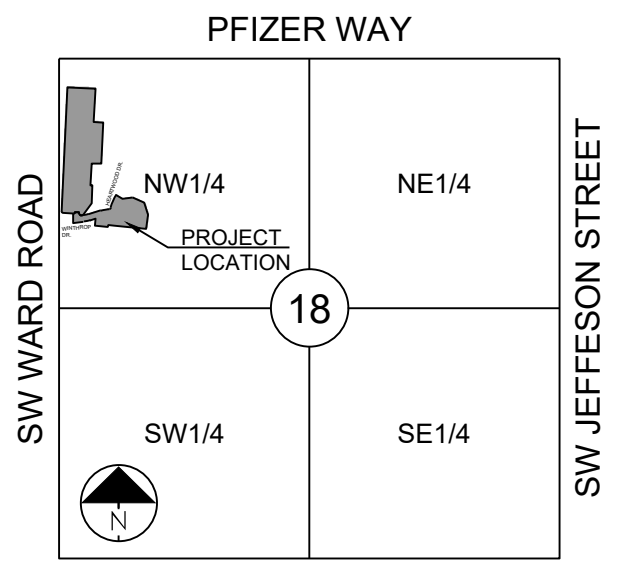


WATER LINE PLANS FOR WOODLAND GLEN 2ND PLAT IN THE CITY OF LEE'S SUMMIT JACKSON COUNTY, MISSOURI

LEGEND:

- A/E - ACCESS EASEMENT
 - BC - BACK OF CURB
 - B/B - BACK TO BACK
 - BM - BENCHMARK
 - BL or B.L. - BUILDING LINE
 - CO - CLEANOUT
 - TJB - TELEPHONE JUNCTION BOX
 - C&G - CURB AND GUTTER
 - D/E - DRAINAGE EASEMENT
 - E/E - ELECTRICAL EASEMENT
 - EL - ELEVATION
 - FL - FLOW LINE
 - G/E - GAS LINE EASEMENT
 - HDPE - HIGH-DENSITY POLYETHYLENE
 - L/E - LANDSCAPE EASEMENT
 - MSFE - MINIMUM SERVICEABLE FLOOR ELEVATION
 - PVC - POLYVINYL CHLORIDE
 - P/L - PROPERTY LINE
 - PUB/E - PUBLIC EASEMENT
 - RCP - REINFORCED CONCRETE PIPE
 - ROW or RW - RIGHT-OF-WAY
 - S/E - SANITARY SEWER EASEMENT
 - SL - SERVICE LINE
 - SW - SIDEWALK
 - TE - TOP ELEVATION
 - U/E - UTILITY EASEMENT
 - WSE - WATER SURFACE ELEVATION
 - W/E - WATERLINE EASEMENT
-
- ASPHALT PAVEMENT - EXISTING
 - ASPHALT PAVEMENT - PROPOSED
 - CONCRETE PAVEMENT - EXISTING
 - CONCRETE PAVEMENT - PROPOSED
 - ASPHALT PAVEMENT - EXISTING
 - CONCRETE SIDEWALK - EXISTING
 - CONCRETE SIDEWALK - PROPOSED
 - CURB & GUTTER
 - CURB & GUTTER - EXISTING
 - TREELINE
 - EXISTING LOT AND RW LINES
 - EXISTING PLAT LINES
 - P/L - PROPERTY LINES
 - ROW - RIGHT-OF-WAY
 - SANITARY SEWER MAIN
 - SANITARY SEWER MAIN - EXIST.
 - STORM SEWER
 - STORM SEWER - EXISTING
 - CATV_x - CABLE TV - EXISTING
 - FOC_x - FIBER OPTIC CABLE - EXISTING
 - T_x - TELEPHONE LINE - EXIST.
 - E_x - ELECTRIC LINE - EXISTING
 - OHP_x - OVERHEAD POWER LINE - EXIST.
 - UGE_x - UNDERGROUND ELECTRIC - EX.
 - G_x - GAS LINE - EXISTING
 - W_x - WATERLINE - EXISTING
 - L_x - LIGHT - EXISTING
 - - EXISTING MANHOLE
 - - CLEANOUT
 - - EXISTING SANITARY MANHOLE
 - - PROPOSED SANITARY MANHOLE
 - [AI] - EXISTING AREA INLET
 - [CI] - EXISTING CURB INLET
 - [GI] - EXISTING GRATE INLET
 - [JB] - EXISTING JUNCTION BOX
 - [SM] - EXISTING STORM MANHOLE



SECTION 18-47N-31W
LOCATION MAP
SCALE 1" = 2000'

UTILITY CONTACTS:

MISSOURI DEPARTMENT OF TRANSPORTATION (MODOT)
Steve Holloway
600 NE Colbern Road
Lee's Summit, MO 64086
(816) 607-2186

SPIRE (MG&E)
Tod Fagan
700 Market Street
St. Louis, MO 63101
Office: (314) 658-5496

EVERGY (KCP&L)
Jimmy Godbout
Jimmy.Godbout@evergy.com
Office: (913) 667-5119

CITY OF LEE'S SUMMIT PUBLIC WORKS
Dena Mezger
220 SE Green Street
Lee's Summit, MO 64063
(816) 969-1800

AT&T
Mark Manion or Marty Loper
500 E. 8th Street, Room 370
Kansas City, MO 64106
(816) 275-2341 or (816) 275-1550

COMCAST CABLE
John Meadows
4700 Little Blue Parkway
Independence, MO 64057
(816) 795-2257

CITY OF LEE'S SUMMIT WATER UTILITIES
Mark Schautler
1200 SE Hamblen Road
Lee's Summit, MO 64081
(816) 969-1900

GENERAL NOTES:

1. ALL CONSTRUCTION TO FOLLOW THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
2. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE ENGINEERING DEPARTMENT OF THE CITY OF LEE'S SUMMIT, MISSOURI.
3. LINEAL FOOT MEASUREMENTS SHOWN ON THE PLANS ARE HORIZONTAL MEASUREMENTS, NOT SLOPE MEASUREMENTS. ALL PAYMENTS SHALL BE MADE ON HORIZONTAL MEASUREMENTS.
4. NO GEOLOGICAL INVESTIGATION HAS BEEN PERFORMED ON THE SITE.
5. THE UTILITY LOCATIONS SHOWN ON THESE PLANS ARE TAKEN FROM UTILITY COMPANY RECORDS AND APPARENT FIELD LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL ADHERE TO THE PROVISIONS OF THE SENATE BILL NUMBER 583, 78TH GENERAL ASSEMBLY OF THE STATE OF MISSOURI. THE BILL REQUIRES THAT ANY PERSON OR FIRM DOING EXCAVATION ON PUBLIC RIGHT OF WAY DO SO ONLY AFTER GIVING NOTICE TO, AND OBTAINING INFORMATION FROM, UTILITY COMPANIES. STATE LAW REQUIRES 48 HOURS ADVANCE NOTICE. THE CONTRACTOR MAY ALSO UTILIZE THE FOLLOWING TOLL FREE PHONE NUMBER PROVIDED BY "MISSOURI ONE CALL SYSTEM, INC.": 1-800-DIG-RITE. THIS PHONE NUMBER IS APPLICABLE ANYWHERE WITHIN THE STATE OF MISSOURI. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL NOTIFY ALL THOSE COMPANIES WHICH HAVE FACILITIES IN THE NEAR VICINITY OF THE CONSTRUCTION TO BE PERFORMED.
7. PRIOR TO ORDERING PRECAST STRUCTURES, SHOP DRAWING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL.
8. THE CONTRACTOR SHALL PROTECT ALL MAJOR TREES FROM DAMAGE. NO TREE SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER, UNLESS SHOWN OTHERWISE.
9. CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE PERFORMED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES.
10. ALL WASTE MATERIAL RESULTING FROM THE PROJECT SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR, OR AS DIRECTED BY THE OWNER AT NO ADDITIONAL COST.
11. ALL EXCAVATIONS SHALL BE UNCLASSIFIED. NO SEPARATE PAYMENT WILL BE MADE FOR ROCK EXCAVATION.
12. THE CONTRACTOR SHALL CONTROL THE EROSION AND SILTATION DURING ALL PHASES OF CONSTRUCTION AND SHALL KEEP THE STREETS CLEAN OF MUD AND DEBRIS.
13. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL TRAFFIC HANDLING MEASURES NECESSARY TO ENSURE THAT THE GENERAL PUBLIC IS PROTECTED AT ALL TIMES. TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD-LATEST EDITION).
14. ALL SANITARY SEWER LATERALS SHALL HAVE A TRENCH CHECK, CONSISTING OF FLOWABLE BACKFILL, INSTALLED DURING CONSTRUCTION. TRENCH CHECK SHALL EXTEND TO BOTTOM OF TRENCH, TO WIDTH OF TRENCH, TO 12 INCHES ABOVE PIPE, FOR A MINIMUM LENGTH OF 12 INCHES. TRENCH CHECK SHALL BE LOCATED AT LEAST 5 FEET FROM SANITARY MAIN.

EARTHWORK:

1. PRIOR TO EARTHWORK ACTIVITIES, PRE-DISTURBANCE EROSION AND SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PER THE STORM WATER POLLUTION PREVENTION PLAN AND/OR THE EROSION AND SEDIMENT CONTROL PLAN PREPARED FOR THIS SITE.
2. ALL BACKFILL MATERIAL SHALL BE PLACED IN MAXIMUM 6-INCH LIFTS AND COMPACTED TO 95-PERCENT OF MAXIMUM DENSITY AS DEFINED USING A STANDARD PROCTOR TEST (ASHTO T99/ASTM 698).
3. BACKFILL MATERIALS SHALL NOT INCLUDE ORGANIC MATTER, DEBRIS OR TOPSOIL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REDISTRIBUTING THE TOPSOIL OVER PROPOSED TURF AND LANDSCAPED AREAS TO A MINIMUM DEPTH OF 6-INCHES BELOW FINAL GRADE.
5. ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE. UNLESS NOTED OTHERWISE THE FOLLOWING GRADES SHALL APPLY:
 - A. TURF AREAS - 2.5% MINIMUM, 4H:1V MAXIMUM
6. ALL DISTURBED AREAS SHALL BE FERTILIZED, SEEDED AND MULCHED IMMEDIATELY AFTER EXCAVATION ACTIVITIES HAVE CEASED. SEEDING SHALL BE PER THE EROSION AND SEDIMENT CONTROL PLAN AND/OR LANDSCAPE PLAN. IF NOT SPECIFIED SEEDING SHALL BE PER APWA SECTION 2400, LATEST EDITION. UNLESS OTHERWISE NOTED, SEEDING SHALL BE SUBSIDIARY TO THE CONTRACT PRICE FOR PIPE INSTALLATION.
7. CONTRACTOR SHALL ADHERE TO THE REPORTING REQUIREMENTS OUTLINED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THIS PROJECT. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PROPERLY MAINTAINED AND KEPT CLEAN OF SILT AND DEBRIS AND IN GOOD WORKING ORDER. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS REQUIRED.

UTILITIES:

1. EXISTING UTILITIES HAVE BEEN SHOWN TO THE GREATEST EXTENT POSSIBLE BASED UPON INFORMATION PROVIDED TO THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES AND FIELD LOCATING UTILITIES PRIOR TO CONSTRUCTION AND IDENTIFYING ANY POTENTIAL CONFLICTS. ALL CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ANY REQUIRED UTILITY RELOCATIONS. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL VERIFY FLOW-LINES AND STRUCTURE TOPS PRIOR TO CONSTRUCTION, AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES. PROVIDE SHOP DRAWINGS FOR ALL PRECAST AND MANUFACTURED UTILITY STRUCTURES FOR REVIEW BY THE ENGINEER PRIOR TO CONSTRUCTION OF THE STRUCTURES.
4. UTILITY SEPARATION: WATERLINES SHALL HAVE A MINIMUM OF 10 FEET HORIZONTAL AND 2 FEET VERTICAL SEPARATION FROM ALL STORM SEWER LINES. IF MINIMUM SEPARATIONS CAN NOT BE OBTAINED, CONCRETE ENCASUREMENT OF THE STORM SEWER LINE SHALL BE REQUIRED 10 FEET IN EACH DIRECTION OF THE CONFLICT.
5. PAYMENT FOR TRENCHING, BACKFILLING, PIPE EMBEDMENT, FLOWABLE FILL, BACKFILL MATERIALS, CLEAN UP, SEEDING, SODDING AND ANY OTHER ITEMS NECESSARY FOR THE CONSTRUCTION OF THE UTILITY LINE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE UTILITY INSTALLATION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING RESPECTIVE UTILITY COMPANIES 48-HOURS IN ADVANCE FOR THE INSPECTION OF ANY PROPOSED UTILITY MAIN EXTENSION OR SERVICE LINE OR SERVICE CONNECTION TO ANY EXISTING MAIN.
7. TRENCH SPOILS SHALL BE NEATLY PLACED ONSITE ADJACENT TO THE TRENCH, AND COMPACTED TO PREVENT SATURATION AND EXCESS SEDIMENT RUNOFF. UNSUITABLE MATERIALS, ROCK AND SHALE, ASPHALT, CONCRETE, TREES, BRUSH ETC. SHALL BE PROPERLY DISPOSED OF OFFSITE. MATERIALS MAY BE WASTED ONSITE AT THE DIRECTION OF THE OWNER OR HIS APPOINTED REPRESENTATIVE.

Sheet List Table	
Sheet Number	Sheet Title
1	COVER
2	GENERAL LAYOUT
3	LINE 1 PLAN AND PROFILE
4	LINE 2 & 3 PLAN AND PROFILE
5	WATER LINE DETAILS

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
#E2002003860F #LAC201005237 #LS200200895F

PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

**WOODLAND GLEN 2ND PLAT
WATER LINE PLANS
WARD ROAD AND WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI**

OWNER/DEVELOPER:

ABP FUNDING, LLC
JOHN DUGGAN
9101 W. 110TH STREET, SUITE 200
OVERLAND PARK, KANSAS 66210
p 913-208-2283
JDUGGAN@KC-DSLAW.COM

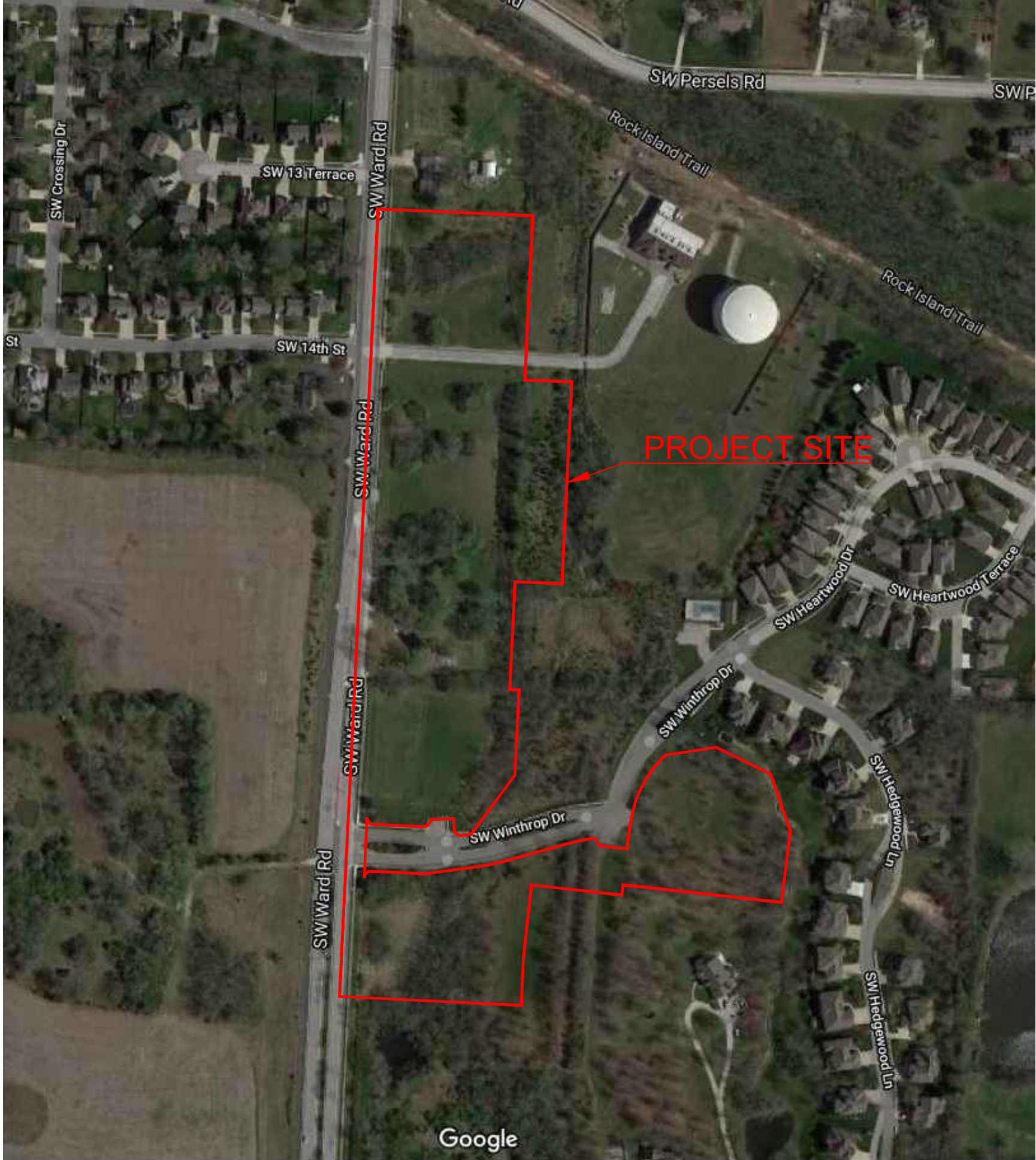
RECORD DRAWING

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"400-00 100.10", "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: 10/18/2022
Certified by: RPM
Title: Design Engineer
Firm: Schlager and Associates, P.A.

SUMMARY OF QUANTITIES		
ITEM	QUANTITY	UNITS
1 CONNECT TO EXISTING WATER LINE	2	EA
2 FIRE HYDRANT ASSEMBLY	3	EA
3 INLINE TEMPORARY FIRE HYDRANT ASSEMBLY	2	EA
4 8" C-900 PVC	1,625	LF
5 8" GATE VALVE	4	EA
6 8"X8" TEE	2	EA
7 8" 11.25' PVC BEND w/ THRUST BLOCKS	9	EA
8 8" 22.5' PVC BEND w/ THRUST BLOCKS	3	EA
9 CITY PERMIT FEE	1	LS
10 BOND	1	LS



VICINITY MAP
N.T.S.



PROJECT BENCHMARK:

SW CORNER NW 1/4 SEC. 18-47N-31W, JACKSON COUNTY, MO.
3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41

COVER

SHEET

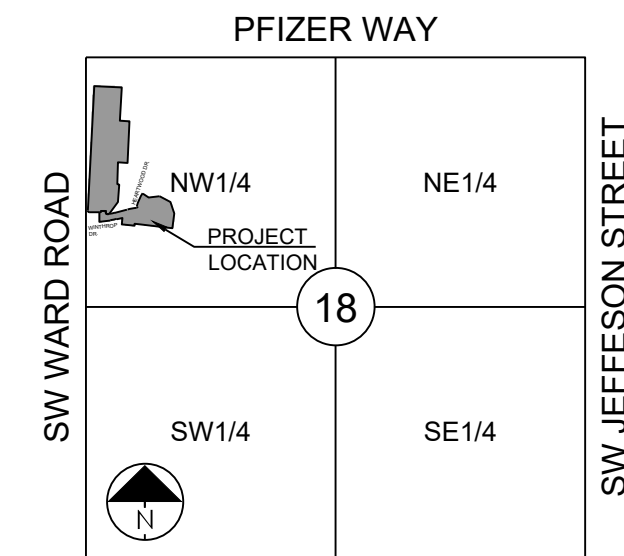
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PROJECT BENCHMARK:

SW CORNER NW 1/4 SEC. 18-47N-31W, JACKSON COUNTY, MO.
 3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
 M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41



SECTION 18-47N-31W
LOCATION MAP
 SCALE 1" = 2000'

GENERAL NOTES:

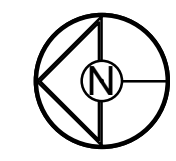
1. ALL CONSTRUCTION TO FOLLOW THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATIONS.
3. FOR ALL WATER LINES THE MAXIMUM DEPTH OF COVER IS SEVEN (7) FEET.

RECORD DRAWING

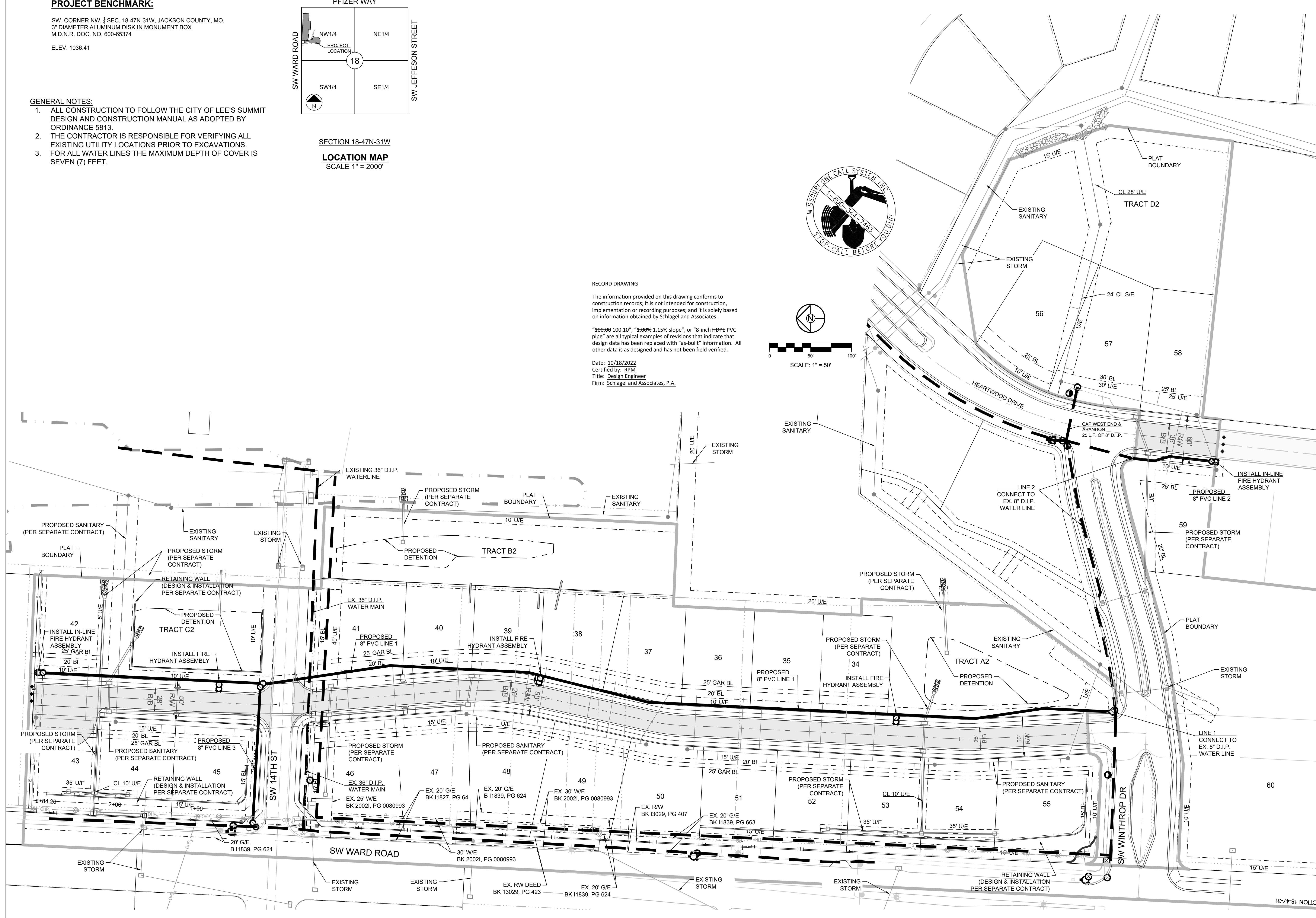
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Date: 10/18/2022
 Certified by: RPM
 Title: Design Engineer
 Firm: Schlager and Associates, P.A.



SCALE: 1" = 50'



PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

**WOODLAND GLEN 2ND PLAT
 WATER LINE PLANS
 WARD ROAD AND WINTHROP DRIVE
 LEE'S SUMMIT, MISSOURI**

REVISION DATE	DESCRIPTION
4-21-2020	CITY COMMENTS
5-22-2020	CITY COMMENTS
6-13-2020	CITY COMMENTS
7-8-2020	CITY COMMENTS
01/12/2021	SCHLAGEL QUANTITIES
02/26/2020	CITY COMMENTS
09/15/2022	CITY COMMENTS
10/18/2022	AS-BUILTS

GENERAL LAYOUT

SHEET

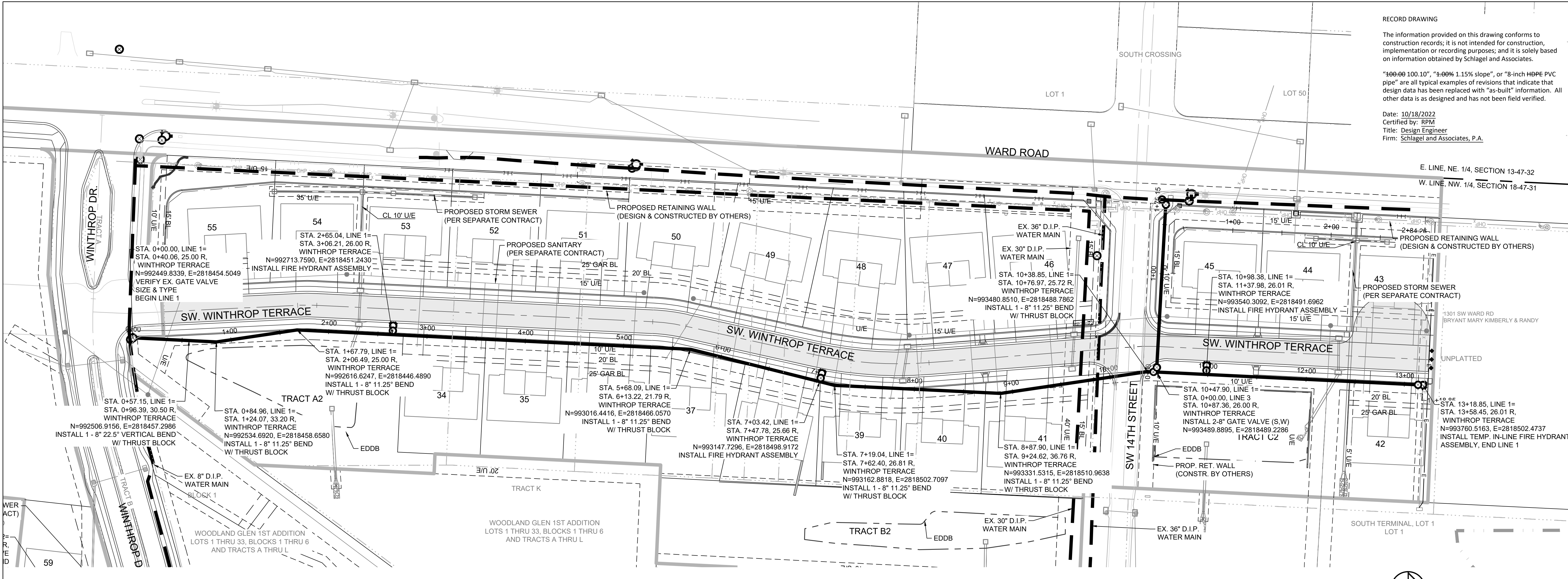
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RECORD DRAWING
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 Date: 10/18/2022
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 Title: Design Engineer
 Firm: Schlagel and Associates, P.A.

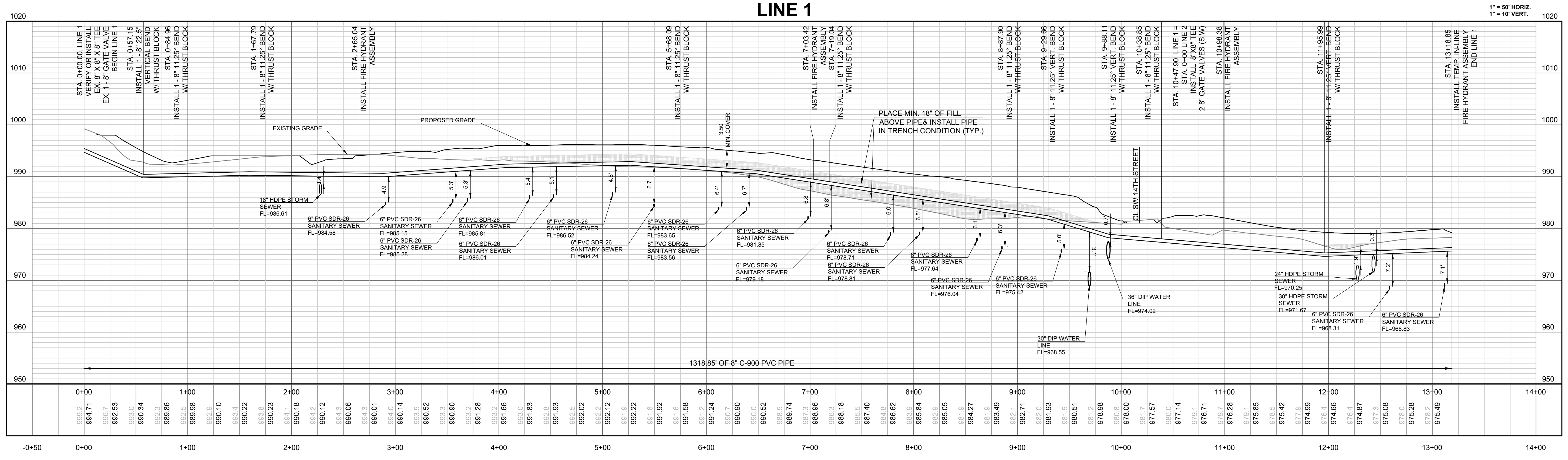
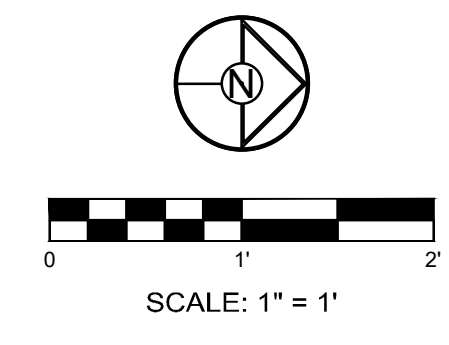
PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

**WOODLAND GLEN 2ND PLAT
 WATER LINE PLANS
 WARD ROAD AND WINTHROP DRIVE
 LEE'S SUMMIT, MISSOURI**



NOTE:
 CONTRACTOR TO VERIFY LOCATION AND DEPTHS OF ALL UTILITIES PRIOR TO CONSTRUCTION.

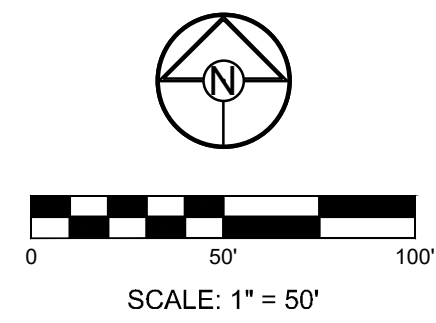
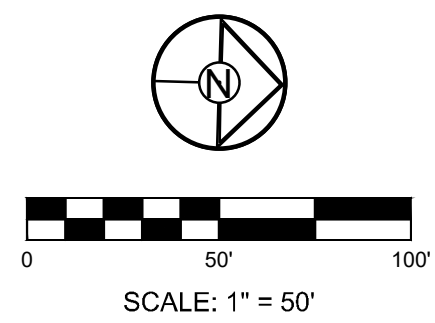
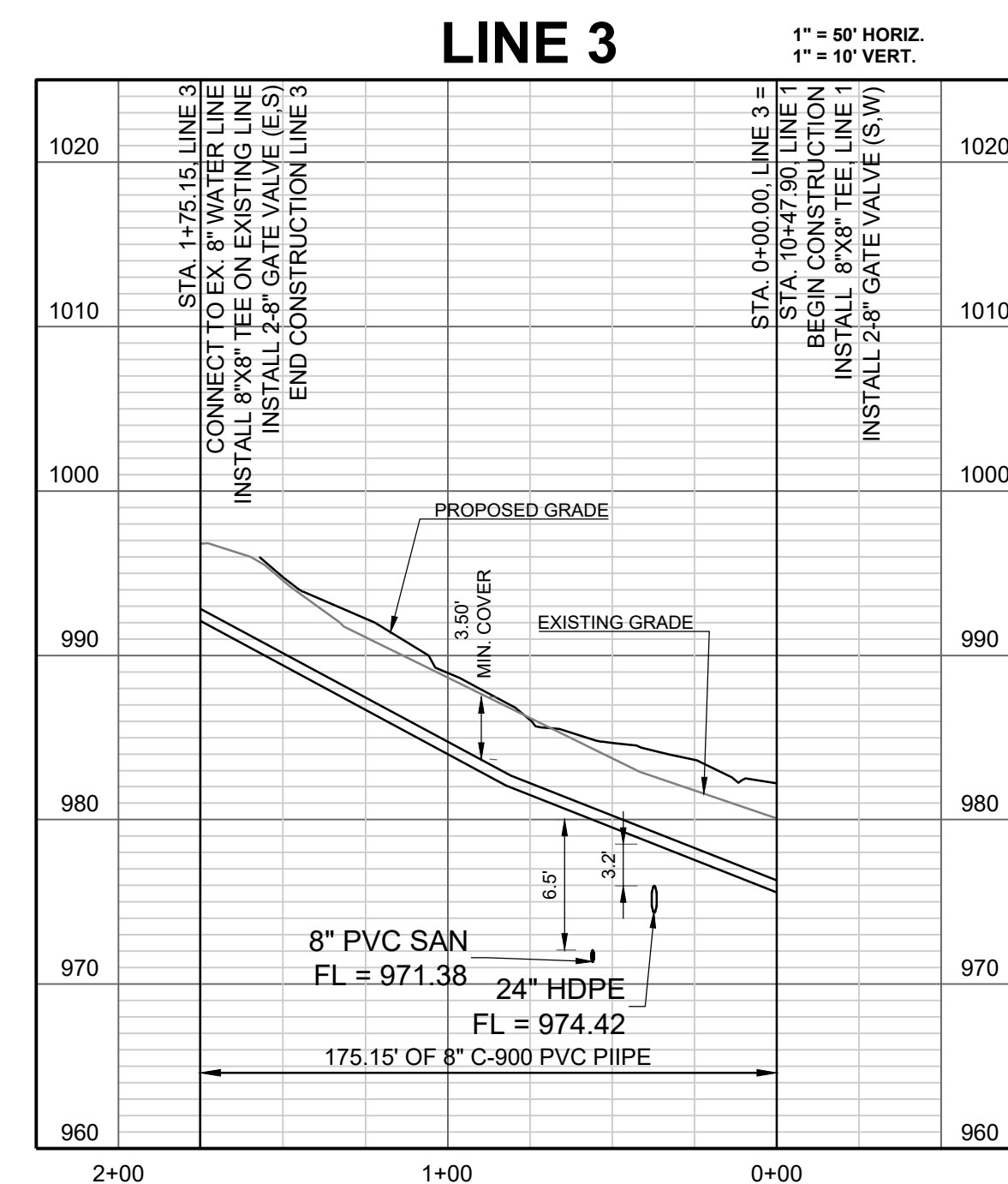
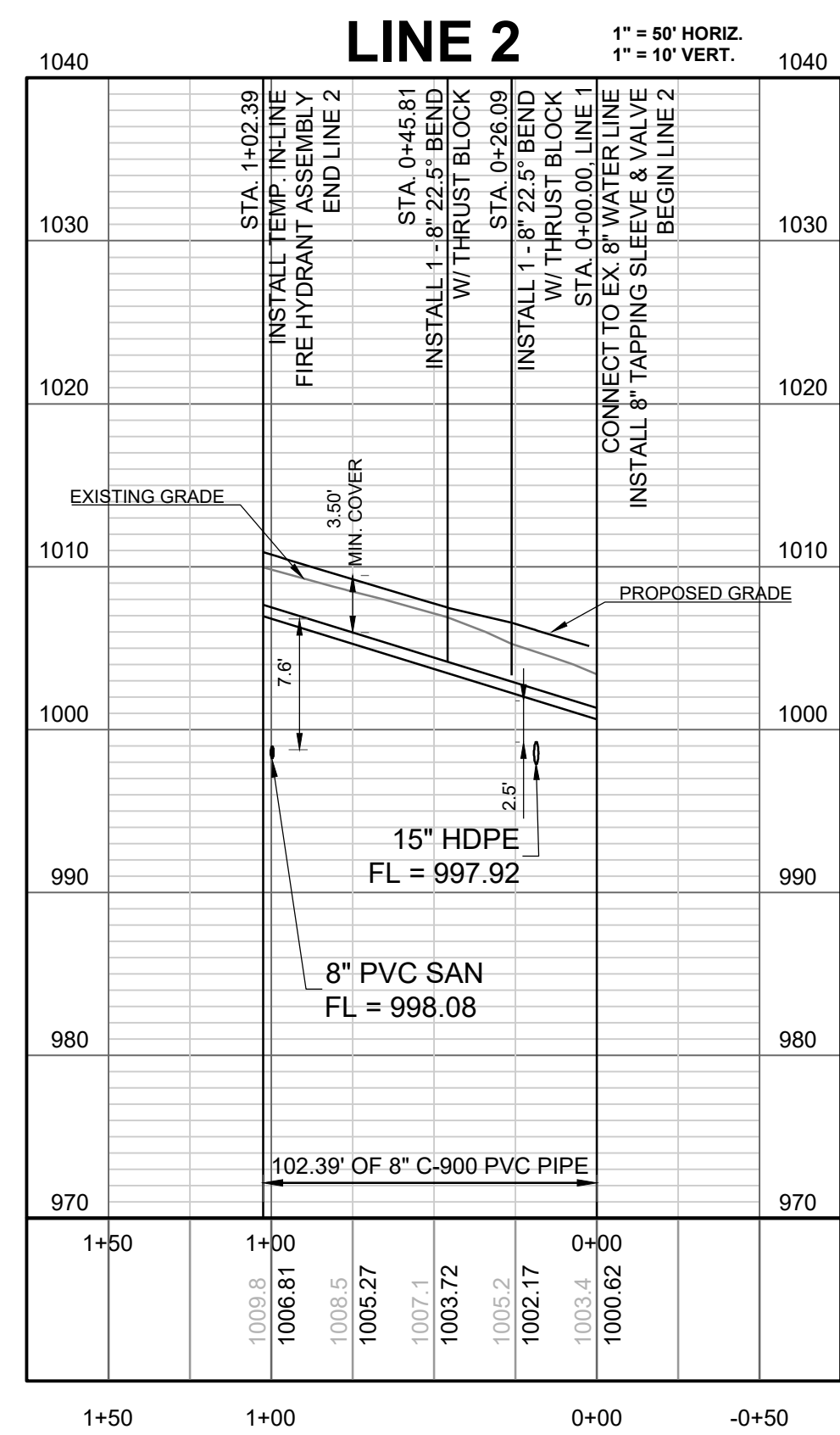
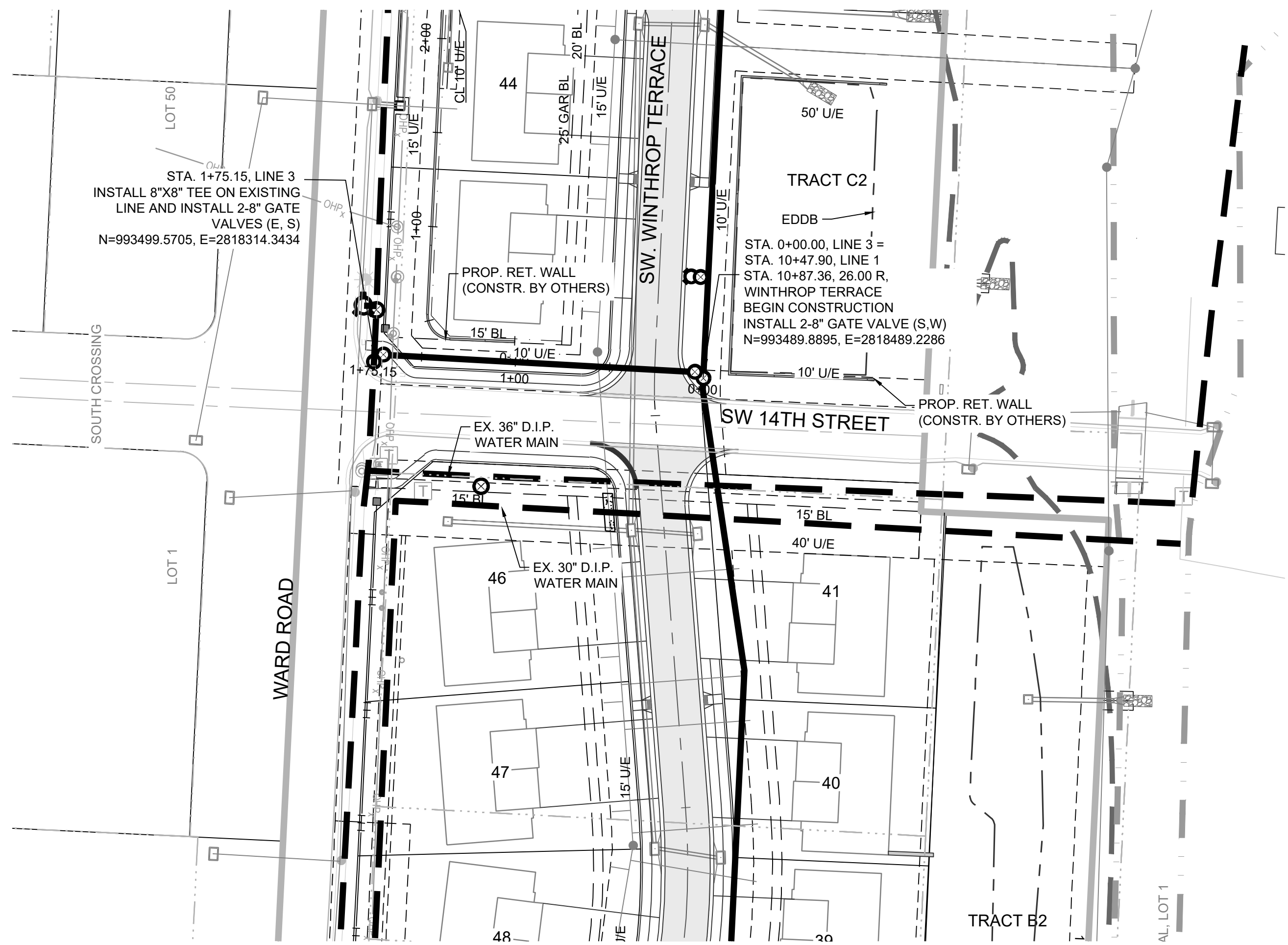
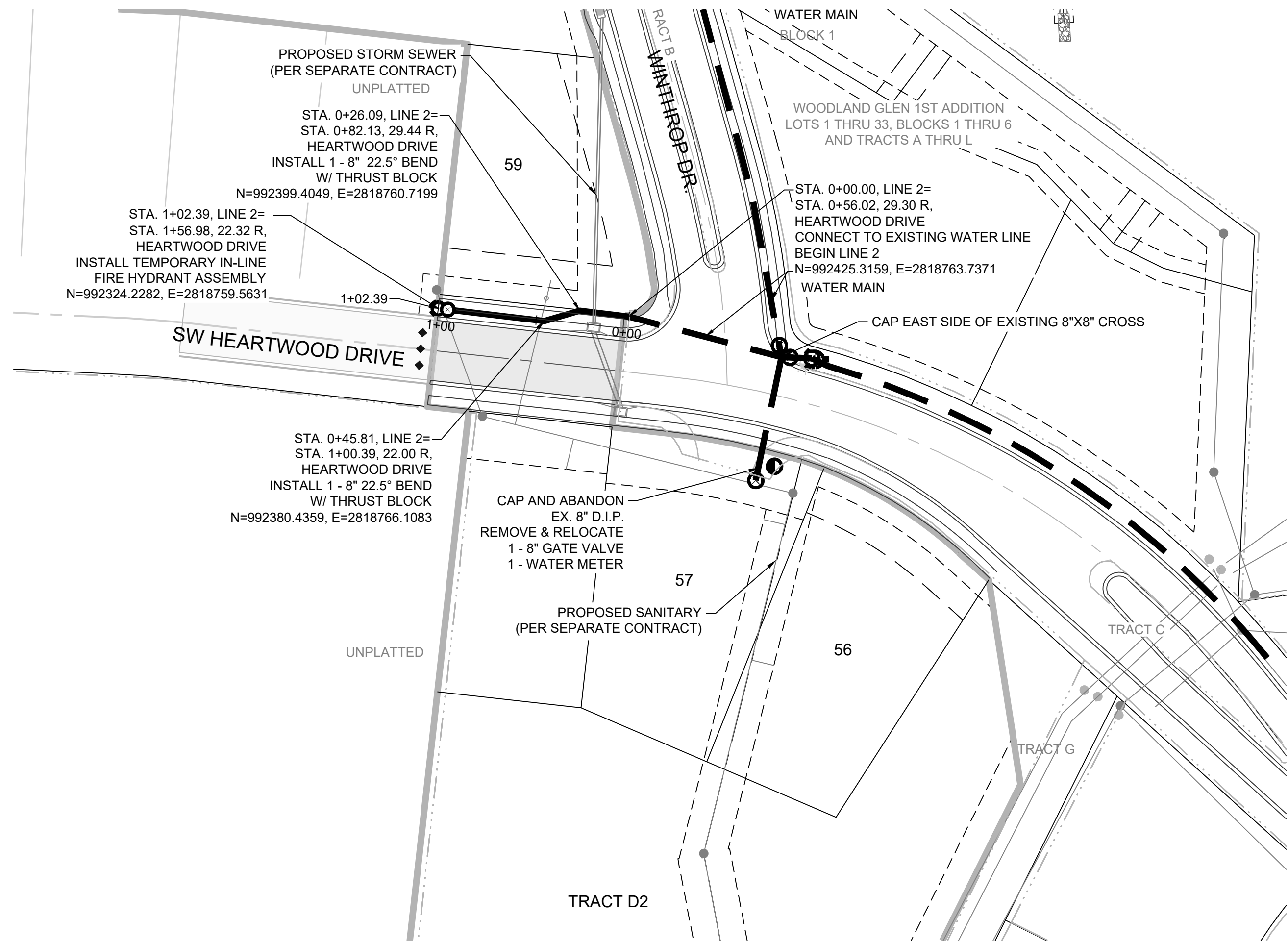


REVISION DATE	DESCRIPTION
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6-13-2020	CITY COMMENTS
7-8-2020	CITY COMMENTS
01/12/2021	SCHLAGEL QUANTITIES
02/20/2020	DATE PREPARED
09/15/2022	CITY COMMENTS
10/18/2022	AS-BUILTS

DRAWN BY: RPM
 CHECKED BY: MAB
 DATE PREPARED: 02/20/2020
 PROJ. NUMBER: 18-017

LINE 1 PLAN AND PROFILE

SHEET



NOTE:
 CONTRACTOR TO VERIFY LOCATION AND DEPTHS OF ALL UTILITIES PRIOR TO CONSTRUCTION.

RECORD DRAWING

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Date: 10/18/2022
 Certified by: RPM
 Title: Design Engineer
 Firm: Schlager and Associates, P.A.

**WOODLAND GLEN 2ND PLAT
 WATER LINE PLANS
 WARD ROAD AND WINTHROP DRIVE
 LEE'S SUMMIT, MISSOURI**

REVISION DATE	DESCRIPTION
4-21-2020	CITY COMMENTS
5-22-2020	CITY COMMENTS
6-13-2020	CITY COMMENTS
7-8-2020	CITY COMMENTS
01/12/2021	SCHLAGEL QUANTITIES
02/20/2020	CITY COMMENTS
09/15/2022	CITY COMMENTS
10/18/2022	AS-BUILTS

LINE 2 & 3 PLAN AND PROFILE

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PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

WOODLAND GLEN 2ND PLAT
 WATER LINE PLANS
 WARD ROAD AND WINTHROP DRIVE
 LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
4-21-2020	CITY COMMENTS
5-22-2020	CITY COMMENTS
6-13-2020	CITY COMMENTS
7-8-2020	CITY COMMENTS
01/11/2021	SCHLAGEL QUANTITIES
02/26/2020	CITY COMMENTS
09/15/2022	CITY COMMENTS
10/18/2022	AS-BUILTS

WATER LINE
 DETAILS

SHEET

5

RECORD DRAWING

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Date: 10/18/2022
 Certified by: RPM
 Title: Design Engineer
 Firm: Schlager and Associates, P.A.

REQUIRED CONCRETE BEARING AREA (SQ. FEET - SF)

NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND
6	4.7	6.7	4.0	4.0
8	8.4	11.8	6.4	4.0
10	13.1	18.5	10.0	4.0
12	18.8	26.7	14.4	4.0
14	25.7	36.3	19.6	5.0
16	33.5	47.4	25.8	6.6
18	42.4	REST. JT.	32.5	8.3
20	REST. JT.	REST. JT.	40.1	10.3
24	REST. JT.	REST. JT.	REST. JT.	14.8

REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)

NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND
6	50.5	71.4	38.6	19.7
8	89.8	126.9	68.7	35.0
10	140.2	198.3	107.3	54.7
12	202.0	REST. JT.	154.6	78.8
14	REST. JT.	REST. JT.	210.4	107.3
16	REST. JT.	REST. JT.	REST. JT.	140.1
18	REST. JT.	REST. JT.	REST. JT.	177.3
20	REST. JT.	REST. JT.	REST. JT.	110.0
24	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 AREA MUST BE AGAINST UNDISTURBED SOIL.
 4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

DATE: 02/13
DRAWN BY: JN
CHECKED BY: DL
FILE: WAT-2
REV: 1/14

REQUIRED CONCRETE BEARING AREA (SQ. FEET - SF)

NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND
6	4.7	6.7	4.0	4.0
8	8.4	11.8	6.4	4.0
10	13.1	18.5	10.0	4.0
12	18.8	26.7	14.4	4.0
14	25.7	36.3	19.6	5.0
16	33.5	47.4	25.8	6.6
18	42.4	REST. JT.	32.5	8.3
20	REST. JT.	REST. JT.	40.1	10.3
24	REST. JT.	REST. JT.	REST. JT.	14.8

REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)

NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND
6	50.5	71.4	38.6	19.7
8	89.8	126.9	68.7	35.0
10	140.2	198.3	107.3	54.7
12	202.0	REST. JT.	154.6	78.8
14	REST. JT.	REST. JT.	210.4	107.3
16	REST. JT.	REST. JT.	REST. JT.	140.1
18	REST. JT.	REST. JT.	REST. JT.	177.3
20	REST. JT.	REST. JT.	REST. JT.	110.0
24	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.

DATE: 02/13
DRAWN BY: JN
CHECKED BY: DL
FILE: WAT-1
REV: 1/14

REQUIRED CONCRETE BEARING AREA (SQ. FEET - SF)

NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND
6	4.7	6.7	4.0	4.0
8	8.4	11.8	6.4	4.0
10	13.1	18.5	10.0	4.0
12	18.8	26.7	14.4	4.0
14	25.7	36.3	19.6	5.0
16	33.5	47.4	25.8	6.6
18	42.4	REST. JT.	32.5	8.3
20	REST. JT.	REST. JT.	40.1	10.3
24	REST. JT.	REST. JT.	REST. JT.	14.8

REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)

NOM. DIA. (INCHES)	TEE, PLUG	BEND	BEND	BEND
6	50.5	71.4	38.6	19.7
8	89.8	126.9	68.7	35.0
10	140.2	198.3	107.3	54.7
12	202.0	REST. JT.	154.6	78.8
14	REST. JT.	REST. JT.	210.4	107.3
16	REST. JT.	REST. JT.	REST. JT.	140.1
18	REST. JT.	REST. JT.	REST. JT.	177.3
20	REST. JT.	REST. JT.	REST. JT.	110.0
24	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 AREA MUST BE AGAINST UNDISTURBED SOIL.
 4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

DATE: 02/13
DRAWN BY: JN
CHECKED BY: DL
FILE: WAT-1
REV: 1/14

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" MINIMUM BURY DEPTH FOR ALL SERVICE LINES.
 6. EXCAVATION FOR TAP TO EXPOSE 4 LINEAR FEET OF MAIN.
 7. NO SPLICES ALLOWED BETWEEN METER AND MAIN.
 8. SERVICE CONNECTION TAP AT APPROXIMATELY 45 DEGREES.
 9. LID AND RISER RING SHALL BE SET SO THAT GROUND WATER WILL DRAIN AWAY FROM THE WELL.
 10. CONTACT WATER UTILITIES, 816-969-1900, FOR REQUIREMENTS OF A METER LARGER THAN 2"

DATE: 02/13
DRAWN BY: JN
CHECKED BY: DL
FILE: WAT-11
REV: 1/14

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.

DATE: 02/13
DRAWN BY: JN
CHECKED BY: DL
FILE: WAT-9
REV: 1/14

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.

DATE: 02/13
DRAWN BY: JN
CHECKED BY: DL
FILE: WAT-7
REV: 1/14