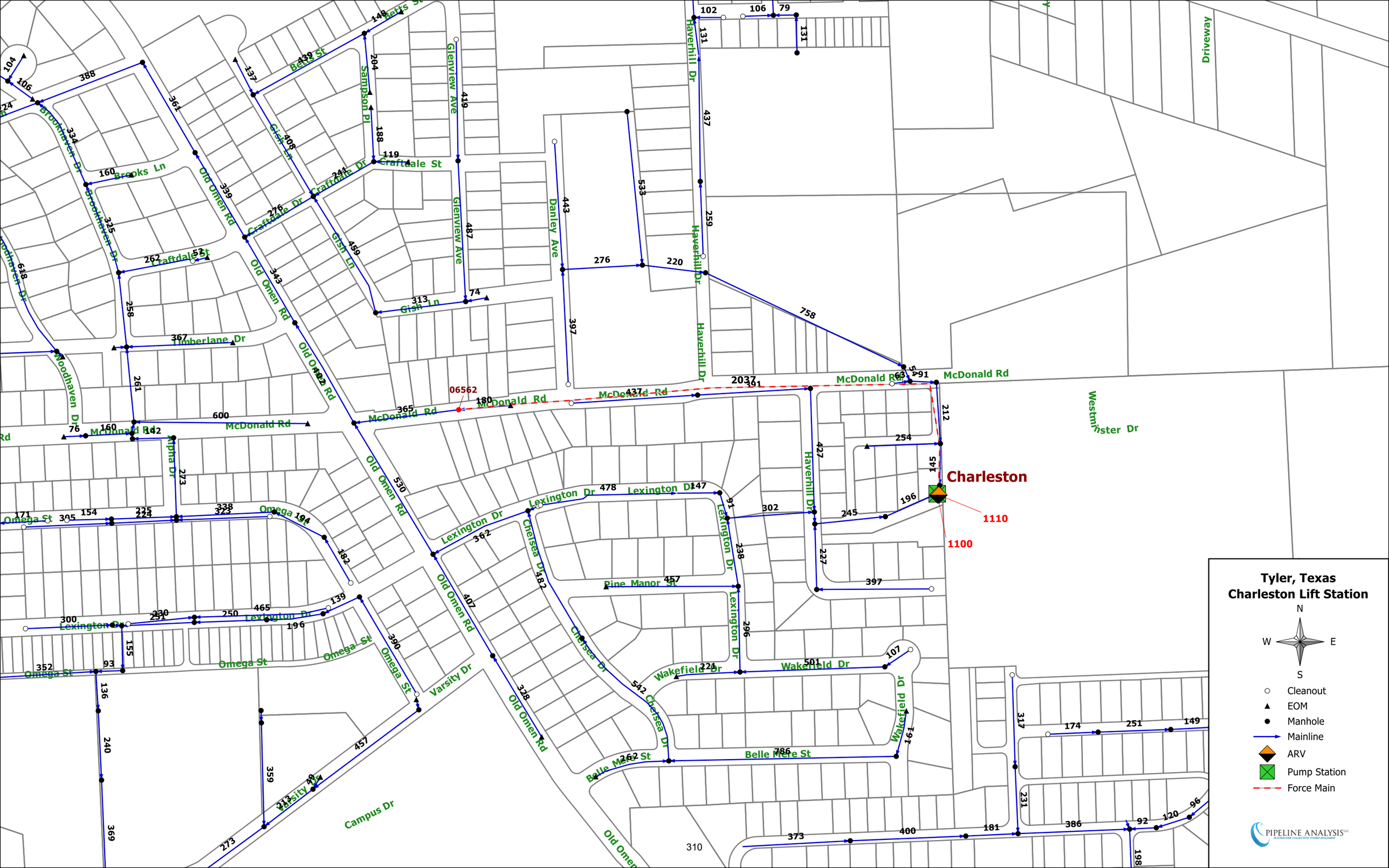
CHARLESTON LIFT STATION


Tyler, Texas
Charleston Lift Station
N
W
E
S
Cleanout
EOM
Manhole
Mainline
ARV
Pump Station
Force Main
PIPELINE ANALYSIS
Charleston
1110
1100
06562
McDonald Rd
Lexington Dr
Omega St
Old Omen Rd
Haverhill Dr
Glenview Ave
Danley Ave
Chelsea Dr
Wakefield Dr
Belle Meade St
Pine Manor St
Westminster Dr
Campus Dr
Varsity Dr
Woodhaven Dr
Brookhaven Dr
Brooks Ln
Timberlane Dr
Alpha Dr
Craftdale St
Craftdale Dr
Gish Ln
Sampson Pl
Betts St
Driveway
310

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name CHARLESTON **Type** Submersible
Location/Address 2916 Savannah Creek
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 14, 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:	Wood w/ wood post	●	○	○	○	○
Gates double 11 Ft	Type:	Wood wd Frame metal post	●	○	○	○	○
Site/Grounds	Size:	31' x 31'	○	●	○	○	○
Lighting	YES		●	○	○	○	○
Pavement (Driving)	Type:	Dirt	○	●	○	○	○
Drainage	Type:	Surface	○	○	●	○	○
Odor	Comment:	NONE	●	○	○	○	○
Odor Control System	Type:		○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			○	○	○	○	○
Overall Site Appearance			●	○	○	○	○

Comments one side of Wet Well Slab Flush w/ ground allowing drainage onto slab, same with valve pit. High storm water drainage mark on Fence 15 +/- 1 Foot in places

55
43
98

74+2
24
98

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well	Size:	8'x8					
Debris			○	●	○	○	○
Fats, oils, and grease			○	●	○	○	○
Ventilation	Pipe		●	○	○	○	○
Walls	Material:	Conc	○	●	○	○	○
Coatings	Type:	No	○	○	○	○	○
Access Hatches	Number:	1 Metal 4'x8'	●	○	○	○	○
Slab	Conc	9'-6" x 9'-6"	○	●	○	○	○
Dry Well/Valve Vault							
5' Φ x 5' Deep Walls	Material:	Concrete	●	○	○	○	○
Coatings	Type:	No	○	○	○	○	○
Grating/Hatching	Number:	1 Metal 3x3	○	●	○	○	○
Stairway/Ladder	Material:	No	○	○	○	○	○
Sump/~~Pump~~	Number:	Floor drain	●	○	○	○	○
Ventilation	Type:	Pipe	○	●	○	○	○

Comments Wetwell slab soffit shows some detriation at hatch opening. All components in Valve Vault have significant corrision compressor for wet well aration not plugged in.

Mechanical

			Good	Fair	Poor	Critical	N/A
Bypass Connection	(Circle)	YES / NO	4" valve and DI Riser down stream of valve vault				
Piping and Valves							
Suction Valve	Number:		○	○	○	○	○
6" Check Valve	Number:	2 DI	○	○	●	○	○
6" Discharge Valve	Number:	2 DI	○	○	●	○	○

Mechanical (continued)

			Good	Fair	Poor	Critical	N/A
4" Riser Piping	Material:	P.E.	●	○	○	○	○

Discharge Piping	Material: 6" DI	○	○	●	○	○
Fittings	Material: DI	○	○	●	○	○

Comments _____

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	○	○	○	○	○

Pumps 1 & 2: chain good above high water line - coated with scum below. Electric cables - good. No guide rails

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 corrosion on panel door hinges

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:	Upland	●	○	○	○	○
Radio/Antenna	Type:	on top of Control panel	●	○	○	○	○

Comments Visual and sound alarm, minor corrosion on electric panel

Building and Grounds

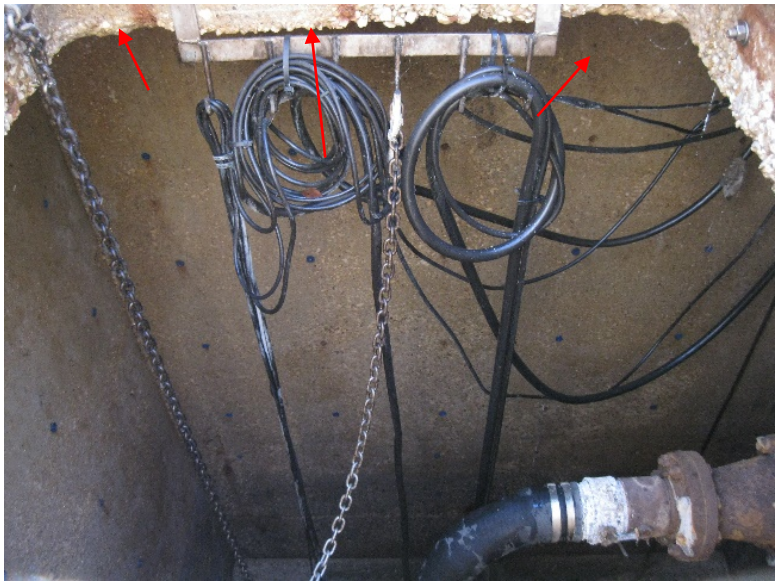
Lift Station Perimeter Facing North

Side of Wet Well Slab Flush With Ground Allowing Drainage onto Slab

High Storm Water Drainage Mark on Fence; +/- 1-Foot in Areas

Valve Vault

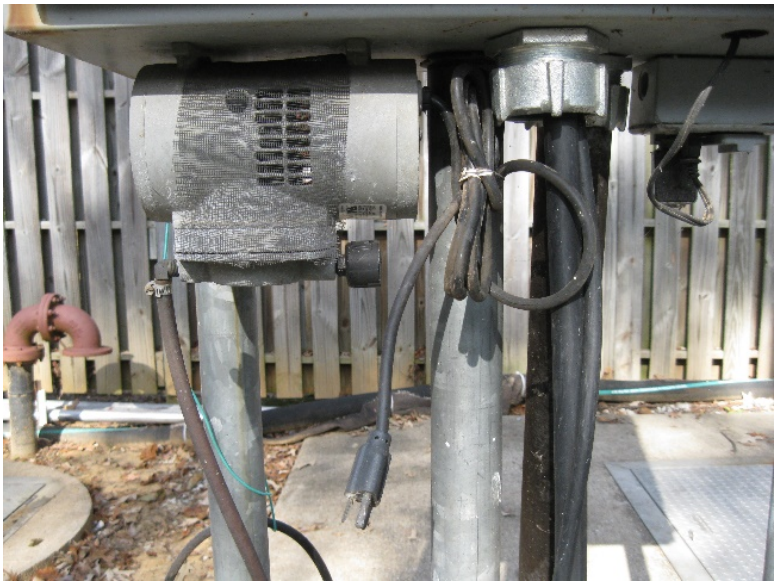
Structural



Wet Well Rim Shows Some Deterioration Due To Exposure to Corrosive Environment

Components in Valve Vault With Corrosion (1)

Check Valves with Surface Corrosion



Compressor For Wet Well Aeration Not Plugged In

Structural

Wet Well Walls in Good Condition

Mechanical

Wet Well Interior with Suction Pipe and Chain Links for Pumps

Wet Well Interior With Suction Pipes

Electrical

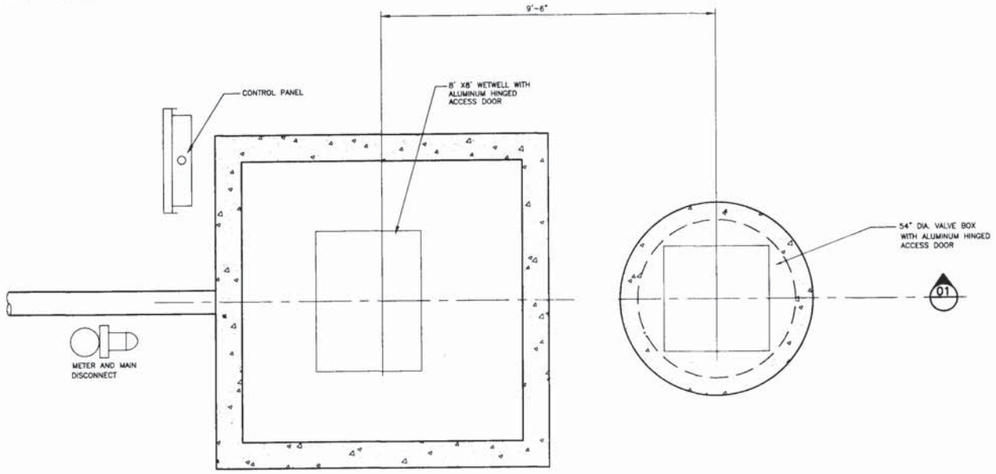
Front of Electrical & Instrumentation Panel

Electric Meter Panel

Instrumentation/SCADA

Instrumentation Panel

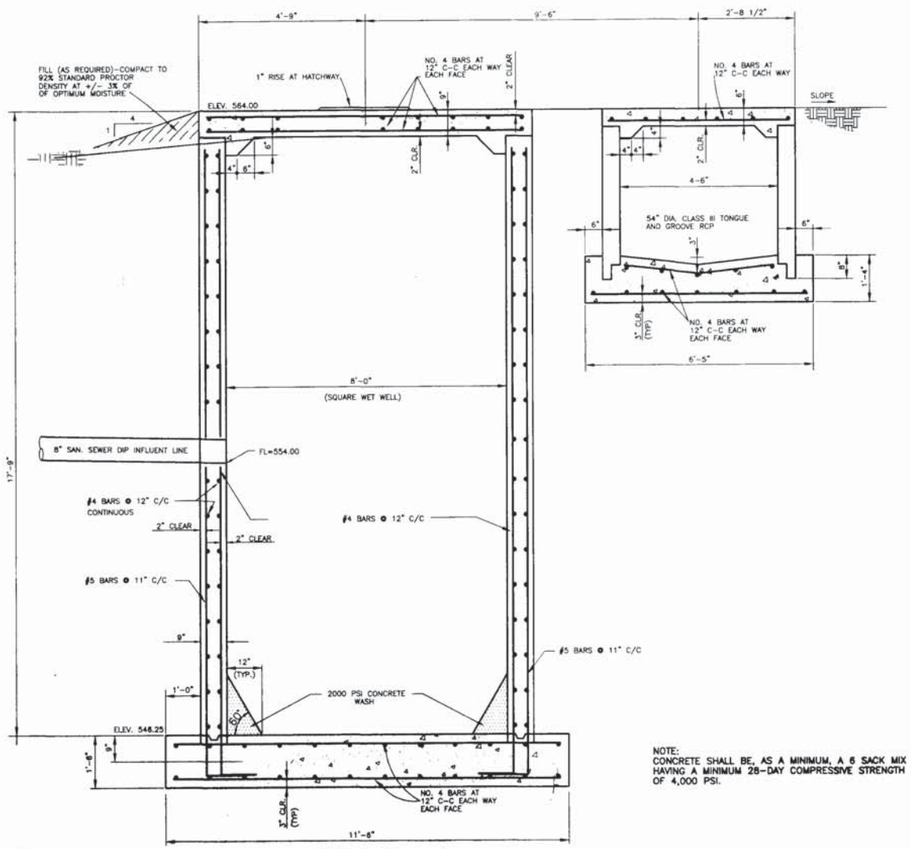
Visual Alarm



(PIPING OMITTED)

PLAN – LIFT STATION

SCALE: 1/2" = 1'-0"

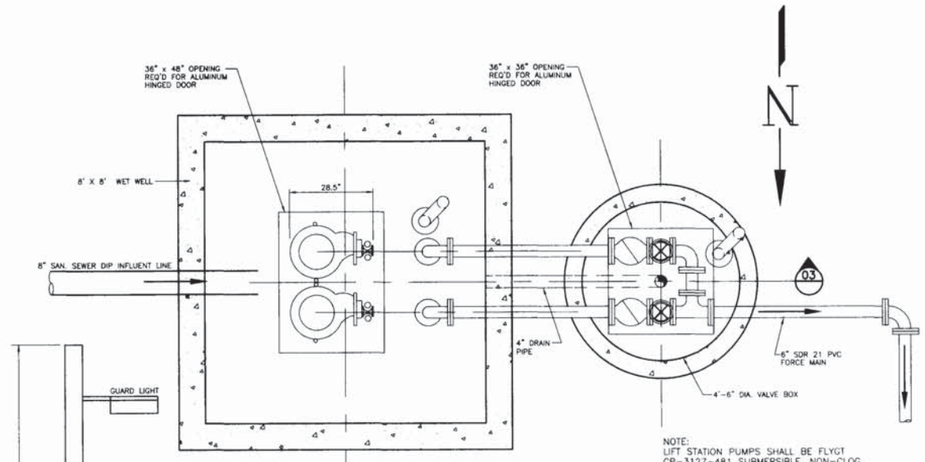


NOTE:
CONCRETE SHALL BE, AS A MINIMUM, A 6 SACK MIX HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

(PIPING OMITTED)

01 SECTION – LIFT STATION

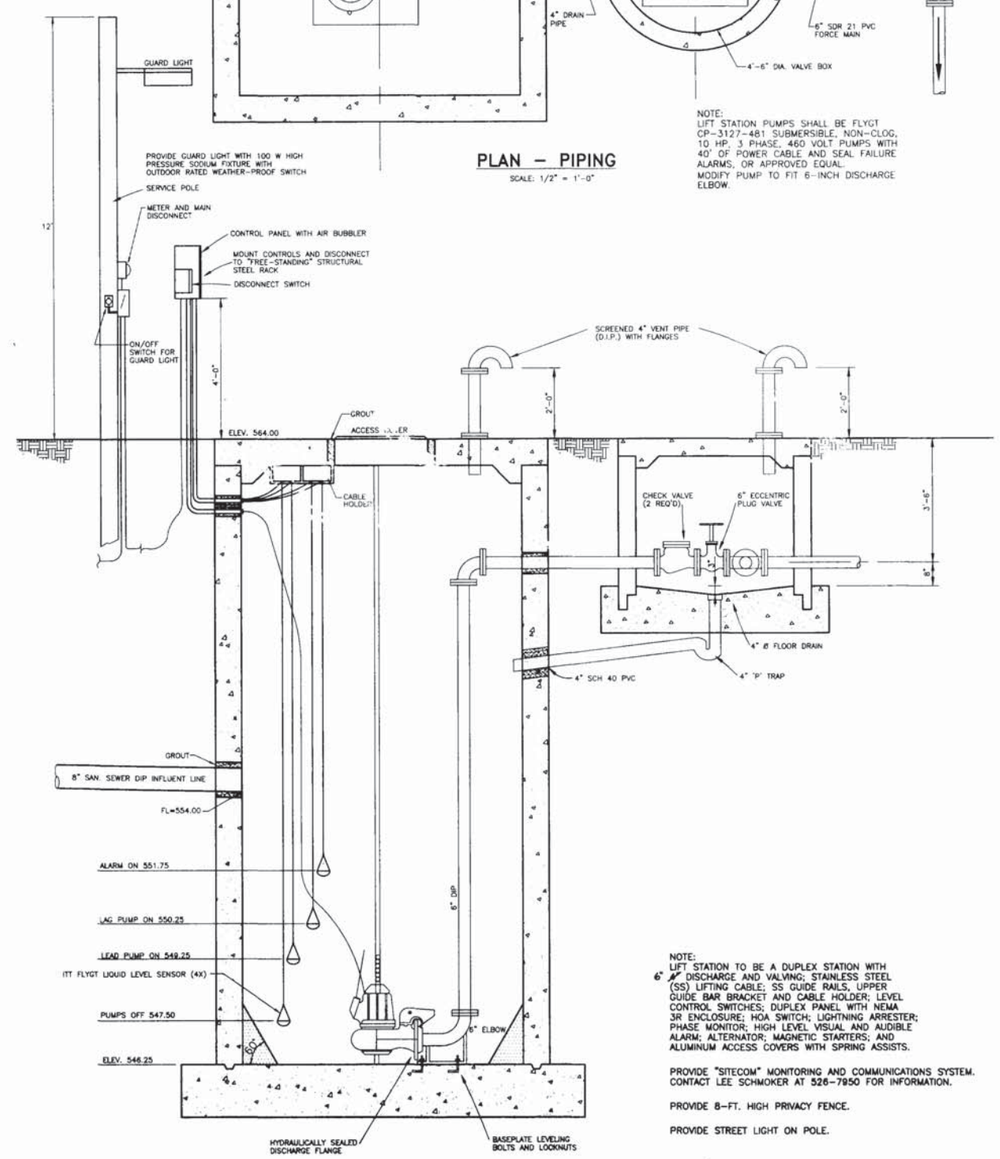
SCALE: 1/2" = 1'-0"



NOTE:
LIFT STATION PUMPS SHALL BE FLYGT CP-3127-481 SUBMERSIBLE, NON-CLOG, 10 HP, 3 PHASE, 460 VOLT PUMPS WITH 40' OF POWER CABLE AND SEAL FAILURE ALARMS, OR APPROVED EQUAL.
MODIFY PUMP TO FIT 6-INCH DISCHARGE ELBOW.

PLAN – PIPING

SCALE: 1/2" = 1'-0"



NOTE:
LIFT STATION TO BE A DUPLEX STATION WITH 6" ø DISCHARGE AND VALVING; STAINLESS STEEL (SS) LIFTING CABLE; SS GUIDE RAILS, UPPER GUIDE BAR BRACKET AND CABLE HOLDER; LEVEL CONTROL SWITCHES; DUPLEX PANEL WITH NEMA 3R ENCLOSURE; HOA SWITCH; LIGHTNING ARRESTER; PHASE MONITOR; HIGH LEVEL VISUAL AND AUDIBLE ALARM; ALTERNATOR; MAGNETIC STARTERS; AND ALUMINUM ACCESS COVERS WITH SPRING ASSISTS.

PROVIDE "SITECOM" MONITORING AND COMMUNICATIONS SYSTEM. CONTACT LEE SCHMOKER AT 526-7950 FOR INFORMATION.

PROVIDE 8-FT. HIGH PRIVACY FENCE.

PROVIDE STREET LIGHT ON POLE.

03 SECTION – PIPING

SCALE: 1/2" = 1'-0"

LIFT STATION DETAILS

DESIGNED BY:	RSB
DRAWN BY:	PJS
CHECKED BY:	RSB
DATE:	MARCH 2000
SCALE:	AS NOTED

STATE OF TEXAS
R.S.A. BEAUDREAUX
9776
REGISTERED PROFESSIONAL ENGINEER
03-08-00

The Brown Company
ENGINEERS SURVEYORS & LAND PLANNERS
1321 SOUTH BROADWAY
TYLER, TEXAS

CONSTRUCTION PLANS
FOR
CHARLESTON PARK, UNIT I
CHARLESTON PARK, L.L.C.
TYLER, SMITH COUNTY, TEXAS

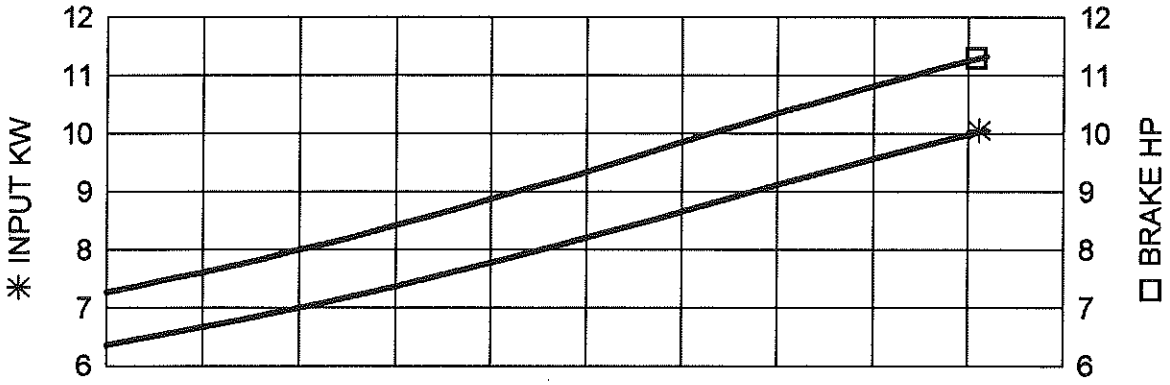
REVISIONS		
NO.	DATE	REMARKS

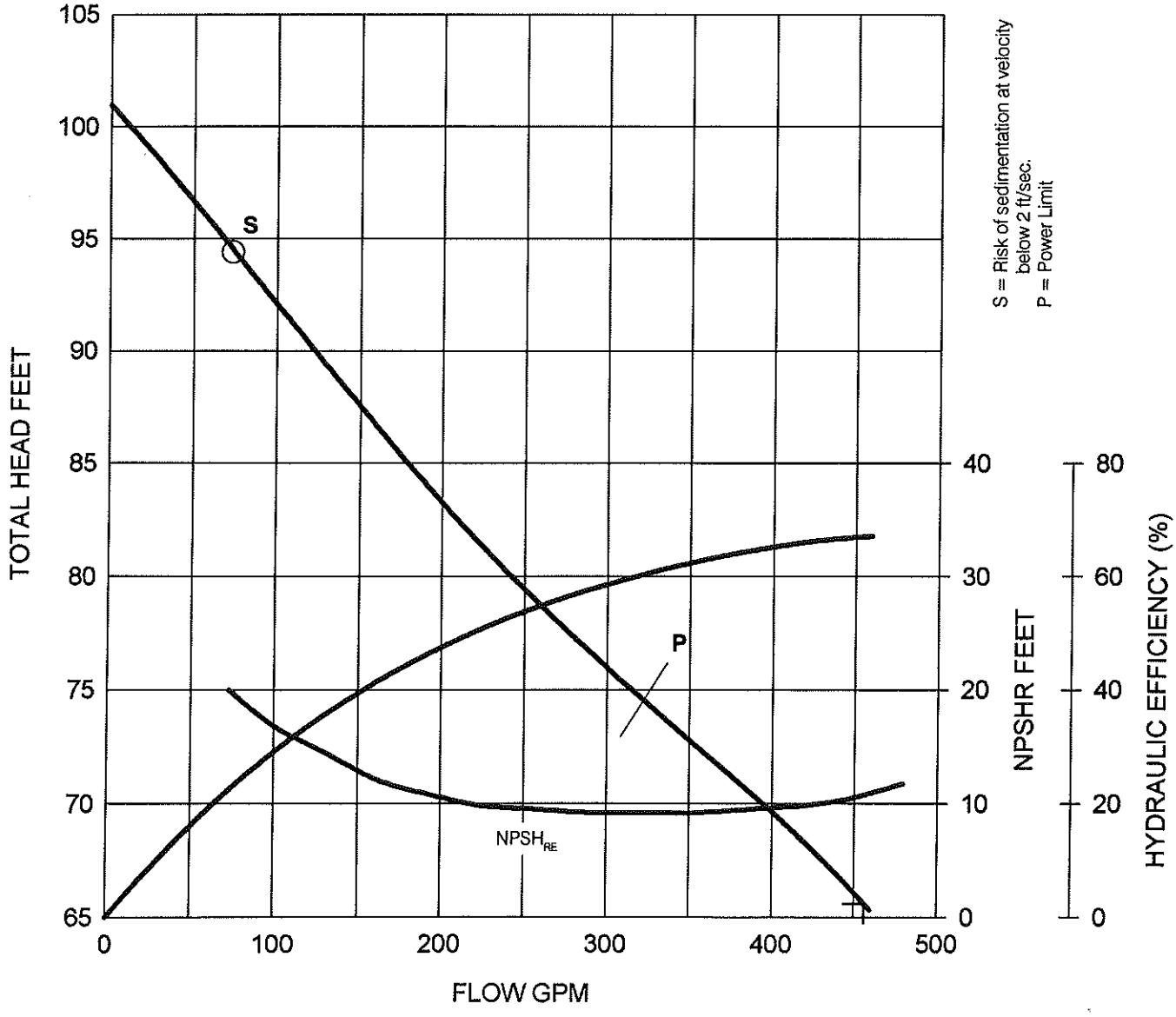
CONTRACT NO. 99067

SHEET NO. 17

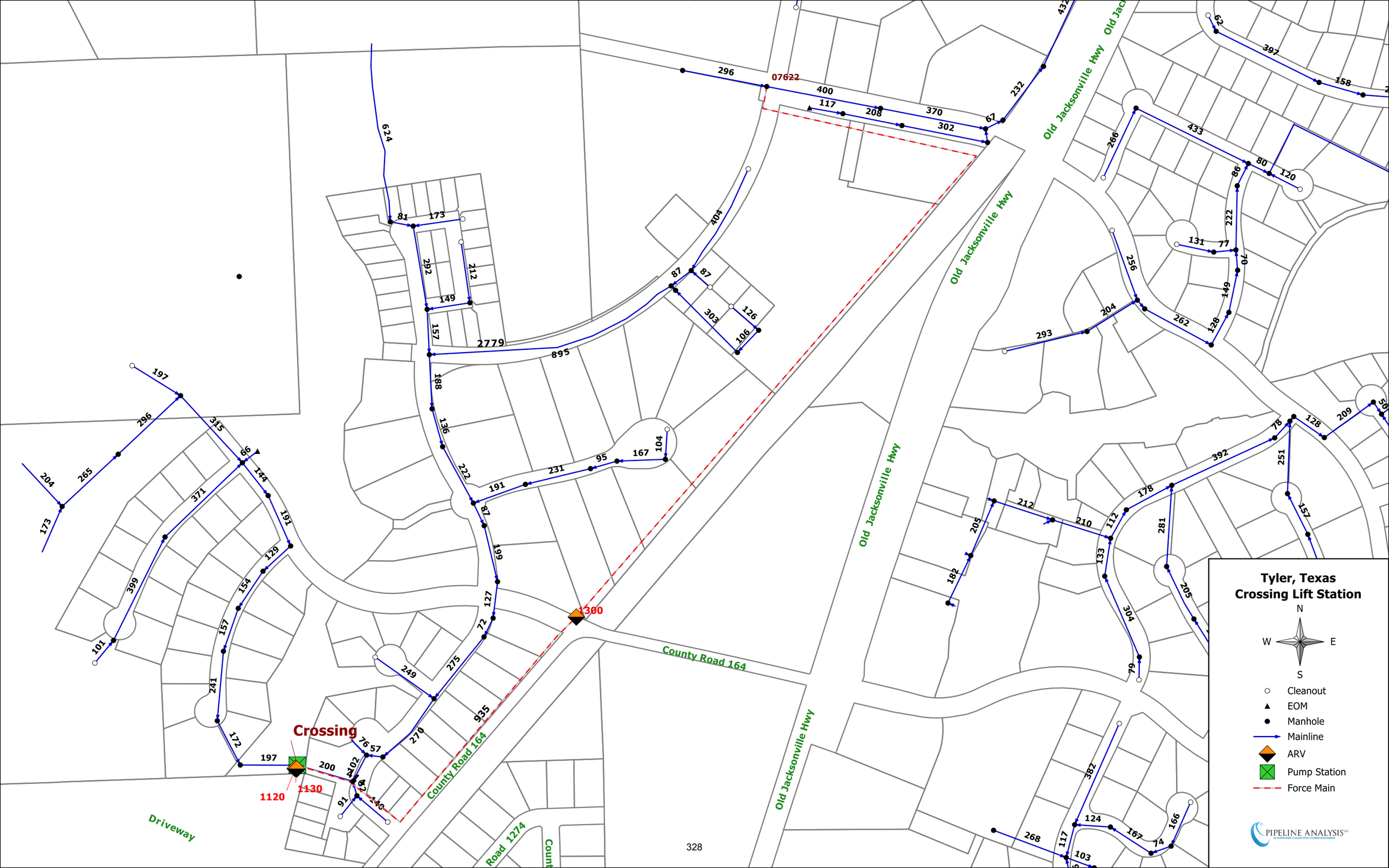
99067-17-LIFT.DWG

PAGE	SECTION		CONFIG.	
26	3	**C-3127**	CP	
ISSUED	SUPERSEDES	**481 Impeller**	VANES	PHASE
6/94	2/88		1	3





CROSSING LIFT STATION


Tyler, Texas
Crossing Lift Station
N
W
E
S
Cleanout
EOM
Manhole
Mainline
ARV
Pump Station
Force Main
PIPELINE ANALYSIS
Crossing
1120
1130
1300
07622
County Road 164
Old Jacksonville Hwy
Driveway
Road 1274
2779
895
935

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name CROSSINGS **Type** Submersible
Location/Address 7761 Cross 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 12, 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:	WROUGHT IRON	●	○	○	○	○
Gates	Type:	W.I. Double 15'-9"	●	○	○	○	○
Site/Grounds	Size:	21' x 26'	●	○	○	○	○
Lighting – need maintenance			○	○	●	○	○
Pavement (Driving)	Type:	Asphalt	○	●	○	○	○
Drainage	Type:	Surface	●	○	○	○	○
Odor	Comment:	NONE	●	○	○	○	○
Odor Control System	Type:	NONE	○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			●	○	○	○	○
Overall Site Appearance			●	○	○	○	○

Comments Asphalt Failure ½ way across drive at one location

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well	Size: ~7'8"x7'-8"						
Debris			○	○	●	○	○
Fats, oils, and grease			○	○	●	○	○
Ventilation	Pipe		●	○	○	○	○
Walls	Material:	Concrete	○	●	○	○	○
Coatings	Type:	?	○	●	○	○	○
Cr Access Hatches	Number:	METAL 1 double 5 1/2x3'-4"	●	○	○	○	○
Slab	Conc. 9x9	w/safety grate	●	○	○	○	○
Dry Well/Valve Vault							
Walls 6'x6'	Material:	Concrete	●	○	○	○	○
Coatings	Type:	?	○	○	○	○	○
Grating/Hatching	Number:	METAL 1-3x3	●	○	○	○	○
~~Stairway/Ladder~~	Material:	—	●	○	○	○	○
Sump/~~Pump~~	Number:	Floor Drain	○	○	○	○	○
Ventilation	Type:	Pipe	●	○	○	○	○

Comments Slab 7x7 concrete

Crane attachment fitting. Some pitting on wet well walls at water line. Air compressor on slab below control panel for wet well airation.

Mechanical

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

Mechanical (continued)

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

Discharge Piping	Material: 6" DI	●	○	○	○	○
Fittings	Material: DI	○	○	●	○	○

Comments Fitting poor in wetwell, good in Valve Vault
Corrosion on riser pipes. Fittings poor in wetwell, good in valve vault.

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	○	○	○	○	○

chain, rails, electric conduit - good
1 pump w/ grease and debris on top.

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	NONE	○	○	○	○	○
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:	None	○	○	○	○	○

Instrumentation/SCADA (continued)			Good	Fair	Poor	Critical	N/A
PLC	Type:		○	○	○	○	○
SCADA			○	○	○	○	○
RTU	Type:	Uplink	●	○	○	○	○
Radio/Antenna	Type:	Yes	●	○	○	○	○

Comments Antenna on Pole next to light pole
Visual Alarm, Sound Alarm

Building and Grounds

Lift Station Perimeter Facing West

Asphalt Damage on Driveway

Lift Station Lighting Mounted on Pole.
In Need of Maintenance

Structural

Minimal Corrosion and Peeling on Crane Attachment Fitting

Wet Well Interior

Air Compressor on Slab Below Control Panel
For Wet Well Aeration

Mechanical

Fitting in Poor Condition in Wet Well

Check Valves in Valve Vault

Suction Pipe Shows Signs of Corrosion

Interior of Wet Well With Riser Pipes and Chain Links for Pumps Visible

Electrical

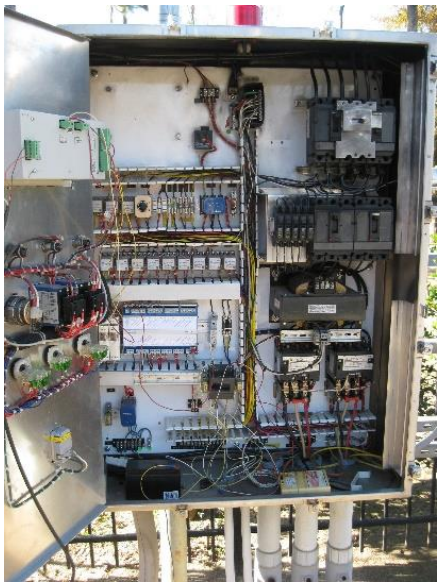
Electrical and Instrumentation Panels in Good Condition

Instrumentation/SCADA

Antenna on Light Pole

Visual and Sound Alarm on Instrumentation Panel

Inside Instrumentation Panel



Inside Instrumentation Panel (2)

Instrumentation/SCADA

Inside Instrumentation Panel Door

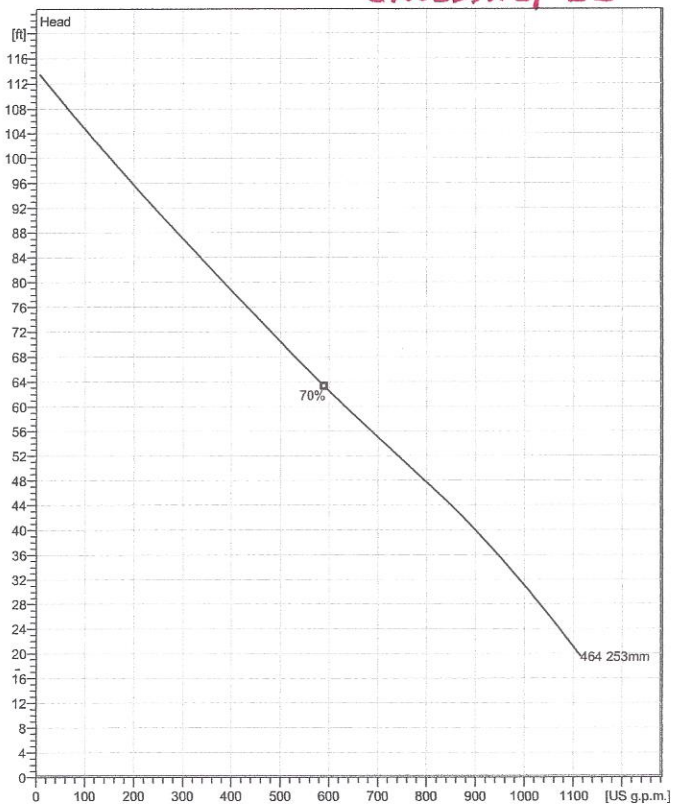
Uplink RTU

xylem

NP 3153 HT 3~ 464

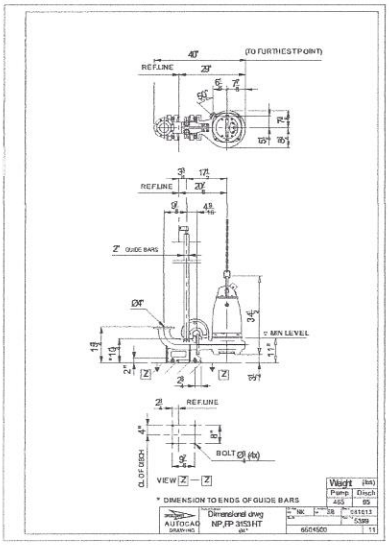
Technical specification

CROSSING LS



Water, pure *Curve ISO*

Installation: P - Semi permanent, Wet



Note: Picture might not correspond to the current configuration.

General

Patented self cleaning semi-open channel impeller, ideal for pumping in waste water applications. Possible to be upgraded with Guide-pin® for even better clogging resistance. Modular based design with high adaptation grade.

Impeller

Impeller material	Hard-Iron ™
Discharge Flange Diameter	3 15/16 inch
Suction Flange Diameter	3 15/16 inch
Impeller diameter	253 mm
Number of blades	2

Motor

Motor #	N3153.095 21-18-4AA-W 20hp FM
Stator variant	1
Frequency	60 Hz
Rated voltage	460 V
Number of poles	4
Phases	3~
Rated power	20 hp
Rated current	26 A
Starting current	157 A
Rated speed	1760 rpm
Power factor	
1/1 Load	0.83
3/4 Load	0.78
1/2 Load	0.67
Motor efficiency	
1/1 Load	87.5 %
3/4 Load	88.5 %
1/2 Load	87.5 %

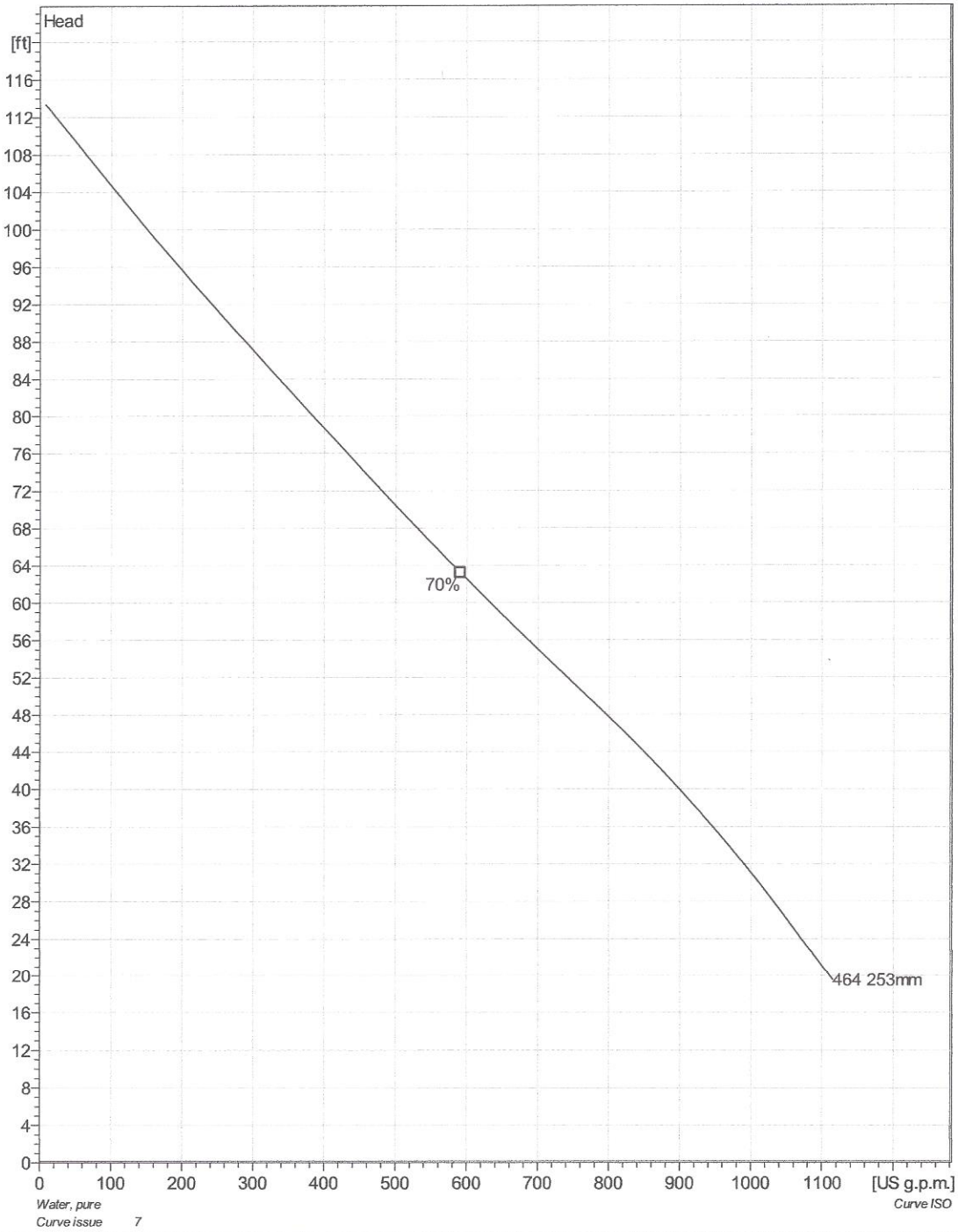
Configuration

Project	Project ID	Created by	Created on	Last update
			2017-04-26	

xylem

NP 3153 HT 3~ 464

Duty Analysis



Project	Project ID	Created by	Created on	Last update
			2017-04-26	

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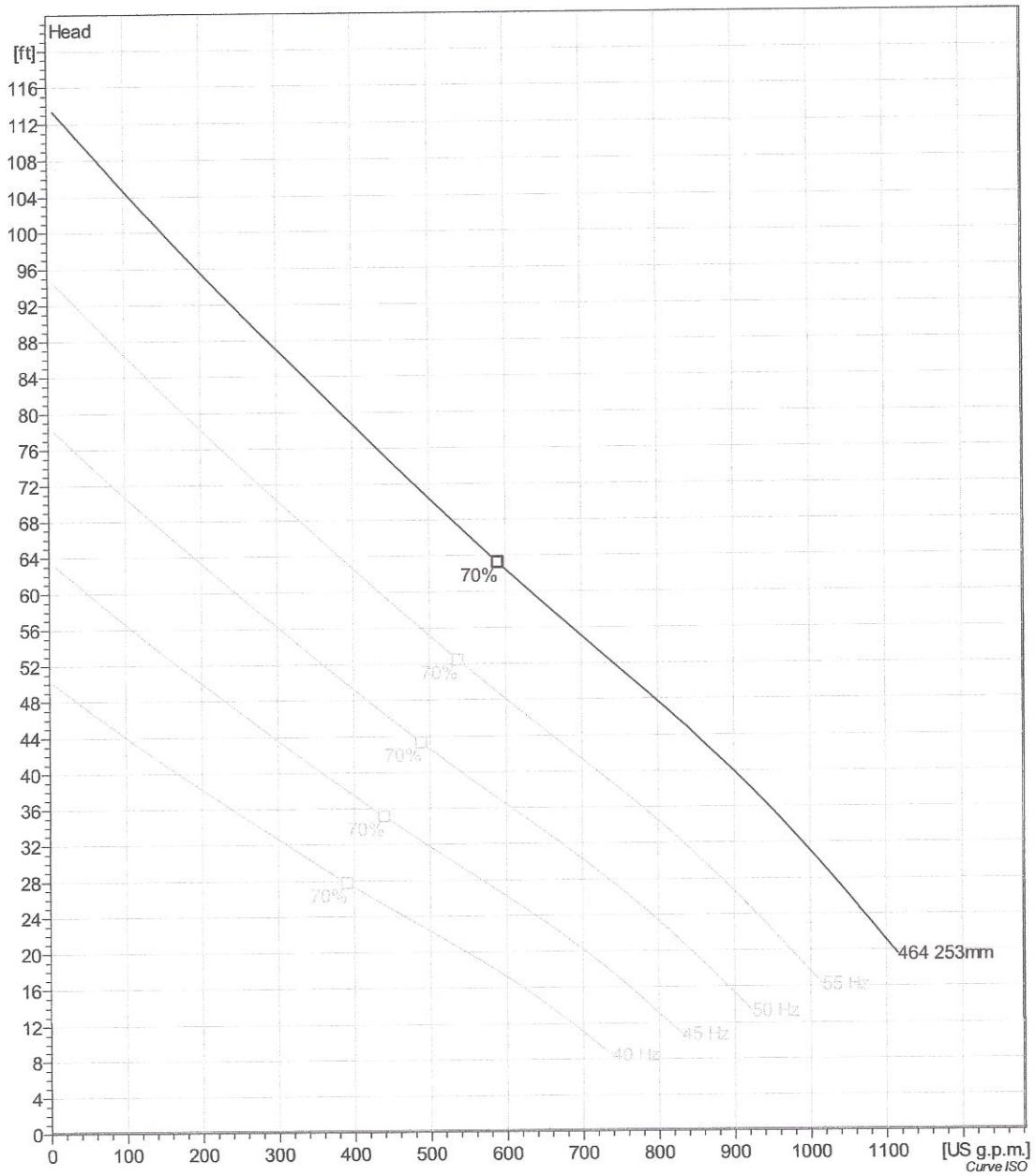
NP 3153 HT 3~ 464

FLYGT

VFD Analysis



Project	Project ID	Created by	Created on	Last update
			2017-04-26	

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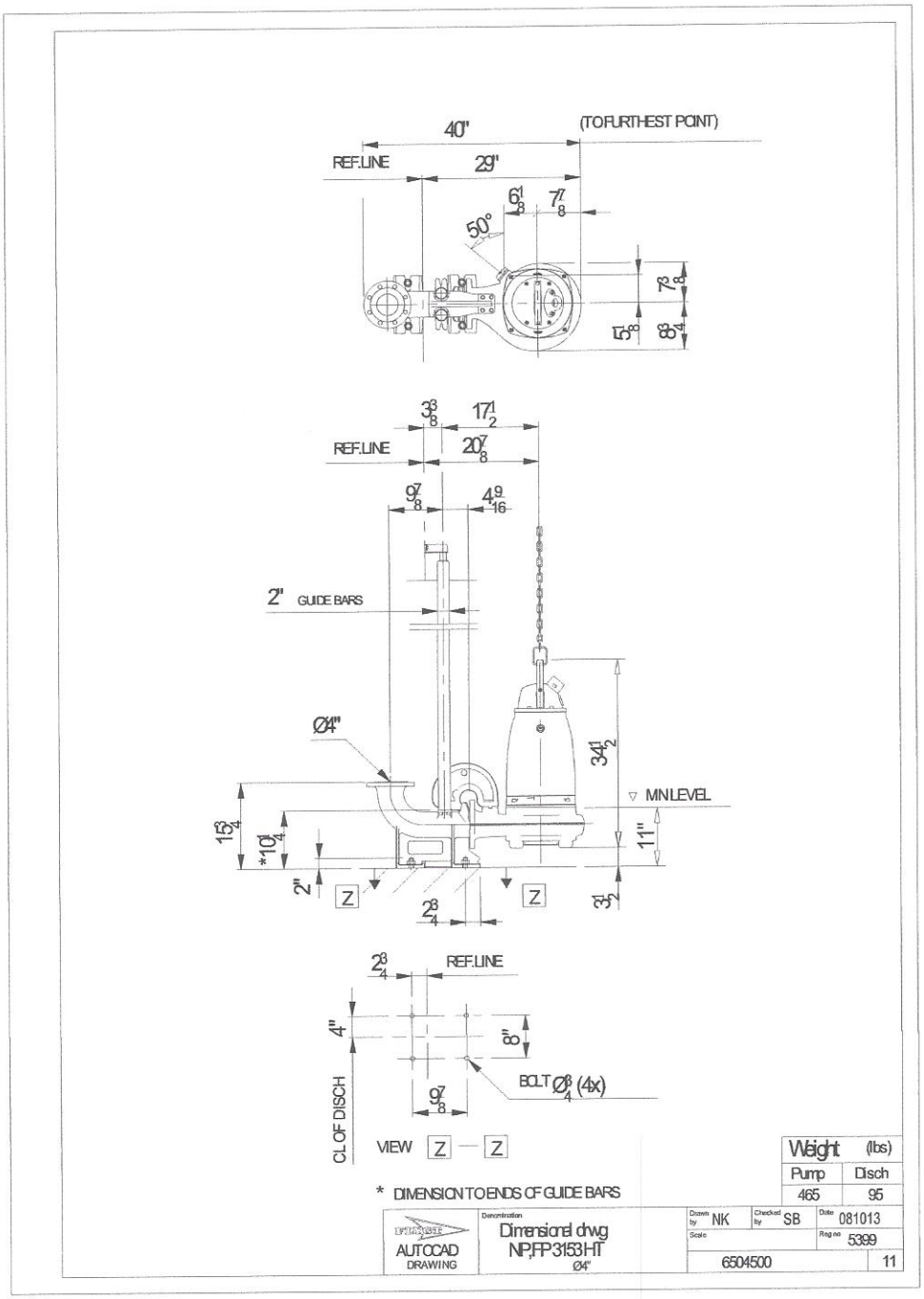
NP 3153 HT 3~ 464

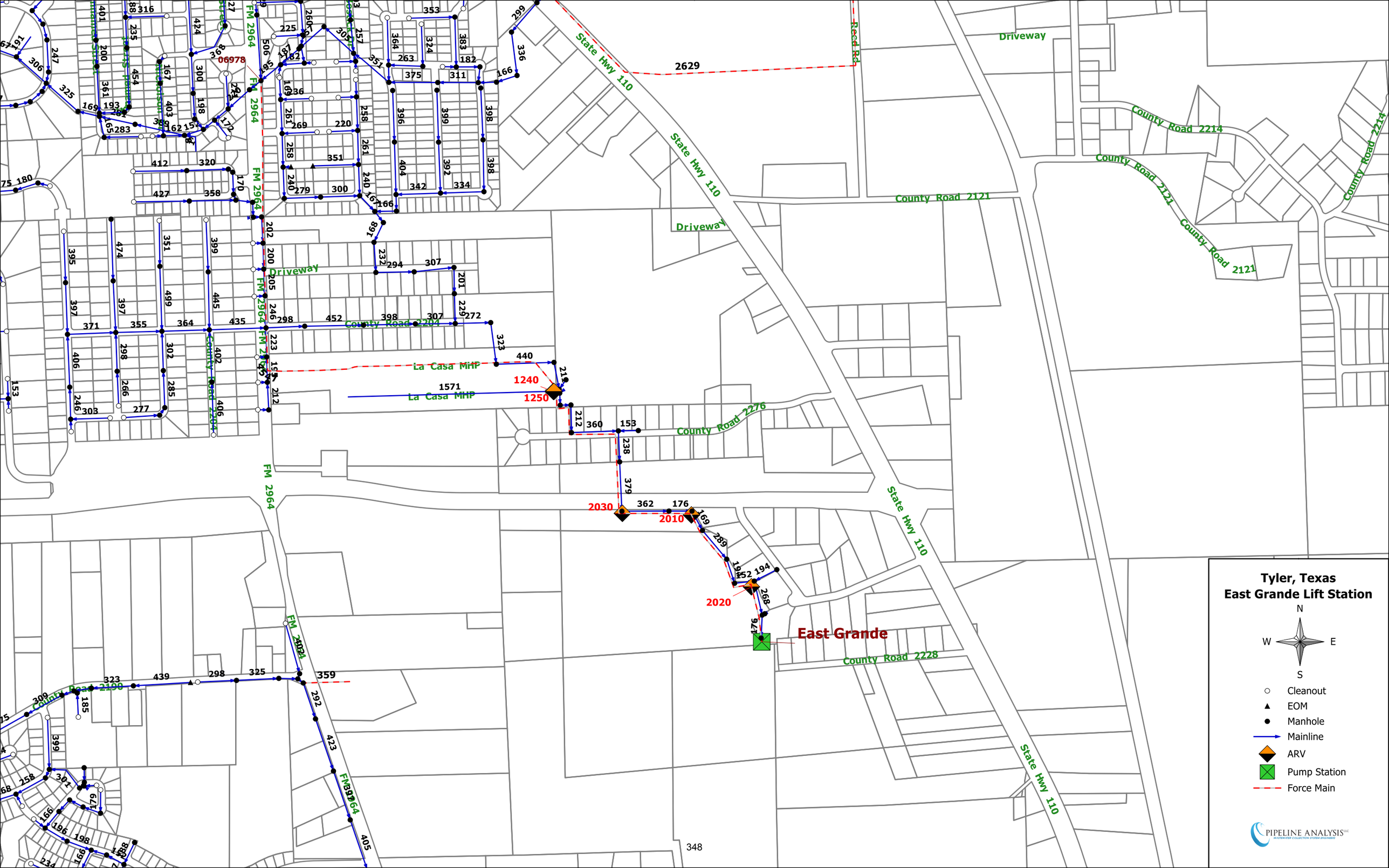
Dimensional drawing

FLYGT



Project	Project ID	Created by	Created on	Last update
			2017-04-26	

EAST GRANDE LIFT STATION


Tyler, Texas
East Grande Lift Station
N
W
E
S
Cleanout
EOM
Manhole
Mainline
ARV
Pump Station
Force Main
PIPELINE ANALYSIS
East Grande
State Hwy 110
County Road 2214
County Road 2121
County Road 2276
County Road 2228
County Road 2204
County Road 2190
FM 2964
Driveway
La Casa MHP
Reed Rd
2629
1240
1250
1571
2030
2010
2020
06978
348

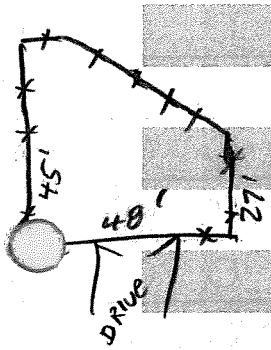
N 32° 16.525'
W 95° 14.966'

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name EAST GRANDE **Type** Submersible
Location/Address 13692 Sydney Road
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 15, 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 15'	Type:	"	●	○	○	○	○
Site/Grounds	Size:	See sketch	●	○	○	○	○
Lighting		✓	●	○	○	○	○
Pavement (Driving)	Type:	Concrete	●	○	○	○	○
Drainage	Type:	Surface	○	●	○	○	○
Odor	Comment:	NONE	●	○	○	○	○
Odor Control System	Type:		○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			●	○	○	○	○
Overall Site Appearance			●	○	○	○	○



Comments Hoist Attachment Present; Slab surface Flush with natural ground along some edges.

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well	Size:	10'x10'					
Debris			○	●	○	○	○
Fats, oils, and grease			○	●	○	○	○
Ventilation PIPE			●	○	○	○	○
Walls	Material:	Concrete	●	○	○	○	○
Coatings	Type:	✓	●	●	○	○	○
Access Hatches W/ SAFETY GRATE	Number:	1 DOUBLE METAL 5'x8'8"	●	●	○	○	○
walls 1' Thick Slab Concrete 12'x12'			●	○	○	○	○
Dry Well/Valve Vault							
Walls (walls 6" Thick Depth 4'-7")	Material:	CONCRETE	●	○	○	○	○
Coatings	Type:	✓	●	○	○	○	○
~~Grating~~/Hatching	Number:	1-METAL 4'x3'	○	●	○	○	○
Stairway/Ladder	Material:	NO	○	○	○	○	●
Sump ~~/Pump~~	Number:	Floor Drain	○	●	○	○	○
Ventilation	Type:	Pipe	●	○	○	○	○

Comments MINOR CORROSION on top surface of hatches Floor Drain Need cleaning, One pump has lift cable attached, one does not. Cable Found coiled on Instrument Panel Post

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	●	○	○	○	○

Discharge Piping	Material: 4" DI	●	○	○	○	○
Fittings	Material: 4" DI	●	○	○	○	○

Comments Compressor for airation of wet well.

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:	NO	○	○	○	○	○
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:	Ultra sonic	●	○	○	○	○
Flow	Type:	No	○	○	○	○	○

Instrumentation/SCADA (continued)

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

Comments Visual and Sound Alarm

Building and Grounds

Lift Station Perimeter

Hoist for Submersible Pumps

Wet Well Slab

Wet Well Slab Surface Flush With Ground

Structural

Minor Corrosion on Top Surface of Hatch (1)

Wet Well Hatch Open

Interior of Wet Well

Interior of Wet Well (2)

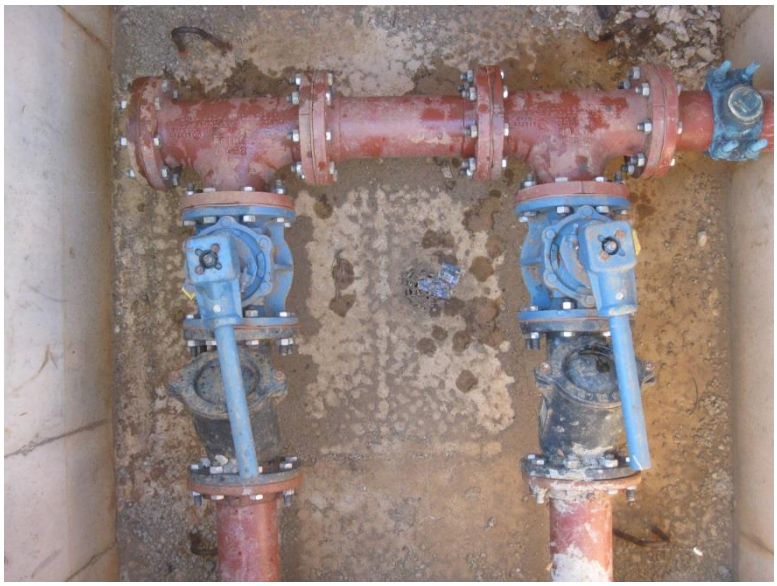
Structural

Minor Amount of Oil and Fat Deposits in Wet Well

Cable Found Coiled on Instrument Panel Post

Mechanical

Air Compressor For Aeration of Wet Well



Check Valves in Valve Vault

Electrical

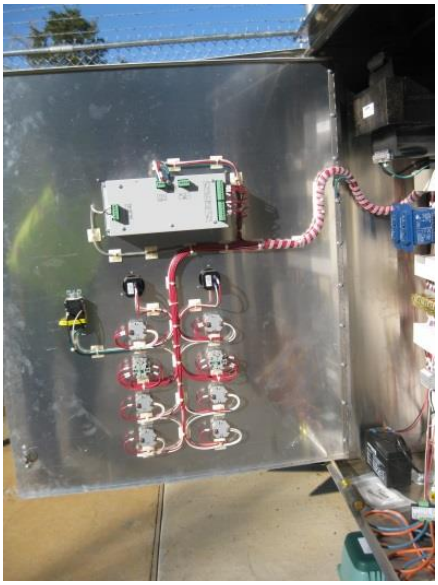
Electrical Meter

Instrumentation/SCADA

Visual and Sound Alarm on Instrumentation Panel

Inside Instrumentation Panel

Inside Instrumentation Panel (2)



Inside Instrumentation Panel Door

Instrumentation/SCADA

Uplink RTU

Record Drawing
December 2016

EAST GRANDE SANITARY SEWER IMPROVEMENTS
Lift Station Calculations
SANITARY SEWER FLOW CALCULATIONS

4/23/2015 for City of Tyler Utilities

Subdivision Classification	Capacity Persons Unit (or Lot)	Flow GPD Person	Land Capacity Units (or Lots) Acre	Day Length Hours	Average Flow Calculations GPM Lot	GPM Acre	GPM Person	Peaking Factor
R1 - 6"	3.3	140	-	24	0.32	-	-	4.0
R1 - 8"	3.3	140	-	24	0.32	-	-	2.5
R2 - 6"	3.3	100	20	24	0.23	4.58	-	4.0
R2 - 8"	3.3	100	20	24	0.23	4.58	-	2.5
RMF - 6"	2.5	100	20	24	0.17	3.47	-	4.0
RMF - 8"	2.5	100	20	24	0.17	3.47	-	2.5
C1 - 6"	2	100	10	24	-	1.39	-	4.0
C1 - 8"	2	100	10	24	-	1.39	-	2.5
C2 - 6"	2	100	5	24	-	0.69	-	4.0
C2 - 8"	2	100	5	24	-	0.69	-	2.5
RPO - 6"	50	20	1	12	-	1.39	-	4.0
RPO - 8"	50	20	1	12	-	1.39	-	2.5
Elementary	-	15	-	9	-	-	0.03	3.0
HS/MS	-	20	-	9	-	-	0.04	3.0

Service Areas	Subdivision Sizes by Classification: Commercial C2 - 8" # of Acres	Commercial C1 - 8" # of Acres	Residential RMF - 8" # of Acres	Residential R1 - 8" # of Lots	Subdivision Flowrates (in GPM) by Classification: Commercial C2 - 8" x 0.69 GPM/Acre	Commercial C1 - 8" x 1.39 GPM/Acre	Residential RMF - 8" x 3.47 GPM/Acre	Residential R1 - 8" x 0.32 GPM/Lot	Average Flow GPM	Peak Flow GPM
Tyler S. Commercial Park	37.4				26.0				26.0	64.9
Future Devel along Grande	23		22		16.0		76.4		92.4	230.9
Ex Lift Station Area				220				70.6	70.6	176.5
Pleasant Hill Addition				34				10.9	10.9	27.3
TOTALS	60.4	0	22	254	41.9	0.0	76.4	81.5	199.8	499.6

Note: Average flow for lift station = 199.8 GPM (Calculated) Use: 200 GPM
Peak flow for lift station = 499.6 GPM (Calculated) Use: 500 GPM - Pump 500 GPM Peak

EAST GRANDE SANITARY SEWER IMPROVEMENTS
Lift Station Calculations
PUMPING HEAD CALCULATIONS

10/21/2015

Description: **Lift Station with 8" Force Main**

Pipe Sizes:			Pipe Lengths:			Hazen-Williams Coefficients:	
Suction Line:	4	inch	Length Suction Pipe:	0	feet	Pump & Suction:	140
Pump Branch:	4	inch	Length of Station Pipe:	42	feet	Main:	140
Main Pipe "A":	8	inch	Length of Main "A":	7667	feet		
Main Pipe "B":		inch	Length of Main "B":		feet		
Main Pipe "C":		inch	Length of Main "C":		feet		

Minor Head Losses:		
Sum of Loss Coefficients in suction line	K=	0
Sum of Loss Coefficients in station piping	K=	2.3
Sum of Loss Coefficients in main "A"	K=	14
Sum of Loss Coefficients in main "B"	K=	
Sum of Loss Coefficients in main "C"	K=	

* Based on 4 long radius 90-degree elbows with a K=0.6 & 18 angles and exit loss of K=1.0

CALCULATIONS FOR ONE PUMP ONLY

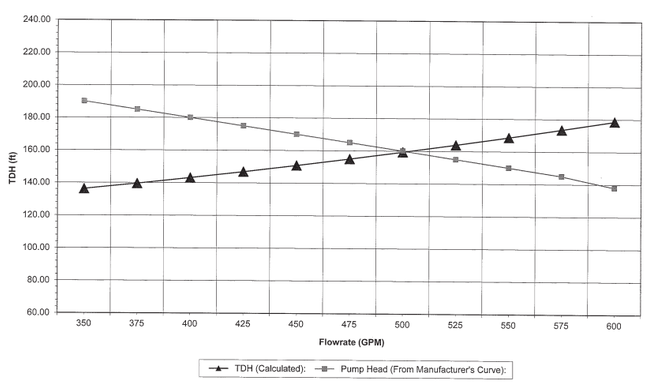
							Design Peak Flow				
Total Flow in GPM per Pump	350	375	400	425	450	475	500	525	550	575	600
Station Losses (Pump Branch):											
Velocity in station piping, fps	8.94	9.57	10.21	10.85	11.49	12.13	12.77	13.40	14.04	14.68	15.32
Minor Headloss @ station, feet	2.85	3.27	3.73	4.21	4.71	5.25	5.82	6.42	7.04	7.70	8.38
Suction Lift, feet	0	0	0	0	0	0	0	0	0	0	0
Static Lift Inside Station, feet	12	12	12	12	12	12	12	12	12	12	12
Friction slope in pipe, ft. per ft.	0.0067	0.0758	0.0854	0.0956	0.1062	0.1174	0.1291	0.1413	0.1540	0.1672	0.1810
Friction loss in pipe, feet	2.80	3.18	3.59	4.01	4.46	4.93	5.42	5.94	6.47	7.02	7.60
Total Station Losses:	17.65	18.46	19.31	20.22	21.18	22.18	23.24	24.35	25.51	26.72	27.98
Force Main "A" Losses:											
Velocity in force main, fps	2.23	2.39	2.55	2.71	2.87	3.03	3.19	3.35	3.51	3.67	3.83
Minor loss in force main, feet	1.09	1.25	1.42	1.60	1.79	2.00	2.21	2.44	2.68	2.93	3.19
Friction slope in pipe, ft. per ft.	0.0023	0.0026	0.0029	0.0033	0.0036	0.0040	0.0044	0.0048	0.0053	0.0057	0.0062
Friction loss in pipe, feet	17.48	19.86	22.39	25.05	27.84	30.77	33.84	37.04	40.37	43.84	47.43
Static lift, feet	100	100	100	100	100	100	100	100	100	100	100
Total Force Main "A" Losses:	118.57	121.11	123.80	126.65	129.64	132.77	136.06	139.48	143.05	146.77	150.62
Total Head Requirements:											
TDH (Calculated)	136.22	139.57	143.12	146.86	150.81	154.96	159.30	163.84	168.57	173.49	178.60
Pump Head (From Manufacturer's Curve)	190	185	180	175	170	165	160	155	150	145	138

Pump Selection:

Manufacturer:	Flygt
Model:	NP 3171.185 NP-275
Pump Size:	4"
Impeller Diameter:	7-11/16" NP275
Horse Power:	35 HP

EAST GRANDE SEWER
LIFT STATION
SYSTEM & PUMP CURVE

THE C.T. BRANNON CORP
Project: EAST GRANDE SEWER L.S.
Project #: 14116
3/30/2015



GRANDE SANITARY SEWER IMPROVEM
Lift Station Calculations
NEW PUMP CONTROL SETTINGS

4/23/2015

Lift Station Configuration:

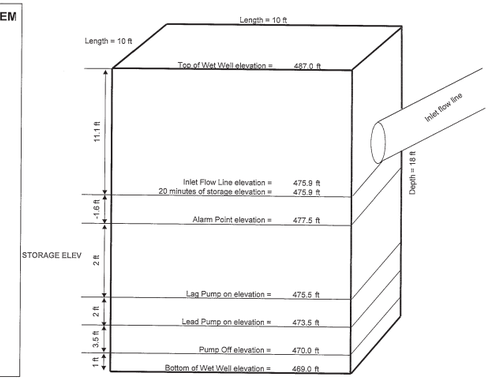
Well Dimensions = 10 ft. x 10 ft.
Top of Wet Well Lid Elev. = 487 ft

Inlet Flow Line Elev. = 475.86 ft
Wet Well Bottom Elev. = 469 ft
Depth = 18 ft

Peak Pump Flow = 500 GPM
Min. Flow = 66 GPM
Storage = 4104 Gallons
Operating Time = 6 Minutes

Pump Settings:

	Elevation (ft.)	Diff (ft.)
Top of Wet Well Elev.	487.0	
		11.1
20 Min Storage Limit Elev.	475.9	
		-1.6
Alarm Point Elev.	477.5	
		2.0
Lag Pump on	475.5	
		2.0
Lead Pump on	473.5	
		3.5
Pump Off	470.0	
		1.0
Bottom of Wet Well Elev.	469	
Total Differential		18.0



EAST GRANDE SANITARY SEWER IMPROVEMENTS
Lift Station Calculations
WET WELL SIZING

4/23/2015

Use Mass Balance Equation:

Rate Out = Rate In + Storage Rate

Use minumum flow rate for Rate In:

Rate In = 33% of average flow (minimum flow)

Collection System (Avg. Flow) = 200 gpm
Peak flow = 500 gpm

Rate In = 0.33 x 200 gpm
Rate In = 66.0 gpm

Rate of Storage:

Rate of Storage = Volume of Wetwell / Operating Time

Min. Operating Time (O.T.) for Max. Flow = 6 minutes

Volume of Storage Required:

Volume = (Rout - Rin) * O.T.

V = (500 GPM - 66 GPM) * 6 MIN
V = 2,604.00 gallons

Pump Design Flow = 500 gpm

Max. Detention Time:

Time = Volume / Minimum Flow
Time = 2604 gallons / 66 GPM
Time = 39.5 minutes — Aeration needed at wet well

Depth of Operating Volume in Wet Well:

Well Width = 10 ft
Well Length = 10 ft
Volume = 100 sq. ft. / Vertical Foot of Well

2604 gal = 100 * h * 7.48052 gal/cu. ft.
h = 2604 / 7.48052 / 100 sq. ft.
h = 3.48 feet

Storage Depth Needed for 20 Minutes at Peak Flow:

Volume = **2604 gal + 20 min * 500 GPM** — Peak flow in=500 GPM
Volume = 4,104 gallons — (Pump design=500 GPM
Volume = 549 cu. ft. — per force main velocity)

Vol. in lines = 0.0 cu. ft. — (optional, see below)

Required Storage = 549 cu. ft.
Required Well Storage = 549 cu. ft.

Required Well Depth = 5.49 ft

Check of Well Depth:

Inlet Flow Line Elev. = 475.9 ft
Bottom of Wet Well Elev. = 469 ft
Bottom of Oper. Range Elev. = 470 ft
Check Inlet Flow Line Elev. = 475.5 ft

EAST GRANDE SANITARY SEWER IMPROVEMENTS
Lift Station Calculations

Power Outage Storage Capacity

4/23/2015

7.48052 GAL/CF

Longest Power Outage over 24 month period:	**1** hr	**0** min	=	**60** mins

Average flow for lift station	*200* GPM
Volume of storage needed	**1604.17** GAL

Volume Under Inflow	Width	*10* ft	Total=	**690.00** CF
	Length	*10* ft		
	Inflow Elev	*475.9* ft		
	Bottom Elev	*469.0* ft		

Storage in Wet Well at certain Elevation	Elevation	**481.00** ft
	Additional Wet Well storage at Elev.	**510.00** CF
	Total Wet Well Storage at Elevation	**1200.00** CF

Line Storage	Line 1 size	**12**	inch	Length 1	**500** ft
	Line 2 size	**8**	inch	Length 2	**0** ft
	Line 3 size	**0**	inch	Length 3	**0** ft
	Line 4 size	**0**	inch	Length 4	**0** ft
	Line 5 size	**0**	inch	Length 5	**0** ft
	Line 6 size	**0**	inch	Length 6	**0** ft
	Total Line Storage:	**392.70** CF			

Total Storage Provided at Elevation	Elevation	481.00 ft
	Wet Well Storage	1200.00 CF
	Line Storage	392.70 CF
	Total Storage	1592.70 CF

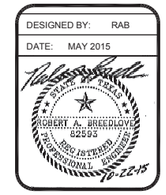
Total Storage Time Provided	**60** mins	*Required*	60 mins

0.99 hrs

ACCORDING TO THE "UNDERGROUND FACILITY DAMAGE PREVENTION & SAFETY ACT, SECTION 9" IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT TEXAS ONE CALL AT 1--800--245--4545 A MINIMUM OF 48 HOURS PRIOR TO BEGINNING ANY EXCAVATION ACTIVITIES.

LIFT STATION CALCULATIONS

DESIGNED BY: RAB
DATE: MAY 2015



1321 SOUTH BROADWAY
TYLER, TEXAS 75701
(903) 597-2122
BRANNON CORP
CIVIL ENGINEERS
THE C.T. BRANNON CORPORATION
TBPE FIRM #F-2144
WWW.BRANNONCORP.COM

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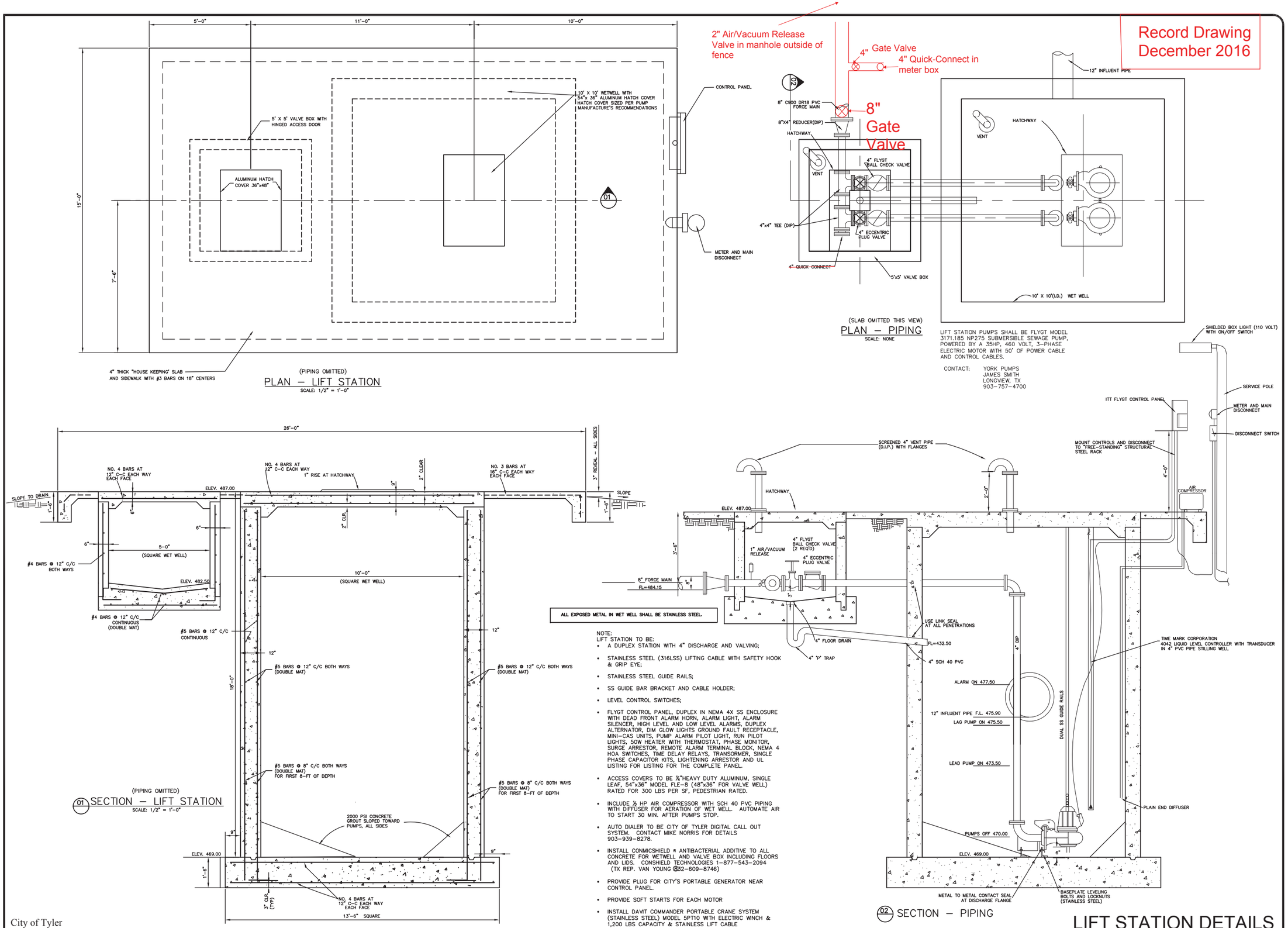
CONSTRUCTION PLANS
SANITARY SEWER IMPROVEMENTS
EAST GRANDE @ SH 110 & PALUXY @ SHACKLEFORD CREEK
CITY OF TYLER TYLER, TEXAS

NO	DATE	REVISIONS REMARKS

ISSUED FOR:

PROJECT NO. 14116
SHEET NO. **11.1**

14116-C11.0-LS Service Area



ALL EXPOSED METAL IN WET WELL SHALL BE STAINLESS STEEL.

NOTE:
LIFT STATION TO BE:

- A DUPLEX STATION WITH 4" DISCHARGE AND VALVING;
- STAINLESS STEEL (316LSS) LIFTING CABLE WITH SAFETY HOOK & GRIP EYE;
- STAINLESS STEEL GUIDE RAILS;
- SS GUIDE BAR BRACKET AND CABLE HOLDER;
- LEVEL CONTROL SWITCHES;
- FLYGT CONTROL PANEL, DUPLEX IN NEMA 4X SS ENCLOSURE WITH DEAD FRONT ALARM HORN, ALARM LIGHT, ALARM SILENCER, HIGH LEVEL AND LOW LEVEL ALARMS, DUPLEX ALTERNATOR, DIM GLOW LIGHTS GROUND FAULT RECEPTACLE, MINI-CAS UNITS, PUMP ALARM PILOT LIGHT, RUN PILOT LIGHTS, 50W HEATER WITH THERMOSTAT, PHASE MONITOR, SURGE ARRESTOR, REMOTE ALARM TERMINAL BLOCK, NEMA 4 HOA SWITCHES, TIME DELAY RELAYS, TRANSORMER, SINGLE PHASE CAPACITOR KITS, LIGHTENING ARRESTOR AND UL LISTING FOR LISTING FOR THE COMPLETE PANEL.
- ACCESS COVERS TO BE ¼"HEAVY DUTY ALUMINUM, SINGLE LEAF, 54"x36" MODEL FLE-8 (48"x36" FOR VALVE WELL) RATED FOR 300 LBS PER SF, PEDESTRIAN RATED.
- INCLUDE ½ HP AIR COMPRESSOR WITH SCH 40 PVC PIPING WITH DIFFUSER FOR AERATION OF WET WELL. AUTOMATE AIR TO START 30 MIN. AFTER PUMPS STOP.
- AUTO DIALER TO BE CITY OF TYLER DIGITAL CALL OUT SYSTEM. CONTACT MIKE NORRIS FOR DETAILS 903-939-8278.
- INSTALL CONMICSHIELD ® ANTIBACTERIAL ADDITIVE TO ALL CONCRETE FOR WETWELL AND VALVE BOX INCLUDING FLOORS AND LIDS. CONSHIELD TECHNOLOGIES 1-877-543-2094 (TX REP. VAN YOUNG @832-609-8746)
- PROVIDE PLUG FOR CITY'S PORTABLE GENERATOR NEAR CONTROL PANEL.
- PROVIDE SOFT STARTS FOR EACH MOTOR
- INSTALL DAVIT COMMANDER PORTABLE CRANE SYSTEM (STAINLESS STEEL) MODEL 5PT10 WITH ELECTRIC WINCH & 1,200 LBS CAPACITY & STAINLESS LIFT CABLE

DESIGNED BY: RAB
DATE: MAY 2015
ROBERT A. BREEDLOVE 62593 REGISTERED PROFESSIONAL ENGINEER STATE OF TEXAS
12-22-15

BRANNON CORP
CIVIL ENGINEERS
1321 SOUTH BROADWAY
TYLER, TEXAS 75701
(903) 597-2121
THE C.T. BRANNON CORPORATION
TBPE F-2312
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CONSTRUCTION PLANS
SANITARY SEWER IMPROVEMENTS
EAST GRANDE @ SH 110 &
PALUXY @ SHACKLEFORD CREEK
CITY OF TYLER TYLER, TEXAS

NO.	DATE	REVISIONS REMARKS

ISSUED FOR:

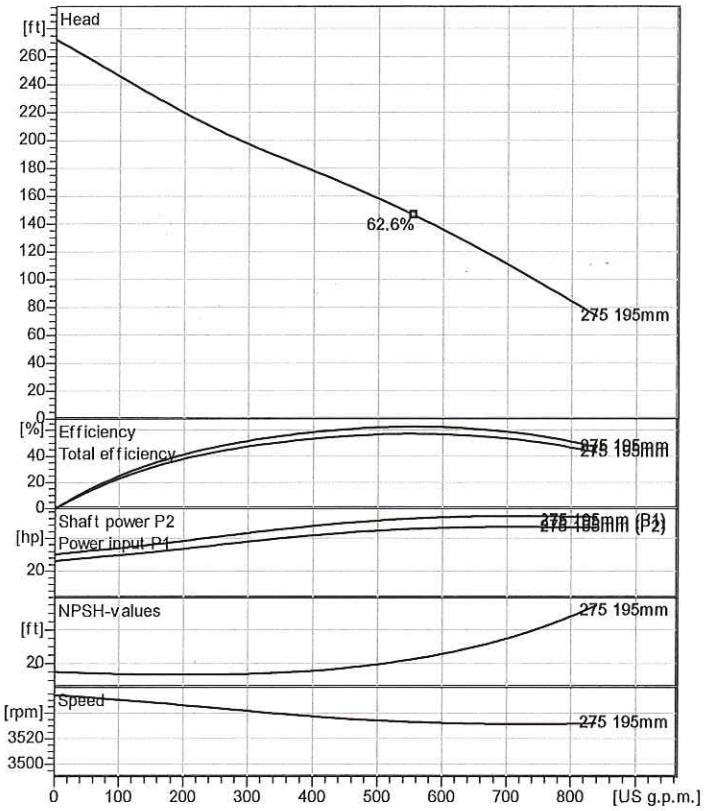
PROJECT NO. 14116
SHEET NO. 11.2

1411b-C11.2-LS

xylem
Let's Solve Water

NP 3171 SH 3~ 275

Technical specification

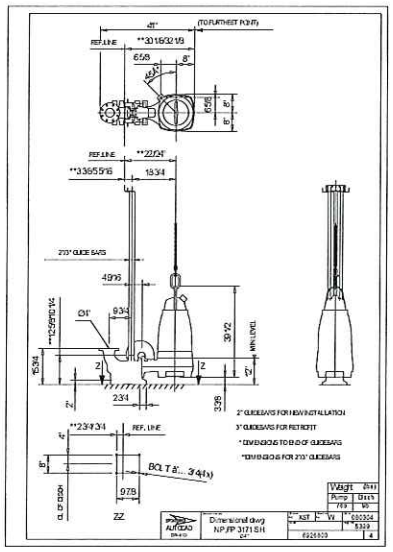


Water, pure

Curve according to: ISO 9906 grade 2 annex 1 or 2

Note: Picture might not correspond to the current configuration.

Installation: P - Semi permanent, Wet



General

Patented self cleaning semi-open channel impeller, ideal for pumping in waste water applications. Possible to be upgraded with Guide-pin® for even better clogging resistance. Modular based design with high adaptation grade.

Impeller

Impeller material	Grey cast iron
Discharge Flange Diameter	3 15/16 inch
Suction Flange Diameter	100 mm
Impeller diameter	195 mm
Number of blades	2

Motor

Motor #	N3171.181 25-18-2AA-W 35hp
Stator variant	9
Frequency	60 Hz
Rated voltage	460 V
Number of poles	2
Phases	3~
Rated power	35 hp
Rated current	40 A
Starting current	292 A
Rated speed	3530 rpm
Power factor	
1/1 Load	0.91
3/4 Load	0.89
1/2 Load	0.82
Efficiency	
1/1 Load	91.0 %
3/4 Load	91.5 %
1/2 Load	92.0 %

Configuration

Project	Project ID	Created by	Created on	Last update
East Grande Lift Station	**Tyler, City of**	**Troy Blackall**	**2015-04-01**	**2015-04-23**

xylem
Let's Solve Water

NP 3171 SH 3~ 275

FLYGT

Performance curve

Pump

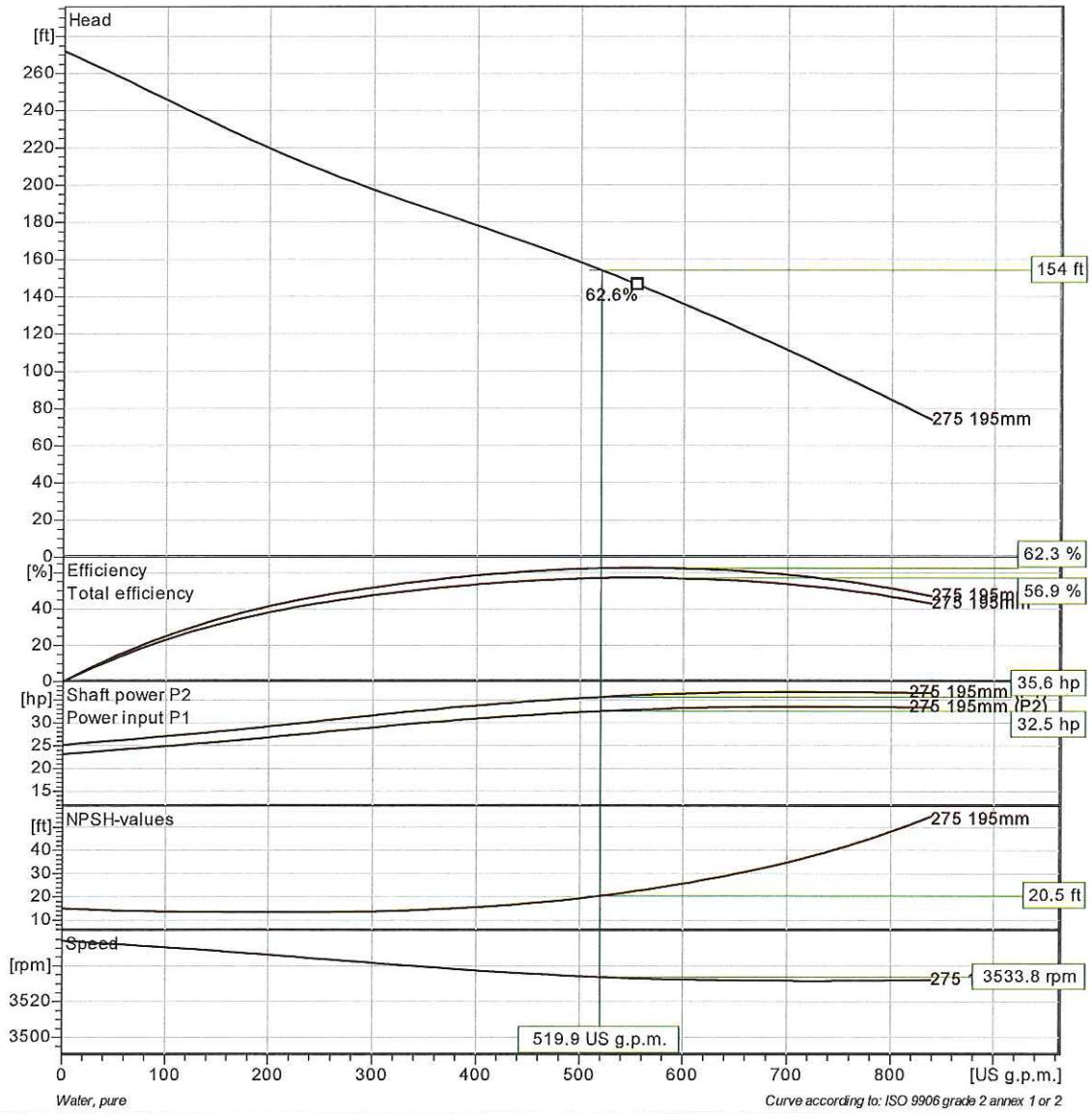
Discharge Flange Diameter	3 15/16 inch
Suction Flange Diameter	100 mm
Impeller diameter	7 11/16"
Number of blades	2

Motor

Motor #	N3171.181 25-18-2AA-W 35hp
Stator variant	9
Frequency	60 Hz
Rated voltage	460 V
Number of poles	2
Phases	3~
Rated power	35 hp
Rated current	40 A
Starting current	292 A
Rated speed	3530 rpm

Power factor	
1/1 Load	0.91
3/4 Load	0.89
1/2 Load	0.82

Efficiency	
1/1 Load	91.0 %
3/4 Load	91.5 %
1/2 Load	92.0 %



Project	Project ID	Created by	Created on	Last update
East Grande Lift Station	Tyler, City of	Troy Blackall	2015-04-01	2015-04-23

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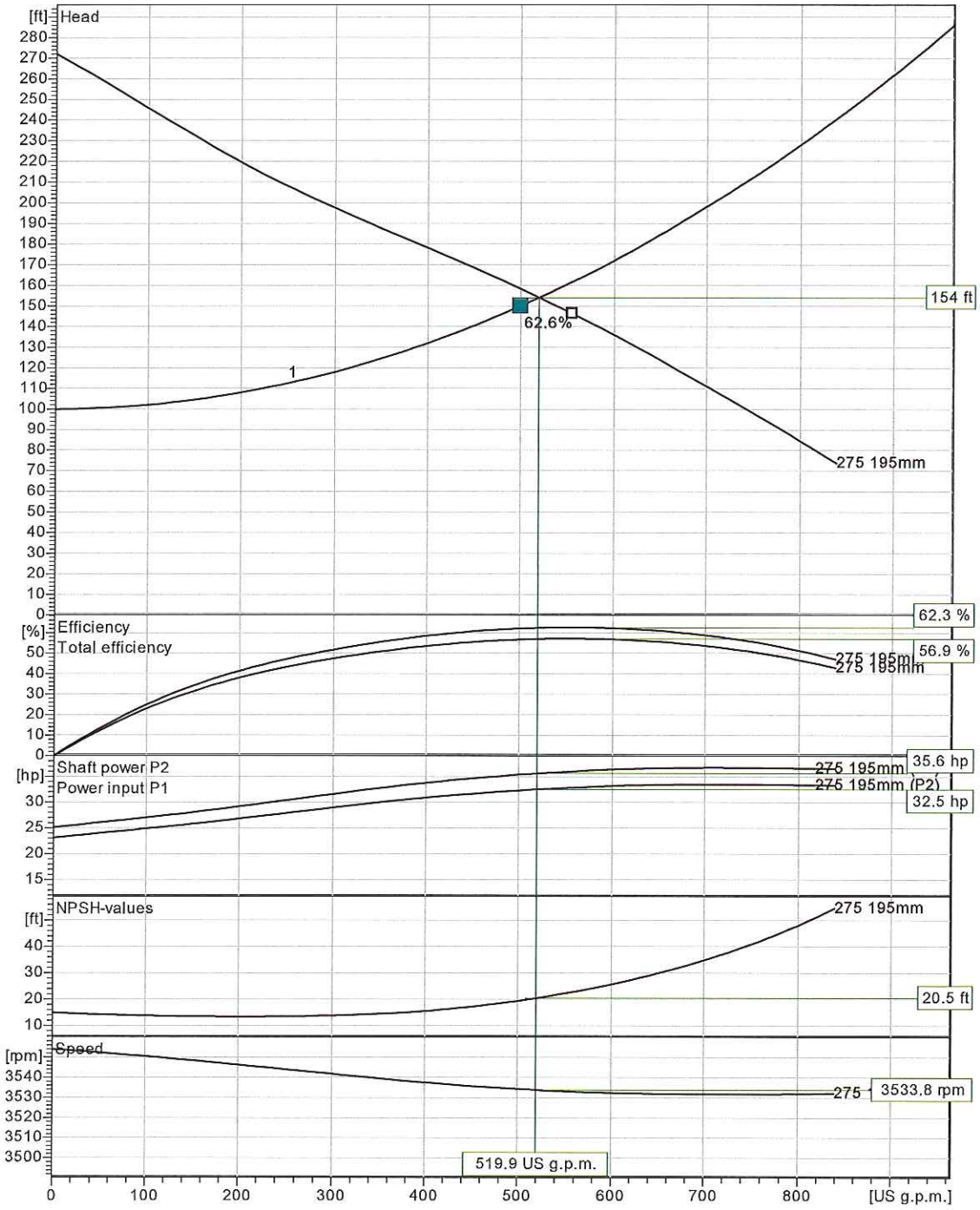
Let's Solve Water

NP 3171 SH 3~ 275

FLYGT

Duty Analysis



Pumps running /System	Indivi dual pump Flow	Head	Shaft power	Total Flow	Head	Shaft power	Pump eff.	Specific energy	NPSHre
1	520 US g.p.m.	154 ft	32.5 hp	520 US g.p.m.	154 ft	32.5 hp	62.3 %	851 kWh/US MG	20.5 ft

Project	Project ID	Created by	Created on	Last update
East Grande Lift Station	Tyler, City of	Troy Blackall	2015-04-01	2015-04-23

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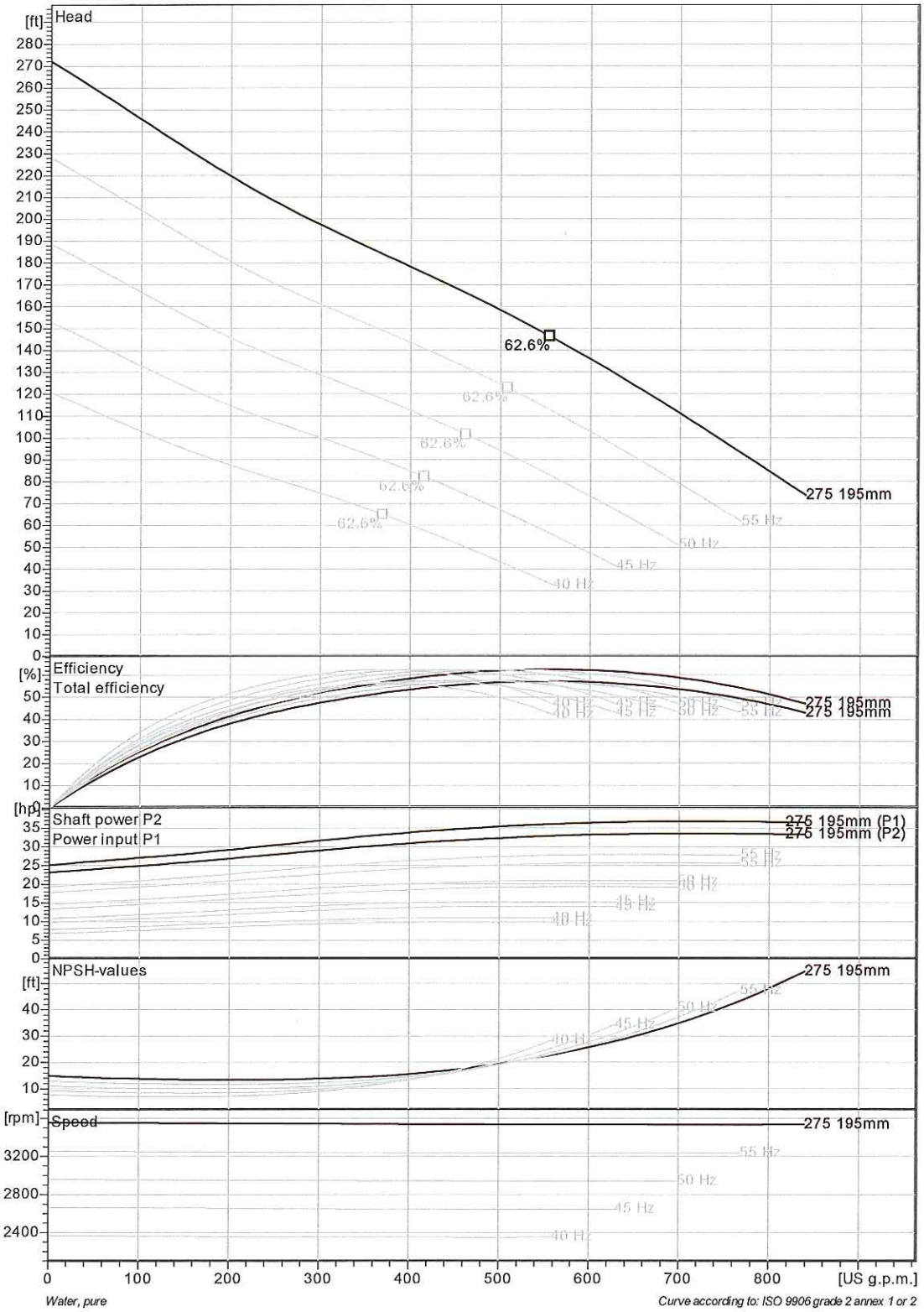
NP 3171 SH 3~ 275

VFD Curve

FLYGT



Project	Project ID	Created by	Created on	Last update
East Grande Lift Station	Tyler, City of	Troy Blackall	2015-04-01	2015-04-23

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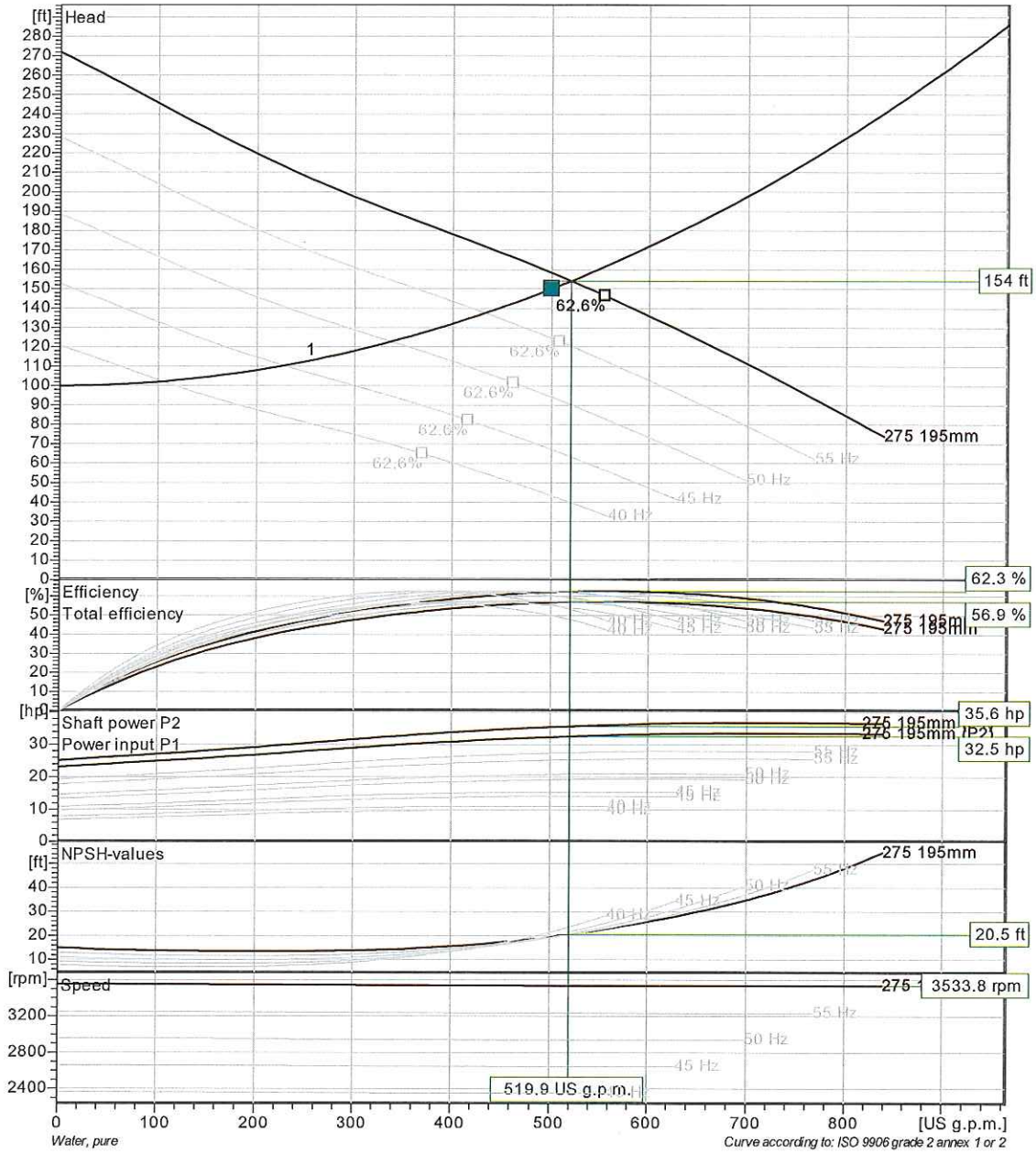
Let's Solve Water

NP 3171 SH 3~ 275

FLYGT

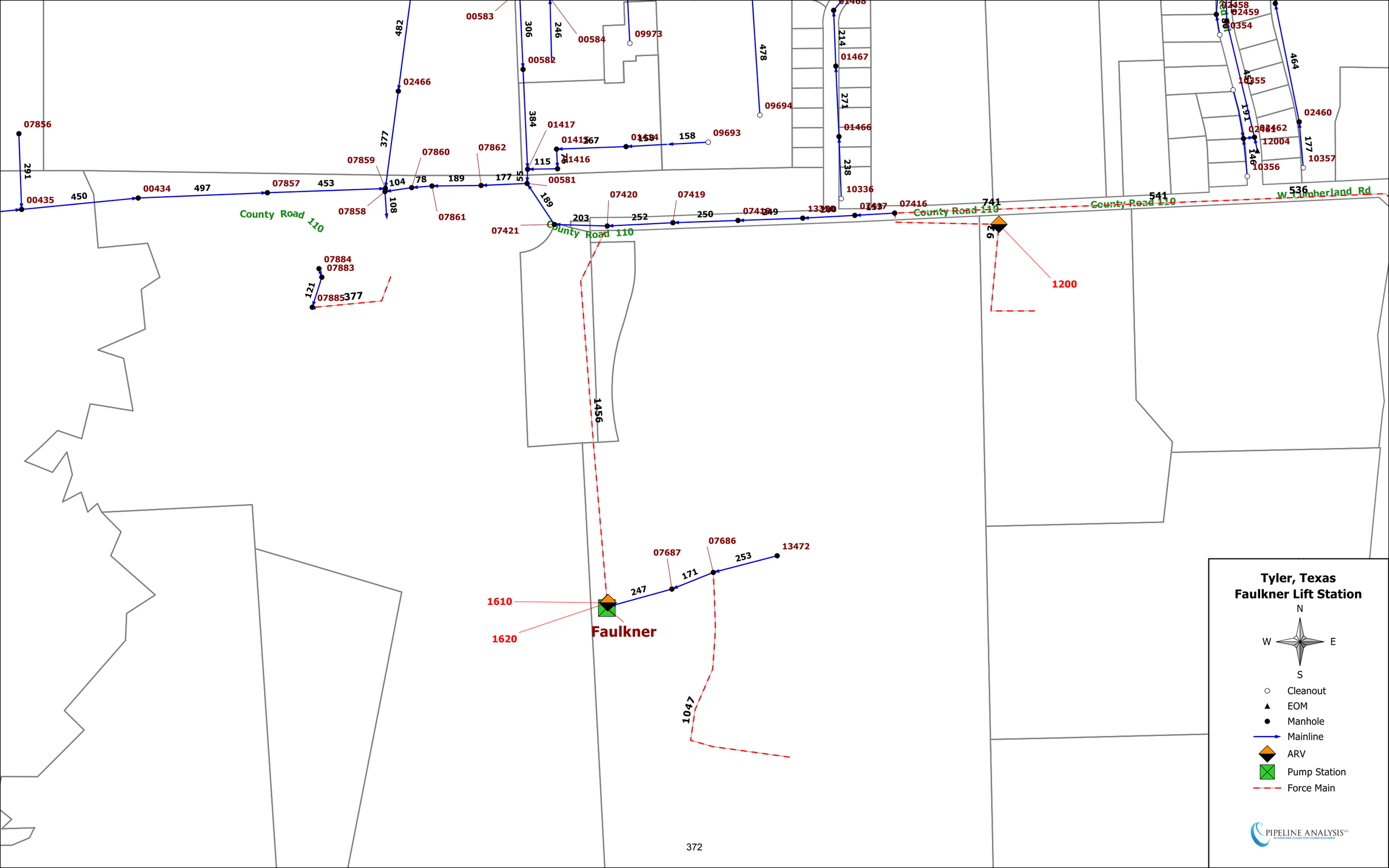
VFD Analysis



Pumps running /System	Individual pump Frequency	Flow	Head	Shaft power	Total Flow	Head	Shaft power	Hyd eff.	Specific energy	NPSHre
1	60 Hz	520 US g.p.m.	154 ft	32.5 hp	520 US g.p.m.	154 ft	32.5 hp	62.3 %	851 kWh/US MG	20.5 ft
1	55 Hz	433 US g.p.m.	137 ft	24.5 hp	433 US g.p.m.	137 ft	24.5 hp	61.3 %	766 kWh/US MG	15.7 ft
1	50 Hz	337 US g.p.m.	123 ft	17.9 hp	337 US g.p.m.	123 ft	17.9 hp	58.6 %	716 kWh/US MG	11.7 ft
1	45 Hz	228 US g.p.m.	110 ft	12.2 hp	228 US g.p.m.	110 ft	12.2 hp	52 %	733 kWh/US MG	8.73 ft
1	40 Hz	105 US g.p.m.	102 ft	7.67 hp	105 US g.p.m.	102 ft	7.67 hp	35.4 %	1030 kWh/US MG	7.06 ft

Project	Project ID	Created by	Created on	Last update
East Grande Lift Station	Tyler, City of	Troy Blackall	2015-04-01	2015-04-23

FAULKNER LIFT STATION


Tyler, Texas
Faulkner Lift Station
N
W
E
S
Cleanout
EOM
Manhole
Mainline
ARV
Pump Station
Force Main
Faulkner
1610
1620
1200
1456
1047
County Road 110
W Cumberland Rd
07856
00435
00434
07857
07858
07859
07860
07861
07862
07421
07420
07419
07416
07884
07883
07885
00583
00584
00582
00581
09973
09694
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01417
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02466
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02462
12004
10355
10356
10357
13472
07686
07687
247
171
253
377
482
306
246
384
478
214
271
238
464
191
177
146
291
450
497
453
104
78
108
189
177
55
115
158
203
252
250
741
541
536
121
377

Tyler Water Utilities - Lift Station Assessment Form

Lift Station Name Falkner **Type** Environmental One
Location/Address 460 Cumberland 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 12, 2017
City Works Work Order

Building and Grounds

			Good	Fair	Poor	Critical	N/A
Building Structure	Type:	ENVIRONMENTAL ONE Fiberg					
Building Roof/Ceiling		Fiberglass	●	○	○	○	○
Building Finishes		HDPE	●	○	○	○	○
Building Doors and Windows		—	○	○	○	○	○
Building HVAC	Type:	—	○	○	○	○	○
Fencing 12'x 12'	Type:	chain link	●	○	○	○	○
Gates 4'	Type:	"	●	○	○	○	○
Site/Grounds	Size:	12'x12'	●	○	○	○	○
Lighting		✓	●	○	○	○	○
Pavement (Driving)	Type:	None	○	○	○	○	●
Drainage	Type:	Surface	●	○	○	○	○
Odor	Comment:	None	●	○	○	○	○
Odor Control System	Type:	—	○	○	○	○	○
Odor Control Mechanical			○	○	○	○	○
Odor Control Media	Type:		○	○	○	○	○
Noise			○	○	○	○	○
Overall Site Appearance			●	○	○	○	○

Comments

Structural

			Good	Fair	Poor	Critical	N/A
Wet Well	Size:						
Debris		—	○	○	○	○	○
Fats, oils, and grease		—	○	○	○	○	○
Ventilation		1 vent	●	○	○	○	○
Walls	Material:	Plastic	●	○	○	○	○
Coatings	Type:	—	○	○	○	○	○
Access Hatches	Number:	1	●	○	○	○	○
Slab		—	○	○	○	○	○
Dry Well/Valve Vault		NONE					
Walls	Material:		○	○	○	○	○
Coatings	Type:		○	○	○	○	○
Grating/Hatching	Number:		○	○	○	○	○
Stairway/Ladder	Material:		○	○	○	○	○
Sump/Pump	Number:		○	○	○	○	○
Ventilation	Type:		○	○	○	○	○

Comments Environmental One Package System
Could not observe fluids in wet well (Environmental One System)

Mechanical

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

Mechanical (continued)

			Good	Fair	Poor	Critical	N/A
Riser Piping	Material:		○	○	○	○	○

Discharge Piping	Material:	○	○	○	○	○
Fittings	Material:	○	○	○	○	○

Comments Could not observe valves, Fittings or piping.

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

Environmental One fiberglass panel

Comments light alarm visible. Environmental One Panel.

Instrumentation/SCADA

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

Instrumentation/SCADA (continued)

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

Comments None Observed

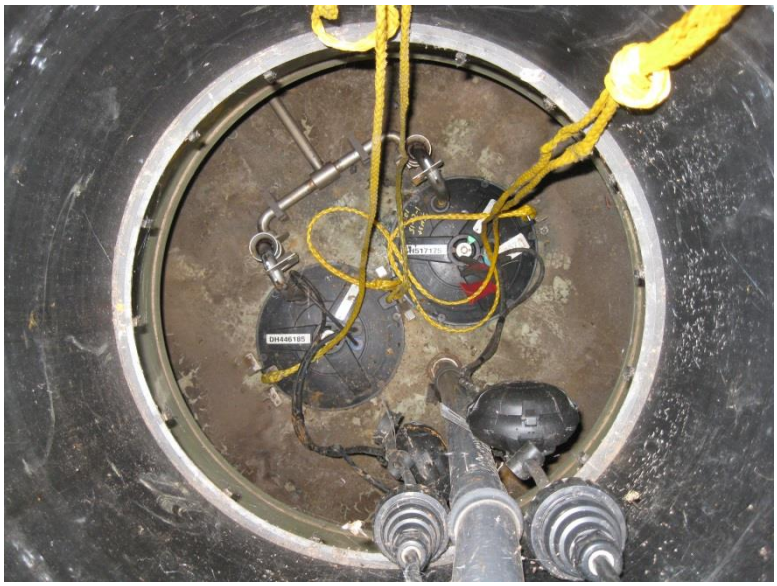
Building and Grounds

Lift Station Perimeter Fencing and Gate

Environmental One Fiberglass

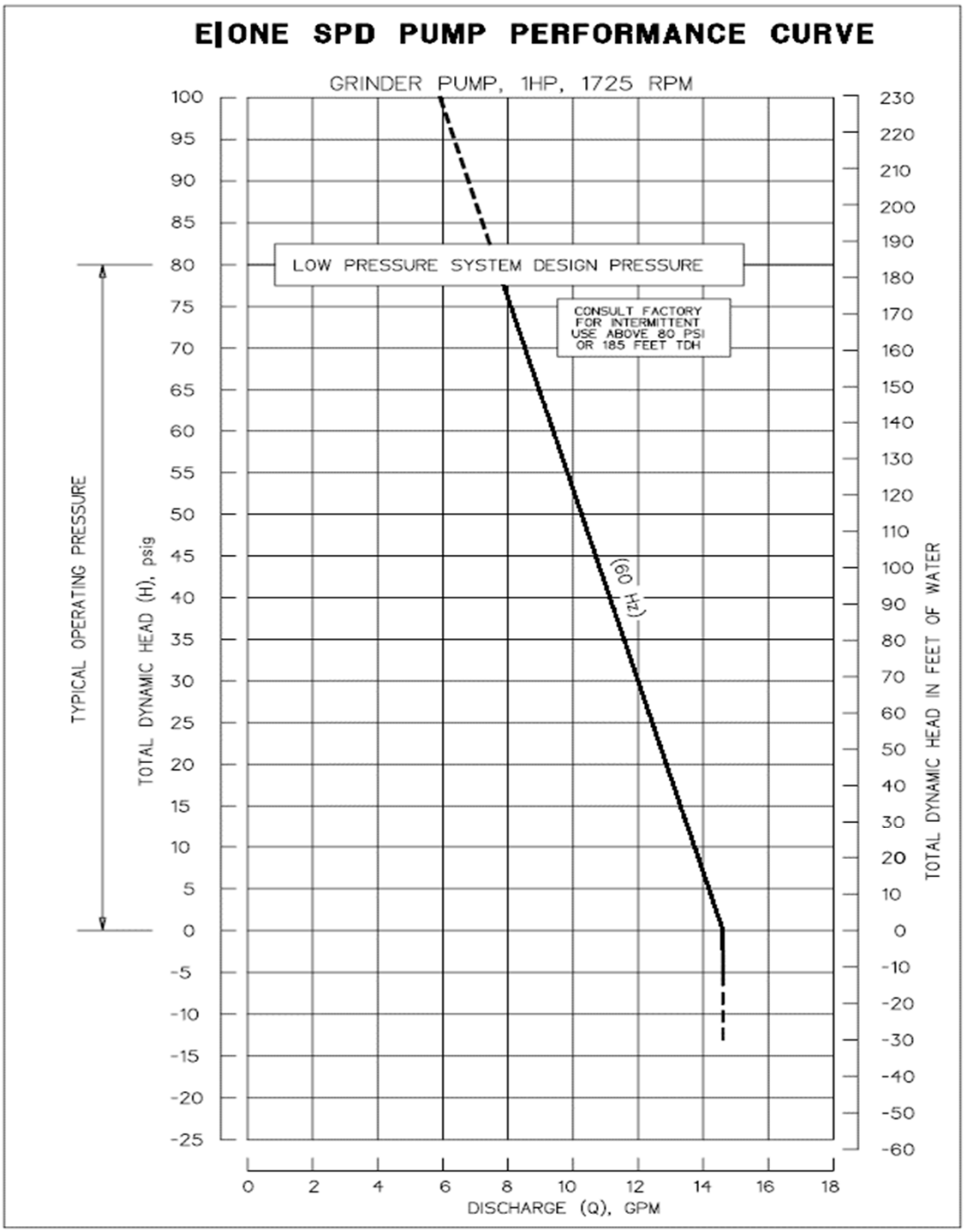
Structural

Environmental One Package System



Could Not Observe Components in Wet Well

Electrical

Environmental One Fiberglass Panel With Strobe Light Alarm

FAULKNER PARK LIFT STATION
PUMP CURVE