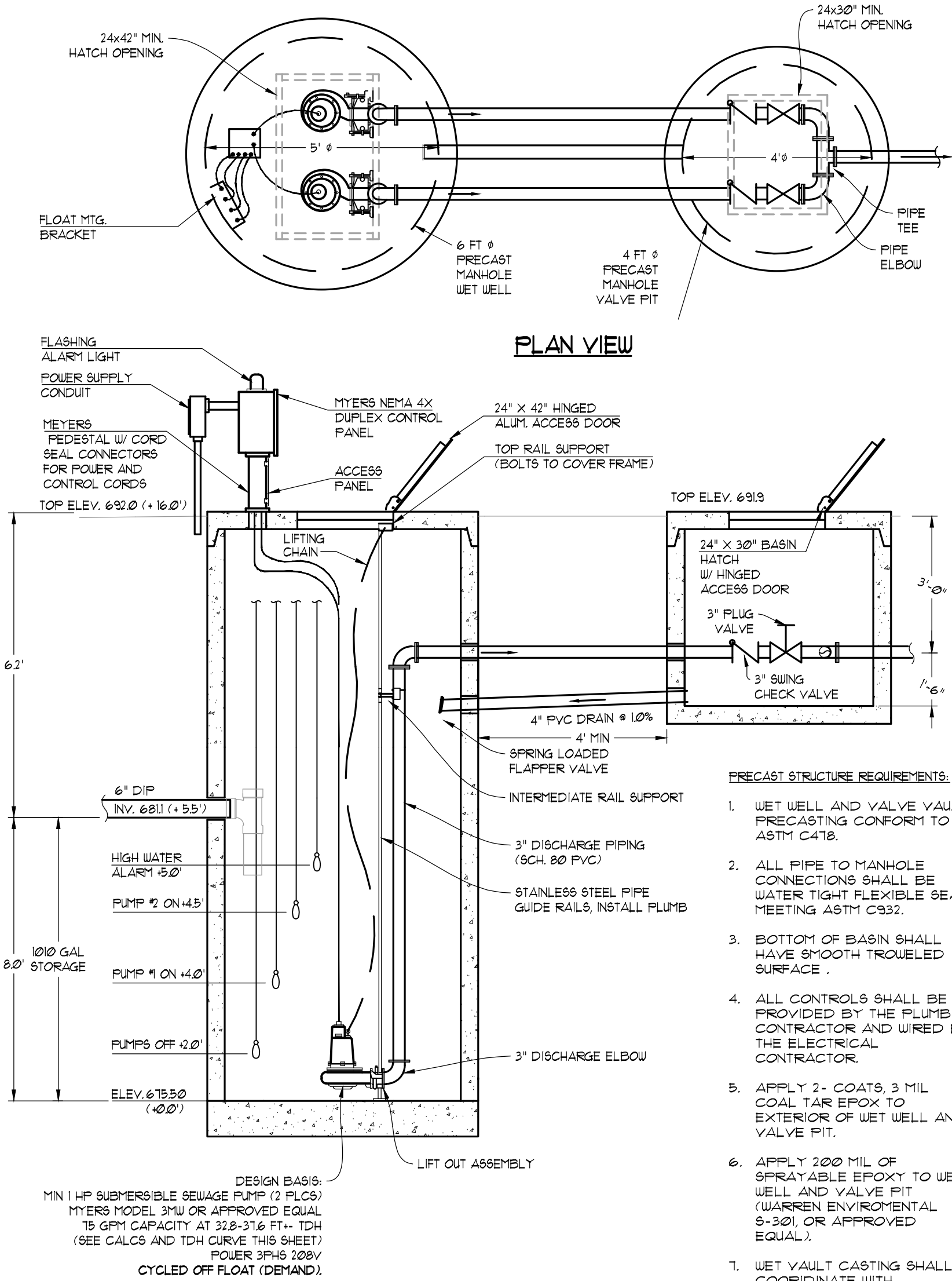


LIFT STATION GENERAL REQUIREMENTS:

CONTRACTOR SHALL SUBMIT A COMPLETE LIFT STATION SHOP DRAWING SET FOR APPROVAL THAT MEETS THE FOLLOWING REQUIREMENTS:

- SUBPERSIBLE SEWAGE PUMPS SHALL HAVE CAST IRON VOLUTE CASE WITH 3" DISCHARGE FLANGE OR FILLED MOTOR TWO-RAIL LIFT-OUT RAIL SYSTEM AND RECESSED TYPE PUMP IMPELLER CAPABLE OF PASSING 2" DIAMETER SOLIDS.
- MOTORS SHALL BE SEALED SUBPERSIBLE TYPE FILLED WITH DIELECTRIC OIL. MOTORS SHALL HAVE BALL BEARINGS DESIGNED FOR 50,000 HOURS B-10 LIFE. HEAT SENSORS SHALL BE IMBEDDED IN THE WINDING AND CONNECTED IN SERIES WITH THE MOTOR STARTER CONTACTOR COIL TO STOP THE MOTOR IF THE WINDING TEMPERATURE IS ABOVE 148°F. PUMP/MOTOR SHAFT SHALL BE 48 STAINLESS STEEL.
- PUMP CASE SHALL BE CAST IRON. PUMP IMPELLER SHALL BE RECESSED TYPE. THE MOTOR SHALL BE PROTECTED BY TWO MECHANICAL SEALS WITH A SEAL CHAMBER BETWEEN THE SEALS. SEAL FACE SHALL BE CARBON AND CERAMIC. A DOUBLE ELECTRODE SHALL BE MOUNTED IN THE SEAL CHAMBER TO DETECT WATER IN THE SEAL. THIS ELECTRODE SHALL CAUSE A RED LIGHT IN THE CONTROL BOX TO TURN ON WHEN WATER IS DETECTED.
- IMPELLER SHALL BE CAST IRON OF THE RECESSED TYPE. IMPELLER SHALL BE DYNAMICALLY BALANCED. IMPELLER AND MOTOR SHALL HAVE TOP LIFT-OUT CASE.
- A LIFT-OUT RAIL SYSTEM SHALL BE PROVIDED FOR EACH PUMP. THE SYSTEM SHALL CONSIST OF A DUCTILE IRON DISCHARGE BASE, CAST IRON PUMP ATTACHING AND SEALING PLATE, STAINLESS STEEL PUMP GUIDE PLATE AND CAST IRON ELBOW. GUIDE RAILS SHALL BE TWO 1" SCHEDULE 40 STAINLESS STEEL PIPES. ALL BOLTS AND FASTENERS SHALL BE STAINLESS STEEL. PROVIDE A FOUR STAINLESS STEEL LIFTING CHAIN WITH ENLARGED MASTER LINKS.
- DUPLEX PUMPS SHALL BE CONTROLLED BY AN ELECTRICAL CONTROL PANEL. THE PANEL ENCLOSURE SHALL BE NEMA-4X WEATHERPROOF PANEL AND SHALL HAVE A HINGED DOOR AND A PEDESTAL BASE. PUMPS SHALL BE CONTROLLED BY A MERCURY FLOAT SWITCH LEVEL CONTROL.
- MAIN CIRCUIT BREAKERS SHALL BE MOUNTED WITH OPERATING HANDLES THROUGH THE DOOR AND SHALL HAVE A LOCK ARRANGEMENT THAT PREVENTS THE DOOR FROM BEING OPENED WHEN EITHER BREAKER IS IN THE 'ON' POSITION WHEN BREAKERS ARE OFF ALL POWER TO THE CONTROL ELEMENTS SHALL BE KILLED.
- A MAGNETIC MOTOR STARTER WITH THERMAL OVERLOAD PROTECTION SHALL BE PROVIDED FOR STARTING EACH PUMP. AN ALTERNATOR RELAY SHALL BE PROVIDED TO ALTERNATE PUMPS ON EACH SUCCESSIVE PUMPING CYCLE AND AN OVERSIDE RELAY SHALL BE USED TO START BOTH PUMPS IF FLOW IS GREATER THAN ONE PUMP CAN HANDLE AND SHALL START THE SECOND PUMP IN CASE OPERATING PUMP FAILS. THE OPERATION OF THE OVERSIDE RELAY SHALL ALSO ACTIVATE THE ALARM.
- H-O-A SWITCHES, ELAPSED TIME METERS, CONTROL TRANSFORMERS, ALARM SWITCH, ALARM CONTACT FOR ENERGY MANAGEMENT SYSTEM AND RUN LIGHTS SHALL BE FURNISHED FOR EACH PUMP.
- A TERMINAL STRIP WITH BOX TYPE CONNECTORS SHALL BE SUPPLIED TO MAKE ALL POWER AND CONTROL CONNECTIONS FOR BOTH PUMPS. ALL TERMINALS SHALL BE MARKED FOR EASY IDENTIFICATION. A GROUND TERMINAL STRIP SHALL BE PROVIDED.
- A HIGH WATER RED ALARM LIGHT SHALL BE MOUNTED ON THE CONTROL PANEL.
- PROVIDE WATERPROOF RUBBER COVERED CORDS FOR CONNECTION BETWEEN THE CONTROL PANEL AND THE PUMPS AND LEVEL CONTROLS. INSULATION ON THE CORDS SHALL BE TYPE 90. CONDUCTORS IN THE CORDS SHALL BE COPPER MINIMUM 3/16" AWG FOR PUMPS AND 2 #6 AWG FOR LEVEL CONTROLS.
- REMOTE ALARM PANEL SHALL BE FLUSH MOUNTED AND SHALL CONTAIN A RED ALARM LIGHT, AN ALARM HORN AND A SILENCE SWITCH. ALARM PANEL SHALL BE INSTALLED INSIDE THE BUILDING IN THE ADMINISTRATION AREA.
- CHECK VALVES SHALL BE CONSTRUCTED WITH A GRAY CAST IRON BODY AND COVER AND WITH A HOLLOW STEEL BALL WITH NITRILE RUBBER EXTERIOR. THE CHECK VALVES SHALL BE A FULL FLOW, NON-CLOG TYPE WITH A FLOW AREA EQUAL TO THE NOMINAL SIZE OF THE VALVE.
- PROVIDE ONE HALLIDAY PRODUCTS MODEL D2B36D PORTABLE HOIST, ALL STAINLESS STEEL CONSTRUCTION WITH 3-1/2" DIAMETER MAST, ADJUSTABLE DAVIT ARM, WINCH, CABLE AND HOOK. LIFTING CAPACITY SHALL BE 1000 LBS. PROVIDE DUTY FLOOR STYLE HOIST SOCKET FOR EACH DOWSING CHAMBER.



ELEVATION

PROJECT NAME: OCONEE COUNTY FACILITY MAINT EMS
MUNICIPALITY: OCONEE COUNTY, GA

LIFT STATION DESIGN

Facility Name / Designation: Lift Station

I. DESIGN CAPACITY AND DISCHARGE PIPING SELECTION

A. DEMAND 'AVERAGE DAILY FLOW'

Facility (Per Table 13.3 GA EPD Onsite Manual)	Qty	Unit	Base Flow Rate Per Unit	Flow Rate Per Unit (GPD)	Notes
Facility Maint.	9	employee	25	225	
Facility Maint.	1	wash machine	500	500	
EMS Building	6	employee	40	240	
EMS Building	1	wash machine	500	500	
TOTAL AVERAGE DAILY FLOW (ADF)			1465	GPD	
			1.02	GPM	

B. DESIGN PEAK FLOW RATE

- Peaking Factor = 10.00 from GA Onsite Manual
- Peak Flow = 10.17 GPM (ADF x Peak Factor / 1440)
- Alternate DFW Peak Flow from MEP = 85.0 GPM (conservative-use 1-2 building)
- Choose Design Flow (Q Design) = 75.0 GPM (6 inch gravity at 1% less than 1/2 full)

C. HORIZONTAL PIPING (Min. Vel = 2 ft/s, Max Velocity = 5 ft/s, Ideal = 4 ft/s)

Pipe Size vs Velocity at Design Flow	1.25 in	1.50 in	2 in	3 in	4 in	Avg Vel = 0.4084 GPM / d ²
	19.60	13.61	7.66	3.40	1.91	ft/s

Choose Horiz. Force Main Size = 3.0 in

D. VERTICAL PIPING (Min. Vel = 4 ft/s, Max Velocity = 8 ft/s, Ideal = 5 ft/s)

Pipe Size vs Velocity at Design Flow	1.25 in	1.50 in	2 in	3 in	4 in	Avg Vel = 0.4084 GPM / d ²
	19.60	13.61	7.66	3.40	1.91	ft/s

Choose Vert. Piping Size = 3.0 in

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BLP PROJECT NO. 26034

PROJECT NAME: OCONEE COUNTY FACILITY MAINT EMS
MUNICIPALITY: OCONEE COUNTY, GA

II. WET WELL DESIGN (DUPLEX SYSTEM)

Design Pump Q: 75.0 GPM

A. DESIGN CRITERIA

- Max Pump Motor Cycle Rate = 3 Starts per Hour (verify with manufacturer/City)
- Tdet, Max Detention Time = 30.00 Minutes
1. Topile = 60 min / Max Cycle Rate = 23 min
- Vmax = Qavg * Tdet = 1125 gallons where Qavg is taken as 1/2 Q design
- Vmin = Toyle * Qpump / 4 = 375 gallons
- Choose Design Vol = 423 gallons

B. OPERATING VOLUME, V, LEAD PUMP START TO ALL PUMPS OFF.

- Wet Well Diameter = 6 ft
- Wet Well Volume per Foot = 211 gal/ft

- Level D (Lead Pump On - All Pumps Off) = 2.0 ft (2.0 ft max)

8. Control Elevations

Rim-Wet well	= 691.50	ft	+16
Influent Invert	= 681.00	ft	+5.5
High Water Alarm	= 680.50	ft	+5
Lag Pump On	= 680.00	ft	+4.5
Lead Pump On	= 679.50	ft	+4
All Pumps Off	= 677.50	ft	+2
Bottom of Sump	= 675.50	ft	
Min. Liquid Level	= 2.00	ft (verify with pump manufacturer)	
Influent Invert - All Pumps Off	= 3.50	ft (if 5ft or greater, use down pipe)	

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BLP PROJECT NO. 26034

PROJECT NAME: OCONEE COUNTY FACILITY MAINT EMS
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III. SYSTEM CURVE CALCULATIONS

Calculate High Head Curve and Low Head System Curves Design Pump Q: 75.0 GPM

A. STATIC HEAD

- Pipe Centerline at Discharge = 704.40 ft
- All Pumps Off = 677.50 ft
- High Water Level = 680.00 ft
- Total Static (High Head) = 26.90 ft
- Total Static (Low Head) = 24.40 ft

B. PRESSURE AT CONNECTION (From Receiving F.M. Pressure Test - ENTER 0 PSI For Gravity Discharge)

- Low Pressure Reading = 0.00 psi
- Low Head Pressure = 0.00 ft
- High Pressure Reading = 0.00 psi
- High Head Pressure = 0.00 ft

C. FRICTION LOSSES

1. Pump Station Piping - minor losses

K	Qty	K*Qty
45° el	0.35	2 0.70
90° el	0.40	4 1.60
reducer	1.50	1 1.50
increaser	0.79	
gate valve, open	0.15	2 0.30
dismantling joint	0.10	1 0.10
ball valve, open	0.05	
Check Valve (slanted disc)	3.00	1 3.00
T-line flow	0.30	
T-branch flow	1.00	
ΣK @ Pump Station		7.20

2. Force Main Piping - minor losses

K	Qty	K*Qty
45° el	0.35	2 0.70
90° el	0.40	4 1.60
reducer	1.50	1 1.50
increaser	0.79	
gate valve, open	0.15	2 0.30
Check Valve (slanted disc)	3.00	1 3.00
T-line flow	0.30	
T-branch flow	1.00	
ΣK @ Force Main		4.10

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BLP PROJECT NO. 26034

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MUNICIPALITY: OCONEE COUNTY, GA

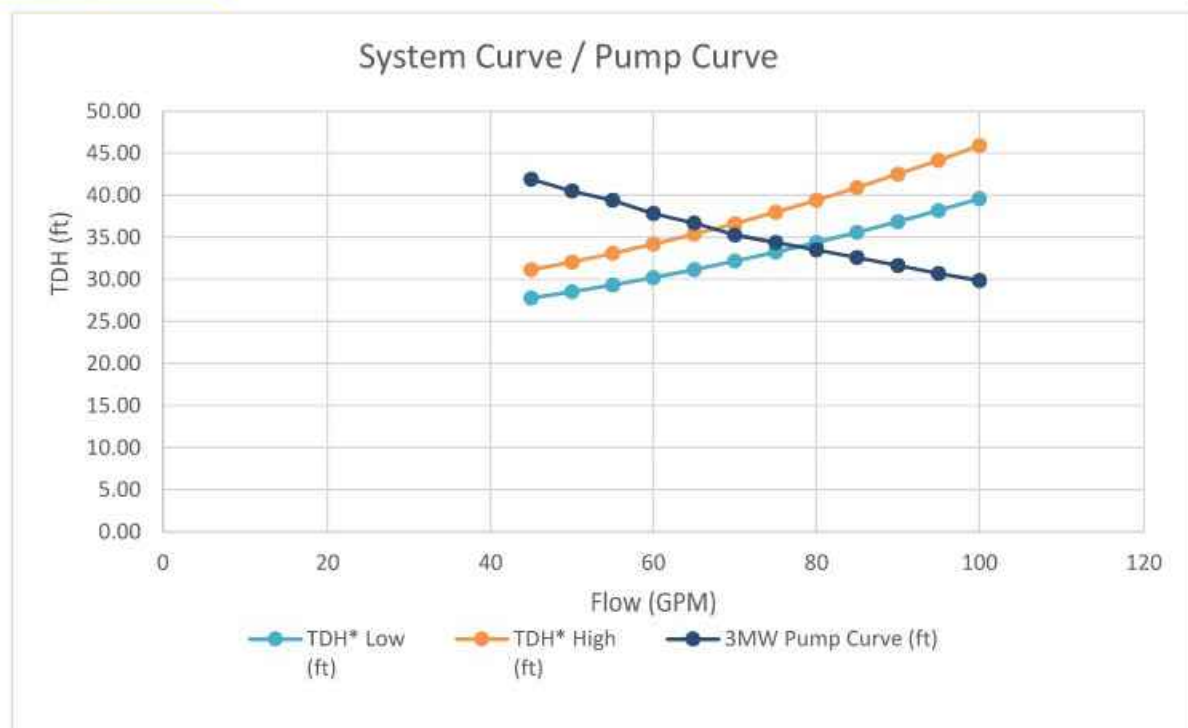
3. Major Losses and Overall System Curve

	Pump Station (PS)	Force Main (FM)
Pipe dia. (in)	3.00	3.00
Pipe Material	PVC	PVC
Pipe length (ft)	25.00	410.00
C _{Minor} - Initial Service (Low)	140.00	140.00
C _{Minor} - End of Service (High)	120.00	120.00

Flow (GPM)	h _{major} PS (ft)	h _{major} PS-Low (ft)	h _{major} PS-High (ft)	h _{major} FM (ft)	h _{major} FM-Low (ft)	h _{major} FM-High (ft)	TDH* Low (ft)	TDH* High (ft)	3MW Pump Curve (ft)
45	0.47	0.15	0.20	0.27	2.49	3.31	27.77	31.14	41.90
50	0.58	0.18	0.25	0.33	3.02	4.02	28.51	32.07	40.50
55	0.70	0.22	0.29	0.40	3.61	4.80	29.32	33.08	39.37
60	0.83	0.26	0.34	0.47	4.24	5.64	30.20	34.18	37.83
65	0.97	0.30	0.40	0.55	4.91	6.54	31.14	35.36	36.70
70	1.13	0.34	0.46	0.64	5.64	7.50	32.15	36.62	35.27
75	1.29	0.39	0.52	0.74	6.40	8.52	33.23	37.97	34.36
80	1.47	0.44	0.59	0.84	7.22	9.60	34.37	39.39	33.50
85	1.66	0.49	0.65	0.95	8.07	10.74	35.57	40.90	32.58
90	1.86	0.55	0.73	1.06	8.97	11.93	36.85	42.49	31.64
95	2.08	0.60	0.80	1.18	9.92	13.19	38.18	44.15	30.69
100	2.30	0.66	0.88	1.31	10.90	14.50	39.58	45.90	29.87

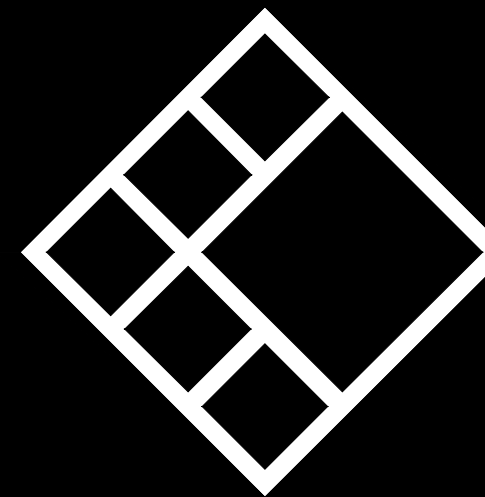
*TDH = Static Head + Pressure Head (if applicable) + Minor Losses + Major Losses

Design Pumping Rate

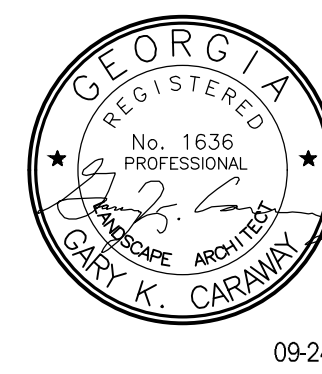


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BLP PROJECT NO. 26034



OCONEE COUNTY BOARD OF COMMISSIONERS



09/24/2026

OCONEE COUNTY FACILITY
MAINTENANCE & EMS
7580 MACON HIGHWAY
WATKINSVILLE, GA 30677

REVISIONS

No.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

RELEASED FOR CONSTRUCTION

SUBMITTALS

No.	DATE	DESCRIPTION
1	06-03-26	SDP REVIEW
2	07-10-26	GSWCC RESUBMITTAL
3	07-30-26	OCWR RESUBMITTAL
4	08-14-26	OCWR RESUBMITTAL
5	08-14-26	GSWCC RESUBMITTAL
6	09-24-26	BID SET
7		
8		
9		
10		
11		
12		
13		
14		
15		

BLP, INC. PROJECT NO: 26034

DATE: 09/24/2026

DRAWING BY: ARP

CHECKED BY: GKC

SANITARY SEWER DETAILS

C510

SHEET#

Phone: 770-483-1173

1020 OLD BISHOP ROAD, BISHOP GA 30621

Civil Engineers

Landscape Architects

Breedlove Land Planning, Inc.

DUPLEX LIFT STATION

NOT TO SCALE