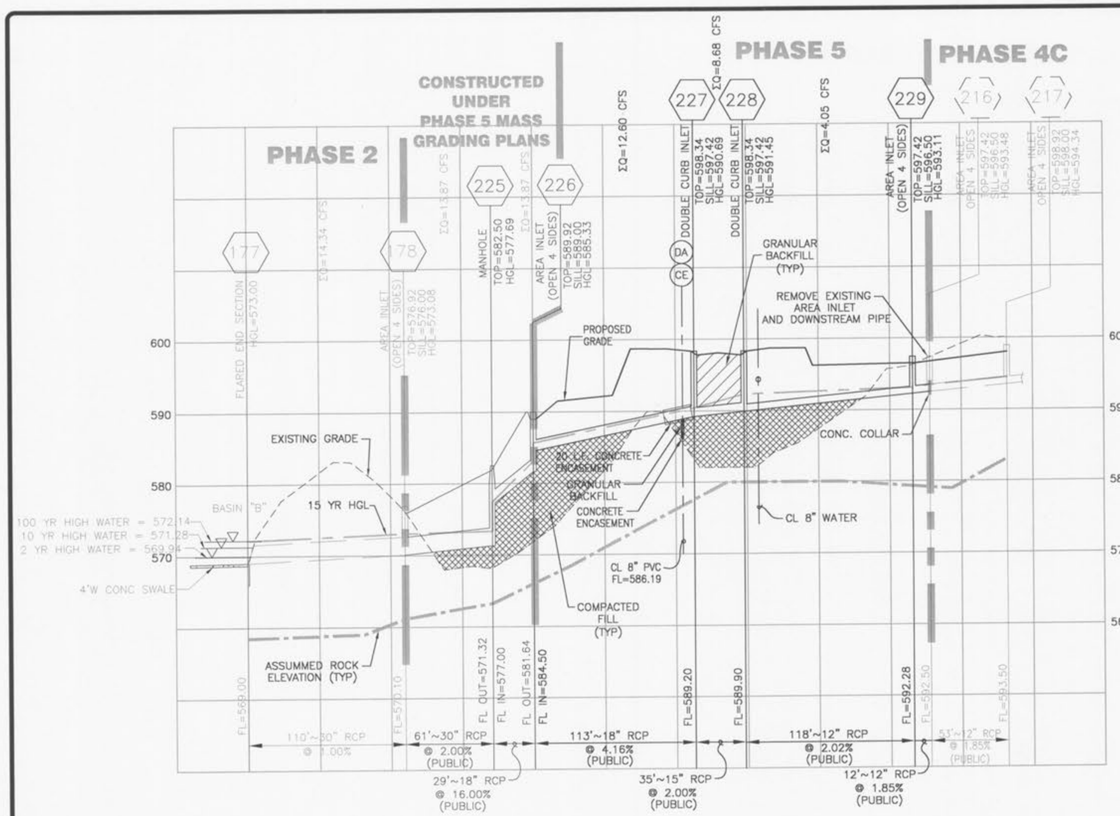


15YR HYDRAULIC CALCS

Label	Diameter (in)	Length (Unified) (ft)	Manning's n	Bend Angle (Calculated) (degrees)	Slope (ft/ft)	Flow (ft³/s)	Excess Capacity (Full Flow) (ft³/s)	Capacity (Full Flow) (ft³/s)	Velocity (In) (ft/s)	Velocity (Out) (ft/s)	Stop Node	Invert (Downstream) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (Out) (ft)	Start Node	Invert (Upstream) (ft)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (In) (ft)	Notes
																			FREEBOARD
229-217	12.0	65.0	0.013	83.54	0.019	3.35	1.57	4.92	5.08	4.27	229	592.26	596.50	593.49	217	593.50	598.00	594.28	3.72
228-229	12.0	118.0	0.013	2.02	0.020	4.05	0.99	5.04	5.68	5.16	228	589.90	597.42	591.45	229	592.26	596.50	593.11	3.39
227-228	15.0	35.0	0.013	5.78	0.020	8.68	0.46	9.14	7.07	7.07	227	589.20	597.42	590.69	228	589.90	597.42	591.32	6.10
226-227	18.0	113.0	0.013	0.00	0.042	12.60	8.82	21.42	7.57	12.61	226	584.50	589.00	585.33	227	589.20	597.42	590.54	6.88
225-226	18.0	29.0	0.013	72.20	0.160	13.87	28.15	42.02	8.16	17.39	225	577.00	582.50	577.69	226	581.64	589.00	583.02	5.98
178-225	30.0	61.0	0.013	29.17	0.020	13.87	44.13	58.00	5.63	3.03	178	570.10	576.00	572.30	225	571.32	582.50	572.57	9.93
177-178	30.0	110.0	0.013	0.00	0.010	14.34	26.67	41.01	3.20	2.92	177	569.00	580.00	572.14	178	570.10	576.00	572.24	3.76

100YR HYDRAULIC CALCS

Label	Diameter (in)	Length (Unified) (ft)	Manning's n	Bend Angle (Calculated) (degrees)	Slope (ft/ft)	Flow (ft³/s)	Excess Capacity (Full Flow) (ft³/s)	Capacity (Full Flow) (ft³/s)	Velocity (In) (ft/s)	Velocity (Out) (ft/s)	Stop Node	Invert (Downstream) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (Out) (ft)	Start Node	Invert (Upstream) (ft)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (In) (ft)	Notes
																			FREEBOARD
229-217	12.0	65.0	0.013	83.54	0.019	4.54	0.38	4.92	5.78	5.78	229	592.26	596.50	596.33	217	593.50	598.00	597.38	0.62
228-229	12.0	118.0	0.013	2.02	0.020	5.48	-0.44	5.04	6.98	6.98	228	589.90	597.42	592.34	229	592.26	596.50	595.13	1.37
227-228	15.0	35.0	0.013	5.78	0.020	11.65	-2.51	9.14	9.49	9.49	227	589.20	597.42	590.90	228	589.90	597.42	592.03	5.39
226-227	18.0	113.0	0.013	0.00	0.042	16.89	4.53	21.42	9.69	13.30	226	584.50	589.00	585.51	227	589.20	597.42	590.64	6.78
225-226	18.0	29.0	0.013	72.20	0.160	18.59	23.43	42.02	10.61	18.45	225	577.00	582.50	577.83	226	581.64	589.00	583.10	5.90
178-225	30.0	61.0	0.013	29.17	0.020	18.59	39.41	58.00	6.24	3.88	178	570.10	576.00	572.45	225	571.32	582.50	572.78	9.72
177-178	30.0	110.0	0.013	0.00	0.010	19.21	21.80	41.01	4.13	3.91	177	569.00	580.00	572.14	178	570.10	576.00	572.35	3.65

NOTE: CONCRETE PIPE JOINTS SHALL BE MSD TYPE "A" APPROVED COMPRESSION-TYPE JOINTS AND SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE, USING FLEXIBLE, WATERTIGHT, RUBBER-TYPE GASKETS ASTM C443. BAND-TYPE GASKETS DEPENDING ENTIRELY ON CEMENT FOR ADHESION AND RESISTANCE TO DISPLACEMENT DURING JOINTING SHALL NOT BE USED.

ALL STORM SEWER PIPES SHALL BE REINFORCED CONCRETE PIPE, CLASS II MINIMUM. ANY CONCRETE PIPE, CONDUIT, OR CULVERT BENEATH A STREET RIGHT-OF-WAY OR WITH REASONABLE PROBABILITY OF BEING SO LOCATED SHALL BE A MINIMUM OF CLASS III, BUT ALSO SHALL ACCOUNT FOR ALL VERTICAL LOADS. IN NO CASE SHALL THE DESIGN PROVIDE FOR LESS THAN HS-20 LOADING PER AASHTO. FOR OTHER LOCATIONS, THE MINIMUM DESIGN LIVE LOAD SHALL BE THE HS-10 LOADING.

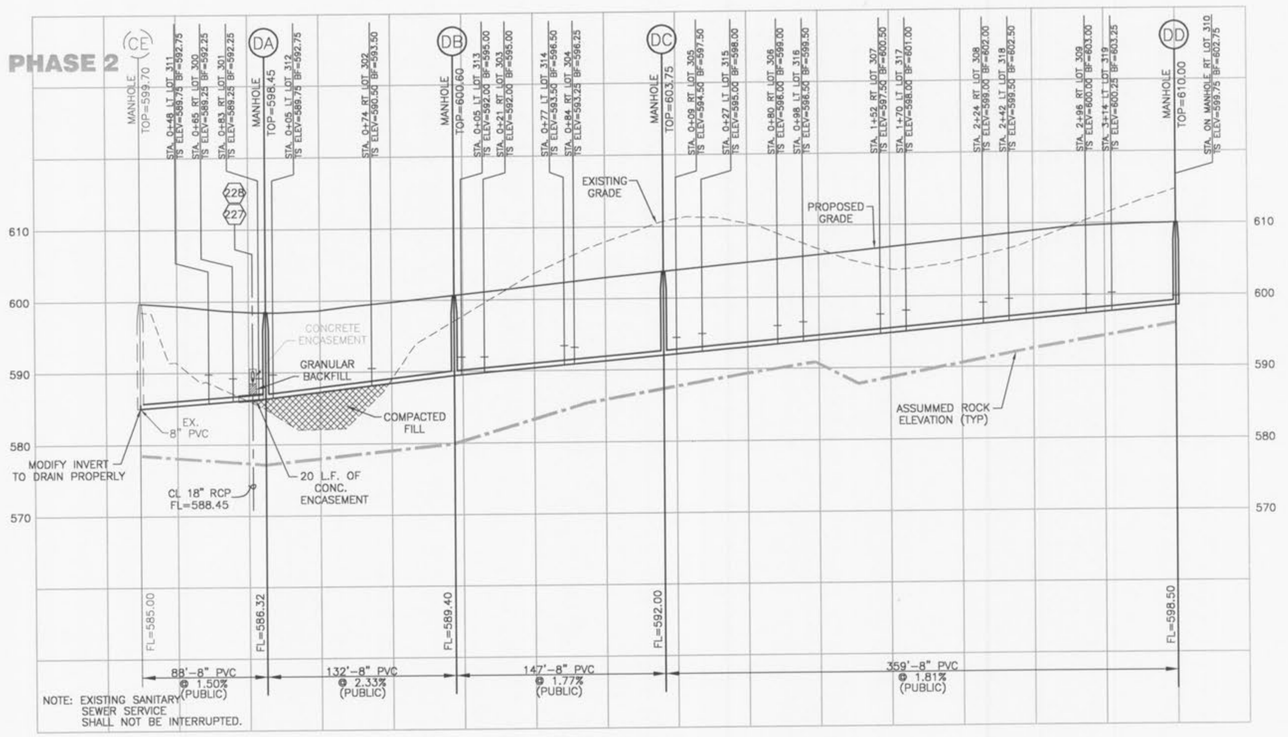
STORM SEWER PIPES WHICH CROSS OVER EXISTING OR PROPOSED SANITARY SEWER TRENCHES SHALL BE CRADLED IN CONCRETE THROUGH THE FULL WIDTH OF THE SANITARY SEWER TRENCH INTO UNDISTURBED SOIL. THE TRENCH SHALL BE BACKFILLED AND COMPACTED WITH GRANULAR FILL FROM THE TOP OF THE SANITARY SEWER TO THE BOTTOM OF THE CONCRETE CRADLE.

IF THE STORM AND SANITARY SEWERS ARE PARALLEL AND IN THE SAME TRENCH OR OVER-DIG, THE UPPER PIPE SHALL BE PLACED ON A SHELF AND THE LOWER PIPE SHALL BE BEDDED IN COMPACTED GRANULAR FILL TO THE FLOWLINE OF THE UPPER PIPE.

BRICK SHALL NOT BE USED IN THE CONSTRUCTION OF STORM SEWER STRUCTURES

ALL CONCRETE PIPES WILL BE INSTALLED WITH O-RING RUBBER TYPE GASKETS

CONNECTIONS AT ALL STORM SEWER STRUCTURES TO BE MADE WITH A-LOK JOINT OR EQUAL.



NOTE: EXISTING SANITARY SEWER SERVICE SHALL NOT BE INTERRUPTED.

SCALE: 1" = 50' HORIZ.
1" = 10' VERT.

NO	DATE	REVISION DESCRIPTION
1	12/1/10	CITY COMMENTS

DEVELOPER/OWNER:
PULTE GROUP
16640 CHESTERFIELD GROVE, SUITE 200
CHESTERFIELD, MO 63005
PHONE: (636) 537-7129

STATE OF MISSOURI JAMES T. ROTH NUMBER E-2000150065 REGISTERED PROFESSIONAL ENGINEER

CIVIL ENGINEERS
CORPORATE ENGINEERING CERTIFICATE #001185

JAMES T. ROTH
CIVIL ENGINEER
PE NO. E-2000150065
DATE: 12/1/10

PRESTON WOODS - PHASE 5
IMPROVEMENT PLANS
PRESTON WOODS LANE
O'FALLON, MO. 63366

SEWER PROFILES

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10777 sunset office drive
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DESIGN/CALC BY	JKW
DRAWN BY	JKW
CHECKED BY	JTR
DRAWING SCALE	
DATE	11/03/10
Job Number	10-0038
Sheet Number	C7.0