GENERAL NOTES:

1. WELD, INSPECT & TEST PRIMARY PIPING PER ASME B31.3-2016, NORMAL SERVICE.
   - DESIGN CONDITIONS: 200 PSIG @ 175F
   - TEST PRESSURE: 300 PSIG HYDRO

2. LABEL EACH ASSEMBLY WITH A METAL TAG. METAL TAG TO HAVE A YELLOW BACKGROUND WITH BLACK LETTERS OF AT LEAST 1/4" TEXT HEIGHT. LABEL MAY USE PAINT OR VINYL ON THE METAL TAG. "HILINE 2309-WRP-209-MOD-H, ITEM ___"

3. INSTALL INSULATION & HEAT TRACE IN LOCATIONS AS DEFINED BY THE P&ID (H-14-112132).

   - ARMAFLEX TO BE 1" THICK WITH WB COATING (WHITE) FOR OUTDOOR PURPOSE ON ITEMS 3 AND 4 (LESS FLANGES).

   - (EQUIVALENT INSULATION SYSTEMS MAY BE USED WITH APPROVAL OF CLIENT.)

   - HEAT TRACE SYSTEM TO BE RATED FOR CLASS 1, DIVISION 2, GROUP B ON EQUIPMENT SHOWN ON THIS DWG.

   HEAT TRACE MATERIALS:
   - RAYCHEM 5BTV2-CT
   - RAYCHEM GT-66 TAPE
   - RAYCHEM JBM-100 POWER KITS (OR EQUIVALENT RAYCHEM)
   - RAYCHEM T-100 OR S-150 SPLICE KIT
   - RAYCHEM TEE KIT, T-100 OR PMKG-LT
   - RAYCHEM END SEAL, E-100 OR E-150 TYPE

4. ALL PRIMARY PIPING (PROCESS WETTED) COMPONENTS ARE SAFETY SIGNIFICANT. ALL OTHER COMPONENTS ARE GENERAL SERVICE. THE WELD FILLER IS ALSO SAFETY SIGNIFICANT. CMTRS ARE REQUIRED FOR ALL SAFETY SIGNIFICANT MATERIALS.

5. HOSE IS TO BE PROCURED FROM RIVER BEND TRANSFER AS A HOSE JUMPER PER RPP-14859 WITH SPECIFIED FITTINGS ATTACHED. NO HEAT TRACE OR INSULATION IS REQUIRED.

BILL OF MATERIALS

-100	-090	-080	-070	-060	-050	-040	-030	-020	-010	DESCRIPTION	SPECIFICATION	ITEM NO:
									X	BFS SPOOL 1		1
								X		DVM SPOOL 1		2
							X			PT SPOOL 1		3
						X				BFS-DVM HOSE		4
					X					PT HOSE 1		5
				X						PT HOSE 2		6
			X							PT HOSE 3		7
		X								PT HOSE 4		8
	X									PT HOSE 5		9
X										PT HOSE 6		10
												11
							1	1	2	HART UNION, 1" SOCKET WELD - TAILPIECE	HART 3333-5, 304L, TAIL PIECE	12
2	2	2	2	2	2	2		1		HART UNION, 1" SOCKET WELD - THREADPIECE	HART 3333-5, 304L, EPDM O-RING	13
							AR	AR	AR	PIPE, 1" SCH 80S, SMLS	ASTM A312, F304L	14
							1	1	1	ELBOW, 1" SCH 80, BW	ASTM A403, WP304L, CL. S OR W	15
							1			FLANGE, 1" RFSO, CLASS 150	ASTM A182, F304L, ASME B16.5	16
							1			GASKET, 1/8" THICK, FULL FACE, 1" CLASS 150	GARLOCK 3700	17
							4			HEX BOLT, 1/2-13 UNC, 1-1/4"L	ASTM A193 GR.B7	18
												19
												20
												21
1	1	1	1	1	1	1				HOSE, 1" SAFE-T-CHEM, BW ENDS, LENGTH = SEE TABLE	RIVER BEND TRANSFER PER NOTE 5.	22
												23
												24
												25
												26
												27
												28
												29
												30
						AR		AR	AR	HEATING CABLE	RAYCHEM 5BTV2-CT	31
						AR		AR	AR	GLASS TAPE, 1/2"	RAYCHEM GS-54	32
												33
						AR		AR	AR	ARMAFLEX AP - 1" THICK	ARMACELL	34
						AR		AR	AR	ARMAFLEX COATING - WHITE	ARMAFLEX WB	35
						AR		AR	AR	ARMAFLEX ADHESIVE	ARMAFLEX 520	36

TROY I. STOKES STATE OF WASHINGTON 22347 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Troy I. Stokes
DN: cn=Troy I. Stokes, o=HiLine, ou, email=troy.stokes@hilineeng.com, c=US
Date: 2024.01.03 21:34:28 -08'00'

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ±1/4"
ANGULAR: ±1 DEG
ONE PLACE DECIMAL: ±0.25
TWO PLACE DECIMAL: ±0.125
THREE PLACE DECIMAL: ±0.063
MACHINED SURFACE: 125 RMS

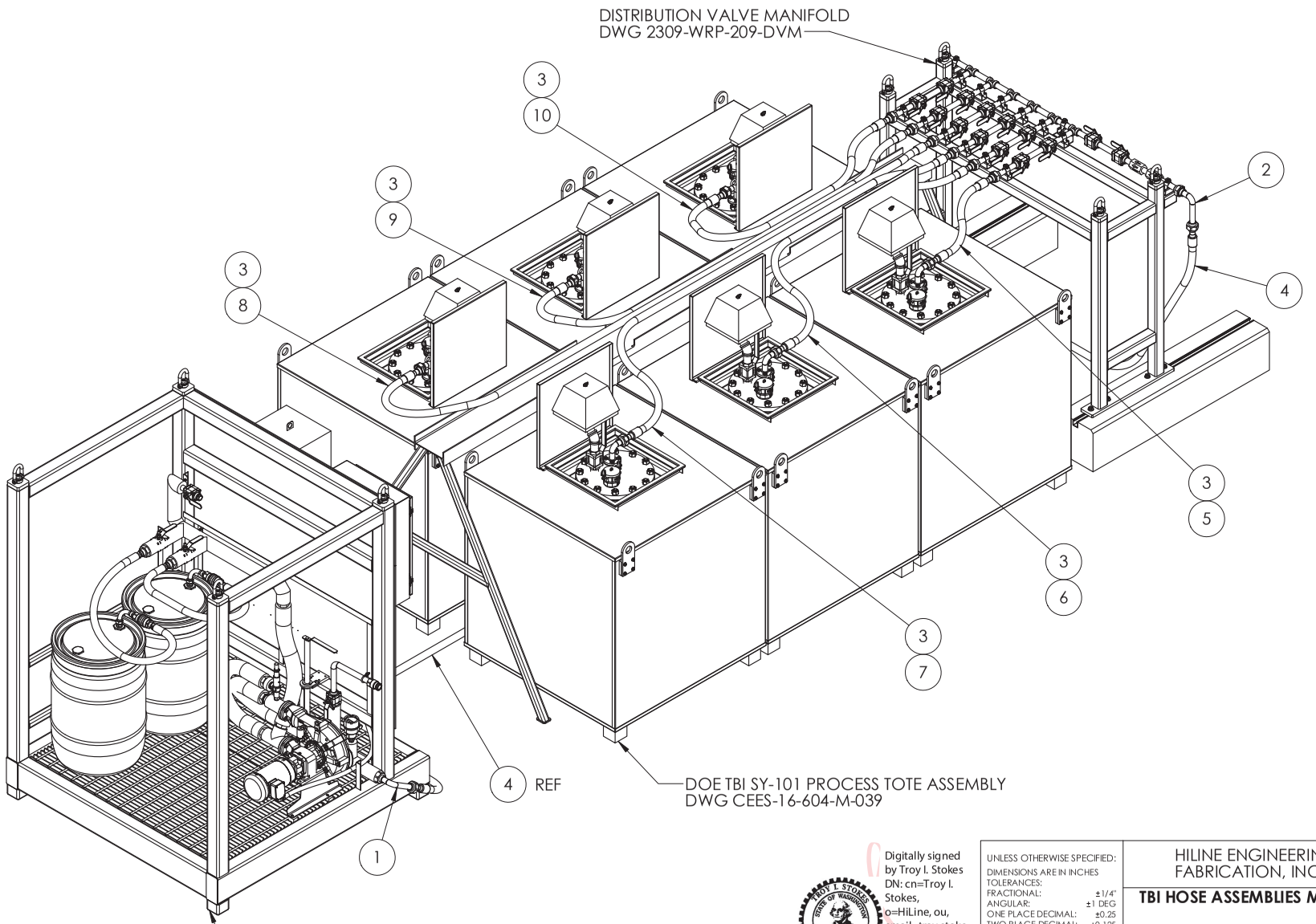
DRAWN BY: T. STOKES
DRAWN DATE: 11/19/2023

HILINE ENGINEERING & FABRICATION, INC.

TBI HOSE ASSEMBLIES MODIFIED

SIZE	DWG. NO.	REV
B	2309-WRP-209-MOD-H	B

EDT: SHT 1 OF 4



Digitally signed by Troy I. Stokes
DN: cn=Troy I. Stokes, o=HiLine, ou, email=troy.stokes@hilineeng.com, c=US
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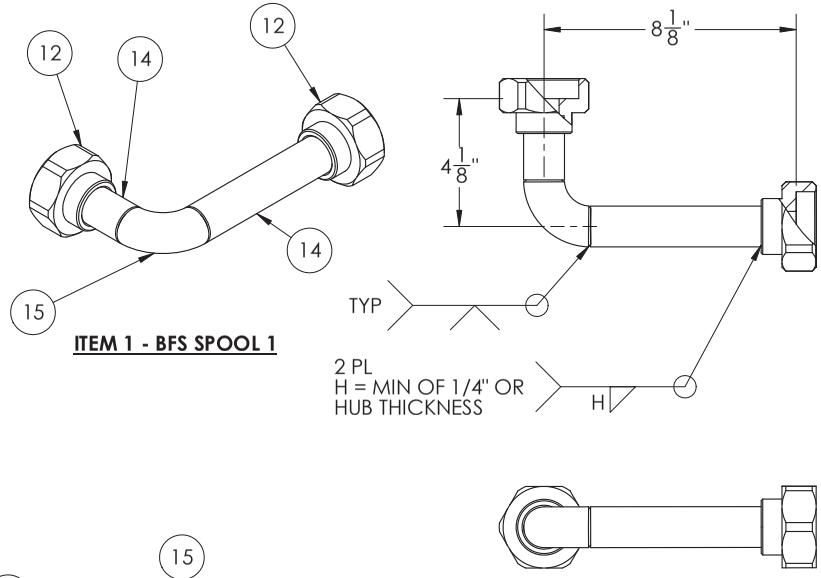
UNLESS OTHERWISE SPECIFIED:	
DIMENSIONS ARE IN INCHES	
TOLERANCES:	
FRACTIONAL:	±1/4"
ANGULAR:	±1 DEG
ONE PLACE DECIMAL:	±0.25
TWO PLACE DECIMAL:	±0.125
THREE PLACE DECIMAL:	±0.063
MACHINED SURFACE:	125 RMS
DRAWN BY:	T. STOKES
DRAWN DATE:	11/19/2023

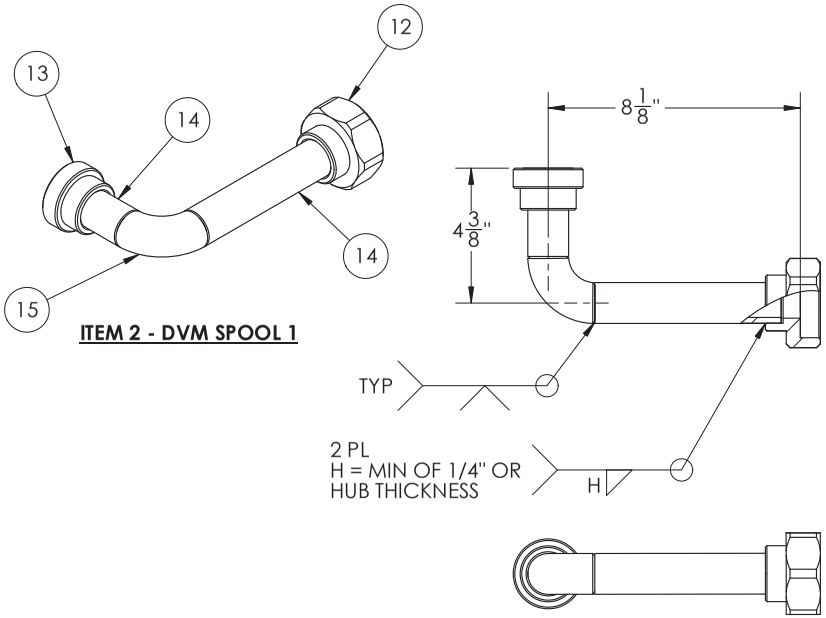
HILINE ENGINEERING & FABRICATION, INC.

TBI HOSE ASSEMBLIES MODIFIED

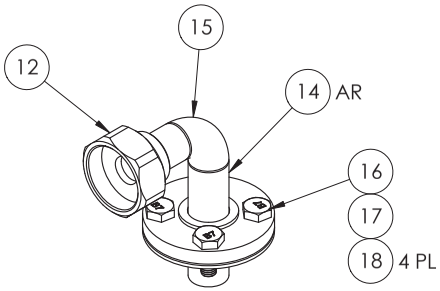
SIZE	DWG. NO.	REV
B	2309-WRP-209-MOD-H	B
	EDT:	SHT 2 OF 4



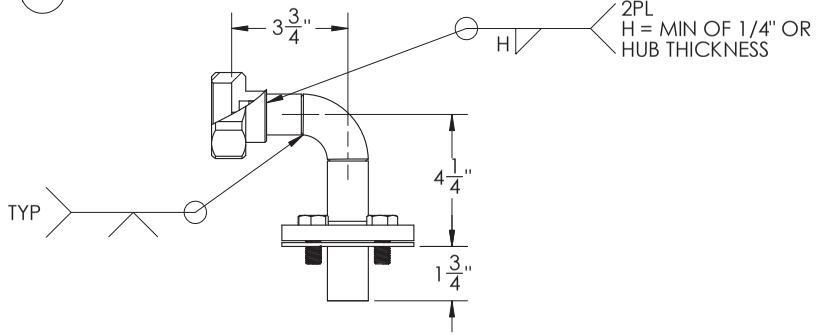
ITEM 1 - BFS SPOOL 1



ITEM 2 - DVM SPOOL 1



ITEM 3 - PT SPOOL 1



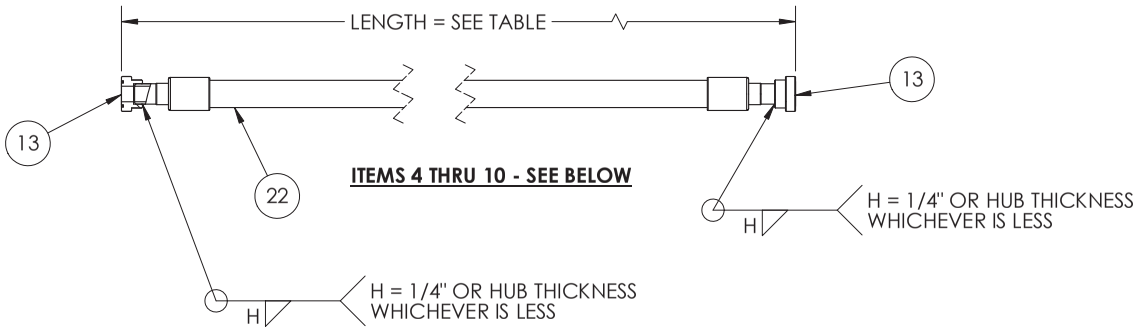
Digitally signed by Troy I. Stokes
DN: cn=Troy I. Stokes, o=HiLine, ou, email=troy.stokes@hilineeng.com, c=US
Date: 2024.01.03 21:34:56 -08'00'

UNLESS OTHERWISE SPECIFIED:	
DIMENSIONS ARE IN INCHES	
TOLERANCES:	
FRACTIONAL:	±1/4"
ANGULAR:	±1 DEG
ONE PLACE DECIMAL:	±0.25
TWO PLACE DECIMAL:	±0.125
THREE PLACE DECIMAL:	±0.063
MACHINED SURFACE:	125 RMS
DRAWN BY:	T. STOKES
DRAWN DATE:	11/19/2023

HILINE ENGINEERING & FABRICATION, INC.

TBI HOSE ASSEMBLIES MODIFIED

SIZE	DWG. NO.	REV
B	2309-WRP-209-MOD-H	B
	EDT:	SHT 3 OF 4



BILL OF MATERIAL ITEM	HOSE NAME	HOSE LENGTH	TOLERANCE +	TOLERANCE -
4	BFS-DVM HOSE	382"	6"	0"
5	PT HOSE 1	33-7/8"	1"	0"
6	PT HOSE 2	101-1/8"	3"	0"
7	PT HOSE 3	152-1/4"	4"	0"
8	PT HOSE 4	200-1/2"	4"	0"
9	PT HOSE 5	147-5/8"	4"	0"
10	PT HOSE 6	100-1/2"	3"	0"

Digitally signed by Troy I. Stokes
DN: cn=Troy I. Stokes, o=HiLine, ou, email=troy.stokes@hilineeng.com, c=US
Date: 2024.01.03 21:35:13 -08'00'

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ±1/4"
ANGULAR: ±1 DEG
ONE PLACE DECIMAL: ±0.25
TWO PLACE DECIMAL: ±0.125
THREE PLACE DECIMAL: ±0.063
MACHINED SURFACE: 125 RMS

DRAWN BY: T. STOKES
DRAWN DATE: 11/19/2023

HILINE ENGINEERING & FABRICATION, INC.

TBI HOSE ASSEMBLIES MODIFIED

SIZE	DWG. NO.	REV
B	2309-WRP-209-MOD-H	B

EDT:

SHT 4 OF 4