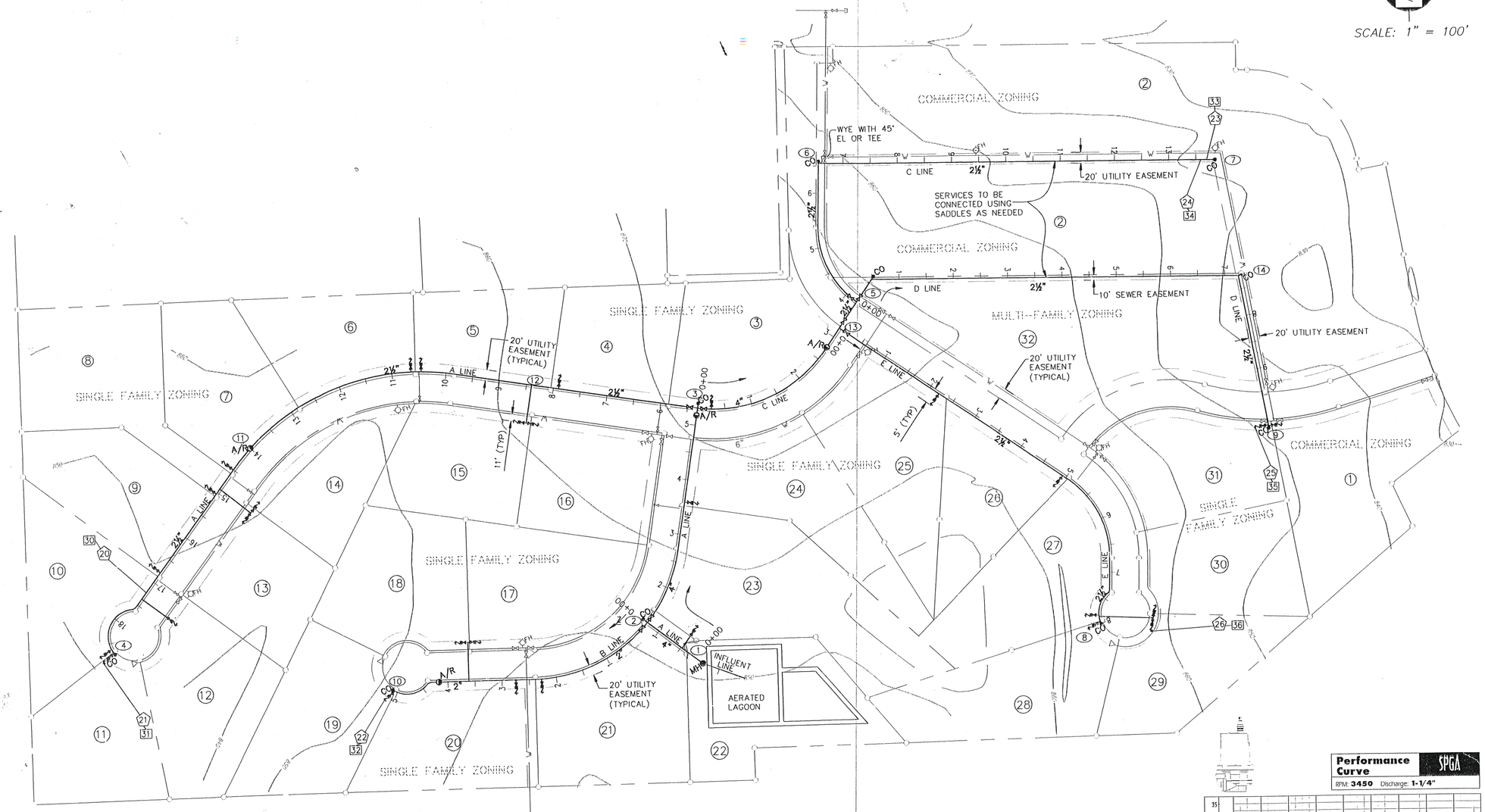
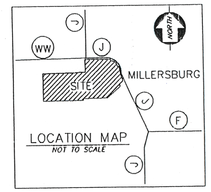




NOTES:
1. CONTRACTOR RESPONSIBLE TO LOCATE ALL UTILITIES IN PROJECT AREA BEFORE CONSTRUCTION.
2. ALL CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE STATE OF MISSOURI CLEAN WATER REGULATIONS.
3. ALL GATE VALVES, AIR RELEASE VALVES, AND CLEANOUTS MUST BE LOCATED BEHIND THE ROAD DITCHES.
4. SERVICES SHALL BE EXTENDED 5' ONTO THE LOT IT SERVES OR AT LEAST 10' BEHIND THE WATERLINE.
5. MINIMUM BURY UNDER DITCHES IS 24".
6. WYE WITH 45° EL OR TEE AT 90° BENDS.

LEGEND

- GATE VALVE
- FIRE HYDRANT & VALVE
- FLUSH HYDRANT & VALVE
- CAP & THRUST BLOCK
- WATER LINE
- S — SANITARY SEWER LINE
- CO — SEWER CLEANOUT
- MH — SEWER MANHOLE
- EASEMENT LINE
- CONTOUR LINE
- PROPERTY LINE
- (1) LOT NUMBER
- 32 HYDRAULIC ANALYSIS PUMP NODE
- (22) HYDRAULIC ANALYSIS TANK NODE
- (335) HYDRAULIC ANALYSIS LINE NODE
- 2" SEWER LINE SIZE DESIGNATION

QUANTITIES:
510 LF 2" PVC
4210 LF 2½" PVC
860 LF 4" PVC
1 EA 2" GATE VALVES
4 EA 2½" GATE VALVES
2 EA 4" GATE VALVES
4 EA AIR RELEASE VALVES
10 EA CLEANOUTS
1 EA STANDARD MANHOLE
2 EA 4" CROSS
1 EA 4"x2" REDUCER
1 EA 4"x2½" REDUCER
2 EA 2½"x2½"x2" TEES
1 EA 4"x2½"x2½" TEE
2 EA 2½" WYES
28 EA SERVICES
120 LF CRUSHED ROCK BACKFILL

OWNERS:
ED & SHIRLEY BRIGHT
1695 COUNTY ROAD 342
FULTON, MISSOURI 65251
(573) 642-5636

PIPE NETWORK ANALYSIS AND OPTIMIZATION

JOB: FOUR STAR SUBDIVISION GRINDER PUMP - HYDROMATIC SPGA 4.5

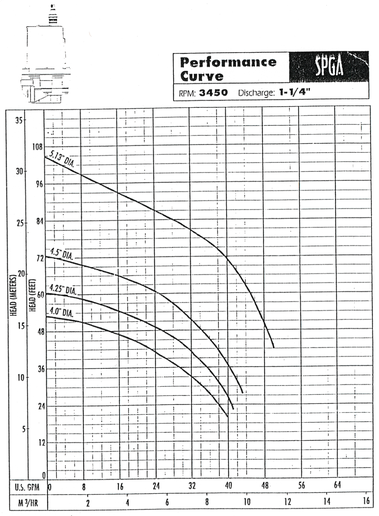
NODE DATA — PAGE 1

NODE NO.	ELEV. FT.	OUTPUT GPM	E.G.L. FT.	PR.HEAD FT.	PRESSURE PSI	
1	849.0	200.	849.0			RESERVOIR
2	849.0		853.0	4.0	1.7	
3	848.0		861.3	13.3	5.8	
4	839.0		889.3	50.3	21.8	
5	869.0		867.7	-1.3	-0.6	
6	862.0		871.4	9.4	4.1	
7	864.0		880.9	16.9	7.3	
8	854.0		876.1	22.1	9.6	
9	845.0		882.4	37.4	16.2	
10	848.0		878.4	30.4	13.2	
11	850.0		881.6	31.6	13.7	
12	860.0		867.8	7.8	3.4	
13	870.0		864.8	-5.2	-2.3	
14	835.0		878.4	43.4	18.8	
20	835.0		892.1	57.1	24.7	
21	832.0		891.6	59.6	25.8	
22	852.0		888.3	36.3	15.7	
23	827.0		880.9	53.9	23.4	
24	843.0		886.8	43.8	19.0	
25	847.0		887.6	40.6	17.6	
26	845.0		886.7	41.7	18.0	
30	833.0	-24.	833.0			RESERVOIR
31	830.0	-22.	830.0			RESERVOIR
32	850.0	-41.	850.0			RESERVOIR
34	841.0	-36.	841.0			RESERVOIR
35	845.0	-38.	845.0			RESERVOIR
36	843.0	-38.	843.0			RESERVOIR

JOB: FOUR STAR SUBDIVISION GRINDER PUMP - HYDROMATIC SPGA 4.5

PIPE DATA — PAGE 2

PIPE NO.	NODES FROM	TO	DIAM. IN.	LENGTH FT.	COEF	FLOW GPM	VEL. FT/SEC	HEAD LOSS
1	2	1	4.0	127.0	120.*	200.	5.1	4.0
2	3	2	4.0	405.0	120.*	158.	4.0	8.3
3	12	3	2.5	309.0	120.*	46.	3.0	6.4
4	11	12	2.5	665.0	120.*	46.	3.0	13.8
5	4	11	2.5	368.0	120.*	46.	3.0	7.7
6	13	3	4.0	319.0	120.*	112.	2.9	3.5
7	5	13	2.5	58.0	120.*	74.	4.9	2.9
8	6	5	2.5	278.0	120.*	36.	2.4	3.6
9	7	6	2.5	731.0	120.*	36.	2.4	9.6
10	14	5	2.5	730.0	120.*	38.	2.5	10.7
11	9	14	2.5	270.0	120.*	38.	2.5	4.0
12	8	13	2.5	800.0	120.*	38.	2.5	11.3
20	20	4	2.0	150.0	120.*	24.	2.5	2.8
21	21	4	2.0	150.0	120.*	22.	2.2	2.3
22	22	10	2.0	200.0	120.*	41.	4.2	10.0
23	7	23	2.0	150.0	120.*	0.	0.0	0.0
24	24	7	2.0	150.0	120.*	36.	3.7	5.8
25	25	9	2.0	120.0	120.*	38.	3.9	5.2
26	26	8	2.0	250.0	120.*	38.	3.8	10.5
27	10	2	2.0	509.0	120.*	41.	4.2	25.4
30	30	20	PUMP HEAD	59.1 FT		24.	POWER	0.HP
31	31	21	PUMP HEAD	61.6 FT		22.	POWER	0.HP
32	32	22	PUMP HEAD	38.3 FT		41.	POWER	0.HP
34	34	24	PUMP HEAD	45.8 FT		36.	POWER	0.HP
35	35	25	PUMP HEAD	42.6 FT		38.	POWER	0.HP
36	36	26	PUMP HEAD	43.7 FT		38.	POWER	0.HP



AURORA PUMP — A UNIT OF GENERAL SIGNAL
Conditions of Service: GPM: ____ TDH: ____
HYDROMATIC® PUMPS

WILLIAM L. MARSHALL — NUMBER E-11597 — STATE OF MISSOURI — REGISTERED PROFESSIONAL ENGINEER

Date	By	Description	Appvd/By
		REVISIONS	

PROJECT: ED & SHIRLEY BRIGHT CALLAWAY COUNTY, MO
SHEET TITLE: FOUR STAR SUBDIVISION
PRESSURE SEWER AND LAGOON PLANS
DATE: 4/28/97
DR BY: CLL
CHKD BY: WLM

MARSHALL ENGINEERING & SURVEYING
P.O. BOX 7387 300 ST. JAMES STREET
COLUMBIA MISSOURI 65205

JOB NO. 97002
SHEET 1 5