



**MODEL 282L
TWO INCH FULL PIPE
SENSOR**

**INSTALLATION AND PROFILING
MANUAL FOR PIPE SIZES 4"-60"**

JULY 2010

PATENT NOTICE

This equipment is manufactured under
one or more of the following U.S. Patents:
4083246; 4549434; 4459858



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Table of Contents

SAFETY SUMMARY

Never Enter a Confined Space Without Testing the Air.....	iii
Never Enter a Confined Space Without the Proper Safety Equipment.....	iii
Never Enter a Confined Space Without Standby/Rescue Personnel.....	iii

SPECIFICATIONS

Velocity Measurement	iv
Materials	iv
Pressure/Temperature Limits	iv
Dimensions	iv

SECTION I: GENERAL DESCRIPTION

Sensor.....	1-1
Insertion Hardware.....	1-1
Flow Measurement.....	1-2
Velocity Profile	1-2
Mean Velocity	1-2
Sensed Velocity	1-2
Flow Calculation.....	1-2
Velocity Multipliers (K1, K2, K3)	1-3
Calculating the Velocity Multipliers	1-3
Calculating the Mean Velocity	1-3
Isotachs	1-4
Sensor Location	1-4

SECTION II: APPLICATION SCHEMATICS

Clearance.....	2-1
Skewed Profiles.....	2-1
90° Elbow.....	2-2
T - Junction	2-3
Y - Junction.....	2-4
Active Valves.....	2-5
Small Large Pipe Junction	2-6
Pump Station.....	2-7

SECTION III INSTALLATION AND PROFILING

Flowmeter	3-1
Sensor	3-1
Location, Position, and Clearance	3-1
Access Hole	3-1
Attach the Sensor to Insertion Tube.....	3.2
Sensor Alignment.....	3-2
Measure Length C.....	3-3
Install the Insertion Tube	3-3
Profiling Tool	3-4
Check Pipe ID.....	3-4
Measuring the Velocity Profile.....	3-6
Far Wall Method	3-6
Sensor Location Check	3-8
Mean Velocity (\bar{U}) Calculation	3-8
Velocity Multiplier (K1, K2, K3).....	3-8
Sensor Operating Position (Raw Waste Water).....	3-9
Sensor Operating Position (Clean Water)	3-9
Measuring Length C (Alternate Method)	3-9
Measuring the Velocity Profile.....	3-10
Near Wall Method	3-10
Sensor Location Check	3-13
Mean Velocity (\bar{U}) Calculation	3-13
Velocity Multiplier (K1, K2, K3).....	3-13
Sensor Operating Position.....	3-13
1/8 D Profile	3-13
1/8 D Sensor Position.....	3-14
Options.....	3-15
Pressure Options	3-15
Cable Disconnect Option	3-16
Two Inch Full Pipe Sensor Parts Illustration.....	3-17

SECTION IV PARTIAL PROFILES

Partial Profiling Methods	4-1
Profile Curve Estimation.....	4-2
Far/Near Wall Sensor Location Velocities	4-3
Complete the Profile Curve.....	4-3

PROFILING DATA LOGS

4-4

SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedure and therefore do not appear elsewhere in this publication. These are the recommended precautions that personnel must understand and apply when working in confined spaces. Examples of confined spaces are boilers, furnaces, degreasers, pipelines, pits, pumping stations, septic tanks, sewage digesters, man-holes, vaults, and storage tanks.

NEVER ENTER A CONFINED SPACE WITHOUT TESTING THE AIR

The air inside confined spaces may be toxic, oxygen deficient, or explosive due to a lack of good ventilation. This is because most confined spaces are not designed for workers to enter and work on a routine basis.

Do not trust your senses to determine if the air in a confined space is safe. You cannot see or smell many of the toxic gases or vapors. Test the space at the bottom, middle, and top.

NEVER ENTER A CONFINED SPACE WITHOUT THE PROPER SAFETY EQUIPMENT

Do not enter a confined space without the proper safety equipment such as a tripod, lifeline, and gas detector.

NEVER ENTER A CONFINED SPACE WITHOUT STANDBY/RESCUE PERSONNEL

Only enter a confined space in the presence of someone who is capable of rendering aid. Standby personnel should not have any other duties but to serve as standby and know what action to take in case of an emergency. Standby personnel should not enter a confined space until help arrives and then only with proper equipment, life lines, and respirators.

Comment:

Over 50% of workers who die in confined spaces are attempting to rescue other workers.

SPECIFICATIONS

VELOCITY MEASUREMENT

METHOD: Electromagnetic (Faraday's Law)
RANGE: -0.5 to +20 ft/sec (600 cm./sec)
ACCURACY: $\pm 2\%$ of reading, \pm zero stability
ZERO STABILITY: ± 0.03 ft/sec

MATERIALS

SENSOR: Polyurethane exposed to flow
SENSOR CABLE: Twinax Polyurethane outer jacket
SENSOR MOUNTING: PVC and ductile iron exposed to flow (stainless steel optional)

PRESSURE / TEMPERATURE LIMITS

PVC INSERTION TUBE: 150 psi @ 105° F
(McCrometer recommends the use of stainless steel.)
STAINLESS STEEL INSERTION TUBE: 250 psi @ 160° F
SENSOR: Flow temperature range 32° F to 160° F (0° C to 72° C) at 250 psi. Sensors for extreme environments are available, subject to application review - contact factory.

DIMENSIONS

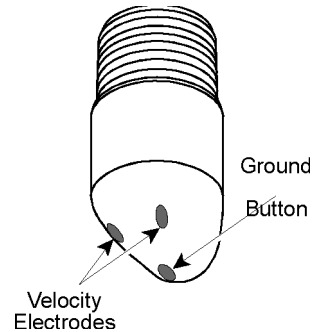
SENSOR: 1.66" Diameter (Requires 1.75" ball valve port clearance)
INSERTION HARDWARE: 1.66" Diameter, Length varies (Specify length at time of order)

SECTION I

GENERAL DESCRIPTION

Sensor

The two inch full pipe sensor (Figure 1-1) measures water velocity in full pipes. The sensor operates on the Faraday principle which states that a conductor moving through a magnetic field produces a voltage that is directly proportional to the velocity of the conductor. An inductor inside the sensor produces the magnetic field, and two velocity electrodes on the surface of the sensor measure the voltage produced by the water (moving conductor). The flowmeter electronics convert the voltage measurement to a velocity output.



Comment:

The purpose of the reference electrode is to suppress electrical noise that may be present in the water.

Figure 1-1. Sensor

Insertion Hardware

The insertion hardware (Figure 1-2) consists of a sensor, sensor cable, ball valve, and insertion tube. The sensor is attached to the insertion tube and the insertion tube is inserted into the pipe through a 2" ball valve or corporation stop. A standard sensor cable is 20 feet long and terminates at a terminal strip or sensor disconnect.

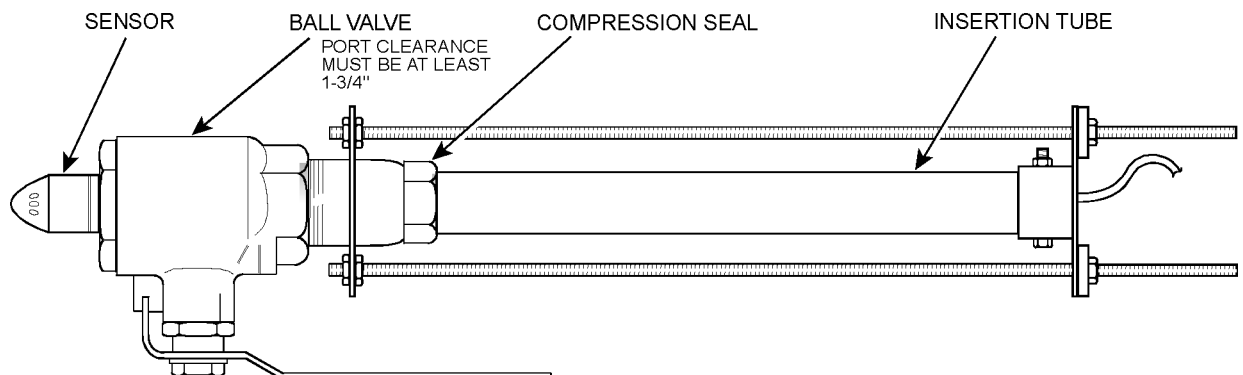


Figure 1-2. Insertion Hardware

Flow Measurement

Velocity Profile

The velocity profile is the velocity of the water at various positions on a plane across the pipe. These velocities vary and the slowest velocities are at or near the pipe wall. The result is a profile shape similar to the one shown in Figure 1-3. This shape is referred to as the theoretical profile.

Comment:

Pipe elbows, valves or obstructions will cause the profile shape to change.

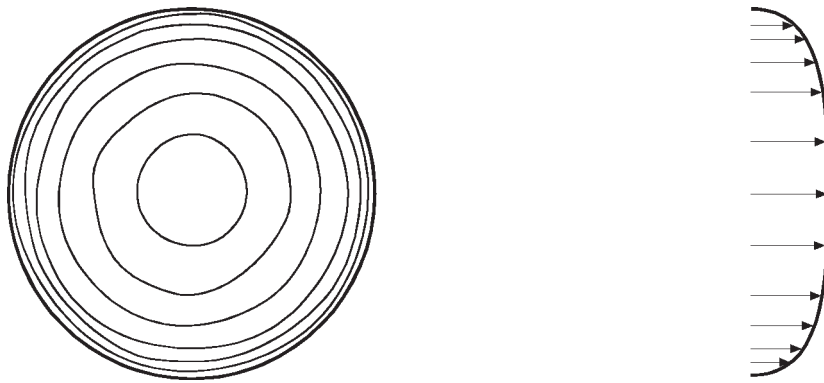


Figure 1-3. Velocity Profile (Theoretical)

Mean Velocity

The mean velocity (\bar{U}) is the average of all the velocities across the flow.

Sensed Velocity

The sensed velocity (U) is the velocity that is measured by the sensor which is located near the sensor electrodes.

Flow Calculation

Flow is calculated with the continuity equation $Q = \bar{U} \times A$ where Q is flow, \bar{U} is mean velocity and A is cross-sectional area of the pipe.

Velocity Multipliers (K1, K2, K3)

The velocity multiplier (K) modifies the sensed velocity so that it can be used as the mean velocity in the continuity equation. One velocity multiplier (K1) is a first order multiplier and a first order multiplier assumes a linear relationship between the sensed velocity and the velocity profile. This may be significantly non-linear when:

- The difference between the minimum and maximum flow is three or more times.
- The sensor is located near an elbow, junction, or obstruction.

If the above conditions exist, a second or third order multiplier is appropriate. The third order equation is:

$$U = K_1 U_s + K_2 U_s^2 + K_3 U_s^3$$

Where (K) is the multiplier and (U_s) is the sensed velocity.

Calculating the Velocity Multipliers

We must have a sensed velocity and a mean velocity to calculate the velocity multiplier. Profiling is the method we use to get the mean velocity. When the flow is profiled, the velocity is measured at various locations across the flow.

Comment:

A second order multiplier requires at least three profiles and a third order multiplier requires at least four profiles. The profiles should be evenly spaced over the range of flows and must include a profile of the minimum and maximum flow rates.

You will need the Flow Calculator software package to calculate second or third order multipliers. Factory assistance is also available.

Check the instruction manual for your model flowmeter to see if the meter can use second and third order multipliers.

Calculating the Mean Velocity

The pipe cross-section is divided into a number of concentric rings called annular areas (Figure 1-4). Although the velocity across the pipe changes, the velocity in a particular annular area is considered constant. Each annular area velocity is weighted because the amount of influence that each one has on the mean velocity calculation is different. To get the mean velocity, the weighted velocities are totaled then they are divided by a mean velocity factor.

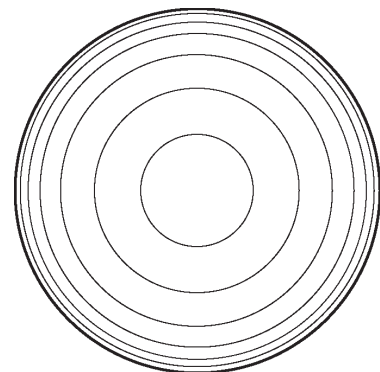


Figure 1-4. Annular Areas

The two inch profiling data log in the back of this manual has a column of sensor locations. Each location in this column represents an annular area. The velocity at each location is measured with the sensor and recorded in the log. The velocity at a particular location is multiplied by the weighting factor at that location. The weighted velocities are totaled and divided by the mean velocity factor at the bottom of the log to get the mean velocity.

Isotachs

An isotach indicates a velocity gradient (Figure 1-5). This can be compared to a topographic map that shows the varying terrain with elevation lines. Notice that the isotachs in Figure 1-5 are concentric circles. These isotachs are from a fully developed profile in a straight run of pipe. This is the configuration that was used to develop the weighting factors in the profiling data log. The best results are attained in applications which have velocity profiles similar to the one used to develop the information in the profiling data log.

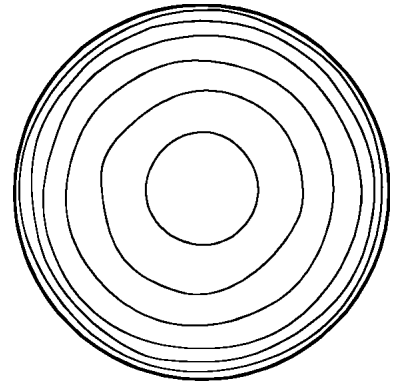


Figure 1-5. Isotachs

Sensor Location

Locate the sensor as far as possible away from elbows, valves, and junctions. A few guidelines are as follows:

- The sensor should be located at least 5 pipe diameters upstream or 10 pipe diameters downstream from elbows and junctions.

Comment:

The best results are obtained from a sensor that is as far as possible away from elbows, junctions, and obstructions.

- The sensor must be located at least 10 pipe diameters upstream or 25 pipe diameters downstream from active valves.

SECTION II

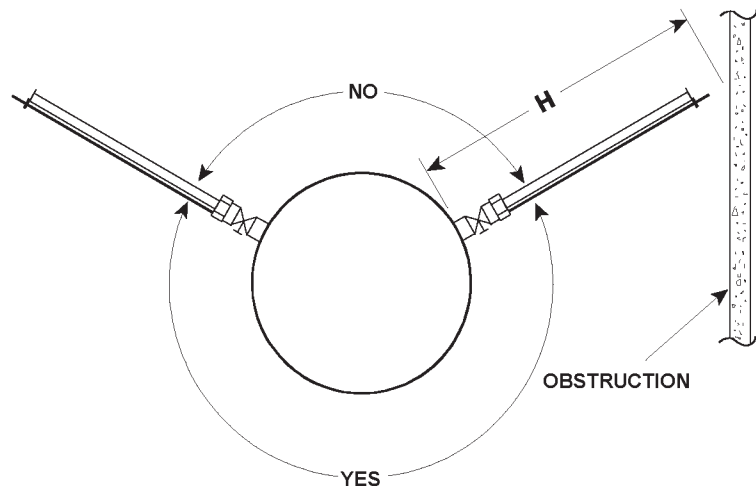
APPLICATION SCHEMATICS

The application schematics (Pages 2-1 to 2-7) show different applications and the best sensor location for a particular application.

Clearance

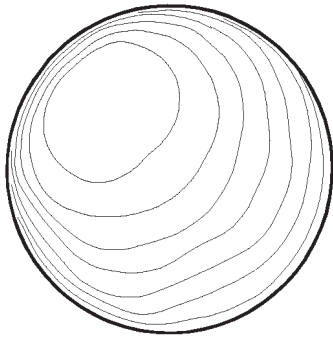
Distance H must be at least one insertion tube length plus 8

The sensor can be installed on vertical and horizontal pipes. However, on horizontal pipes, do not install the sensor at or near the top of the pipe. Air bubbles and grease float to the top and could affect readings.

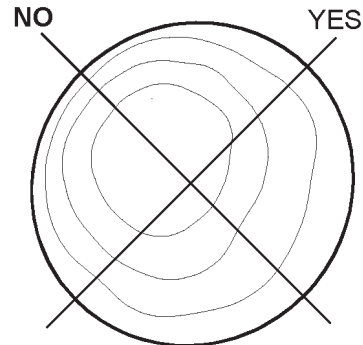


Skewed Profiles

This profile is skewed too much to get good results. These locations are indicated by a NO in the application schematics.

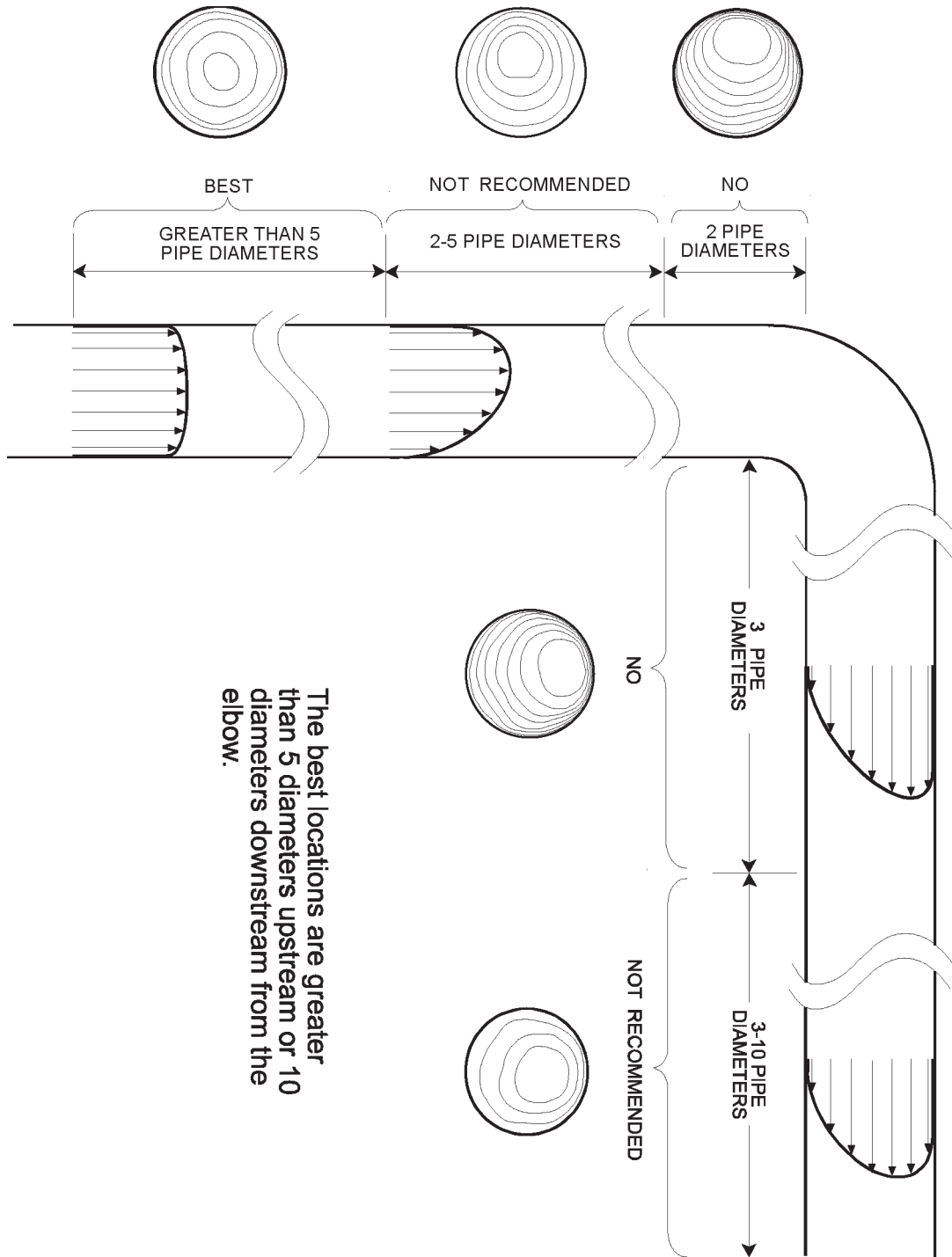


This profile is somewhat skewed. These locations, which are indicated by a NOT RECOMMENDED in the application schematics, should be avoided.

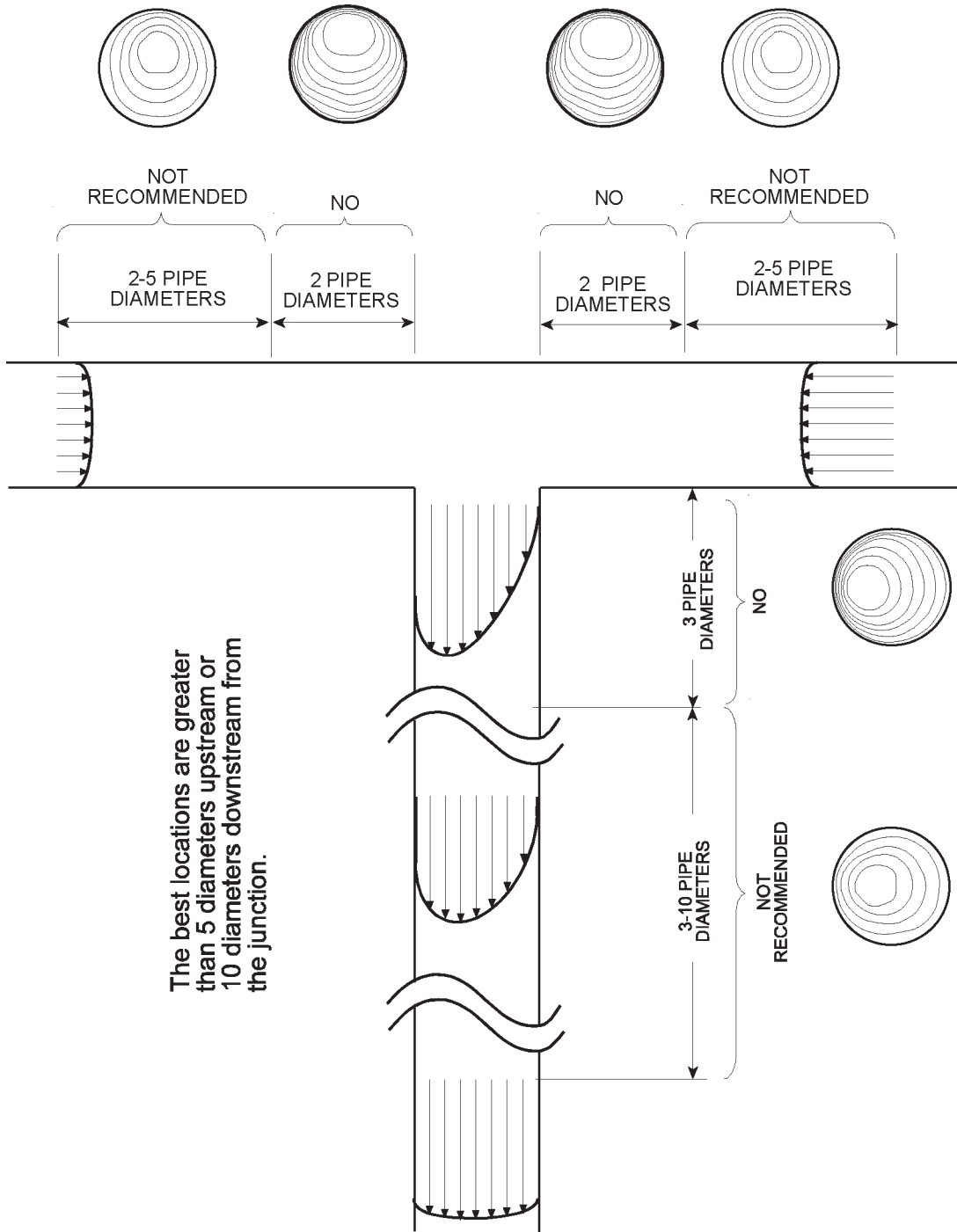


If a NOT RECOMMENDED location cannot be avoided, mount the sensor so that the profile is bisected asymmetrically when the pipe is traversed.

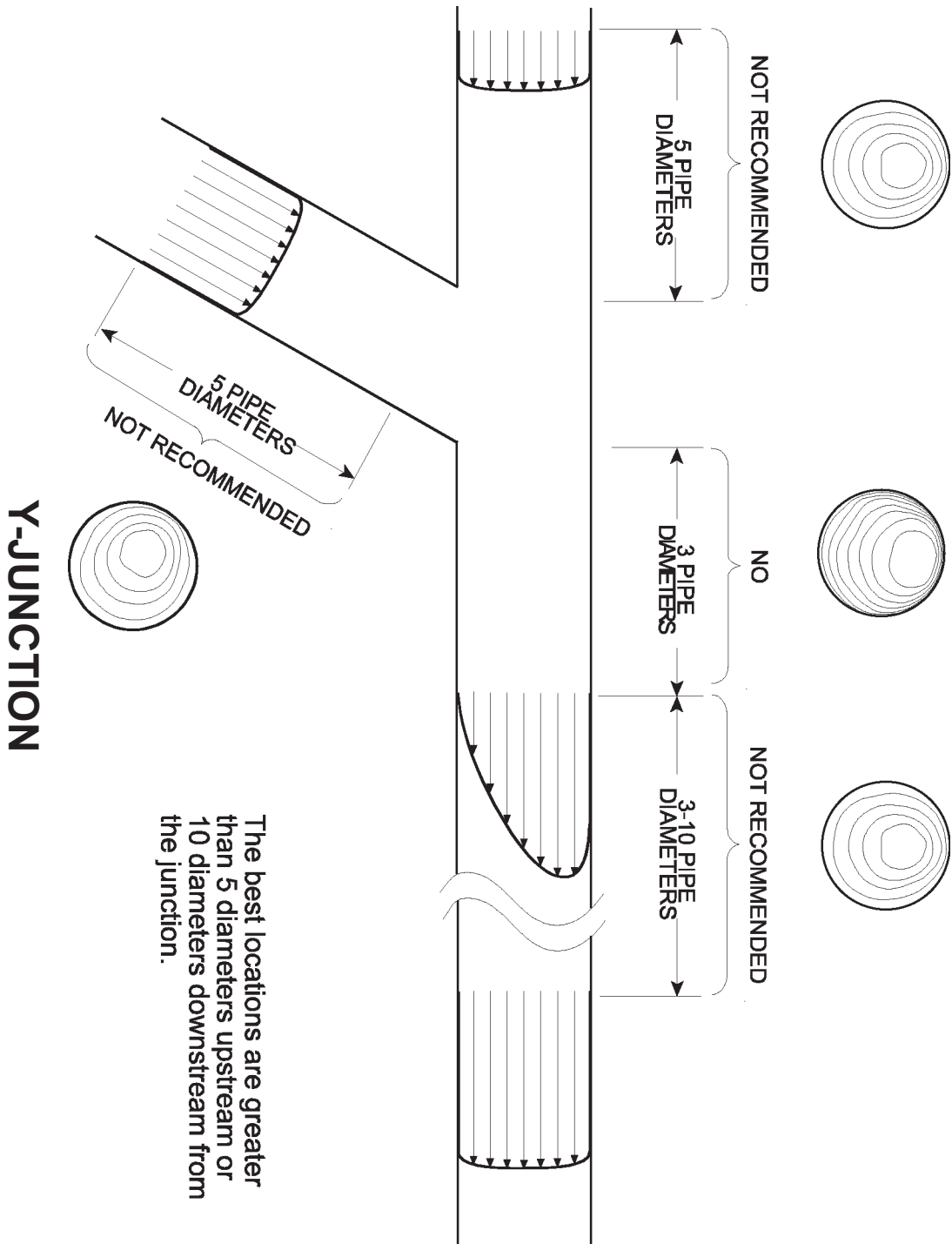
90° ELBOW

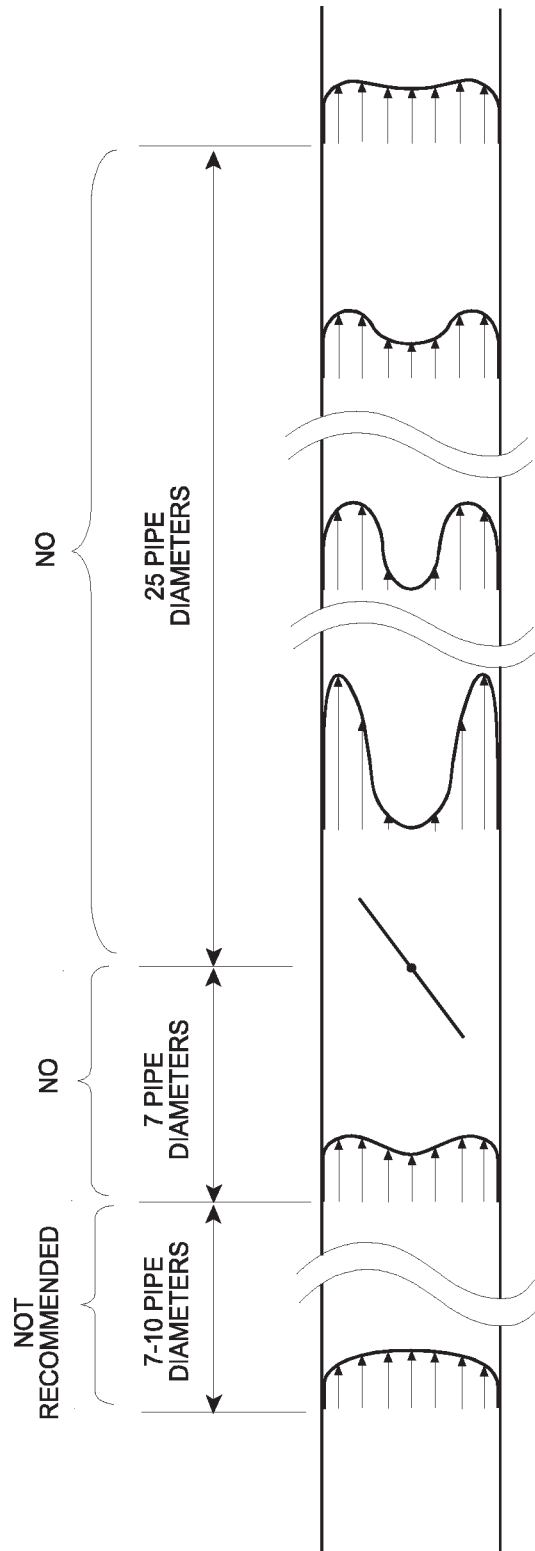


The best locations are greater than 5 diameters upstream or 10 diameters downstream from the elbow.



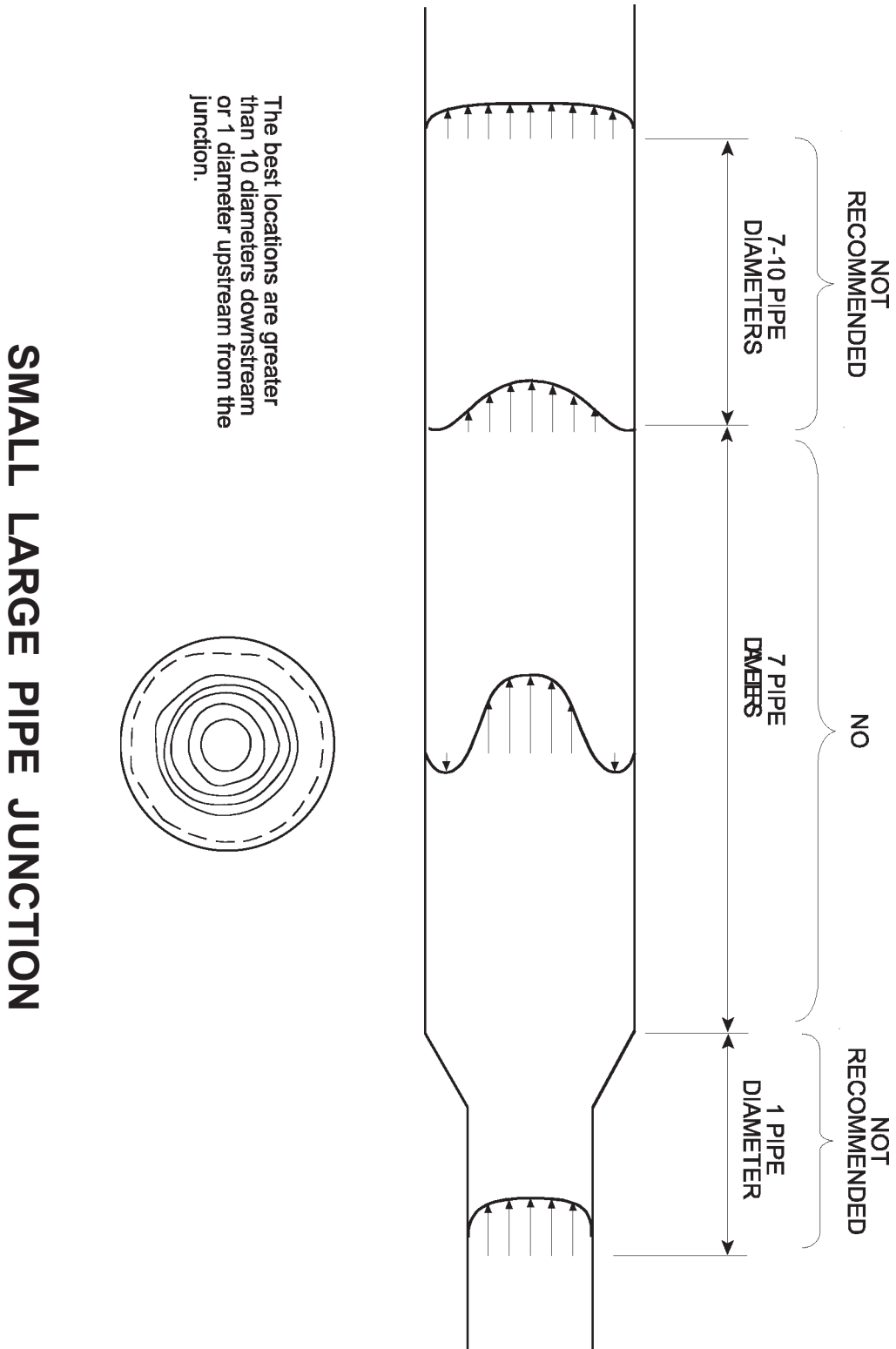
T - JUNCTION





The purpose of an active valve is to vary the flow. An active valve will produce a distorted profile that changes as the flow changes. As a result, the sensor must be installed at least 10 diameters upstream or 25 diameters downstream from an active valve. The upstream side is the preferred location.

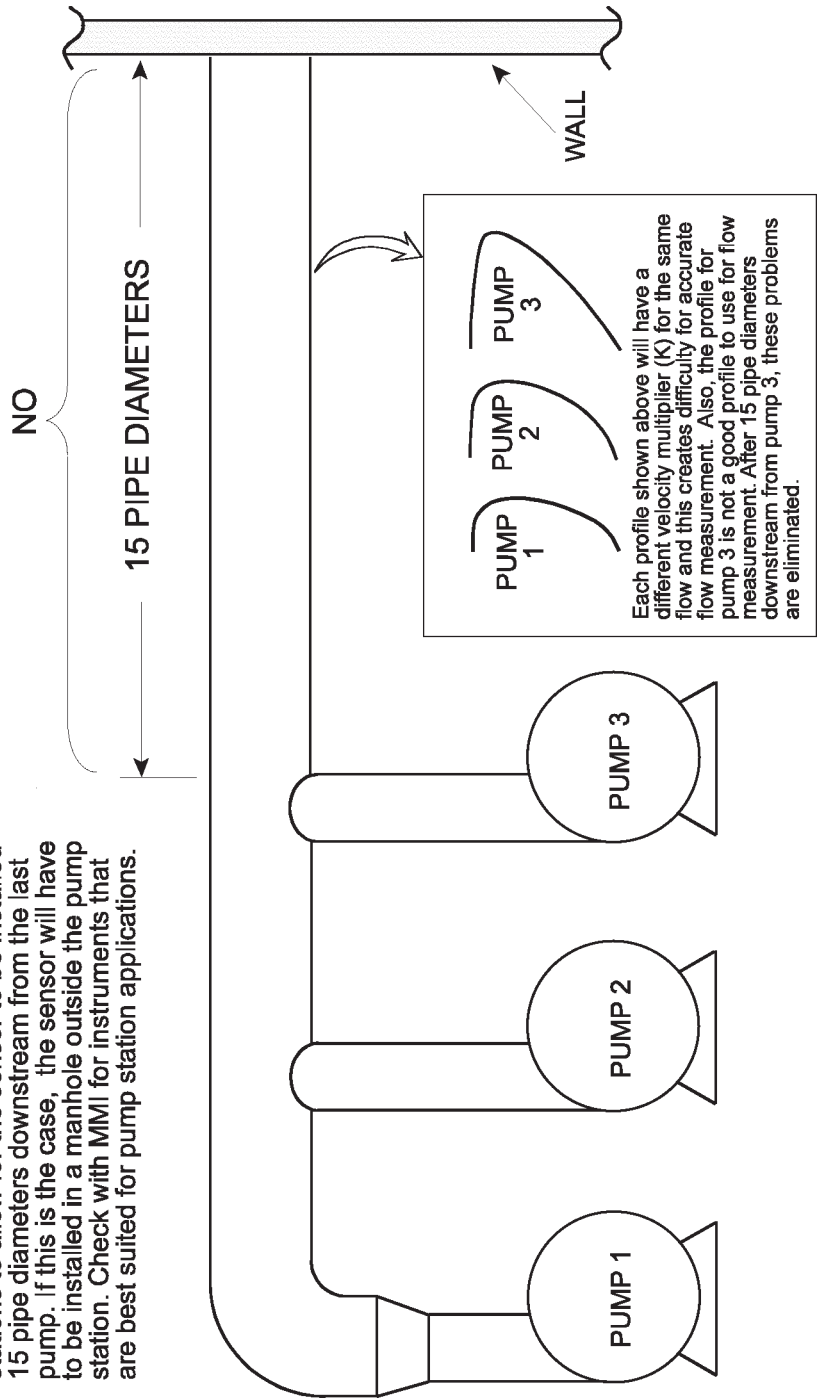
ACTIVE VALVES



The best locations are greater than 10 diameters downstream or 1 diameter upstream from the junction.

SMALL LARGE PIPE JUNCTION

There may not be enough room in some pump stations to allow for the sensor to be installed 15 pipe diameters downstream from the last pump. If this is the case, the sensor will have to be installed in a manhole outside the pump station. Check with MMI for instruments that are best suited for pump station applications.



PUMP STATION

SECTION III INSTALLATION AND PROFILING

This instruction is for the installation of the sensor and insertion hardware. The sensor cable connections and flowmeter installation instructions are contained in the manual for your model flowmeter. The installation outline is as follows:

- Mount the flowmeter electronics.
- Install the sensor.
- Measure the inside diameter of the pipe.
- Profile the flow.
- Calculate Mean Velocity (\bar{U}).
- Set the sensor at the operating position.
- Record the velocity at the operating position.
- Calculate the Velocity Multiplier.

INSTALLATION

Flowmeter

Install the flowmeter as described in the technical manual for your model flowmeter.

Sensor

Location, Position, and Clearance

The Application Schematics (Pages 2-1 through 2-7) illustrate sensor location, position, and clearance requirements.

Access Hole

The pipe must be tapped and have a pipe nipple in place before the sensor can be installed. A smooth 1-3/4" access hole (Figure 3-1) and a flush pipe nipple (Figure 3-2) are required for accurate flow measurement in waste water applications. Clean water applications that can use the 1/8 D operating position do not have to have flush pipe nipples.

WARNING

Tapping into pressurized pipes is dangerous and injury could result from improper tapping procedures.

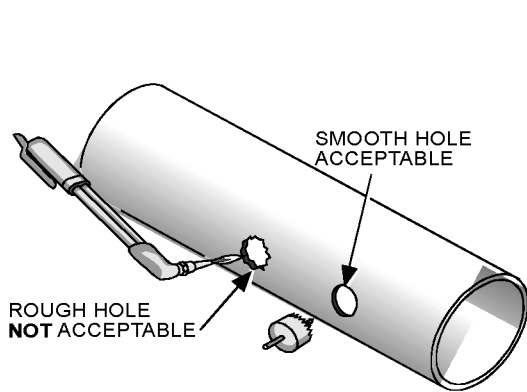


Figure 3-1. Access Hole

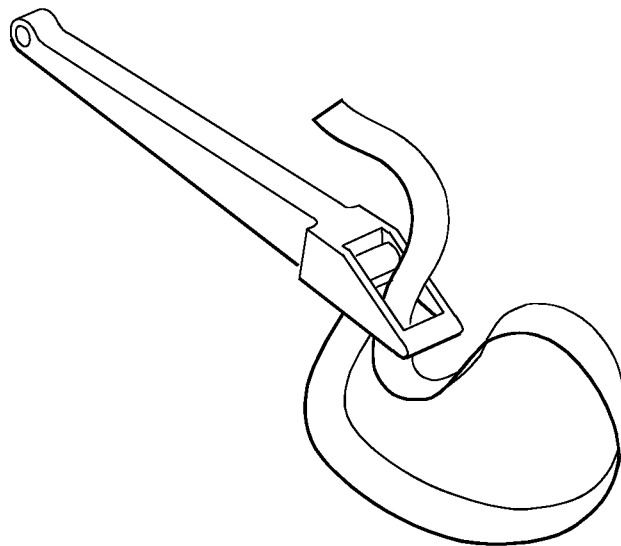


Figure 3-3. Strap Wrench

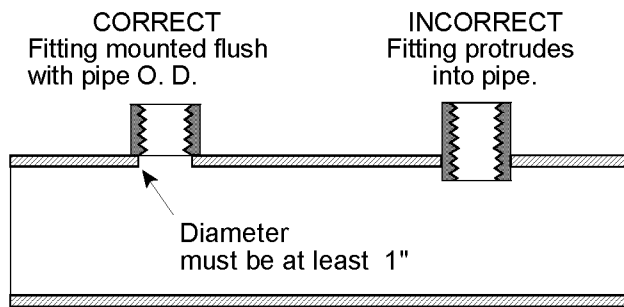


Figure 3-2. Pipe Nipple

Attach the Sensor to Insertion Tube

The sensor is usually shipped with the sensor attached to the insertion tube. If the sensor needs to be attached, then do the following:

- Wrap the sensor threads with Teflon tape.
- Run the sensor cable through the center of the insertion tube and carefully screw the sensor into the insertion tube. Hand tighten only.

Sensor Alignment

After the sensor has been attached to the insertion tube, it needs to be aligned. To align the sensor, turn it using a strap wrench until the arrow on the sensor and the arrow on the decal are pointed in the same direction (Figure 3-4).

Comment:

Only use a strap wrench (Figure 3-3) to rotate the sensor.

Do not force the sensor.

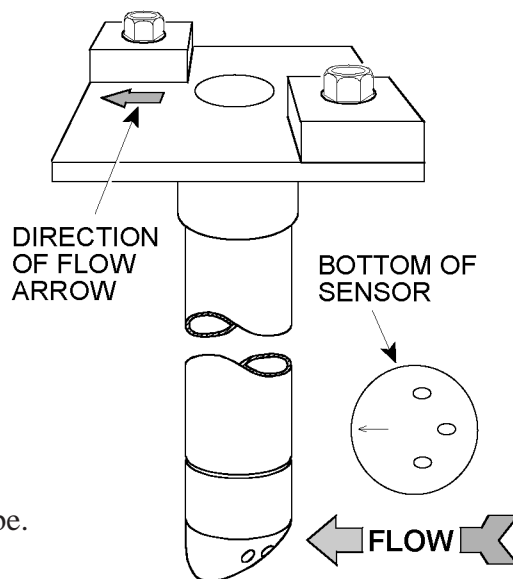


Figure 3-4. Sensor Alignment

Measure Length C

Measure and write down length C. This is measured from the top edge of the insertion tube cap to the start of the tapered section on the sensor (Figure 3-5). You will need this measurement to do the profile.

The tapered section of the sensor is about 3/4". If the insertion tube is in the pipe and cannot be removed, see "Measuring Length C (Alternate Method)" on Page 3-9.

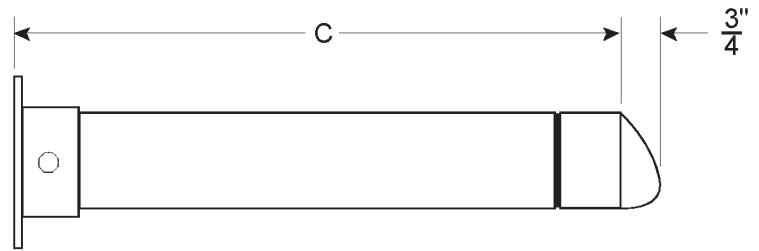


Figure 3-5. Length C

Install the Insertion Tube

Install the ball valve on the pipe nipple. Use Teflon tape to seal the pipe threads. Do not use pipe dope because the unit will only output near zero velocity readings if pipe dope gets on the sensor electrodes.

- Remove the plastic cover from the pipe nipple on the compression seal and wrap the nipple with Teflon tape.
- Wrap the compression seal threads with Teflon tape and screw it into the ball valve. Do not use pipe dope to seal the threads. If pipe dope gets on the sensor electrodes, noisy velocity readings near zero will result.
- The compression seal must be aligned so that any one side of the restraining plate is parallel to the pipe (Figure 3-6).
- Attach the restraining rods to the compression seal restraining plate. The rods need to be positioned so that when the insertion tube is installed the sensor will be aligned with the flow. Be sure all cotter pins are properly installed (Figure 3-7).

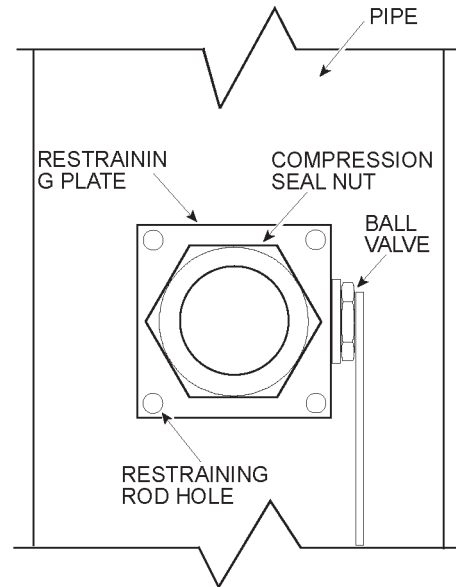


Figure 3-6. Compression Seal Installation

WARNING

The insertion tube may shoot out of the pipe and could cause injury if the restraining rods are not properly installed.

- With the arrow on the insertion tube cap aligned with the flow (Figure 3-4), run the restraining rods through the captive nuts until the insertion tube is inside the compression seal.

CAUTION

The captive nuts must be tightened simultaneously or the insertion tube cap will become cocked and cause the captive nuts to bind. A profiling tool (Figure 3-8) will prevent this.

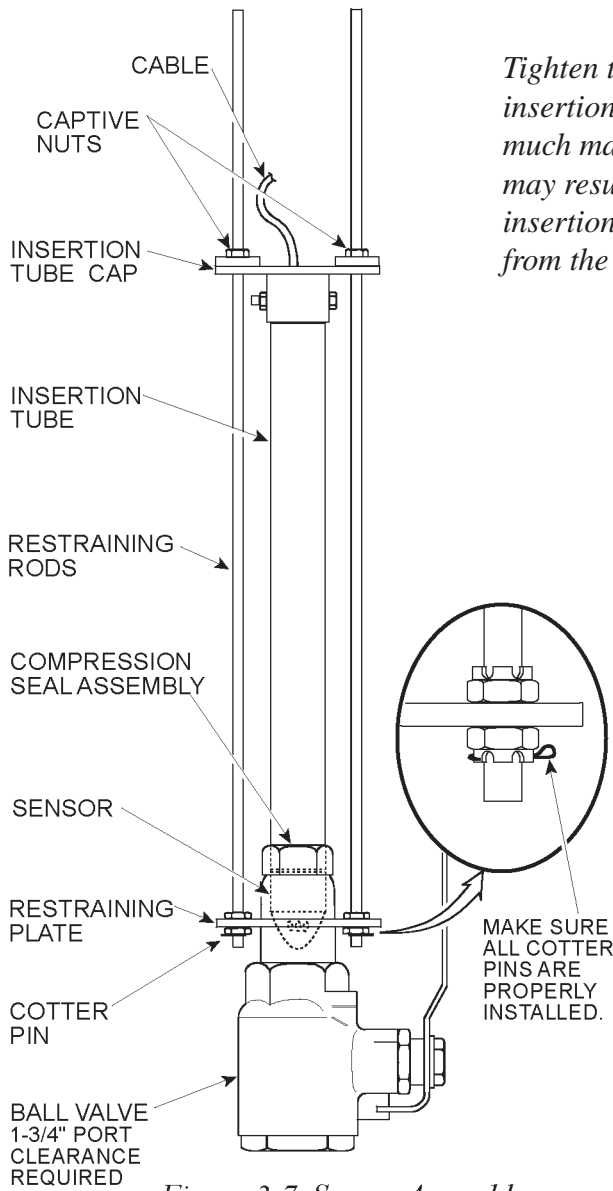


Figure 3-7. Sensor Assembly

IMPORTANT

Tighten the compression seal nut only enough to seal the insertion tube. Tightening the compression seal nut too much may cause the seal to grip the insertion tube. This may result in the captive nuts being pulled out of the insertion tube cap when the insertion tube is retracted from the pipe.

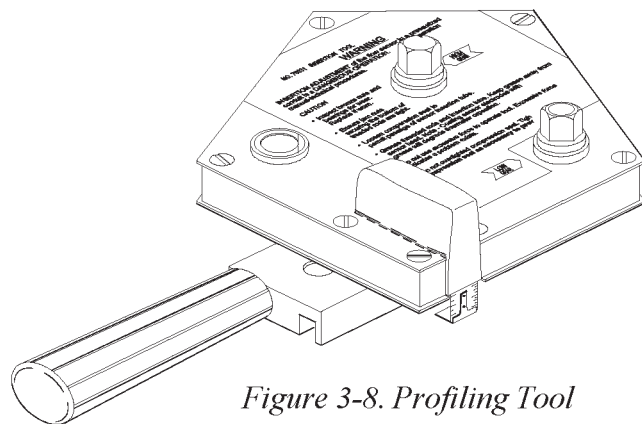


Figure 3-8. Profiling Tool

Profiling Tool

A profiling tool (Figure 3-8) is used to rotate the captive nuts on the insertion tube cap simultaneously. Place the profiling tool over the captive nuts and rotate the high gear shaft.

Check Pipe ID

If you do not know the inside diameter (ID) and wall thickness (WT) of the pipe, measure them before you start to profile. The best method is to measure them directly; however, if the flow cannot be shut down, the sensor can be used to get these measurements.

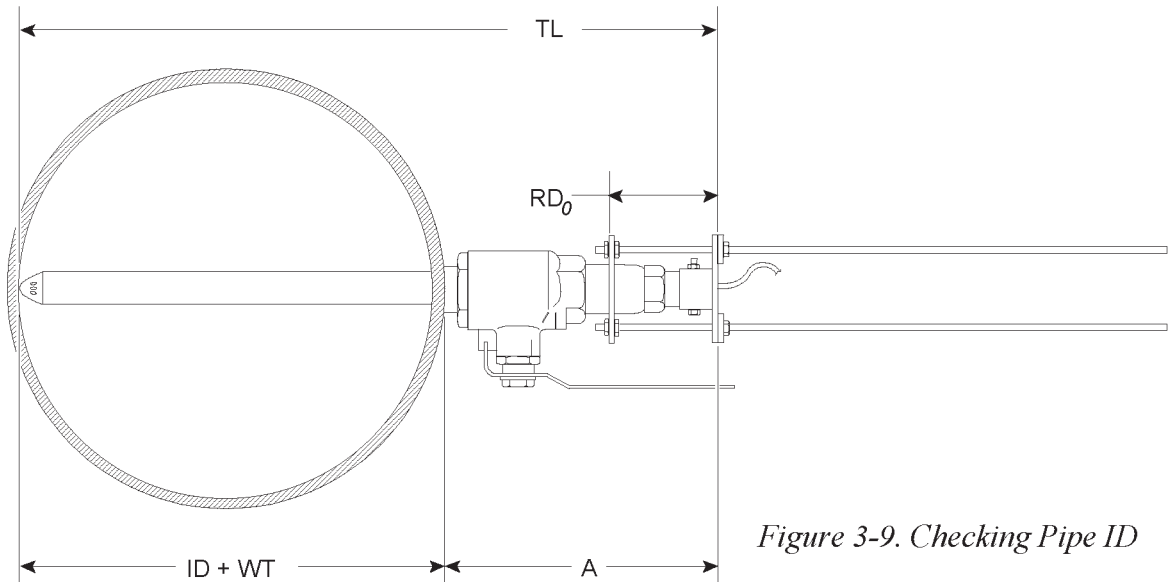


Figure 3-9. Checking Pipe ID

- Place the profiling tool over the captive nuts with the yellow decal on top.
- OPEN the ball valve.
- Place a ratchet on the high gear shaft of the profiling tool and rotate clockwise. Do this until the tip of the sensor reaches the far wall of the pipe. The sensor will stop and you will not be able to turn the ratchet.

CAUTION

As the sensor nears the far wall, slow down and do not force the ratchet. Excessive force could damage the sensor or insertion tool, which would require sensor replacement.

- Measure the outside circumference of the pipe and divide this measurement by π (3.14). This is the outside diameter (O.D.).
- Now add 3/4" to length C (Figure 3-5). This is total length (TL).
- Measure distance A (Figure 3-9). This is measured from the pipe O.D. to the top edge of the insertion tube cap .

The sensor cable must be connected to the flowmeter and the meter must be set to output velocity. Check the flowmeter instruction manual for sensor cable connection and velocity output.

To obtain the velocity profile, you will need to measure multiple velocities at various locations across the pipe. To do this you need:

A reference distance (RD).

The profiling data log at the back of this manual.

The reference distance is measured from the top edge of the insertion tube cap to the bottom edge of the compression seal nut (Figure 3-9).

- Subtract distance A from total length (TL). This will give the inside diameter (I.D.) plus one wall thickness (WT).

$$ID + WT = TL - A$$

- Determine the wall thickness by:

$$WT = OD - (ID + WT)$$

- Determine inside diameter (ID) by:

$$ID = OD - 2(WT) \text{ or } ID = (ID + WT) - WT$$

Measuring the Velocity Profile

Far Wall Method

The far wall is the wall opposite the sensor mounting hardware. The far wall method starts with the first velocity measurement being taken at the far wall. If the insertion tube is too short to traverse the pipe I.D., use the near wall method (Page 3-10) to do a partial profile (Section IV).

Comment:

The far wall method is preferred because it is easier to locate the far wall than it is the near wall.

The sensor cable must be connected to the flowmeter and the meter must be set to output velocity. Check the flowmeter instruction manual for sensor cable connection and velocity output.

To obtain the velocity profile, you will need to measure multiple velocities at various locations across the pipe. To do this, you need:

A reference distance (RD).

The profiling data log.

The reference distance is measured from the top edge of the insertion tube cap to the bottom edge of the restraining plate (Figure 3-10).

- Open the profiling data log to the page with the inside diameter (I.D.) of your pipe.
- Place the profiling tool over the captive nuts on the insertion tube cap.
- Position the sensor at the far wall (RD_0) by rotating the high gear shaft on the profiling tool clockwise until the sensor stops (Figure 3-9). Slow down and be careful as the sensor approaches the far wall. Do not force the ratchet.
- Measure and record RD_0 .

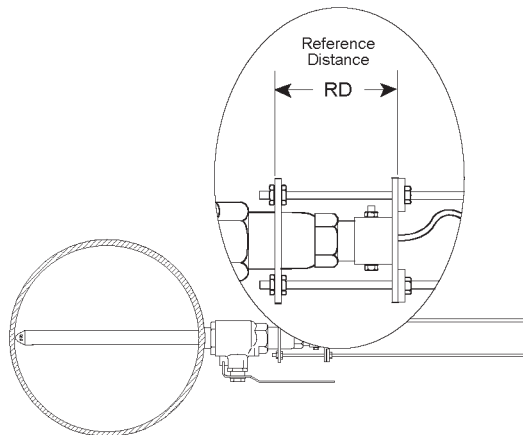


Figure 3-10. Reference distance

- Calculate RD_1 and rotate the high gear shaft counterclockwise until (RD_1) is reached.
 $RD_1 = (RD_0 + 1/4")$
- Record (RD_1) and the velocity reading in the appropriate columns at the bottom of the log at RD_1 location (Figure 3-11).

PIPE ID = 4.00"		# OF DATA POINTS 8		
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
RD ₈ _____	0.00	_____	x 8.154 =	_____
RD ₇ _____	0.25	_____	x 1.439 =	_____
RD ₆ _____	0.50	_____	x 1.040 =	_____
RD ₅ _____	0.75	_____	x .667 =	_____
RD ₄ _____	1.00	_____	x .361 =	_____
RD ₃ _____	1.50	_____	x .589 =	_____
RD ₂ _____	2.00	_____	x 2.820 =	_____
RD ₁ _____	3.00	_____	x 4.222 =	_____
RD ₀ _____			TOTAL	_____
TOTAL _____ ÷ 19.25 = MEAN VEL _____				

Figure 3-11. Profiling Data Log

- Calculate RD_2 and position the sensor at RD_2 . Record RD_2 and the velocity.
 $RD_2 = (\text{Sensor Location } RD_1 - \text{Sensor Location } RD_2) + RD_1$
- Calculate RD_3 and position the sensor at RD_3 . Record RD_3 and the velocity.
 $RD_3 = (\text{Sensor Location } RD_2 - \text{Sensor Location } RD_3) + RD_2$
- Repeat this until you reach sensor location 0.00.

Sensor Location Check

The sensor location check is used to verify the pipe I.D., and should be done immediately after the velocity profile has been measured. With the sensor at location 0.00, increase distance RD by 3/4". The velocity output should be about zero. If it is not, the I.D. is larger than thought. If the velocity drops to near zero before location 0.00 is reached, the I.D. is smaller than thought. Repeat the profile at the correct pipe diameter.

Mean Velocity (\bar{U}) Calculation

After you have finished profiling, you need to calculate the mean velocity (\bar{U}).

- Multiply each measured velocity by the weighting constant and record the product in weighted velocity column.
- Now add the weighted velocities and record the total at the bottom of the page in the TOTAL block.
- Divide the total by the number specified on the bottom of the log to find the mean velocity.

$$TOTAL \underline{\hspace{2cm}} \div XX.XX = MEAN VEL$$

Velocity Multiplier (K1, K2, K3) Calculation

The Velocity Multiplier (K) converts the sensed velocity to a mean velocity. For all flowmeters that use the Flo-Ware program, the velocity multiplier is calculated by that program. Check the Flo-Ware Communications User Manual for a description of the velocity multiplier fields. For those flowmeters which do not use the Flo-Ware program, the velocity multiplier calculation is as follows:

- Position the sensor at the operating position and record the velocity.
- Divide the mean velocity that was recorded in the profiling data log by the operating position velocity. The result is the velocity multiplier (K).

Comment:

If you want to do a second or third order correction (Page 1-3), you must use the Site-Ware software package. You can also consult the factory.

Sensor Operating Position (Raw Waste Water)

The operation position for raw waste water and sludge is at sensor location 0.00. To position the sensor at this location you need to:

- Calculate distance A (Figure 3-12) by subtracting the pipe wall thickness (WT) from length C.
- Position the top edge of the insertion tube cap distance A from the pipe.

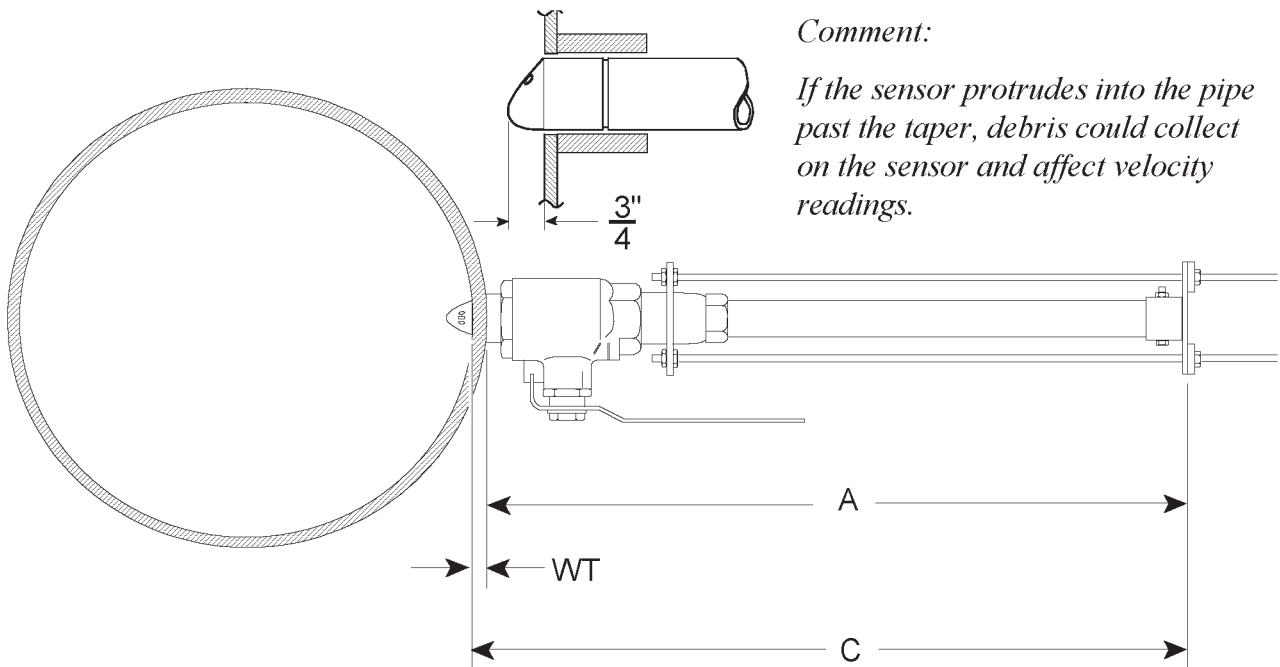


Figure 3-12. Sensor Operating Position

Sensor Operating Position (Clean Water)

The preferred operating position for clean water that does not contain rags or strings is at the 1/8 D sensor position (Page 3-14).

Measuring Length C (Alternate Method)

The overall sensor length will vary by $\pm 1/8''$. Therefore, this method should only be used in situations where it is difficult to measure length C directly. To measure length C with this method you will need to:

- Measure the inside of the insertion tube from the sensor to the top of the insertion tube cap (Figure 3-13 Distance B).

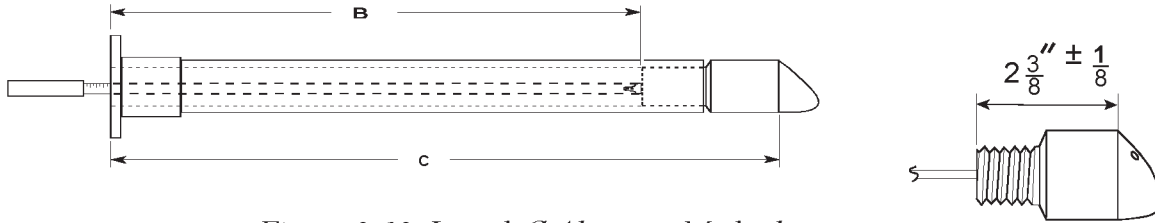


Figure 3-13. Length C Alternate Method

- Add 2-3/8" to distance B. This will be length C.

$$\text{Length C} = B + 2\frac{3}{8}"$$

Measuring the Velocity Profile

Near Wall Method

The near wall is the wall through which the sensor enters the pipe. With the near wall method, the FIRST velocity measurement is taken when the sensor is located at the near wall.

Comment:

The far wall method is preferred because it is easier to locate the far wall than it is the near wall.

The sensor cable must be connected to the flowmeter and the meter must be set to output velocity. Check the flowmeter instruction manual for sensor cable connection and velocity output.

To measure the velocity profile, you will need to measure the velocity at various locations across the pipe. To do this you need:

A reference distance (RD).

The profiling data log.

The reference distance is measured from the top edge of the insertion tube cap to the bottom edge of the restraining plate (Figure 3-14).

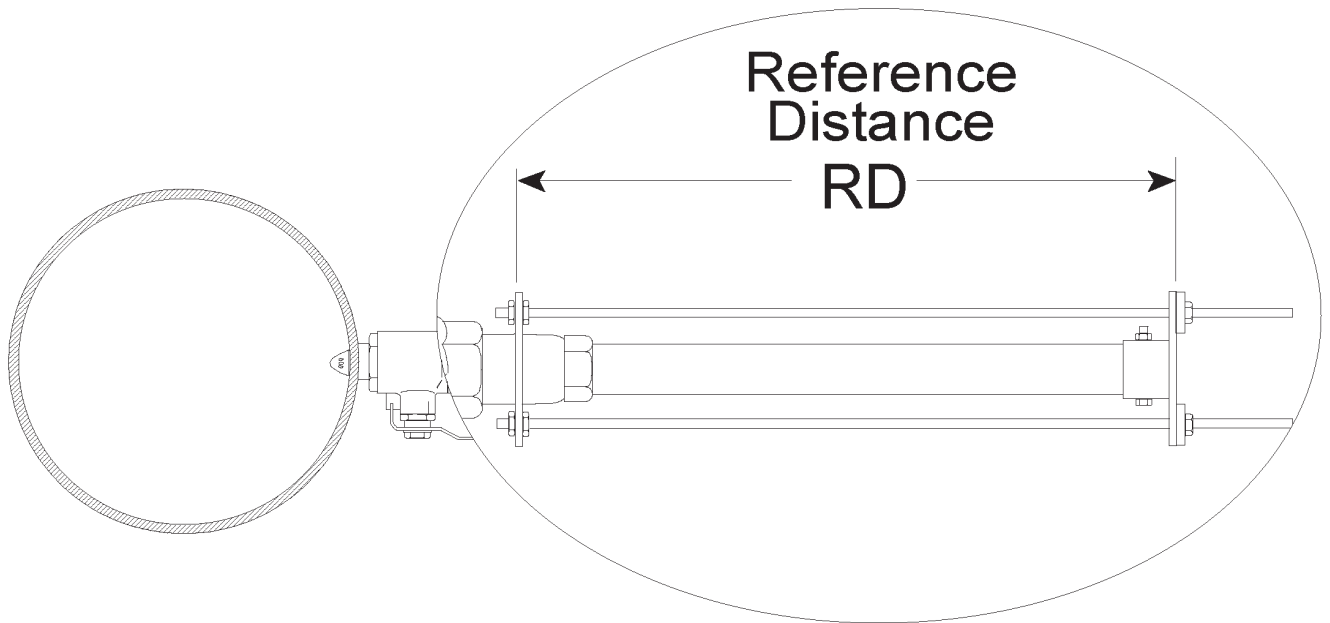


Figure 3-14. Reference Distance RD

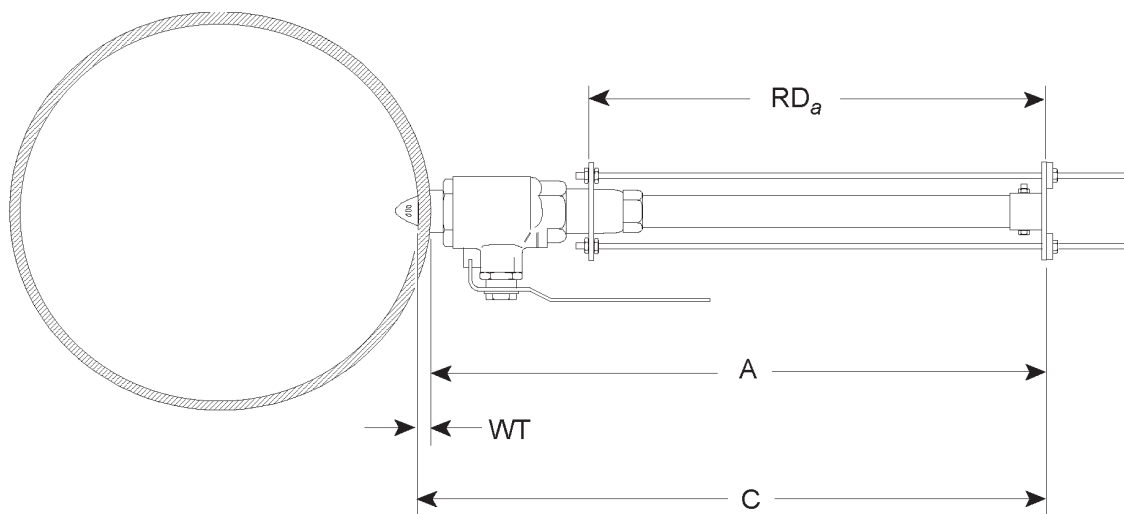


Figure 3-15. RD_a Near Wall

- Open the profiling data log to the page with the inside diameter (I.D.) of your pipe.
- Calculate distance A (Figure 3-15) by subtracting the wall thickness (WT) from the insertion tube length C.
- Place the profiling tool (Figure 3-8) over the captive nuts on the insertion tube cap. With a ratchet, rotate the high gear shaft clockwise until the top edge of the insertion tube cap is distance A from the pipe. This is sensor position RD_a .
- Measure reference distance RD_a (Figure 3-15) and record it at sensor location 0.00 under the reference distance column in the profiling data log (Figure 3-16).
- Record the velocity in the measured velocity column next to sensor location 0.00.
- Calculate RD_b and rotate the high gear shaft until RD_b is reached.
 $RD_b = RD_a - (\text{Sensor Location } RD_b - \text{Sensor Location } RD_a)$
- Record RD_b and the velocity in the appropriate columns at sensor location 0.25.
- Calculate RD_c and position the sensor at location 0.50. Record RD_c and the velocity.
 $RD_c = RD_b - (\text{Sensor Location } RD_c - \text{Sensor Location } RD_b)$
- Repeat this until you reach the bottom sensor location.

PIPE ID = 4.00"		# OF DATA POINTS 8		
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
RD_a _____	0.00	_____	x 8.154 =	_____
RD_b _____	0.25	_____	x 1.439 =	_____
RD_c _____	0.50	_____	x 1.040 =	_____
RD_d _____	0.75	_____	x .667 =	_____
RD_e _____	1.00	_____	x .361 =	_____
RD_f _____	1.50	_____	x .589 =	_____
RD_g _____	2.00	_____	x 2.820 =	_____
RD_h _____	3.00	_____	x 4.222 =	_____
_____			TOTAL	_____
TOTAL _____ ÷ 19.25 = MEAN VEL _____				

Figure 3-16. Profiling Data Log

Sensor Location Check

The sensor location check is used to verify the pipe ID. After you have reached the bottom location, slowly decrease distance RD by 1/4". The sensor should stop. Do not force the ratchet. If the sensor stops before the 1/4" distance is reached, then the I.D. is smaller than thought. If the sensor does not stop when the 1/4" distance is reached, the I.D. is larger than thought. Repeat the profile at the correct pipe diameter.

Mean Velocity (\bar{U}) Calculation

After you have finished profiling, you need to calculate the mean velocity (\bar{U}).

- Multiply each measured velocity by the weighting constant and record the product in the weighted velocity column.
- Add the weighted velocities and record the total at the bottom of the page in the TOTAL block.
- Divide the total by the number specified on the bottom of the log to find the mean velocity.

$$TOTAL______ \div XX.XX = MEAN\ VEL$$

Velocity Multiplier (K1, K2, K3) Calculation

Calculate the velocity multiplier as described on Page 3-8.

Sensor Operating Position

The operating position for raw waste water and sludge is at sensor location 0.00 (Page 3-9). The operating position for clean water is at the 1/8 D position (Page 3-14).

1/8 D Profile

The accuracy of a 1/8 D profile depends on the existence of a theoretical profile (Page 1-2), and can only be used when the flow regime is representative of the theoretical profile. An industry accepted standard is that the velocity of the flow at a distance of 1/8 the diameter from the wall of the pipe is considered to be the mean velocity. To profile, simply position the sensor at 1/8 D and record the velocity. Then calculate the velocity multiplier (Page 3-8).

Comment:

The tip of the sensor will be at 1/8 D.

1/8 D Sensor Position

- Find total length (TL)(Figure 3-17).

$$TL = C + \frac{3}{4}''$$

- Calculate (1/8 D).

$$\frac{1}{8} D = 0.125 \times \text{Pipe ID}$$

- Add wall thickness to 1/8 D.

- Calculate distance A (Figure 3-18).

$$A = TL - (1/8 D + WT)$$

- Set the top edge of the insertion tube cap distance A from the pipe.
- Record the velocity and calculate the velocity multiplier (Page 3-8).

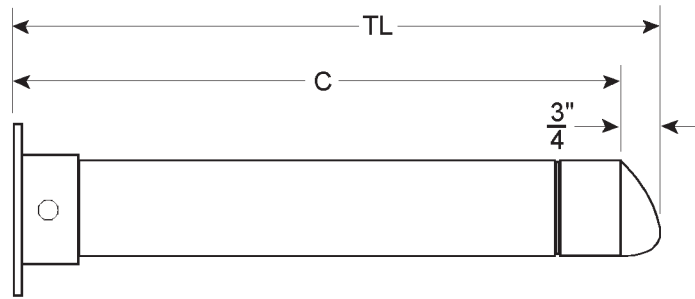


Figure 3-17. Tube Length (TL)

If the flow is clean water, the sensor can be left at the 1/8 D position. Do not leave the sensor in this position for raw waste water because debris could collect on the sensor and affect the velocity readings. In waste water applications, position the sensor at location 0.00 (Page 3-9).

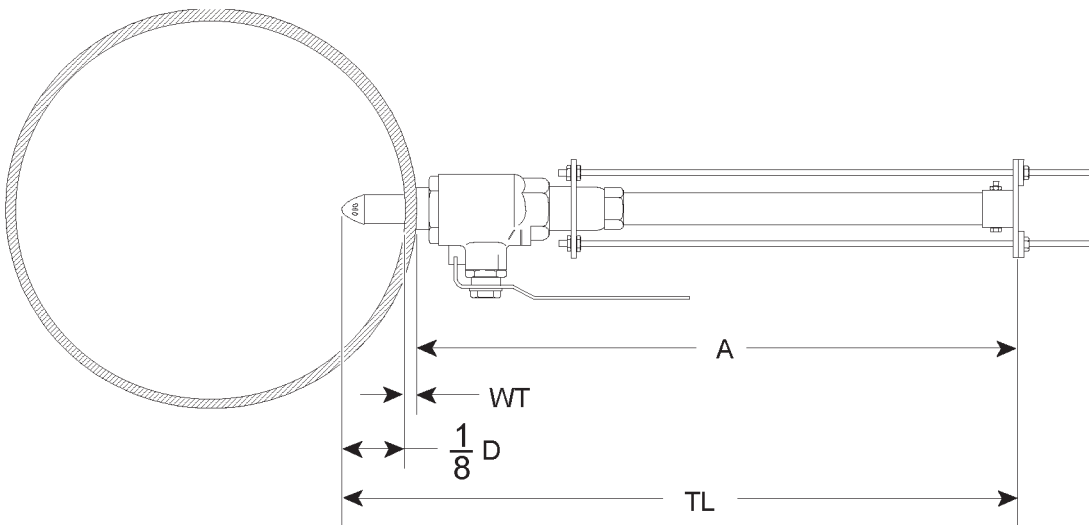


Figure 3-18. 1/8 D Sensor Location

OPTIONS

Pressure Options

The full pipe sensor pressure option is available on both the standard and stainless steel compression seals (Figures 3-19 and 3-20).

Pressure transducer installation.

- Retract the sensor past the ball valve and close the valve.
- Remove the plug in the pressure port (Figures 3-20, 3-21) on the compression seal.
- Wrap the pressure transducer threads with Teflon tape and screw into the pressure port.
- Connect the pressure cable to the pressure transducer and flowmeter.
- Open the ball valve and position the sensor at the operating position.

Comment:

The pressure option is not available on all instruments. If the option is available, the instrument instruction manual will contain the information that describes how to connect the pressure cable to the flowmeter.

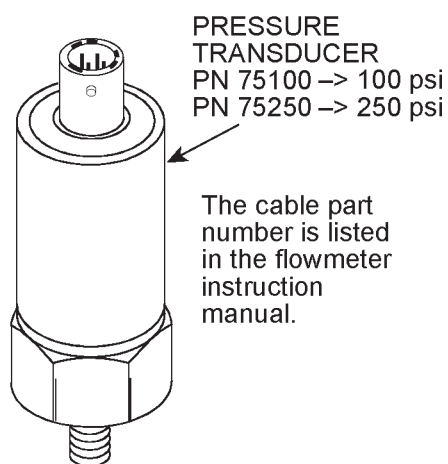


Figure 3-19. Pressure Transducer

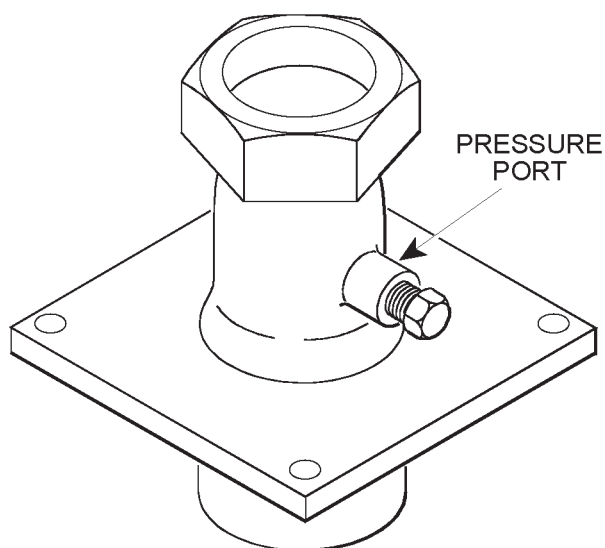


Figure 3-20. Standard Compression Seal with Pressure Port Option

Cable Disconnect Option

The cable disconnect is used on both the sensor and pressure cables. To connect the cable, align the latch alignment marks and push the connector together. To disconnect the cable, pull the latch release toward the cable.

Comment:

The cable disconnect is not available on all instruments.

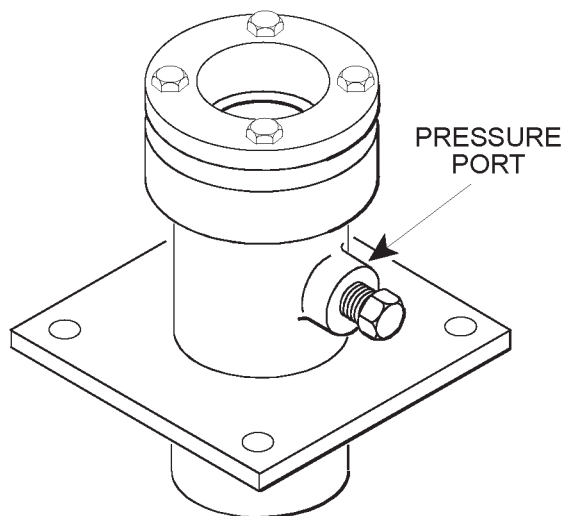


Figure 3-21. Stainless Steel Compression Seal With Pressure Port

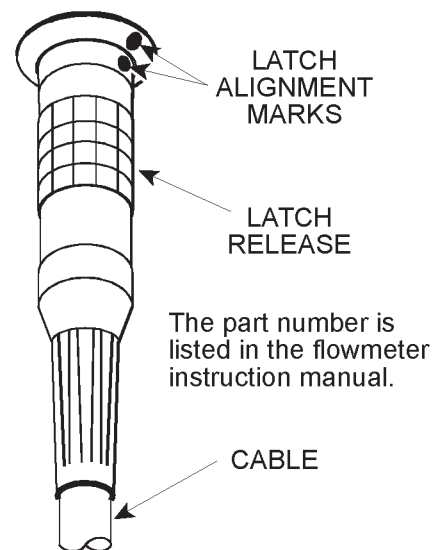
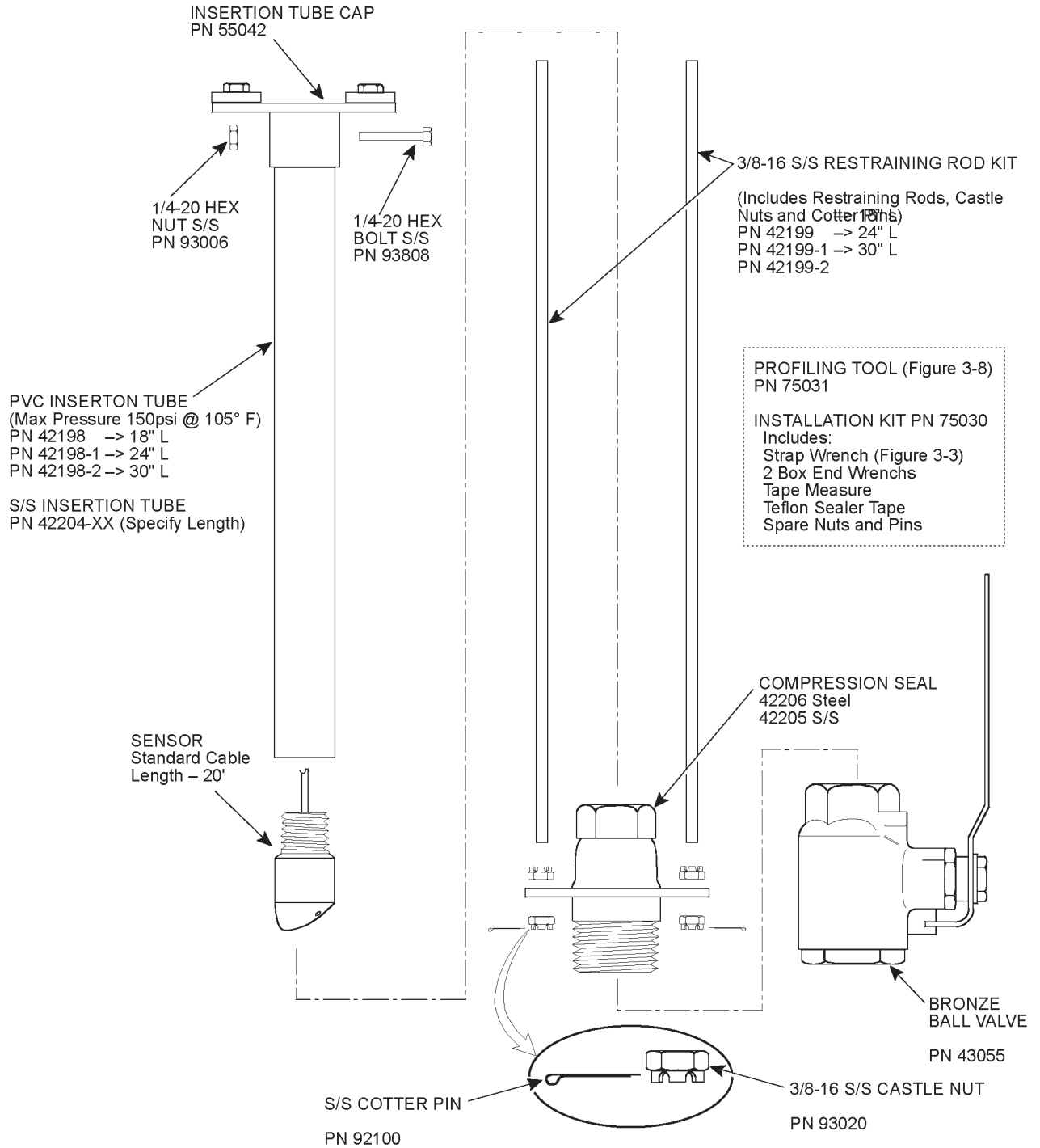


Figure 3-22. Cable Disconnect

TWO INCH FULL PIPE SENSOR PARTS ILLUSTRATION



SECTION IV

PARTIAL PROFILES

In an application where it is difficult to measure a complete velocity profile, a partial profile can be used to estimate a complete profile. The mean velocity can then be calculated from the estimated profile. The accuracy of this technique however, is dependent upon experience with fluid dynamics. Do not use the partial profile as a substitute for the complete profile. Use the partial profile when:

- The insertion tube is too short to traverse the pipe.
- A constant flow rate cannot be maintained long enough to do a full profile.
- The combination of a long insertion tube and high velocity causes excessive sensor vibration.

Partial profiling requires that the user be familiar with the type of profiles that can be expected when the sensor is inserted into a pipe (Figure 4-1). Elbows or obstructions cause distorted profiles and make estimation difficult. This problem can be avoided by locating the sensor a distance of five diameters upstream or ten diameters downstream from obstructions or elbows.

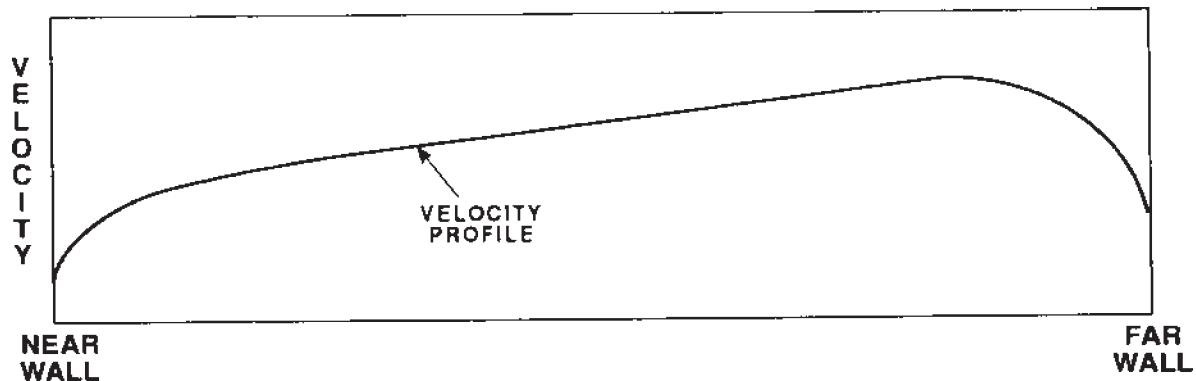


Figure 4-1. Expected Profile

Notice that the expected profile is not symmetrical about the center line. The insertion tube partially obstructs the conduit causing the fluid to speed up. The speeding up effect is less noticeable in the larger diameter conduits.

Partial Profiling Methods

Every other point method:

Measure and record the point velocity at every other sensor location (See profiling data log for sensor location values). This will cut the profiling time in half.

60% method:

Measure and record the point velocities across 60% of the pipe diameter.

Combination method:

Measure and record the point velocity at every other sensor location across 60% of the pipe diameter.

Profile Curve Estimation

To estimate the profile, you need to:

- Measure the partial profile and record these velocities in the profiling data log. As a minimum, try to traverse 60% of the pipe diameter at every other sensor location. The more points you measure, the easier it will be to estimate the profile curve.
- Plot the measured velocities on a graph. Mark the vertical axis velocity and the horizontal axis sensor location.
- Calculate far/near wall velocity.
- Draw a smooth curve connecting the near and far wall velocities. Use the partial profile and the expected profile to estimate the profile curve.
- Find the missing velocities on the curve and record them in the profiling data log.

With either the far wall (Page 3- 6) or near wall (Page 3-10) profiling method, measure as many point velocities as you can and plot them on a graph (Figure 4-2).

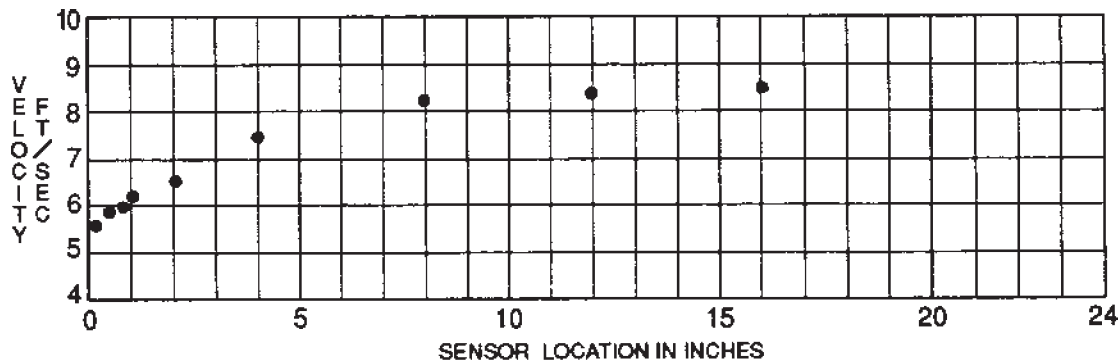


Figure 4-2. Partial Profile Plot (24" Diameter)

Far/Near Wall Sensor Location Velocities

There is approximately an 18% difference between the far wall and near wall sensor location velocities. The far wall velocity is faster than the near wall velocity. Calculate by:

- $1.18 \times \text{near wall velocity} = \text{far wall velocity}$.
- $0.85 \times \text{far wall velocity} = \text{near wall velocity}$.

Plot the far/near wall sensor location velocity points.

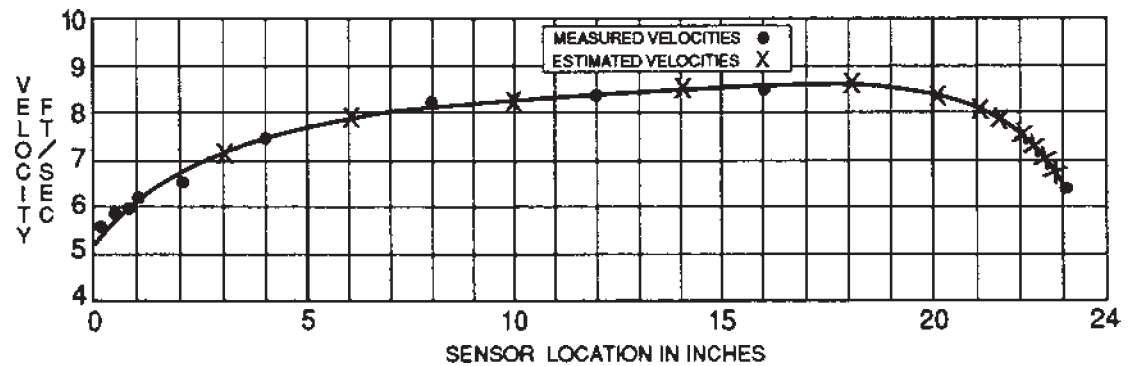


Figure 4-3. Complete Profile Curve (24" Diameter)

Complete The Profile Curve

Draw a continuous curve of the complete profile. Estimate the curve where the velocity points are missing. The estimation is based on the expected profile (Figure 4-3).

Notice that the curve does not cover the complete diameter of the pipe. This is because the sensor locations in the profiling data log are used as points of reference to plot the estimated curve. Actual velocity position is from 0.75" to 23.75".

Find the missing velocity points on the profile curve. From the graph, read the velocity values at these points and record them in the profiling data log. You may want to highlight the estimated velocity values for future reference. Calculate the mean velocity as described on Page 3-8.

PIPE ID = 4.00" # OF DATA POINTS 8									
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED					
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY					
0.00			x 8.154 =						
0.25			x 1.439 =						
0.50			x 1.040 =						
0.75			x .667 =						
1.00			x .361 =						
1.50			x .589 =						
2.00			x 2.820 =						
3.00			x 4.222 =						
			TOTAL						
				TOTAL	+ 19.25 = MEAN VEL _____				

PIPE ID = 4.25" # OF DATA POINTS 9									
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED					
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY					
0.00			x 8.861 =						
0.25			x 1.636 =						
0.50			x 1.232 =						
0.75			x .851 =						
1.00			x .658 =						
1.50			x .344 =						
2.00			x 2.545 =						
3.00			x 3.401 =						
3.25			x 2.617 =						
			TOTAL						
				TOTAL	+ 21.99 = MEAN VEL _____				

4.00 - 4.25

PIPE ID = 4.50" # OF DATA POINTS 10					PIPE ID = 4.75" # OF DATA POINTS 11				
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (Fps)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (Fps)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		X 9.565 =			0.00		X 10.269 =	
	0.25		X 1.833 =			0.25		X 2.031 =	
	0.50		X 1.426 =			0.50		X 1.620 =	
	0.75		X 1.038 =			0.75		X 1.228 =	
	1.00		X .881 =			1.00		X 1.153 =	
	1.50		X .315 =			1.50		X .364 =	
	2.00		X 2.210 =			2.00		X 1.866 =	
	3.00		X 3.327 =			3.00		X 3.179 =	
	3.25		X 1.702 =			3.25		X 1.680 =	
	3.50		X 2.882 =			3.50		X 1.870 =	
			TOTAL			3.75		X 3.150 =	
			TOTAL					TOTAL	
TOTAL _____ + 24.91 = MEAN VEL _____					TOTAL _____ + 28.04 = MEAN VEL _____				

4.50 - 4.75

PIPE ID = 5.00" # OF DATA POINTS 12							PIPE ID = 5.25" # OF DATA POINTS 12						
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED				
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY				
_____	0.00	_____	x 10.971 =	_____	_____	0.00	_____	x 11.672 =	_____				
_____	0.25	_____	x 2.230 =	_____	_____	0.25	_____	x 2.428 =	_____				
_____	0.50	_____	x 1.816 =	_____	_____	0.50	_____	x 2.013 =	_____				
_____	0.75	_____	x 1.420 =	_____	_____	0.75	_____	x 1.613 =	_____				
_____	1.00	_____	x 1.430 =	_____	_____	1.00	_____	x 1.711 =	_____				
_____	1.50	_____	x .660 =	_____	_____	1.50	_____	x 1.049 =	_____				
_____	2.00	_____	x 1.410 =	_____	_____	2.00	_____	x 1.002 =	_____				
_____	3.00	_____	x 2.974 =	_____	_____	3.00	_____	x 3.485 =	_____				
_____	3.25	_____	x 1.630 =	_____	_____	3.50	_____	x 2.581 =	_____				
_____	3.50	_____	x 1.843 =	_____	_____	3.75	_____	x 2.008 =	_____				
_____	3.75	_____	x 2.039 =	_____	_____	4.00	_____	x 2.211 =	_____				
_____	4.00	_____	x 3.421 =	_____	_____	4.25	_____	x 3.694 =	_____				
_____	_____	_____	TOTAL	_____	_____	_____	_____	TOTAL	_____				
TOTAL _____ + 31.36 = MEAN VEL _____					TOTAL _____ + 34.88 = MEAN VEL _____								

5.00 - 5.25

PIPE ID = 5.50" # OF DATA POINTS 13					PIPE ID = 5.50" # OF DATA POINTS 13				
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY
	0.00		x 12.372 =			0.00		x 12.372 =	
	0.25		x 2.627 =			0.25		x 2.627 =	
	0.50		x 2.210 =			0.50		x 2.210 =	
	0.75		x 1.807 =			0.75		x 1.807 =	
	1.00		x 1.995 =			1.00		x 1.995 =	
	1.50		x 1.363 =			1.50		x 1.363 =	
	2.00		x .818 =			2.00		x .818 =	
	3.00		x 3.145 =			3.00		x 3.145 =	
	3.50		x 2.464 =			3.50		x 2.464 =	
	3.75		x 1.952 =			3.75		x 1.952 =	
	4.00		x 2.176 =			4.00		x 2.176 =	
	4.25		x 2.386 =			4.25		x 2.386 =	
	4.50		x 3.969 =			4.50		x 3.969 =	
			TOTAL					TOTAL	
TOTAL _____ + 38.60 = MEAN VEL _____					TOTAL _____ + 38.60 = MEAN VEL _____				

5.25 - 5.50

PIPE ID = 5.75" # OF DATA POINTS 13						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		
—	0.00	—	x 13.072 =	—		
—	0.25	—	x 2.826 =	—		
—	0.50	—	x 2.408 =	—		
—	0.75	—	x 2.003 =	—		
—	1.00	—	x 2.281 =	—		
—	1.50	—	x 1.726 =	—		
—	2.00	—	x .374 =	—		
—	3.00	—	x 3.113 =	—		
—	3.50	—	x 3.243 =	—		
—	4.00	—	x 3.069 =	—		
—	4.25	—	x 2.345 =	—		
—	4.50	—	x 2.561 =	—		
—	4.75	—	x 4.246 =	—		
—	—	—	TOTAL	—		
TOTAL				—	+ 42.52 = MEAN VEL	

PIPE ID = 6.00" # OF DATA POINTS 13						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		
—	0.00	—	x 13.770 =	—		
—	0.25	—	x 3.024 =	—		
—	0.50	—	x 2.606 =	—		
—	0.75	—	x 2.199 =	—		
—	1.00	—	x 2.570 =	—		
—	1.50	—	x 2.095 =	—		
—	2.00	—	x .675 =	—		
—	3.00	—	x 3.930 =	—		
—	4.00	—	x 4.551 =	—		
—	4.25	—	x 2.284 =	—		
—	4.50	—	x 2.739 =	—		
—	5.00	—	x 4.524 =	—		
—	—	—	TOTAL	—		
TOTAL				—	+ 46.65 = MEAN VEL	

5.75 - 6.00

PIPE ID = 6.25" # OF DATA POINTS 13					PIPE ID = 6.50" # OF DATA POINTS 14				
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY
	0.00		x 14.468 =			0.00		x 15.165 =	
	0.25		x 3.223 =			0.25		x 3.422 =	
	0.50		x 2.804 =			0.50		x 3.002 =	
	0.75		x 2.395 =			0.75		x 2.593 =	
	1.00		x 2.860 =			1.00		x 3.152 =	
	1.50		x 2.468 =			1.50		x 2.844 =	
	2.00		x 1.068 =			2.00		x 1.556 =	
	3.00		x 3.245 =			3.00		x 2.608 =	
	4.00		x 5.385 =			4.00		x 5.053 =	
	4.50		x 3.570 =			4.50		x 3.445 =	
	4.75		x 2.690 =			4.75		x 2.623 =	
	5.00		x 2.917 =			5.00		x 2.865 =	
	5.25		x 4.803 =			5.25		x 3.097 =	
			TOTAL			5.50		x 5.083 =	
			TOTAL					TOTAL	
TOTAL _____ + 50.98 = MEAN VEL _____					TOTAL _____ + 55.52 = MEAN VEL _____				

6.26 - 6.50

PIPE ID = 6.75" # OF DATA POINTS 14							PIPE ID = 7.00" # OF DATA POINTS 15						
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED				
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY				
	0.00		x 15.862 =			0.00		x 16.558 =					
	0.25		x 3.621 =			0.25		x 3.819 =					
	0.50		x 3.201 =			0.50		x 3.399 =					
	0.75		x 2.790 =			0.75		x 2.987 =					
	1.00		x 3.444 =			1.00		x 3.738 =					
	1.50		x 3.224 =			1.50		x 3.607 =					
	2.00		x 2.138 =			2.00		x 2.817 =					
	3.00		x 2.026 =			3.00		x 1.508 =					
	4.00		x 4.688 =			4.00		x 4.295 =					
	4.50		x 4.551 =			4.50		x 4.335 =					
	5.00		x 4.083 =			5.00		x 3.952 =					
	5.25		x 3.041 =			5.25		x 2.969 =					
	5.50		x 3.279 =			5.50		x 3.219 =					
	5.75		x 5.365 =			5.75		x 3.461 =					
			TOTAL			6.00		x 5.647 =					
								TOTAL					
TOTAL _____ + 60.27 = MEAN VEL _____					TOTAL _____ + 65.22 = MEAN VEL _____								

6.75 - 7.00

PIPE ID = 7.25" # OF DATA POINTS 14						PIPE ID = 7.50" # OF DATA POINTS 15					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x	17.254 =			0.00		x	17.949 =	
	0.25		x	4.018 =			0.25		x	4.217 =	
	0.50		x	3.598 =			0.50		x	3.796 =	
	0.75		x	3.185 =			0.75		x	3.383 =	
	1.00		x	4.032 =			1.00		x	4.327 =	
	1.50		x	3.991 =			1.50		x	4.378 =	
	2.00		x	3.594 =			2.00		x	3.753 =	
	3.00		x	1.060 =			3.00		x	1.370 =	
	4.00		x	5.818 =			4.00		x	5.244 =	
	5.00		x	7.376 =			5.00		x	7.041 =	
	5.50		x	4.604 =			5.50		x	4.468 =	
	5.75		x	3.398 =			5.75		x	3.320 =	
	6.00		x	3.644 =			6.00		x	3.577 =	
	6.25		x	5.930 =			6.25		x	3.827 =	
				TOTAL			6.50		x	6.214 =	
				TOTAL						TOTAL	
TOTAL _____ + 70.39 = MEAN VEL _____						TOTAL _____ + 75.76 = MEAN VEL _____					

7.25 - 7.50

PIPE ID = 8.25" # OF DATA POINTS 14						PIPE ID = 8.50" # OF DATA POINTS 15					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 20.031	=			0.00		x 20.725	=	
	0.25		x 4.812	=			0.25		x 5.010	=	
	0.50		x 4.392	=			0.50		x 4.590	=	
	0.75		x 3.978	=			0.75		x 4.176	=	
	1.00		x 5.214	=			1.00		x 5.510	=	
	1.50		x 5.545	=			1.50		x 5.936	=	
	2.00		x 5.453	=			2.00		x 6.026	=	
	3.00		x 2.152	=			3.00		x 2.829	=	
	4.00		x 7.162	=			4.00		x 6.159	=	
	6.00		x 14.154	=			6.00		x 13.560	=	
	6.50		x 5.667	=			6.50		x 5.522	=	
	6.75		x 4.122	=			6.75		x 4.035	=	
	7.00		x 4.383	=			7.00		x 4.305	=	
	7.25		x 7.069	=			7.25		x 4.570	=	
			TOTAL	=			7.50		x 7.356	=	
			TOTAL	=					TOTAL	=	
TOTAL _____ + 93.15 = MEAN VEL _____						TOTAL _____ + 99.37 = MEAN VEL _____					

8.25 - 8.50

PIPE ID = 8.75" # OF DATA POINTS 15							PIPE ID = 9.00" # OF DATA POINTS 16						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY				
—	0.00	—	x 21.418 =	—	—	0.00	—	x 22.111 =	—				
—	0.25	—	x 5.208 =	—	—	0.25	—	x 5.407 =	—				
—	0.50	—	x 4.789 =	—	—	0.50	—	x 4.987 =	—				
—	0.75	—	x 4.374 =	—	—	0.75	—	x 4.573 =	—				
—	1.00	—	x 5.806 =	—	—	1.00	—	x 6.103 =	—				
—	1.50	—	x 6.327 =	—	—	1.50	—	x 6.720 =	—				
—	2.00	—	x 6.602 =	—	—	2.00	—	x 7.180 =	—				
—	3.00	—	x 3.603 =	—	—	3.00	—	x 4.474 =	—				
—	4.00	—	x 5.218 =	—	—	4.00	—	x 4.345 =	—				
—	6.00	—	x 12.929 =	—	—	6.00	—	x 12.263 =	—				
—	6.50	—	x 7.309 =	—	—	6.50	—	x 7.081 =	—				
—	7.00	—	x 6.208 =	—	—	7.00	—	x 6.058 =	—				
—	7.25	—	x 4.489 =	—	—	7.25	—	x 4.398 =	—				
—	7.50	—	x 4.757 =	—	—	7.50	—	x 4.674 =	—				
—	7.75	—	x 7.642 =	—	—	7.75	—	x 4.944 =	—				
—	—	—	TOTAL	—	—	8.00	—	x 7.929 =	TOTAL				
TOTAL				÷ 105.81 = MEAN VEL	TOTAL				÷ 112.46 = MEAN VEL	TOTAL			

8.75 - 9.00

PIPE ID = 9.25" # OF DATA POINTS 15					PIPE ID = 9.50" # OF DATA POINTS 16				
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 22.804 =			0.00		x 23.496 =	
	0.25		x 5.605 =			0.25		x 5.803 =	
	0.50		x 5.185 =			0.50		x 5.384 =	
	0.75		x 4.771 =			0.75		x 4.969 =	
	1.00		x 6.400 =			1.00		x 6.696 =	
	1.50		x 7.113 =			1.50		x 7.506 =	
	2.00		x 7.759 =			2.00		x 8.341 =	
	3.00		x 5.441 =			3.00		x 5.783 =	
	4.00		x 3.544 =			4.00		x 3.522 =	
	6.00		x 14.874 =			6.00		x 14.018 =	
	7.00		x 11.548 =			7.00		x 11.196 =	
	7.50		x 6.753 =			7.50		x 6.598 =	
	7.75		x 4.859 =			7.75		x 4.764 =	
	8.00		x 5.132 =			8.00		x 5.045 =	
	8.25		x 8.217 =			8.25		x 5.321 =	
			TOTAL			8.50		x 8.504 =	
			TOTAL					TOTAL	
TOTAL _____ + 119.33 = MEAN VEL _____					TOTAL _____ + 126.42 = MEAN VEL _____				

9.25 - 9.50

PIPE ID = 9.75" # OF DATA POINTS 16						PIPE ID = 10.00" # OF DATA POINTS 17					
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 24.188 =				0.00		x 24.880 =		
	0.25		x 6.001 =				0.25		x 6.199 =		
	0.50		x 5.582 =				0.50		x 5.780 =		
	0.75		x 5.167 =				0.75		x 5.366 =		
	1.00		x 6.993 =				1.00		x 7.290 =		
	1.50		x 7.900 =				1.50		x 8.294 =		
	2.00		x 8.923 =				2.00		x 9.507 =		
	3.00		x 6.535 =				3.00		x 7.290 =		
	4.00		x 1.107 =				4.00		x 1.603 =		
	6.00		x 15.195 =				6.00		x 13.750 =		
	7.00		x 10.823 =				7.00		x 10.432 =		
	7.50		x 8.737 =				7.50		x 8.502 =		
	8.00		x 7.302 =				8.00		x 7.143 =		
	8.25		x 5.231 =				8.25		x 5.132 =		
	8.50		x 5.509 =				8.50		x 5.417 =		
	8.75		x 8.793 =				8.75		x 5.698 =		
			TOTAL				9.00		x 9.081 =		
			TOTAL						TOTAL		
			TOTAL _____ + 133.72 = MEAN VEL _____						TOTAL _____ + 141.24 = MEAN VEL _____		

9.75 - 10.00

PIPE ID = 10.75" # OF DATA POINTS 17							PIPE ID = 11.00" # OF DATA POINTS 18						
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED				
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY				
	0.00		x 26.955 =			0.00		x 27.646 =					
	0.25		x 6.792 =			0.25		x 6.990 =					
	0.50		x 6.375 =			0.50		x 6.573 =					
	0.75		x 5.960 =			0.75		x 6.158 =					
	1.00		x 8.181 =			1.00		x 8.478 =					
	1.50		x 9.478 =			1.50		x 9.873 =					
	2.00		x 11.265 =			2.00		x 11.853 =					
	3.00		x 9.576 =			3.00		x 10.343 =					
	4.00		x 3.656 =			4.00		x 4.531 =					
	6.00		x 9.750 =			6.00		x 8.544 =					
	7.00		x 12.899 =			7.00		x 12.306 =					
	8.00		x 12.957 =			8.00		x 12.561 =					
	8.50		x 10.188 =			8.50		x 9.945 =					
	9.00		x 8.410 =			9.00		x 8.243 =					
	9.25		x 5.980 =			9.25		x 5.874 =					
	9.50		x 6.268 =			9.50		x 6.168 =					
	9.75		x 9.948 =			9.75		x 6.458 =					
			TOTAL			10.00		x 10.238 =					
			TOTAL					TOTAL					
			TOTAL _____ ÷ 165.13 = MEAN VEL _____					TOTAL _____ ÷ 173.54 = MEAN VEL _____					

10.75 - 11.00

PIPE ID = 11.25" # OF DATA POINTS 16						PIPE ID = 11.50" # OF DATA POINTS 17					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 28.337 =				0.00		x 29.028 =		
	0.25		x 7.188 =				0.25		x 7.386 =		
	0.50		x 6.771 =				0.50		x 6.968 =		
	0.75		x 6.356 =				0.75		x 6.555 =		
	1.00		x 8.775 =				1.00		x 9.072 =		
	1.50		x 10.268 =				1.50		x 10.663 =		
	2.00		x 12.441 =				2.00		x 13.030 =		
	3.00		x 11.113 =				3.00		x 11.884 =		
	4.00		x 5.503 =				4.00		x 6.571 =		
	6.00		x 12.668 =				6.00		x 11.279 =		
	8.00		x 23.287 =				8.00		x 22.431 =		
	9.00		x 15.884 =				9.00		x 15.511 =		
	9.50		x 8.968 =				9.50		x 8.797 =		
	9.75		x 6.356 =				9.75		x 6.248 =		
	10.00		x 6.649 =				10.00		x 6.545 =		
	10.25		x 10.527 =				10.25		x 6.839 =		
			TOTAL				10.50		x 10.817 =		
			TOTAL						TOTAL		
TOTAL _____ + 182.16 = MEAN VEL _____					TOTAL _____ + 191.01 = MEAN VEL _____						

11.25 - 11.50

PIPE ID = 12.25" # OF DATA POINTS 17					PIPE ID = 12.50" # OF DATA POINTS 18				
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 31.100 =			0.00		x 31.790 =	
	0.25		x 7.978 =			0.25		x 8.176 =	
	0.50		x 7.562 =			0.50		x 7.760 =	
	0.75		x 7.149 =			0.75		x 7.347 =	
	1.00		x 9.962 =			1.00		x 10.259 =	
	1.50		x 11.850 =			1.50		x 12.245 =	
	2.00		x 14.799 =			2.00		x 15.390 =	
	3.00		x 14.209 =			3.00		x 14.986 =	
	4.00		x 10.360 =			4.00		x 11.818 =	
	6.00		x 7.547 =			6.00		x 6.456 =	
	8.00		x 19.730 =			8.00		x 18.791 =	
	9.00		x 19.754 =			9.00		x 19.188 =	
	10.00		x 18.092 =			10.00		x 17.709 =	
	10.50		x 10.092 =			10.50		x 9.914 =	
	10.75		x 7.114 =			10.75		x 7.000 =	
	11.00		x 7.413 =			11.00		x 7.304 =	
	11.25		x 11.688 =			11.25		x 7.605 =	
			TOTAL			11.50		x 11.979 =	
			TOTAL					TOTAL	
TOTAL _____ + 218.90 = MEAN VEL _____					TOTAL _____ + 228.65 = MEAN VEL _____				

12.25 - 12.50

PIPE ID = 12.75" # OF DATA POINTS 18							PIPE ID = 13.00" # OF DATA POINTS 19						
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED				
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY				
	0.00		x 32.480 =			0.00		x 33.170 =					
	0.25		x 8.373 =			0.25		x 8.571 =					
	0.50		x 7.958 =			0.50		x 8.155 =					
	0.75		x 7.544 =			0.75		x 7.742 =					
	1.00		x 10.556 =			1.00		x 10.853 =					
	1.50		x 12.641 =			1.50		x 13.036 =					
	2.00		x 15.980 =			2.00		x 16.571 =					
	3.00		x 15.765 =			3.00		x 16.545 =					
	4.00		x 13.375 =			4.00		x 15.029 =					
	6.00		x 5.445 =			6.00		x 4.515 =					
	8.00		x 17.836 =			8.00		x 16.865 =					
	9.00		x 18.608 =			9.00		x 18.014 =					
	10.00		x 17.313 =			10.00		x 16.904 =					
	10.50		x 13.139 =			10.50		x 12.883 =					
	11.00		x 10.657 =			11.00		x 10.475 =					
	11.25		x 7.494 =			11.25		x 7.377 =					
	11.50		x 7.797 =			11.50		x 7.684 =					
	11.75		x 12.270 =			11.75		x 7.989 =					
			TOTAL			12.00		x 12.560 =					
								TOTAL					
TOTAL _____ ÷ 238.62 = MEAN VEL _____				TOTAL _____ ÷ 248.82 = MEAN VEL _____									

12.75 - 13.00

PIPE ID = 13.25" # OF DATA POINTS 17						PIPE ID = 13.50" # OF DATA POINTS 18					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		X 33.860	=			0.00		X 34.550	=	
	0.25		X 8.768	=			0.25		X 8.966	=	
	0.50		X 8.353	=			0.50		X 8.551	=	
	0.75		X 7.940	=			0.75		X 8.138	=	
	1.00		X 11.150	=			1.00		X 11.446	=	
	1.50		X 13.432	=			1.50		X 13.827	=	
	2.00		X 17.162	=			2.00		X 17.754	=	
	3.00		X 17.325	=			3.00		X 18.107	=	
	4.00		X 16.782	=			4.00		X 15.652	=	
	6.00		X 3.669	=			6.00		X 5.816	=	
	8.00		X 23.997	=			8.00		X 22.679	=	
	10.00		X 31.937	=			10.00		X 31.069	=	
	11.00		X 20.320	=			11.00		X 19.928	=	
	11.50		X 11.224	=			11.50		X 11.039	=	
	11.75		X 7.875	=			11.75		X 7.756	=	
	12.00		X 8.181	=			12.00		X 8.066	=	
	12.25		X 12.852	=			12.25		X 8.373	=	
			TOTAL				12.50		X 13.143	=	
			TOTAL						TOTAL		
TOTAL _____ + 259.24 = MEAN VEL _____					TOTAL _____ + 269.90 = MEAN VEL _____						

13.25 - 12.50

PIPE ID = 13.75" # OF DATA POINTS 18						PIPE ID = 14.00" # OF DATA POINTS 19					
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
_____	0.00	_____	x 35.240 =	_____		_____	0.00	_____	x 35.930 =	_____	
_____	0.25	_____	x 9.163 =	_____		_____	0.25	_____	x 9.360 =	_____	
_____	0.50	_____	x 8.748 =	_____		_____	0.50	_____	x 8.946 =	_____	
_____	0.75	_____	x 8.336 =	_____		_____	0.75	_____	x 8.533 =	_____	
_____	1.00	_____	x 11.743 =	_____		_____	1.00	_____	x 12.040 =	_____	
_____	1.50	_____	x 14.223 =	_____		_____	1.50	_____	x 14.618 =	_____	
_____	2.00	_____	x 18.345 =	_____		_____	2.00	_____	x 18.937 =	_____	
_____	3.00	_____	x 18.889 =	_____		_____	3.00	_____	x 19.672 =	_____	
_____	4.00	_____	x 16.802 =	_____		_____	4.00	_____	x 17.955 =	_____	
_____	6.00	_____	x 3.691 =	_____		_____	6.00	_____	x 4.569 =	_____	
_____	8.00	_____	x 23.524 =	_____		_____	8.00	_____	x 21.602 =	_____	
_____	10.00	_____	x 30.183 =	_____		_____	10.00	_____	x 29.278 =	_____	
_____	11.00	_____	x 19.524 =	_____		_____	11.00	_____	x 19.108 =	_____	
_____	11.50	_____	x 14.634 =	_____		_____	11.50	_____	x 14.371 =	_____	
_____	12.00	_____	x 11.792 =	_____		_____	12.00	_____	x 11.604 =	_____	
_____	12.25	_____	x 8.257 =	_____		_____	12.25	_____	x 8.135 =	_____	
_____	12.50	_____	x 8.566 =	_____		_____	12.50	_____	x 8.448 =	_____	
_____	12.75	_____	x 13.434 =	_____		_____	12.75	_____	x 8.758 =	_____	
_____			TOTAL	_____		_____			TOTAL	_____	
TOTAL _____ ÷ 280.78 = MEAN VEL _____						TOTAL _____ ÷ 291.89 = MEAN VEL _____					

13.75 - 14.00

PIPE ID = 14.25" # OF DATA POINTS 18						PIPE ID = 14.50" # OF DATA POINTS 19					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 36.619	=			0.00		x 37.309	=	
	0.25		x 9.558	=			0.25		x 9.755	=	
	0.50		x 9.143	=			0.50		x 9.341	=	
	0.75		x 8.731	=			0.75		x 8.929	=	
	1.00		x 12.336	=			1.00		x 12.633	=	
	1.50		x 15.014	=			1.50		x 15.409	=	
	2.00		x 19.529	=			2.00		x 20.121	=	
	3.00		x 20.456	=			3.00		x 21.240	=	
	4.00		x 19.110	=			4.00		x 20.268	=	
	6.00		x 5.543	=			6.00		x 6.613	=	
	8.00		x 19.751	=			8.00		x 17.973	=	
	10.00		x 28.357	=			10.00		x 27.420	=	
	11.00		x 25.602	=			11.00		x 25.025	=	
	12.00		x 22.564	=			12.00		x 22.163	=	
	12.50		x 12.361	=			12.50		x 12.171	=	
	12.75		x 8.639	=			12.75		x 8.516	=	
	13.00		x 8.951	=			13.00		x 8.831	=	
	13.25		x 14.017	=			13.25		x 9.144	=	
			TOTAL				13.50		x 14.309	=	
			TOTAL						TOTAL		
TOTAL _____ + 303.22 = MEAN VEL _____					TOTAL _____ + 314.79 = MEAN VEL _____						

14.25 - 14.50

PIPE ID = 14.75" # OF DATA POINTS 19							PIPE ID = 15.00" # OF DATA POINTS 20						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY				
	0.00		x 37.999	=		0.00		x 38.688	=				
	0.25		x 9.952	=		0.25		x 10.149	=				
	0.50		x 9.538	=		0.50		x 9.736	=				
	0.75		x 9.126	=		0.75		x 9.324	=				
	1.00		x 12.930	=		1.00		x 13.226	=				
	1.50		x 15.805	=		1.50		x 16.200	=				
	2.00		x 20.713	=		2.00		x 21.305	=				
	3.00		x 22.025	=		3.00		x 22.810	=				
	4.00		x 21.427	=		4.00		x 22.588	=				
	6.00		x 7.779	=		6.00		x 9.042	=				
	8.00		x 16.271	=		8.00		x 14.647	=				
	10.00		x 26.469	=		10.00		x 25.505	=				
	11.00		x 24.436	=		11.00		x 23.836	=				
	12.00		x 21.751	=		12.00		x 21.330	=				
	12.50		x 16.137	=		12.50		x 15.869	=				
	13.00		x 12.932	=		13.00		x 12.738	=				
	13.25		x 9.023	=		13.25		x 8.897	=				
	13.50		x 9.337	=		13.50		x 9.214	=				
	13.75		x 14.600	=		13.75		x 9.530	=				
			TOTAL	=		14.00		x 14.892	=				
								TOTAL	=				
			TOTAL	= 326.59 = MEAN VEL				TOTAL	=				
								TOTAL	= 338.61 = MEAN VEL				

14.75 - 15.00

PIPE ID = 15.25" # OF DATA POINTS 18						PIPE ID = 15.50" # OF DATA POINTS 19					
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		X 39.377 =				0.00		X 40.067 =		
	0.25		X 10.346 =				0.25		X 10.544 =		
	0.50		X 9.933 =				0.50		X 10.131 =		
	0.75		X 9.522 =				0.75		X 9.719 =		
	1.00		X 13.523 =				1.00		X 13.819 =		
	1.50		X 16.596 =				1.50		X 16.991 =		
	2.00		X 21.897 =				2.00		X 22.489 =		
	3.00		X 23.596 =				3.00		X 24.382 =		
	4.00		X 23.751 =				4.00		X 24.915 =		
	6.00		X 10.401 =				6.00		X 11.858 =		
	8.00		X 13.101 =				8.00		X 11.636 =		
	10.00		X 35.549 =				10.00		X 34.241 =		
	12.00		X 40.753 =				12.00		X 39.870 =		
	13.00		X 24.821 =				13.00		X 24.412 =		
	13.50		X 13.503 =				13.50		X 13.308 =		
	13.75		X 9.406 =				13.75		X 9.279 =		
	14.00		X 9.723 =				14.00		X 9.598 =		
	14.25		X 15.184 =				14.25		X 9.916 =		
			TOTAL				14.50		X 15.476 =		
			TOTAL						TOTAL		
TOTAL _____ + 350.87 = MEAN VEL _____						TOTAL _____ + 363.36 = MEAN VEL _____					

15.25 - 15.50

PIPE ID = 15.75" # OF DATA POINTS 19							PIPE ID = 16.00" # OF DATA POINTS 20						
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED				
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY				
	0.00		x 40.756 =			0.00		x 41.445 =					
	0.25		x 10.741 =			0.25		x 10.938 =					
	0.50		x 10.328 =			0.50		x 10.525 =					
	0.75		x 9.917 =			0.75		x 10.114 =					
	1.00		x 14.115 =			1.00		x 14.412 =					
	1.50		x 17.387 =			1.50		x 17.782 =					
	2.00		x 23.082 =			2.00		x 23.674 =					
	3.00		x 25.168 =			3.00		x 25.955 =					
	4.00		x 26.080 =			4.00		x 27.247 =					
	6.00		x 13.412 =			6.00		x 15.063 =					
	8.00		x 10.253 =			8.00		x 8.952 =					
	10.00		x 32.919 =			10.00		x 31.583 =					
	12.00		x 38.971 =			12.00		x 38.057 =					
	13.00		x 23.994 =			13.00		x 23.566 =					
	13.50		x 17.649 =			13.50		x 17.375 =					
	14.00		x 14.076 =			14.00		x 13.878 =					
	14.25		x 9.791 =			14.25		x 9.662 =					
	14.50		x 10.109 =			14.50		x 9.983 =					
	14.75		x 15.768 =			14.75		x 10.303 =					
			TOTAL			15.00		x 16.060 =					
								TOTAL					
TOTAL _____ ÷ 376.08 = MEAN VEL _____				TOTAL _____ ÷ 389.04 = MEAN VEL _____									

15.75 - 16.00

PIPE ID = 16.25" # OF DATA POINTS 19						PIPE ID = 16.50" # OF DATA POINTS 20					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		X 42.134	=			0.00		X 42.823	=	
	0.25		X 11.135	=			0.25		X 11.332	=	
	0.50		X 10.723	=			0.50		X 10.920	=	
	0.75		X 10.312	=			0.75		X 10.509	=	
	1.00		X 14.708	=			1.00		X 15.005	=	
	1.50		X 18.178	=			1.50		X 18.573	=	
	2.00		X 24.266	=			2.00		X 24.859	=	
	3.00		X 26.742	=			3.00		X 27.529	=	
	4.00		X 28.415	=			4.00		X 29.584	=	
	6.00		X 16.811	=			6.00		X 18.658	=	
	8.00		X 7.737	=			8.00		X 6.607	=	
	10.00		X 30.234	=			10.00		X 28.873	=	
	12.00		X 37.130	=			12.00		X 36.189	=	
	13.00		X 31.541	=			13.00		X 30.952	=	
	14.00		X 27.090	=			14.00		X 26.673	=	
	14.50		X 14.650	=			14.50		X 14.450	=	
	14.75		X 10.176	=			14.75		X 10.045	=	
	15.00		X 10.496	=			15.00		X 10.368	=	
	15.25		X 16.352	=			15.25		X 10.690	=	
			TOTAL						TOTAL		
TOTAL _____ + 402.22 = MEAN VEL _____						TOTAL _____ + 415.64 = MEAN VEL _____					

16.25 - 16.75

PIPE ID = 16.75" # OF DATA POINTS 20						PIPE ID = 17.00" # OF DATA POINTS 21					
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 43.512	=			0.00		x 44.201	=	
	0.25		x 11.529	=			0.25		x 11.726	=	
	0.50		x 11.117	=			0.50		x 11.314	=	
	0.75		x 10.707	=			0.75		x 10.904	=	
	1.00		x 15.301	=			1.00		x 15.597	=	
	1.50		x 18.968	=			1.50		x 19.363	=	
	2.00		x 25.451	=			2.00		x 26.043	=	
	3.00		x 28.316	=			3.00		x 29.104	=	
	4.00		x 30.754	=			4.00		x 31.925	=	
	6.00		x 20.602	=			6.00		x 22.645	=	
	8.00		x 5.563	=			8.00		x 4.607	=	
	10.00		x 27.501	=			10.00		x 26.118	=	
	12.00		x 35.235	=			12.00		x 34.271	=	
	13.00		x 30.353	=			13.00		x 29.745	=	
	14.00		x 26.248	=			14.00		x 25.815	=	
	14.50		x 19.167	=			14.50		x 18.888	=	
	15.00		x 15.225	=			15.00		x 15.022	=	
	15.25		x 10.561	=			15.25		x 10.428	=	
	15.50		x 10.884	=			15.50		x 10.754	=	
	15.75		x 16.937	=			15.75		x 11.077	=	
			TOTAL						TOTAL		
TOTAL _____ ÷ 429.30 = MEAN VEL _____					TOTAL _____ ÷ 443.19 = MEAN VEL _____						

17.00 - 17.25

PIPE ID = 17.25" # OF DATA POINTS 19						PIPE ID = 17.50" # OF DATA POINTS 20					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		X 44.890	=			0.00		X 45.579	=	
	0.25		X 11.923	=			0.25		X 12.120	=	
	0.50		X 11.512	=			0.50		X 11.709	=	
	0.75		X 11.102	=			0.75		X 11.299	=	
	1.00		X 15.893	=			1.00		X 16.189	=	
	1.50		X 19.759	=			1.50		X 20.154	=	
	2.00		X 26.636	=			2.00		X 27.228	=	
	3.00		X 29.892	=			3.00		X 30.679	=	
	4.00		X 33.097	=			4.00		X 34.269	=	
	6.00		X 24.785	=			6.00		X 24.021	=	
	8.00		X 3.738	=			8.00		X 5.918	=	
	10.00		X 24.726	=			10.00		X 23.324	=	
	12.00		X 47.258	=			12.00		X 45.952	=	
	14.00		X 49.690	=			14.00		X 48.791	=	
	15.00		X 29.367	=			15.00		X 28.944	=	
	15.50		X 15.800	=			15.50		X 15.595	=	
	15.75		X 10.947	=			15.75		X 10.813	=	
	16.00		X 11.271	=			16.00		X 11.140	=	
	16.25		X 17.522	=			16.25		X 11.465	=	
			TOTAL	=					TOTAL	=	
			TOTAL	=					TOTAL	=	
TOTAL _____ + 457.31 = MEAN VEL _____					TOTAL _____ + 471.66 = MEAN VEL _____						

17.25 - 17.50

PIPE ID = 17.75" # OF DATA POINTS 20							PIPE ID = 18.00" # OF DATA POINTS 21						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY				
	0.00		x 46.268 =			0.00		x 46.957 =					
	0.25		x 12.317 =			0.25		x 12.514 =					
	0.50		x 11.906 =			0.50		x 12.103 =					
	0.75		x 11.496 =			0.75		x 11.694 =					
	1.00		x 16.486 =			1.00		x 16.782 =					
	1.50		x 20.549 =			1.50		x 20.944 =					
	2.00		x 27.821 =			2.00		x 28.413 =					
	3.00		x 31.468 =			3.00		x 32.256 =					
	4.00		x 35.443 =			4.00		x 36.617 =					
	6.00		x 25.555 =			6.00		x 27.092 =					
	8.00		x 3.752 =			8.00		x 4.639 =					
	10.00		x 24.151 =			10.00		x 22.142 =					
	12.00		x 44.633 =			12.00		x 43.301 =					
	14.00		x 47.878 =			14.00		x 46.952 =					
	15.00		x 28.512 =			15.00		x 28.074 =					
	15.50		x 20.690 =			15.50		x 20.407 =					
	16.00		x 16.376 =			16.00		x 16.169 =					
	16.25		x 11.333 =			16.25		x 11.197 =					
	16.50		x 11.659 =			16.50		x 11.526 =					
	16.75		x 18.107 =			16.75		x 11.853 =					
			TOTAL			17.00		x 18.400 =					
								TOTAL					
			TOTAL	÷ 486.26 = MEAN VEL				TOTAL	÷ 501.08 = MEAN VEL				

17.75 - 18.00

PIPE ID = 18.25" # OF DATA POINTS 20							PIPE ID = 18.50" # OF DATA POINTS 21							
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED			REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED			
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY			DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY			
	0.00		x 47.646	=				0.00		x 48.334	=			
	0.25		x 12.711	=				0.25		x 12.908	=			
	0.50		x 12.300	=				0.50		x 12.498	=			
	0.75		x 11.891	=				0.75		x 12.088	=			
	1.00		x 17.078	=				1.00		x 17.374	=			
	1.50		x 21.339	=				1.50		x 21.734	=			
	2.00		x 29.005	=				2.00		x 29.598	=			
	3.00		x 33.044	=				3.00		x 33.833	=			
	4.00		x 37.791	=				4.00		x 38.967	=			
	6.00		x 28.631	=				6.00		x 30.172	=			
	8.00		x 5.622	=				8.00		x 6.701	=			
	10.00		x 20.215	=				10.00		x 18.371	=			
	12.00		x 41.959	=				12.00		x 40.605	=			
	14.00		x 46.015	=				14.00		x 45.067	=			
	15.00		x 37.546	=				15.00		x 36.945	=			
	16.00		x 31.653	=				16.00		x 31.223	=			
	16.50		x 16.953	=				16.50		x 16.744	=			
	16.75		x 11.719	=				16.75		x 11.582	=			
	17.00		x 12.047	=				17.00		x 11.912	=			
	17.25		x 18.892	=				17.25		x 12.242	=			
			TOTAL	=				17.50		x 18.985	=			
			TOTAL	=						TOTAL	=			
TOTAL _____ + 516.15 = MEAN VEL _____							TOTAL _____ + 531.45 = MEAN VEL _____							

18.25 - 18.50

PIPE ID = 19.25" # OF DATA POINTS 20						PIPE ID = 19.50" # OF DATA POINTS 21					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 50.400	=			0.00		x 51.089	=	
	0.25		x 13.499	=			0.25		x 13.696	=	
	0.50		x 13.089	=			0.50		x 13.286	=	
	0.75		x 12.680	=			0.75		x 12.877	=	
	1.00		x 18.262	=			1.00		x 18.558	=	
	1.50		x 22.919	=			1.50		x 23.314	=	
	2.00		x 31.375	=			2.00		x 31.967	=	
	3.00		x 36.199	=			3.00		x 36.987	=	
	4.00		x 42.495	=			4.00		x 43.673	=	
	6.00		x 34.808	=			6.00		x 36.356	=	
	8.00		x 10.514	=			8.00		x 11.978	=	
	10.00		x 13.343	=			10.00		x 11.838	=	
	12.00		x 36.485	=			12.00		x 35.093	=	
	14.00		x 59.097	=			14.00		x 57.788	=	
	16.00		x 58.715	=			16.00		x 57.800	=	
	17.00		x 33.946	=			17.00		x 33.509	=	
	17.50		x 18.108	=			17.50		x 17.896	=	
	17.75		x 12.493	=			17.75		x 12.353	=	
	18.00		x 12.824	=			18.00		x 12.687	=	
	18.25		x 19.863	=			18.25		x 13.019	=	
			TOTAL	=					TOTAL	=	
			TOTAL	=					TOTAL	=	
TOTAL _____ + 578.77 = MEAN VEL _____					TOTAL _____ + 595.02 = MEAN VEL _____						

19.25 - 19.50

PIPE ID = 20.75" # OF DATA POINTS 22							PIPE ID = 21.00" # OF DATA POINTS 23						
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED				
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY				
	0.00		x 54.531 =			0.00		x 55.220 =					
	0.25		x 14.680 =			0.25		x 14.877 =					
	0.50		x 14.271 =			0.50		x 14.468 =					
	0.75		x 13.863 =			0.75		x 14.060 =					
	1.00		x 20.037 =			1.00		x 20.333 =					
	1.50		x 25.289 =			1.50		x 25.683 =					
	2.00		x 34.928 =			2.00		x 35.520 =					
	3.00		x 40.932 =			3.00		x 41.721 =					
	4.00		x 49.564 =			4.00		x 50.743 =					
	6.00		x 44.120 =			6.00		x 45.676 =					
	8.00		x 20.753 =			8.00		x 22.800 =					
	10.00		x 5.636 =			10.00		x 4.663 =					
	12.00		x 28.023 =			12.00		x 26.589 =					
	14.00		x 51.080 =			14.00		x 49.710 =					
	16.00		x 53.065 =			16.00		x 52.090 =					
	17.00		x 42.368 =			17.00		x 41.742 =					
	18.00		x 35.354 =			18.00		x 34.901 =					
	18.50		x 25.286 =			18.50		x 24.991 =					
	19.00		x 19.846 =			19.00		x 19.628 =					
	19.25		x 13.656 =			19.25		x 13.513 =					
	19.50		x 13.991 =			19.50		x 13.850 =					
	19.75		x 21.621 =			19.75		x 14.186 =					
			TOTAL			20.00		x 21.915 =					
								TOTAL					
			TOTAL	÷ 676.33 = MEAN VEL				TOTAL					
								TOTAL	÷ 692.72 = MEAN VEL				

20.75 - 21.00

PIPE ID = 21.75" # OF DATA POINTS 22							PIPE ID = 22.00" # OF DATA POINTS 23						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY				
	0.00		x 57.285 =			0.00		x 57.973 =					
	0.25		x 15.468 =			0.25		x 15.664 =					
	0.50		x 15.059 =			0.50		x 15.256 =					
	0.75		x 14.651 =			0.75		x 14.848 =					
	1.00		x 21.221 =			1.00		x 21.516 =					
	1.50		x 26.867 =			1.50		x 27.262 =					
	2.00		x 37.296 =			2.00		x 37.888 =					
	3.00		x 44.088 =			3.00		x 44.877 =					
	4.00		x 54.282 =			4.00		x 55.462 =					
	6.00		x 50.352 =			6.00		x 51.912 =					
	8.00		x 25.699 =			8.00		x 27.235 =					
	10.00		x 3.791 =			10.00		x 4.685 =					
	12.00		x 24.525 =			12.00		x 22.468 =					
	14.00		x 45.552 =			14.00		x 44.152 =					
	16.00		x 68.401 =			16.00		x 67.066 =					
	18.00		x 65.937 =			18.00		x 64.988 =					
	19.00		x 37.648 =			19.00		x 37.190 =					
	19.50		x 26.825 =			19.50		x 26.526 =					
	20.00		x 21.006 =			20.00		x 20.785 =					
	20.25		x 14.432 =			20.25		x 14.287 =					
	20.50		x 14.770 =			20.50		x 14.626 =					
	20.75		x 22.794 =			20.75		x 14.965 =					
			TOTAL			21.00		x 23.087 =					
								TOTAL					
			TOTAL	÷ 743.08 = MEAN VEL				TOTAL					
								TOTAL	÷ 760.27 = MEAN VEL				

21.75 - 22.00

PIPE ID = 22.25" # OF DATA POINTS 22						PIPE ID = 22.50" # OF DATA POINTS 23					
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 58.661 =				0.00		x 59.349 =		
	0.25		x 15.861 =				0.25		x 16.058 =		
	0.50		x 15.453 =				0.50		x 15.650 =		
	0.75		x 15.046 =				0.75		x 15.243 =		
	1.00		x 21.812 =				1.00		x 22.108 =		
	1.50		x 27.657 =				1.50		x 28.051 =		
	2.00		x 38.480 =				2.00		x 39.072 =		
	3.00		x 45.667 =				3.00		x 46.456 =		
	4.00		x 56.642 =				4.00		x 57.823 =		
	6.00		x 53.473 =				6.00		x 55.035 =		
	8.00		x 28.773 =				8.00		x 30.312 =		
	10.00		x 5.675 =				10.00		x 6.761 =		
	12.00		x 20.498 =				12.00		x 18.616 =		
	14.00		x 42.744 =				14.00		x 41.330 =		
	16.00		x 65.721 =				16.00		x 64.368 =		
	18.00		x 64.030 =				18.00		x 63.063 =		
	19.00		x 49.689 =				19.00		x 49.067 =		
	20.00		x 40.856 =				20.00		x 40.403 =		
	20.50		x 21.587 =				20.50		x 21.365 =		
	20.75		x 14.820 =				20.75		x 14.674 =		
	21.00		x 15.160 =				21.00		x 15.015 =		
	21.25		x 23.381 =				21.25		x 15.355 =		
			TOTAL				21.50		x 23.674 =		
			TOTAL						TOTAL		
TOTAL _____ + 777.64 = MEAN VEL _____						TOTAL _____ + 795.22 = MEAN VEL _____					

22.25 - 22.50

PIPE ID = 23.25" # OF DATA POINTS 22						PIPE ID = 23.50" # OF DATA POINTS 23					
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 61.414	=			0.00		x 62.102	=	
	0.25		x 16.648	=			0.25		x 16.845	=	
	0.50		x 16.241	=			0.50		x 16.437	=	
	0.75		x 15.834	=			0.75		x 16.031	=	
	1.00		x 22.995	=			1.00		x 23.290	=	
	1.50		x 29.235	=			1.50		x 29.629	=	
	2.00		x 40.848	=			2.00		x 41.439	=	
	3.00		x 48.823	=			3.00		x 49.612	=	
	4.00		x 61.365	=			4.00		x 62.546	=	
	6.00		x 59.726	=			6.00		x 61.291	=	
	8.00		x 34.939	=			8.00		x 36.485	=	
	10.00		x 10.594	=			10.00		x 12.065	=	
	12.00		x 13.497	=			12.00		x 11.968	=	
	14.00		x 37.052	=			14.00		x 35.615	=	
	16.00		x 60.260	=			16.00		x 58.876	=	
	18.00		x 83.073	=			18.00		x 81.750	=	
	20.00		x 76.951	=			20.00		x 76.007	=	
	21.00		x 43.167	=			21.00		x 42.711	=	
	21.50		x 22.749	=			21.50		x 22.524	=	
	21.75		x 15.598	=			21.75		x 15.450	=	
	22.00		x 15.939	=			22.00		x 15.792	=	
	22.25		x 24.554	=			22.25		x 16.134	=	
			TOTAL				22.50		x 24.848	=	
			TOTAL						TOTAL		
TOTAL _____ + 849.11 = MEAN VEL _____						TOTAL _____ + 867.47 = MEAN VEL _____					

23.25 - 23.50

PIPE ID = 23.75" # OF DATA POINTS 23							PIPE ID = 24.00" # OF DATA POINTS 24						
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY				
	0.00		x 62.790 =			0.00		x 63.479 =					
	0.25		x 17.042 =			0.25		x 17.238 =					
	0.50		x 16.634 =			0.50		x 16.831 =					
	0.75		x 16.228 =			0.75		x 16.425 =					
	1.00		x 23.586 =			1.00		x 23.881 =					
	1.50		x 30.024 =			1.50		x 30.418 =					
	2.00		x 42.031 =			2.00		x 42.623 =					
	3.00		x 50.401 =			3.00		x 51.190 =					
	4.00		x 63.727 =			4.00		x 64.908 =					
	6.00		x 62.856 =			6.00		x 64.422 =					
	8.00		x 38.031 =			8.00		x 39.579 =					
	10.00		x 13.632 =			10.00		x 15.296 =					
	12.00		x 10.530 =			12.00		x 9.182 =					
	14.00		x 34.173 =			14.00		x 32.726 =					
	16.00		x 57.485 =			16.00		x 56.087 =					
	18.00		x 80.418 =			18.00		x 79.077 =					
	20.00		x 75.054 =			20.00		x 74.094 =					
	21.00		x 42.249 =			21.00		x 41.783 =					
	21.50		x 29.910 =			21.50		x 29.605 =					
	22.00		x 23.331 =			22.00		x 23.105 =					
	22.25		x 15.987 =			22.25		x 15.838 =					
	22.50		x 16.329 =			22.50		x 16.181 =					
	22.75		x 25.141 =			22.75		x 16.524 =					
			TOTAL			23.00		x 25.434 =					
			TOTAL					TOTAL					
			+ 886.03 = MEAN VEL					+ 904.78 = MEAN VEL					

23.75 - 30.00

PIPE ID = 24.25" # OF DATA POINTS 23						PIPE ID = 24.50" # OF DATA POINTS 24					
REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 64.167 =				0.00		x 64.855 =		
	0.25		x 17.435 =				0.25		x 17.632 =		
	0.50		x 17.028 =				0.50		x 17.225 =		
	0.75		x 16.621 =				0.75		x 16.818 =		
	1.00		x 24.177 =				1.00		x 24.473 =		
	1.50		x 30.812 =				1.50		x 31.207 =		
	2.00		x 43.215 =				2.00		x 43.806 =		
	3.00		x 51.979 =				3.00		x 52.768 =		
	4.00		x 66.089 =				4.00		x 67.271 =		
	6.00		x 65.988 =				6.00		x 67.555 =		
	8.00		x 41.128 =				8.00		x 42.679 =		
	10.00		x 17.056 =				10.00		x 18.914 =		
	12.00		x 7.925 =				12.00		x 6.759 =		
	14.00		x 31.274 =				14.00		x 29.818 =		
	16.00		x 54.683 =				16.00		x 53.273 =		
	18.00		x 77.729 =				18.00		x 76.372 =		
	20.00		x 73.126 =				20.00		x 72.150 =		
	21.00		x 55.808 =				21.00		x 55.177 =		
	22.00		x 45.483 =				22.00		x 45.022 =		
	22.50		x 23.913 =				22.50		x 23.686 =		
	22.75		x 16.376 =				22.75		x 16.226 =		
	23.00		x 16.719 =				23.00		x 16.571 =		
	23.25		x 25.728 =				23.25		x 16.915 =		
			TOTAL				23.50		x 26.021 =		
			TOTAL						TOTAL		
TOTAL _____ + 923.73 = MEAN VEL _____						TOTAL _____ + 942.87 = MEAN VEL _____					

24.25 - 25.50

PIPE ID = 24.75" # OF DATA POINTS 24						PIPE ID = 25.00" # OF DATA POINTS 25					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 65.543 =				0.00		x 66.231 =		
	0.25		x 17.829 =				0.25		x 18.025 =		
	0.50		x 17.422 =				0.50		x 17.618 =		
	0.75		x 17.015 =				0.75		x 17.212 =		
	1.00		x 24.768 =				1.00		x 25.064 =		
	1.50		x 31.601 =				1.50		x 31.995 =		
	2.00		x 44.398 =				2.00		x 44.990 =		
	3.00		x 53.557 =				3.00		x 54.346 =		
	4.00		x 68.452 =				4.00		x 69.634 =		
	6.00		x 69.123 =				6.00		x 70.690 =		
	8.00		x 44.230 =				8.00		x 45.782 =		
	10.00		x 20.869 =				10.00		x 22.921 =		
	12.00		x 5.685 =				12.00		x 4.702 =		
	14.00		x 28.358 =				14.00		x 26.893 =		
	16.00		x 51.857 =				16.00		x 50.436 =		
	18.00		x 75.008 =				18.00		x 73.637 =		
	20.00		x 71.168 =				20.00		x 70.179 =		
	21.00		x 54.541 =				21.00		x 53.899 =		
	22.00		x 44.556 =				22.00		x 44.086 =		
	22.50		x 31.456 =				22.50		x 31.148 =		
	23.00		x 24.495 =				23.00		x 24.267 =		
	23.25		x 16.765 =				23.25		x 16.614 =		
	23.50		x 17.110 =				23.50		x 16.960 =		
	23.75		x 26.315 =				23.75		x 17.305 =		
			TOTAL				24.00		x 26.608 =		
			TOTAL						TOTAL		
			TOTAL ÷ 962.21 = MEAN VEL						TOTAL ÷ 981.75 = MEAN VEL		

24.75 - 25.00

PIPE ID = 25.75" # OF DATA POINTS 24							PIPE ID = 26.00" # OF DATA POINTS 25						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY				
	0.00		x 68.295 =			0.00		x 68.983 =					
	0.25		x 18.615 =			0.25		x 18.812 =					
	0.50		x 18.209 =			0.50		x 18.406 =					
	0.75		x 17.803 =			0.75		x 18.000 =					
	1.00		x 25.950 =			1.00		x 26.246 =					
	1.50		x 33.178 =			1.50		x 33.573 =					
	2.00		x 46.765 =			2.00		x 47.356 =					
	3.00		x 56.713 =			3.00		x 57.502 =					
	4.00		x 73.179 =			4.00		x 74.361 =					
	6.00		x 75.396 =			6.00		x 76.966 =					
	8.00		x 50.445 =			8.00		x 52.001 =					
	10.00		x 25.816 =			10.00		x 27.353 =					
	12.00		x 3.818 =			12.00		x 4.718 =					
	14.00		x 24.772 =			14.00		x 22.685 =					
	16.00		x 46.141 =			16.00		x 44.700 =					
	18.00		x 69.483 =			18.00		x 68.086 =					
	20.00		x 92.503 =			20.00		x 91.157 =					
	22.00		x 84.214 =			22.00		x 83.243 =					
	23.00		x 46.867 =			23.00		x 46.393 =					
	23.50		x 33.004 =			23.50		x 32.693 =					
	24.00		x 25.660 =			24.00		x 25.430 =					
	24.25		x 17.544 =			24.25		x 17.392 =					
	24.50		x 17.890 =			24.50		x 17.739 =					
	24.75		x 27.489 =			24.75		x 18.086 =					
			TOTAL			25.00		x 27.783 =	TOTAL				
			TOTAL	÷ 1041.54 = MEAN VEL				TOTAL	÷ 1061.86 = MEAN VEL				

25.75 - 26.00

PIPE ID = 26.75" # OF DATA POINTS 25							PIPE ID = 27.00" # OF DATA POINTS 26						
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY				
	0.00		x 71.047 =			0.00		x 71.735 =					
	0.25		x 19.402 =			0.25		x 19.599 =					
	0.50		x 18.996 =			0.50		x 19.193 =					
	0.75		x 18.591 =			0.75		x 18.787 =					
	1.00		x 27.132 =			1.00		x 27.427 =					
	1.50		x 34.755 =			1.50		x 35.149 =					
	2.00		x 49.130 =			2.00		x 49.722 =					
	3.00		x 59.869 =			3.00		x 60.658 =					
	4.00		x 77.906 =			4.00		x 79.088 =					
	6.00		x 81.676 =			6.00		x 83.247 =					
	8.00		x 56.674 =			8.00		x 58.233 =					
	10.00		x 31.971 =			10.00		x 33.513 =					
	12.00		x 7.991 =			12.00		x 9.274 =					
	14.00		x 16.965 =			14.00		x 15.238 =					
	16.00		x 40.351 =			16.00		x 38.893 =					
	18.00		x 63.861 =			18.00		x 62.442 =					
	20.00		x 87.074 =			20.00		x 85.700 =					
	22.00		x 80.291 =			22.00		x 79.295 =					
	23.00		x 60.667 =			23.00		x 60.018 =					
	24.00		x 49.180 =			24.00		x 48.704 =					
	24.50		x 34.553 =			24.50		x 34.239 =					
	25.00		x 26.826 =			25.00		x 26.594 =					
	25.25		x 18.324 =			25.25		x 18.170 =					
	25.50		x 18.671 =			25.50		x 18.518 =					
	25.75		x 28.664 =			25.75		x 18.867 =					
			TOTAL			26.00		x 28.957 =					
			TOTAL	÷ 1124.00 = MEAN VEL				TOTAL					
								TOTAL	÷ 1145.11 = MEAN VEL				

26.75 - 27.00

PIPE ID = 27.25" # OF DATA POINTS 24						PIPE ID = 27.50" # OF DATA POINTS 25					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 72.423	=			0.00		x 73.111	=	
	0.25		x 19.795	=			0.25		x 19.992	=	
	0.50		x 19.390	=			0.50		x 19.586	=	
	0.75		x 18.984	=			0.75		x 19.181	=	
	1.00		x 27.723	=			1.00		x 28.018	=	
	1.50		x 35.543	=			1.50		x 35.937	=	
	2.00		x 50.313	=			2.00		x 50.905	=	
	3.00		x 61.447	=			3.00		x 62.235	=	
	4.00		x 80.270	=			4.00		x 81.452	=	
	6.00		x 84.818	=			6.00		x 86.389	=	
	8.00		x 59.793	=			8.00		x 61.354	=	
	10.00		x 35.056	=			10.00		x 36.601	=	
	12.00		x 10.654	=			12.00		x 12.130	=	
	14.00		x 13.603	=			14.00		x 12.059	=	
	16.00		x 37.431	=			16.00		x 35.966	=	
	18.00		x 61.019	=			18.00		x 59.590	=	
	20.00		x 84.319	=			20.00		x 82.933	=	
	22.00		x 107.332	=			22.00		x 105.993	=	
	24.00		x 95.351	=			24.00		x 94.383	=	
	25.00		x 52.446	=			25.00		x 51.973	=	
	25.50		x 27.410	=			25.50		x 27.176	=	
	25.75		x 18.713	=			25.75		x 18.559	=	
	26.00		x 19.062	=			26.00		x 18.908	=	
	26.25		x 29.251	=			26.25		x 19.257	=	
			TOTAL	=					TOTAL	=	
TOTAL _____ + 1166.41 = MEAN VEL _____						TOTAL _____ + 1197.91 = MEAN VEL _____					

27.25 - 27.50

PIPE ID = 27.75" # OF DATA POINTS 25						PIPE ID = 28.00" # OF DATA POINTS 26					
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 73.799 =				0.00		x 74.487 =		
	0.25		x 20.189 =				0.25		x 20.385 =		
	0.50		x 19.783 =				0.50		x 19.980 =		
	0.75		x 19.378 =				0.75		x 19.575 =		
	1.00		x 28.313 =				1.00		x 28.609 =		
	1.50		x 36.332 =				1.50		x 36.726 =		
	2.00		x 51.496 =				2.00		x 52.087 =		
	3.00		x 63.024 =				3.00		x 63.813 =		
	4.00		x 82.635 =				4.00		x 83.817 =		
	6.00		x 87.960 =				6.00		x 89.532 =		
	8.00		x 62.915 =				8.00		x 64.476 =		
	10.00		x 38.146 =				10.00		x 39.693 =		
	12.00		x 13.702 =				12.00		x 15.371 =		
	14.00		x 10.607 =				14.00		x 9.247 =		
	16.00		x 34.497 =				16.00		x 33.025 =		
	18.00		x 58.157 =				18.00		x 56.720 =		
	20.00		x 81.540 =				20.00		x 80.142 =		
	22.00		x 104.646 =				22.00		x 103.293 =		
	24.00		x 93.409 =				24.00		x 92.428 =		
	25.00		x 51.497 =				25.00		x 51.017 =		
	25.50		x 36.104 =				25.50		x 35.788 =		
	26.00		x 27.994 =				26.00		x 27.759 =		
	26.25		x 19.103 =				26.25		x 18.948 =		
	26.50		x 19.453 =				26.50		x 19.298 =		
	26.75		x 29.839 =				26.75		x 19.648 =		
			TOTAL				27.00		x 30.132 =		TOTAL
			TOTAL	÷ 1209.61 = MEAN VEL							TOTAL
											TOTAL ÷ 1231.50 = MEAN VEL

27.75 - 28.00

PIPE ID = 28.75" # OF DATA POINTS 26						PIPE ID = 29.00" # OF DATA POINTS 27					
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 76.550	=			0.00		x 77.238	=	
	0.25		x 20.975	=			0.25		x 21.172	=	
	0.50		x 20.570	=			0.50		x 20.767	=	
	0.75		x 20.165	=			0.75		x 20.362	=	
	1.00		x 29.495	=			1.00		x 29.790	=	
	1.50		x 37.908	=			1.50		x 38.302	=	
	2.00		x 53.861	=			2.00		x 54.452	=	
	3.00		x 66.179	=			3.00		x 66.968	=	
	4.00		x 87.363	=			4.00		x 88.545	=	
	6.00		x 94.248	=			6.00		x 95.821	=	
	8.00		x 69.164	=			8.00		x 70.728	=	
	10.00		x 44.339	=			10.00		x 45.889	=	
	12.00		x 20.959	=			12.00		x 23.016	=	
	14.00		x 5.720	=			14.00		x 4.731	=	
	16.00		x 28.590	=			16.00		x 27.105	=	
	18.00		x 52.383	=			18.00		x 50.929	=	
	20.00		x 75.918	=			20.00		x 74.500	=	
	22.00		x 99.195	=			22.00		x 97.816	=	
	24.00		x 89.451	=			24.00		x 88.448	=	
	25.00		x 66.813	=			25.00		x 66.158	=	
	26.00		x 53.816	=			26.00		x 53.333	=	
	26.50		x 37.656	=			26.50		x 37.338	=	
	27.00		x 29.161	=			27.00		x 28.925	=	
	27.25		x 19.883	=			27.25		x 19.727	=	
	27.50		x 20.234	=			27.50		x 20.079	=	
	27.75		x 31.014	=			27.75		x 20.430	=	
			TOTAL						TOTAL		
			TOTAL	÷ 1298.36 = MEAN VEL					TOTAL	÷ 1321.04 = MEAN VEL	

28.75 - 29.00

PIPE ID = 29.25" # OF DATA POINTS 25						PIPE ID = 29.50" # OF DATA POINTS 26					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 77.926	=			0.00		x 78.614	=	
	0.25		x 21.369	=			0.25		x 21.565	=	
	0.50		x 20.963	=			0.50		x 21.160	=	
	0.75		x 20.559	=			0.75		x 20.756	=	
	1.00		x 30.085	=			1.00		x 30.380	=	
	1.50		x 38.696	=			1.50		x 39.090	=	
	2.00		x 55.043	=			2.00		x 55.634	=	
	3.00		x 67.756	=			3.00		x 68.545	=	
	4.00		x 89.727	=			4.00		x 90.909	=	
	6.00		x 97.993	=			6.00		x 98.966	=	
	8.00		x 72.292	=			8.00		x 73.857	=	
	10.00		x 47.440	=			10.00		x 48.993	=	
	12.00		x 25.170	=			12.00		x 24.374	=	
	14.00		x 3.834	=			14.00		x 6.063	=	
	16.00		x 25.618	=			16.00		x 24.129	=	
	18.00		x 49.472	=			18.00		x 48.012	=	
	20.00		x 73.077	=			20.00		x 71.650	=	
	22.00		x 96.432	=			22.00		x 95.043	=	
	24.00		x 119.538	=			24.00		x 118.191	=	
	26.00		x 104.594	=			26.00		x 103.615	=	
	27.00		x 57.100	=			27.00		x 56.620	=	
	27.50		x 29.745	=			27.50		x 29.508	=	
	27.75		x 20.274	=			27.75		x 20.117	=	
	28.00		x 20.625	=			28.00		x 20.469	=	
	28.25		x 31.601	=			28.25		x 20.821	=	
			TOTAL	=					TOTAL	=	
			TOTAL	=					TOTAL	=	
TOTAL _____ + 1343.91 = MEAN VEL _____					TOTAL _____ + 1366.99 = MEAN VEL _____						

29.25 - 29.50

PIPE ID = 30.25" # OF DATA POINTS 26						PIPE ID = 30.50" # OF DATA POINTS 27					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 80.677	=			0.00		x 81.365	=	
	0.25		x 22.155	=			0.25		x 22.352	=	
	0.50		x 21.750	=			0.50		x 21.947	=	
	0.75		x 21.346	=			0.75		x 21.543	=	
	1.00		x 31.266	=			1.00		x 31.561	=	
	1.50		x 40.271	=			1.50		x 40.665	=	
	2.00		x 57.408	=			2.00		x 57.999	=	
	3.00		x 70.910	=			3.00		x 71.699	=	
	4.00		x 94.456	=			4.00		x 95.638	=	
	6.00		x 103.685	=			6.00		x 105.259	=	
	8.00		x 78.553	=			8.00		x 80.119	=	
	10.00		x 53.654	=			10.00		x 55.209	=	
	12.00		x 28.988	=			12.00		x 30.528	=	
	14.00		x 5.741	=			14.00		x 6.837	=	
	16.00		x 20.825	=			16.00		x 18.901	=	
	18.00		x 43.611	=			18.00		x 42.138	=	
	20.00		x 67.344	=			20.00		x 65.901	=	
	22.00		x 90.844	=			22.00		x 89.435	=	
	24.00		x 114.111	=			24.00		x 112.739	=	
	26.00		x 100.646	=			26.00		x 99.646	=	
	27.00		x 74.287	=			27.00		x 73.633	=	
	28.00		x 59.429	=			28.00		x 58.947	=	
	28.50		x 30.914	=			28.50		x 30.675	=	
	28.75		x 21.054	=			28.75		x 20.896	=	
	29.00		x 21.407	=			29.00		x 21.250	=	
	29.25		x 32.777	=			29.25		x 21.603	=	
			TOTAL	=			29.50		x 33.070	=	
			TOTAL	=					TOTAL	=	
TOTAL _____ + 1437.38 = MEAN VEL _____					TOTAL _____ + 1461.23 = MEAN VEL _____						

30.25 - 30.50

PIPE ID = 30.75" # OF DATA POINTS 27						PIPE ID = 31.00" # OF DATA POINTS 28					
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 82.053	=			0.00		x 82.740	=	
	0.25		x 22.548	=			0.25		x 22.745	=	
	0.50		x 22.144	=			0.50		x 22.340	=	
	0.75		x 21.739	=			0.75		x 21.936	=	
	1.00		x 31.857	=			1.00		x 32.152	=	
	1.50		x 41.059	=			1.50		x 41.453	=	
	2.00		x 58.590	=			2.00		x 59.181	=	
	3.00		x 72.487	=			3.00		x 73.276	=	
	4.00		x 96.820	=			4.00		x 98.002	=	
	6.00		x 106.832	=			6.00		x 108.406	=	
	8.00		x 81.686	=			8.00		x 83.253	=	
	10.00		x 56.765	=			10.00		x 58.322	=	
	12.00		x 32.070	=			12.00		x 33.612	=	
	14.00		x 8.028	=			14.00		x 9.316	=	
	16.00		x 17.069	=			16.00		x 15.329	=	
	18.00		x 40.661	=			18.00		x 39.183	=	
	20.00		x 64.454	=			20.00		x 63.003	=	
	22.00		x 88.021	=			22.00		x 86.602	=	
	24.00		x 111.362	=			24.00		x 109.979	=	
	26.00		x 98.641	=			26.00		x 97.632	=	
	27.00		x 72.975	=			27.00		x 72.314	=	
	28.00		x 58.461	=			28.00		x 57.973	=	
	28.50		x 40.764	=			28.50		x 40.441	=	
	29.00		x 31.499	=			29.00		x 31.259	=	
	29.25		x 21.445	=			29.25		x 21.286	=	
	29.50		x 21.798	=			29.50		x 21.640	=	
	29.75		x 33.364	=			29.75		x 21.994	=	
			TOTAL				30.00		x 33.658	=	
			TOTAL						TOTAL		
			÷ 1485.29 = MEAN VEL						÷ 1509.54 = MEAN VEL		

30.75 - 31.00

PIPE ID = 31.25" # OF DATA POINTS 26						PIPE ID = 31.50" # OF DATA POINTS 27					
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED		REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY		DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	
	0.00		x 83.428	=			0.00		x 84.116	=	
	0.25		x 22.941	=			0.25		x 23.138	=	
	0.50		x 22.537	=			0.50		x 22.734	=	
	0.75		x 22.133	=			0.75		x 22.330	=	
	1.00		x 32.447	=			1.00		x 32.742	=	
	1.50		x 41.847	=			1.50		x 42.241	=	
	2.00		x 59.772	=			2.00		x 60.363	=	
	3.00		x 74.064	=			3.00		x 74.853	=	
	4.00		x 99.184	=			4.00		x 100.367	=	
	6.00		x 109.979	=			6.00		x 111.553	=	
	8.00		x 84.820	=			8.00		x 86.387	=	
	10.00		x 59.879	=			10.00		x 61.436	=	
	12.00		x 35.156	=			12.00		x 36.701	=	
	14.00		x 10.699	=			14.00		x 12.180	=	
	16.00		x 13.681	=			16.00		x 12.126	=	
	18.00		x 37.701	=			18.00		x 36.217	=	
	20.00		x 61.550	=			20.00		x 60.092	=	
	22.00		x 85.180	=			22.00		x 83.753	=	
	24.00		x 108.591	=			24.00		x 107.199	=	
	26.00		x 131.785	=			26.00		x 130.429	=	
	28.00		x 113.859	=			28.00		x 112.870	=	
	29.00		x 61.760	=			29.00		x 61.275	=	
	29.50		x 32.084	=			29.50		x 31.843	=	
	29.75		x 21.835	=			29.75		x 21.676	=	
	30.00		x 22.189	=			30.00		x 22.031	=	
	30.25		x 33.952	=			30.25		x 22.385	=	
			TOTAL	=			30.50		x 34.246	=	
			TOTAL	=					TOTAL	=	
TOTAL _____ + 1533.98 = MEAN VEL _____						TOTAL _____ + 1558.62 = MEAN VEL _____					

31.25 - 31.50

PIPE ID = 31.75" # OF DATA POINTS 27						PIPE ID = 32.00" # OF DATA POINTS 28					
REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY		REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	
	0.00		x 84.804 =				0.00		x 85.491 =		
	0.25		x 23.334 =				0.25		x 23.531 =		
	0.50		x 22.930 =				0.50		x 23.127 =		
	0.75		x 22.526 =				0.75		x 22.723 =		
	1.00		x 33.038 =				1.00		x 33.333 =		
	1.50		x 42.635 =				1.50		x 43.028 =		
	2.00		x 60.954 =				2.00		x 61.545 =		
	3.00		x 75.641 =				3.00		x 76.429 =		
	4.00		x 101.549 =				4.00		x 102.731 =		
	6.00		x 113.127 =				6.00		x 114.701 =		
	8.00		x 87.955 =				8.00		x 89.523 =		
	10.00		x 62.995 =				10.00		x 64.554 =		
	12.00		x 38.246 =				12.00		x 39.792 =		
	14.00		x 13.757 =				14.00		x 15.430 =		
	16.00		x 10.664 =				16.00		x 9.294 =		
	18.00		x 34.730 =				18.00		x 33.241 =		
	20.00		x 58.632 =				20.00		x 57.168 =		
	22.00		x 82.322 =				22.00		x 80.888 =		
	24.00		x 105.801 =				24.00		x 104.399 =		
	26.00		x 129.068 =				26.00		x 127.701 =		
	28.00		x 111.877 =				28.00		x 110.879 =		
	29.00		x 60.787 =				29.00		x 60.296 =		
	29.50		x 42.319 =				29.50		x 41.995 =		
	30.00		x 32.668 =				30.00		x 32.427 =		
	30.25		x 22.226 =				30.25		x 22.066 =		
	30.50		x 22.581 =				30.50		x 22.421 =		
	30.75		x 34.540 =				30.75		x 22.776 =		
			TOTAL				31.00		x 34.834 =		
			TOTAL						TOTAL		
			TOTAL ÷ 1583.46 = MEAN VEL						TOTAL ÷ 1608.50 = MEAN VEL		

31.75 - 32.00

PIPE ID = 32.25" # OF DATA POINTS 27

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 86.179 =			18.00		x 31.749 =	
	0.25		x 23.728 =			20.00		x 55.702 =	
	0.50		x 23.324 =			22.00		x 79.450 =	
	0.75		x 22.920 =			24.00		x 102.992 =	
	1.00		x 33.628 =			26.00		x 126.329 =	
	1.50		x 43.422 =			28.00		x 109.876 =	
	2.00		x 62.136 =			29.00		x 80.475 =	
	3.00		x 77.218 =			30.00		x 64.093 =	
	4.00		x 103.913 =			30.50		x 33.253 =	
	6.00		x 116.275 =			30.75		x 22.617 =	
	8.00		x 91.092 =			31.00		x 22.972 =	
	10.00		x 66.113 =			31.25		x 35.128 =	
	12.00		x 41.340 =					TOTAL	
	14.00		x 17.200 =					TOTAL	
	16.00		x 8.018 =					TOTAL	
								TOTAL	+ 1633.73 = MEAN VEL

32.25

4-61

PIPE ID = 32.50" # OF DATA POINTS 28

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 86.867 =			18.00		x 30.255 =	
	0.25		x 23.924 =			20.00		x 54.233 =	
	0.50		x 23.520 =			22.00		x 78.008 =	
	0.75		x 23.117 =			24.00		x 101.581 =	
	1.00		x 33.923 =			26.00		x 124.952 =	
	1.50		x 43.816 =			28.00		x 108.869 =	
	2.00		x 62.726 =			29.00		x 79.815 =	
	3.00		x 78.006 =			30.00		x 63.605 =	
	4.00		x 105.095 =			30.50		x 33.012 =	
	6.00		x 117.849 =			30.75		x 22.456 =	
	8.00		x 92.660 =			31.00		x 22.812 =	
	10.00		x 67.673 =			31.25		x 23.167 =	
	12.00		x 42.888 =			31.50		x 35.422 =	
	14.00		x 19.067 =					TOTAL	
	16.00		x 6.836 =						

TOTAL _____ ÷ 1659.15 = MEAN VEL _____

32.50

4-62

PIPE ID = 32.75" # OF DATA POINTS 28

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 87.555 =			18.00		x 28.759 =	
	0.25		x 24.121 =			20.00		x 52.760 =	
	0.50		x 23.717 =			22.00		x 76.562 =	
	0.75		x 23.313 =			24.00		x 100.165 =	
	1.00		x 34.218 =			26.00		x 123.569 =	
	1.50		x 44.210 =			28.00		x 107.857 =	
	2.00		x 63.317 =			29.00		x 79.151 =	
	3.00		x 78.794 =			30.00		x 63.114 =	
	4.00		x 106.277 =			30.50		x 43.875 =	
	6.00		x 119.424 =			31.00		x 33.839 =	
	8.00		x 94.229 =			31.25		x 23.007 =	
	10.00		x 69.234 =			31.50		x 23.363 =	
	12.00		x 44.437 =			31.75		x 35.716 =	
	14.00		x 21.031 =				TOTAL		
	16.00		x 5.747 =				TOTAL		
					TOTAL _____ + 1684.78 = MEAN VEL _____				

PIPE ID = 33.00" # OF DATA POINTS 29

32.75

4-63

REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY
	0.00		x 88.242 =			18.00		x 27.261 =	
	0.25		x 24.317 =			20.00		x 51.285 =	
	0.50		x 23.913 =			22.00		x 75.114 =	
	0.75		x 23.510 =			24.00		x 98.746 =	
	1.00		x 34.513 =			26.00		x 122.182 =	
	1.50		x 44.603 =			28.00		x 106.841 =	
	2.00		x 63.908 =			29.00		x 78.485 =	
	3.00		x 79.582 =			30.00		x 62.621 =	
	4.00		x 107.459 =			30.50		x 43.549 =	
	6.00		x 120.998 =			31.00		x 33.596 =	
	8.00		x 95.798 =			31.25		x 22.846 =	
	10.00		x 70.794 =			31.50		x 23.203 =	
	12.00		x 45.987 =			31.75		x 23.559 =	
	14.00		x 23.092 =			32.00		x 36.010 =	
	16.00		x 4.752 =						TOTAL
REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	TOTAL _____ ÷ 1710.60 = MEAN VEL _____				

33.00

PIPE ID = 33.50" # OF DATA POINTS 28

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 89.618 =			18.00		x 24.259 =	
	0.25		x 24.710 =			20.00		x 48.328 =	
	0.50		x 24.307 =			22.00		x 72.206 =	
	0.75		x 23.903 =			24.00		x 95.895 =	
	1.00		x 35.104 =			26.00		x 119.394 =	
	1.50		x 45.391 =			28.00		x 142.702 =	
	2.00		x 65.090 =			30.00		x 122.144 =	
	3.00		x 81.159 =			31.00		x 65.936 =	
	4.00		x 109.823 =			31.50		x 34.180 =	
	6.00		x 124.147 =			31.75		x 23.237 =	
	8.00		x 98.937 =			32.00		x 23.594 =	
	10.00		x 73.918 =			32.25		x 23.950 =	
	12.00		x 49.088 =			32.50		x 36.598 =	
	14.00		x 24.449 =						
	16.00		x 6.089 =						
					TOTAL				
					÷ 1762.83 = MEAN VEL				

33.50

4-66

PIPE ID = 34.00" # OF DATA POINTS 29

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 90.993 =			18.00		x 22.956 =	
	0.25		x 25.104 =			20.00		x 45.360 =	
	0.50		x 24.700 =			22.00		x 69.287 =	
	0.75		x 24.297 =			24.00		x 93.029 =	
	1.00		x 35.694 =			26.00		x 116.587 =	
	1.50		x 46.178 =			28.00		x 139.960 =	
	2.00		x 66.271 =			30.00		x 120.137 =	
	3.00		x 82.735 =			31.00		x 64.948 =	
	4.00		x 112.187 =			31.50		x 45.105 =	
	6.00		x 127.296 =			32.00		x 34.765 =	
	8.00		x 102.077 =			32.25		x 23.627 =	
	10.00		x 77.043 =			32.50		x 23.984 =	
	12.00		x 52.193 =			32.75		x 24.341 =	
	14.00		x 27.528 =			33.00		x 37.186 =	
	16.00		x 4.761 =					TOTAL	

TOTAL _____ ÷ 1815.84 = MEAN VEL _____

34.00

PIPE ID = 34.50" # OF DATA POINTS 29

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 92.369 =			18.00		x 18.991 =	
	0.25		x 25.497 =			20.00		x 42.384 =	
	0.50		x 25.093 =			22.00		x 66.356 =	
	0.75		x 24.690 =			24.00		x 90.150 =	
	1.00		x 36.284 =			26.00		x 113.764 =	
	1.50		x 46.966 =			28.00		x 137.199 =	
	2.00		x 67.453 =			30.00		x 118.113 =	
	3.00		x 84.311 =			31.00		x 86.008 =	
	4.00		x 114.551 =			32.00		x 68.269 =	
	6.00		x 130.445 =			32.50		x 35.350 =	
	8.00		x 105.218 =			32.75		x 24.017 =	
	10.00		x 80.169 =			33.00		x 24.375 =	
	12.00		x 55.300 =			33.25		x 24.733 =	
	14.00		x 30.610 =			33.50		x 37.774 =	
	16.00		x 6.862 =					TOTAL	

TOTAL _____ ÷ 1869.64 = MEAN VEL _____

34.50

4-70

PIPE ID = 35.00" # OF DATA POINTS 30

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 93.744 =			18.00		x 15.398 =	
	0.25		x 25.890 =			20.00		x 39.398 =	
	0.50		x 25.486 =			22.00		x 63.415 =	
	0.75		x 25.083 =			24.00		x 87.257 =	
	1.00		x 36.874 =			26.00		x 110.925 =	
	1.50		x 47.753 =			28.00		x 134.419 =	
	2.00		x 68.634 =			30.00		x 116.072 =	
	3.00		x 85.887 =			31.00		x 84.667 =	
	4.00		x 116.915 =			32.00		x 67.276 =	
	6.00		x 133.595 =			32.50		x 46.661 =	
	8.00		x 108.359 =			33.00		x 35.935 =	
	10.00		x 83.297 =			33.25		x 24.408 =	
	12.00		x 58.410 =			33.50		x 24.766 =	
	14.00		x 33.696 =			33.75		x 25.124 =	
	16.00		x 9.348 =			34.00		x 38.362 =	
								TOTAL	

TOTAL _____ ÷ 1924.23 = MEAN VEL _____

35.00

4-72

PIPE ID = 35.25" # OF DATA POINTS 28

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 94.431 =			18.00		x 13.741 =	
	0.25		x 26.086 =			20.00		x 37.903 =	
	0.50		x 25.683 =			22.00		x 61.940 =	
	0.75		x 25.280 =			24.00		x 85.806 =	
	1.00		x 37.169 =			26.00		x 109.501 =	
	1.50		x 48.147 =			28.00		x 133.023 =	
	2.00		x 69.225 =			30.00		x 156.374 =	
	3.00		x 86.675 =			32.00		x 132.439 =	
	4.00		x 118.097 =			33.00		x 71.099 =	
	6.00		x 135.169 =			33.50		x 36.766 =	
	8.00		x 109.930 =			33.75		x 24.962 =	
	10.00		x 84.862 =			34.00		x 25.320 =	
	12.00		x 59.965 =			34.25		x 38.656 =	
	14.00		x 35.241 =					TOTAL	
	16.00		x 10.736 =					TOTAL	
					TOTAL _____ + 1951.81 = MEAN VEL _____				

33.25

4-73

PIPE ID = 35.50" # OF DATA POINTS 29

REF (RD) SENSOR DISTANCE/LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT/VELOCITY	REF (RD) DISTANCE/LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT/VELOCITY
0.00		x 95.119 =	18.00		x 12.177 =
0.25		x 26.283 =	20.00		x 36.405 =
0.50		x 25.880 =	22.00		x 60.463 =
0.75		x 25.477 =	24.00		x 84.352 =
1.00		x 37.464 =	26.00		x 108.072 =
1.50		x 48.540 =	28.00		x 131.623 =
2.00		x 69.816 =	30.00		x 155.004 =
3.00		x 87.463 =	32.00		x 131.434 =
4.00		x 119.279 =	33.00		x 70.603 =
6.00		x 136.744 =	33.50		x 36.520 =
8.00		x 111.501 =	33.75		x 24.798 =
10.00		x 86.426 =	34.00		x 25.157 =
12.00		x 61.522 =	34.25		x 25.516 =
14.00		x 36.786 =	34.50		x 38.950 =
16.00		x 12.220 =			TOTAL

TOTAL _____ ÷ 1979.60 = MEAN VEL _____

PIPE ID = 35.75" # OF DATA POINTS 29

33.50

4-74

PIPE ID = 36.00" # OF DATA POINTS 30

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 96.494 =			18.00		x 9.331 =	
	0.25		x 26.676 =			20.00		x 33.404 =	
	0.50		x 26.273 =			22.00		x 57.502 =	
	0.75		x 25.870 =			24.00		x 81.436 =	
	1.00		x 38.055 =			26.00		x 105.205 =	
	1.50		x 49.328 =			28.00		x 128.809 =	
	2.00		x 70.997 =			30.00		x 152.249 =	
	3.00		x 89.039 =			32.00		x 129.412 =	
	4.00		x 121.643 =			33.00		x 69.606 =	
	6.00		x 139.894 =			33.50		x 48.218 =	
	8.00		x 114.643 =			34.00		x 37.105 =	
	10.00		x 89.557 =			34.25		x 25.189 =	
	12.00		x 64.636 =			34.50		x 25.548 =	
	14.00		x 39.879 =			34.75		x 25.907 =	
	16.00		x 15.478 =			35.00		x 39.538 =	
								TOTAL	

TOTAL _____ ÷ 2035.75 = MEAN VEL _____

36.00

PIPE ID = 36.25" # OF DATA POINTS 29

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 97.182 =			18.00		x 8.049 =	
	0.25		x 26.872 =			20.00		x 31.901 =	
	0.50		x 26.469 =			22.00		x 56.018 =	
	0.75		x 26.067 =			24.00		x 79.973 =	
	1.00		x 38.350 =			26.00		x 103.766 =	
	1.50		x 49.721 =			28.00		x 127.397 =	
	2.00		x 71.587 =			30.00		x 150.865 =	
	3.00		x 89.827 =			32.00		x 128.395 =	
	4.00		x 122.825 =			33.00		x 92.881 =	
	6.00		x 141.469 =			34.00		x 73.436 =	
	8.00		x 116.215 =			34.50		x 37.937 =	
	10.00		x 91.123 =			34.75		x 25.744 =	
	12.00		x 66.193 =			35.00		x 26.103 =	
	14.00		x 41.426 =			35.25		x 39.832 =	
	16.00		x 17.252 =					TOTAL	
					TOTAL _____ + 2064.12 = MEAN VEL _____				

36.25

4-77

PIPE ID = 36.50" # OF DATA POINTS 30

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 97.870 =			18.00		x 6.862 =	
	0.25		x 27.069 =			20.00		x 30.396 =	
	0.50		x 26.666 =			22.00		x 54.532 =	
	0.75		x 26.263 =			24.00		x 78.508 =	
	1.00		x 38.645 =			26.00		x 102.325 =	
	1.50		x 50.115 =			28.00		x 125.981 =	
	2.00		x 72.178 =			30.00		x 149.476 =	
	3.00		x 90.615 =			32.00		x 127.374 =	
	4.00		x 124.006 =			33.00		x 92.210 =	
	6.00		x 143.044 =			34.00		x 72.938 =	
	8.00		x 117.786 =			34.50		x 37.690 =	
	10.00		x 92.689 =			34.75		x 25.580 =	
	12.00		x 67.752 =			35.00		x 25.939 =	
	14.00		x 42.975 =			35.25		x 26.299 =	
	16.00		x 19.122 =			35.50		x 40.126 =	
									TOTAL

TOTAL _____ ÷ 2092.69 = MEAN VEL _____

36.50

4-78

PIPE ID = 37.00" # OF DATA POINTS 31

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) SENSOR DISTANCE	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 99.245 =		18.00		x 4.769 =	
	0.25		x 27.462 =		20.00		x 27.381 =	
	0.50		x 27.059 =		22.00		x 51.554 =	
	0.75		x 26.657 =		24.00		x 75.571 =	
	1.00		x 39.235 =		26.00		x 99.432 =	
	1.50		x 50.902 =		28.00		x 123.137 =	
	2.00		x 73.359 =		30.00		x 146.687 =	
	3.00		x 92.191 =		32.00		x 125.322 =	
	4.00		x 126.370 =		33.00		x 90.859 =	
	6.00		x 146.194 =		34.00		x 71.937 =	
	8.00		x 120.930 =		34.50		x 49.776 =	
	10.00		x 95.822 =		35.00		x 38.276 =	
	12.00		x 70.869 =		35.25		x 25.970 =	
	14.00		x 46.073 =		35.50		x 26.331 =	
	16.00		x 23.155 =		35.75		x 26.690 =	
					36.00		x 40.714 =	
								TOTAL

TOTAL _____ ÷ 2150.42 = MEAN VEL _____

37.00

4-80

PIPE ID = 37.50" # OF DATA POINTS 30

REF (RD) DISTANCE	SENSOR LOCATION	SENSOR MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHT WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	SENSOR MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHT WEIGHTED VELOCITY
	0.00		x 100.620 =			18.00		x 6.109 =	
	0.25		x 27.855 =			20.00		x 24.360 =	
	0.50		x 27.452 =			22.00		x 48.567 =	
	0.75		x 27.050 =			24.00		x 72.623 =	
	1.00		x 39.825 =			26.00		x 96.528 =	
	1.50		x 51.689 =			28.00		x 120.280 =	
	2.00		x 74.540 =			30.00		x 143.881 =	
	3.00		x 93.767 =			32.00		x 167.331 =	
	4.00		x 128.734 =			34.00		x 140.737 =	
	6.00		x 149.344 =			35.00		x 75.275 =	
	8.00		x 124.074 =			35.50		x 38.861 =	
	10.00		x 98.956 =			35.75		x 26.361 =	
	12.00		x 73.989 =			36.00		x 26.722 =	
	14.00		x 49.174 =			36.25		x 27.082 =	
	16.00		x 24.511 =			36.50		x 41.302 =	
									TOTAL

TOTAL _____ ÷ 2208.93 = MEAN VEL _____

37.50

4-82

PIPE ID = 38.00"

OF DATA POINTS 31

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 101.995 =			18.00		x 4.776 =	
	0.25		x 28.248 =			20.00		x 23.047 =	
	0.50		x 27.845 =			22.00		x 45.574 =	
	0.75		x 27.443 =			24.00		x 69.667 =	
	1.00		x 40.415 =			26.00		x 93.613 =	
	1.50		x 52.476 =			28.00		x 117.411 =	
	2.00		x 75.721 =			30.00		x 141.061 =	
	3.00		x 95.342 =			32.00		x 164.563 =	
	4.00		x 131.097 =			34.00		x 138.701 =	
	6.00		x 152.494 =			35.00		x 74.269 =	
	8.00		x 127.218 =			35.50		x 51.334 =	
	10.00		x 102.090 =			36.00		x 39.447 =	
	12.00		x 77.110 =			36.25		x 26.752 =	
	14.00		x 52.278 =			36.50		x 27.113 =	
	16.00		x 27.593 =			36.75		x 27.474 =	
						37.00		x 41.890 =	
								TOTAL	

TOTAL _____ + 2268.23 = MEAN VEL _____

38.00

PIPE ID = 38.50" # OF DATA POINTS 31

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 103.370 =			18.00		x 6.883 =	
	0.25		x 28.641 =			20.00		x 19.062 =	
	0.50		x 28.239 =			22.00		x 42.573 =	
	0.75		x 27.836 =			24.00		x 66.702 =	
	1.00		x 41.005 =			26.00		x 90.687 =	
	1.50		x 53.263 =			28.00		x 114.529 =	
	2.00		x 76.902 =			30.00		x 138.226 =	
	3.00		x 96.918 =			32.00		x 161.780 =	
	4.00		x 133.460 =			34.00		x 136.652 =	
	6.00		x 155.644 =			35.00		x 98.420 =	
	8.00		x 130.363 =			36.00		x 77.612 =	
	10.00		x 105.226 =			36.50		x 40.032 =	
	12.00		x 80.233 =			36.75		x 27.143 =	
	14.00		x 55.384 =			37.00		x 27.504 =	
	16.00		x 30.679 =			37.25		x 27.865 =	
						37.50		x 42.479 =	
									TOTAL

TOTAL _____ ÷ 2328.31 = MEAN VEL _____

38.50

4-86

PIPE ID = 39.00" # OF DATA POINTS 32

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 104.746 =			18.00		x 9.374 =	
	0.25		x 29.034 =			20.00		x 15.452 =	
	0.50		x 28.632 =			22.00		x 39.565 =	
	0.75		x 28.230 =			24.00		x 63.729 =	
	1.00		x 41.595 =			26.00		x 87.752 =	
	1.50		x 54.050 =			28.00		x 111.635 =	
	2.00		x 78.083 =			30.00		x 135.378 =	
	3.00		x 98.493 =			32.00		x 158.980 =	
	4.00		x 135.824 =			34.00		x 134.589 =	
	6.00		x 158.794 =			35.00		x 97.061 =	
	8.00		x 133.508 =			36.00		x 76.603 =	
	10.00		x 108.363 =			36.50		x 52.893 =	
	12.00		x 83.357 =			37.00		x 40.618 =	
	14.00		x 58.492 =			37.25		x 27.534 =	
	16.00		x 33.767 =			37.50		x 27.895 =	
						37.75		x 28.257 =	
						38.00		x 43.067 =	
								TOTAL	

TOTAL _____ + 2389.18 = MEAN VEL _____

39.00

4-88

PIPE ID = 39.50" # OF DATA POINTS 31

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 106.121 =			18.00		x 12.252 =	
	0.25		x 29.427 =			20.00		x 12.218 =	
	0.50		x 29.025 =			22.00		x 36.551 =	
	0.75		x 28.623 =			24.00		x 60.748 =	
	1.00		x 42.185 =			26.00		x 84.808 =	
	1.50		x 54.837 =			28.00		x 108.731 =	
	2.00		x 79.264 =			30.00		x 132.517 =	
	3.00		x 100.068 =			32.00		x 156.166 =	
	4.00		x 138.187 =			34.00		x 179.679 =	
	6.00		x 161.944 =			36.00		x 150.052 =	
	8.00		x 136.654 =			37.00		x 79.950 =	
	10.00		x 111.500 =			37.50		x 41.204 =	
	12.00		x 86.483 =			37.75		x 27.925 =	
	14.00		x 61.603 =			38.00		x 28.287 =	
	16.00		x 36.859 =			38.25		x 28.649 =	
						38.50		x 43.655 =	
								TOTAL	

TOTAL _____ ÷ 2450.83 = MEAN VEL _____

39.50

4-90

PIPE ID = 40.00" # OF DATA POINTS 32

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 107.496 =			18.00		x 15.516 =	
	0.25		x 29.820 =			20.00		x 9.361 =	
	0.50		x 29.418 =			22.00		x 33.531 =	
	0.75		x 29.016 =			24.00		x 57.760 =	
	1.00		x 42.775 =			26.00		x 81.854 =	
	1.50		x 55.624 =			28.00		x 105.816 =	
	2.00		x 80.445 =			30.00		x 129.644 =	
	3.00		x 101.644 =			32.00		x 153.339 =	
	4.00		x 140.550 =			34.00		x 176.900 =	
	6.00		x 165.095 =			36.00		x 148.003 =	
	8.00		x 139.800 =			37.00		x 78.937 =	
	10.00		x 114.638 =			37.50		x 54.453 =	
	12.00		x 89.610 =			38.00		x 41.789 =	
	14.00		x 64.715 =			38.25		x 28.316 =	
	16.00		x 39.953 =			38.50		x 28.678 =	
						38.75		x 29.040 =	
						39.00		x 44.243 =	
								TOTAL	

TOTAL _____ ÷ 2513.27 = MEAN VEL _____

40.00

4-92

PIPE ID = 40.50" # OF DATA POINTS 32

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 108.871 =			18.00		x 19.168 =	
	0.25		x 30.213 =			20.00		x 6.882 =	
	0.50		x 29.811 =			22.00		x 30.506 =	
	0.75		x 29.409 =			24.00		x 54.764 =	
	1.00		x 43.365 =			26.00		x 78.893 =	
	1.50		x 56.411 =			28.00		x 102.891 =	
	2.00		x 81.625 =			30.00		x 126.759 =	
	3.00		x 103.219 =			32.00		x 150.498 =	
	4.00		x 142.913 =			34.00		x 174.106 =	
	6.00		x 168.245 =			36.00		x 145.942 =	
	8.00		x 142.946 =			37.00		x 104.637 =	
	10.00		x 117.777 =			38.00		x 82.289 =	
	12.00		x 92.738 =			38.50		x 42.375 =	
	14.00		x 67.829 =			38.75		x 28.707 =	
	16.00		x 43.050 =			39.00		x 29.070 =	
						39.25		x 29.432 =	
						39.50		x 44.832 =	
								TOTAL	

TOTAL _____ ÷ 2576.50 = MEAN VEL _____

40.50

4-94

PIPE ID = 41.00" # OF DATA POINTS 33

REF (RD) DISTANCE	SENSOR LOCATION	SENSOR MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 110.246 =			18.00		x 23.207 =	
	0.25		x 30.606 =			20.00		x 4.782 =	
	0.50		x 30.204 =			22.00		x 27.475 =	
	0.75		x 29.802 =			24.00		x 51.763 =	
	1.00		x 43.955 =			26.00		x 75.924 =	
	1.50		x 57.198 =			28.00		x 99.957 =	
	2.00		x 82.806 =			30.00		x 123.864 =	
	3.00		x 104.794 =			32.00		x 147.644 =	
	4.00		x 145.276 =			34.00		x 171.297 =	
	6.00		x 171.395 =			36.00		x 143.869 =	
	8.00		x 146.092 =			37.00		x 103.269 =	
	10.00		x 120.916 =			38.00		x 81.273 =	
	12.00		x 95.867 =			38.50		x 56.013 =	
	14.00		x 70.944 =			39.00		x 42.961 =	
	16.00		x 46.149 =			39.25		x 29.098 =	
						39.50		x 29.461 =	
						39.75		x 29.824 =	
						40.00		x 45.420 =	
								TOTAL	

TOTAL _____ ÷ 2640.51 = MEAN VEL _____

41.00

4-96

PIPE ID = 41.25" # OF DATA POINTS 31

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		X 110.934 =			18.00		X 25.372 =	
	0.25		X 30.803 =			20.00		X 3.875 =	
	0.50		X 30.401 =			22.00		X 25.958 =	
	0.75		X 29.999 =			24.00		X 50.260 =	
	1.00		X 44.249 =			26.00		X 74.436 =	
	1.50		X 57.591 =			28.00		X 98.487 =	
	2.00		X 83.396 =			30.00		X 122.413 =	
	3.00		X 105.581 =			32.00		X 146.213 =	
	4.00		X 146.457 =			34.00		X 169.887 =	
	6.00		X 172.970 =			36.00		X 193.437 =	
	8.00		X 147.665 =			38.00		X 160.402 =	
	10.00		X 122.486 =			39.00		X 85.137 =	
	12.00		X 97.432 =			39.50		X 43.800 =	
	14.00		X 72.503 =			39.75		X 29.657 =	
	16.00		X 47.700 =			40.00		X 30.020 =	
						40.25		X 45.714 =	
								TOTAL	
								TOTAL	

TOTAL _____ + 2672.81 = MEAN VEL _____

41.25

4-97

PIPE ID = 41.50" # OF DATA POINTS 32

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 111.621 =			18.00		x 24.563 =	
	0.25		x 30.999 =			20.00		x 6.125 =	
	0.50		x 30.597 =			22.00		x 24.439 =	
	0.75		x 30.196 =			24.00		x 48.755 =	
	1.00		x 44.544 =			26.00		x 72.947 =	
	1.50		x 57.985 =			28.00		x 97.015 =	
	2.00		x 83.987 =			30.00		x 120.958 =	
	3.00		x 106.369 =			32.00		x 144.778 =	
	4.00		x 147.639 =			34.00		x 168.475 =	
	6.00		x 174.545 =			36.00		x 192.047 =	
	8.00		x 149.239 =			38.00		x 159.377 =	
	10.00		x 124.056 =			39.00		x 4.629 =	
	12.00		x 98.997 =			39.50		x 43.547 =	
	14.00		x 74.062 =			39.75		x 29.489 =	
	16.00		x 49.251 =			40.00		x 29.852 =	
						40.25		x 30.216 =	
						40.50		x 46.008 =	
								TOTAL	

TOTAL _____ ÷ 2705.30 = MEAN VEL _____

41.50

4-98

PIPE ID = 42.00" # OF DATA POINTS 33

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 112.996 =			18.00		x 27.649 =	
	0.25		x 31.392 =			20.00		x 4.788 =	
	0.50		x 30.990 =			22.00		x 23.118 =	
	0.75		x 30.589 =			24.00		x 45.741 =	
	1.00		x 45.134 =			26.00		x 69.963 =	
	1.50		x 58.771 =			28.00		x 94.063 =	
	2.00		x 85.167 =			30.00		x 118.043 =	
	3.00		x 107.944 =			32.00		x 141.902 =	
	4.00		x 150.001 =			34.00		x 165.639 =	
	6.00		x 177.696 =			36.00		x 189.256 =	
	8.00		x 152.385 =			38.00		x 157.317 =	
	10.00		x 127.196 =			39.00		x 83.609 =	
	12.00		x 102.128 =			39.50		x 57.574 =	
	14.00		x 77.181 =			40.00		x 44.134 =	
	16.00		x 52.354 =			40.25		x 29.880 =	
						40.50		x 30.244 =	
						40.75		x 30.608 =	
						41.00		x 46.597 =	
								TOTAL	

TOTAL _____ ÷ 2770.88 = MEAN VEL _____

42.00

4-100

PIPE ID = 42.50" # OF DATA POINTS 33

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 114.371 =			18.00		x 30.737 =	
	0.25		x 31.785 =			20.00		x 6.899 =	
	0.50		x 31.383 =			22.00		x 19.119 =	
	0.75		x 30.982 =			24.00		x 42.722 =	
	1.00		x 45.724 =			26.00		x 66.972 =	
	1.50		x 59.558 =			28.00		x 91.104 =	
	2.00		x 86.348 =			30.00		x 115.118 =	
	3.00		x 109.519 =			32.00		x 139.014 =	
	4.00		x 152.364 =			34.00		x 162.792 =	
	6.00		x 180.846 =			36.00		x 186.451 =	
	8.00		x 155.532 =			38.00		x 155.245 =	
	10.00		x 130.337 =			39.00		x 110.860 =	
	12.00		x 105.260 =			40.00		x 86.970 =	
	14.00		x 80.301 =			40.50		x 44.720 =	
	16.00		x 55.460 =			40.75		x 30.271 =	
						41.00		x 30.635 =	
						41.25		x 30.999 =	
						41.50		x 47.185 =	
								TOTAL	

TOTAL _____ ÷ 2837.25 = MEAN VEL _____

42.50

4-102

PIPE ID = 43.00" # OF DATA POINTS 34

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 115.746 =			18.00		x 33.828 =	
	0.25		x 32.178 =			20.00		x 9.396 =	
	0.50		x 31.776 =			22.00		x 15.496 =	
	0.75		x 31.375 =			24.00		x 39.698 =	
	1.00		x 46.314 =			26.00		x 63.975 =	
	1.50		x 60.345 =			28.00		x 88.138 =	
	2.00		x 87.528 =			30.00		x 112.185 =	
	3.00		x 111.094 =			32.00		x 136.117 =	
	4.00		x 154.727 =			34.00		x 159.933 =	
	6.00		x 183.996 =			36.00		x 183.634 =	
	8.00		x 158.680 =			38.00		x 153.162 =	
	10.00		x 133.478 =			39.00		x 109.484 =	
	12.00		x 108.393 =			40.00		x 85.947 =	
	14.00		x 83.423 =			40.50		x 59.135 =	
	16.00		x 58.568 =			41.00		x 45.306 =	
						41.25		x 30.662 =	
						41.50		x 31.027 =	
						41.75		x 31.391 =	
						42.00		x 47.773 =	
								TOTAL	

TOTAL _____ ÷ 2904.40 = MEAN VEL _____

43.00

4-104

PIPE ID = 43.50" # OF DATA POINTS 33

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 117.121 =			18.00		x 36.922 =	
	0.25		x 32.571 =			20.00		x 12.279 =	
	0.50		x 32.169 =			22.00		x 12.251 =	
	0.75		x 31.768 =			24.00		x 36.668 =	
	1.00		x 46.904 =			26.00		x 60.972 =	
	1.50		x 61.132 =			28.00		x 85.164 =	
	2.00		x 88.709 =			30.00		x 109.243 =	
	3.00		x 112.668 =			32.00		x 133.209 =	
	4.00		x 157.089 =			34.00		x 157.063 =	
	6.00		x 187.146 =			36.00		x 180.803 =	
	8.00		x 161.827 =			38.00		x 204.431 =	
	10.00		x 136.620 =			40.00		x 168.710 =	
	12.00		x 111.527 =			41.00		x 89.311 =	
	14.00		x 86.546 =			41.50		x 45.892 =	
	16.00		x 61.677 =			41.75		x 31.054 =	
						42.00		x 31.419 =	
						42.25		x 31.783 =	
						42.50		x 48.362 =	
								TOTAL	

TOTAL _____ + 2972.34 = MEAN VEL _____

43.50

4-106

PIPE ID = 44.00" # OF DATA POINTS 34

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 118.496 =			18.00		x 40.018 =	
	0.25		x 32.964 =			20.00		x 15.549 =	
	0.50		x 32.562 =			22.00		x 9.385 =	
	0.75		x 32.161 =			24.00		x 33.634 =	
	1.00		x 47.494 =			26.00		x 57.964 =	
	1.50		x 61.918 =			28.00		x 82.184 =	
	2.00		x 89.889 =			30.00		x 106.293 =	
	3.00		x 114.243 =			32.00		x 130.293 =	
	4.00		x 159.451 =			34.00		x 154.182 =	
	6.00		x 190.296 =			36.00		x 177.961 =	
	8.00		x 164.974 =			38.00		x 201.629 =	
	10.00		x 139.762 =			40.00		x 166.639 =	
	12.00		x 114.661 =			41.00		x 88.285 =	
	14.00		x 89.670 =			41.50		x 60.696 =	
	16.00		x 64.789 =			42.00		x 46.479 =	
						42.25		x 31.445 =	
						42.50		x 31.810 =	
						42.75		x 32.175 =	
						43.00		x 48.950 =	
								TOTAL	

TOTAL _____ ÷ 3041.06 = MEAN VEL _____

44.00

4-108

PIPE ID = 44.50" # OF DATA POINTS 34

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 119.871 =			18.00		x 43.116 =	
	0.25		x 33.357 =			20.00		x 19.206 =	
	0.50		x 32.956 =			22.00		x 6.899 =	
	0.75		x 32.554 =			24.00		x 30.595 =	
	1.00		x 48.083 =			26.00		x 54.950 =	
	1.50		x 62.705 =			28.00		x 79.197 =	
	2.00		x 91.069 =			30.00		x 103.336 =	
	3.00		x 115.818 =			32.00		x 127.367 =	
	4.00		x 161.814 =			34.00		x 151.291 =	
	6.00		x 193.446 =			36.00		x 175.107 =	
	8.00		x 168.122 =			38.00		x 198.815 =	
	10.00		x 142.905 =			40.00		x 164.557 =	
	12.00		x 117.796 =			41.00		x 117.088 =	
	14.00		x 92.795 =			42.00		x 91.653 =	
	16.00		x 67.901 =			42.50		x 47.065 =	
						42.75		x 31.836 =	
						43.00		x 32.202 =	
						43.25		x 32.567 =	
						43.50		x 49.539 =	
								TOTAL	

TOTAL _____ ÷ 3110.57 = MEAN VEL _____

44.50

4-110

PIPE ID = 45.25" # OF DATA POINTS 33

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 121.934 =			28.00		x 74.705 =	
	0.25		x 33.946 =			30.00		x 98.886 =	
	0.50		x 33.545 =			32.00		x 122.964 =	
	0.75		x 33.144 =			34.00		x 146.937 =	
	1.00		x 48.968 =			36.00		x 170.806 =	
	1.50		x 63.885 =			38.00		x 194.571 =	
	2.00		x 92.840 =			40.00		x 218.231 =	
	3.00		x 118.179 =			42.00		x 179.088 =	
	4.00		x 165.357 =			43.00		x 94.510 =	
	6.00		x 198.171 =			43.50		x 48.494 =	
	8.00		x 172.843 =			43.75		x 32.789 =	
	10.00		x 147.620 =			44.00		x 33.155 =	
	12.00		x 122.500 =			44.25		x 50.421 =	
	14.00		x 97.485 =					TOTAL	
	16.00		x 72.574 =					TOTAL	
	18.00		x 47.767 =					TOTAL	
	20.00		x 25.419 =					TOTAL	
	22.00		x 3.884 =					TOTAL	
	24.00		x 26.029 =					TOTAL	
	26.00		x 50.419 =					TOTAL	
					TOTAL _____ + 3216.30 = MEAN VEL _____				

45.25

4-113

PIPE ID = 45.75" # OF DATA POINTS 34

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 123.309 =			28.00		x 71.703 =	
	0.25		x 34.339 =			30.00		x 95.911 =	
	0.50		x 33.938 =			32.00		x 120.018 =	
	0.75		x 33.537 =			34.00		x 144.023 =	
	1.00		x 49.558 =			36.00		x 167.926 =	
	1.50		x 64.672 =			38.00		x 191.727 =	
	2.00		x 94.020 =			40.00		x 215.425 =	
	3.00		x 119.754 =			42.00		x 177.012 =	
	4.00		x 167.719 =			43.00		x 93.480 =	
	6.00		x 201.321 =			43.50		x 64.163 =	
	8.00		x 175.991 =			44.00		x 49.081 =	
	10.00		x 150.763 =			44.25		x 33.181 =	
	12.00		x 125.637 =			44.50		x 33.547 =	
	14.00		x 100.613 =			44.75		x 51.010 =	
	16.00		x 75.890 =					TOTAL	
	18.00		x 50.870 =					TOTAL	
	20.00		x 26.152 =					TOTAL	
	22.00		x 3.886 =					TOTAL	
	24.00		x 25.325 =					TOTAL	
	26.00		x 47.392 =					TOTAL	
								TOTAL	

TOTAL _____ + 3287.77 = MEAN VEL _____

45.75

4-115

PIPE ID = 50.75" # OF DATA POINTS 37

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 137.058 =			28.00		x 41.420 =	
	0.25		x 38.268 =			30.00		x 65.853 =	
	0.50		x 37.868 =			32.00		x 90.204 =	
	0.75		x 37.468 =			34.00		x 114.472 =	
	1.00		x 55.455 =			36.00		x 138.657 =	
	1.50		x 72.537 =			38.00		x 162.759 =	
	2.00		x 105.821 =			40.00		x 186.778 =	
	3.00		x 135.495 =			42.00		x 210.715 =	
	4.00		x 191.336 =			44.00		x 234.568 =	
	6.00		x 232.818 =			46.00		x 191.488 =	
	8.00		x 207.473 =			47.00		x 135.097 =	
	10.00		x 182.211 =			48.00		x 105.195 =	
	12.00		x 157.032 =			48.50		x 71.984 =	
	14.00		x 131.935 =			49.00		x 54.954 =	
	16.00		x 106.922 =			49.25		x 37.099 =	
	18.00		x 81.991 =			49.50		x 37.467 =	
	20.00		x 57.143 =			49.75		x 56.895 =	
	22.00		x 32.378 =					TOTAL	
	24.00		x 8.129 =						
	26.00		x 17.335 =						
					TOTAL			+ 4045.68 = MEAN VEL	

50.75

4-135

PIPE ID = 52.25" # OF DATA POINTS 37

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 141.182 =			28.00		x 32.259 =	
	0.25		x 39.447 =			30.00		x 56.747 =	
	0.50		x 39.047 =			32.00		x 81.156 =	
	0.75		x 38.647 =			34.00		x 105.488 =	
	1.00		x 57.223 =			36.00		x 129.741 =	
	1.50		x 74.896 =			38.00		x 153.916 =	
	2.00		x 109.360 =			40.00		x 178.013 =	
	3.00		x 140.217 =			42.00		x 202.032 =	
	4.00		x 198.420 =			44.00		x 225.973 =	
	6.00		x 242.265 =			46.00		x 249.835 =	
	8.00		x 216.918 =			48.00		x 202.947 =	
	10.00		x 191.648 =			49.00		x 142.741 =	
	12.00		x 166.457 =			50.00		x 110.931 =	
	14.00		x 141.344 =			50.50		x 56.716 =	
	16.00		x 116.309 =			50.75		x 38.274 =	
	18.00		x 91.352 =			51.00		x 38.644 =	
	20.00		x 66.474 =			51.25		x 58.661 =	
	22.00		x 41.673 =					TOTAL	
	24.00		x 17.385 =						
	26.00		x 8.126 =						
					TOTAL			+ 4288.37 = MEAN VEL	

52.25

4-141

PIPE ID = 53.00" # OF DATA POINTS 39

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 143.245 =			28.00		x 27.668 =	
	0.25		x 40.036 =			30.00		x 52.181 =	
	0.50		x 39.636 =			32.00		x 76.618 =	
	0.75		x 39.236 =			34.00		x 100.979 =	
	1.00		x 58.108 =			36.00		x 125.264 =	
	1.50		x 76.075 =			38.00		x 149.474 =	
	2.00		x 111.130 =			40.00		x 173.607 =	
	3.00		x 142.577 =			42.00		x 197.664 =	
	4.00		x 201.962 =			44.00		x 221.645 =	
	6.00		x 246.989 =			46.00		x 245.551 =	
	8.00		x 221.640 =			48.00		x 199.765 =	
	10.00		x 196.368 =			49.00		x 140.633 =	
	12.00		x 171.171 =			50.00		x 109.358 =	
	14.00		x 146.050 =			50.50		x 74.765 =	
	16.00		x 121.005 =			51.00		x 57.043 =	
	18.00		x 96.037 =			51.25		x 38.493 =	
	20.00		x 71.144 =			51.50		x 38.862 =	
	22.00		x 46.327 =			51.75		x 39.232 =	
	24.00		x 23.321 =			52.00		x 59.543 =	
	26.00		x 4.811 =					TOTAL	

TOTAL _____ ÷ 4412.37 = MEAN VEL_____

53.00

4-144

PIPE ID = 54.00" # OF DATA POINTS 39

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 145.994 =			28.00		x 23.267 =	
	0.25		x 40.822 =			30.00		x 46.082 =	
	0.50		x 40.422 =			32.00		x 70.554 =	
	0.75		x 40.022 =			34.00		x 94.952 =	
	1.00		x 59.287 =			36.00		x 119.277 =	
	1.50		x 77.648 =			38.00		x 143.530 =	
	2.00		x 113.489 =			40.00		x 167.709 =	
	3.00		x 145.724 =			42.00		x 191.815 =	
	4.00		x 206.684 =			44.00		x 215.847 =	
	6.00		x 253.287 =			46.00		x 239.807 =	
	8.00		x 227.937 =			48.00		x 263.693 =	
	10.00		x 202.660 =			50.00		x 213.360 =	
	12.00		x 177.457 =			51.00		x 111.703 =	
	14.00		x 152.327 =			51.50		x 76.330 =	
	16.00		x 127.269 =			52.00		x 58.217 =	
	18.00		x 102.285 =			52.25		x 39.276 =	
	20.00		x 77.375 =			52.50		x 39.646 =	
	22.00		x 52.537 =			52.75		x 40.016 =	
	24.00		x 27.773 =			53.00		x 60.721 =	
	26.00		x 4.814 =					TOTAL	

TOTAL _____ ÷ 4580.44 = MEAN VEL _____

54.00

4-148

PIPE ID = 54.25" # OF DATA POINTS 38

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 146.882 =			28.00		x 21.204 =	
	0.25		x 41.018 =			30.00		x 44.555 =	
	0.50		x 40.618 =			32.00		x 69.035 =	
	0.75		x 40.219 =			34.00		x 93.443 =	
	1.00		x 59.582 =			36.00		x 117.778 =	
	1.50		x 78.041 =			38.00		x 142.040 =	
	2.00		x 114.079 =			40.00		x 166.230 =	
	3.00		x 146.511 =			42.00		x 190.348 =	
	4.00		x 207.864 =			44.00		x 214.393 =	
	6.00		x 254.861 =			46.00		x 238.366 =	
	8.00		x 229.511 =			48.00		x 262.266 =	
	10.00		x 204.234 =			50.00		x 212.299 =	
	12.00		x 179.028 =			51.00		x 148.990 =	
	14.00		x 153.896 =			52.00		x 115.626 =	
	16.00		x 128.836 =			52.50		x 59.066 =	
	18.00		x 103.848 =			52.75		x 39.842 =	
	20.00		x 78.933 =			53.00		x 40.212 =	
	22.00		x 54.090 =			53.25		x 61.015 =	
	24.00		x 29.320 =					TOTAL	
	26.00		x 5.827 =						
					TOTAL _____ + 4622.95 = MEAN VEL _____				

54.25

4-149

PIPE ID = 54.50" # OF DATA POINTS 39

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 147.369 =			28.00		x 19.237 =	
	0.25		x 41.215 =			30.00		x 43.027 =	
	0.50		x 40.815 =			32.00		x 67.516 =	
	0.75		x 40.415 =			34.00		x 91.932 =	
	1.00		x 59.876 =			36.00		x 116.277 =	
	1.50		x 78.434 =			38.00		x 140.550 =	
	2.00		x 114.669 =			40.00		x 164.751 =	
	3.00		x 147.298 =			42.00		x 188.880 =	
	4.00		x 209.045 =			44.00		x 212.937 =	
	6.00		x 256.436 =			46.00		x 236.922 =	
	8.00		x 231.085 =			48.00		x 260.836 =	
	10.00		x 205.807 =			50.00		x 211.237 =	
	12.00		x 180.600 =			51.00		x 148.286 =	
	14.00		x 155.465 =			52.00		x 115.101 =	
	16.00		x 130.402 =			52.50		x 58.804 =	
	18.00		x 105.411 =			52.75		x 39.668 =	
	20.00		x 80.492 =			53.00		x 40.038 =	
	22.00		x 55.644 =			53.25		x 40.408 =	
	24.00		x 30.869 =			53.50		x 61.309 =	
	26.00		x 6.935 =					TOTAL	

TOTAL _____ ÷ 4665.66 = MEAN VEL _____

54.50

4-150

PIPE ID = 55.00" # OF DATA POINTS 40

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 148.744 =			28.00		x 15.588 =	
	0.25		x 41.608 =			30.00		x 39.970 =	
	0.50		x 41.208 =			32.00		x 64.474 =	
	0.75		x 40.808 =			34.00		x 88.908 =	
	1.00		x 60.466 =			36.00		x 113.272 =	
	1.50		x 79.220 =			38.00		x 137.564 =	
	2.00		x 115.849 =			40.00		x 161.787 =	
	3.00		x 148.871 =			42.00		x 185.938 =	
	4.00		x 211.405 =			44.00		x 210.019 =	
	6.00		x 259.584 =			46.00		x 234.030 =	
	8.00		x 234.234 =			48.00		x 257.970 =	
	10.00		x 208.953 =			50.00		x 209.107 =	
	12.00		x 183.744 =			51.00		x 146.874 =	
	14.00		x 158.604 =			52.00		x 114.047 =	
	16.00		x 133.536 =			52.50		x 77.894 =	
	18.00		x 108.538 =			53.00		x 59.392 =	
	20.00		x 83.610 =			53.25		x 40.060 =	
	22.00		x 58.753 =			53.50		x 40.430 =	
	24.00		x 33.966 =			53.75		x 40.801 =	
	26.00		x 9.443 =			54.00		x 61.898 =	
									TOTAL

TOTAL _____ ÷ 4751.66 = MEAN VEL _____

55.00

4-152

PIPE ID = 55.50" # OF DATA POINTS 39

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 150.119 =			28.00		x 12.321 =	
	0.25		x 42.000 =			30.00		x 36.910 =	
	0.50		x 41.601 =			32.00		x 61.430 =	
	0.75		x 41.201 =			34.00		x 85.881 =	
	1.00		x 61.056 =			36.00		x 110.262 =	
	1.50		x 80.007 =			38.00		x 134.574 =	
	2.00		x 117.028 =			40.00		x 158.817 =	
	3.00		x 150.445 =			42.00		x 182.991 =	
	4.00		x 213.766 =			44.00		x 207.095 =	
	6.00		x 262.733 =			46.00		x 231.130 =	
	8.00		x 237.382 =			48.00		x 255.096 =	
	10.00		x 212.100 =			50.00		x 278.992 =	
	12.00		x 186.887 =			52.00		x 224.844 =	
	14.00		x 161.744 =			53.00		x 117.448 =	
	16.00		x 136.670 =			53.50		x 59.979 =	
	18.00		x 111.665 =			53.75		x 40.451 =	
	20.00		x 86.729 =			54.00		x 40.822 =	
	22.00		x 61.863 =			54.25		x 41.193 =	
	24.00		x 37.066 =			54.50		x 62.487 =	
	26.00		x 12.338 =					TOTAL	

TOTAL _____ ÷ 4838.45 = MEAN VEL _____

55.50

4-154

PIPE ID = 56.00" # OF DATA POINTS 40

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 151.494 =			28.00		x 9.436 =	
	0.25		x 42.393 =			30.00		x 33.847 =	
	0.50		x 41.994 =			32.00		x 58.382 =	
	0.75		x 41.594 =			34.00		x 82.849 =	
	1.00		x 61.645 =			36.00		x 107.248 =	
	1.50		x 80.793 =			38.00		x 131.579 =	
	2.00		x 118.208 =			40.00		x 155.842 =	
	3.00		x 152.018 =			42.00		x 180.037 =	
	4.00		x 216.127 =			44.00		x 204.164 =	
	6.00		x 265.882 =			46.00		x 228.223 =	
	8.00		x 240.530 =			48.00		x 252.214 =	
	10.00		x 215.247 =			50.00		x 276.136 =	
	12.00		x 190.031 =			52.00		x 222.721 =	
	14.00		x 164.884 =			53.00		x 116.392 =	
	16.00		x 139.804 =			53.50		x 79.459 =	
	18.00		x 114.793 =			54.00		x 60.566 =	
	20.00		x 89.849 =			54.25		x 40.843 =	
	22.00		x 64.974 =			54.50		x 41.214 =	
	24.00		x 40.167 =			54.75		x 41.585 =	
	26.00		x 15.620 =			55.00		x 63.075 =	
								TOTAL	

TOTAL _____ ÷ 4926.02 = MEAN VEL _____

56.00

4-156

PIPE ID = 56.50" # OF DATA POINTS 40

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 152.868 =			28.00		x 6.935 =	
	0.25		x 42.786 =			30.00		x 30.781 =	
	0.50		x 42.387 =			32.00		x 55.331 =	
	0.75		x 41.987 =			34.00		x 79.814 =	
	1.00		x 62.235 =			36.00		x 104.230 =	
	1.50		x 81.579 =			38.00		x 128.580 =	
	2.00		x 119.387 =			40.00		x 152.862 =	
	3.00		x 153.592 =			42.00		x 177.078 =	
	4.00		x 218.488 =			44.00		x 201.226 =	
	6.00		x 269.030 =			46.00		x 225.308 =	
	8.00		x 243.678 =			48.00		x 249.324 =	
	10.00		x 218.393 =			50.00		x 273.272 =	
	12.00		x 193.175 =			52.00		x 220.591 =	
	14.00		x 168.024 =			53.00		x 154.534 =	
	16.00		x 142.939 =			54.00		x 119.795 =	
	18.00		x 117.921 =			54.50		x 61.154 =	
	20.00		x 92.971 =			54.75		x 41.235 =	
	22.00		x 68.086 =			55.00		x 41.606 =	
	24.00		x 43.269 =			55.25		x 41.977 =	
	26.00		x 19.291 =			55.50		x 63.664 =	
									TOTAL

TOTAL _____ ÷ 5014.37 = MEAN VEL _____

56.50

4-158

PIPE ID = 57.00" # OF DATA POINTS 41

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 154.243 =			28.00		x 4.818 =	
	0.25		x 43.179 =			30.00		x 27.713 =	
	0.50		x 42.780 =			32.00		x 52.277 =	
	0.75		x 42.380 =			34.00		x 76.776 =	
	1.00		x 62.824 =			36.00		x 101.208 =	
	1.50		x 2.365 =			38.00		x 125.576 =	
	2.00		x 120.567 =			40.00		x 149.877 =	
	3.00		x 155.165 =			42.00		x 174.113 =	
	4.00		x 220.848 =			44.00		x 198.283 =	
	6.00		x 272.179 =			46.00		x 222.387 =	
	8.00		x 246.827 =			48.00		x 246.426 =	
	10.00		x 221.540 =			50.00		x 270.399 =	
	12.00		x 196.319 =			52.00		x 218.454 =	
	14.00		x 171.164 =			53.00		x 153.118 =	
	16.00		x 146.075 =			54.00		x 118.737 =	
	18.00		x 121.051 =			54.50		x 81.025 =	
	20.00		x 96.093 =			55.00		x 61.741 =	
	22.00		x 71.200 =			55.25		x 41.627 =	
	24.00		x 46.373 =			55.50		x 41.998 =	
	26.00		x 23.349 =			55.75		x 42.369 =	
						56.00		x 64.253 =	
								TOTAL	

TOTAL _____ ÷ 5103.52 = MEAN VEL _____

57.00

4-160

PIPE ID = 57.25" # OF DATA POINTS 39

REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED	REF (RD)	SENSOR	MEASURED	WEIGHT	WEIGHTED
DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY	DISTANCE	LOCATION	VELOCITY (FPS)	CONSTANT	VELOCITY
	0.00		X 154.930	=		28.00		X 3.903	=
	0.25		X 43.375	=		30.00		X 26.178	=
	0.50		X 42.976	=		32.00		X 50.749	=
	0.75		X 42.577	=		34.00		X 75.255	=
	1.00		X 63.119	=		36.00		X 99.696	=
	1.50		X 82.758	=		38.00		X 124.072	=
	2.00		X 121.157	=		40.00		X 148.383	=
	3.00		X 155.952	=		42.00		X 172.628	=
	4.00		X 222.028	=		44.00		X 196.809	=
	6.00		X 273.753	=		46.00		X 220.924	=
	8.00		X 248.401	=		48.00		X 244.974	=
	10.00		X 223.114	=		50.00		X 268.960	=
	12.00		X 197.891	=		52.00		X 292.880	=
	14.00		X 172.734	=		54.00		X 235.278	=
	16.00		X 147.643	=		55.00		X 122.671	=
	18.00		X 122.616	=		55.50		X 62.592	=
	20.00		X 97.654	=		55.75		X 42.194	=
	22.00		X 72.757	=		56.00		X 42.566	=
	24.00		X 47.926	=		56.25		X 64.547	=
	26.00		X 25.524	=				TOTAL	

TOTAL _____ ÷ 5148.38 = MEAN VEL _____

57.25

4-161

PIPE ID = 57.50" # OF DATA POINTS 40

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 155.618 =			28.00		x 6.169 =	
	0.25		x 43.572 =			30.00		x 24.643 =	
	0.50		x 43.172 =			32.00		x 49.221 =	
	0.75		x 42.773 =			34.00		x 73.734 =	
	1.00		x 63.414 =			36.00		x 98.183 =	
	1.50		x 83.152 =			38.00		x 122.567 =	
	2.00		x 121.747 =			40.00		x 146.887 =	
	3.00		x 156.739 =			42.00		x 171.143 =	
	4.00		x 223.209 =			44.00		x 195.333 =	
	6.00		x 275.327 =			46.00		x 219.460 =	
	8.00		x 249.975 =			48.00		x 243.521 =	
	10.00		x 224.687 =			50.00		x 267.518 =	
	12.00		x 199.464 =			52.00		x 291.451 =	
	14.00		x 174.305 =			54.00		x 234.215 =	
	16.00		x 149.211 =			55.00		x 122.143 =	
	18.00		x 124.181 =			55.50		x 62.329 =	
	20.00		x 99.216 =			55.75		x 42.019 =	
	22.00		x 74.315 =			56.00		x 42.390 =	
	24.00		x 49.479 =			56.25		x 42.762 =	
	26.00		x 24.707 =			56.50		x 64.841 =	
									TOTAL

TOTAL _____ ÷ 5193.45 = MEAN VEL _____

57.50

4-162

PIPE ID = 58.00" # OF DATA POINTS 41

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 156.993 =			28.00		x 4.821 =	
	0.25		x 43.965 =			30.00		x 23.303 =	
	0.50		x 43.565 =			32.00		x 46.161 =	
	0.75		x 43.166 =			34.00		x 70.689 =	
	1.00		x 64.003 =			36.00		x 95.154 =	
	1.50		x 83.938 =			38.00		x 119.555 =	
	2.00		x 122.926 =			40.00		x 143.893 =	
	3.00		x 158.312 =			42.00		x 168.167 =	
	4.00		x 225.569 =			44.00		x 192.378 =	
	6.00		x 278.476 =			46.00		x 216.526 =	
	8.00		x 253.123 =			48.00		x 240.610 =	
	10.00		x 227.834 =			50.00		x 264.630 =	
	12.00		x 202.608 =			52.00		x 288.587 =	
	14.00		x 177.446 =			54.00		x 232.086 =	
	16.00		x 152.347 =			55.00		x 121.083 =	
	18.00		x 127.311 =			55.50		x 82.590 =	
	20.00		x 102.339 =			56.00		x 62.916 =	
	22.00		x 77.431 =			56.25		x 42.411 =	
	24.00		x 52.585 =			56.50		x 42.782 =	
	26.00		x 27.804 =			56.75		x 43.154 =	
						57.00		x 65.430 =	
								TOTAL	

TOTAL _____ ÷ 5284.16 = MEAN VEL _____

58.00

4-164

PIPE ID = 58.25" # OF DATA POINTS 40

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		X 157.680 =	
	0.25		X 44.161 =	
	0.50		X 43.762 =	
	0.75		X 43.363 =	
	1.00		X 64.298 =	
	1.50		X 84.331 =	
	2.00		X 123.516 =	
	3.00		X 159.098 =	
	4.00		X 226.749 =	
	6.00		X 280.050 =	
	8.00		X 254.697 =	
	10.00		X 229.407 =	
	12.00		X 204.180 =	
	14.00		X 179.016 =	
	16.00		X 153.915 =	
	18.00		X 128.877 =	
	20.00		X 103.901 =	
	22.00		X 78.989 =	
	24.00		X 54.139 =	
	26.00		X	
				29.353

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	28.00		X 5.834 =	
	30.00		X 21.236 =	
	32.00		X 44.630 =	
	34.00		X 69.166 =	
	36.00		X 93.638 =	
	38.00		X 118.047 =	
	40.00		X 142.394 =	
	42.00		X 166.678 =	
	44.00		X 190.898 =	
	46.00		X 215.056 =	
	48.00		X 239.151 =	
	50.00		X 263.183 =	
	52.00		X 287.153 =	
	54.00		X 231.018 =	
	55.00		X 161.494 =	
	56.00		X 125.020 =	
	56.50		X 63.768 =	
	56.75		X 42.978 =	
	57.00		X 43.350 =	
	57.25		X 65.724 =	
				TOTAL

TOTAL _____ + 5329.81 = MEAN VEL _____

58.25

4-165

PIPE ID = 58.50" # OF DATA POINTS 41

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 158.367 =			28.00		x 6.944 =	
	0.25		x 44.358 =			30.00		x 19.265 =	
	0.50		x 43.958 =			32.00		x 43.099 =	
	0.75		x 43.559 =			34.00		x 67.641 =	
	1.00		x 64.593 =			36.00		x 92.121 =	
	1.50		x 84.724 =			38.00		x 116.539 =	
	2.00		x 124.106 =			40.00		x 140.894 =	
	3.00		x 159.885 =			42.00		x 165.187 =	
	4.00		x 227.930 =			44.00		x 189.417 =	
	6.00		x 281.624 =			46.00		x 213.585 =	
	8.00		x 256.271 =			48.00		x 237.691 =	
	10.00		x 230.981 =			50.00		x 261.735 =	
	12.00		x 205.753 =			52.00		x 285.716 =	
	14.00		x 180.587 =			54.00		x 229.949 =	
	16.00		x 155.484 =			55.00		x 160.785 =	
	18.00		x 130.443 =			56.00		x 124.491 =	
	20.00		x 105.464 =			56.50		x 63.504 =	
	22.00		x 80.548 =			56.75		x 42.803 =	
	24.00		x 55.694 =			57.00		x 43.174 =	
	26.00		x 30.902 =			57.25		x 43.546 =	
						57.50		x 66.019 =	
								TOTAL	

TOTAL _____ ÷ 5375.66 = MEAN VEL _____

58.50

4-166

PIPE ID = 59.00" # OF DATA POINTS 42

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 159.742 =			28.00		x 9.455 =	
	0.25		x 44.750 =			30.00		x 15.610 =	
	0.50		x 44.351 =			32.00		x 40.034 =	
	0.75		x 43.952 =			34.00		x 64.590 =	
	1.00		x 65.182 =			36.00		x 89.085 =	
	1.50		x 85.510 =			38.00		x 113.519 =	
	2.00		x 125.285 =			40.00		x 137.891 =	
	3.00		x 161.458 =			42.00		x 162.202 =	
	4.00		x 230.290 =			44.00		x 186.451 =	
	6.00		x 284.772 =			46.00		x 210.639 =	
	8.00		x 259.419 =			48.00		x 234.766 =	
	10.00		x 234.128 =			50.00		x 258.832 =	
	12.00		x 208.898 =			52.00		x 282.836 =	
	14.00		x 183.729 =			54.00		x 227.807 =	
	16.00		x 158.621 =			55.00		x 159.364 =	
	18.00		x 133.574 =			56.00		x 123.429 =	
	20.00		x 108.589 =			56.50		x 84.156 =	
	22.00		x 83.665 =			57.00		x 64.091 =	
	24.00		x 58.803 =			57.25		x 43.195 =	
	26.00		x 34.002 =			57.50		x 43.567 =	
						57.75		x 43.938 =	
						58.00		x 66.607 =	
								TOTAL	

TOTAL _____ ÷ 5467.94 = MEAN VEL _____

59.00

4-168

PIPE ID = 59.25" # OF DATA POINTS 40

REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD)	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 160,430 =			28.00		x 10,855 =	
	0.25		x 44,947 =			30.00		x 13,926 =	
	0.50		x 44,548 =			32.00		x 38,501 =	
	0.75		x 44,148 =			34.00		x 63,064 =	
	1.00		x 65,477 =			36.00		x 87,566 =	
	1.50		x 85,903 =			38.00		x 112,007 =	
	2.00		x 125,875 =			40.00		x 136,388 =	
	3.00		x 162,245 =			42.00		x 160,707 =	
	4.00		x 231,470 =			44.00		x 184,966 =	
	6.00		x 286,346 =			46.00		x 209,164 =	
	8.00		x 260,994 =			48.00		x 233,302 =	
	10.00		x 235,701 =			50.00		x 257,378 =	
	12.00		x 210,470 =			52.00		x 281,394 =	
	14.00		x 185,299 =			54.00		x 305,349 =	
	16.00		x 160,189 =			56.00		x 244,656 =	
	18.00		x 135,140 =			57.00		x 127,369 =	
	20.00		x 110,152 =			57.50		x 64,944 =	
	22.00		x 85,225 =			57.75		x 43,763 =	
	24.00		x 60,358 =			58.00		x 44,135 =	
	26.00		x 35,552 =			58.25		x 66,902 =	
							TOTAL		

TOTAL _____ + 5514.38 = MEAN VEL _____

59.25

4-169

PIPE ID = 59.50" # OF DATA POINTS 41

REF (RD) DISTANCE	SENSOR VELOCITY	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR VELOCITY	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 161.117 =			28.00		x 12.353 =	
	0.25		x 45.143 =			30.00		x 12.337 =	
	0.50		x 44.744 =			32.00		x 36.967 =	
	0.75		x 44.345 =			34.00		x 61.537 =	
	1.00		x 65.772 =			36.00		x 86.046 =	
	1.50		x 86.296 =			38.00		x 110.495 =	
	2.00		x 126.465 =			40.00		x 134.883 =	
	3.00		x 163.032 =			42.00		x 159.212 =	
	4.00		x 232.650 =			44.00		x 183.480 =	
	6.00		x 287.921 =			46.00		x 207.688 =	
	8.00		x 262.568 =			48.00		x 231.835 =	
	10.00		x 237.275 =			50.00		x 255.923 =	
	12.00		x 212.042 =			52.00		x 279.950 =	
	14.00		x 186.870 =			54.00		x 303.916 =	
	16.00		x 161.758 =			56.00		x 243.591 =	
	18.00		x 136.707 =			57.00		x 126.839 =	
	20.00		x 111.715 =			57.50		x 64.679 =	
	22.00		x 86.784 =			57.75		x 43.586 =	
	24.00		x 61.913 =			58.00		x 43.959 =	
	26.00		x 37.103 =			58.25		x 44.331 =	
						58.50		x 67.196 =	
									TOTAL

TOTAL _____ ÷ 5561.01 = MEAN VEL _____

59.50

4-170

PIPE ID = 60.00" # OF DATA POINTS 42

REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY	REF (RD) DISTANCE	SENSOR LOCATION	MEASURED VELOCITY (FPS)	WEIGHT CONSTANT	WEIGHTED VELOCITY
	0.00		x 162.492 =			28.00		x 15.638 =	
	0.25		x 45.536 =			30.00		x 9.449 =	
	0.50		x 45.137 =			32.00		x 33.898 =	
	0.75		x 44.738 =			34.00		x 58.480 =	
	1.00		x 66.361 =			36.00		x 83.004 =	
	1.50		x 87.082 =			38.00		x 107.467 =	
	2.00		x 127.644 =			40.00		x 131.872 =	
	3.00		x 164.605 =			42.00		x 156.218 =	
	4.00		x 235.011 =			44.00		x 180.504 =	
	6.00		x 291.069 =			46.00		x 204.731 =	
	8.00		x 265.716 =			48.00		x 228.898 =	
	10.00		x 240.422 =			50.00		x 253.007 =	
	12.00		x 215.187 =			52.00		x 277.056 =	
	14.00		x 190.012 =			54.00		x 301.046 =	
	16.00		x 164.896 =			56.00		x 241.454 =	
	18.00		x 139.839 =			57.00		x 125.776 =	
	20.00		x 114.842 =			57.50		x 85.721 =	
	22.00		x 89.904 =			58.00		x 65.267 =	
	24.00		x 65.025 =			58.25		x 43.978 =	
	26.00		x 40.205 =			58.50		x 44.351 =	
						58.75		x 44.723 =	
						59.00		x 67.785 =	
									TOTAL

60.00

4-172

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