

GRADING LEGEND:

- DENOTES OVERFLOW SWALE
- DENOTES FINISHED AS-BUILT GRADE ELEVATION
- DENOTES FINISHED GRADE ELEVATION
- DENOTES EXISTING GRADE ELEVATION
- DENOTES LOT HIGH POINT ELEVATION
- DENOTES PROPOSED MAJOR CONTOUR
- DENOTES PROPOSED MINOR CONTOUR
- DENOTES EXISTING MAJOR CONTOUR
- DENOTES EXISTING MINOR CONTOUR
- DENOTES AS-BUILT MAJOR CONTOUR
- DENOTES AS-BUILT MINOR CONTOUR
- MWSE

MISSOURI GEOGRAPHIC REFERENCE SYSTEM BENCHMARK:

BM JA-45, IS A KC METRO ALUMINUM GRS DISK SET IN CONCRETE AND ABOUT 3 INCHES BELOW THE PAVEMENT ON THE SHOULDER OF SE RANSON ROAD. IT IS STAMPED JA45, 1987.

ELEV. = 1046.25

BASIS OF BEARINGS:

MISSOURI STATE PLANE COORDINATE SYSTEM (NAD) 1983, MISSOURI, WEST ZONE

NOTES:

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

LOT TYPE TABLE		
LOT NUMBER	BASEMENT TYPE	MBOE
104	DAYLIGHT	1021
105	DAYLIGHT	1021
106	DAYLIGHT	1021
107	DAYLIGHT	1021
108	DAYLIGHT	1021
109	DAYLIGHT	1022
110	DAYLIGHT	1023
111	DAYLIGHT	1023
112	DAYLIGHT	1024
113	STANDARD	1026
114	STANDARD	1024
115	STANDARD	1024
116	STANDARD	1024
117	STANDARD	1024
118	STANDARD	1024
119	STANDARD	1024
120	STANDARD	1024
121	STANDARD	1024
122	STANDARD	1024
123	STANDARD	1024
124	STANDARD	1024
125	STANDARD	1024
126	STANDARD	1024
127	STANDARD	1024
128	STANDARD	1024
129	STANDARD	1024
130	STANDARD	1024
131	STANDARD	1024
132	STANDARD	1024
133	STANDARD	1024
134	STANDARD	1024

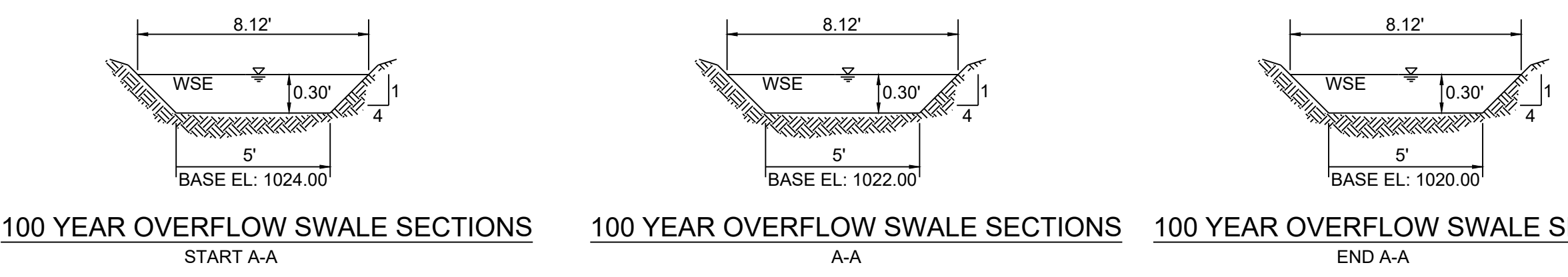
NOTES:

- MBOE = MINIMUM BUILDING OPENING ELEVATION FOR HOUSES ADJACENT TO ENGINEERED OVERFLOW SWALES SHALL BE MINIMUM 2 FEET ABOVE THE 100 YR WATER SURFACE ELEVATION.
- EGL = ENERGY GRADE LINE (100 YR)
- WSE = WATER SURFACE ELEVATION (100 YR)
- ENGINEERED SWALES TO BE GRADED TO NORMAL DEPTH OF FLOW (WATER SURFACE ELEVATION) OR 1.0 FT, WHICHEVER IS GREATER. MINIMUM SLOPE OF ENGINEERED SWALES SHALL BE AS NOTED.
- MBOE'S ADJACENT TO SUMPED INLETS SHALL BE A MINIMUM OF 1 FOOT ABOVE TOP OF ADJACENT BERM.

WEIR CALCULATIONS (Q = CLH ^{3/2})							
SECTION	DRAINAGE AREA (AC.)	Q100 (CFS)	DESIGN OVERFLOW (CFS)	WEIR ELEVATION	WEIR COEFFICIENT	LENGTH	WSE
1	4.07	34.65	34.65	1018.50	3.33	10'-0"	1019.53
2	5.12	43.60	43.60	1018.50	3.33	10'-0"	1019.70

100 YEAR OVERFLOW SWALES												
SECTION	DRAINAGE AREA (AC.)	Q100 (CFS)	Q10 (CFS)	DESIGN OVERFLOW (CFS)	BED SLOPE (%)	BASE WIDTH (FT.)	SIDE SLOPE	TOP WIDTH (FT.)	NORMAL DEPTH (FT.)	VELOCITY (FPS)	VELOCITY HEAD (FT.)	EGL (FT.)
A-A	3.11	26.50	15.10	11.40	3.80	5	4:1	8.12	0.39	4.45	0.31	0.70

RUNOFF CALCULATIONS:
 $Q = K \cdot C \cdot I \cdot A$
 $K_{10} = 1.0$ $K_{100} = 1.25$ $C = 0.66$ $I = INTENSITY$
 DESIGN OVERFLOW = $Q_{DESIGN} = Q_{100} - Q_{10}$
 MANNINGS "n" = 0.030 FOR SWALES



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 Schlagel and Associates.

"100-00 100.10", "3.80% 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: 3/13/2025
 Certified by: JLL
 Title: Senior Project Engineer
 Firm: Schlagel and Associates, P.A.

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PREPARED BY:

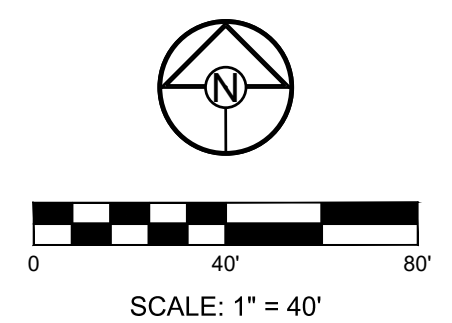
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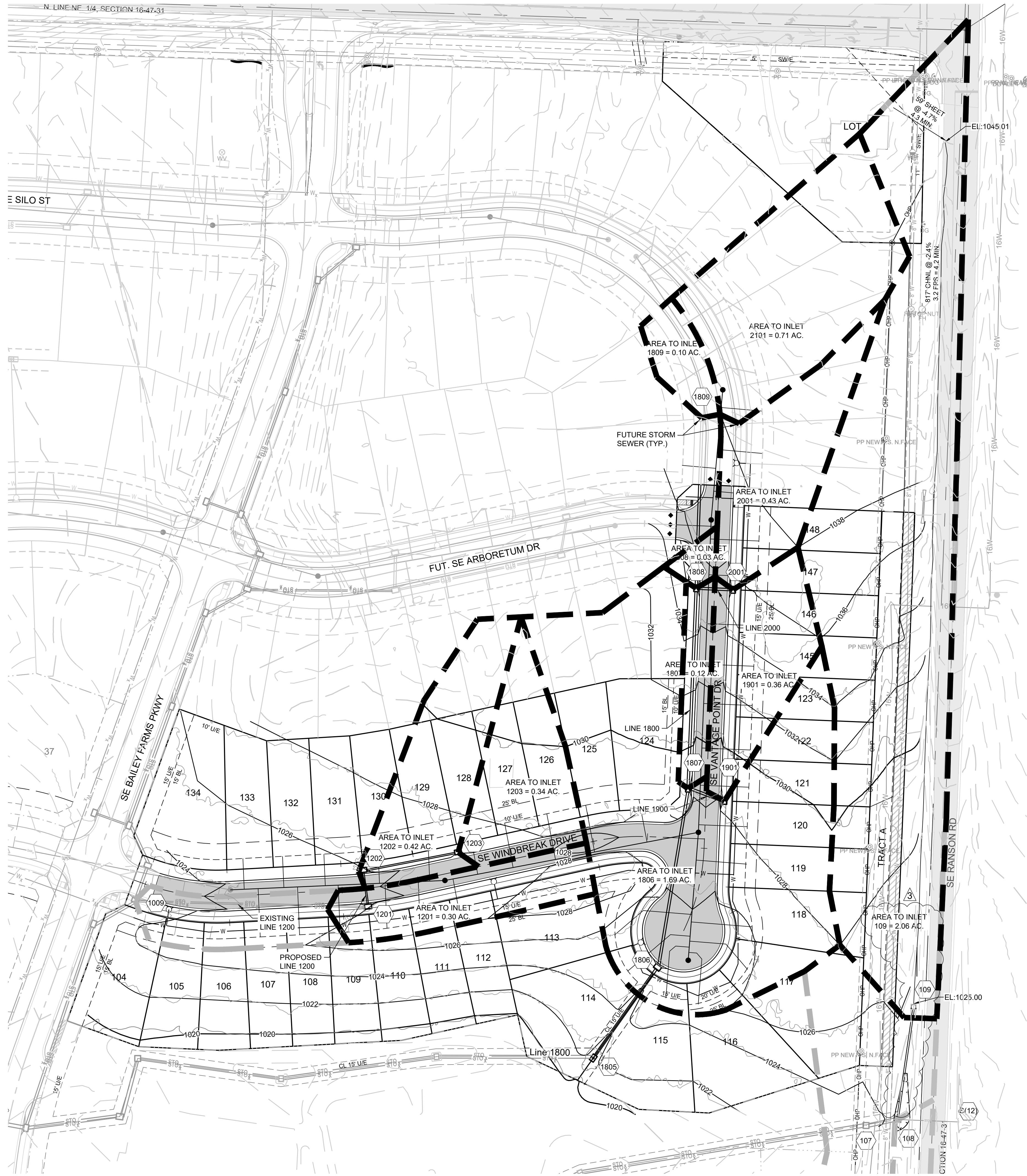
RETREAT AT BAILEY FARMS, FIRST PLAT STREET, STORMWATER, AND MASTER DRAINAGE PLAN
SE BAILEY ROAD AND SE RANSON ROAD
LEES SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
03/21/2022	PER CITY COMMENTS DATED 02/25/2022
04/20/2022	PER CITY COMMENTS DATED 02/25/2022
08/25/2022	ADD FIELD INLET
09/08/2022	REVISE FIELD INLET
11/01/2022	REVISED INLET 09 TO MATCH S1 INLET
10/27/2023	Updated City Details to 2023 Details
11/30/2023	Added "New City Requirement" Note
03/13/2025	AS-BUILT'S

MASTER DRAINAGE PLAN-GRADING PLAN

SHEET





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ELEV. = 1046.25

BASIS OF BEARINGS:

MISSOURI STATE PLANE COORDINATE SYSTEM (NAD) 1983, MISSOURI, WEST ZONE

NOTES:

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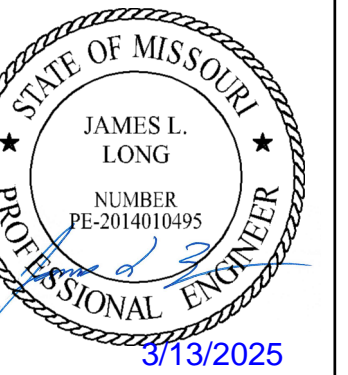
THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.

LEGEND

- EXISTING DRAINAGE AREA
- PROPOSED DRAINAGE AREA

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PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

**RETREAT AT BAILEY FARMS, FIRST PLAT
 STREET, STORMWATER, AND MASTER
 DRAINAGE PLAN**
**SE BAILEY ROAD AND SE RANSON ROAD
 LEES SUMMIT, MISSOURI**

RECORD DRAWING

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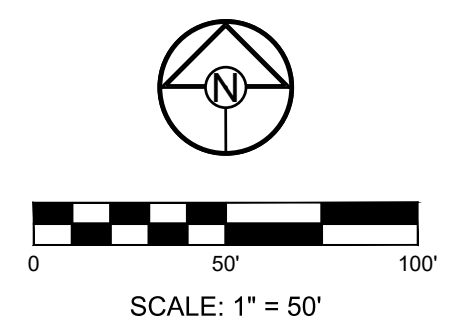
Date: 3/13/2025
 Certified by: JLL
 Title: Senior Project Engineer
 Firm: Schlager and Associates, P.A.

REVISION DATE	DESCRIPTION
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09/08/2022	REVISED FIELD INLET
11/01/2022	REVISED INLET 09 TO MATCH S1 INLET
10/27/2023	Updated City Details to 2023 Details
11/30/2023	Added "New City Requirements" Note
03/13/2025	AS-BUILTS

MASTER DRAINAGE PLAN-DRAINAGE MAP

SHEET

7



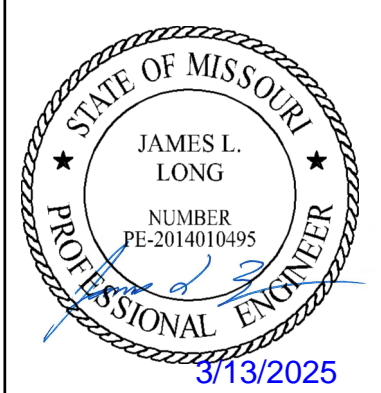
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ELEV. = 1046.25



PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

RETREAT AT BAILEY FARMS, FIRST PLAT
 STREET, STORMWATER, AND MASTER
 DRAINAGE PLAN
 SE BAILEY ROAD AND SE RANSON ROAD
 LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
03/21/2022	PER CITY COMMENTS
04/20/2022	PER CITY COMMENTS DATED 02/25/2022
05/25/2022	ADD FIELD INLET
09/08/2022	REVISED FIELD INLET
11/01/2022	REVISED INLET 09 TO MATCH S1 INLET
10/27/2023	Updated City Details to 2023 Details
11/30/2023	Added "New City Requirements" Note
03/13/2025	AS-BUILTS

DRAWN BY: JRJ
CHECKED BY: JLL
DATE PREPARED: 02/09/2022
PROJ. NUMBER: 21-133

MASTER DRAINAGE PLAN-DRAINAGE CALCLS

SHEET
8

10-YEAR RUNOFF CALCULATIONS

Design Storm:		10																								
"K" Value:		1.00																								
"F" Factor:		1.00																								
Runoff Calculations										Pipe Properties																
Inlet #	Area (acres)	"C" Value	Cumul. Area (acres)	Cx A	Tc	Intensity	Runoff To Inlet	Cumul. Runoff	Pipe Cap.	Pipe Vel.	Up Piped Inlet 1	Up Piped Inlet 2	Up Area (acres)	Cx A	Up Inlet	Down Inlet	Pipe Type	"n" Value	Pipe Size	Length	Slope %	Drop In Inlet	FL Up	FL Down	Inlet Top	
DS TAILWATER @ STR #100																										
LINE 100	108	13.00	0.51	15.06	7.66	15.0	5.18	34.33	39.66	81.69	11.56															
	109	2.06	0.50	2.06	1.03	8.5	6.41	6.60	6.60	27.66	8.80															
Drop in Inlet 1009																										
LINE 1200	1201	0.30	0.66	1.06	0.70	5.0	7.35	1.46	5.14	16.09	9.11															
	1202	0.42	0.66	0.76	0.50	5.2	7.29	2.02	3.66	12.12	9.88															
	1203	0.34	0.66	0.34	0.22	5.0	7.35	1.65	1.65	9.90	8.06															
Drop in Inlet 1007																										
LINE 1800	1805	0.00	0.66	3.42	2.26	6.5	6.92	0.00	15.63	29.00	9.23															
	1806	1.69	0.66	3.42	2.26	6.2	6.99	7.79	15.77	23.25	7.40															
	1807	0.12	0.66	1.73	1.14	5.8	7.11	0.56	8.12	12.04	6.82	1901														
	1808	0.03	0.66	1.25	0.83	5.4	7.22	0.14	5.96	9.90	8.06	2001														
	1809	0.10	0.66	0.79	0.52	5.0	7.35	0.49	3.83	7.67	6.25	2101														
Drop in Inlet 1807																										
LINE 1900	1901	0.36	0.66	0.36	0.24	5.0	7.35	1.75	1.75	7.00	5.70															
Drop in Inlet 1808																										
LINE 2000	2001	0.43	0.66	0.43	0.28	5.0	7.35	2.09	2.09	7.00	5.70															

100-YEAR RUNOFF CALCULATIONS

Design Storm:		100																								
"K" Value:		1.25																								
"F" Factor:		1.00																								
Runoff Calculations										Pipe Properties																
Inlet #	Area (acres)	"C" Value	Cumul. Area (acres)	Cx A	Tc	Intensity	Runoff To Inlet	Cumul. Runoff	Pipe Cap.	Pipe Vel.	Up Piped Inlet 1	Up Piped Inlet 2	Up Area (acres)	Cx A	Up Inlet	Down Inlet	Pipe Type	"n" Value	Pipe Size	Length	Slope %	Drop In Inlet	FL Up	FL Down	Inlet Top	
DS TAILWATER @ STR #100																										
LINE 100	108	13.00	0.51	15.06	7.66	15.0	7.36	60.97	70.44	81.69	11.56															
	109	2.06	0.50	2.06	1.03	8.5	9.05	11.65	11.65	27.66	8.80															
Drop in Inlet 1009																										
LINE 1200	1201	0.30	0.66	1.06	0.70	5.0	10.32	2.55	9.03	16.09	9.11															
	1202	0.42	0.66	0.76	0.50	5.2	10.24	3.55	6.42	12.12	9.88															
	1203	0.34	0.66	0.34	0.22	5.0	10.32	2.90	2.90	9.90	8.06															
Drop in Inlet 1007																										
LINE 1800	1805	0.00	0.66	3.42	2.26	6.5	9.74	0.00	27.49	29.00	9.23															
	1806	1.69	0.66	3.42	2.26	6.2	9.83	13.71	27.74	23.25	7.40															
	1807	0.12	0.66	1.73	1.14	5.8	9.99	0.99	14.26	12.04	6.82	1901														
	1808	0.03	0.66	1.25	0.83	5.4	10.15	0.25	10.46	9.90	8.06	2001														
	1809	0.10	0.66	0.79	0.52	5.0	10.32	0.85	6.73	7.67	6.25	2101														
Drop in Inlet 1807																										
LINE 1900	1901	0.36	0.66	0.36	0.24	5.0	10.32	3.07	3.07	7.00	5.70															
Drop in Inlet 1808																										
LINE 2000	2001	0.43	0.66	0.43	0.28	5.0	10.32	3.66	3.66	7.00	5.70															

GUTTER SPREAD AND INLET CAPACITY CALCULATIONS - RETREAT AT BAILEY FARMS, FIRST PLAT

DESIGN STORM: 10
"K" FACTOR: 1.00
CURB TYPE "A" = LAZY BACK
CURB TYPE "B" = HIGH BACK

RUNOFF CALCULATIONS										INLET DESIGN										GUTTER DESIGN			
INLET #	COMPOSITE "C"	AREA	INLET Tc	INTENSITY	RUNOFF	UPSTREAM INLET	UPSTREAM INLET	UPSTREAM INLET	UPSTREAM INLET	BYPASS FROM UPSTREAM INLET	TOTAL RUNOFF	STREET GRADE	STREET CROSS SLOPE	CURB TYPE	INLET LENGTH	EFFECTIVE LENGTH 80% CAP	INLET INTERCEPTION	BYPASS TO DOWNSTREAM INLET	STREET GRADE	STREET CROSS SLOPE	DEPTH AT CURB	SPREAD OF FLOW	
LINE 1200																							
1201	0.66	0.30	5	7.35	1.46					0.00	1.46	1.20	2.08	A	6	4.8	1.32	0.14	1.20	2.08	0.15	7.94	
1202	0.66	0.42	5	7.35	2.04	1203				0.18	2.22	1.20	2.08	A	6	4.8	1.89	0.32	1.20	2.08	0.18	9.22	
1203	0.66	0.34	5	7.35	1.65					0.00	1.65	1.20	2.08	A	6	4.8	1.47	0.18	1.20	2.08	0.16	8.30	
LINE 1800																							
1806	0.66	1.69	5	7.35	8.20	1807	1901			0.67	8.87	SUMP	2.08	A	6	4.8	13.44	0.00	SUMP	2.08	< 0.21	< 10.50	
1807	0.66	0.12	5	7.35	0.58	1808				0.00	0.58	3.80	2.08	A	6	4.8	0.53	0.05	3.80	2.08	0.09	4.75	
1808	0.66	0.03	5	7.35	0.15					0.00	0.15	2.00	2.08	A	6	4.8	0.14	0.00	2.00	2.08	0.06	3.35	
1809	0.66	0.10	5	7.35	0.49					0.00	0.49	2.00	2.08	A	6	6	0.47	0.01	2.00	2.08	0.09	4.98	
LINE 1900																							
1901	0.66	0.36	5	7.35	1.75	2001				0.40	2.15	3.80	2.08	A	6	4.8	1.53	0.62	3.80	2.08	0.14	7.44	
LINE 2000																							
2001	0.66	0.43	5	7.35	2.09					0.00	2.09	2.00	2.08	A	6	4.8	1.68	0.40	2.00	2.08	0.16	8.24	

NOTES:
1. CAPACITY OF INLETS ON GRADE DETERMINED USING ROUTINE OUTLINED ON PGS 56-96 TO 56-97, SECTION 5600 APWA
2. CAPACITY OF SUMP INLETS CALCULATED USING FIGURE 5604-21, SECTION 5600 APWA
3. MANNINGS "n" VALUE FOR COMBINED ASPHALT PAVEMENT AND CONCRETE CURB - 0.014

RECORD DRAWING

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Date: 3/13/2025
Certified by: JLL
Title: Senior Project Engineer
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