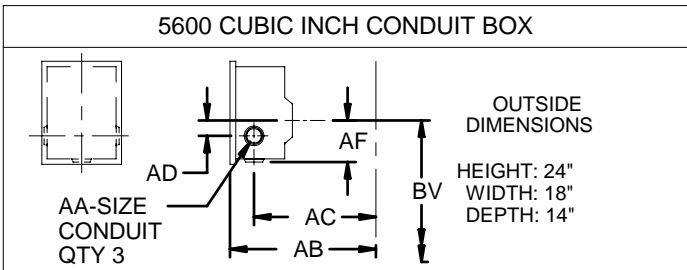
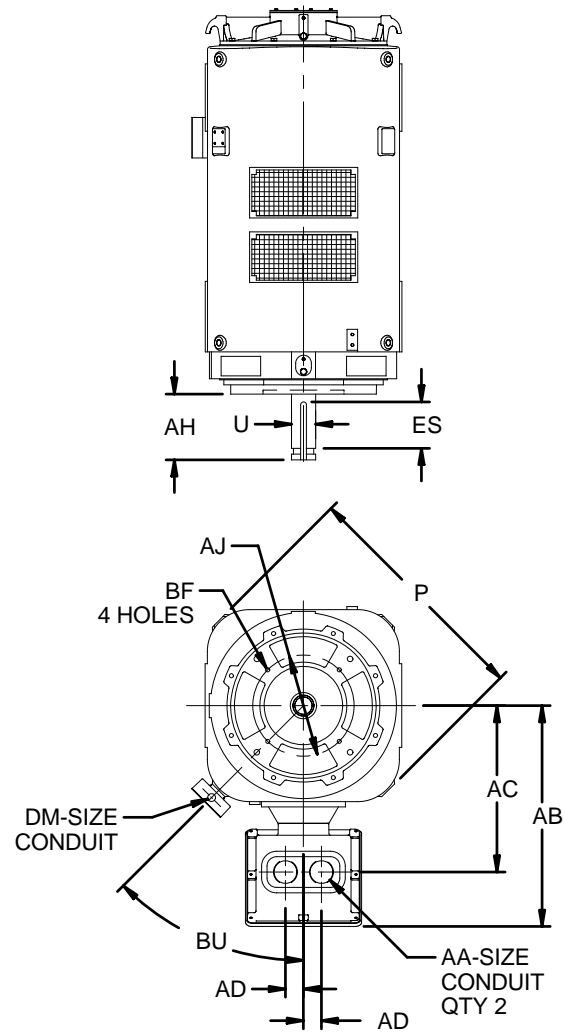
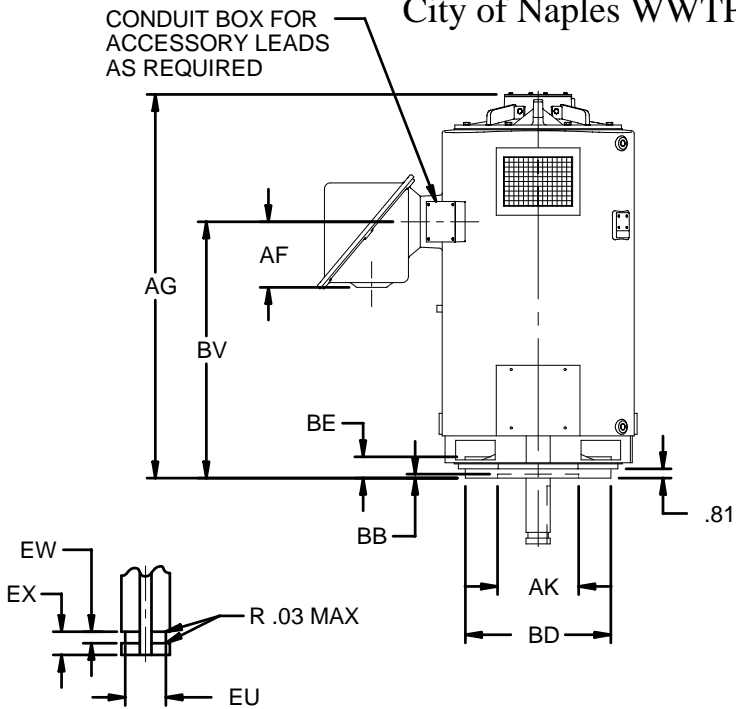


# Attachment A - No 4 600HP Pump and Motor TECHNICAL DRAWINGS

EFFECTIVE: <b>01-AUG-11</b>	ATTACHMENT A-1	<b>VERTICAL MOTORS</b> WEATHER PROTECTED TYPE I FRAME: 5000VPH, VP, VPA BASIC TYPE: RV	PRINT: <b>09-2661</b>
SUPERSEDES: <b>03-JUL-06</b>			SHEET: <b>1 OF 1</b>

## City of Naples WWTP #4 Reclaim 600 HP Motor Replacement



FRAME	P	AG	BV
✓ 5008	40.00	48.50	27.00
5012		63.50	42.00

POLE	U	AH	ES	EU	EW	EX	SQ
2	-0.001	±.062	MIN	-0.005	+0.002	-0.005	KEY
✓ 4 & SLOWER	2.375	5.000	3.50	2.000	.375	.750	.625
	3.125	7.000	5.00	2.625	.500	1.000	.750

VOLTS	C/BOX VOLUME (CU.IN.)	AB	AC	AD	AF	BU
✓ 0-4800	3400	36.50	27.88	3.00	10.94	45°
4801-6900	5600	36.13	30.13	4.00	10.81	

FRAME	AJ	AK	BB	BD	BE	BF
5000VPH	14.750	13.500	.25	20.00	2.19	.69
5000VP <sup>3</sup>	14.750	13.500		24.50		.69
	22.000			30.50		.94
✓ 5000VPA	26.000	22.000		.81		

AA	DM
2 NPT	1/2 NPT
2-1/2 NPT	3/4 NPT
3 NPT	1 NPT
✓ 3-1/2 NPT	1-1/4 NPT
4 NPT	✓ 1-1/2 NPT

**TOLERANCES**

FACE RUNOUT	.007 TIR
PERMISSIBLE ECCENTRICITY OF MOUNTING RABBET	.007 TIR
PERMISSIBLE SHAFT RUNOUT	.003 TIR
MAXIMUM SHAFT END PLAY	.010

1: DIMENSIONS MAY VARY .25" DUE TO CASTING AND/OR FABRICATION VARIATIONS.  
 2: DIMENSIONS AND TOLERANCES ARE SHOWN IN INCHES.  
 3: 5000VP HAS TWO BOLT CIRCLES.

**Nidec Motor Corporation**  
St. Louis, Missouri

INFORMATION DISCLOSED ON THIS DOCUMENT IS CONSIDERED PROPRIETARY AND SHALL NOT BE REPRODUCED OR DISCLOSED WITHOUT WRITTEN CONSENT OF NIDEC MOTOR CORPORATION



ISSUED BY  
**R. TIMMERMANN**  
APPROVED BY  
**R. KING**

IHP\_DP\_NMCA (MAR-2011) SOLIDEDGE

(ATTACHMENT A-2)  
CITY OF NAPLES WASTEWATER TREATMENT PLANT  
#4 600hp RECLAIM PUMP UPGRADE PROJECT



For the new #4 600 HP Pump/Motor Assembly:  
Contractor to provide and install ½” Stainless Steel threaded pipe, fittings, and ball valves with plugs; for bearing lubrication drains as shown in picture to left.



For the new #4 600 HP Pump/Motor Assembly:  
Contractor to provide and install:  
- New - 2ea 3.5” Sealtite conduits and fittings from the new #4 Motor Lead Junction Box to existing wall mounted J-Box. Each new conduit shall have 3ea new 350 MCM THHN, and 1ea new #2 Bond Conductors installed. Contractor shall provide and connect motor leads with properly sized, manufacturer recommended type, multi-lug terminals.

- Contractor may utilize existing Control Sealtite conduits and connectors for new motor connections if considered re-usable. Contractor may re-use control conductors for new motor safeties/controls. Contractor shall

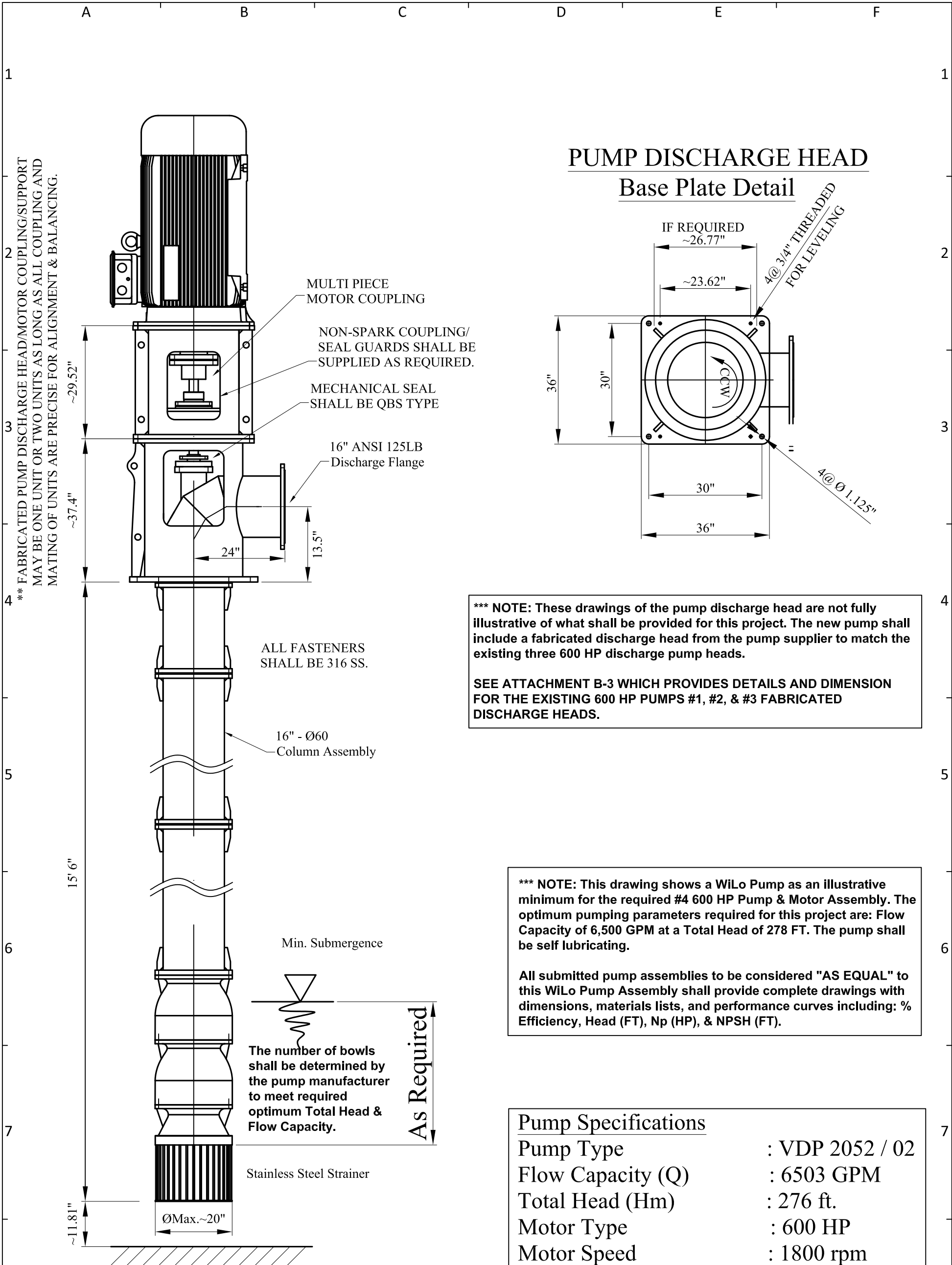
connect and test all controls and safeties to assure all functions are operational.

(ATTACHMENT A-2)  
CITY OF NAPLES WASTEWATER TREATMENT PLANT  
#4 600hp RECLAIM PUMP UPGRADE PROJECT

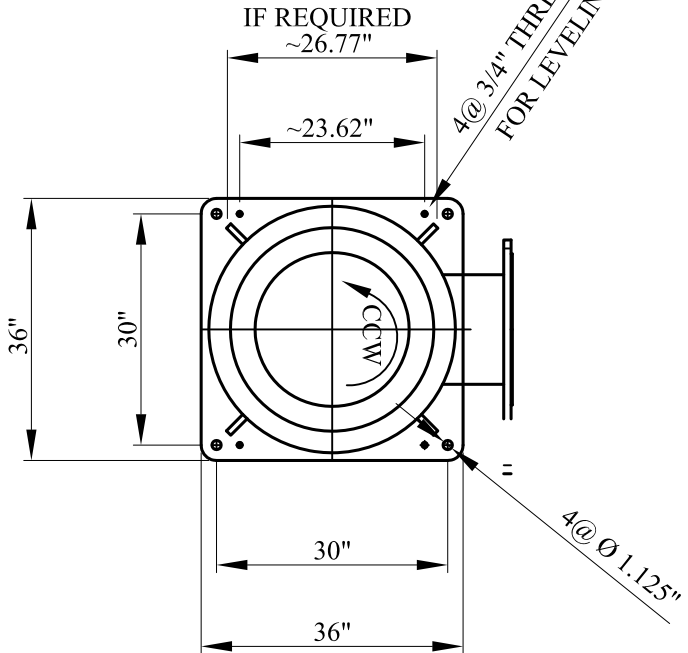


Contractor may have to dress the entrance hole for the new #4 600 HP pump by removing some minor irregularities in the concrete due to outside diameter of new pump flanges. Contractor shall prevent any debris from entering the wet well during chipping process and/or pump installation.

CITY OF NAPLES WASTEWATER TREATMENT PLANT  
 #4 600 HP RECLAIM PUMP/MOTOR UPGRADE/REPLACEMENT



**PUMP DISCHARGE HEAD**  
**Base Plate Detail**



**\*\*\* NOTE:** These drawings of the pump discharge head are not fully illustrative of what shall be provided for this project. The new pump shall include a fabricated discharge head from the pump supplier to match the existing three 600 HP discharge pump heads.

**SEE ATTACHMENT B-3 WHICH PROVIDES DETAILS AND DIMENSION FOR THE EXISTING 600 HP PUMPS #1, #2, & #3 FABRICATED DISCHARGE HEADS.**

**\*\*\* NOTE:** This drawing shows a Wilo Pump as an illustrative minimum for the required #4 600 HP Pump & Motor Assembly. The optimum pumping parameters required for this project are: Flow Capacity of 6,500 GPM at a Total Head of 278 FT. The pump shall be self lubricating.

All submitted pump assemblies to be considered "AS EQUAL" to this Wilo Pump Assembly shall provide complete drawings with dimensions, materials lists, and performance curves including: % Efficiency, Head (FT), Np (HP), & NPSH (FT).

Pump Specifications	
Pump Type	: VDP 2052 / 02
Flow Capacity (Q)	: 6503 GPM
Total Head (Hm)	: 276 ft.
Motor Type	: 600 HP
Motor Speed	: 1800 rpm
Motor Voltage	: 460VAC 3PH

\*Dimensions only information, precise dimensions, stage of the project will be required

DIMESION IN ■ inches

Wilo Pump Local Distributor:  
 Mader Electric Motors, N. Ft. Myers, Fl.

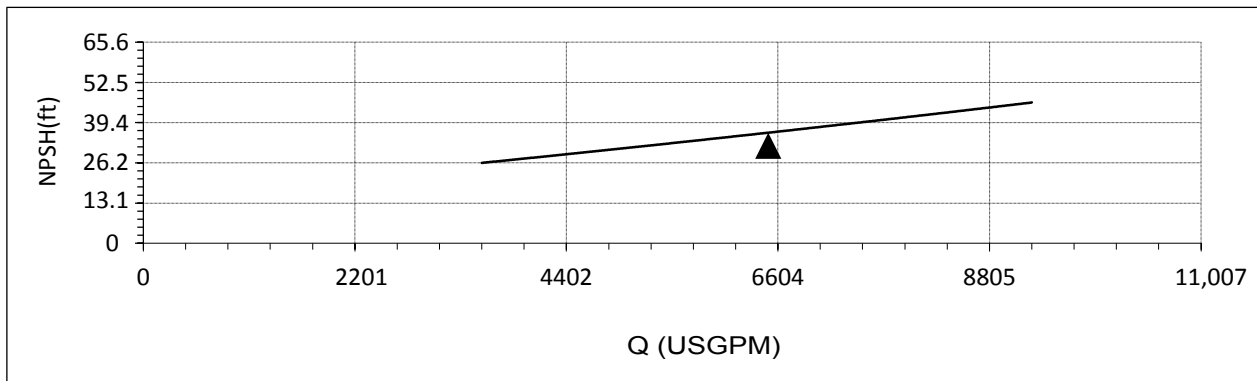
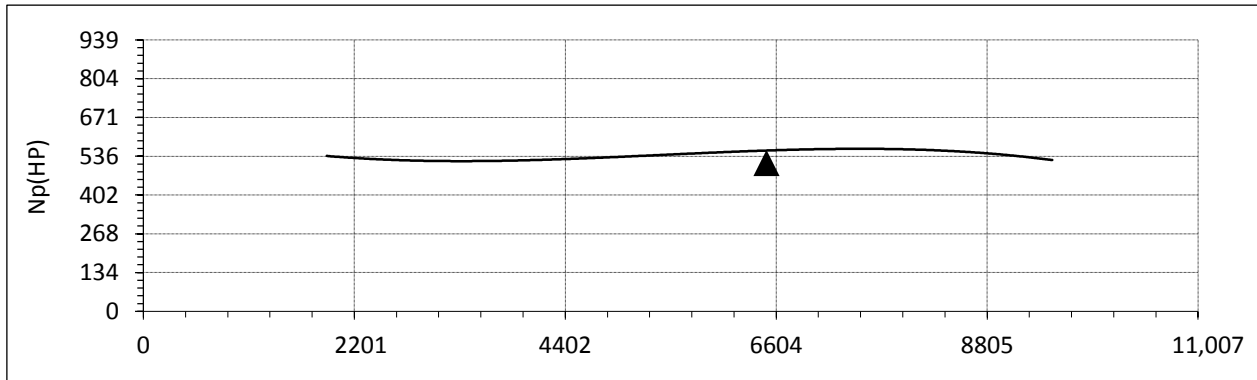
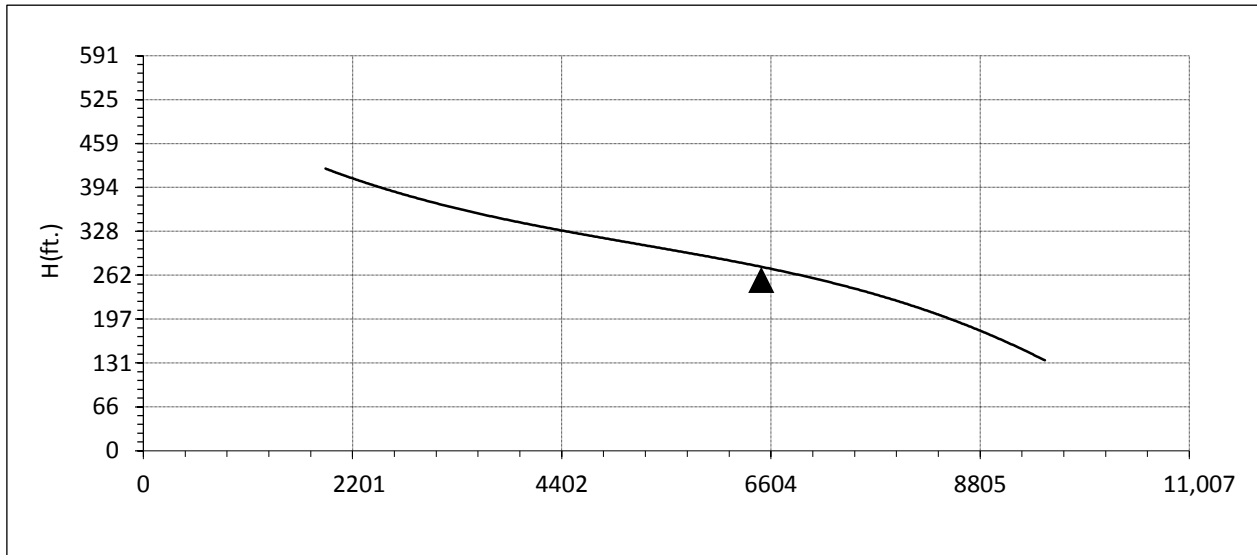
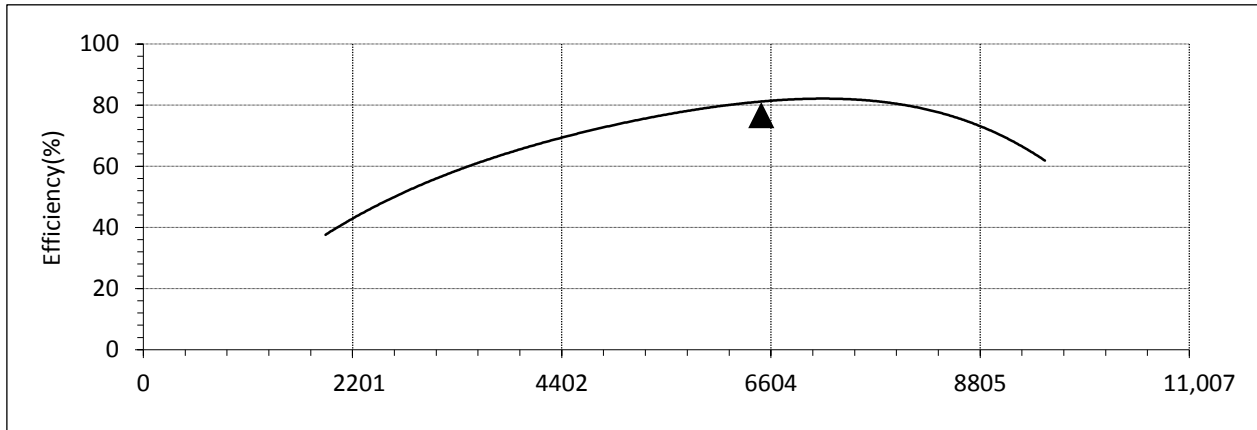


VDP 2052 / 02

REVISION NO	REVISION AREA	DATE	DRAWING NO
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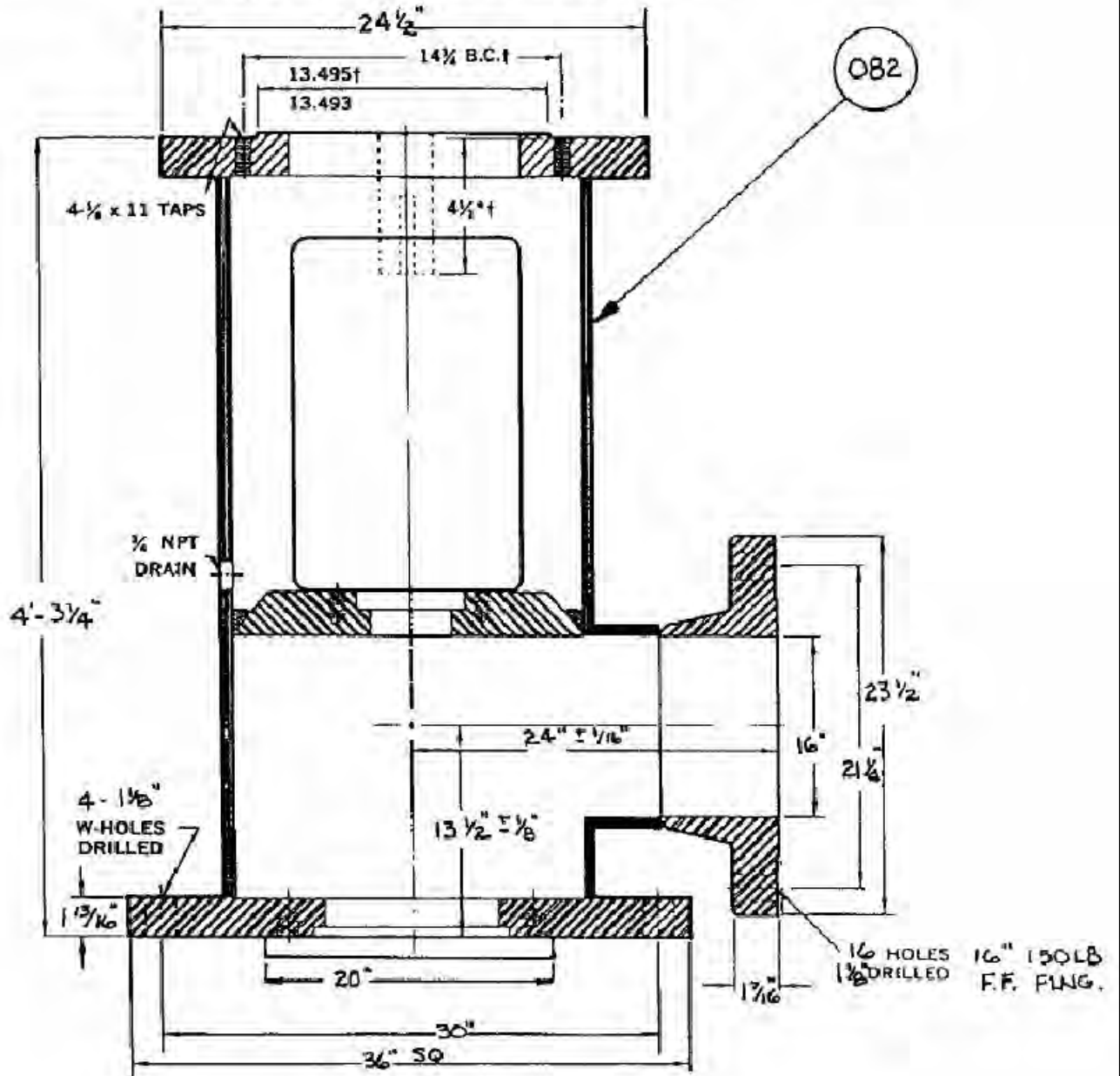


Type	Q	n	Ne <sub>m</sub>	Discharge
VDP 2052	6500 gpm	1800 rpm	600 Hp	16"
# of Stage	H	NPSH	$\eta_p$	$\varnothing$ Max.
02	276 ft	36 ft	81.00%	20"



ATTACHMENT B-3  
600 HP PUMP

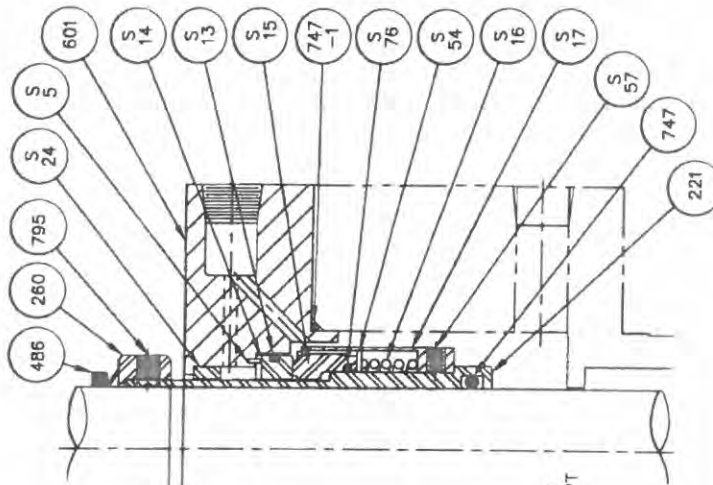
### VERTICAL TURBINE PUMPS Type FH Fabricated Discharge Heads



### MECHANICAL SEAL DETAIL

QTY	REF NO.	DESCRIPTION
1	S-5	PIN, ANTI-ROTATION
1	S-13	O-RING GASKET, SEAT
1	S-14	STATIONARY FACE
1	S-15	ROTATING FACE
1	S-16	SPRING
1	S-17	SPRING HOLDER
1	S-24	BUSHING, FLANGE
1	S-54	RING, RETAINING
3	S-57	SET SCREW, SPRING HOLDER
1	S-76	O-RING GASKET, ROTATING FACE
1	221	SLEEVE, SHAFT
1	260	COLLAR, DRIVE
1	486	RING, SEALING-V
1	601	FLANGE, SEAL
1	747	O-RING GASKET, SLEEVE
1	747-1	O-RING GASKET, FLANGE
6	795	SET SCREW, COLLAR

SEAL MODEL	SHAFT SIZE	SEAL SETTING
1250	0.812	± .030
1625	1.000, 1.188	0.125
2125	1.438, 1.688	0.188
2500	1.938	0.188
3125	2.188, 2.438 2.688	0.188



SEAL SETTING  
± .030

FLUSH  
.500 NPT

QUENCH  
.500 NPT

INJECTION  
.500 NPT

FLANGE VIEW  
DRAIN  
.500 NPT

**NOTES**

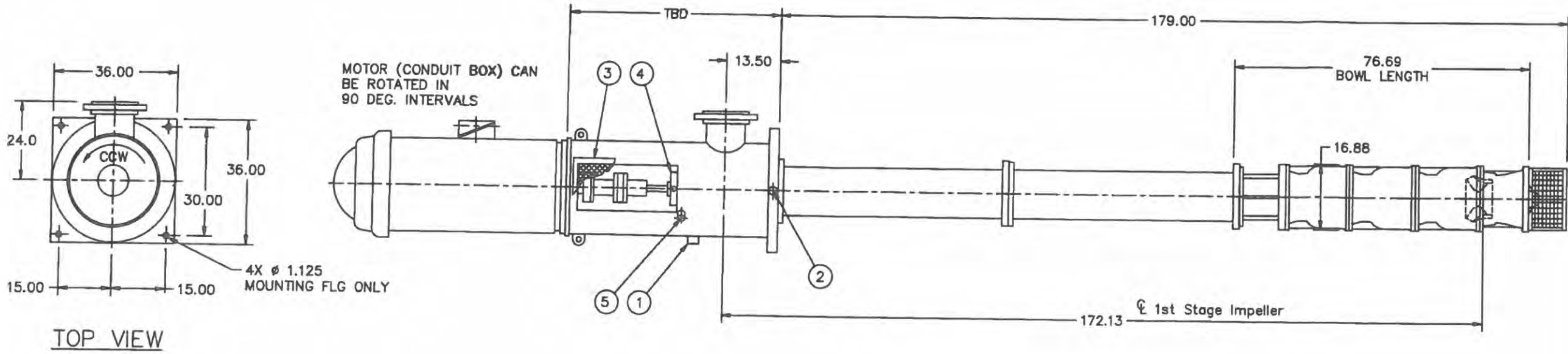
BASIC SEAL-REF NO. 119 INCLUDES  
 REF NO.'S S-13 THRU S-76.

DESIGNING AND TOLERANCES FOR THIS DRAWING SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

- ASME Y14.5-1994 DIMENSIONING AND TOLERANCING
- ASME Y14.1-1994 UNIFORM PRACTICES FOR GRAPHIC REPRESENTATION
- ASME Y14.18-1996 SURFACE TEXTURE SYMBOLS
- ASME Y14.19-1995 SURFACE FINISH SYMBOLS
- ASME Y14.21-1996 POSITIONAL TOLERANCES
- ASME Y14.23-1995 SURFACE FINISH SYMBOLS
- ASME Y14.25-1995 SURFACE FINISH SYMBOLS
- ASME Y14.26-1995 SURFACE FINISH SYMBOLS
- ASME Y14.27-1995 SURFACE FINISH SYMBOLS
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DO NOT SCALE DRAWING

CITY OF NAPLES WASTEWATER TREATMENT PLANT  
#4 600 HP RECLAIM PUMP/MOTOR UPGRADE/REPLACEMENT

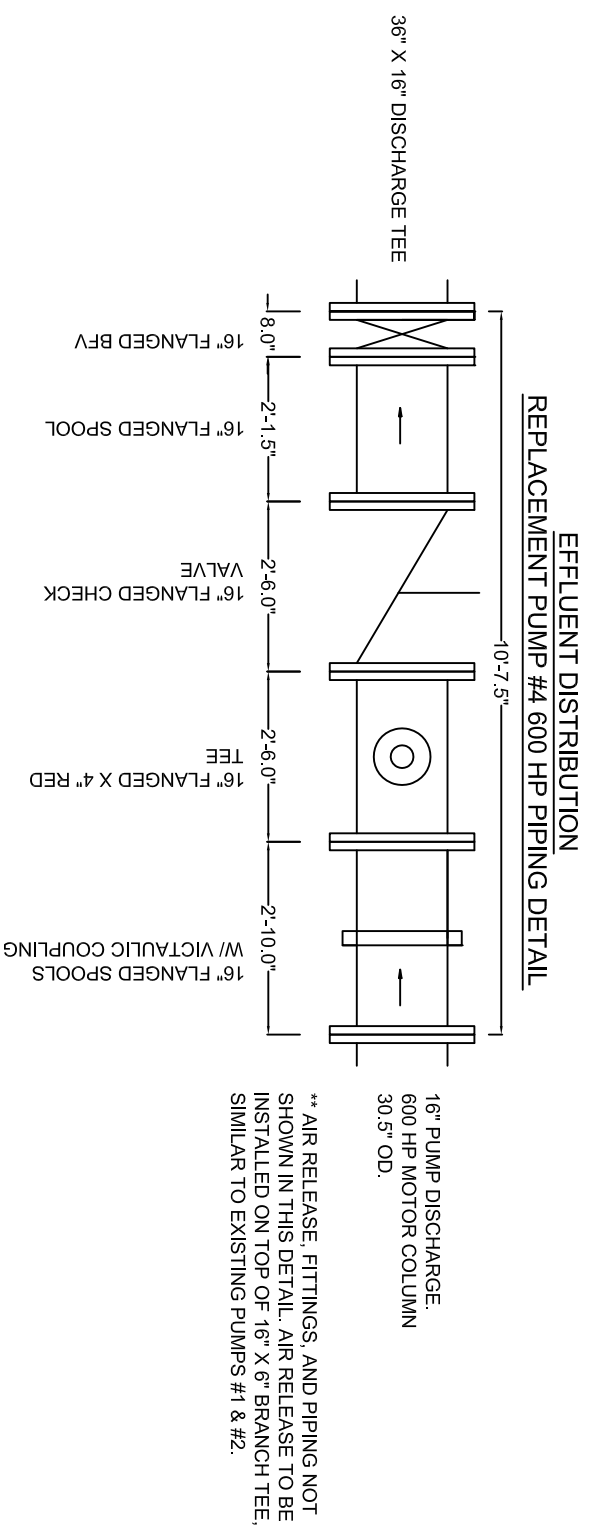
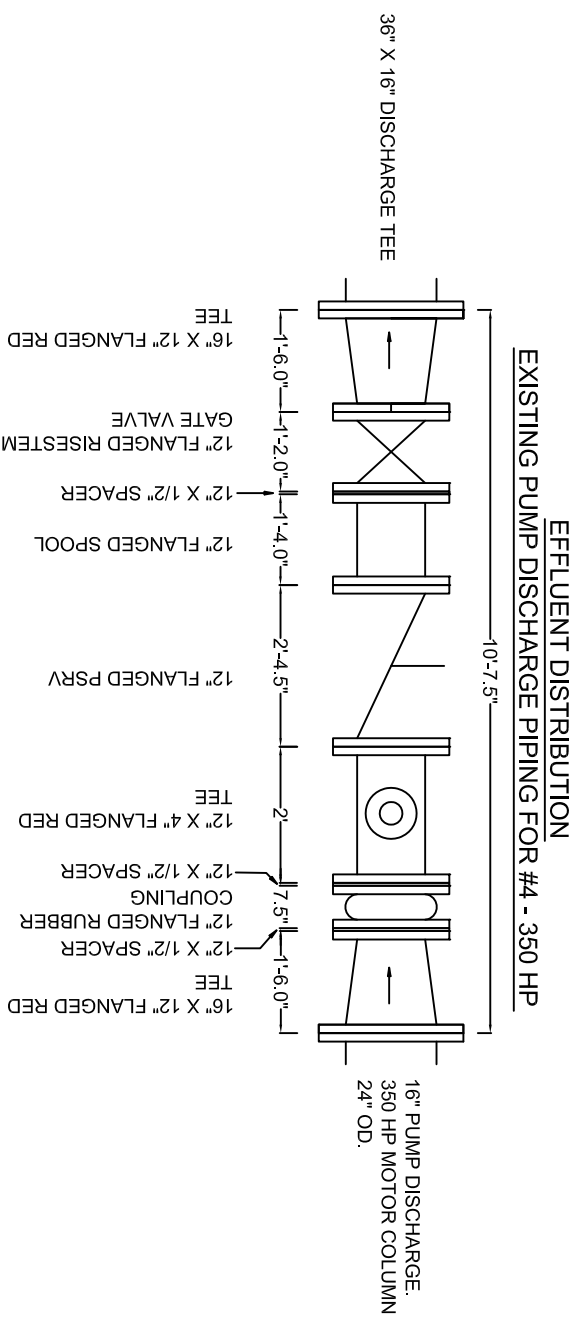


SAMPLE PUMP DETAIL OF EXISTING #2 600 HP PUMP

PUMP			DRIVER		DIMENSIONS ARE <input type="checkbox"/> YES <input type="checkbox"/> NO IN INCHES		DIMENSIONS IN <input type="checkbox"/> YES <input type="checkbox"/> NO BRACKETS ARE IN MILLIMETERS		APPROVAL DRAWING NOTE	
SUCTION SIDE: NA			MAWP -		MAKE: USEM		SUCTION & DISCHARGE NOZZLE LOCATION DIMENSIONS ARE ± .125"		1. PURCHASER'S COMMENTS AND/OR CORRECTIONS. WITHIN THE SCOPE OF CONTRACT WILL BE MADE ON THE FIRST COMPLETED CERTIFIED DRAWING SUBMITTED BY RUMRPLUMPH, INC. AND RETURNED FOR CORRECTION.	
DISCH. SIDE: 16.0" 150# F.F.			MAWP 420 PSI		FRAME: 500B VPA ENCLOSURE: WP-1		ALL OTHER INSTALLATION DIMENSIONS ARE ± .50"		2. CORRECTIONS, ALTERATIONS, ADDITIONS AND OR MODIFICATIONS OUTSIDE SCOPE OF CONTRACT OR MADE AFTER FIRST SUBMITTAL MAY REQUIRE AN ADDITIONAL ENGINEERING SERVICE CHARGE.	
TYPE: HVE4 HP: 600 RPM: 1800			SEE DRIVER PRINT FOR DIMENSIONS		VOLTS: 480 PHASE: 3 CYCLES: 60		FORCES & MOMENTS		3. ITEMS CONDITIONALLY APPROVED OR WITH DEFERRED APPROVAL BY PURCHASER, MUST BE SPECIFICALLY STATED OTHERWISE DELIVERY MAY BE AFFECTED.	
MECHANICAL SEAL			MFGR.: FLOWSERVE		API 610 8TH EDITION FORCES & MOMENTS		F=FORCE (LB)		SUCT	
APPROXIMATE WEIGHTS			TYPE & SIZE: QBS 3125		R=RESULTANT		DISCH		DISCH	
PUMP: 4500 LBS.			API CODE: 5A4N		FX		-		1900	
DRIVER: 6900 LBS.			TOTAL WEIGHT: 11400 LBS.		FY		-		2300	
					FZ		-		1500	
					FR		-		3300	
					MX		-		5400	
					MY		-		2700	
					MZ		-		4000	
					MR		-		7200	
									ORIGINAL DRAWING	
									LTR DESCRIPTION	
									REVISIONS	



# ATTACHMENT C-1



1. Contractor shall coordinate with City staff to disconnect existing 350 HP Motor power and control wires; disconnect and remove motor and place on pallet for City to determine disposition.
2. Contractor shall disconnect existing 350 HP Pump; remove pump and place on pallet for City to determine disposition.
3. Contractor shall coordinate with City staff to shut down the reclaimed water distribution system so that the #4 pump discharge piping can be removed and the new 16" Butterfly Valve can be installed. This scheduling is critical so staff can notify customers and Emergency Services that the system will be out of service. The new BF Valve must be installed quickly to prevent the system from being out of service for a prolonged period. After the BF Valve is installed and the system is brought back on line, the contractor may continue the rest of the installation.
4. All gaskets shall be 1/16" minimum Rubber. All Fasteners shall be Stainless Steel.
5. The contractor shall remove the remaining #4 pipe-works and concrete supports.
6. Prior to setting the new 600 HP Pump; the Contractor shall verify the entrance hole for the pump is clear of any obstructions. The Contractor shall remove any obstructions in the entry hole and prevent any debris from falling into the wet well, which could result in damage to the pumps.
7. The contractor shall set, level, and secure the new pump.
8. The contractor shall install the required ductile spools, check valve, TEE, and Victaulic Grooved Coupling; making sure alignment is tight, and the weight of the new fittings are temporarily supported.
9. The contractor shall form and pour a new concrete support column under the new 16" X 6" TEE. The support shall have a minimum of 4ea - #5 vertical rebar, drilled and epoxy into floor; with a minimum of 3 ea evenly spaced rounds of #4 rebar, tied to the #5 vertical rebar. All rebar shall be a minimum of 1.5" distant from finished edge of concrete. The concrete support shall be a minimum of 16" wide (in line) by 24" wide (Perpendicular) by 28" high. Concrete shall be 3,000 psi minimum.
10. Contractor shall provide a qualified electrician to install the new 2ea - 3.5" Sealite conduits and fittings from the new #4 Motor Lead Junction Box to existing wall mounted J-Box. Each new conduit shall have 3ea new 350 MCM THHN, and 1ea - new #2 Bond Conductors installed. Contractor shall provide and connect motor leads with properly sized, manufacturer recommended type, multi-lug terminals. See Attachment A-2.
11. Contractor may utilize existing Control Sealite conduits and connectors for new motor connections if considered re-usable. Contractor may re-use control conductors for new motor safeties/controls. Contractor shall connect and test all controls, heaters, and safeties to assure all functions are operational. See Attachment A-2.
12. Contractor to provide and install 1/2" Stainless Steel threaded pipe, fittings, and ball valves with plugs; for bearing lubrication drains as shown in Attachment A-2.
13. Contractor shall provide a Pump/Motor technical representative for the alignment, rotation, and startup of the new pump assembly. The contractor shall provide and install the manufacturer's recommended lubrication for the unit. The City will provide a Technician to program and operate the VFD for the new 600 HP Pump/Motor Assembly.
14. The contractor shall provide a qualified technician for the startup and adjustment of the check valve and air and vacuum valve as required.
15. The contractor shall clean and paint the pump, motor, and pipe works with TNAMEC Endura-Sheild II, Series 1074U (Federal Safety Purple) as shown in Attachment D-1 & D-2. Contractor shall not paint stainless steel fasteners, fittings, etc. or any maintenance fittings.
16. Contractor shall restore any damage areas due to this construction.

- THESE DRAWINGS ARE A COMBINATION OF SEVERAL REFERENCE DRAWINGS PROVIDED TO THE CITY. THESE DRAWINGS ARE TO BE USED AS REFERENCE ONLY. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL CURRENT UTILITY LOCATIONS. THE CONTRACTOR SHALL LOCATE BY POT-HOLING ALL CRITICAL UTILITIES PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY UNDERGROUND UTILITY. THE CONTRACTOR SHALL RESTORE ALL SOD, PAVEMENT, IRRIGATION, LANDSCAPING, DRIVEWAYS, CURBING, ETC. TO EXISTING CONDITION OR BETTER.

- ALL MATERIALS, LABOR, AND PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE CURRENT CITY OF NAPLES UTILITIES STANDARDS AND SPECIFICATIONS.

CHECKED BY:	REVISION	DATE
DWG		



**CITY OF NAPLES - UTILITIES DEPARTMENT  
WASTEWATER TREATMENT FACILITY  
#4 600 HP RECLAIM PUMP UPGRADE**

PIPING DETAIL
SHEET: 1
DATE: NOV. 2015

# ATTACHMENT C-2

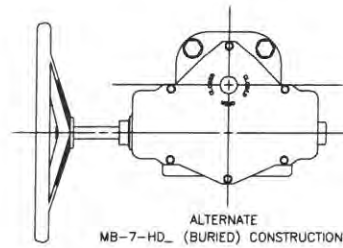
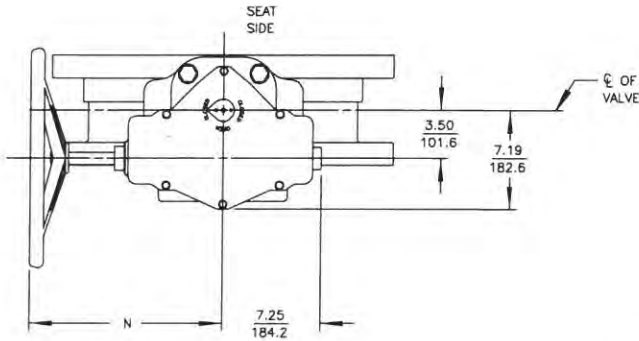
VALVE SIZE	DIMENSIONS										
	INCHES MILLIMETERS										
	A	B	C	D	E	F	G	H	J	K	L
14	8.00 203	1.47 37	10.91 277	11.50 292	18.75 476	1.12 28	8	1-B UNC	4	1.56 40	21.00 533
16	8.00 203	1.53 39	12.06 306	12.75 324	21.25 540	1.12 28	12	1-B UNC	4	1.62 41	23.50 597
18	8.00 203	1.66 42	14.03 356	13.50 343	22.75 578	1.25 32	12	1-1/8-7 UNC	4	1.69 43	25.00 635
20	8.00 203	1.78 45	15.02 382	15.25 387	25.00 635	1.25 32	16	1-1/8-7 UNC	4	1.75 44	27.50 699

ACTUATOR NUMBER	DIM	
	INCHES MILLIMETERS	
	M	N
MS-7-HDB	8.00 203	9.81 249
MS-7-HD12	12.00 406	14.06 357
MS-7-HD16	15.00 406	14.06 357
MS-7-HD24	24.00 610	18.31 357
MS-7-HD30	30.00 762	20.81 529
MS-7-HD36	36.00 914	23.56 598

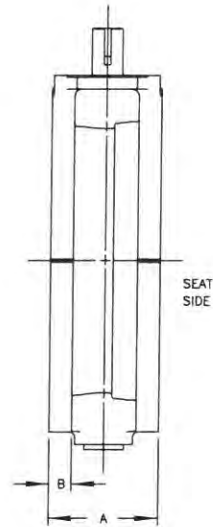
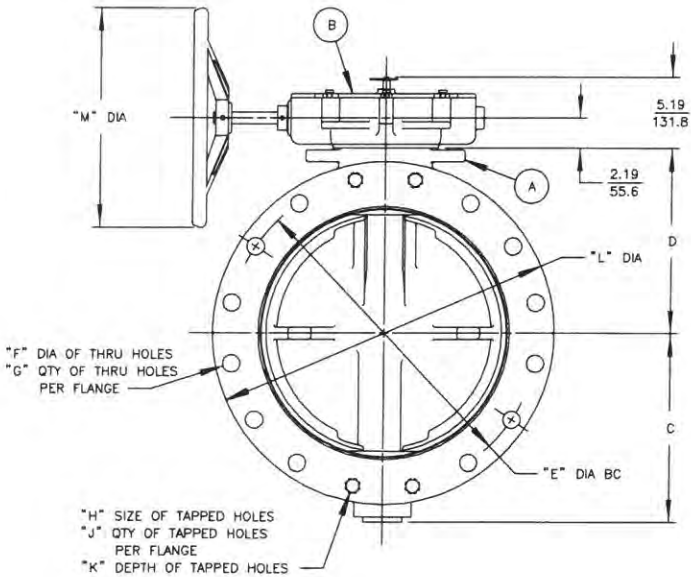
A	VALVE
B	ACTUATOR

NOTE:

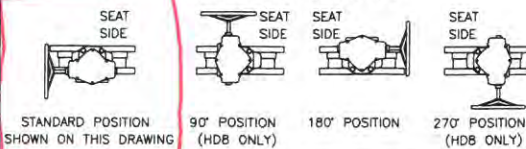
1. FLANGES ARE FLAT FACED WITH DIMENSIONS AND DRILLING TO ANSI B16.1 CLASS 125 EXCEPT FOR TAPPED HOLES AS INDICATED. SEE A-26506 FOR NON-ANSI FLANGED DATA.
2. FLOW MAY BE IN EITHER DIRECTION. THE PREFERRED INSTALLATION IS WITH THE SEAT SIDE UPSTREAM.
3. 42 TURNS OF HANDWHEEL ARE REQUIRED TO OPEN VALVE.



**NOTICE**  
THIS DRAWING DOES NOT SHOW ACTUATOR ACCESSORIES. IF ACCESSORIES ARE REQUIRED, REFER TO THE APPROPRIATE ACCESSORY INSTALLATION DRAWING FOR DIMENSIONS AND OTHER RELATED INFORMATION.



ACTUATOR MOUNTING POSITIONS



F	8130	02/26/09
E	81843	10/07/08
D	81138	02/13/04
C	80712	03/20/02
B	84288	02/03/08
A	84211	11/09/02

**DeZURIK**  
Sartell, MN USA 56377  
www.dezurik.com

BAW BUTTERFLY VALVES SIZE 14 - 20 FLANGED MS-7-HD_ OR MB-7-HD_ HANDWHEEL ACTUATOR			
DOCT. CODE	DRAWN	APPROVED	GG
C1	CHECKED TNB	DATE	5-13-92
			A40868

## ATTACHMENT C-3

**EPOXY PAINT SPECIFICATION  
TNE MEC SERIES 141**

**APPLICATION DATA 10.02-7**

Page 1

September, 2009

Supersedes January, 2008



Name:	Tnemec Series 141 Pota-Pox 80 Epoxy	
Material:	Polyamidoamine Epoxy, Conforms to NSF 61 Standards, AWWA C550, AWWA D102 Inside Systems No. 1 and 2, AWWA C210	
Colors:	White, Beige, Red, Blue(RAL-5009)	
Application:	Spray as is	
% Solids by Volume:	80 % Mixed	
Theoretical Coverages:	1,283 mil sq. ft. per gallon	
Air Drying Time @ 75°F (24° C):		
Handling:	4 hours	
To Recoat:	5 hours	
Immersion Service:	7 days	
VOC:	1.3 lbs./gal.	
Minimum Surface Prep:	SSPC-SP-10	
Performance Criteria:	This product will meet or exceed the following test requirements established for the coating system listed:	
Abrasion	Method:	ASTM D 4060 CS-17 Wheel, 1000 grams load
Adhesion	Method:	ASTM D 4541 900 PSI pull ASTM D 3359 Cross Hatch
Salt Spray (Fog)	Method:	ASTM B 117
Fresh Water	Method:	Constant immersion in tap water at 75°F (24°C), no blistering or delamination after 1 year immersion
DeZURIK	4 - 8 MILS	
Standard Thickness:		

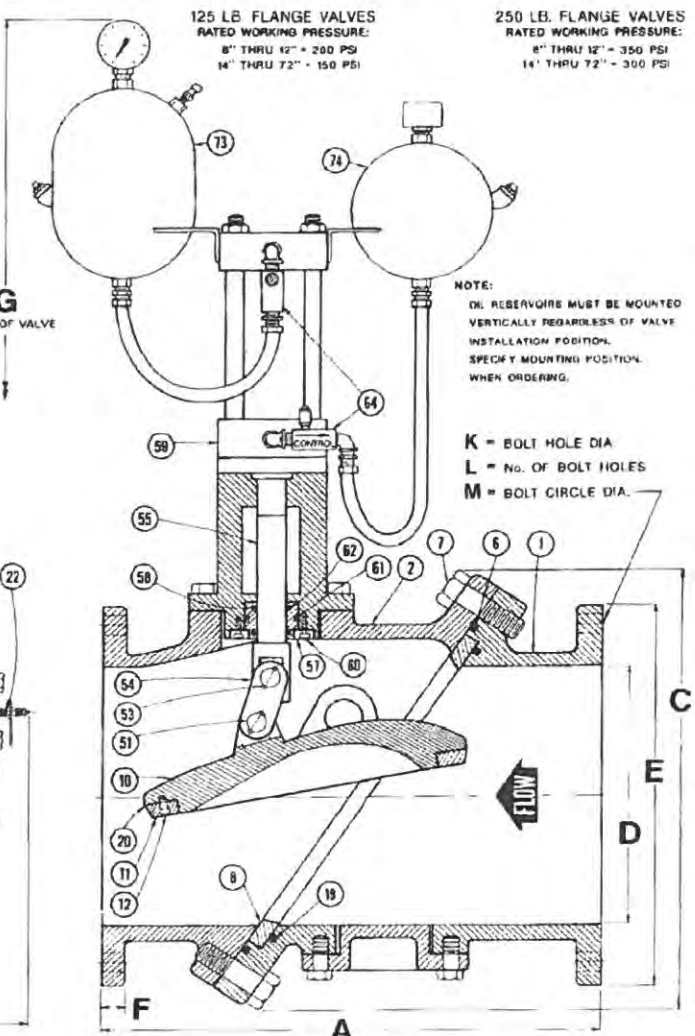
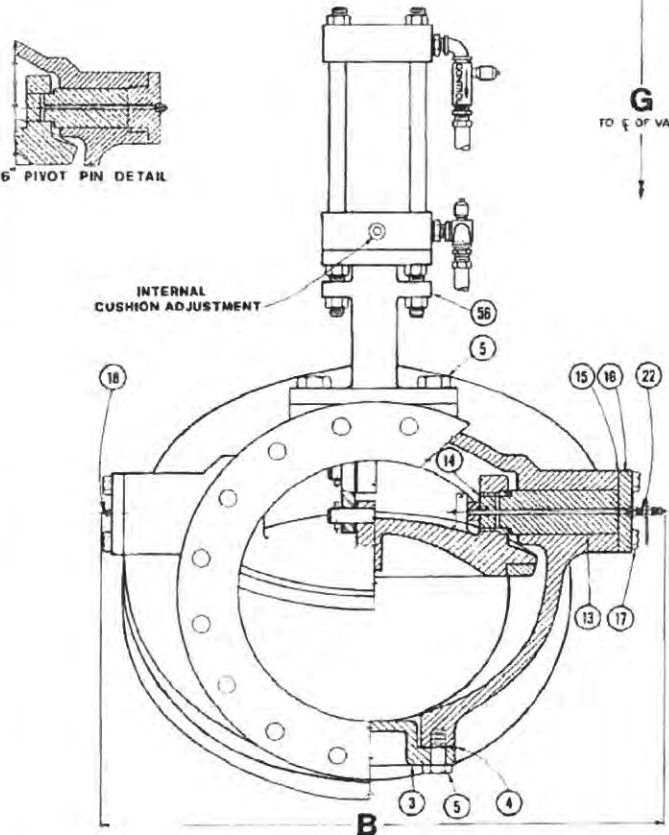
**24" APCO SLANTING DISC CHECK VALVE WITH TOP MOUNTED OIL DASHPOT**

16"

DET.	DESCRIPTION	MATERIAL
1	SEAT BODY HALF	CAST IRON ASTM A126 GR B
2	PIVOT BODY HALF	CAST IRON ASTM A126 GR B
3	INSPECTION HOLE COVER	CASR IRON ASTM A 126 GR B
4	INSPECTION HOLE GASKET	LEXIDE (NON - ASBESTOS)
5	INSPECTION HOLE BOLT	STEEL ASTM A307 GR B
6	DIAGONAL FLANGE SEAL	BUNA - N
7	DIAGONAL FLANGE BOLT	STEEL ASTM A307 GR B
8	SEAT RING	BRONZE ASTM B271 ALLOY C92200
10	DISC	DUCTILE IRON ASTM A536
11	DISC RING	BRONZE ASTM B271 ALLOY C92200
12	DISC RING RETAINING SCREWS	STAINLESS STEEL ASTM A276 T316
13	PIVOT PIN	STAINLESS STEEL ASTM A582 T303
14	PIVOT PIN BUSHING <sup>3</sup>	STAINLESS STEEL ASTM A269 T304
15	PIVOT PIN GASKET	LEXIDE (NON - ASBESTOS)
16	PIVOT PIN COVER <sup>4</sup>	CAST IRON ASTM A126 GR B
17	PIVOT PIN COVER BOLT	STEEL ASTM A307 GR B
18	GREASE FITTING	STEEL ZINC PLATED
19	SEAT RING SEAL	BUNA - N
20	DISC RING GASKET	LEXIDE (NON - ASBESTOS)
22	INDICATOR ASSEMBLY	STAINLESS STEEL ASTM A269 T304
51	LINKAGE PIN	STAINLESS STEEL ASTM A582 T303
53	LINKAGE TENSION PIN	STAINLESS STEEL COMMERCIAL
54	PIVOT LINKAGE	STAINLESS STEEL ASTM A240 T304
55	CONNECTING ROD	STAINLESS STEEL 17-4PH
56	DASHPOT SPACER	CAST IRON ASTM A126 GR B
57	BUSHING RETAINING RING	CAST IRON ASTM A126 GR B
58	CONNECTING ROD BUSHING	BRONZE ASTM B584
59	DASHPOT CYLINDER	STEEL COMMERCIAL
60	BUSHING RETAINING SCREW	STAINLESS STEEL ASTM A276 T316
61	BUSHING SEAL	BUNA - N
62	CONNECTING ROD SEAL	BUNA - N
64	FLOW CONTROL VALVE	BRASS COMMERCIAL
73	HYDRO - PNEUMATIC TANK	STEEL COMMERCIAL
74	OIL RESERVOIR	STEEL COMMERCIAL

VALVE SIZE	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"	54"	60"	72"
MODEL No.	806T	808T	810T	812T	814T	816T	818T	820T	824T	830T	836T	842T	848T	854T	860T	872T
125 LB. & 250 LB. CLASS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
175 LB. CLASS	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
250 LB. CLASS	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
APPROX. WEIGHT	275	350	450	550	650	750	850	950	1050	1200	1370	1625	1975	2400	2800	3300

<sup>1</sup> DISC MATERIAL IS BRONZE ASTM B584 ALLOY C90700 6", 8", 10"  
<sup>2</sup> DETAILS 11, 12, & 20 NOT REQUIRED  
<sup>3</sup> PIVOT PIN MATERIAL IS ALUMINUM BRONZE ASTM B150 FOR SIZES 6", 8" & 10"  
<sup>4</sup> PIVOT PIN BUSHING NOT REQUIRED FOR SIZES 6", 8" & 10"  
<sup>5</sup> PIVOT PIN COVER MATERIAL IS BRASS ASTM B16 FOR SIZE 6"  
 DETAILS 15 & 17 NOT REQUIRED

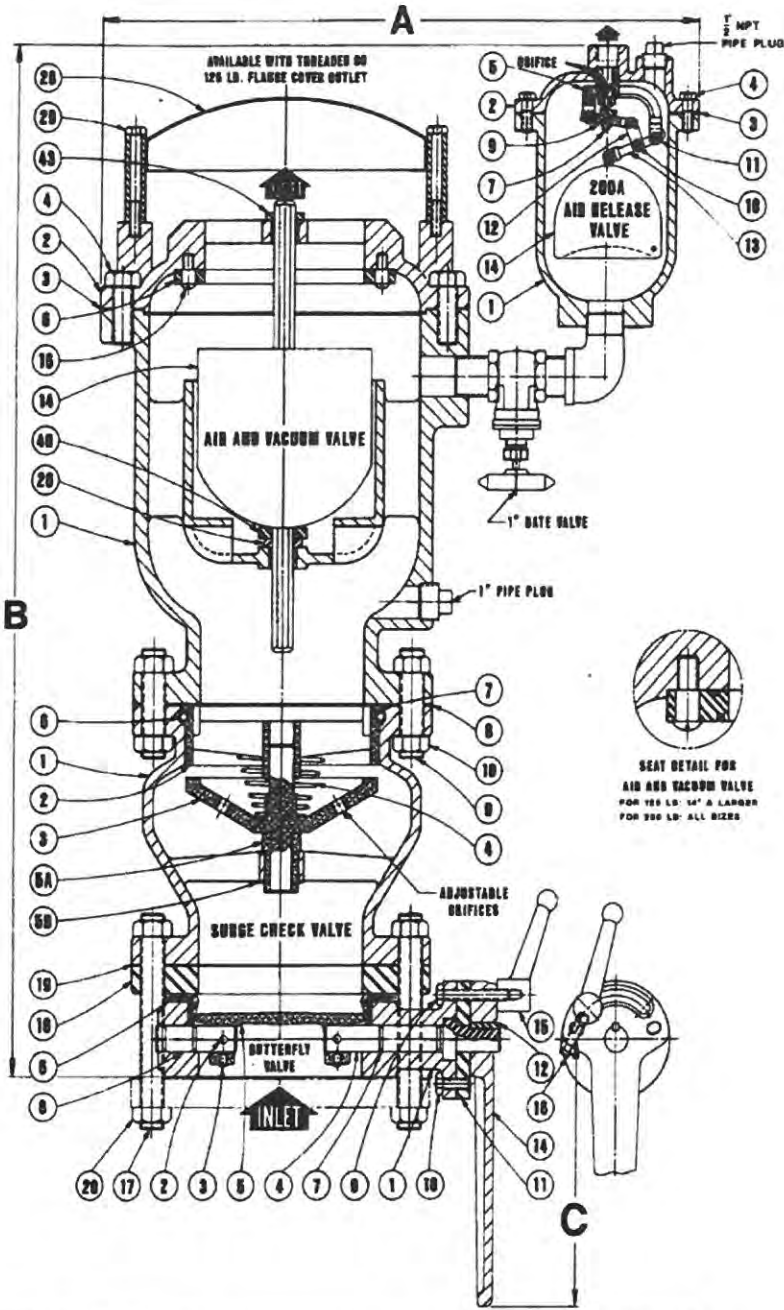


DATE  
03/01/10



DRAWING No.  
**S-800T**

# APCO SLOW CLOSING AIR AND VACUUM VALVE WITH AIR RELEASE AND ISOLATION BUTTERFLY VALVE



200A AIR RELEASE VALVE		
DET	DESCRIPTION	MATERIAL
1	BODY	CAST IRON ASTM A126 GR. B
2	COVER	CAST IRON ASTM A126 BR. B
3	GASKET	LEXIDE (NON-ASBESTOS)
4	LEVERAGE FRAME	STEEL ASTM A307 GR. B
5	LEVERAGE FRAME	DELTRIN ASTM D2133
7	NEEDLE	BUNA-N
9	NEEDLE LEVER	DELTRIN ASTM D2133
10	LEVER PIN	STAINLESS STEEL ASTM T303
11	RETAINING RING	STAINLESS STEEL 15-7 MO
12	CONNECTING LINK	NYLON
13	FLOAT LEVER	DELTRIN ASTM D2133
14	FLOAT*	STAINLESS STEEL ASTM T304

\*CONCAVE FLOAT

AIR AND VACUUM VALVE		
DET	DESCRIPTION	MATERIAL
1	BODY	CAST IRON ASTM A126 GR. B
2	COVER	CAST IRON ASTM A126 DR. B
3	GASKET	LEXIDE (NON-ASBESTOS)
4	COVER BOLT	STEEL ASTM A307 GR. B
6	SEAT	BUNA-N
14	FLOAT	STAINLESS STEEL ASTM T304
16	SEAT SCREW	STAINLESS STEEL ASTM T303
26	GUIDE BUSHING	STAINLESS STEEL ASTM T303
28	HOOD	H.R.S.
29	HOOD SCREW	STEEL ASTM A307 OR S
40	BUMPER	BUNA-N
43	GUIDE BUSHING	STAINLESS STEEL ASTM T303

STAINLESS STEEL WITH BUNA-N SEAL FOR 14" & LARGER ON 125

SURGE CHECK VALVE		
DET	DESCRIPTION	MATERIAL
1	BODY	CAST IRON ASTM A126 GR. B
2	SEAT	BRONZE ASTM 8584 C83600
3	PLUG	BRONZE ASTM 8584 C83600
4	SPRING	STAINLESS STEEL ASTM T316
5A	BUSHING	BRASS ASTM B16 C36000
5B	RETAINING RING	STAINLESS STEEL 15-7 MO
6	RETAINING BALL	STAINLESS STEEL ASTM T440
7	RETAINING SCREW	STAINLESS STEEL 18-8
8	GASKET	LEXIDE (NON-ASBESTOS)
9	STUD	STEEL AISI 1018
10	NUT	STEEL ASTM A307 OR. B

BUTTERFLY VALVE		
DET	DESCRIPTION	MATERIAL
1	BODY	CAST IRON ASTM A126 OR. B
2	DISC PIN	STAINLESS STEEL ASTM T303
3	SET SCREW	STAINLESS STEEL 18-8
4	TOP PIVOT PIN	STAINLESS STEEL ASTM T303
5	DISC	BRONZE ASTM B5B4 C92200
6	DISC SEAT	BUNA-N
7	PIVOT PIN SEAL	BUNA-N
8	BOTTOM PIVOT PIN	STAINLESS STEEL ASTM T303
9	LOCKING SCREW	STEEL ASTM A108 C10180
10	ADAPTER PLATE SCREW	STEEL ASTM A307 GR. B
11	ADAPTER PLATE	STEEL
12	HAND LEVER KEY	STEEL ASTM A108 C10180
14	HAND LEVER	CAST IRON ASTM A126 GR. B
15	LOCK LEVER	CAST IRON ASTM A126 GR. B
16	DISC STOP	STEEL ASTM A307 GR. B
17	STUD	STEEL ASTM AISI 1018
18	RETAINING PLATE	STEEL
19	GASKET	LEXIDE (NON-ASBESTOS)
20	NUT	STEEL ASTM A563

8" TO 12" CAST IRON  
14" TO 16" DUCTILE IRON

VALVE SIZE	MODEL No.	COMBINATION	A	B		C
				125 LB. 3/16" ORIFICE	250 LB. 3/32" ORIFICE	
4"	1204	904 / 1604 / 152 / 200A	19 7/16	30 1/2	30 7/8	6
6"	1206	906 / 1606 / 153 / 200A	22 11/16	35 3/8	36	12
8"	1208	908 / 1608 / 154 / 200A	25 1/2	41 7/8	42 3/8	12
10"	1210	910 / 1610 / 155 / 200A	27 7/8	45 3/4	46 1/2	12
12"	1212	912 / 1612 / 156 / 200A	32 7/8	50 7/8	50 7/8	12
14"	1214	914 / 1614 / 157 / 200A	41 7/8	52 1/4	52 1/4	15
16"	1216	916 / 1616 / 158 / 200A	45 1/2	55 3/8	55 3/8	15

DATE  
02-09-10



DRAWING No.  
**S-1200**



# ENDURA-SHIELD® II SERIES 1074U

## ATTACHMENT D-1

### PRODUCT PROFILE

<b>GENERIC DESCRIPTION</b>	Aliphatic Acrylic Polyurethane
<b>COMMON USAGE</b>	A coating highly resistant to abrasion, wet conditions, corrosive fumes and exterior weathering. High build quality combines with project specific primers for two-coat, labor saving systems. Contains a blend of ultra-violet light (UV) absorbers for enhanced color and gloss retention. Fast curing options are available; see Curing Time below. NOT FOR IMMERSION SERVICE.
<b>COLORS</b>	Refer to Tnemec Color Guide. <b>Note:</b> Certain colors may require multiple coats depending on method of application and finish coat color. When feasible, the preceding coat should be in the same color family, but noticeably different.
<b>FINISH</b>	Gloss
<b>SPECIAL QUALIFICATIONS</b>	Series 1074U meets the requirements of SSPC-36 (level 3) Paint Standard.
<b>PERFORMANCE CRITERIA</b>	Contact your Tnemec representative for specific test results.

### COATING SYSTEM

<b>PRIMERS</b>	<p><b>Steel:</b> Series 1, 20, FC20, 27, 66, L69, L69F, N69, N69F, V69, V69F, 90-97, 91-H<sub>2</sub>O, 94-H<sub>2</sub>O, 104, 135, L140, L140F, N140, N140F, V140, V140F, 161, 394, 530</p> <p><b>Galvanized Steel and Non-Ferrous Metal:</b> Series 27, 66, L69, L69F, N69, N69F, V69, V69F, 135, 161</p> <p><b>Concrete:</b> Series 66, L69, L69F, N69, N69F, V69, V69F, 84, 104, 161</p> <p><b>CMU:</b> 54-660, 130. Intermediate coat required.</p> <p><b>Note:</b> Before topcoating with Series 1074U, Series 530 exterior exposed for more than 24 hours must first be scarified or receive an intermediate coat of Tnemec polyamide epoxy. Recoat windows for other primers may apply. See those data sheets for additional information.</p>
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### SURFACE PREPARATION

<b>ALL SURFACES</b>	Must be clean, dry and free of oil, grease and other contaminants. See primer product data sheet for surface preparation recommendation.
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### TECHNICAL DATA

<b>VOLUME SOLIDS</b>	66 ± 2.0% (mixed) †
<b>RECOMMENDED DFT</b>	2.0 to 5.0 mils (50 to 125 microns) per coat. <b>Note:</b> Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.

<b>CURING TIME</b>	Temperature	To Handle	To Recoat	Resist Moisture
	95°F (35°C)	4 hours	5 hours	3 hours
	75°F (24°C)	6 hours	8 hours	5 hours
	55°F (13°C)	12 hours	16 hours	9 hours
	35°F (2°C)	36 hours	48 hours	20 hours

Curing time varies with surface temperature, air movement, humidity and film thickness. If coating is exposed to moisture before the applicable cure parameters are met, dull, flat or spotty appearing areas may develop. **Note:** For faster curing and low-temperature applications, add No. 44-710 Urethane Accelerator; see separate product data sheet. Contact Tnemec Technical Services for force curing times and temperatures.

### VOLATILE ORGANIC COMPOUNDS

EPA Method 24 †

Unthinned	Max 7% (No. 39 Thin.)	Max 6% (No. 42 Thin.)	Max 5% (No. 48 Thin.)
2.59 lbs/gal (310 g/l)	2.83 lbs/gal (339 g/l)	2.82 lbs/gal (338 g/l)	2.81 lbs/gal (337 g/l)

### HAPS

Unthinned	Max 7% (No. 39 Thin.)	Max 6% (No. 42 Thin.)	Max 5% (No. 48 Thin.)
0.19 lbs/gal solids	0.19 lbs/gal solids	0.19 lbs/gal solids	0.19 lbs/gal solids

**THEORETICAL COVERAGE** 1,051 mil sq ft/gal (25.8 m<sup>2</sup>/L at 25 microns). See APPLICATION for coverage rates. †

**NUMBER OF COMPONENTS** Two: Part A and Part B

**MIXING RATIO** By volume: Eight (Part A) to one (Part B)

### PACKAGING

	PART A (Partially filled)	PART B (Partially filled)	When Mixed
3 Gallon Kit	5 gallon pail	1/2 gallon can	3 gallons (11.35L)
1 Gallon Kit	1 gallon pail	1 pint can	1 gallon (3.79L)

**NET WEIGHT PER GALLON** 11.03 ± 0.25 lbs (5.00 ± .11 kg) (mixed) †

**STORAGE TEMPERATURE** Minimum 20°F (-7°C) Maximum 110°F (43°C)

**TEMPERATURE RESISTANCE** (Dry) Continuous 250°F (121°C) Intermittent 275°F (135°C)

**SHELF LIFE** Part A: 24 months; Part B: 12 months at recommended storage temperature.

**FLASH POINT - SETA** Part A: 95°F (35°C) Part B: 135°F (57°C)

# ENDURA-SHIELD® II | SERIES 1074U

**HEALTH & SAFETY**

Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product.  
**Keep out of the reach of children.**

**APPLICATION**

**COVERAGE RATES**

**Conventional Build (Spray, Brush or Roller)**

	Dry Mills (Microns)	Wet Mills (Microns)	Sq Ft/Gal (m <sup>2</sup> /Gal)
Suggested	2.5 (65)	4.0 (100)	423 (39.3)
Minimum	2.0 (50)	3.0 (75)	529 (49.2)
Maximum	3.0 (75)	4.5 (115)	353 (32.8)

**High-Build (Spray Only)**

	Dry Mills (Microns)	Wet Mills (Microns)	Sq Ft/Gal (m <sup>2</sup> /Gal)
Suggested	4.0 (100)	6.0 (150)	265 (24.6)
Minimum	3.0 (75)	4.5 (115)	353 (32.8)
Maximum	5.0 (125)	7.5 (190)	212 (19.7)

**Note:** Can be spray applied at 3.0 to 5.0 mils (75 to 125 microns) DFT per coat when extra protection or the elimination of a coat is desired. Allow for overspray and surface irregularities. Wet film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance. †

**MIXING**

Stir contents of the container marked Part A, making sure no pigment remains on the bottom. Add the contents of the can marked Part B to Part A while under agitation. Continue agitation until the two components are thoroughly mixed. When used with 44-710 Urethane Accelerator, first blend 44-710 into Part A under agitation; continue as above. Do not use mixed material beyond pot life limits. **Caution: Part B is moisture-sensitive and will react with atmospheric moisture. Unused material must be kept tightly closed at all times.**

**THINNING**

Thinning is required for proper application. For air or airless spray, thin 6% or 7 ounces per gallon with No. 42 Thinner if temperatures are below 80°F (27°C) or use 5% or 6 ounces of No. 48 Thinner for temperatures above 80°F (27°C). For brush and roller, thin 7% or 9 ounces per gallon with No. 39 Thinner. When using 1074U, maximum thinning is 7% for No. 39 Thinner, 6% for No. 42 Thinner, and 5% for No. 48 Thinner. **Caution: Do not add thinner if more than 30 minutes have elapsed after mixing.**

**POT LIFE**

1 1/2 hours at 77°F (25°C) unthinned    2 hours at 77°F (25°C) thinned

**APPLICATION EQUIPMENT**

**Air Spray**

Gun	Fluid Tip	Air Cap	Air Hose ID	Mat'l Hose ID	Atomizing Pressure	Pot Pressure
DeVilbiss JGA	E	704 or 765	5/16" or 3/8" (7.9 or 9.5 mm)	3/8" or 1/2" (9.5 or 12.7 mm)	75-90 psi (5.2-6.2 bar)	10-20 psi (0.7-1.4 bar)

Low temperatures or longer hoses require higher pot pressure.

**Airless Spray**

Tip Orifice	Atomizing Pressure	Mat'l Hose ID	Manifold Filter
0.009-0.013" (230-330 microns)	3000-3500 psi (207-241 bar)	1/4" or 3/8" (6.4 or 9.5 mm)	100 mesh (150 microns)

Use appropriate tip/atomizing pressure for equipment, applicator technique and weather conditions.

**Roller:** Use 1/4" or 3/8" (6.4 mm or 9.5 mm) synthetic woven nap roller covers. Do not use long nap roller covers. Two coats are required to obtain dry film thickness above 3.0 mils (75 microns).

**Brush:** Recommended for small areas only. Use high quality natural or synthetic bristle brushes. Two coats are required to obtain recommended film thickness above 3.0 mils (75 microns).

**SURFACE TEMPERATURE**

Minimum 35°F (2°C)    Maximum 120°F (49°C)  
 The surface should be dry and at least 5°F (3°C) above the dew point.

**CLEANUP**

Flush and clean all equipment immediately after use with the recommended thinner or MEK.

† Values may vary with color.

WARRANTY & LIMITATION OF SELLER'S LIABILITY: Tnemec Company, Inc. warrants only that its coatings represented herein meet the formulation standards of Tnemec Company, Inc. THE WARRANTY DESCRIBED IN THE ABOVE PARAGRAPH SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. The buyer's sole and exclusive remedy against Tnemec Company, Inc. shall be for replacement of the product in the event a defective condition of the product should be found to exist and the exclusive remedy shall not have failed its essential purpose as long as Tnemec is willing to provide comparable replacement product to the buyer. NO OTHER REMEDY (INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY, ENVIRONMENTAL INJURIES OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE TO THE BUYER. Technical and application information herein is provided for the purpose of establishing a general profile of the coating and proper coating application procedures. Test performance results were obtained in a controlled environment and Tnemec Company makes no claim that these tests or any other tests, accurately represent all environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection and use of the coating.