

COMPANY NAME:	Professional Designers & Engineers, Inc.		
PROJECT NAME:	PIPE-PRO EXAMPLE		
DESIGNED BY:	Kent R. Rieske	DATE:	December 10, 2010
FILE NAME:	2PHDEMO.2PD	PIPE LINE No.:	1
PIPE SPEC.:	ASTM A106, GR. C, C. Steel, Seamless		
PIPE ROUGHNESS:	0.000150 Absolute Roughness, e		
GAS or VAPOR:	Steam, saturated, 30.00 psia, 250.49 deg. F, 0.62 S.G.		
PROPERTIES:	0.073 lb/cf, 1.35 k, 18.02 M, 0.013 centipoise		
LIQUID:	Water, saturated, 0.94 S.G., 250.49 deg. F.		
PROPERTIES:	58.8 lb/cf, 0.239 centipoise & 54.0 dynes/cm.		

PIPING PHYSICAL DIMENSIONS

PIPE SIZE No.	NOMINAL SIZE inches	SCHEDULE and/or WEIGHT	WALL THICK. inches	INSIDE DIA. inches	OUTSIDE DIA. inches	FLOW AREA sq. in.	METAL AREA sq. in.
3	3	40 ST	0.216	3.068	3.500	7.39	2.23
PIPE WEIGHT EMPTY lbs/ft	PIPE WEIGHT FULL lbs/ft	SURFACE AREA INSIDE sq.ft/ft	SURFACE AREA OUTSIDE sq.ft/ft	FIFTH POWER of I.D. inch ⁵	RADIUS GYRATION inches r	MOMENT INERTIA inch ⁴ I	SECTION MODULUS inch ³ Z
7.59	7.60	0.80	0.92	272	1.16	3.02	1.72

VALVE and FITTING DATA

K/f	90 deg. ELBOWS	45 deg. ELBOWS	RUN TEES	BRANCH TEES	GLOBE VALVES	GATE VALVES	CHECK VALVES
=	20	16	20	60	340	8	100
QTY =	0	0	0	0	0	0	0

PIPE ARRANGEMENT DATA

NODES	PIPE ELEV feet	PIPE LENGTH feet	ENTRANCE LOSS K	EXIT LOSS K	GAS/VAPOR SYSTEM K	LIQUID SYSTEM K
SOURCE 1	0.00	0	0.00	-	-	-
OUTLET 2	0.00	100	-	0.00	-	-
CHANGE	0.00	100	-	-	7.27	12.75

FLOW, FINAL RESULTS and MISCELLANEOUS

FLOW COMPONENT	FLOW RATE lb/hr	FLOW RATE scfm/gpm	FLOW RATE acfm/cfs	VELOCITY INLET fps	REYNOLDS NUMBER Re	FRICTION FACTOR f	PRESSURE DROP psi
GAS/VAPOR	2000	684.8	458.51	148.85	323901	0.019	1.31
LIQUID	1000	2.1	0.00	0.09	8624	0.033	0.00
2-PHASE	3000	-	-	148.94	-	-	2.35
FLOW PATTERN IS	ANNULAR.			Bx =	0.4	By =	40691