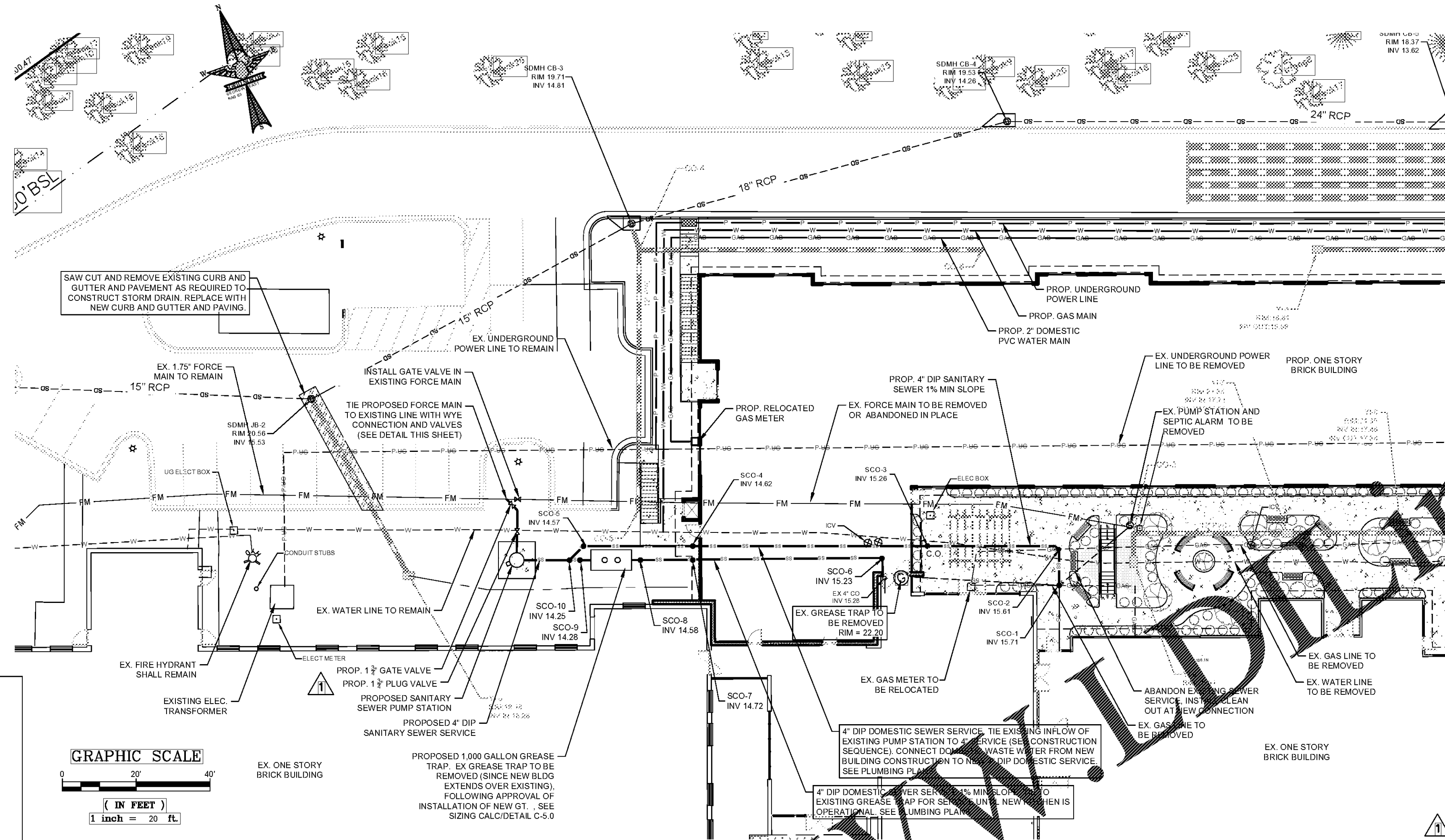
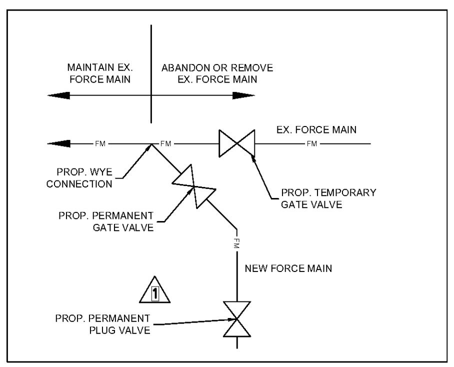
Legend of Symbols & Abbreviations

EIP – EXISTING IRON PIPE
EIR – EXISTING IRON REBAR
NIR – NEW IRON REBAR
S.T. – SIGHT TRIANGLE
M.B.S. – MINIMUM BUILDING SETBACK
P.S.D.E. – PUBLIC STORM DRAINAGE EASEMENT
S.S.E. – SANITARY SEWER EASEMENT
SSMH – SANITARY SEWER MANHOLE
R/W – RIGHT OF WAY
P.S.S.E. – PRIVATE SANITARY SEWER EASEMENT
GPUE – GENERAL PUBLIC UTILITY EASEMENT
C.P. – COMPUTED POINT
ECM – EXISTING CONCRETE MONUMENT
E.P.K. – EXISTING P.K. NAIL

– HANDICAPPED PARKING
– TRANSMISSION TOWER
– UTILITY POLE
GAS – UNDERGROUND GASLINE
P-OH – OVERHEAD UTILITY LINE
SS – SANITARY SEWER LINE
– SANITARY SEWER MANHOLE
– FIRE HYDRANT
WV – WATER VALVE
– WATER MANHOLE
CB – CATCH BASIN
– RAILROAD TRACK
– MONITORING WELL
– ELECTRIC BOX/TRANSFORMER
– CURB INLET
– YARD INLET
SD – STORM DRAIN
W – WATER LINE
X – FENCE LINE
– ZONING LINE
T-UG – UNDERGROUND TELE–COMMUNICATIONS





FORCE MAIN CONNECTION DETAIL
NOT TO SCALE

PUMP STATION CONSTRUCTION SEQUENCE

1. PROTECT EXISTING GREASE TRAP, PUMP STATION AND FORCE MAIN SYSTEM UNTIL PROPOSED GREASE TRAP, PUMP STATION AND FORCE MAIN SYSTEMS ARE INSTALLED, TESTED AND APPROVED FOR OPERATION.
2. CONTRACTOR SHALL CONFIRM ALL PERMITS FOR WASTE WATER SYSTEM CONSTRUCTION HAVE BEEN SECURED AND SHALL LOCATE AND PROTECT ALL UTILITIES IN THE CONSTRUCTION AREA.
3. GRADE AREA FOR PROPOSED GREASE TRAP AND PUMP STATION SYSTEM AND INSTALL PROPOSED STORM DRAINAGE SYSTEM FROM YI-9 TO EXISTING JB-2. AREA SHALL BE GRADED TO INSURE POSITIVE DRAINAGE TO YARD INLET.
4. INSTALL PROPOSED PUMP STATION SYSTEM, FORCEMAIN, GATE VALVES, GREASE TRAP AND GRAVITY SYSTEM SERVED BY PUMP STATION.
5. TEST PUMP STATION SYSTEM IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS AND PROVIDE ENGINEER OF RECORD SATISFACTORY START-UP REPORT DATA INDICATING COMPLIANCE WITH REGULATIONS.
6. REDIRECT WASTEWATER FLOW FROM EXISTING GREASE TRAP TO NEWLY CONSTRUCTED GREASE TRAP.
7. REDIRECT WASTEWATER FLOW FROM EXISTING PUMP STATION TO NEWLY CONSTRUCTED GRAVITY SYSTEM AND PUMP STATION.
8. REMOVE TEMPORARY GATE VALVE IN EXISTING FORCE MAIN AND CAP PORTION OF FORCE MAIN TO BE ABONDONED OR REMOVED.
9. REMOVE AND CLEAN EXISTING PUMP STATION PUMPS, FLOATS AND ELECTRICAL CONTROLS AND PROVIDE THEM TO OWNER REPRESENTATIVE FOR STORAGE.
10. REMOVE EXISTING GREASE TRAP AND DISPOSE OFF-SITE.
11. REMOVE EXISTING FORCE MAIN AND PUMP STATION WET WELL AND DISPOSE OFF-SITE OR ABANDON IN PLACE AT DIRECTION OF OWNER REPRESENTATIVE.

GEORGIA REGISTERED No. 026033 PROFESSIONAL ENGINEER FRANK L. GRAY III
03/18/20
GWSCC 0041295

PERMITTED DEMAND

A. DESCRIPTION	B. LOADING (GPD)	TOTAL (AxB) (GPD)	
34 BEDS	100/BED	3400	
30 STAFF	150	4500	
SPA (5 GPD/PER)	34	170	
	TOTAL	8070	GPD
		5.6	GPM

C. GPM	D. FS	PEAK FLOW (CxD) (GPM)
5.6	3	16.8125

INCREASE DEMAND

A. DESCRIPTION	B. LOADING (GPD)	TOTAL (AxB) (GPD)	
26 BEDS	100/BED	2600	
15 STAFF	150	2250	
SPA (5 GPD/PER)	26	130	
	TOTAL	4980	GPD
		3.5	GPM

C. GPM	D. FS	PEAK FLOW (CxD) (GPM)
9.1	3	27

SET PUMP AT 27 GPM OUTFLOW MINIMUM

System Head Loss Calculations

HERITAGE HEALTHCARE

Forcemain interior diameter (in) =		[illegible]	Total K	3.45
Pipe Area (sf) =		0.017		
Length of forcemain (ft) =		360		
Hazen-Williams pipe coefficient=		see below		
Static Head (ft)	18.4-11.0			

C=	130	100		C=130	C=100		C=130	C=100
Flow (gpm)	Friction loss (ft)	Friction loss (ft)	Velocity (fps)	Head (ft)	Head (ft)	Minor losses (ft)	Total Head (ft)	Total Head (ft)
0	0.00	[illegible]	0.00	5.40	5.40	0.00	5.40	5.40
2	0.11	0.17	0.27	5.51	5.57	0.00	5.51	5.58
4	[illegible]	0.63	0.53	5.79	6.03	0.02	5.80	6.05
6	[illegible]	1.34	0.80	6.22	6.74	0.03	6.26	6.77
[illegible]	[illegible]	2.28	1.07	6.80	7.68	0.06	6.86	7.74
10	2.12	3.45	1.33	7.52	8.85	0.09	7.61	8.94
12	2.97	4.83	1.60	8.37	10.23	0.14	8.51	10.37
14	3.95	6.43	1.86	9.35	11.83	0.19	9.54	12.01
16	5.06	8.23	2.13	10.46	13.63	0.24	10.71	13.87
18	6.30	10.24	2.40	11.70	15.64	0.31	12.00	15.94
20	7.65	12.44	2.66	13.05	17.84	0.38	13.43	18.22
22	9.13	14.84	2.93	14.53	20.24	0.46	14.99	20.70
24	10.73	17.44	3.20	16.13	22.84	0.55	16.67	23.39
26	12.44	20.22	3.46	17.84	25.62	0.64	18.48	26.27
28	14.27	23.20	3.73	19.67	28.60	0.74	20.42	29.34
30	16.22	26.36	3.99	21.62	31.76	0.85	22.47	32.62
32	18.28	29.71	4.26	23.68	35.11	0.97	24.65	36.08
34	20.45	33.24	4.53	25.85	38.64	1.10	26.94	39.74
36	22.73	36.95	4.79	28.13	42.35	1.23	29.36	43.58
38	25.12	40.84	5.06	30.52	46.24	1.37	31.90	47.61
40	27.63	44.91	5.33	33.03	50.31	1.52	34.55	51.83

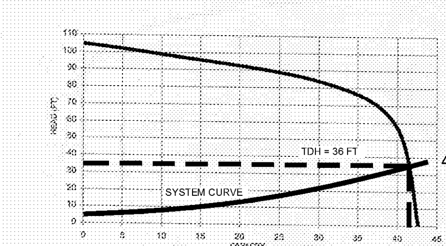
Hazen-Williams Equation:
Loss = Length * [Flow /(C * Area * 1.32 * (R^0.63))] ^ 1.852
R = hydraulic radius = diameter / 4 for sanitary sewer pipes

Minor losses include the following:	
(3) 45 degree elbows @ K = 0.15	0.45
(1) valve @ K = 1.00	1.00
(1) check valve @ K = 1.5	1.50
(1) discharge conn. @ K = 0.50	0.50
	3.45

	TDH (FT)	Discharge (GPM)
From Pump Curve and System Curve Service Point:	36	41
Calculated FM Velocity: 5.46 FPS		
= Discharge(GPM) / FM dia (SF) * 448.8		

Keen Pump — Submersible Grinder Pumps

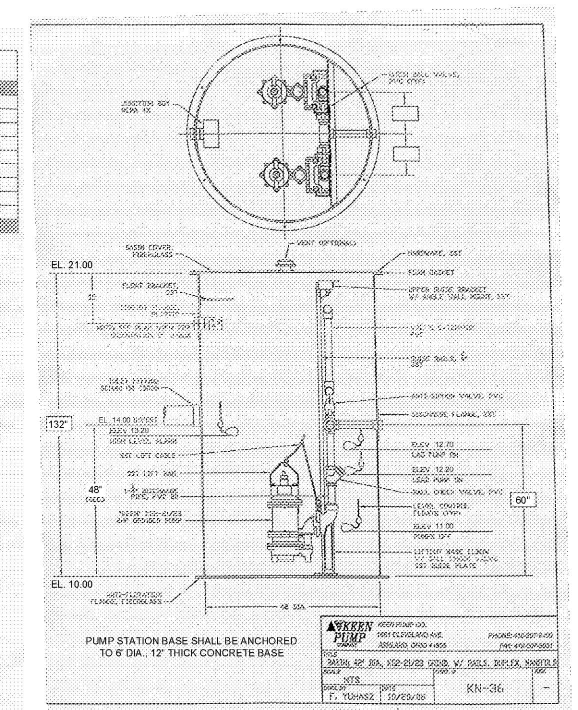
General		Motor Data	
Project Name		HP / Service Factor	2 HP / 1.92
Date / Curve No.	/	Start Relay	Keen Model # RE-2
Pump Data		Start Capacitor	150 mfd, 250 volt
Model No.	KG2-21	Run Capacitor	30 mfd, 370 volt
Discharge	1-1/4" NPT Vertical	Rated Power	208 / 230 volt, 1-Phase
Grinder Ring	18 Slots	Rated Current	14 / 12.8 amps
Impeller Dia.	5.35"	Starting Current	28 amps
Impeller Vanes	12	Pole / Rate Speed	2 Pole / 3450 RPM
Impeller Type	Recessed Vortex	Insulation Class	F



Performance Chart

Flow (GPM)	10 GPM	20 GPM	30 GPM	40 GPM
Head (Feet)	100 ft	92 ft	85 ft	57 ft

Revised Feb. 2009 1-16



PUMP STATION BASE SHALL BE ANCHORED TO 6' DIA., 12" THICK CONCRETE BASE

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RENOVATION & ADDITION TO:
PruittHealth Savannah
12825 WHITE BLUFF ROAD
SAVANNAH, GA 31419

Project Reference Numbers
Architect's Project No. 100001
Drawn By : JLR / FLG

REVISIONS

DATES

PHASE	ISSUED

UTILITY PLAN
PUMP STATION
DETAILS

SHEET NUMBER

C-4.1

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