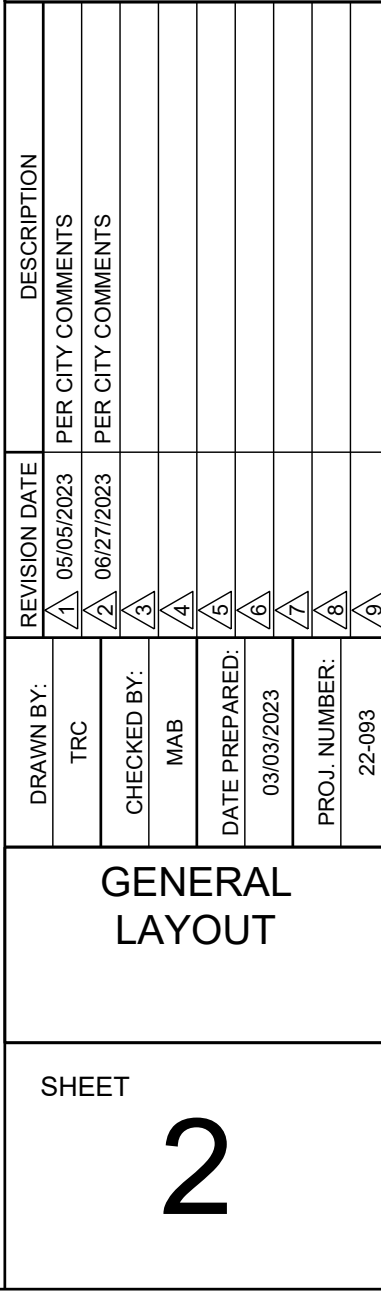
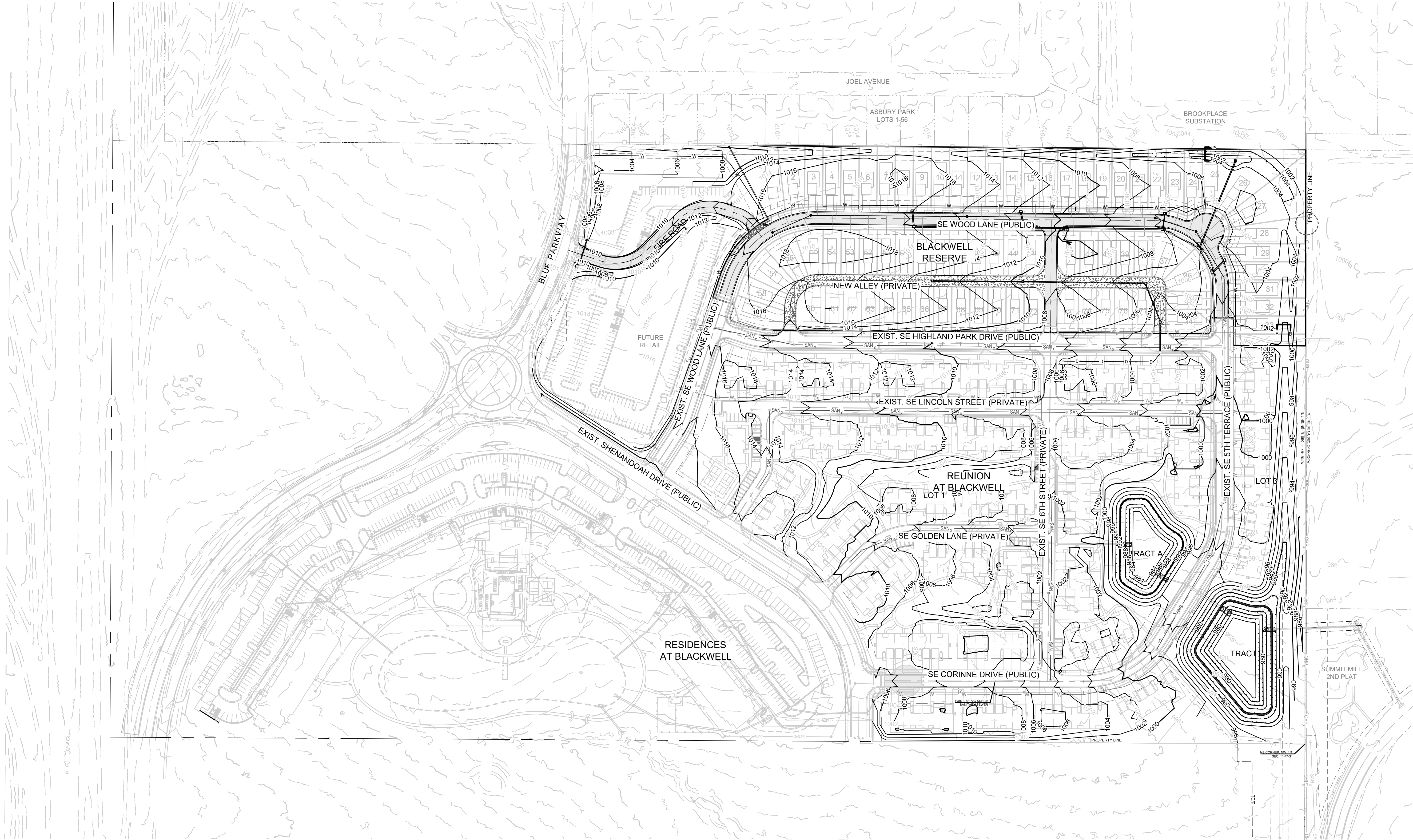






GRADING LEGEND:

--- 1000 --- EXISTING CONTOUR

— 1000 — PROPOSED CONTOUR (FINISHED GRADE)

- 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.

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

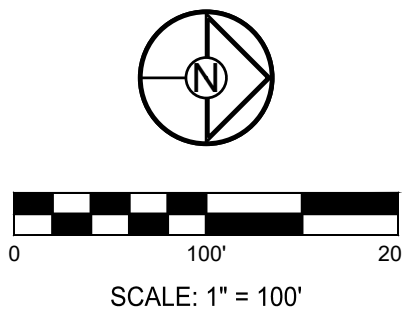
ELEV. 997.045

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



BLACKWELL RESERVE

STREET AND STORM SEWER PLANS

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS

OVERALL GRADING PLAN

SHEET

3

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:

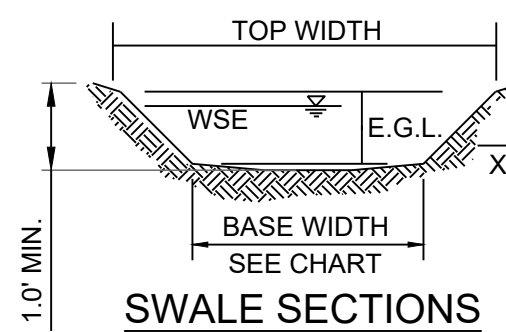
MARK ALLEN BREUER

MEMBER

PE-2009007268

06.27.2023

SCHLAGEL & ASSOCIATES, P.A.

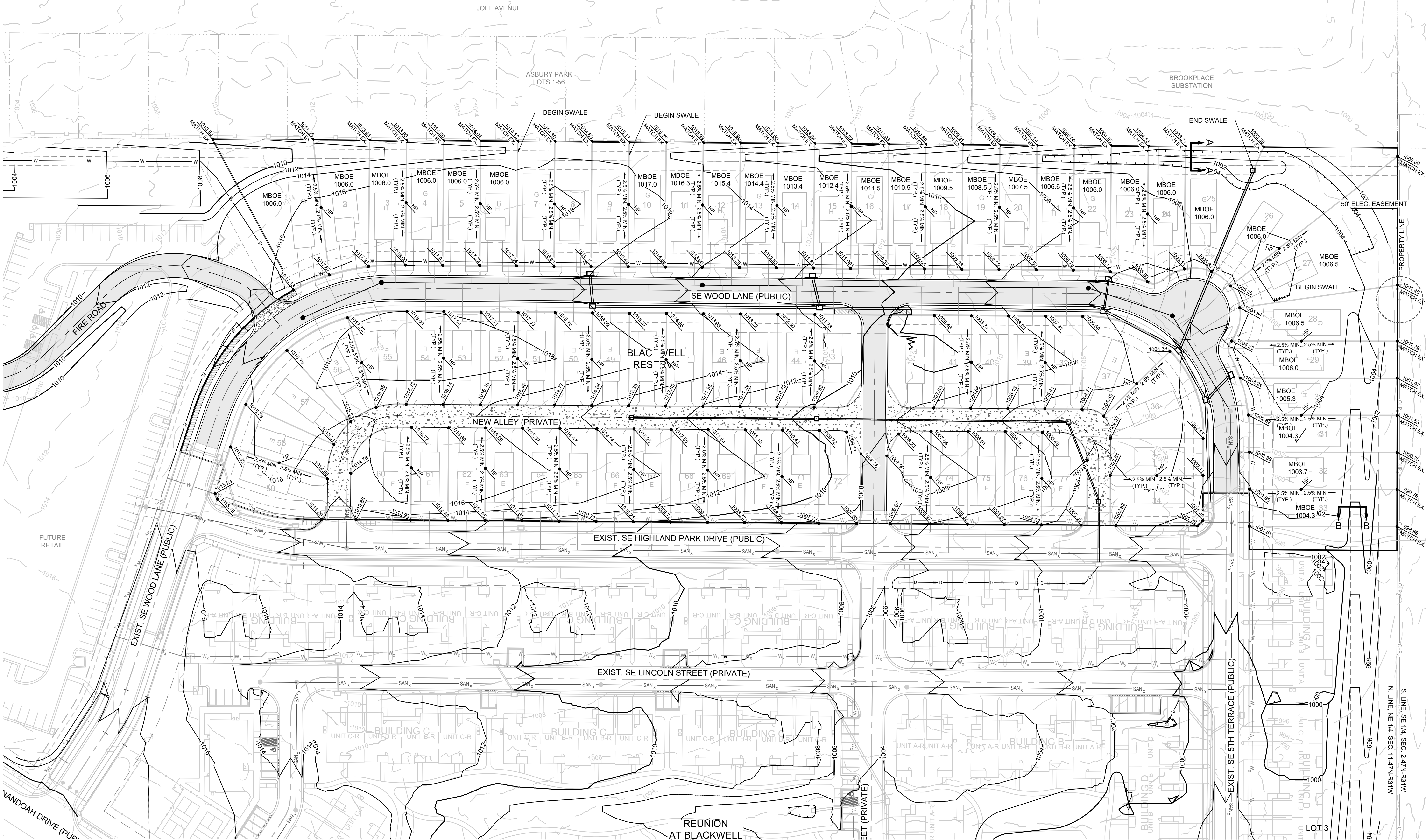


RUNOFF CALCULATIONS:
 $Q = K \cdot C \cdot I \cdot A$
 $K_{100} = 1.25$ $K_{10} = 1.0$ $C = 0.51$
 $I_{10} = 7.35$ $I_{100} = 10.32$
VELOCITY HEAD = $(\text{VELOCITY})^2 / 64.4$
EGL = DEPTH + VELOCITY HEAD

ENGINEERED CHANNELS													
LOCATION	SECTION	DRAINAGE AREA (AC.)	Q100 (CFS)	Q10 (CFS)	DESIGN OVERFLOW FORMULA	DESIGN OVERFLOW (CFS)	BED SLOPE (%)	SIDE SLOPE (X:1)	BASE WIDTH (FT)	CROSS SECTION AREA (FT ²)	TOP WIDTH (FT)	NOMINAL DEPTH (FT.)	AVERAGE VELOCITY (FPS)
LOT 25	A	1.25	10.64	6.06	Q100(A)	10.64	2.40	5.00	6.00	5.05	11.70	0.38	3.50
LOT 33	B	0.66	5.62	3.20	Q100(B)	5.62	2.00	5.00	6.00	3.12	9.92	0.28	2.68

NOTES:

- MBOE = MINIMUM BUILDING OPENING ELEVATION FOR HOUSES ADJACENT TO ENGINEERED OVERFLOW SWALES SHALL BE A MINIMUM OF 2 FEET ABOVE THE WATER SURFACE ELEVATION FOR THE 1% CHANCE STORM EVENT APPROVED INDIVIDUAL LOT PLOT PLANS MAY ALTER THE CONSTRUCTED SWALES IN ELEVATION (CONTOUR) FROM THE GRADING PLAN AS LONG AS THE MBOE IS ADJUSTED ACCORDING TO THE ABOVE CRITERIA.
- EGL = ENERGY GRADE LINE (100 YR)
- MVSE = MAXIMUM WATER SURFACE ELEVATION (100 YR)
- MBOE'S ADJACENT TO SUMPED AREA INLETS SHALL BE A MINIMUM OF 1' ABOVE TOP OF ADJACENT BERM.



TURF REINFORCEMENT MAT NOTES:

- REFERENCE "MASS GRADING & EROSION SEDIMENT CONTROL PLANS FOR RESIDENCES, TRADITIONS & RESERVE AT BLACKWELL" FOR TURF REINFORCEMENT MAT INSTALLATION.
- MAINTIAN, REPAIR AND REPLACE TURF REINFORCEMENT MAT AS NECESSARY.

GRADING LEGEND:

--- 1000 --- EXISTING CONTOUR
--- 1000 --- PROPOSED CONTOUR (FINISHED GRADE)

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.

TRANSMISSION EASEMENT NOTES:

- EXCAVATION NOT PERMITTED WITHIN 25 FEET OF TRANSMISSION POLES.
- SOIL SHALL NOT COME INTO CONTACT WITH TRANSMISSION POLES.
- OPERATION OF EQUIPMENT OVER 14 FEET IN HEIGHT WITHIN TRANSMISSION EASEMENT IS NOT PERMITTED.
- CONSTRUCTION EQUIPMENT SHALL ALWAYS MAINTAIN A MINIMUM DISTANCE OF 20 FEET FROM ENERGIZED TRANSMISSION LINE CONDUCTORS.
- ALL SPOILS ARE TO BE MAINTAINED OUTSIDE THE TRANSMISSION EASEMENT IMMEDIATELY AFTER EXCAVATION TO ASSURE PROPER CLEARANCES.
- FOR ADDITIONAL TRANSMISSION EASEMENT ENCROACHMENT REQUIREMENTS SEE <https://www.evergy.com/partner-with-us/transmission-projects/transmission-line-easements>

MO GRS BENCHMARK:

STATION NAME - JA-90

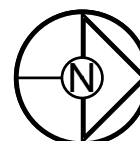
KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

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



0 50' 100'
SCALE: 1" = 50'

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
#E2002003606F #LAC2001005237 #LS200200859F

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

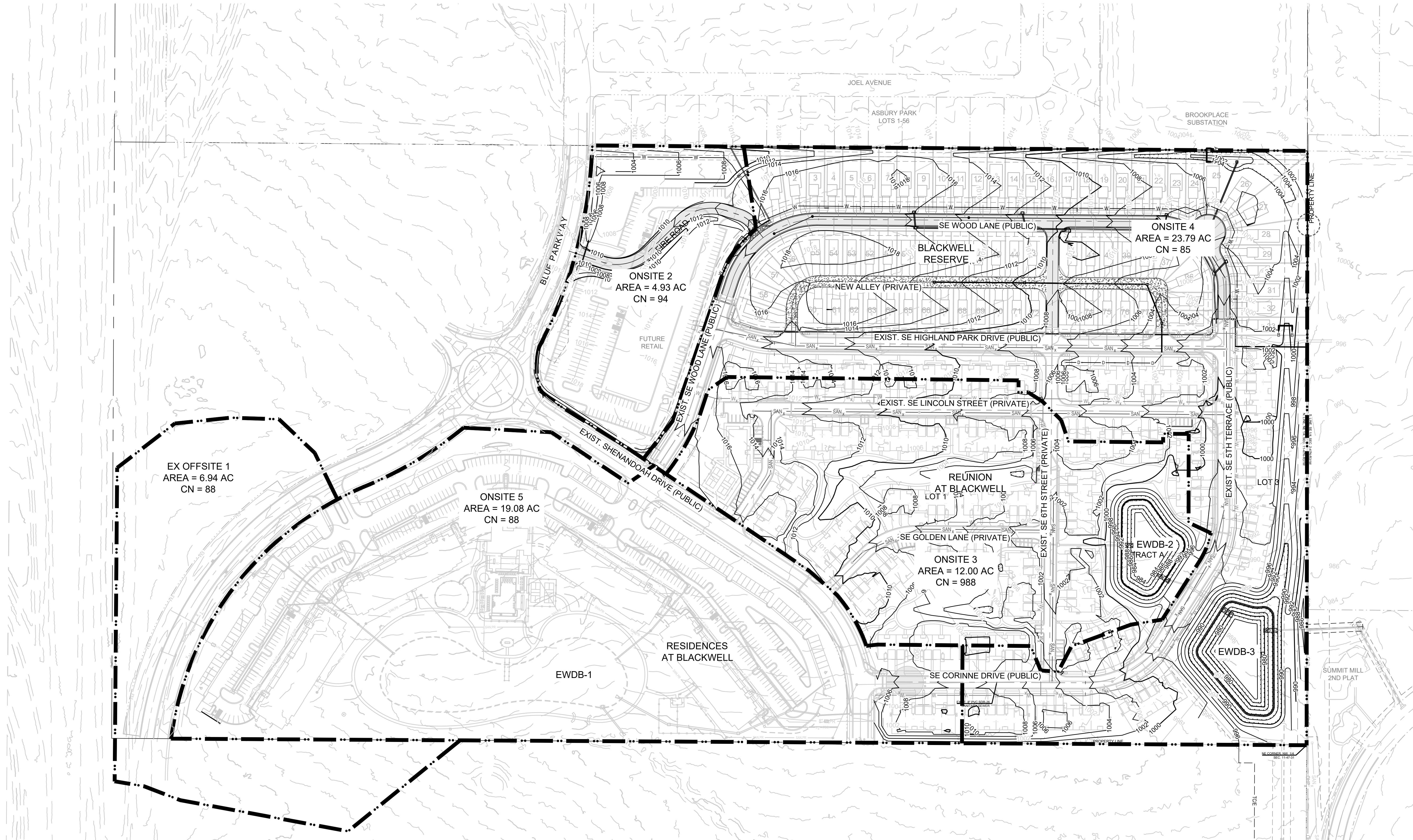
BLACKWELL RESERVE
STREET AND STORM SEWER PLANS
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS

MASTER
DRAINAGE PLAN
- GRADING PLAN

SHEET

I:\PROJECTS\2022\22-0633\0 DWG Plans\01 SS- GRD.dwg, 5 MASTER DRAINAGE PLAN - OVERALL DRAINAGE MAP, 11



GRADING LEGEND:

--- 1000 --- EXISTING CONTOUR

— 1000 — PROPOSED CONTOUR (FINISHED GRADE)

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

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

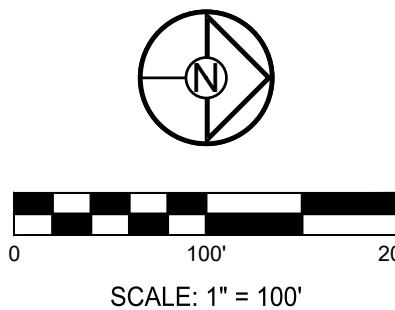
ELEV. 997.045

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



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:
MARK ALLEN BREUER
MEMBER
PE-2009007268
06.27.2023

SCHLAGEL & ASSOCIATES, P.A.

**BLACKWELL RESERVE
STREET AND STORM SEWER PLANS**

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-063

**MASTER
DRAINAGE PLAN
- OVERALL
DRAINAGE MAP**

SHEET



GRADING LEGEND:

--- 1000 --- EXISTING CONTOUR

— 1000 — PROPOSED CONTOUR (FINISHED GRADE)

- 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.

MO GRS BENCHMARK:

STATION NAME - JA-90

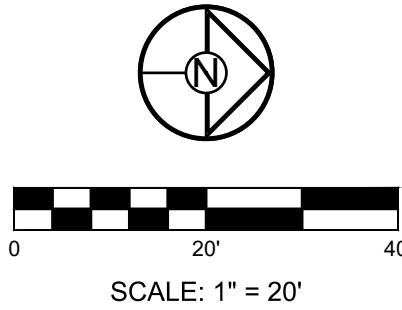
KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD. N:1001052.8503, E:2845604.8272

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



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.

**BLACKWELL RESERVE
STREET AND STORM SEWER PLANS**

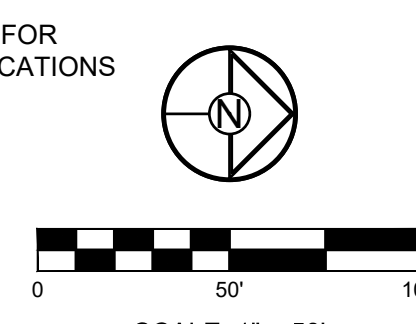
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

DRAWN BY:	REVISION DATE	DESCRIPTION
TRC	05/05/2023	PER CITY COMMENTS
CHECKED BY:	06/27/2023	PER CITY COMMENTS
MAB		
DATE PREPARED:		
03/03/2023		
PROJ. NUMBER:		
22-593		

FIRE ROAD
GRADING PLAN

SHEET

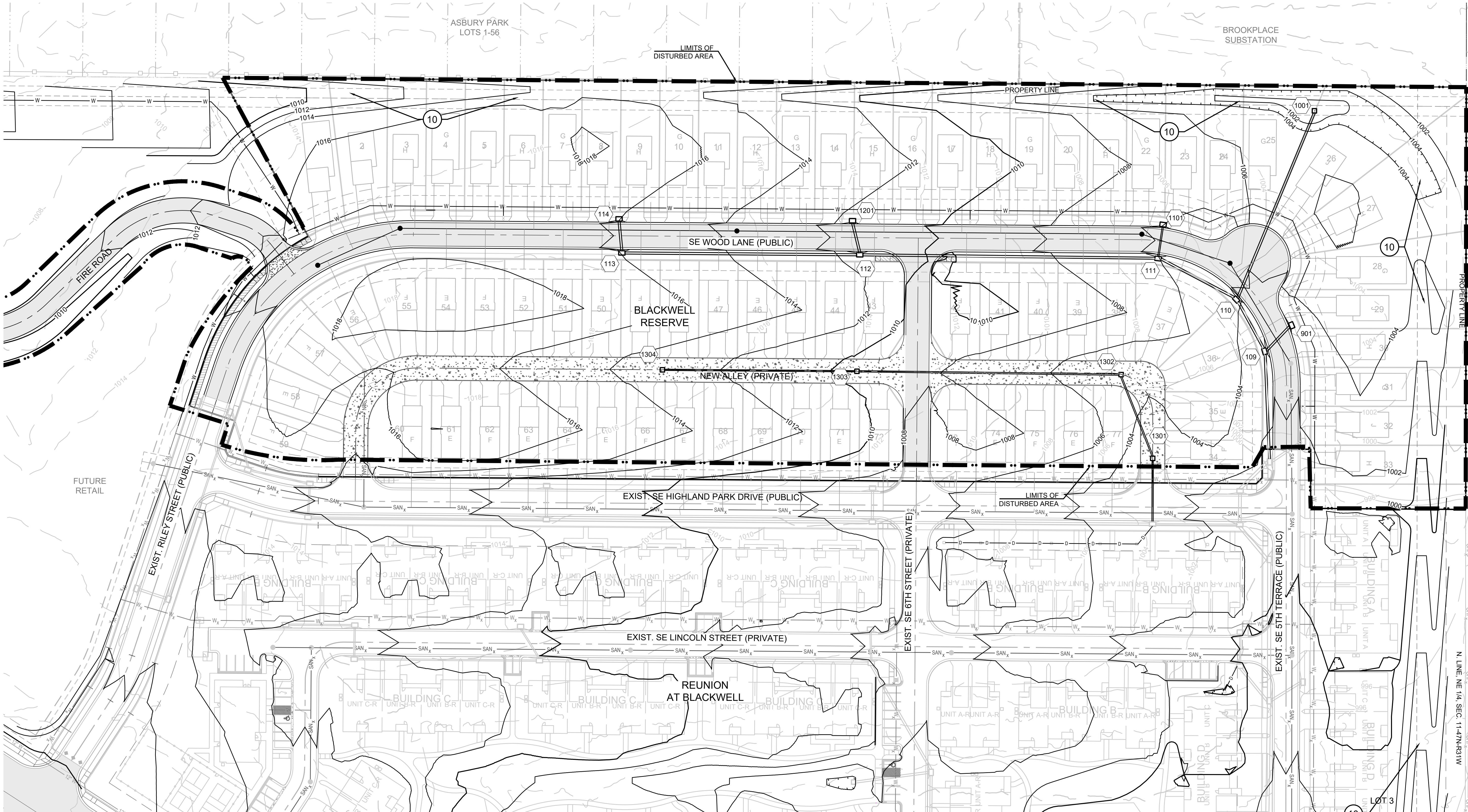
7



LEGEND	
	TEMP. CONSTRUCTION ENTRANCE AND STAGING AREA
	CONCRETE WASHOUT AREA
	ROCK DITCH CHECK
	BMP PLAN REF. NO.
	SILT FENCE FOR INLET PROTECTION PRIOR TO STRUCTURE TOP
	SUPER SEDIMENT SILT FENCE (PRIOR TO LAND DISTURBANCE)
	SILT FENCE (PRIOR TO LAND DISTURBANCE)
	SILT FENCE (DURING CONSTRUCTION)
	LIMITS OF DISTURBANCE
	EXISTING CONTOURS
	PROPOSED CONTOURS
	GRAVEL FILTER FOR STORM SEWER STRUCTURES ONLY

7. ALL PERIMETER SILT FENCE, EARTH DIKES, SEDIMENT BASINS, AND ROCK CONSTRUCTION ENTRANCES WILL BE INSTALLED BEFORE GRADING OPERATIONS BEGIN.
8. SILT FENCE AND EARTH DIKES THAT ARE PLACED BEFORE GRADING BEGINS WILL BE MAINTAINED BY THE GRADING CONTRACTOR.
9. AREAS WITHIN PUBLIC RIGHT-OF-WAY SHALL BE SODDED IMMEDIATELY AFTER CONSTRUCTION IS COMPLETE.
10. SEE MASS GRADING & EROSION SEDIMENT CONTROL PLANS FOR BEDDINGS, TRADITIONS & RESERVE AT BLACKWELL FOR SILT FENCE INSTALLATION.

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



EROSION NOTE:

SEE SHEET 8 FOR EROSION CONTROL STAGING CHART, LEGEND AND SITE SPECIFIC NOTES.

MO GRS BENCHMARK:

STATION NAME - JA-90

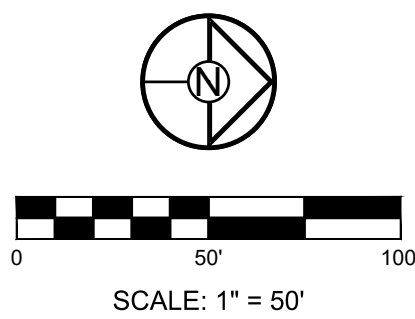
KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD. N:1001052.8503, E:2845604.8272

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



**BLACKWELL RESERVE
STREET AND STORM SEWER PLANS**

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/2023	PER CITY COMMENTS
06/27/2023	PER CITY COMMENTS

POST-CONSTRUCTION
EROSION
CONTROL PLAN

SHEET

10

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:

STATE OF MISSOURI

MARK ALLEN BREUER

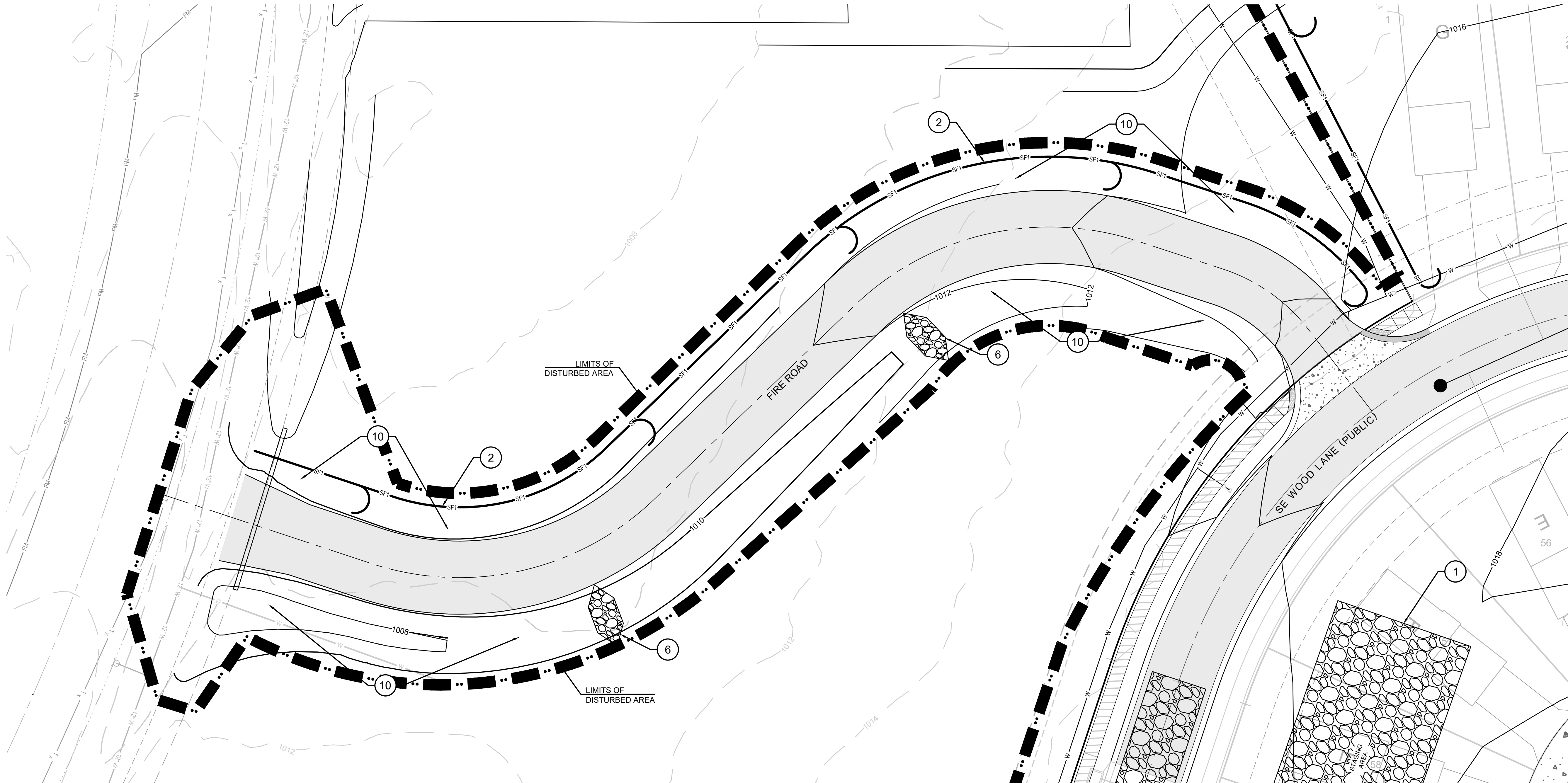
MEMBER

PE-2009007268

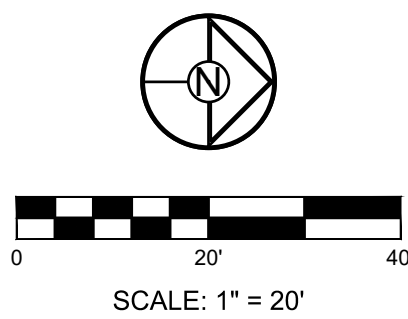
PROFESSIONAL ENGINEER

06.27.2023

SCHLAGEL & ASSOCIATES, P.A.



EROSION NOTE:
SEE SHEET 8 FOR EROSION CONTROL STAGING
CHART, LEGEND AND SITE SPECIFIC NOTES.



BLACKWELL RESERVE
STREET AND STORM SEWER PLANS
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/2023	PER CITY COMMENTS
2 06/27/2023	PER CITY COMMENTS
3	
4	
5	
6	
7	
8	
9	
10	

DRAWN BY: TRC	CHECKED BY: MAB	DATE PREPARED: 03/03/2023	PROJ. NUMBER: 22-593
------------------	--------------------	------------------------------	-------------------------

FIRE ROAD
EROSION
CONTROL PLAN



1. ALL STREET CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL. ALL APPLICABLE AASHTO STANDARDS HAVE BEEN MET.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
3. ALL INSPECTION OF STREET CONSTRUCTION TO BE PERFORMED BY THE CITY OF LEE'S SUMMIT DEVELOPMENT ENGINEERING.
4. CURB RETURN RADI SHALL BE 25' AT BACK OF CURB UNLESS OTHERWISE NOTED.
5. SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
6. ASSUMED DESIGN SPEED = 25 MPH (RESIDENTIAL LOCAL).
7. MINIMUM STOPPING SIGHT DISTANCE = 155 FEET.
8. MINIMUM K, SAG CURVE = 26 (14' WITH LIGHTING), CREST CURVE = 12.
9. GRADE INTERSECTIONS TO DRAIN AS SHOWN.
10. SSD = STOPPING SIGHT DISTANCE.
11. ALL ADA SIDEWALK RAMPS SHALL BE CONSTRUCTED BY THE DEVELOPER WITH THE PUBLIC INFRASTRUCTURE.

SIDEWALK NOTE:
SIDEWALKS AT BUILDINGS WILL BE INSTALLED BY OTHERS
UNLESS NOTED OTHERWISE.

MO GRS BENCHMARK:

STATION NAME - JA-90

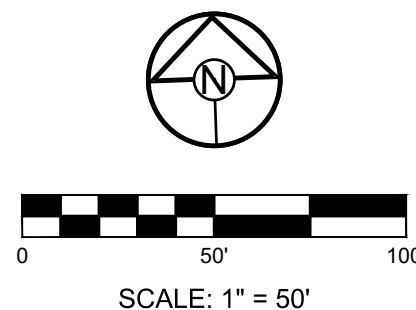
KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988"
LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD
LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD
ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

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



DRAWN BY:		REVISION DATE	DESCRIPTION
TRC		05/05/2023	PER CITY COMMENTS
		06/27/2023	PER CITY COMMENTS
CHECKED BY:			
MAB			
DATE PREPARED			
03/03/2023			
PROJ. NUMBER:			
22 003			

SE 6TH STREET
(PRIVATE) - PLAN
& PROFILE

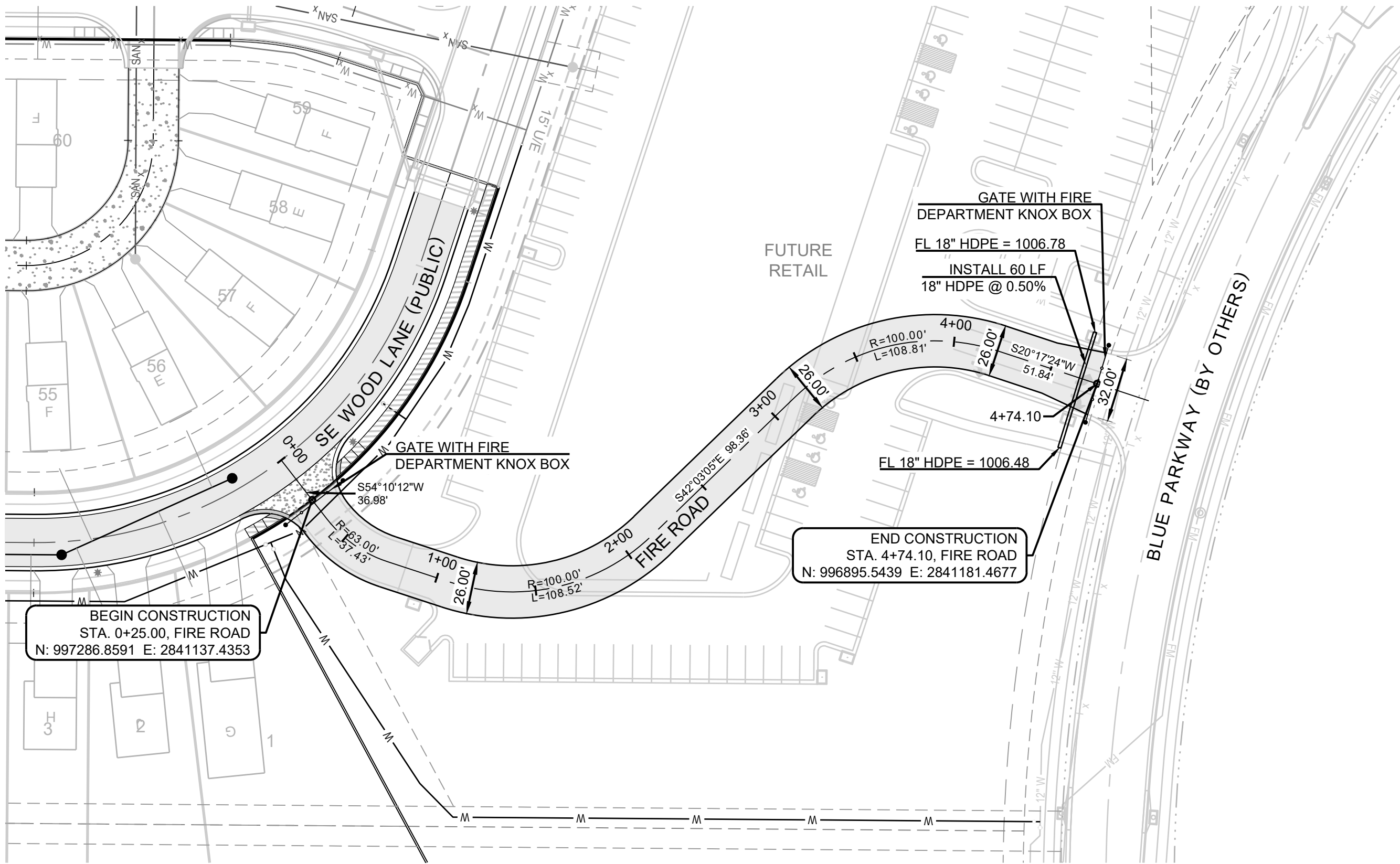
SHEET

14

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.



- STREET NOTES:**
1. ALL STREET CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL. ALL APPLICABLE AASHTO STANDARDS HAVE BEEN MET
 2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
 3. ALL INSPECTION OF STREET CONSTRUCTION TO BE PERFORMED BY THE CITY OF LEE'S SUMMIT DEVELOPMENT ENGINEERING.
 4. CURB RETURN RADII SHALL BE 25' AT BACK OF CURB UNLESS OTHERWISE NOTED.
 5. SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
 6. ASSUMED DESIGN SPEED = 25 MPH (RESIDENTIAL LOCAL).
 7. MINIMUM STOPPING SIGHT DISTANCE = 155 FEET.
 8. MINIMUM K, SAG CURVE = 26 (14' WITH LIGHTING), CREST CURVE = 12.
 9. GRADE INTERSECTIONS TO DRAIN AS SHOWN.
 10. SSD = STOPPING SIGHT DISTANCE.
 11. ALL ADA SIDEWALK RAMPS SHALL BE CONSTRUCTED BY THE DEVELOPER WITH THE PUBLIC INFRASTRUCTURE.

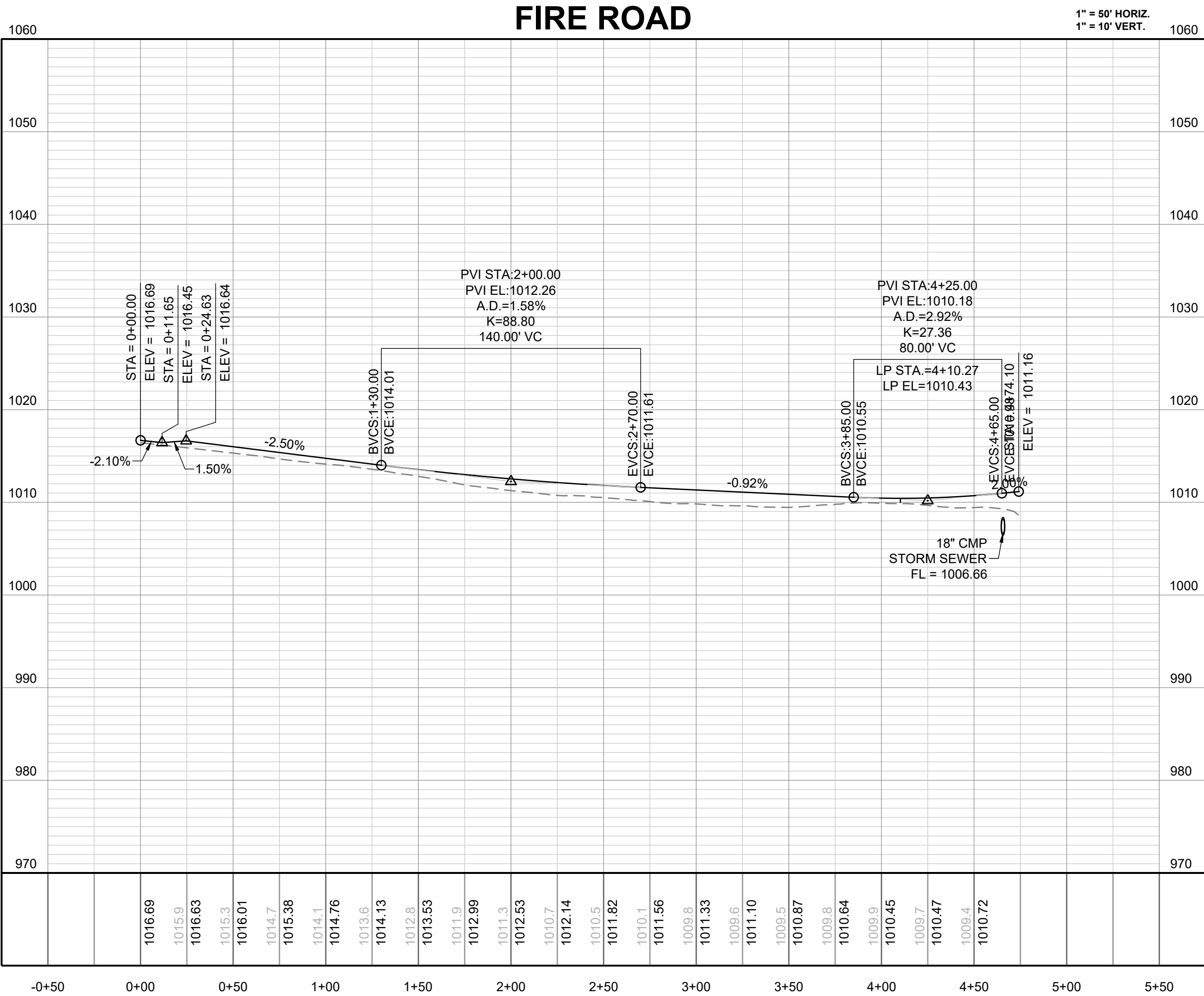
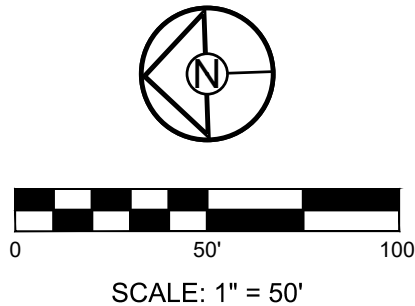
MO GRS BENCHMARK:

STATION NAME - JA-90

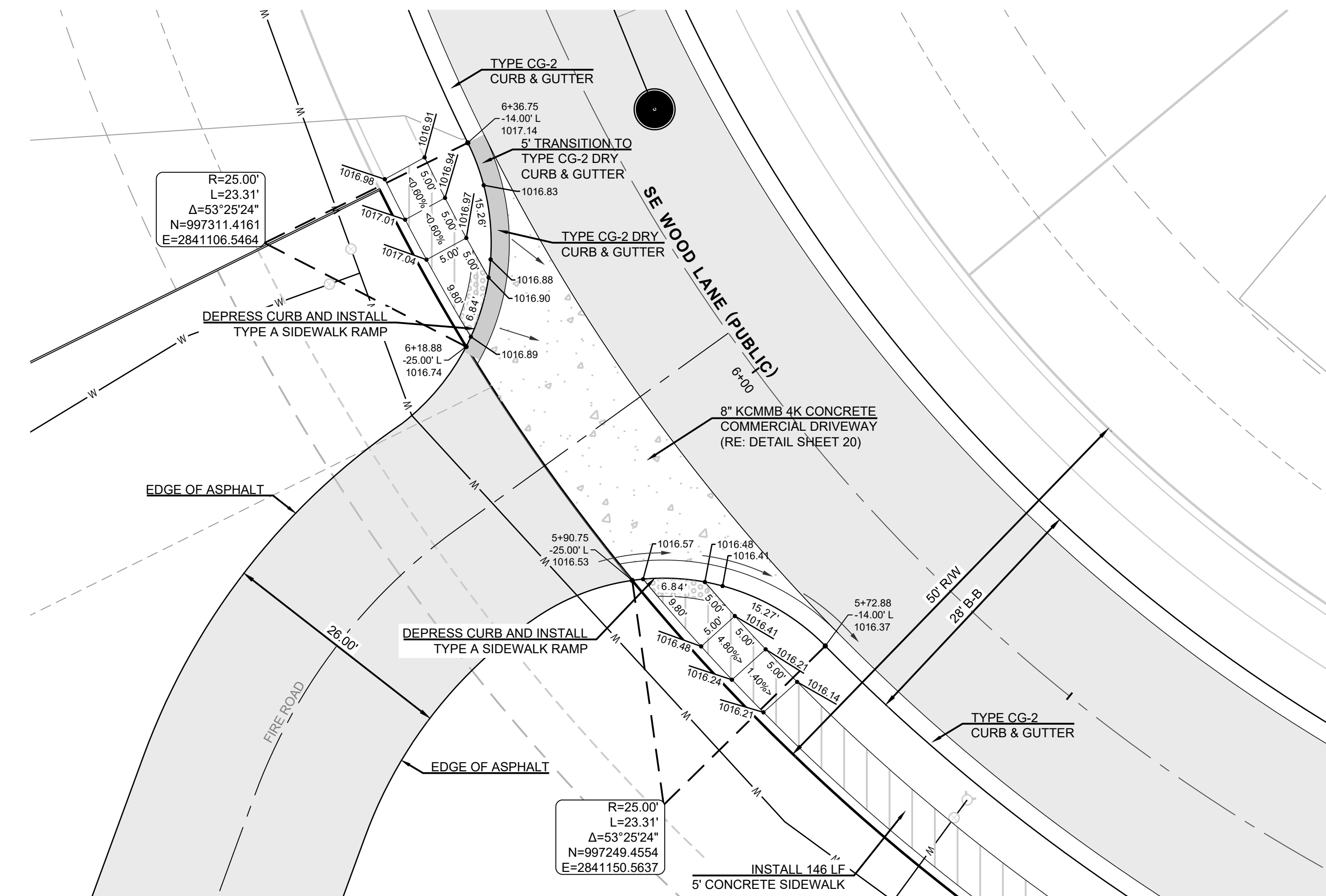
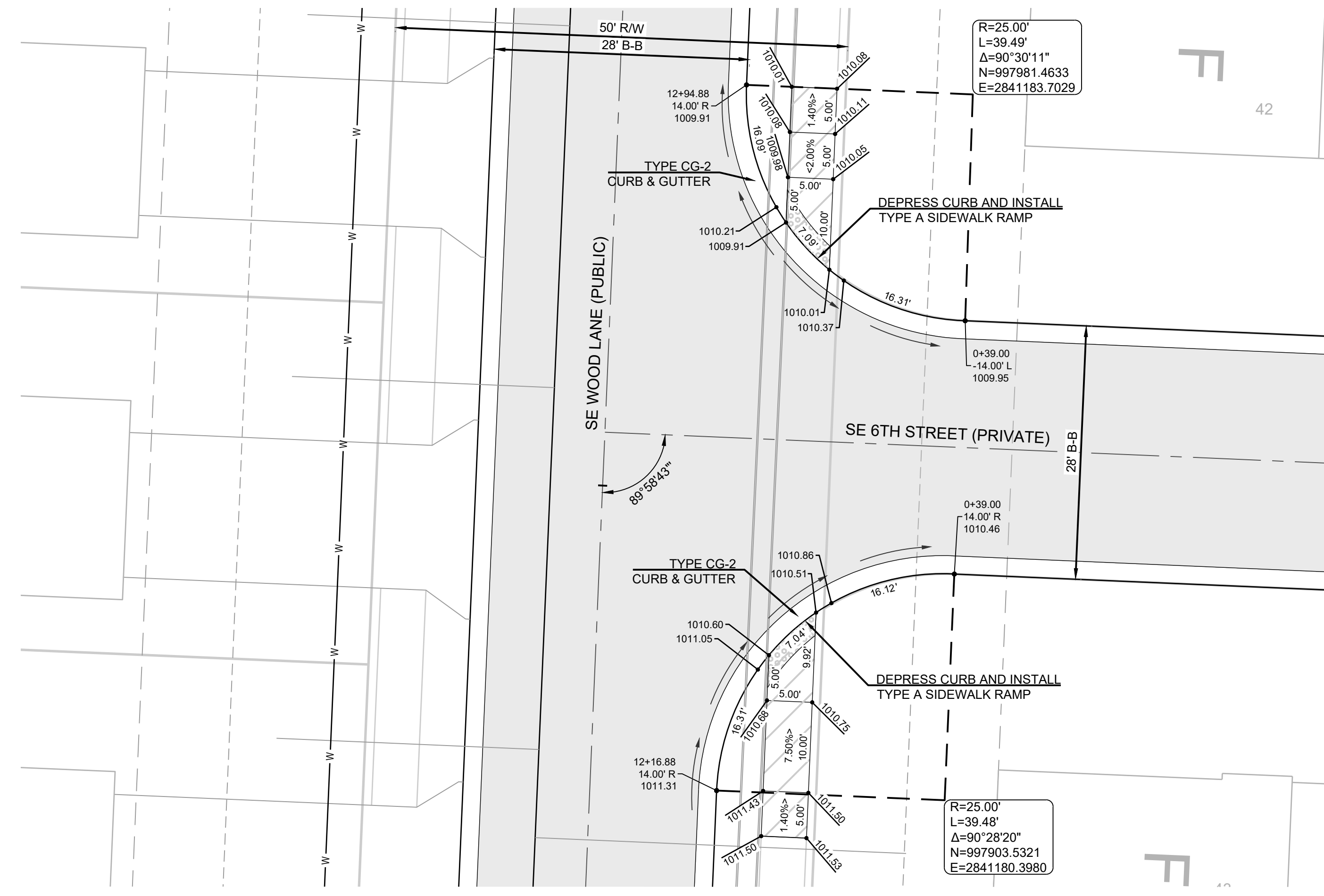
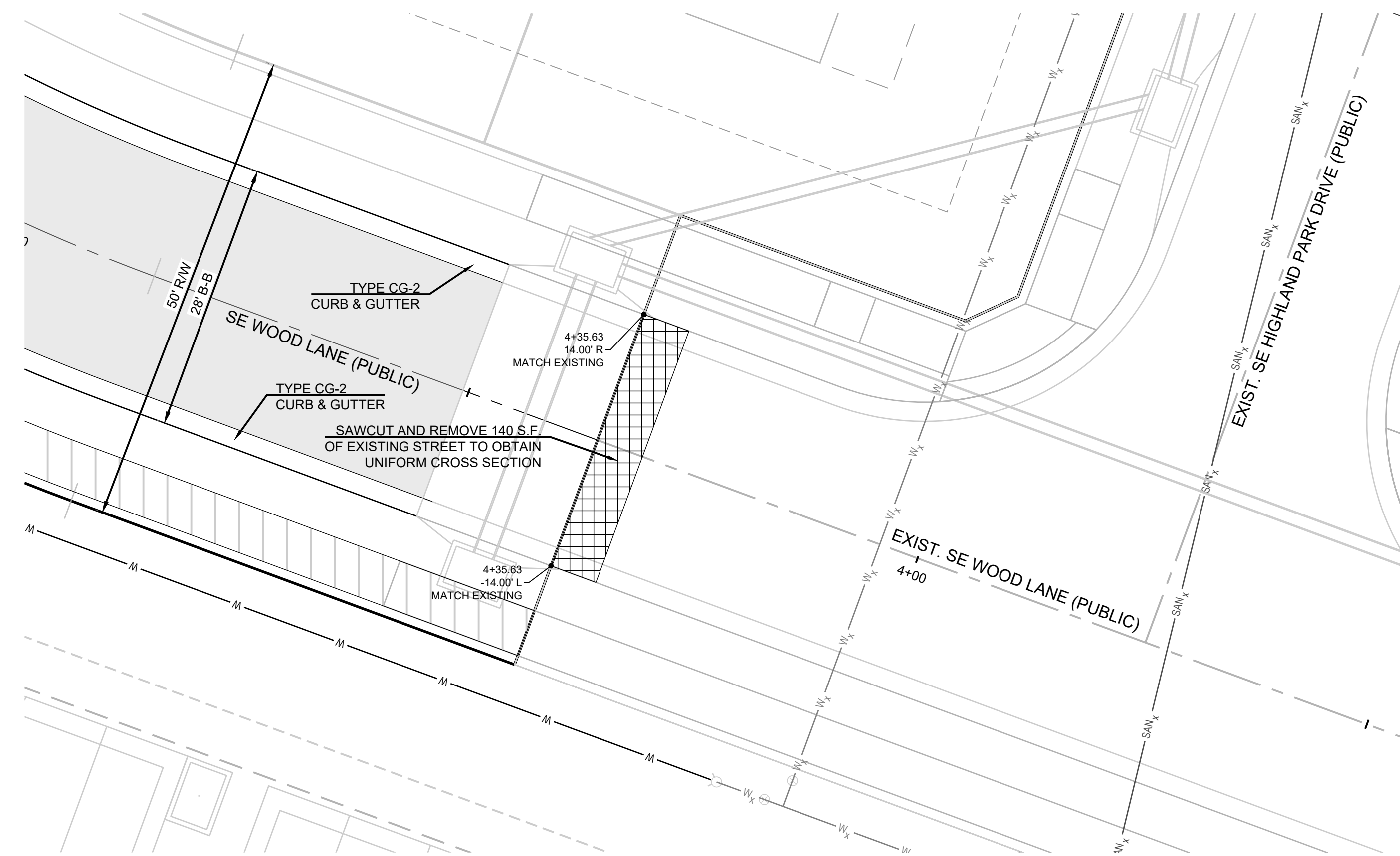
KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988"
LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

PROJECT BENCHMARK:

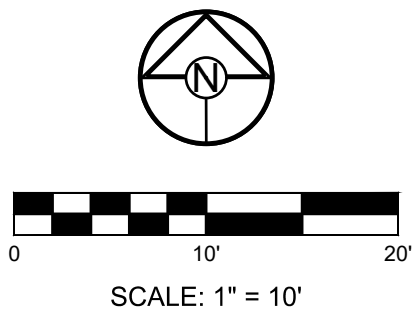
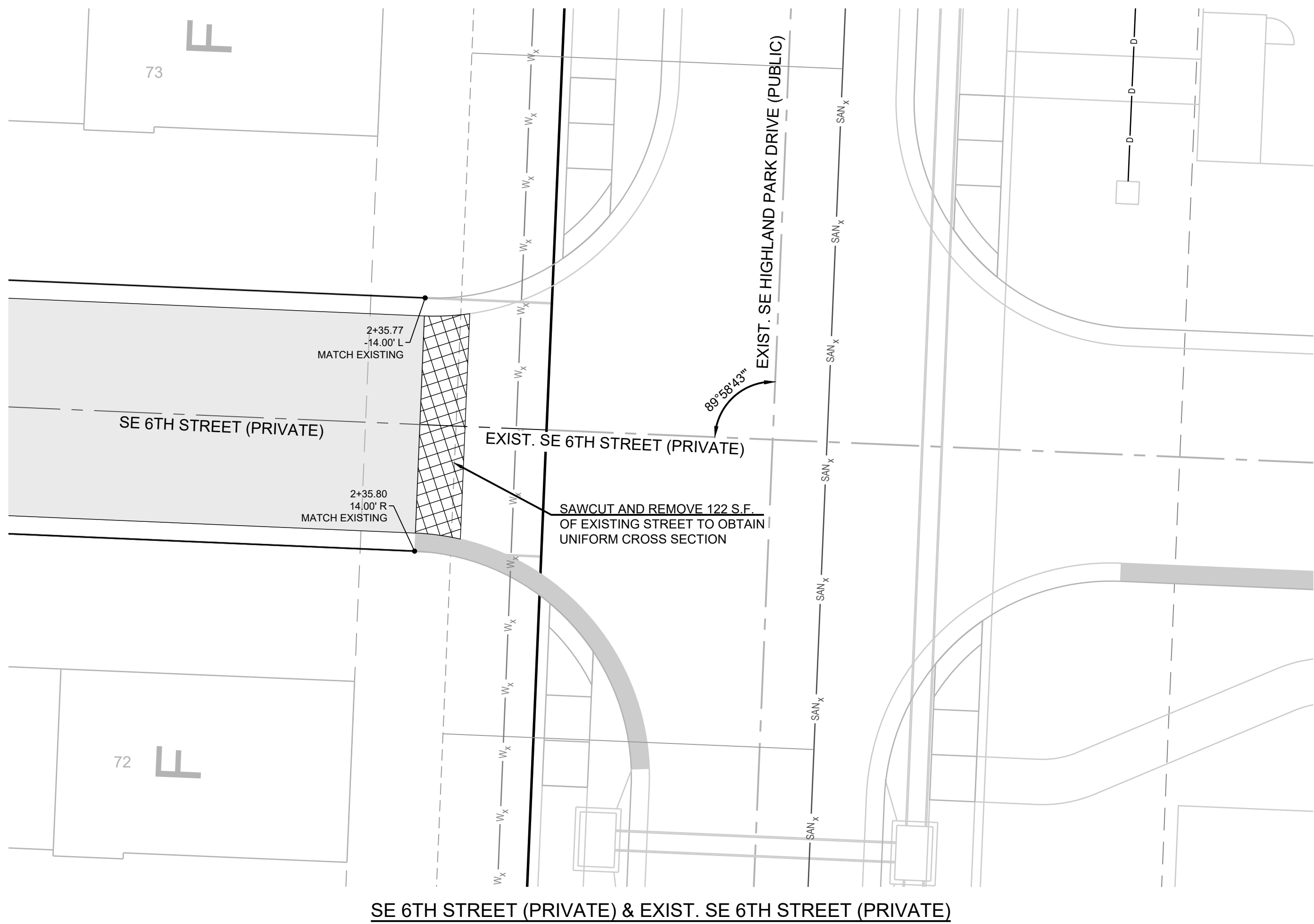
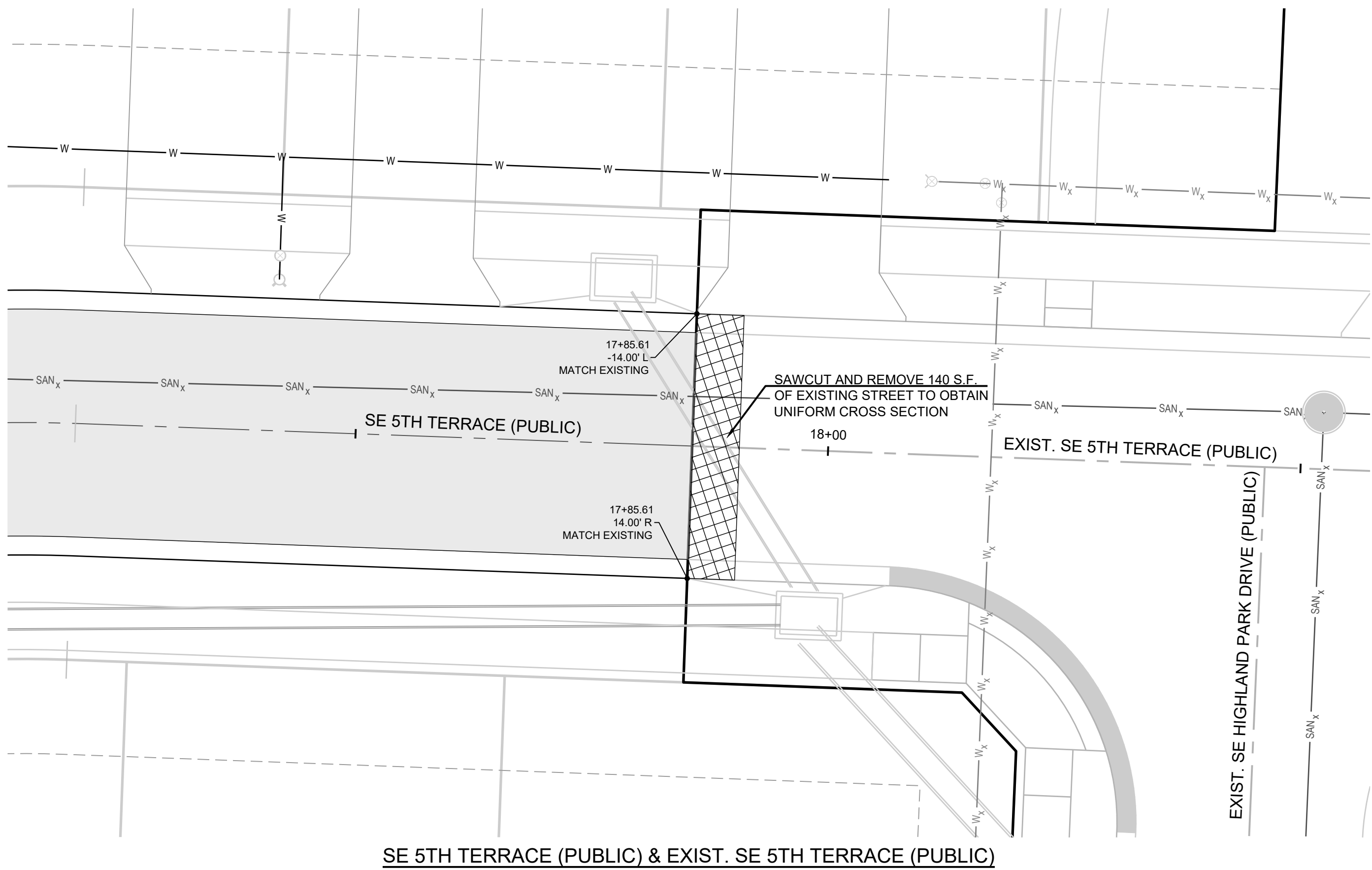
"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365



DRAWN BY:	REVISION DATE	DESCRIPTION
TRC	05/05/2023	PER CITY COMMENTS
CHECKED BY:	06/27/2023	PER CITY COMMENTS
MAB		
DATE PREPARED:		
03/03/2023		
PROJ. NUMBER:		
22-593		



REVISION	DATE	DESCRIPTION
1	05/05/2023	PER CITY COMMENTS
2	06/27/2023	PER CITY COMMENTS
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9



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
#E2002003690-F #LAC2001005237 #LS2002008659-F

PREPARED BY:

STATE OF MISSOURI

MARK ALLEN BREUER

NUMBER PE-2009007268

PROFESSIONAL ENGINEER

06.27.2023

SCHLAGEL & ASSOCIATES, P.A.

BLACKWELL RESERVE

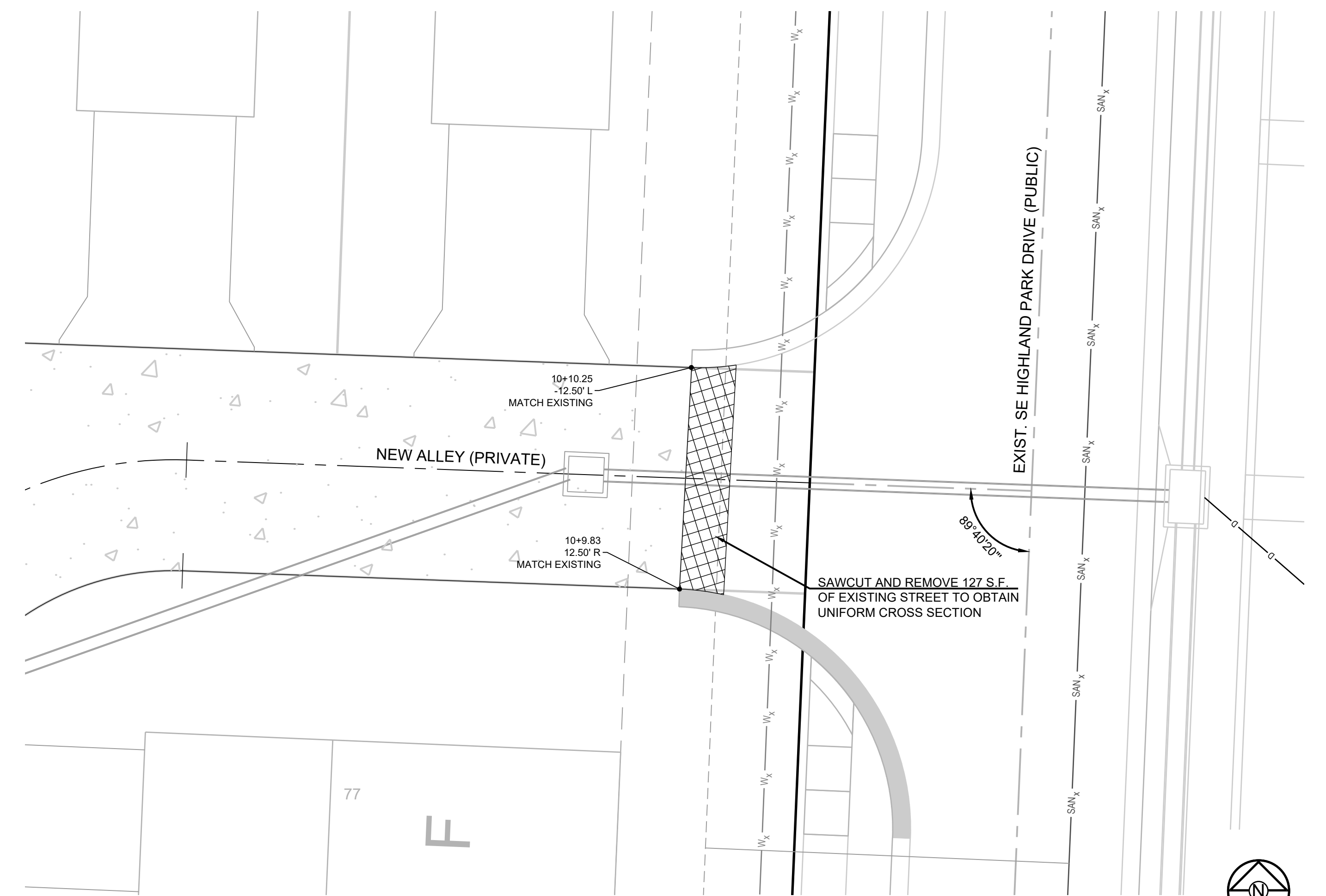
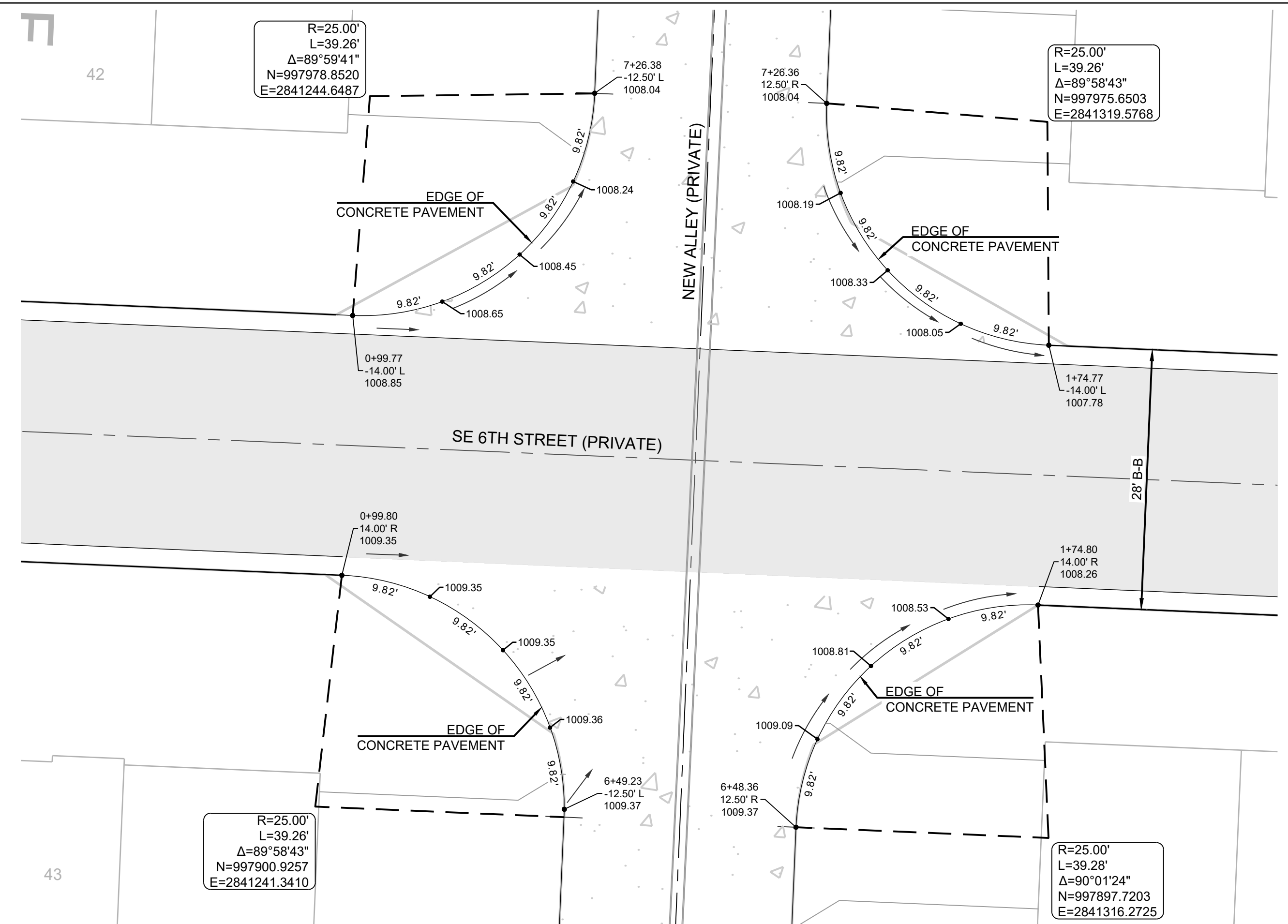
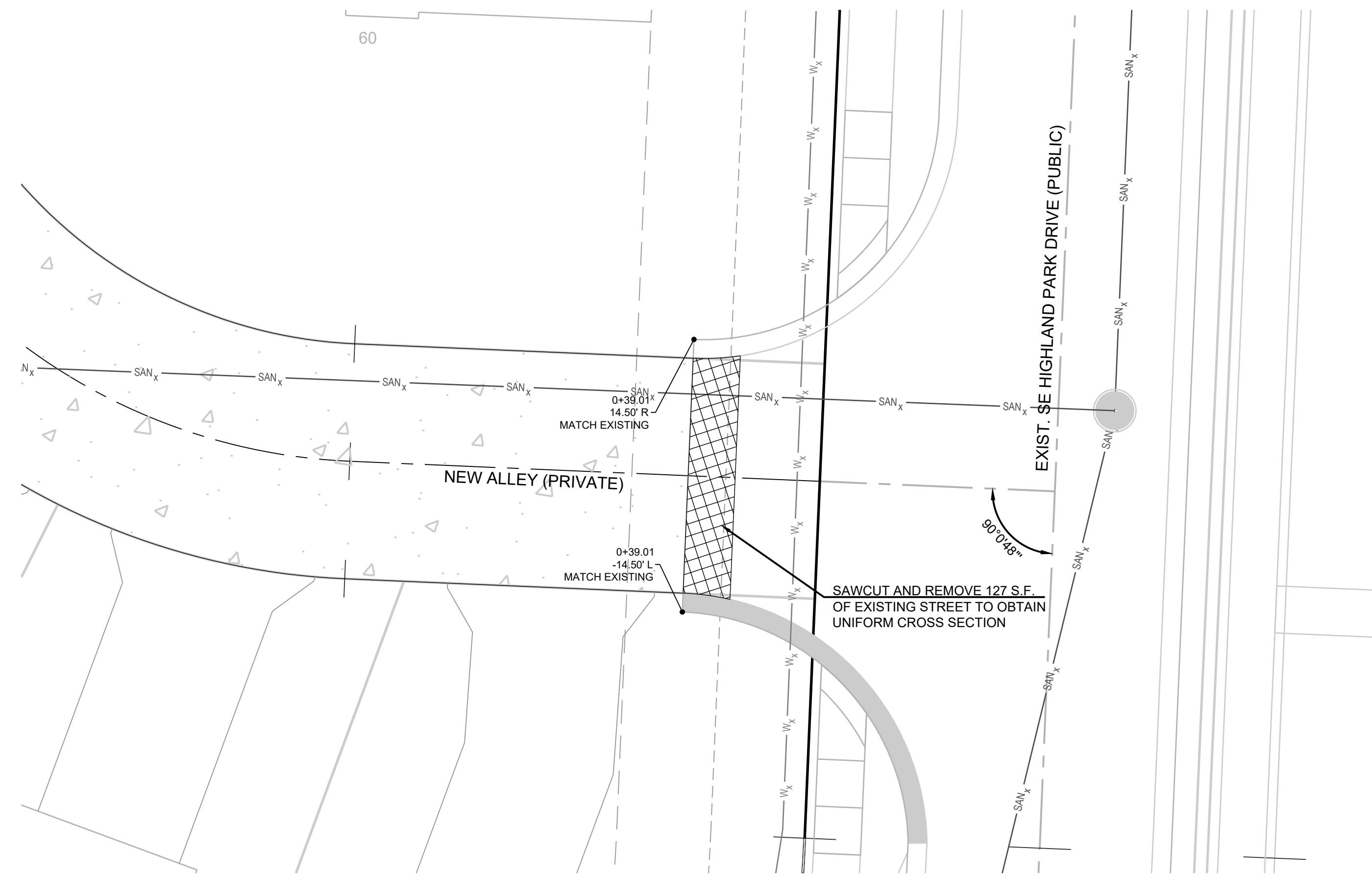
STREET AND STORM SEWER PLANS

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/2023	PER CITY COMMENTS
2 06/27/2023	PER CITY COMMENTS
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-593

INTERSECTION DETAILS
SHEET
17



	TRC	PER CITY COMMENTS
CHECKED BY:	MAB	
DATE PREPARED:		
03/03/2023		
PROJ. NUMBER:		
22-083		

Design Storm:		10																										
"K" Value:		1.00																										
"F" Factor:		1.00																										
Runoff Calculations											Pipe Properties																	
In#	Area (acres)	"C" Value	Cumul. Area (acres)	Cumul. Cx/A	To	Intensity	Runoff To Inlet	Cumul. Runoff	Pipe Cap.	Pipe Vel.	Up Piped Inlet 1	Up Piped Inlet 2	Up Area (acres)	Up Cx/A	Up Inlet	Down Inlet	Pipe Type	"n"	Pipe Size	Length	Slope %	Drop In Inlet	FL Up	FL Down	Inlet Top	HGL Elev.		
LINE 100																												
101	0.61	0.66	20.29	13.39	8.6	6.38	2.57	85.48	103.97	10.81			0.00	0.00	101	100	HDPE	0.012	42	55.00	0.91	0.50	DS TAILWATER @ STR #100			987.84		
102	0.40	0.66	19.68	12.99	8.6	6.39	1.69	82.98	231.47	24.06			3.52	2.32	102	101	HDPE	0.012	42	35.50	4.51	0.50	984.50	984.00	995.20	988.79		
103	0.37	0.66	15.76	10.40	8.3	6.45	1.58	67.12	78.50	8.17	201	301	0.42	0.28	103	102	HDPE	0.012	42	133.63	0.52	0.50	986.60	987.10	985.00	990.21		
104	0.22	0.66	14.97	9.88	7.9	6.55	0.95	64.74	82.29	8.55	501	601	1.57	1.04	104	103	HDPE	0.012	42	211.69	0.57	0.50	989.50	988.30	998.95	992.62		
105	0.11	0.66	13.18	8.70	7.7	6.61	0.48	57.54	68.17	9.64			0.00	0.00	105	104	HDPE	0.012	36	145.31	0.89	0.50	991.30	990.00	1000.55	994.42		
106	0.18	0.66	13.07	8.63	7.6	6.64	0.79	57.24	67.01	9.48	701		6.62	4.37	106	105	HDPE	0.012	36	46.74	0.86	0.50	992.20	991.80	1001.44	995.31		
107	0.64	0.66	6.27	4.14	6.9	6.80	2.87	28.14	41.21	8.39			0.00	0.00	107	106	HDPE	0.012	30	35.00	0.86	0.50	993.00	992.70	1001.44	995.70		
108	0.18	0.66	5.63	3.72	6.8	6.82	0.81	25.36	37.44	7.63	801		0.26	0.17	108	107	HDPE	0.012	30	42.40	0.71	0.50	993.80	993.50	1001.65	996.01		
109	0.12	0.66	5.19	3.43	6.6	6.89	0.55	23.61	37.18	7.57	901		0.66	0.44	109	108	HDPE	0.012	30	113.76	0.70	0.50	995.10	994.30	1002.98	997.11		
110	0.11	0.66	4.41	2.91	6.4	6.93	0.50	20.17	22.19	7.06	1001		1.50	0.99	110	109	HDPE	0.012	24	60.72	0.81	0.50	996.09	995.60	1004.14	998.14		
111	0.53	0.66	2.80	1.85	6.3	6.97	2.44	12.87	20.70	11.72	1101		0.65	0.43	111	110	HDPE	0.012	18	90.66	3.32	0.50	999.59	996.59	1006.03	1001.40		
112	0.42	0.66	1.62	1.07	5.6	7.16	1.98	7.65	9.28	7.57	1201		0.47	0.31	112	111	HDPE	0.012	15	306.71	1.76	0.50	1005.49	1000.09	1011.58	1006.94		
113	0.34	0.66	0.73	0.48	5.1	7.33	1.64	3.53	8.96	7.30			0.00	0.00	113	112	HDPE	0.012	15	244.59	1.64	0.50	1010.00	1005.99	1015.97	1010.92		
114	0.39	0.66	0.39	0.26	5.0	7.35	1.89	1.89	8.34	6.80			0.00	0.00	114	113	HDPE	0.012	15	35.14	1.42	N/A	1011.00	1010.50	1016.02	1011.66		
LINE 200																												
201	2.31	0.66	2.31	1.52	5.0	7.35	11.21	11.21	41.95	13.35			0.00	0.00	201	102	HDPE	0.012	24	58.100	2.93	1.50	N/A	989.80	988.10	993.70	991.25	
LINE 300																												
301	0.52	0.66	1.21	0.80	5.1	7.32	2.51	5.84	11.31	9.21			0.00	0.00	301	102	HDPE	0.012	15	216.69	2.61	2.25	994.51	988.85	999.68	995.74		
302	0.69	0.66	0.69	0.46	5.0	7.35	3.35	3.35	7.54	6.14			0.00	0.00	302	301	HDPE	0.012	15	43.08	1.16	N/A	995.51	995.01	1000.36	996.40		
LINE 400																												
401	0.42	0.66	0.42	0.28	5.0	7.35	2.04	2.04	11.46	9.34			0.00	0.00	401	103	HDPE	0.012	15	34.98	1.03	2.25	N/A	990.98	990.05	996.59	991.66	
LINE 500																												
501	0.43	0.66	1.14	0.75	5.1	7.33	2.08	5.52	13.59	11.07			0.00	0.00	501	104	HDPE	0.012	15	46.43	3.77	2.25	993.50	991.75	1000.12	994.69		
502	0.71	0.66	0.71	0.47	5.0	7.35	3.45	3.45	11.83	9.64			0.00	0.00	502	501	HDPE	0.012	15	35.00	2.86	0.50	995.00	994.00	1000.54	995.91		
LINE 600																												
601	0.43	0.66	0.43	0.28	5.0	7.35	2.09	2.09	12.38	10.09			0.00	0.00	601	104	HDPE	0.012	15	39.93	3.14	2.25	N/A	993.00	991.75	999.16	993.69	
LINE 700																												
701	0.32	0.66	6.62	4.37	7.6	6.64	1.40	28.99	39.24	7.99	1301		2.26	1.49	701	106	HDPE	0.012	30	89.67	0.94	0.50	993.40	992.70	1002.90	995.90		
702	0.58	0.66	4.04	2.67	7.1	6.75	2.58	17.99	34.14	10.87	1401		0.54	0.36	702	701	HDPE	0.012	24	288.09	1.78	0.50	999.49	993.90	1007.44	1001.39		
703	0.46	0.66	2.92	1.93	6.4	6.93	2.10	13.36	14.30	8.09	1501		0.85	0.56	703	702	HDPE	0.012	18	338.06	1.58	0.50	1005.28	999.99	1011.51	1007.13		
704	0.26	0.66	1.61	1.06	5.7	7.16	1.23	7.60	9.17	5.19			0.00	0.00	704	703	HDPE	0.012	18	245.08	0.65	0.50	1007.37	1005.78	1014.19	1008.69		
705	0.07	0.66	1.35	0.89	5.5	7.19	0.33	6.41	8.59	4.86			0.00	0.00	705	704	HDPE	0.012	18	35.04	0.57	0.50	1008.07	1007.17	1014.20	1009.27		
706	0.03	0.66	1.28	0.84	5.3	7.25	0.14	6.13	6.71	5.47			0.00	0.00	706	705	HDPE	0.012	15	65.36	0.92	0.50	1009.17	1008.57	1014.96	1010.50		
707	0.49	0.66	1.25	0.83	5.1	7.31	2.36	6.03	6.30	5.13	1601		0.26	0.17	707	706	HDPE	0.012	15	61.70	0.81	0.50	1010.17	1009.67	1015.18	1011.43		
708	0.50	0.66	0.50	0.33	5.0	7.35	2.43	2.43	6.49	5.29			0.00	0.00	708	707	HDPE	0.012	15	35.00	0.86	N/A	1010.97	1010.67	1015.18	1011.72		
LINE 800																												
801	0.26	0.66	0.26	0.17	5.0	7.35	1.26	1.26	15.30	12.47			0.00	0.00	801	108	HDPE	0.012	15	40.76	4.78	1.25	N/A	997.00	995.05	1001.88	997.52	
LINE 900																												
901	0.66	0.66	0.66	0.44	5.0	7.35	3.20	3.20	15.73	12.81			0.00	0.00	901	109	HDPE	0.012	15	38.65	5.05	1.25	N/A	998.30	996.35	1003.20	999.17	
LINE 1000																												
1001	1.50	0.66	1.50	0.99	5.0	7.35	7.28	7.28	20.06	6.39			0.00	0.00	1001	110	HDPE	0.012	24	210.17	0.67	0.50	N/A	998.00	996.59	1002.00	999.15	
LINE 1100																												
1101	0.65	0.66	0.65	0.43	5.0	7.35	3.15	3.15	11.22	9.14			0.00	0.00	1101	111	HDPE	0.012	15	35.07	2.57	0.50	N/A	1001.00	1000.09	1006.02	1001.86	
LINE 1200																												
1201	0.47	0.66	0.47	0.31	5.0	7.35	2.28	2.28	11.69	9.53			0.00	0.00	1201	112	HDPE	0.012	15	35.84	2.79	0.50	N/A	1006.99	1005.99	1011.71	1007.71	
LINE 1300																												
1301	0.30	0.66	2.26	1.49	6.2	7.01	1.39	10.46	14.48	8.20			0.00	0.00	1301	701	HDPE	0.012	18	67.73	1.62	1.00	995.49	994.40	1002.83	997.08		
1302	0.80	0.66	1.96	1.29	6.0	7.05	3.72	9.12	13.26	10.80			0.00	0.00	1302	1301	HDPE	0.012	15	92.02	3.59	0.50	999.30	995.99	1004.68	1000.92		
1303	0.58	0.66	1.16	0.77	5.4	7.22	2.76	5.53	9.67	7.88			0.00	0.00	1303	1302	HDPE	0.012	15	271.61	1.91	0.50	1004.99	999.80	1009.51	1006.17		
1304	0.58	0.66	0.58	0.38	5.0	7.35	2.81	2.81	9.26	7.54			0.00	0.00	1304	1303	HDPE	0.012	15	200.00	1.75	N/A	1008.99	1005.49	1013.05	1009.79		
LINE 1400																												
1401	0.54	0.66	0.54	0.36	5.0	7.35	2.62	2.62	16.94	13.80			0.00	0.00	1401	702	HDPE	0.012	15	35.00	5.86	0.75	N/A	1002.29	1000.24	1007.44	1003.07	
LINE 1500																												
1501	0.85	0.66	0.85	0.56	5.0	7.35	4.13	4.13	9.90	8.06			0.00	0.00	1501	703	HDPE	0.012	15	35.00	2.00	0.50	N/A	1006.48	1005.78	1011.51	1007.48	
LINE 1600																												
1601	0.13	0.66	0.26	0.17	5.1	7.31	0.63	1.25	6.02	4.91			0.00	0.00	1601	707	HDPE	0.012	15	202.61	0.74	0.50	1012.17	1010.67	1017.15	1012.69		
1602	0.13	0.66	0.13	0.09	5.0	7.35	0.63	0.63	5.28	4.31			0.00	0.00	1602	1601	HDPE	0.012	15	35.00	0.57	N/A	1012.87	1012.67	1017.15	1013.23		
LINE 1700																												
1701	1.32	0.66	8.37	6.45	7.1	6.76	5.89	43.59	92.48	9.61	2101		1.41	1.85	1701	1700	HDPE	0.012	42	138.00	0.72	1.00	990.99	990.00	1000.50	994.21		
1702	0.27	0.66	6.64	3.72	6.9	6.81	1.21	25.36	68.55	13.97	2001		2.17	1.43	1702	1701	HDPE	0.012	30	167.90	2.38	0.50	995.99	991.99	1003.40	998.09		
1703	0.53	0.66	3.20	2.11	6.7	6.87	2.40	14.51	16.84	9.53	1801		0.55	0.36	1703	1702	HDPE	0.012	18	128.04	2.19	0.50	999.79	996.99	1006.01	1001.75		
1704	0.28	0.66	2.12	1.40	5.8	7.11	1.31	9.95	11.83	6.69	1901		0.26	0.17	1704	1703	HDPE	0.012	18	341.08	1.08	0.50	1003.98	1000.29	1013.09	1005.52		
1705	0.39	0.66	1.58	1.04	5.3	7.27	1.87	7.58	10.11	5.72			0.00	0.00	1705	1704	HDPE	0.012	18	190.50	0.79	0.50	1005.98	1004.48	1012.67	1007.30		
1706	0.85	0.66	1.19	0.79	5.2	7.30	4.09	5.73	8.37	6.82			0.00	0.00	1706</													

[illegible]

SCHLAGEL
ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
 14920 West 107th Street • Lenexa, Kansas 66245
 (913) 492-2159 • Fax: (913) 492-8400
 WWW.SCHLAGELASSOCIATES.COM
 Missouri State Certificates of Authority
 #E200200380-F #LAC200100527 #A0200200889-F

PREPARED BY:



06.27.2023

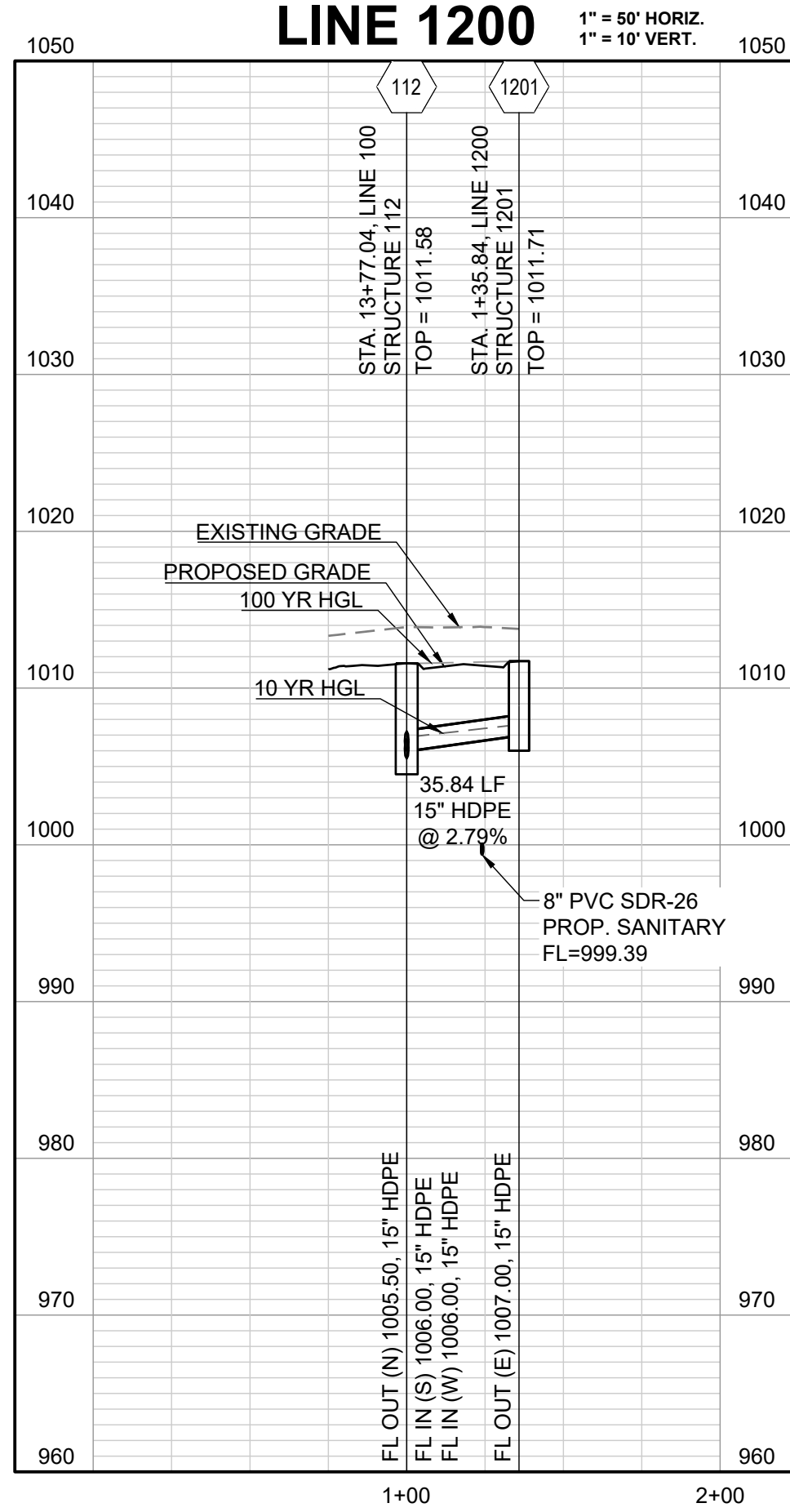
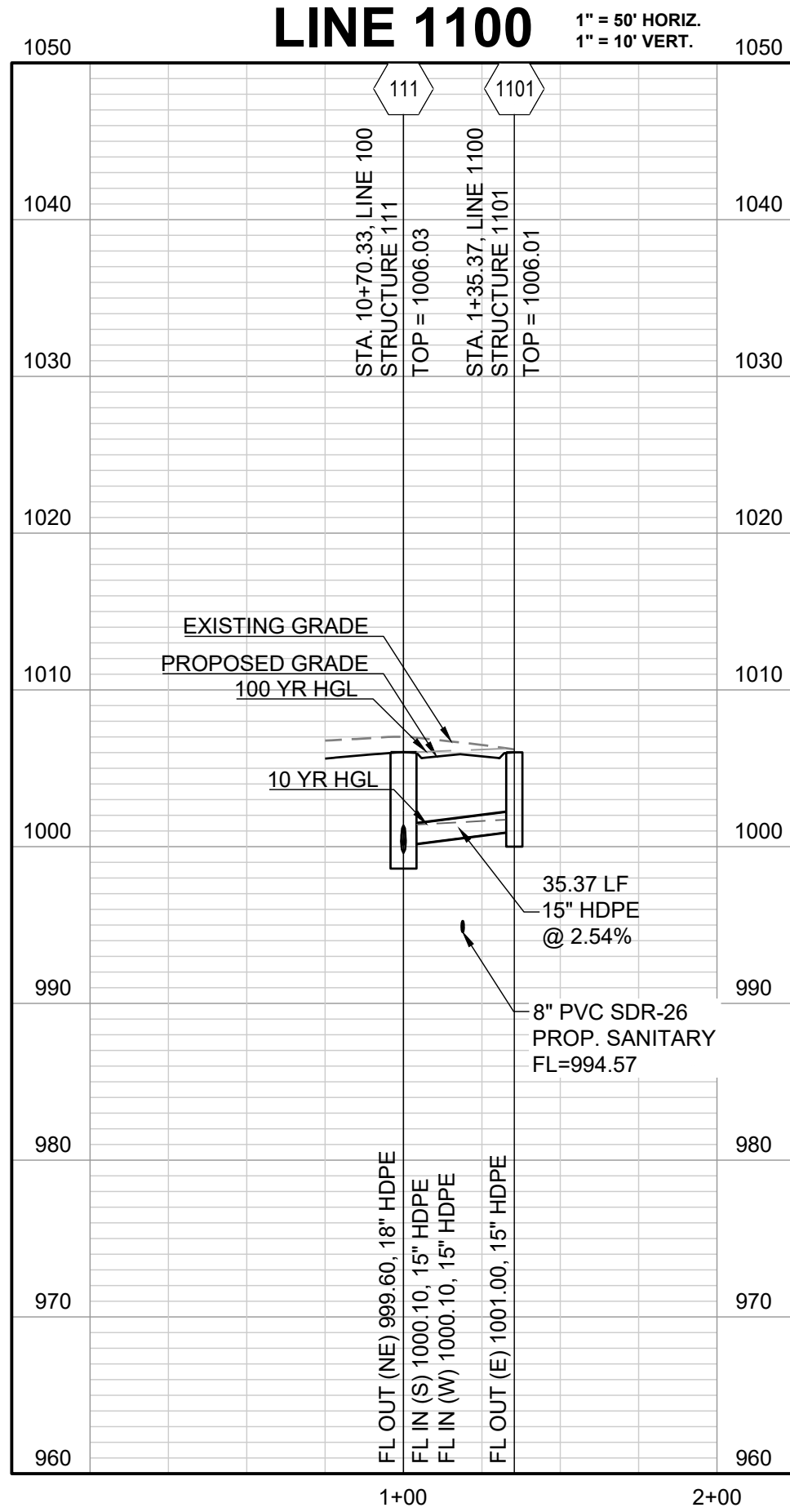
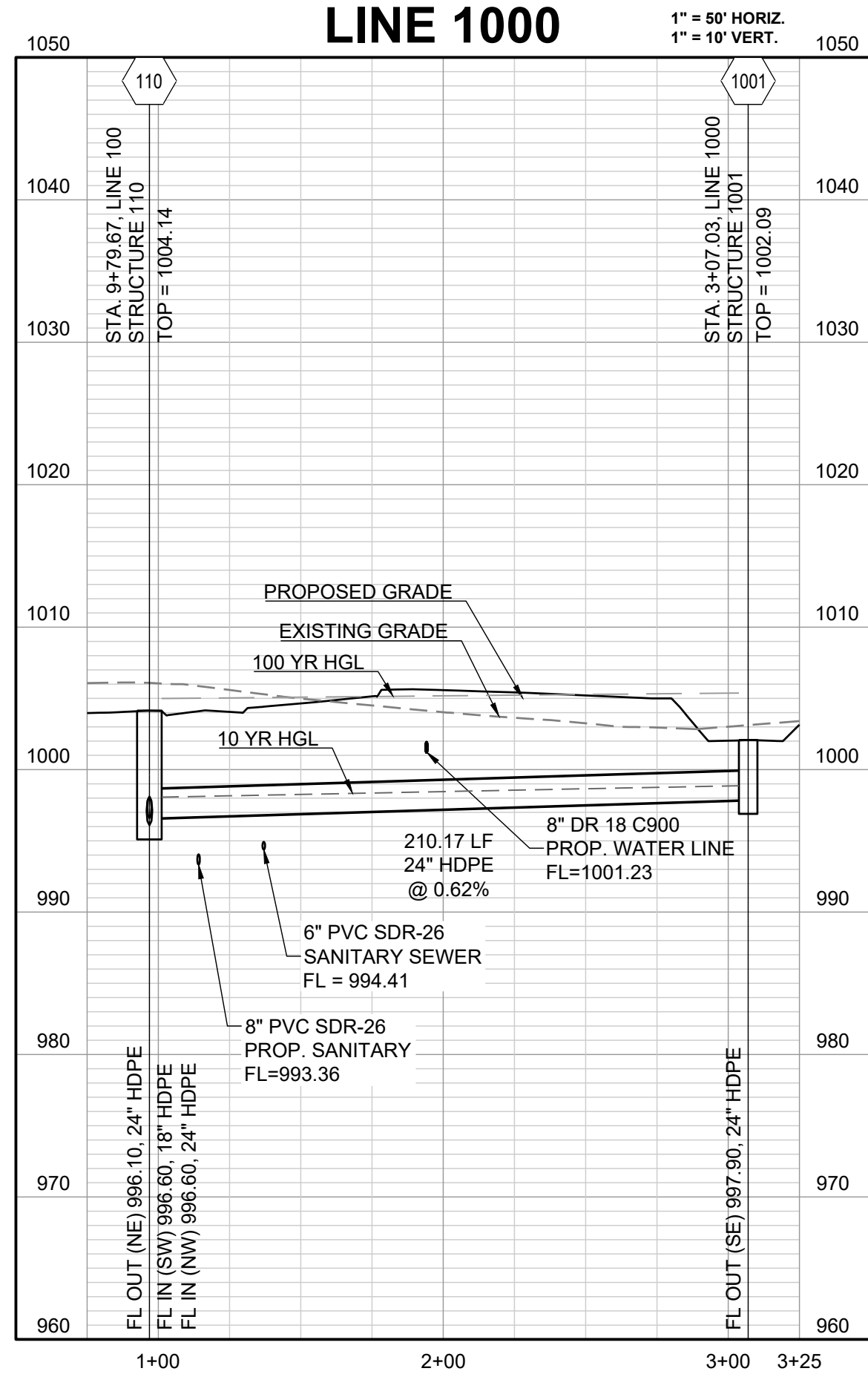
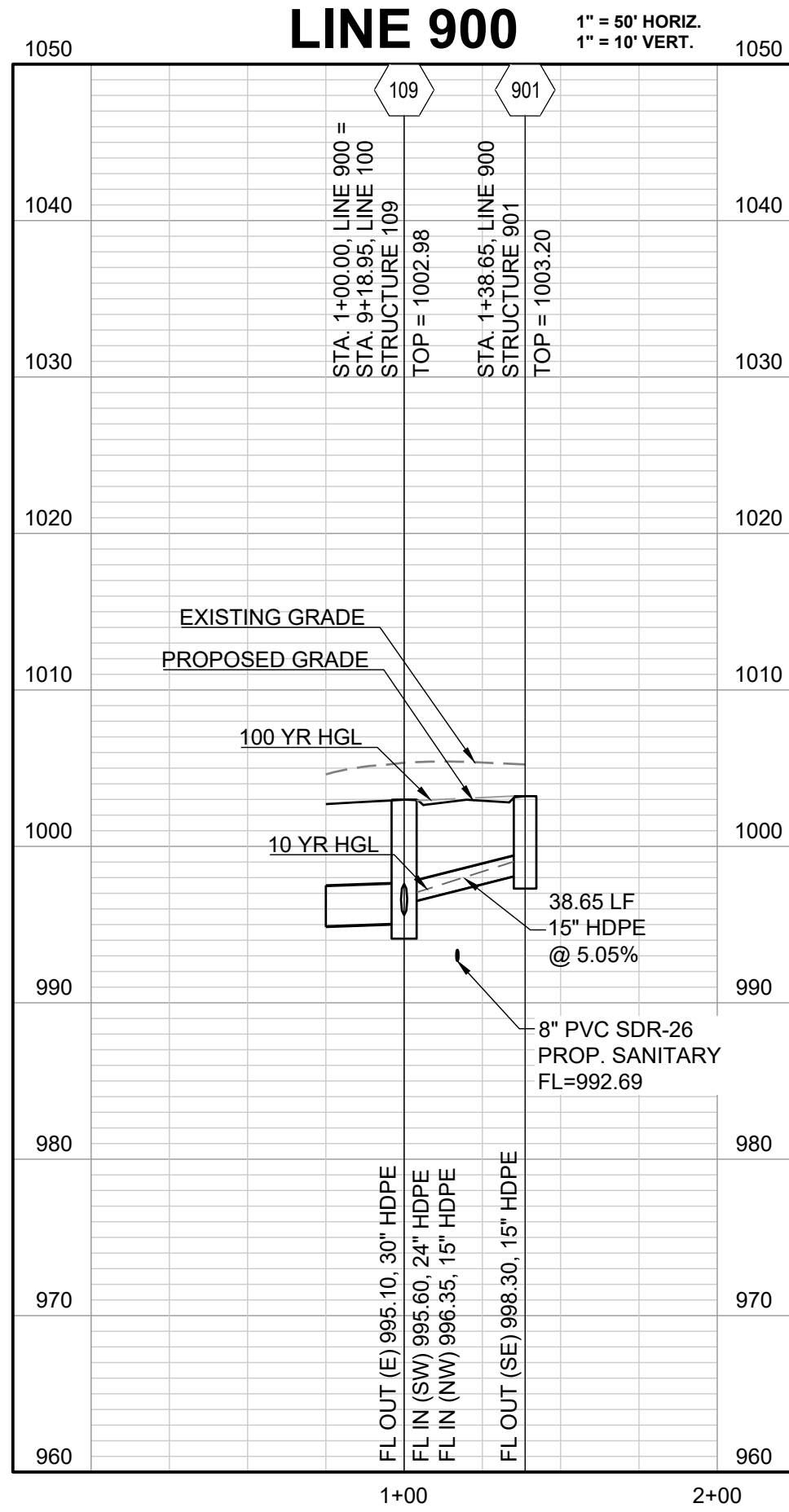
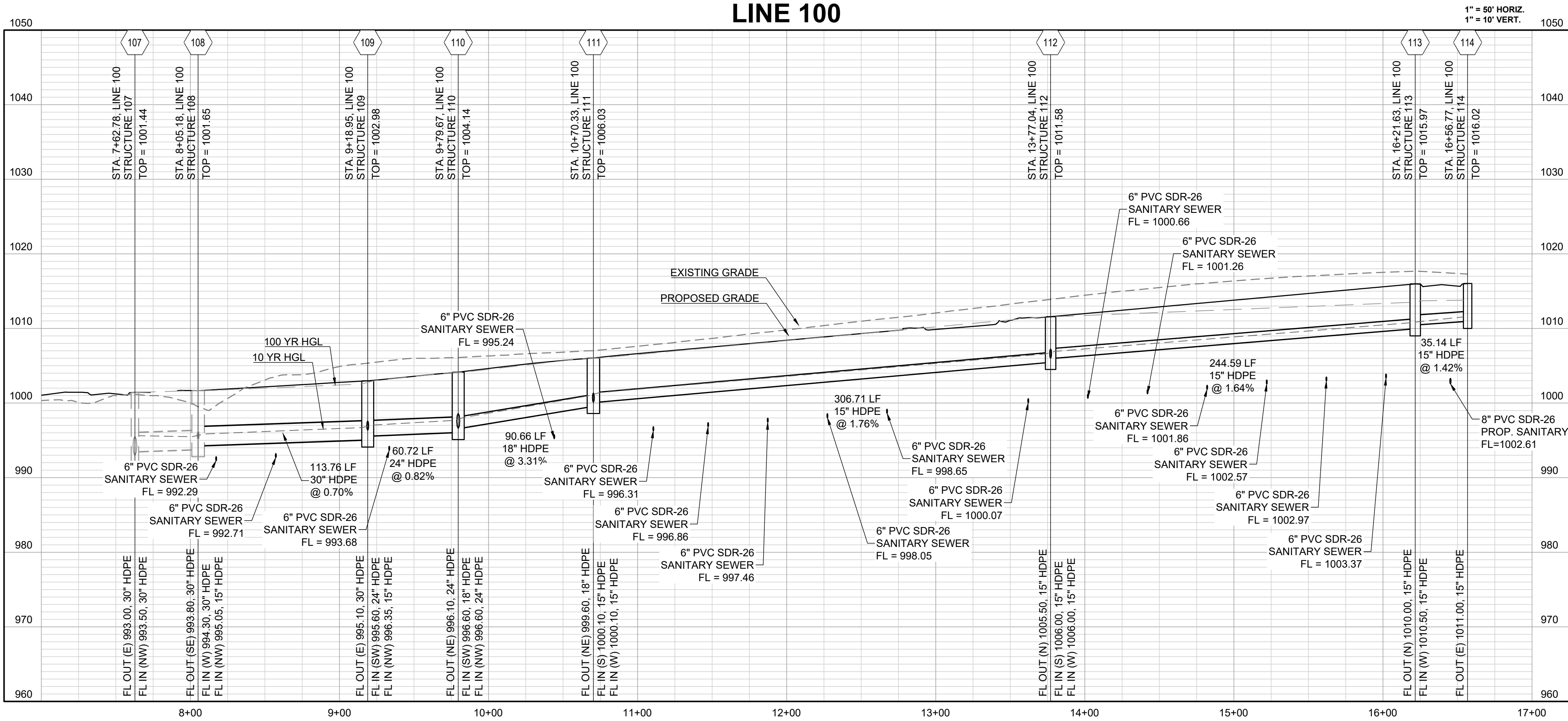
BLACKWELL RESERVE
STREET AND STORM SEWER PLANS

REVISION	DATE	DESCRIPTION
1	05/05/2023	PER QTY COMMENTS
2	06/27/2023	PER QTY COMMENTS
3		
4		
5		
6		
7		
8		
9		

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-493

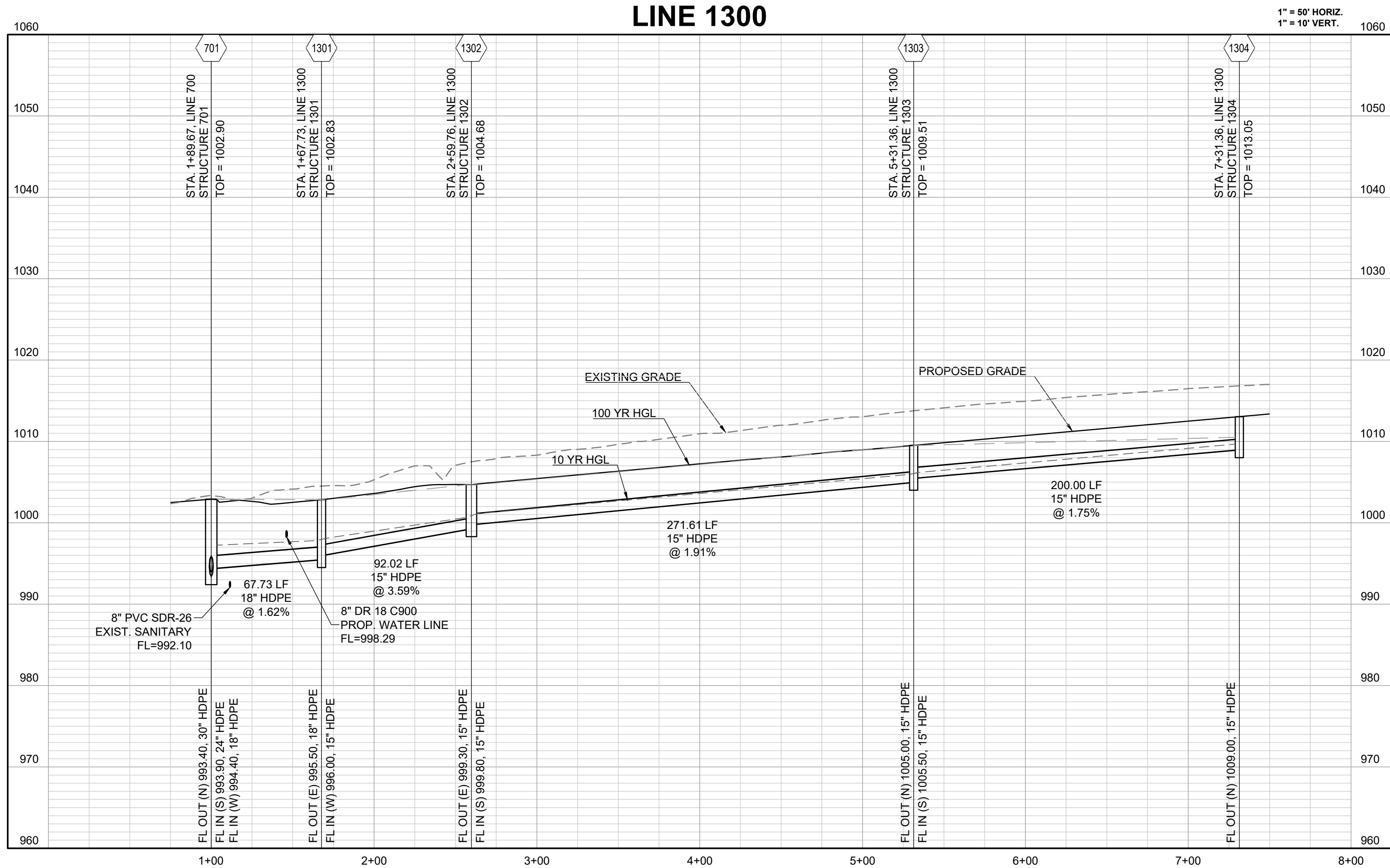
SHEET

23



BLACKWELL RESERVE
STREET AND STORM SEWER PLANS
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

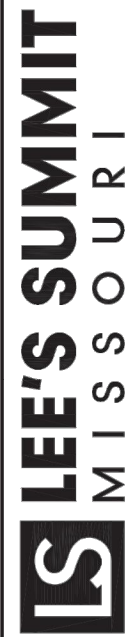
STORM PROFILES		REVISION
SHEET 24	DRAWN BY:	PER CITY COMMENTS
	TRC	PER CITY COMMENTS
	CHECKED BY:	PER CITY COMMENTS
	MAB	PER CITY COMMENTS
	DATE PREPARED:	PER CITY COMMENTS
	03/02/23	PER CITY COMMENTS
	PROJ. NUMBER:	PER CITY COMMENTS
	22-093	PER CITY COMMENTS
		PER CITY COMMENTS
		PER CITY COMMENTS



BLACKWELL RESERVE
STREET AND STORM SEWER PLANS
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/2023	PER CITY COMMENTS
2 06/27/2023	PER CITY COMMENTS
3	
4	
5	
6	
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-593

STORM
PROFILES



Project: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name:

Drawn By: MIF
Checked By: DL
Date: 05/2021
Proj. #: _____

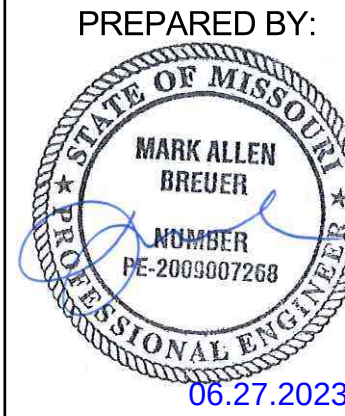
STM-3



Project: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Signed: Manager

Drawn By: MIF
Checked By: DL
Date: 05/20/21
Proj. #:

STM-2



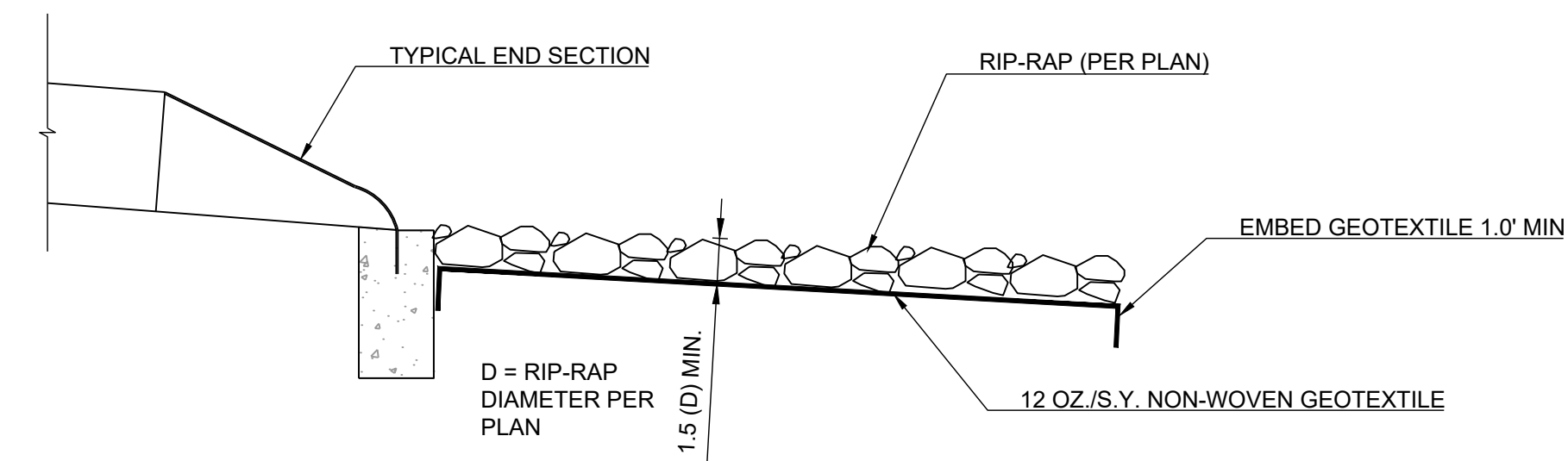
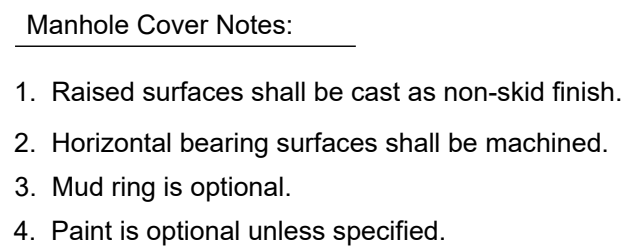
SCHLAGEL & ASSOCIATES, F

BLACKWELL RESERVE
STREET AND STORM SEWER PLANS

* 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 FLOATON. 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.
7. TESTING: CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL MATERIAL TESTING REQUIRED FOR THEIR WORK. THIS INCLUDES SCHEDULING OF TESTS, COORDINATING AND PROVIDING ACCESS TO SAMPLE LOCATIONS, AND SATISFYING ALL TEST RESULT REPORTING REQUIREMENTS.



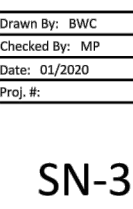
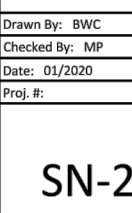
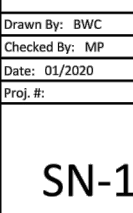
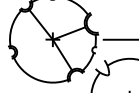
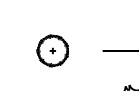


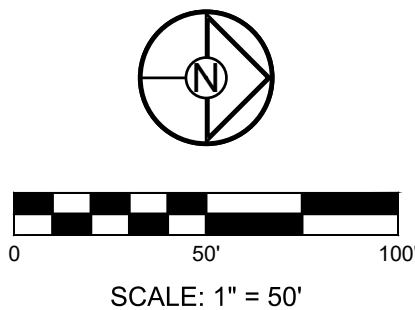
Figure 1 shows five examples of street nameplates with their dimensions and labels:

- Wood (D3-1 (SP-1))**: 30" wide, 6" high. Labels: SE, LN.
- 5 TH (D3-1 (SP-3))**: 30" wide, 6" high. Labels: SE, TER.
- 6 TH (D3-1 (SP-2))**: 30" wide, 6" high. Labels: SE, ST.
- Highland Park DR (D3-1 (SP-4))**: 48" wide, 6" high. Labels: SE, DR.
- New Alley (D3-1 (SP-5))**: 30" wide, 6" high. No side labels.





SHADE TREES					
	— AMM	11 EA.	Acer miyabei 'Morton'	State Street Miyabe Maple	2.5" Cal. B&B
	— ATW	33 EA.	Acer truncatum 'Warrenrd'	Pacific Sunset Maple	2.5" Cal. B&B
	— GPC	5 EA.	Ginkgo biloba "Princeton Sentry"	Princeton Sentry Ginkgo	2.5" Cal. B&B
	— QR	35 EA.	Quercus rubra	Red Oak	2.5" Cal. B&B
	— QS	1 EA.	Quercus shumardii	Shumard Oak	2.5" Cal. B&B
	— UXF	38 EA.	Ulmus x Frontier	Frontier Elm	2.5" Cal. B&B
ORNAMENTAL TREES					
	— AC	30 EA.	Amelanchier canadensis	Shadblow Serviceberry	2" Cal. & 8' ht. B&B
EVERGREEN TREES					
	— JCK	50 EA.	Juniperus chinensis 'Keteleeri'	Keteleeri Juniper	6' ht. B&B
	— JVC	33 EA.	Juniperus virginiana 'Canaertii'	Canaert Juniper	6' ht. B&B



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:

SCHLAGEL & ASSOCIATES, P.A.

BLACKWELL RESERVE

STREET AND STORM SEWER PLANS

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION	DATE	DESCRIPTION
1	05/05/2023	PER CITY COMMENTS
2	06/27/2023	PER CITY COMMENTS
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

LANDSCAPE PLAN

SHEET

30