBED EARTH

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

VERTICAL THRUST BLOCKS

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-2  
Rev: 1/14  
Rev:

REQUIRED CONCRETE BEARING AREA (SQUARE FEET – SF)

NOM. DIA. (INCHES)	180	90	45	22.5	11.25
	TEE, PLUG	BEND	BEND	BEND	BEND
6	4.7	6.7	4.0	4.0	4.0
8	8.4	11.8	6.4	4.0	4.0
10	13.1	18.5	10.0	5.1	4.0
12	18.6	26.7	14.4	7.4	4.0
14	25.7	36.3	19.6	10.0	5.0
16	33.5	47.4	25.6	13.1	6.6
18	42.4	59.1	32.5	16.5	8.3
20	52.1	72.4	40.1	20.4	10.3
24	70.1	98.1	54.1	27.4	14.8

NOTES:

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2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.  
3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.  
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

POURED CONCRETE BLOCKS (TYP.)

UNDISTURBED EARTH

BEARING AREA (TYP.)

BOND BREAKER (TYP. ALL BLOCKS)

PLAN

1/4" BOND BREAKER

SECTION A

1/2" DIAMETER

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

HORIZONTAL THRUST BLOCKS

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-1  
Rev: 1/14  
Rev:

LENGTH AS SHOWN ON PLANS

3" CLEAR

6"

6"

6"

6"

CONCRETE ENCASEMENT

NOTES:

1. INTERMEDIATE BELLS SHALL BE ENCASED.  
2. REINFORCING STEEL SHALL BE #4 @ 12" O.C. EACH WAY WITH A MINIMUM REBAR LAP OF 12".  
3. THIS DETAIL IS FOR PIPES 12" AND SMALLER.

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

WATER PIPE ENCASEMENT

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-4  
Rev: 1/14  
Rev:

VALVE COVER

FINAL GRADE

3" MAXIMUM

VARIES AS REQUIRED

CUT A NOTCH IN TOP OF VALVE BOX AND PLACE 2" OF TRACER WIRE COILED INSIDE VALVE COVER BOX

STANDARD 2" SQUARE VALVE OPERATING NUT

WELD (TYP. 8 PLACES)

ALIGNMENT WASHER 1/8" MIN. STEEL 4-1/2"

1" COLD ROLLED STEEL

MIN. 5" FERROUS METAL VALVE BOX

SOCKET FROM 1/4" STEEL INSIDE DIMENSIONS 2-3/16" X 3" DEEP DO NOT TIGHTEN SET SCREW TO 2" OPERATING NUT

INSTALL TRACER WIRE ALONG OUTSIDE SURFACE OF VALVE BOX

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

VALVE STEM EXTENSION AND VALVE BOX

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-9  
Rev: 1/14  
Rev:

2" FROM BACK OF CURB

BACK OF CURB

GROUND SURFACE

MECHANICAL JOINT (TYP.)

VALVE LID & COVER

20" MIN. 42" MAX.

THRUST BLOCK (SEE NOTE 1)

KEEP WEEPHOLE FREE OF CONCRETE AND FOREIGN MATERIAL

VARIES

VALVE BOX & BASE

6" GATE VALVE

24"x24"x4" SOLID CONCRETE PAD

UNDISTURBED EARTH

PROVIDE MIN. 1/2 CU. YD. OF 3/4" GRANULAR FILL PER AWWA C600 SEC. 4.2.7.2.4

MJ RESTRAINT FITTINGS (SEE NOTES 1 & 2)

THRUST BLOCK

UNDISTURBED EARTH

NOTES:

1. WHEN RETAINER GLANDS ARE USED IN LIEU OF MECHANICAL JOINT (MJ) RESTRAINT FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.  
2. GATE VALVE MAY BE BOLTED DIRECTLY TO MJ RESTRAINT TEE.  
3. SEE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR FIRE HYDRANT, VALVES, VALVE BOX LID, AND COVER.  
4. BOTTOM HYDRANT FLANGE SHALL BE 2" TO 6" ABOVE FINISHED GRADE.  
5. FOR STREETS WITHOUT CURBS FIRE HYDRANTS SHALL BE PLACED WITHIN 1 FOOT OF THE R/W LINE, BUT NOT MORE THAN 10' FROM EDGE OF PAVEMENT. FIRE HYDRANT SHALL NOT BE PLACED IN BOTTOM OF DITCH.  
6. HYDRANT SHALL BE ROTATED AS DIRECTED BY INSPECTOR.

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

HYDRANT INSTALLATION – STRAIGHT SET

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-7  
Rev: 1/14  
Rev:

2" FROM BACK OF CURB

BACK OF CURB

GROUND SURFACE

THRUST BLOCK (SEE NOTE 1)

KEEP WEEPHOLE FREE OF CONCRETE AND FOREIGN MATERIAL

20" MIN. 42" MAX.

MECHANICAL JOINT (TYP.)

VALVE LID & COVER

VARIES

VALVE BOX & BASE

6" GATE VALVE

24"x24"x4" SOLID CONCRETE PAD

UNDISTURBED EARTH

PROVIDE MIN. 1/2 CU. YD. OF 3/4" GRANULAR FILL PER AWWA C600 SEC. 4.2.7.2.4

MJ RESTRAINT FITTINGS (SEE NOTES 1 & 2)

THRUST BLOCKS

UNDISTURBED EARTH

NOTES:

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LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

HYDRANT WITH 90 DEGREE BEND

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-8  
Rev: 1/14  
Rev:

FINISHED GRADE

REGULAR BACKFILL

TRENCH AS REQUIRED BY OSHA

FLOWABLE FILL

12"

12" MIN.

NOT TO SCALE

NOTES:

1. FLOWABLE FILL SHALL MEET THE REQUIREMENTS OF THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL.  
2. REGULAR BACKFILL ABOVE THE TRENCH CHECK SHALL BE FREE OF DEBRIS, ORGANIC MATTER, AND STONES > 6" IN ANY DIMENSION.  
3. TOP OF FLOWABLE BACKFILL SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE.  
4. LENGTH OF TRENCH CHECK SHALL BE A MINIMUM OF 12".

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

TRENCH CHECK

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-6  
Rev: 1/14  
Rev:

MANHOLE FRAME AND LID REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES

FINISH GRADE

12" MIN. 16" MAX.

36" METER WELL ASSEMBLY

1" AIR RELEASE ASSEMBLY REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES

1" FULL PORT BALL VALVE W/ EXTENDED HANDLE 600 PSI BRASS (TYP)

1" SCH 40 RED BRASS THREADED PIPE ASTM B43

1" BALL CORPORATION STOP AWWA/CO TAPER THREAD INLET BY FEMALE IRON PIPE THREAD OUTLET

BRASS SERVICE SADDLE (2 STRAPS REQUIRED FOR DUCTILE IRON PIPE)

WATER MAIN

CONCRETE BLOCK

GRANULAR BEDDING

GRANULAR BEDDING TO SPRING LINE

AIR RELEASE ASSEMBLY NOT TO SCALE

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

AIR RELEASE ASSEMBLY

Date: 04/17  
Drawn By: MJF  
Checked By: DL  
WAT-10

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

HYDRANT INSTALLATION – STRAIGHT SET

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-7  
Rev: 1/14  
Rev:

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

HYDRANT WITH 90 DEGREE BEND

Date: 02/13  
Drawn By: JN  
Checked By: DL  
FILE: WAT-8  
Rev: 1/14  
Rev:

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

TRENCH CHECK

Date: 02/13  
Drawn By: JN  
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FILE: WAT-6  
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Rev:

LEE'S SUMMIT  
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

AIR RELEASE ASSEMBLY

Date: 04/17  
Drawn By: MJF  
Checked By: DL  
WAT-10

STREETS OF WEST PRYOR  
NWQ NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

WATER LINE PLANS  
DETAIL SHEET

PROJ. NO. A14-7067-1  
DESIGNER LDO  
DRAWN BY JT/BKR  
CFN 7067-1W\_DET  
SHEET C-9  
REV 0

THIS DRAWING SHALL NOT BE UTILIZED BY ANY PERSON, FIRM, OR CORPORATION IN WHOLE OR IN PART WITHOUT THE SPECIFIC PERMISSION OF KAW VALLEY ENGINEERING, INC.

LDO

JT/BKR

DSN

CHK

LDO

JT/BKR

DSN

CHK

INITIAL ISSUE

DESCRIPTION

0

1-4-19

REV

DATE

STATE OF MISSOURI

LEON D. OSBOURN

REGISTERED PROFESSIONAL ENGINEER

NUMBER 021726

LEON D. OSBOURN

ENGINEER

MO # 021726

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kawvalley.com | www.kawvalley.com

KV

KAW VALLEY ENGINEERING

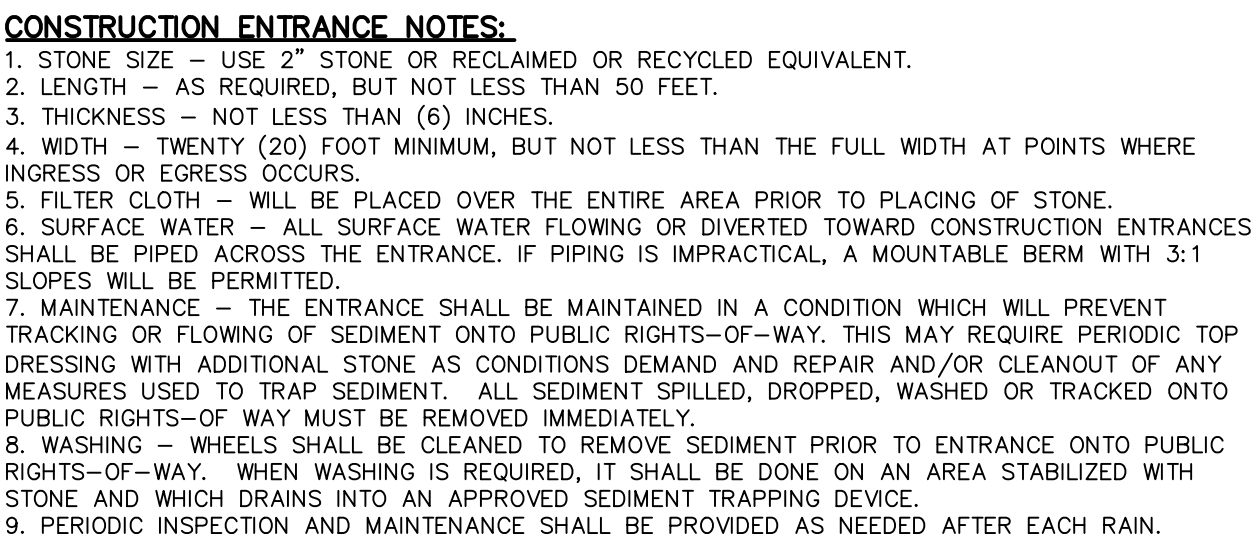
KAW VALLEY ENGINEERING, INC. IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842.  
EXPIRES 12/31/19

STREETS OF WEST PRYOR  
NWQ NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

WATER LINE PLANS  
DETAIL SHEET

PROJ. NO. A14-7067-1  
DESIGNER LDO  
DRAWN BY JT/BKR  
CFN 7067-1W\_DET  
SHEET C-9  
REV 0

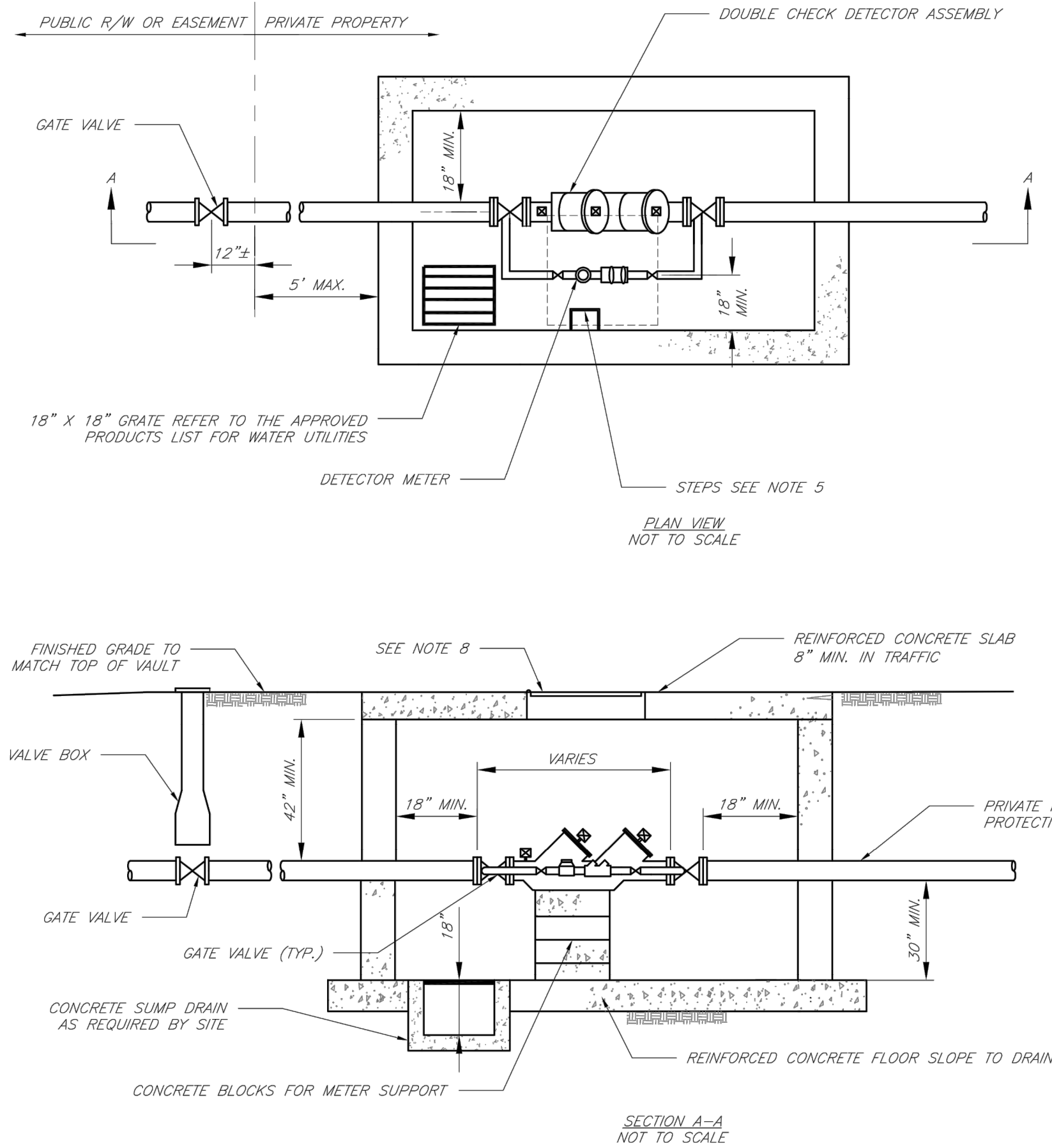




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**KAW VALLEY ENGINEERING**

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- GENERAL NOTES:
1. METER VAULT WALLS TO BE POURED OR PRECAST CONCRETE. METER VAULT ROOF TO BE REINFORCED CONCRETE WITH OPENING CENTERED OVER DETECTOR METER. REINFORCED WALLS AND SLABS ARE TO BE PROTECTED BY THE DETECTOR METER.
  2. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. PROVIDE CONCRETE SUMPS TO MAIN DRAIN AND GROUND DISCHARGE POINTS.
  3. PIPE AND FITTINGS FROM THE CITY WATER MAIN THROUGH THE VAULT SHALL BE PROVIDED WITH RESTRAINED JUNT FITTINGS.
  4. ALL FITTINGS FOR THE DETECTOR METER TO BE BRASS.
  5. DETECTOR SHOWN WITH 12" DIA. DETECTOR PRODUCTS LISTED FOR WATER UTILITIES AND SHALL BE ON 16" CENTERS.
  6. A DEPARTMENT OF NATURAL RESOURCES APPROVED DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED. PROVIDE COPY OF THE MISSOURI DEPARTMENT OF NATURAL RESOURCES APPROVED BACKFLOW PREVENTION ASSEMBLIES, CONTACT WATER UTILITIES AT 314-669-1900.
  7. ALL VALVES SHALL HAVE RISING STEMS.
  8. MANHOLE COVER SHALL BE A BILCO K-1 MODEL UNLESS IN A VEHICLE TRAFFIC AREA. SEE THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR THE COVER. COVER SHALL HAVE A 1-3/4" Ø HOLE DRILLED FOR A TOUCH/READ DEVICE.
  9. A MINIMUM OF 18" CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING, VALVES, APPURTENANCES, ETC.
  10. CONTACT PUBLIC WORKS ENGINEERING FOR VAULTS THAT INCLUDE A FIRE DEPARTMENT CONNECTION OR A 3" OR LARGER METER.

**CITY OF LEE'S SUMMIT, MO**  
**PUBLIC WORKS DEPARTMENT**  
**ENGINEERING DIVISION**



Project: STANDARD DRAWINGS

**STREETS OF WEXT PRYOR**  
NWQ NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

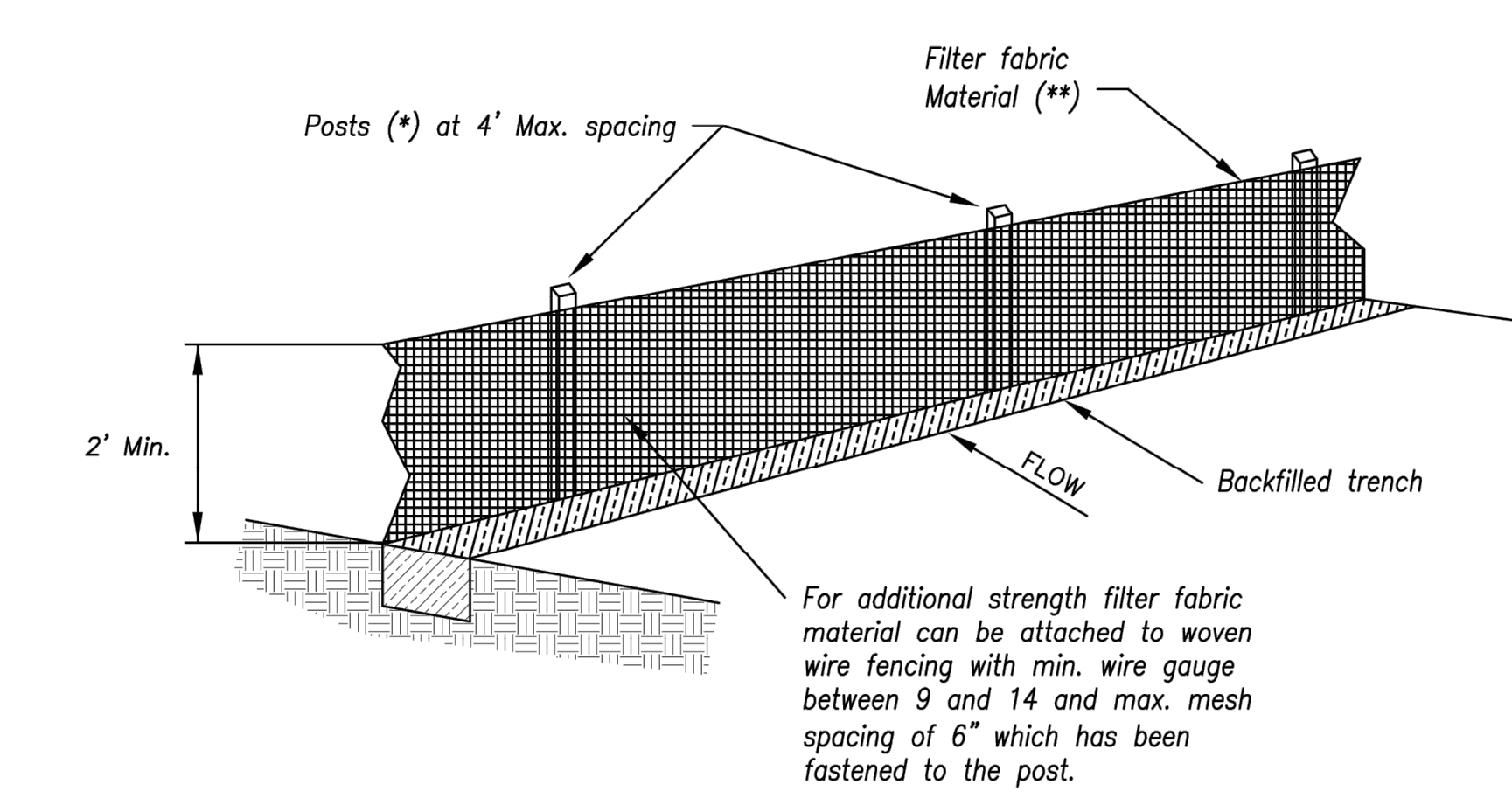
# WATER LINE PLANS DETAIL SHEET

PROJ. NO.	
A14_7067-	
DESIGNER	DRAWN BY
LDO	JT/BK

7067-1W_DET	
SHEET	RE

C-10	C
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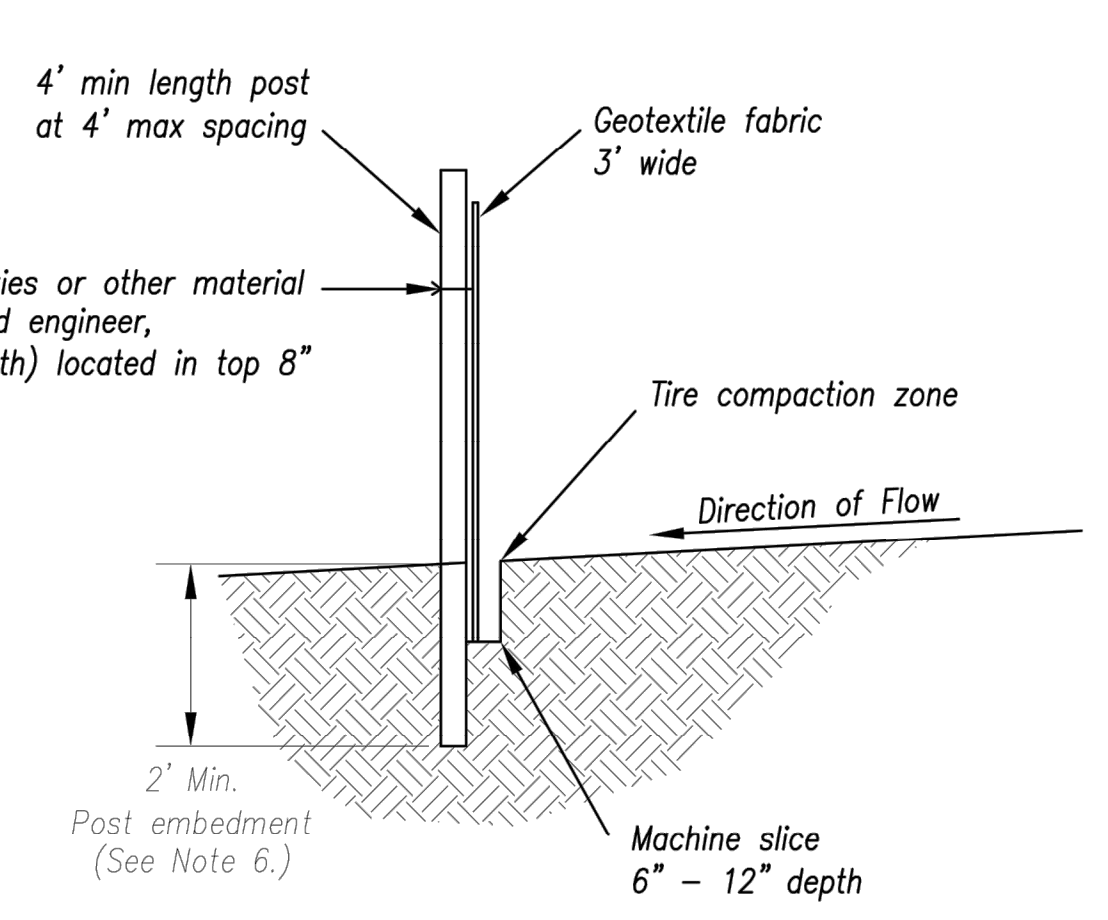




- (\*) POSTS
- MIN. LENGTH 4'
  - HARDWOOD 1 3/16" x 1 3/16"
  - NO.2 SOUTHERN PINE 2 5/8" x 2 5/8"
  - STEEL 1.33 LB/FT

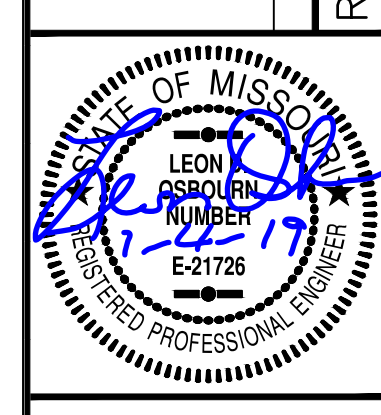
(\*\*) - Geotextile Fabric shall meet the requirements of AASHTO M288

**SILT FENCE DETAILS**  
Not to Scale



- Notes:
1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
  2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
  3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
  4. Attach fabric to upstream side of post.
  5. Install posts a minimum of 2' into the ground.
  6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

- Maintenance:
1. Remove and dispose of sediment deposits when the deposit approaches 1/3 the height of silt fence.
  2. Repair as necessary to maintain function and structure.



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**KAW VALLEY ENGINEERING**

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**STREETS OF WEST PRYOR**  
NW/Q NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

**WATER LINE PLANS**  
DETAIL SHEET

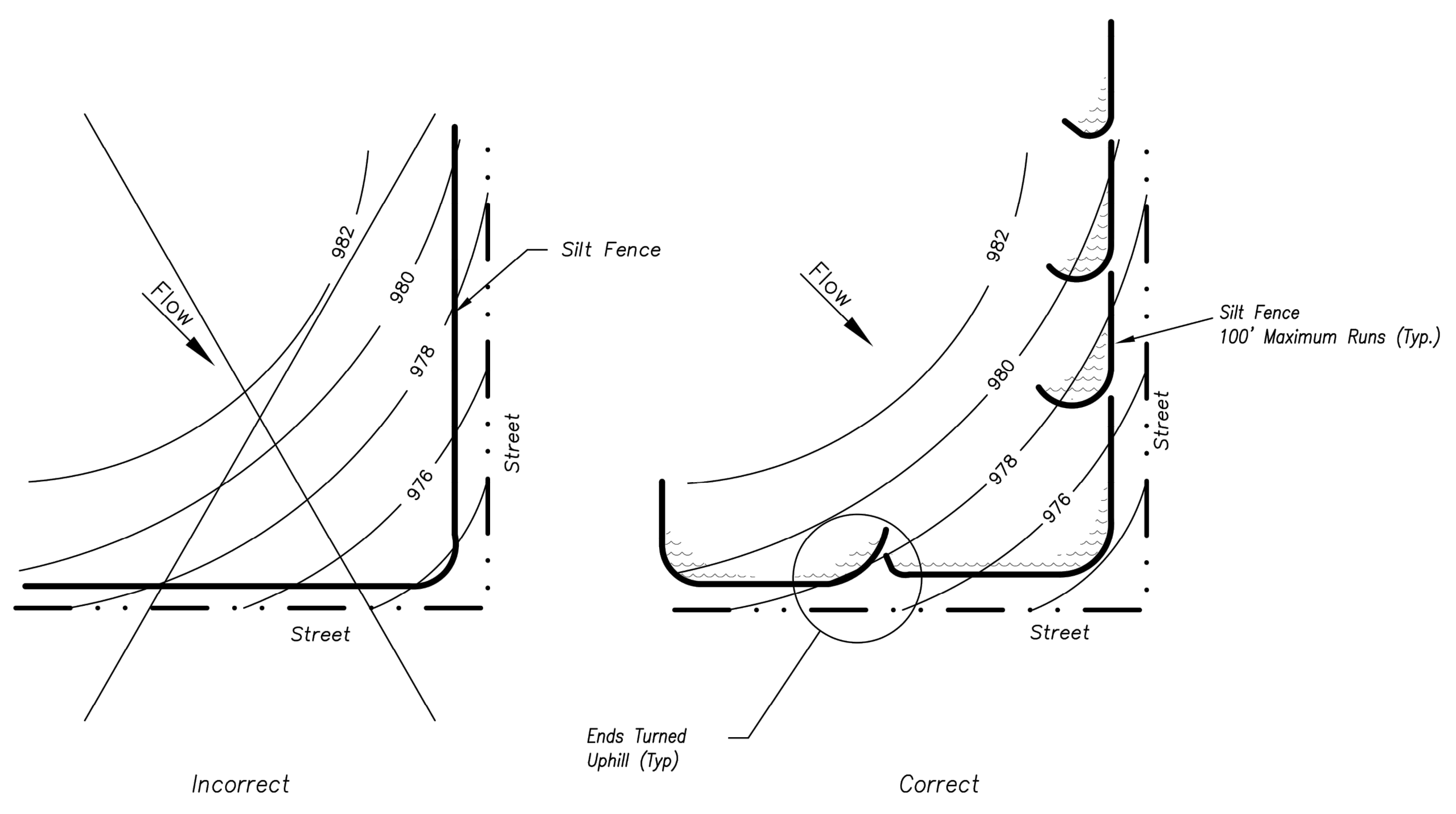
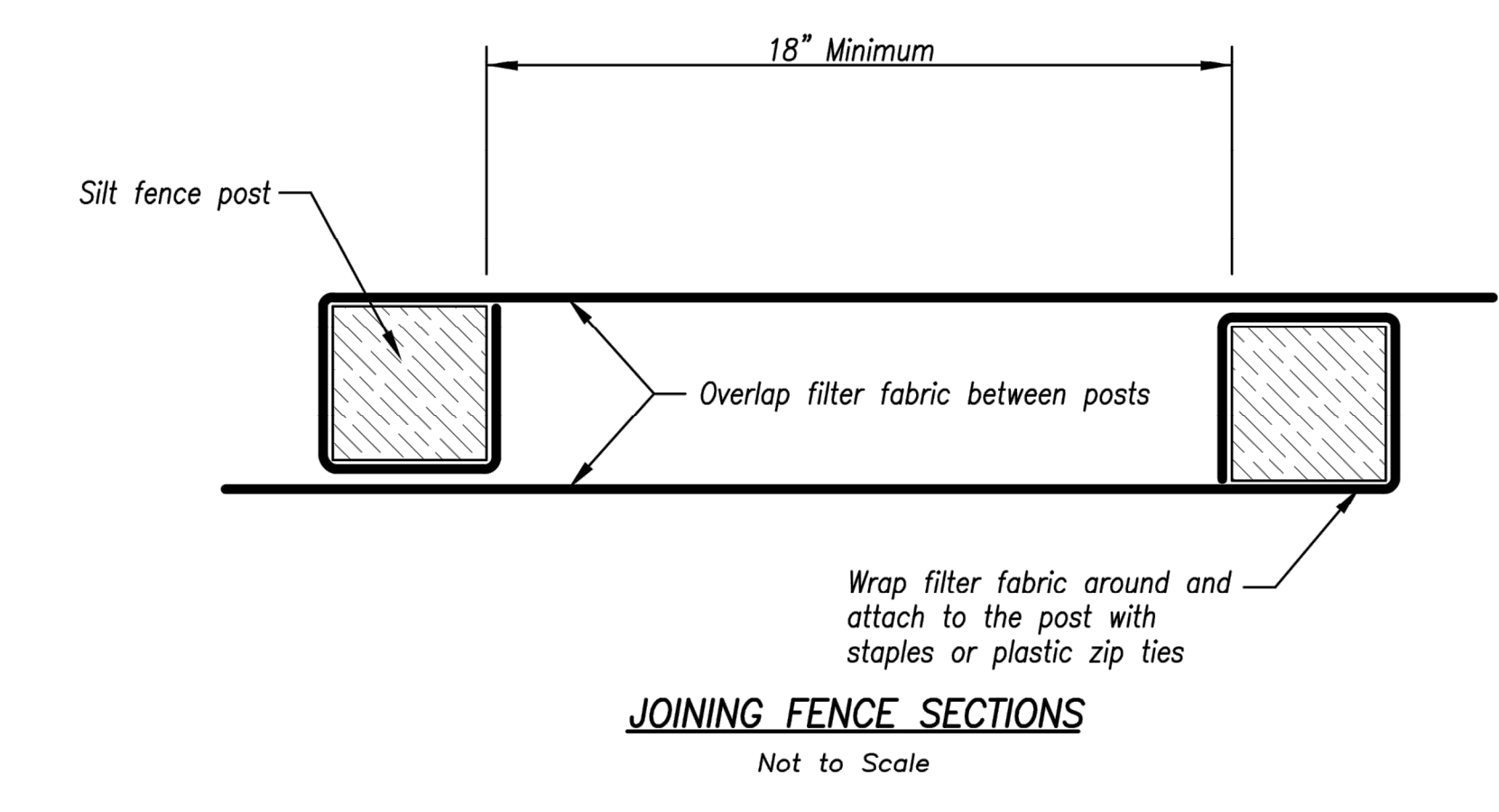
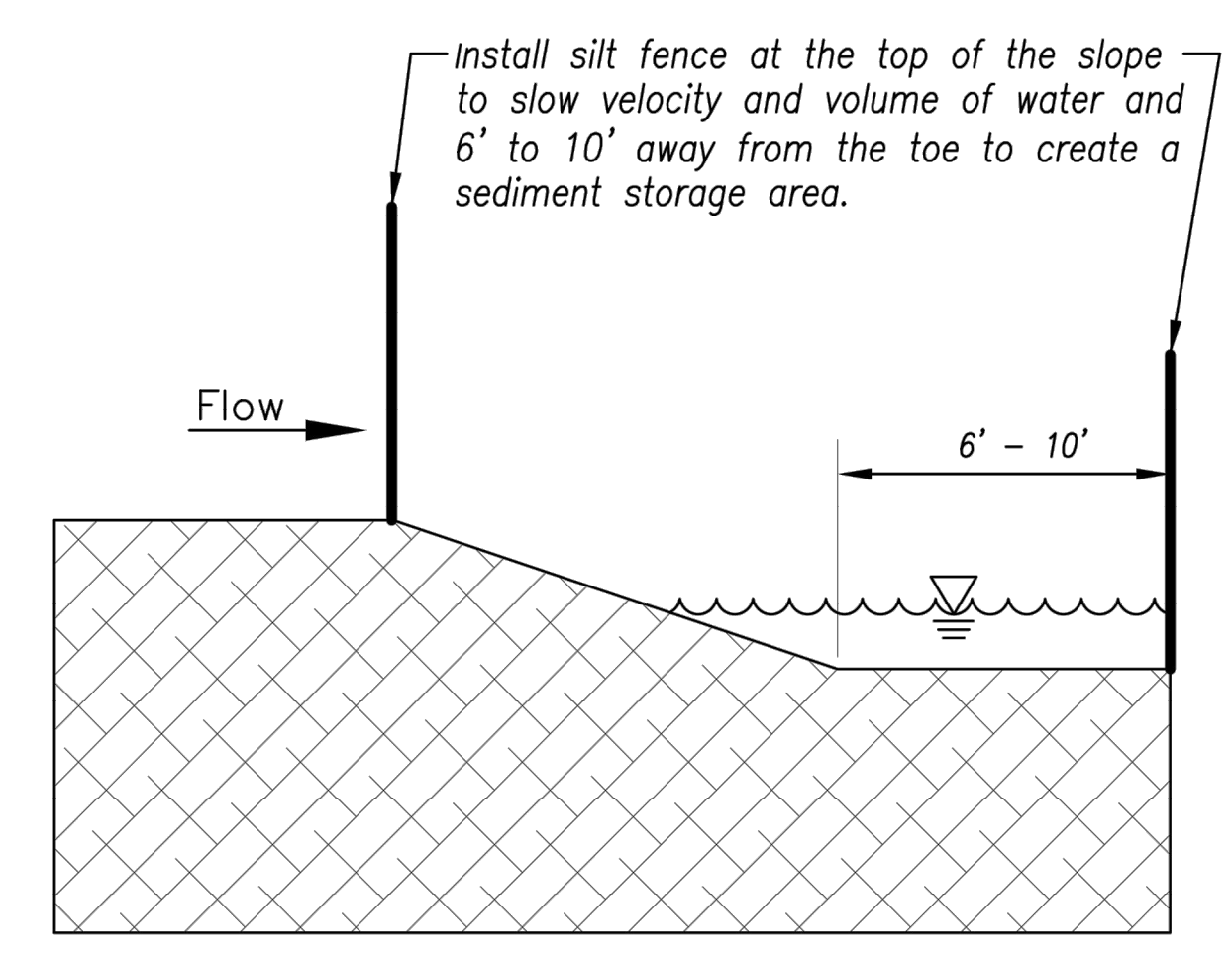


Figure A

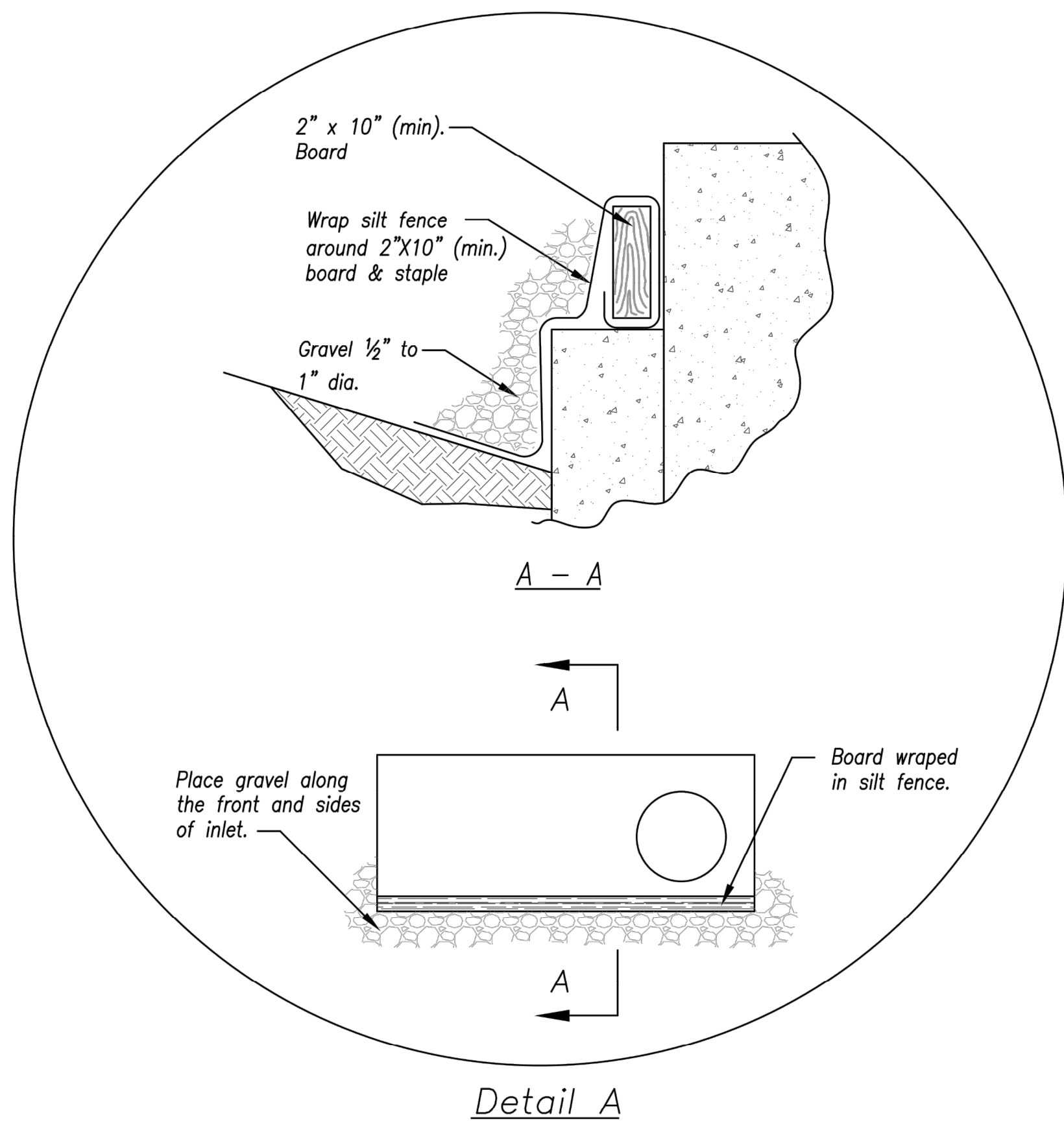
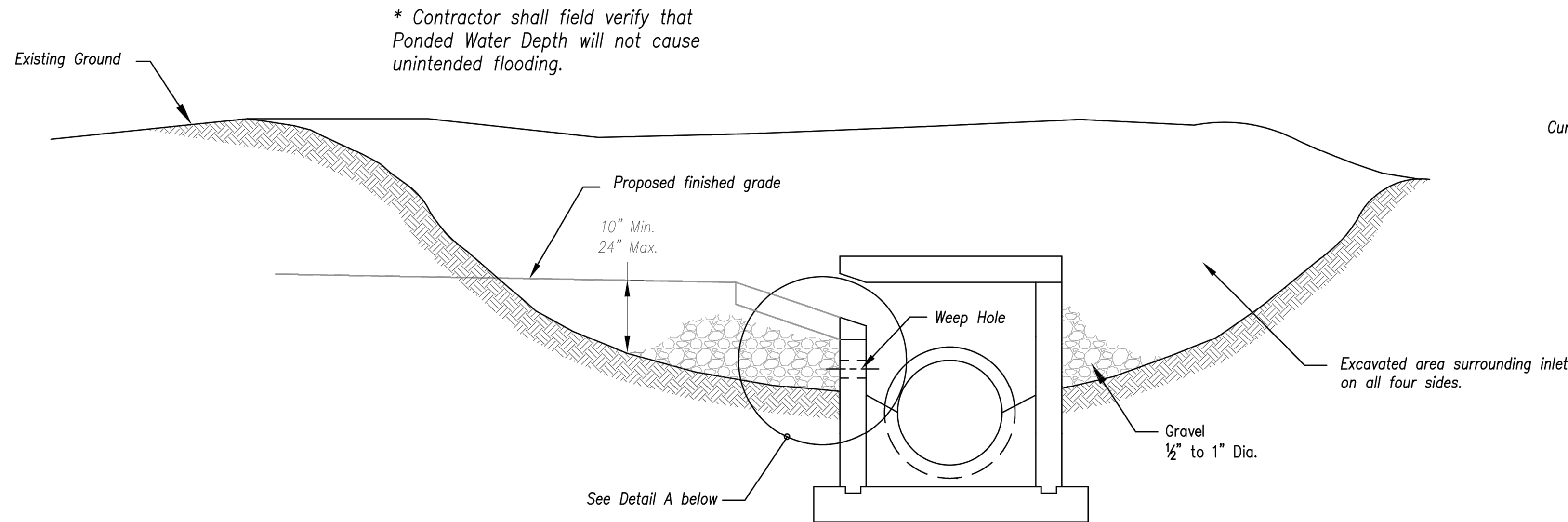
**SILT FENCE LAYOUT**  
Not to Scale



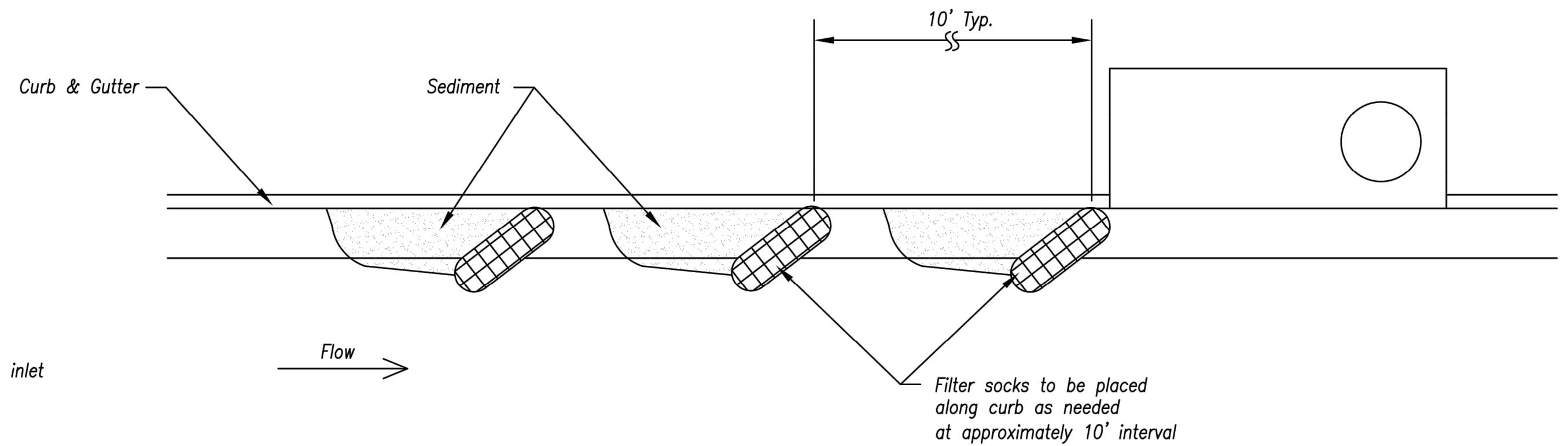
<b>AMERICAN PUBLIC WORKS ASSOCIATION</b>	
KANSAS CITY METRO CHAPTER	
SILT FENCE	
STANDARD DRAWING NUMBER ESC-03	
ADOPTED: 10/24/2016	

PROJ. NO.	A14_7067-1
DESIGNER	LDO
DRAWN BY	JT/BKR
CFN	7067-1W_DET
SHEET	C-11
REV	0

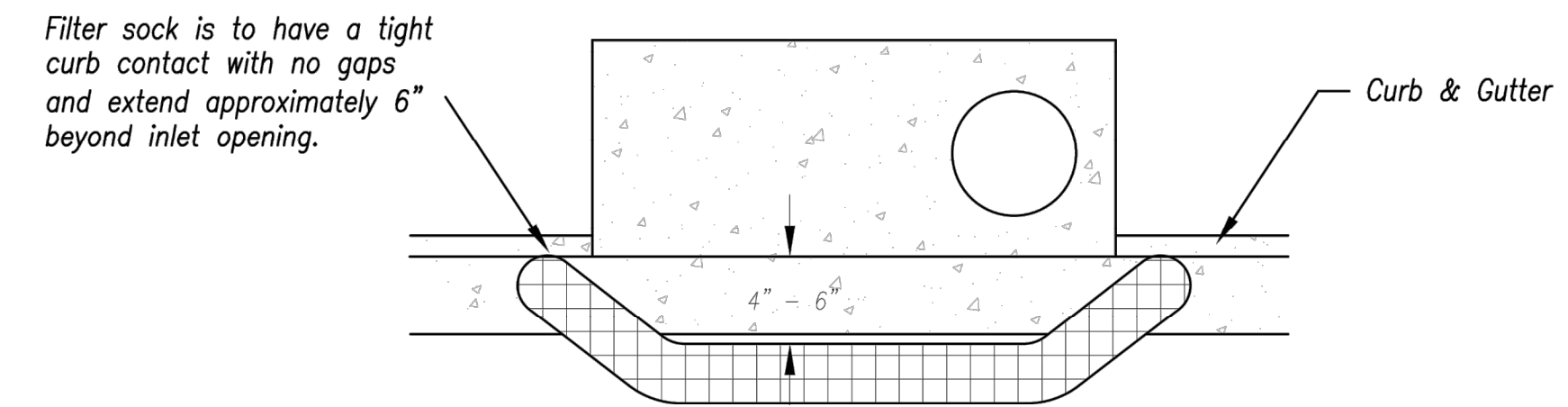




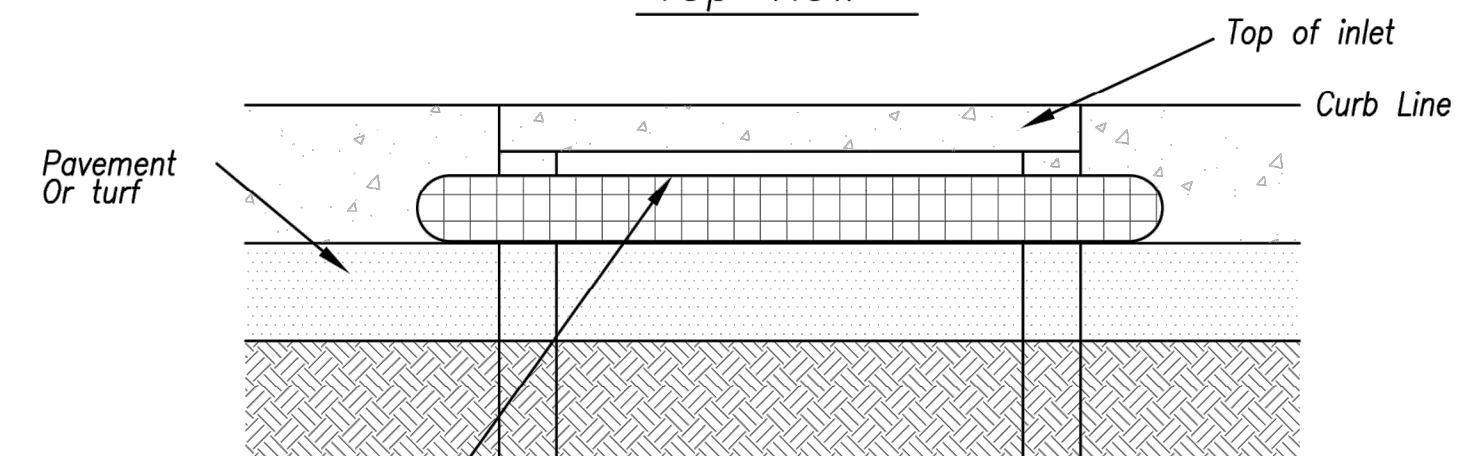
EARLY STAGE CURB INLET  
(Open Box and Prior to Pouring  
Curb and Inlet Throat)



On Grade Curb Inlet Protection



Top View



Front View

Sump Inlet Sediment Filter

LATE STAGE CURB INLET  
(After Pouring Curb and Inlet Throat)

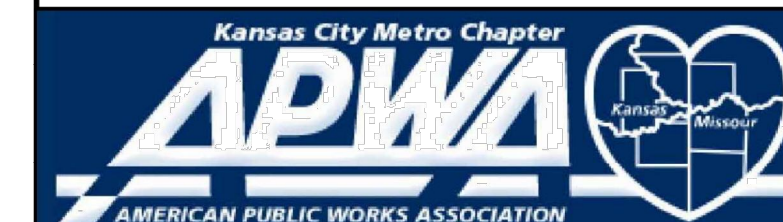
Notes:

1. Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" X 10" (min.) board wrapped in silt fence. Structures shall have excavated storage area on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When inlet is completed and curb poured, filter socks or approved equal should be used (Late Stage Curb Inlet). Straw wattles are not approved for curb inlet use.
3. Contractor to field verify ponding water shall not create a traffic hazard.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

AMERICAN PUBLIC WORKS ASSOCIATION



KANSAS CITY  
METRO CHAPTER

CURB INLET PROTECTION

STANDARD DRAWING  
NUMBER ESC-06

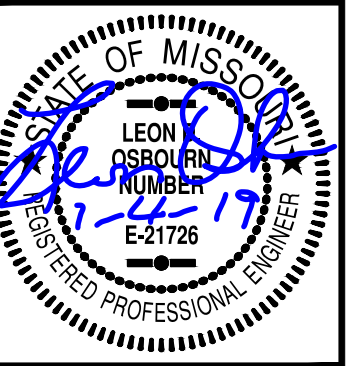
ADOPTED:  
10/24/2016

STREETS OF WEST PRYOR  
NW/Q NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

WATER LINE PLANS  
DETAIL SHEET

PROJ. NO. A14\_7067-1  
DESIGNER LDO DRAWN BY JT/BKR  
CFN 7067-1W\_DET  
SHEET

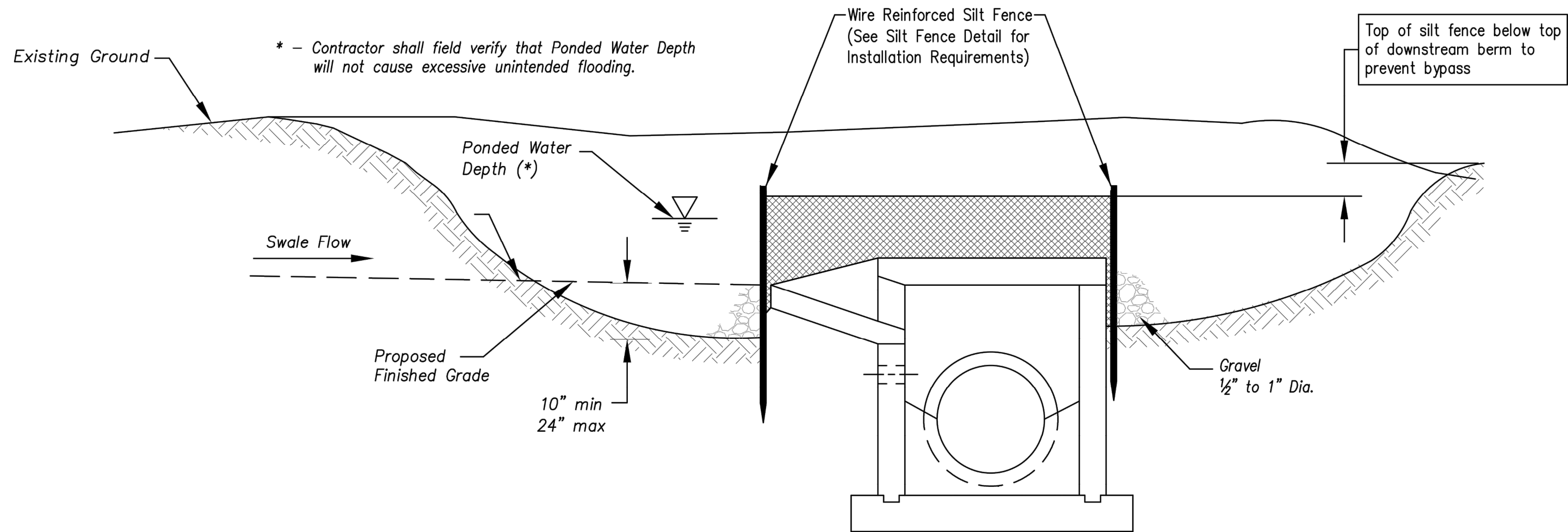
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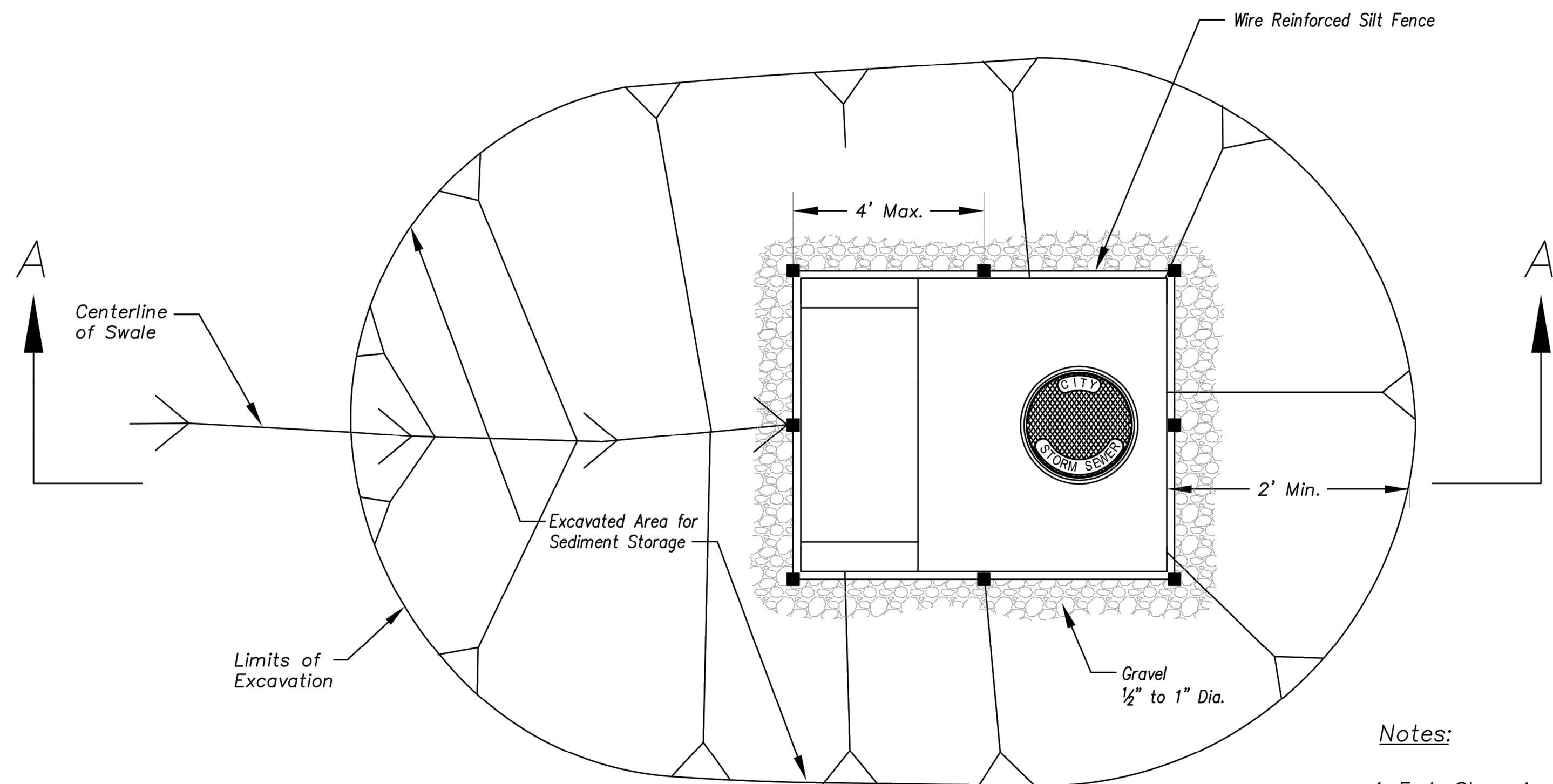
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**KAW VALLEY ENGINEERING**  
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SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842.  
EXPIRES 12/31/19





Section A-A  
Not to Scale

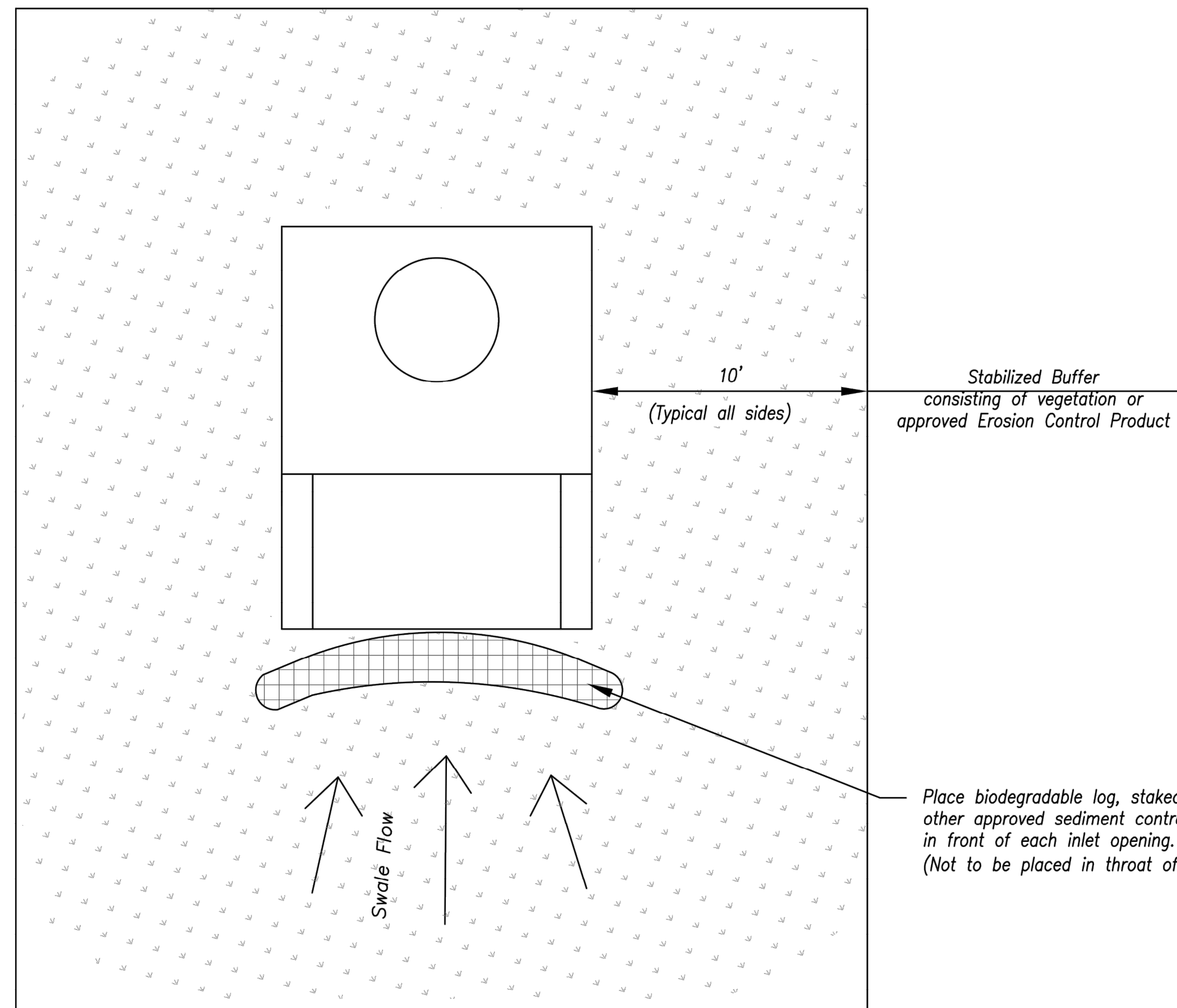


Plan  
Not to Scale

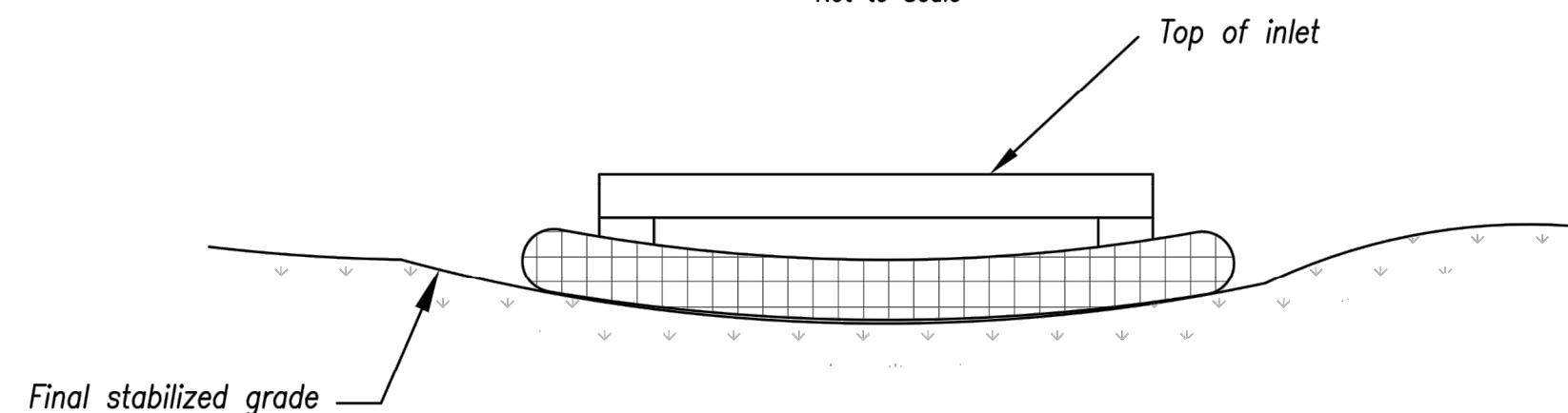
**EARLY STAGE AREA INLET**  
(All open boxes and inlets not at final grade)

**Notes:**

1. Early Stage Area Inlet Sediment Barrier to be installed immediately after inlet or junction box is constructed.
2. Silt fence shall remain in place until excavated area is removed and Late Stage Area Inlet is being installed.
3. Backfill excavated area ONLY after final grading of the site. Stabilization of the site is to immediately follow.
4. Wire reinforced silt fence may be used in place of silt fence attached to wood frame.



Plan  
Not to Scale



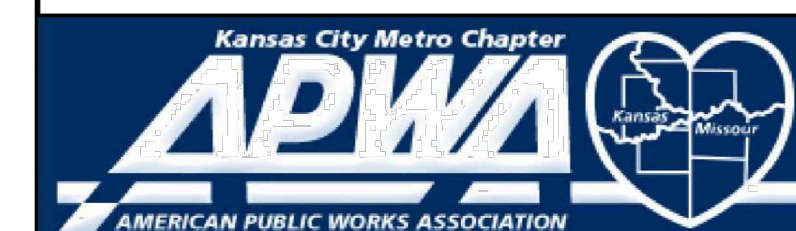
Front View

**LATE STAGE AREA INLET**  
(Area inlets at final grade and existing inlets)

**Maintenance:**

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

**AMERICAN PUBLIC WORKS ASSOCIATION**



KANSAS CITY  
METRO CHAPTER

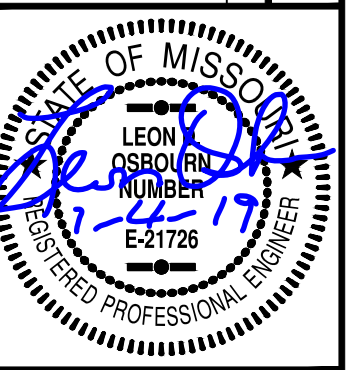
AREA INLET AND  
JUNCTION BOX PROTECTION

STANDARD DRAWING  
NUMBER ESC-07  
ADOPTED:  
10/24/2016

STREETS OF WEST PRYOR  
NW/Q NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

WATER LINE PLANS  
DETAIL SHEET

PROJ. NO.	A14_7067-1
DESIGNER	LDO
DRAWN BY	JT/BKR
CFN	7067-1W_DET
SHEET	C-13
REV	0



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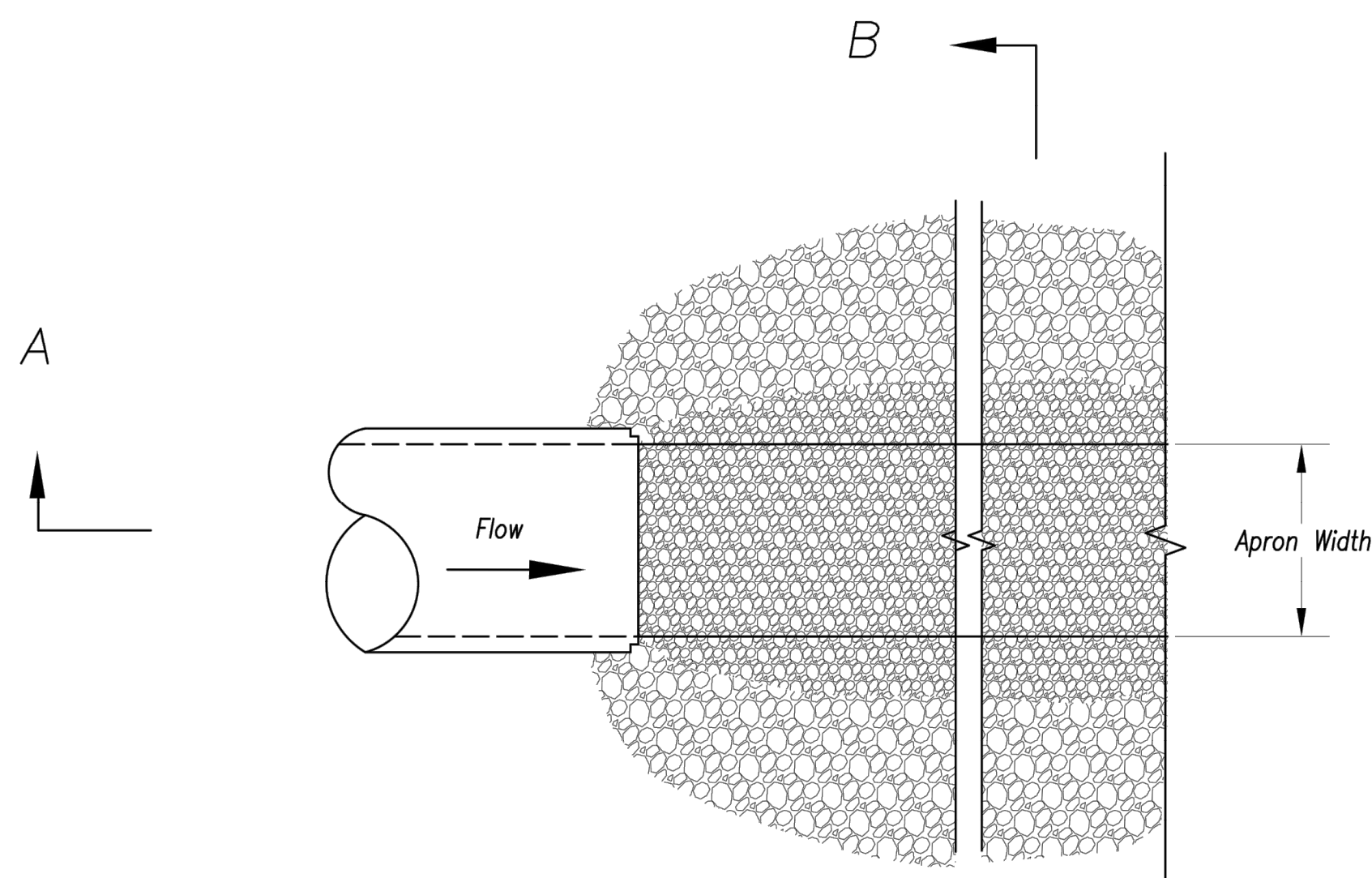


**KAW VALLEY ENGINEERING**  
KAW VALLEY ENGINEERING, INC. IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/19

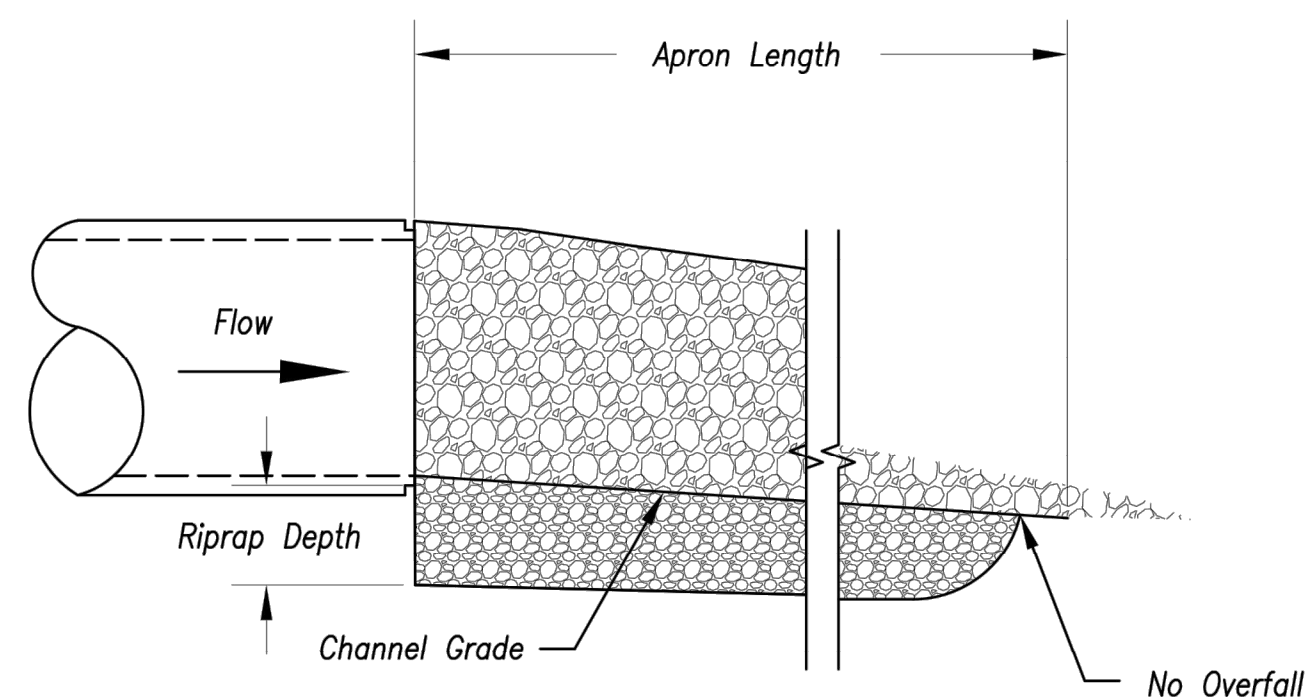
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0	1-4-19	INITIAL ISSUE

LDO	DSN	DWN	CHK
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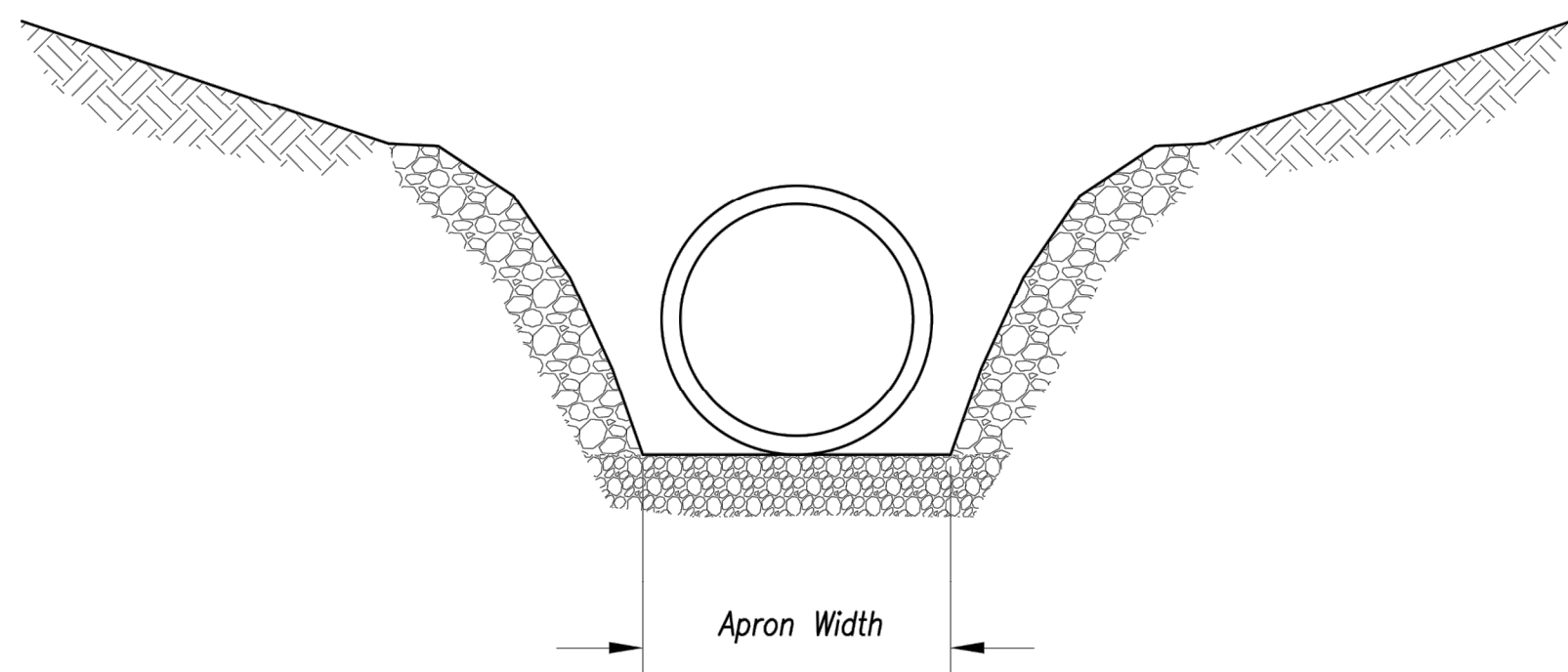




*Plan View*  
Not to Scale

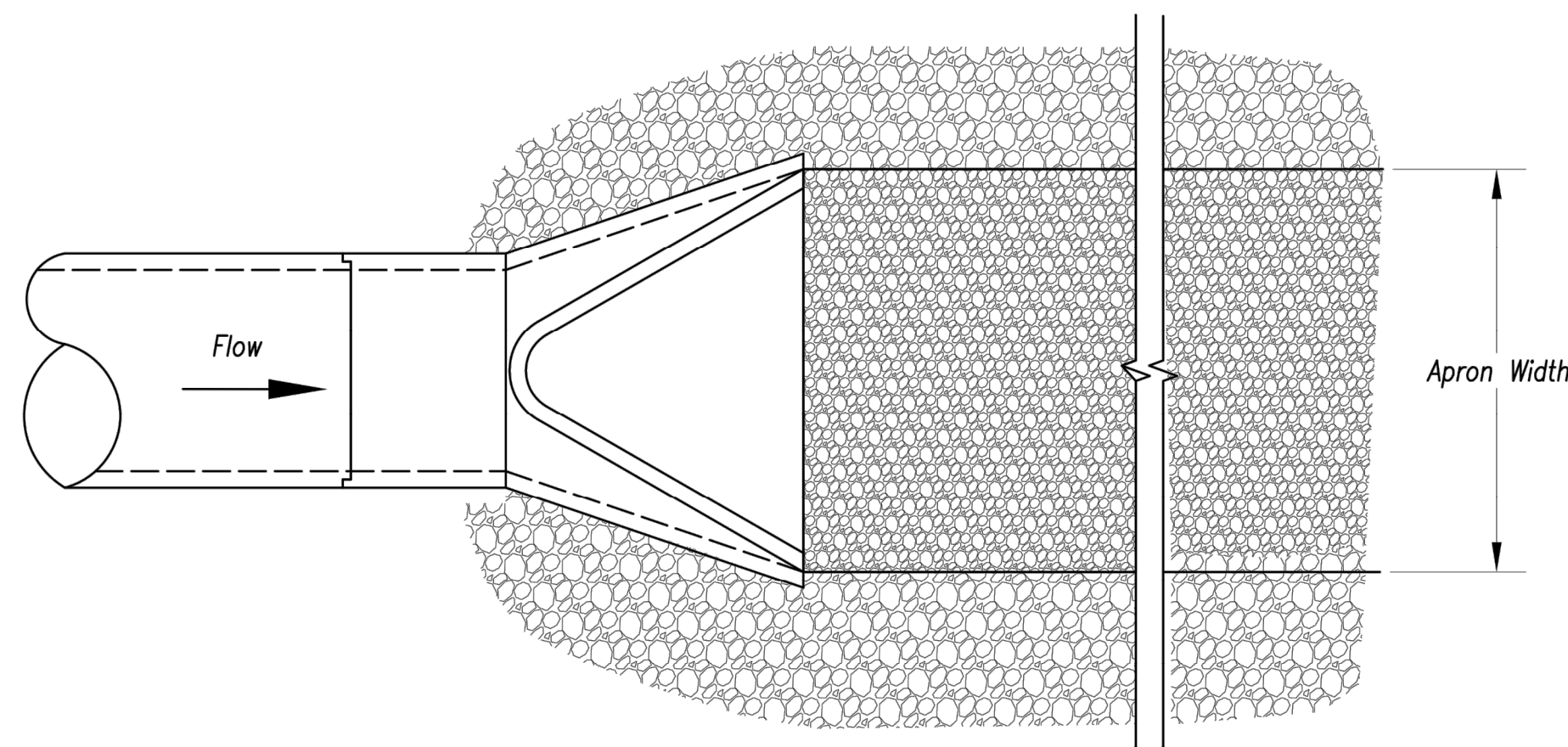
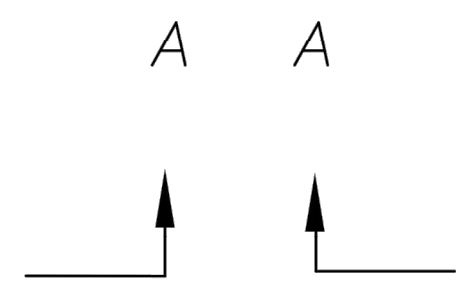


*Section A-A*  
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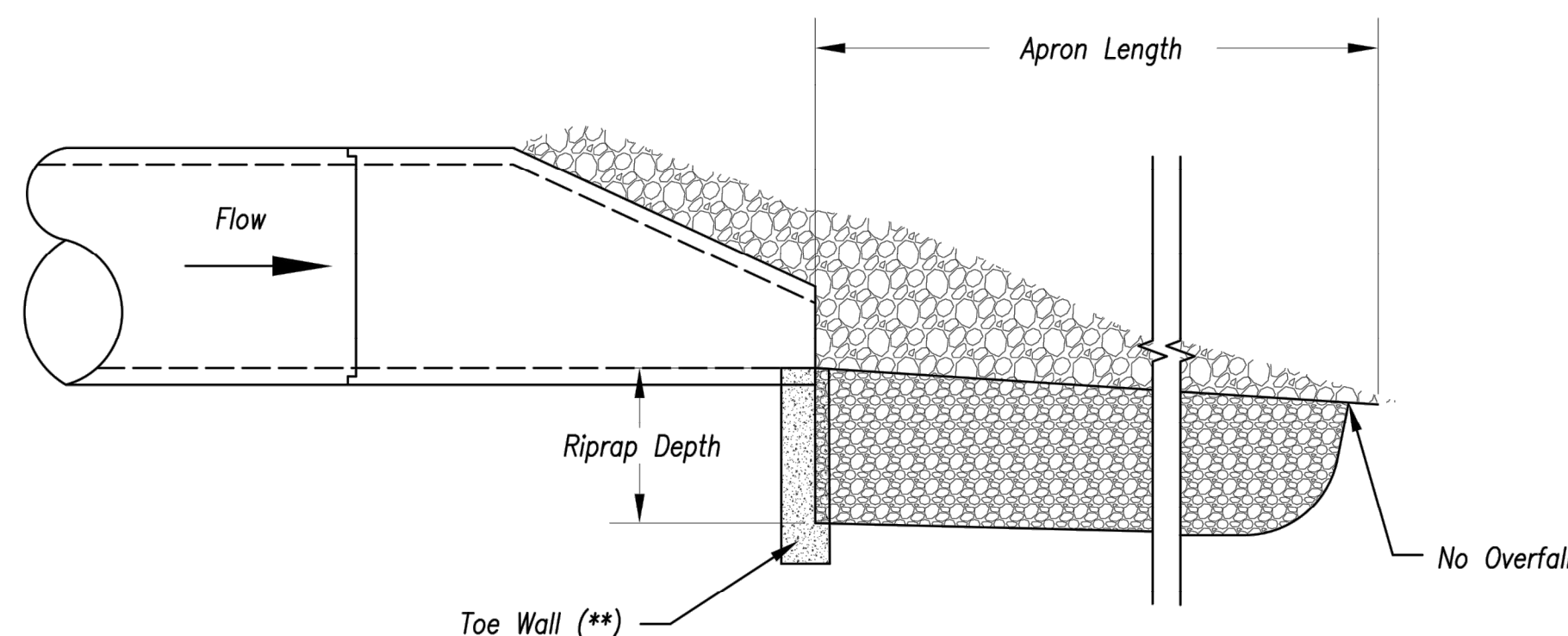


*Section B-B*  
Not to Scale

OUTLET PROTECTION W/O END SECTION



*Plan View*  
Not to Scale



*Section A-A*  
Not to Scale

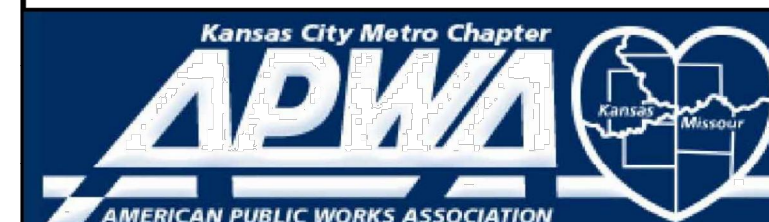
OUTLET PROTECTION WITH END SECTION

Notes:

1. Rock all sides steeper than 3:1.
2. Stabilize all disturbed areas downstream of outlet to the limits of disturbance.
3. Alternative outlet protection and slope stabilization measures may be used with approval by the Engineer.
4. Install riprap apron so that it is no higher than flowline of pipe.
5. Reference APWA Specification 2650 for rock type, size, and placement.

Modified from 2015 Overland Park Standard Details  
for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION



KANSAS CITY  
METRO CHAPTER

OUTLET PROTECTION

STANDARD DRAWING  
NUMBER ESC-I4

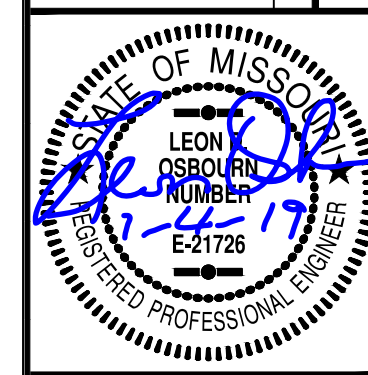
ADOPTED:  
10/24/2016

STREETS OF WEST PRYOR  
NW/4 NW PRYOR ROAD & NW LOWENSTEIN DRIVE  
LEE'S SUMMIT, MISSOURI

WATER LINE PLANS  
DETAIL SHEET

PROJ. NO. A14-7067-1  
DESIGNER LDO DRAWN BY JT/BKR  
CFN 7067-1W\_DET  
SHEET

C-14  
REV 0



LEON D. OSBOURN  
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REV	DATE	DESCRIPTION	DSN	DWN	CHK
0	1-4-19	INITIAL ISSUE	LDO	JT/BKR	LDO