

Single jet
Pelton Wheel Design For 140 feet of head 2.5 cfs

Bhp = 31.8 @ 80% eff. $Bhp = \frac{9he}{8.8}$

Jet diameter = 2.2" for 2.5 cfs
140 net head $d = \frac{\sqrt{5769}}{\sqrt{\pi C_v \sqrt{2gh}}}$ $C_v = \text{coef. of nozzle assumed } .98$

Nozzle diameter \approx 20% greater than jet diameter

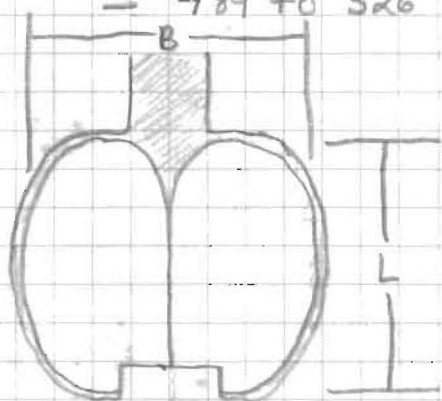
$= 2.6'' \pm .1$ nozzle tip = subtended angle $60^\circ - 64^\circ$

If needle valve used the needle diameter \approx 15% greater than

Nozzle diameter (above) = $3.0'' \pm .1$ terminate in cone $\pm 2^\circ - 4^\circ$

Pitch diameter = 20" to 30" @ 26" Pitch diameter = 8 to 12 times

RPM = 489 to 326 377



$d = \text{jet diameter @ } 2.2''$

$B = 3d @ 6.6''$

$L = 2.6d @ 5.5''$

$D = 0.85d @ 1.87''$

Runaway believed to be 112% increase 800 rpm

15kW

$2 = \frac{3.45}{1.28} = 2.16 \text{ cfs}$

$1.5 = 4.95 \sqrt{Q/H^{1/4}}$

$\frac{1.5}{4.95} = \sqrt{Q/H^{1/4}} \quad H^{1/4} \frac{1.5}{4.95} = \frac{Q}{H^{1/4}}$

2 jet

Jet diameter = 1.6" @ 1.25 cfs/jet with 140 Net head

Nozzle diameter = 1.9"

Needle diameter = 2.2"

pitch diameter = @ 19.2" 12.8 to 19.2

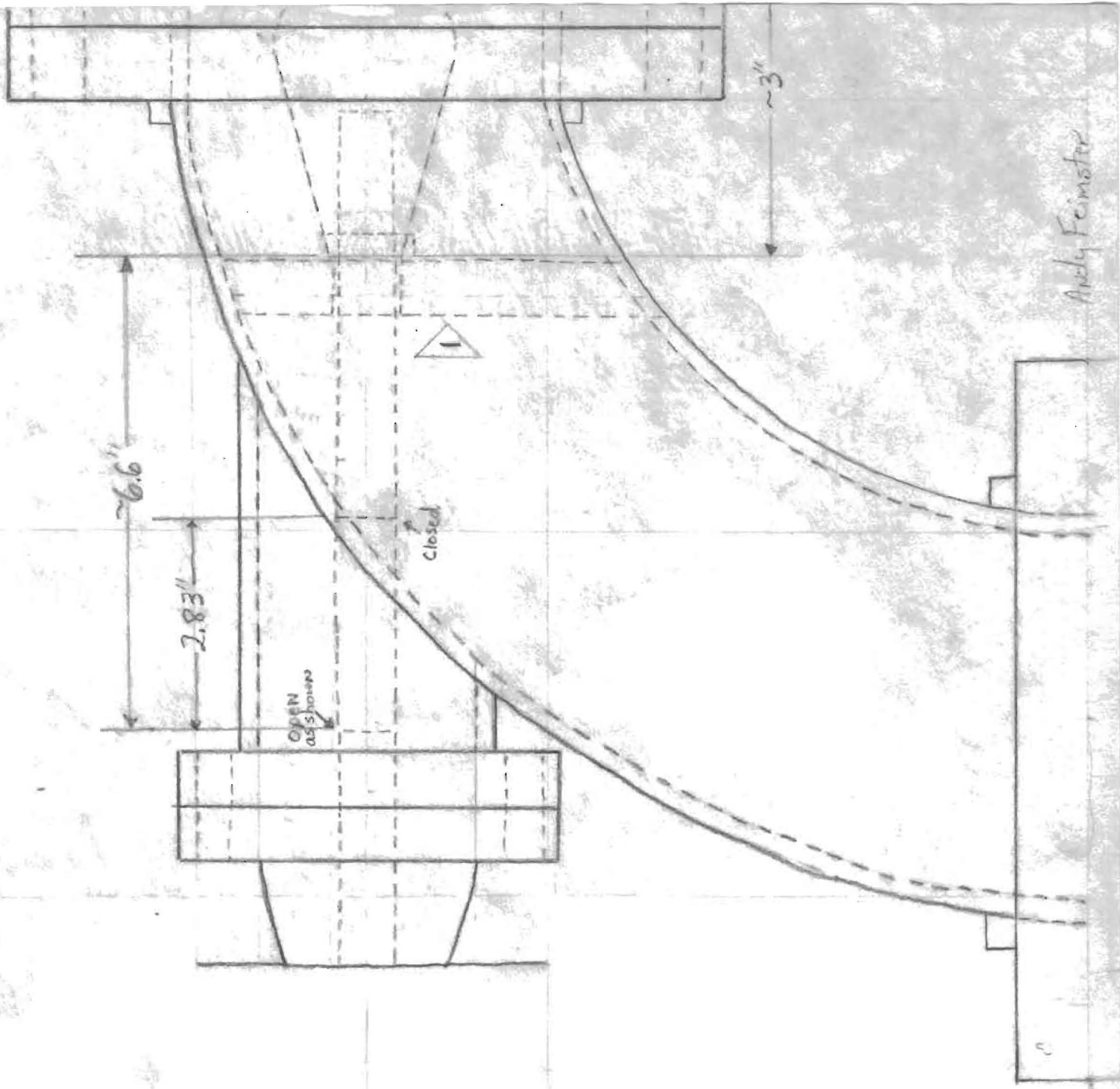
B = 4.8"

L = 4.16"

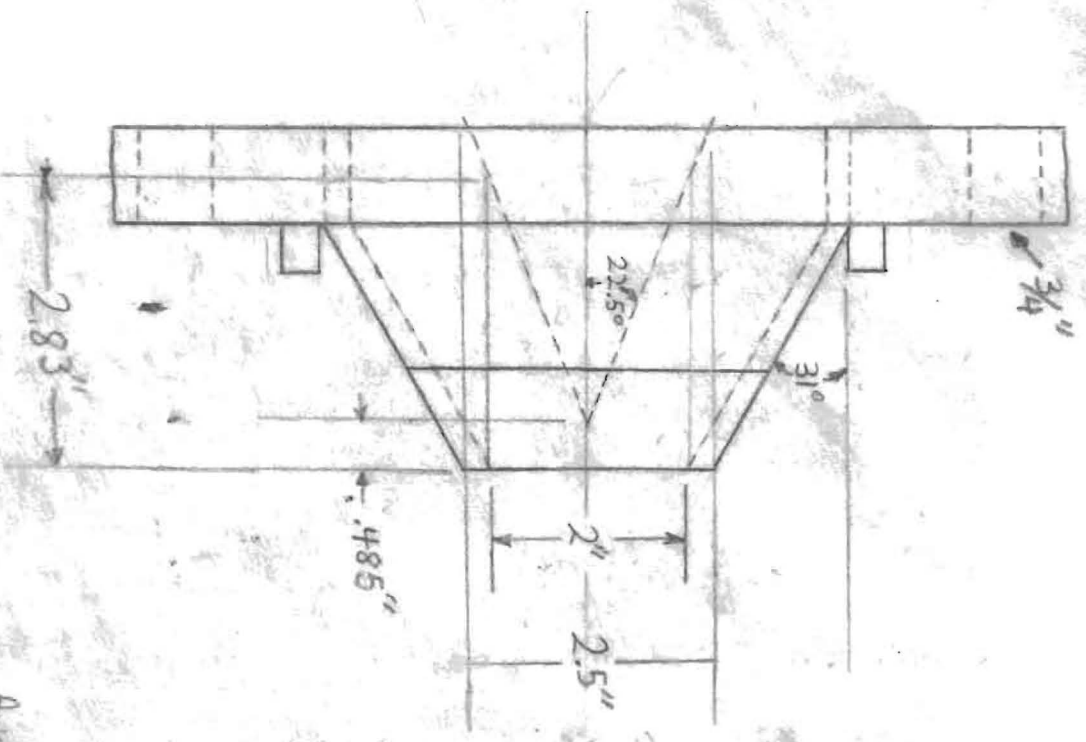
D = 1.36"

15"

650 rpm

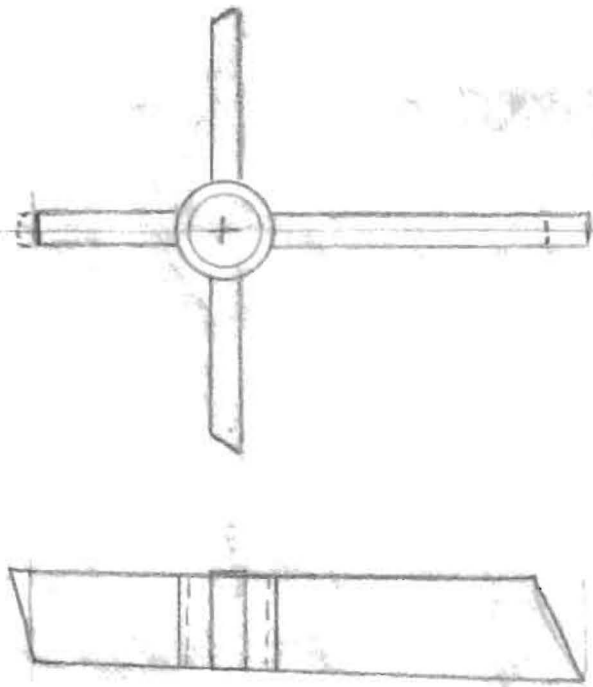


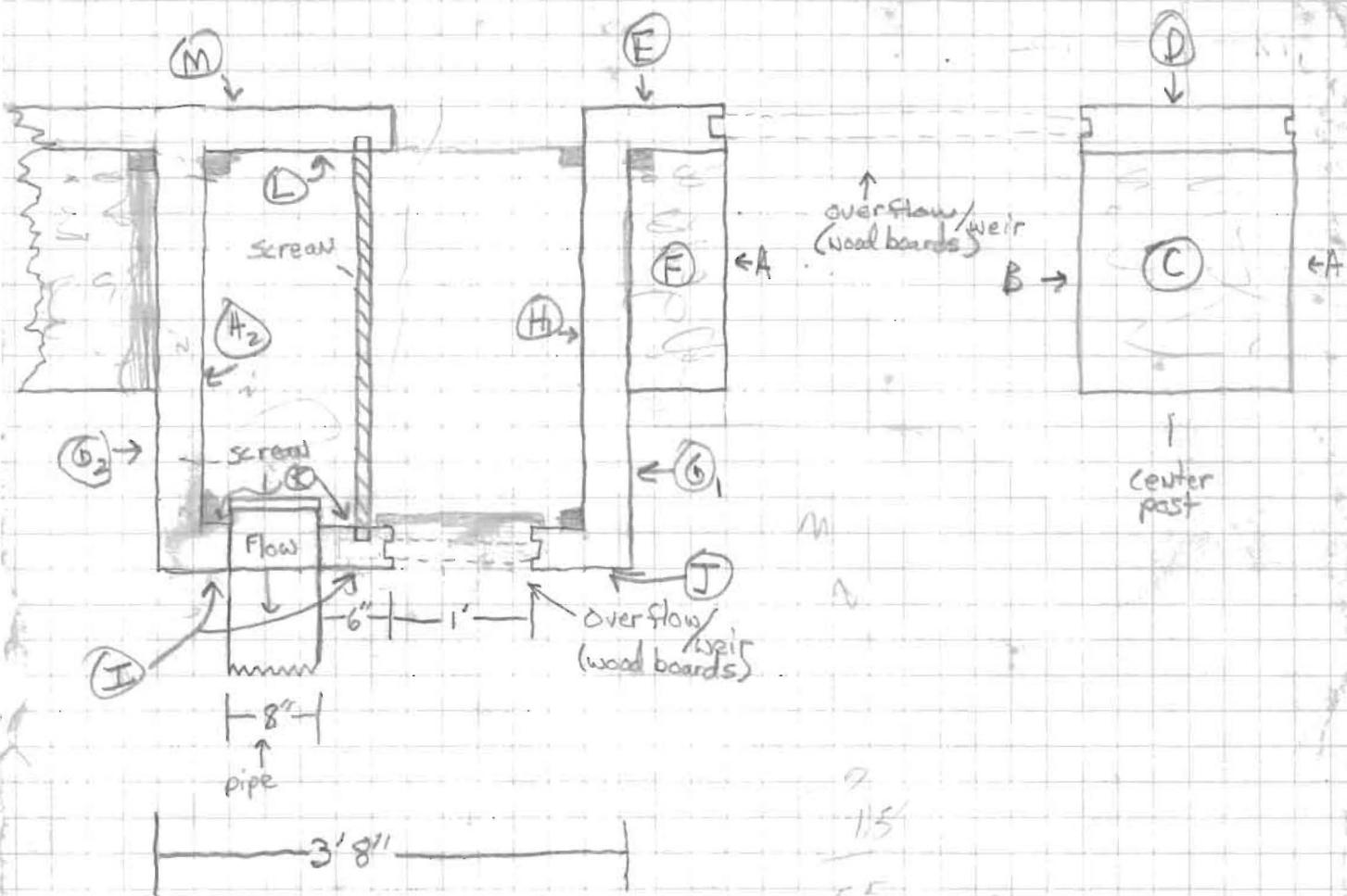
Andy Feinstein



Andy Feimster

Drawn by Andy Feinster





2.5

15" PD Pelton Wheel

OD

PD

Jet deflector

Fixed Nozzle

Jet deflector

Needle Nozzle

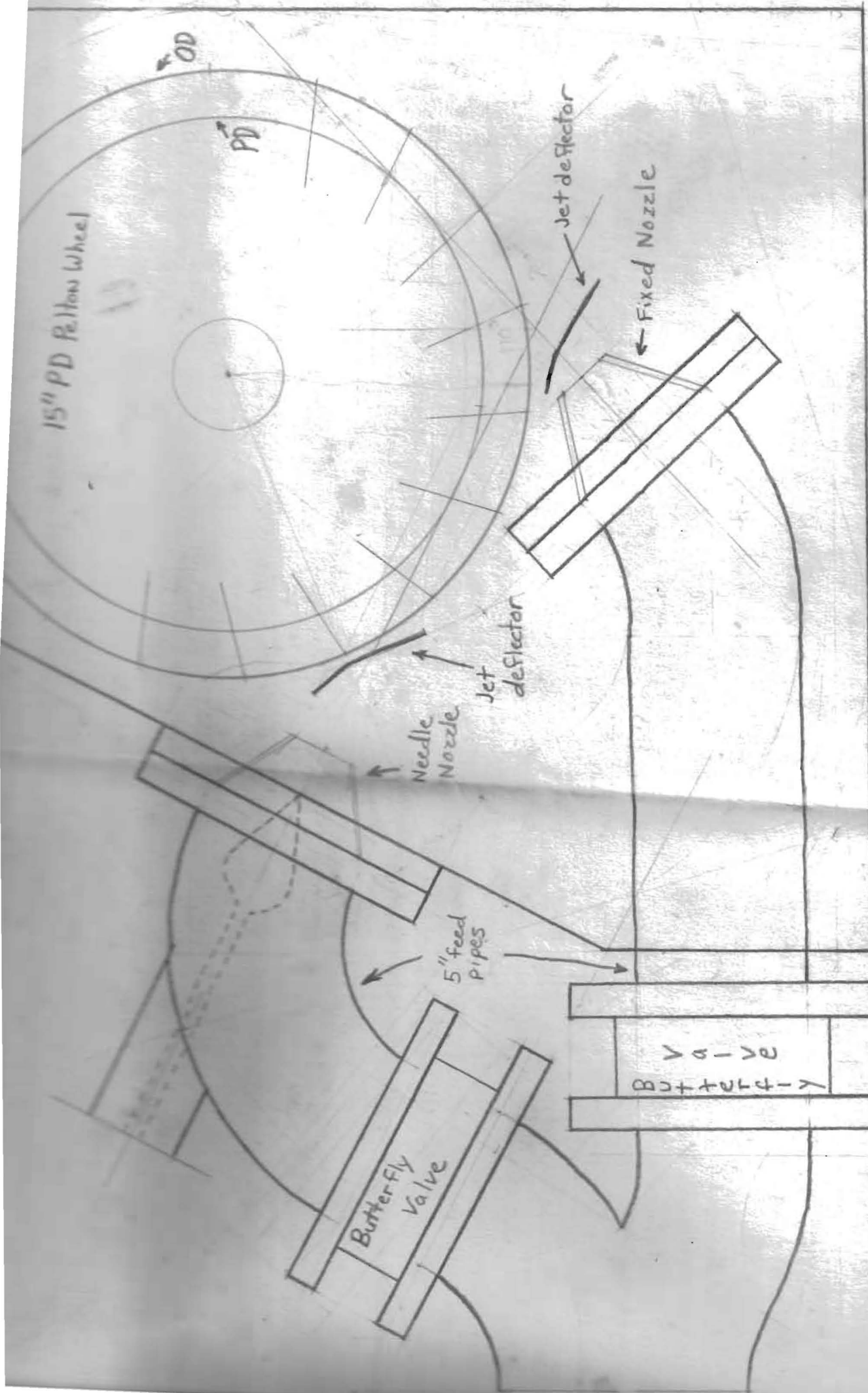
5" feed pipes

Butterfly Valve

Valve
Butterfly

Tailpit

Andy Feimster





4/8

4/8
4/8
4/8
4/8
4/8
4/8
4/8

2 1/8

1 2 3 4 5 6 7

4/8 inside radius
4/8 outside
6 1/2