

BASIS OF BEARINGS:

MISSOURI STATE PLANE COORDINATE SYSTEM
(NAD) 1983, MISSOURI, WEST ZONE

NOTES:

ALL CONSTRUCTION ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEES SUMMIT TECHNICAL SPECIFICATIONS.

THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

CORNERSTONE AT BAILEY FARMS, 2ND PLAT
WATER MAIN PLANS

SE BAILEY FARMS PKWY & SE ARBORETUM
DR LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
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2	
3	
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8	

DRAWN BY:	NCA
CHECKED BY:	JLL
DATE PREPARED:	
PROJ. NUMBER:	25-541

GENERAL LAYOUT

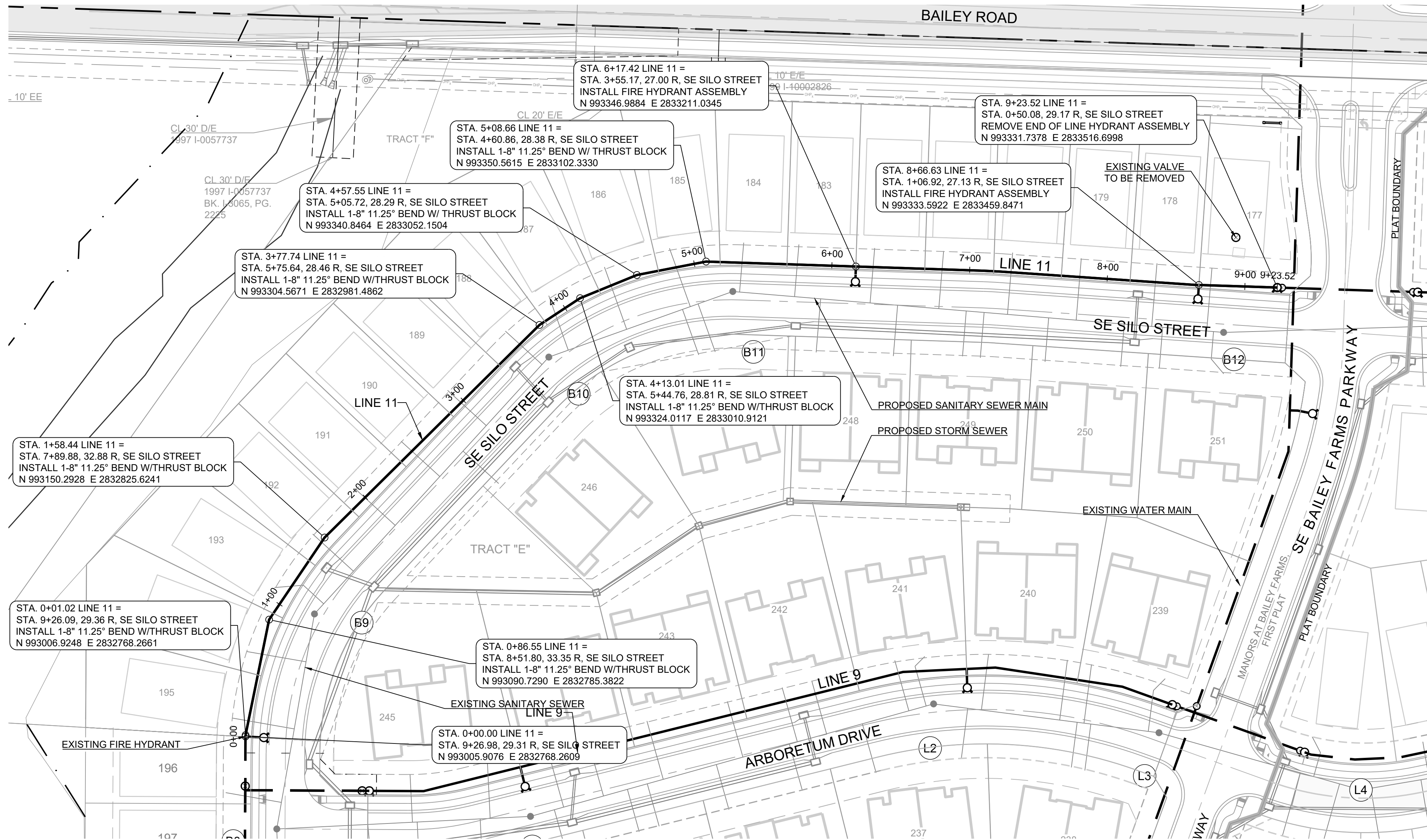
SHEET

2



NW CORNER, NE. 1/4
SECTION 16, 47N, 31W
FOUND BRASS DISK IN
MONUMENT BOX

S02° 19' 18" W 5292.29'



MISSOURI GEOGRAPHIC REFERENCE SYSTEM BENCHMARK:

BM JA-45, IS A KC METRO ALUMINUM GRS DISK SET IN CONCRETE AND ABOUT 3 INCHES BELOW THE PAVEMENT ON THE SHOULDER OF SE RANSON ROAD. IT IS STAMPED JA45, 1987.

ELEV. = 1046.25

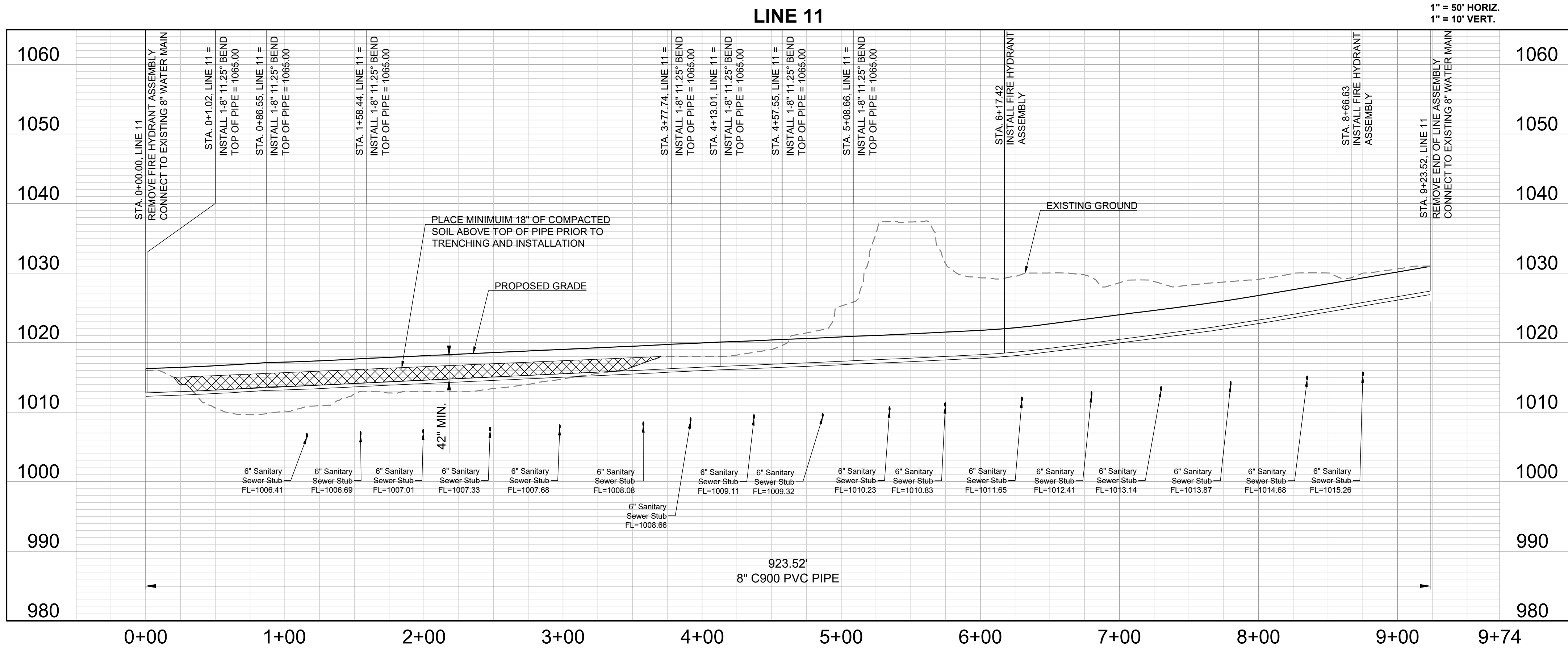
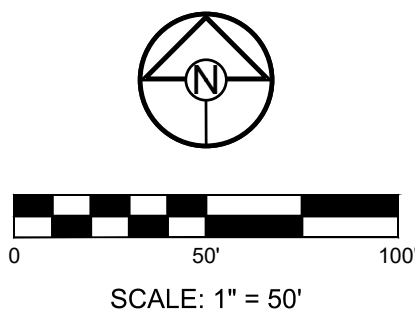
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#E2002003600-F #LAC2001005237 #LS2002008659-F

PREPARED BY:



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CORNERSTONE AT BAILEY FARMS, 2ND PLAT
WATER MAIN PLANS

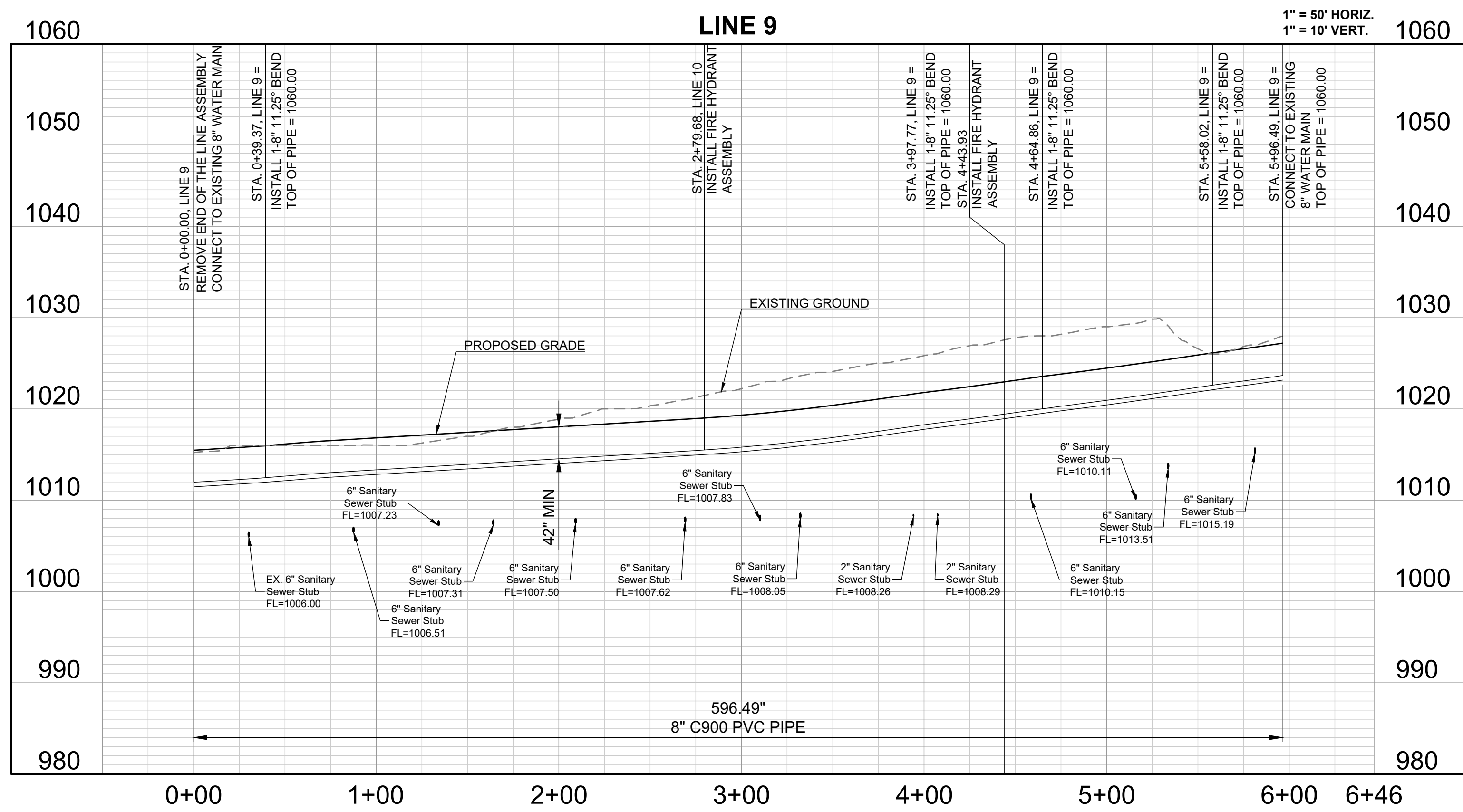
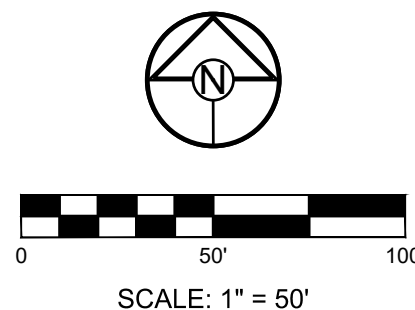
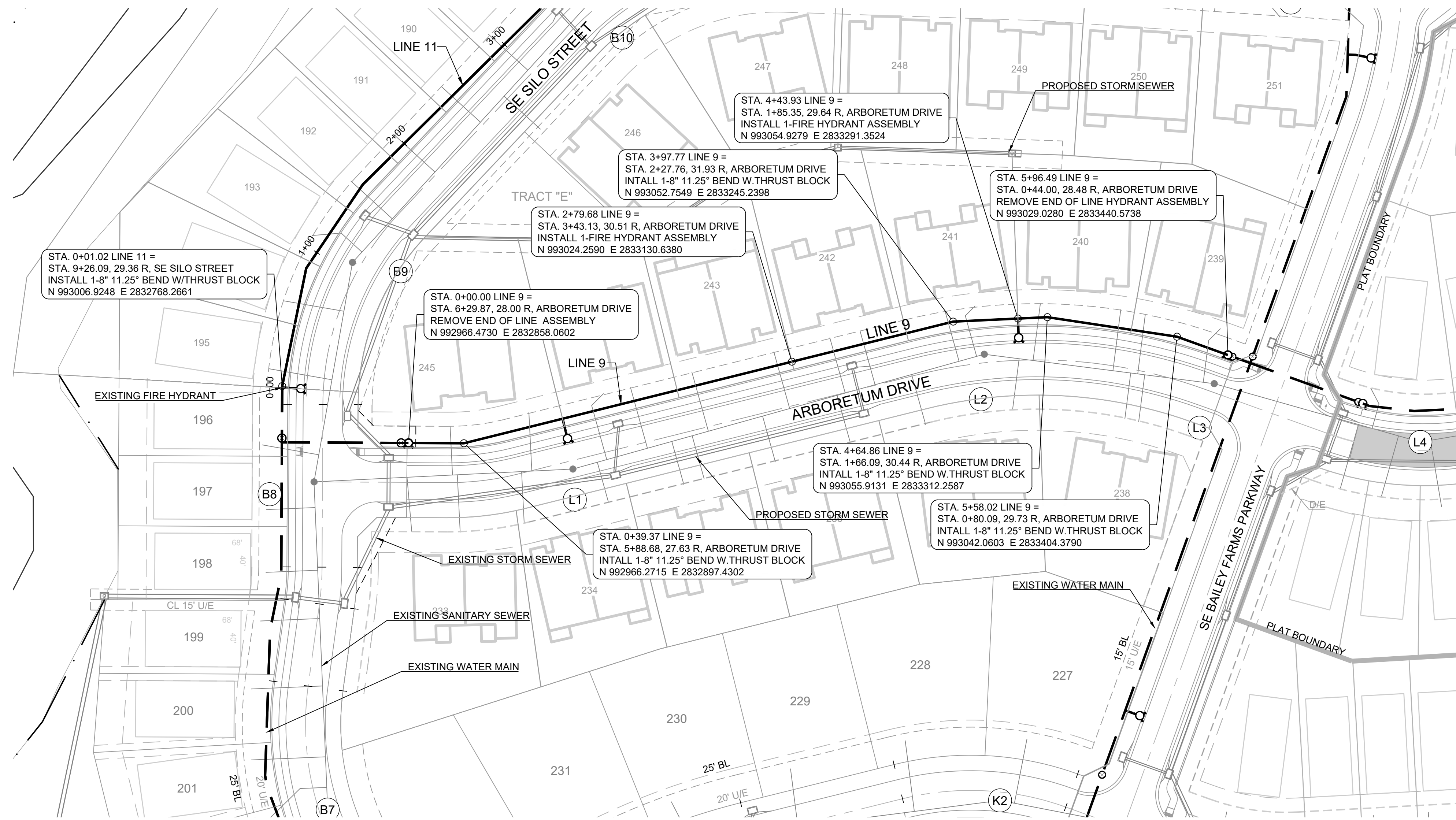
SE BAILEY FARMS PKWY & SE ARBORETUM
DR LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
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DRAWN BY: NCA	CHECKED BY: JLL	DATE PREPARED:	PROJ. NUMBER: 25-041
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LINE 11 PLAN & PROFILE

SHEET
3



MISSOURI GEOGRAPHIC REFERENCE SYSTEM BENCHMARK:

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CORNERSTONE AT BAILEY FARMS, 2ND PLAT
WATER MAIN PLANS

SE BAILEY FARMS PKWY & SE ARBORETUM
DR LEE'S SUMMIT, MO

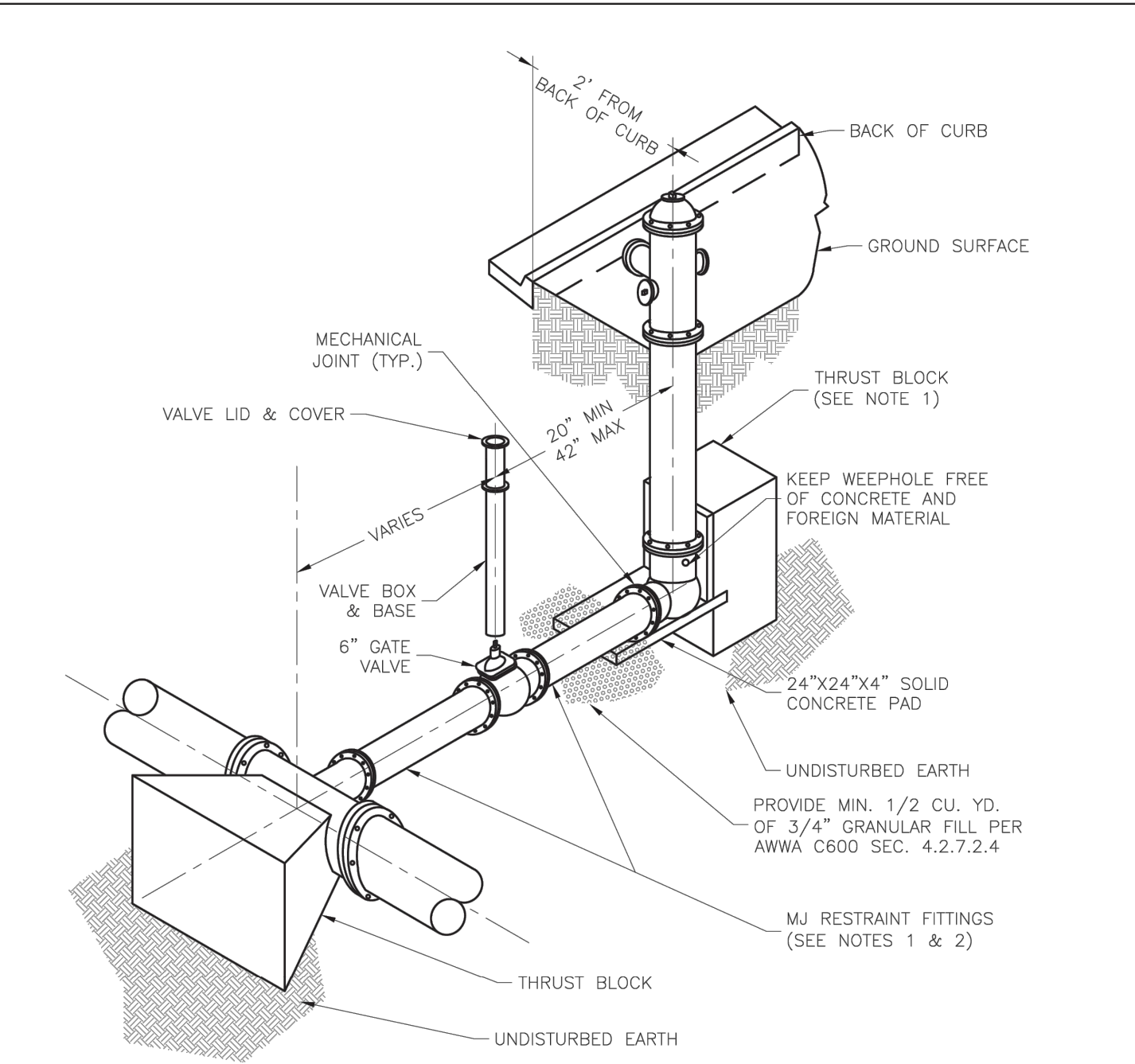
REVISION DATE	DESCRIPTION
1	
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DRAWN BY:	NCA
CHECKED BY:	JLL
DATE PREPARED:	
PROJ. NUMBER:	25-041

LINE 9 PLAN & PROFILE

SHEET

4



- 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.

LS

LEE'S SUMMIT

MISSOURI

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

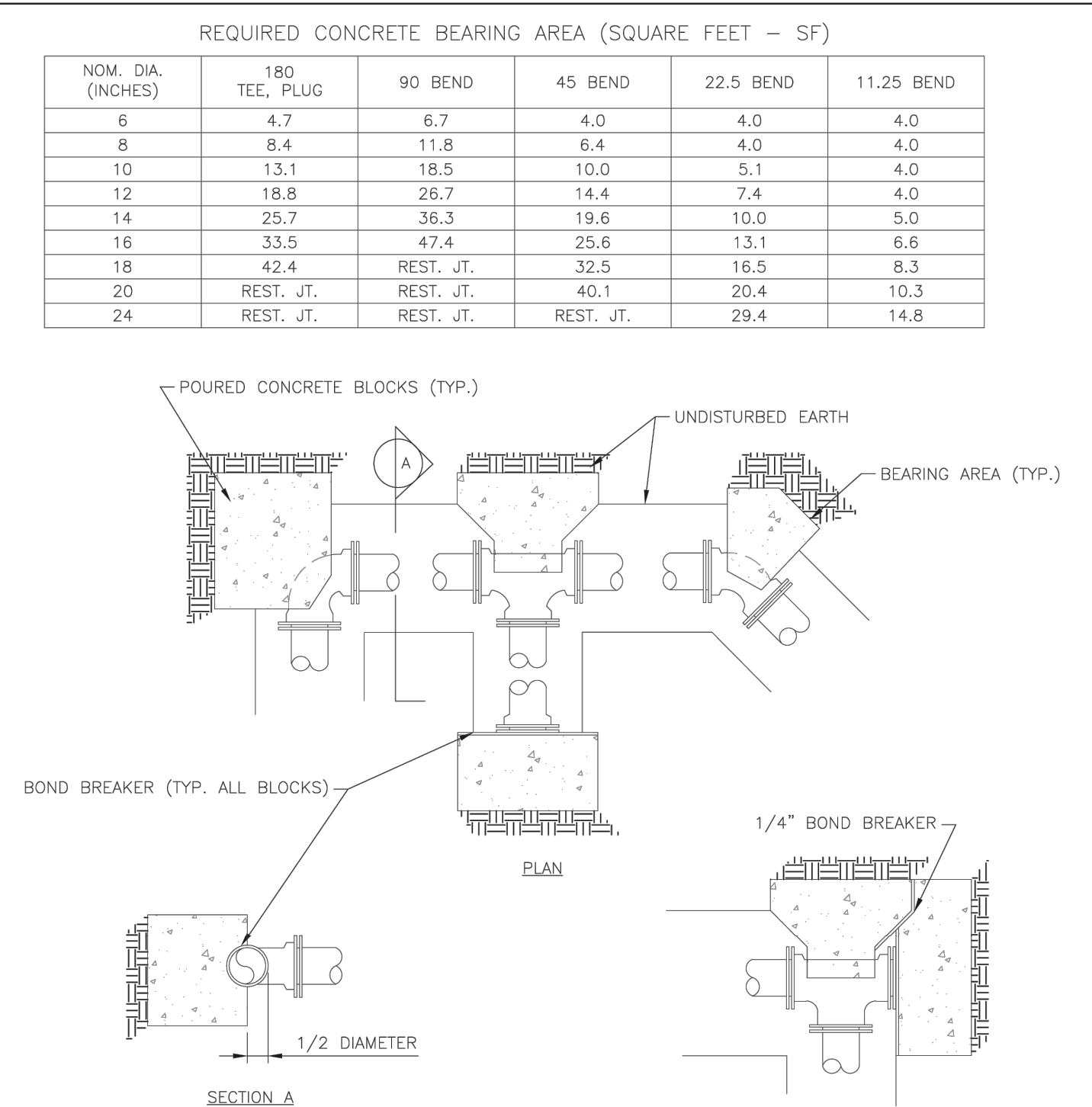
HYDRANT - STRAIGHT SET

WAT-7

Date: 01/2016

Drawn By: JN

Checked By: DL



- 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 AREA MUST BE AGAINST UNDISTURBED SOIL.
 4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

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HORIZONTAL THRUST BLOCK

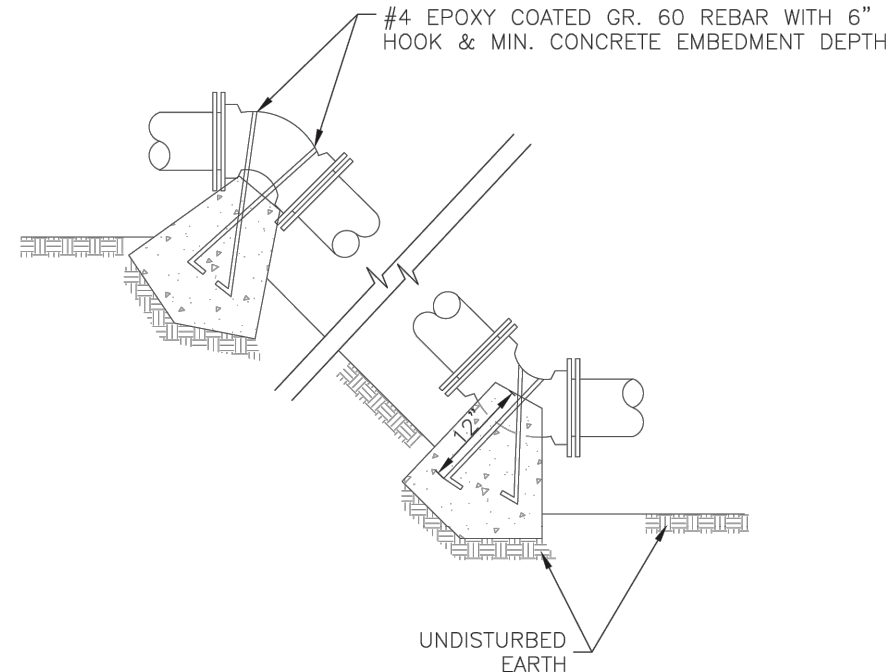
WAT-1

Date: 01/2016

Drawn By: JN

Checked By: DL

REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)					
NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 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	18.8	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	REST. JT.	32.5	16.5	8.3
20	REST. JT.	REST. JT.	40.1	20.4	10.3
24	REST. JT.	REST. JT.	REST. JT.	29.4	14.8



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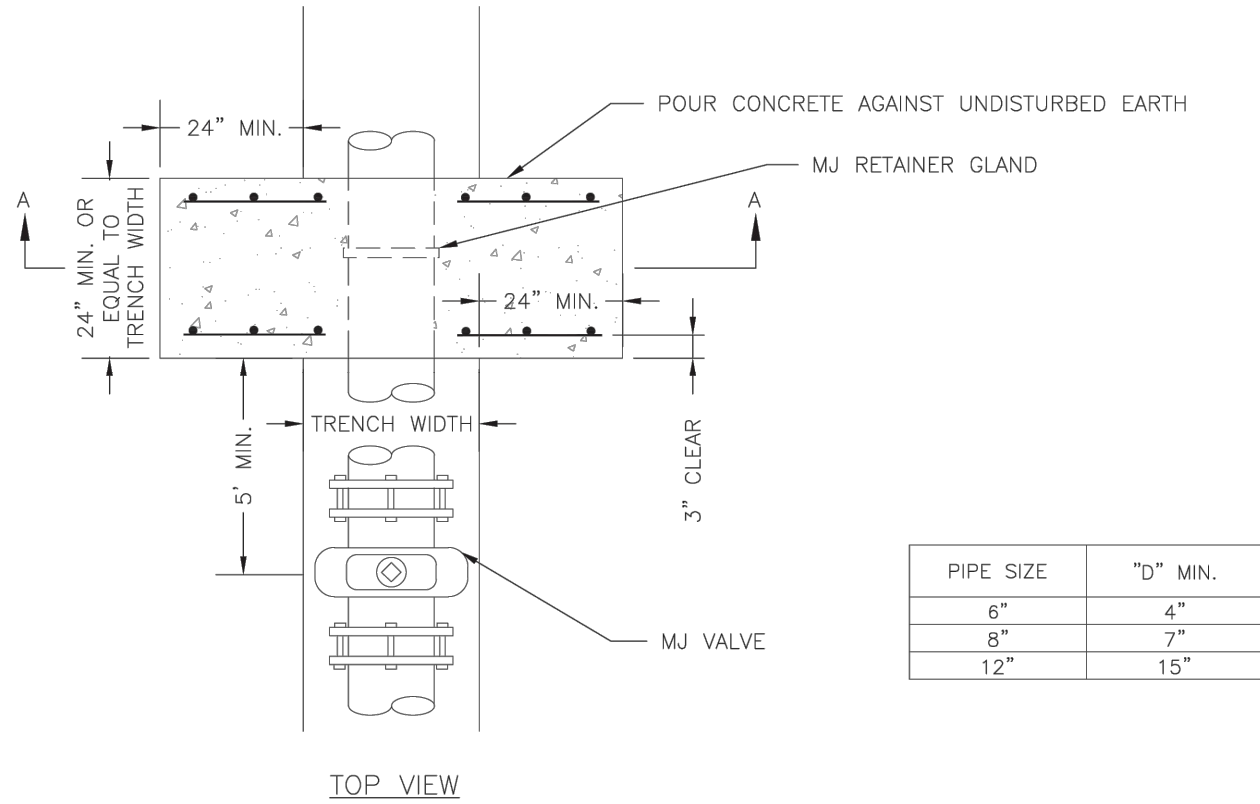
VERTICAL THRUST BLOCK

WAT-2

Date: WAT-2

Drawn By: JN

Checked By: DL



NOTE:
THIS DETAIL NOT TO BE USED FOR PIPE GREATER THAN 12"

LS

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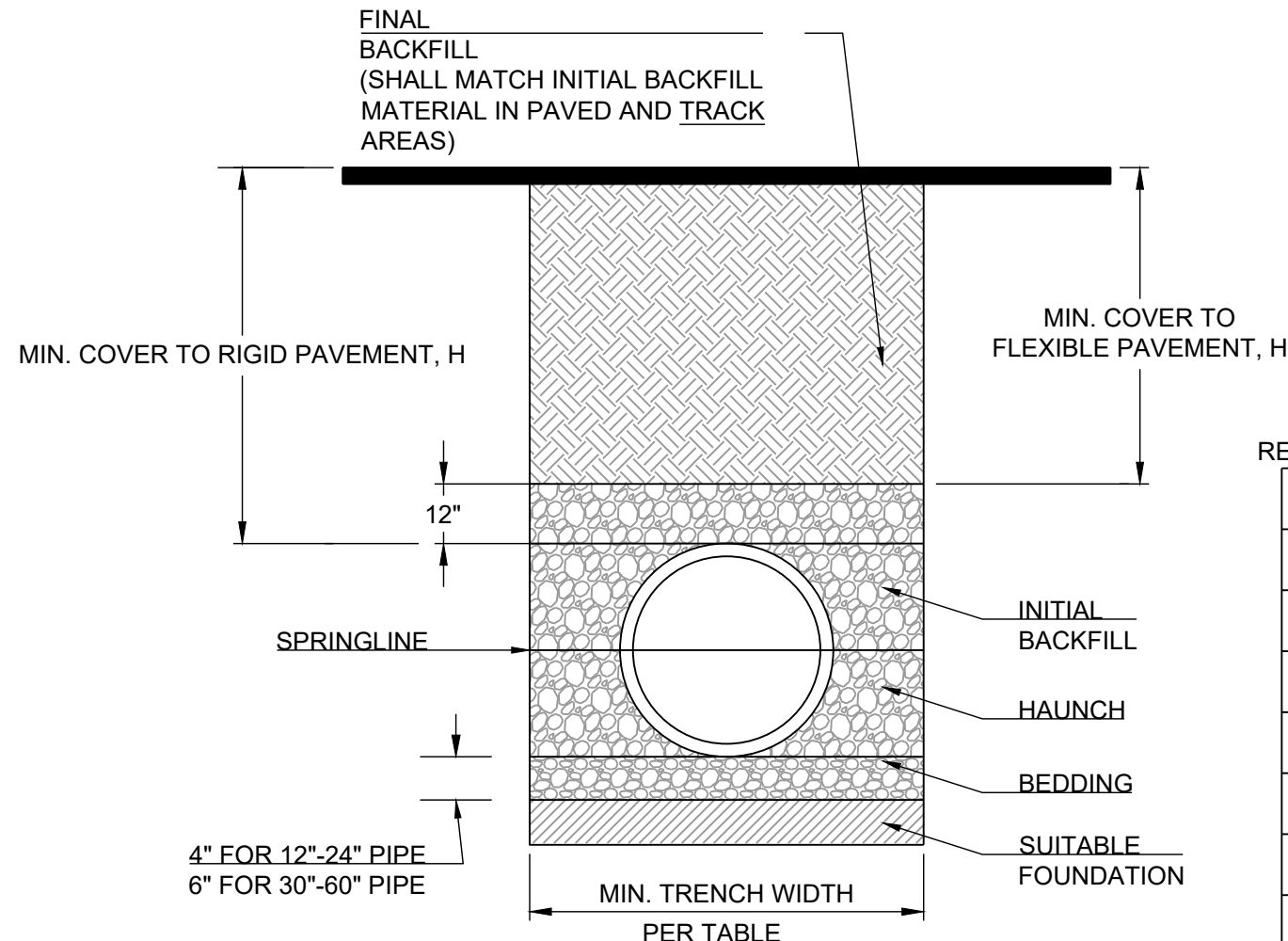
STRADDLE BLOCK

WAT-3

Date: 01/2016

Drawn By: JN

Checked By: DL



RECOMMENDED MINIMUM TRENCH WIDTHS

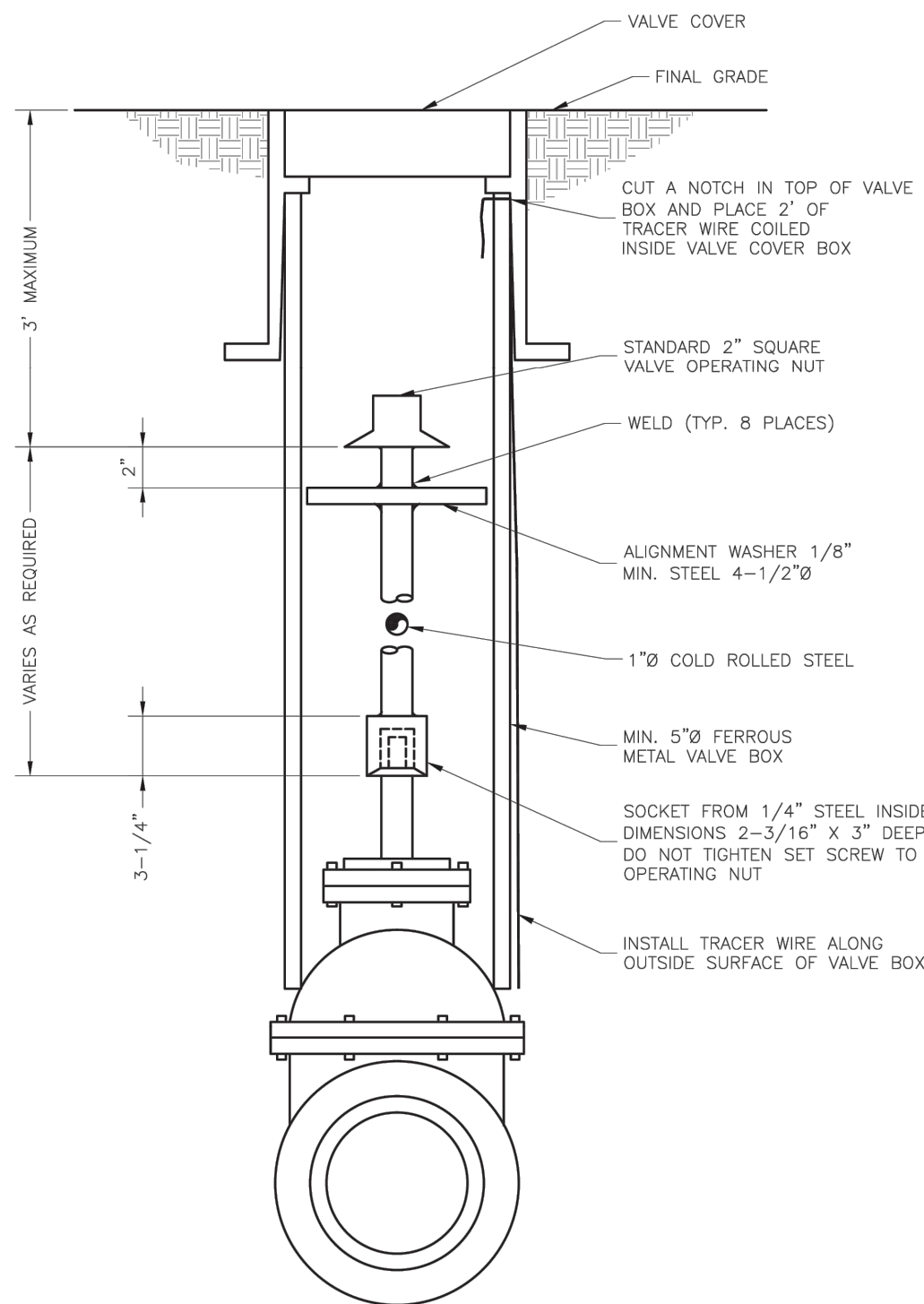
PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS		
SURFACE LIVE LOADING CONDITION		
PIPE DIAM.	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.



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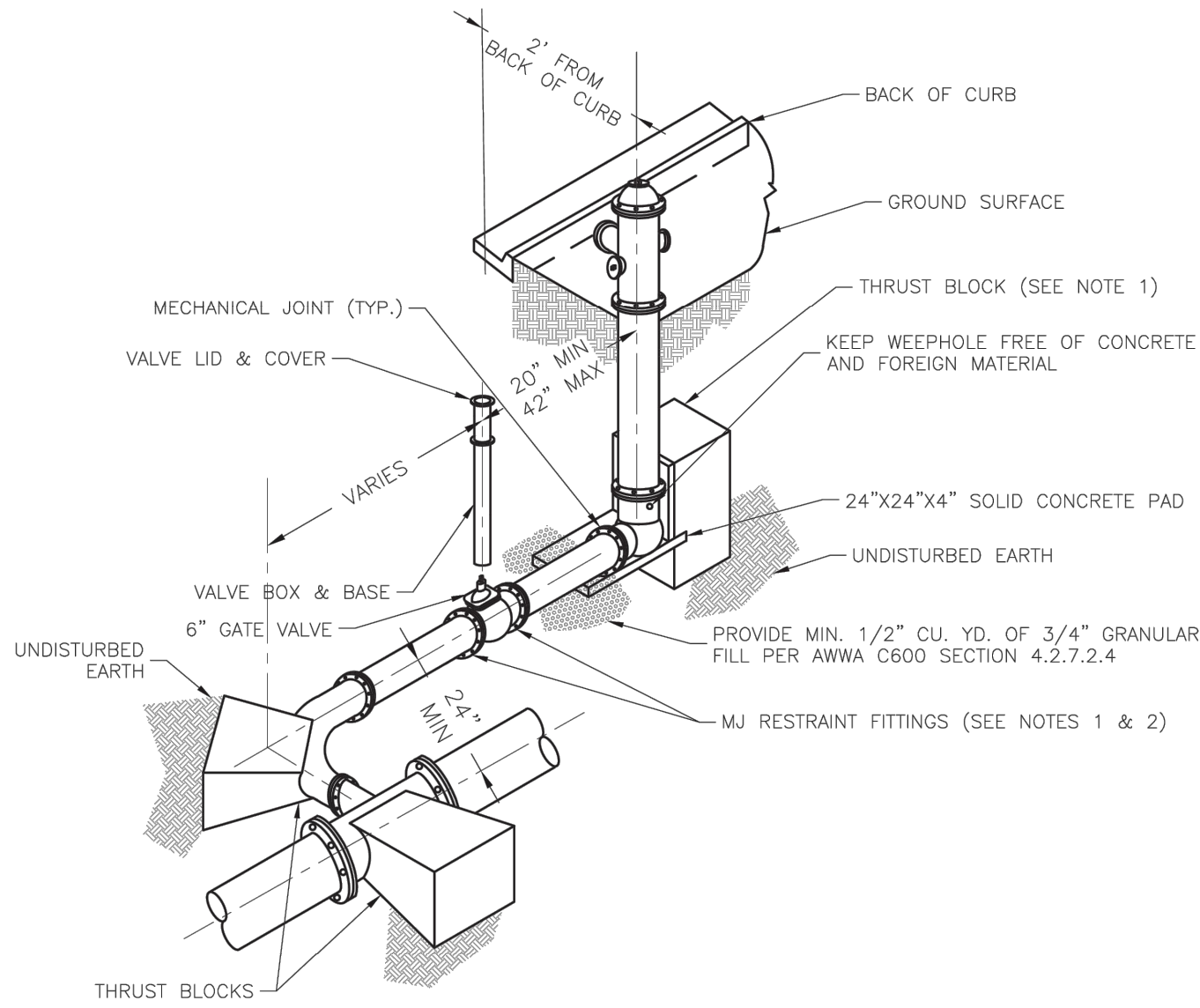
VALVE STEM EXTENSION AND VALVE BOX

WAT-9

Date: 01/2016

Drawn By: JN

Checked By: DL



NOTES:

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HYDRANT WITH 90 DEGREE BEND

WAT-8

Date: 01/2016

Drawn By: JN

Checked By: DL

PREPARED BY:



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WATER MAIN PLANS
SE BAILEY FARMS PKWY & SE ARBORETUM
DR LEE'S SUMMIT, MO

REVISION	DATE	DESCRIPTION
1	1/2/16	ISSUED FOR PERMIT
2	1/2/16	ISSUED FOR PERMIT
3	1/2/16	ISSUED FOR PERMIT
4	1/2/16	ISSUED FOR PERMIT
5	1/2/16	ISSUED FOR PERMIT
6	1/2/16	ISSUED FOR PERMIT
7	1/2/16	ISSUED FOR PERMIT
8	1/2/16	ISSUED FOR PERMIT

DRAWN BY: NCA	CHECKED BY: JLL	DATE PREPARED: 1/2/16	PROJ. NUMBER: 25-041
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WATER LINE
DETAILS

SHEET

5