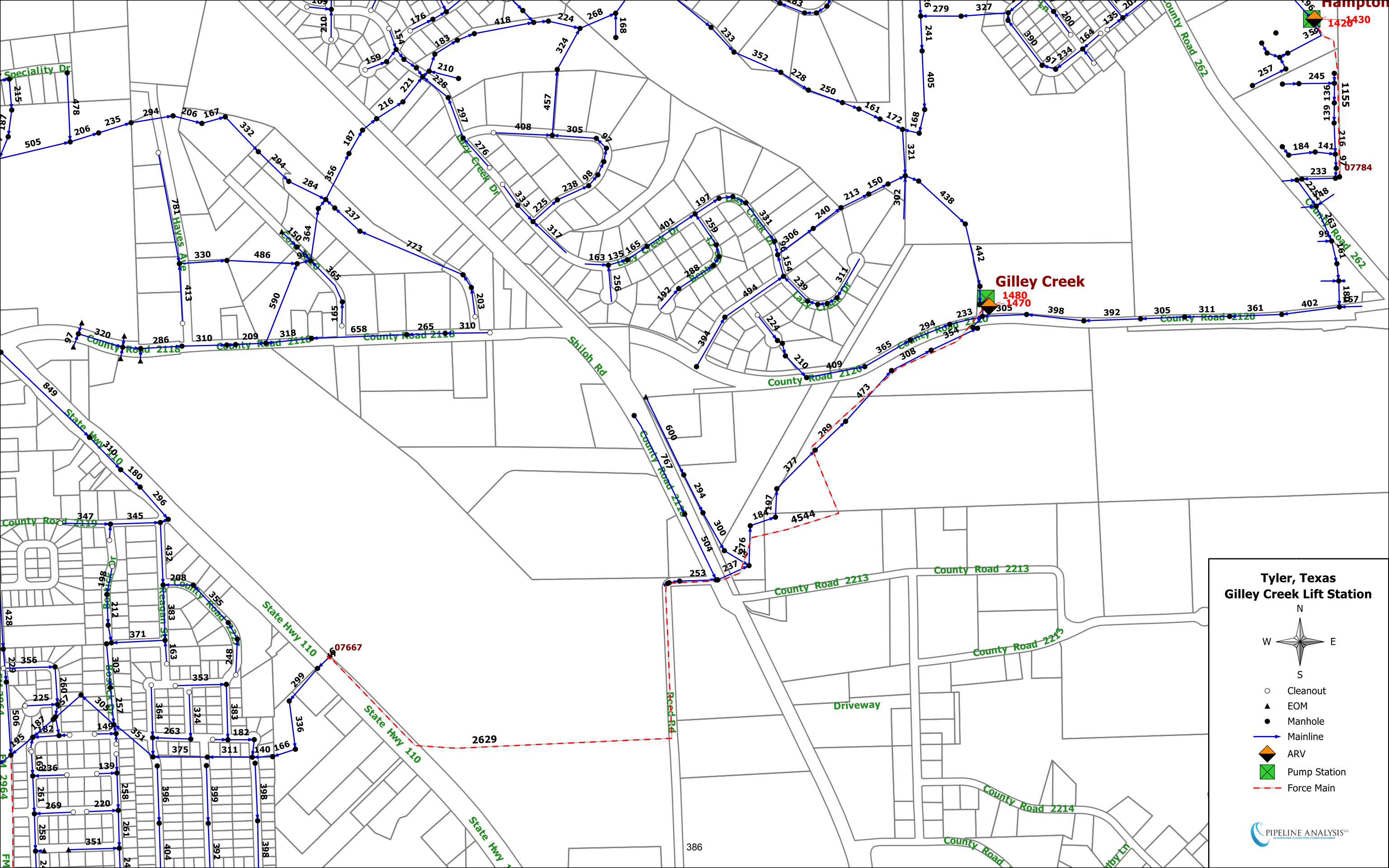


GILLEY CREEK LIFT STATION



Tyler, Texas
Gilley Creek Lift Station

N

W

E

S

Cleanout

EOM

Manhole

Mainline

ARV

Pump Station

Force Main

PIPELINE ANALYSIS^{INC}

WATERWATER SOLUTIONS GROUP, INC.

N 32° 17.739'
W 95° 14.352'

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name GILLEY Type Self Priming
 Location/Address 9127 County Road 2120
 Lift Station Asset ID _____ Number of Pumps 6-3 sets
 Firm Capacity in GPM (all pumps operating) _____ 2 pumps in
 Firm Capacity in GPM (largest pump out of service) _____ each set
 Inspector Don White Date Dec 14, 2017
 City Works Work Order _____

Building and Grounds

Good Fair Poor Critical N/A

Building Structure	Type: <u>BRICK</u>					
Building Roof/Ceiling	<u>Concrete</u>	☒	☐	☐	☐	☐
Building Finishes	<u>34' x 34'</u>	☒	☐	☐	☐	☐
Building Doors and Windows	<u>5-3' x 4' ALUM. windows w/ security bars</u> <u>1-3' metal Pedestrian Rolling</u> <u>1-10' metal overhead</u>	☐	☒	☐	☐	☐
Building HVAC	Type: <u>NONE</u>	☐	☐	☐	☐	☐
Fencing	Type: <u>Chain link</u>	☐	☒	☐	☐	☐
Gates	<u>1-3' Pedestrian</u> <u>1-14' Double Vehicular</u>	☐	☒	☐	☐	☐
Site/Grounds	Size: <u>Fenced 50' x 80'</u> <u>LOT +/- 143' wide</u> <u>x 173' deep</u>	☐	☒	☐	☐	☐
Lighting	☒	☒	☐	☐	☐	☐
Pavement (Driving)	Type: <u>Concrete</u>	☐	☒	☐	☐	☐
Drainage	Type: <u>Surface</u>	☐	☒	☐	☐	☐
Odor	Comment: <u>Minor - inside building</u>	☐	☒	☐	☐	☐
Odor Control System	Type: _____	☐	☐	☐	☐	☐
Odor Control Mechanical		☐	☐	☐	☐	☐
Odor Control Media	Type: _____	☐	☐	☐	☐	☐
Noise		☐	☐	☒	☐	☐
Overall Site Appearance		☒	☐	☐	☐	☐

Comments one lower half window panel glass missing. Spalling of concrete drive near Hwy. North side of building adjacent to steep natural ground draining to building with no protective slope or channeling drainage away from building. Shallow foundation exposure, 0-3", allowing drainage into floor of building. Erosion silt on sidewalk around edge of building. Corrosion on chain link fence and gates.

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well							
	Size:	11'					
	Debris		☒	☐	☐	☐	☐
	Fats, oils, and grease		☒	☐	☐	☐	☐
	Ventilation	?	☐	☐	☐	☐	☐
COULD NOT TELL CONDITION	Walls	Material: CONCRETE	☐	☐	☐	☐	☐
	Coatings	Type: ?	☐	☐	☐	☐	☐
	Access Hatches	CI Number: 1-2'x2'	☐	☒	☐	☐	☐
	Slab	Concrete	☒	☐	☐	☐	☐
Dry Well/Valve Vault							
	Walls	Material: N/A	☐	☐	☐	☐	☐
	Coatings	Type:	☐	☐	☐	☐	☐
	Grating/Hatching	Number:	☐	☐	☐	☐	☐
	Stairway/Ladder	Material:	☐	☐	☐	☐	☐
	Sump/Pump	Number:	☐	☐	☐	☐	☐
	Ventilation	Type:	☐	☐	☐	☐	☐

Comments Could not open hatch without tools, very limited wet well visibility. Pump 1A, 1B has one 3/4" return line from discharge to wet well for aeration. Pump 2A, 2B, 3A & 3B each have a 3/4" return for a total of 5 return lines pump 1-3.

Mechanical

			Good	Fair	Poor	Critical	N/A
Bypass Connection	(Circle)	YES / NO					
1- left of pump 1- between pump 1 & 2							
Piping and Valves							
	Suction Valve	Number: —	☐	☐	☐	☐	☐
2 on Pump 1	Check Valve	Number: 4-12" DI	☐	☐	☒	☐	☐
	Discharge Valve	Number: 4-12", 1-6" DI	☐	☐	☒	☐	☐
1-12" and 1-6" on Bypass Piping; 1-? on 6" Bypass							
Mechanical (continued)			Good	Fair	Poor	Critical	N/A
	Riser Piping	Material: 10" DI	☐	☒	☐	☐	☐

Riser Piping Fair below slab, Good above slab.

MANIFOLD - 18"

Pump 1 - 12" DI

Pump 2 & 3 10" to Cornell Pump

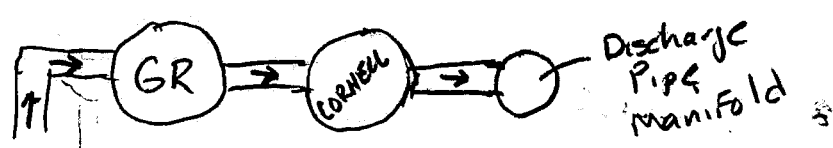
- 12" to manifold

Discharge Piping	Material: <u>DI</u>	☐	☒	☐	☐	☐
Fittings	Material: <u>DI</u>	☐	☒	☐	☐	☐

18" Discharge
 Comments Manifold has welded fittings; Grease exposed on check valves

Pumps								
Pump 1	Asset ID	Make	Model					
	Capacity	GPM						
	Impeller Dia./Code	Horsepower						
				Good	Fair	Poor	Critical	N/A
Pump				☐	☐	☐	☐	☐
Seals				☐	☐	☐	☐	☐
Motor				☐	☐	☐	☐	☐
Shaft				☐	☐	☐	☐	☐
Electrical Cable								
Noise				☐	☐	☐	☐	☐
Vibration/Heat				☐	☐	☐	☐	☐
Pump 1	The following components are to be inspected during pump disassembly							
Oil				☐	☐	☐	☐	☐
Impeller				☐	☐	☐	☐	☐
Packing Rings				☐	☐	☐	☐	☐
Internal Seals				☐	☐	☐	☐	☐

3 sets of pumps with two pumps (1-GR, 1-Cornell)



2B Cornell Pump Co, Portland Oregon
6NHTA-FIBK

Pump 2

Asset ID

Make

Model

Capacity

GPM

Impeller Dia./Code

Horsepower

Good Fair Poor Critical N/A

Pump

18
2B 13B-6" discharge w/
welded fitting / bend to 12" discharge

Seals

Motor

Shaft

Electrical Cable

Noise

Vibration/Heat

Pump 2

The following components are to be inspected during pump disassembly

Oil

Impeller

Packing Rings

Internal Seals

Pump 3

Asset ID

Make

Model

Capacity

GPM

Impeller Dia./Code

Horsepower

Good Fair Poor Critical N/A

Pump

Seals

Motor

Shaft

Electrical Cable

Noise

Vibration/Heat

Pump 3*The following components are to be inspected during pump disassembly*

	Good	Fair	Poor	Critical	N/A
Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 4

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 4*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Corrosion on pump/motor frames.

Pump 5

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

Good Fair Poor Critical N/A

Pump

Seals

Motor

Shaft

Electrical Cable

Noise

Vibration/Heat

Pump 5*The following components are to be inspected during pump disassembly*

Oil

Impeller

Packing Rings

Internal Seals

Pump 6

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

Good Fair Poor Critical N/A

Pump

Seals

Motor

Shaft

Electrical Cable

Noise

Vibration/Heat

Pump 6

The following components are to be inspected during pump disassembly

	Good	Fair	Poor	Critical	N/A
Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Electrical System

	Good	Fair	Poor	Critical	N/A
Electrical System Power					
Volt/Phase:					
Panel/Enclosures NEMA4X YES NO	☐	☒	☐	☐	☐
Transformers (AEP)	☐	☐	☐	☐	☐
Disconnect Type:	☐	☐	☐	☐	☐
Generator KW NO	☐	☐	☐	☐	☐
Transfer Switch	☐	☐	☐	☐	☐
Electrical System Control					
Breakers Type:	☐	☐	☐	☐	☐
Speed control/VFD Type:	☐	☐	☐	☐	☐
Starters Type:	☐	☐	☐	☐	☐
Control Relays Type:	☐	☐	☐	☐	☐

Comments

Instrumentation/SCADA

				Good	Fair	Poor	Critical	N/A
Panel	NEMA4X	YES	NO	☐	☐	☐	☐	☐

Instrumentation

Level	Type: <u>ultrasonic</u>	☐	☒	☐	☐	☐
Flow	Type: _____	☐	☐	☐	☐	☐

Instrumentation/SCADA (continued)

			Good	Fair	Poor	Critical	N/A
PLC	Type: _____	☐	☐	☐	☐	☐	
SCADA		☐	☐	☐	☐	☐	
RTU	Type: <u>Uplink</u>	☒	☐	☐	☐	☐	
Radio/Antenna	Type: <u>small antenna on uplink</u>	☒	☐	☐	☐	☐	

Comments Alarms not observed

Building and Grounds



Lift Station Perimeter Facing South



Lift Station Building Adjacent to Steep Natural Ground Facing West. No Flood Protection Measures in Place.



Sloping Ground Adjacent to Westside of Building



Lower Half of Window Panel Glass Missing on Westside of Building

Building and Grounds



Shallow Foundation Exposure (0"-3") on Westside of Building Allows Drainage Into Building



High Water Level Mark on Walls of Building Show Indication of Prior Flooding



Building Entrance Facing South



Lift Station Perimeter Fence Facing West. Minor Corrosion Observed.

Structural



Hatch Could Not Be Opened Without Tools



Very Limited Wet Well Visibility

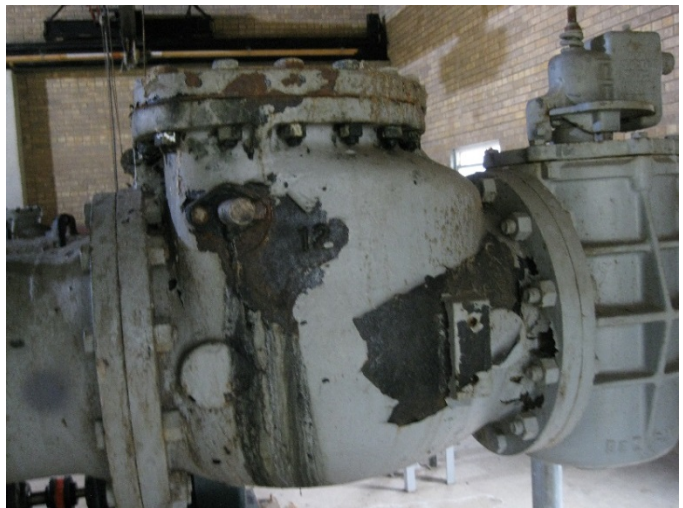
Mechanical



Cornell and Gorman - Rupp Pumps in Series (3 sets of 2 pumps each)



Grease Exposed on Valve. Flaking of Coating and Corrosion Observed



Flaking of Coating on Valves

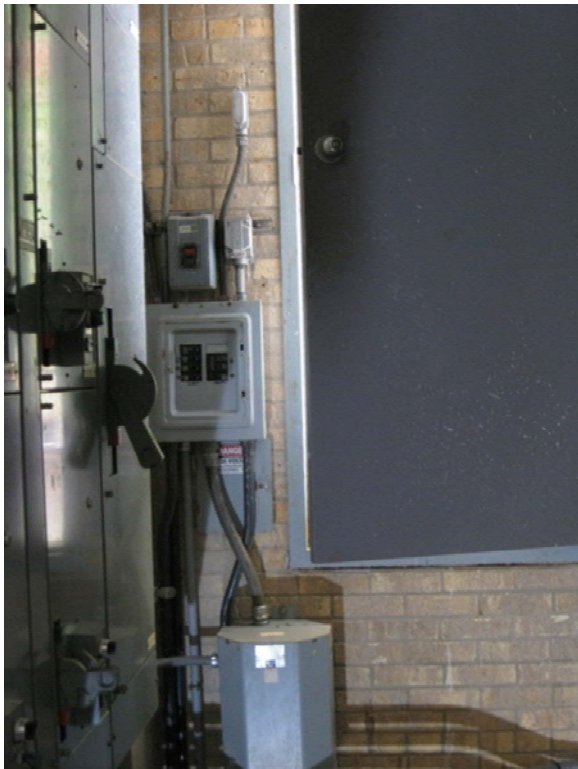
Electrical



Front of Electrical Panel/Enclosure in Fair Condition



Primary Meter in Fair Condition

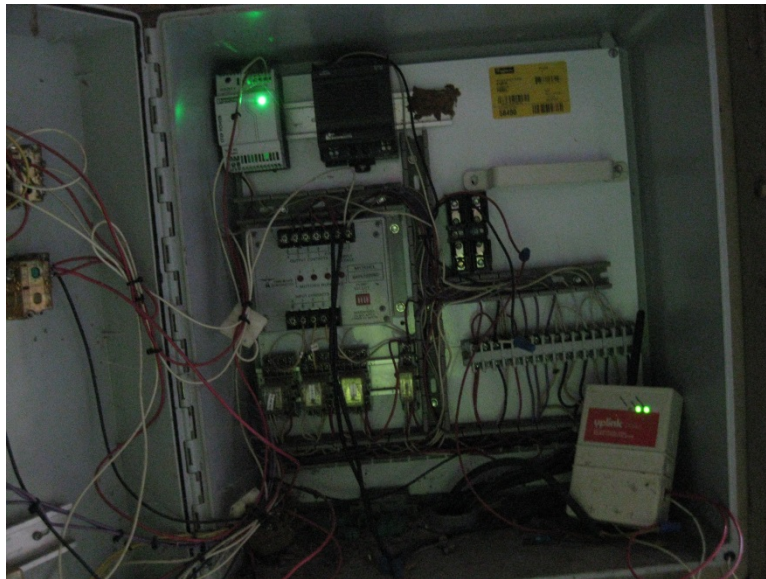


Breaker Box

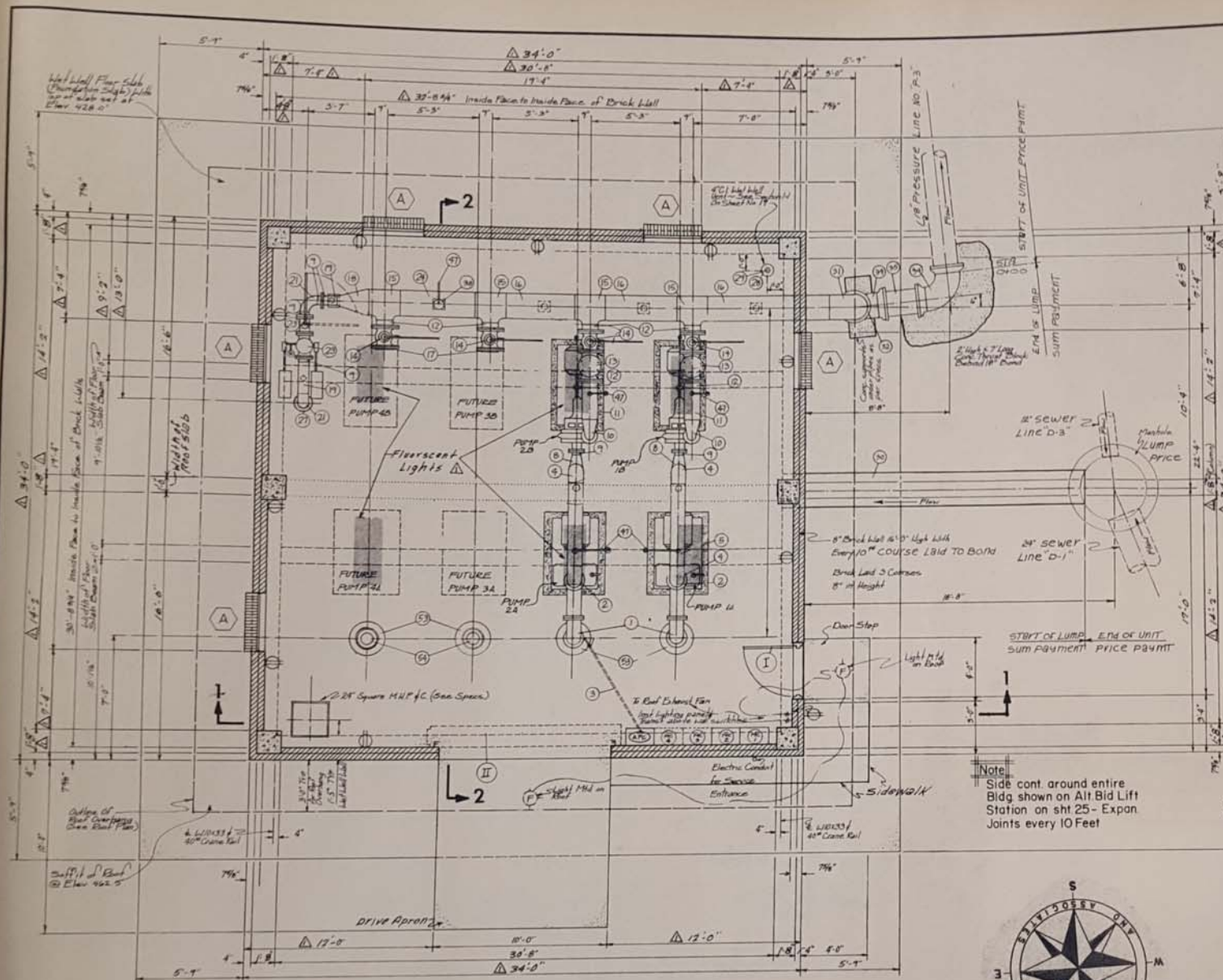
Instrumentation/SCADA



Front of Instrumentation Panel.
No Visual or Audible Alarm System Observed On Site



Inside of Instrumentation Panel



FLOOR PLAN
Scale: 1/4" = 1'-0"

DOOR, WINDOW, & ELECTRICAL SCHEDULE

MARK	QUANTITY	DESCRIPTION
I	1	3'-0" x 7'-0" x 1 1/2" Steel entrance door with 8 1/4" Steel Frame, Caco #P-3070-M12, Penetrator #3070-M with Mort latch & lockset #5221, 3 - #22/2 Ball Bearing Brass Mort Hinges, #40w Floor Holder & Bumper (or Accepted Equal)
II	1	10'-0" High x 6'-0" Wide Rolling door as manuf. by Overhead Door Co. #FN-2 with slot size C187, Cornell type CGP, or an accepted equal - To be Alum. Finish & Chain Operated
A	5	3' x 4 1/2" Wide x 6'-1" High Alum. Radiator Windows, Mosker Series 82/PS A 523, Cupples, or Accepted equal
4	1	One three hole switch plate for surface mtd. GE #5931-1 Switches and one one-hole switch plate for surface mtd. GE #5931-1 Switch (or accepted eq.) for the roof mtd. exhaust fan. Mtd switches about 48" above floor
10	1	120V wall outlets, surface mtd., GE #4065-1 or accepted equal. Maint about 24" above floor
6	2	2 8'10" - 40 WATT - Fluorescent light
17	2	Floodlight yoke mtd. on top of roof deck, GE Type L-82 General purpose with 500W 150V Lamp, or accepted equal
2	2	Motor control centers, 1# 2 are to be installed now, 3# 4 are future centers (See space)
15	1	Automatic Pump Control Center (See Space)
16	1	Lighting Panel Box, surface mtd. (See Space)
18	1	Transformer surface mtd. on wall above lighting panel box. See section 2.2 on sheet no. 17 of Specifications

PIPES, FITTINGS, & APPURTENANCE SCHEDULE

No	Quantity	Description	No	Quantity	Description
1	2	10" Elbow, PFD, Class 25	59	As required	3/4" Copper tubing air bubbler line - see space
2	2	10" Steel welding neck flange, 150#	61	1	1" x 3/8" Galv. to Copper connector
3	1	1" Conduit in floor slab for 3/4" Copper tube air bubbler line	62	1	1" Conduit PVC Encased for wet well air bubbler line - see space
4	4	10" Steel welding elbow	63	4	Pipe hole cover - See details on sheet no. 21
5	2	10" Steel pipe cut to fit - weld item no. 48 thru pipe wall	64	2	Pipe hole stopper - See details on sheet no. 21
6	2	6" Steel pipe cut to fit			
7	2	10" Steel pipe cut to fit - See section 2.2 on page no. 17			
8	2	10" x 6" Steel welding reducing elbow			
9	6	6" Steel welding neck flange, 150#			
10	2	12" x 6" Steel welding reducing elbow			
11	2	12" Steel pipe cut to fit - weld item 48 thru pipe wall			
12	6	12" Steel welding neck flange, 150#			
13	2	12" Horiz. Swg. Check valve, Flngd. ends w/ wide spring lever			
14	4	12" Lever actuated plug valves, both ends flanged			
15	4	18" x 12" Steel welding reducing tee			
16	3	18" Steel welding pipe cut to fit			
17	2	12" Blind flange			
18	1	18" x 6" Steel welding reducer			
19	3	6" Steel pipe cut to fit			
20	4	10" C.I. Penetration pipe, both ends flanged, See sections 1.1, 2.2			
21	2	6" Steel welding elbow			
22	1	6" Lever actuated plug valve, both ends flanged			
23	1	6" Surge relief valve - See Space			
24	1	18" Steel pipe cut to fit, weld item 26 thru pipe wall			
25	2	10" C.I. Flanged Sludge shoe, Clow F1404, or approved equal			
26	4	4" C.I. water press. relief valve, 18" Lg. Clow F1412, or appr. eq.			
27	1	6" C.I. M.U. wall sleeve, Clow F1433, or appr. eq.			
28	2	4" C.I. M.U. wall sleeve, Clow F1433, or appr. eq.			
29	1	4" x 18" C.I. Plain or ball end wet well vent pipe			
30	1	24" x 18" C.I. Plain end wet well inlet pipe			
31	1	18" Steel welding 90° elbow			
32	1	18" Steel welding neck flange			
33	1	18" C.I. Pipe, One end flanged, cut to fit			
34	2	18" C.I. 1/4 Bend, M.U. Both ends			
35	1	18" C.I. Plain end pipe cut to fit			
36	1	2" Galv. SH. pipe collar welded thru pipe wall, NPT			
37	1	2" x 2" NPT Galv. Steel nipple			
38	1	Air release assembly - See space & See det. on sheet no. 21			
39	1	3/4" x 1/2" NPT Galv. sh. reducer			
40	1	3/4" NPT Galv. sh. tee			
41	4	3/4" NPT Galv. sh. nipple			
42	2	3/4" NPT Gate valve			
43	1	3/4" to 1/2" Bushing for reattaching quick disconnect coupling			
44	1	Quick disconnect coupling & back flushing hose turn w/ item 38			
45	1	3/4" NPT Galv. steel elbow			
46	1	3/4" Iron to copper adapter			
47	As required	3/4" Copper pipe drain lines - See Space			
48	4	3/4" NPT SH. Collar welded thru pipe wall			
49	As required	3/4" Copper drain lines w/ fittings from pump bases - See space			



4-15-74	changed Dem. Add sidewalk, changed notes; add fluorescent light	VL
DATE	ITEM - REVISION	BY

**LIFT STATION NO. 3
BASE BID**

**Floor Plan
Door, Window, & Electrical Sch.
Pipes, Fittings, & Appurtenances Sch.**

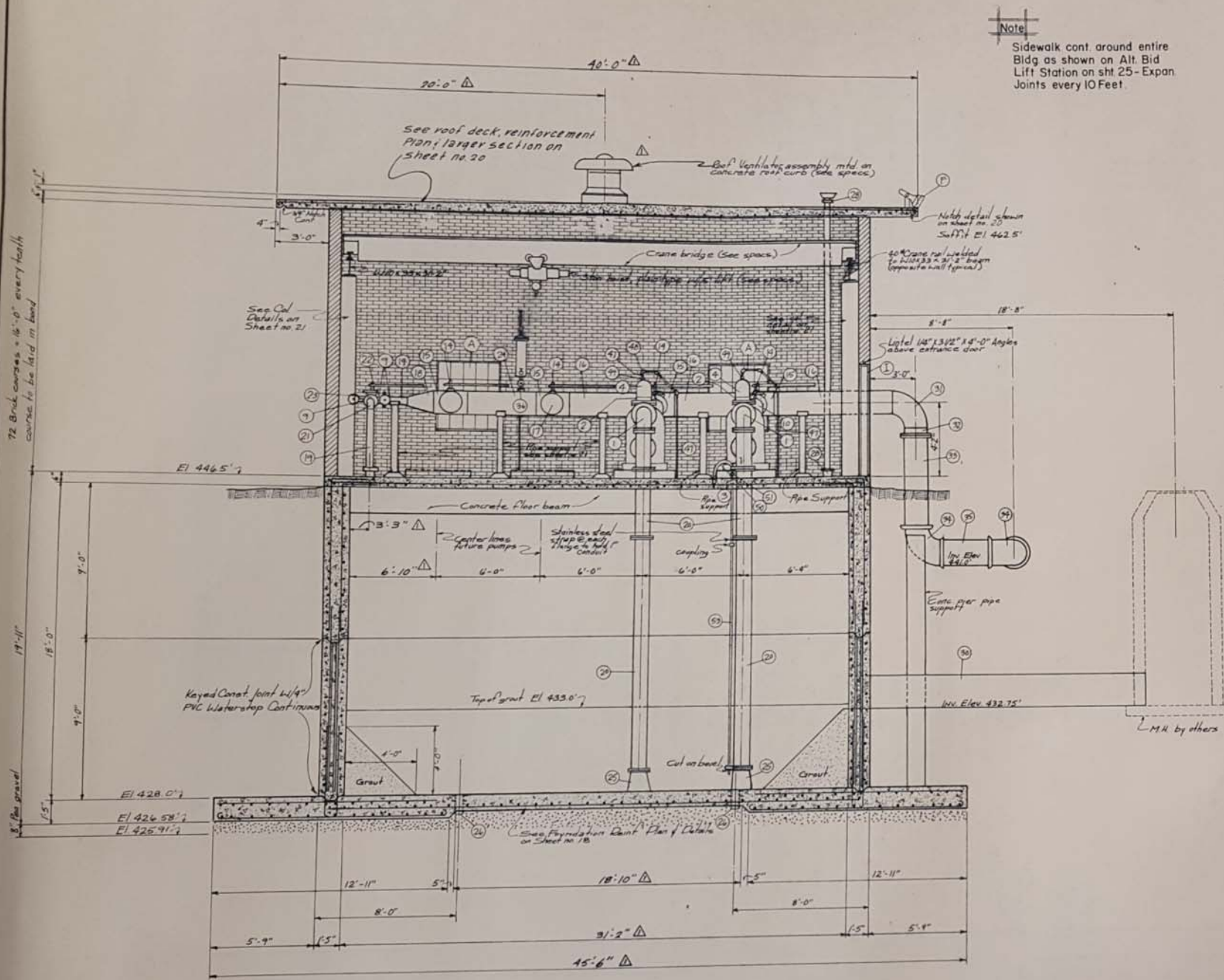
Drawn By: *J.R.* Checked By: *R.E.F.*

Job No.: 1047 Date: June 25, 1974

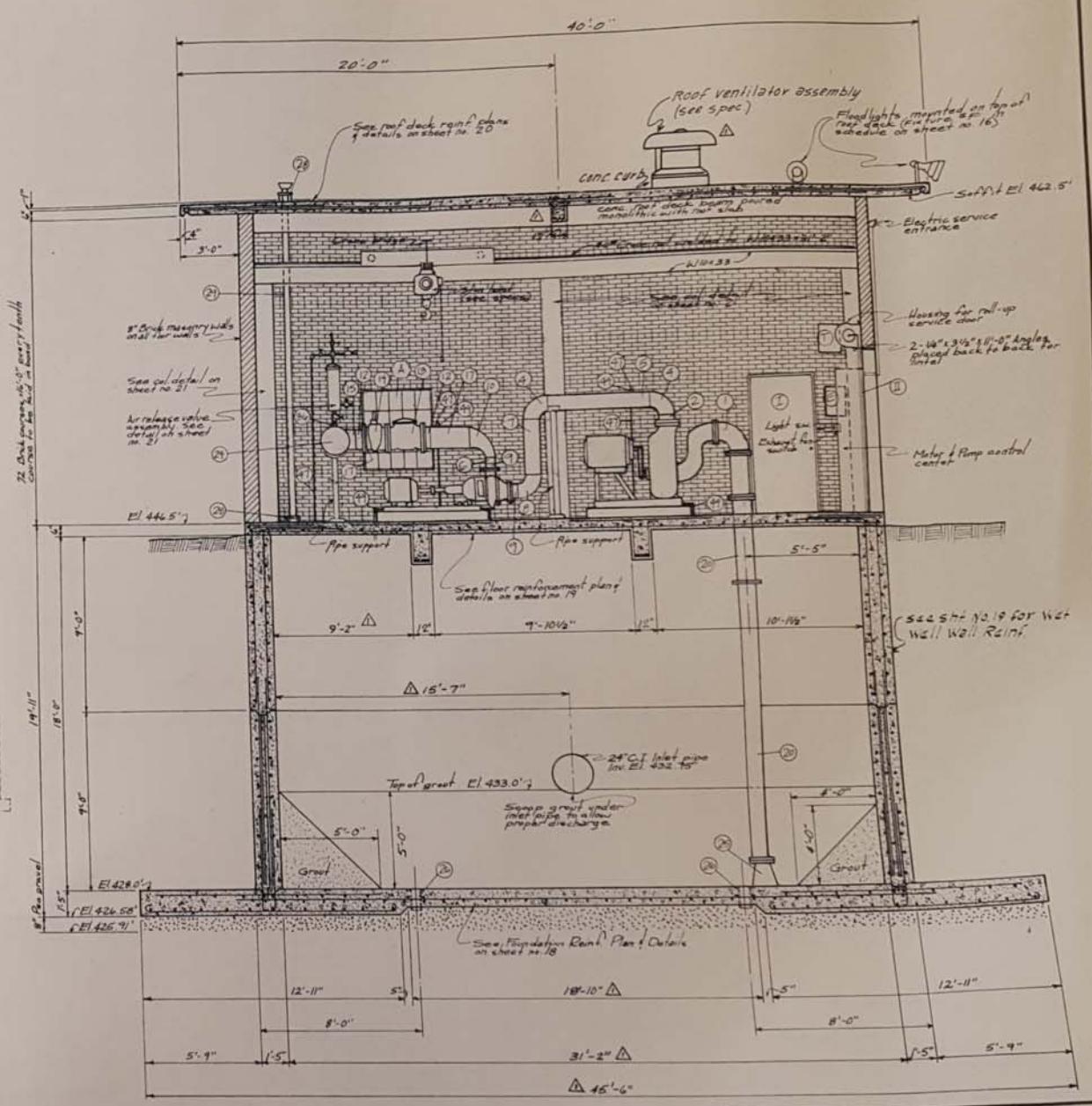
Scale: 1/4" = 1' = 1 Foot

WISEBAKER, FIX, & ASSOCIATES
Consulting Engineers
Tyler & Denison, Texas
Sheet No. 16R of 28 Sheets

EPA Project No. WPC-Tex-1006



SECTION 1-1
Scale: 1/4" = 1'-0"



SECTION 2-2
Scale: 1/4" = 1'-0"

LIFT STATION NO. 3
BASE BID

Section 1-1
Section 2-2

Drawn by: J.R.	Checked by: R.E.F.
Job No.: 1047	Date: June 27, 1974
Scale: 1/4" = 1 Foot	

WISENBAKER, FIX, AND ASSOCIATES
Consulting Engineers



EPA Project No. WPC-Tex-1006



Company:
Name:
Date: 4/28/2017

Pump:

Size: 6NHTA
Type: Encl Solids Handling
Synch Speed: 1800 rpm
Curve: 6NHTA18
Specific Speeds:
Dimensions:
Speed: 1770 rpm
Dia: 13.75 in
Impeller:
Ns: 2120
Nss: ---
Suction: 6 in
Discharge: 6 in

Pump Limits:

Temperature: 250 °F
Pressure: 125 psi g
Sphere Size: 3 in
Power: ---
Eye Area: ---

Search Criteria:

Flow: --- Head: ---

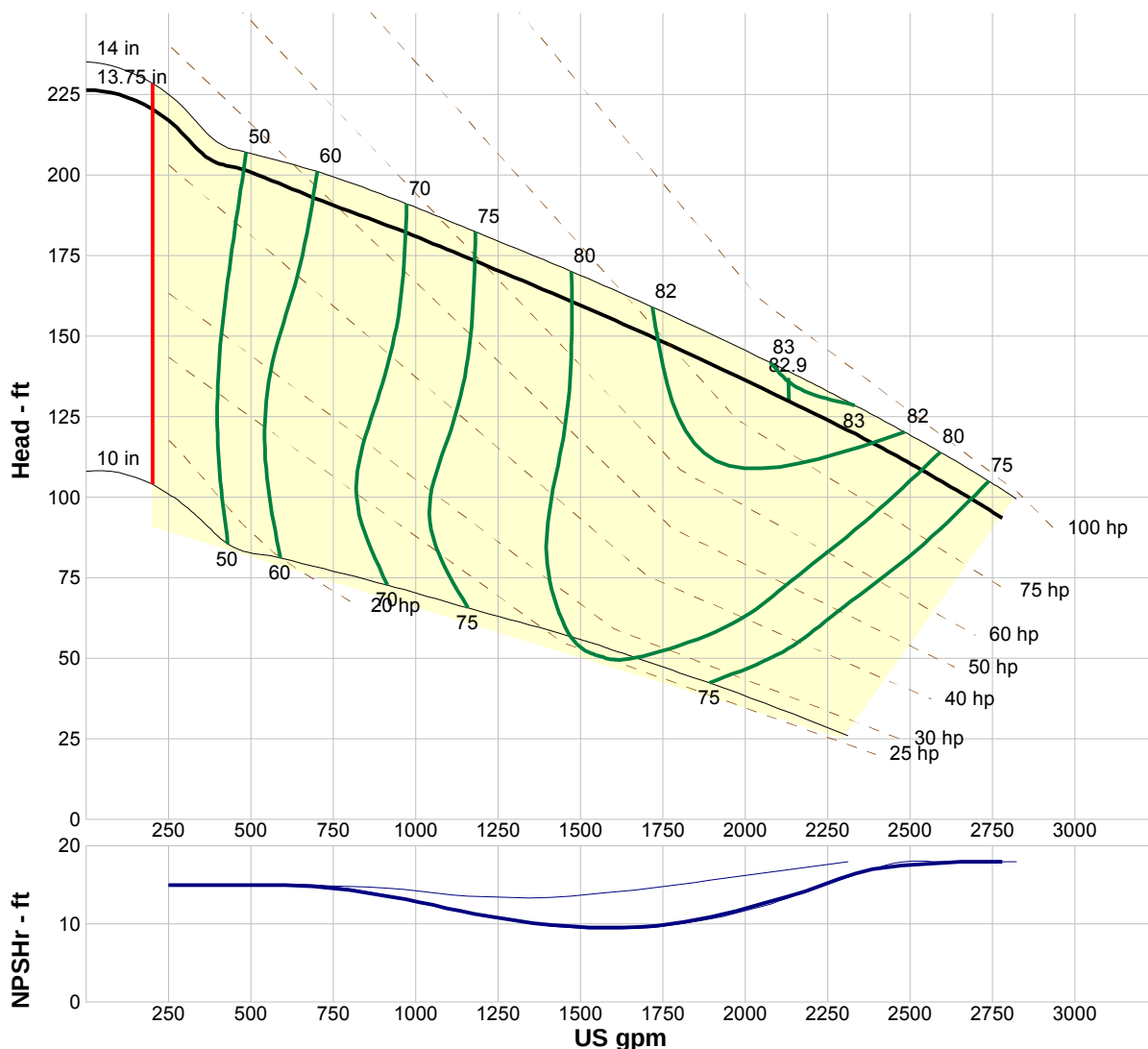
Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP
NPSHa: ---
Temperature: 60 °F
Vapor Pressure: 0.2563 psi a
Atm Pressure: 14.7 psi a

Motor:

Standard: NEMA
Enclosure: TEFC
Sizing Criteria: Max Power on Design Curve
Size: 100 hp
Speed: 1800 rpm
Frame: 405T

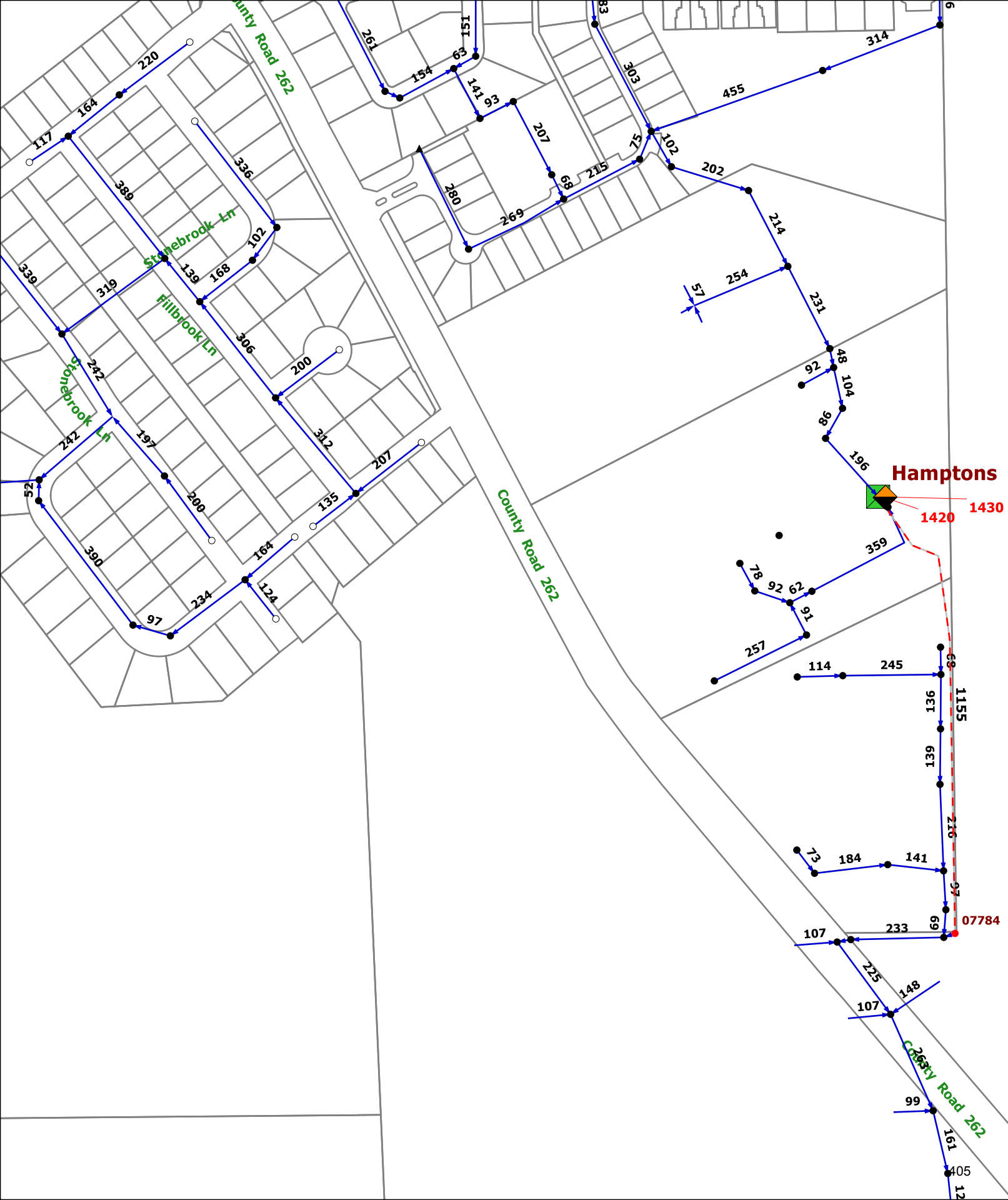
---- Duty Point ----	
Flow:	2132 US gpm
Head:	130 ft
Eff:	83%
Power:	84.4 hp
NPSHr:	13.5 ft
---- Design Curve ----	
Shutoff Head:	226 ft
Shutoff dP:	98 psi
Min Flow:	200 US gpm
BEP:	82.9% @ 2132 US gpm
NOL Power:	91.8 hp @ 2779 US gpm
-- Max Curve --	
Max Power:	98.8 hp @ 2822 US gpm



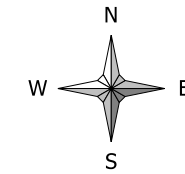
Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
2668	1770	101	76	89.6	18
2223	1770	125	83	84.9	14.8
1778	1770	147	82	80	10.2
1334	1770	167	78	71.9	10.5
889	1770	185	67	61.4	13.6

HAMPTONS LIFT STATION



Tyler, Texas Hamptons Lift Station



- Cleanout
- ▲ EOM
- Manhole
- Mainline
- ◆ ARV
- Pump Station
- - - Force Main

N 32° 18.048'
W 95° 13.911'

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name HAMPTONS Type Submersible
Location/Address 4274 Old Owen Rd
Lift Station Asset ID _____ Number of Pumps 2
Firm Capacity in GPM (all pumps operating) _____
Firm Capacity in GPM (largest pump out of service) _____
Inspector Don White Date Dec 16, 2017
City Works Work Order _____

Building and Grounds

Good Fair Poor Critical N/A

Building Structure	Type: <u>NONE</u>					
Building Roof/Ceiling		☐	☐	☐	☐	☐
Building Finishes		☐	☐	☐	☐	☐
Building Doors and Windows		☐	☐	☐	☐	☐
Building HVAC	Type: _____	☐	☐	☐	☐	☐
Fencing	<u>SEE EROSION COMMENT</u> Type: <u>Chain Link w/ PVC slats</u>	☒	☐	☐	☐	☐
Gates	<u>Double 16'</u> Type: <u>11</u>	☒	☐	☐	☐	☐
Site/Grounds	Size: <u>16'-4" x 23'-6"</u>	☒	☐	☐	☐	☐
Lighting	☒	☒	☐	☐	☐	☐
Pavement (Driving)	Type: <u>Concrete</u>	☒	☐	☐	☐	☐
Drainage	Type: <u>SURFACE</u>	☐	☐	☒	☐	☐
Odor	Comment: <u>NONE</u>	☒	☐	☐	☐	☐
Odor Control System	Type: _____	☐	☐	☐	☐	☐
Odor Control Mechanical		☐	☐	☐	☐	☐
Odor Control Media	Type: _____	☐	☐	☐	☐	☐
Noise		☐	☐	☐	☐	☐
Overall Site Appearance		☒	☐	☐	☐	☐

Comments Erosion has undermined fence post on west side.

Structural

Good Fair Poor Critical N/A

Wet Well		Size: <u>6'φ</u>				
Debris			☐	☐	☒	☐
Fats, oils, and grease			☐	☒	☐	☐
Ventilation	Pipe		☐	☒	☐	☐
Walls	Material: <u>Concrete</u>		☒	☐	☐	☐
Coatings	Type:		☐	☐	☒	☐
Access Hatches	Number: <u>1 METAL 4'x3'</u>		☒	☐	☐	☐
Slab	<u>86" φ concrete</u>		☐	☐	☐	☐
Dry Well/Valve Vault						
Walls	Material: <u>6'φ Concrete</u>		☒	☐	☐	☐
Coatings	Type:		☐	☒	☐	☐
Grating/Hatching	Number: <u>1 METAL 3'x3'</u>		☐	☒	☐	☐
Stairway/Ladder	Material: <u>NO</u>		☐	☐	☐	☒
Sump/ Pump	Number: <u>Floor Drain</u>		☐	☒	☐	☐
Ventilation	Type: <u>Pipe</u>		☐	☒	☐	☐

Comments Floor drain need cleaning, corrosion on ventilation pipes, Removal catch basket in place in wet well at influent pipe Flow line.

Mechanical

Good Fair Poor Critical N/A

Bypass Connection	(Circle)	YES	/	NO	
Piping and Valves					
Suction Valve	Number:	<u>—</u>	☐	☐	☒
Check Valve	Number:	<u>2-6" DI</u>	☐	☒	☐
Discharge Valve	Number:	<u>2-6" DI</u>	☐	☒	☐

Mechanical (continued)

Good Fair Poor Critical N/A

Riser Piping	Material:	<u>4" DI</u>	☐	☐	☒	☐
--------------	-----------	--------------	-----------------------	-----------------------	----------------------------------	-----------------------

Discharge Piping	Material: <u>6" DI</u>	☒	☐	☐	☐	☐
Fittings	Material: <u>DI</u>	☐	☒	☐	☐	☐

Comments 6x4 reducers in valve vault CORROSION. Riser pipes - CORROSION. Some CORROSION on valves, wheels, bolts, some corrosion on fitting bolts. pump chain and electric conduits - Good Guide rails - Fair. compressor for wet well aeration.

Pumps

Pump 1	Asset ID	Make	Model					
Capacity	GPM							
Impeller Dia./Code	Horsepower							
		Good	Fair	Poor	Critical	N/A		
Pump		☐	☐	☐	☐	☐		
Seals		☐	☐	☐	☐	☐		
Motor		☐	☐	☐	☐	☐		
Shaft		☐	☐	☐	☐	☐		
Electrical Cable								
Noise		☐	☐	☐	☐	☐		
Vibration/Heat		☐	☐	☐	☐	☐		

Pump 1	The following components are to be inspected during pump disassembly					
Oil		☐	☐	☐	☐	☐
Impeller		☐	☐	☐	☐	☐
Packing Rings		☐	☐	☐	☐	☐
Internal Seals		☐	☐	☐	☐	☐

Pump 2

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 2*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 3

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 3*The following components are to be inspected during pump disassembly*

		Good	Fair	Poor	Critical	N/A
	Oil	☐	☐	☐	☐	☐
	Impeller	☐	☐	☐	☐	☐
	Packing Rings	☐	☐	☐	☐	☐
	Internal Seals	☐	☐	☐	☐	☐

Pump 4

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

		Good	Fair	Poor	Critical	N/A
	Pump	☐	☐	☐	☐	☐
	Seals	☐	☐	☐	☐	☐
	Motor	☐	☐	☐	☐	☐
	Shaft	☐	☐	☐	☐	☐
	Electrical Cable					
	Noise	☐	☐	☐	☐	☐
	Vibration/Heat	☐	☐	☐	☐	☐

Pump 4*The following components are to be inspected during pump disassembly*

	Oil	☐	☐	☐	☐	☐
	Impeller	☐	☐	☐	☐	☐
	Packing Rings	☐	☐	☐	☐	☐
	Internal Seals	☐	☐	☐	☐	☐

Pump 5

Asset ID _____ Make _____ Model _____

Capacity _____ GPM _____

Impeller Dia./Code _____ Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 5*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 6

Asset ID _____ Make _____ Model _____

Capacity _____ GPM _____

Impeller Dia./Code _____ Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable	☐	☐	☐	☐	☐
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 6

The following components are to be inspected during pump disassembly

	Good	Fair	Poor	Critical	N/A
Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Electrical System

	Good	Fair	Poor	Critical	N/A
Electrical System Power					
Volt/Phase:					
Panel/Enclosures	NEMA4X	<u>YES</u>	NO	☒	☐
Transformers (AEP)		☐	☐	☐	☐
Disconnect	Type:	☐	☐	☐	☐
Generator	KW	<u>NO</u>	☐	☐	☒
Transfer Switch		☐	☐	☐	☒
Electrical System Control					
Breakers	Type:	☐	☐	☐	☐
Speed control/VFD	Type:	☐	☐	☐	☐
Starters	Type:	☐	☐	☐	☐
Control Relays	Type:	☐	☐	☐	☐

Comments

Instrumentation/SCADA

				Good	Fair	Poor	Critical	N/A
Panel	NEMA4X	YES	NO	☐	☐	☐	☐	☐
Instrumentation								
Level	Type:	<u>Floats</u>		☐	☒	☐	☐	☐
Flow	Type:	<u>No</u>		☐	☐	☐	☐	☒
Instrumentation/SCADA (continued)				Good	Fair	Poor	Critical	N/A
PLC	Type:			☐	☐	☐	☐	☐
SCADA				☐	☐	☐	☐	☐
RTU	Type:	<u>uplink</u>		☒	☐	☐	☐	☐
Radio/ <u>Antenna</u>	Type:	<u>on top of panel</u>		☒	☐	☐	☐	☐
Comments <u>Visual alarm. Ant mound on slab @ conduit.</u>								

Building and Grounds



Lift Station Perimeter

Structural



Corrosion on Ventilation Piping



Wet Well Interior

Mechanical



Corrosion on Check Valves



Interior of Wet Well

Electrical



Electrical and Instrumentation Panel Facing Fence
and Allowing for Limited Access

Instrumentation/SCADA



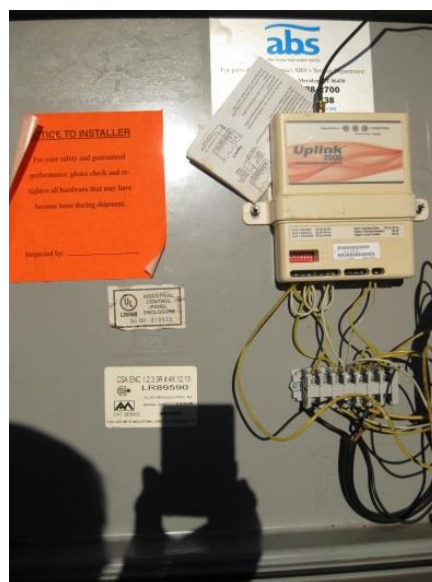
Instrumentation/Electrical Panels



Visual and Sound Alarm on Instrumentation Panel,
Antenna Mounted on Conduit Piping

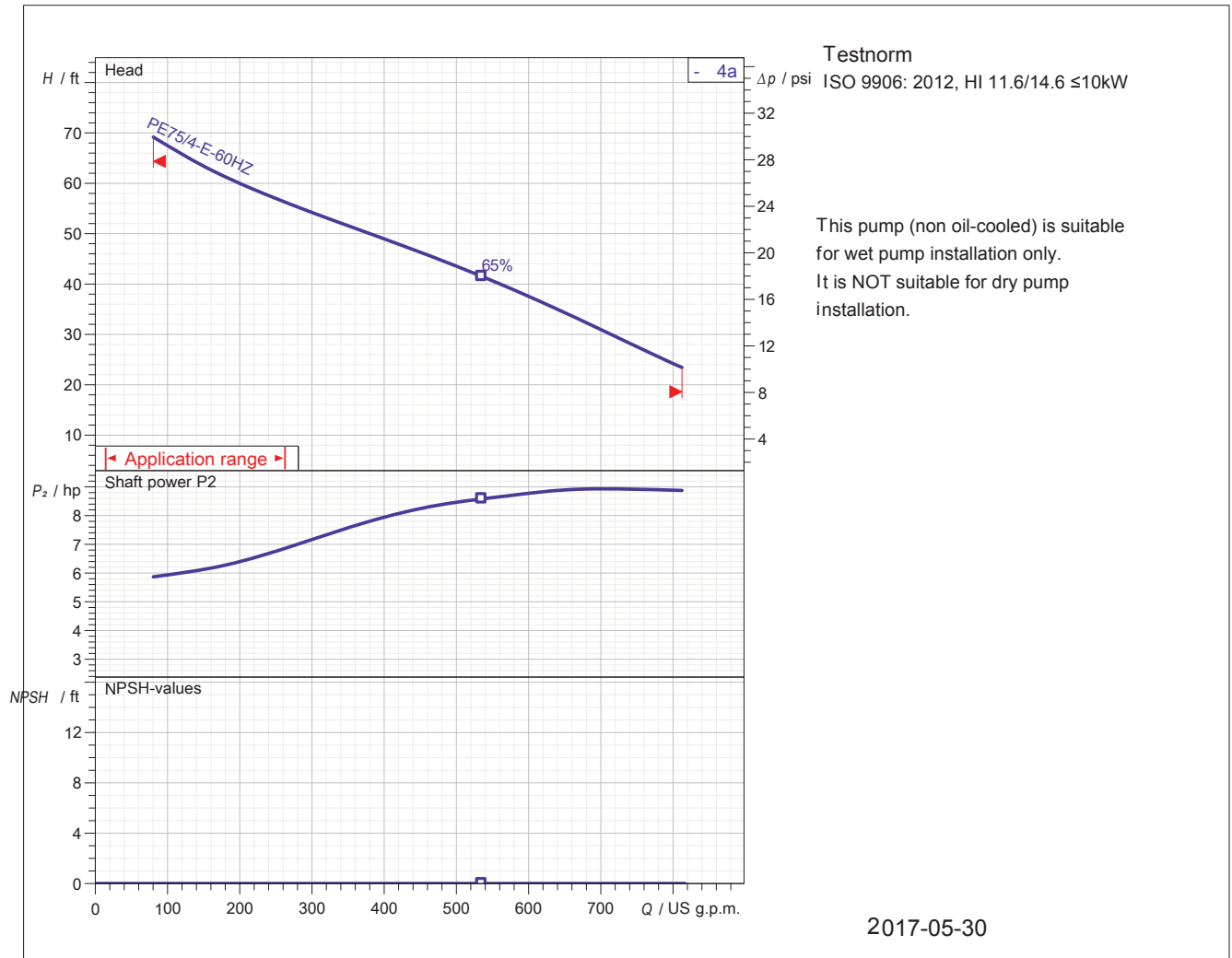


Inside Instrumentation Panel



Inside Instrumentation Panel Door With Uplink RTU

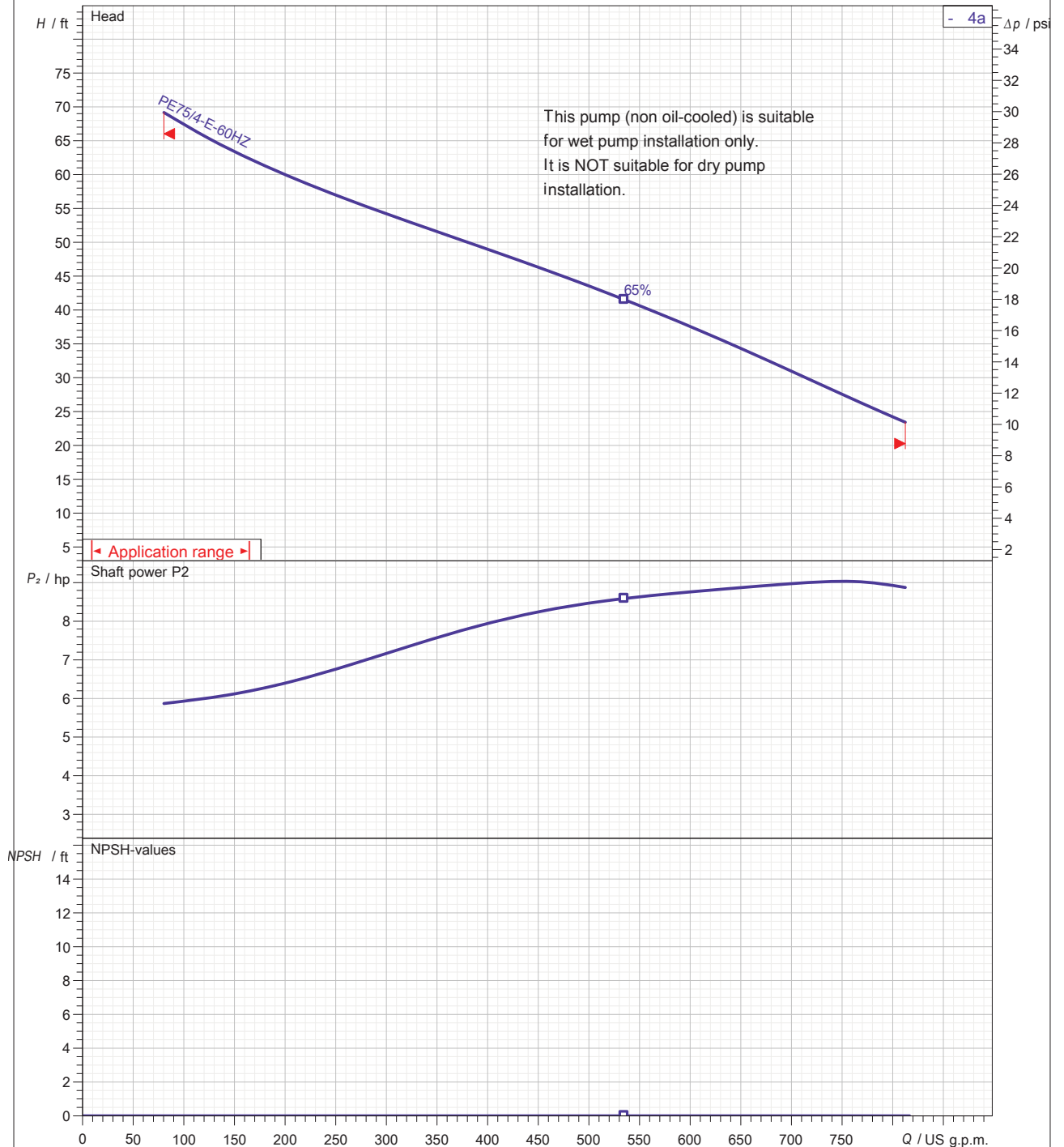
XFP100E CB1 60HZ (wet pit)



Sulzer reserves the right to change any data and dimensions without prior notice and can not be held responsible for the use of information contained in this software.

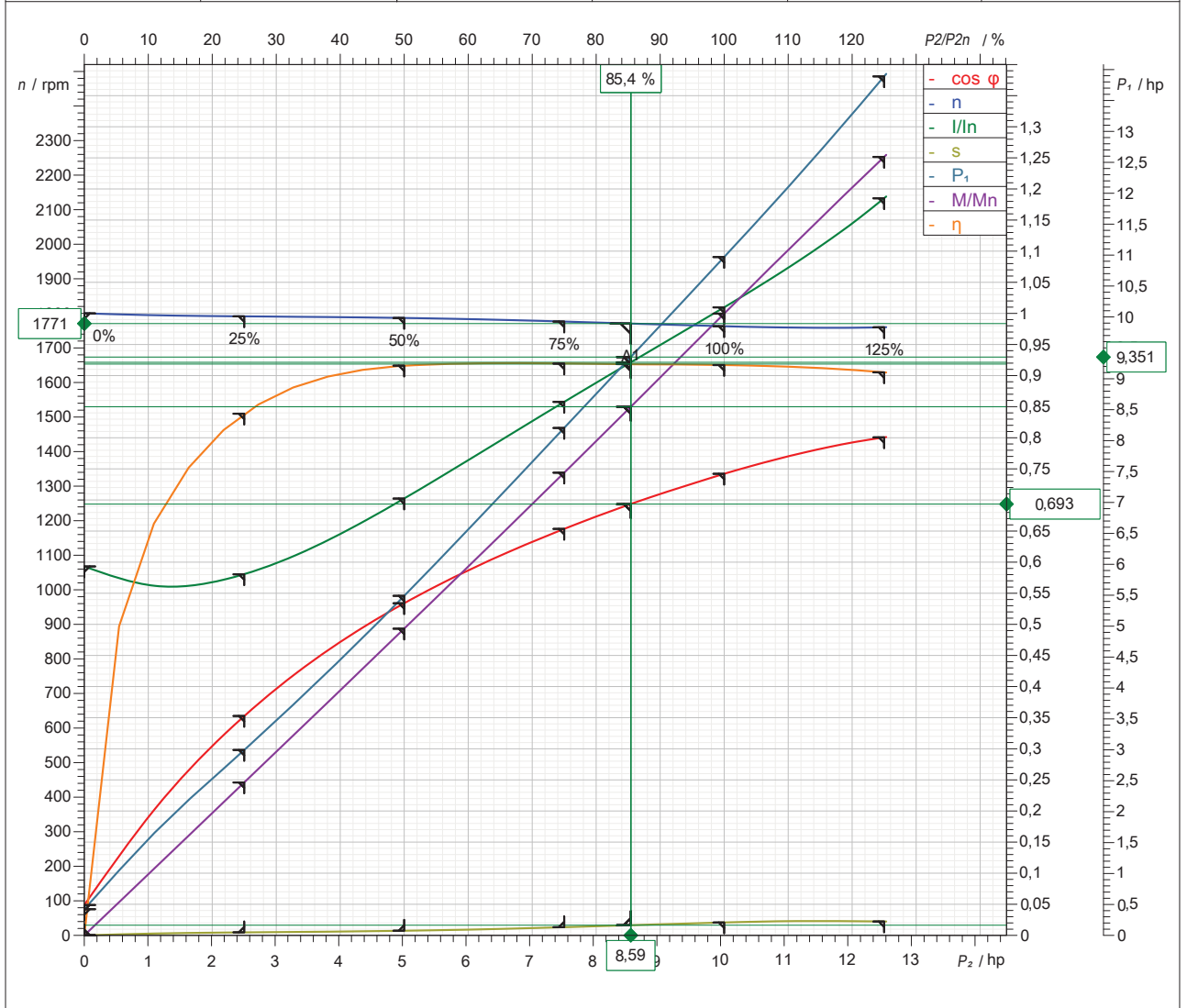
Spaix® 4, Version 4.3.4 - 2017/04/12 (Build 580)
Data version Mar-2017

Curve number		Pump performance curves XFP100E CB1 60HZ (wet pit) SULZER		
Reference curve XFP100E CB1 60HZ				
			Discharge DN100	Frequency 60 Hz
Density 62,32 lb/ft³	Viscosity 1,082E-5 ft²/s	Testnorm ISO 9906: 2012, HI 11.6/14.6 ≤10kW	Rated speed 1771 rpm	Date 2017-05-30
Flow	Head	Rated power	Hydraulic efficiency	NPSH



Impeller size 8,19 inch	N° of vanes 1	Impeller Contrablock Plus impeller, 1 vane	Solid size 3,15 inch	Revision
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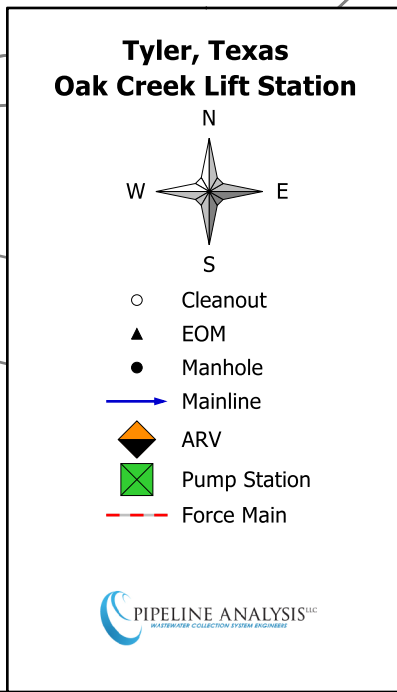
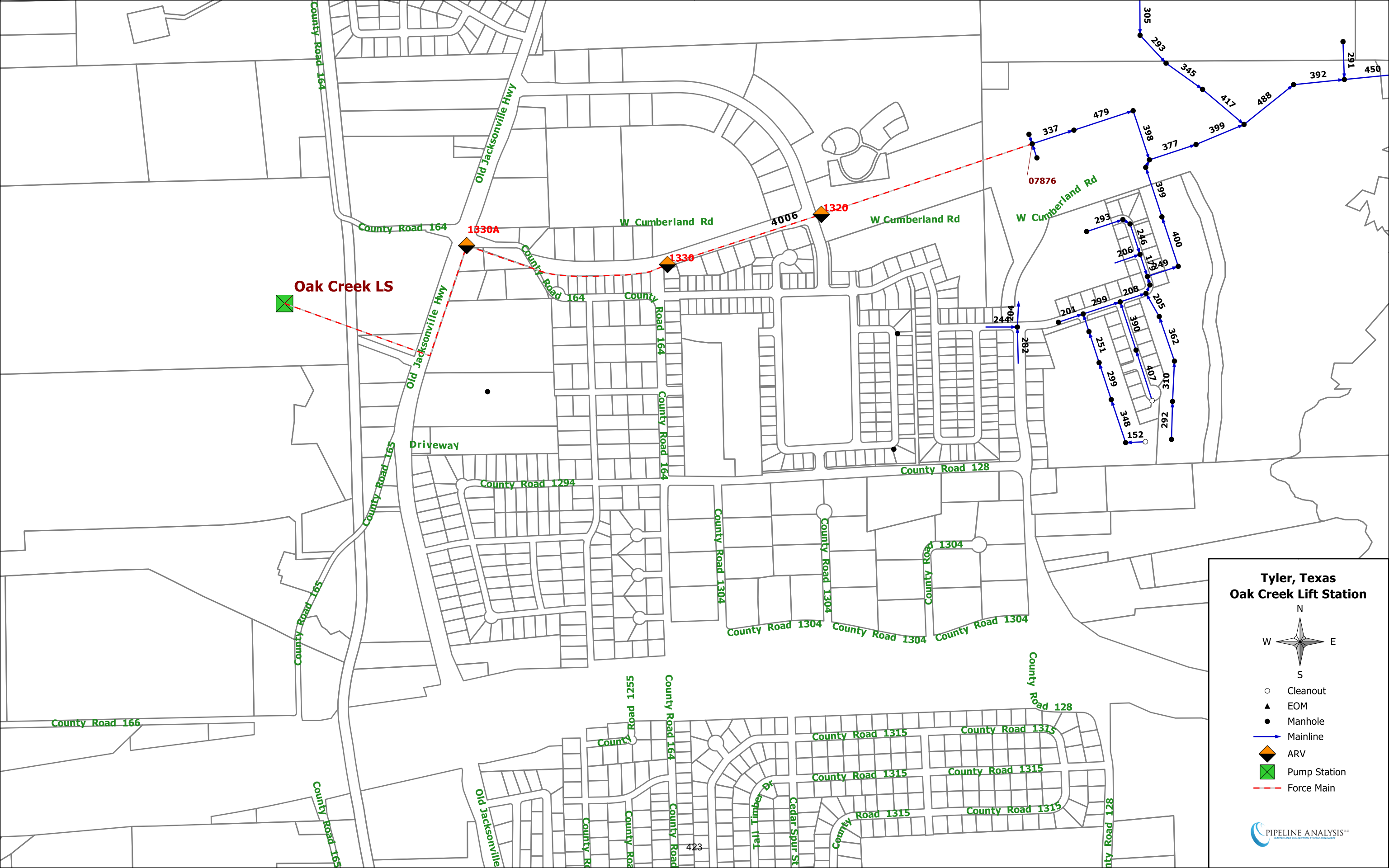
Rated power 10,1 hp	Service factor 1,3	Nominal Speed 1760 rpm	Number of poles 4	Rated voltage 460 V	Date 2017-05-30
------------------------	-----------------------	---------------------------	----------------------	------------------------	--------------------



Symbol	No loac	25 %	50 %	75 %	100 %	125 %
P_2 / hp	0	2,514	5,029	7,543	10,06	12,57
P_1 / hp	0,4241	2,998	5,49	8,206	10,97	13,89
η / %	0	83,88	91,6	91,93	91,69	90,52
n / rpm	1800	1791	1787	1776	1763	1760
$\cos \phi$	0,04885	0,3528	0,534	0,6535	0,7422	0,8007
I / A	8,126	7,953	9,622	11,75	13,83	16,23
s / %	0	0,48	0,7421	1,313	2,072	2,237
M / lbf ft	0	7,372	14,78	22,3	29,97	37,52

Tolerance according to VDE 0530 T1 12.84 for rated power				
Starting current 79,6 A	Starting torque 58,5 lbf ft	Moment of inertia 0,752 lb ft ²	No. starts per hour 15	

OAK CREEK LIFT STATION



32° 15.158'
95° 21.109'

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name OAK CREEK Type Submersible
Location/Address Oak Creek Blvd. @ Tule Creek Lane
Lift Station Asset ID _____ Number of Pumps 2
Firm Capacity in GPM (all pumps operating) _____
Firm Capacity in GPM (largest pump out of service) _____
Inspector Don White Date Dec 18, 2017
City Works Work Order _____

Building and Grounds

Good Fair Poor Critical N/A

		Good	Fair	Poor	Critical	N/A
Building Structure	Type: <u>NONE</u>					
Building Roof/Ceiling		☐	☐	☐	☐	☐
Building Finishes		☐	☐	☐	☐	☐
Building Doors and Windows		☐	☐	☐	☐	☐
Building HVAC	Type: _____	☐	☐	☐	☐	☐
Fencing <u>metal post</u>	Type: <u>Wood</u>	☒	☐	☐	☐	☐
<u>16' Double</u> Gates <u>metal post & frame</u>	Type: <u>II</u>	☒	☐	☐	☐	☐
Site/Grounds	Size: <u>30'-6" W x 36' D</u>	☒	☐	☐	☐	☐
Lighting		☒	☐	☐	☐	☐
Pavement (Driving)	Type: <u>Concrete</u>	☒	☐	☐	☐	☐
Drainage	Type: <u>Surface</u>	☒	☐	☐	☐	☐
Odor	Comment: <u>NONE</u>	☒	☐	☐	☐	☐
Odor Control System	Type: _____	☐	☐	☐	☐	☐
Odor Control Mechanical		☐	☐	☐	☐	☐
Odor Control Media	Type: _____	☐	☐	☐	☐	☐
Noise		☐	☐	☐	☐	☐
Overall Site Appearance		☒	☐	☐	☐	☐

Comments Slabs above natural ground

3/10
28
12

Structural

Good Fair Poor Critical N/A

Wet Well		Size: <u>N 10'x10'</u>					
Debris			☒	☐	☐	☐	☐
Fats, oils, and grease			☒	☐	☐	☐	☐
Ventilation	<u>Pipe</u>		☐	☒	☐	☐	☐
Walls	Material: <u>CONCRETE</u>		☒	☐	☐	☐	☐
Coatings	Type:		☒	☐	☐	☐	☐
Access Hatches	Number: <u>1 Double 5'4" x 3'</u>		☒	☐	☐	☐	☐
Slab	<u>12' x 12'</u>		☒	☐	☐	☐	☐
Dry Well/Valve Vault		<u>7'x7'x7' Deep SLAB 8'x8' Good</u>					
Walls	Material: <u>CONCRETE</u>		☒	☐	☐	☐	☐
Coatings	Type:		☒	☐	☐	☐	☐
Grating/Hatching	1 <u>METAL DOUBLE 4'-4" x 3'-2"</u>		☒	☐	☐	☐	☐
Stairway/Ladder	Material:		☐	☐	☐	☐	☒
Sump/Pump	Number: <u>PVC PIPE TO WET WELL</u>		☒	☐	☐	☐	☐
Ventilation	Type: <u>PIPE</u>		☐	☒	☐	☐	☐

Comments Crane in place @ wet well - Good

Guide Rails, lifting cable, electric conduits - Good

Mechanical

Good Fair Poor Critical N/A

Bypass Connection	(Circle) YES / NO					
Piping and Valves						
Suction Valve	Number: <u>—</u>		☐	☐	☐	☐
Check Valve	Number: <u>2-6" DI</u>		☒	☐	☐	☐
Discharge Valve	Number: <u>2-6" DI</u>		☒	☐	☐	☐

Mechanical (continued)

Good Fair Poor Critical N/A

Riser Piping	Material: <u>6" DI</u>		☒	☐	☐	☐
--------------	------------------------	--	----------------------------------	-----------------------	-----------------------	-----------------------

Discharge Piping	Material: 6" DI	☒	☐	☐	☐	☐
Fittings	Material: 6" DI	☒	☐	☐	☐	☐

Comments Compressor For wet well aeration

Pumps							
Pump 1	Asset ID	Make	Model				
	Capacity	GPM					
	Impeller Dia./Code	Horsepower					
			Good	Fair	Poor	Critical	N/A
Pump			☐	☐	☐	☐	☐
Seals			☐	☐	☐	☐	☐
Motor			☐	☐	☐	☐	☐
Shaft			☐	☐	☐	☐	☐
Electrical Cable							
Noise			☐	☐	☐	☐	☐
Vibration/Heat			☐	☐	☐	☐	☐
Pump 1	The following components are to be inspected during pump disassembly						
Oil			☐	☐	☐	☐	☐
Impeller			☐	☐	☐	☐	☐
Packing Rings			☐	☐	☐	☐	☐
Internal Seals			☐	☐	☐	☐	☐

Pump 2

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

Good Fair Poor Critical N/A

Pump ☐ ☐ ☐ ☐ ☐Seals ☐ ☐ ☐ ☐ ☐Motor ☐ ☐ ☐ ☐ ☐Shaft ☐ ☐ ☐ ☐ ☐Electrical Cable ☐ ☐ ☐ ☐ ☐Noise ☐ ☐ ☐ ☐ ☐Vibration/Heat ☐ ☐ ☐ ☐ ☐**Pump 2***The following components are to be inspected during pump disassembly*Oil ☐ ☐ ☐ ☐ ☐Impeller ☐ ☐ ☐ ☐ ☐Packing Rings ☐ ☐ ☐ ☐ ☐Internal Seals ☐ ☐ ☐ ☐ ☐**Pump 3**

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

Good Fair Poor Critical N/A

Pump ☐ ☐ ☐ ☐ ☐Seals ☐ ☐ ☐ ☐ ☐Motor ☐ ☐ ☐ ☐ ☐Shaft ☐ ☐ ☐ ☐ ☐Electrical Cable ☐ ☐ ☐ ☐ ☐Noise ☐ ☐ ☐ ☐ ☐Vibration/Heat ☐ ☐ ☐ ☐ ☐

Pump 3*The following components are to be inspected during pump disassembly*

	Good	Fair	Poor	Critical	N/A
Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 4

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 4*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 5

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 5*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 6

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable	☐	☐	☐	☐	☐
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 6

The following components are to be inspected during pump disassembly

	Good	Fair	Poor	Critical	N/A
Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Electrical System

	Good	Fair	Poor	Critical	N/A
Electrical System Power					
Volt/Phase:					
Panel/Enclosures	NEMA4X	<u>YES</u>	NO	☒	☐
Transformers (AEP)		☐	☐	☐	☐
Disconnect	Type:	☐	☐	☐	☐
<i>Natural GAS Operated</i> Generator	KW	<u>YES</u>	☒	☐	☐
Transfer Switch		☒	☐	☐	☐
Electrical System Control					
Breakers	Type:	☐	☐	☐	☐
Speed control/VFD	Type:	☐	☐	☐	☐
Starters	Type:	☐	☐	☐	☐
Control Relays	Type:	☐	☐	☐	☐

Comments Generator Door Panels locked

Instrumentation/SCADA

			Good	Fair	Poor	Critical	N/A
Panel	NEMA4X	YES	NO	☒	☐	☐	☐
Instrumentation							
Level	Type:	ULTRASONIC FLOATS	☒	☐	☐	☐	☐
Flow	Type:	NO	☐	☐	☐	☐	☐
Instrumentation/SCADA (continued)							
PLC	Type:		☐	☐	☐	☐	☐
SCADA							
RTU	Type:	uplink	☒	☐	☐	☐	☐
Radio/Antenna	Type:	w/ uplink	☒	☐	☐	☐	☐
Comments	Visual Alarm						

Building and Grounds



Lift Station Perimeter Fence



Life Station Gate and Wet Well and Valve Vault Slabs

Structural



Crane Near Wet Well



Wet Well Interior

Mechanical



Air Compressor For Wet Well Aeration –
Could Preferably Moved to Higher Ground

Electrical

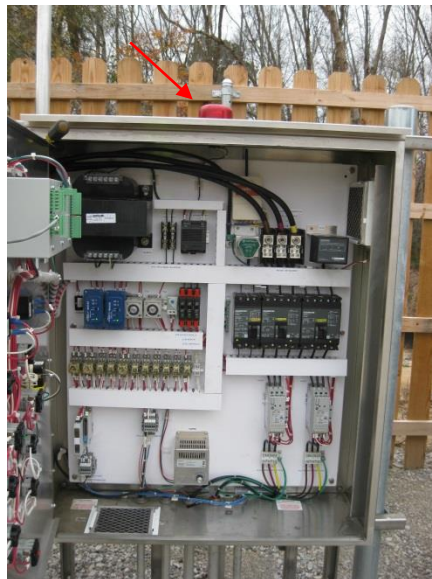


Electrical Panel in Good Condition

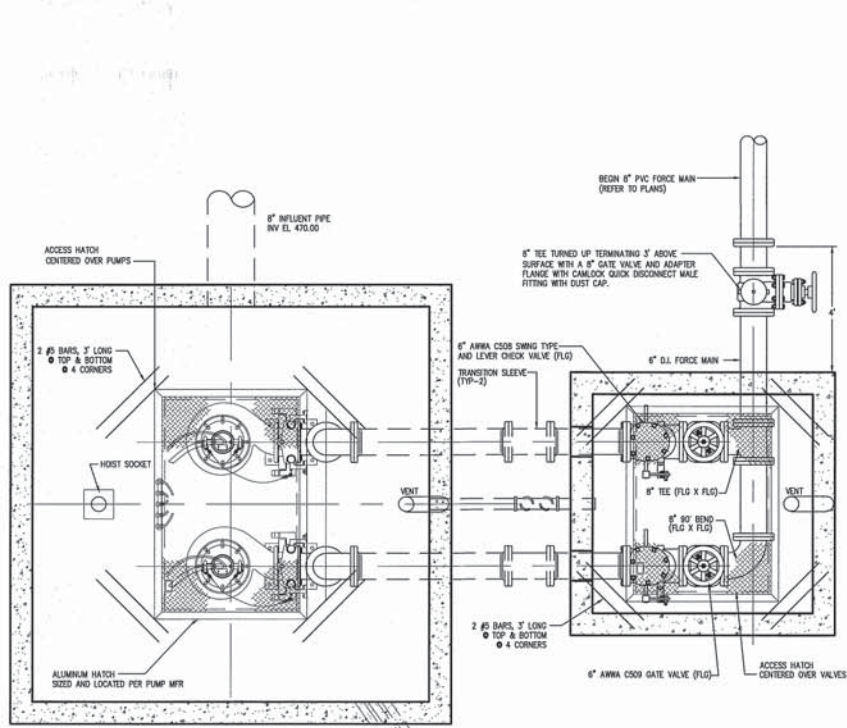
Instrumentation/SCADA



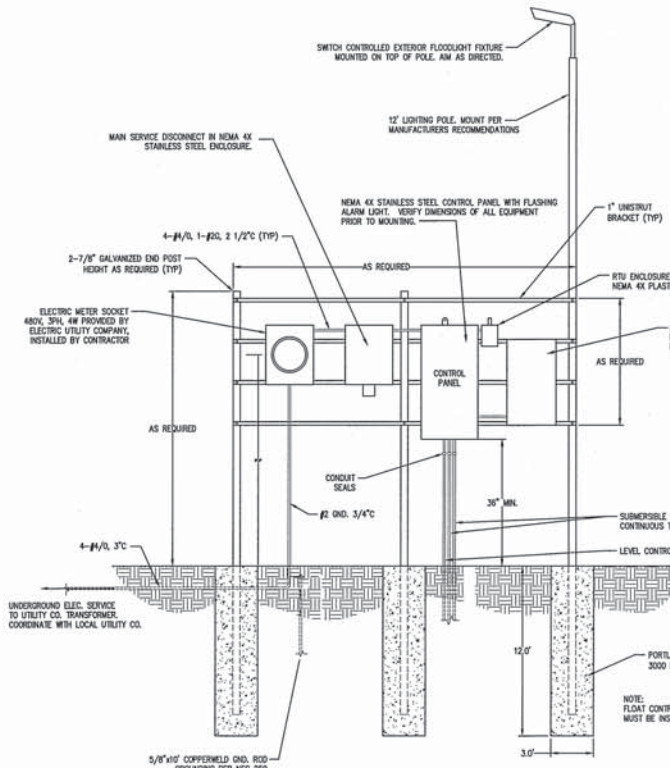
Instrumentation/Electrical Panels in Good Condition



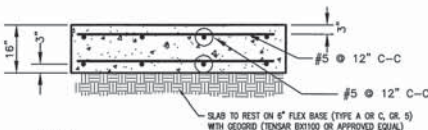
Inside Instrumentation Panel With Visual Alarm
Mounted on Top Of Panel



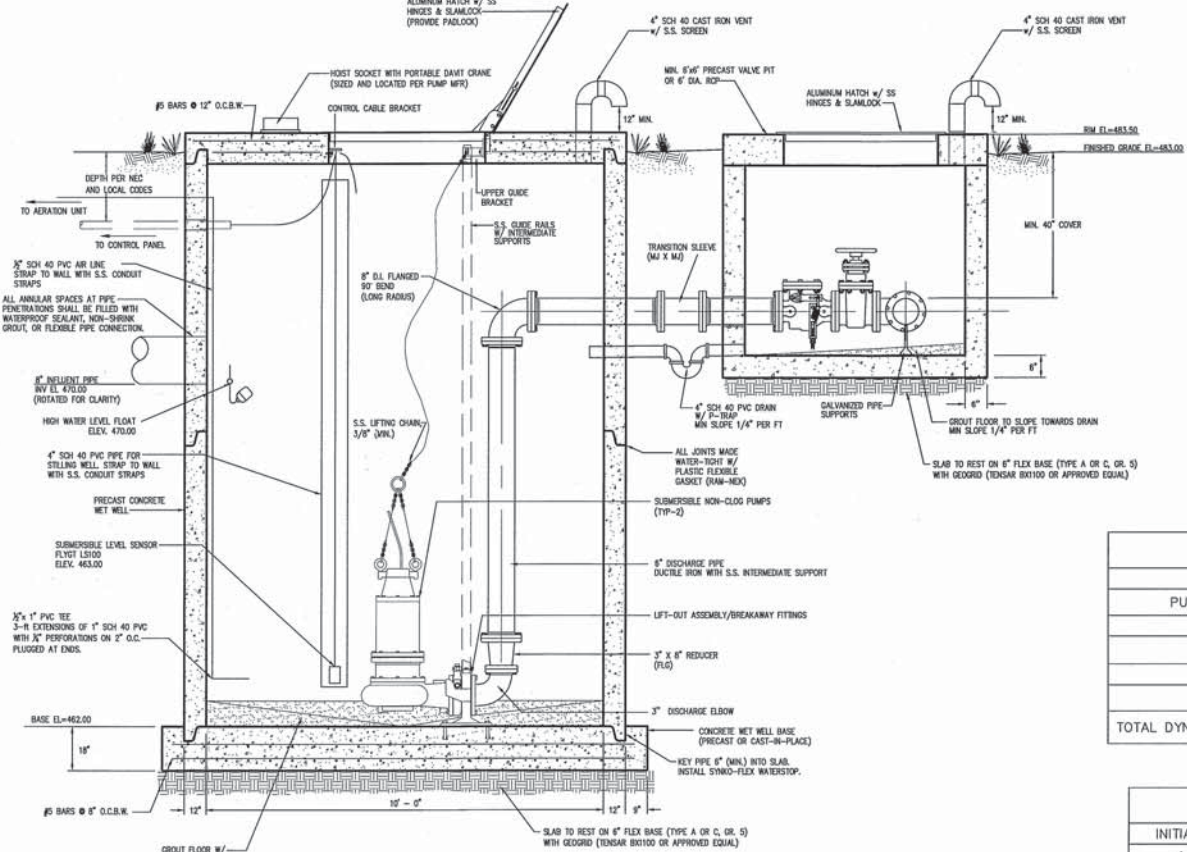
PLAN VIEW
SCALE: N.T.S.



PUMP CONTROL PANEL MOUNTING BRACKET ELEVATION
SCALE: N.T.S.



EMERGENCY GENERATOR PAD
SCALE: N.T.S.



SECTION VIEW
SCALE: N.T.S.

PUMP PERFORMANCE DATA		
PUMP SELECTION	FLYGT NP 3153SH	
FLOW	470 GPM	
MOTOR HP	23 HP @ 3505 RPM	
IMPELLER	#275 (167mm)	
VOLTAGE	3-PH, 460 V, 60 HZ	
TOTAL DYNAMIC HEAD @ DESIGN	90.00 FT	

TRANSDUCER SETTINGS		
INITIAL	FINAL	
1'	1'	PUMP OFF
2'	3.5'	LEAD PUMP ON
3.5'	6'	LAG PUMP ON
8'	8'	HIGH WATER ALARM

LIFT STATION ELECTRICAL NOTES

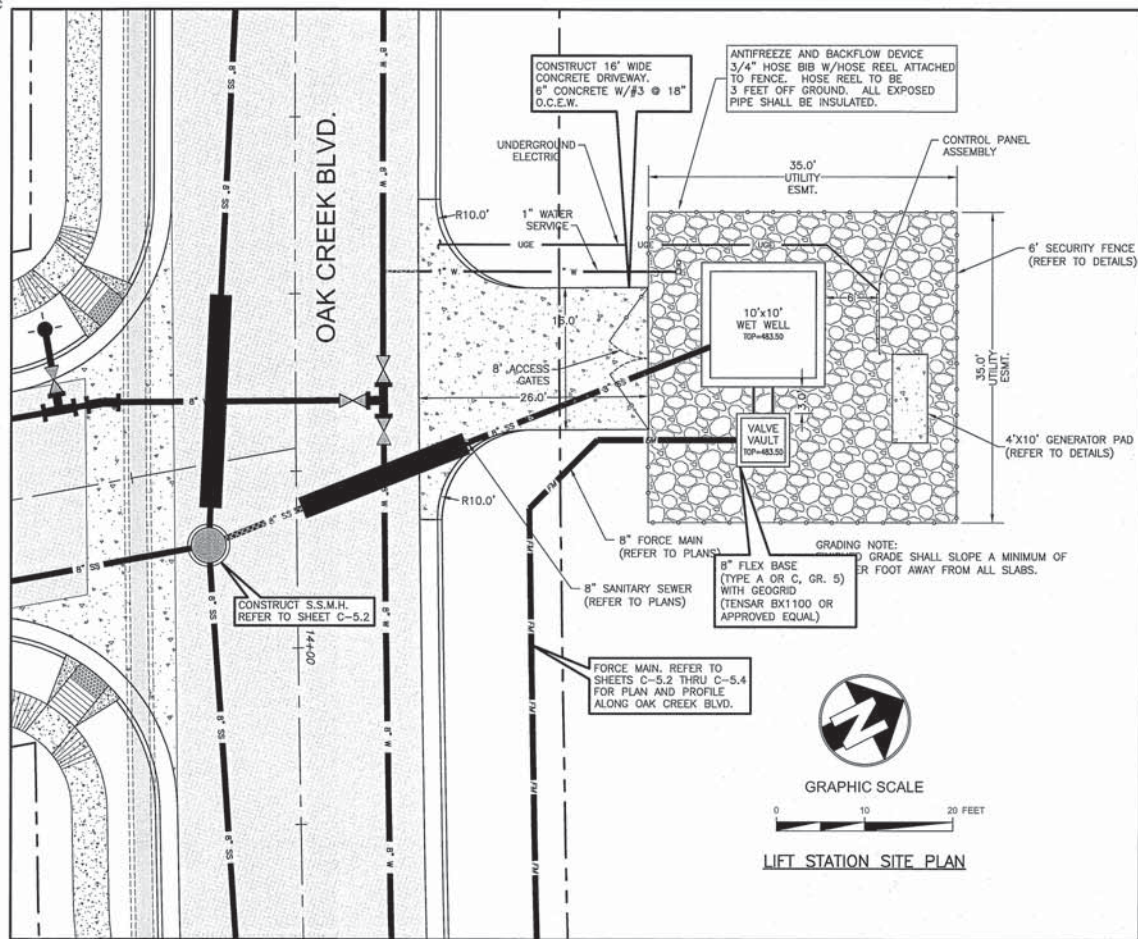
- All work shall be done in accordance with National Electric Code, latest edition, and all local and state authorities having jurisdiction thereof.
- All equipment shall be specification grade and shall have UL label for intended use.
- Electrical systems shall be complete in every detail, including all incidental items for a proper and functioning installation subject to final approval of Engineer.
- All required permits and inspections shall be obtained by Contractor and such costs shall be included in bid price for work.
- Examination of site is mandatory. Contractor is hereby held to examine the site and have included in bid price all costs due to site and field conditions.
- Complete identification of project electrical components is required. Identify all panels, control devices, etc., with the nomenclature required using plastic laminate nameplates. Install type-specified directions of all circuits on inside of all panels.
- Electrical service shall be 277/480-volt, 3-phase, and 4-wire. Service size shall be sized for system. General lighting and power transformer shall be at least 100KVA, and shall be housed with load center in a separate stainless steel enclosure.
- Provide natural gas service for generator. Coordinate service with Centertown Energy.
- Power and control conduit shall be installed in the structural lift station slab.
- Equipment to be service entrance rated and UL listed. Equipment to be UL 1008 listed.
- All mounting hardware shall be Type 304 Stainless Steel and install seal-offs in conduit leading into the pump control panel and junction boxes. All enclosures shall be Type 304 Stainless Steel, and disconnects shall be FRP-NEMA 4X. All enclosures and disconnects shall be lockable with a padlock.
- Coordinate requirements of utility service with local utility company. Provide meter base as required.
- Pump controls shall be alternating start sequence.
- Control panel shall include lightning-transient protection, phase monitor, and alarm system. Panel to have dead face.
- Controls and control panel to be supplied by pump manufacturer. Panel shall be equipped with Flygt APP32 Level Controller.
- Dry contacts shall be provided for connection to RTU.
- Conductors for power shall be stranded copper, rated for 75 °C, with insulation suitable for dry and wet locations. Sizing shall be done according to NEC requirements. Power conductors shall be continuous. Field splices are not allowed.
- Wire size for controls shall be #14 AWG copper stranded rated for 90 °C. Wire size for SCADA controls shall be #16 AWG copper stranded rated for 90 °C.
- Contractor shall install Uplink DigiCell AnyNet by Numerex telemetry equipment. Coordinate requirements with City of Tyler Water Utilities.
- Aeration system shall be sized to provide a minimum of 5 scfm. Provide power from load center with a power switch. Compressor shall be rated for outdoor use and continuous duty. Locate compressor on wet well slab without interfering with hatch operation.
- Main electrical disconnect shall be housed in NEMA 4X, stainless steel enclosure and shall be equal to Square D, Class 3110, 600-volt class, heavy duty, service rated safety switch, NEMA 4X, with all copper current carrying parts. Model N3HJD. Provide with fusing class size based on the characteristics of the motor loads served and the available fault current. Main electrical disconnect shall be time delay fuse or time delay circuit breaker. Provide a surge arrester in

a separate NEMA 4X, SS304 enclosure mounted in the service pole mounting rack.

- Electrical equipment shall comply with the latest version of the NFPA National Electrical Code (NEC) requirements for Class 1, Group C and D, Division 1 locations. Additionally, equipment located in wet wells shall be suitable for use under corrosive environments. Each flexible cable shall be provided with a watertight seal and separate strain relief. High water float switch shall be normally open and non mercury type.
- Free-standing electrical service and transfer switch shall be housed in heavy-duty electrical weatherproof, NEMA 4X, stainless steel 304 enclosures securely mounted onto the rock a minimum of 24\"/>

LIFT STATION CONSTRUCTION NOTES

- Lift station shall be duplex with submersible pumps with stainless steel guide roll system and breakaway fittings, with 3-phase, 460 Volt locking control panel, NEMA 4X junction box, flashing light and horn alarm system.
- Provide concrete wet well cover with lockable access hatch, dimension and location as determined by pump manufacturer. Hatch shall be aluminum tread double leaf ventilated, with lock tab and positive guided open door latch with an automatic engagement device for a fully open 90 degree position. The open door latch must be released before closing. The hinges shall be tamper proof from the outside. Hatch must be cast into slabs.
- Lift Station Wet Well and Valve Vault
 - Reinforced concrete pipe (Wet well) shall be ASTM C-478 8-Wall Thickness with G-ring compressive joints, Type II cement.
 - Reinforced concrete box (Valve vault) shall be ASTM C-890, Type II cement.
 - All slab concrete shall be Class 'C' and have a minimum compressive strength of 4,000 psi at 28 days.
 - All reinforcing steel shall conform to ASTM A-615, Grade 60.
 - All grout shall be non-shrink, having minimum compressive strength of 5,000 psi at 28 days, complying with USACE, CEM-C-621.
 - Provide 2-inch clear cover for the slope unless noted otherwise.
 - All pipe openings shall be sufficient size core for waterproof joint sealing.
- Piping and Valves
 - All piping as shown shall be ductile iron, Class 53 per AWWA C150.
 - Flanges shall be 125 lb, ANSI B-16.1 C. Bolts and nuts shall conform to ASTM A316 stainless steel.
 - Gaskets shall be Grade I rubber, ring type.
 - All annular spaces between discharge piping and valve vault shall be sealed using waterproof joint sealer.
- All exposed piping outside of wet well shall receive a 100% solids epoxy coating system with a top coat of urethane installed according to manufacturer instructions.
- All piping within wet well shall be coated with a 100% solids coal tar epoxy coating system installed according to manufacturer instructions.
- All interior fasteners and accessories shall be stainless steel. Stainless steel shall be Type 304 or 316 unless specified otherwise.
- Contractor shall coordinate the correct placement and installation of the lifting eyes on the wet well and valve vault lid with the manufacturer.
- Buried ductile iron valves and fittings shall be encased with 8 mil polyethylene wrap.
- Contractor shall submit shop drawings of wet well, valve vault, piping, valves, and all mechanical equipment to engineer for review and approval.
- Floor of lift station shall be formed at 10% slope with grout.
- Pumps shall be located and anchored per manufacturer's recommendations.
- Contractor shall coordinate with pumps manufacturer the location of all access doors.
- Wet well discharge riser can be assembled from several forged pieces. A stainless steel pipe support bracket shall be installed at the center of each compound pipe riser.
- All mechanical joints shall have a "Mega-Lug" thrust restrained joint, per ANSI/AWWA C111/A21.11 and ANSI/AWWA C153/A21.55.
- Finished grade shall slope at a minimum of 1/4\"/>



GRAPHIC SCALE
0 10 20 FEET
LIFT STATION SITE PLAN



REVISIONS

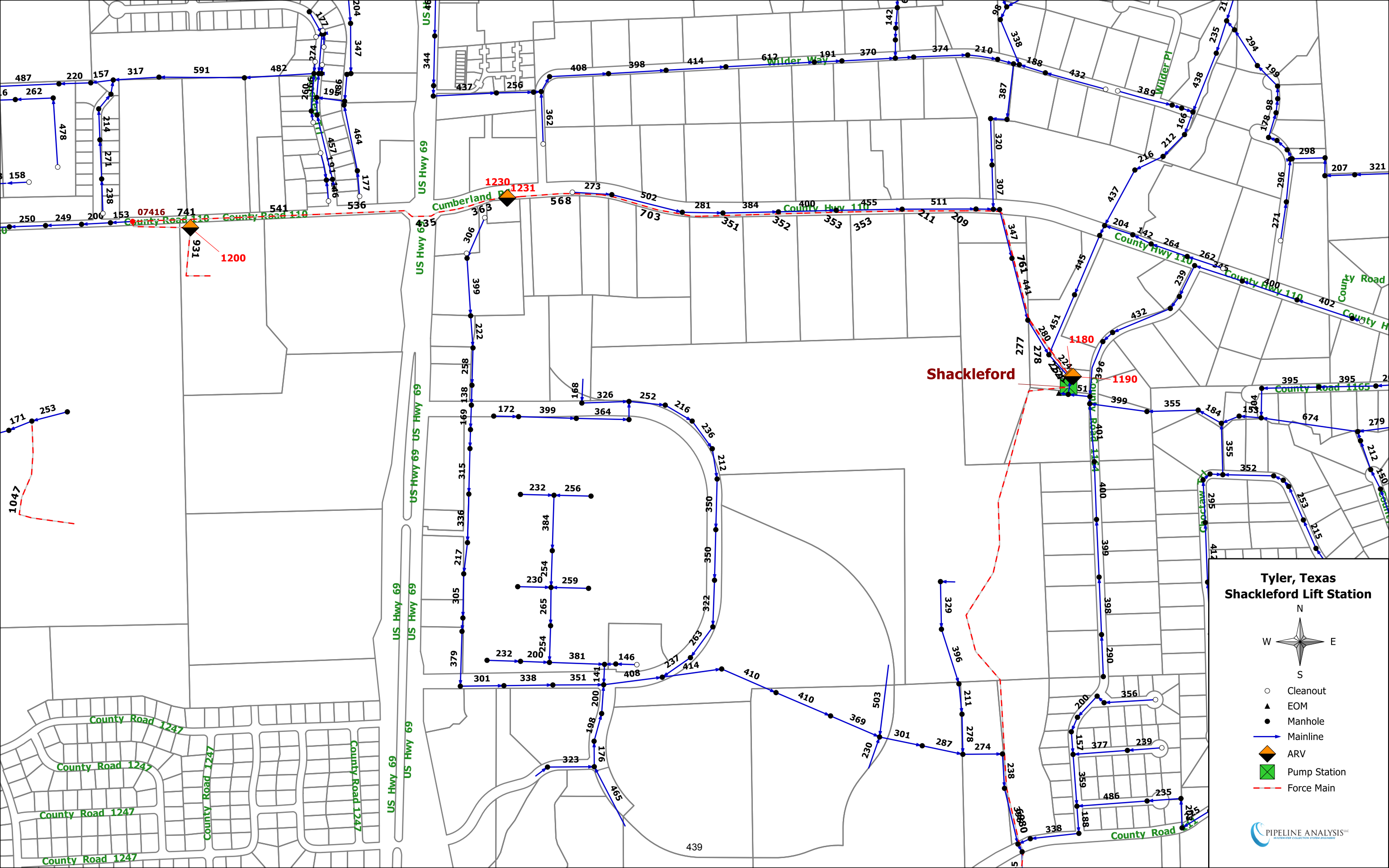
DATE	DESCRIPTION	AS BUILT - RECORD DRAWINGS
06-06-16		



OAK CREEK ADDITION, UNIT 1
DEVELOPER: TYLER OAK CREEK DEVELOPMENT, LLC
TYLER, SMITH COUNTY, TEXAS
SANITARY SEWER LIFT STATION
SITE PLAN AND DETAILS

DRAWN BY: MGRM
CHECKED BY: BAE
ISSUE DATE:
BAC JOB NO: 15-022
DRAWING NUMBER:
C-3.3

SHACKLEFORD CREEK



Tyler, Texas
Shackleford Lift Station

N
W E
S

- Cleanout
- EOM
- Manhole
- Mainline
- ARV
- Pump Station
- Force Main

PIPELINE ANALYSIS
sanitary sewer collection system analysis

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name Shackleford Type Submersible
 Location/Address 9125 Cherokee Trail
 Lift Station Asset ID _____ Number of Pumps 2
 Firm Capacity in GPM (all pumps operating) _____
 Firm Capacity in GPM (largest pump out of service) _____
 Inspector Don White Date Dec 12, 2017
 City Works Work Order _____

Building and Grounds

Good Fair Poor Critical N/A

Building Structure	Type: <u>CMU</u>					
Building Roof/Ceiling	<u>Metal ceiling coated insulation</u>	☐	☐	☐	☐	☐
Building Finishes	<u>Painted CMU</u>	☐	☒	☐	☐	☐
<u>1-pedestrian</u> Building Doors and Windows	<u>metal-vehicle rolling overhead</u>	☒	☐	☐	☐	☐
Building HVAC	Type: <u>Vent</u>	☒	☐	☐	☐	☐
Fencing	Type: <u>chain link</u>	☒	☐	☐	☐	☐
Gates	Type: <u>chain link</u>	☒	☐	☐	☐	☐
Site/Grounds	Size: _____	☒	☐	☐	☐	☐
Lighting		☒	☐	☐	☐	☐
Pavement (Driving)	Type: <u>Concrete</u>	☒	☐	☐	☐	☐
Drainage	Type: <u>Surface</u>	☐	☒	☐	☐	☐
Odor	Comment: <u>None w/ hatch closed</u>	☐	☒	☐	☐	☐
Odor Control System	Type: <u>WM Qdos HYDROGEN</u>	☐	☐	☐	☐	☐
Odor Control Mechanical	<u>PEROXIDE 50%</u>	☐	☐	☐	☐	☐
Odor Control Media	Type: _____	☐	☐	☐	☐	☐
Noise		☐	☐	☐	☐	☐
Overall Site Appearance		☐	☐	☐	☐	☐

Comments Exewash present, opening in eves and unsealed wall Footing at slab allows moisture into building. Bldg site barrier CMU walls have some cracks.

Structural

		Good	Fair	Poor	Critical	N/A
Wet Well						
Debris	Size:	☐	☐	☐	☒	☐
Fats, oils, and grease		☐	☐	☐	☒	☐
Ventilation		☒	☐	☐	☐	☐
Walls	Material: <u>Concrete</u>	☒	☐	☐	☐	☐
Coatings	Type:	☐	☐	☐	☐	☐
Access Hatches ^{METAL}	Number: <u>1-^{3x4}double</u>	☒	☐	☐	☐	☐
Slab	<u>1-single 3x4</u>	☒	☐	☐	☐	☐
Dry Well/Valve Vault						
Walls	Material:	☐	☐	☐	☐	☐
Coatings	Type:	☐	☐	☐	☐	☐
Grating/Hatching	Number:	☐	☐	☐	☐	☐
Stairway/Ladder	Material:	☐	☐	☐	☐	☐
Sump/Pump	Number:	☐	☐	☐	☐	☐
Ventilation	Type:	☐	☐	☐	☐	☐

Comments secondary wet well - 3-3x4 hatches, significant sludge in wetwell. Air compressor for compressed air to wetwell.

Mechanical

		Good	Fair	Poor	Critical	N/A
Bypass Connection	(Circle) <u>YES</u> / NO					
Piping and Valves						
Suction Valve	Number:	☐	☐	☐	☐	☐
<u>DI</u> 4" Check Valve	Number: <u>2-DI</u>	☒	☐	☐	☐	☐
<u>DI</u> 4" Discharge Valve	Number: <u>2-DI</u>	☒	☐	☐	☐	☐

Mechanical (continued)

		Good	Fair	Poor	Critical	N/A
4" Riser Piping	Material: <u>DI</u>	☐	☐	☒	☐	☐

Good-above slab
Poor-below

8" Discharge Piping	Material: <u>DI</u>	☐	☐	☐	☐	☐
Fittings	Material: <u>DI</u>	☐	☐	☐	☐	☐

Comments 2 return lines w/ Gate Valves to wet well on discharge piping
for maintenance purposes; surge valve on discharge
Flow Meter on discharge; air ariator to wet well - on timer

Pumps							
Pump 1	Asset ID	Make	Model				
	Capacity	GPM					
	Impeller Dia./Code	Horsepower					
			Good	Fair	Poor	Critical	N/A
Pump			☐	☐	☐	☐	☐
Seals			☐	☐	☐	☐	☐
Motor			☐	☐	☐	☐	☐
Shaft			☐	☐	☐	☐	☐
Electrical Cable							
Noise			☐	☐	☐	☐	☐
Vibration/Heat			☐	☐	☐	☐	☐
Pump 1	The following components are to be inspected during pump disassembly						
Oil			☐	☐	☐	☐	☐
Impeller			☐	☐	☐	☐	☐
Packing Rings			☐	☐	☐	☐	☐
Internal Seals			☐	☐	☐	☐	☐

Hoist on Tracts to lift pumps. - Good

Pump 2

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 2*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 3

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 3*The following components are to be inspected during pump disassembly*

	Good	Fair	Poor	Critical	N/A
Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 4

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 4*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 5

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable					
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 5*The following components are to be inspected during pump disassembly*

Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Pump 6

Asset ID _____

Make _____

Model _____

Capacity _____

GPM _____

Impeller Dia./Code _____

Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	☐	☐	☐	☐	☐
Seals	☐	☐	☐	☐	☐
Motor	☐	☐	☐	☐	☐
Shaft	☐	☐	☐	☐	☐
Electrical Cable	☐	☐	☐	☐	☐
Noise	☐	☐	☐	☐	☐
Vibration/Heat	☐	☐	☐	☐	☐

Pump 6

The following components are to be inspected during pump disassembly

	Good	Fair	Poor	Critical	N/A
Oil	☐	☐	☐	☐	☐
Impeller	☐	☐	☐	☐	☐
Packing Rings	☐	☐	☐	☐	☐
Internal Seals	☐	☐	☐	☐	☐

Electrical System

	Good	Fair	Poor	Critical	N/A
Electrical System Power					
Volt/Phase:					
Panel/Enclosures	NEMA4X	YES	NO	☐	☐
Transformers (AEP)	☐	☐	☐	☐	☐
Disconnect	Type:	☐	☐	☐	☐
Generator	KW	YES	☐	☐	☐
Transfer Switch	?	☐	☐	☐	☐
Electrical System Control					
Breakers	Type:	☐	☐	☐	☐
Speed control/VFD	Type:	☐	☐	☐	☐
Starters	Type:	☐	☐	☐	☐
Control Relays	Type:	☐	☐	☐	☐

Comments Breaker Panel shows corrosion; Generator Control Panel
significat corrosion, Moisture and outside soil seepage around
slab of breaker panel and generator panel

Instrumentation/SCADA

				Good	Fair	Poor	Critical	N/A
Panel	NEMA4X	YES	NO	☐	☐	☐	☐	☐

Instrumentation

Level	Type: <u>Floats</u>	☐	☐	☒	☐	☐
Flow ✓	Type: <u>MAGMETER</u>	☒	☐	☐	☐	☐

Instrumentation/SCADA (continued)

			Good	Fair	Poor	Critical	N/A
PLC	Type: _____	☐	☐	☐	☐	☐	
SCADA		☐	☐	☐	☐	☐	
RTU	Type: <u>uplink</u>	☒	☐	☐	☐	☐	
Radio/Antenna	Type: <u>w/uplink</u>	☒	☐	☐	☐	☐	

Comments _____

Building and Grounds



CMU Lift Station Building Facing North



Driveway Facing South



Lift Station Perimeter To Left of Building
Facing North



Lift Station Building Facing East

Building and Grounds



Lift Station Building Facing West



Eyewash Station Near North Fence



Dog House in Northeast Corner



Valve Vault in Backyard. Problems with High Water Levels.

Building and Grounds



Hydrogen Peroxide Stored On-Site and Used for Odor Control



Metering Pump for Hydrogen Peroxide

Structural



Cracked CMU Wall



Damaged Exterior Wall



Opening for Wet Well

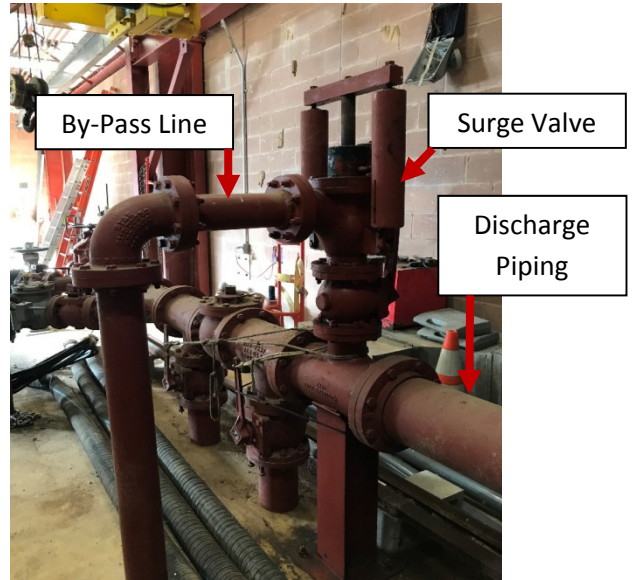


Extensive Debris and Fat, Oils, Grease Deposit Inside Wet Well

Mechanical



Interior of Building Facing North



Discharge Piping Components



Flow Meter



Piping for Future Expansion

Electrical



Electric Generator



Electric Panel Inside Building Facing Northwest



Moisture and External Soil Seepage Around Electric Panel Slab



Significant Corrosion on Generator Control Panel

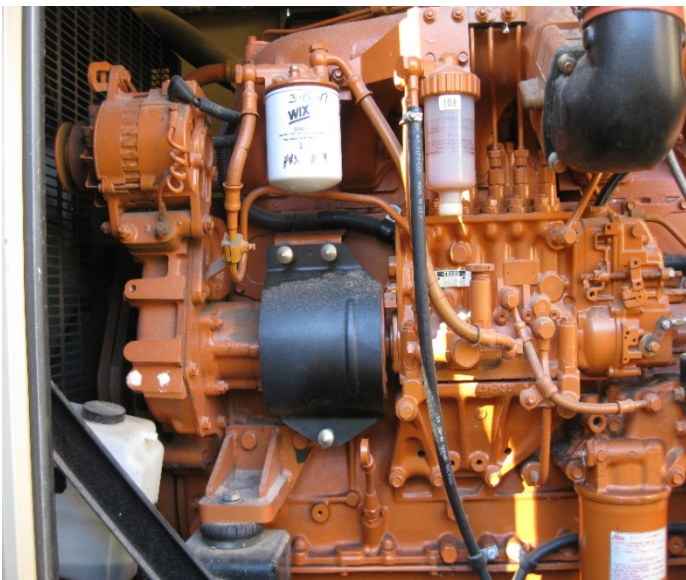
Electrical



Interior of Generator Control Panel



Interior of Generator Enclosure

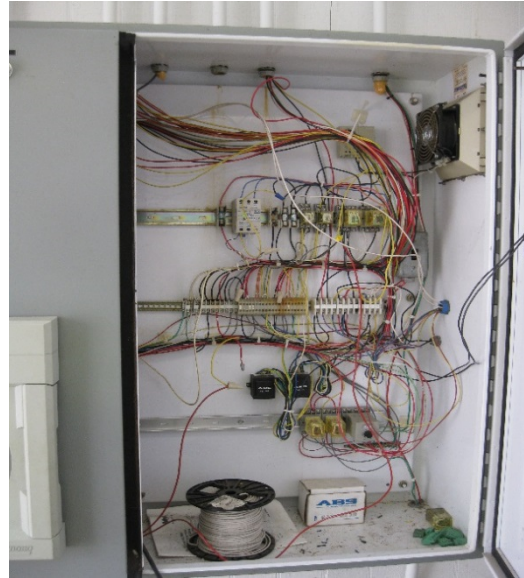


Interior of Generator Enclosure

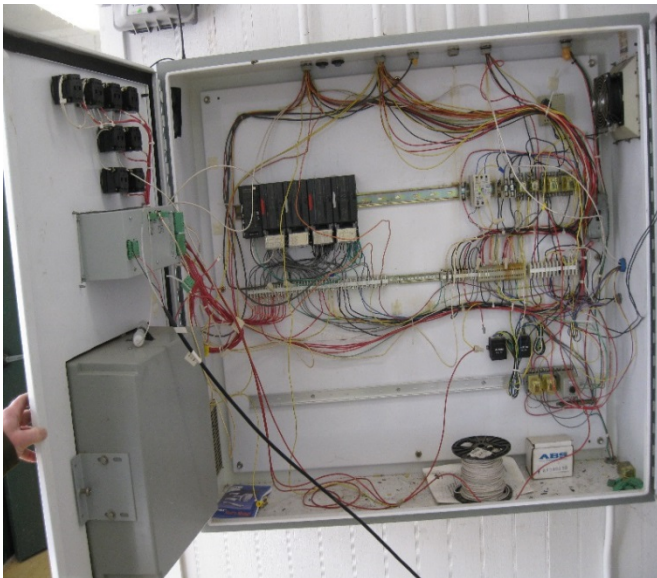
Instrumentation/SCADA



Instrumentation Panel



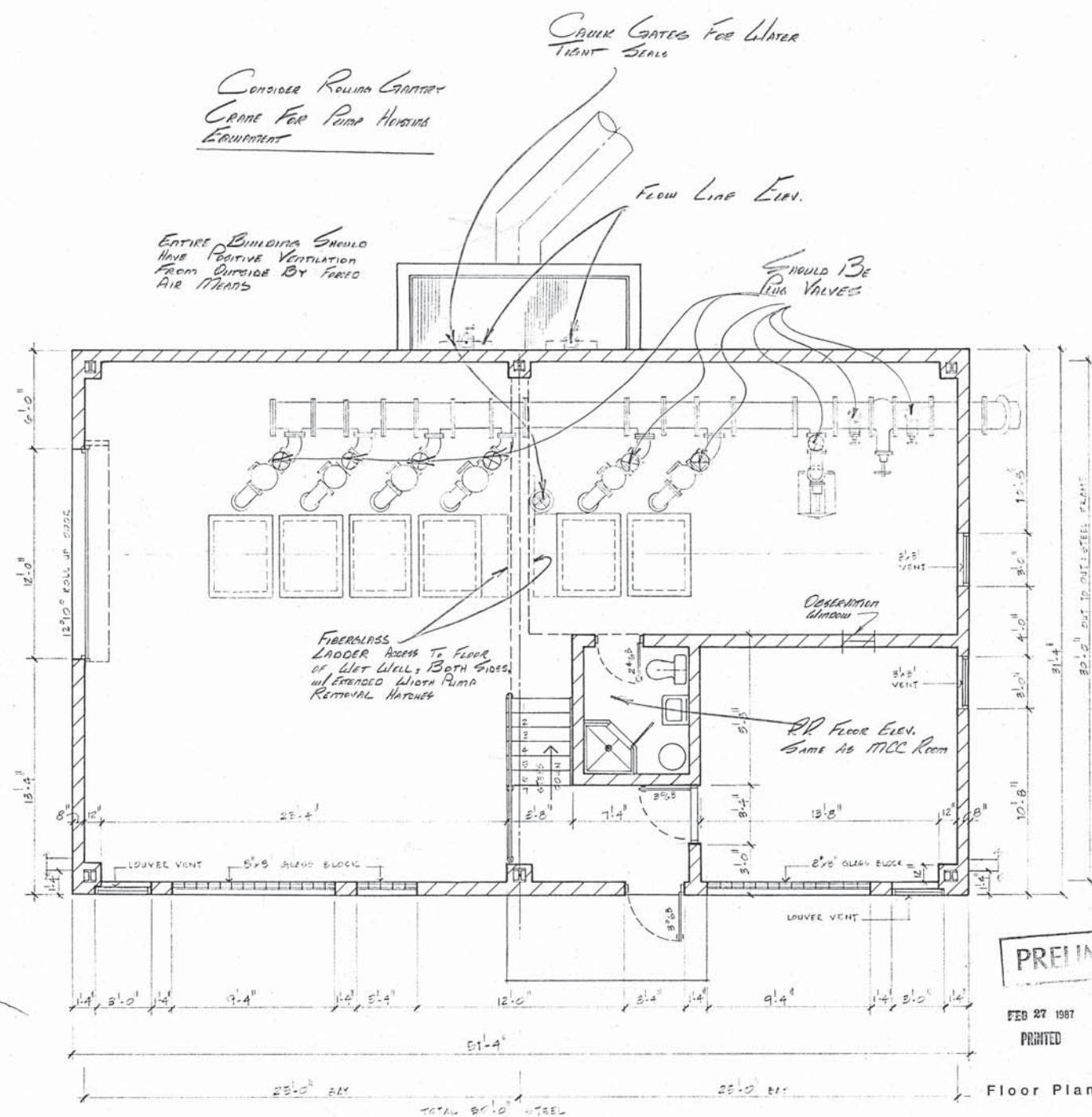
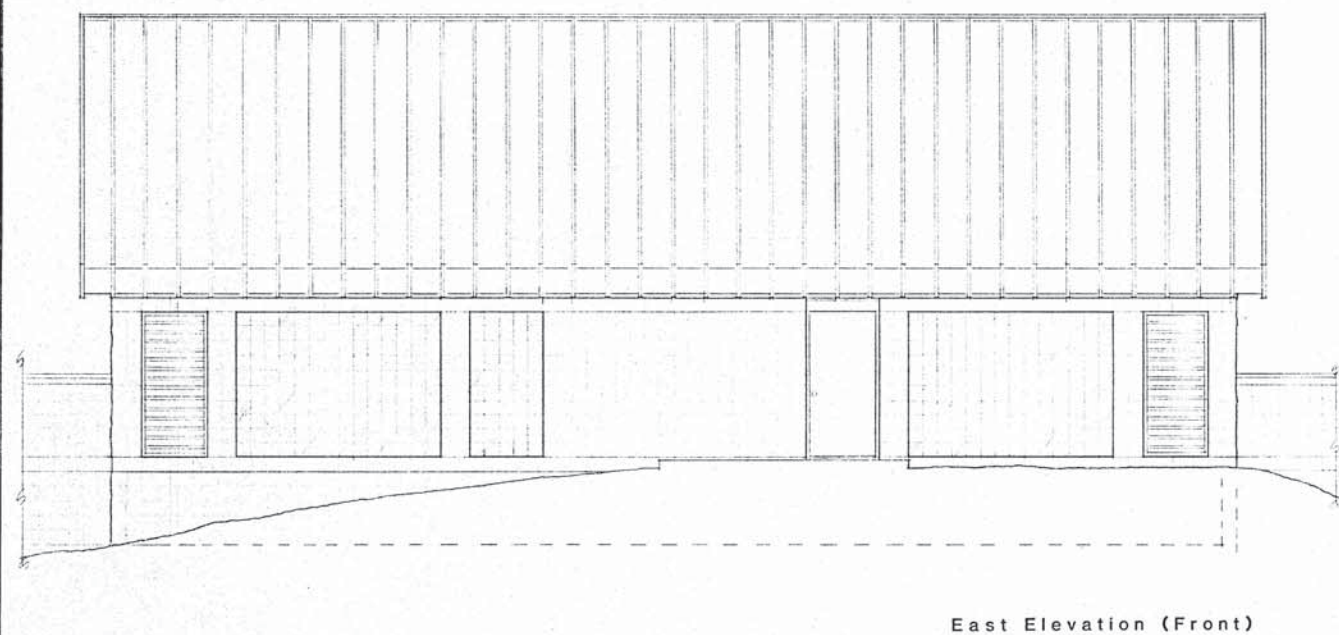
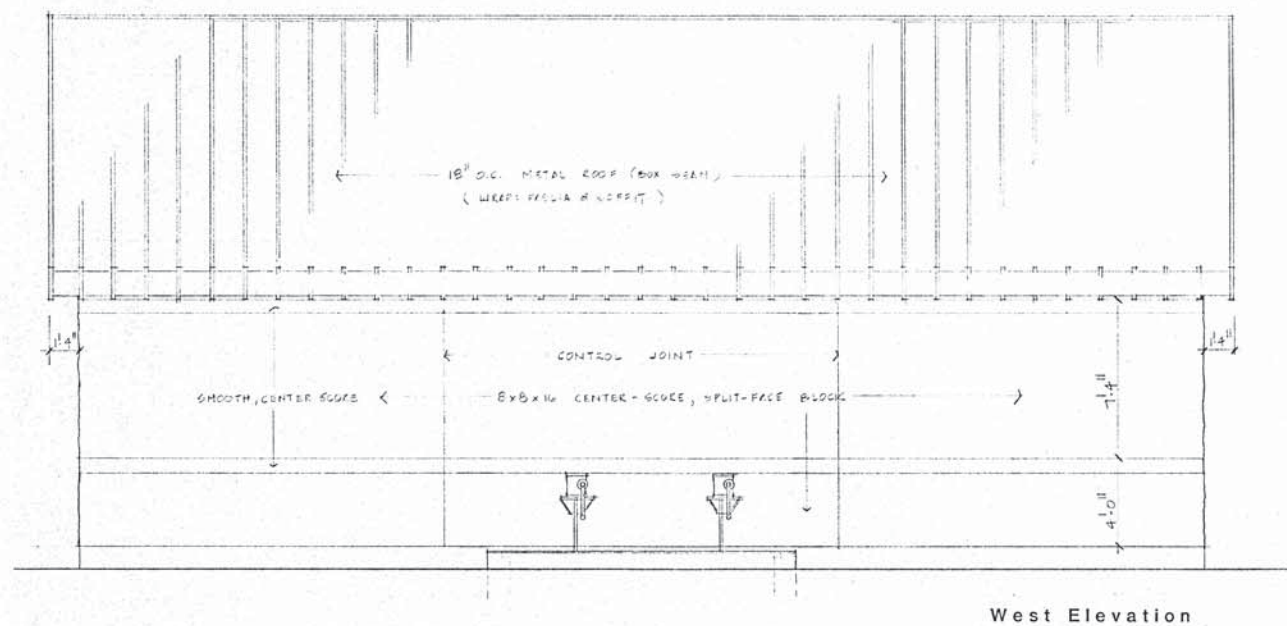
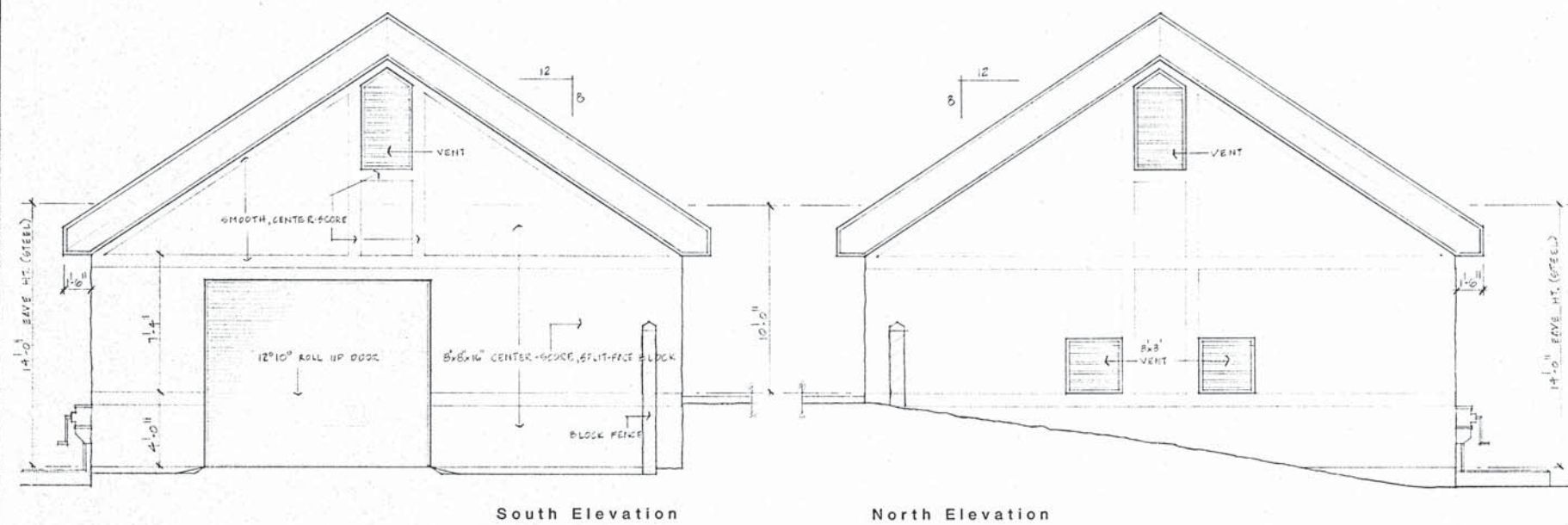
Interior of Instrumentation Panel (1)



Interior of Instrumentation Panel (2)



Interior of Instrumentation Panel with RTU



One Additional Complete Pumping Unit
Stored on Site on Initial Const. Phase
& Installed at First Additional Const. Phase

Consider Rolling Gravel
Crane For Pump Hoisting
Equipment

ENTIRE BUILDING SHOULD
HAVE POSITIVE VENTILATION
FROM OUTSIDE BY FORCED
AIR MEANS

CAULK GATES FOR WATER TIGHT SEALS

Flow Line Elev

Should 13
Pine Valves

FIBERGLASS
LADDER ACCESS TO FLOOR
OF WET WELL; BOTH SIDES.
UNEXTENDED WITH PUMP
REMOVAL HATCHES

R.R. Floor Elev.
Same as MCC Room

PRELIMINARY

FEB 27 1987
PRINTED

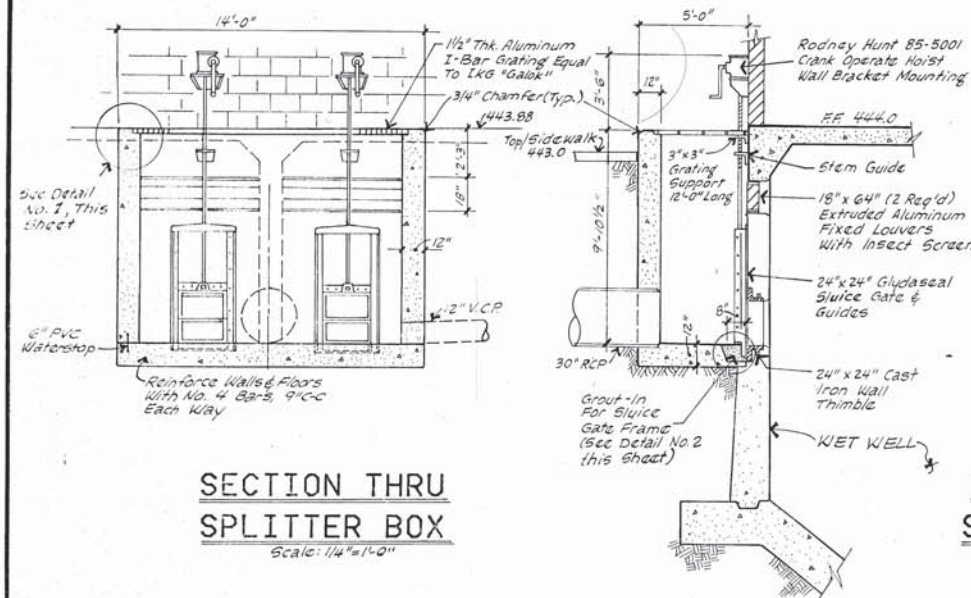
Floor Plan

The Brannon Corporation

CIVIL ENGINEERS & URBAN PLANNERS
3300 SOUTH BROADWAY • TYLER, TEXAS 75701

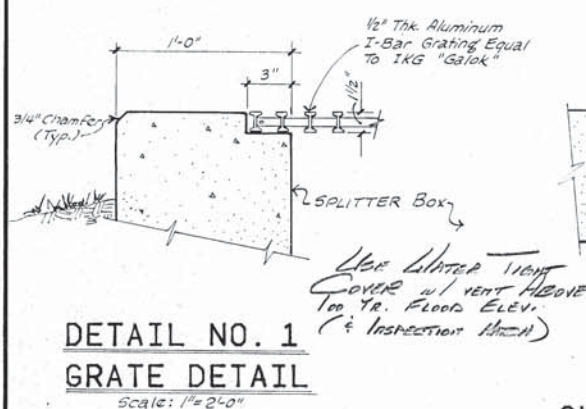
CONSTRUCTION PLANS
FOR
SHACKLEFORD CREEK
LIFT STATION
CITY OF TYLER
TYLER, SMITH COUNTY, TEXAS

REVISIONS		
NO.	DATE	REMARKS
1	7/2/77	
CONTRACT NO. 66-206(40)		
SHEET NO. 3 OF		



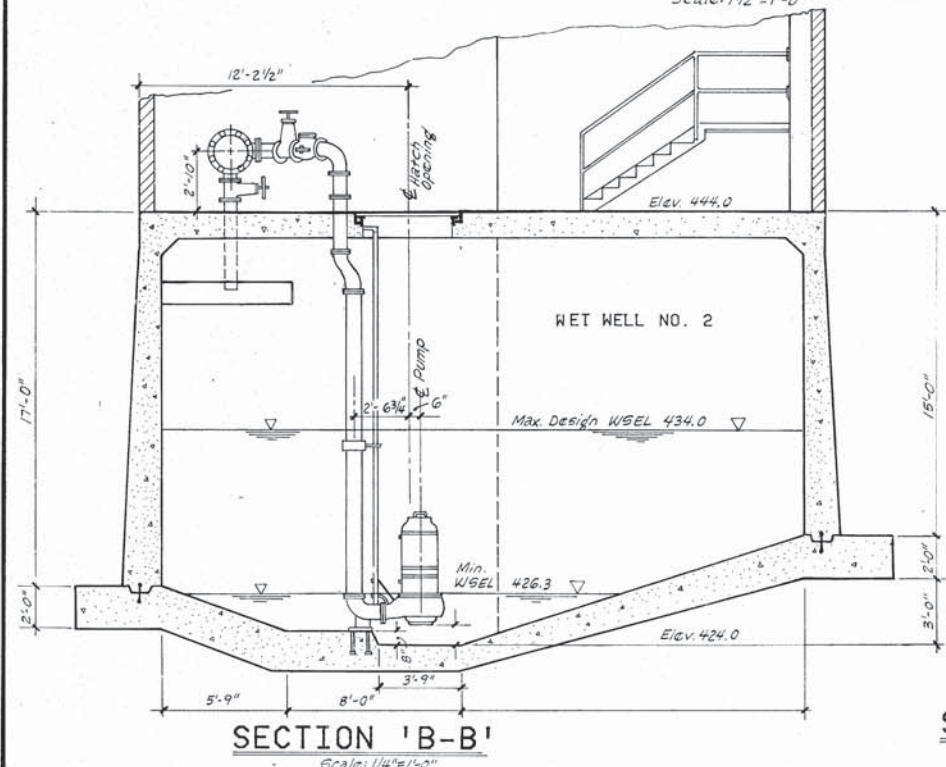
SECTION THRU
SPLITTER BOX
Scale: 1/4"=1'-0"

CROSS-SECTION
THRU SPLITTER BOX
Scale: 1/4"=1'-0"



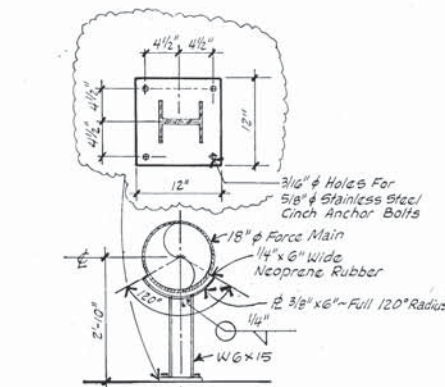
DETAIL NO. 1
GRATE DETAIL
Scale: 1"=2'-0"

DETAIL NO. 2
INSTALLATION OF
SLUICE GATE FRAME
Scale: 1 1/2"=1'-0"

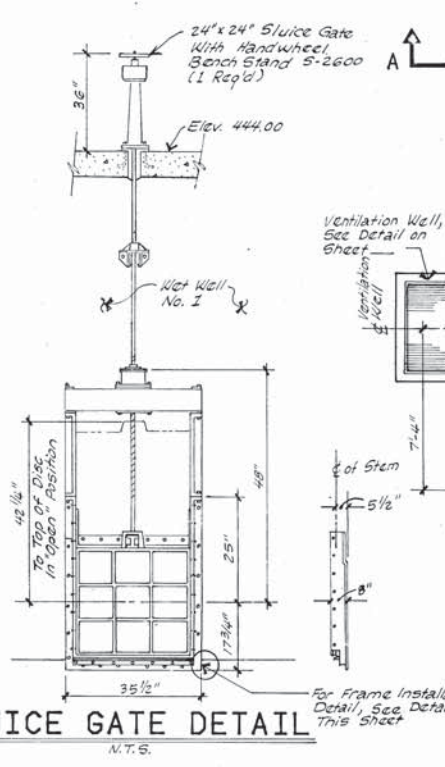


SECTION 'B-B'
Scale: 1/4"=1'-0"

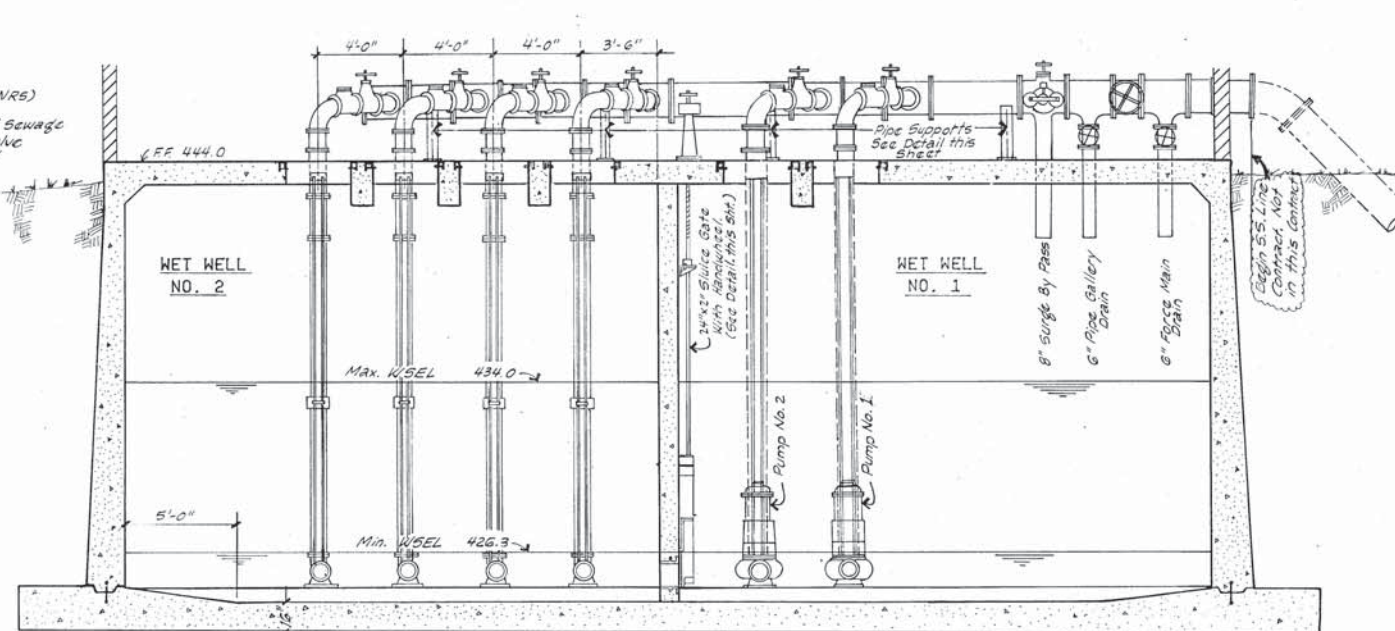
ELEVATION VIEW
SURGE ANTICIPATOR
VALVE
Scale: 1/4"=1'-0"



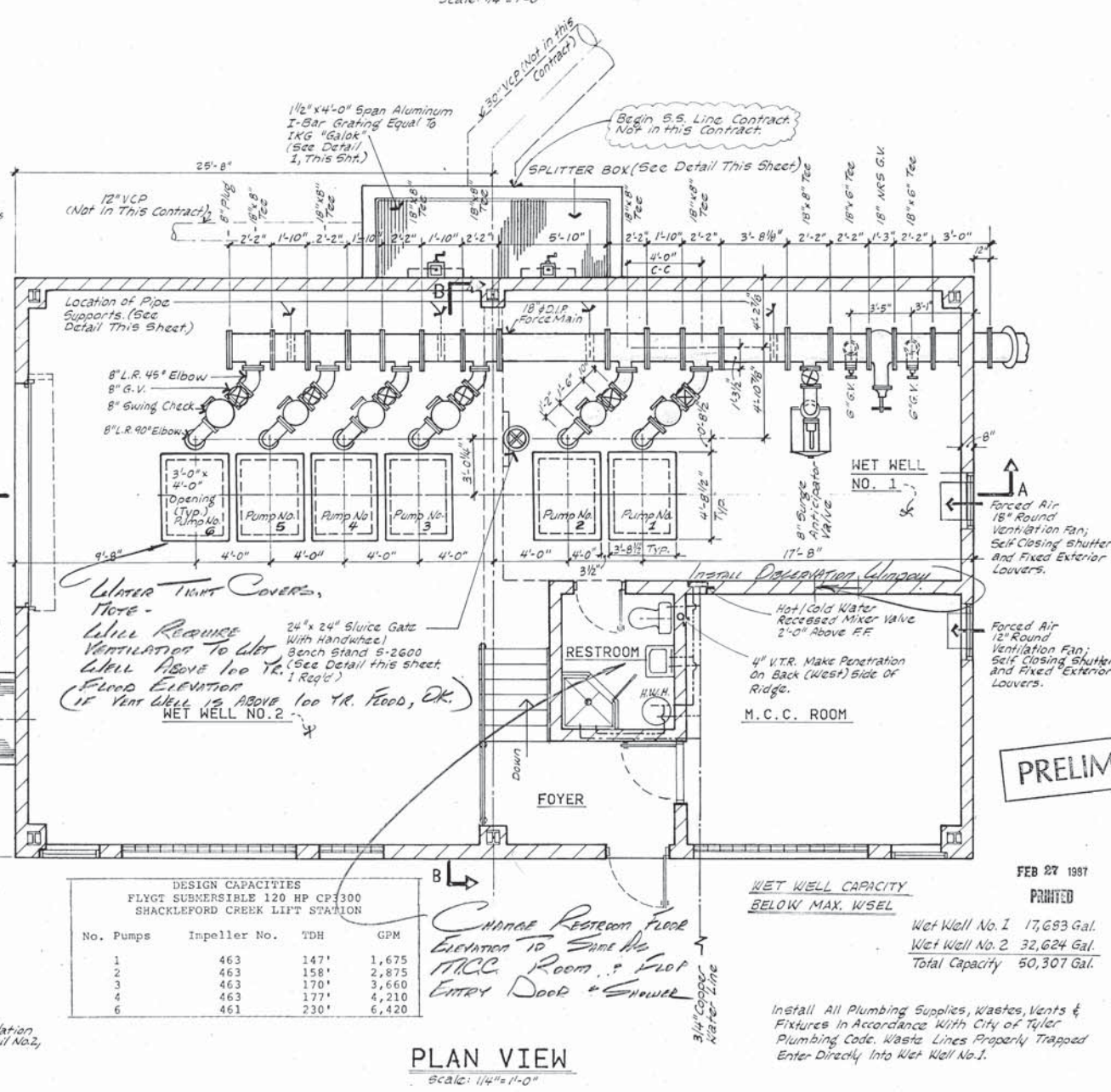
PIPE SUPPORT
DETAIL
Scale: 1/2"=1'-0"



SLUICE GATE DETAIL
N.T.S.



SECTION 'A-A'
Scale: 1/4"=1'-0"



PLAN VIEW
Scale: 1/4"=1'-0"

DESIGN CAPACITIES				
FLYGT SUBMERSIBLE 120 HP CP3300				
SHACKLEFORD CREEK LIFT STATION				
No. Pumps	Impeller No.	TDH	GPM	
1	463	147'	1,675	
2	463	158'	2,875	
3	463	170'	3,660	
4	463	177'	4,210	
6	461	230'	6,420	

WET WELL CAPACITY
BELOW MAX. WSEL

Wet Well No. 1	17,683 Gal.
Wet Well No. 2	32,624 Gal.
Total Capacity	50,307 Gal.

Install All Plumbing Supplies, Wastes, Vents & Fixtures in Accordance With City of Tyler Plumbing Code. Waste Lines Properly Trapped Enter Directly Into Wet Well No. 1.

PRELIMINARY

FEB 27 1997
PRINTED

DSGN: C.T.B.
DWN: TAF & S.G.
CK'D: C.T.B.
DATE: 2/87
SCALE: As Noted

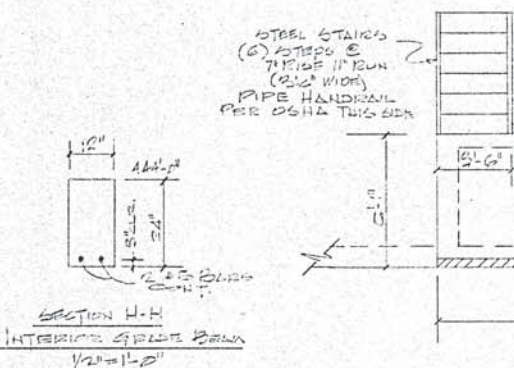
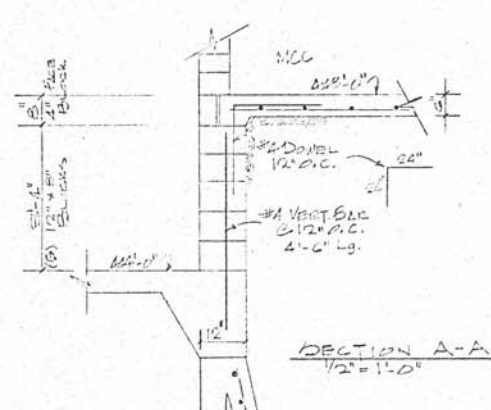
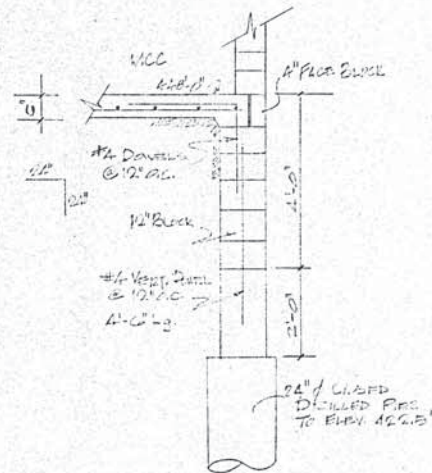
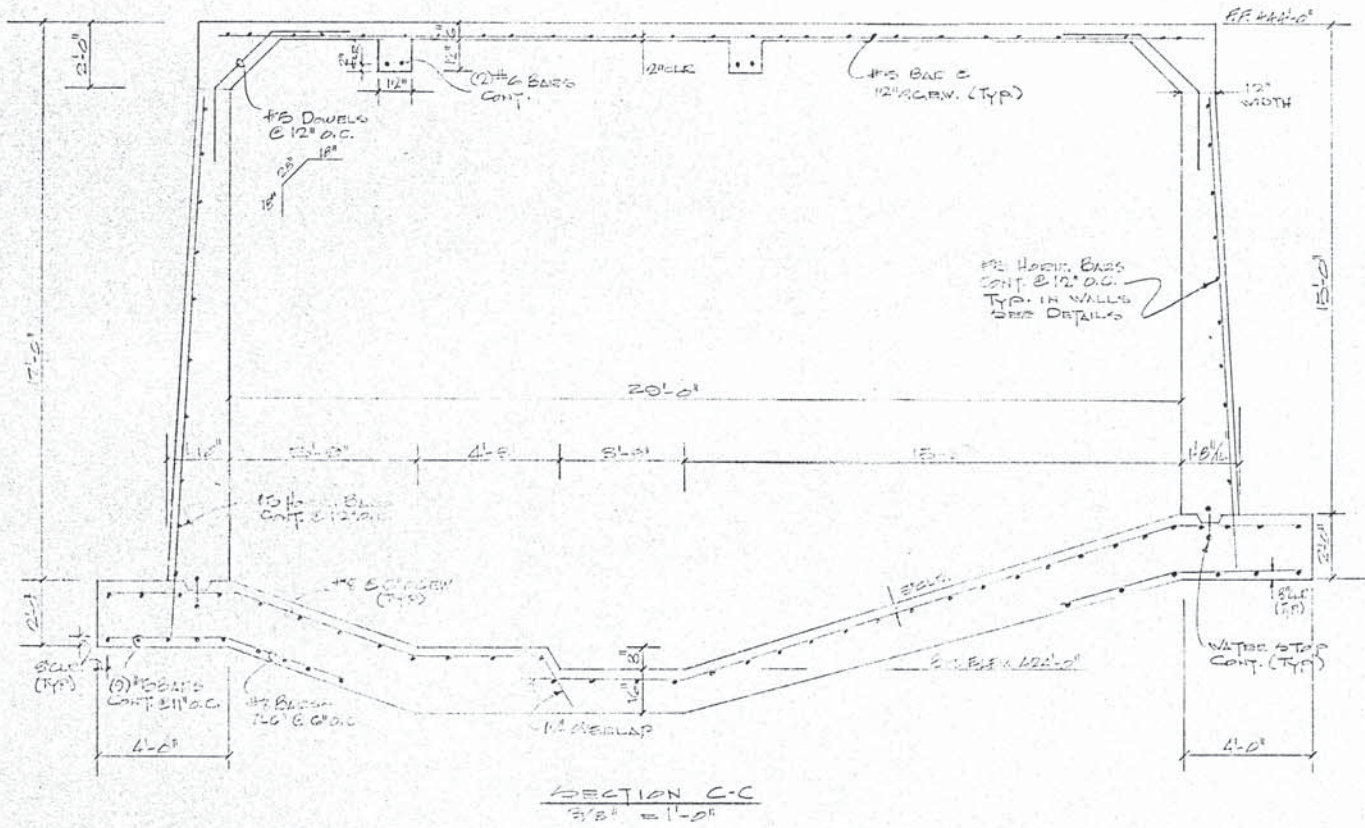
The Brammon Corporation
CIVIL ENGINEERS & URBAN PLANNERS
3300 SOUTH BROADWAY • TYLER, TEXAS 75701

CONSTRUCTION PLANS
FOR
SHACKLEFORD CREEK
LIFT STATION
CITY OF TYLER
TYLER, SMITH COUNTY, TEXAS

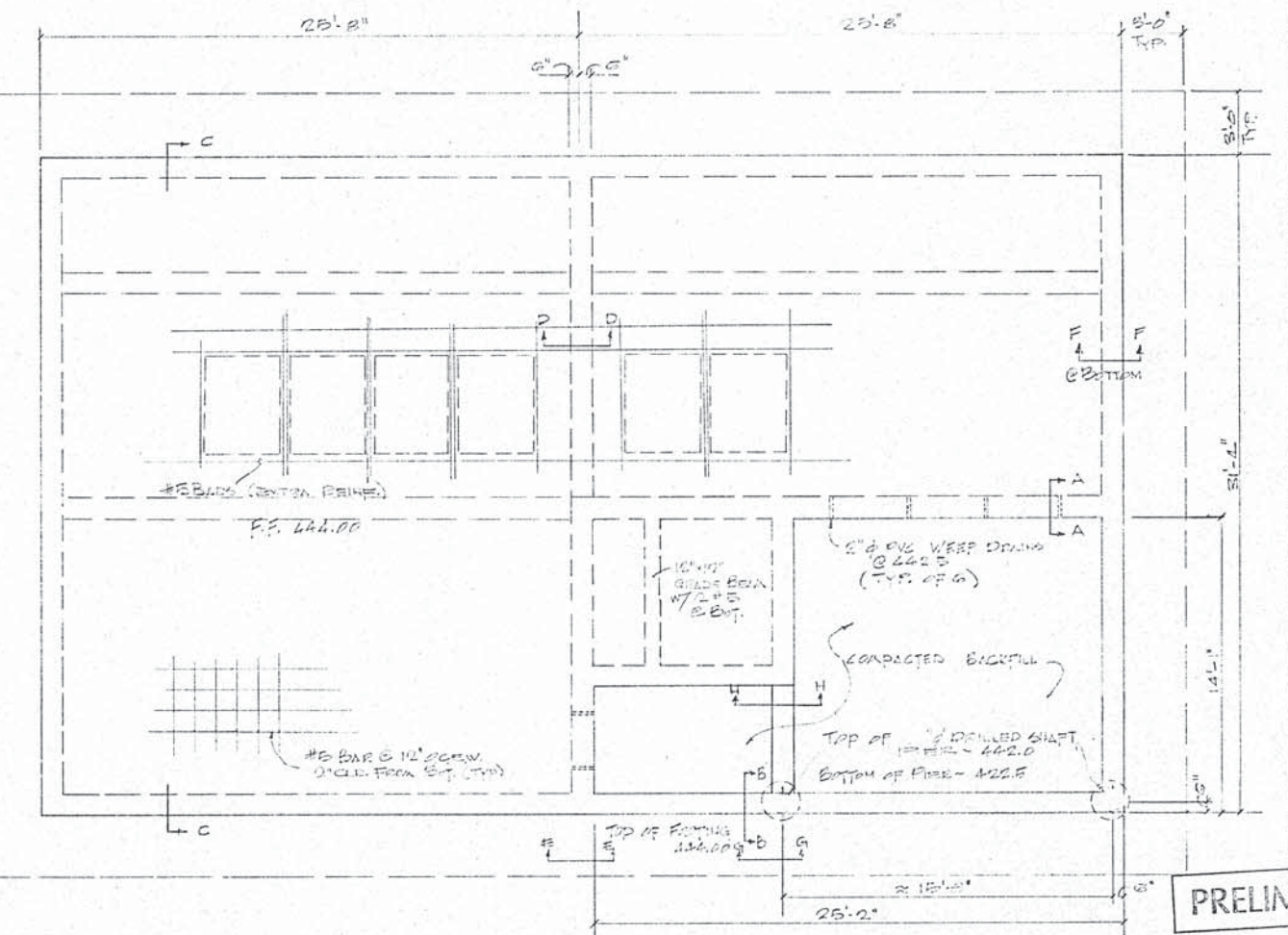
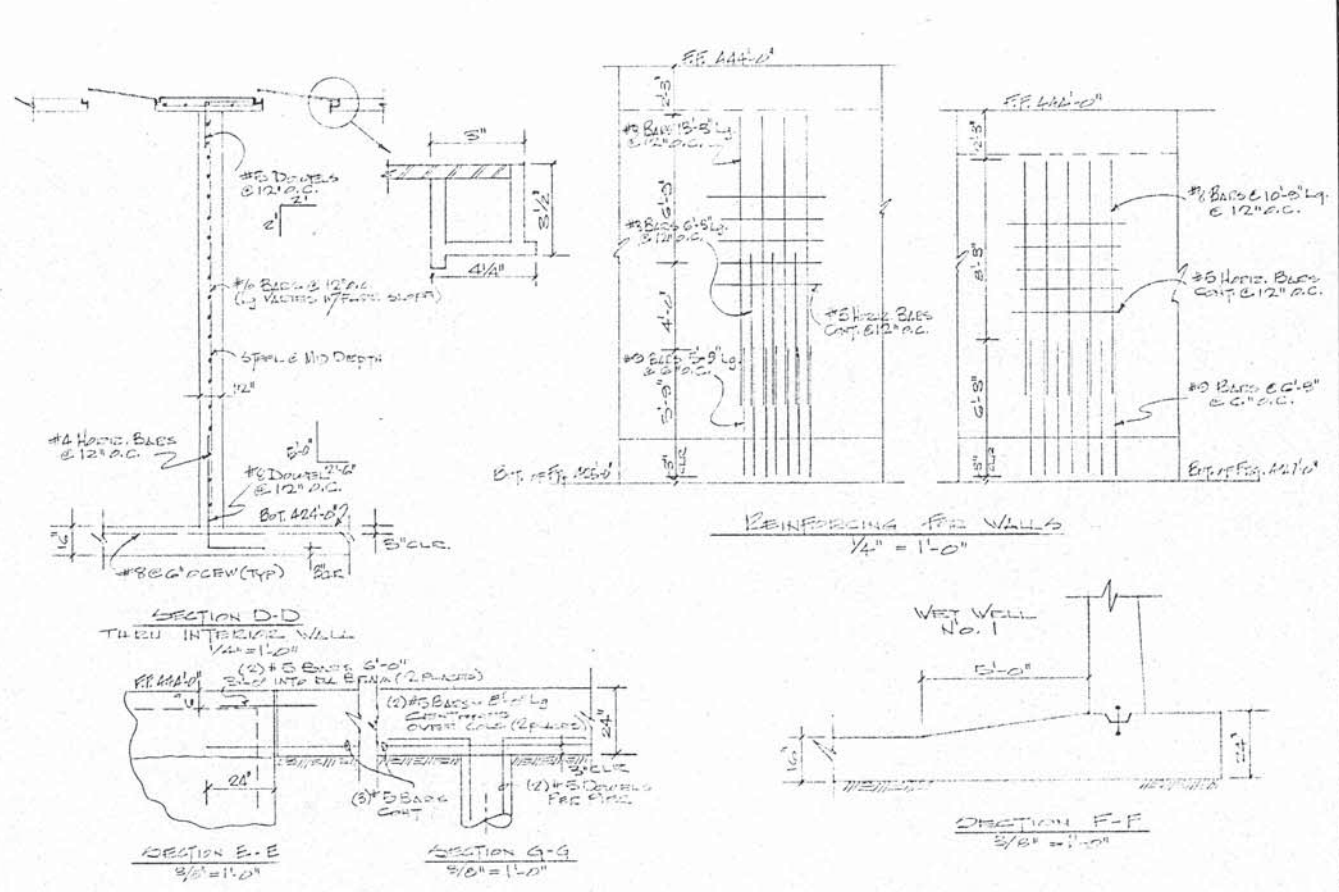
REVISIONS

NO.	DATE	REMARKS

CONTRACT NO. 86-206(40)
SHEET NO. 4 OF 4



FOUNDATION PLAN @ ELEV. 148'-0"
1/4" = 1'-0"



FOUNDATION PLAN @ ELEV. 144'-0"
1/4" = 1'-0"

DSGN: R.H.E.
DWN: A.K.
CK'D: C.T.B.
DATE: 2/27
SCALE: AS SHOWN



The Brannon Corporation
CIVIL ENGINEERS & URBAN PLANNERS
3300 SOUTH BROADWAY, TYLER, TEXAS 75701

CONSTRUCTION PLANS
FOR
SHACKLEFORD CREEK
LIFT STATION
CITY OF TYLER
TYLER, SMITH COUNTY, TEXAS

REVISIONS		
NO.	DATE	REMARKS

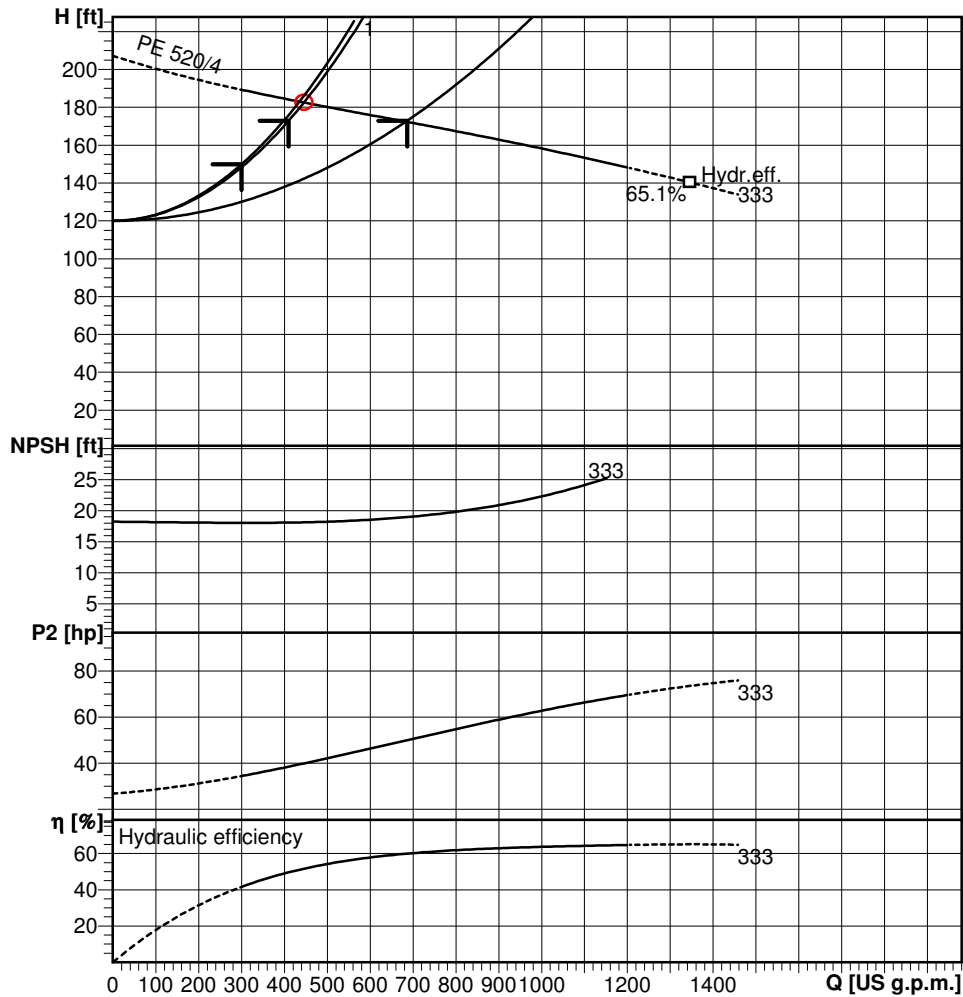
PRELIMINARY

CONTRACT NO.
86-406
SHEET NO.
5 OF

FEB 27 1987
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XFP 100J-CB2 60 HZ

Testnorm
ISO 2548C



2011-09-22

Operating data specification

Flow	445 US g.p.m.
Static head	120 ft
Shaft power	39.9 hp
Fluid	Water
Nature of system	Single head pump

Head	183 ft
Efficiency	51.6 %
NPSH	18.1 ft
Temperature	39 °F
No. of pumps	1

Pump data

Type	XFP 100J-CB2 60 HZ
Series	XFP PE4-PE6
N° of vanes	2
Free passage	3 1/8"
Discharge port	DN100

Make	ABS
Impeller	Contrabloc impeller, 2 vane
Impeller size	13.1 inch
Suction port	DN100

Motor data

Rated voltage	460 V
Rated power P2	69.7 hp
Number of poles	4
Power factor	0.844
Starting current	700 A
Starting torque	617 lbf ft
Insulation class	F

Frequency	60 Hz
Nominal speed	1780 rpm
Efficiency	95.1 %
Rated current	81.4 A
Rated torque	206 lbf ft
Degree of protection	IP68

Project
Customer pos.no
Project ID
Pos.no
Created by

City of Tyler

4", 107 HP, 62.2%, 7 Year Warranty
1
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2016-06-03

Data sheet

Pump type KRT K 100-400/804XNG-S

Operating data

Flow	700	US g.p.m.	Fluid		
Head	200	ft	Density	62.3	lb/ft³
Operating speed	1781	rpm	Viscosity	1.08E-5	ft²/s
Shaft power	57	hp	Temperature	68	°F
Efficiency	62.2	%			
Required pump NPSH	19.6	ft			
Head H(Q=0)	239	ft			
Application range	Head		Flow		
	From	210	ft	441	US g.p.m.
	To	131	ft	1840	US g.p.m.

Design

Make	KSB	Impeller type	Multi channel impeller
Design	Submersible pump		Closed
Series	KRT K	Impeller size	(363) 14 ^{5/16} inch
Frame size	100-400		Max. (408) 16 ^{1/16} inch
Stages	1		Min. (355) 14 inch
Curve number	K43198s/0	Free passage	3 inch
		Weight	2089.9 lb
Type of bearings	Antifriction		
Nos. of bearings	2 / 1		
Lubrication	Grease lubrication, regreasing without dismantling of pump		
Suction port	Pressure rating	--	
	Nominal pipe size DN0	---	
	Nominal pipe size DN1	6"	
	Norm	--	
Discharge port	Pressure rating	CLASS 125	
	Nominal pipe size DN2	4 inch	
	Nominal pipe size DN3	6 inch	
	Norm	ASME/ANSI B16.1	
Suction port: pump (DN1)		Discharge port: discharge elbow (DN3)	

Materials

Pump casing	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Discharge cover	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Impeller	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Shaft	Tempered steel EN-1.0503+N (A 576 Grade 1045)
Bearing bracket	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Motor casing	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Bolts, nuts	Stainless steel A4 (EN-1.4571) (A 276 Type 316)
Shaft protection sleeve	Stainless steel EN-1.4021+QT800 (A 276 Type 420)
Casing wear ring	Grey cast iron EN-JL 1030 (A 48 Class 30B)
Impeller wear ring	---
O-Rings	Nitrile rubber (NBR)

KSB Inc., 4415 Sarellen Road, Richmond, Virginia 23231, Phone: 001-804-222-1818, Fax: 001-804-226-6961

KSB Pumps Inc, 5885 Kennedy Road, Mississauga, Ontario L4Z 2G3 (Canada), Phone: (0905) 568-9200, Fax: (0905) 568-9120

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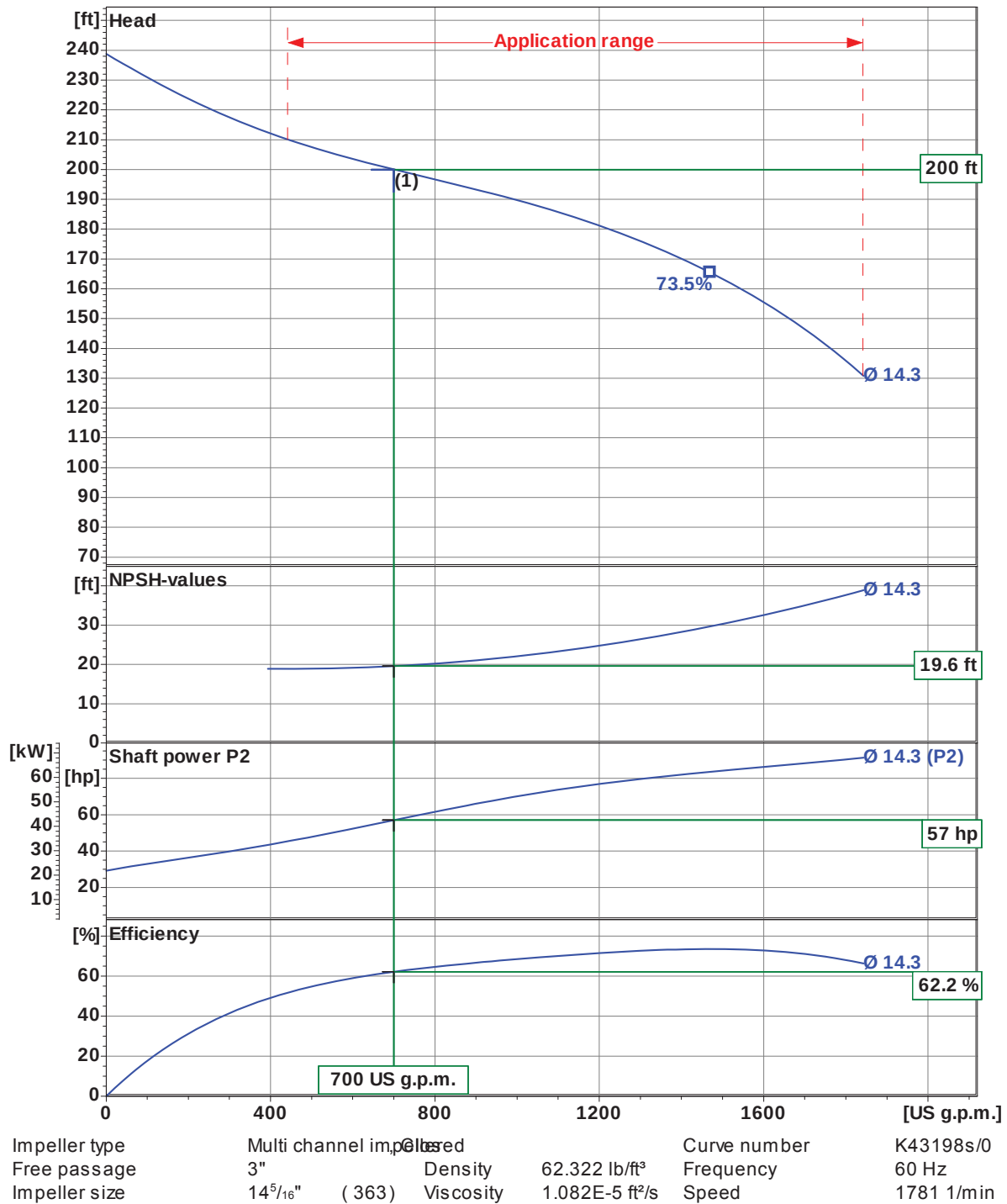
Project City of Tyler
 Customer pos.no
 Project ID 4", 107 HP, 62.2%, 7 Year Warranty
 Pos.no 1
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Performance curve

Pump type **KRT K 100-400/804XNG-S**



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Customer pos.no
Project ID
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Pos.no

City of Tyler

4", 107 HP, 62.2%, 7 Year Warranty
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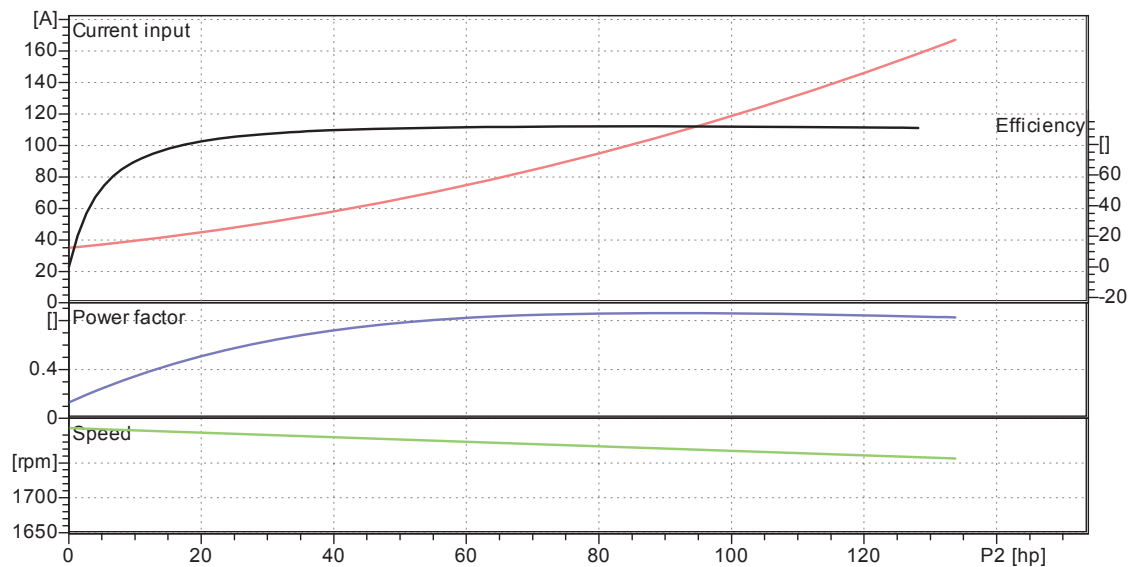
Data sheet: Motor data

Motor type 804XNG S / P

Motor manufacturer	KSB Aktiengesellschaft	Rated voltage	460	V
Design acc. standard	-	Rated frequency	60	Hz
Service factor	1.15	Rated power P2	107	hp
Degree of protection	IP68	Rated current	128	A
Insulation class	H	Nominal speed	1765	rpm
Starting mode	Direct	NEMA code letter	F	
No. starts / h	10	Starting to rated current	5.5	
Coolant temperature	< / = 40 °C (104 °F)	Starting current	704	A
Motor casing	Grey cast iron EN-GJL-250 (A 48 Class 35B)			
Explosion protection	Class I, Div. 1, Groups C,D, T3			
Pump type	KRT K 100-400/804XNG-S			

Load	P1 kW	P2 hp	eta %	cos phi	I A
4/4	87.16	107.0	91.5	0.86	128.0
3/4	65.15	80.3	91.9	0.86	95.0
2/4	43.89	53.5	91.0	0.8	69.0
1/4	23.25	26.8	85.6	0.6	49.0

Main cable	2 x AWG 3-4	Diameter	1.06..1.13 inch
Control cable	1 x AWG 15-10	Diameter	0.63..0.67 inch
Cable, outer sheath	Waterproof synthetic rubber compound		
Cable length	15 m		



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Project City of Tyler
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Data sheet

Pump type KRT K 100-400/804XNG-S

Operating data

Flow	700	US g.p.m.	Fluid		
Head	200	ft	Density	62.3	lb/ft³
Operating speed	1781	rpm	Viscosity	1.08E-5	ft²/s
Shaft power	57	hp	Temperature	68	°F
Efficiency	62.2	%			
Required pump NPSH	19.6	ft			
Head H(Q=0)	239	ft			
Application range	Head		Flow		
From	210	ft	441	US g.p.m.	
To	131	ft	1840	US g.p.m.	

Design

Make	KSB	Impeller type	Multi channel impeller
Design	Submersible pump		Closed
Series	KRT K	Impeller size	(363) 14 ⁵ / ₁₆ inch
Frame size	100-400		Max. (408) 16 ¹ / ₁₆ inch
Stages	1		Min. (355) 14 inch
Curve number	K43198s/0	Free passage	3 inch
		Weight	2089.9 lb
Type of bearings	Antifriction		
Nos. of bearings	2 / 1		
Lubrication	Grease lubrication, regreasing without dismantling of pump		
Suction port	Pressure rating	---	
	Nominal pipe size DN0	---	
	Nominal pipe size DN1	6"	
	Norm	---	
Discharge port	Pressure rating	CLASS 125	
	Nominal pipe size DN2	4 inch	
	Nominal pipe size DN3	6 inch	
	Norm	ASME/ANSI B16.1	
Suction port: pump (DN1)		Discharge port: discharge elbow (DN3)	

Materials

Pump casing	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Discharge cover	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Impeller	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Shaft	Tempered steel EN-1.0503+N (A 576 Grade 1045)
Bearing bracket	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Motor casing	Grey cast iron EN-GJL-250 (A 48 Class 35B)
Bolts, nuts	Stainless steel A4 (EN-1.4571) (A 276 Type 316)
Shaft protection sleeve	Stainless steel EN-1.4021+QT800 (A 276 Type 420)
Casing wear ring	Grey cast iron EN-JL1030 (A 48 Class 30B)
Impeller wear ring	---
O-Rings	Nitrile rubber (NBR)

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2016-06-03

Data sheet

Pump type

KRT K 100-400/804XNG-S

Shaft seal

Type of seal	Double mechanical seal
Arrangement:	Tandem
Seal on medium side	with elastomer bellows
Mechanical seal, pump-side	Silicon carbide / Silicon carbide
Mechanical seal, bearing-side	Carbon / Silicon carbide

Monitoring

Thermal winding protection	By temperature sensitive switches or PTC
Explosion proof protection	---
Motor housing monitoring	By conductive moisture sensor electrode
Mechanical seal leakage detection	By float switch
Bearing temperature monitoring	By PT 100 thermistor

Coating

Preparatory treatment	Sa 2 1/2 to ISO 8501-1 / ISO 12 944-4 DIN 55928, Part 4
Blasting method	Steel grit blasting
Primer	Zinc phosphate or Zinc dust
Dry film thickness primer	> 35 microns
Top coat	2-component epoxy resin
Solids content	> 82 %
Dry film thickness top coat	> 150 microns
Colour	Ultramarine Blue (RAL 5002 to DIN 6174)

Installation

INSTALLATION

Type of installation:	Wet well installation designed for automatic connection to a permanently installed discharge elbow
Discharge elbow size (DN2/DN3):	6 inch / 6 inch
Flange dimensions to:	ASME/ANSI B16.1, CLASS 125
Claw:	Bolted to the pump
Guide system:	Double guide bars
Guide bar diameter:	2 x 2 in pipe, outside dia. 60,3 mm (2,4 in), inside dia. 50...54 mm (2,0...2,1 in)
Installation depth:	4,5 m (15 ft)
Lifting device:	stainless steel lifting chain
Length of lifting device:	10 m (33 ft)
Lifting loops:	Every 2,5 m (8 ft)
Installation accessories:	Discharge elbow, 6 inch / 6 inch fasteners, claw, bracket, lifting chain, but without guide bars
Materials:	
Discharge elbow:	Grey cast iron EN-GJL-250 (A48 Class 35B)
Claw:	Grey cast iron EN-GJL-250 (A48 Class 35B)
Bracket:	Stainless steel EN-1.4571 (A276 Type 316 Ti)
Guide bars:	Not part of this specification
Lifting device:	Stainless steel EN-1.4404 (A276 Type 316 L)

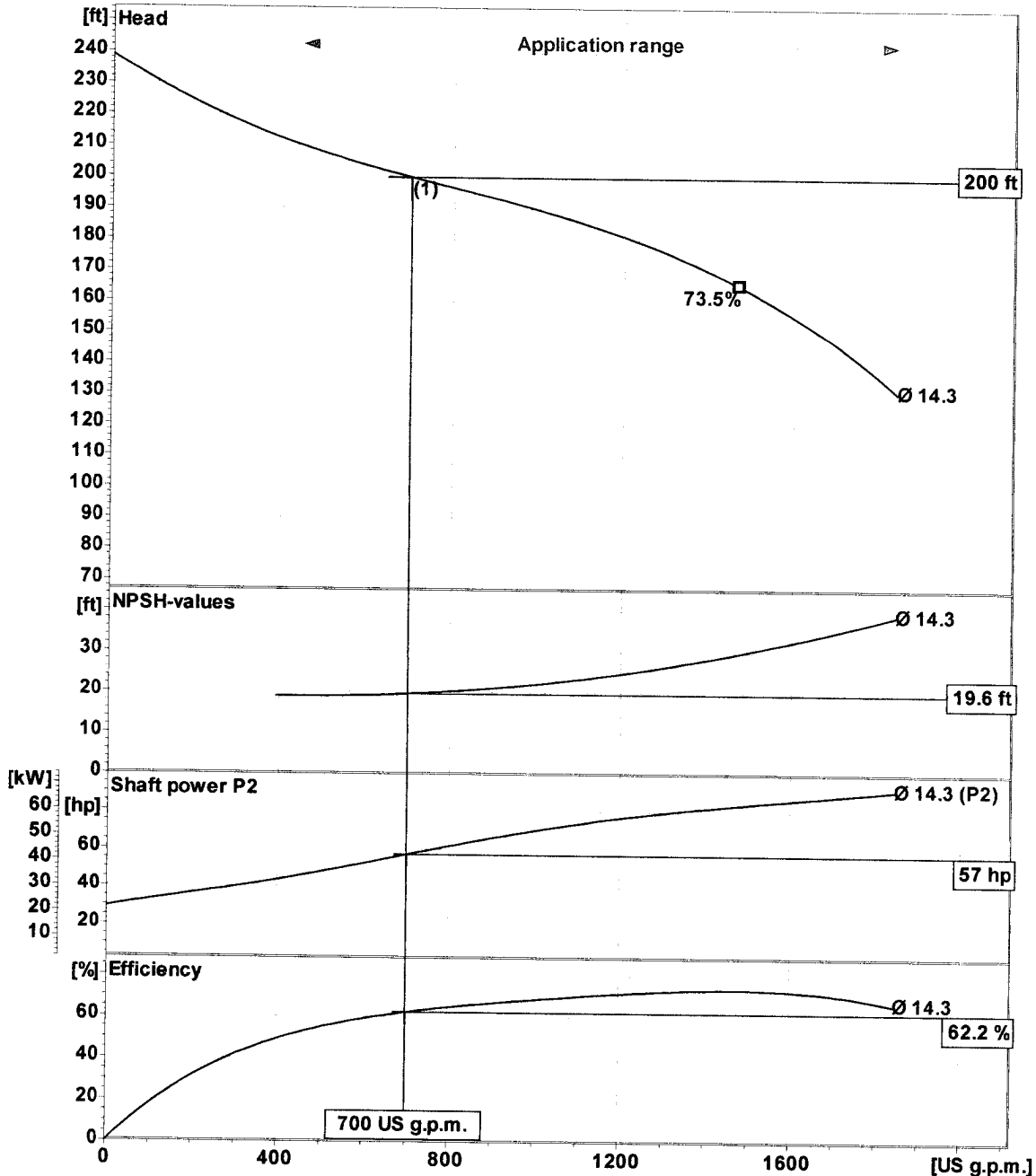
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Performance curve

Pump type **KRT K 100-400/804XNG-S**



Impeller type	Multi channel impeller	Density	62.322 lb/ft³	Curve number	K43198s/0
Free passage	3"	Viscosity	1.082E-5 ft²/s	Frequency	60 Hz
Impeller size	14 ^{5/16} " (363)	Speed	1781 1/min		

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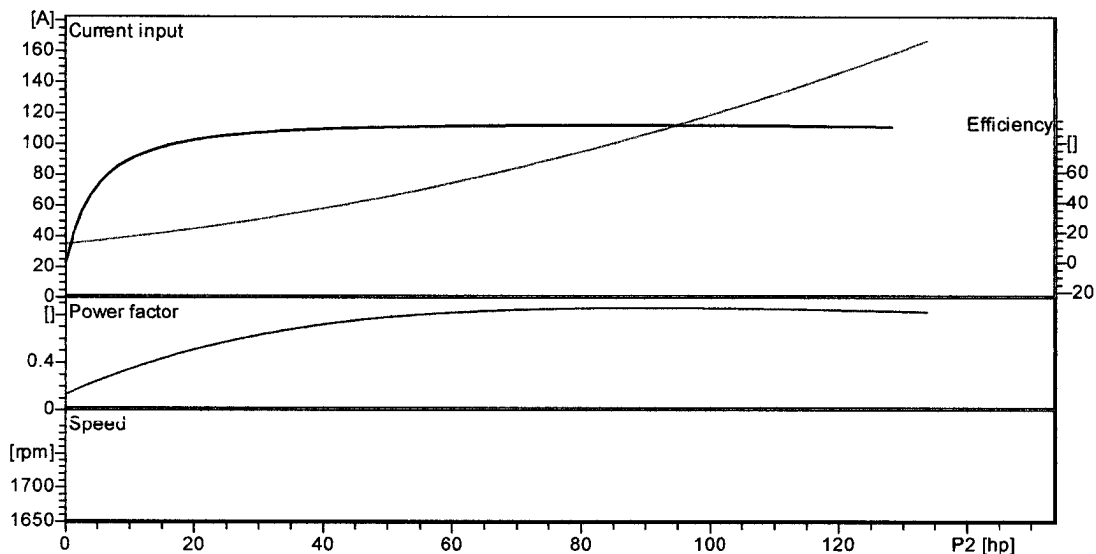
Data sheet: Motor data

Motor type **804XNG S / P**

Motor manufacturer	KSB Aktiengesellschaft	Rated voltage	460	V
Design acc. standard	-	Rated frequency	60	Hz
Service factor	1.15	Rated power P2	107	hp
Degree of protection	IP68	Rated current	128	A
Insulation class	H	Nominal speed	1765	rpm
Starting mode	Direct	NEMA code letter	F	
No. starts / h	10	Starting to rated current	5.5	
Coolant temperature	< / = 40 °C (104 °F)	Starting current	704	A
Motor casing	Grey cast iron EN-GJL-250 (A 48 Class 35B)			
Explosion protection	Class I, Div. 1, Groups C,D, T3			
Pump type	KRT K 100-400/804XNG-S			

Load	P1 kW	P2 hp	eta %	cos phi	I A
4/4	87.16	107.0	91.5	0.86	128.0
3/4	65.15	80.3	91.9	0.86	95.0
2/4	43.89	53.5	91.0	0.8	69.0
1/4	23.25	26.8	85.6	0.6	49.0

Main cable	2 x AWG 3-4	Diameter	1.06..1.13 inch
Control cable	1 x AWG 15-10	Diameter	0.63..0.67 inch
Cable, outer sheath	Waterproof synthetic rubber compound		
Cable length	15 m		



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