

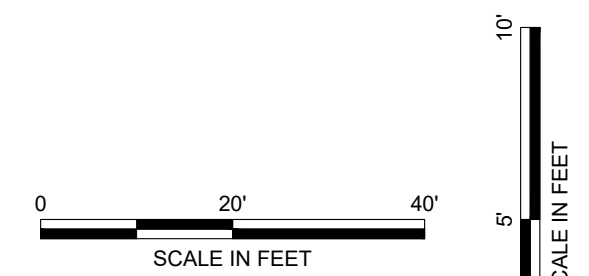
**LEGEND:**  
 FL - FLOW LINE OF STRUCTURE  
 HGL - HYDRAULIC GRADE LINE (15-YR STORM\*)  
 PP - POLYPROPYLENE PIPE  
 RCP - REINFORCED CONCRETE PIPE  
 T - TOP OF STRUCTURE  
 TC - TOP OF CURB AT STRUCTURE  
 TGr - TOP OF GRATE  
 TQ - TOTAL FLOW (15-YR STORM\*)

\* TOTAL FLOW, "TQ", SHOWN ON THESE PROFILES IS BASED ON THE 15-YR, 20-MIN DESIGN STORM WITH A GROUND SATURATION FACTOR OF 1.1 APPLIED.

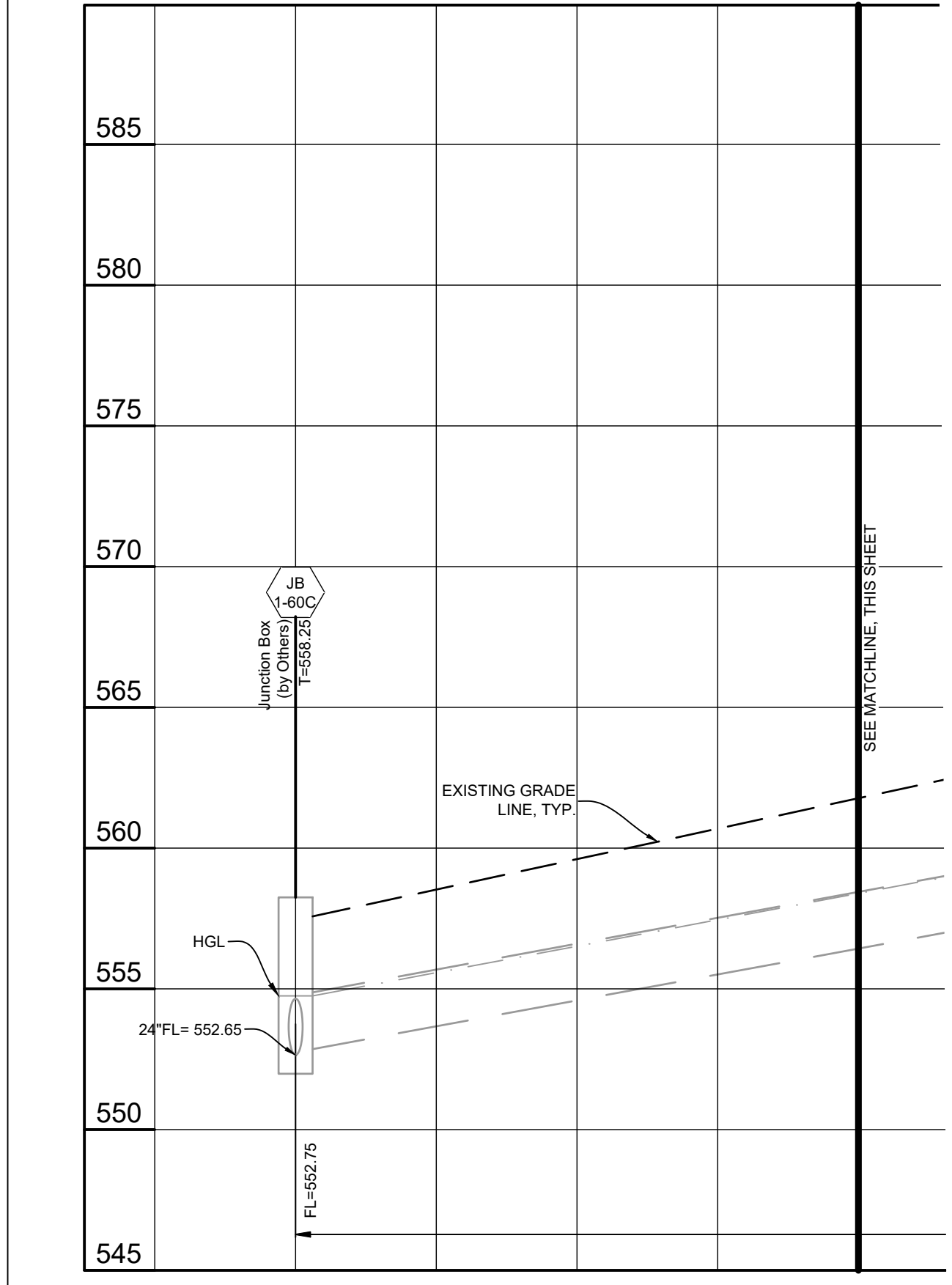
**GRANULAR BACKFILL NOTE:**  
 1. COMPACTED GRANULAR BACKFILL SHALL BE PLACED UNDER PAVEMENT AND CURB FOR ALL ITEMS REQUIRING TRENCH BACKFILL.

**CONCRETE ENCASUREMENT NOTE:**  
 1. ENCASE WITH CONCRETE BOTH SANITARY AND STORM SEWER AT CROSSING WHEN STORM SEWER IS WITHIN 18 INCHES ABOVE SANITARY SEWER. ADD CONCRETE CRADLE TO ONLY RCP STORM SEWER AND ENCASE FLEXIBLE STORM SEWER WHEN IT IS MORE THAN 18 INCHES ABOVE SANITARY LINE PER CITY OF O'FALLON.

**EXISTING UTILITY DISCLAIMER:**  
 1. EXISTING UTILITIES (UNDERGROUND ELECTRIC, GAS, AND WATER) ARE SHOWN APPROXIMATELY. THESE LOCATIONS WERE PLOTTED FROM MISSOURI ONE-CALL SYSTEM MARKINGS AT THE TIME OF THE SURVEY FIELD WORK. DEPTHS WERE NOT FIELD LOCATED, AND ARE SHOWN AT INDUSTRY STANDARDS.



STORM01



STORM01

System Name = Storm01  
 Description = Storm 01 - Onsite Storm Sewers to Connection with DS Storm  
 Sewer Type = Storm  
 System Number = 1  
 Return Period (yr) = 15  
 Rainfall duration (min) = 20  
 Runoff Factor Multiplier = 1.000  
 Starting HGL Elev. (ft) = 554.75  
 Use St. Louis Co./MSD Losses? = Y

STRUCTURES	FLOWLINES	SIZE/	LENGTH/	ANGLE	CURVED?	n	AREA/	Qadd	Qtotal/	Qfull	Cons/	Reqds	Yn/	PARTIAL	FULL	LOSSES	COND	HGL	UPR	SFR
UPR/LWR	UPR/LWR	ANGLE	CURVED?				PI						Yc	V/Y	V/Vhead	F/C	V/T	U/L	UPR/LWR	TOP/FRBD
2GI 1-10	571.81	12"	143.00	90°	N	0.013	0.45	1.55	1.55	2.66	0.35	1.97	1.97	1.97	2.85	0.08	OF	572.89	575.31	2.42
MH 1-7	568.00	90°	N				3.44		5.83	0.19	0.53	1.96	0.06	0.00	0.00	FP	570.00	571.92		1.92
CI 1-9	567.92	15"	37.06	46°	N	0.013	0.12	0.46	0.46	0.86	0.23	0.37	0.37	0.00	0.00	FP	570.00	571.92		
CI 1-8	567.60	46°	N				3.83		6.02	0.01	0.26	2.40	0.00	0.00	0.00	FP	570.00	571.92		
CI 1-8	567.50	15"	36.51	56°	N	0.013	0.25	0.90	1.36	1.10	0.38	1.11	1.11	0.02	0.02	FP	570.00	573.50		3.50
MH 1-7	567.10	56°	N				3.60		6.78	0.04	0.46	2.86	0.02	0.00	0.00	FP	569.96	573.50		
MH 1-7	567.00	15"	162.75	86°	N	0.013	0.05	0.19	3.10	1.00	0.61	2.53	2.53	0.37	0.08	FP	569.96	575.00		5.04
MH 1-2	565.37	86°	N				3.80		6.48	0.23	0.71	4.11	1.10	0.00	0.03	FP	569.48	575.00		
2GI 1-6	573.06	12"	54.82	36°	N	0.013	0.43	1.13	1.13	1.68	0.34	1.75	1.44	0.49	0.49	ND	573.89	576.56		2.67
2GI 1-5	572.14	36°	N				2.63		4.63	0.10	0.45	0.77	0.03	0.00	0.00	OJ	572.91	576.56		
2GI 1-5	572.04	12"	36.00	36°	N	0.013	0.09	0.31	1.44	1.44	0.40	2.45	1.83	0.22	0.45	ND	572.91	576.04		3.13
MH 1-4	571.52	36°	N				3.44		4.29	0.16	0.51	0.70	0.05	0.00	0.01	OJ	572.22	576.04		
MH 1-4	571.42	12"	56.17	13°	N	0.013	0.00	0.00	4.18	0.16	0.51	0.93	0.05	0.00	0.04	OJ	571.58	576.92		4.70
2GI 1-3	570.65	13°	N				1.70		7.79	0.12	0.59	0.46	0.05	0.00	0.01	ND	569.48	576.55		4.97
2GI 1-3	570.55	15"	105.87	4°	N	0.013	0.22	0.77	2.21	1.45	0.46	5.46	1.80	1.53	0.57	OC	571.58	576.55		
MH 1-2	569.02	4°	N				3.50		7.79	0.12	0.59	0.46	0.05	0.00	0.01	ND	569.48	576.55		
MH 1-2	565.27	18"	26.60	0°	N	0.013	0.00	0.00	5.31	1.20	0.71	3.00	3.00	0.07	0.14	OC	566.75	576.10		9.35
2GI 1-1	564.95	90°	N				1.70		11.55	0.25	0.89	1.55	0.14	0.00	0.04	FP	566.50	576.10		
2GI 1-1	564.85	18"	18.31	0°	N	0.013	0.16	0.56	5.87	1.37	0.73	3.32	3.32	0.22	0.06	FP	566.50	575.50		9.00
CI 1-60E	564.60	0°	N				3.50		12.31	0.31	0.94	1.53	0.17	0.00	0.09	FP	566.13	575.00		
CI 1-60E	564.50	24"	37.00	0°	N	0.013	0.24	0.87	6.74	1.00	0.75	2.15	2.15	0.03	0.00	OC	566.13	571.50		5.37
AI 1-60D	564.13	88°	N				3.63		22.68	0.09	0.92	1.97	0.07	0.00	0.00	OJ	566.10	571.50		
AI 1-60D	564.03	24"	245.11	0°	N	0.013	0.12	0.46	7.20	4.60	0.52	2.29	2.29	11.28	0.02	OF	566.10	571.00		4.90
JB 1-60C	552.75	0°	N				3.83		48.66	0.10	0.95	2.00	0.08	0.00	0.03	OJ	554.75	571.00		

**LEGEND**  
 UPR - At upper end of pipe  
 LWR - At lower end of pipe  
 SIZE - Sewer size (diam or WxH)  
 ANGLE - Downstream deflection (deg)  
 LENGTH - Pipe length (ft)  
 CURVED - Pipe is curved?  
 n - Manning's roughness factor  
 AREA - Upper drainage area (ac)  
 FP - Friction factor (cfs/ac)  
 Qadd - Added flowrate (cfs)  
 Qtotal - Total flowrate (cfs)  
 Qfull - Pipe full capacity (cfs)  
 Cons - Construction slope of pipe (%)  
 Reqds - Minimum required slope (%)  
 Yn - Normal depth (ft)  
 Yc - Critical depth (ft)  
 PARTIAL - Conditions at lower end of pipe  
 FULL - Conditions assuming full pipe flow  
 V - Velocity (fps)  
 Y - Depth (ft)  
 Vhead - Velocity head (ft)  
 LOSSES - Major and minor head losses  
 F - Friction in pipe (ft)  
 C - Curve in pipe (ft)  
 V - Velocities in upper structure (ft)  
 T - Turns in upper structure (ft)  
 COND - Flow condition code at each pipe end:  
 FP - full pipe flow  
 OC - open channel flow  
 ND - set to normal depth  
 CD - set to critical depth  
 OF - initially set to open channel  
 depth then set to full pipe flow  
 OJ - open channel flow but hydraulic jump may occur downstream  
 HGL - Hydraulic grade line elevation (ft)  
 TOP - Elev. of top of upper struct (ft assl)  
 FRBD - Difference btwn upper HGL and TOP (ft)

**Notes:**  
 1. Friction losses computed w/ Manning's formula if full pipe flow or back-calculated if open channel flow (simulating flow profile)  
 2. HGL at upper structure includes structure losses calculated with actual inflowing velocities using iterative procedure  
 3. Velocity and turn structure loss components only computed for incoming pipes with invert elevations below outlet crown elevation

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 Design: EJS / RPK  
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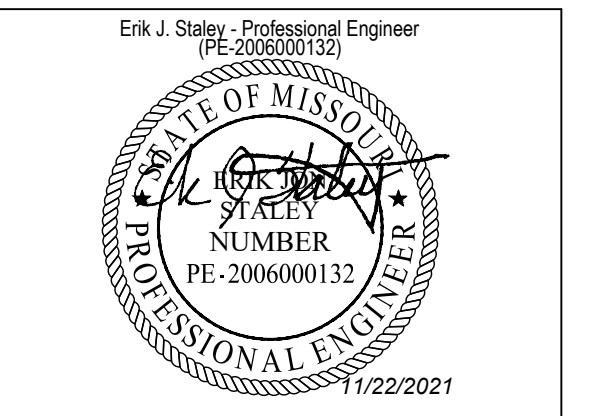
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**DATE 08/25/2021**

**ISSUANCE**

NO	DATE	DESCRIPTION
1.	08/25/21	CITY SUBMITTAL
2.	09/22/21	2nd CITY SUBMITTAL
3.	10/06/21	3rd CITY SUBMITTAL
4.	11/22/21	4th CITY SUBMITTAL (BID SET)

**O'FALLON, MO MOTOMART  
 NEW CONVENIENCE CENTER  
 AND CARWASH  
 FKG OIL COMPANY**

**SEWER PROFILES 1**