

WOODLAND OAKS
Lots 1 thru 42
SANITARY SEWER CONSTRUCTION PLANS
Section 27, Township 48 North, Range 31 West
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

CONSTRUCTION AND DESIGN NOTES:

SANITARY SEWERS:

- SANITARY SEWER FORCEMAIN SHALL BE HIGH DENSITY POLYETHYLENE (HDPE), SDR-11, UNLESS NOTED OTHERWISE IN THESE PLANS. FITTINGS AND APPURTENANCES SHALL MEET OR EXCEED PIPE PRESSURE CLASS.
- HOUSE SEWER LATERALS SHALL BE 1.25 INCH HDPE, SDR-11. LATERALS SHALL BE CONSTRUCTED USING A TEE OR TAPPING SADDLE AT THE SEWER STATION SHOWN IN THESE PLANS. EACH SERVICE SHALL HAVE A BALL/CHECK LATERAL ASSEMBLY LOCATED 9' FROM THE MAIN. SEE DETAIL THIS SET. TERMINATE SERVICE LATERAL WITH CAP PER PLAN. LENGTH VARIES. MAINTAIN A MINIMUM 42" BURY ON ALL SERVICE LATERALS.
- THE CONTRACTOR SHALL MAINTAIN A LOG OF THE "AS BUILT" STATION AND LENGTH OF EACH HOUSE LATERAL AND SHALL PROVIDE ENGINEERING SOLUTIONS, L.L.C. WITH A COPY OF SAID LOG UPON COMPLETION OF SEWER CONSTRUCTION.
- ALL MANHOLES/STRUCTURES INSTALLED IN THE STREET RIGHT-OF-WAY SHALL BE FINISHED 1/2" PER FOOT ABOVE THE NEAREST ADJACENT BACK OF CURB
- A STAKE SHALL BE PLACED AT THE END OF EACH LATREAL WITH THE END ELEVATION WRITTEN ON THE STAKE
- FILL AREAS SHALL HAVE 18" OF COMPACTED FILL IN PLACE PRIOR TO TRENCHING
- EPOXY COAT INTERNAL SURFACE OF MANHOLES AS DIRECTED IN THE PLAN SET. LIGHTLY SANDBLAST AND EPOXY COAT MANHOLES WITH A TOTAL DRY FILM THICKNESS OF NOT LESS THAN 8.0 MILS. EPOXY SHALL BE ONE OF THE FOLLOWING: CITADEL SLS-30, NEOPOXY NPR-5300 OR RAVEN 405.

GENERAL NOTE:

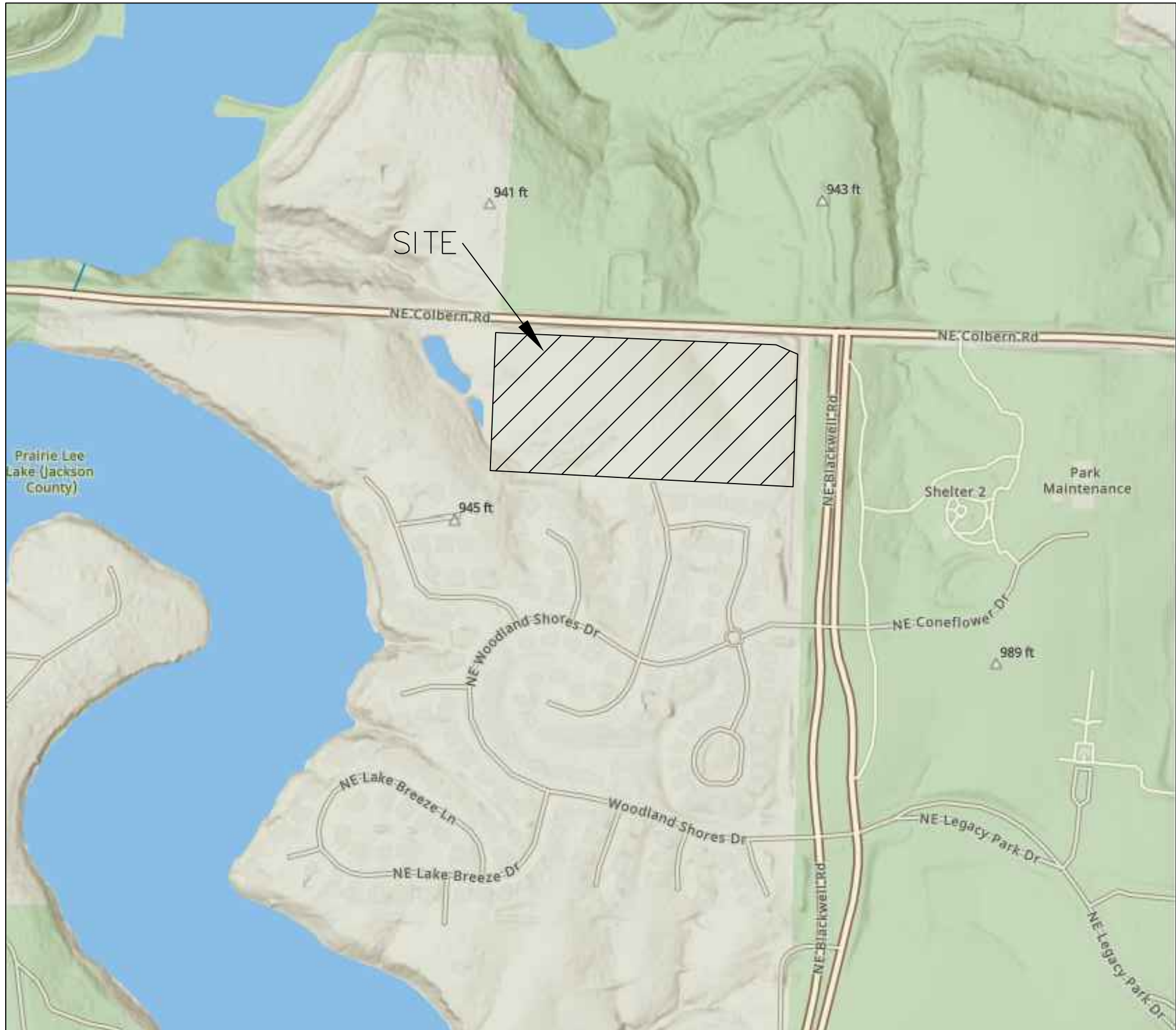
- ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
- TRACER WIRE SHALL BE INSTALLED ON ALL FORCEMAINS AND SERVICE LATERALS.

OIL - GAS WELLS

ACCORDING TO EDWARD ALTON MAY JR'S ENVIRONMENTAL IMPACT STUDY OF ABANDONED OIL AND GAS WELLS IN LEE'S SUMMIT, MISSOURI IN 1995, THERE ARE NOT OIL AND GAS WELLS WITHIN 185 FEET OF THE PROPERTY AS SURVEYED HEREON.

FLOOD INFORMATION:

The property is located in Zone "X" areas outside the 100 year flood plain per FEMA Map 29095C0430G, dated January 20, 2017



INDEX OF SHEETS:

- C.400 ~ SANITARY SEWER COVER SHEET
- C.401 ~ SANITARY SEWER GENERAL LAYOUT
- C.402 ~ SANITARY SEWER PLAN & PROFILE
- C.403 ~ SANITARY SEWER PLAN & PROFILE
- C.404 ~ SANITARY SEWER PLAN & PROFILE
- C.405 ~ SANITARY SEWER PLAN & PROFILE
- C.406 ~ SANITARY SEWER DETAILS

Summary of Quantities:

ITEM AND DESCRIPTION	UNIT	ESTIMATED QUANTITY
SANITARY		
3" PVC HDPE SDR-11 FORCEMAIN	LF	1,826.64
2" PVC HDPE SDR-11 FORCEMAIN	LF	2,034.76
1.25" HDPE SDR-11 SERVICE LINE	LF	966.30
1.25" LATERAL ASSEMBLY	EA	42.00
2" PVC HDPE SDR-11 BENDS	EA	1.00
AIR RELEASE VALVE & VAULT	EA	2.00
PIPE BORING	LF	85.49
MANHOLE EPOXY LINING	EA	3.00
CONNECTION TO EXISTING SYSTEM	LS	1.00
ODOR/CORROSION CONTROL SYSTEM	EA	1.00

UTILITY COMPANIES:

THE FOLLOWING LIST OF UTILITY COMPANIES IS PROVIDED FOR INFORMATION ONLY. WE DO NOT OFFER ANY GUARANTEE OR WARRANTY THAT THIS LIST IS COMPLETE OR ACCURATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES THAT MAY BE AFFECTED BY THE PROPOSED CONSTRUCTION AND VERIFYING THE ACTUAL LOCATION OF EACH UTILITY LINE. THE CONTRACTOR SHALL NOTIFY ENGINEERING SOLUTIONS AT 816.623.9888 OF ANY CONFLICT WITH PROPOSED IMPROVEMENTS.

EVERGY ~ 298-1196
MISSOURI GAS ENERGY ~ 756-5261
SOUTHWESTERN BELL TELEPHONE ~ 761-5011
COMCAST CABLE ~ 795-1100
WILLIAMS PIPELINE ~ 422-6300
CITY OF LEE'S SUMMIT PUBLIC WORKS ~ 969-1800
CITY OF LEE'S SUMMIT DEVELOPMENT ENGINEERING INSPECTION AT 816.969.1200
CITY OF LEE'S SUMMIT WATER UTILITIES ~ 969-1900
MISSOURI ONE CALL (DIG RITE) ~ 1-800-344-7483

LEGEND:

- B/L - BUILDING SET-BACK
- C/A - COMMON AREA
- D/E - DRAINAGE EASEMENT
- FND. - FOUND
- L/E - LANDSCAPE EASEMENT
- L.N.A. - LIMITS OF NO ACCESS
- R/W - RIGHT OF WAY
- SAN - SANITARY SEWER LINE
- S/W - SIDEWALK
- U/E - UTILITY EASEMENT
- W - WATER LINE
- ST - STORM SEWER LINE

ENGINEER'S CERTIFICATION:

I HEREBY CERTIFY THAT THIS PROJECT HAS BEEN DESIGNED AND THESE PLANS PREPARED IN ACCORDANCE WITH THE CURRENT DESIGN CRITERIA OF THE CITY OF LEE'S SUMMIT, MISSOURI AND THE STATE OF MISSOURI. I FURTHER CERTIFY THAT THESE PLANS WERE DESIGNED IN ACCORDANCE TO AASHTO STANDARDS.

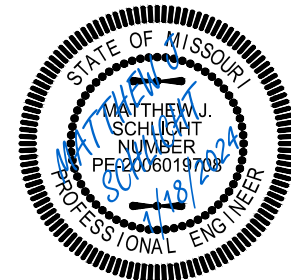


Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1685
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS
LSMO
Issue Date: January 18, 2024

Cover Sheet
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri



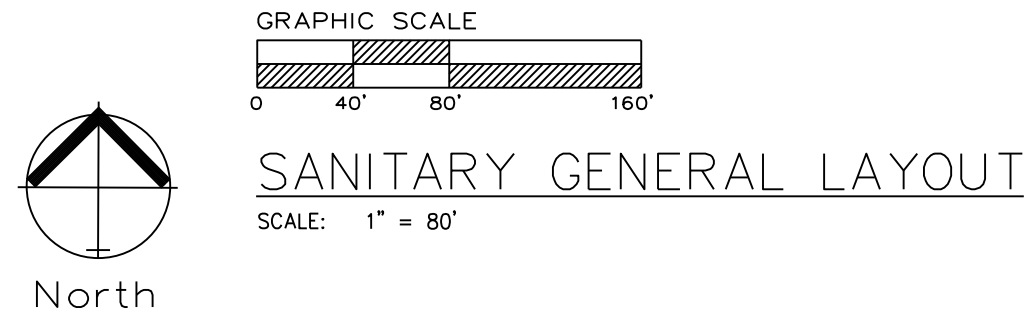
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
1/18/2024 As-Built

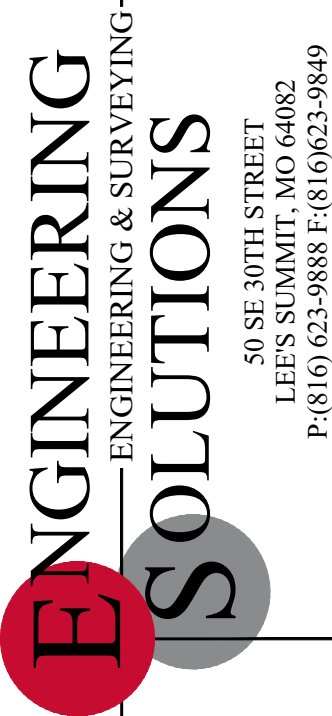
RECORD DRAWING
The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by my firm.

"100-00 100.10", "4.00% 1.15% slope", or "8-inch HDPE-PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

Date: 1/18/2024
Certified by: Matthew J. Schlicht
Title: Engineer
Firm: Engineering Solutions



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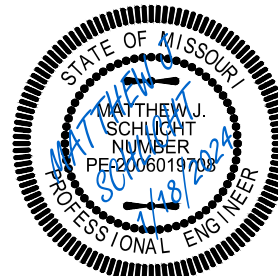


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Project:
WOODLAND OAKS
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January 18, 2024

Sanitary Sewer General Layout
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri



Matthew J. Schlicht
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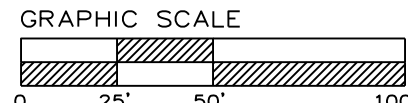
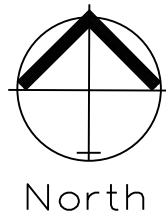
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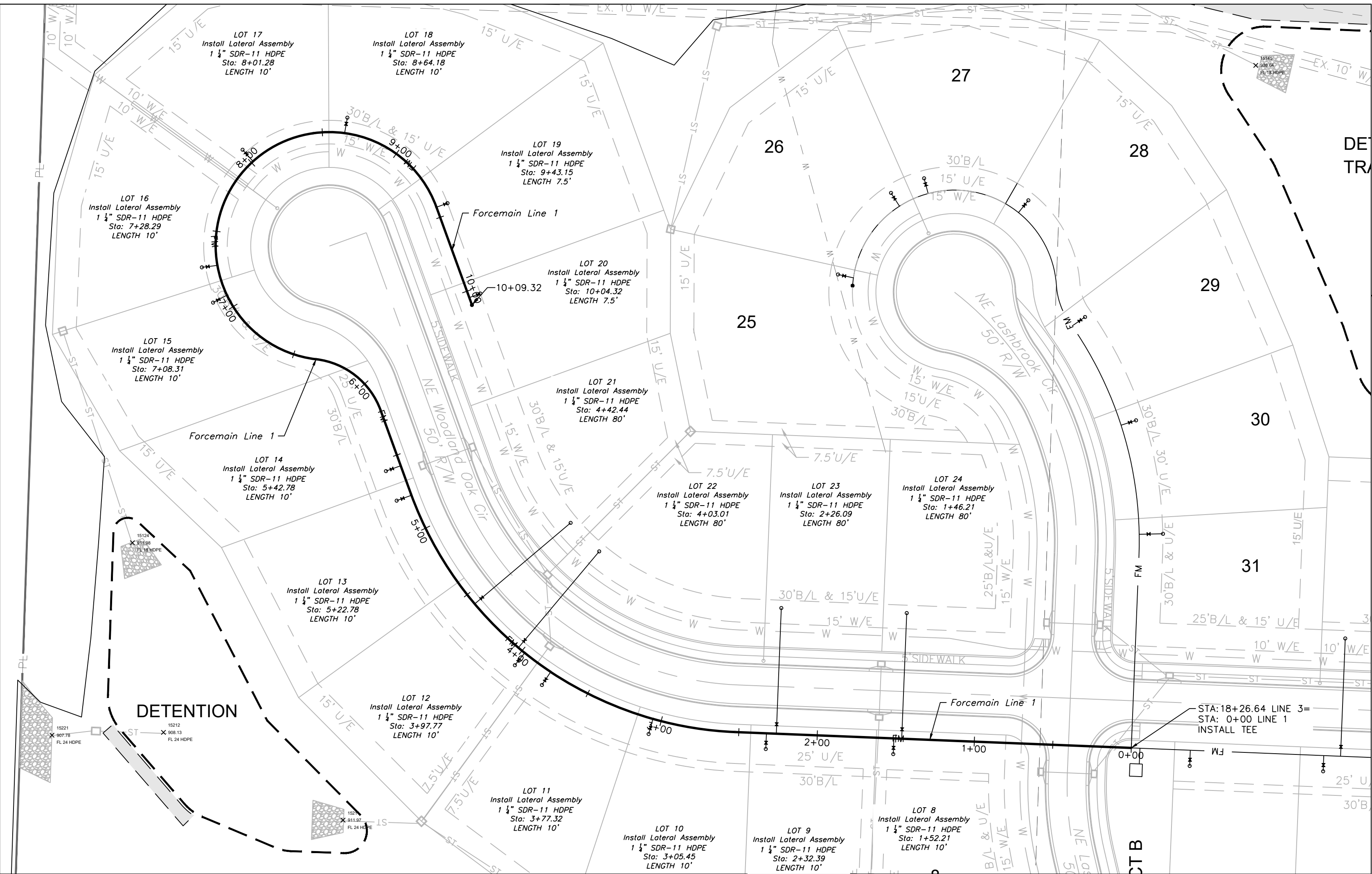
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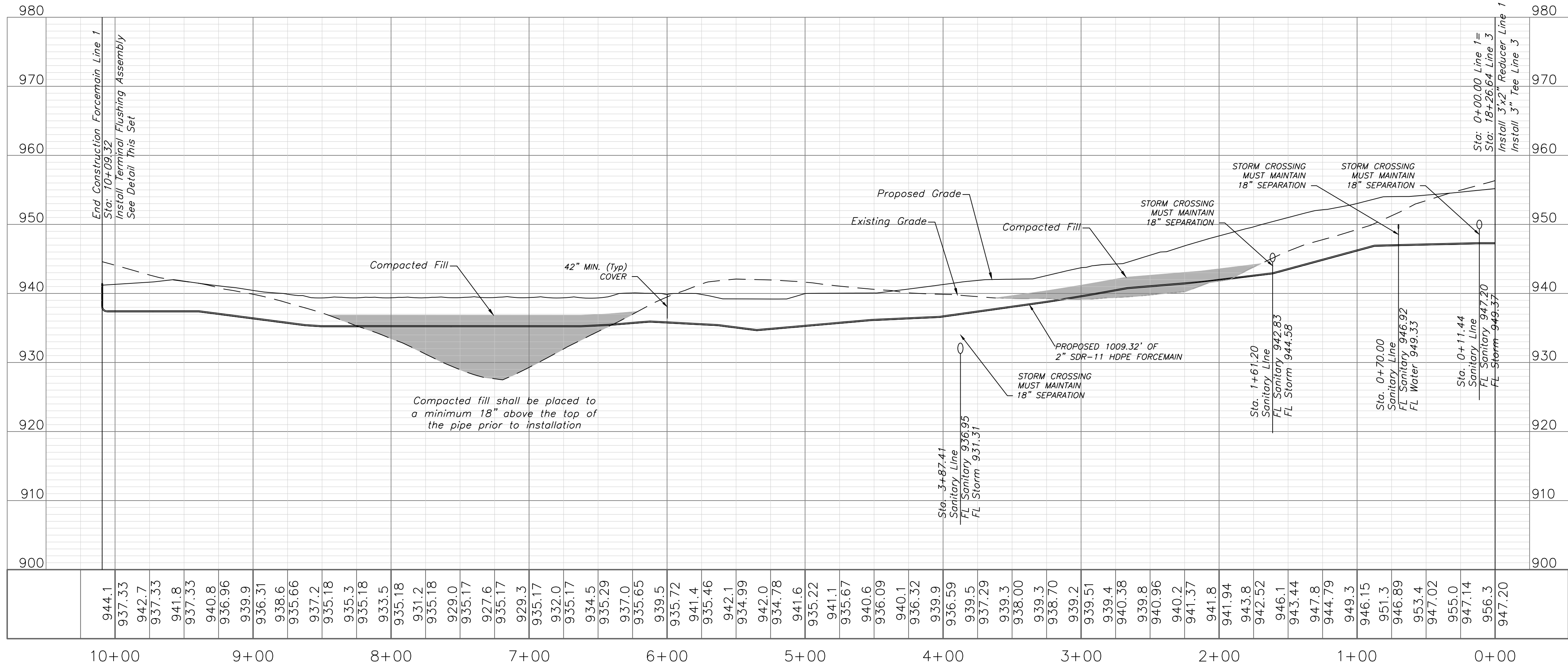
SANITARY PLAN & PROFILE

SCALE: 1" = 50'

NOTE:
ALL LOTS WILL BE SERVED BY A LOW PRESSURE SEWER (LPS) SYSTEM AND WILL REQUIRE GRINDER PUMPS.



FORCEMAIN LINE 1



RECORD DRAWING
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Date: 1/18/2024
Certified by: Matthew J. Schlicht
Title: Engineer
Firm: Engineering Solutions

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P: (816) 623-9888 F: (816) 623-9849

Professional Registration
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Surveying 2005008319-D
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Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS
LSMO
Issue Date: January 18, 2024

Sanitary Plan and Profile
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

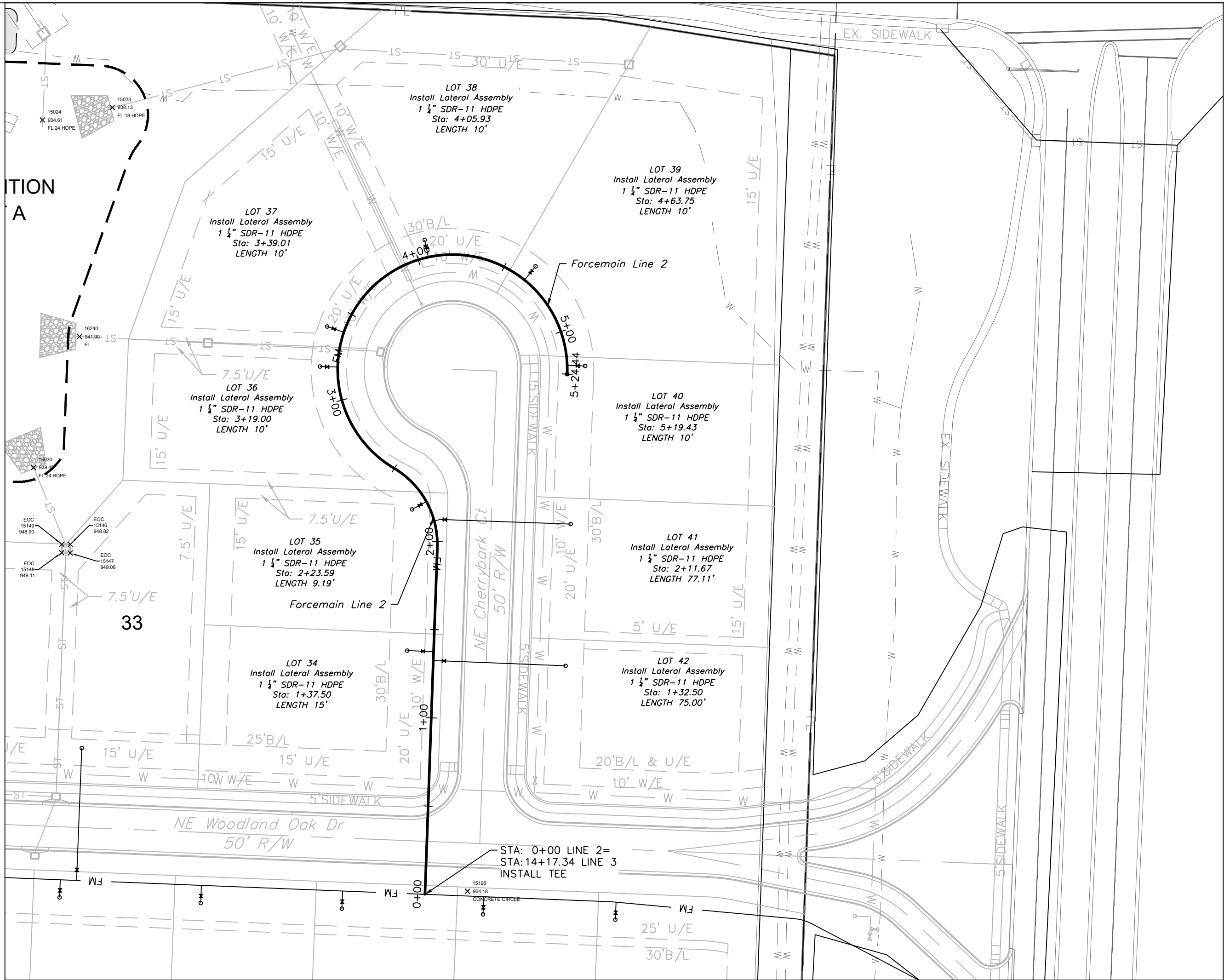
STATE OF MISSOURI
MATTHEW J. SCHLICHT
REGISTERED PROFESSIONAL ENGINEER
No. 0000019708
EXPIRATION DATE 12/31/2025
NE PE E-143355

REVISIONS
1/18/2024 As-Built

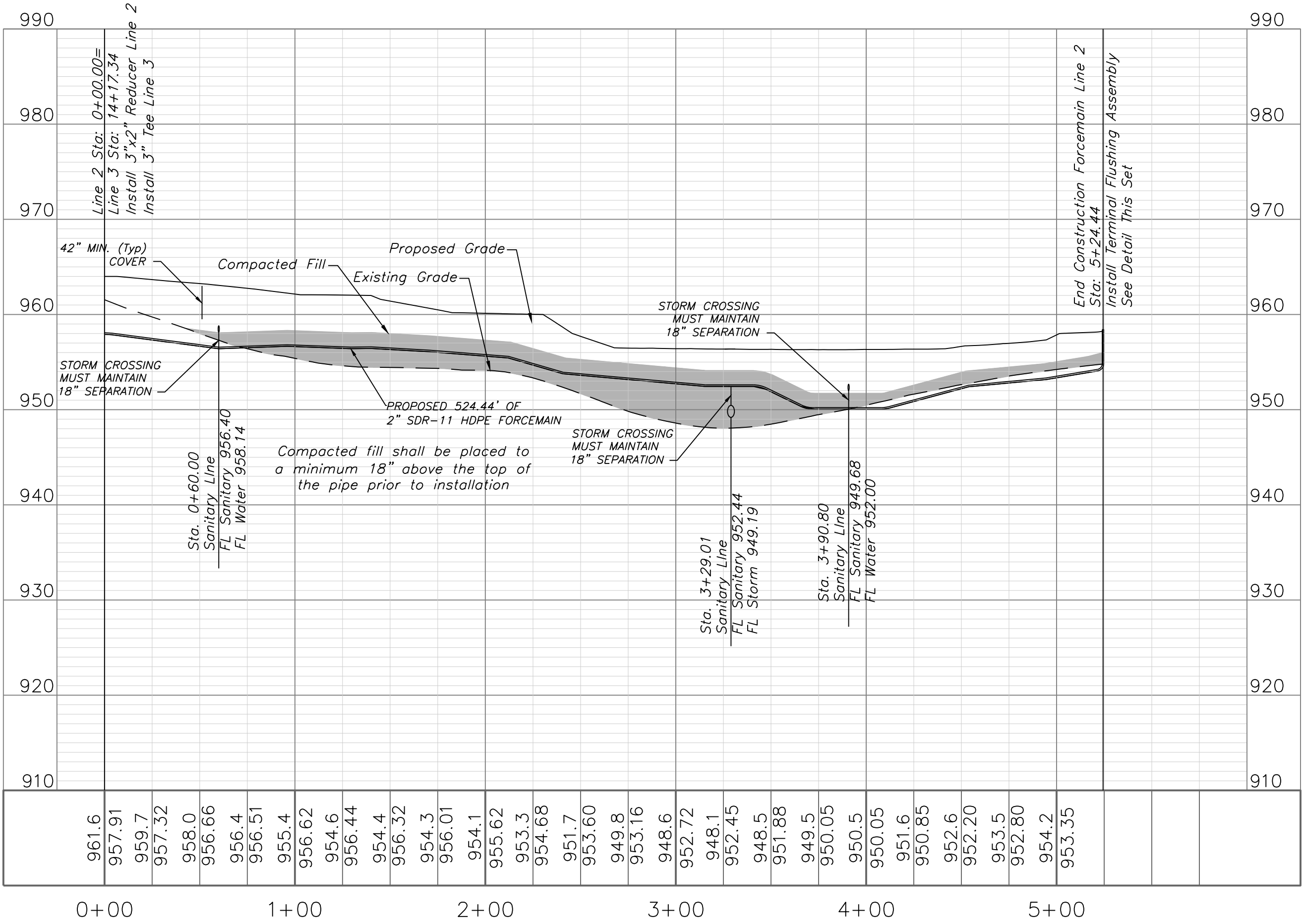
C. 402

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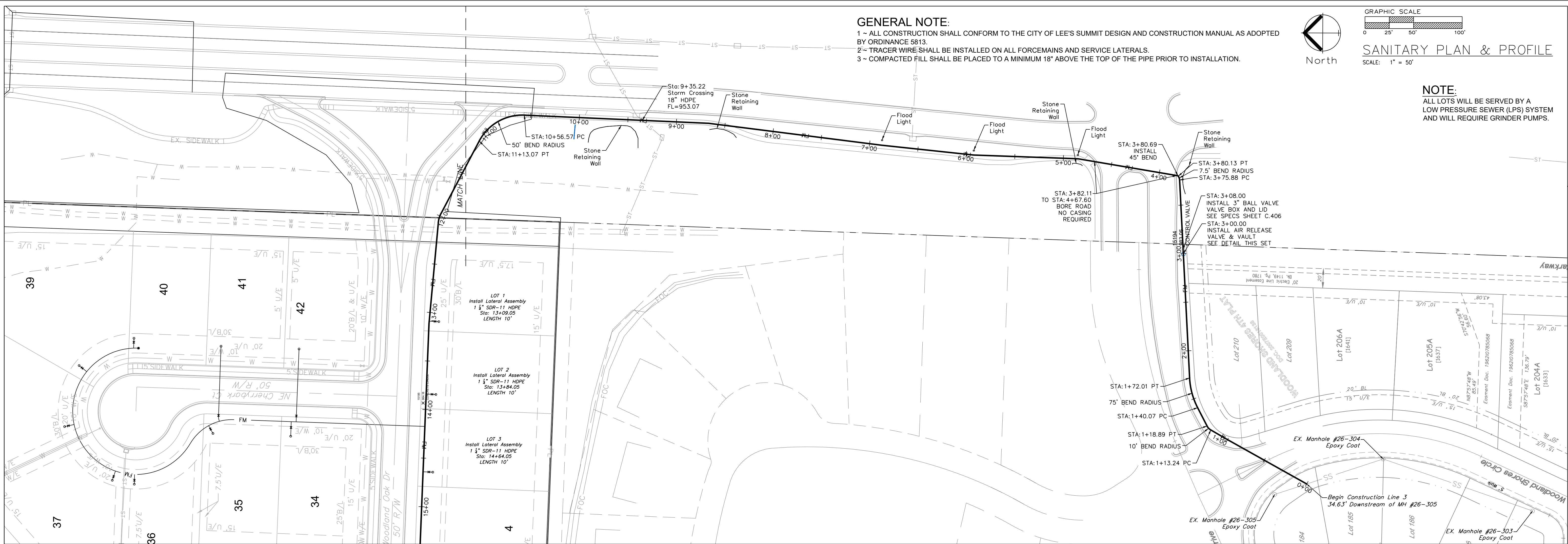
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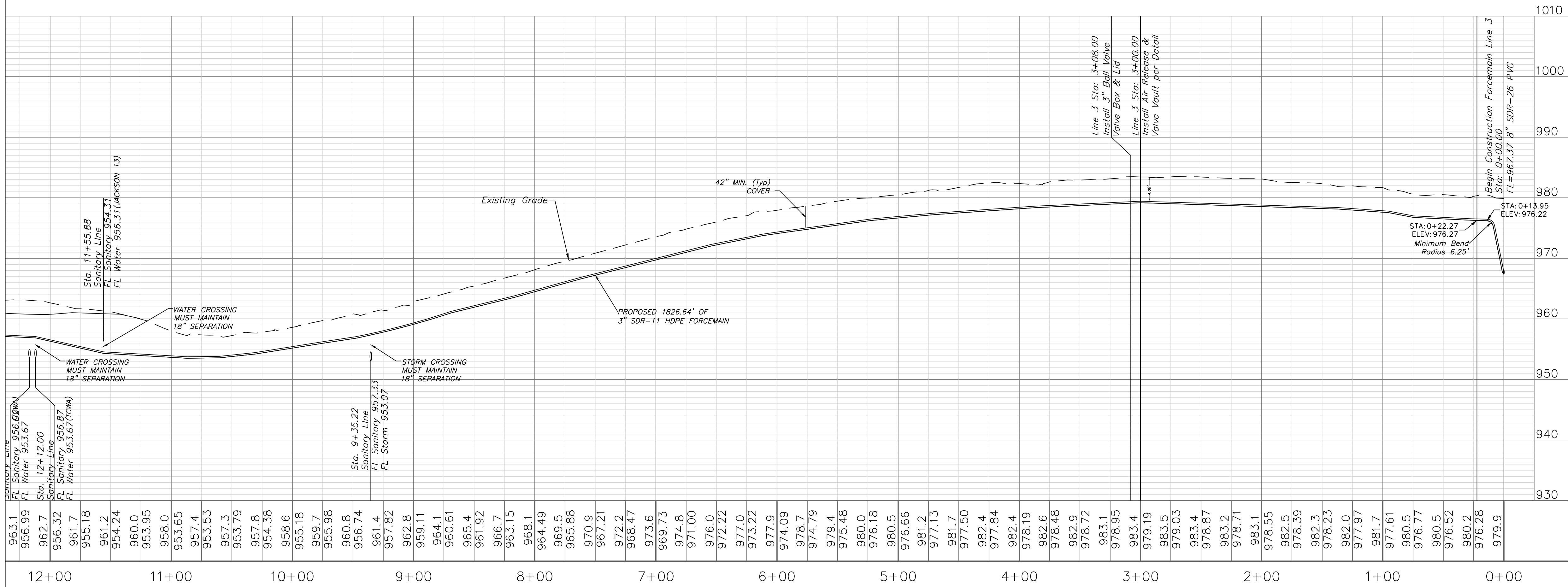
FORCEMAIN LINE 2



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Date: 1/18/2024
Certified by: Matthew J. Schlicht
Title: Engineer
Firm: Engineering Solutions



FORCEMAIN LINE 3



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Sanitary Plan and Profile
Construction Plans for:
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Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

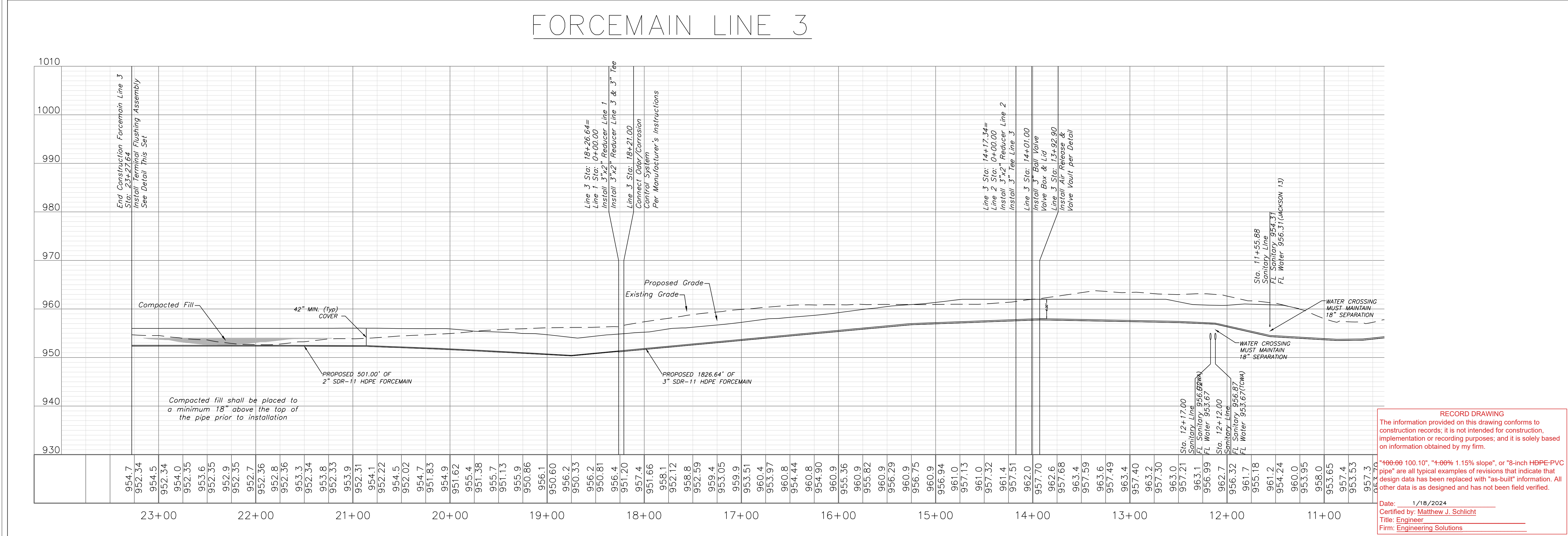
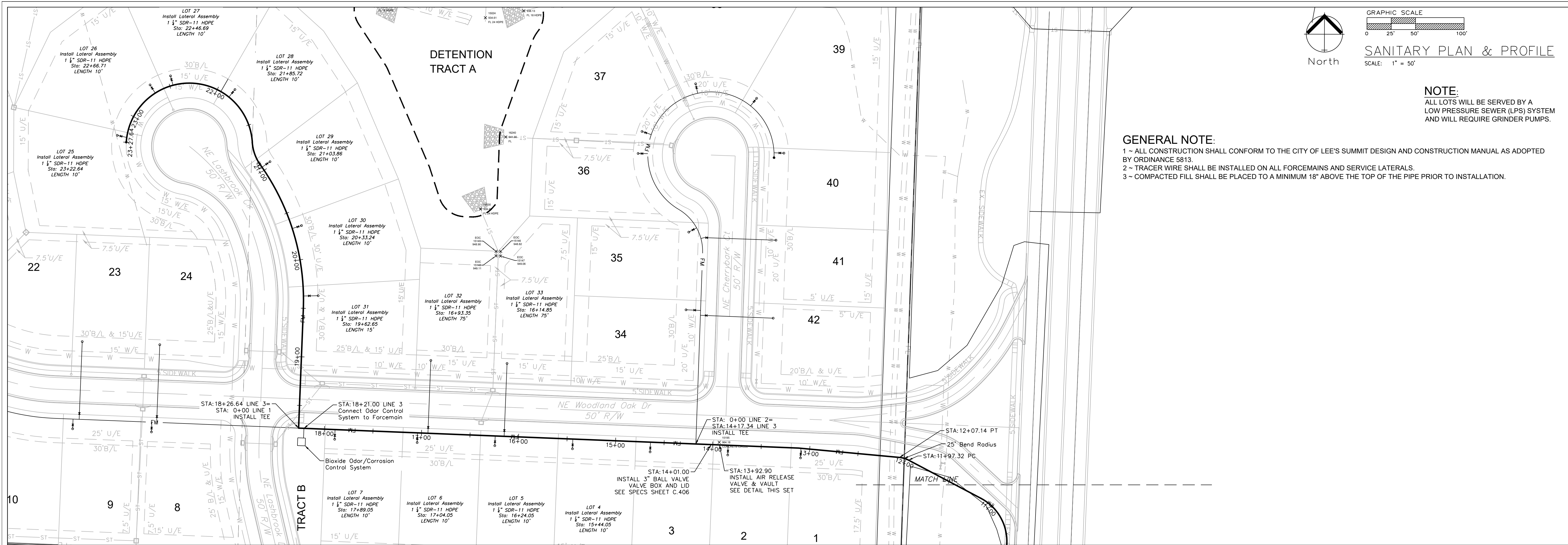
Project:
WOODLAND OAKS
LSMO
Issue Date:
January 18, 2024

STATE OF MISSOURI
MATTHEW J. SCHLICHT
REGISTERED PROFESSIONAL ENGINEER
No. 19071
Exp. 12/31/2026
NE PE E-14335

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
1/18/2024 As-Built

C. 404



ENGINEERING SOLUTIONS

Professional Registration

Project: WOODLAND OAKS

Sanitary Plan and Profile

Construction Plans for: WOODLAND OAKS

RECORD DRAWING

Sanitary Plan and Profile

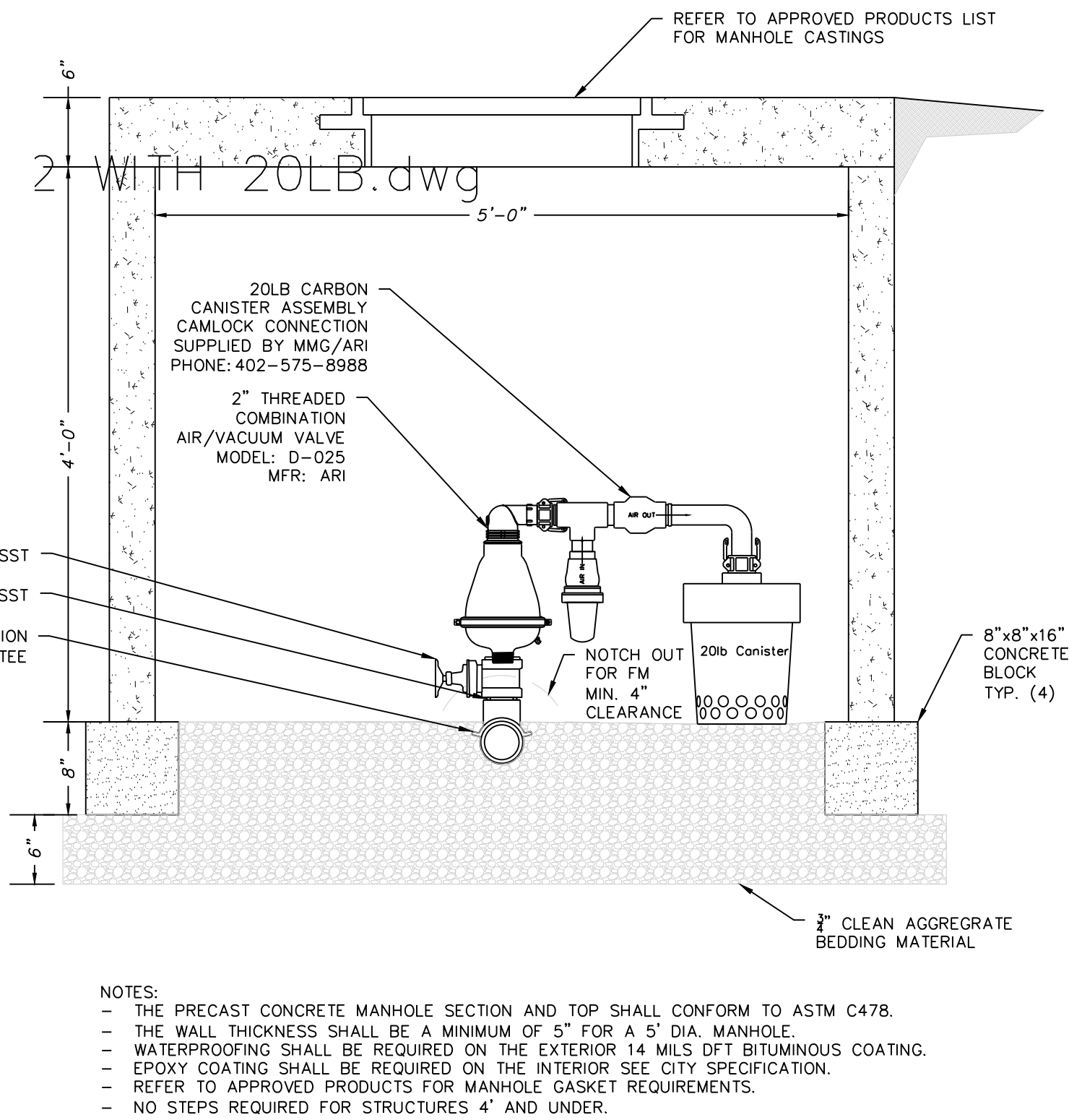
ODOR/CORROSION CONTROL SYSTEM SPECIFICATION:

- THE ODOR/CORROSION CONTROL SYSTEM SHALL BE CAPABLE OF BOTH SULFIDE PREVENTION AND REMOVAL. THE SYSTEM SHALL BE LIQUID CHEMICAL FEED TYPE. THE CHEMICAL EMPLOYED SHALL BE NITRATE SALTS I.E. BIOXIDE.
- THE SYSTEM SIZING WAS BASED ON THE MORE CONSERVATIVE SULFIDE PREVENTION THEORY. A DISSOLVED SULFIDES CONCENTRATION OF 2 MG/L WAS ASSUMED IN THE SYSTEM FOR STANDARD DOMESTIC WASTEWATER. THE AVERAGE DAILY FLOW AT BUILD-OUT IN THE SYSTEM IS CALCULATED TO BE 0.016 MGD. A STOICHIOMETRIC BIOXIDE DOSE OF 0.57 GALLONS PER DAY WAS CALCULATED WHICH EQUATES TO 1.50 ML/MIN. THE DOSAGE PUMP SELECTED MUST HAVE CAPACITY TO PUMP 10 TIMES THE CALCULATED STOICHIOMETRIC AMOUNT.
- THE SYSTEM SHALL CONSIST OF A BULK STORAGE TANK, (2) CHEMICAL FEED PUMP, ELECTRICAL CONTROL PANEL WITH INTEGRAL SYSTEM CONTROLS AND ALL OTHER NECESSARY PIPE, FITTINGS AND APPURTENANCES NECESSARY TO PROVIDE A WORKING CHEMICAL FEED SYSTEM. POWER TO THE SITE 120/1/60 SHALL BE SUPPLIED BY OTHERS.
- OPERATION: THE SYSTEM SHALL UTILIZE DUPLEX PUMPS TO PROVIDE FOR VARIABLE DOSING WHILE PROVIDING FIRM CAPACITY IN EVENT OF PUMP FAILURE. EACH PUMP SHALL BE ENERGIZED/DE-ENERGIZED BY A REPEATABLE TIMER CONNECTED TO A DUPLEX RECEPTACLE. PUMP DOSAGE RATES ALONG WITH ON/OFF TIMES SHALL BE MANUALLY SET.
- ALL EQUIPMENT MUST BE FURNISHED BY A SINGLE SUPPLIER WHO SHALL BE RESPONSIBLE FOR THE COORDINATION AND PERFORMANCE OF THE SYSTEM.
- DELIVERY OF PRODUCTS SHALL BE COORDINATED WITH THE CONTRACTOR. FABRICATED ASSEMBLIES SHALL BE SHIP ASSEMBLED AND PROPERLY MATCH MARKED FOR EASE OF FIELD ERECTION. THE EQUIPMENT SUPPLIER SHALL PROVIDE COMPLETE ASSEMBLY INSTRUCTIONS TO THE CONTRACTOR.
- THE EQUIPMENT SUPPLIER SHALL BE RESPONSIBLE FOR PROVIDING THE FIRST FULL LOAD OF BIOXIDE FOR THE SYSTEM WHICH WILL AIDE IN START-UP AND TRAINING OF THE SYSTEM. THE EQUIPMENT SUPPLIER SHALL BE RESPONSIBLE FOR SUCCESSFUL START-UP OF THE SYSTEM. ACCEPTANCE OF THE SYSTEM SHALL BE CONTINGENT UPON SUCCESSFUL START-UP, PROVIDING THE REQUIRED TRAINING, AND PROVIDING COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE CITY IN BOTH HARD COPY AND PDF FORM.
- EQUIPMENT:
 - CHEMICAL STORAGE TANK
 - MATERIAL: ROTATIONALLY MOLDED CROSS-LINKED HIGH-DENSITY POLYETHYLENE (HDXLPE).
 - CAPACITY: 300 US GALLONS SINGLE WALL.
 - MFR TO PROVIDE ANCHORAGE SYSTEM TO WITHSTAND SUSTAINED 150 MPH WINDS. ANCHORAGE TO CONCRETE PAD BY OTHERS.
 - FITTINGS SHALL BE LOCATED ON TANK TOP OR DOME.
 - MINIMUM 16" DIAMETER MANWAY WITH LEVER LOCKING COVER.
 - PLASTIC FITTINGS SHALL BE "BULK HEAD" OR "TWO-FLANGE" STYLE.
 - FLANGE BOLTED FITTINGS SHALL CONFORM TO ANSI/ASME B-16.5 FOR 150 PSI PRESSURE CLASS.
 - 2" PVC FILL BULKHEAD FITTING W/ EPDM GASKET & PVC FILL LINE ASSEMBLY, PE BRACKET W/ 316 SST HARDWARE AND EPDM GASKETS. FILL LINE QUICK DISCONNECT COUPLING MAX. 48" ABOVE BOTTOM OF TANK. FILL LINE TO INCLUDE 2" BALL VALVE AND DUST CAP.
 - 3" MUSHROOM VENT W/ EPDM GASKET & POLY SCREEN.
 - 2" PVC SUCTION BULKHEAD FITTING W/ EPDM GASKET & PVC DROP TUBE ASSEMBLY W/ 316 SST HARDWARE AND EPDM GASKETS.
 - CHEMICAL FEED SYSTEM
 - THE OPERATION OF THE CHEMICAL FEED SYSTEM SHALL BE CONTROLLED FROM THE CONTROL PANEL. ALL EQUIPMENT CONTROL SWITCHES, PILOT LIGHTS, CONTROLLERS, ETC. AND THE CHEMICAL FEED PUMPS SHALL BE HOUSED IN THIS PANEL.
 - THE CONTROL PANEL SHALL BE CONSTRUCTED OF 316 SST AND BE RATED NEMA 4X.
 - THE CONTROL PANEL SHALL CONTAIN THE FOLLOWING: TIMER CONTROL SYSTEM, (2) WATSON MARLOW ODO5 20 PUMP, (0.1 - 300 ml/min), (2) DUPLEX PUMP RECEPTACLE, COOLING FAN, CONDENSATION HEATER, (3) CONTROL RELAYS.
 - THE SYSTEM SHALL PROVIDE THE FOLLOWING OUTPUTS: RUN STATUS, ALARM, ANALOG OUT 4-20 mA, GROUND, SUPPLY 5V+.
 - PIPING AND APPURTENANCES
 - ALL SUCTION AND DISCHARGE PIPING SHALL BE 3/4" SCHEDULE 80 PVC. ALL VALVES FITTINGS AND CONNECTORS SHALL BE SCHEDULE 80 PVC.
 - ALL FILL LINE PIPING SHALL BE 2" SCHEDULE 80 PVC. ALL FILL LINE VALVES FITTINGS AND CONNECTORS SHALL BE SCHEDULE 80 PVC.
 - FILL LINE SHALL HAVE A 2" SST MALE CAMLOCK WITH A 2" PLASTIC FEMALE CAMLOCK CAP.
 - A WYE STRAINER SHALL BE INSTALLED ON THE SUCTION LINE.
 - FIELD TESTS: IF REQUIRED, THE SUPPLIER SHALL MAKE ANY CHANGES TO THE SYSTEM, AT THEIR OWN EXPENSE, THAT MAY BE NECESSARY TO ASSURE SATISFACTORY AND EFFICIENT OPERATION OF THIS SYSTEM.

WARRANTY: THE SUPPLIER SHALL GUARANTEE THAT THE SYSTEM WILL PERFORM AS DESCRIBED AND INTENDED IN THESE SPECIFICATIONS. THE SUPPLIER SHALL WARRANT THE SYSTEM, COMPLETE, TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF TWELVE (12) MONTHS FROM ACCEPTANCE. THE SUPPLIER SHALL REPAIR OR PROVIDE REPLACEMENT FOR ANY DEFECTIVE COMPONENTS UNDER THIS WARRANTY. IN ADDITION, THE CHEMICAL STORAGE TANK SHALL BE WARRANTED FOR A PERIOD OF FIVE (5) YEARS FROM WARRANTY START DATE.

ODOR/CORROSION CONTROL SYSTEM SITE/UTILITY NOTES:

- ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
- THE ODOR/CORROSION CONTROL SYSTEM SHALL BE LOCATED ON A REINFORCED CONCRETE FOUNDATION. THE CONCRETE FOUNDATION SHALL EXTEND A MINIMUM OF 18 INCHES PAST THE LIMITS OF THE CHEMICAL STORAGE TANK. COORDINATE FOUNDATION DIMENSIONS WITH THE EQUIPMENT SUPPLIER. THE CONCRETE FOUNDATION SHALL BE A MINIMUM OF 8" THICK, UTILIZING 4,000 PSI CONCRETE AND GRADE 60 REBAR. REBAR SHALL BE PLACED ON 12" CENTERS EACH DIRECTION. REBAR TO BE PLACED 3" ABOVE FINISH GRADE. SYSTEM TO BE PLACED AS SHOWN ON THE PLANS.
- THE EQUIPMENT FOUNDATION SHALL BE LEVEL WITH A MINIMUM 4 INCHES OF CLEAN GRAVEL PLACED ON A 12" DEEP PREPARED SUB-GRADE. GRADE ADJACENT AREA TO DRAIN AROUND EQUIPMENT FOUNDATION.
- ELECTRICAL: ONE 120 VAC, 60 HZ, 15 AMP SINGLE PHASE ELECTRICAL SERVICE SHALL BE PROVIDED.

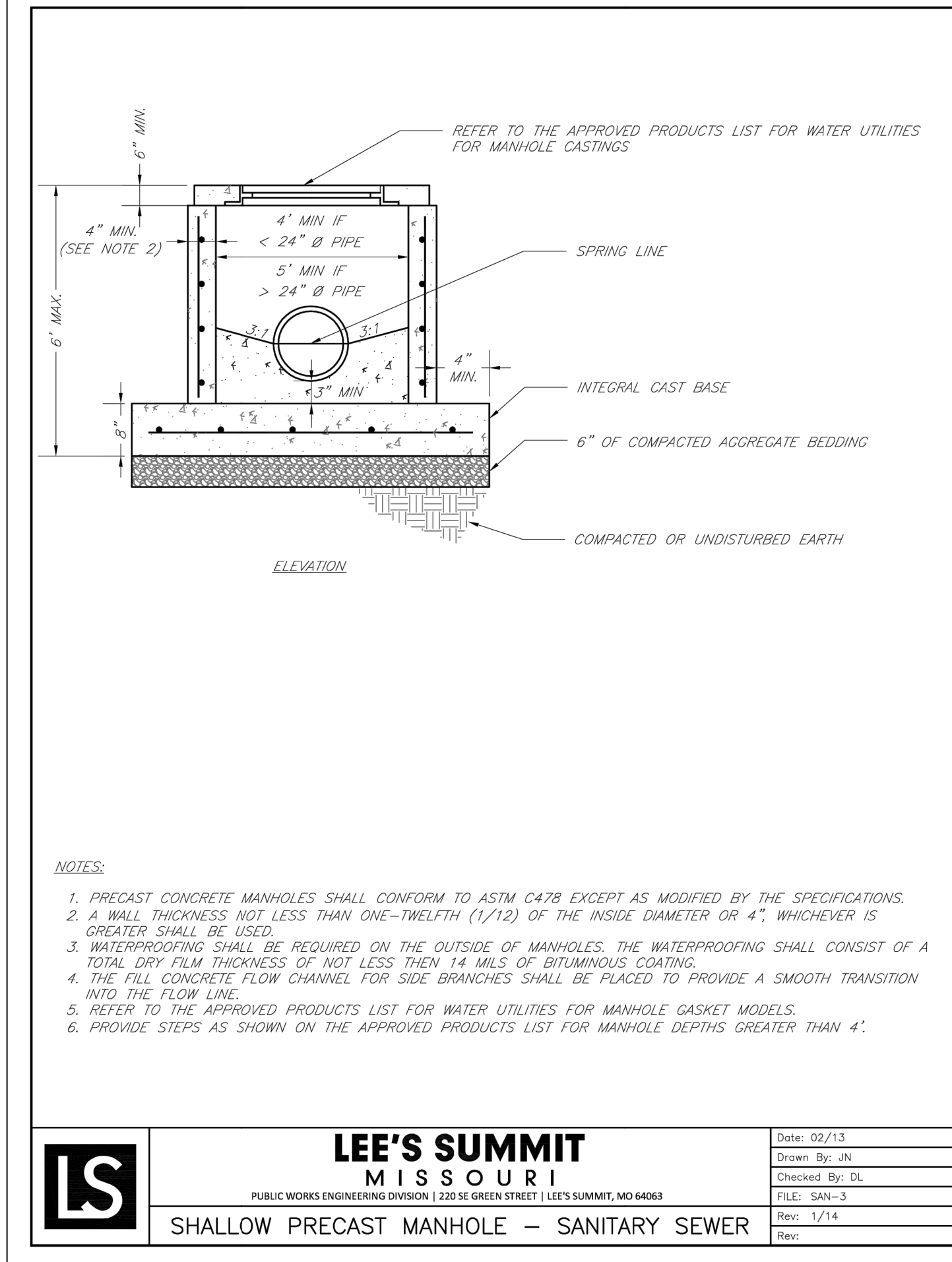


AIR RELEASE FOR SEWAGE

NOT TO SCALE

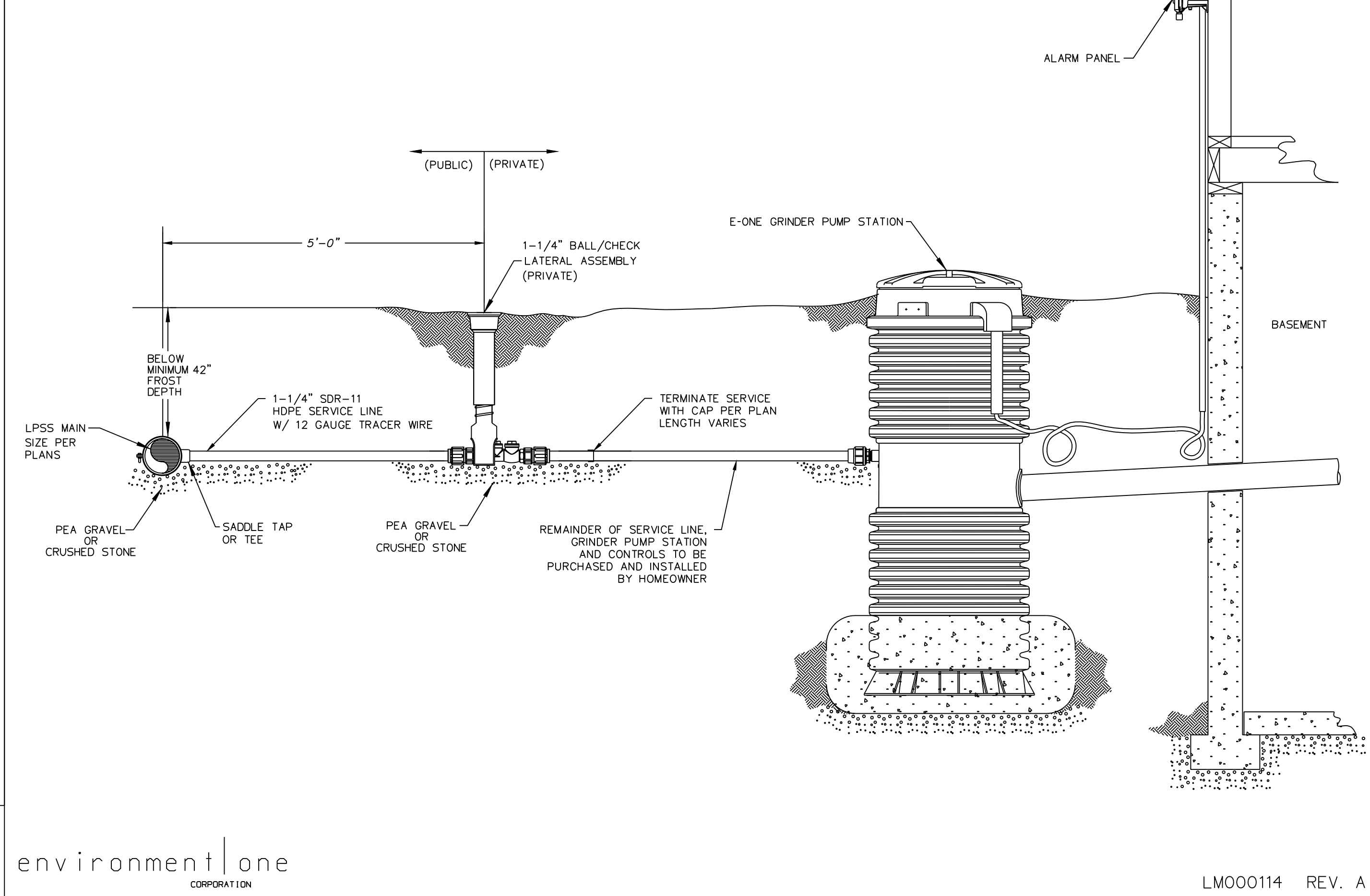
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environmentone CORPORATION

TYPICAL LATERAL INSTALLATION



TYPICAL TERMINAL FLUSHING CONNECTION

- GATE VALVE SPEC:
- INTEGRAL SEAT SOLID WEDGE
 - INSIDE SCREW & SCREWED BONNET
 - NON RISING STEM
 - PTFE INTERNAL PACKING
 - MATERIAL: 316 SST
 - 150 PSI WORKING PRESSURE

- BALL VALVE SPEC:
- FULL PORT
 - PTFE SEALS
 - MATERIAL: 316 SST
 - 150 PSI WORKING PRESSURE

SOS	05-13-10	1	1/32
DR BY	CHK'D	DATE	ISSUE SCALE
elone SEWER SYSTEMS			
TYPICAL TERMINAL FLUSHING CONNECTION			
ESD 10-0094			

