

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

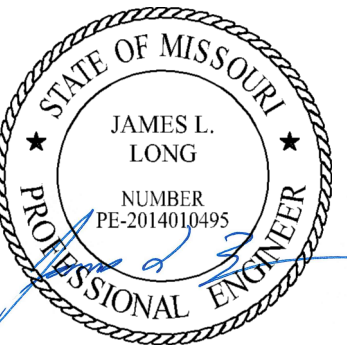
BASIS OF BEARINGS:

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

NOTES:

1. ALL CONSTRUCTION TO FOLLOW THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
3. FOR ALL WATER LINES THE MAXIMUM DEPTH OF COVER IS SEVEN (7) FEET.

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

**MANOR AT BAILEY FARMS, FIRST PLAT
 WATER LINE PLANS
 SE BAILEY ROAD AND SE RANSON ROAD
 LEE'S SUMMIT, MISSOURI**

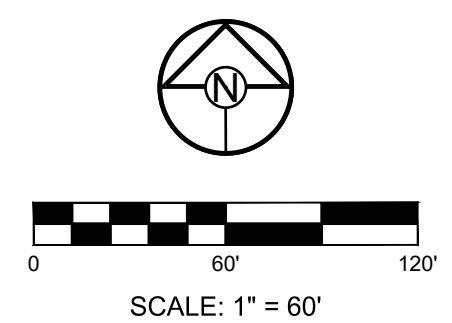
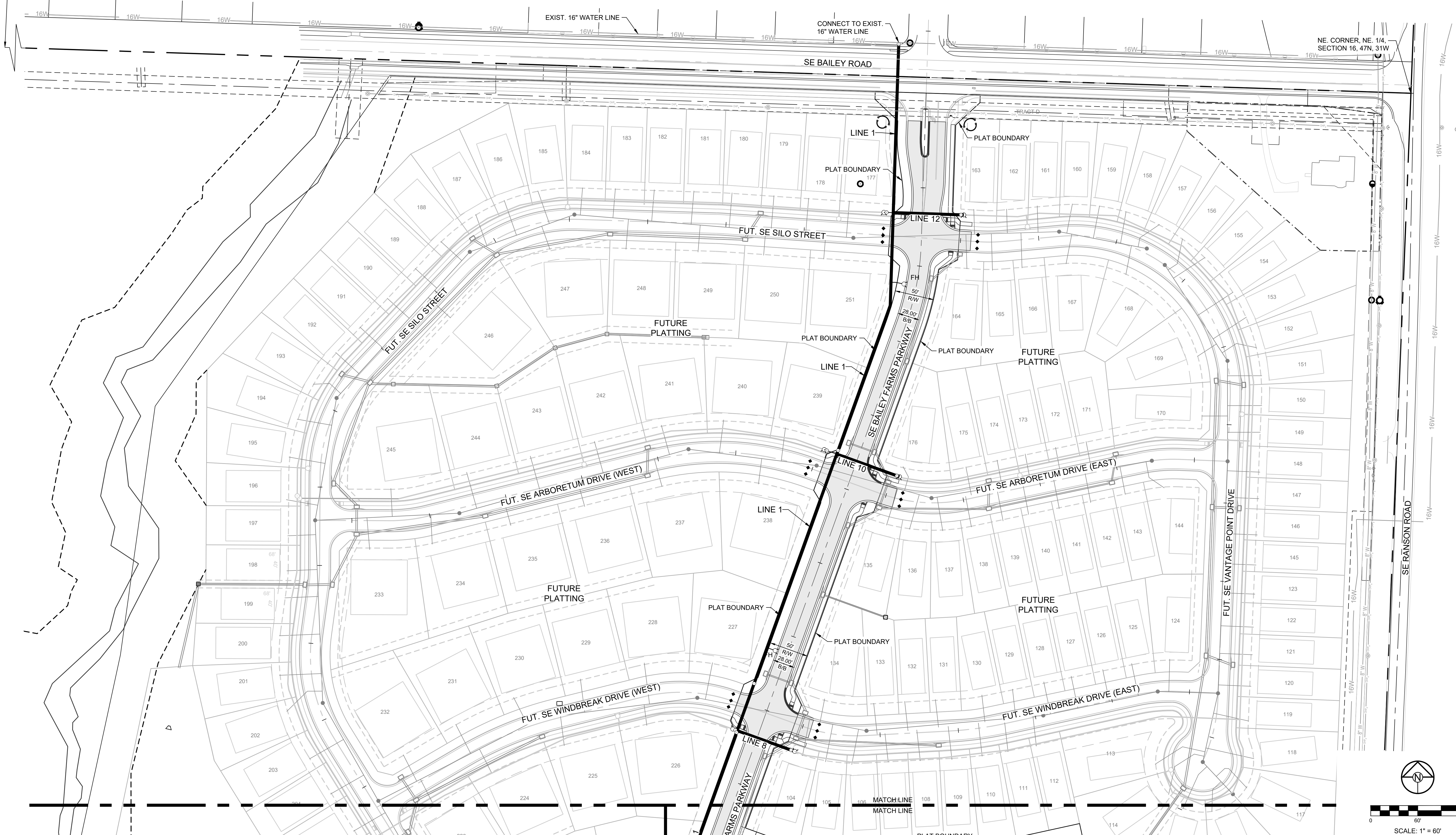
REVISION DATE	DESCRIPTION
1/24/2022	per City Comments dated 11/19/2022

GENERAL LAYOUT - NORTH

SHEET

NW CORNER, NE. 1/4,
SECTION 16, 47N, 31W

NE CORNER, NE. 1/4,
SECTION 16, 47N, 31W



I:\PROJECTS\2021\21-130\3.0 DWG Plans\3.0 DWG Plans\3.0 WATER GEN.dwg, 1/31/2022 7:10:38 AM, 11



MISSOURI GEOGRAPHIC REFERENCE SYSTEM BENCHMARK:

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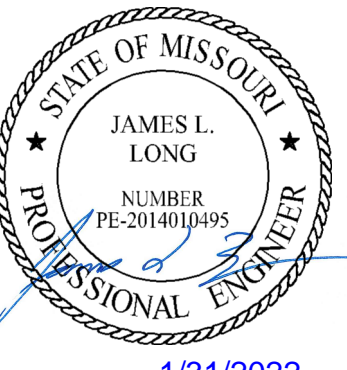
MISSOURI STATE PLANE COORDINATE SYSTEM (NAD) 1983, MISSOURI, WEST ZONE

NOTES:

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 #E2002003600F #LAC2001005237 #LS2002008659F

PREPARED BY:



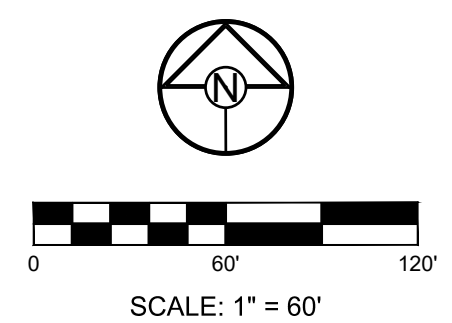
SCHLAGEL & ASSOCIATES, P.A.

**MANOR AT BAILEY FARMS, FIRST PLAT
 WATER LINE PLANS
 SE BAILEY ROAD AND SE RANSON ROAD
 LEE'S SUMMIT, MISSOURI**

REVISION DATE	DESCRIPTION
1/24/2022	per City Comments dated 11/19/2022

GENERAL LAYOUT - WEST

SHEET



I:\PROJECTS\2021\21-130\3.0 DWG Plans\3.0 WATER GEN.dwg, 1/31/2022 7:10:46 AM, 11



MISSOURI GEOGRAPHIC REFERENCE SYSTEM BENCHMARK:

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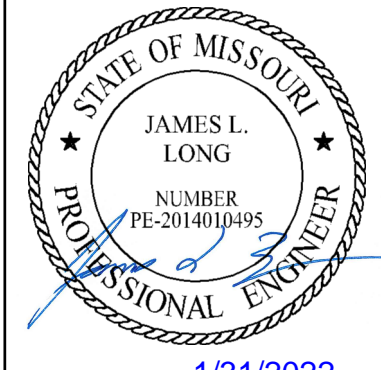
MISSOURI STATE PLANE COORDINATE SYSTEM (NAD) 1983, MISSOURI, WEST ZONE

NOTES:

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PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

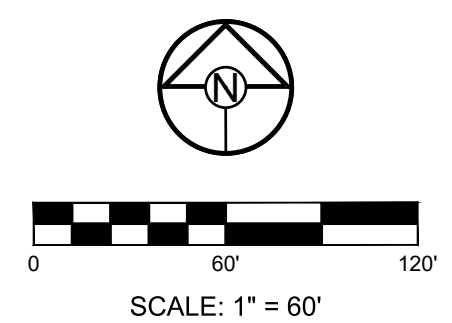
**MANOR AT BAILEY FARMS, FIRST PLAT
 WATER LINE PLANS
 SE BAILEY ROAD AND SE RANSON ROAD
 LEE'S SUMMIT, MISSOURI**

REVISION DATE	DESCRIPTION
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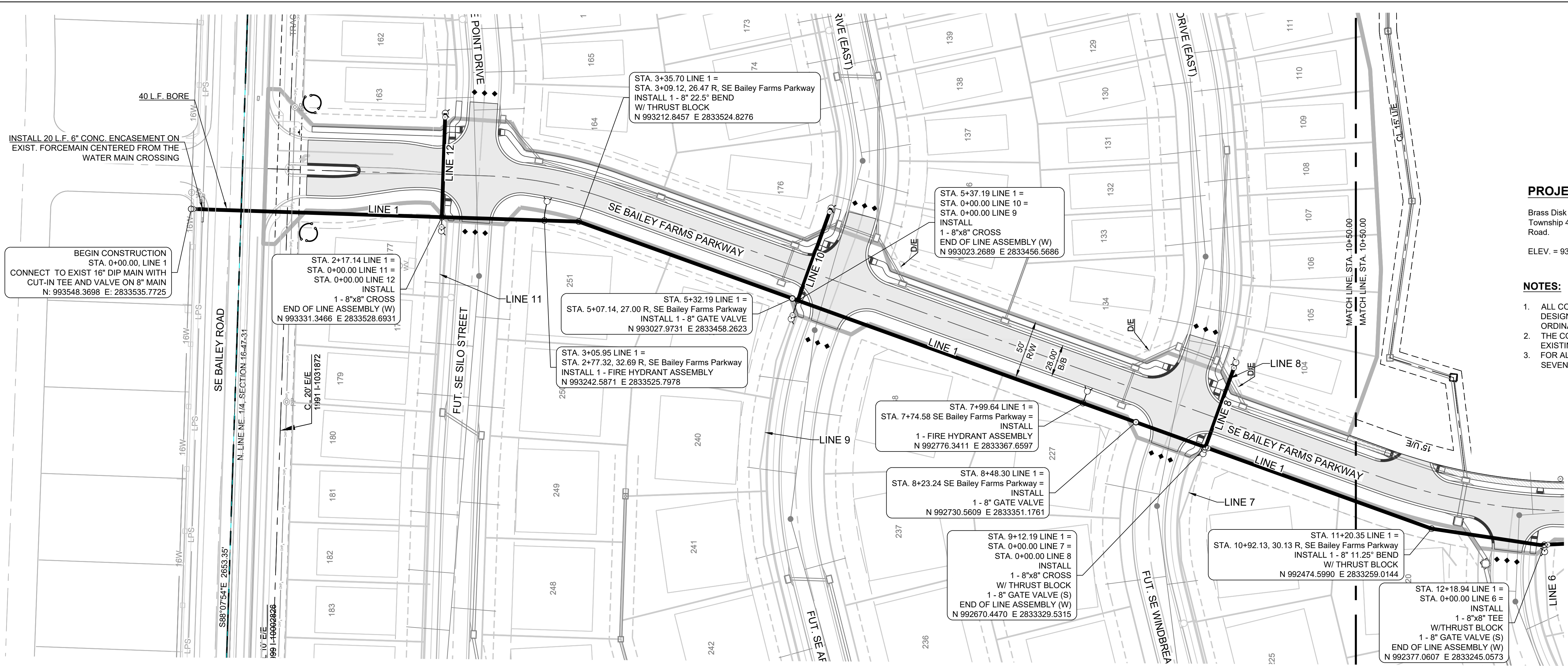
DRAWN BY: MBH	CHECKED BY: JLL	DATE PREPARED: 11/05/2021	PROJ. NUMBER: 21-130
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GENERAL LAYOUT - EAST

SHEET
4



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PROJECT BENCHMARK:

Brass Disk at the Northeast Corner of the Northeast One-Quarter of Section 16, Township 47 N, Range 31 W, Intersection of SE. Bailey Road and SE. Ranson Road.
ELEV. = 939.19

NOTES:

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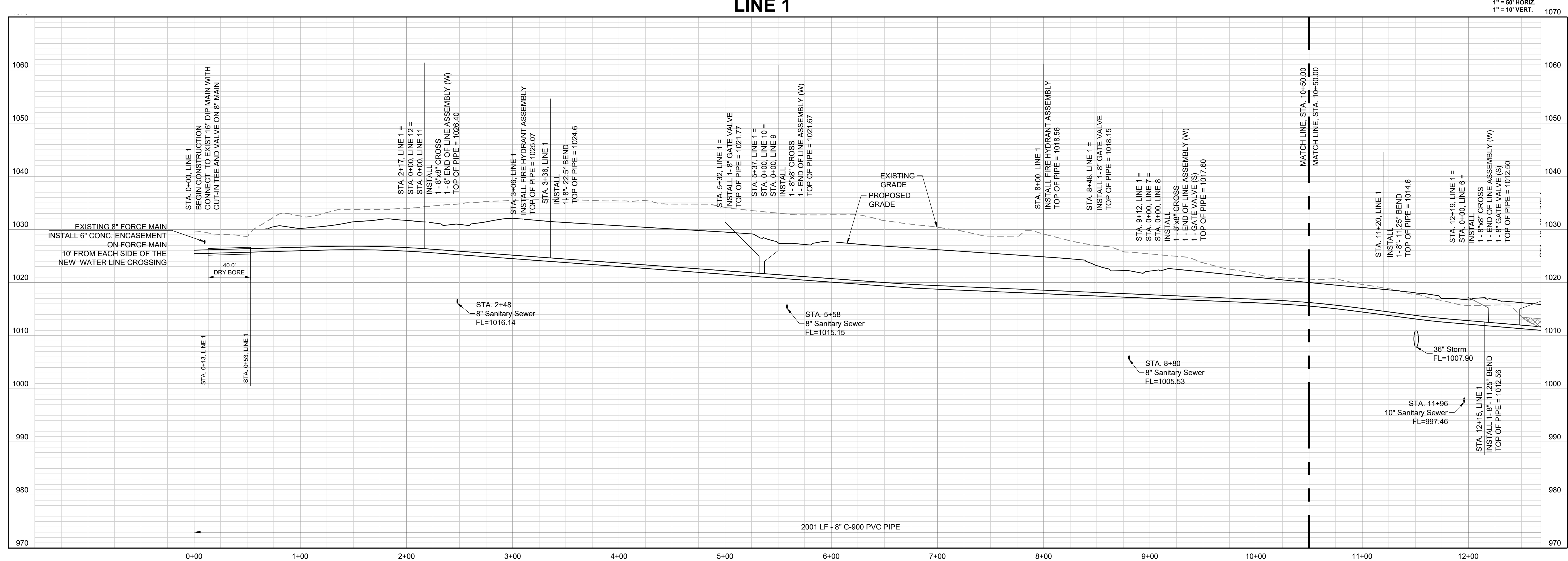
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PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

MANOR AT BAILEY FARMS, FIRST PLAT
WATER LINE PLANS
SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI

LINE 1

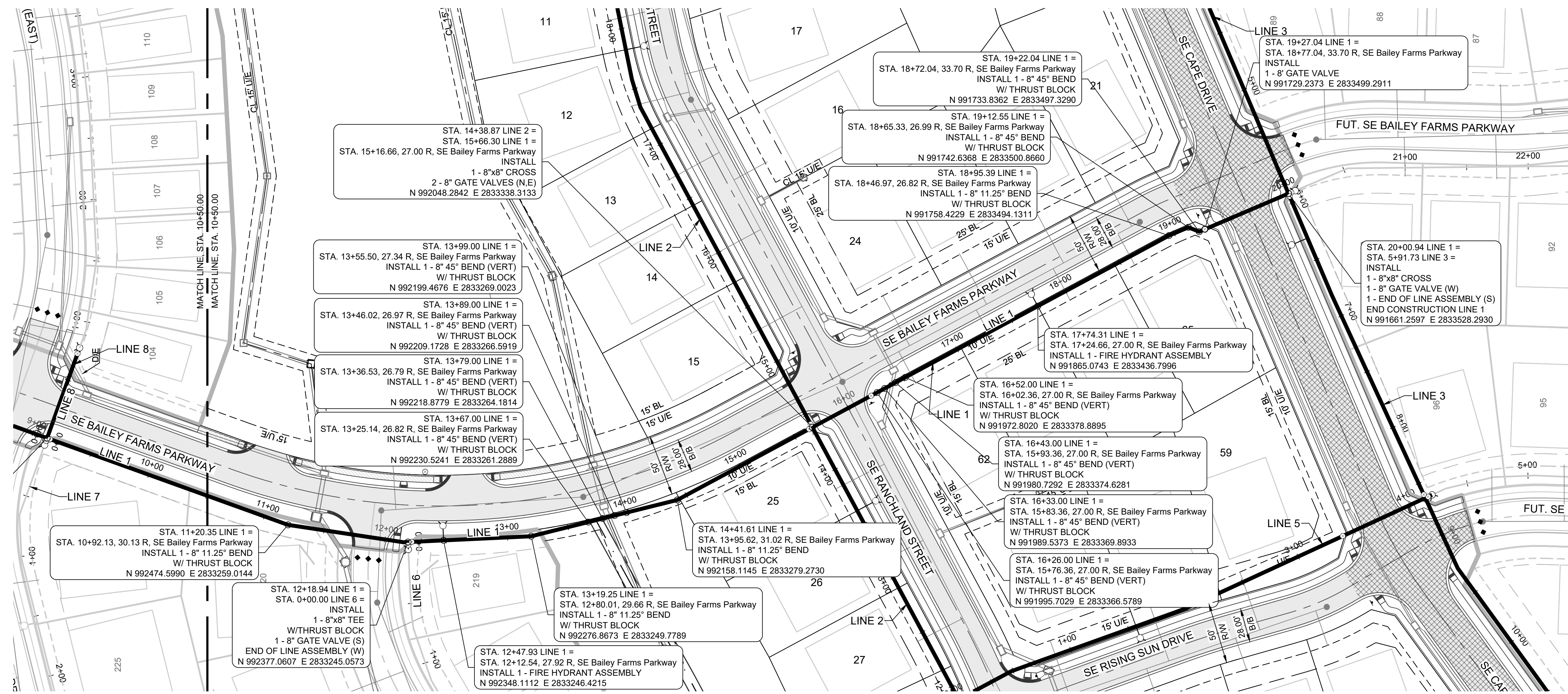


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1/24/2022	per City Comments dated 11/19/2022

DRAWN BY:	MBH
CHECKED BY:	JLL
DATE PREPARED:	11/05/2021
PROJ. NUMBER:	21-130

WATER LINE 1
PLAN & PROFILE

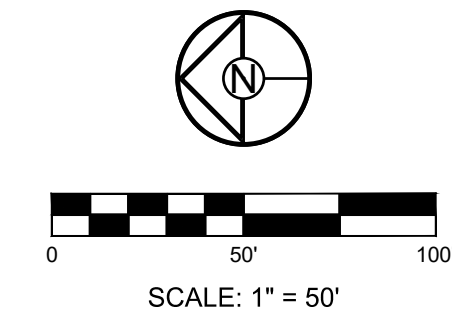
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PROJECT BENCHMARK:
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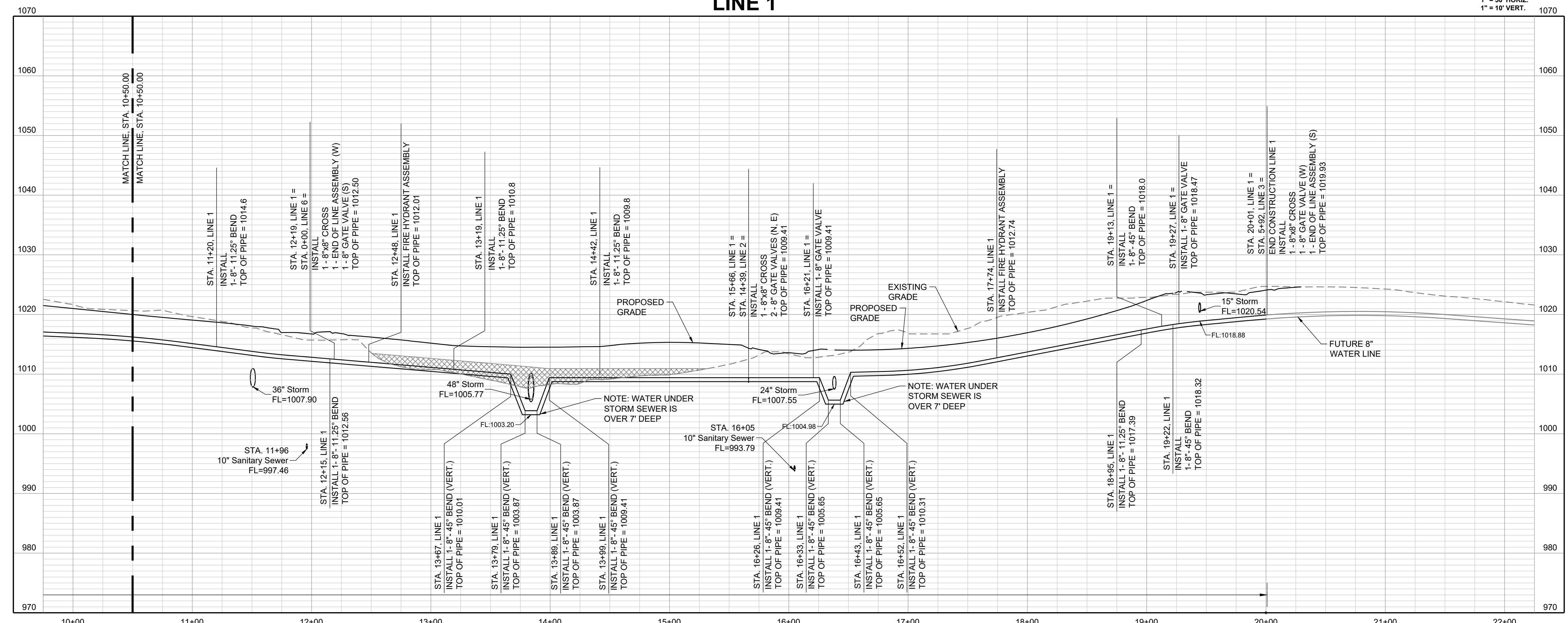
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PREPARED BY:

 JAMES L. LONG
 1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.

MANOR AT BAILEY FARMS, FIRST PLAT
WATER LINE PLANS
SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI

LINE 1



COMPACTED FILL TO BE PLACED A MINIMUM OF 18" ABOVE TOP OF PIPE PRIOR TO PIPE EXCAVATION

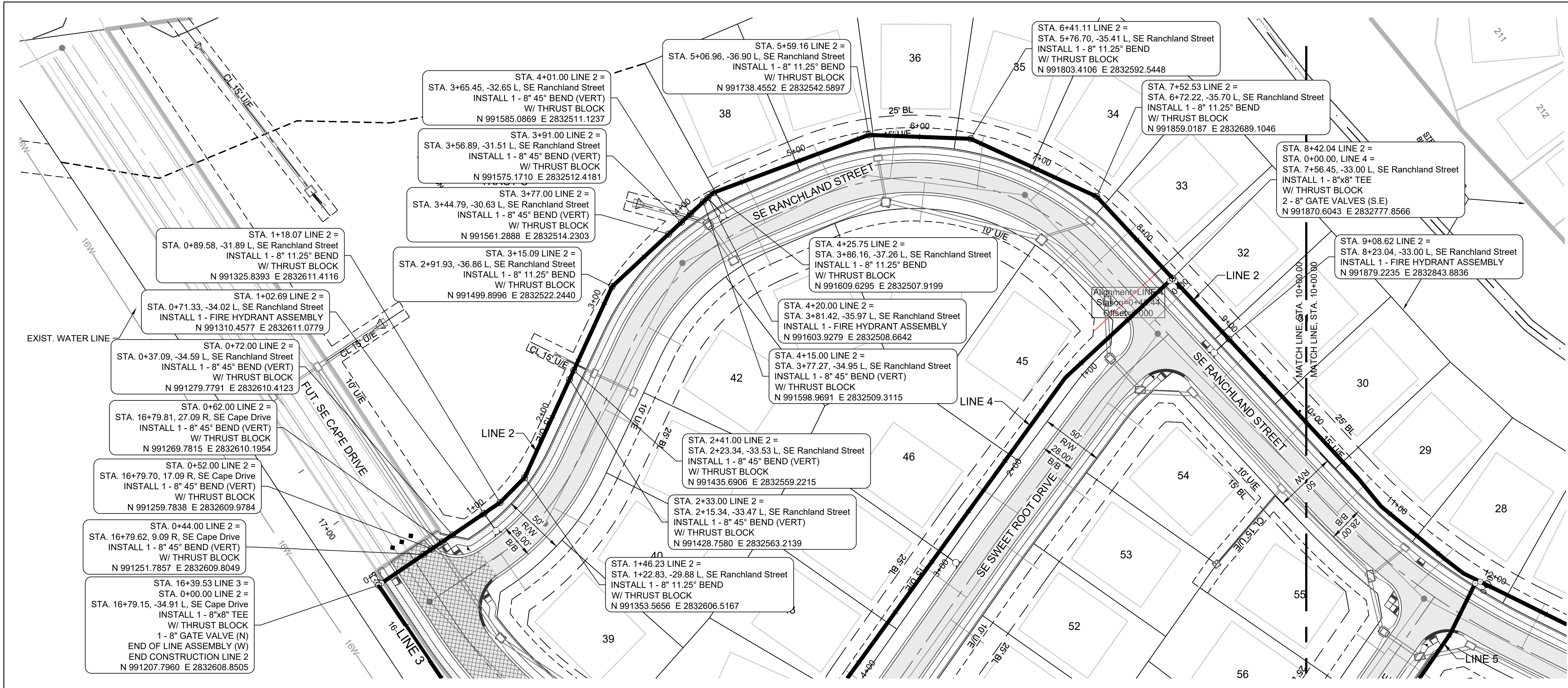
REVISION DATE	DESCRIPTION
1/24/2022	per City Comments dated 11/19/2022

DRAWN BY:	MBH
CHECKED BY:	JLL
DATE PREPARED:	1/10/2021
PROJ. NUMBER:	21-130

WATER LINE 1
PLAN & PROFILE
CONTD

SHEET
6

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PROJECT BENCHMARK:
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 ELEV. = 939.19

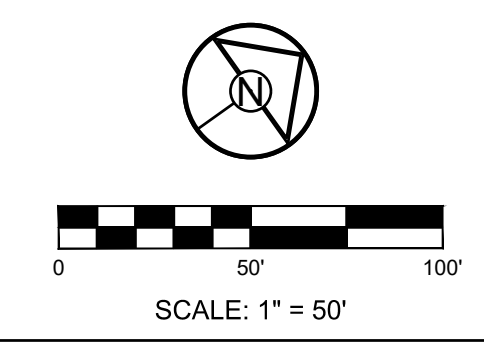
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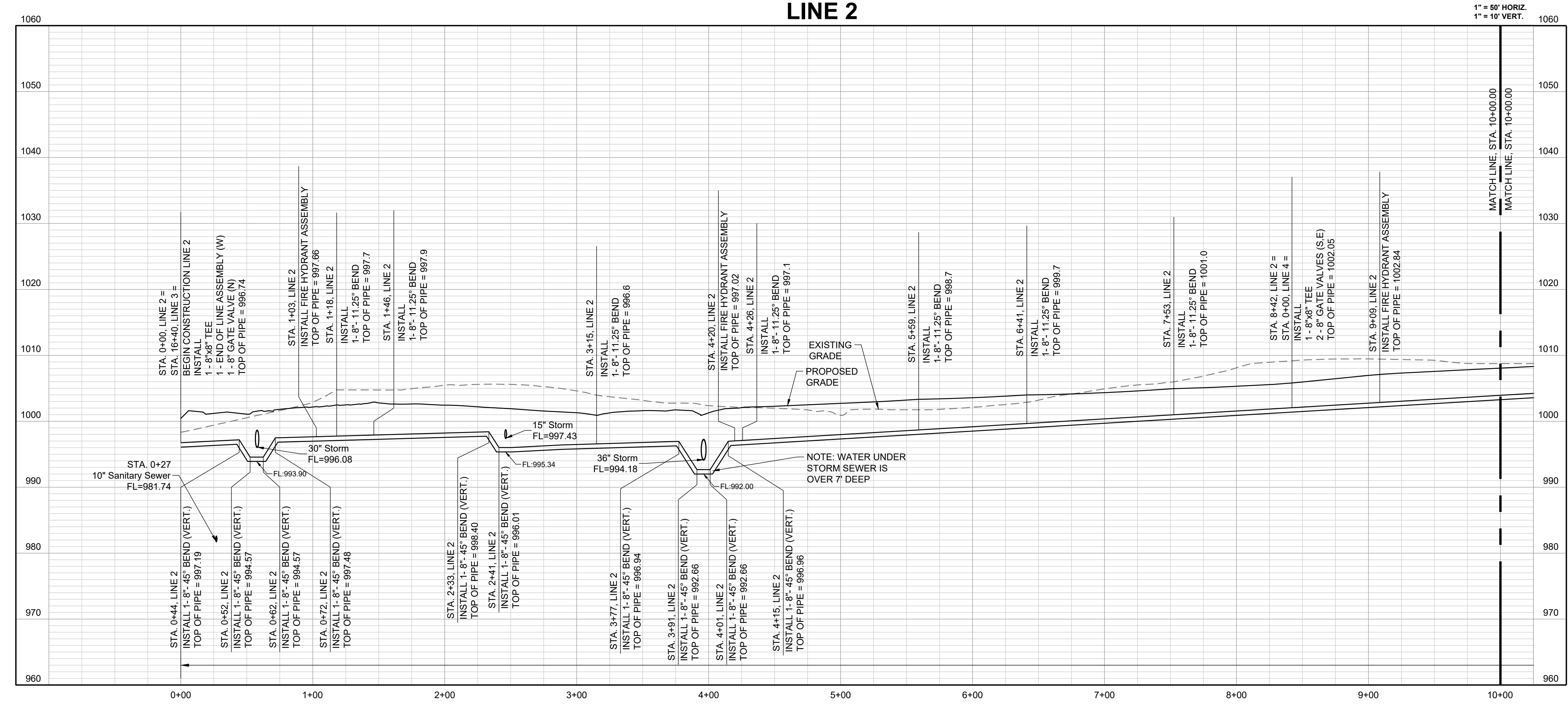
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PREPARED BY:

 JAMES L. LONG
 NUMBER PE-201401495
 EXPIRES 1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.



LINE 2



MANOR AT BAILEY FARMS, FIRST PLAT
WATER LINE PLANS
SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI

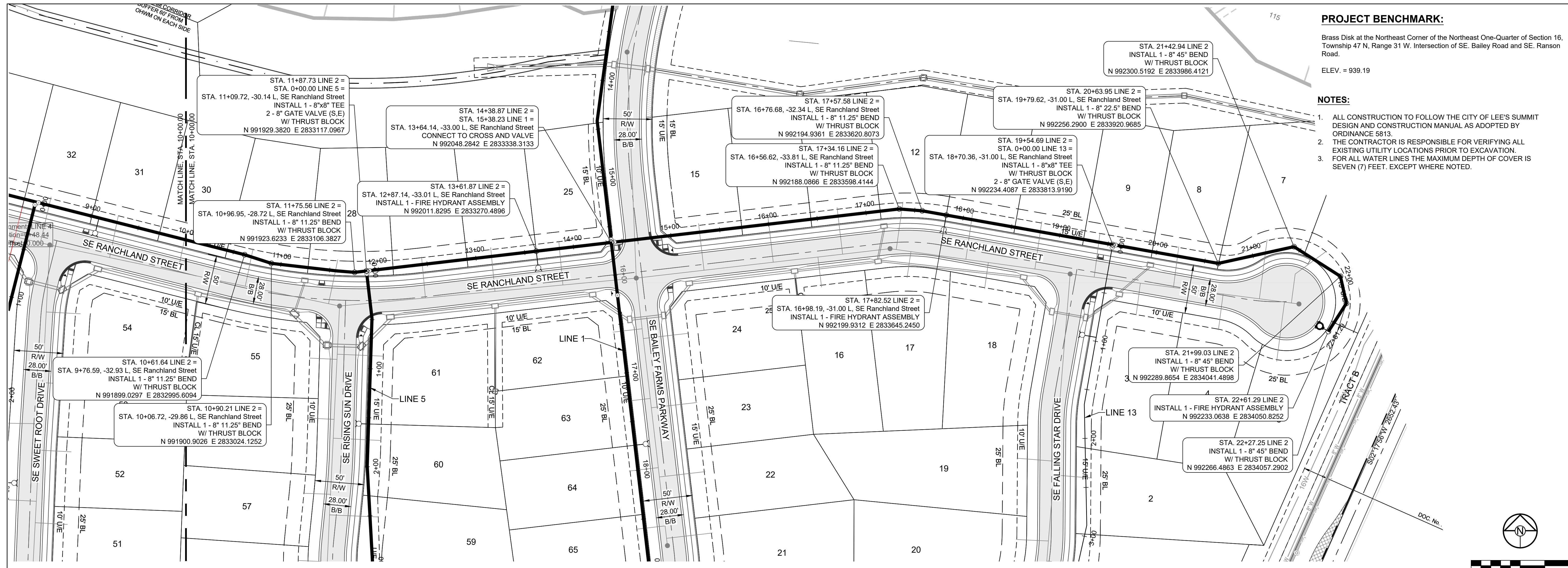
REVISION DATE	DESCRIPTION
1/24/2022	per City Comments dated 11/19/2022

DRAWN BY:	MBH
CHECKED BY:	JLL
DATE PREPARED:	11/05/2021
PROJ. NUMBER:	21-130

WATER LINE 2
PLAN & PROFILE

SHEET
7

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PROJECT BENCHMARK:
 Brass Disk at the Northeast Corner of the Northeast One-Quarter of Section 16,
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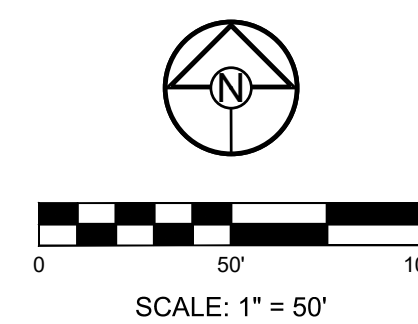
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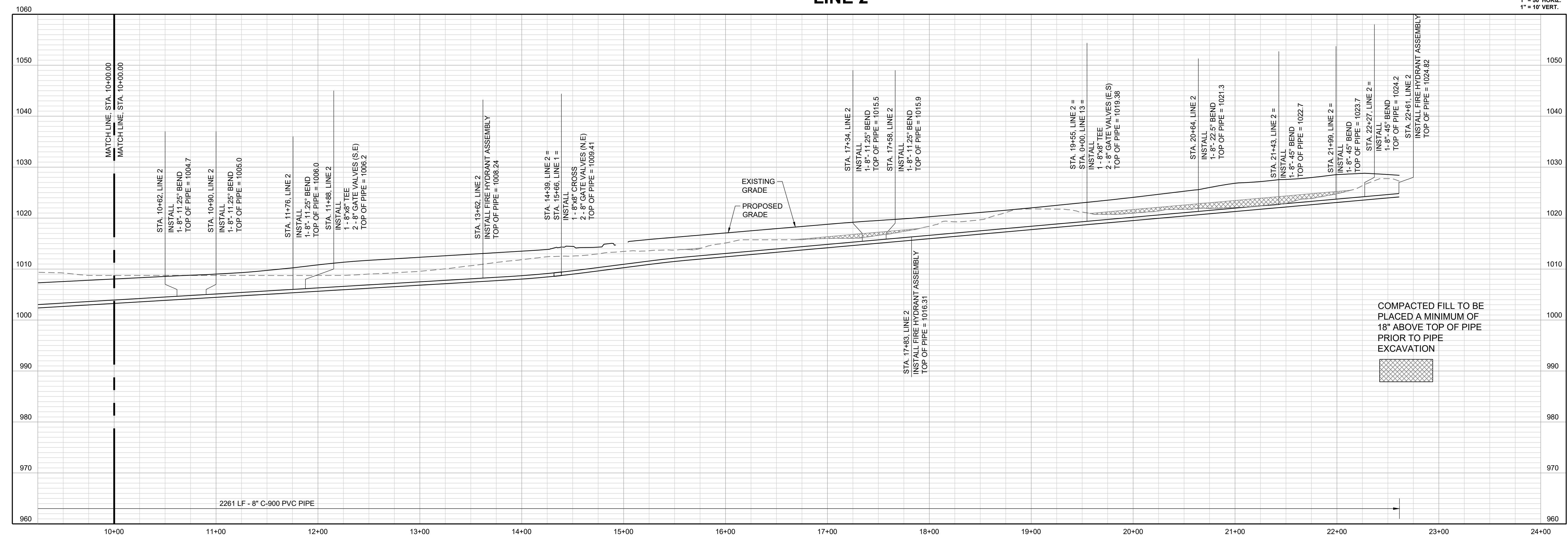
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PREPARED BY:

 JAMES L. LONG
 PE-201401495
 1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.



LINE 2



COMPACTED FILL TO BE PLACED A MINIMUM OF 18" ABOVE TOP OF PIPE PRIOR TO PIPE EXCAVATION

MANOR AT BAILEY FARMS, FIRST PLAT
WATER LINE PLANS
SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
1/24/2022	per City Comments dated 11/19/2022

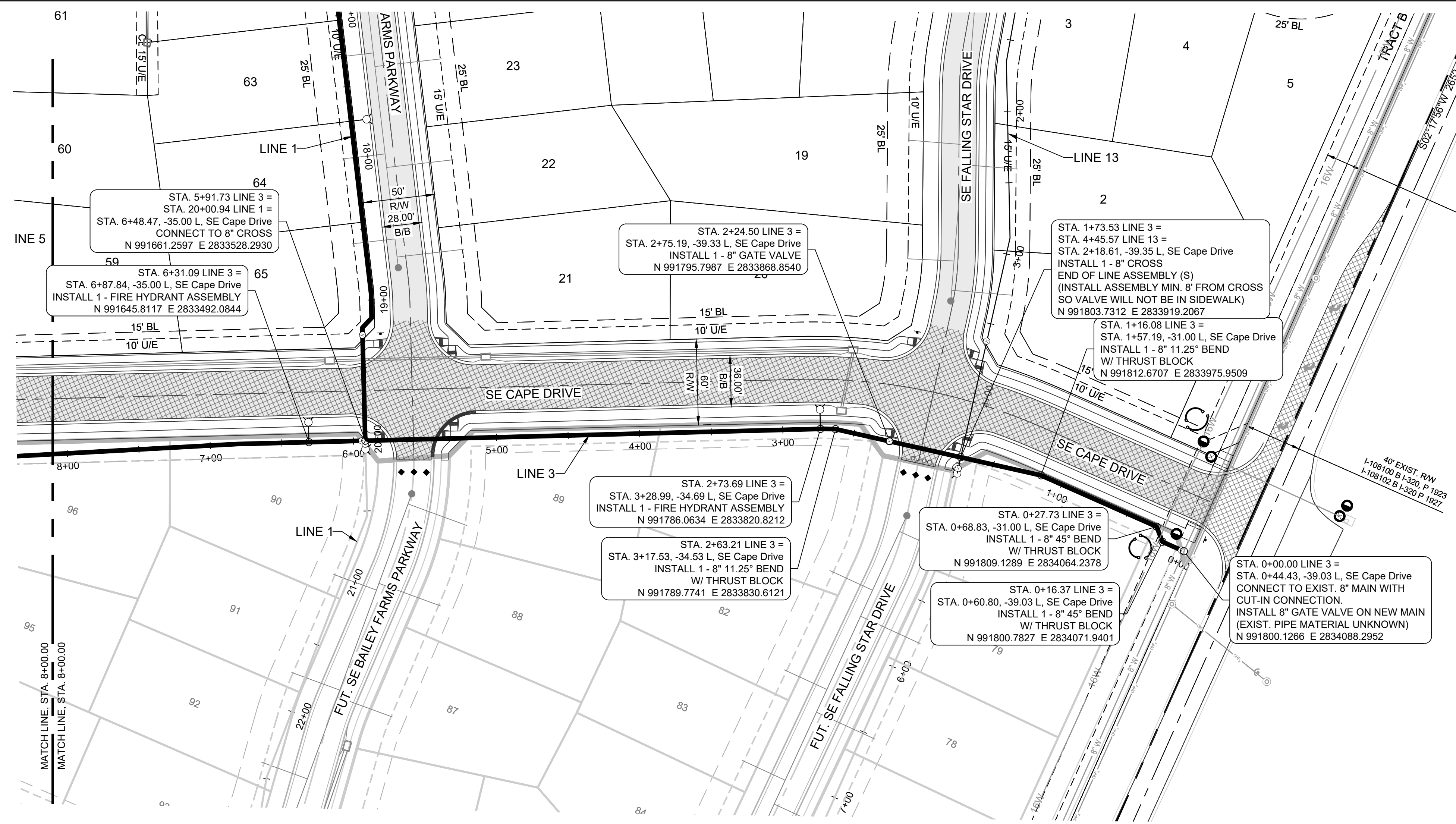
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DATE PREPARED:	1/16/2021
PROJ. NUMBER:	21-130

WATER LINE 2
PLAN & PROFILE
CONT'D

SHEET

8

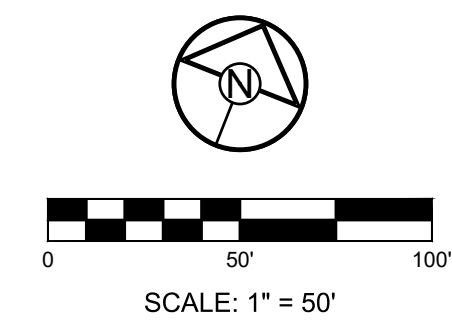
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PROJECT BENCHMARK:
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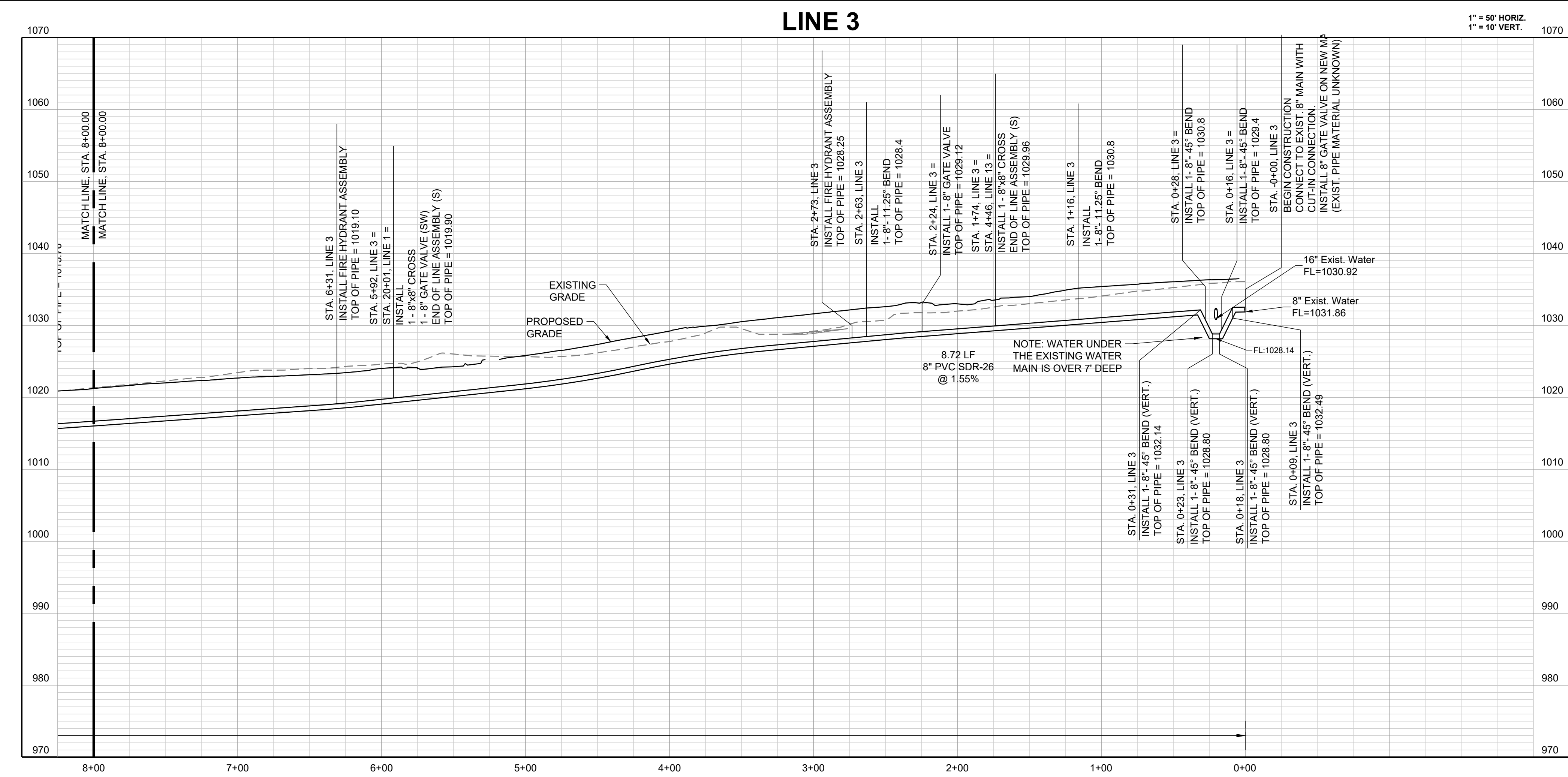


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PREPARED BY:

 JAMES L. LONG
 PE-2014016495
 1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.

MANOR AT BAILEY FARMS, FIRST PLAT
WATER LINE PLANS
SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI



COMPACTED FILL TO BE PLACED A MINIMUM OF 18" ABOVE TOP OF PIPE PRIOR TO PIPE EXCAVATION

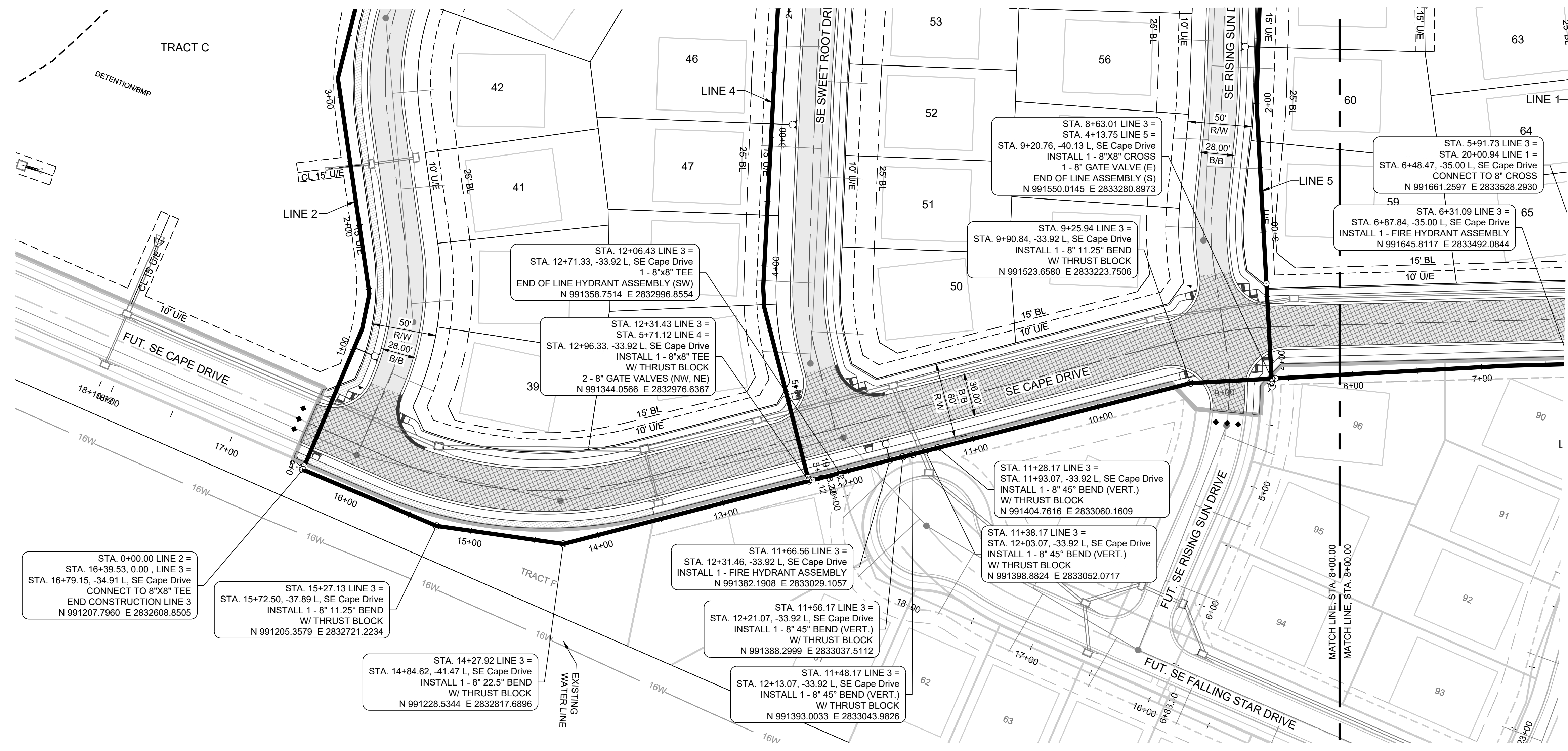
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1/24/2022	per City Comments dated 11/19/2022
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DRAWN BY:	MBH
CHECKED BY:	JLL
DATE PREPARED:	1/10/2021
PROJ. NUMBER:	21-130

**WATER LINE 3
 PLAN & PROFILE**

SHEET
9

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PROJECT BENCHMARK:
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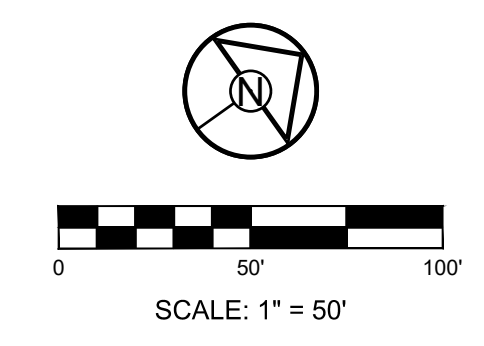
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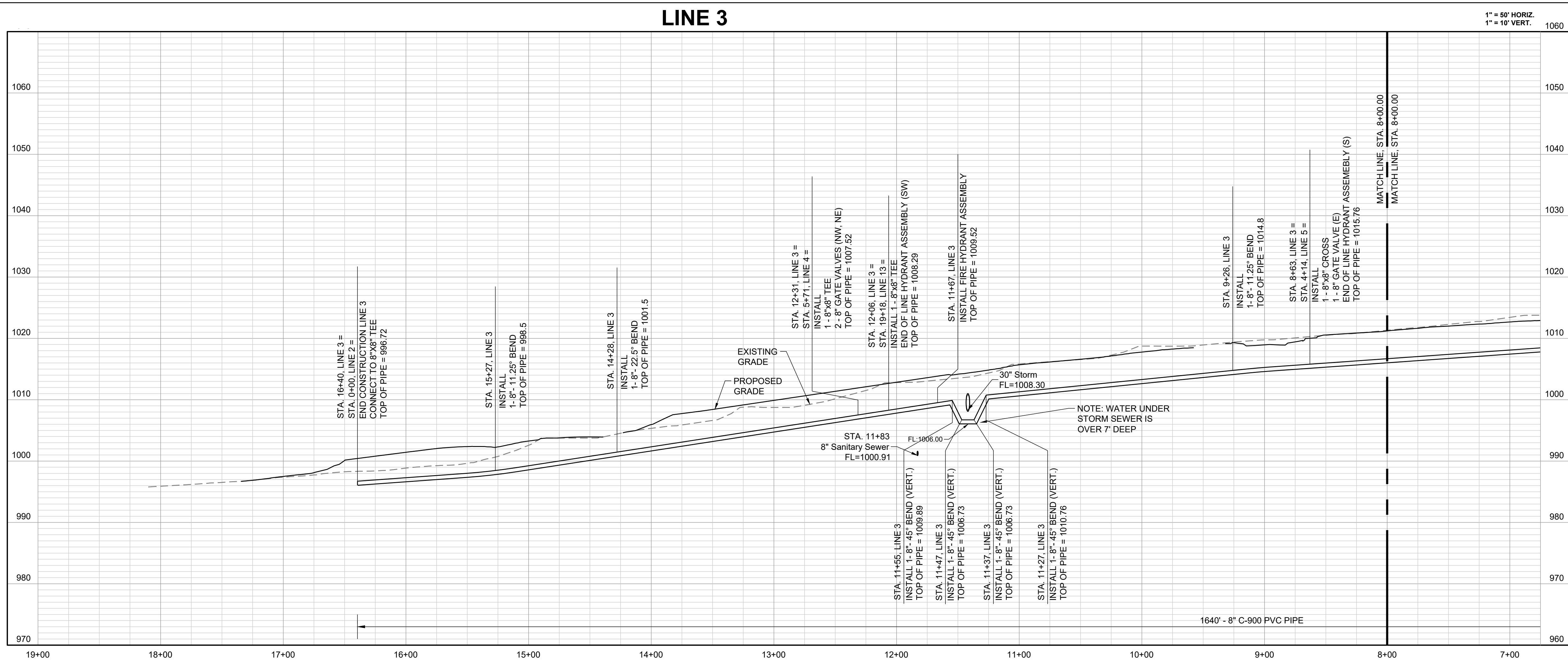
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PREPARED BY:

 JAMES L. LONG
 PE-2014010495
 1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.



LINE 3



COMPACTED FILL TO BE PLACED A MINIMUM OF 18" ABOVE TOP OF PIPE PRIOR TO PIPE EXCAVATION

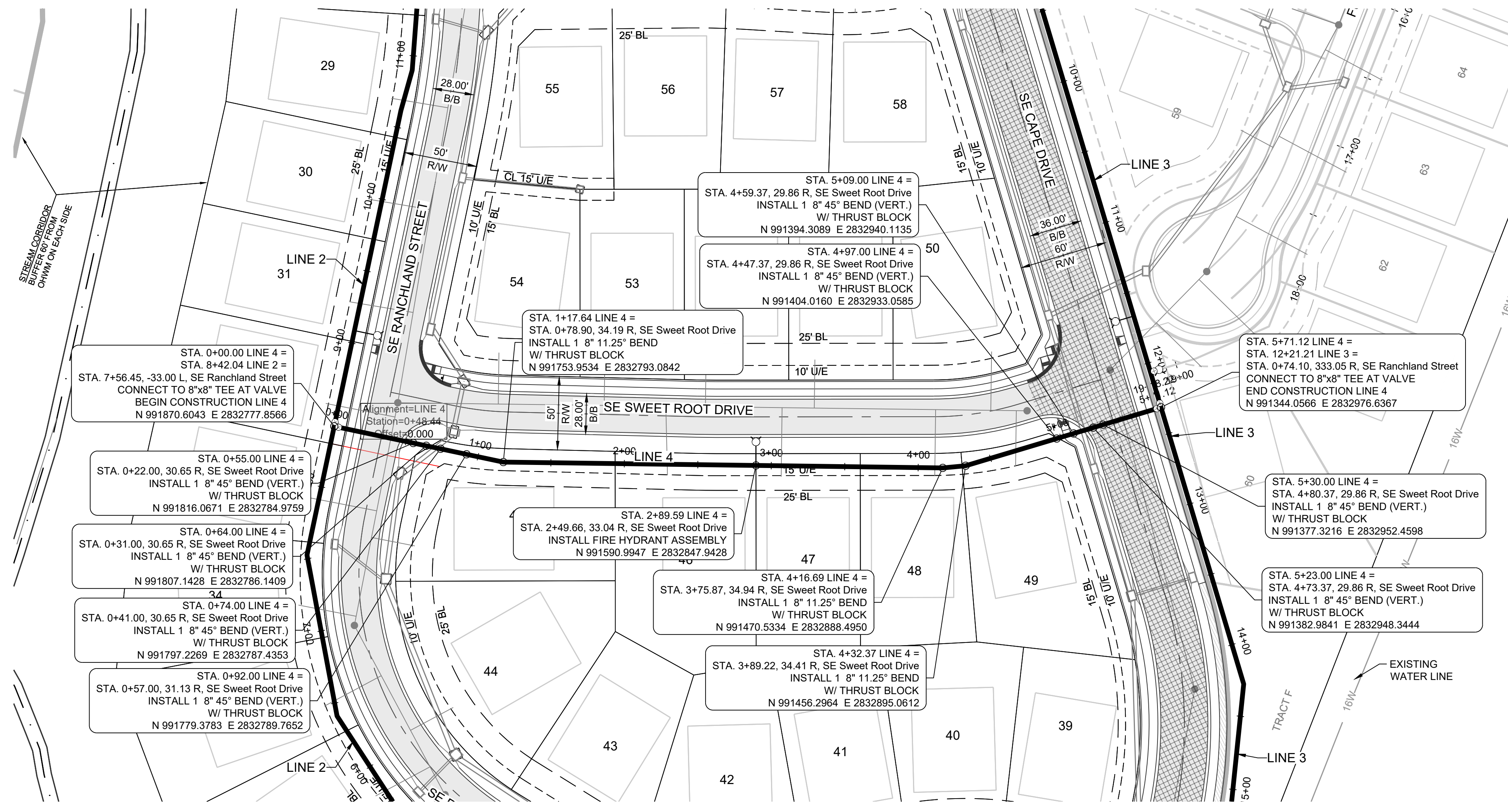
MANOR AT BAILEY FARMS, FIRST PLAT
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SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI

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WATER LINE 3
PLAN & PROFILE
CONT'D

SHEET
10

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PROJECT BENCHMARK:
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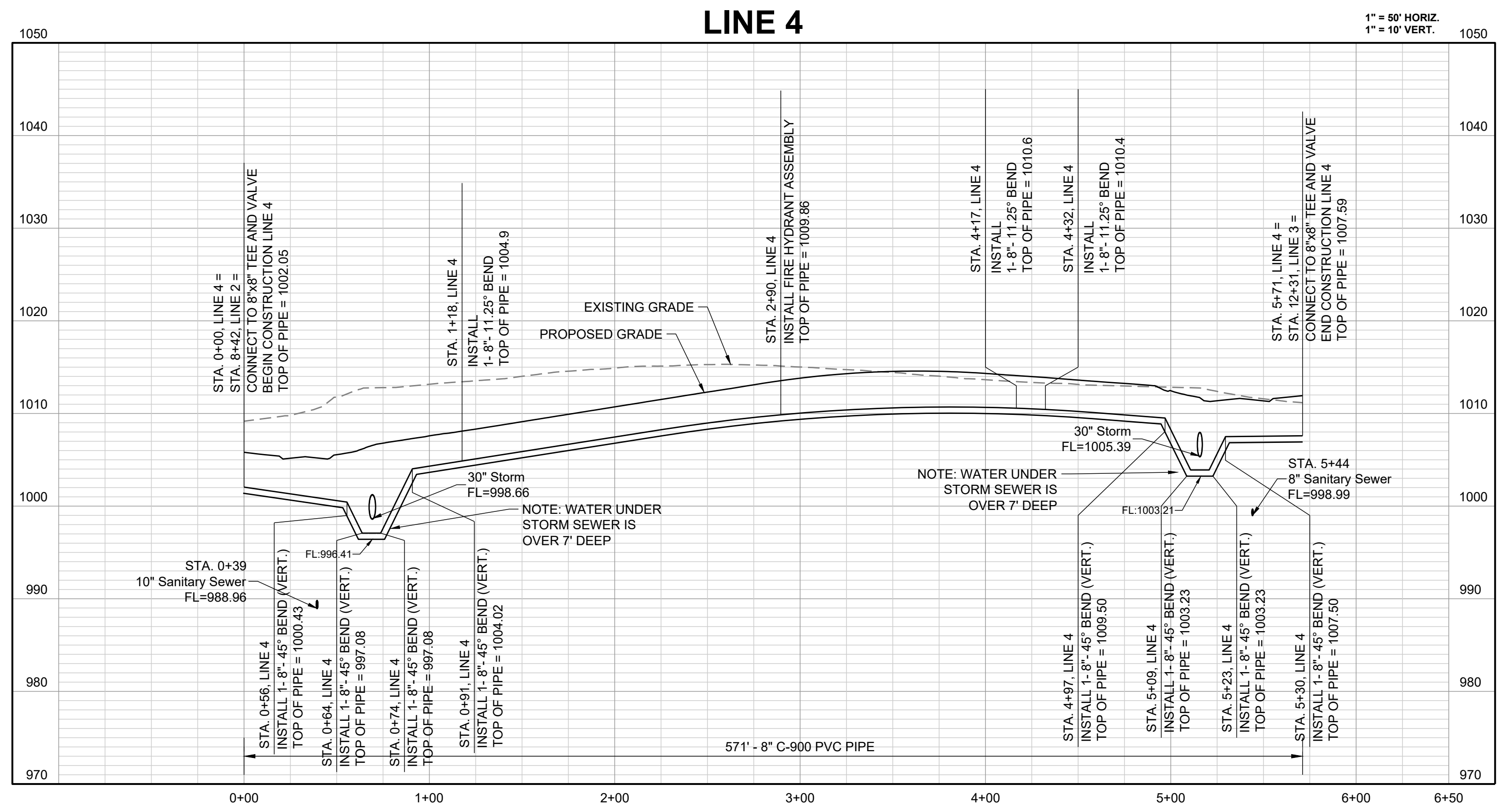


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PREPARED BY:

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 PE-201401495
 1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.

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LEE'S SUMMIT, MISSOURI



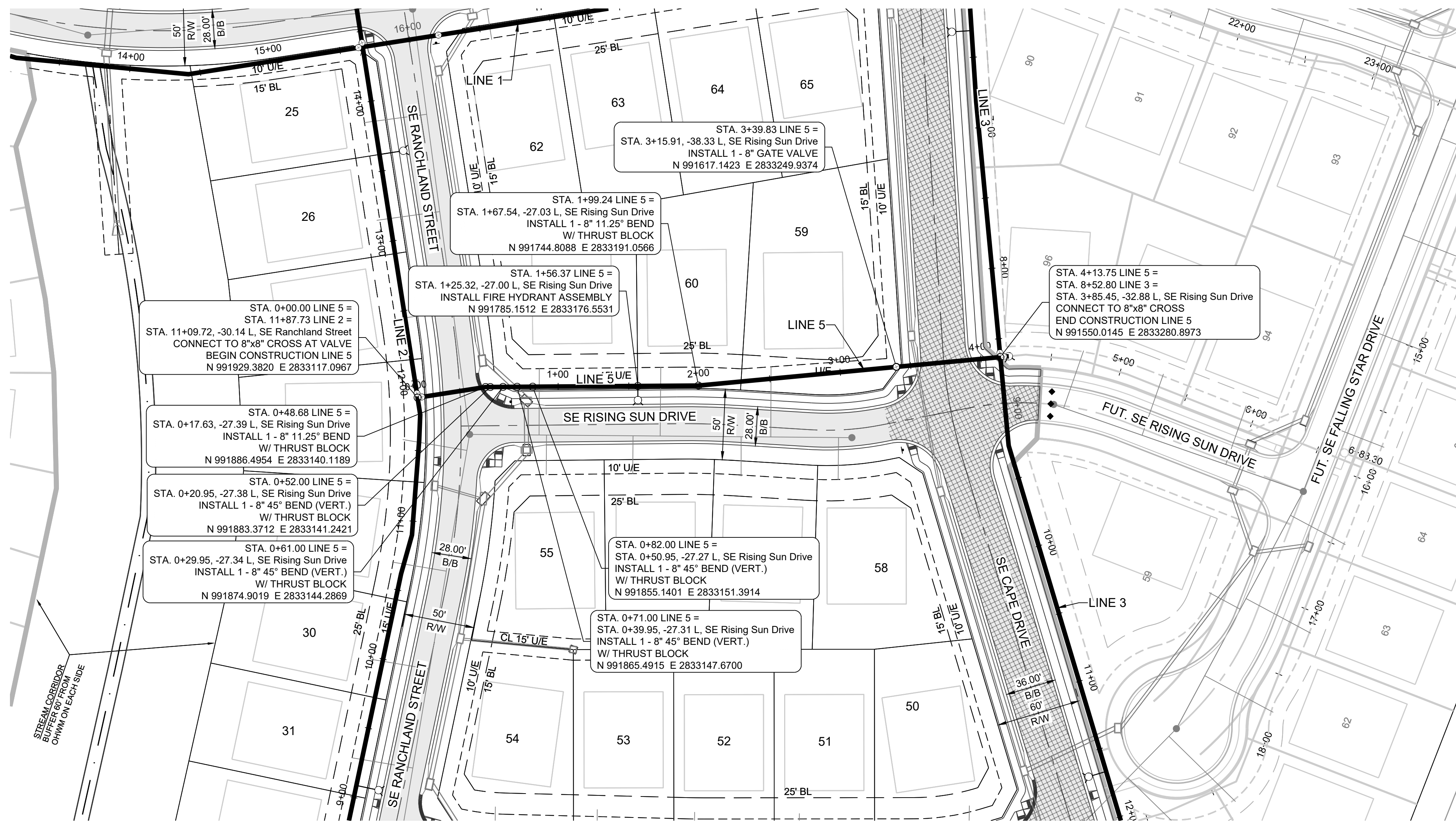
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PROJ. NUMBER:	21-130

WATER LINE 4
PLAN & PROFILE

SHEET
11

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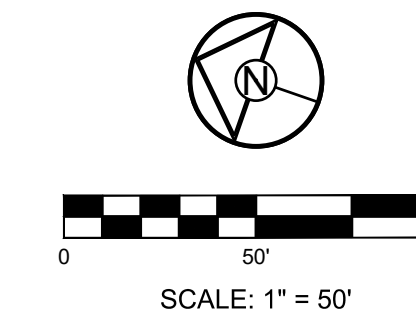
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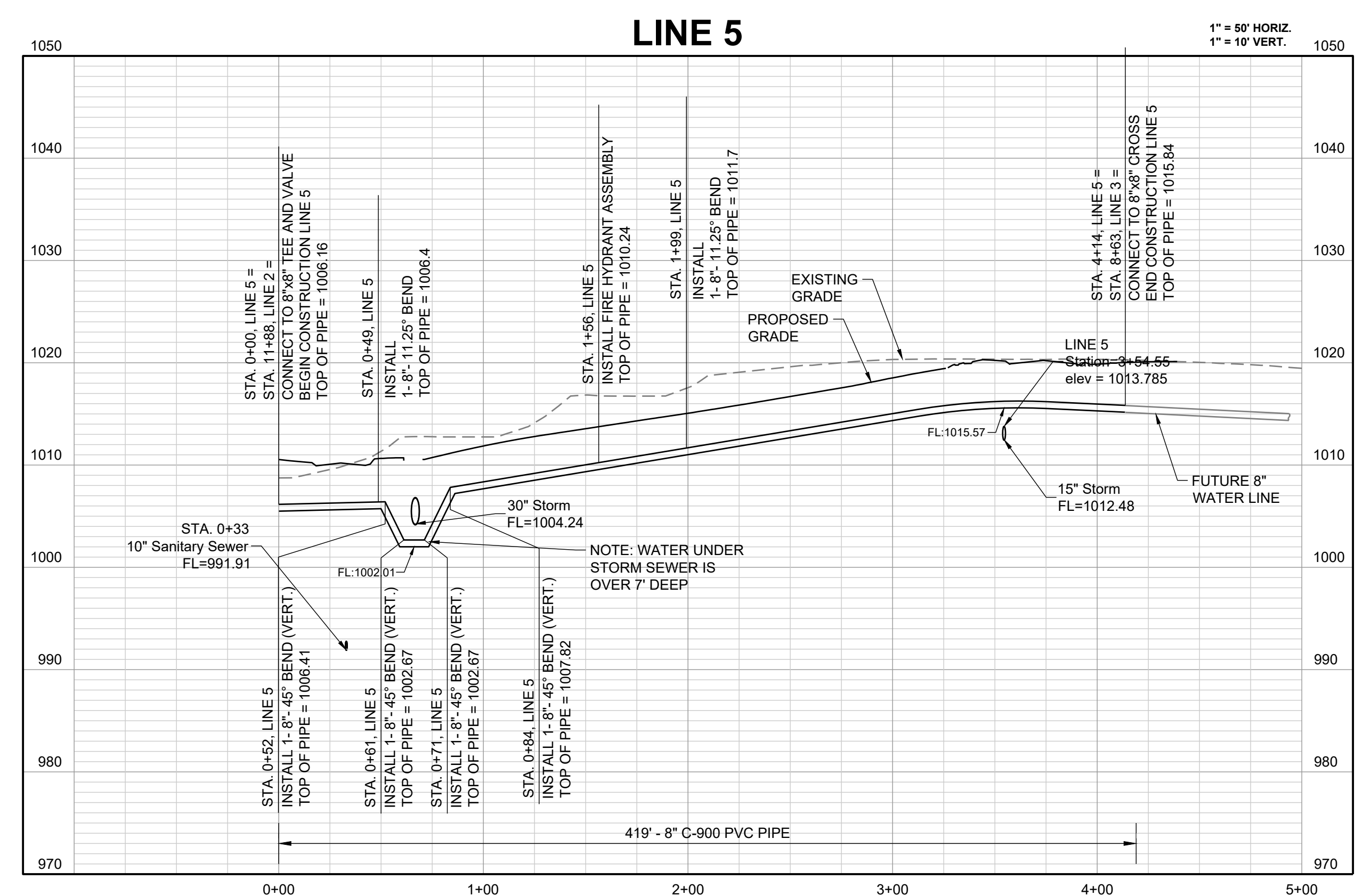
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 #E2002003609F #LAC200100523F #LS200200869F

PREPARED BY:



1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.

MANOR AT BAILEY FARMS, FIRST PLAT
WATER LINE PLANS
SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI

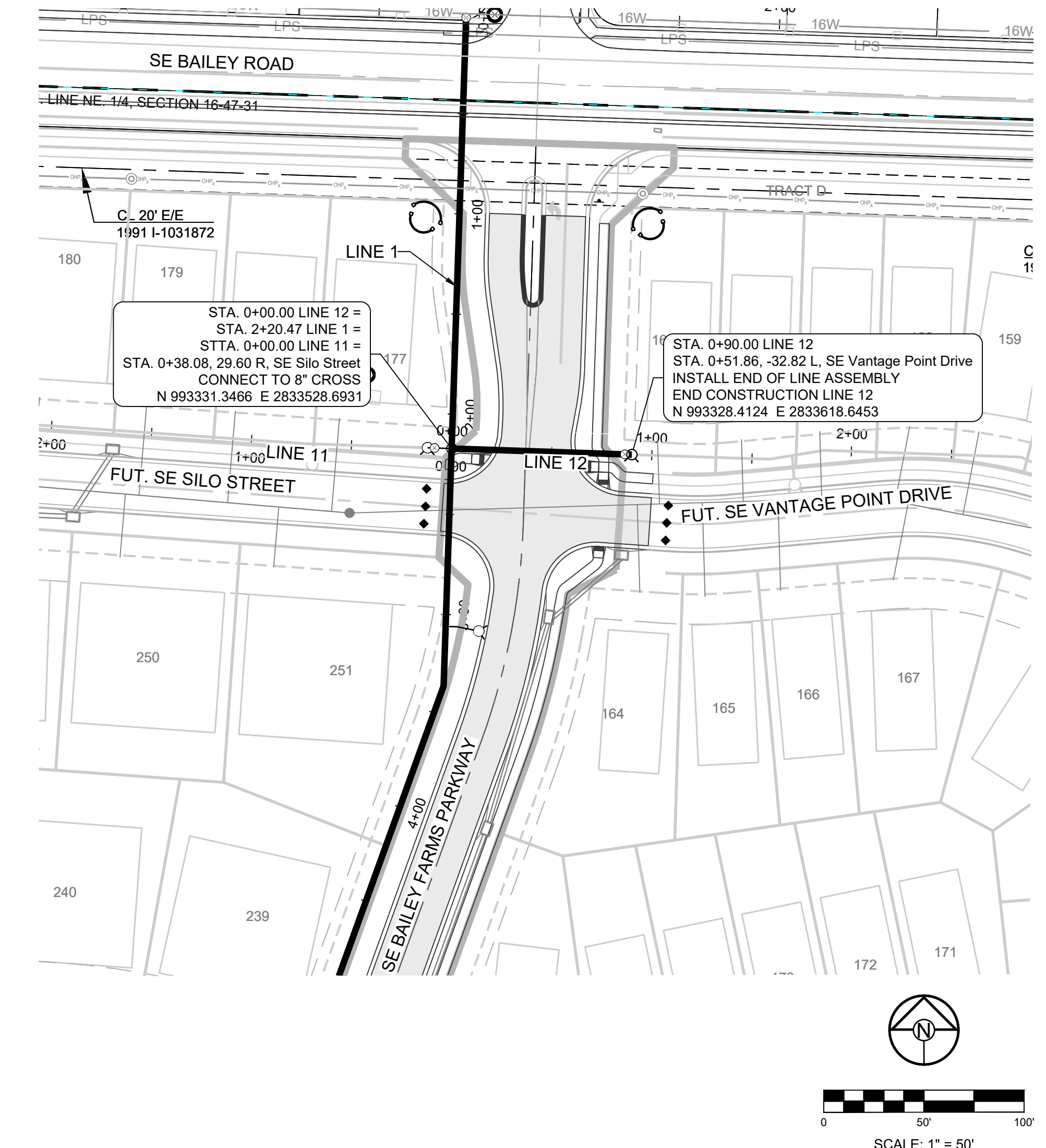
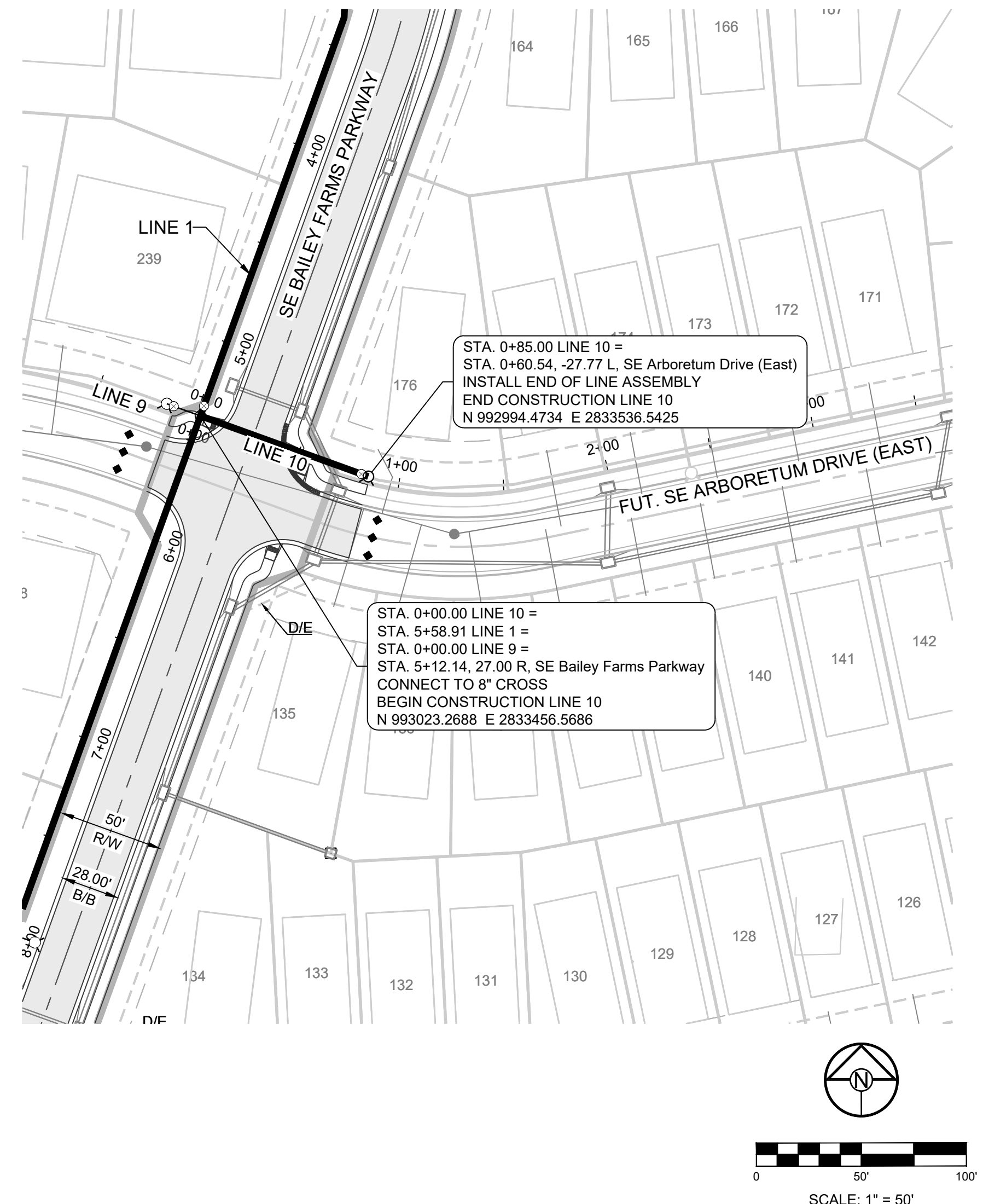
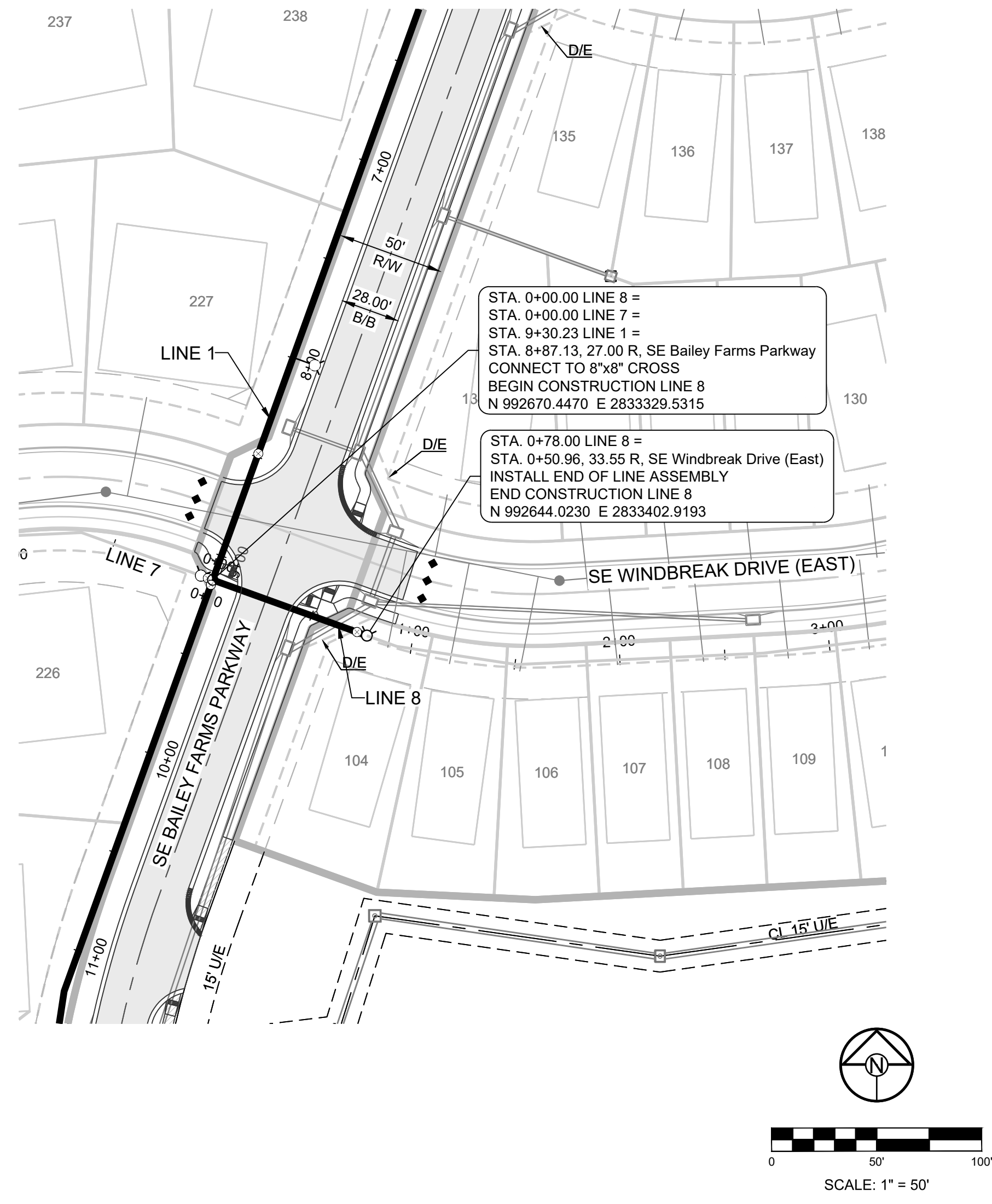


REVISION DATE	DESCRIPTION
1/24/2022	per City Comments dated 11/19/2022

DRAWN BY:	MBH
CHECKED BY:	JLL
DATE PREPARED:	1/16/2021
PROJ. NUMBER:	21-130

WATER LINE 5
PLAN & PROFILE

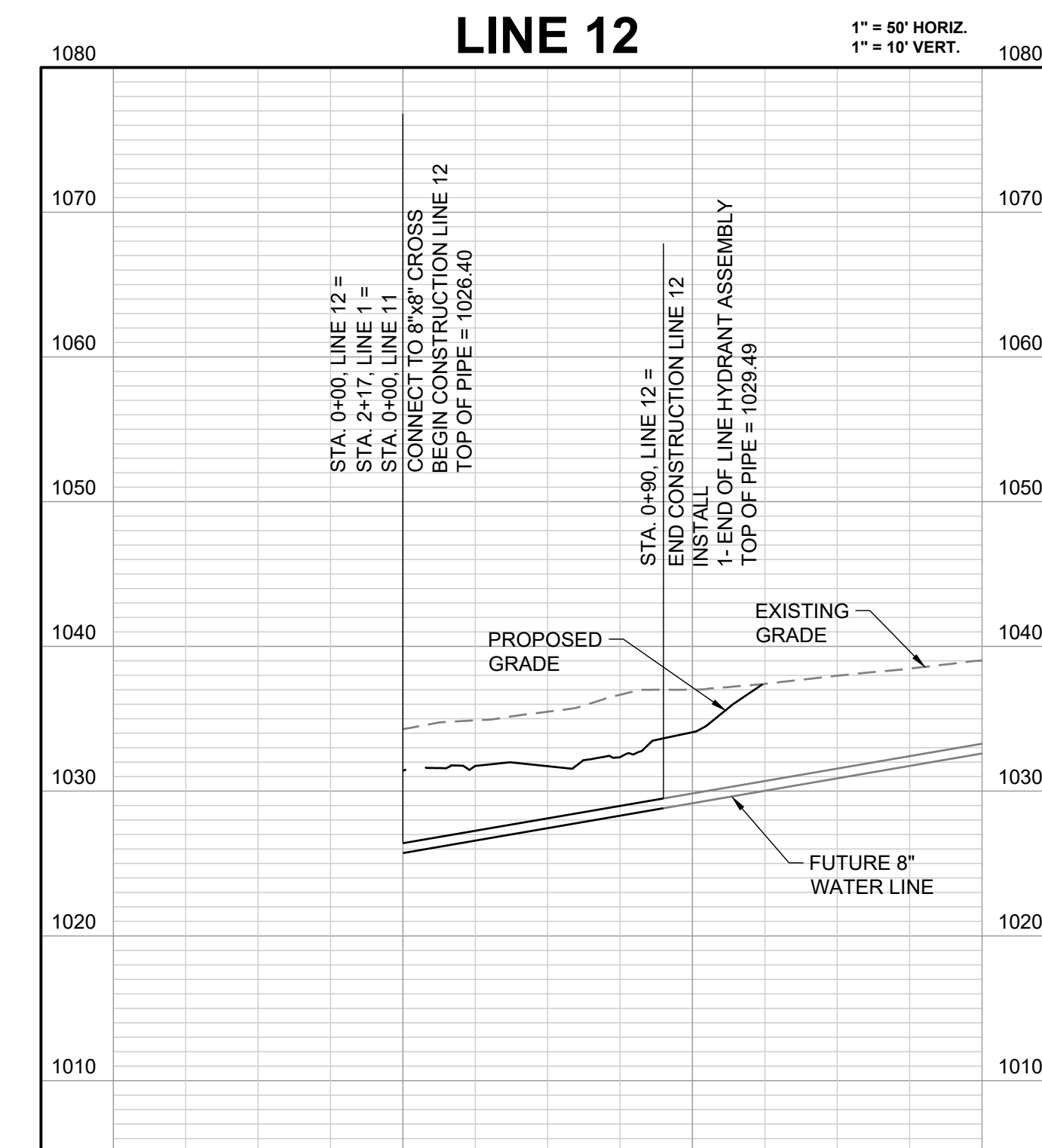
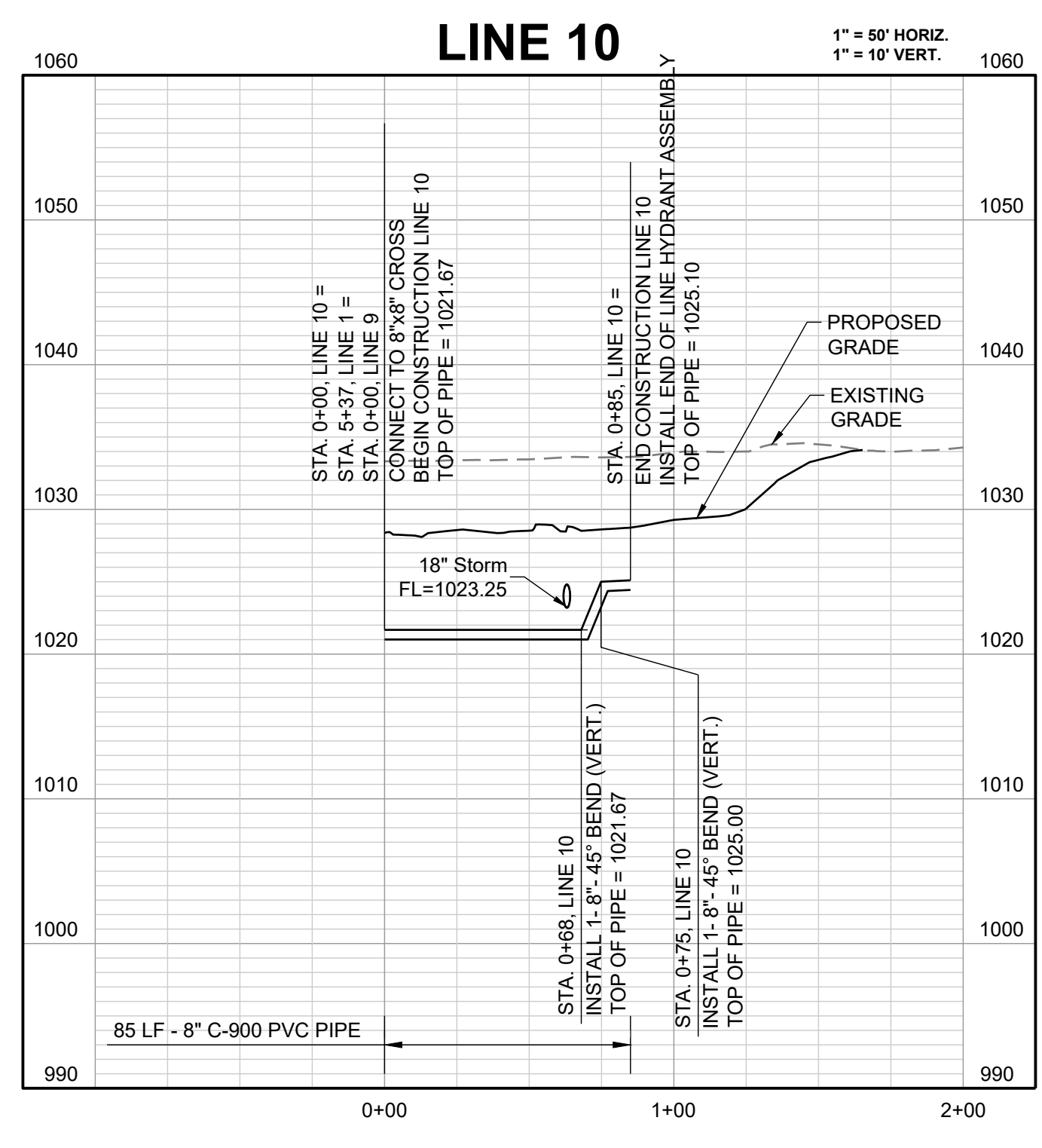
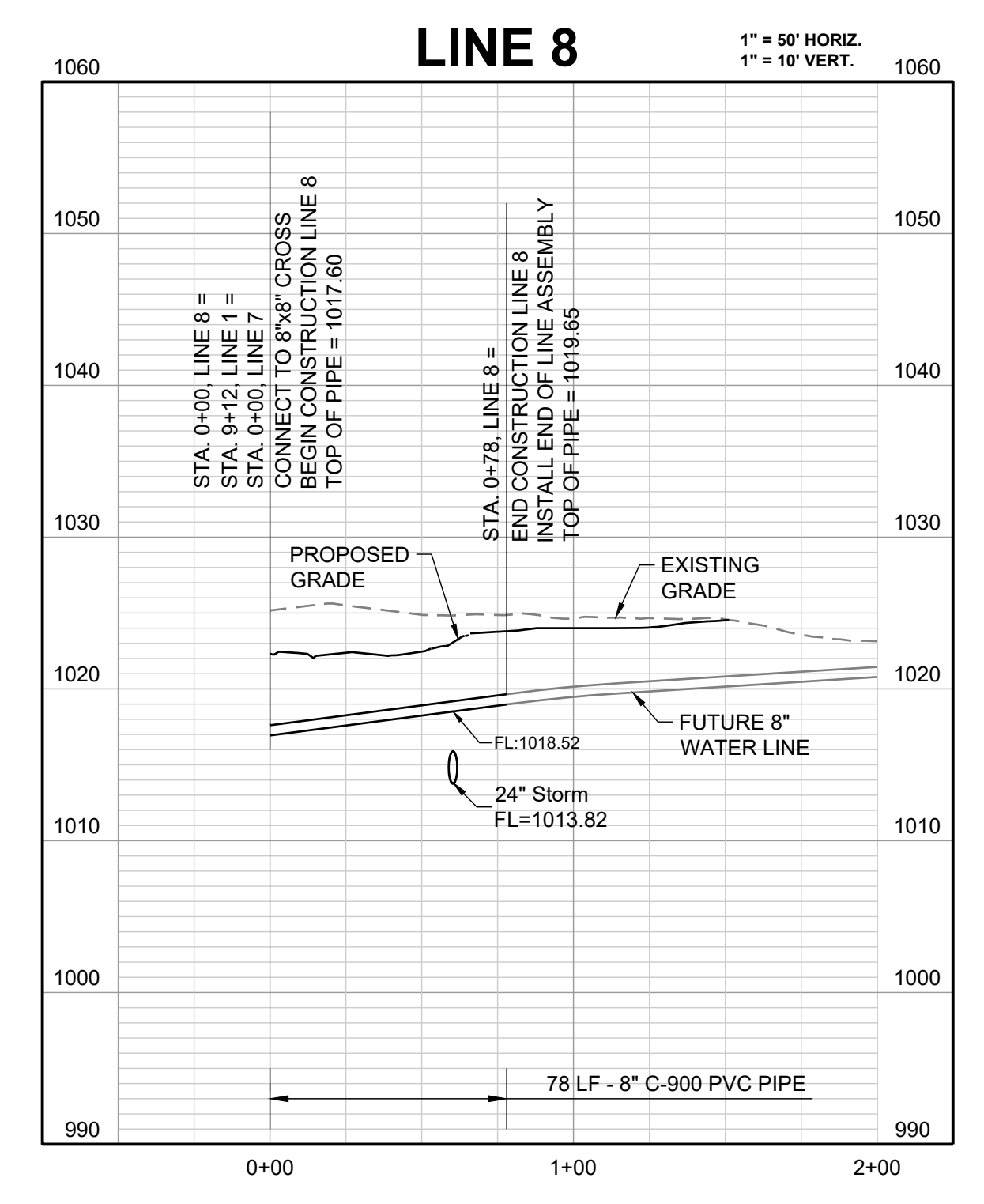
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NOTES:

- ALL CONSTRUCTION TO FOLLOW THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
- FOR ALL WATER LINES THE MAXIMUM DEPTH OF COVER IS SEVEN (7) FEET, UNLESS OTHERWISE NOTED.

PROJECT BENCHMARK:
 Brass Disk at the Northeast Corner of the Northeast One-Quarter of Section 16, Township 47 N, Range 31 W, Intersection of SE. Bailey Road and SE. Ranson Road.
 ELEV. = 939.19



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 #E200200360P-F #LAC2001005237 #LS200200895F

PREPARED BY:

 JAMES L. LONG
 PROFESSIONAL ENGINEER
 1/31/2022
 SCHLAGEL & ASSOCIATES, P.A.

MANOR AT BAILEY FARMS, FIRST PLAT
 WATER LINE PLANS
 SE BAILEY ROAD AND SE RANSON ROAD
 LEE'S SUMMIT, MISSOURI

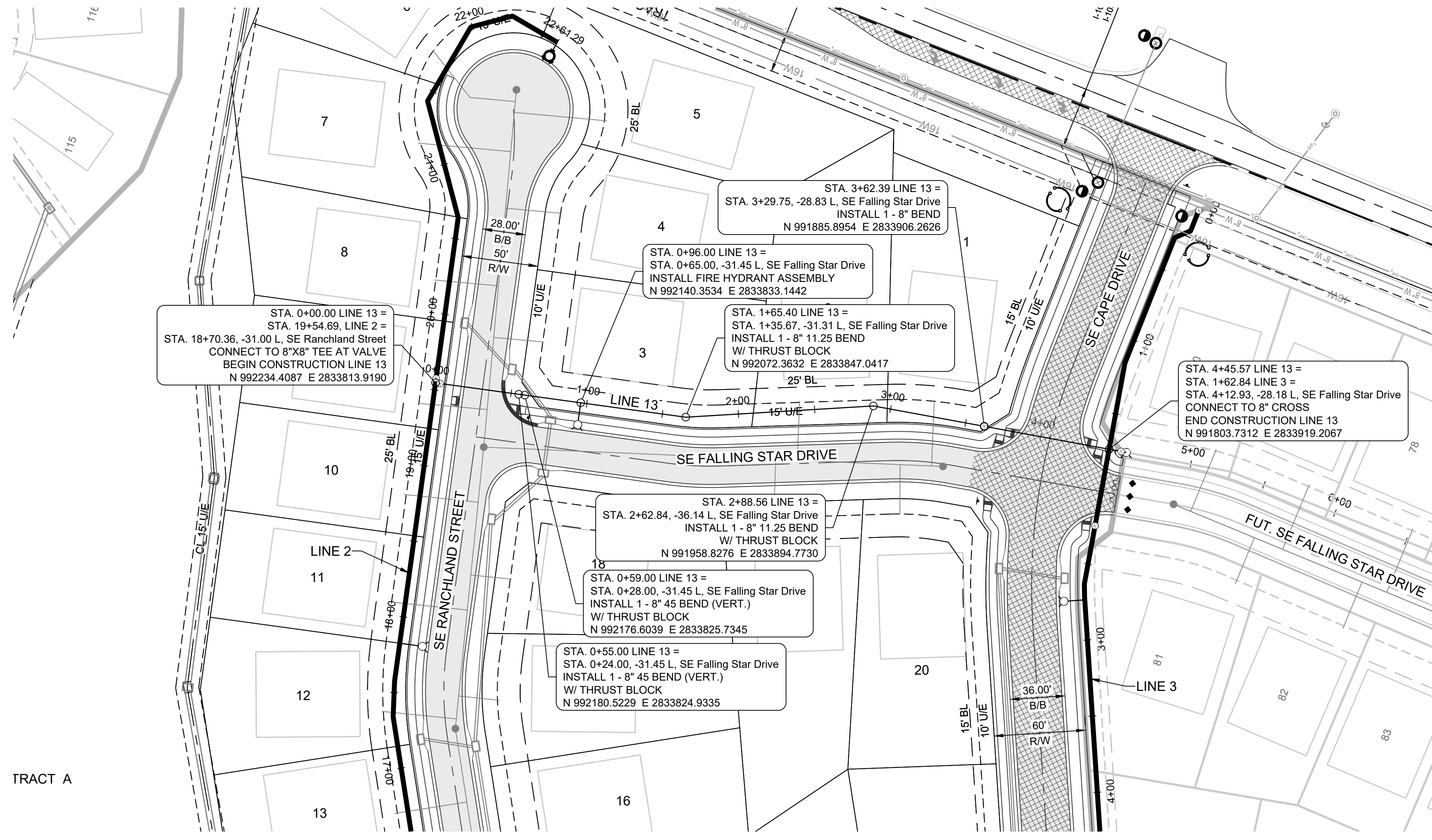
REVISION DATE	DESCRIPTION
1/24/2022	per City Comments dated 11/19/2022

DRAWN BY: MBH
 CHECKED BY: JLL
 DATE PREPARED: 1/05/2021
 PROJ. NUMBER: 21-130

**WATER LINE 8,
 10, & 12 PLAN &
 PROFILE**

SHEET
13

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TRACT A



PROJECT BENCHMARK:

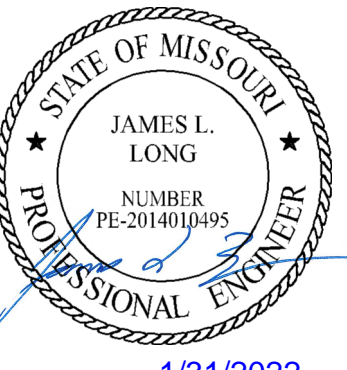
Brass Disk at the Northeast Corner of the Northeast One-Quarter of Section 16, Township 47 N, Range 31 W, Intersection of SE. Bailey Road and SE. Ranson Road.
ELEV. = 939.19

NOTES:

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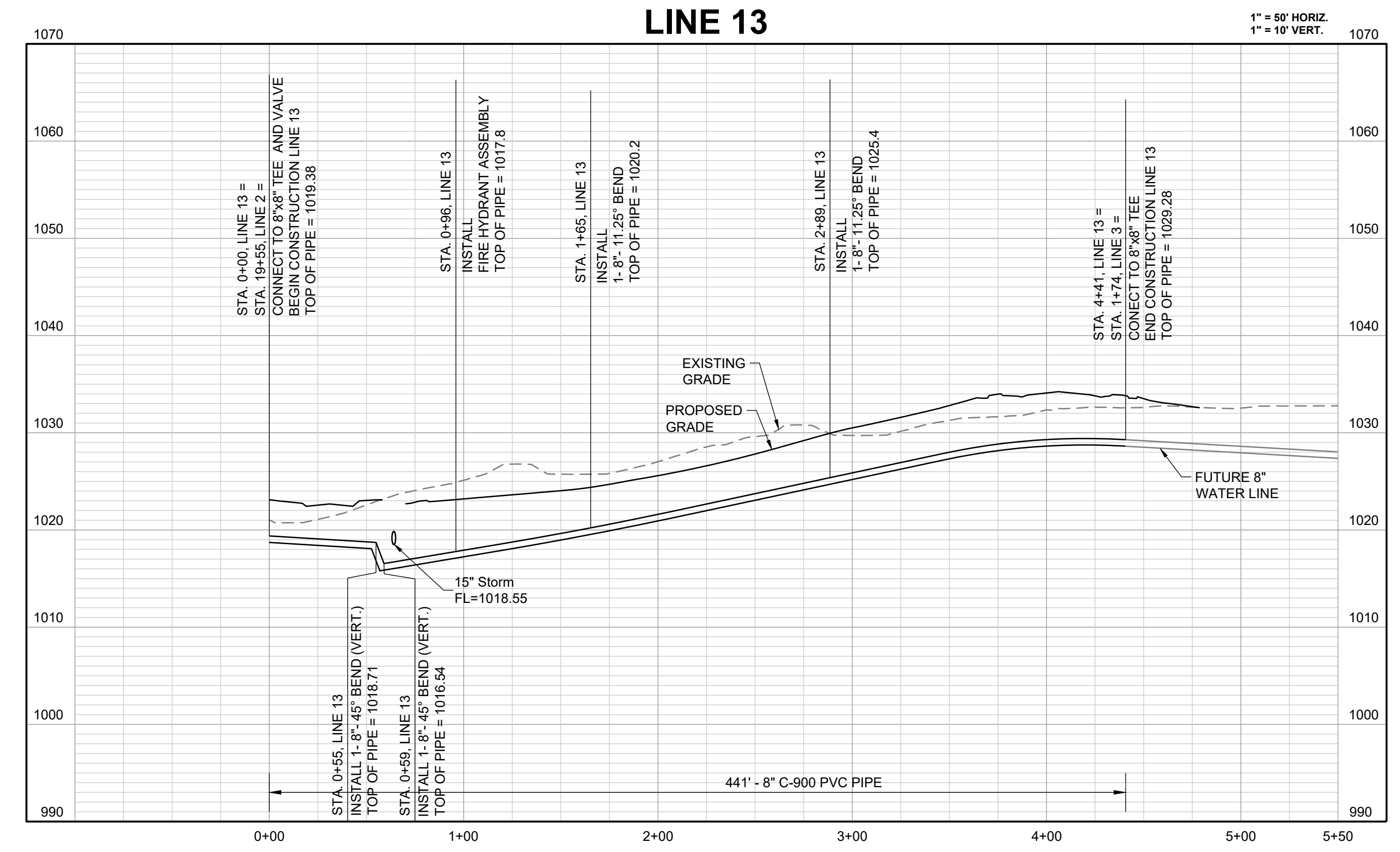
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PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

MANOR AT BAILEY FARMS, FIRST PLAT
WATER LINE PLANS
SE BAILEY ROAD AND SE RANSON ROAD
LEE'S SUMMIT, MISSOURI



REVISION DATE	DESCRIPTION
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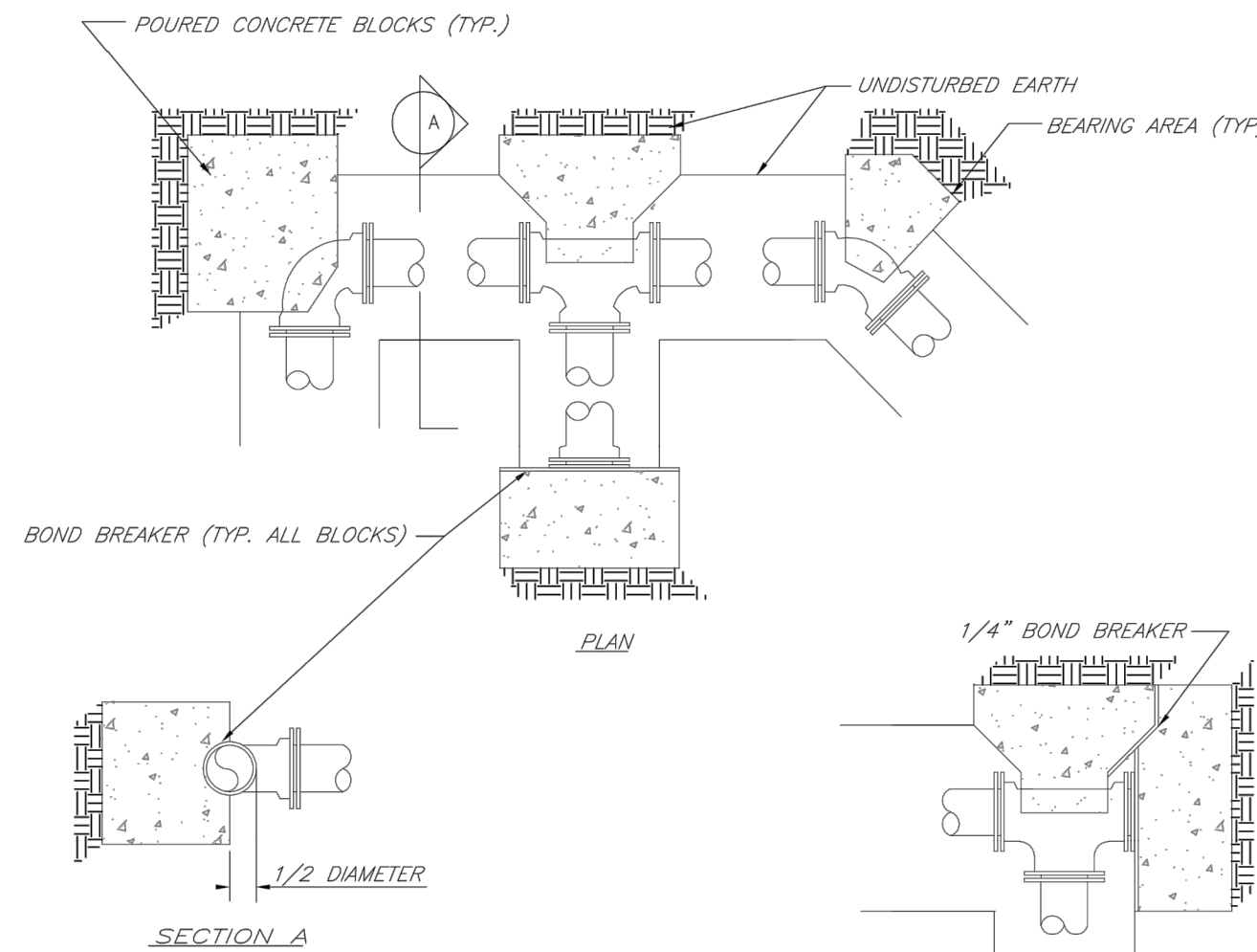
WATER LINE 13
PLAN & PROFILE

SHEET
14

I:\PROJECTS\2021\21-130\3.0 design\3.0 DWG Plans\3.0 Water\21-130-WATER P&P.dwg, 1/31/2022 7:14:15 AM, 1/1

REQUIRED CONCRETE BEARING AREA (SQUARE FEET - SF)					
NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND	BEND
6	4.7	6.7	4.0	4.0	4.0
8	8.4	11.9	6.4	4.0	4.0
10	13.1	18.5	10.0	5.1	4.0
12	18.8	26.7	14.4	5.4	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	58.7	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

- 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.

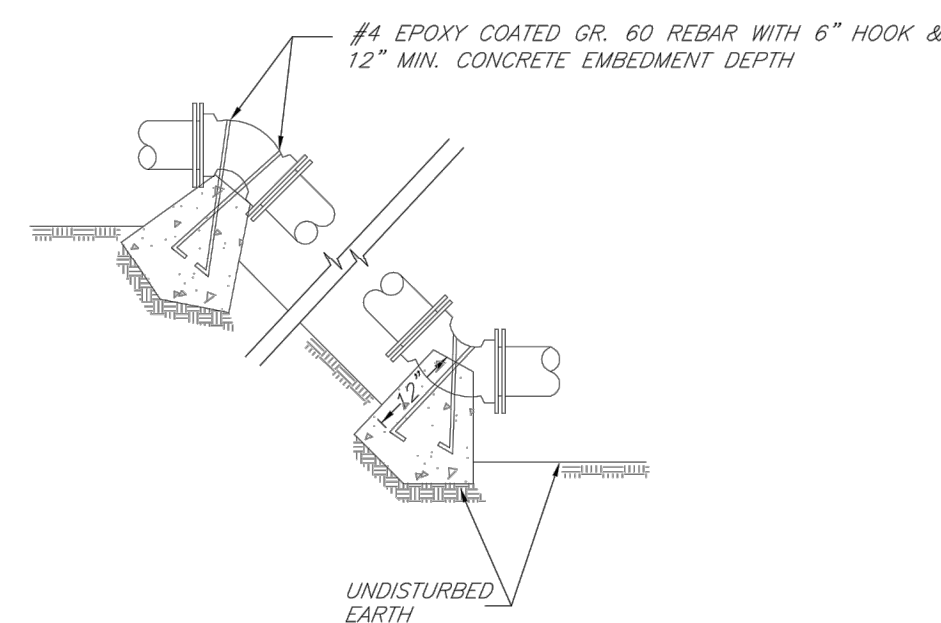


LEE'S SUMMIT MISSOURI
 PUBLIC WORKS ENGINEERING DIVISION | 1201 SE GREEN STREET | LEE'S SUMMIT, MO 64063
HORIZONTAL THRUST BLOCKS

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

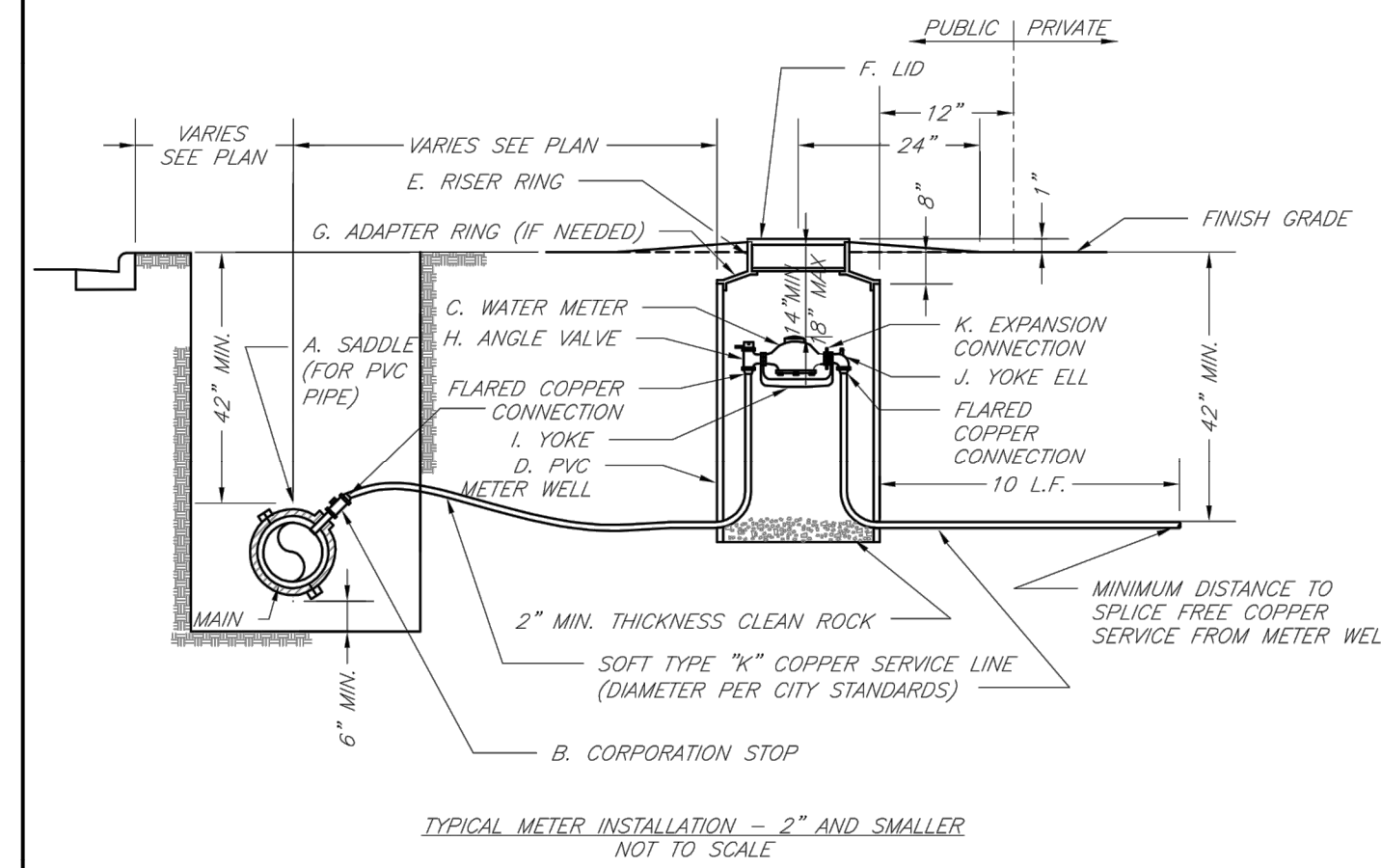
REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)					
NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND	BEND
6	50.5	71.4	38.6	19.7	9.9
8	89.8	126.9	68.7	35.0	17.6
10	140.2	198.3	107.3	54.7	27.5
12	202.0	REST. JT.	154.6	78.9	39.6
14	REST. JT.	REST. JT.	210.4	107.3	53.9
16	REST. JT.	REST. JT.	REST. JT.	140.1	70.4
18	REST. JT.	REST. JT.	REST. JT.	177.3	89.1
20	REST. JT.	REST. JT.	REST. JT.	REST. JT.	110.0
24	REST. JT.	REST. JT.	REST. JT.	REST. JT.	158.4

- 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.



LEE'S SUMMIT MISSOURI
 PUBLIC WORKS ENGINEERING DIVISION | 1201 SE GREEN STREET | LEE'S SUMMIT, MO 64063
VERTICAL THRUST BLOCKS

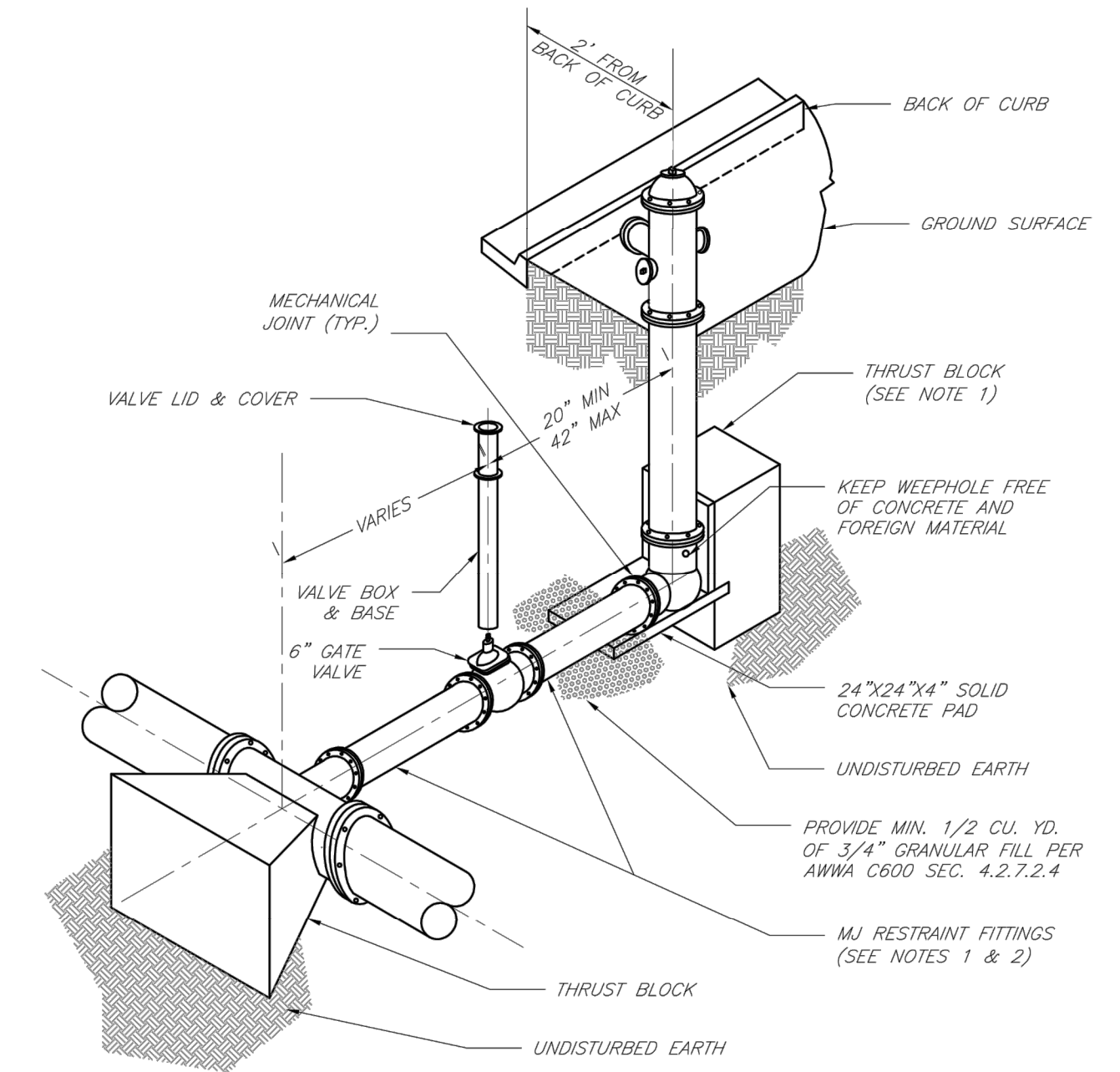
Date: 02/13
 Drawn By: JN
 Checked By: DL
 FILE: WMT-2
 Rec: 1/14
 Rev:



- NOTES:
 1. METER INSTALLATION SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE PAVEMENT WITHOUT CITY APPROVAL.
 2. IF METER IS TO BE LOCATED OTHER THAN IN FRONT OF PROPERTY LINE, CITY APPROVAL SHALL BE OBTAINED.
 3. CITY TO FURNISH ITEMS A-K.
 4. NO OTHER EQUIPMENT SHALL BE INSTALLED IN THIS PIT.
 5. 42\"/>

LEE'S SUMMIT MISSOURI
 PUBLIC WORKS ENGINEERING DIVISION | 1201 SE GREEN STREET | LEE'S SUMMIT, MO 64063
SERVICE CONNECTION/METER WELL

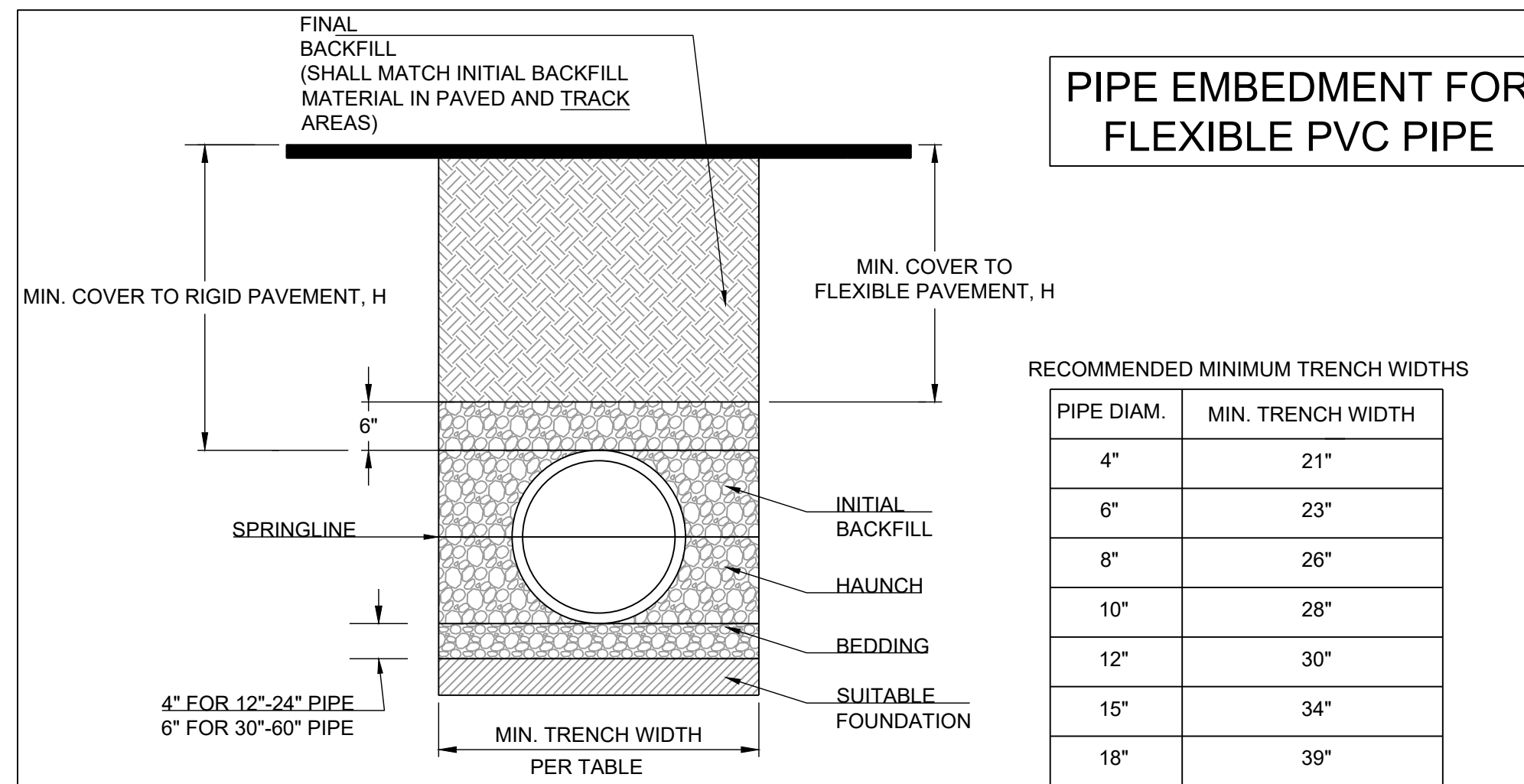
Date: 02/13
 Drawn By: JN
 Checked By: DL
 FILE: WMT-11
 Rec: 1/14
 Rev:



- 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\"/>

LEE'S SUMMIT MISSOURI
 PUBLIC WORKS ENGINEERING DIVISION | 1201 SE GREEN STREET | LEE'S SUMMIT, MO 64063
HYDRANT INSTALLATION - STRAIGHT SET

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



PIPE EMBEDMENT FOR FLEXIBLE PVC PIPE

RECOMMENDED MINIMUM TRENCH WIDTHS

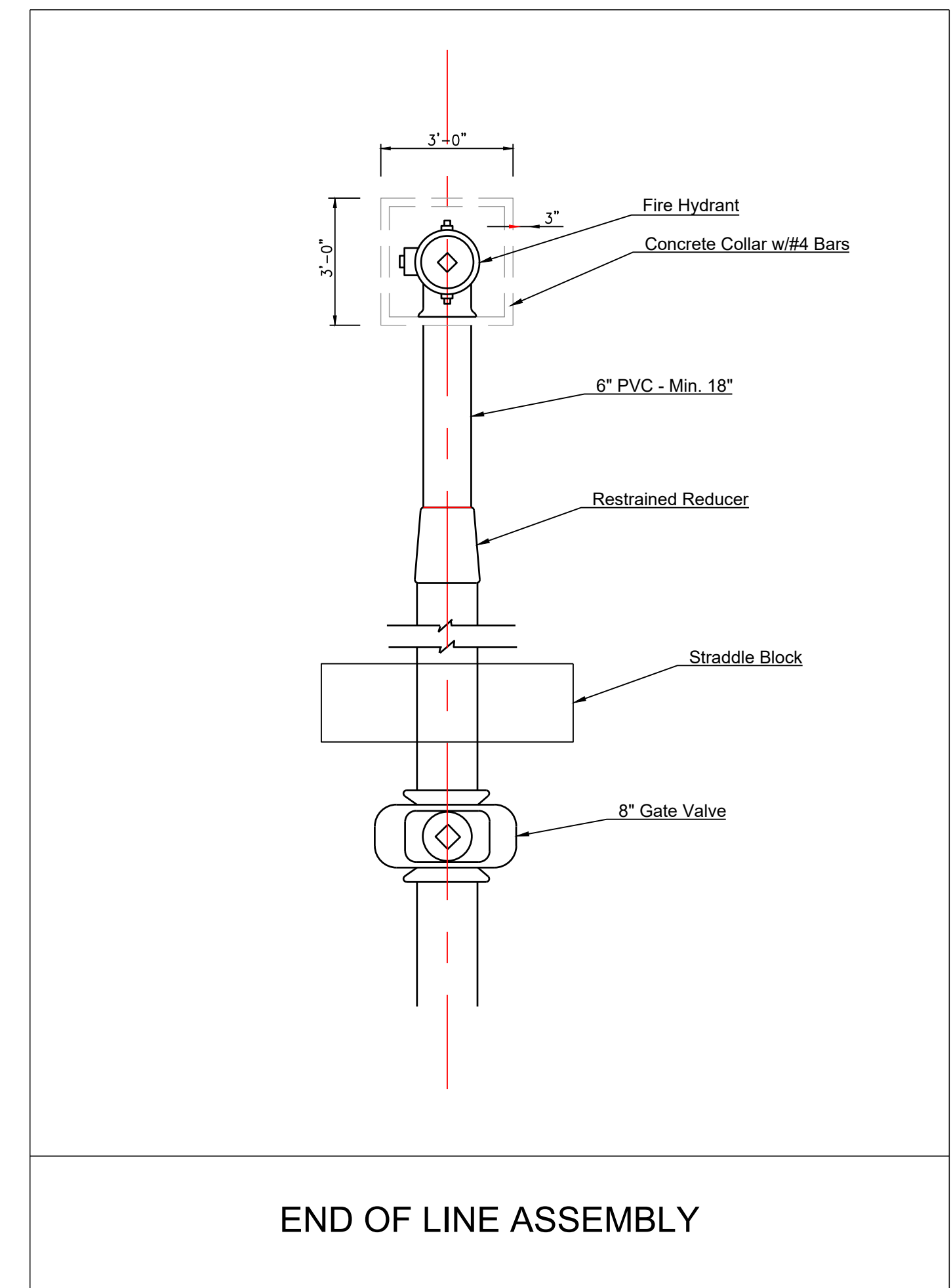
PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	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 FLOATION. 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.



END OF LINE ASSEMBLY

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1/24/2022	per City Comments dated 11/19/2022

DRAWN BY: MBH
 CHECKED BY: JLL
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WATER LINE DETAILS