

**MO GRS BENCHMARK:**

STATION NAME - JA-90  
KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988"  
LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.  
N:1001052.8503, E:2845604.8272

ELEV. 997.045

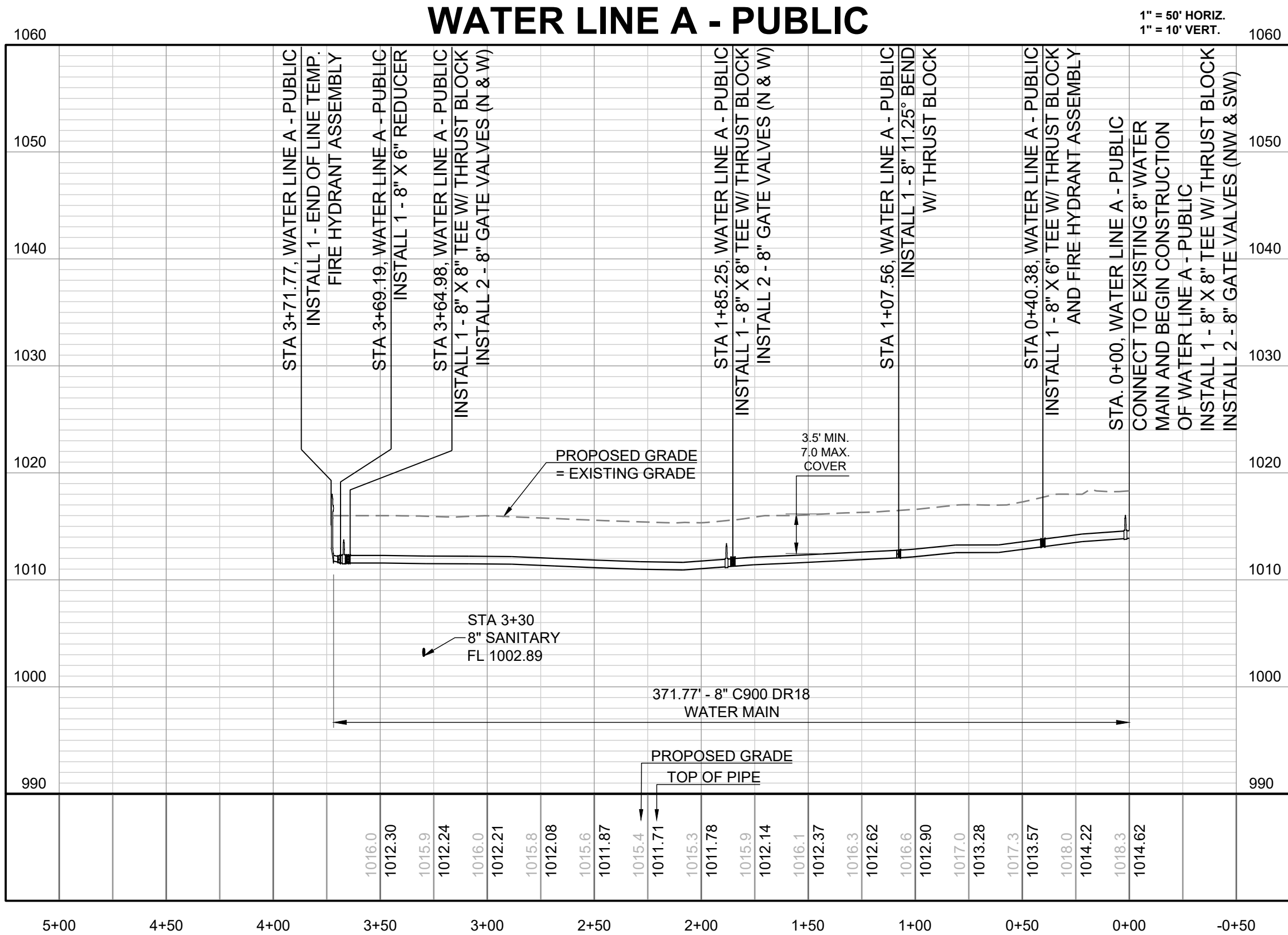
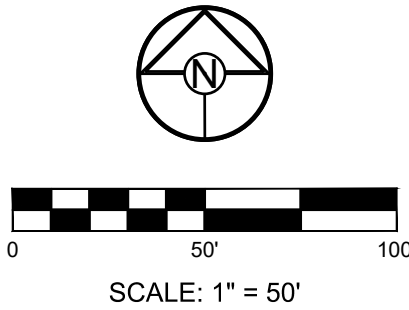
**PROJECT BENCHMARK:**

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE  
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.  
N:996874.9690, E:2840937.1365

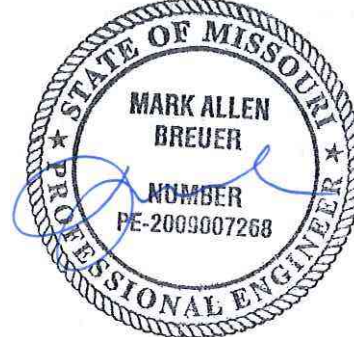
ELEV. 1005.719

**NOTES:**

- ALL CONSTRUCTION ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEE'S SUMMIT TECHNICAL SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.



PREPARED BY:



06.27.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL  
PUBLIC WATER MAIN PLANS

HERITAGE STREET LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
03/28/2023	REVISE PER CITY COMMENTS
06/23/2023	REVISE PER CITY COMMENTS
06/23/2023	REVISE PER CITY COMMENTS
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06/23/2023	REVISE PER CITY COMMENTS
06/23/2023	REVISE PER CITY COMMENTS

DRAWN BY:	DESCRIPTION
JRL	REVISE PER CITY COMMENTS
CHECKED BY:	REVISE PER CITY COMMENTS
MAB	REVISE PER CITY COMMENTS
DATE PREPARED:	REVISE PER CITY COMMENTS
03/28/2023	REVISE PER CITY COMMENTS
PROJ. NUMBER:	REVISE PER CITY COMMENTS
22-597	REVISE PER CITY COMMENTS

WATER LINE A -  
PUBLIC

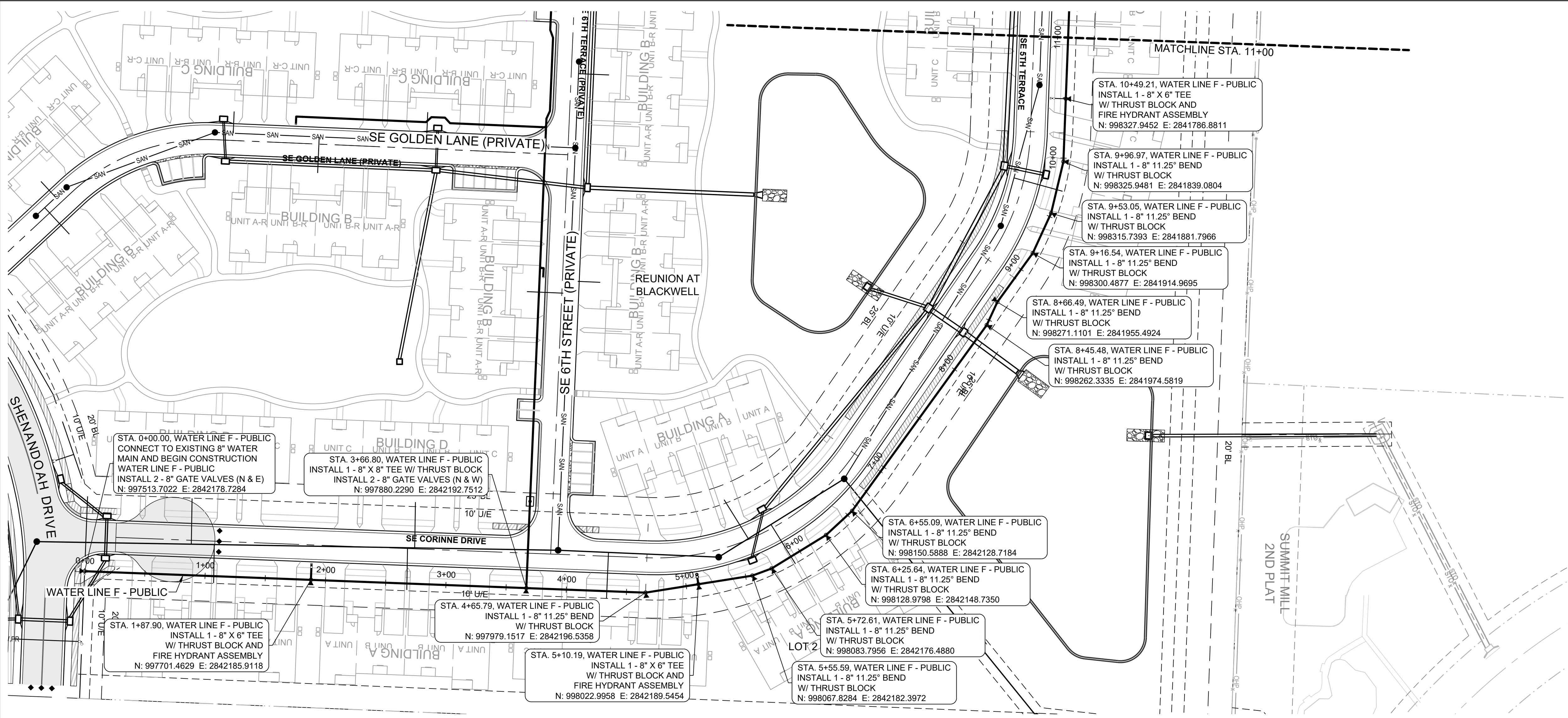
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**MO GRS BENCHMARK:**

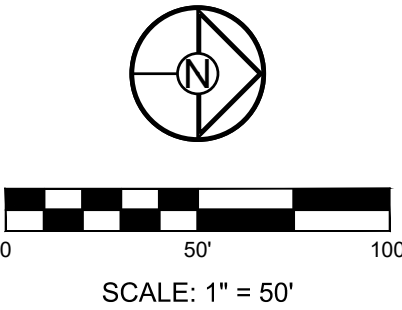
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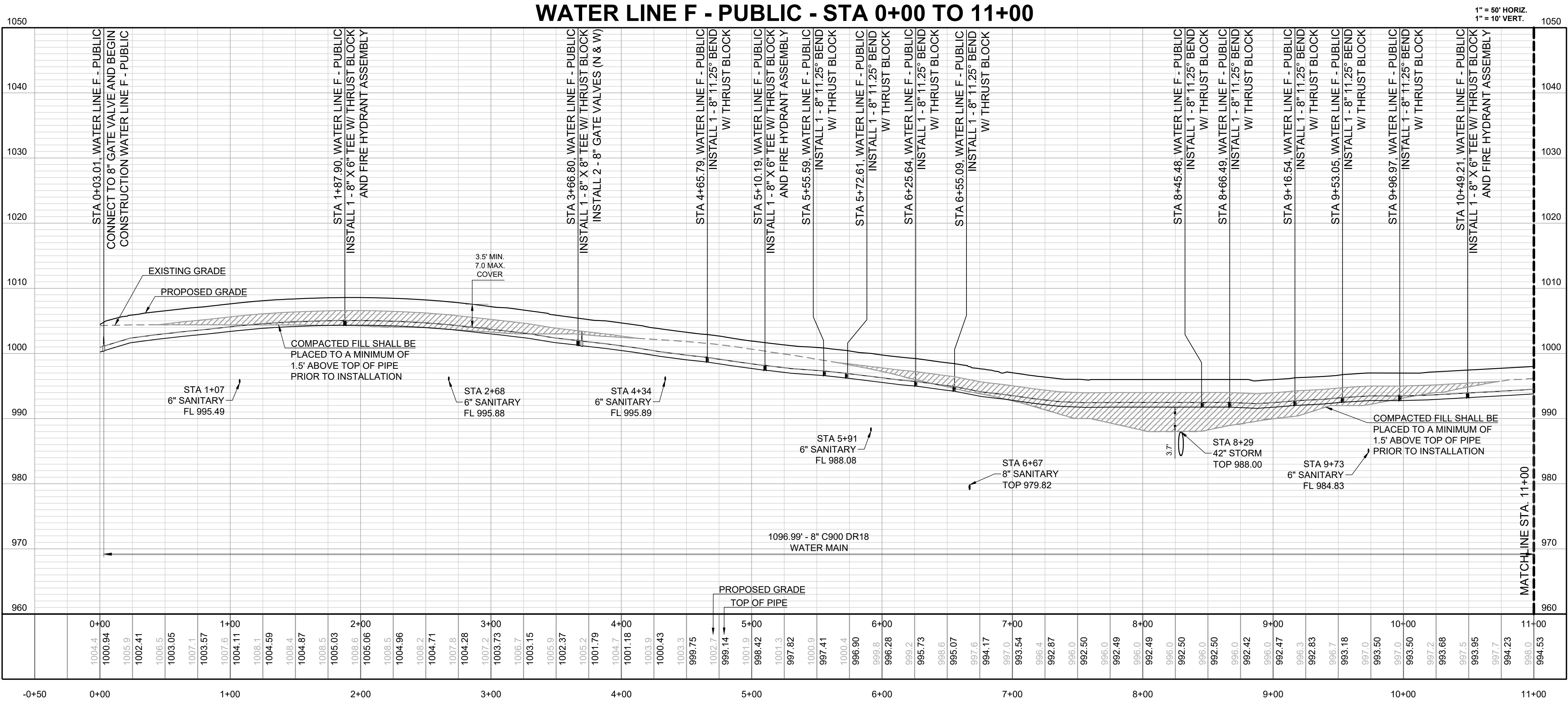
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**WATER LINE F - PUBLIC - STA 0+00 TO 11+00**



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REUNION AT BLACKWELL  
PUBLIC WATER MAIN PLANS

HERITAGE STREET LEE'S SUMMIT, MO

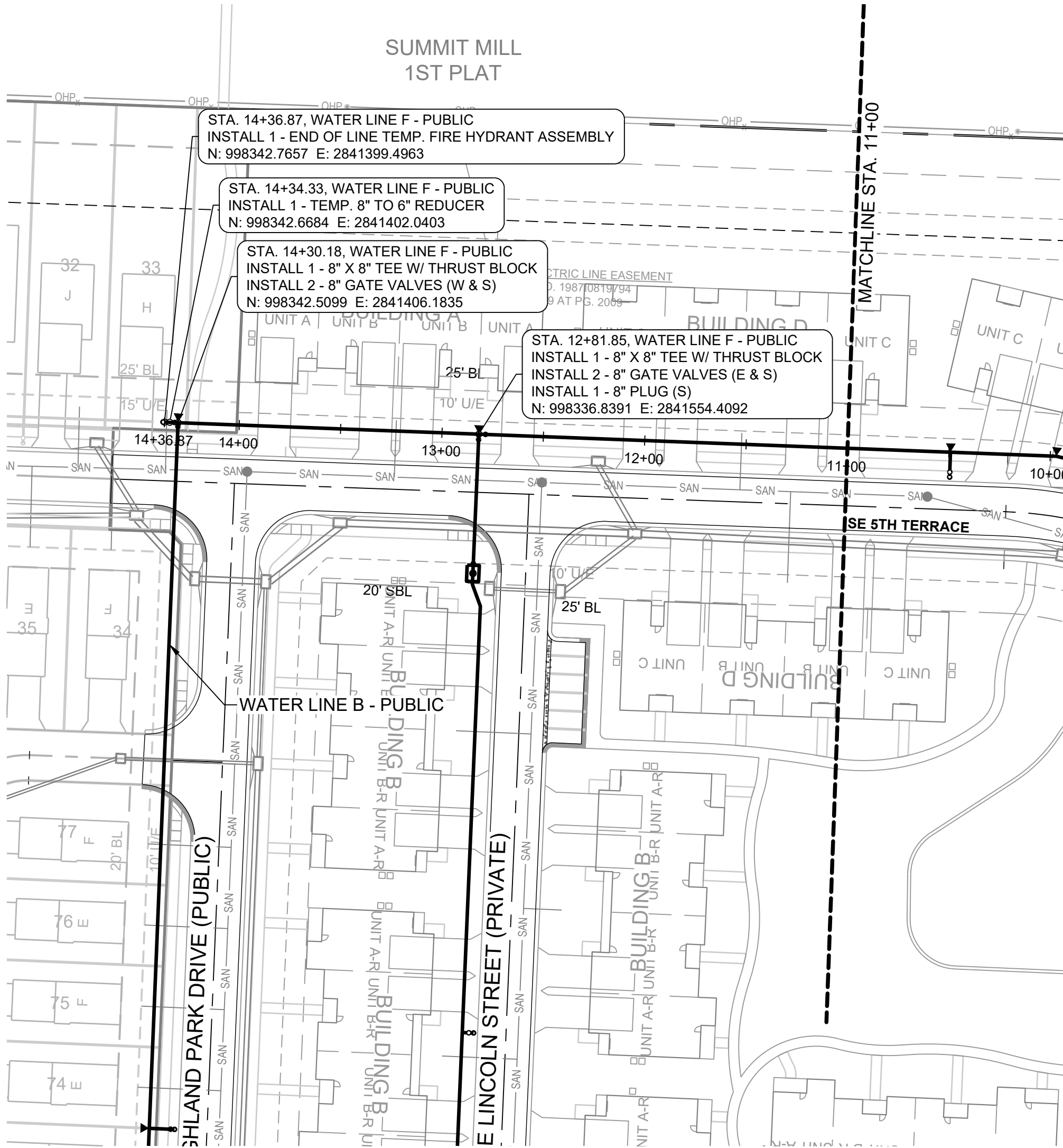
REVISION DATE	DESCRIPTION
03/28/2023	REVISE PER CITY COMMENTS
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06/23/2023	REVISE PER CITY COMMENTS
06/23/2023	REVISE PER CITY COMMENTS
06/23/2023	REVISE PER CITY COMMENTS

WATER LINE F -  
PUBLIC (STA  
0+00 TO 11+00)

SHEET

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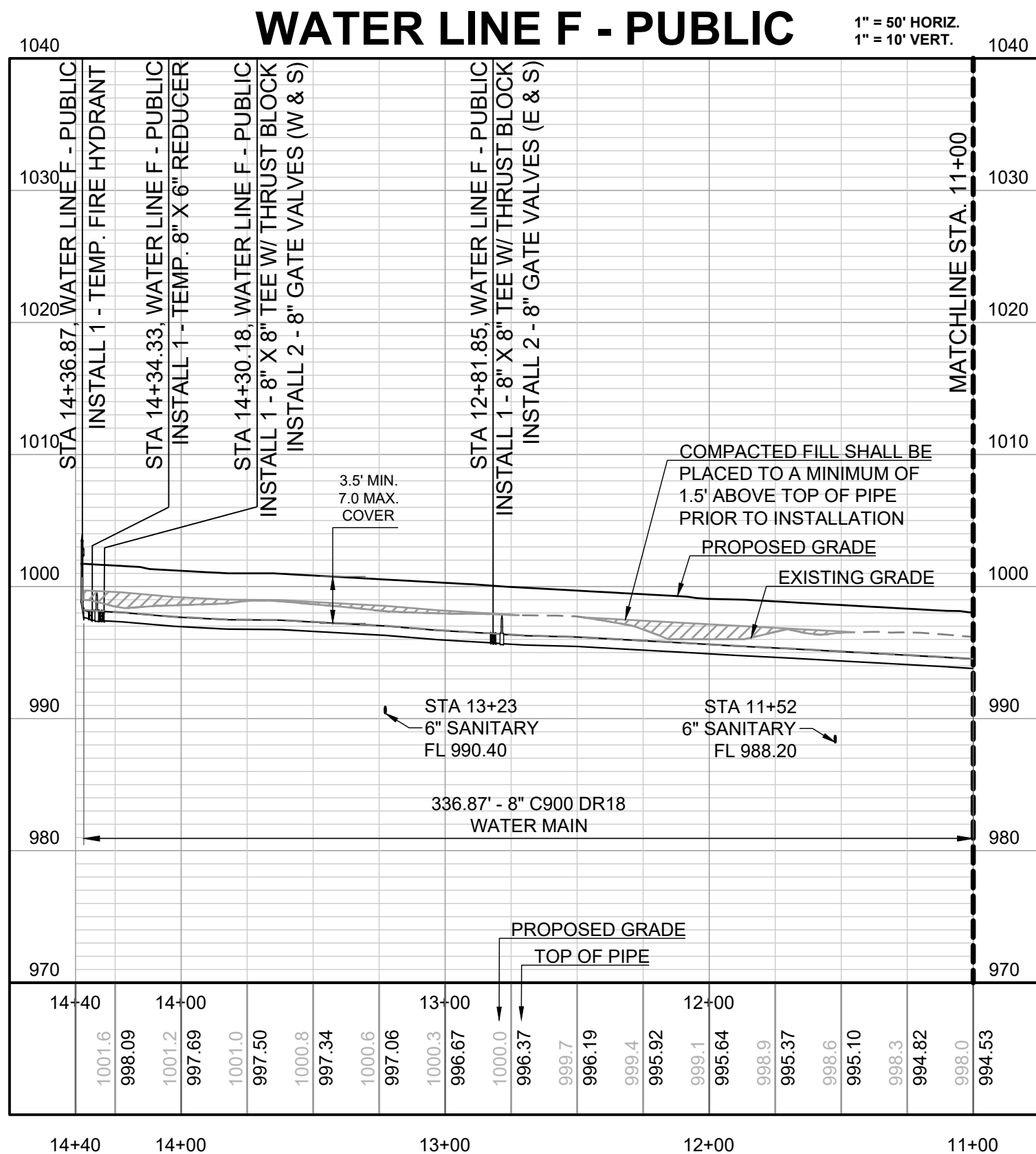
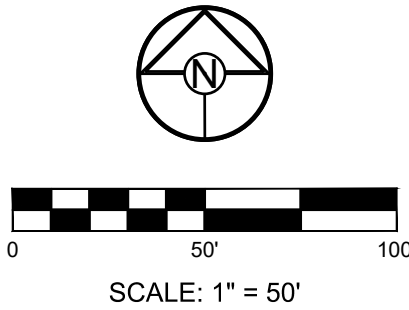
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SCHLAGEL

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

#E2002003600-F #LAC2001005237 #LS2002008659-F

PREPARED BY:

06.27.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL

PUBLIC WATER MAIN PLANS

HERITAGE STREET LEE'S SUMMIT, MO

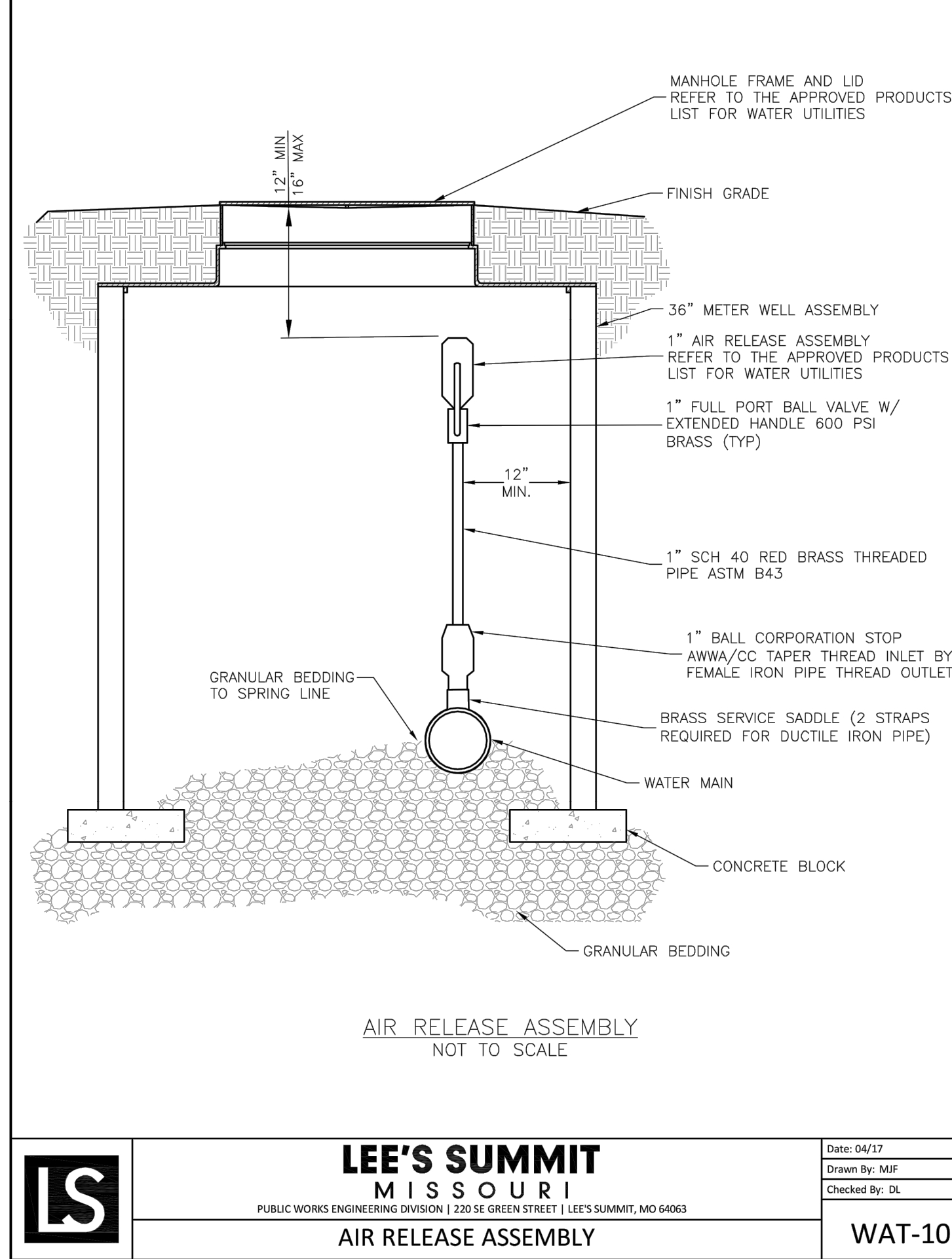
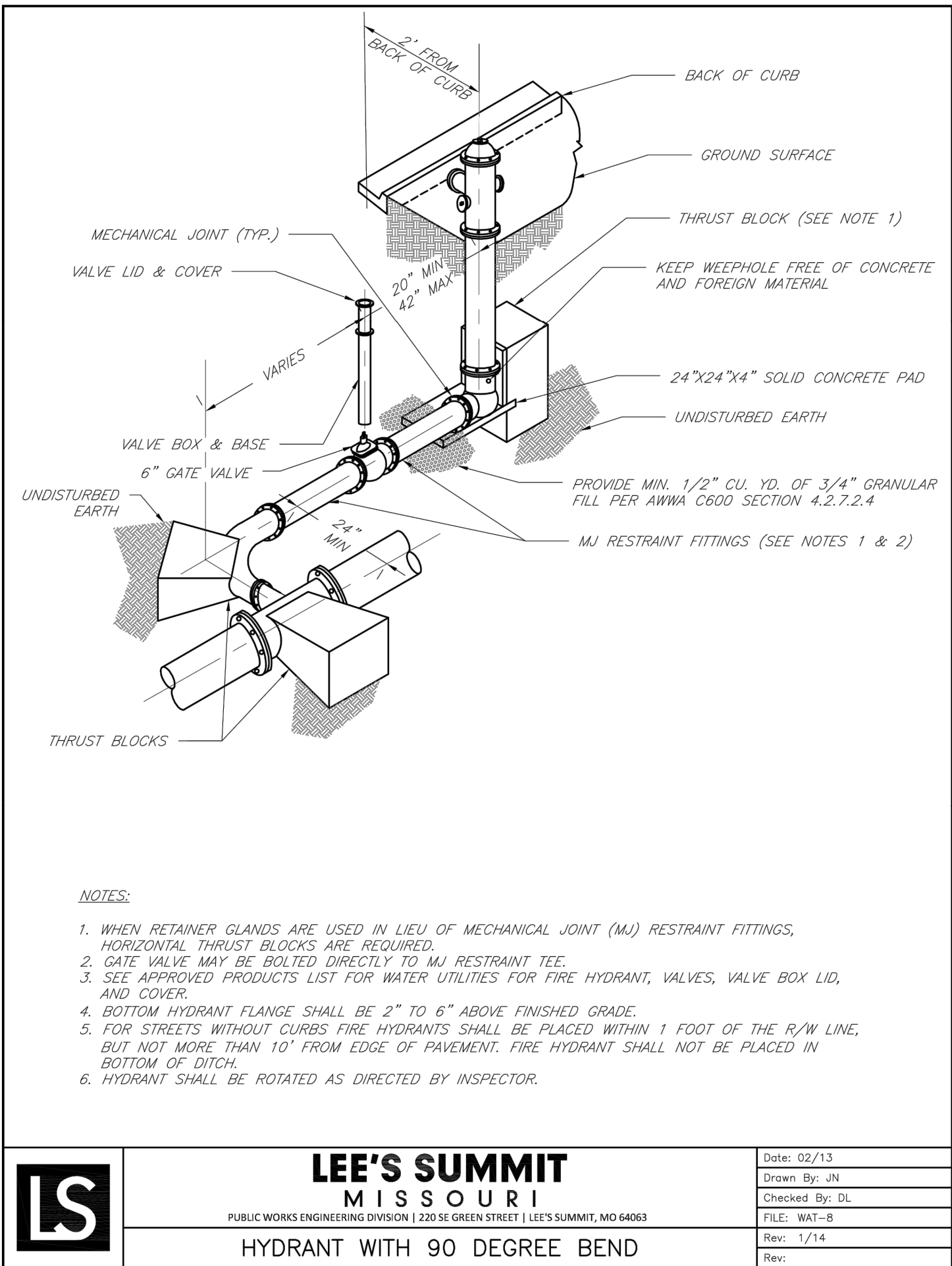
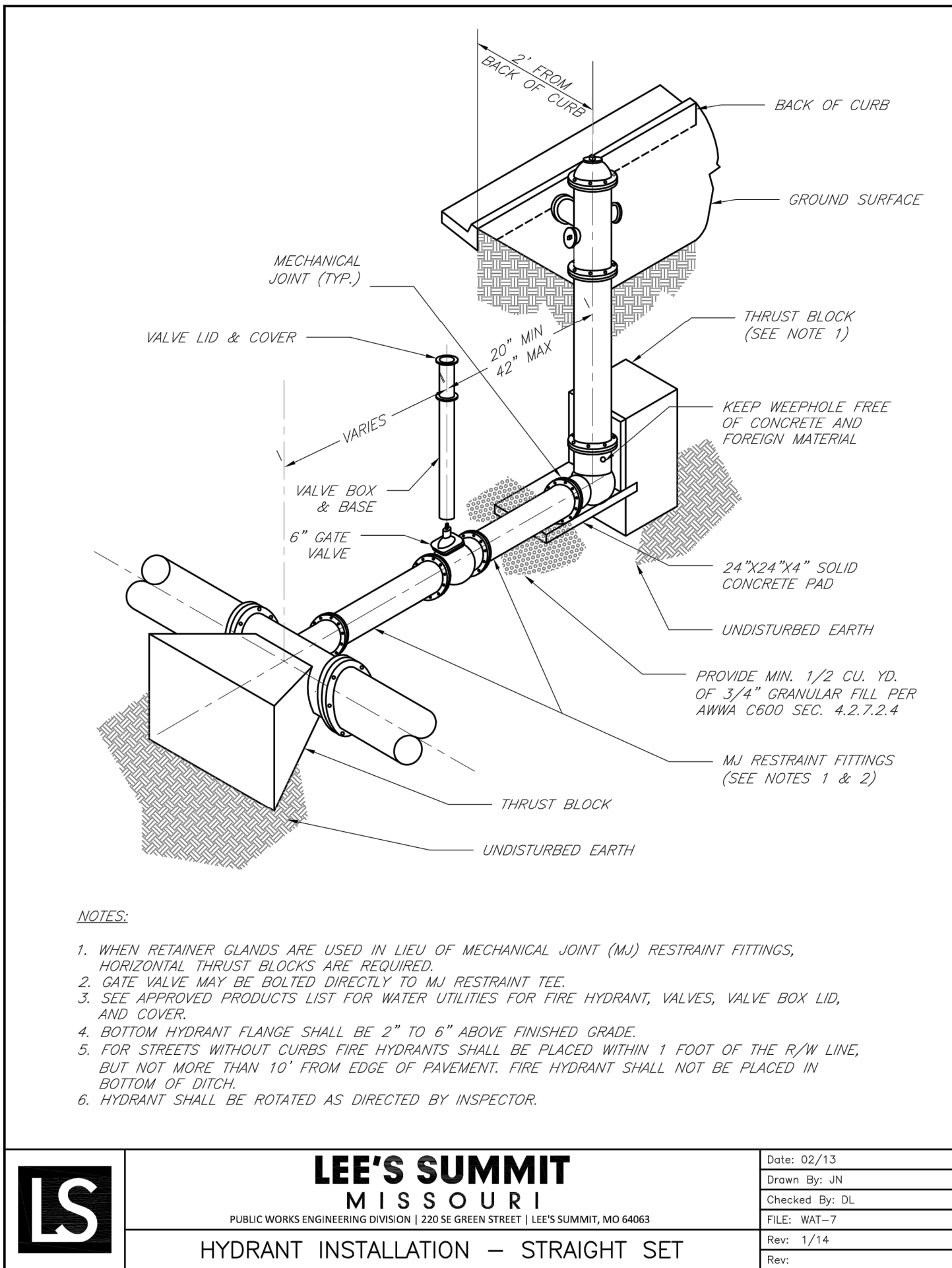
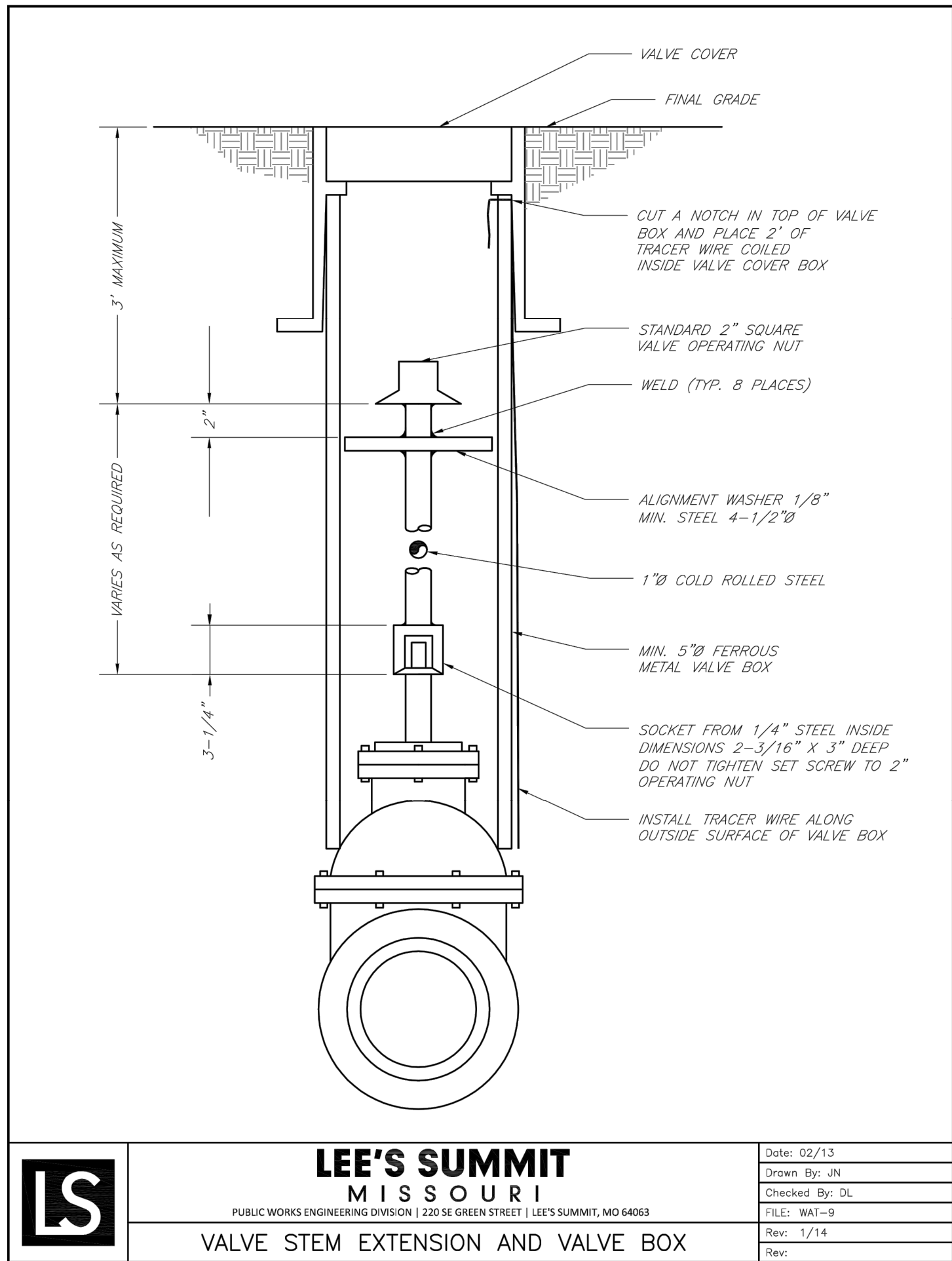
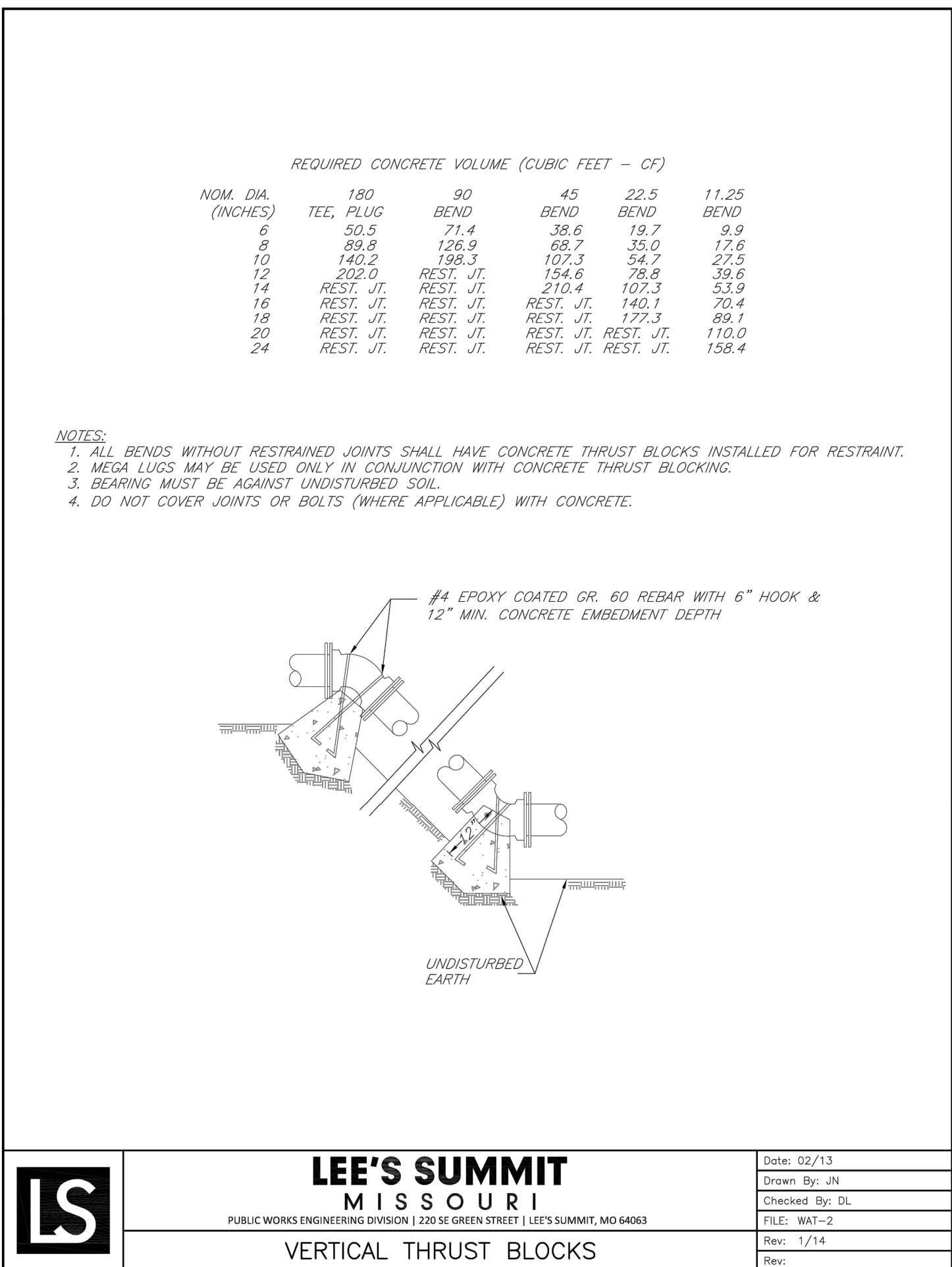
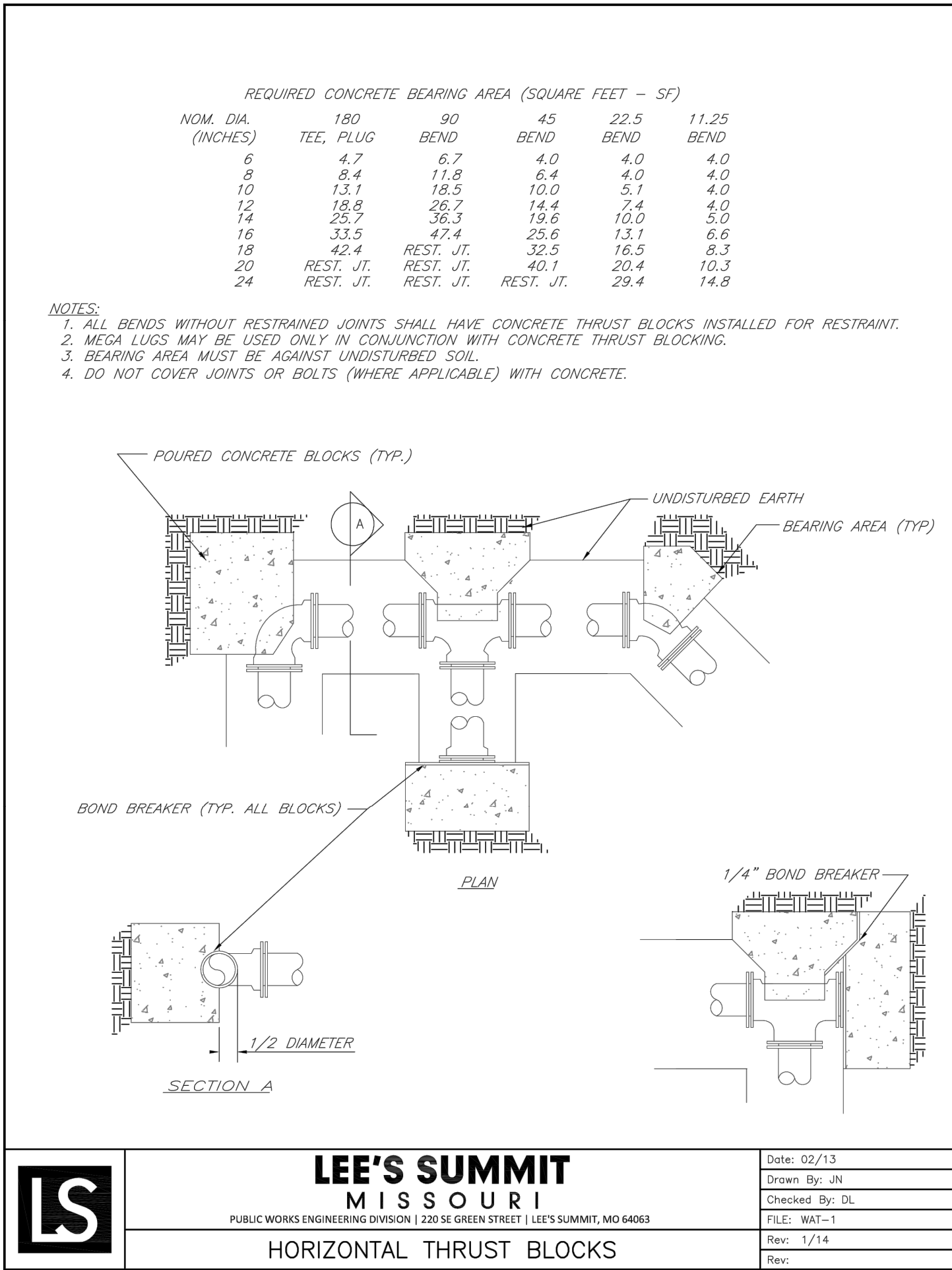
REVISION DATE	DESCRIPTION
03/26/2023	REVISE PER CITY COMMENTS
06/23/2023	REVISE PER CITY COMMENTS
08/03/2023	DATE PREPARED
22-597	PROJ. NUMBER

WATER LINE F - PUBLIC (STA 11+00 TO 14+36.87)

SHEET

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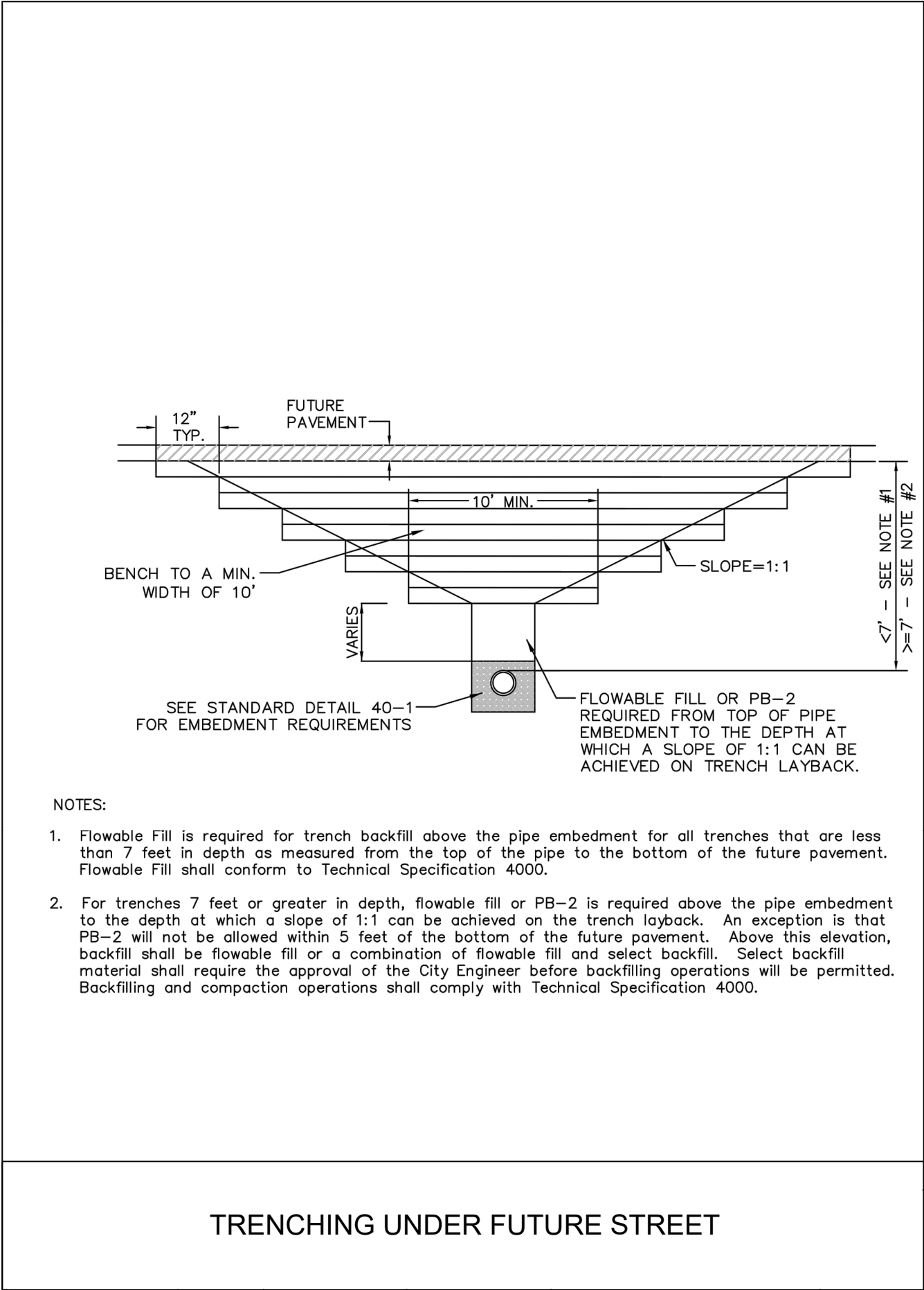




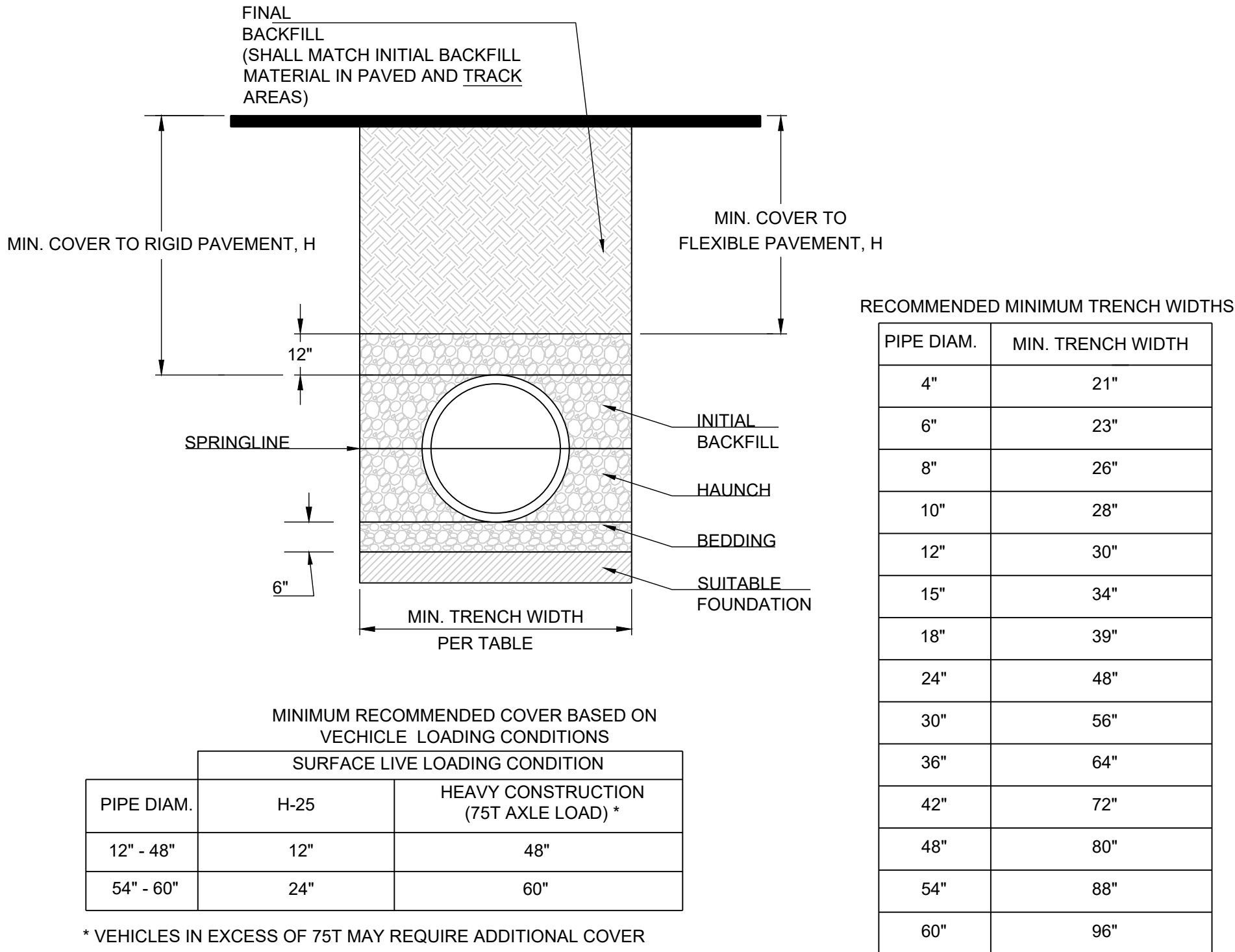
REVISION DATE	DESCRIPTION	REVISED PER CITY COMMENTS
03/28/2023	1	REVISED PER CITY COMMENTS
06/23/2023	2	REVISED PER CITY COMMENTS
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DRAWN BY: JRL  
CHECKED BY: MAB  
DATE PREPARED: 03/23/2023  
PROJ. NUMBER: 22-597





- NOTES:
- Flowable Fill is required for trench backfill above the pipe embedment for all trenches that are less than 7 feet in depth as measured from the top of the pipe to the bottom of the future pavement. Flowable Fill shall conform to Technical Specification 4000.
  - For trenches 7 feet or greater in depth, flowable fill or PB-2 is required above the pipe embedment to the depth at which a slope of 1:1 can be achieved on the trench layback. An exception is that PB-2 will not be allowed within 5 feet of the bottom of the future pavement. Above this elevation, backfill shall be flowable fill or a combination of flowable fill and select backfill. Select backfill material shall require the approval of the City Engineer before backfilling operations will be permitted. Backfilling and compaction operations shall comply with Technical Specification 4000.

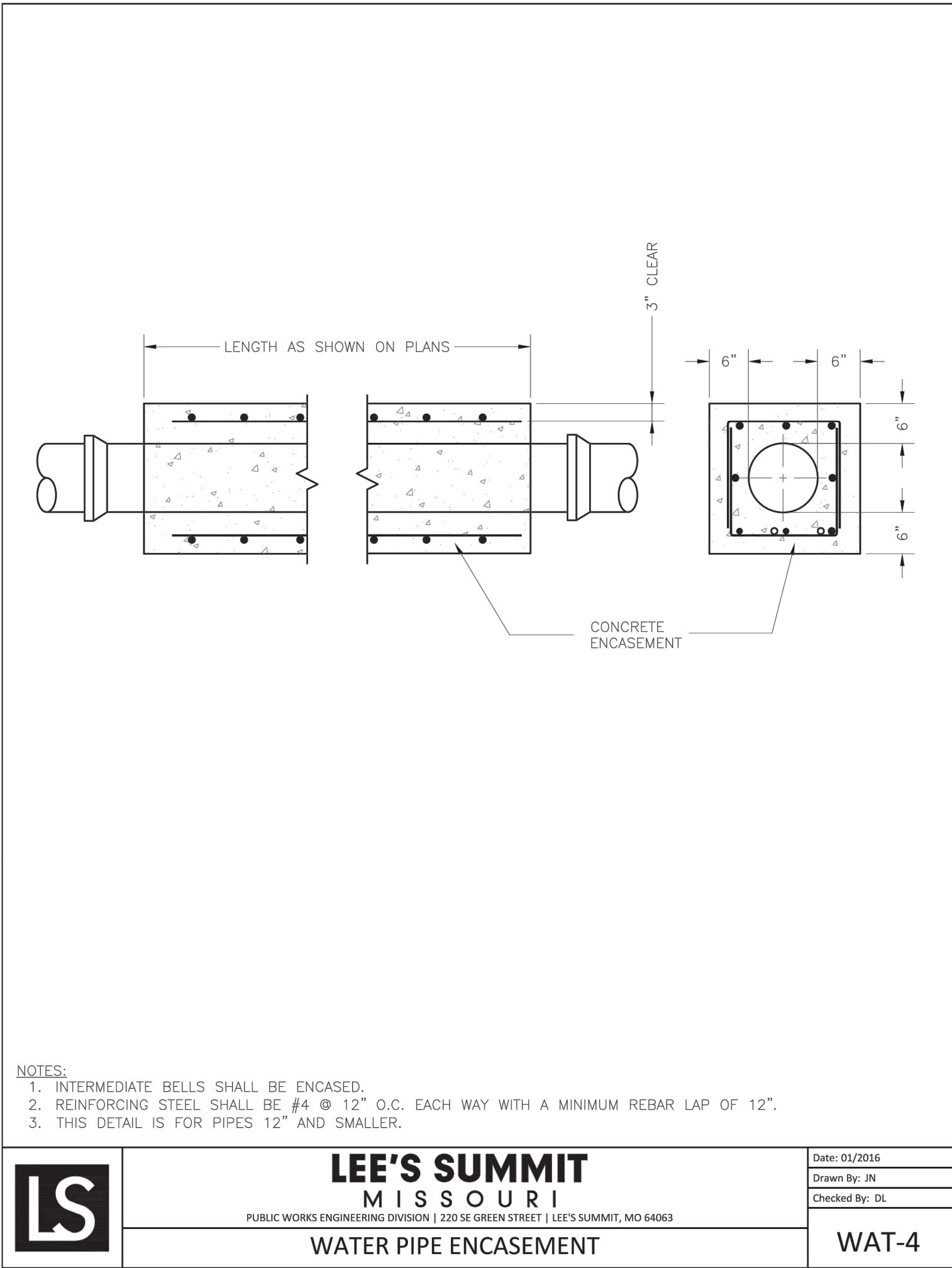


PIPE DIAM.	MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS	
	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

\* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

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"

- 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 6" (100mm) .
  - 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 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.



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



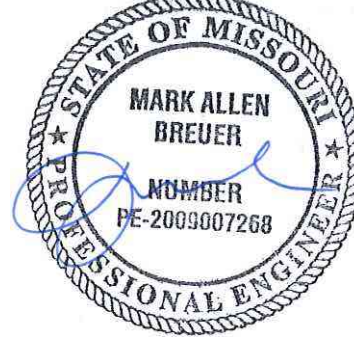
**LEE'S SUMMIT**  
**MISSOURI**  
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64083

**WATER PIPE ENCASEMENT**

Date: 01/2016  
Drawn By: JN  
Checked By: DL

**WAT-4**

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL  
PUBLIC WATER MAIN PLANS  
HERITAGE STREET LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
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DETAILS

SHEET

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