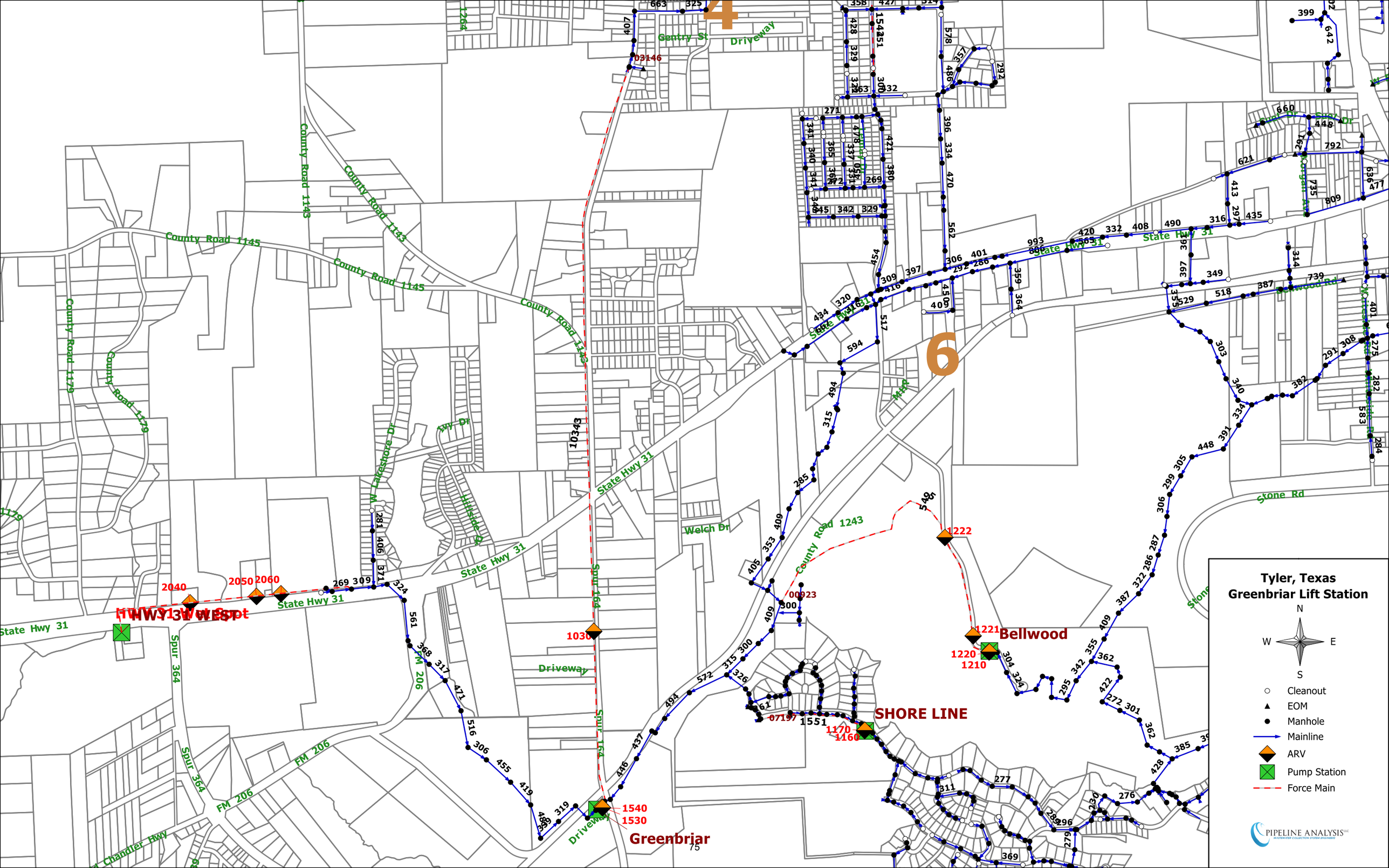
GREENBRIAR LIFT STATION



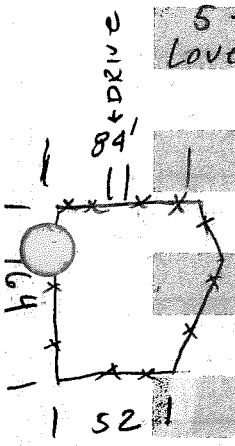
Tyler, Texas
Greenbriar Lift Station

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name GREENBRIAR **Type** Self Priming
Location/Address 10936 Spur 164
Lift Station Asset ID **Number of Pumps** 4
Firm Capacity in GPM (all pumps operating) 2 sets - 2 pumps in each set
Firm Capacity in GPM (largest pump out of service)
Inspector Don White **Date** Dec 17, 2017
City Works Work Order

Building and Grounds

			Good	Fair	Poor	Critical	N/A
Building Structure	32'x32' Type: Brick						
Building Roof/Ceiling	Concrete		●	○	○	○	○
Building Finishes	stains in 2 locations		●	○	○	○	○
Building Doors and Windows	3' Pedestrian 10' Rolling overhead		○	●	○	○	○
Building HVAC	Type: ceiling vent Fan	5 - 3'-4"x4' Louver windows	○	●	○	○	○
Fencing	Type: chain link		○	●	○	○	○
Gates	Type: 16' Double Vehicular 3'-6" Ped.		○	●	○	○	○
Site/Grounds	Size: see sketch ←		○	●	○	○	○
Lighting	Most inside Florsent bulbs out		○	●	○	○	○
Pavement (Driving)	Type: Asphalt, Concrete		○	conc ●	Asph ●	○	○
Drainage	Type: Surface		○	●	○	○	○
Odor	Comment: None outside building Minor inside		●	○	○	○	○
Odor Control System	Type:		○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			○	●	○	○	○
Overall Site Appearance			○	●	○	○	○



Comments Some corrosion on fence, gates, doors. Asphalt drive from Road to gate - poor condition, concrete drive inside site - fair Ponding on concrete drive, silt accumulation on concrete drives. 2'ϕ RCP culvert under drive - silted ½ way up. Water connection line in building leaks causing ponding on floor

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well	Size:	+/- 30x30					
	Debris		○	●	○	○	○
	Fats, oils, and grease		○	●	○	○	○
	Ventilation		○	○	○	○	○
	Walls	Material: Concrete	○	●	○	○	○
	Coatings	Type: ?	○	○	○	○	○
	Access Hatches	Number: 1-2x2 Metal	○	●	○	○	○
	Slab	Concrete - Building Slab	●	○	○	○	○
Dry Well/Valve Vault		NONE					
	Walls	Material:	○	○	○	○	○
	Coatings	Type:	○	○	○	○	○
	Grating/Hatching	Number:	○	○	○	○	○
	Stairway/Ladder	Material:	○	○	○	○	○
	Sump/Pump	Number:	○	○	○	○	○
	Ventilation	Type:	○	○	○	○	○

Comments 2 pumps in operation, third pump in place not connected, space For Fourth pump. Cover For future 4th riser through slab - poor; 3/4" return line to wet well From each of 4 pumps For aration, Hoist For pump removal.

Mechanical

			Good	Fair	Poor	Critical	N/A
Bypass Connection	(Circle)	YES / NO					
Piping and Valves							
	Suction Valve	Number: —	○	○	○	○	○
on discharge lines in operation	Check Valve	Number: 2-10" DI	●	○	○	○	○
	Discharge Valve	Number: 2-10" DI	●	○	○	○	○

Mechanical (continued)

			Good	Fair	Poor	Critical	N/A
	Riser Piping	Material: 8" DI	○	○	●	○	○

6" - Surge valve

			Good	Fair	Poor	Critical	N/A
Discharge Piping	Material:	8, 10, 18" DI	●	○	○	○	○
Fittings	Material:	DI	●	○	○	○	○

Comments Discharge Pipe 18" G-R pump to Cornell Pump, 10" cornell to Manifold, 18" Manifold to Force Main. Some Corrosion on pump frames.

Pumps

Pump 1 Asset ID _____ Make _____ Model _____

Capacity _____ GPM

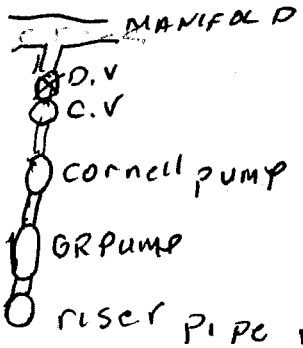
Impeller Dia./Code _____ Horsepower _____

	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*

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

2 sets of 2 pumps



Pumps next to wall do not appear to operate properly.

GR turns very slowly, cornell normal both run full time. 2nd two pumps appear to operate normal w/ cycle.

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	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:	Floats		○	●	○	○	○
Flow	Type:	No		○	○	○	○	○

Instrumentation/SCADA (continued)

			Good	Fair	Poor	Critical	N/A
PLC	Type:		○	○	○	○	○
SCADA			○	○	○	○	○
RTU	Type:	uplink	●	○	○	○	○
Radio/~~Antenna~~	Type:	w/uplink	●	○	○	○	○

Comments

Building and Grounds

Lift Station Perimeter Facing West

Door Facing North- Minor Corrosion Observed

Poor Condition Asphalt Drive From Road to Gate With Fair Condition Concrete Drive Inside Site

Poor Condition Asphalt Drive

Building and Grounds

Silt Accumulation on Concrete Drive Facing West

Inside Fluorescent Light Bulbs Not Working

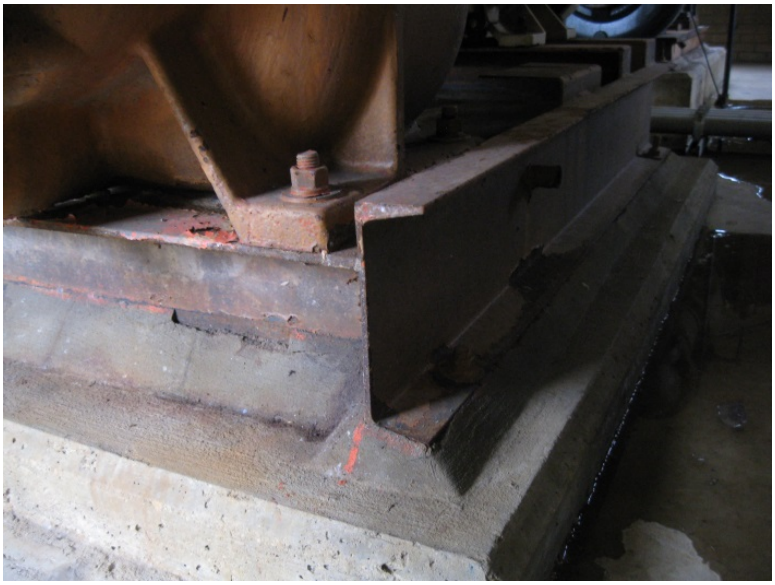
Water Connection Line in Building Leaking Causing Ponding on Floor

Ponding on Concrete Drive Facing East

Structural

Poor Condition of Cover for Future Fourth Riser Pipe to Fourth Pump

Mechanical



Corrosion at Pump Frames

Corrosion at Pump Frames

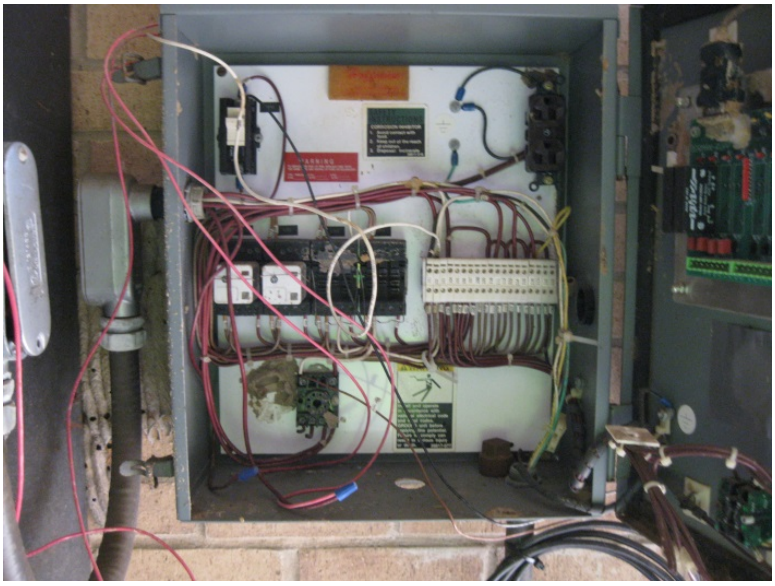
Riser Piping in Poor Condition (1)

Riser Piping in Poor Condition (2)

Electrical

Front of Electrical Panel/Enclosure in Poor Condition

Pump Control Panel



Inside Pump Control Panel

Inside Pump Control Panel Door

Instrumentation/SCADA

Front of Instrumentation Panel

Inside of Instrumentation Panel (1)

Uplink RTU Inside Instrumentation Panel

D S

Self Priming Centrifugal Pump

Model T8A3S-B

Size 8” x 8”

Super T SERIES

VARIOUS PATENTS APPLY

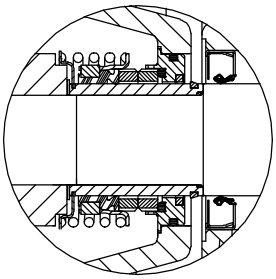
5 YEAR WARRANTY SUPER T SERIES

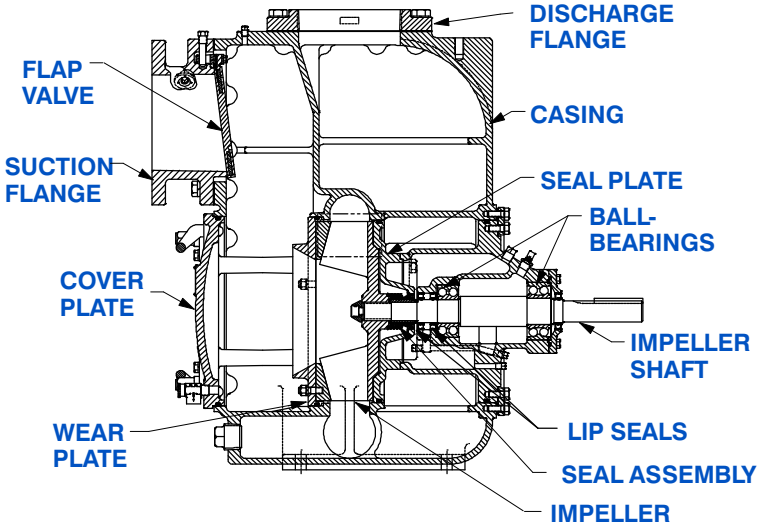
PUMP SPECIFICATIONS

Size: 8” (203 mm) ASA Flanged Suction x 8” (203 mm) NPT Female Discharge.
Casing: Gray Iron 30.
Maximum Operating Pressure 83 psi (572 kPa).*
Semi-Open Type, Two Vane Impeller: Ductile Iron 65-45-12.
Handles 3” (76,2 mm) Diameter Spherical Solids.
Impeller Shaft: Alloy Steel 4150.
Shaft Sleeve: Alloy Steel 4130.
Replaceable Wear Plate: Gray Iron 30.
Removable Adjustable Cover Plate: Gray Iron 30; 94 lbs. (43 kg).
Flap Valve: Neoprene W/Nylon and Steel Reinforcing.
Seal Plate: Gray Iron 30.
Radial and Thrust Bearings: Open Double Row Ball.
Bearing Housing: Gray Iron 30.
Bearing and Seal Cavity Lubrication: SAE 30 Non-Detergent Oil.
Flanges: Gray Iron 30.
Gaskets: Buna-N, Compressed Synthetic Fibers, PTFE, Cork and Rubber.
O-Rings: Buna-N.
Hardware: Standard Plated Steel.
Brass Pressure Relief Valve.
Bearing and Seal Cavity Oil Level Sight Gauges.
Optional Equipment: Metal Bellows Seal. Automatic Air Release Valve. High Pump Temperature Shutdown Kit. 120V/240V Casing Heater. Self-Cleaning Wear Plate.
Gray Iron 30 Spool Flanges:
8” ASA Discharge **(Specify Model T8A3S-B /F)**.
200 mm DIN 2527 (PN 16) Suction and Discharge **(Specify Model T8A3S-B /FM)**.

Consult Factory for Applications Exceeding Maximum Pressure and/or Temperature Indicated.

Shown with Optional Discharge Spool Flange (Available in ASA or DIN Standard Sizes).





SEAL DETAIL

Cartridge Type, Mechanical, Oil-Lubricated, Double Floating, Self-Aligning. Tungsten Titanium Carbide Rotating and Stationary Faces. Stainless Steel 316 Stationary Seat. Fluorocarbon Elastomers (DuPont Viton® or Equivalent). Stainless Steel 18-8 Cage and Spring. Maximum Temperature of Liquid Pumped, 160°F (71°C).*

GORMAN-RUPP PUMPS

THE GORMAN-RUPP COMPANY ● MANSFIELD, OHIO
GORMAN-RUPP OF CANADA LIMITED ● ST. THOMAS, ONTARIO, CANADA
www.grpumps.com
Specifications Subject to Change Without Notice
Printed in U.S.A.

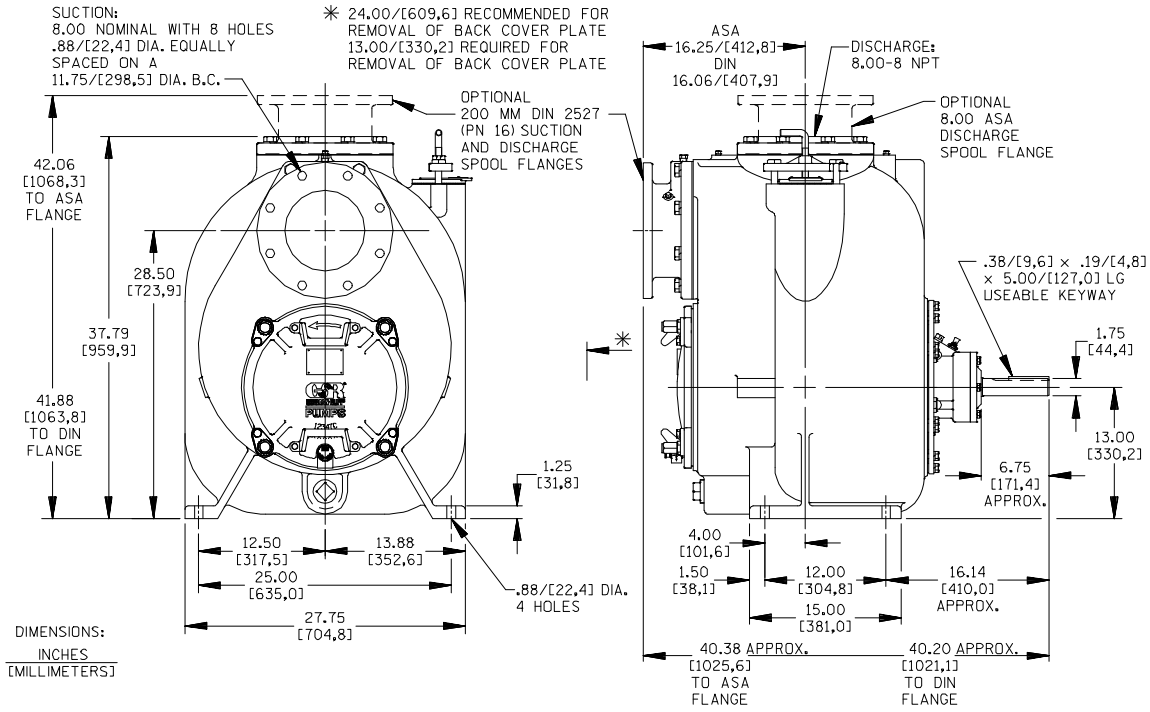
Specification Data

SECTION 55, PAGE 2300

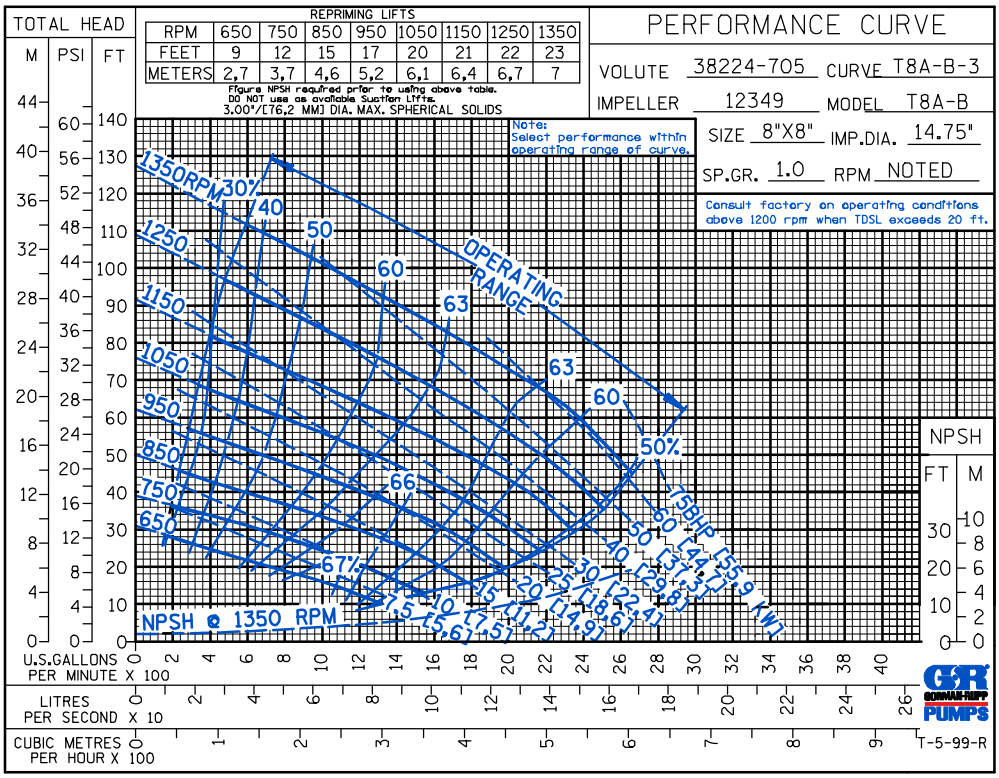
APPROXIMATE DIMENSIONS and WEIGHTS

NET WEIGHT:	**1295 LBS. (587 KG.)***
SHIPPING WEIGHT:	**1399 LBS. (635 KG.)***
EXPORT CRATE:	**47.9 CU. FT. (1,36 CU. M.)**

***ADD 35 LBS. (15,9 KG.) W/EACH SPOOL FLANGE**



OPTIONAL ASA OR DIN STANDARD SPOOL FLANGES AVAILABLE



THE GORMAN-RUPP COMPANY ● MANSFIELD, OHIO

GORMAN-RUPP OF CANADA LIMITED ● ST. THOMAS, ONTARIO, CANADA

Specifications Subject to Change Without Notice

Printed in U.S.A.

Pump Data Sheet - Cornell

Company:

Name:

Date: 4/28/2017

Pump:

Size: 6NHTA

Type: Encl Solids Handling
Synch Speed: 1800 rpm

Speed: 1770 rpm
Dia: 13.75 in

Curve: 6NHTA18

Impeller:

Specific Speeds:

Ns: 2120
Nss: ---

Dimensions:

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

Temperature: 60 °F
Vapor Pressure: 0.2563 psi a
Atm Pressure: 14.7 psi a

NPSHa: ---

Motor:

Standard: NEMA
Enclosure: TEFC

Size: 100 hp
Speed: 1800 rpm
Frame: 405T

Sizing Criteria: Max Power on Design Curve

---- Duty Point ----

Flow:	2132 US gpm
Head:	130 ft
Eff:	83%
Power:	84.4 hp
NPSHr:	13.5 ft

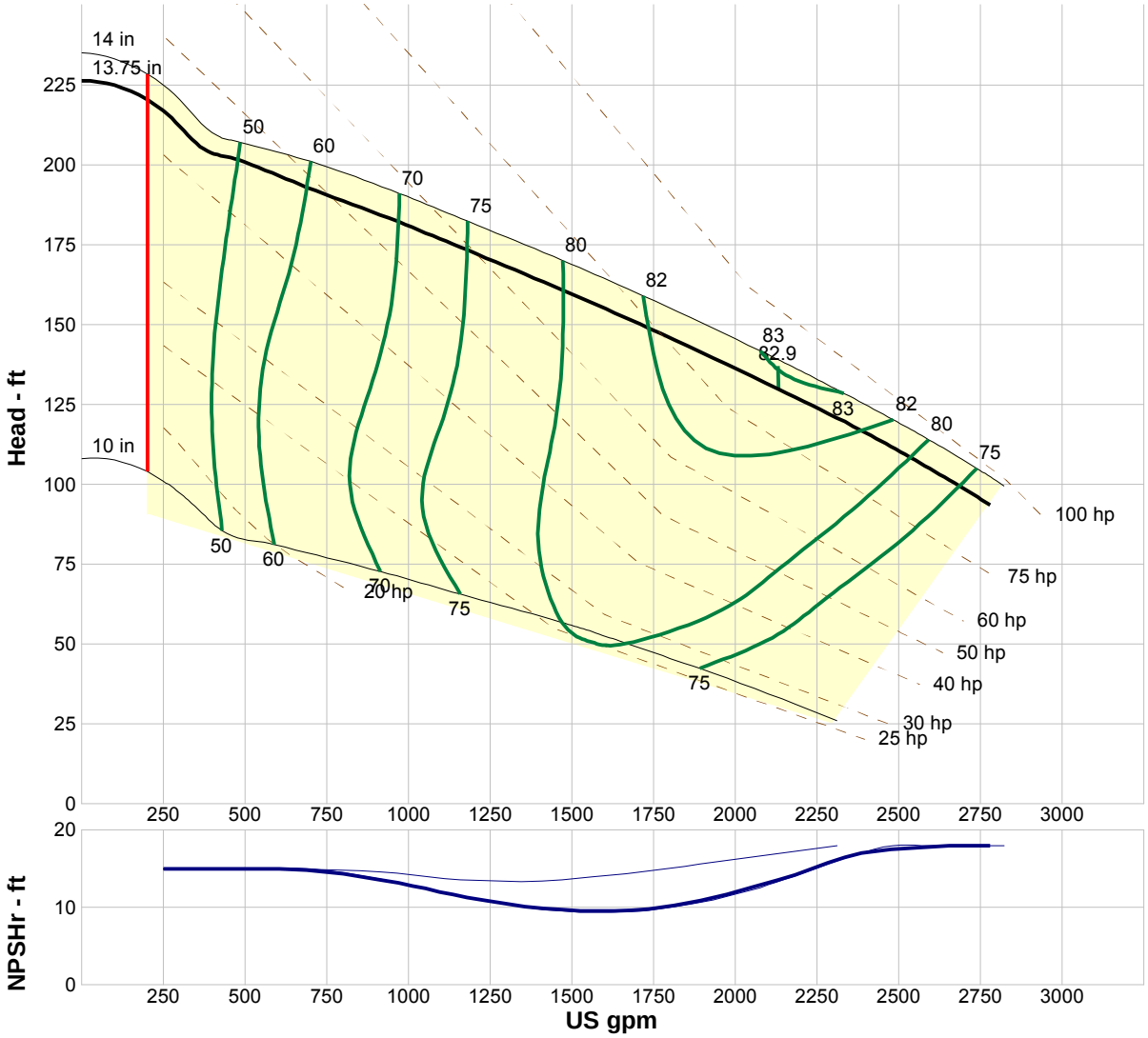
---- Design Curve ----

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

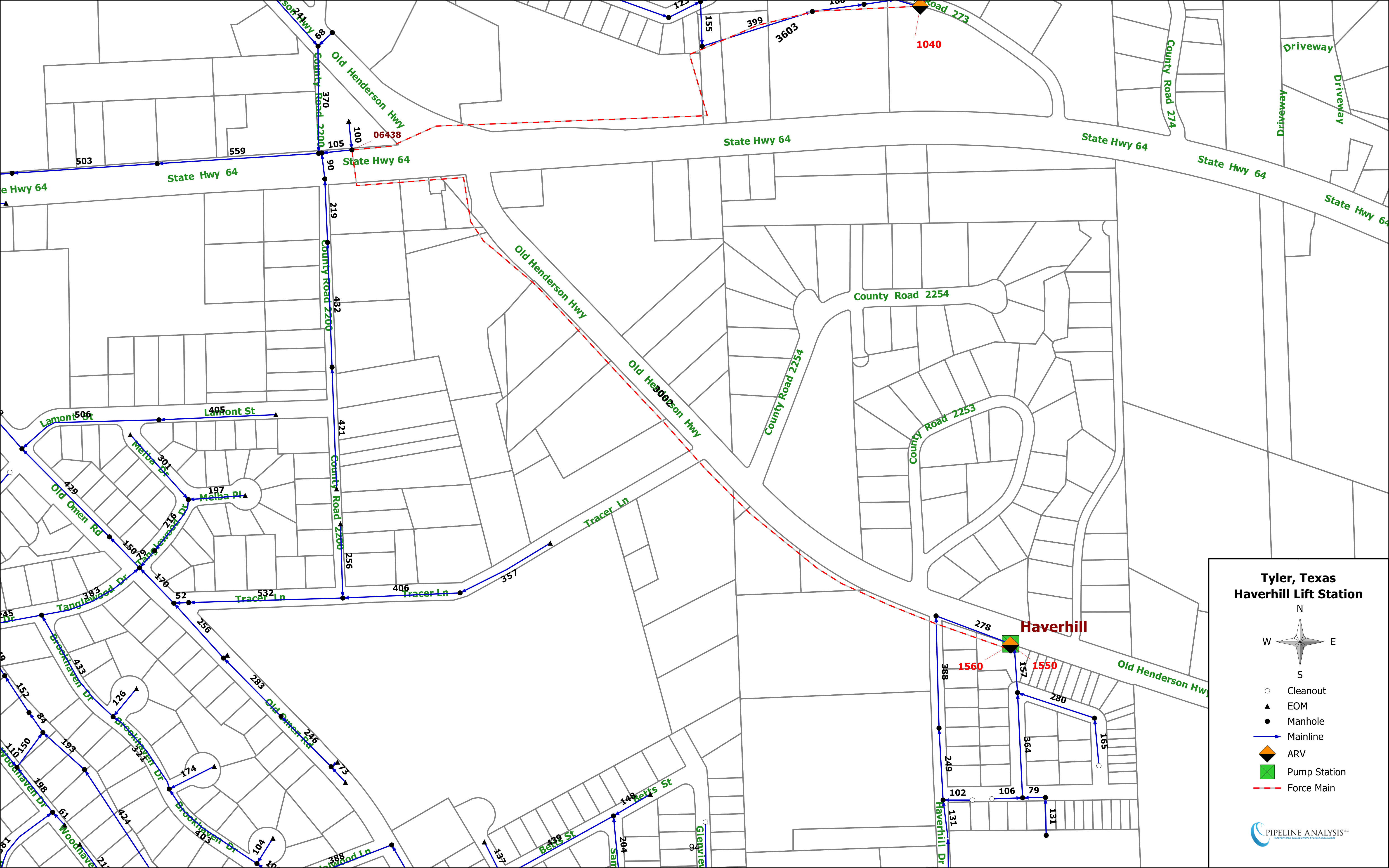


Performance Evaluation:

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

Selected from catalog: Cornell.60 Vers: 3.10.1

HAVERHILL LIFT STATION


Tyler, Texas
Haverhill Lift Station
N
W
E
S
Cleanout
EOM
Manhole
Mainline
ARV
Pump Station
Force Main
PIPELINE ANALYSIS
Haverhill
1560
1550
1040
06438
State Hwy 64
Old Henderson Hwy
County Road 2200
County Road 2254
County Road 2253
County Road 274
County Road 273
Driveway
Lamont St
Melba Pl
Melba Dr
Tracer Ln
Old Omen Rd
Tanglewood Dr
Brookhaven Dr
Woodhaven Dr
Betts St
Haverhill Dr

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name HAVERHILL **Type** Self Priming
Location/Address 3970 County Road 219
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 13, 2017
City Works Work Order

Building and Grounds

			Good	Fair	Poor	Critical	N/A
Building Structure	Type:	Doghouse					
Building Roof/Ceiling		Fiberglass	●	○	○	○	○
Building Finishes		"	●	○	○	○	○
Building Doors ~~and Windows~~		"	●	○	○	○	○
Building HVAC	Type:	FAN	○	○	○	○	○
Fencing	Type:	Chain Link	◉	●	○	○	○
Gates 10'	Type:	"	○	●	○	○	○
Site/Grounds	Size:	27'X20'	○	○	○	○	○
Lighting Site & Doghouse		YES	●	○	○	○	○
Pavement (Driving)	Type:	Dirt	○	●	○	○	○
Drainage 52" Pipe Culvert crossing drive	Type:	Surface	○	●	○	○	○
Odor	Comment:	FROM M.H. cover	○	●	○	○	○
Odor Control System	Type:	—	○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			○	○	○	○	○
Overall Site Appearance			○	●	○	○	○

Comments SLAB w/ Doghouse & M.H. Lid 12'-6"X20'. Could not slide doghouse cover to open position. Door only access with cover closed makes maintence DIFFICULT. BACK side of slab level with Natural Ground allowing drainage into dog house. Some corrosion on Fence. Drainage ditch parallel to Old Henderson Hwy is eroding and could impact wet well in the future.

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well	Size:	8' ϕ or larger					
	Debris		○	○	●	○	○
	Fats, oils, and grease		○	●	○	○	○
	Ventilation	1½" Galv. pipe	○	●	○	○	○
	Walls Material:	Concrete	○	●	○	○	○
	Coatings Type:	✓	○	●	○	○	○
	Access ~~Hatches~~ 2' Manhole Lid Number:	1	○	○	●	○	○
	Slab		○	○	○	○	○
Dry Well/Valve Vault		NONE - Valves IN DOGHOUSE					
	Walls Material:		○	○	○	○	○
	Coatings Type:		○	○	○	○	○
	Grating/Hatching Number:		○	○	○	○	○
	Stairway/Ladder Material:		○	○	○	○	○
	Sump/Pump Number:		○	○	○	○	○
	Ventilation Type:		○	○	○	○	○

Comments M.H. Lid has 2½" hole in centr allowing rainwater to enter wet well. Lid corroded. Significant debris in wet well.

Mechanical

				Good	Fair	Poor	Critical	N/A
Bypass Connection	(Circle)	YES / NO						
Piping and Valves								
	Suction Valve	Number:		○	○	○	○	○
6"	Check Valve DI	Number:	2	●	○	○	○	○
6"	Discharge Valve DI	Number:	1	●	○	○	○	○

Mechanical (continued)

				Good	Fair	Poor	Critical	N/A
6"	Riser Piping	Material:	DI	○	○	●	○	○

			Good	Fair	Poor	Critical	N/A
8"	Discharge Piping	Material: DI	●	○	○	○	○
	Fittings	Material: DI	◐	●	○	○	○

Comments 1" return line from each pump discharge piping to wetwell for airation. Some corrosion on bolts. Threaded steel pipe nipple from pump 1 discharge

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*

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

New Bolts on Both Motors
Grease, Oil, & metal shavings on frame around motors

Pump 2 Asset ID _____ Make _____ Model _____

Capacity _____ GPM

Impeller Dia./Code _____ Horsepower _____

	Good	Fair	Poor	Critical	N/A
Pump	○	○	○	○	○
Seals	○	○	○	○	○
Motor New	○	○	○	○	○
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	○	○	○	○	○

Floor beneath Pump 2 & Motor has Oil/Grease probably From old motor replaced

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	NO			○	○	○	○	○
Transfer Switch					○	○	○	○	○
Electrical System Control									
Breakers	Type:				○	○	○	○	○
Speed control/VFD	Type:				○	○	○	○	○
Starters	Type:				○	○	○	○	○
Control Relays	Type:				○	○	○	○	○

Comments Could not open Pump Control Panel; Could not open service disconnect panel

Instrumentation/SCADA

			Good	Fair	Poor	Critical	N/A
Panel	NEMA4X YES NO		○	○	○	○	○
Instrumentation							
Level	Type: Ultrasonic		○	●	○	○	○
Flow	Type:		○	○	○	○	○

Instrumentation/SCADA (continued)

			Good	Fair	Poor	Critical	N/A
PLC	Type:		○	○	○	○	○
SCADA			○	○	○	○	○
RTU	Type:		○	○	○	○	○
Radio/Antenna	Type:		○	○	○	●	○

Comments antenna disconnected, debris in flow level pipe.

Building and Grounds

Lift Station Perimeter Facing South


Lift Station Entrance Facing South


Limited Access Dog House Cover

Concrete Slab Level With Natural Ground Facing East

Structural

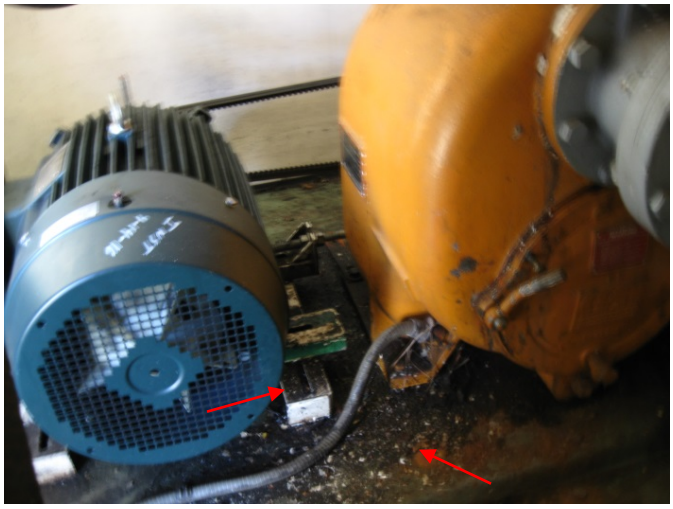
Manhole Lid Facing South


Manhole Lid Corrosion With 2-1/2” Hole In Center


Debris Deposit in Wet Well (1)

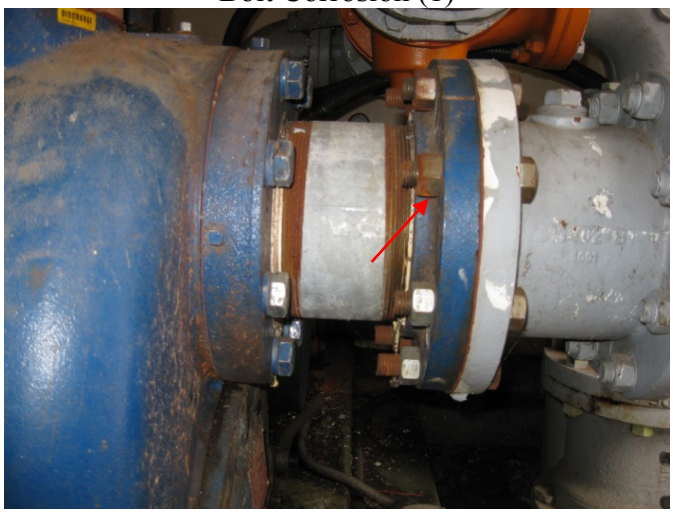

Debris Deposit in Wet Well (2)

Mechanical



Grease, Oil, Shavings on Motor Frame

Bolt Corrosion (1)



Bolt Corrosion (2)

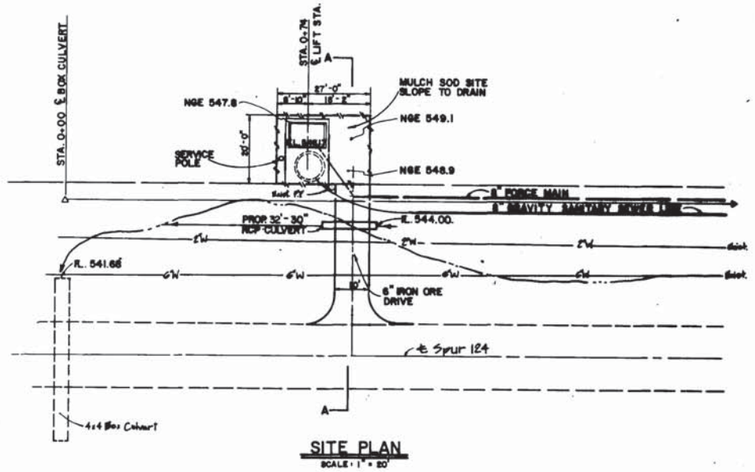
Electrical

Front of Pump Control Panel


Front of Service Disconnect Panel Facing South

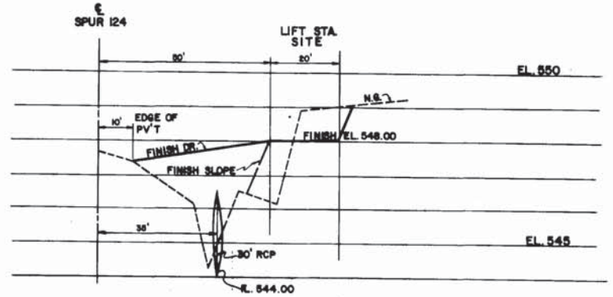
Instrumentation/SCADA

Front of Instrumentation Panel



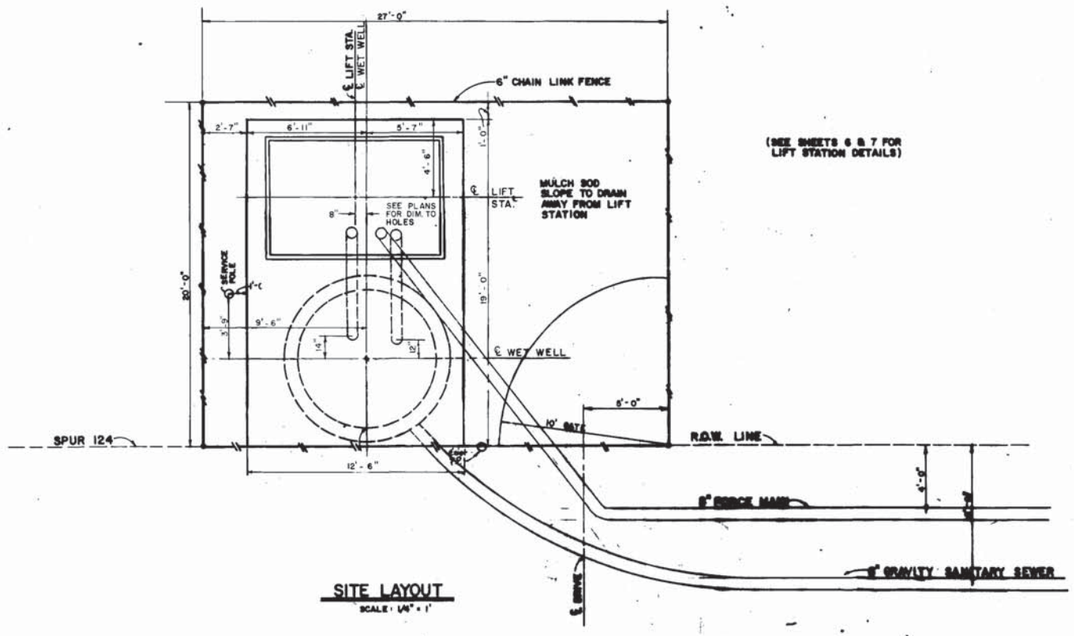
SITE PLAN

SCALE: 1" = 20'



SECTION A-A

SCALE: 1" = 80' HORZ.
1" = 2' VERT.



SITE LAYOUT

SCALE: 1/8" = 1'

(SEE SHEETS 6 & 7 FOR LIFT STATION DETAILS)

AS BUILT

3.2.84

3.2.84

HAVERHILL LANE
HWY. SPUR 124

SEWAGE LIFT STATION
SITE PLAN

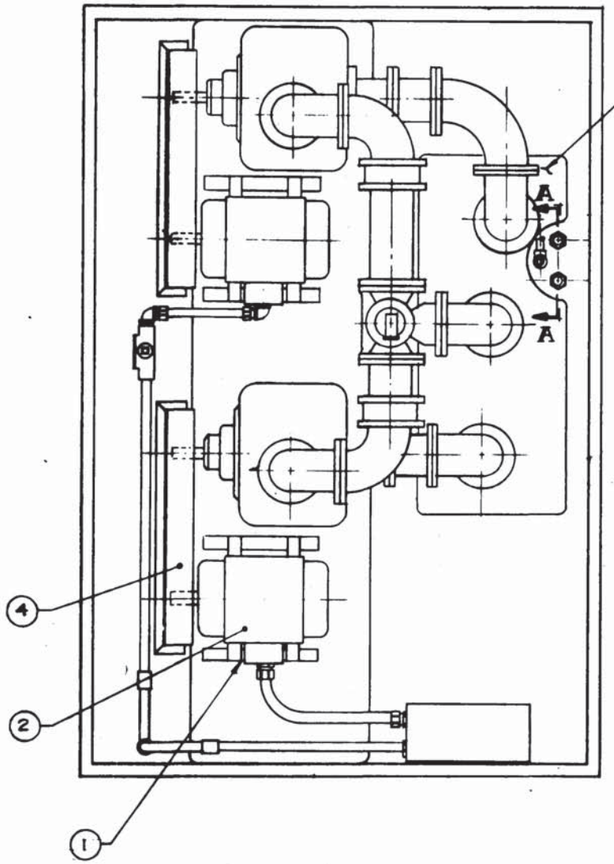
VELVIN, WEEKS & DONEGAN
3800 PALUXY DR. 9425

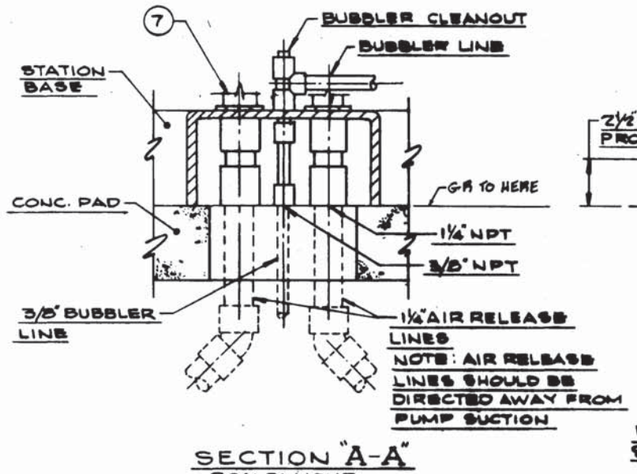
CONSULTING ENGINEERS
TYLER, TEXAS
JOB NO. 984-T
Sheet 5 of 7

BRUNING 44-132-80229

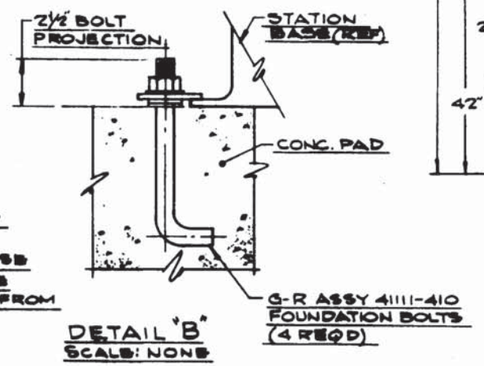
ITEM	DESCRIPTION	MATL
1	MOTOR BASE	STEEL
2	MOTOR FR ___ HP ___	RPM ____
3	PUMP TGA3-B	C.I.
4	BELT GUARD	STEEL
5	DISCHARGE CHECK VALVE	C.I. 6"
6	DISCHARGE PLUG VALVE	C.I. 6" 3-WAY
7	AIR RELEASE LINE	FLEXIBLE 1"
8	CONTROL PANEL*	STEEL

650 GPM @ 5 FT. TDH

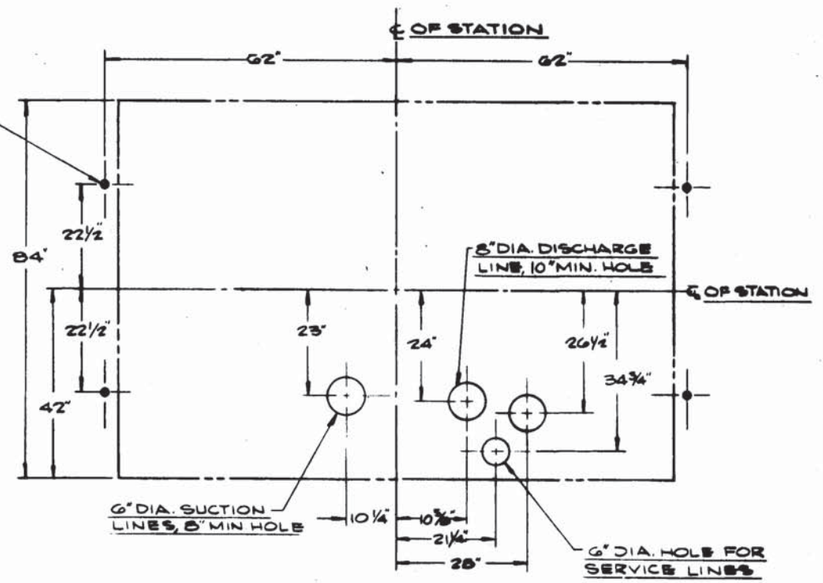




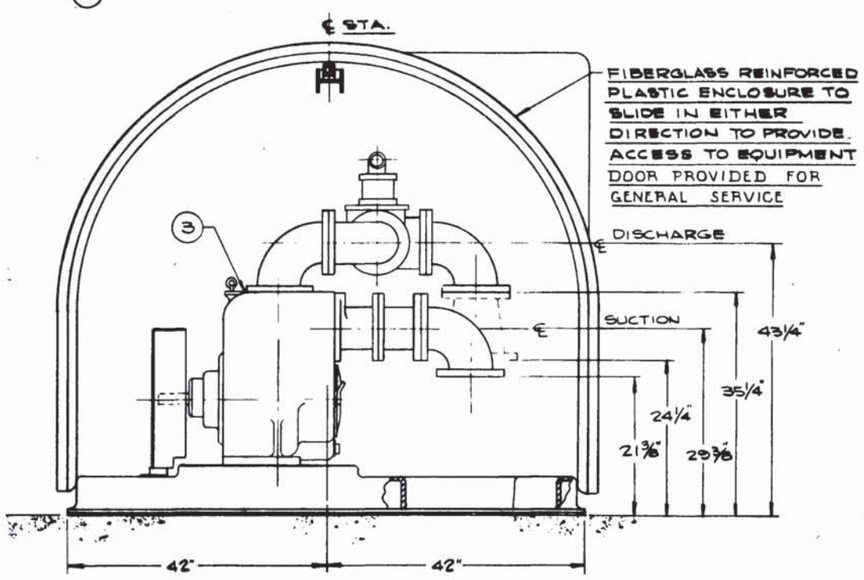
SECTION "A-A"
SCALE: NONE

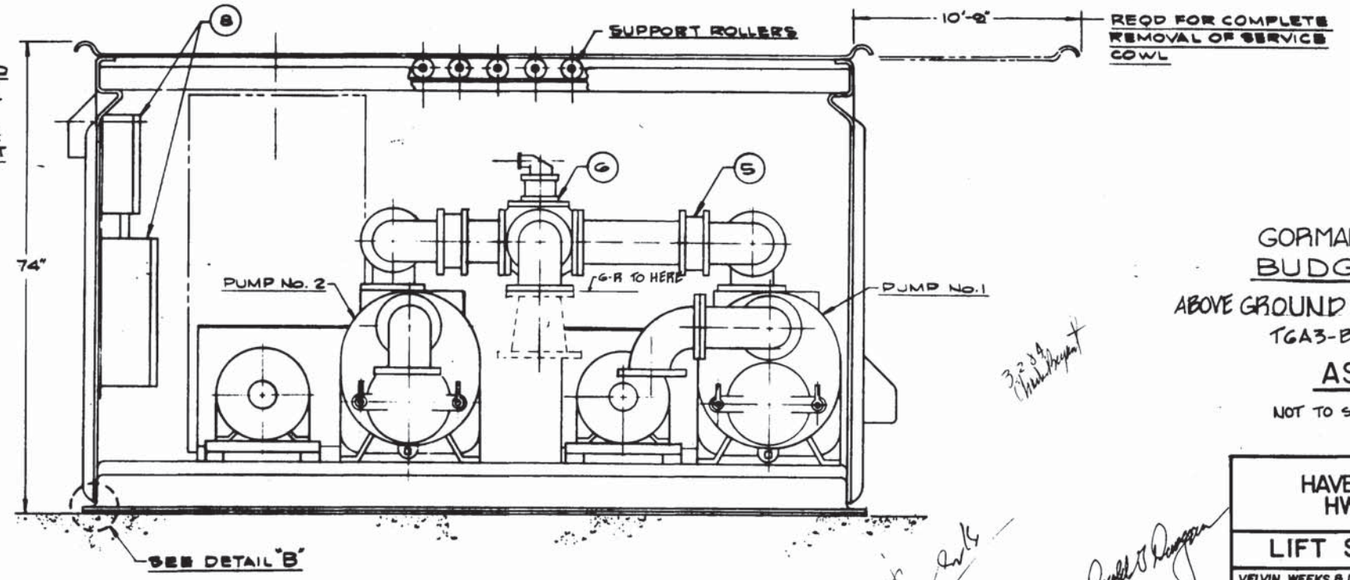


DETAIL "B"
SCALE: NONE



PLAN VIEW





GORMAN-RUPP 7'x10'
BUDGET LINE
ABOVE GROUND PUMP STATION
TGA3-B, GxGx6
AS BUILT
NOT TO SCALE

HAVERHILL LANE
HWY. SPUR 124

LIFT STATION DETAILS

VELVIN, WEEKS & DONEGAN
3800 PALUXY DR. # 425

CONSULTING ENGINEERS
TYLER, TEXAS
JOB NO. 984-T
Sheet 7 of 7

D S

Self Priming Centrifugal Pump

Super T SERIES
VARIOUS PATENTS APPLY

Model T6A3S-B

Size 6” x 6”

5 FIVE-YEAR WARRANTY SUPER T SERIES

PUMP SPECIFICATIONS

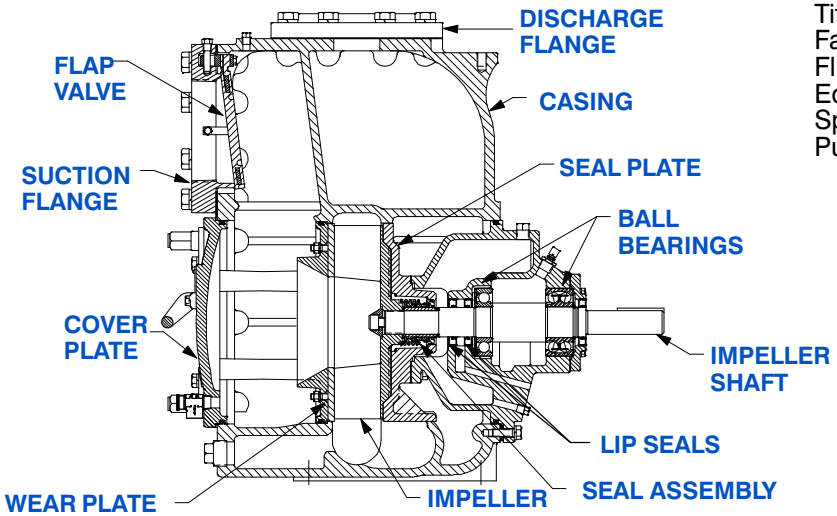
Size: 6” x 6” (152 mm x 152 mm) NPT - Female.
Casing: Gray Iron 30.
Maximum Operating Pressure 79 psi (545 kPa).*
Semi-Open Type, Two Vane Impeller: Ductile Iron 65-45-12.
Handles 3” (76,2 mm) Diameter Spherical Solids.
Impeller Shaft: Alloy Steel 4150.
Shaft Sleeve: Alloy Steel 4130.
Replaceable Wear Plate: Carbon Steel 1026.
Removable Adjustable Cover Plate: Gray Iron 30; 62 lbs. (28 kg).
Flap Valve: Neoprene W/Nylon and Steel Reinforcing.
Seal Plate: Gray Iron 30.
Bearing Housing: Gray Iron 30.
Radial Bearing: Open Single Row Ball.
Thrust Bearing: Open Double Row Ball.
Bearing and Seal Cavity Lubrication: SAE 30 Non-Detergent Oil.
Flanges: 125# Gray Iron 30.
Gaskets: Buna-N, Compressed Synthetic Fibers, PTFE, Vegetable Fiber, Cork, and Rubber.
O-Rings: Buna-N.
Hardware: Standard Plated Steel.
Brass Pressure Relief Valve.
Bearing and Seal Cavity Oil Level Sight Gauges.
Optional Equipment: Metal Bellows Seal. Automatic Air Release Valve. 120V/240V Casing Heater. High Pump Temperature Shutdown Kit. G-R Hard Iron Casing. Self-Cleaning Wear Plate.
Gray Iron 30 Suction and Discharge Spool Flanges:
6” ASA **(Specify Model T6A3S-B /F).**
150 mm DIN 2527 (PN16) **(Specify Model T6A3S-B /FM).**

**Consult Factory for Applications Exceeding Maximum Pressure and/or Temperature Indicated.*

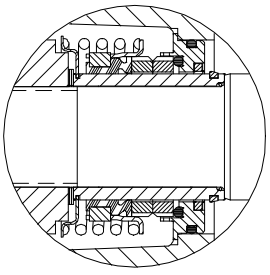
Shown with Optional Suction & Discharge Spool Flanges (Available in ASA or DIN Standard Sizes).

SEAL SPECIFICATIONS

Cartridge Type, Mechanical, Oil-Lubricated, Double Floating, Self-Aligning. Tungsten Titanium Carbide Rotating and Stationary Faces. Stainless Steel 316 Stationary Seat. Fluorocarbon Elastomers (DuPont Viton® or Equivalent). Stainless Steel 18-8 Cage and Spring. Maximum Temperature of Liquid Pumped, 160°F (71°C).*



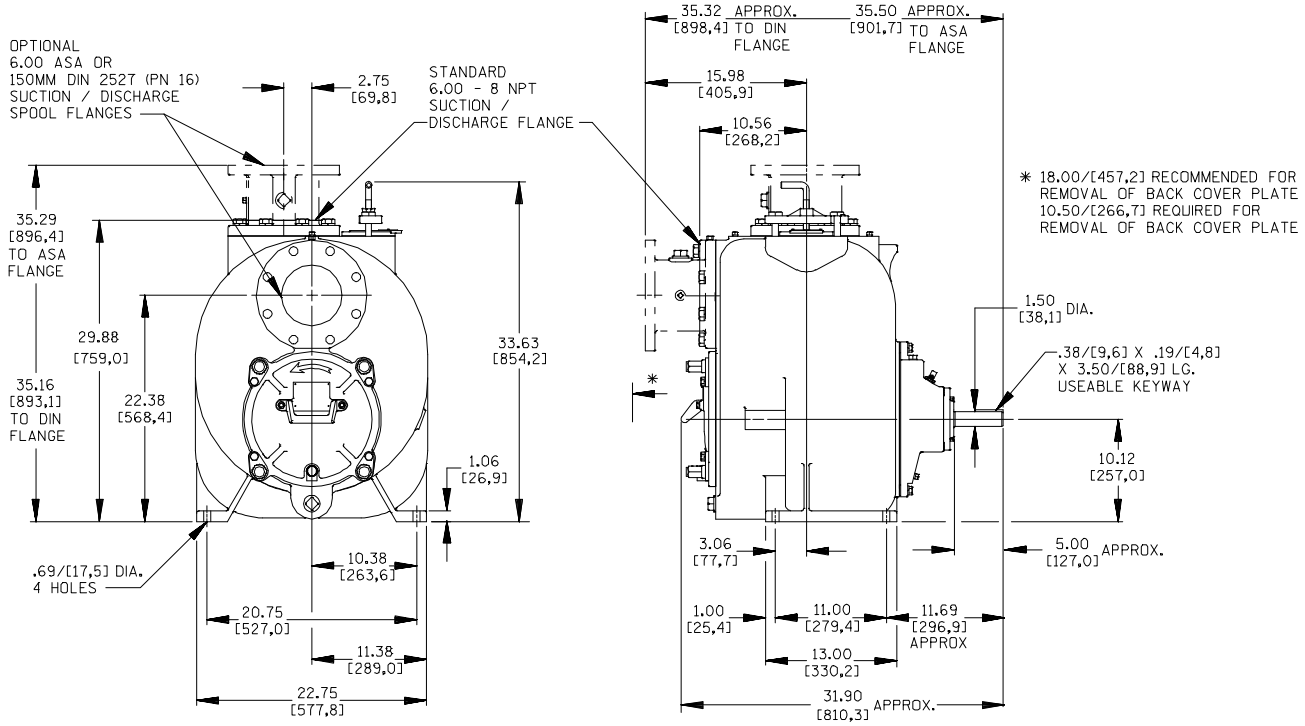
SEAL DETAIL



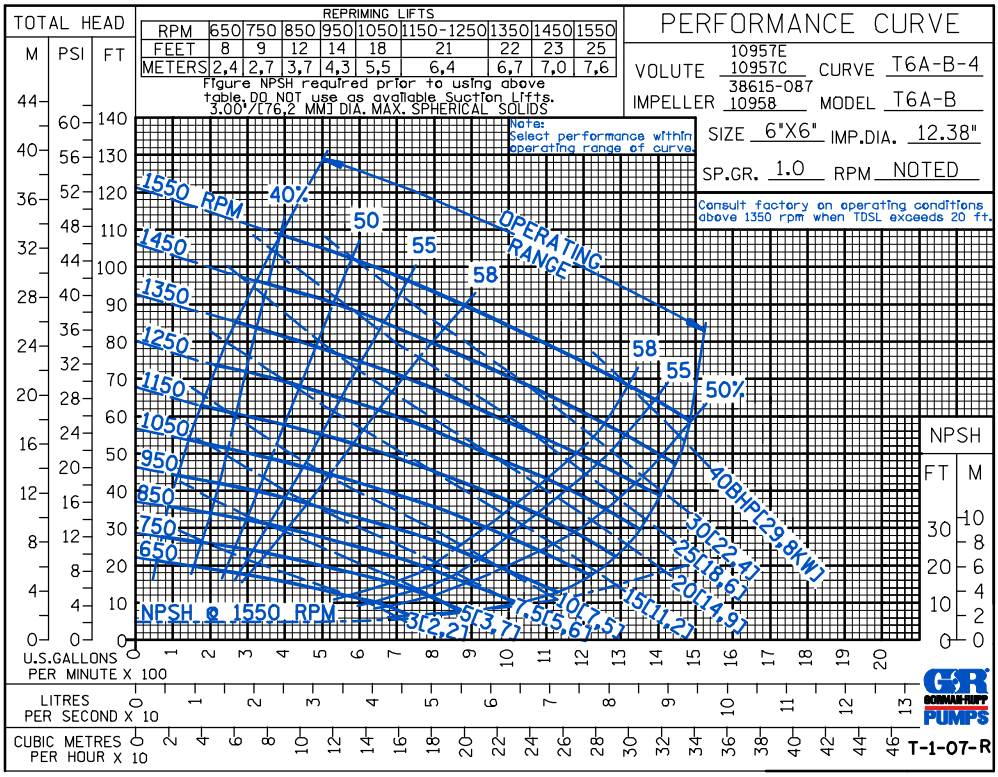
APPROXIMATE DIMENSIONS and WEIGHTS

NET WEIGHT:	**855 LBS. (388 KG.)***
SHIPPING WEIGHT:	**910 LBS. (413 KG.)***
EXPORT CRATE:	**32.5 CU. FT. (0,92 CU. M.)**

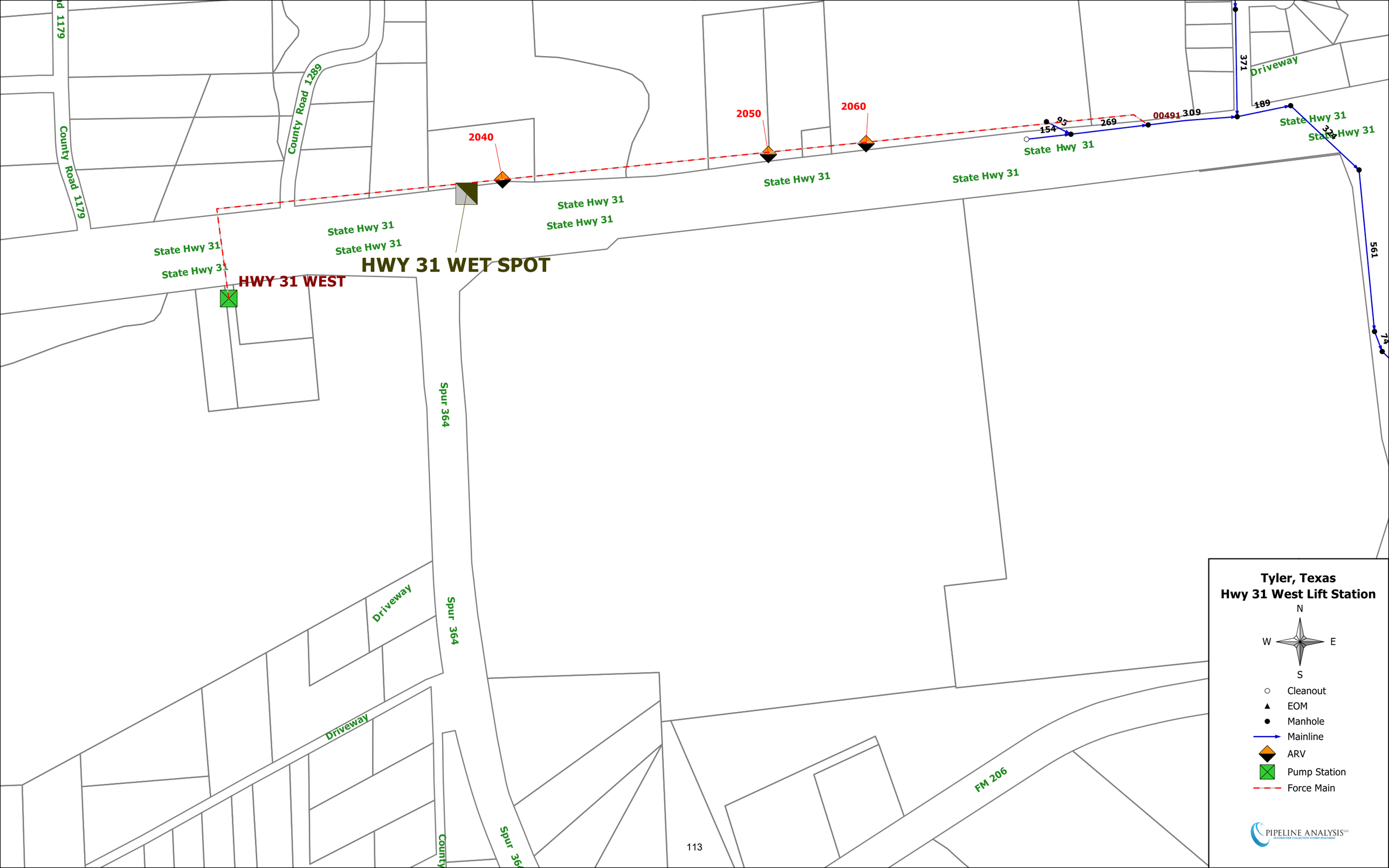
***ADD 25 LBS. (11,3 KG.) W/EACH SPOOL FLANGE**



OPTIONAL ASA OR DIN STANDARD SUCTION & DISCHARGE SPOOL FLANGES AVAILABLE



HIGHWAY 31 LIFT STATION

 Tyler, Texas
Hwy 31 West Lift Station
N
W
E
S
Cleanout
EOM
Manhole
Mainline
ARV
Pump Station
Force Main
PIPELINE ANALYSIS
HWY 31 WET SPOT
HWY 31 WEST
2040
2050
2060
00491
309
189
371
561
154
95
269
State Hwy 31
County Road 1179
County Road 1289
Spur 364
Driveway
FM 206
113

N 32° 19.806'
W 95° 23.982'

Tyler Water Utilities - Lift Station Assessment Form

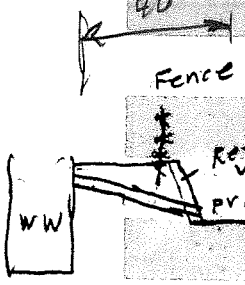
Lift Station Name HWY 31 **Type** Submersible
Location/Address 13933 State Highway 31 West
Lift Station Asset ID 0 **Number of Pumps** 2
Firm Capacity in GPM (all pumps operating)
Firm Capacity in GPM (largest pump out of service)
Inspector Don White **Date** Dec 17, 2017
City Works Work Order

Building and Grounds

			Good	Fair	Poor	Critical	N/A
Building Structure	Type:	NONE					
Building Roof/Ceiling			○	○	○	○	○
Building Finishes			○	○	○	○	○
Building Doors and Windows			○	○	○	○	○
Building HVAC	Type:		○	○	○	○	○
Fencing	Type:	Chain link	●	○	○	○	○
Gates Double 21'	Type:	Chain link	●	○	○	○	○
Site/Grounds	Size:	63' width x 49'	●	○	○	○	○
Lighting			●	○	○	○	○
Pavement (Driving)	Type:	Asphalt	●	○	○	○	○
Drainage	Type:	Surface	●	○	○	○	○
Odor	Comment:	NONE	●	○	○	○	○
Odor Control System	Type:		○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			○	○	○	○	○
Overall Site Appearance			●	○	○	○	○

Comments curb inlets on drive, grate inlet in parkway. 5'w x 3'-3"D concrete box culvert crossing under drive. Wetwell slab Flush with paving surface.

Structural



			Good	Fair	Poor	Critical	N/A
Wet Well	Size:	6'ϕ					
	Debris		●	○	○	○	○
	Fats, oils, and grease		●	○	○	○	○
	Ventilation	? PVC Pipe to Site Retaining Wall	○	○	○	○	○
	Walls	Material: Conc	●	○	○	○	○
	Coatings	Type: ✓	●	○	○	○	○
	Access Hatches	Number: 1 - METAL DOUBLE 4'5"X3' WITH SAFETY GRATE	●	○	○	○	○
	Slab	Concrete - combined with Valve vault	●	○	○	○	○
Dry Well/Valve Vault							
	Walls	Material: Concrete	●	○	○	○	○
	Coatings	Type: X	○	○	○	○	○
	~~Grating~~/Hatching	Number: Metal 1 3'9"X 4'-2"	●	○	○	○	○
	~~Stairway~~/Ladder	Material:	○	○	○	○	●
	Sump/Pump	Number: NONE	○	○	●	○	○
	Ventilation	Type: NONE	○	○	●	○	○

Comments 2" standing water in value vault

Mechanical

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

Mechanical (continued)

			Good	Fair	Poor	Critical	N/A
Riser Piping	Material:	4"DI	○	●	○	○	○

			Good	Fair	Poor	Critical	N/A
Discharge Piping	Material: 4"DI		●	○	○	○	○
Fittings	Material: DI		●	○	○	○	○

Comments 1 Discharge valve closed. By pass has gate valve. some corrosion on riser pipes. Guide rails, chains, electric conduits - good. Hoist (Frame Only) present.

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	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

Instrumentation/SCADA

				Good	Fair	Poor	Critical	N/A
Panel	NEMA4X	YES	NO	○	○	○	○	○
Instrumentation								
Level	Type:	Floats		○	●	○	○	○
Flow	Type:	No		○	○	○	○	○

Instrumentation/SCADA (continued)

			Good	Fair	Poor	Critical	N/A
PLC	Type:		○	○	○	○	○
SCADA			○	○	○	○	○
RTU	Type:	Up link 4550	●	○	○	○	○
Radio/~~Antenna~~	Type:	w/ uplink	●	○	○	○	○

Comments TWO EATON PANELS & GENERAC PANEL LOCKED.
PANEL AT WET WELL LOCKED.
VISUAL AND SOUND ALARM. Generator door panels locked

Building and Grounds

Lift Station Perimeter Facing South

Entrance to Lift Station-Driveway in Good Condition

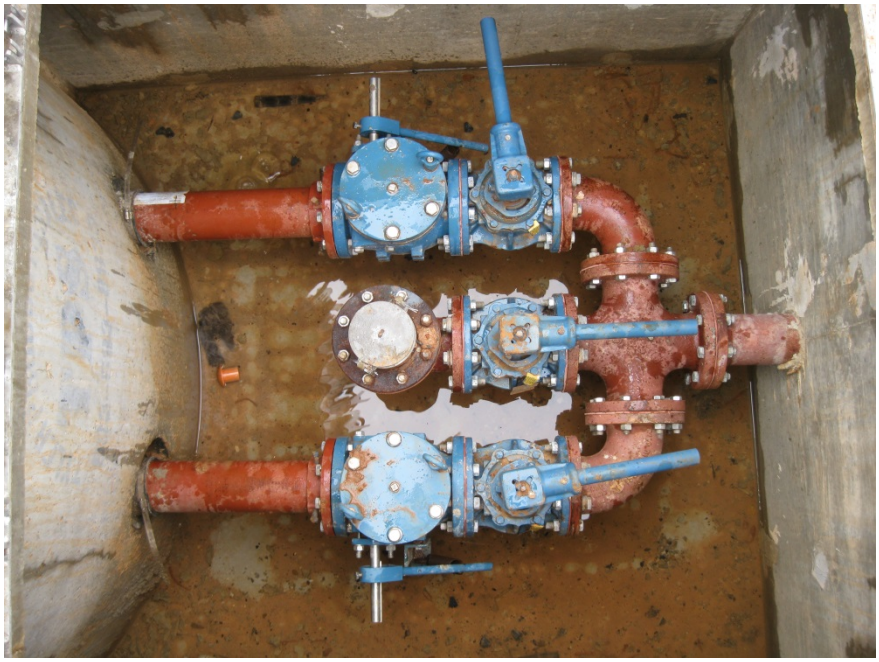
Wet Well Slab Flush With Paving Surface

Structural

2” Standing Water in Valve Vault

Mechanical

Wet Well Interior



Water Accumulation in Valve Vault Interior-
No Sump Pump/ Ventilation Pipe

Electrical

Front of Generator

Generator Panel Door Panel Locked

Front of Electrical Panel

Instrumentation/SCADA

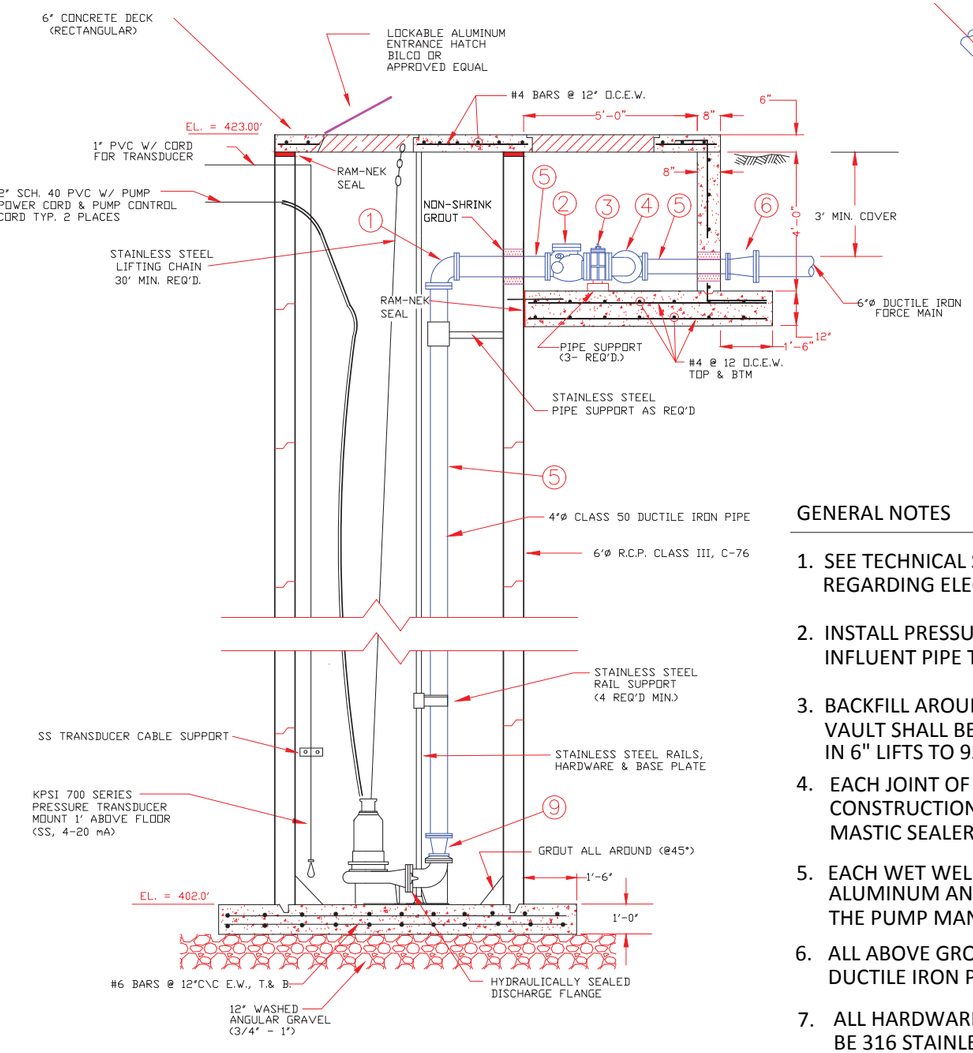
Front Instrumentation Panel

Inside of Instrumentation Panel (1)

Inside of Instrumentation Panel (2)

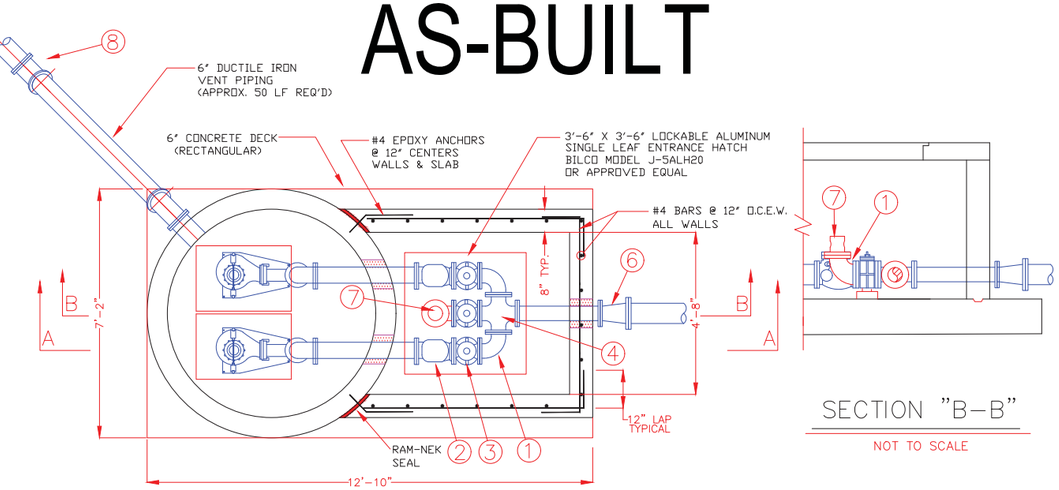
Inside of Instrumentation Panel Door

AS-BUILT



SECTION "A–A"

NOT TO SCALE



PLAN

NOT TO SCALE

SECTION "B–B"

NOT TO SCALE

GENERAL NOTES

1. SEE TECHNICAL SPECIFICATIONS, FOR DETAILS REGARDING ELECTRICAL REQUIREMENTS.
2. INSTALL PRESSURE TRANSDUCER OPPOSITE SIDE OF INFLUENT PIPE TO AVOID TURBULENCE
3. BACKFILL AROUND LIFT STATION & VALVE VAULT SHALL BE SELECT MATERIAL COMPACTED IN 6" LIFTS TO 95% STANDARD PROCTOR DENSITY.
4. EACH JOINT OF R.C.P. USED FOR WET WELL CONSTRUCTION SHALL BE SEALED WITH A MASTIC SEALER.
5. EACH WET WELL ENTRANCE HATCH SHALL BE ALUMINUM AND SIZED AS RECOMMENDED BY THE PUMP MANUFACTURER.
6. ALL ABOVE GROUND PIPING SHALL BE FLANGED DUCTILE IRON PIPE CLASS 50, SHOP-PRIMED & PAINTED.
7. ALL HARDWARE LOCATED IN THE WET WELL SHALL BE 316 STAINLESS STEEL.
8. ALL CONCRETE SHALL BE 3,500 P.S.I. @ 28 DAYS MINIMUM.
9. WET WELL INTERIOR SHALL BE COATED WITH COAL TAR EPOXY IN ACCORDANCE WITH SPECS.
10. REINFORCING STEEL SHALL CONFORM WITH ASTM-615, GRADE 60. (MINIMUM)
11. CONSTRUCTION AND PLACING OF CONCRETE AND REBAR SHALL CONFORM WITH THE LATEST REVISION OF THE ACI CODE.

MARK	DESCRIPTION	QTY
①	4"ø D.I., 90° BEND, FL X FL	5 REQ'D
②	4"ø SWING CHECK VALVE, LEVER & SPRING OP., FL X FL	2 REQ'D
③	4"ø ECCENTRIC PLUG VALVE, FL X FL	3 REQ'D
④	4"ø D.I., FLANGED CROSS, FL X FL	1 REQ'D
⑤	4"ø D.I., FLANGED PIPE (VARIOUS LENGTHS), FL X FL	5 REQ'D
⑥	6"ø X 4"ø D.I., REDUCER, MJ X MJ	1 REQ'D
⑦	4"ø DIXON ALUMINUM CAMLOCK ADAPTOR, FL X ADAPTER	1 REQ'D
⑧	6"ø D.I., 45° BEND, MJ X MJ	2 REQ'D
⑨	4"ø X 3"ø D.I., REDUCER (IF REQUIRED), FL X FL	2 REQ'D

12. ALL STRUCTURAL STEEL SHALL BE A-36 UNLESS NOTED ON THE DRAWINGS.
13. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC CURRENT EDITION.
14. ALL WELDING SHALL CONFORM WITH "AWS" LATEST EDITION.
15. ALL ELECTRODES SHALL BE OF THE E-70 SERIES, UNLESS OTHERWISE NOTED.
16. ALL EXPOSED CONCRETE EDGES ARE TO HAVE A MINIMUM OF 3/4" X 3/4" CHAMFER.
17. PIPES PENETRATING WALLS SHALL BE CAST IN WALLS, DUCTILE IRON PIPE AND SHALL HAVE CONCRETE WALL FLANGE.

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CITY OF TYLER

2016 SEWER SYSTEM IMPROVEMENTS
STATE HIGHWAY 31 W
LIFT STATION & FORCE MAIN

REVISIONS

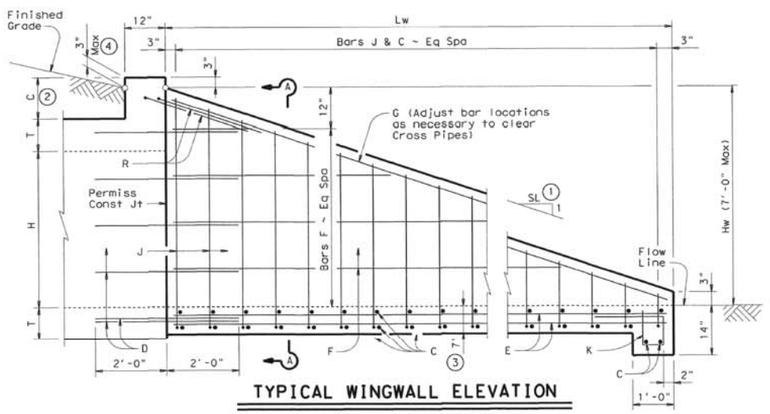
NO.	DESCRIPTION	DATE	BY

LIFT STATION
MECHANICAL & STRUCTURAL

Seal/ Preliminary Stamp

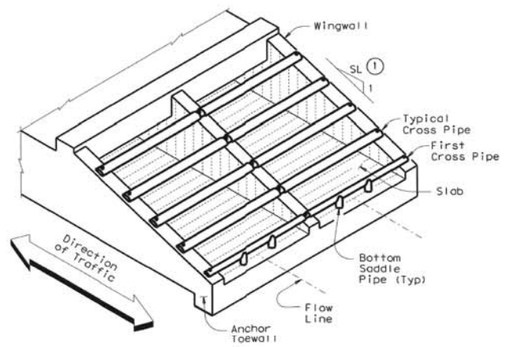
ELLEDGE ENGINEERING CORP
TBPE #F-16917

CHECKED BY:	PE	DATE:	
APPROVED BY:		DATE:	
JOB NO.:	2015-01-001		
SHEET NO.:	20		



TYPICAL WINGWALL ELEVATION

(Cross Pipes not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing Bolted Anchor Option)

Formulas: (All values are in Feet)

Hw = H + T + C − 0.250'

Lw = (Hw − 0.250') (SL)

For Cast-in-place culverts:

Atw = (N) (S) + (N + 1) (U)

For Precast culverts:

Atw = (N) (2U + S) + (N − 1) (0.500')

Total Wingwall Area (S.F.)
= (0.5) (Hw + 0.250') (Lw) (N + 1)

Total Concrete Volume (C.Y.)
= [(Wingwall Area) (0.583') +
(Lw) (Atw) (0.583') +
(Atw) (1.000') (1.167' − 0.583')] ÷ (27)

Total Reinforcing (Lbs)
= (1.55) (Lw) (Atw) +
(4.43) (Atw) +
(K) (Hw) (N + 1) (√Lw)

C = Height of Curb above top of Top Slab
Hw = Height of Wingwall
K = Constant Value for use in formulas

Slope SL:1	K
6:1	10.41

Atw = Anchor Toewall Length
Lw = Length of Wingwall
N = Number of Culvert Barrels
S = Clear Span of each Barrel
SL:1 = Side Slope Ratio (Horizontal : 1 Vertical)

See applicable box culvert standard for H, S, T, and U values.

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

All reinforcing steel shall be Grade 60. All reinforcing shall be adjusted as necessary to provide a minimum clear cover of 1".

The quantities for concrete, reinforcing steel, and Cross Pipes resulting from the formulas given herein are for Contractor's information only.

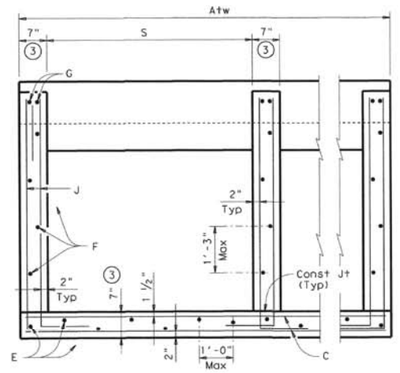
Cross Pipes, Sleeve Pipes, and Saddle Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except the concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

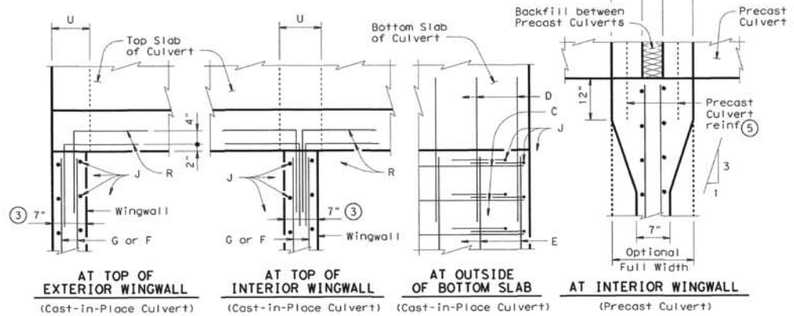
See BCS standard sheet for additional dimensions and information.

Alternate design drawings bearing the seal of a professional engineer will be acceptable for precast construction of the Safety End Treatments.



SECTION A-A

(Showing typical Wingwall and Wing Slab reinforcing)
(Pipe Runners not shown for clarity)



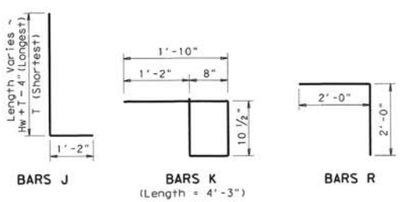
AT TOP OF EXTERIOR WINGWALL (Cast-in-Place Culvert)

AT TOP OF INTERIOR WINGWALL (Cast-in-Place Culvert)

AT OUTSIDE OF BOTTOM SLAB (Cast-in-Place Culvert)

AT INTERIOR WINGWALL (Precast Culvert)

PLAN VIEWS OF CORNER DETAILS



BARS J

BARS K (Length = 4'-3")

BARS R

TABLE OF REINFORCING BAR SIZES & SPACING		
Bar	Size	Spacing
C	#4	10" Max
D	#4	match F & E
E	#4	1'- 0" Max
F	#4	1'- 3" Max
G	#6	Shown
J	#4	10" Max
K	#4	1'- 0" Max
R	#4	Shown

1. Slope will be 6:1 or flatter.
2. 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to ECD standard.
3. Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" Minimum). If thicknesses greater than the minimum (7") are used, no changes will be made in quantities and no additional compensation will be allowed.
4. For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
5. For Culverts with C = 0", the precast culvert reinforcing may extend 1'-0" minimum into Wingwall. Wingwall Bars D and R may be omitted. Otherwise, refer to the "Wingwall Connection Detail" on the SCP-MD standard.

SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR BOX CULVERTS
(MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

FILE:	setbpse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT	February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

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CITY OF TYLER

2016 SEWER SYSTEM IMPROVEMENTS
STATE HIGHWAY 31 W
LIFT STATION & FORCE MAIN

REVISIONS

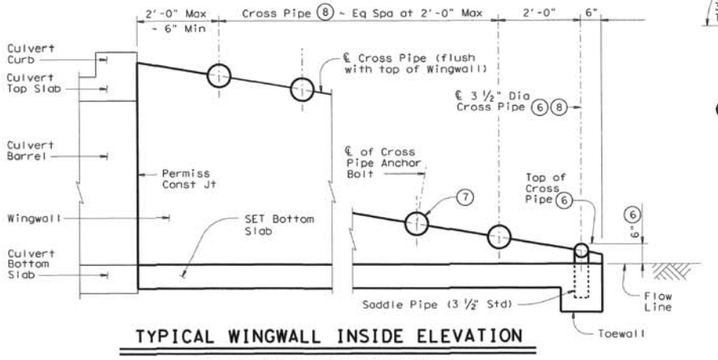
NO.	DESCRIPTION	BY	DATE

SAFETY END TREATMENT FOR BOX CULVRTS SET B-PD

Seal / Preliminary Stamp

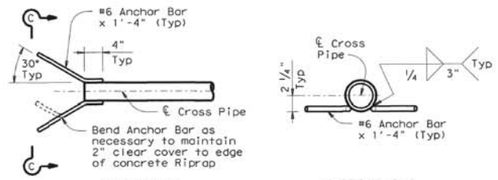
ELLEDGE ENGINEERING CORP.
TBPE #F-10917

CHECKED BY:	PE	DATE:
APPROVED BY:		DATE:
JOB NO.:	2015-01-001	
SHEET NO.:	25-1	



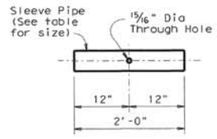
TYPICAL WINGWALL INSIDE ELEVATION

(Showing installation of Cross Pipes)

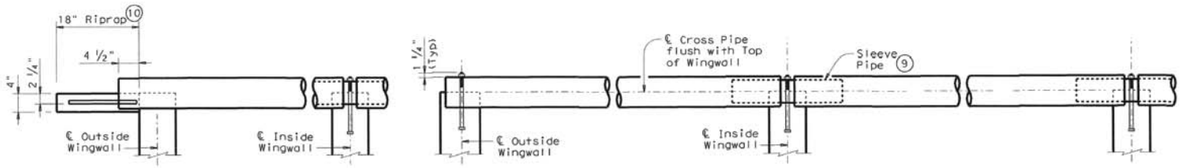


PART PLAN SECTION C-C

OPTIONAL ANCHOR BAR DETAILS

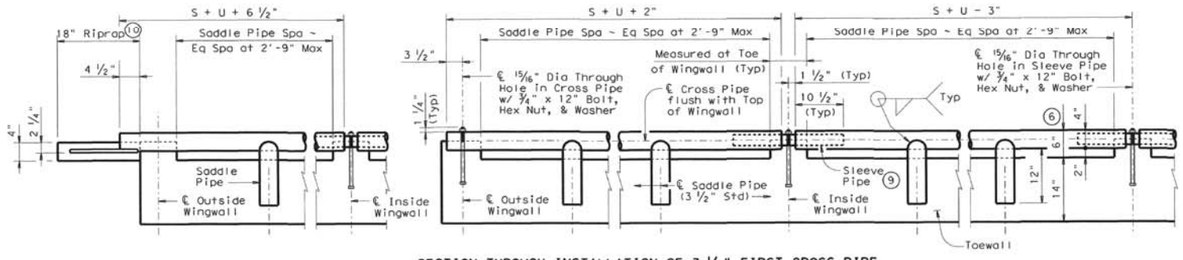


SLEEVE PIPE DETAILS (9)



SECTION THROUGH INSTALLATION OF TYPICAL FULL CROSS PIPE

(Anchor details and dimensions are similar to those shown below in SECTION THROUGH INSTALLATION OF 3 ½" FIRST CROSS PIPE detail.)



SECTION THROUGH INSTALLATION OF 3 ½" FIRST CROSS PIPE

OUTSIDE CULVERT BARREL WITH OPTIONAL ANCHOR BARS & RIPRAP

OUTSIDE CULVERT BARREL WITH BOLTED ANCHOR

INSIDE CULVERT BARREL

CROSS PIPE INSTALLATION DETAILS

REQUIRED PIPE SIZES (8)		
Culvert Span Sizes	Cross Pipe Size	Sleeve Pipe Size (9)
First Pipe	3 ½" STD	2 ½" STD
30" to 42"	4" STD	3" STD
48" to 72"	5" STD	4" STD
78" to 120"	6" STD	5" STD

STANDARD PIPE SIZES		
Pipe Size	Pipe O.D.	Pipe I.D.
2 ½" STD	2.875"	2.469"
3" STD	3.500"	3.068"
3 ½" STD	4.000"	3.548"
4" STD	4.500"	4.026"
5" STD	5.563"	5.047"
6" STD	6.625"	6.065"

(6) The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.

(7) The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that concrete does not flow into this Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(8) Cross Pipes and Sleeve Pipes (if required) shall be as shown in the REQUIRED PIPE SIZES table. Saddle Pipes for the 3 ½" first Cross Pipe shall also be 3 ½".

(9) At Contractor's option, the Cross Pipe may be continuous across the Inside Wingwalls. If such option is selected, the Sleeve Pipe shall be omitted and a 15⁄16" diameter through hole made in the Cross Pipe to accept the anchor bolt at the centerline of each Interior Wingwall.

(10) Riprap will be required when using the optional Anchor Bar details and shall be included in the Price Bid for Safety End Treatment. Such Riprap shall be concrete Riprap in accordance with Item 432, "Riprap".

SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR BOX CULVERTS
(MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

FILE:	setbpdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT	February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

STATE OF TEXAS — Phil R. Elledge — 65520 — REGISTERED PROFESSIONAL ENGINEER

02-03-2016

AS-BUILT

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CITY OF TYLER

2016 SEWER SYSTEM IMPROVEMENTS
STATE HIGHWAY 31 W
LIFT STATION & FORCE MAIN

REVISIONS

NO.	DESCRIPTION	BY	DATE

SAFETY END TREATMENT FOR BOX CULVRTS SET B-PD

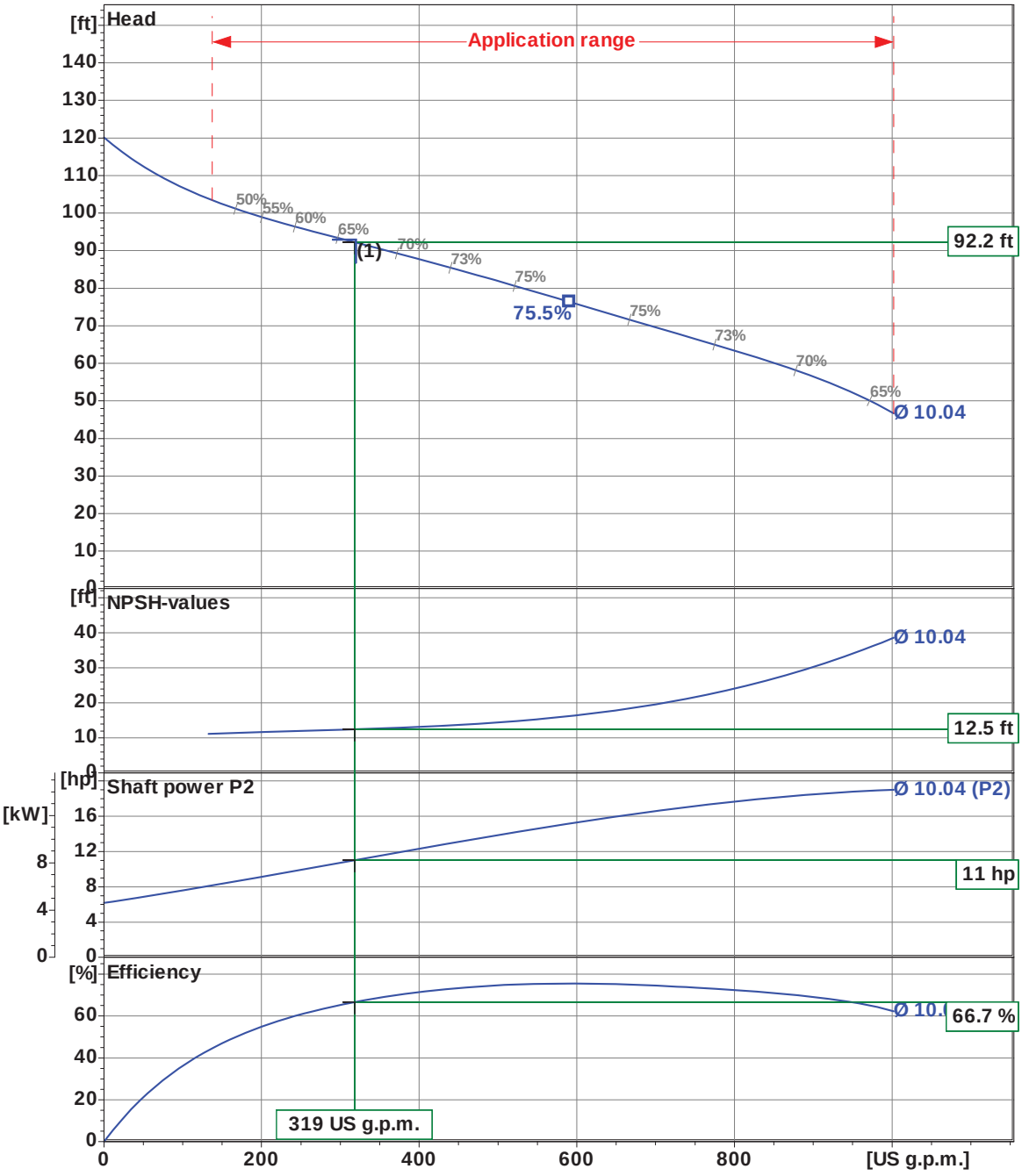
Seal: Preliminary Stamp

ELLEDGE ENGINEERING CORP TBPE #F-16917

CHECKED BY: PE — DATE:
APPROVED BY: — DATE:
JOB NO.: 2015-01-001
SHEET NO.: 25-2

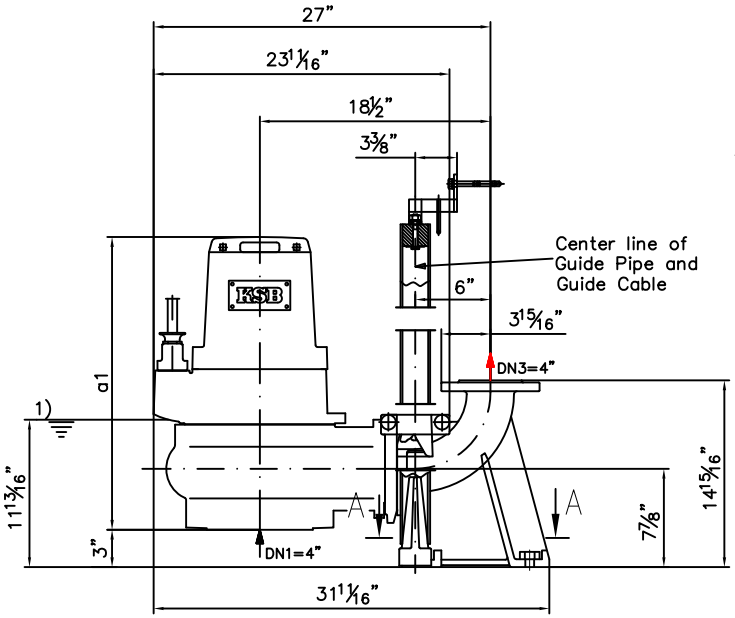
Performance curve

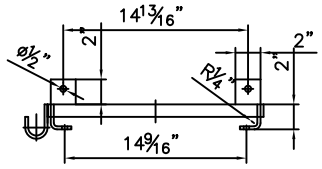
Pump type **KRT E 80-251/164XG-S**

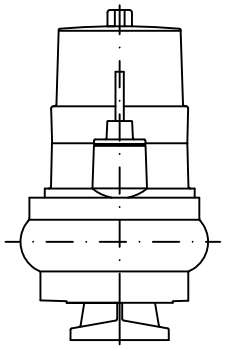


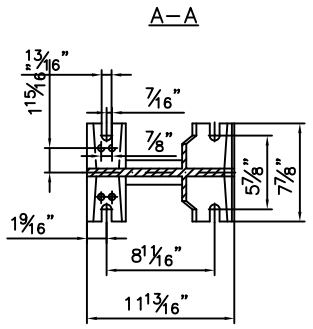
Impeller type	Single vane impeller closed			Curve number	K42592/4
Free passage	3"		Density of fluid	62.322 lb/ft³	Frequency	60 Hz
Impeller size	$10^{1}/_{16}$"	(255)	Viscosity	1.082E-5 ft²/s	Speed	1750 1/min

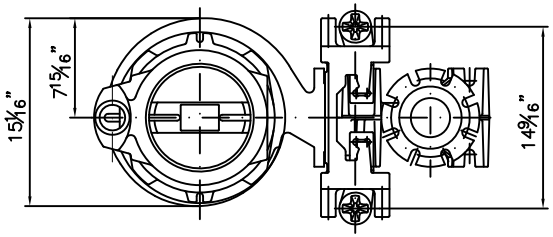
KSB Inc., Richmond, VA. / KSB Pumps Inc., Mississauga, Ontario / KSB AG, Halle (Germany)











Hydraulik Hydraulics Hydraulique	KSB–Motor KSB–Engine KSB–Moteur	a1		Gewicht / Weight / Poids Material version/variant G	
		mm	inch	kg	lbs
E	74	596	23 8/16	152	335
	114	626	24 5/8	166	365
	164	626	24 5/8	177	390
	46	596	23 8/16	138	305
	66	596	23 8/16	150	330
	96	626	24 5/8	161	355
	126	626	24 5/8	175	385

NUR FÜR ANFRAGE/ANGEBOT
technische Änderungen vorbehalten

FOR INQUIRY/OFFER ONLY
technical modifications reserved

SEULEMENT POUR LES DEMANDES/LES OFFRES
sous réserve de modifications technique

1) Mindestwasserstand
1) Minimum water level
1) Niveau d'eau minimum

Zeichnungs-Nr./Drawing No./N°Plan				Betreiber-Nr./Customer No./N°Client
	2005–08–04	Paula	1	
Ma stab/Scale/Echelle	2005–05–24	Paula	0	KSB Auftrags-Nr./KSB Order No./N°commande KSB
1:10 A3	Datum/Date	Name/Nom	Änderung/Revision Modification	
	Baureihe-Gro ß e/Type-Size			KSB Werk-Nr./KSB Work No./N° de fabrication KSB
	KRT E 80–251			
	stationäre Aufstellung **stationary installation** **installation stationnaire**			
	Bitte grundsatzlich bei Schriftverkehr angeben / Should always be stated in correspondence / A indiquer dans toute correspondance			

KSB Aktiengesellschaft
Geschaftsbereich Pumpen
Wasserwirtschaftstechnik

Postfach 20 07 43
D-06008 Halle (Saale)
Turmstra e/@2-100
D-06110 Halle (Saale)

Tel.: (03 45) 48 26–0
Fax: (03 45) 48 26 46 99
Telex: 318284 ksbha.

Project	**City of Tyler - State Hwy 31 Lift Station**
Customer pos.no	
Project ID	**3", 20HP, 7 Yr Warranty**
Pos.no	**1**
Created by	**PSI - Charles Norman**

2016-03-14

Data sheet

Pump type KRT E 80-251/164XG-S

Operating data

Flow	319	US g.p.m.	Fluid			
Head	92.2	ft	Density of fluid	62.3	lb/ft³	
Operating speed	1750	rpm	Viscosity	1.08E-5	ft²/s	
Shaft power	11	hp	Temperature	68	°F	
Efficiency	66.7	%				
Required pump NPSH	12.5	ft				
Head H(Q=0)	120	ft				
Application range	Head		Flow			
From	103	ft	137	US g.p.m.		
To	46.7	ft	1000	US g.p.m.		

Design

Make	KSB	Impeller type	Single vane impeller		
Design	Submersible pump		Closed		
Series	KRT E	Impeller size	(255)	$10^{1}/_{16}$	inch
Frame size	80-251		Max. (270)	$10^{5}/_{8}$	inch
Stages	1		Min. (210)	$8^{1}/_{4}$	inch
Curve number	K42592/4	Free passage		3	inch
		Weight		422.18	lb
Type of bearings	Antifriction				
Nos. of bearings	1 / 1				
Lubrication	Grease lubrication. lubricated for lifetime				

Suction port	Pressure rating		--
	Flange size	DN0	---
	Flange size	DN1	4"
	Norm		--
Discharge port	Pressure rating		CLASS 125
	Flange size	DN2	3 inch
	Flange size	DN3	3 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	Stainless steel EN-1.4021+QT800 (A 276 Type 420)
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	---
Casing wear ring	Grey cast iron EN-JL1030 (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

KSB Aktiengesellschaft, Turmstrasse 92, 06110 Halle (Germany), Phone +49 (345) 48260, Fax +49 (345) 4826 4699, www.ksb.com

Data sheet

Pump type KRT E 80-251/164XG-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
Explosion proof protection	By PTC (Explosion proof models only)
Motor housing monitoring	By conductive moisture sensor electrode
Mechanical seal leakage detection	---
Bearing temperature monitoring	---

Coating

Preparatory treatment	SSPC near white SP 10
Blasting method	Steel grit blasting
Primer	Zinc phosphate or Zinc dust
Dry film thickness primer	> 1 1/2 mils (35 microns)
Top coat	2-component epoxy resin
Solids content	> 82 %
Dry film thickness top coat	> 6 mils (150 microns)
Color	Ultramarine Blue

Installation

INSTALLATION	
Type of installation:	Wet well installation designed for automatic connection to a permanently installed discharge elbow
Discharge elbow size (DN2/DN3):	3 inch / 3 inch
Flange to suit:	ASME/ANSI B16.1, CLASS 125
Claw:	Bolted to the pump
Guide system:	Double guide bars, by contractor
Guide bar dimension:	2" diameter pipes
Installation depth:	33 ft (10 m)
Lifting device:	stainless steel lifting chain
Length of lifting device:	33 ft (10 m)
Lifting loops:	Every 8 ft (2.5 m)
Installation accessories:	Discharge elbow, 3 inch / 3 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)
Lifting device:	Stainless steel EN-1.4404 (A276 Type 316L)

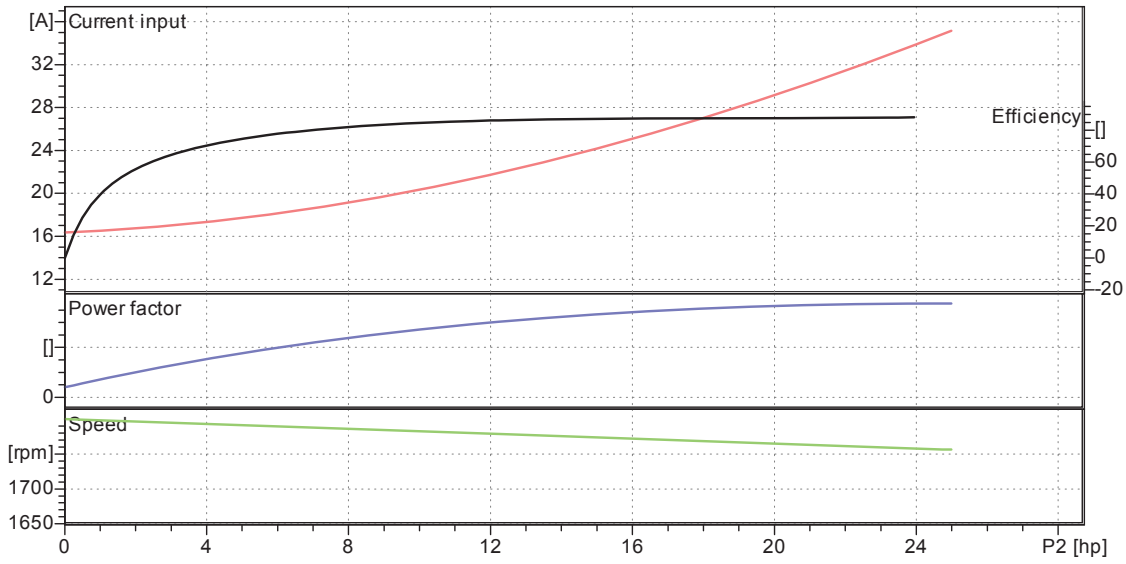
Data sheet: Motor data

Motor type 164XG

Motor manufacturer	KSB Aktiengesellschaft	Rated voltage	460	V
Design acc. standard	-	Rated frequency	60	Hz
Service factor	1.15	Rated HP (D.O.L) or VFD	20	hp
Degree of protection	IP68	Rated current	29	A
Insulation class	F	Nominal speed	1765	rpm
Starting mode	Direct	NEMA code letter	K	
No. starts / h	20	Starting to rated current	7.6	
Coolant temperature	< / = 104 °F (40 °C)	Starting current	220	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 E 80-251/164XG-S			

Load	P1 kW	P2 hp	eta %	cos phi	I A
4/4	16.94	20.0	88.0	0.73	29.0
3/4	12.86	15.0	87.0	0.66	24.3
2/4	8.86	10.0	84.2	0.55	20.4
1/4	4.95	5.0	75.3	0.35	17.6

Main cable	1 x AWG 11-7+15-5	Diameter	0.83..0.91 inch
Control cable	---	Diameter	
Cable. outer sheath	Waterproof synthetic rubber compound		
Cable length	15 m		



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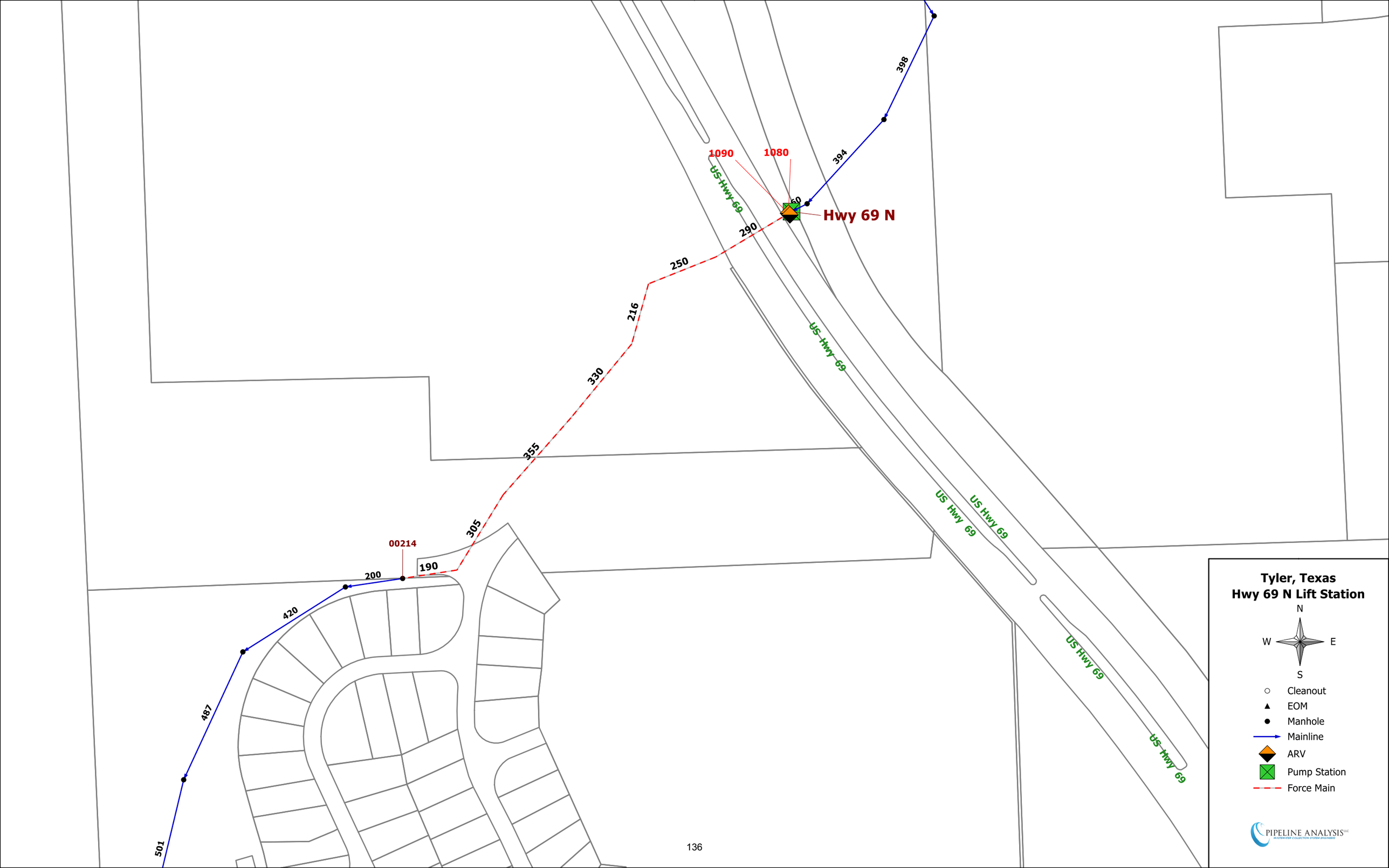
HIGHWAY 69N LIFT STATION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US Hwy 69
Tyler, Texas
Hwy 69 N Lift Station
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EOM
Manhole
Mainline
ARV
Pump Station
Force Main
PIPELINE ANALYSIS LLC

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name HIGHWAY 69 **Type** Submersible
Location/Address 12808 Highway 69 N
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 13, 2017
City Works Work Order

Building and Grounds

			Good	Fair	Poor	Critical	N/A
Building Structure	Type:	NONE					
Building Roof/Ceiling			○	○	○	○	○
Building Finishes			○	○	○	○	○
Building Doors and Windows			○	○	○	○	○
Building HVAC	Type:		○	○	○	○	○
Fencing	Type:	Chain Link	●	○	○	○	○
Gates 4' PEDESTRIAN 16' VEHICULAR	Type:	11	●	○	○	○	○
Site/Grounds	Size:	67'x47'	●	○	○	○	○
Lighting		YES	●	○	○	○	○
Pavement (Driving)	Type:	ASPHALT	●	○	○	○	○
Drainage	Type:	SURFACE/ CULVERT	○	●	○	○	○
Odor	Comment:	NONE	○	○	○	○	○
Odor Control System	Type:	NONE	○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			○	○	○	○	○
Overall Site Appearance			●	○	○	○	○

Comments 24"Ø Pipe Culvert Across Drive; Silt FM Erosion on Asphalt Surface in Site, erosion @ light post pier and Fence post pier. Erosion along north fence line

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well	Size:	8'ø Concrete					
Debris			○	○	●	○	○
Fats, oils, and grease			○	○	●	○	○
Ventilation	Pipe - Corrosion		○	●	○	○	○
Walls	Material:	Concrete	○	●	○	○	○
Coatings ✓	Type:		○	●	○	○	○
Access Hatches	Number:	1 METAL 5'-4" x 3'-8"	●	○	○	○	○
Slab	Conc. 12'x17' (A+/- 6" above natural ground)		●	○	○	○	○
Dry Well/Valve Vault							
Walls	Material:	Concrete	●	○	○	○	○
Coatings	Type:	No	○	○	○	○	○
Grating/Hatching	Number:	DOUBLE METAL 6'x4'	●	○	○	○	○
~~Stairway/Ladder~~	Material:	—	○	○	○	○	●
Sump/~~Pump~~	Number:	1 Floor Drain	●	○	○	○	○
Ventilation	Type:	Pipe	●	○	○	○	○

SLAB 9'-6" x 7'-4" INSIDE 8'x6'x7' Deep

Comments Pump Crane; Minor pitting on Wet well wall

See page 8 For surge valve Vault

Mechanical

				Good	Fair	Poor	Critical	N/A
Bypass Connection	(Circle)	YES / NO						
Piping and Valves								
	Suction Valve	Number:	—	○	○	○	○	○
8"DI	Check Valve	Number:	2-	●	○	○	○	○
8"DI	Discharge Valve	Number:	2 Minor Corrision	○	●	○	○	○

Mechanical (continued)

				Good	Fair	Poor	Critical	N/A
8"	Riser Piping	Material:	DI Corrosion	○	●	○	○	○

			Good	Fair	Poor	Critical	N/A
Discharge Piping	Material:		○	○	○	○	○
Fittings	Material:		○	●	○	○	○

Comments Discharge Piping Not Visible, some corrosion on Fittings in wetwell.

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*

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

Both Pumps: Electric cable, guide rails, chain; 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		YES	●	○	○	○	○
Electrical System Control							
Breakers	Type:		○	○	○	○	○
Speed control/VFD	Type:		○	○	○	○	○
Starters	Type:		○	○	○	○	○
Control Relays	Type:		○	○	○	○	○

SLAB 20'x8'-8"

Comments

Instrumentation/SCADA

			Good	Fair	Poor	Critical	N/A
Panel	NEMA4X YES NO		○	○	○	○	○
Instrumentation							
Level	Type:	High Water Float Ultra Sonic	○	○	○	○	○
Flow	Type:	NO	○	○	○	○	○

Instrumentation/SCADA (continued)

			Good	Fair	Poor	Critical	N/A
PLC	Type:		○	○	○	○	○
SCADA			○	○	○	○	○
RTU	Type:	Uplink	○	○	○	○	○
Radio/Antenna	Type:	small post on top of panel	○	○	○	○	○

Comments Visual or Sound alarm not observed.

SURGE VALVE VAULT 6'x8'x7' Deep (Inside Dim)
slab 9'-6"x7'-4"

WALLS: CONCRETE - GOOD

COATING: NONE

HATCH: DOUBLE METAL 6'x4' - GOOD

SUMP / FLOOR DRAIN - GOOD

VENTALATION: PIPE - GOOD

Building and Grounds

Lift Station Perimeter Facing East

Lift Station Facing Southeast

Lift Station Grounds Facing East With Generator Near East End

Erosion at Light Post Pier and Fence Pier Facing West

Structural

Wet Well in Fair Condition With Only
Some Amount of Debris & FOG Deposits

Wet Well Walls in Good Condition

Electrical

Front of Generator Facing North


Transfer Switch Facing East


Front of Electrical Panel Facing West

Instrumentation/SCADA

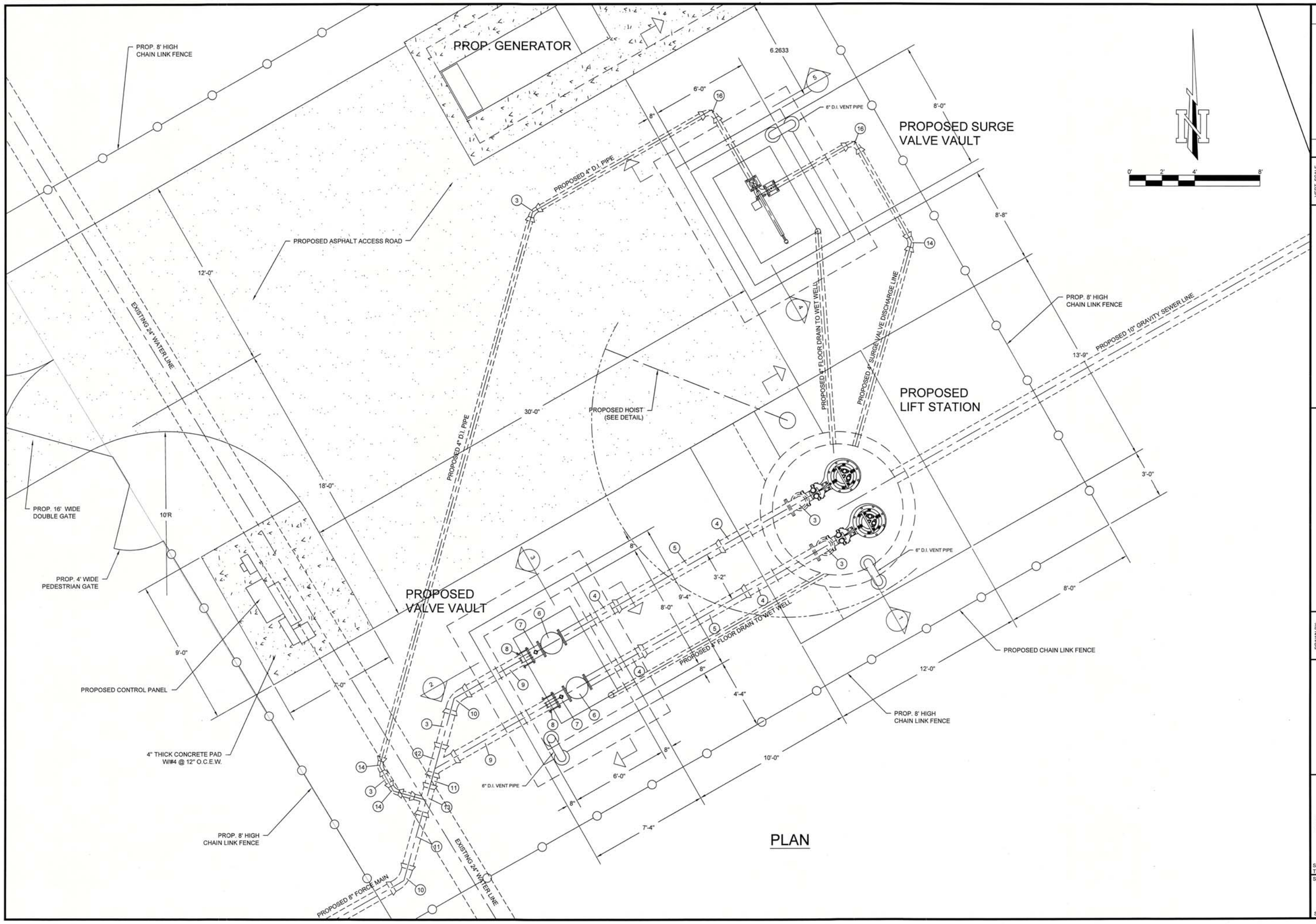
Front Instrumentation Panel Facing West

Inside of Instrumentation Panel (1)

Inside of Instrumentation Panel (2)

Inside of Instrumentation Panel Door

Uplink RTU Inside Instrumentation Panel



MARK	REVISION	DATE

VERT. SCALE
N/A
HORIZ. SCALE
NOTED
PLOT SCALE
1:1
DRAWING NAME
Lift_station1A

SHEET NAME:

PROPOSED US 69/I-20 LIFT STATION PLAN

PROJECT NAME:

CITY OF TYLER, TEXAS US 69/I-20 WASTEWATER SYSTEM IMPROVEMENTS

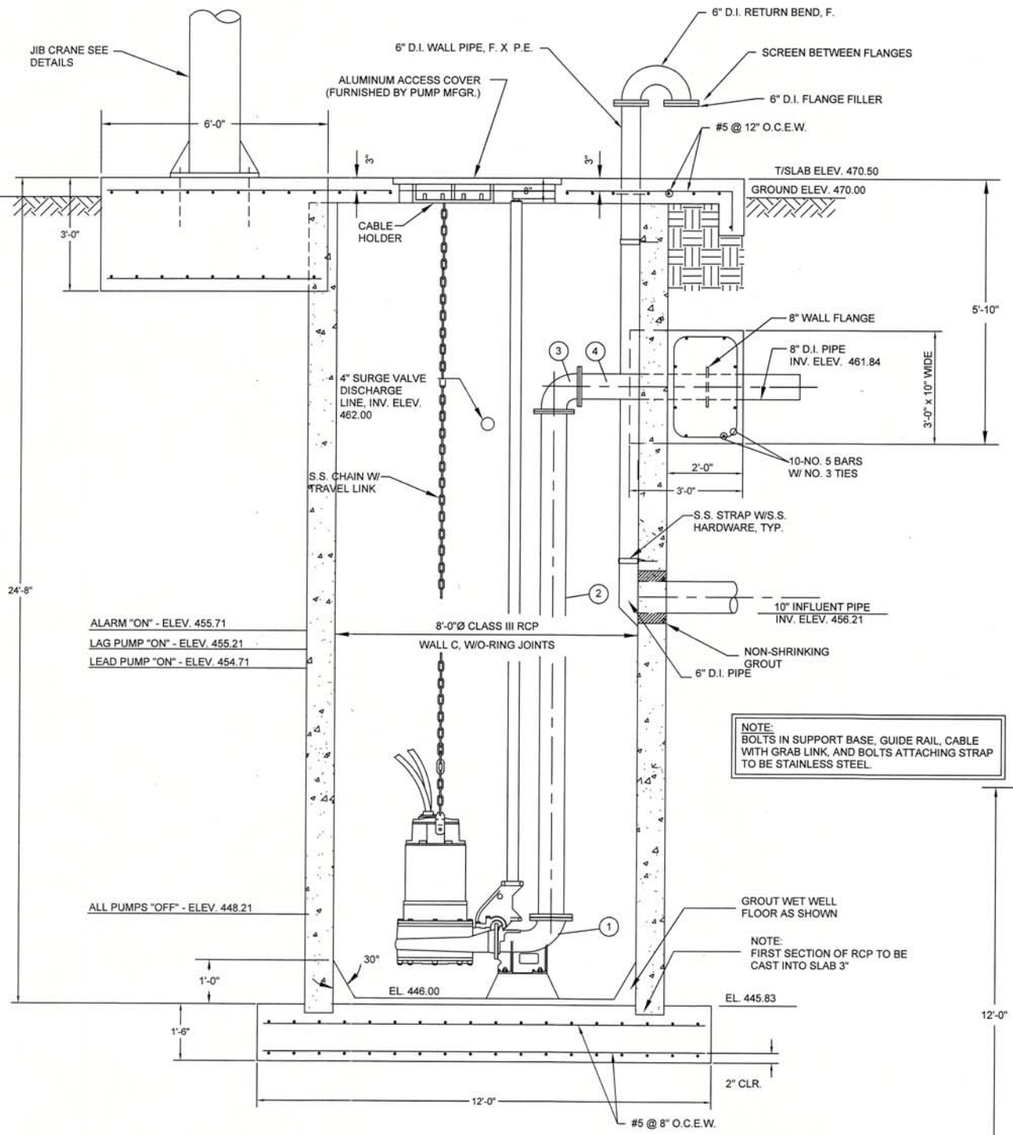
DRAWN BY:
D. CRIM
DESIGNED BY:
P.W.H.
LATEST REVISION:
3/1/2011
KSA JOB NO.:
TYL-280

WFA
WISENBAKER FIX & ASSOCIATES
6781 Oak Hill Blvd.
Tyler, Texas 75703
Tel. 903-581-8141
Fax 903-581-6853

PHILIP W. HUSEMAN
95720

SEAL: Philip W. Huseman 3/4/11
TBPE Firm Registration No. 1356

SHEET NO.
37 | 50
SHEET OF



NOTE:
BOLTS IN SUPPORT BASE, GUIDE RAIL, CABLE WITH GRAB LINK, AND BOLTS ATTACHING STRAP TO BE STAINLESS STEEL.

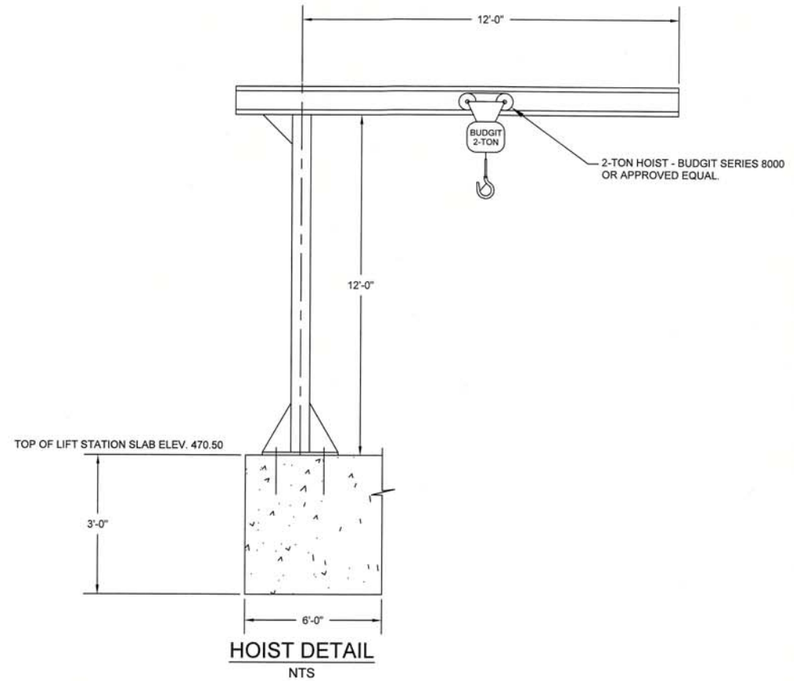
NOTE:
OBJECTS IN SECTION ARE ROTATED FOR CLARITY.

ILLUSTRATIVE SECTION 1

0' 1' 2' 4'

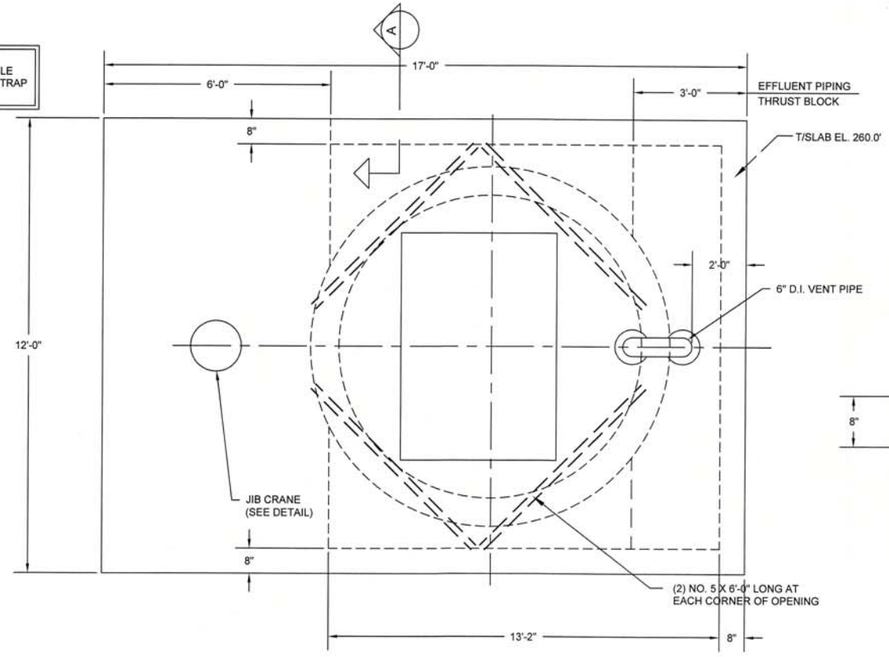
PIPING SCHEDULE

MARK	DESCRIPTION
1	8" C.I. DISCHARGE ELBOW AND SUPPORT BASE
2	8" D.I. PIPE, F.
3	8" D.I. 90° BEND, F.
4	8" D.I. WALL PIPE, F. X P.E.
5	8" D.I. PIPE, M.J.
6	8" CHECK VALVE, F.
7	8" PLUG VALVE, F.
8	8" FLANGED ADAPTER (DRESSER STYLE 127 OR EQUIVALENT)
9	8" D.I. PIPE, P.E.
10	8" D.I. 45° BEND, P.E.
11	8" D.I. PIPE, P.E.
12	8" X 8" D.I. WYE, M.J.
13	8" X 4" TEE, M.J.
14	4" D.I. 45° BEND, M.J.
15	4" D.I. WALL PIPE, F. X P.E.
16	4" D.I. 90° BEND, M.J.



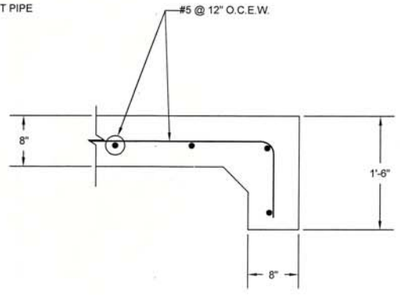
HOIST DETAIL

NTS



TOP SLAB PLAN

0' 1' 2' 4'



SECTION A

0' 5' 1' 2'

DATE	REVISION	MARK

VERT. SCALE N/A
HORIZ. SCALE NOTED
PLOT SCALE 1:1
DRAWING NAME Lift_station1A

SHEET NAME: PROPOSED US 69/I-20 LIFT STATION SECTIONS

PROJECT NAME: CITY OF TYLER, TEXAS US 69/I-20 WASTEWATER SYSTEM IMPROVEMENTS

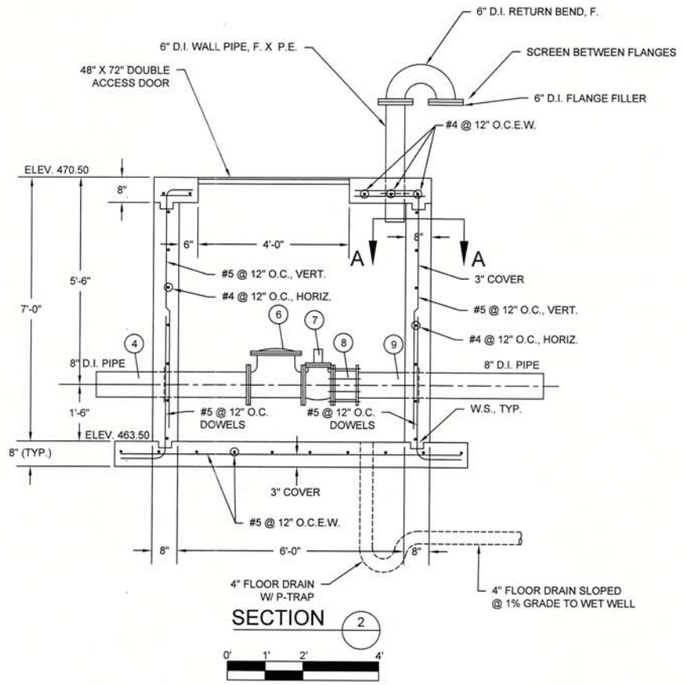
DRAWN BY: D. CRIM
DESIGNED BY: P.W.H.
LATEST REVISION: 3/2/2011
KSA JOB NO.: TYL-280

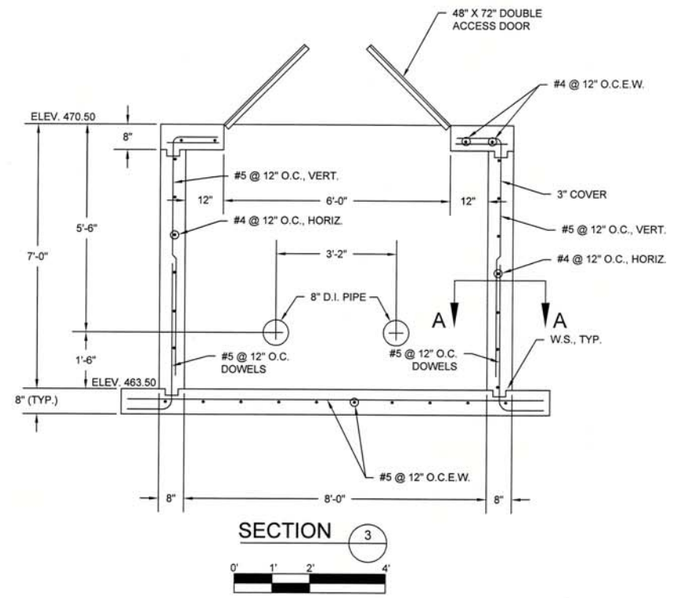
WFA
WISENBAKER FIX & ASSOCIATES
6781 Oak Hill Blvd.
Tyler, Texas 75703
Tel: 903-581-8141
Fax 903-581-6853

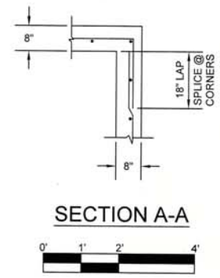
STATE OF TEXAS
PHILIP W. HUSEMAN
95720
LICENSED PROFESSIONAL ENGINEER
3/4/11

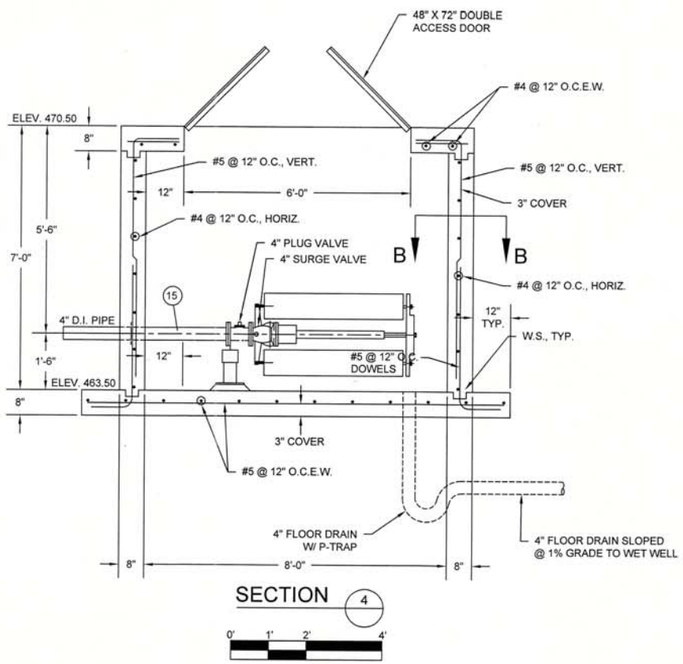
SEAL:
TBPE Firm Registration No. 1356

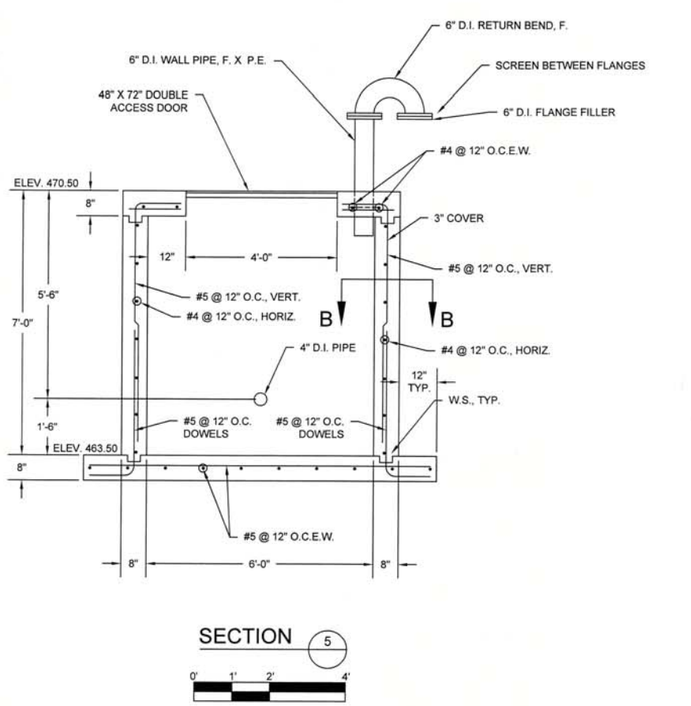
SHEET NO.
38 | 50
SHEET OF

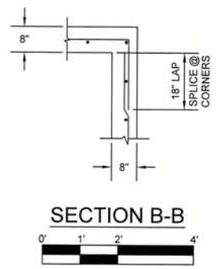












VERT. SCALE: N/A
HORIZ. SCALE: NOTED
PLOT SCALE: 1:1
DRAWING NAME: Lift_station1A
MARK | REVISION | DATE

PROPOSED US 69/I-20 VALVE VAULT AND SURGE VALVE VAULT SECTIONS

SHEET NAME:

CITY OF TYLER, TEXAS US 69/I-20 WASTEWATER SYSTEM IMPROVEMENTS

PROJECT NAME:

DRAWN BY:	DESIGNED BY:	LATEST REVISION:	KSA JOB NO:
D. CRIM	P.W.H.	3/1/2011	TYL-280

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STATE OF TEXAS
PHILIP W. HUSEMAN
95720
LICENSED PROFESSIONAL ENGINEER
SEAL: 3-4-11
TBPE Firm Registration No. 1356

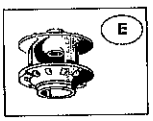
SHEET NO.
39 | 50
SHEET OF

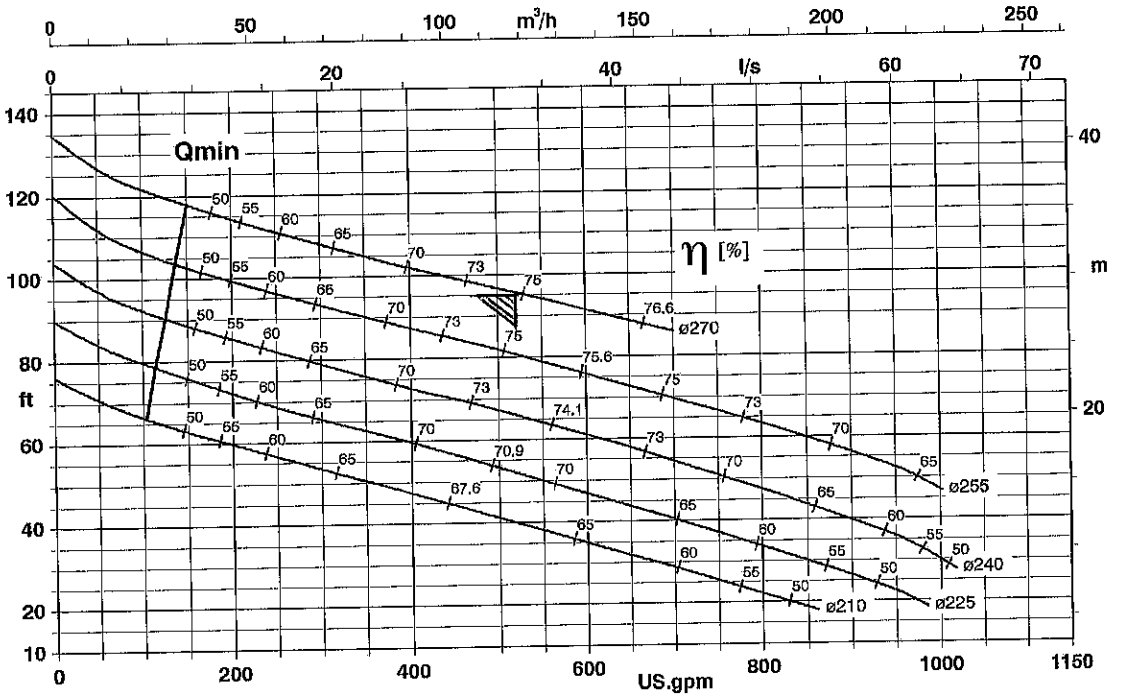
KSB Model KRT E80-251/164XG, 20HP, 460V, 3 Phase, Explosion Proof Electrical
Submersible Pumps each with 70' Power Cable.
500gpm @ 95'

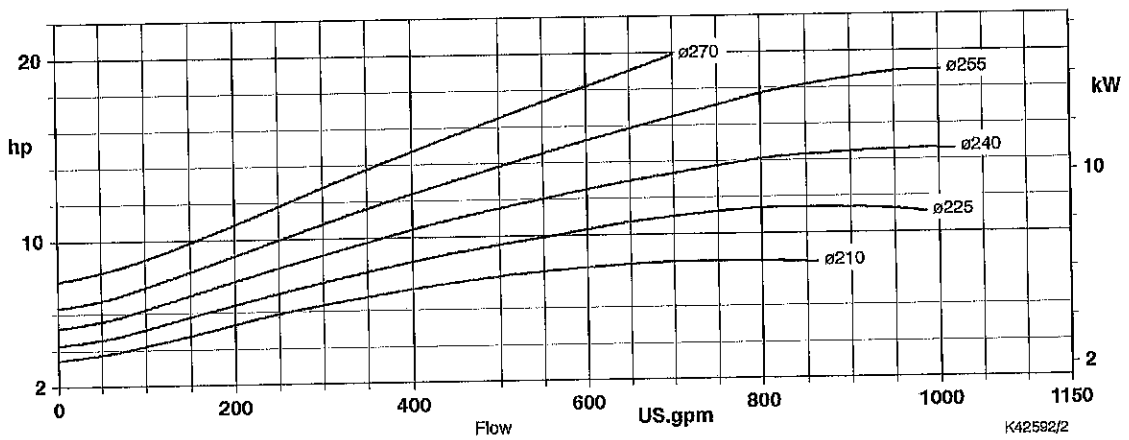
KRT E 80-251

1750 rpm

3 inch







Free passage 3" (76 mm)

MOTOR RATING Material G		MAX. LIQUID TEMP.		MOTOR CODE
Hp	kW	°F	°C	
10	7.5	104	40	74U
				74X *)
		140	60	114W
				114Z *)
15	11.2	104	40	114U
				114X *)
		140	60	164W
				164Z *)
20	14.9	104	40	164U
				164X *)

*) FM/CSA = Explosionproof to Class I, Division 1, Groups C & D