



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.

STREET LEGEND:
 RESIDENTIAL LOCAL

SCHLAGEL
 ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
 14920 West 107th Street • Lenexa, Kansas 66215
 (913) 492-5158 • Fax: (913) 492-8400
 WWW.SCHLAGELASSOCIATES.COM
 Missouri State Certificates of Authority
 #E200203690F #LAC201005237 #LS200200869F

PREPARED BY:

 JAMES L. LONG
 10272023
 NUMBER
 Exp. 204010095
 PROFESSIONAL ENGINEER

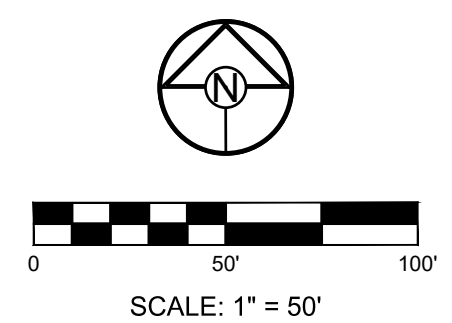
SCHLAGEL & ASSOCIATES, P.A.

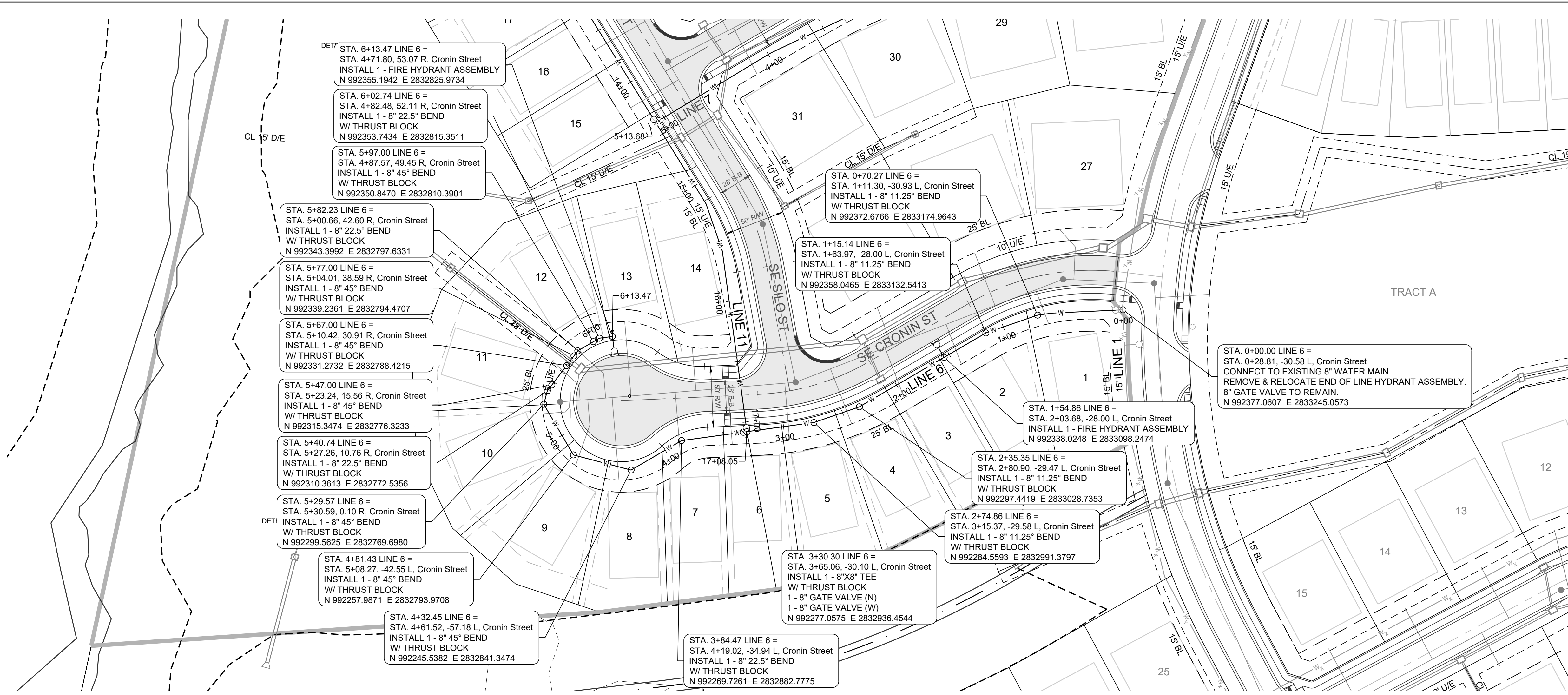
**CORNERSTONE AT BAILEY FARMS, FIRST PLAT
 WATER LINE PLANS
 SE BAILEY ROAD AND SE RANSON ROAD
 LEE'S SUMMIT, MISSOURI**

| REVISION DATE | DESCRIPTION |
|---------------|--------------------------------------|
| 01/27/2022 | City comments dated 01/10/2022 |
| 04/20/2022 | City comments dated 02/28/2022 |
| 05/19/2022 | City comments dated 5/15/22 |
| 05/31/2022 | City comments dated 5/24/2022 |
| 10/27/2023 | Updated City Details to 2023 Details |

SITE LAYOUT

SHEET
3





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:**
- 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.

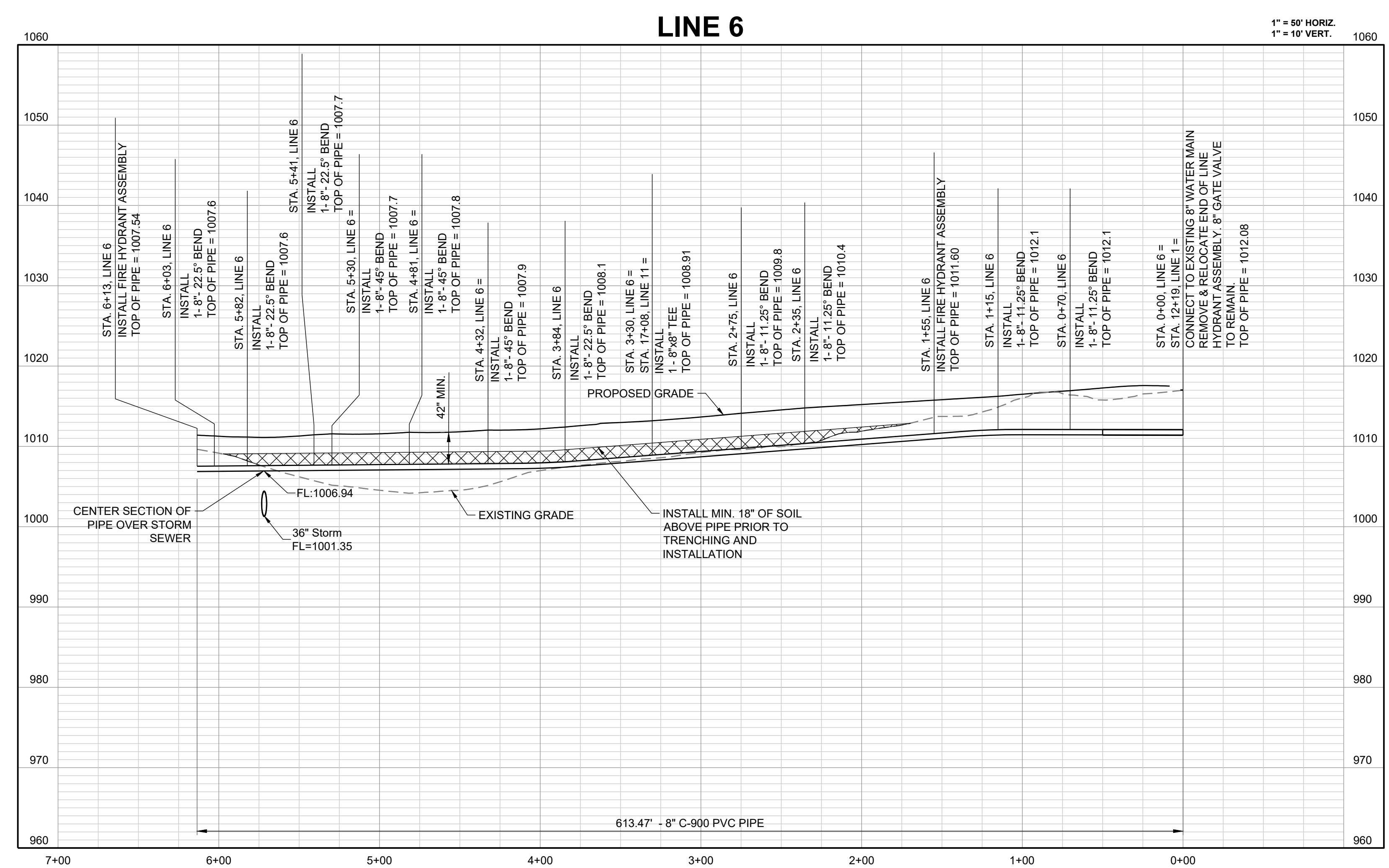
SCHLAGEL
 ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
 14920 West 107th Street • Lenexa, Kansas 66215
 (913) 492-5158 • Fax: (913) 492-8400
 WWW.SCHLAGELASSOCIATES.COM
 Missouri State Certificates of Authority
 #E200200360P #LAC2001005237 #LS200200859F

PREPARED BY:

 JAMES L. LONG
 10272023
 NUMBER
 PE-2014010095
 PROFESSIONAL ENGINEER

SCHLAGEL & ASSOCIATES, P.A.

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

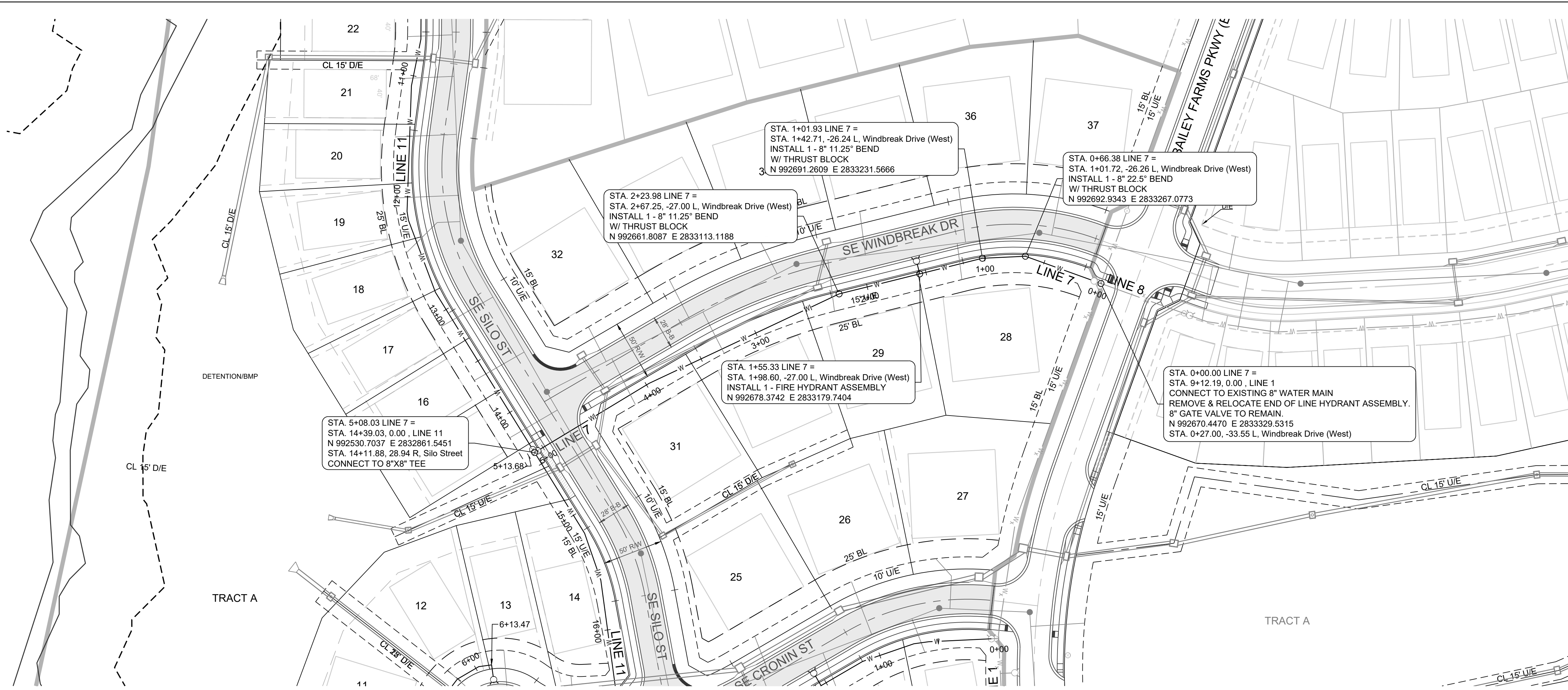


| REVISION DATE | DESCRIPTION |
|---------------|--------------------------------------|
| 01/27/2022 | City comments dated 01/10/2022 |
| 04/20/2022 | City comments dated 02/28/2022 |
| 05/19/2022 | City comments dated 5/15/22 |
| 05/31/2022 | City comments dated 5/24/2022 |
| 10/27/2023 | Updated City details to 2023 Details |

| | |
|----------------|------------|
| DRAWN BY: | JRJ |
| CHECKED BY: | JLL |
| DATE PREPARED: | 12/20/2021 |
| PROJ. NUMBER: | 21-136 |

WATER LINE 6
 PLAN AND
 PROFILE

SHEET
4



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:

- 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.

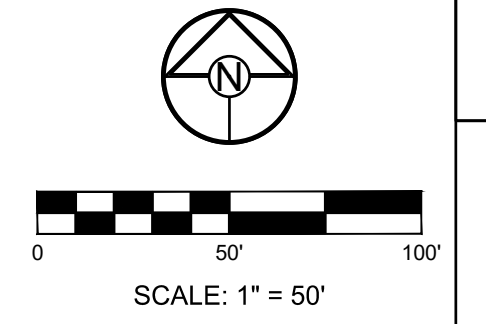
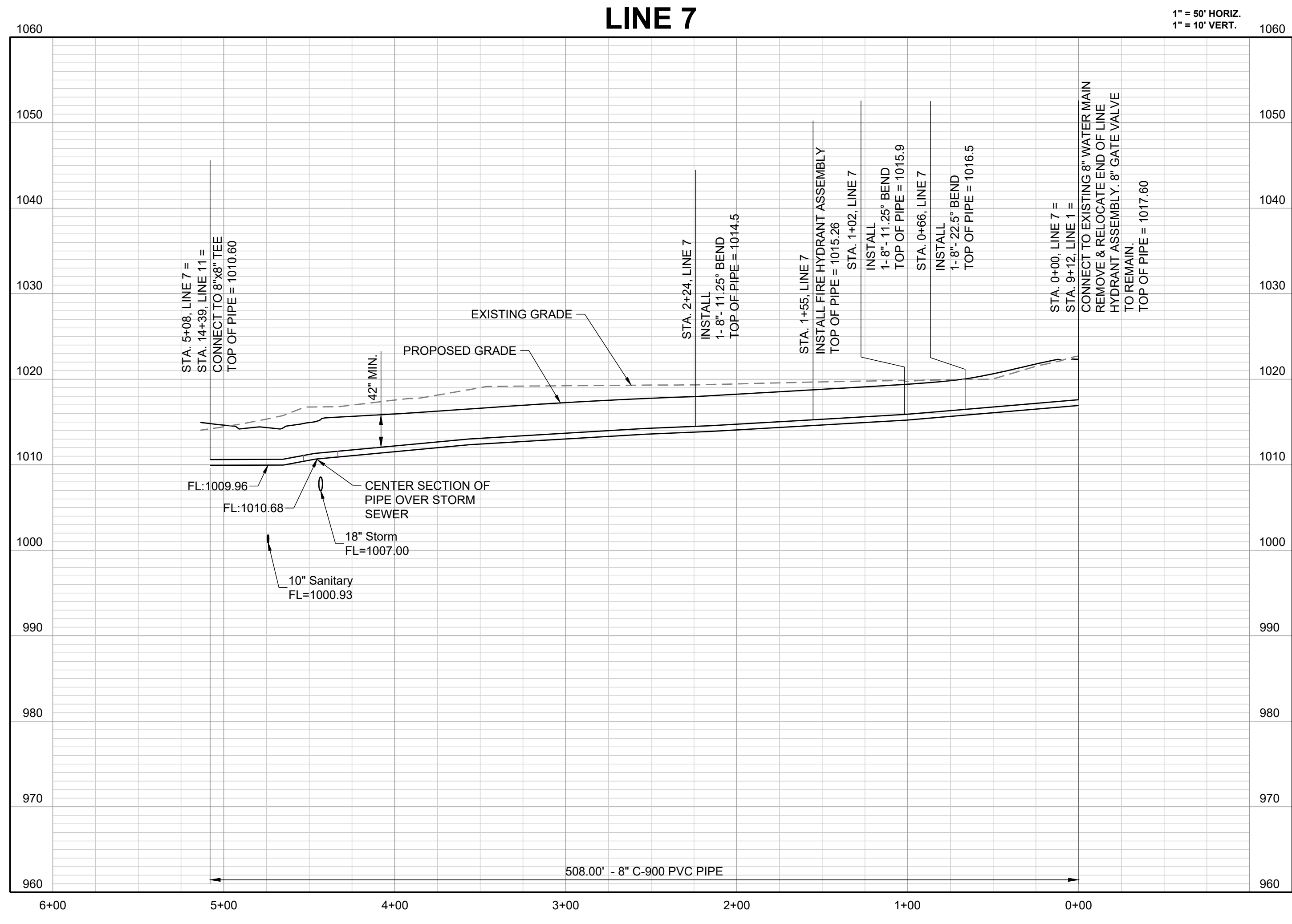
SCHLAGEL
 ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
 14920 West 107th Street • Lenexa, Kansas 66215
 (913) 492-5158 • Fax: (913) 492-8400
 WWW.SCHLAGELASSOCIATES.COM
 Missouri State Certificate of Authority
 #E200203690F #LAC201005237 #LS200200869F

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

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

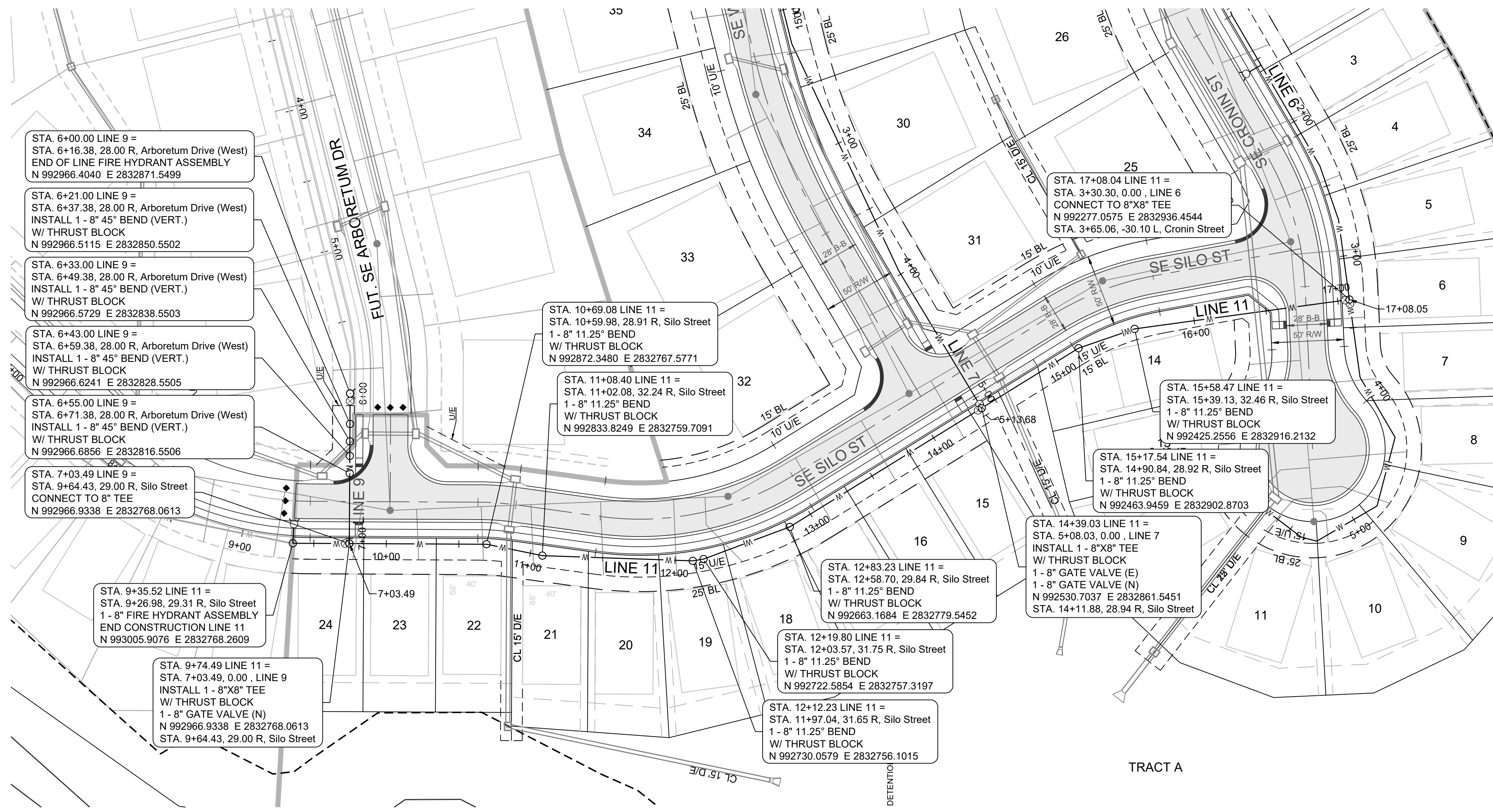


| REVISION DATE | DESCRIPTION |
|---------------|--------------------------------------|
| 01/27/2022 | City comments dated 01/10/2022 |
| 04/20/2022 | City comments dated 02/28/2022 |
| 05/19/2022 | City comments dated 5/15/22 |
| 05/31/2022 | City comments dated 5/24/2022 |
| 10/27/2023 | Updated City Details to 2023 Details |

| | |
|----------------|------------|
| DRAWN BY: | JRJ |
| CHECKED BY: | JLL |
| DATE PREPARED: | 12/20/2021 |
| PROJ. NUMBER: | 21-136 |

**WATER LINE 7
 PLAN AND
 PROFILE**

SHEET
5



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:**
- 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.

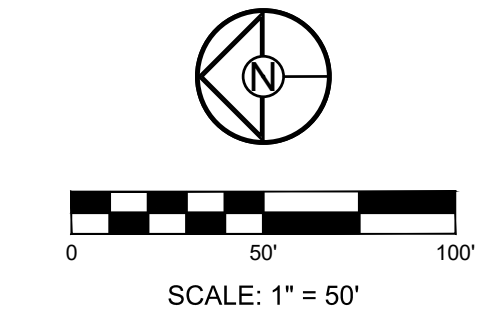
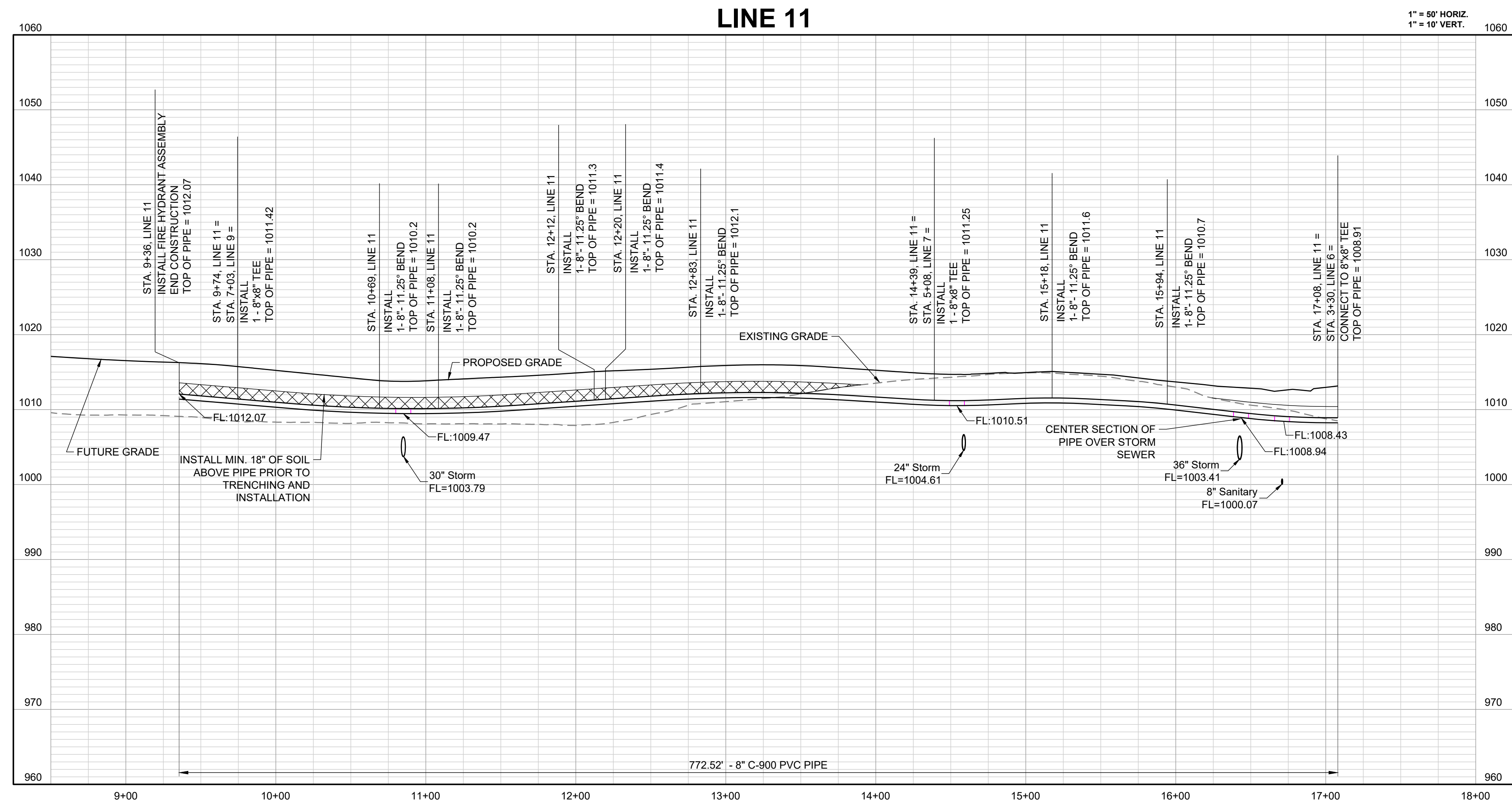
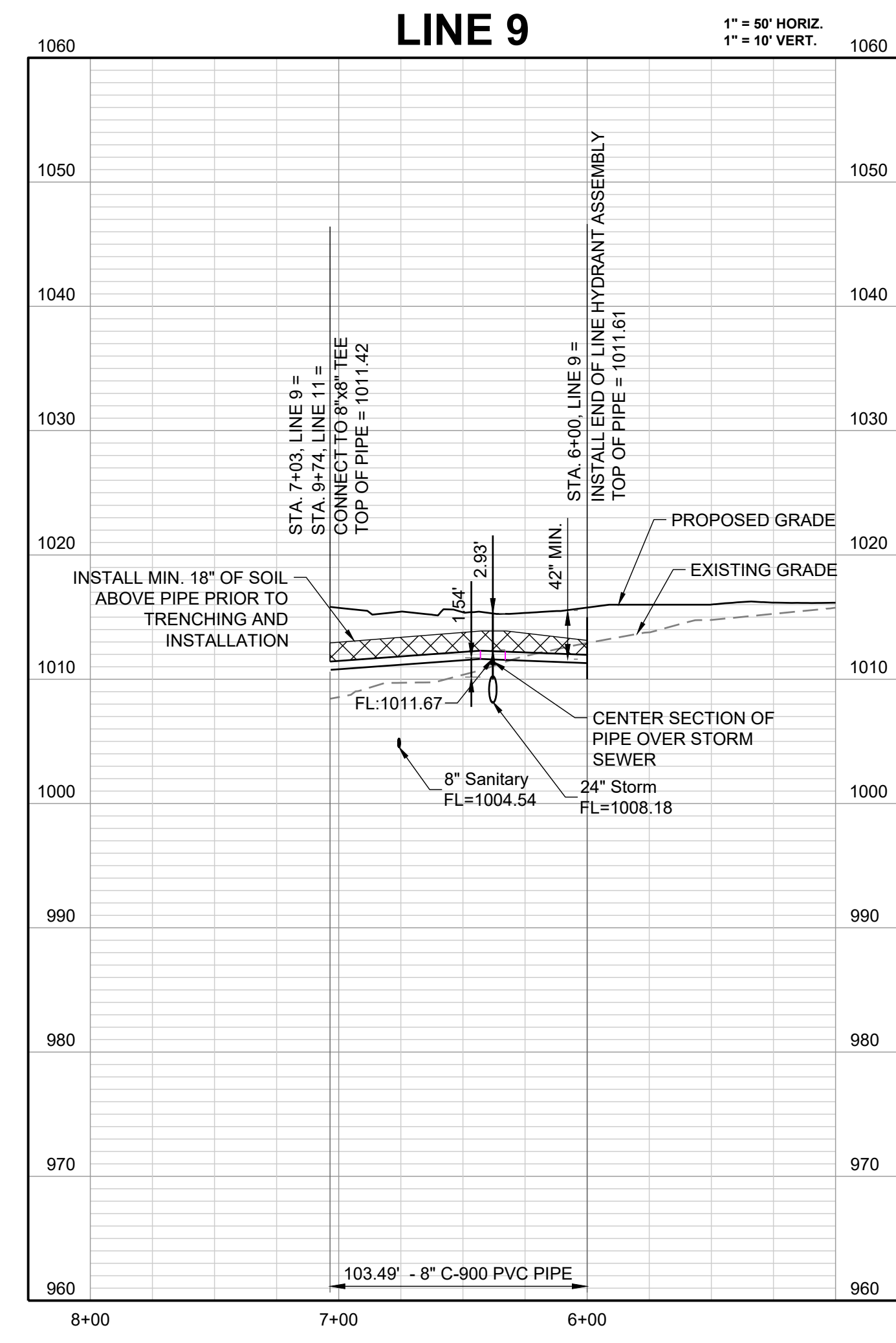
SCHLAGEL
 ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
 14920 West 107th Street • Lenexa, Kansas 66215
 (913) 492-5158 • Fax: (913) 492-8400
 WWW.SCHLAGELASSOCIATES.COM
 Missouri State Certificate of Authority
 #E200203690F #LAC200100237 #S200200869F

PREPARED BY:

 JAMES L. LONG
 10277023
 NUMBER
 PE-2014010095

SCHLAGEL & ASSOCIATES, P.A.

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

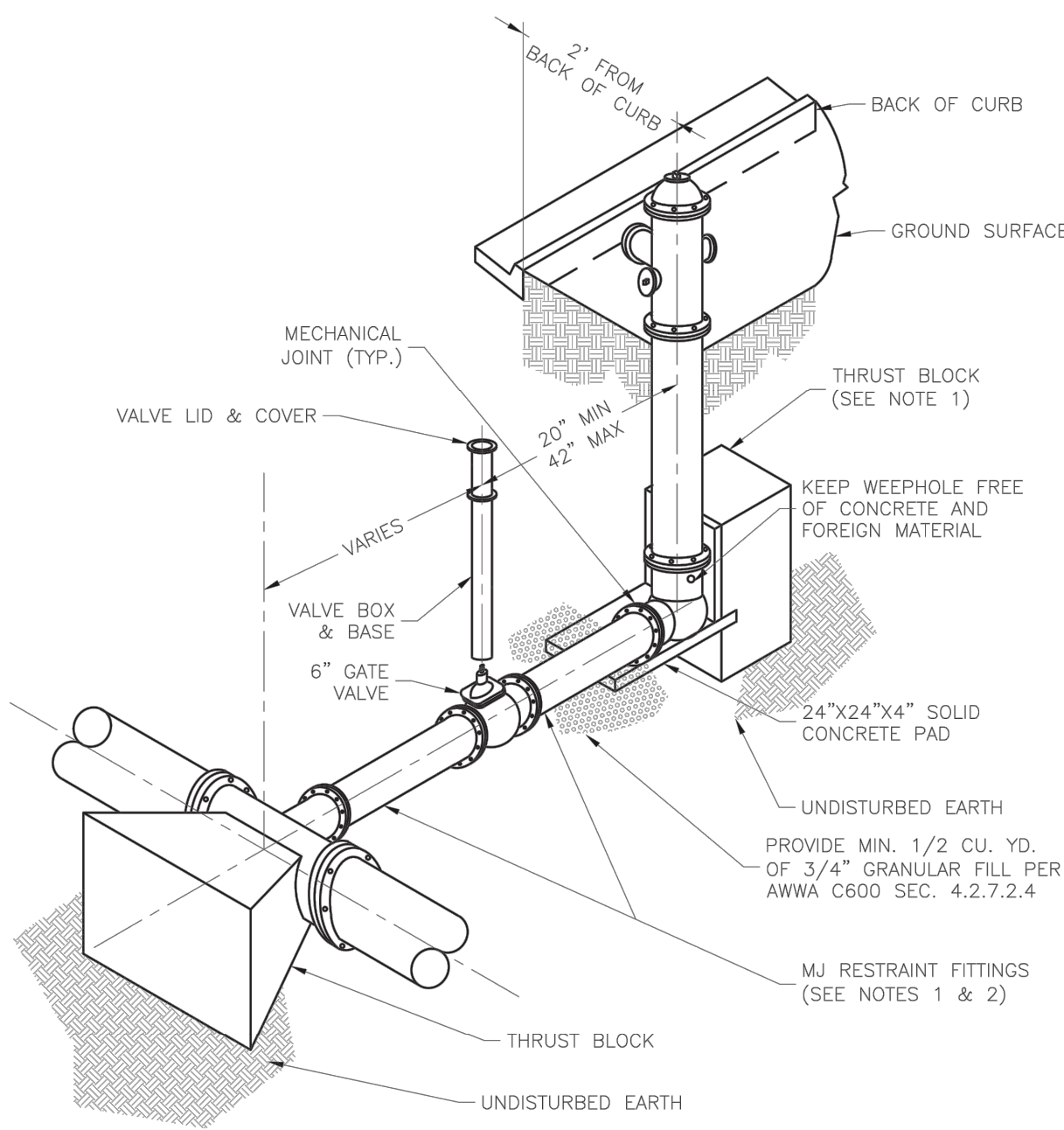


| REVISION DATE | DESCRIPTION |
|---------------|--------------------------------------|
| 01/27/2022 | City comments dated 01/10/2022 |
| 04/20/2022 | City comments dated 02/28/2022 |
| 05/19/2022 | City comments dated 5/15/22 |
| 05/31/2022 | City comments dated 5/24/2022 |
| 10/27/2023 | Updated City details to 2023 Details |

| | |
|----------------|------------|
| DRAWN BY: | JRJ |
| CHECKED BY: | JLL |
| DATE PREPARED: | 12/20/2021 |
| PROJ. NUMBER: | 21-136 |

WATER LINE 9
 AND 11 PLAN
 AND PROFILE

I:\PROJECTS\2021\21-136\3.0 Design\3.0 DWG Plans\8.0 Water\21-136-WATER PP.dwg, WATER LINE 9 AND 11 PLAN AND PROFILE, 10/27/2023 2:40:25 PM, 1-1



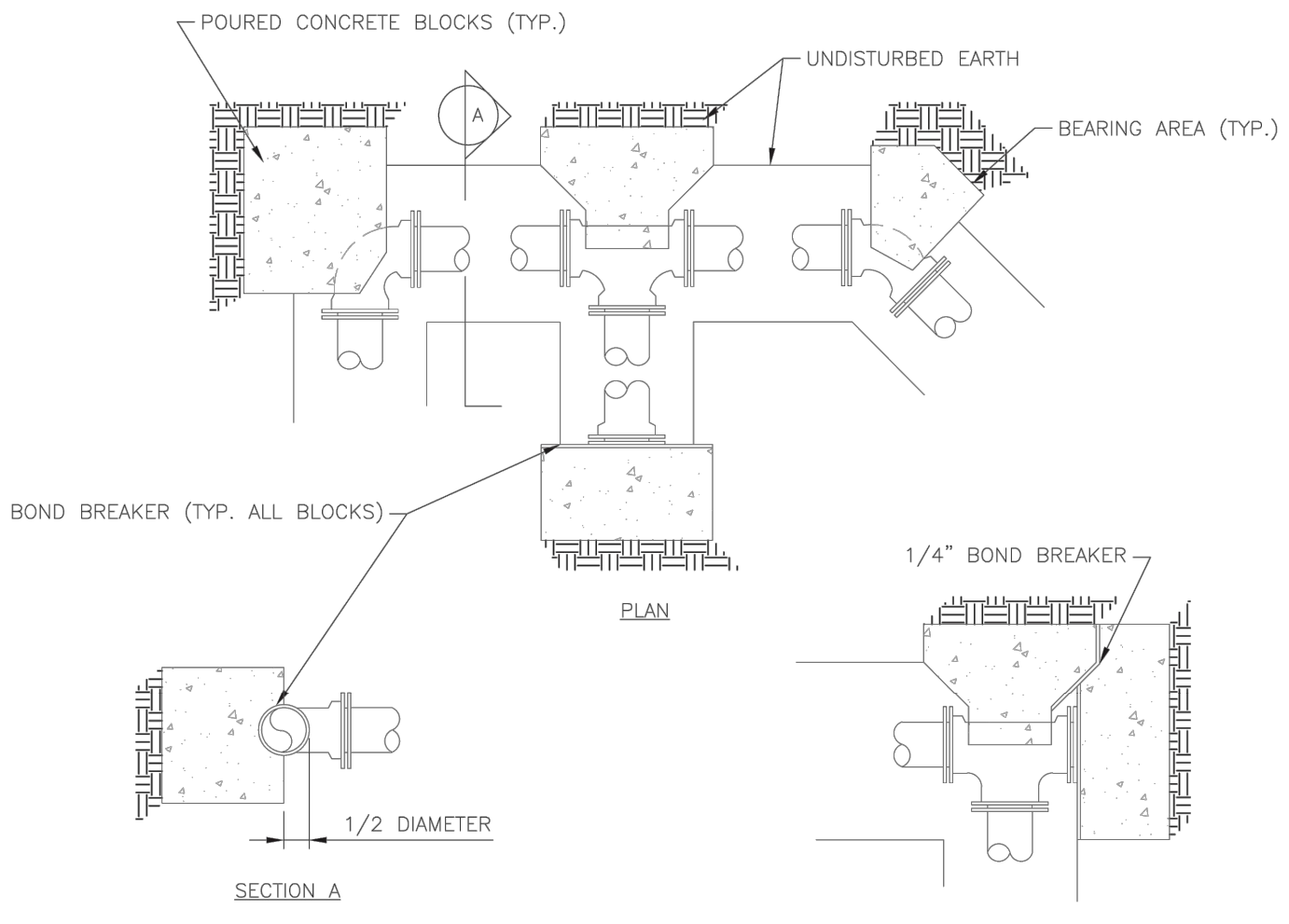
- NOTES:**
- WHEN RETAINER GLANDS ARE USED IN LIEU OF MECHANICAL JOINT (MJ) RESTRAINT FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.
 - GATE VALVE MAY BE BOLTED DIRECTLY TO MJ RESTRAINT TEE.
 - SEE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR FIRE HYDRANT, VALVES, VALVE BOX LID, AND COVER.
 - BOTTOM HYDRANT FLANGE SHALL BE 2" TO 6" ABOVE FINISHED GRADE.
 - 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.
 - 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 - STRAIGHT SET **WAT-7**

REQUIRED CONCRETE BEARING AREA (SQUARE FEET - SF)

| 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 |



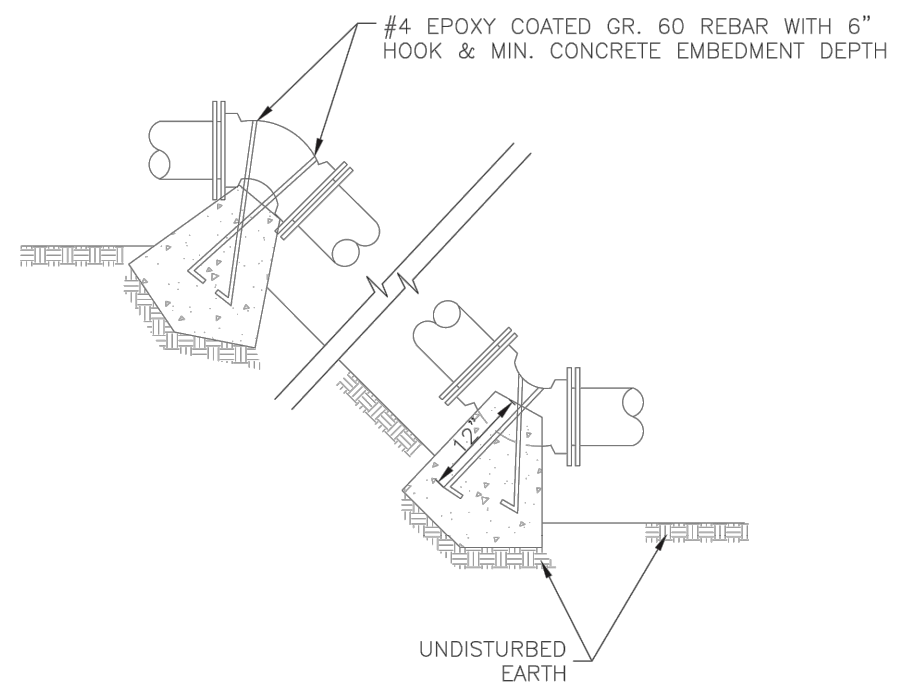
- NOTES:**
- ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
 - MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
 - BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
 - DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

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

HORIZONTAL THRUST BLOCK **WAT-1**

REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)

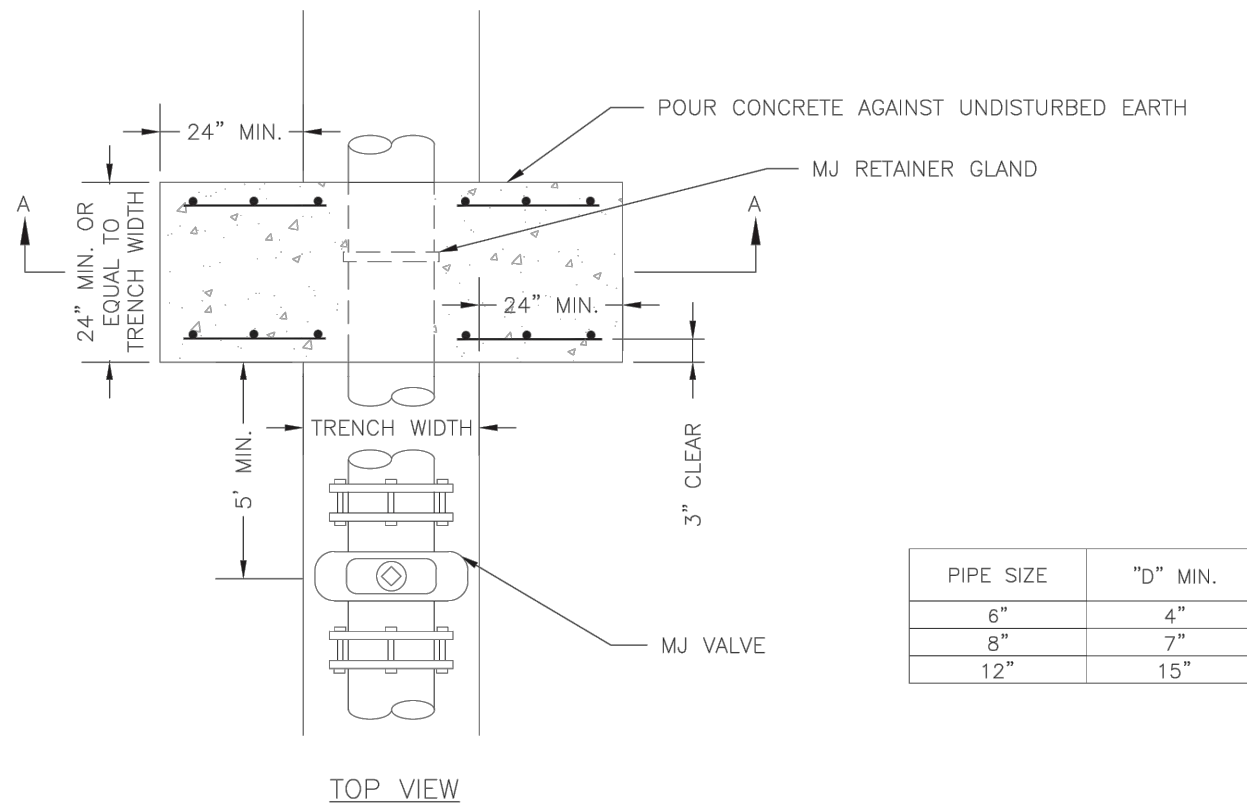
| NOM. DIA. (INCHES) | 180 TEE, PLUG | 90 BEND | 45 BEND | 22.5 BEND | 11.25 BEND |
|--------------------|---------------|-----------|-----------|-----------|------------|
| 6 | 50.5 | 71.4 | 38.6 | 19.7 | 9.9 |
| 8 | 89.8 | 126.9 | 68.7 | 35.0 | 17.6 |
| 10 | 140.2 | 198.3 | 107.3 | 54.7 | 27.5 |
| 12 | 202.0 | REST. JT. | 154.6 | 78.8 | 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:**
- ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
 - MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
 - BEARING MUST BE AGAINST UNDISTURBED SOIL.
 - DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

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

VERTICAL THRUST BLOCK **WAT-2**

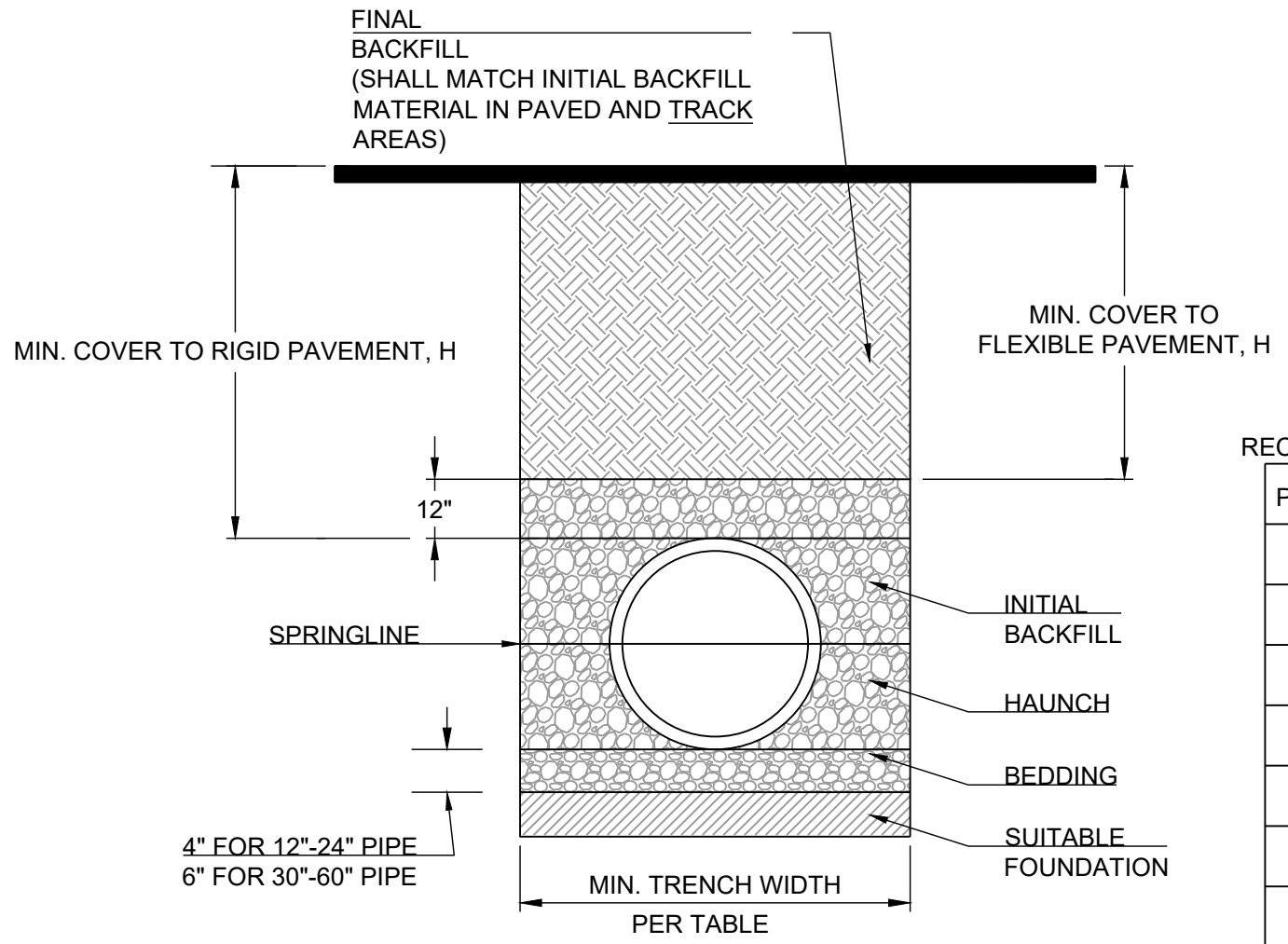


| PIPE SIZE | "D" MIN. |
|-----------|----------|
| 6" | 4" |
| 8" | 7" |
| 12" | 15" |

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

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

STRADDLE BLOCK **WAT-3**



RECOMMENDED MINIMUM TRENCH WIDTHS

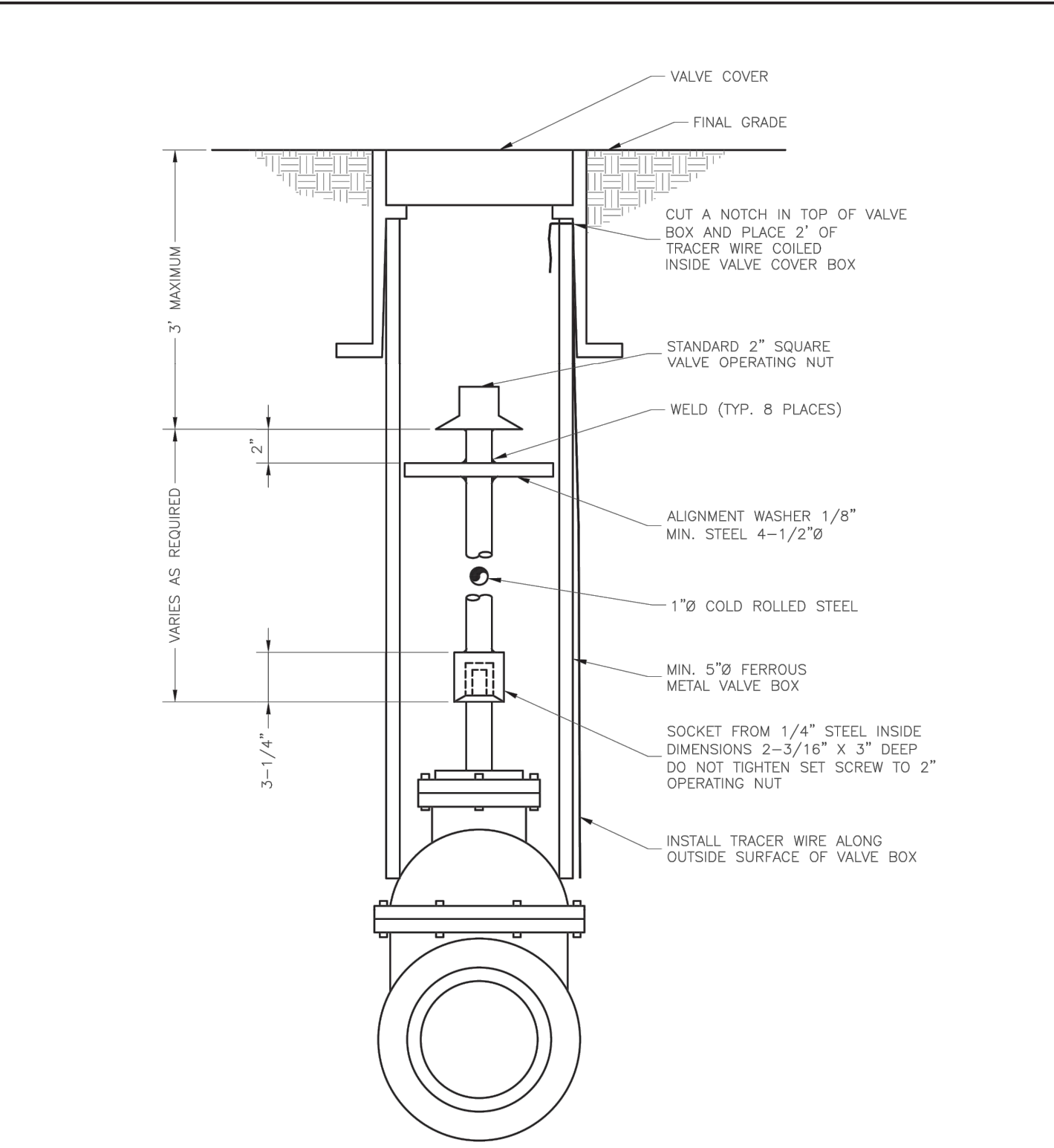
| PIPE DIAM. | MIN. TRENCH WIDTH |
|------------|-------------------|
| 4" | 21" |
| 6" | 23" |
| 8" | 26" |
| 10" | 28" |
| 12" | 30" |
| 15" | 34" |
| 18" | 39" |
| 24" | 48" |
| 30" | 56" |
| 36" | 64" |
| 42" | 72" |
| 48" | 80" |
| 54" | 88" |
| 60" | 96" |

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" |

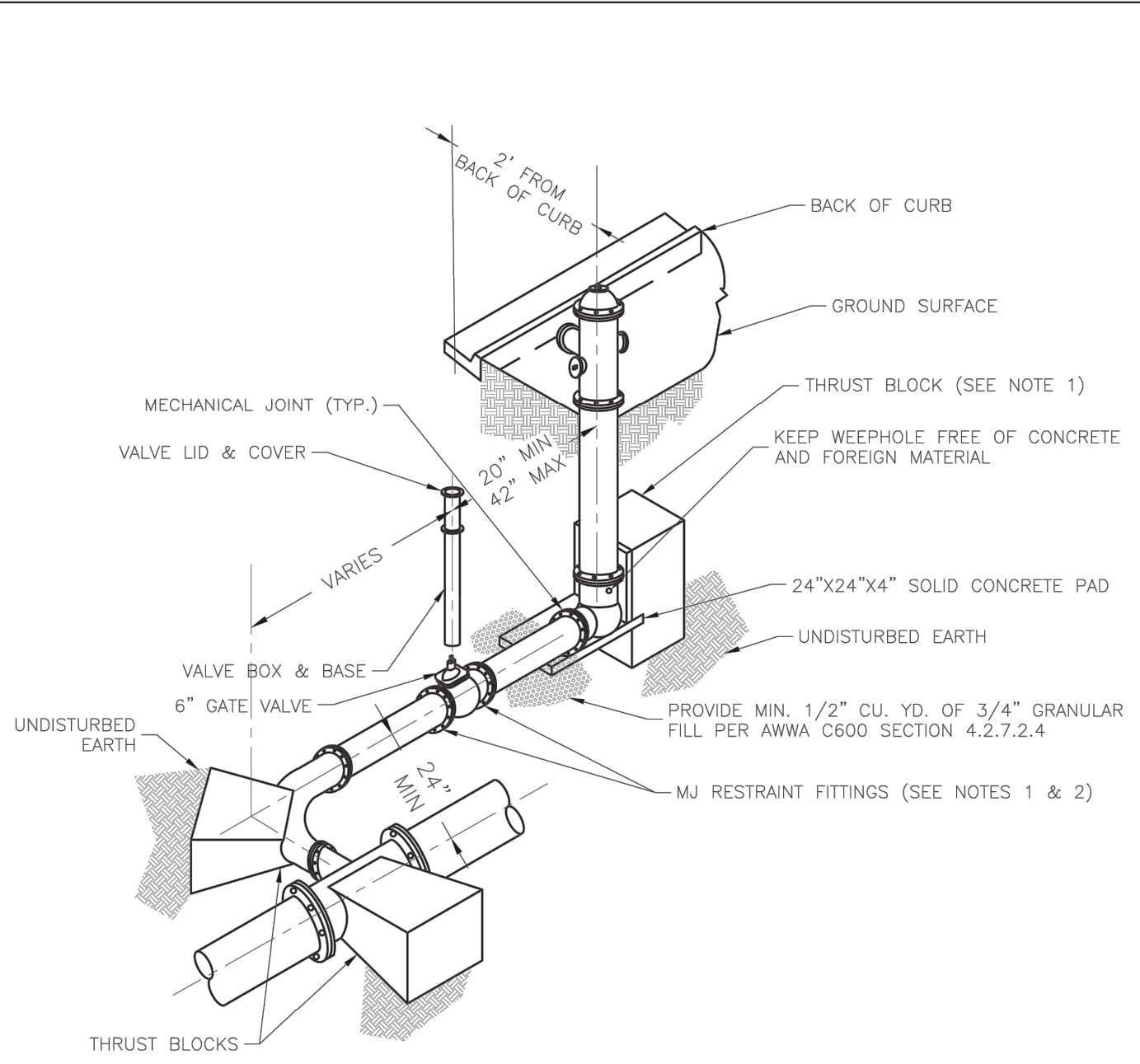
* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

- NOTES:**
- 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
 - MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
 - 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.
 - 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).
 - 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.
 - 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.



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

VALVE STEM EXTENSION AND VALVE BOX **WAT-9**



- NOTES:**
- WHEN RETAINER GLANDS ARE USED IN LIEU OF MECHANICAL JOINT (MJ) RESTRAINT FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.
 - GATE VALVE MAY BE BOLTED DIRECTLY TO MJ RESTRAINT TEE.
 - SEE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR FIRE HYDRANT, VALVES, VALVE BOX LID, AND COVER.
 - BOTTOM HYDRANT FLANGE SHALL BE 2" TO 6" ABOVE FINISHED GRADE.
 - 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.
 - 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 WITH 90 DEGREE BEND **WAT-8**

SCHLAGEL ENGINEERS
PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
14920 West 107th Street • Lenexa, Kansas 66215
(913) 492-5158 • Fax: (913) 492-8400
WWW.SCHLAGELASSOCIATES.COM
Missouri State Certificates of Authority
#E200200360P #LAC201005237 #LS200200859F

PREPARED BY:

JAMES L. LONG
10/27/2023
NUMBER BE-2014010495
PROFESSIONAL ENGINEER

SCHLAGEL & ASSOCIATES, P.A.

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

| REVISION DATE | DESCRIPTION |
|---------------|--------------------------------------|
| 01/27/2022 | City comments dated 01/10/2022 |
| 04/20/2022 | City comments dated 02/28/2022 |
| 05/19/2022 | City comments dated 5/15/22 |
| 05/31/2022 | City comments dated 5/24/2022 |
| 10/27/2023 | Updated City details to 2023 details |

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

WATER LINE DETAILS **WAT-8**