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Effects of pit construction, crate design, and ventilation rate on the air velocities in a model swine farrowing house

George Franklin Grandle

To the Graduate Council:

I am submitting herewith a dissertation written by George Franklin Grandle entitled "Effects of pit construction, crate design, and ventilation rate on the air velocities in a model swine farrowing house." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Mechanical Engineering.

Houston Luttrell, Major Professor

We have read this dissertation and recommend its acceptance:

Luther Wilhelm, H. O. Vaigneur, Joel F. Bailey

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

To the Graduate Council:

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Houston Luttrell

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We have read this dissertation and recommend its acceptance:

H O Vaigneur

Luther R Wilhelm

J F Bailey

Accepted for the Council:

C W Minkel

Vice Provost
and Dean of The Graduate School

EFFECTS OF PIT CONSTRUCTION, CRATE DESIGN, AND VENTILATION RATE ON THE AIR VELOCITIES IN A MODEL SWINE FARROWING HOUSE

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

George Franklin Grandle

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I also want to acknowledge my co-workers. Their understanding and consideration about work assignments allowed me to devote the necessary time to this project.

ABSTRACT

This research was performed to evaluate the air flow characteristics of a model totally enclosed swine farrowing house with partially slotted floors. A 1/8 scale model was designed and constructed according to the principles of similitude, and a laboratory experiment was conducted. The effects of pit ventilation duct construction, farrowing crate design, and ventilation rate were studied.

Two replications of the 13 treatments of the experiment were made. The two types of pit ventilation construction included a PVC pipe duct system and a center masonry duct system. Open and solid side farrowing crates were tested along with three rates of ventilation. Control treatments consisting of no pit ventilation, solid side crates, and medium ventilation rate were also tested. Air velocities were measured and recorded at 144 points within the model for each treatment.

There was good agreement between the velocities of the two experiment replications. Although the coefficients of variation were similar to those reported from other studies, the velocities did not follow a pattern which could easily be mathematically predicted as a function of location within the model.

Most of the conclusions reached in previous studies have been based on average air velocities. Since the average air velocities found in this study often did not correlate with the minimum air velocities, the concept of using minimum air velocity as a ventilation system evaluation criterion was investigated.

The air velocities were not much different for the two types of pit ventilation ducts - either at the pig level or at the sow nose locations. Minimum air velocities were all lower when no pit ventilation was used.

The minimum air velocities at both the pig and the sow levels were higher for the open side crate treatments than for the treatments using solid side crates.

The air velocities resulting from the low ventilation rates were much less uniform than those produced by the high ventilation rates. The minimum air velocities at the pig level, the sow level, and the level near the ceiling increased as the ventilation rate increased.

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CHAPTER I

INTRODUCTION

A. THE PROBLEM

Totally enclosed farrowing houses with partially slotted floors are in common use by southern swine producers. Many of the environmental difficulties experienced in these houses occur during extreme ambient temperatures. When the summer ambient temperatures rise above 90-95° F, swine environmental temperatures often exceed the optimum temperatures for satisfactory animal performance. The environmental temperatures in poorly ventilated houses may even exceed the maximum temperatures for animal survival. During cold weather, when the ventilation rates are at minimum levels, noxious gases, odors, and moisture frequently exceed levels of operator comfort. Sometimes the odors and moisture reach a level which endangers sow and pig health.

Most designers feel that satisfactory environmental control is possible with a properly constructed and managed building. The effects of high ambient temperatures can be reduced to tolerable levels with correct air flow rates and uniform flow distribution. Slotted floor houses should incorporate some means of pit ventilation so that odor levels can be maintained within acceptable levels. Winter ventilation rates must be large enough to remove the moisture produced by the sows and pigs; but the winter ventilation should be no more than enough to control odors and/or remove excess moisture, since the incoming air must be heated.

Late in 1975 The University of Tennessee began operating a new swine research and production facility at Ames Plantation Experiment Station near Grand Junction in southwest Tennessee. The facility is devoted to applied research in all aspects of swine production, and it offers an excellent opportunity to study the ventilation problems experienced by southern swine producers. Major research emphasis at the Ames Plantation facility is being placed on production management and efficiency, environmental management, facilities, and economics. Environmental research is being conducted by the Agricultural Engineering Department and includes the monitoring of environmental conditions (temperature, relative humidity, and air-flow patterns), animal cleanliness, slat longevity, and equipment performance.

The Ames Plantation facility consists of a 24 crate farrowing house, a nursery unit, and two finishing houses. Preliminary observations indicated that the environmental conditions and resulting animal performance were satisfactory for both finishing floors during both winter and summer conditions. The winter ventilation system was adequate to maintain acceptable odor and moisture levels in the farrowing house and nursery. However, adequate ventilation and/or cooling was apparently not available in the farrowing house and nursery during several hot periods of the summer of 1976. The sows in the farrowing house exhibited symptoms of severe heat stress. Although proper nursery ventilation is important, the problems in the farrowing house were thought to be more widespread among southern swine producers. This study was therefore directed toward the farrowing house.

The inadequate ventilation experienced in the farrowing house during the summer of 1976 was thought to result from non-uniform and insufficient air flows through the building. As originally designed and constructed, the summer air inlets consisted of three equally spaced windows in the sidewall opposite the fan bank and two windows in the sidewall adjacent to the fan bank. The maximum summer air flow was approximately 333 cubic feet per minute (cfm) for each sow and litter.

The window inlets were recognized as a source of problems. Walton and Sprague (1951) illustrated the non-uniform air flow patterns produced by window inlets. The guidelines regarding the necessary air flow during extremely hot summer conditions are not as well defined. Midwest Plan Service (1975) suggested 210 cfm per sow and litter. Driggers (1974) recommended 450 cfm per sow and litter. Approximately 500 cfm per sow and litter are needed to provide one air change per minute in the Ames farrowing house. The preliminary study of 1976 indicated that much more than the designed 333 cfm per sow and litter would be needed.

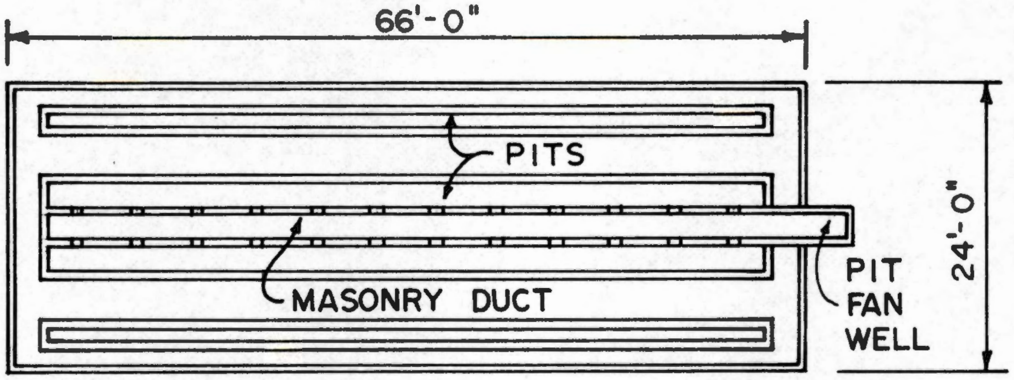
Several methods were suggested for improving the summer environmental conditions in the Ames Plantation farrowing house. The costs of constructing and evaluating each of these methods on an individual basis would have been prohibitive. The other experiments involving animal nutrition, breeding, etc. would also have been disrupted. Therefore, only one of the suggested improvements was constructed in the full size production unit, and the method of similitude was employed to evaluate other suggested modifications as well as an additional pit ventilation design. A continuous slot eave inlet was installed in the prototype, and the fan capacity was increased to approximately 610 cfm per sow and litter. No actual air flow measurements were taken in the prototype during the summers of 1976 and 1977. A definitive evaluation of any change in the environmental conditions of the prototype farrowing house was therefore not possible, but personnel at Ames Plantation believed a significant improvement was made from 1976 to 1977.

B. THE PURPOSE

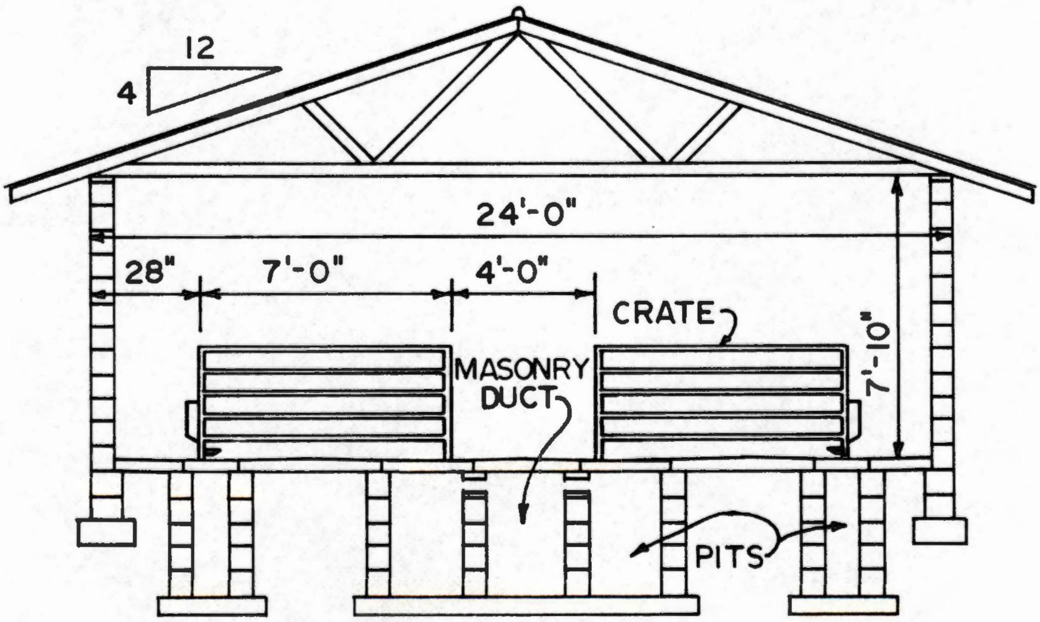
The purpose of this research was to evaluate and compare the ventilation characteristics of two farrowing house pit ventilation systems. The two systems considered were the center masonry duct system (Figure 1) and the PVC pipe duct system (Figure 2). The effects of farrowing crate construction and quantity of air flow on the uniformity of air distribution within the farrowing house were of particular concern. The method of similitude was employed to design a laboratory model with which to conduct this study. The uniformity of air distribution was determined by measuring air velocities at selected points throughout the model.

C. THE OBJECTIVES

This research study was initiated to evaluate the ventilation characteristics of two pit ventilation systems in a model totally enclosed farrowing house. The specific objectives of this study were as follows:

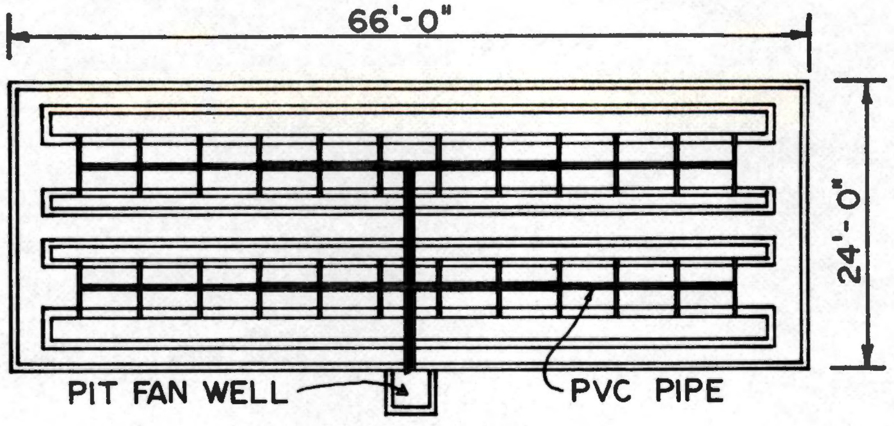


PIT VENTILATION PLAN



CROSS SECTION

Figure 1. Farrowing House with Masonry Duct Pit Ventilation System.



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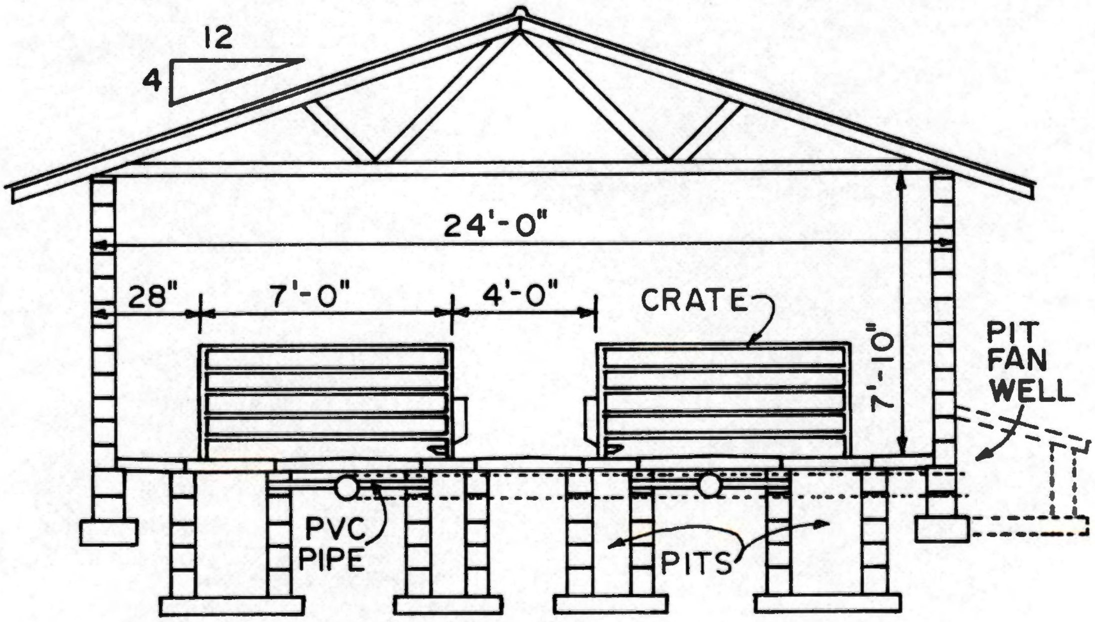

CROSS SECTION

Figure 2. Farrowing House with PVC Pipe Pit Ventilation System.

1. to determine the effect of farrowing crate construction and air flow rate on the air flow characteristics of a model totally enclosed farrowing house;
2. to evaluate the effect of pit ventilation duct design on the air flow characteristics of a model totally enclosed farrowing house.

CHAPTER II

LITERATURE REVIEW

A. VENTILATION

The control of environmental conditions in confinement swine housing depends on proper design. The ventilation system must be designed to provide variable air flow rates according to the number of animals, size of animals, and the ambient conditions. There are several factors which affect the performance of ventilation systems: Inlet configuration, inlet velocity, fan location(s), and orientation of exterior surfaces with respect to north.

Walton and Sprague (1951) conducted a study of air flow through air inlets being used in animal shelter ventilation. They concluded that the existing inlet recommendation of 60 square inches of inlet area for each 3-1/2 animals was not adequate. Only 20 to 30 percent of the total air entering the animal shelter, entered through the inlet. The balance of the air entered by infiltration. After testing several air inlets, Walton and Sprague (1951) concluded that long slots or a series of holes admit more air per unit area than any of the regular "L" or "T" inlets. The regular inlets were 60 square inches (4" x 15", 5" x 12", or 6" x 10").

Pattie and Milne (1966) concluded that each type of air inlet will establish a distinct air flow pattern and velocity distribution.

Smith and Hazen (1968) concluded that inlet design improvements should be based on ways to increase the general turbulence level in the air flow system.

Turner and Davis (1968) described the "Cornell Ventilation System" for high density caged poultry housing. They suggested that an exhaust system can reduce the potential of moist air to enter the walls and/or ceilings. They further suggested that a slot-type inlet be used to direct air down the outside walls around the entire perimeter of the building except at and within six to eight feet of any fan. They suggested an air inlet velocity of 800 to 1,000 feet per minute. The fans in the Cornell system were located in groups to maximize the linear feet of perimeter available for inlets. Low-level exhausts for winter and high-level exhausts for summer were used. Additional features include continuous air flow, even during cold weather, and an automatic motorized inlet control.

Weller, Heldman, and Esmay (1970) observed in their study of a horizontal slot air inlet that the air in the area just below the non-baffled slot was very still - indicating inadequate ventilation.

Schulte, et al. (1972) concluded from their model study of the effects of slotted floors on air flow characteristics in a swine confinement building that the ventilation design criteria based on experience with solid floor systems may not be adequate for slotted floors. Also, slotted floors had fewer effects upon mean air velocities when a non-baffled slot air inlet was used. Higher velocities in the model were observed when baffles were used. Air entered the model through continuous slot inlets in the ceiling along the entire length of both side walls One last conclusion was that malodorous and/or toxic gases may be forced from the manure collection pits into the animal environment when an above floor inlet and exhaust ventilation system is used. All air was exhausted from above the pit level through openings in each end wall. The inlet baffle for the baffled inlet treatment was constructed to direct incoming air along the ceiling, and only the summer ventilation rates were used.

Hellickson, Young, and Witmer (1973) studied air flows in a 48 feet long by 40 feet wide enclosed beef unit. The unit featured slotted floors and a unique attic divider with a center ceiling air inlet. The divider allowed winter air to enter from the south half of the attic while summer air was introduced from the north half of the attic. During all tests using the center ceiling inlet system, air flow into and from the pits was observed. Good summer ventilation air distribution was obtained with exhaust fans on opposite side walls using a baffled center ceiling inlet. Solar attic tempering of the incoming summer ventilation air ranged from 5° F above to 2° F below with an average 0.2° F above the outside temperature.

Wilson and Bishop (1974) concluded from their study of the distribution and uniformity of air velocities in a model broiler house with an exhaust ventilation system that increasing the air inlet velocity increased the mean air velocity at bird level. The increased inlet velocity had little effect on the air distribution. They further concluded that fans grouped in a bank with slot inlets on both sidewalls was a superior arrangement with respect to air distribution at bird level to either fans in a bank or fans uniformly spaced along one sidewall, when inlets on the opposite sidewall only were used.

Albright (1976) concluded from his study of air flow through hinged baffle slotted inlets that if the incoming air is brought over the outside wall plate the construction of the baffle significantly affects the air flow rate. If the baffle directs air across the ceiling, the flow will be approximately 38 percent lower than if the baffle directs air down the outside wall. He further concluded that when using the Bernoulli energy equation for steady flow to compute air flow through a hinged baffle slotted inlet with no abrupt change of flow, a discharge coefficient of 0.8 should be used. The ASHRAE Handbook of Fundamentals (1972) proposed a somewhat lower value of 0.74.

Pohl and Hellickson (1978) conducted a model study of five types of manure pit ventilation systems. They concluded that pit ventilation system design has a significant effect on average air flow velocities in the pit, but not at swine level. Also, the pit ventilation system location with respect to baffle ceiling inlet arrangement is important in developing proper ventilation design. The location of the baffled ceiling inlet influences the amount of air flow along the walls above the slotted floor. The composite results of the data obtained from air flow velocities, patterns and evacuation times indicate that the pressurized ventilator system and the centered duct pit ventilator provided the best ventilation characteristics in the model, with the slotted pipe under-slat ventilator producing the poorest ventilation characteristics. Non-uniform air flows were noted for the hooded manure pit exhaust system and the outside wall pit ventilator. However, only one level of ventilation was used, and all air was exhausted through the totally slotted floor. The baffle provided a "T" inlet rather than a hinged configuration.

B. MODEL STUDIES

The method of similitude has proven useful in predicting the air flow characteristics of livestock housing ventilating systems. In a similitude study of ventilation inlet configuration, Smith and Hazen (1968) concluded that models can successfully predict the air flow characteristics of the prototype. They further concluded that models can effectively describe the velocity distribution, the shape and the rate of spread of the jet, and the jet curvature for a specific inlet configuration. Geometric similarity of the prototype was maintained in the model, and dynamic similarity was based on equivalent Reynolds numbers. The effects of gravity (and thus Froudes number) were not considered. Smith and Hazen assumed isothermal flow and negligible compressibility of the inlet air.

Pattie and Milne (1966) concluded that a one-tenth scale model of a poultry house was a reliable means of investigating ventilation air flow patterns and air flow velocity distribution. This study assumed isothermal flow, and the dynamic similarity was based on Reynolds number. However, lower flows were tried with no significant changes in air flow patterns or velocity distributions. The lower flows were taken at model Reynolds numbers equal 0.20, 0.65, and 0.91 of the prototype Reynolds number. In other words, the velocities determined from one air flow rate could be related to those from another flow rate by a constant.

Wilson, Esmay, and Persson (1970) concluded in a model study of non-isothermal wall jet velocities and temperature profiles that the effects of buoyant forces on the velocity profiles were negligible at inlet velocities above 800 feet per minute and temperature differences of 50° F or less. Below 800 feet per minute and at the same temperature difference, bouyant forces appeared to affect air flow.

Schulte, et al. (1972) conducted a 1/12 scale model study of the effects of slotted floors on the air flow characteristics in a swine confinement building. The study showed modeling to be a useful technique in the study of ventilation air flow characteristics. Dynamic similarity was based on the Reynolds number.

Wilson and Bishop (1974) found good agreement of the air velocities at bird level in a 1/13 scale model of a caged layer house with those measured in the prototype. No report was made about the basis used for the dynamic similarity.

Dybwad, et al. (1974) concluded from a model study of the effects of ridge vent construction on the natural ventilation characteristics of an open front beef facility that the ratio of the outlet air velocity to wind velocity increases linearly with increases in the reciprocals of Reynolds and Frounde numbers. The reciprocal of Reynolds number predicted the greatest variation in air flow and was thought to be the better of the two. In other words, even in a natural air flow system where gravity would most likely affect air flow, Reynolds number geometric similarity still yielded the best results.

Pohl and Hellickson (1976) conducted a model study of five types of manure pit ventilation systems. The prototype for this study was an enclosed finishing building with a fully slotted floor. Ventilation characteristics and evacuation times for the five systems were studied and evaluated. The air flow velocity for the model was based on Reynolds number for the ventilation characteristics and flow pattern study. However, the evacuation time study was run once with air velocities determined by Reynolds number and then repeated for air velocities determined by Froude number. They considered evacuation times measured for air flow rates determined by Reynolds numbers to be more accurate than those measured for air flows determined by Froude numbers. This assumption may be open to question, since the average evacuation times determined by Froude number were closer to the theoretical evacuation time than were the times determined from Reynolds number. This study did not show a comparison of model results with prototype results, and only the low ventilation rate normally used during winter was simulated.

CHAPTER III

LABORATORY MODEL

A. DESCRIPTION OF THE PROTOTYPE

The prototype for this model study was the enclosed farrowing house at Ames Plantation. The 24' x 66' structure contains 24 - 5' x 7' farrowing crates (Figure 3) and employs a PVC pipe system for ventilating both pits (Figure 2, page 6).

The building was constructed with uninsulated masonry block sidewalls, and a plywood ceiling was insulated with a fibrous batt (R-11). Electric heating cables were installed in the pig creep areas of the solid portion of the floor between the two slotted floor covered waste pits. The farrowing crates were constructed such that the ends and side partitions were essentially solid.

B. APPLYING THE PRINCIPLES OF SIMILITUDE

The air velocity at a point within the building will be affected by the location of the point, the geometry of the building, the fluid properties, and the resulting air inlet velocity. A list of the pertinent quantities thought to influence the ventilation characteristics of the totally enclosed farrowing house was compiled (Table 1). The fluid was assumed incompressible for the flows under consideration.

The functional relationship among pertinent quantities can be expressed as $V = f\ (V_o\ \lambda,\ w,\ \rho,\ \mu,\ g)$. Applying the Buckingham Pi Theorem, four independent and dimensionless pi terms were derived (Table 2).

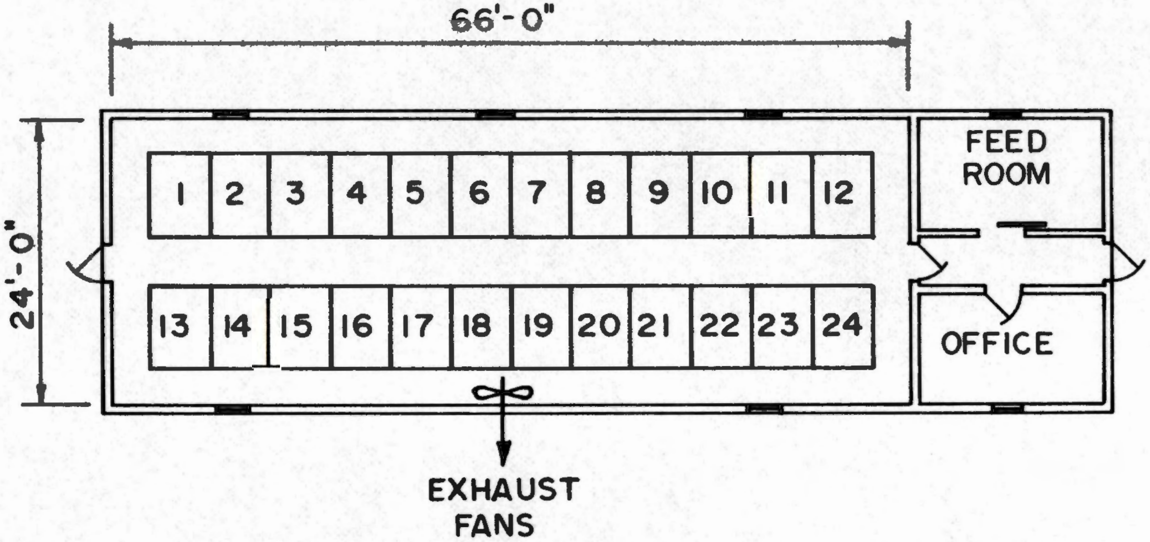

Figure 3. Floor Plan of the Prototype Farrowing House.

Table 1. Quantities Pertinent to the Ventilation Characteristics of A Totally Enclosed Farrowing House

Variable No.	Symbol	Description	Dimensional Symbol*
1	V	Air velocity at a point within the farrowing house	LT^{-1}
2	V_o	Resulting air inlet velocity	LT^{-1}
3	λ	Characteristic length	L
4	w	Width of air inlet slot	L
5	ρ	Mass density of air	$M\ L^{-3}$
6	μ	Dynamic viscosity of air	$M\ L^{-1}T^{-1}$
7	g	Acceleration of gravity	LT^{-2}

*M, L, T are the basic dimensions of mass, length, and time respectively.

Table 2. List of PI Terms

PI Term No.	Definition	Description
1	$\pi_1 = V/V_o$	Dependent pi term
2	$\pi_2 = w/\lambda$	
3	$\pi_3 = \frac{\rho V_o w}{\mu}$	Reynold's number
4	$\pi_4 = \frac{V_o^2}{gw}$	Froude number

There were seven dimensional quantities which - minus the three basic dimensions of mass, length, and time-yields four dimensionless variables Note that commonly used pi terms were derived where possible and appropriate. Reynold's number Re and the Froude number Fr are two commonly used dimensionless variables, and they appear in this study as the third and fourth pi terms, respectively. The relationship among dimensionless variables can be written.

$$V/V_o = F\left(\frac{w}{\lambda}, \frac{\rho V_o w}{\mu}, \frac{V_o^2}{gw}\right) \qquad (1)$$

The relationship in equation (1) is general and can apply to any ventilation system in which the same pertinent dimensional quantities are involved. Therefore, this relationship can be written for a model ventilation system as

$$[V/V_o]_m = F\left[\frac{w}{\lambda}, \frac{\rho V_o w}{\mu}, \frac{V_o^2}{gw}\right]_m \qquad (2)$$

where the subscript m refers to the model.

According to model theory, if the corresponding independent pi terms for the model and prototype are equal, then the dependent pi terms are also equal. The model design and operating conditions are found by equating the independent pi terms of the model to their respective pi terms in the prototype (Table 3). The prediction equation can then be written by equating the dependent pi term of the prototype to the dependent pi term of the model. In other words, π_1 equals $\pi_1)_m$. In

Table 3. Development of Model Design Conditions

Condition No.	PI Term Equation	Basic Equation	Design Condition*
1	$\pi_2)_m = \pi_2$	$(w/\lambda)_m = w/\lambda$	$w_m = (\frac{1}{n})\ w$
2	$\pi_3)_m = \pi_3$ $(Re)_m = (Re)$	$(\frac{\rho V_o w}{\mu})_m = \frac{\rho V_o w}{\mu}$	$V_o)_m = n\ V_o$
3	$\pi_4)_m = \pi_4$ $(Fr)_m = (Fr)$	$(\frac{V_o^2}{gw})_m = \frac{V_o^2}{gw}$	$V_o)_m = \frac{1}{\sqrt{n}}\ V_o$

* $\frac{\lambda}{\lambda} = n$; $\rho_m = \rho$; $\mu_m = \mu$; $g_m = g$

terms of the dimensional quantities, the prediction equation becomes

$$V/V_o = [V/V_o]_m \qquad (3)$$

Models in which one or more of the design and/or operating conditions cannot be satisfied, are known as distorted models. In this study, operating conditions two and three (Table 3) could not be satisfied simultaneously unless the model and prototype were the same size (n = 1). Since n was taken as 8, this model is a distorted model. According to Murphy (1958), if one design condition cannot be satisfied, the prediction equation must be modified. One procedure for establishing the prediction equation is by determining a prediction factor δ so that

$$\pi_1 = \delta\ \pi_1)_m \qquad (4)$$

Therefore,

$$\delta = \pi_1/\pi_1)_m \qquad (5)$$

Experimental evidence, when available from the prototype and corresponding model, can be used to evaluate the prediction factor.

C. DESIGN OF THE MODEL

1. PHYSICAL CONSTRUCTION

The model system was designed according to the design and operating conditions listed in Table 3. A geometric scale length of 8 was used which resulted in a 99.0-in long, 36.0-in wide, and 12.0-in high model. The air inlet system was constructed using dimension balsa wood for the trusses, soffit, and facia. One-eighth in by 3/4-in aluminum bar stock was used for the hinged baffle. The sidewalls were constructed of 1/4-in thick plexiglass and the ceiling was made of 1/8-in thick plexiglass glued to the underside of the roof truss system. Forty-eight holes (3/8-in diameter) were drilled in the ceiling for inserting the velocity probe. The holes were covered with duct tape when not in use. A series of parallel boxes made of 1/4-in thick plexiglass was used for the floor and pit system. The boxes were constructed so that they could easily be rearranged from the PVC pipe duct pit ventilation system to the masonry duct pit ventilation system. The pits at the rear of the sows were covered with wooden slats, while the smaller pits at the front of the sows were covered with canvas mesh to simulate the expanded metal used in the prototype.

Cardboard was used to construct farrowing crates with solid ends and solid partitions. The cardboard crates were removed for the tests simulating open end crates.

2. AIR FLOW

Reynolds Number is defined as the ratio of the inertia forces of an element of fluid to the viscous force acting on the fluid (21). The Froude Number is defined as the ratio of the inertia force to the gravitational force developed on an element of fluid (21). Previous model studies (6, 13) have placed more importance on the viscous force than the gravitational force. In fact, several researchers (1, 17, 18) have ignored the acceleration of gravity term entirely. Satisfying the requirement that the Re of the model be equal to the Re of the prototype precludes the possibility of laminar flow in the prototype being represented by turbulent flow in the model, and vice versa. The reasonably good correlation of model and prototype results obtained in other studies (1, 18, 24) supports the idea of using a constant Re for model design in air flow studies. Another advantage of selecting air flow based on Re is that the resulting higher air velocities are more easily measured.

The air flow rates for the model were first selected based on holding Re constant. Using the continuity equation

$$Q = A\,V_o \qquad (6)$$

and solving for V_o

$$V_o = \frac{Q}{A} \qquad (7)$$

the model air flow rates can be determined from design condition 2 (Table 3). Therefore,

$$\left(\frac{Q}{A}\right)_m = n\,\frac{Q}{A}$$

and

$$Q_m = n\,\left(\frac{Am}{A}\right)\,Q \qquad (8)$$

However, the air inlet slot width and characteristic length terms can be substituted into equation 8 for the inlet area.

$$W_m = n \left(\frac{w_m \lambda_m}{w\lambda}\right) Q \qquad (9)$$

Further substitution of design condition 1 (Table 3) into equation 9 yields the necessary model air flow design equation.

$$Q_m = n \left(\frac{w_m \lambda_m}{nw_m n\lambda_m}\right) Q$$

$$Q_m = \frac{1}{n} Q \qquad (10)$$

All the air flow for the minimum ventilation rate was drawn through the pits by a suction type centrifugal fan which was connected to the pit ventilation system with 2-in diameter PVC pipe. Air flow through the pit was measured with an inclined U-tube manometer which measured the pressure drop across a 1.40-in diameter orifice plate located in the PVC pipe. Air flow through the pit ventilation system was maintained constant through all tests by adjusting a 2-in diameter PVC gate valve located in the PVC pipe.

An additional suction type centrifugal fan was used to draw air through the model for the normal and summer ventilation rates. This fan was connected to a 4.20-in diameter orifice plate in a straight section of 6-in diameter aluminum pipe. The aluminum pipe was connected to the model with a 6-in diameter flexible hose. The pressure drop across this orifice was also measured with an inclined U-tube manometer. The required air flow was achieved by adjusting a hinged door on the discharge side of the suction fan.

The air flow rates required to hold the Reynolds number constant for the model and prototype could not be achieved with the available orifice meters and conventional suction fans. The air flows used in the model were based on a model Reynolds number equal to 0.40 that of the prototype. Justification for reducing the air flows was based on research by Pattie and Milne (1966). They concluded that using Reynolds numbers of 0.20, 0.65, and 0.91 that of the prototype showed no significant changes in flow patterns or velocity distribution. Table 4 summarizes the air flow rates for the model and prototype.

Table 4. Summary of the Model and Prototype Air Flow Requirements Based on Reynold's Number (Design Condition No. 2)

Ventilation	Prototype			Model (Design)			Model (Actual)		
Rate	Low	Medium	High	Low	Medium	High	Low	Medium	High
Air Flow (cfm)	600	3,000	15,600	75	375	1,950	30	147	786
Inlet Opening Width[1] (IN.)	0.1	0.5	2.6	.0124	.062	.323	.0124	.062	.323
V_o (fpm)	595	600	595	4,813	4,813	4,804	1,925	1,887	1,936
R_e	508	2,562	13,209	510	2,548	13,249	204	999	5,339
$R_e)_m/R_e)_p$	---	---	---	1	1	1	.40	.39	.404

[1]The prototype had a total inlet baffle length of 121 feet, and the model inlet baffle length was 15.08 feet.

CHAPTER IV

EXPERIMENTAL DESIGN

A. TREATMENTS

Two pit ventilation duct designs, two farrowing crate designs, and three airflow rates were tested in the model. A control treatment (no pit ventilation) was run for one crate construction and one airflow. The entire experiment was replicated twice resulting in 26 tests. Table 5 summarizes the treatment schedule for the experiment.

The first pit ventilation duct design was the PVC pipe system used in the prototype (Figure 2, page 6). The second pit ventilation duct design was the center masonry duct (Figure 1, page 5) used in The University of Tennessee Agricultural Extension Service Plan Number 726-20. The first farrowing crate design was that used in the prototype which had solid dividing and end partitions. The open type crate design was simulated by removing the crates from the model and making the tests with no pen partitions.

The three ventilation rates (low, medium, and high) correspond to the three ventilation levels (minimum, normal, and summer) used in the prototype. All air for all tests entered the model through baffled continuous slot eave inlets (Figure 4). The baffle was adjusted to the required openings shown in Table 4.

Table 5. Pit Configuration, Crate Construction, Air Flow Rates, and Replications for the Treatments Tested

Pit Vent Design	Crate Construction	Air Flow Rate	Repli- cation	Treat- ment
PVC Pipe Duct	Solid Sides	Low	1	PSBL1
			2	PSBL2
		Medium	1	PSBM1
			2	PSBM2
		High	1	PSBH1
			2	PSBH2
	Open Sides	Low	1	POBL1
			2	POBL2
		Medium	1	POBM1
			2	POBM2
		High	1	POBH1
			2	POBH2
Masonry Block Duct	Solid Sides	Low	1	MSBL1
			2	MSBL2
		Medium	1	MSBM1
			2	MSBM2
		High	1	MSBH1
			2	MSBH2
	Open Sides	Low	1	MOBL1
			2	MOBL2
		Medium	1	MOBM1
			2	MOBM2
		High	1	MOBH1
			2	MOBH2
Control (none)	Solid Sides	Medium	1	CSBM1
			2	CSBM2

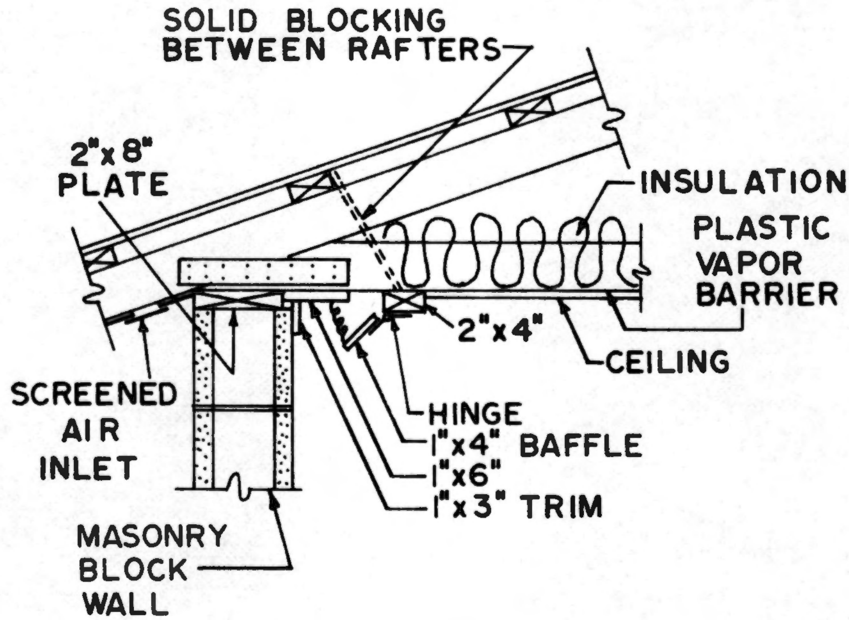

Figure 4. Air Inlet Detail for the Prototype Farrowing House.

B. MEASUREMENTS AND INSTRUMENTATION

The model studies were performed in the research laboratories of the Agricultural Engineering Department at The University of Tennessee (Figure 5). The data acquisition system consisted of a Charles River microcomputer with dual floppy disk drives and a Digital LSI 11 central processing board. The computer was interfaced with a 64 channel Kaye Ramp/Scanner. Sensors included two Leeds and Northrup Differential Pressure Transmitters, a type T (copper-Constantan) thermocouple, and a TSI model 1640 air velocity meter.

Only six of the Scanner channels were used. The first provided a reference voltage for adjusting all data for any voltage bias. The second channel provided a thermocouple reference voltage. The third and fourth channels were used for inputs from the two Differential Pressure Transmitters. The fifth channel received input from the thermocouple, and the sixth channel was used for input from the air velocity meter.

One pressure transmitter was used to sense the static pressure drop across the air inlet system. The second pressure transmitter was connected in parallel with the inclined U-tube manometer to sense pressure drop across the 1.40-in diameter orifice used in monitoring air flow through the pit ventilation system. The thermocouple was used to monitor the temperature of the laboratory during all tests.

The air velocity meter was used to sense air velocities at 144 points in the model as shown in Figure 6. Measurements were taken in twelve sections along the x-axis corresponding to the centerlines of the

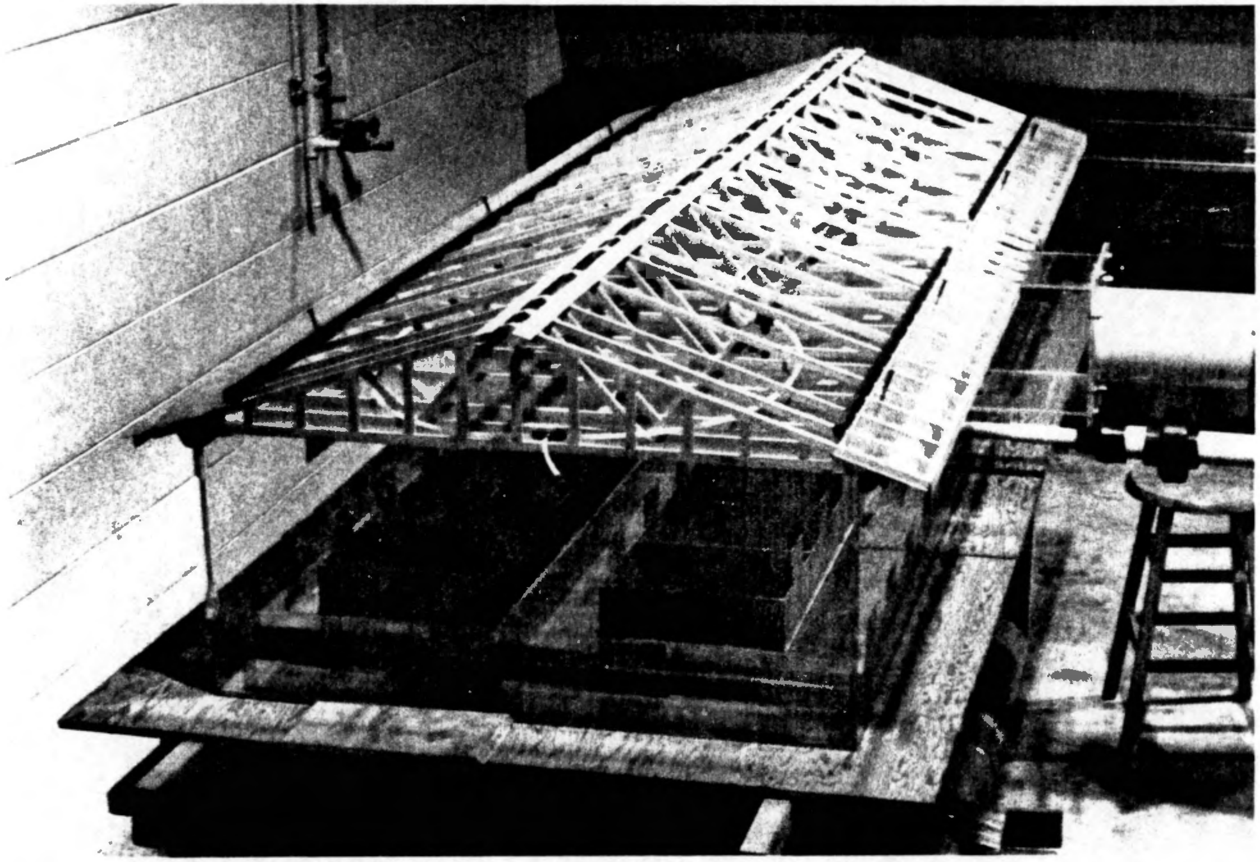

Figure 5. The Laboratory Model.

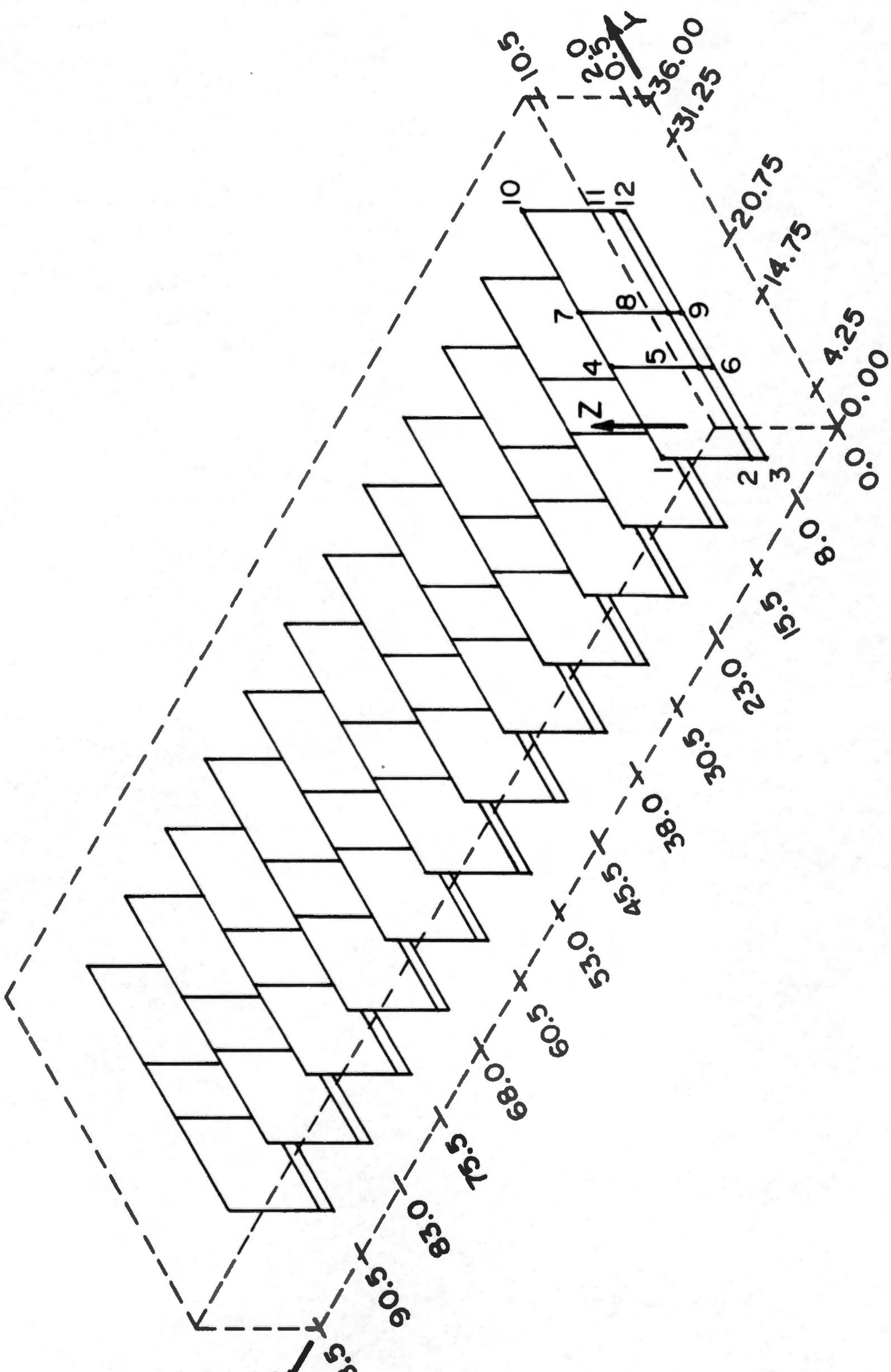

Figure 6. Grid Showing the 12 Points and 12 Planes Where Velocities were Measured.

farrowing crates. The four points along the y-axis represent points just inside the front and rear of each crate. The three planes along the z-axis correspond respectively to pig nose level, sow nose level and a level near the ceiling.

Preliminary observations indicated that velocity fluctuations were rapid enough that additional damping of the signals was required. This was accomplished by taking more than one reading at each point and using an average value. A FORTRAN program was written to control operation of the Scanner with subroutines for reading, converting, sorting, averaging, and recording data.

The velocity meter probe was positioned at each sampling point, and data sampling was initiated after allowing the meter reading to stabilize. Each input channel was scanned six consecutive times. The Scanner provided analog to digital conversion of the sensor signals, and the digital signals were fed into the computer system for processing. Following the completion of each section of twelve sampling points, the six readings for each point were averaged. The maximum, minimum, and average value for each pressure sensor and the velocity meter were recorded in data files on floppy disks. Only the average temperature reading was recorded.

CHAPTER V

RESULTS AND DISCUSSION

A. DATA ANALYSIS

The twelve section data files were concatenated into one file of 144 observations at the completion of each test. After all the data were collected, the 26 data files were edited so that each observation included one entry for each of the following variables: Average velocity, average pressure drop across the inlet baffle, X, Y, Z, replication, pit type, crate construction, and ventilation level.

The edited files were then transferred to The University of Tennessee Computing Center IBM4341 VM/370 computer for analysis with the Statistical Analysis System (SAS). SAS is a system of procedures for data management, statistical analysis, report writing, and graphics (1981, 1982). Version 82.3 SAS was used interactively with VM/CMS.

A preliminary Analysis of Variance of all data excluding that from the control treatment is presented in Table 6. Replication had no significant effect (at the 83 percent level) on the average velocities within the model. Data from the two replications of each test were therefore averaged before further analysis. The averaged data from the two replications is presented in Appendix B.

B. UNIFORMITY OF AIR FLOW

One measure of the effectiveness of a ventilaion system is the uniformity of air distribution. Maximum ventilating efficiency suggests

Table 6. Analysis of Variance for Velocity

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F Value	Probability of Greater F
Replication	1	18,305	18,305	1.90	0.1677
X (Length)	11	263,997	24,000	2.50	0.0041
Pit Ventil-ation Type	1	72,273	72,273	7.52	0.0061
Y (Width)	3	389,005	129,668	13.49	0.0001
Z (Height)	2	1,570,846	785,423	81.71	0.0001
Crate Con-struction	1	22,639,441	22,639,441	2,355.33	0.0001
Ventilation Rate	2	83,862,861	41,931,431	4,362.40	0.0001
Residual	3434	33,006,123	9,612	3,433.85	----
Total	3455	141,822,851	----	----	----

that all animals receive equal air movement. As a quick evaluation of the ventilation systems modeled in this study, three dimensional response surface plots were prepared for each level of Z for each of the thirteen tests. The response variable, velocity, was plotted as a function of X and Y. The response surface plots shown in figures 7, 8, 9, and 10 are typical of the 39 plots which were made. These four figures illustrate how the response surfaces were too "bumpy" to characterize by equations. In fact attempting to describe the velocities as functions of location within the model appeared impractical. Table 7 summarizes the maximum velocity, minimum velocity, average velocity, standard deviation and coefficient of variation for the 48 velocity readings at each level of Z for each test. The coefficient of variation is a dimensionless term defined as

$$CV = \frac{SD}{\bar{V}}$$

where

CV = Coefficient of variation

SD = Standard deviation of the mean velocity at the 48 locations, feet/min.

$\bar{V}$ = Mean velocity of the 48 velocities at the 48 locations, feet/min.

Although the coefficient of variation should not be totally abstracted from its respective standard deviation and mean, it is an informative and useful measure of the uniformity with which the model air velocities are distributed. In this case the coefficient of variation is a measure of the relative dispersion of the 48 velocities at each Z level in the model about the mean of the 48 velocities.

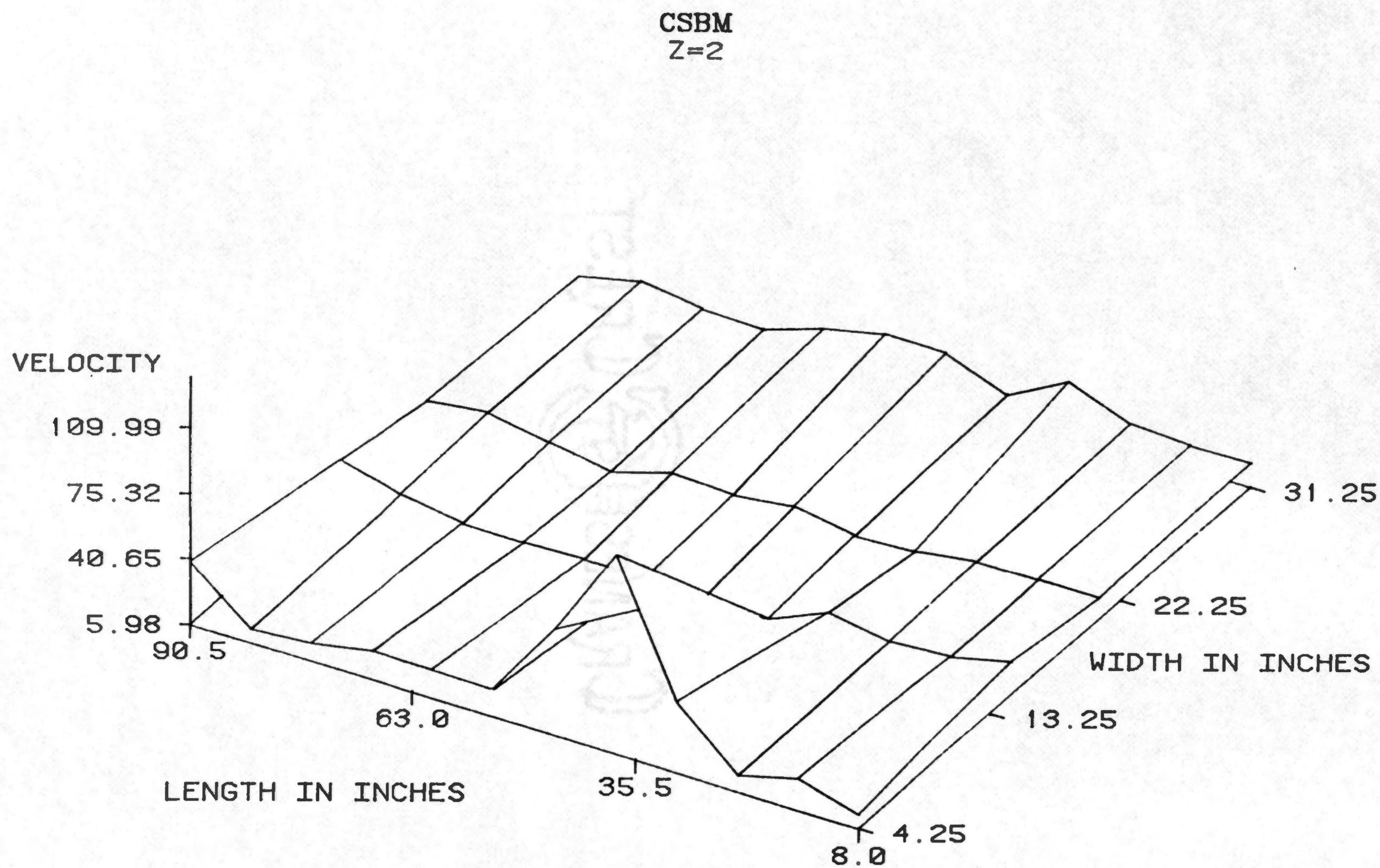

Figure 7. Velocity Response Surface at Sow Level for No Pit Ventilation, Solid Side Crates, and Medium Ventilation Rate (ft. per min.).

PSBM
Z=2

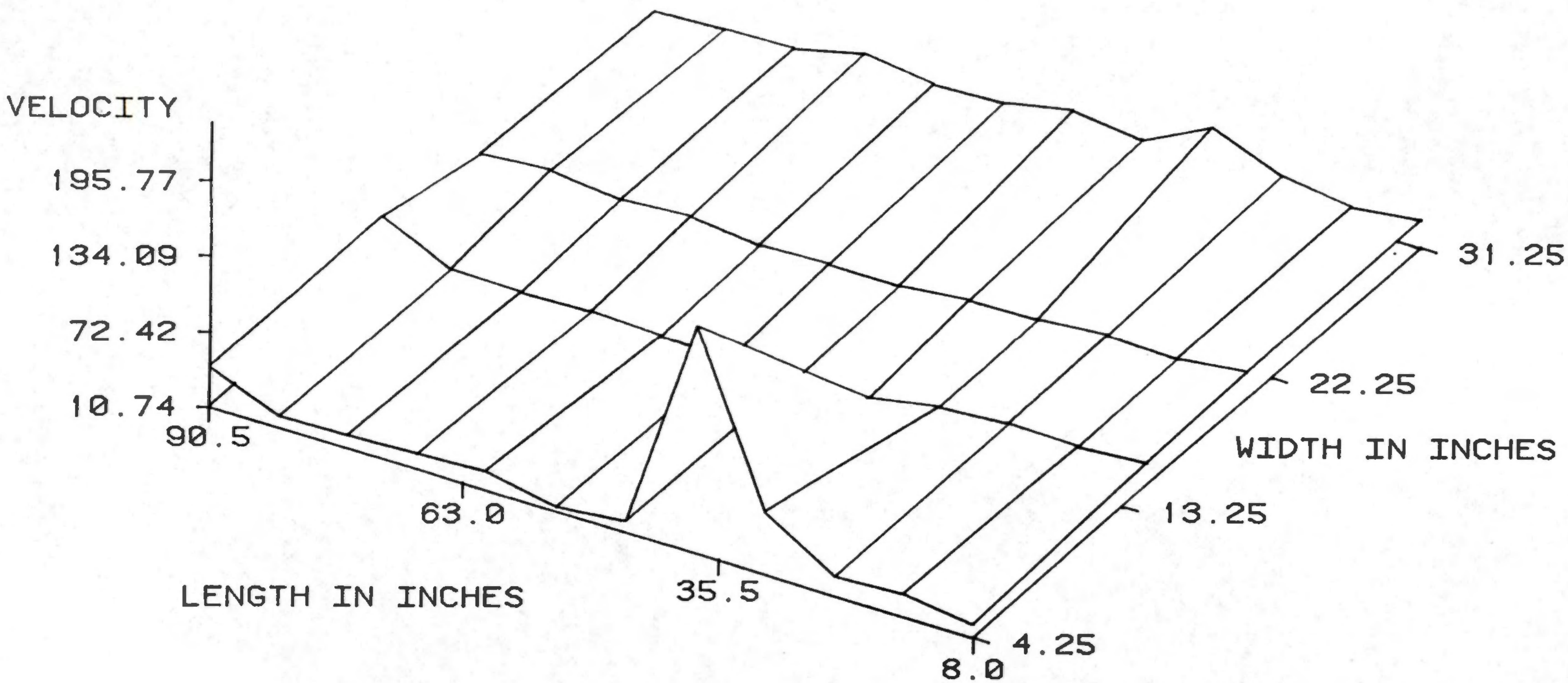

Figure 8. Velocity Response Surface at Sow Level for PVC Pipe Pit Ventilation, Solid Side Crates, and Medium Ventilation Rate (ft. per min.).

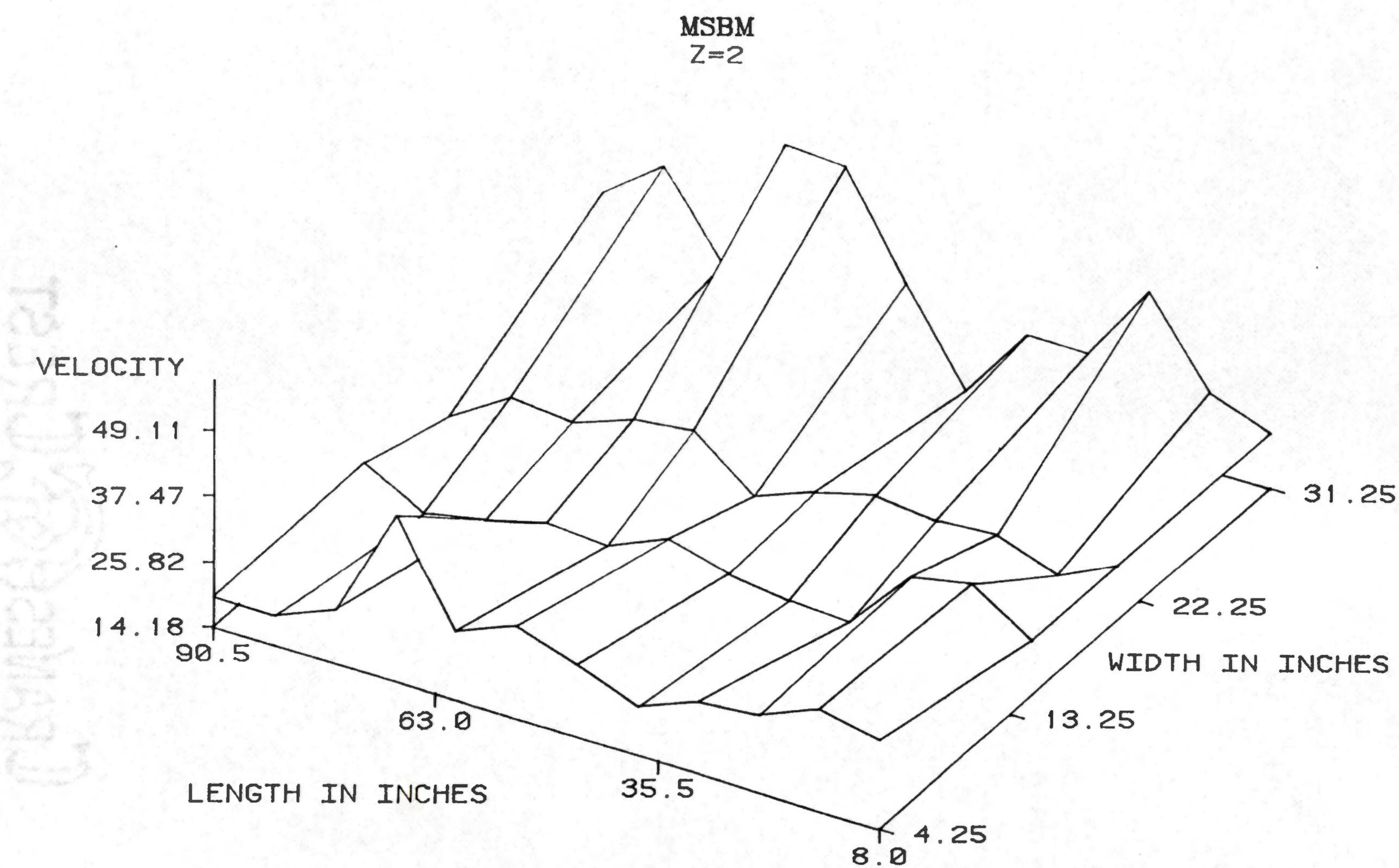

Figure 9. Velocity Response Surface at Sow Level for Masonry Duct Pit Ventilation, Solid Side Crates, and Medium Ventilation Rate (ft. per min.).

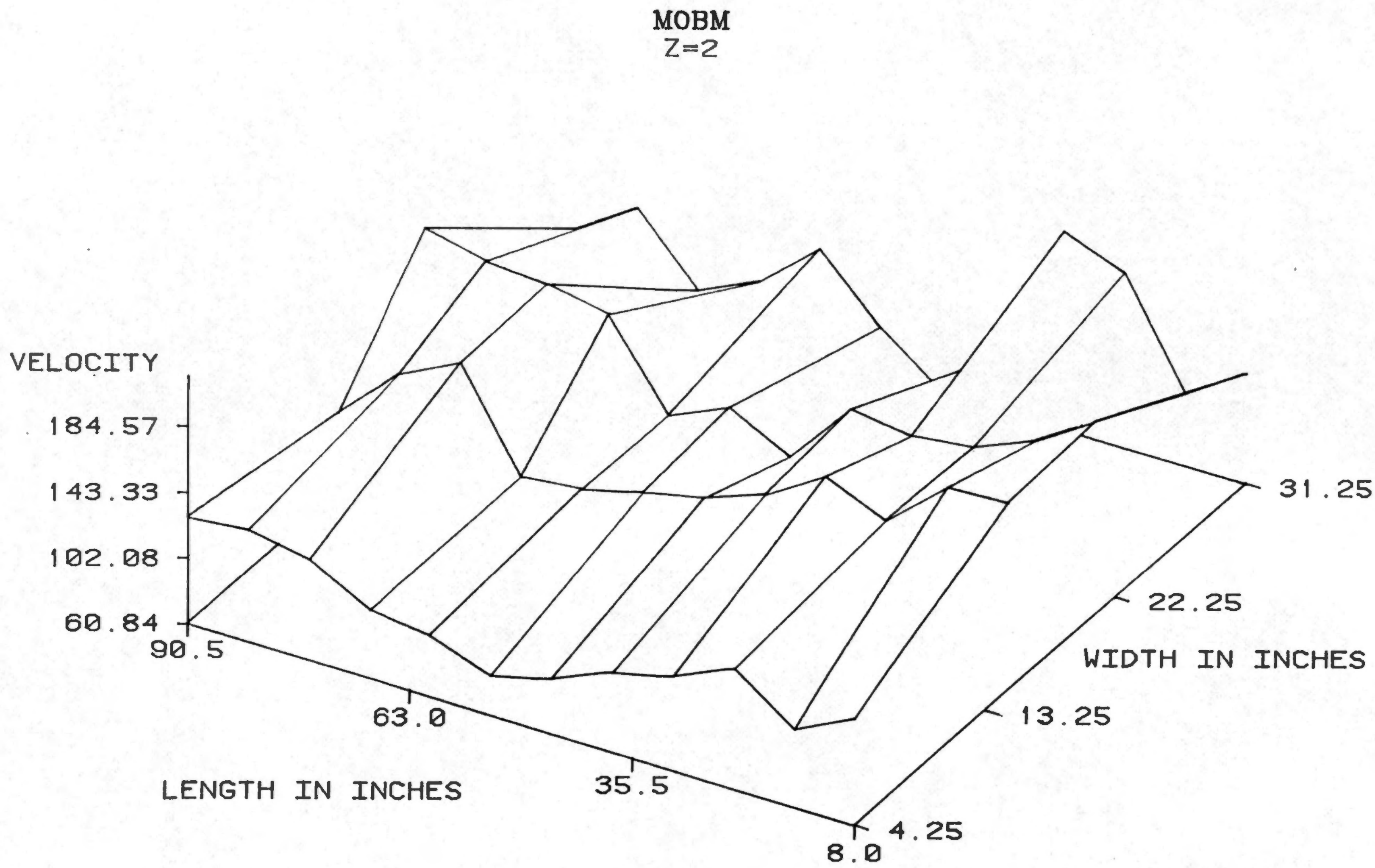

Figure 10. Velocity Response Surface at Sow Level for Masonry Duct Pit Ventilation, Open Side Crates, and Medium Ventilation Rate (ft. per min.).

Table 7. Maximum, Minimum, Mean, Standard Deviation, and Coefficient of Variation for all Treatments

Pit Vent Design	Crate Construction	Air Flow Rate	Z (Inches)	Velocity (Ft. Per Min.) Maximum	Mimimum	Mean	Standard Deviation	Coefficient of Variation
PVC Pipe Duct	Open Sides	Low	0.5	109.56	5.24	35.04	15.27	.436
			2.0	92.76	1.79	20.64	12.32	.597
			10.5	92.33	4.30	30.64	12.90	.421
		Medium	0.5	307.27	97.13	199.42	26.26	.132
			2.0	182.89	57.61	119.04	23.30	.196
			10.5	187.99	86.39	134.12	16.54	.123
		High	0.5	666.64	426.66	618.00	32.83	.053
			2.0	630.54	361.06	544.45	40.19	.074
			10.5	642.20	277.98	491.12	52.53	.107
	Solid Sides	Low	0.5	28.96	0.81	4.88	4.33	.886
			2.0	148.36	0.93	8.11	19.86	2.451
			10.5	87.57	2.65	27.72	13.12	.473
		Medium	0.5	49.83	5.73	20.83	6.49	.312
			2.0	254.01	8.69	28.88	25.97	.899
			10.5	220.41	53.14	102.35	35.13	.343
		High	0.5	258.54	35.42	104.75	33.53	.320
			2.0	213.49	46.16	118.68	31.55	.266
			10.5	620.11	218.09	351.14	59.61	.170

Table 7. (Cont'd)

Pit Vent Design	Crate Construction	Air Flow Rate	Z (Inches)	Velocity (Ft. Per Min.) Maximum	Miminum	Mean	Standard Deviation	Coefficient of Variation
Masonry Block Duct	Open Sides	Low	0.5	214.75	2.12	39.88	21.93	.550
			2.0	79.34	1.59	16.49	8.79	.533
			10.5	98.78	2.03	29.21	13.19	.452
		Medium	0.5	377.47	85.49	201.06	50.57	.251
			2.0	189.54	58.56	128.33	22.27	.174
			10.5	282.44	85.91	142.56	34.54	.242
		High	0.5	675.38	388.94	597.91	33.85	.057
			2.0	636.85	425.16	586.71	37.12	.063
			10.5	620.70	450.17	564.36	28.89	.051
	Solid Sides	Low	0.5	76.95	0.13	4.17	8.35	2.000
			2.0	20.37	0.53	3.86	2.73	.707
			10.5	66.87	2.46	27.20	11.42	.420
		Medium	0.5	45.15	5.23	22.27	7.41	.333
			2.0	57.81	10.23	25.42	6.15	.242
			10.5	249.27	59.04	101.44	29.30	.289
		High	0.5	554.82	56.71	126.83	40.90	.322
			2.0	468.32	72.55	144.04	33.99	.236
			10.5	558.97	210.97	362.68	43.56	.120
Control (none)	Solid Sides	Medium	0.5	38.46	4.34	13.89	5.47	.394
			2.0	109.99	5.98	20.12	15.22	.757
			10.5	136.11	44.52	73.46	20.27	.276

Smaller coefficient of variation values are indicative of more uniform velocities. Larger coefficient of variation values indicate that the velocities include a wide range of values about the mean. Table 7 does show that the velocities resulting from the low ventilation rates were much less uniform than were the velocities produced by the high ventilation rates in treatments which were otherwise similar.

The coefficients of variation in Table 7 for the treatments involving high ventilation rates and open sided crates are comparable to the treatments for which other researchers have reported (17, 24). Wilson and Bishop (1974) reported coefficients of variation ranging from 0.190 to 0.358 for treatments with high ventilation rates, fans banked together on one side and air inlets on both side walls. Schulte, et al. (1972) reported coefficients of variation, which he called turbulent intensities, ranging from 0.07 to 0.20 for high ventilation rates, no model pen partitions and no pit ventilation. In Table 7 the coefficients of variation for the open sided crates and high ventilation rates range from 0.051 at ceiling level for the masonry duct to 0.107 at ceiling level for the PVC pipe duct. In other words, the air velocities observed in this study were more uniform than those previously reported.

C. MINIMUM AIR VELOCITIES

Another measure of the effectiveness of a ventilation system is the minimum air velocity to which an animal is exposed. Regardless of what the average velocity is within the building, if there is even one animal position with an unacceptable air movement, then the entire ventilation system becomes unacceptable. This factor is especially important in confinement swine farrowing houses where the animals have limited freedom to move to a more comfortable location. The pigs in a farrowing house do have freedom to move to the most comfortable location. However, sow movement is very restricted and air movement at the sow nose position is critical for maintaining sow comfort and performance.

The velocity response surface plots clearly showed that in none of the model treatments did all pig positions (Z = 0.5) or all sow positions (Z = 2.0) "see" the same air velocities. In fact, the coefficients of variation were quite high for several of the treatments. Although other researchers have drawn conclusions based on average velocities across entire planes or surfaces (13, 17, and 24), no further attempts were made to analyze or characterize treatments in terms of average velocities. The minimum air velocity observations in Table 7 were examined to identify those systems which produce very low minimum air velocities.

1. EFFECTS OF LOCATION ON VELOCITY

Although no attempt was made to define the model velocities as functions of location within the model, a few general trends were observed. For both the PVC pipe and the masonry pit ventilation ducts with solid side crates, the minimum air velocities increased as Z increased for all three air flow rates. That is, the minimum velocities were lowest at pig level and highest at a level near the ceiling. When the open side crates were used, however, the minimum velocities were lower for sow level than pig level except when the high air flow rate was used with the masonry duct and open side crates.

2. EFFECTS OF PIT VENTILATION DUCT DESIGN

One of the objectives of this study was to determine the effects of pit ventilation duct design on the air flow characteristics of the model. Figures 11 and 12 show the air velocities at the 24 sow nose locations for the PVC pipe pit ventilation duct, the masonry pit ventilation duct, and the control which had no pit ventilation. It should be noted that the sows face away from the center of the building (Y = 4.25 and Y = 31.25) for the masonry duct. Figures 11 and 12 are plotted for the treatments using solid side crates and medium air flow rates. The PVC pipe pit ventilation duct produced higher velocities than the control at the sow nose locations in all crates. The masonry pit ventilation duct produced higher velocities than the control at the sow nose locations in all crates except numbers 12 and 18.

The minimum air velocity comparisons among the PVC pipe pit ventilation duct, the masonry pit ventilation duct, and the control were of particular interest. Only the solid side crates and the medium air flow rates were tested in the control. The minimum air velocities (Table 7) at pig level, sow level, and the level near the ceiling were all lower when no pit ventilation was used.

The minimum velocities at pig level (Z = 0.5) were higher for the PVC pipe duct than for the masonry duct for all treatments except when the high ventilation rate was used with the solid side crates. The minimum velocities at sow level (Z = 2.0) were higher for the PVC pipe duct only for the low air flow rates. When the medium and high air flow rates were used, the sow level minimum velocities were higher for the masonry pit ventilation duct. The minimum air velocities at the level

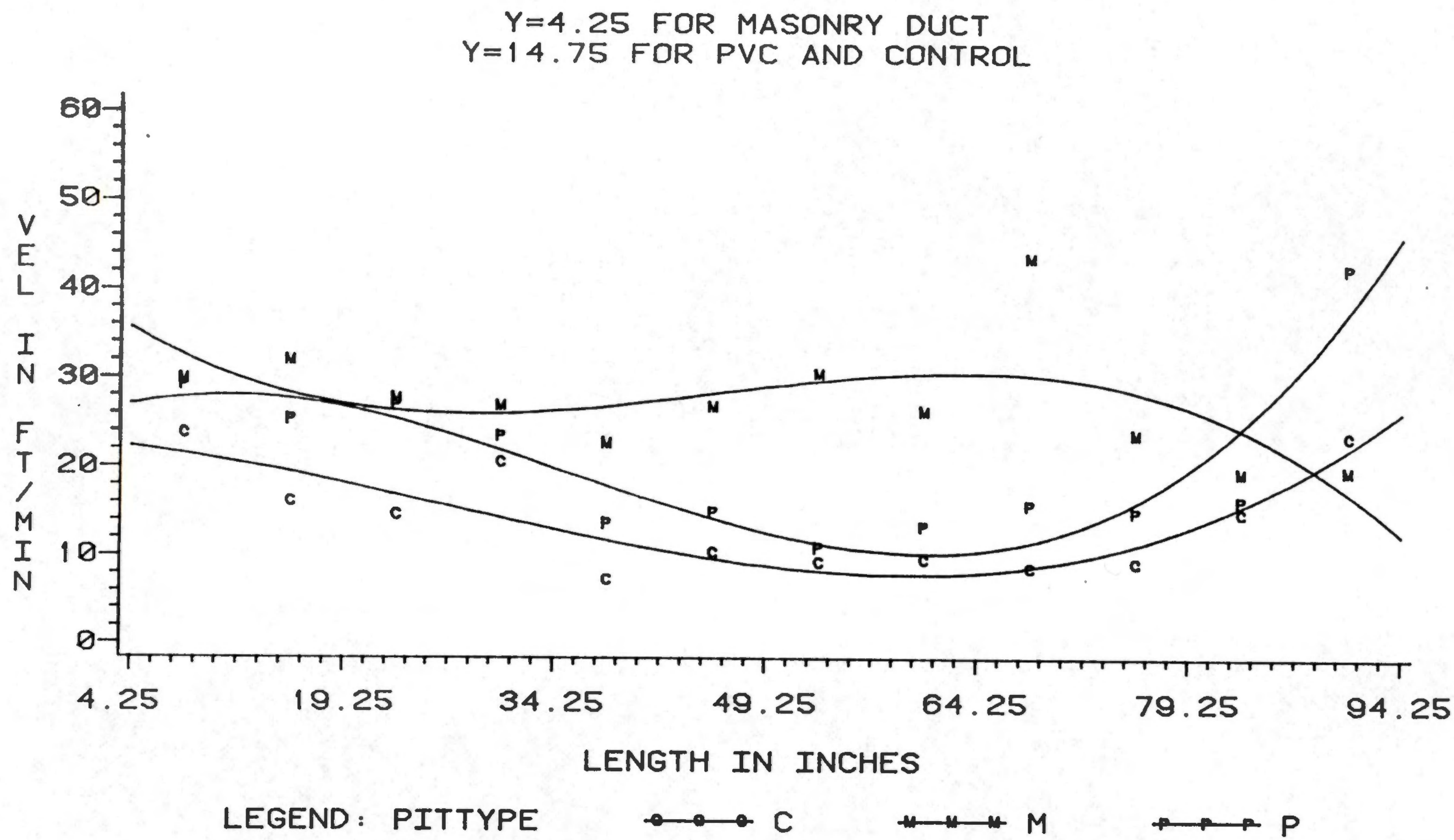

Figure 11. Air Velocities at Model Sow Nose Location Numbers 1-12 for Solid Side Crates and Medium Air Flow Rates.

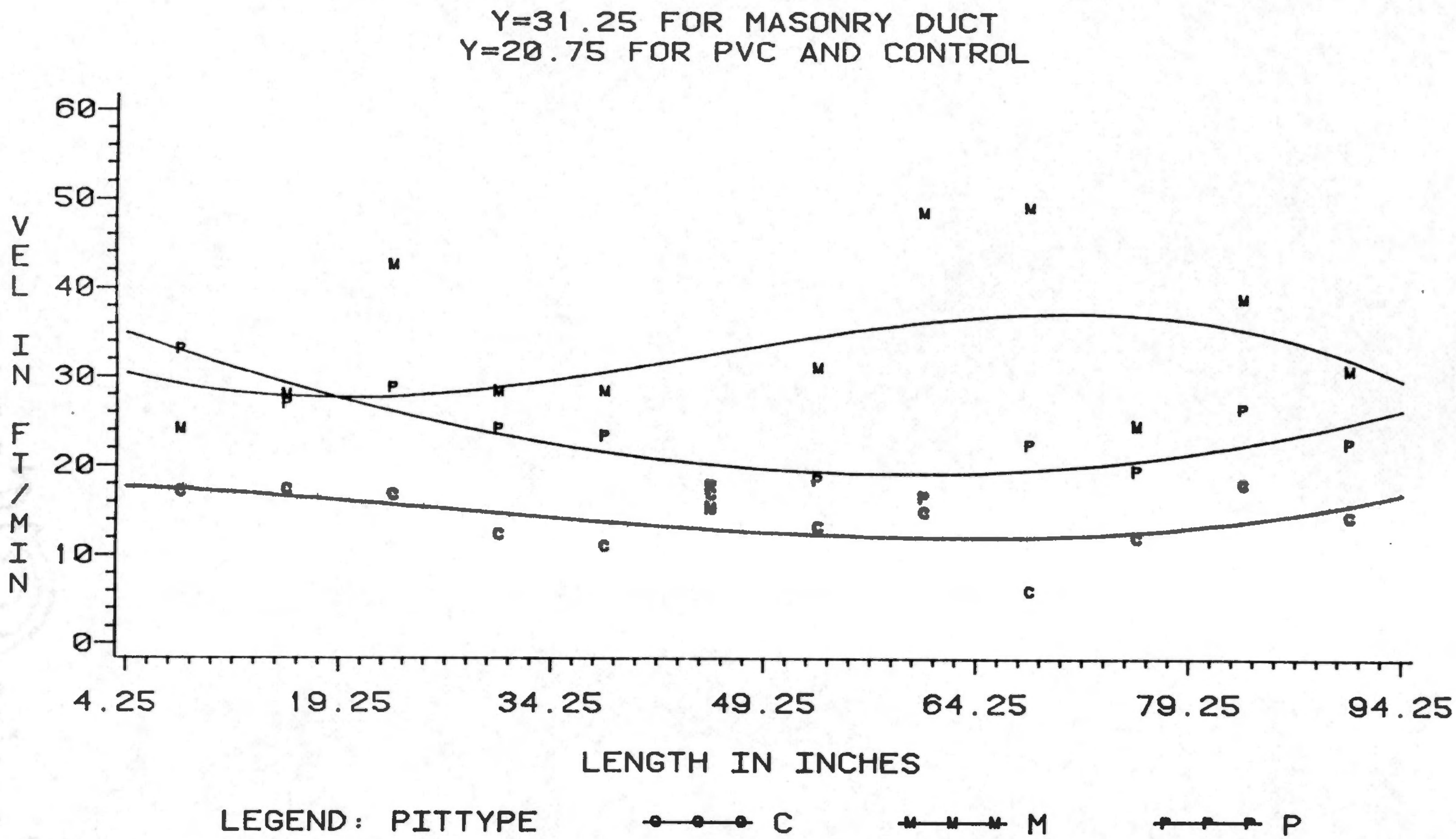

Figure 12. Air Velocities at Model Sow Nose Location Numbers 13-24 for Solid Side Crates and Medium Air Flow Rates.

near the ceiling (Z = 10.5) were higher for the PVC pipe pit ventilation duct with low air flow rates; they were higher for the masonry pit ventilation duct with medium air flow rates; and they were mixed with the high air flow rates.

3. EFFECTS OF CRATE CONSTRUCTION

Previous studies (12, 13, 17, 23, 24) have not considered the effects of pen construction on model air flow patterns, but Table 7, page 41, clearly shows that minimum air velocities at both pig and sow levels are reduced by crates constructed with solid sides. At the pig level (Z = 0.5), the minimum observed velocities were much higher for the open crate treatments than for the solid side crate treatments. Also, the sow level (Z = 2.0) minimum velocities were higher for the open crate treatments than for the solid side crate treatments.

The intent of this research was not to determine whether open side crates or solid side crates provided the best ventilation but rather to show that obstructions within the building can affect the air-flow characteristics of an enclosed confinement structure. In fact very little information exists with regard to what minimum and maximum air velocities are acceptable to sows and baby pigs. Bond, et al. (1965) concluded that there was no apparent justification for using more than a minimum air velocity (35 ft. per min.) for finishing age hogs when air temperatures were less than about 90° F. According to model theory, actual prototype air velocities should be about 1/8 of the model velocities presented in Table 7, page 41. So, only the velocities for the high ventilation rates would exceed the minimum air velocities used by Bond, et al. (1965). Since the high air flow rates simulated in this model are only employed in the prototype when inside temperatures exceed about 80° F, Bond's work really is of little value in trying to determine whether open side or solid side crates provide superior ventilation at low and medium ventilation rates.

The baffled slot air inlet system used in this model study was that presented by Turner and Davis (1968). The incoming air is directed down the wall so as to entrain the air at the ceiling level. As an indication that this entraining and mixing process did take place, air velocities in a horizontal plane 1 1/2 inches below the ceiling (Z = 10.5) were investigated. The minimum air velocities at a level near the ceiling were higher for the open crate treatments than for the solid side crate treatments except when the low air flow rate was used with the masonry pit ventilation duct. The maximum air velocities near the ceiling (Z = 10.5) were also higher for the open crate treatments than for the solid side crate treatments except when the medium air flow rate was used with the PVC pipe pit ventilation duct.

4. EFFECTS OF AIR FLOW RATE

Beckett (1965) identified air velocity as one of eight factors involved in producing an "effective swine temperature." In very general terms, as the hog's environmental temperatures increase, its ability to lose heat and maintain a constant body temperature decreases. Bond, et al. (1965) found increased air velocities to be beneficial to swine when environmental temperatures exceed about 90° F. One possible means of accomplishing increased air velocities at animal level is to increase the ventilation rate.

Since higher temperatures are the trigger for increased ventilation rates in the prototype, the higher ventilation rates should produce higher air velocities - especially at animal level. As the ventilation rate increased, the minimum air velocities increased at pig level, sow level and the level near the ceiling for all model treatments. Perhaps worth noting is that for the medium air flow rate and open side crates the minimum air velocities at pig and sow levels often exceeded those for the high air flow rate and solid side crates.

As the ventilation rate increased, the maximum air velocities also increased at all levels when the open side crates were used. However, when the crates with solid sides were used, maximum air velocities at animal level did not always increase when the ventilation rate increased.

D. SUMMARY OF RESULTS

There was good agreement between the velocities of the two experiment replications. Although the coefficients of variation were similar to those reported from other studies, the velocity variations did not follow a pattern which could be mathematical predicted from the model location variables.

The concept of using minimum velocity as a ventilation system evaluation criterion has not been fully explored. This is evidenced by the lack of information regarding optimum air velocities for swine and the fact that most of the conclusions reached in previous studies have been based on average velocities. Average velocities often do not correlate with minimum velocities (Table 7, page 41).

Figures C-1 thru C-16 in Appendix C show graphical representations of the effects of location, pit ventilation duct construction, crate design, and ventilation rate on the air velocities at pig level (Z = 0.5) within the model. The pig level velocities were about the same for the two types of pit ventilation ducts tested. However, pig level velocities were affected by the farrowing crate design. The solid side crates resulted in much lower pig level velocities than when open side crates were used. The pig level velocities were also dependent upon the ventilation rate. In some cases the minimum velocities for the medium ventilation rate at one pig position were less than the maximum velocities for the low ventilation rate at another pig position; but when the velocities for different treatments were compared at the same pig positions, higher ventilation rates generally produced higher velocities. Ventilation rate was less effective in increasing air velocities when solid side crates were used.

The effects of location, pit ventilation duct construction, crate design, and ventiliation rate on the air velocities at the model sow nose locations are presented graphically as figures D-1 thru D-8 in Appendix D. The sows face out (Y = 4.25 and Y = 31.25) with the masonry pit ventiilation duct, but they face in (Y = 14.75 and Y = 20.75) for the PVC pipe pit ventiilation duct. In nearly all cases, both the PVC pipe and the masonry pit ventilation ducts produced higher air velocities at the sow nose locations than when no pit ventilation was used. Just as at the pig level, air velocities at the sow nose level were not much different for the two types of pit ventilation ducts. The solid side farrowing crates produced lower air velocities at the sow nose locations.

Ventilation rate was less effective in increasing air velocities at the sow nose locations when solid side crates were used, but higher ventilation rates did produce higher air velocities at the sow nose locations.

CHAPTER VI

SUMMARY AND CONCLUSIONS

A. SUMMARY OF THE EXPERIMENT

A 1/8 scale model of an enclosed swine farrowing house was designed and constructed according to the principles of similitude. A laboratory experiment was conducted to determine the effects of pit ventilation duct construction, farrowing crate design, and ventilation rate on the air flow characteristics of the model. Two replications of the experiment were conducted with each replication consisting of 13 treatments. Air velocities were measured and recorded at 144 points within the model for each treatment.

The data were analyzed using SAS and The University of Tennessee Computing Center's IBM 4341 VM/370 computer. There was good agreement between the two experiment replications. The observed air velocities were not uniform among the animal positions within the model, so no further analyses were made using mean velocities. Conclusions were instead based on actual and minimum velocities, because a ventilation system treatment which does not provide adequate air movement to all animal positions is an unsatisfactory ventilation system.

B. CONCLUSIONS

The conclusions of this study are as follows:

1. There was no significant difference (at the 83 percent level) between the two replications of this experiment.

2. The velocity response surface plots showed a wide range in velocity values for each treatment, even though the velocity coefficients of variation were similar to those previously reported.
3. The velocities resulting from the low ventilation rates were much less uniform than those produced by the high ventilation rates.
4. The minimum air velocities increased with vertical position for both the PVC pipe and the masonry pit ventilation ducts when solid side crates were used.
5. The air velocities at sow nose locations were higher in all crates for the PVC pipe pit ventilation duct than for the control which had no pit ventilation; the masonry pit ventilation duct resulted in higher velocities than the control for 22 of 24 sow nose locations.
6. The minimum air velocities at pig level, sow level, and the level near the ceiling were all lower when no pit ventilation was used.
7. The minimum velocities at pig level were higher for the PVC pipe duct than for the masonry duct for all treatments except those when the high ventilation rate was used with the solid side crates.
8. The minimum velocities at sow level were higher for the PVC pipe duct only for the low air flow rates. When the medium and high air flow rates were used, the sow level minimum velocities were higher for the masonry pit ventilation duct.

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APPENDICES

APPENDIX A

LIST OF SYMBOLS, ABBREVIATIONS AND TERMS USED IN THIS RESEARCH

LIST OF SYMBOLS AND ABBREVIATIONS

Symbol	Definition
A	Cross-sectional area of the air inlet, square feet
B	Used in the third position of the treatment name (e.g. CSBM) to indicate air inlet was a baffled slot inlet
C	Used in the first position of the treatment name (e.g. CSBM) to indicate control or no pit ventilation
cfm	Cubic feet per minute
CV	Coefficient of variation, a dimensionless statistic
Fr	Froude number, a dimensionless pi term
fpm	Feet per minute
g	Acceleration caused by gravity, feet per second-second
H	Used in the fourth position of the treatment name (e.g. POBH) to indicate high ventilation rate
L	Used in the fourth position of the treatment name (e.g. POBL) to indicate low ventilation rate
M	Used in the first position of the treatment name (e.g. MOBL) to indicate masonry pit ventilation duct. Also used in the fourth position of the treatment name (e.g. POBM) to indicate medium ventilation rate
m	Subscript used when terms refer to the model

Symbol	Definition
n	Ratio of a characteristic distance in the prototype to the corresponding characteristic distance in the model, a dimensionless scale factor
O	Used in the second position of the treatment name (e.g. POBM) to indicate open side crates
P	Used in the first position of the treatment name (e.g. POBM) to indicate PVC pipe pit ventilation duct
p	Subscript used when terms refer to the prototype
PVC	Polyvinyl Chloride, a type of plastic pipe
Q	Air flow rate, cubic feet per minute
Re	Reynold's number, a dimensionless pi term
S	Used in the second position of the treatment name (e.g. PSBM) to indicate solid side crates
SAS	Statistical Analysis System
SD	Standard deviation of the mean velocity, feet per minute
V	Air velocity, feet per minute
V_o	Air velocity through the inlet opening, feet per minute
$\bar{V}$	Mean air velocity, feet per minute
w	Width of air inlet slot, feet
X	A location variable (see figure 6, page 32), inches
Y	A location variable (see figure 6, page 32), inches

Symbol	Definition
Z	A location variable (see figure 6, page 32), inches
δ	Prediction factor used to relate the dependent variable of a distorted model to the dependent variable of the prototype
λ	A characteristic length used as a pertinent quantity in the dimensional analysis of a totally enclosed swine farrowing house, ft
μ	Dynamic viscosity of air, pounds mass per foot-second
ρ	Mass density of air, pounds mass per cubic foot
$^\circ$ F	Degrees temperature on Fahrenheit scale

APPENDIX B

THE DATA AFTER AVERAGING THE TWO REPLICATIONS OF THE EXPERIMENT

Table B-1. Air Velocity Data for Treatment PSBL

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBL	PVC	SOLID	LOW	8.00	4.25	10.50	49.698
PSBL	PVC	SOLID	LOW	8.00	4.25	2.00	10.219
PSBL	PVC	SOLID	LOW	8.00	4.25	0.50	7.546
PSBL	PVC	SOLID	LOW	8.00	14.75	10.50	36.872
PSBL	PVC	SOLID	LOW	8.00	14.75	2.00	4.459
PSBL	PVC	SOLID	LOW	8.00	14.75	0.50	5.937
PSBL	PVC	SOLID	LOW	8.00	20.75	10.50	45.039
PSBL	PVC	SOLID	LOW	8.00	20.75	2.00	4.112
PSBL	PVC	SOLID	LOW	8.00	20.75	0.50	1.962
PSBL	PVC	SOLID	LOW	8.00	31.25	10.50	46.294
PSBL	PVC	SOLID	LOW	8.00	31.25	2.00	3.717
PSBL	PVC	SOLID	LOW	8.00	31.25	0.50	4.539
PSBL	PVC	SOLID	LOW	15.50	4.25	10.50	22.867
PSBL	PVC	SOLID	LOW	15.50	4.25	2.00	4.305
PSBL	PVC	SOLID	LOW	15.50	4.25	0.50	5.788
PSBL	PVC	SOLID	LOW	15.50	14.75	10.50	35.804
PSBL	PVC	SOLID	LOW	15.50	14.75	2.00	4.976
PSBL	PVC	SOLID	LOW	15.50	14.75	0.50	2.382
PSBL	PVC	SOLID	LOW	15.50	20.75	10.50	30.038
PSBL	PVC	SOLID	LOW	15.50	20.75	2.00	4.983
PSBL	PVC	SOLID	LOW	15.50	20.75	0.50	2.443
PSBL	PVC	SOLID	LOW	15.50	31.25	10.50	32.934
PSBL	PVC	SOLID	LOW	15.50	31.25	2.00	3.948
PSBL	PVC	SOLID	LOW	15.50	31.25	0.50	7.254
PSBL	PVC	SOLID	LOW	23.00	4.25	10.50	15.556
PSBL	PVC	SOLID	LOW	23.00	4.25	2.00	4.403
PSBL	PVC	SOLID	LOW	23.00	4.25	0.50	4.373
PSBL	PVC	SOLID	LOW	23.00	14.75	10.50	15.094
PSBL	PVC	SOLID	LOW	23.00	14.75	2.00	4.490
PSBL	PVC	SOLID	LOW	23.00	14.75	0.50	2.734
PSBL	PVC	SOLID	LOW	23.00	20.75	10.50	30.944
PSBL	PVC	SOLID	LOW	23.00	20.75	2.00	8.871
PSBL	PVC	SOLID	LOW	23.00	20.75	0.50	4.058
PSBL	PVC	SOLID	LOW	23.00	31.25	10.50	44.310
PSBL	PVC	SOLID	LOW	23.00	31.25	2.00	9.724
PSBL	PVC	SOLID	LOW	23.00	31.25	0.50	8.376
PSBL	PVC	SOLID	LOW	30.50	4.25	10.50	14.558
PSBL	PVC	SOLID	LOW	30.50	4.25	2.00	7.680
PSBL	PVC	SOLID	LOW	30.50	4.25	0.50	8.472
PSBL	PVC	SOLID	LOW	30.50	14.75	10.50	23.062
PSBL	PVC	SOLID	LOW	30.50	14.75	2.00	3.383
PSBL	PVC	SOLID	LOW	30.50	14.75	0.50	1.769
PSBL	PVC	SOLID	LOW	30.50	20.75	10.50	23.160
PSBL	PVC	SOLID	LOW	30.50	20.75	2.00	11.374

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBL	PVC	SOLID	LOW	30.50	20.75	0.50	8.304
PSBL	PVC	SOLID	LOW	30.50	31.25	10.50	45.262
PSBL	PVC	SOLID	LOW	30.50	31.25	2.00	13.843
PSBL	PVC	SOLID	LOW	30.50	31.25	0.50	7.693
PSBL	PVC	SOLID	LOW	38.00	4.25	10.50	16.512
PSBL	PVC	SOLID	LOW	38.00	4.25	2.00	141.475
PSBL	PVC	SOLID	LOW	38.00	4.25	0.50	10.595
PSBL	PVC	SOLID	LOW	38.00	14.75	10.50	25.441
PSBL	PVC	SOLID	LOW	38.00	14.75	2.00	3.091
PSBL	PVC	SOLID	LOW	38.00	14.75	0.50	1.473
PSBL	PVC	SOLID	LOW	38.00	20.75	10.50	59.372
PSBL	PVC	SOLID	LOW	38.00	20.75	2.00	2.799
PSBL	PVC	SOLID	LOW	38.00	20.75	0.50	9.670
PSBL	PVC	SOLID	LOW	38.00	31.25	10.50	78.049
PSBL	PVC	SOLID	LOW	38.00	31.25	2.00	6.203
PSBL	PVC	SOLID	LOW	38.00	31.25	0.50	5.229
PSBL	PVC	SOLID	LOW	45.50	4.25	10.50	10.648
PSBL	PVC	SOLID	LOW	45.50	4.25	2.00	6.784
PSBL	PVC	SOLID	LOW	45.50	4.25	0.50	4.526
PSBL	PVC	SOLID	LOW	45.50	14.75	10.50	11.147
PSBL	PVC	SOLID	LOW	45.50	14.75	2.00	2.126
PSBL	PVC	SOLID	LOW	45.50	14.75	0.50	1.263
PSBL	PVC	SOLID	LOW	45.50	20.75	10.50	30.421
PSBL	PVC	SOLID	LOW	45.50	20.75	2.00	2.760
PSBL	PVC	SOLID	LOW	45.50	20.75	0.50	12.060
PSBL	PVC	SOLID	LOW	45.50	31.25	10.50	15.269
PSBL	PVC	SOLID	LOW	45.50	31.25	2.00	4.693
PSBL	PVC	SOLID	LOW	45.50	31.25	0.50	3.132
PSBL	PVC	SOLID	LOW	53.00	4.25	10.50	7.980
PSBL	PVC	SOLID	LOW	53.00	4.25	2.00	3.613
PSBL	PVC	SOLID	LOW	53.00	4.25	0.50	2.793
PSBL	PVC	SOLID	LOW	53.00	14.75	10.50	5.379
PSBL	PVC	SOLID	LOW	53.00	14.75	2.00	2.292
PSBL	PVC	SOLID	LOW	53.00	14.75	0.50	1.222
PSBL	PVC	SOLID	LOW	53.00	20.75	10.50	15.305
PSBL	PVC	SOLID	LOW	53.00	20.75	2.00	2.764
PSBL	PVC	SOLID	LOW	53.00	20.75	0.50	8.675
PSBL	PVC	SOLID	LOW	53.00	31.25	10.50	12.936
PSBL	PVC	SOLID	LOW	53.00	31.25	2.00	3.506
PSBL	PVC	SOLID	LOW	53.00	31.25	0.50	2.530
PSBL	PVC	SOLID	LOW	60.50	4.25	10.50	31.330
PSBL	PVC	SOLID	LOW	60.50	4.25	2.00	3.923
PSBL	PVC	SOLID	LOW	60.50	4.25	0.50	2.513
PSBL	PVC	SOLID	LOW	60.50	14.75	10.50	22.948

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBL	PVC	SOLID	LOW	60.50	14.75	2.00	2.769
PSBL	PVC	SOLID	LOW	60.50	14.75	0.50	1.133
PSBL	PVC	SOLID	LOW	60.50	20.75	10.50	18.755
PSBL	PVC	SOLID	LOW	60.50	20.75	2.00	2.137
PSBL	PVC	SOLID	LOW	60.50	20.75	0.50	8.484
PSBL	PVC	SOLID	LOW	60.50	31.25	10.50	14.722
PSBL	PVC	SOLID	LOW	60.50	31.25	2.00	4.555
PSBL	PVC	SOLID	LOW	60.50	31.25	0.50	3.026
PSBL	PVC	SOLID	LOW	68.00	4.25	10.50	30.990
PSBL	PVC	SOLID	LOW	68.00	4.25	2.00	4.649
PSBL	PVC	SOLID	LOW	68.00	4.25	0.50	3.193
PSBL	PVC	SOLID	LOW	68.00	14.75	10.50	12.847
PSBL	PVC	SOLID	LOW	68.00	14.75	2.00	3.306
PSBL	PVC	SOLID	LOW	68.00	14.75	0.50	1.691
PSBL	PVC	SOLID	LOW	68.00	20.75	10.50	33.494
PSBL	PVC	SOLID	LOW	68.00	20.75	2.00	3.365
PSBL	PVC	SOLID	LOW	68.00	20.75	0.50	1.912
PSBL	PVC	SOLID	LOW	68.00	31.25	10.50	20.414
PSBL	PVC	SOLID	LOW	68.00	31.25	2.00	2.789
PSBL	PVC	SOLID	LOW	68.00	31.25	0.50	3.201
PSBL	PVC	SOLID	LOW	75.50	4.25	10.50	20.646
PSBL	PVC	SOLID	LOW	75.50	4.25	2.00	3.158
PSBL	PVC	SOLID	LOW	75.50	4.25	0.50	2.533
PSBL	PVC	SOLID	LOW	75.50	14.75	10.50	27.352
PSBL	PVC	SOLID	LOW	75.50	14.75	2.00	2.821
PSBL	PVC	SOLID	LOW	75.50	14.75	0.50	1.617
PSBL	PVC	SOLID	LOW	75.50	20.75	10.50	12.952
PSBL	PVC	SOLID	LOW	75.50	20.75	2.00	4.610
PSBL	PVC	SOLID	LOW	75.50	20.75	0.50	1.885
PSBL	PVC	SOLID	LOW	75.50	31.25	10.50	37.238
PSBL	PVC	SOLID	LOW	75.50	31.25	2.00	3.666
PSBL	PVC	SOLID	LOW	75.50	31.25	0.50	2.247
PSBL	PVC	SOLID	LOW	83.00	4.25	10.50	16.887
PSBL	PVC	SOLID	LOW	83.00	4.25	2.00	3.664
PSBL	PVC	SOLID	LOW	83.00	4.25	0.50	3.062
PSBL	PVC	SOLID	LOW	83.00	14.75	10.50	27.514
PSBL	PVC	SOLID	LOW	83.00	14.75	2.00	4.317
PSBL	PVC	SOLID	LOW	83.00	14.75	0.50	2.543
PSBL	PVC	SOLID	LOW	83.00	20.75	10.50	41.916
PSBL	PVC	SOLID	LOW	83.00	20.75	2.00	7.154
PSBL	PVC	SOLID	LOW	83.00	20.75	0.50	2.230
PSBL	PVC	SOLID	LOW	83.00	31.25	10.50	29.291
PSBL	PVC	SOLID	LOW	83.00	31.25	2.00	5.141
PSBL	PVC	SOLID	LOW	83.00	31.25	0.50	5.503

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBL	PVC	SOLID	LOW	90.50	4.25	10.50	65.386
PSBL	PVC	SOLID	LOW	90.50	4.25	2.00	18.444
PSBL	PVC	SOLID	LOW	90.50	4.25	0.50	28.719
PSBL	PVC	SOLID	LOW	90.50	14.75	10.50	20.349
PSBL	PVC	SOLID	LOW	90.50	14.75	2.00	14.639
PSBL	PVC	SOLID	LOW	90.50	14.75	0.50	6.757
PSBL	PVC	SOLID	LOW	90.50	20.75	10.50	17.126
PSBL	PVC	SOLID	LOW	90.50	20.75	2.00	4.874
PSBL	PVC	SOLID	LOW	90.50	20.75	0.50	2.367
PSBL	PVC	SOLID	LOW	90.50	31.25	10.50	28.424
PSBL	PVC	SOLID	LOW	90.50	31.25	2.00	2.484
PSBL	PVC	SOLID	LOW	90.50	31.25	0.50	3.226

Table B-2. Air Velocity Data for Treatment PSBM

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBM	PVC	SOLID	MEDIUM	8.00	4.25	10.50	85.926
PSBM	PVC	SOLID	MEDIUM	8.00	4.25	2.00	21.681
PSBM	PVC	SOLID	MEDIUM	8.00	4.25	0.50	13.668
PSBM	PVC	SOLID	MEDIUM	8.00	14.75	10.50	146.905
PSBM	PVC	SOLID	MEDIUM	8.00	14.75	2.00	29.027
PSBM	PVC	SOLID	MEDIUM	8.00	14.75	0.50	29.693
PSBM	PVC	SOLID	MEDIUM	8.00	20.75	10.50	120.031
PSBM	PVC	SOLID	MEDIUM	8.00	20.75	2.00	33.000
PSBM	PVC	SOLID	MEDIUM	8.00	20.75	0.50	17.507
PSBM	PVC	SOLID	MEDIUM	8.00	31.25	10.50	101.463
PSBM	PVC	SOLID	MEDIUM	8.00	31.25	2.00	34.182
PSBM	PVC	SOLID	MEDIUM	8.00	31.25	0.50	37.098
PSBM	PVC	SOLID	MEDIUM	15.50	4.25	10.50	92.435
PSBM	PVC	SOLID	MEDIUM	15.50	4.25	2.00	29.180
PSBM	PVC	SOLID	MEDIUM	15.50	4.25	0.50	20.181
PSBM	PVC	SOLID	MEDIUM	15.50	14.75	10.50	103.629
PSBM	PVC	SOLID	MEDIUM	15.50	14.75	2.00	25.183
PSBM	PVC	SOLID	MEDIUM	15.50	14.75	0.50	29.296
PSBM	PVC	SOLID	MEDIUM	15.50	20.75	10.50	74.881
PSBM	PVC	SOLID	MEDIUM	15.50	20.75	2.00	26.895
PSBM	PVC	SOLID	MEDIUM	15.50	20.75	0.50	18.951
PSBM	PVC	SOLID	MEDIUM	15.50	31.25	10.50	110.177
PSBM	PVC	SOLID	MEDIUM	15.50	31.25	2.00	27.506
PSBM	PVC	SOLID	MEDIUM	15.50	31.25	0.50	26.665
PSBM	PVC	SOLID	MEDIUM	23.00	4.25	10.50	98.823
PSBM	PVC	SOLID	MEDIUM	23.00	4.25	2.00	26.388
PSBM	PVC	SOLID	MEDIUM	23.00	4.25	0.50	27.653
PSBM	PVC	SOLID	MEDIUM	23.00	14.75	10.50	77.863
PSBM	PVC	SOLID	MEDIUM	23.00	14.75	2.00	26.843
PSBM	PVC	SOLID	MEDIUM	23.00	14.75	0.50	28.717
PSBM	PVC	SOLID	MEDIUM	23.00	20.75	10.50	91.183
PSBM	PVC	SOLID	MEDIUM	23.00	20.75	2.00	28.743
PSBM	PVC	SOLID	MEDIUM	23.00	20.75	0.50	21.451
PSBM	PVC	SOLID	MEDIUM	23.00	31.25	10.50	86.170
PSBM	PVC	SOLID	MEDIUM	23.00	31.25	2.00	35.654
PSBM	PVC	SOLID	MEDIUM	23.00	31.25	0.50	31.474
PSBM	PVC	SOLID	MEDIUM	30.50	4.25	10.50	107.342
PSBM	PVC	SOLID	MEDIUM	30.50	4.25	2.00	61.283
PSBM	PVC	SOLID	MEDIUM	30.50	4.25	0.50	18.426
PSBM	PVC	SOLID	MEDIUM	30.50	14.75	10.50	78.008
PSBM	PVC	SOLID	MEDIUM	30.50	14.75	2.00	23.359
PSBM	PVC	SOLID	MEDIUM	30.50	14.75	0.50	18.649
PSBM	PVC	SOLID	MEDIUM	30.50	20.75	10.50	85.638
PSBM	PVC	SOLID	MEDIUM	30.50	20.75	2.00	24.138

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBM	PVC	SOLID	MEDIUM	30.50	20.75	0.50	21.019
PSBM	PVC	SOLID	MEDIUM	30.50	31.25	10.50	92.596
PSBM	PVC	SOLID	MEDIUM	30.50	31.25	2.00	58.082
PSBM	PVC	SOLID	MEDIUM	30.50	31.25	0.50	38.155
PSBM	PVC	SOLID	MEDIUM	38.00	4.25	10.50	87.490
PSBM	PVC	SOLID	MEDIUM	38.00	4.25	2.00	195.767
PSBM	PVC	SOLID	MEDIUM	38.00	4.25	0.50	32.119
PSBM	PVC	SOLID	MEDIUM	38.00	14.75	10.50	80.448
PSBM	PVC	SOLID	MEDIUM	38.00	14.75	2.00	13.461
PSBM	PVC	SOLID	MEDIUM	38.00	14.75	0.50	11.276
PSBM	PVC	SOLID	MEDIUM	38.00	20.75	10.50	193.840
PSBM	PVC	SOLID	MEDIUM	38.00	20.75	2.00	23.364
PSBM	PVC	SOLID	MEDIUM	38.00	20.75	0.50	19.684
PSBM	PVC	SOLID	MEDIUM	38.00	31.25	10.50	73.575
PSBM	PVC	SOLID	MEDIUM	38.00	31.25	2.00	30.579
PSBM	PVC	SOLID	MEDIUM	38.00	31.25	0.50	30.486
PSBM	PVC	SOLID	MEDIUM	45.50	4.25	10.50	146.624
PSBM	PVC	SOLID	MEDIUM	45.50	4.25	2.00	19.338
PSBM	PVC	SOLID	MEDIUM	45.50	4.25	0.50	13.588
PSBM	PVC	SOLID	MEDIUM	45.50	14.75	10.50	77.058
PSBM	PVC	SOLID	MEDIUM	45.50	14.75	2.00	14.770
PSBM	PVC	SOLID	MEDIUM	45.50	14.75	0.50	8.168
PSBM	PVC	SOLID	MEDIUM	45.50	20.75	10.50	84.966
PSBM	PVC	SOLID	MEDIUM	45.50	20.75	2.00	17.810
PSBM	PVC	SOLID	MEDIUM	45.50	20.75	0.50	22.035
PSBM	PVC	SOLID	MEDIUM	45.50	31.25	10.50	189.445
PSBM	PVC	SOLID	MEDIUM	45.50	31.25	2.00	37.242
PSBM	PVC	SOLID	MEDIUM	45.50	31.25	0.50	35.202
PSBM	PVC	SOLID	MEDIUM	53.00	4.25	10.50	115.114
PSBM	PVC	SOLID	MEDIUM	53.00	4.25	2.00	14.416
PSBM	PVC	SOLID	MEDIUM	53.00	4.25	0.50	10.205
PSBM	PVC	SOLID	MEDIUM	53.00	14.75	10.50	67.765
PSBM	PVC	SOLID	MEDIUM	53.00	14.75	2.00	10.743
PSBM	PVC	SOLID	MEDIUM	53.00	14.75	0.50	9.351
PSBM	PVC	SOLID	MEDIUM	53.00	20.75	10.50	135.078
PSBM	PVC	SOLID	MEDIUM	53.00	20.75	2.00	18.440
PSBM	PVC	SOLID	MEDIUM	53.00	20.75	0.50	16.847
PSBM	PVC	SOLID	MEDIUM	53.00	31.25	10.50	142.576
PSBM	PVC	SOLID	MEDIUM	53.00	31.25	2.00	26.358
PSBM	PVC	SOLID	MEDIUM	53.00	31.25	0.50	25.884
PSBM	PVC	SOLID	MEDIUM	60.50	4.25	10.50	153.288
PSBM	PVC	SOLID	MEDIUM	60.50	4.25	2.00	25.925
PSBM	PVC	SOLID	MEDIUM	60.50	4.25	0.50	15.256
PSBM	PVC	SOLID	MEDIUM	60.50	14.75	10.50	59.634

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBM	PVC	SOLID	MEDIUM	60.50	14.75	2.00	13.151
PSBM	PVC	SOLID	MEDIUM	60.50	14.75	0.50	19.437
PSBM	PVC	SOLID	MEDIUM	60.50	20.75	10.50	68.855
PSBM	PVC	SOLID	MEDIUM	60.50	20.75	2.00	16.524
PSBM	PVC	SOLID	MEDIUM	60.50	20.75	0.50	16.415
PSBM	PVC	SOLID	MEDIUM	60.50	31.25	10.50	63.561
PSBM	PVC	SOLID	MEDIUM	60.50	31.25	2.00	24.577
PSBM	PVC	SOLID	MEDIUM	60.50	31.25	0.50	23.293
PSBM	PVC	SOLID	MEDIUM	68.00	4.25	10.50	101.238
PSBM	PVC	SOLID	MEDIUM	68.00	4.25	2.00	23.155
PSBM	PVC	SOLID	MEDIUM	68.00	4.25	0.50	11.022
PSBM	PVC	SOLID	MEDIUM	68.00	14.75	10.50	57.548
PSBM	PVC	SOLID	MEDIUM	68.00	14.75	2.00	15.505
PSBM	PVC	SOLID	MEDIUM	68.00	14.75	0.50	13.688
PSBM	PVC	SOLID	MEDIUM	68.00	20.75	10.50	185.336
PSBM	PVC	SOLID	MEDIUM	68.00	20.75	2.00	22.426
PSBM	PVC	SOLID	MEDIUM	68.00	20.75	0.50	20.611
PSBM	PVC	SOLID	MEDIUM	68.00	31.25	10.50	83.703
PSBM	PVC	SOLID	MEDIUM	68.00	31.25	2.00	32.597
PSBM	PVC	SOLID	MEDIUM	68.00	31.25	0.50	30.639
PSBM	PVC	SOLID	MEDIUM	75.50	4.25	10.50	95.964
PSBM	PVC	SOLID	MEDIUM	75.50	4.25	2.00	21.590
PSBM	PVC	SOLID	MEDIUM	75.50	4.25	0.50	14.905
PSBM	PVC	SOLID	MEDIUM	75.50	14.75	10.50	84.197
PSBM	PVC	SOLID	MEDIUM	75.50	14.75	2.00	14.710
PSBM	PVC	SOLID	MEDIUM	75.50	14.75	0.50	17.167
PSBM	PVC	SOLID	MEDIUM	75.50	20.75	10.50	112.227
PSBM	PVC	SOLID	MEDIUM	75.50	20.75	2.00	19.483
PSBM	PVC	SOLID	MEDIUM	75.50	20.75	0.50	13.508
PSBM	PVC	SOLID	MEDIUM	75.50	31.25	10.50	74.332
PSBM	PVC	SOLID	MEDIUM	75.50	31.25	2.00	19.183
PSBM	PVC	SOLID	MEDIUM	75.50	31.25	0.50	18.316
PSBM	PVC	SOLID	MEDIUM	83.00	4.25	10.50	122.760
PSBM	PVC	SOLID	MEDIUM	83.00	4.25	2.00	20.648
PSBM	PVC	SOLID	MEDIUM	83.00	4.25	0.50	13.772
PSBM	PVC	SOLID	MEDIUM	83.00	14.75	10.50	70.946
PSBM	PVC	SOLID	MEDIUM	83.00	14.75	2.00	16.088
PSBM	PVC	SOLID	MEDIUM	83.00	14.75	0.50	16.807
PSBM	PVC	SOLID	MEDIUM	83.00	20.75	10.50	145.305
PSBM	PVC	SOLID	MEDIUM	83.00	20.75	2.00	26.463
PSBM	PVC	SOLID	MEDIUM	83.00	20.75	0.50	21.327
PSBM	PVC	SOLID	MEDIUM	83.00	31.25	10.50	79.646
PSBM	PVC	SOLID	MEDIUM	83.00	31.25	2.00	17.625
PSBM	PVC	SOLID	MEDIUM	83.00	31.25	0.50	20.754

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBM	PVC	SOLID	MEDIUM	90.50	4.25	10.50	76.088
PSBM	PVC	SOLID	MEDIUM	90.50	4.25	2.00	43.422
PSBM	PVC	SOLID	MEDIUM	90.50	4.25	0.50	32.034
PSBM	PVC	SOLID	MEDIUM	90.50	14.75	10.50	122.787
PSBM	PVC	SOLID	MEDIUM	90.50	14.75	2.00	42.304
PSBM	PVC	SOLID	MEDIUM	90.50	14.75	0.50	19.528
PSBM	PVC	SOLID	MEDIUM	90.50	20.75	10.50	137.859
PSBM	PVC	SOLID	MEDIUM	90.50	20.75	2.00	22.569
PSBM	PVC	SOLID	MEDIUM	90.50	20.75	0.50	11.948
PSBM	PVC	SOLID	MEDIUM	90.50	31.25	10.50	70.278
PSBM	PVC	SOLID	MEDIUM	90.50	31.25	2.00	14.948
PSBM	PVC	SOLID	MEDIUM	90.50	31.25	0.50	16.014

Table B-3. Air Velocity Data for Treatment PSBH

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBH	PVC	SOLID	HIGH	8.00	4.25	10.50	442.111
PSBH	PVC	SOLID	HIGH	8.00	4.25	2.00	189.299
PSBH	PVC	SOLID	HIGH	8.00	4.25	0.50	214.941
PSBH	PVC	SOLID	HIGH	8.00	14.75	10.50	323.124
PSBH	PVC	SOLID	HIGH	8.00	14.75	2.00	189.863
PSBH	PVC	SOLID	HIGH	8.00	14.75	0.50	146.469
PSBH	PVC	SOLID	HIGH	8.00	20.75	10.50	276.776
PSBH	PVC	SOLID	HIGH	8.00	20.75	2.00	104.365
PSBH	PVC	SOLID	HIGH	8.00	20.75	0.50	99.596
PSBH	PVC	SOLID	HIGH	8.00	31.25	10.50	308.761
PSBH	PVC	SOLID	HIGH	8.00	31.25	2.00	121.388
PSBH	PVC	SOLID	HIGH	8.00	31.25	0.50	103.368
PSBH	PVC	SOLID	HIGH	15.50	4.25	10.50	427.432
PSBH	PVC	SOLID	HIGH	15.50	4.25	2.00	134.212
PSBH	PVC	SOLID	HIGH	15.50	4.25	0.50	107.535
PSBH	PVC	SOLID	HIGH	15.50	14.75	10.50	284.346
PSBH	PVC	SOLID	HIGH	15.50	14.75	2.00	156.890
PSBH	PVC	SOLID	HIGH	15.50	14.75	0.50	118.590
PSBH	PVC	SOLID	HIGH	15.50	20.75	10.50	252.424
PSBH	PVC	SOLID	HIGH	15.50	20.75	2.00	93.918
PSBH	PVC	SOLID	HIGH	15.50	20.75	0.50	63.720
PSBH	PVC	SOLID	HIGH	15.50	31.25	10.50	413.194
PSBH	PVC	SOLID	HIGH	15.50	31.25	2.00	142.798
PSBH	PVC	SOLID	HIGH	15.50	31.25	0.50	106.173
PSBH	PVC	SOLID	HIGH	23.00	4.25	10.50	417.605
PSBH	PVC	SOLID	HIGH	23.00	4.25	2.00	126.506
PSBH	PVC	SOLID	HIGH	23.00	4.25	0.50	119.983
PSBH	PVC	SOLID	HIGH	23.00	14.75	10.50	321.889
PSBH	PVC	SOLID	HIGH	23.00	14.75	2.00	115.043
PSBH	PVC	SOLID	HIGH	23.00	14.75	0.50	93.185
PSBH	PVC	SOLID	HIGH	23.00	20.75	10.50	286.967
PSBH	PVC	SOLID	HIGH	23.00	20.75	2.00	133.268
PSBH	PVC	SOLID	HIGH	23.00	20.75	0.50	158.405
PSBH	PVC	SOLID	HIGH	23.00	31.25	10.50	401.579
PSBH	PVC	SOLID	HIGH	23.00	31.25	2.00	169.219
PSBH	PVC	SOLID	HIGH	23.00	31.25	0.50	158.714
PSBH	PVC	SOLID	HIGH	30.50	4.25	10.50	409.579
PSBH	PVC	SOLID	HIGH	30.50	4.25	2.00	139.191
PSBH	PVC	SOLID	HIGH	30.50	4.25	0.50	98.574
PSBH	PVC	SOLID	HIGH	30.50	14.75	10.50	345.613
PSBH	PVC	SOLID	HIGH	30.50	14.75	2.00	67.047
PSBH	PVC	SOLID	HIGH	30.50	14.75	0.50	36.803
PSBH	PVC	SOLID	HIGH	30.50	20.75	10.50	306.031
PSBH	PVC	SOLID	HIGH	30.50	20.75	2.00	123.030

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBH	PVC	SOLID	HIGH	30.50	20.75	0.50	113.946
PSBH	PVC	SOLID	HIGH	30.50	31.25	10.50	369.927
PSBH	PVC	SOLID	HIGH	30.50	31.25	2.00	167.079
PSBH	PVC	SOLID	HIGH	30.50	31.25	0.50	137.853
PSBH	PVC	SOLID	HIGH	38.00	4.25	10.50	406.618
PSBH	PVC	SOLID	HIGH	38.00	4.25	2.00	81.635
PSBH	PVC	SOLID	HIGH	38.00	4.25	0.50	62.202
PSBH	PVC	SOLID	HIGH	38.00	14.75	10.50	339.401
PSBH	PVC	SOLID	HIGH	38.00	14.75	2.00	46.528
PSBH	PVC	SOLID	HIGH	38.00	14.75	0.50	38.196
PSBH	PVC	SOLID	HIGH	38.00	20.75	10.50	374.867
PSBH	PVC	SOLID	HIGH	38.00	20.75	2.00	122.678
PSBH	PVC	SOLID	HIGH	38.00	20.75	0.50	105.279
PSBH	PVC	SOLID	HIGH	38.00	31.25	10.50	426.906
PSBH	PVC	SOLID	HIGH	38.00	31.25	2.00	169.920
PSBH	PVC	SOLID	HIGH	38.00	31.25	0.50	152.663
PSBH	PVC	SOLID	HIGH	45.50	4.25	10.50	380.496
PSBH	PVC	SOLID	HIGH	45.50	4.25	2.00	91.041
PSBH	PVC	SOLID	HIGH	45.50	4.25	0.50	73.044
PSBH	PVC	SOLID	HIGH	45.50	14.75	10.50	305.683
PSBH	PVC	SOLID	HIGH	45.50	14.75	2.00	54.324
PSBH	PVC	SOLID	HIGH	45.50	14.75	0.50	41.667
PSBH	PVC	SOLID	HIGH	45.50	20.75	10.50	305.139
PSBH	PVC	SOLID	HIGH	45.50	20.75	2.00	76.610
PSBH	PVC	SOLID	HIGH	45.50	20.75	0.50	57.847
PSBH	PVC	SOLID	HIGH	45.50	31.25	10.50	619.176
PSBH	PVC	SOLID	HIGH	45.50	31.25	2.00	151.950
PSBH	PVC	SOLID	HIGH	45.50	31.25	0.50	130.523
PSBH	PVC	SOLID	HIGH	53.00	4.25	10.50	378.901
PSBH	PVC	SOLID	HIGH	53.00	4.25	2.00	78.905
PSBH	PVC	SOLID	HIGH	53.00	4.25	0.50	63.511
PSBH	PVC	SOLID	HIGH	53.00	14.75	10.50	249.573
PSBH	PVC	SOLID	HIGH	53.00	14.75	2.00	60.842
PSBH	PVC	SOLID	HIGH	53.00	14.75	0.50	43.446
PSBH	PVC	SOLID	HIGH	53.00	20.75	10.50	299.566
PSBH	PVC	SOLID	HIGH	53.00	20.75	2.00	85.808
PSBH	PVC	SOLID	HIGH	53.00	20.75	0.50	48.489
PSBH	PVC	SOLID	HIGH	53.00	31.25	10.50	611.288
PSBH	PVC	SOLID	HIGH	53.00	31.25	2.00	157.626
PSBH	PVC	SOLID	HIGH	53.00	31.25	0.50	134.343
PSBH	PVC	SOLID	HIGH	60.50	4.25	10.50	409.508
PSBH	PVC	SOLID	HIGH	60.50	4.25	2.00	70.324
PSBH	PVC	SOLID	HIGH	60.50	4.25	0.50	66.953
PSBH	PVC	SOLID	HIGH	60.50	14.75	10.50	277.448

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBH	PVC	SOLID	HIGH	60.50	14.75	2.00	84.951
PSBH	PVC	SOLID	HIGH	60.50	14.75	0.50	92.327
PSBH	PVC	SOLID	HIGH	60.50	20.75	10.50	238.333
PSBH	PVC	SOLID	HIGH	60.50	20.75	2.00	115.118
PSBH	PVC	SOLID	HIGH	60.50	20.75	0.50	104.507
PSBH	PVC	SOLID	HIGH	60.50	31.25	10.50	401.118
PSBH	PVC	SOLID	HIGH	60.50	31.25	2.00	152.324
PSBH	PVC	SOLID	HIGH	60.50	31.25	0.50	155.289
PSBH	PVC	SOLID	HIGH	68.00	4.25	10.50	385.528
PSBH	PVC	SOLID	HIGH	68.00	4.25	2.00	108.614
PSBH	PVC	SOLID	HIGH	68.00	4.25	0.50	83.810
PSBH	PVC	SOLID	HIGH	68.00	14.75	10.50	343.529
PSBH	PVC	SOLID	HIGH	68.00	14.75	2.00	93.712
PSBH	PVC	SOLID	HIGH	68.00	14.75	0.50	116.738
PSBH	PVC	SOLID	HIGH	68.00	20.75	10.50	329.266
PSBH	PVC	SOLID	HIGH	68.00	20.75	2.00	123.156
PSBH	PVC	SOLID	HIGH	68.00	20.75	0.50	94.908
PSBH	PVC	SOLID	HIGH	68.00	31.25	10.50	396.073
PSBH	PVC	SOLID	HIGH	68.00	31.25	2.00	151.133
PSBH	PVC	SOLID	HIGH	68.00	31.25	0.50	157.171
PSBH	PVC	SOLID	HIGH	75.50	4.25	10.50	392.945
PSBH	PVC	SOLID	HIGH	75.50	4.25	2.00	99.120
PSBH	PVC	SOLID	HIGH	75.50	4.25	0.50	103.527
PSBH	PVC	SOLID	HIGH	75.50	14.75	10.50	227.215
PSBH	PVC	SOLID	HIGH	75.50	14.75	2.00	84.251
PSBH	PVC	SOLID	HIGH	75.50	14.75	0.50	111.851
PSBH	PVC	SOLID	HIGH	75.50	20.75	10.50	273.424
PSBH	PVC	SOLID	HIGH	75.50	20.75	2.00	105.460
PSBH	PVC	SOLID	HIGH	75.50	20.75	0.50	110.501
PSBH	PVC	SOLID	HIGH	75.50	31.25	10.50	401.484
PSBH	PVC	SOLID	HIGH	75.50	31.25	2.00	131.656
PSBH	PVC	SOLID	HIGH	75.50	31.25	0.50	126.556
PSBH	PVC	SOLID	HIGH	83.00	4.25	10.50	385.368
PSBH	PVC	SOLID	HIGH	83.00	4.25	2.00	130.896
PSBH	PVC	SOLID	HIGH	83.00	4.25	0.50	109.128
PSBH	PVC	SOLID	HIGH	83.00	14.75	10.50	292.057
PSBH	PVC	SOLID	HIGH	83.00	14.75	2.00	145.426
PSBH	PVC	SOLID	HIGH	83.00	14.75	0.50	117.174
PSBH	PVC	SOLID	HIGH	83.00	20.75	10.50	277.222
PSBH	PVC	SOLID	HIGH	83.00	20.75	2.00	101.582
PSBH	PVC	SOLID	HIGH	83.00	20.75	0.50	89.188
PSBH	PVC	SOLID	HIGH	83.00	31.25	10.50	342.081
PSBH	PVC	SOLID	HIGH	83.00	31.25	2.00	141.229
PSBH	PVC	SOLID	HIGH	83.00	31.25	0.50	131.516

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
PSBH	PVC	SOLID	HIGH	90.50	4.25	10.50	424.009
PSBH	PVC	SOLID	HIGH	90.50	4.25	2.00	180.483
PSBH	PVC	SOLID	HIGH	90.50	4.25	0.50	155.626
PSBH	PVC	SOLID	HIGH	90.50	14.75	10.50	238.021
PSBH	PVC	SOLID	HIGH	90.50	14.75	2.00	134.773
PSBH	PVC	SOLID	HIGH	90.50	14.75	0.50	126.254
PSBH	PVC	SOLID	HIGH	90.50	20.75	10.50	258.386
PSBH	PVC	SOLID	HIGH	90.50	20.75	2.00	79.984
PSBH	PVC	SOLID	HIGH	90.50	20.75	0.50	53.483
PSBH	PVC	SOLID	HIGH	90.50	31.25	10.50	276.518
PSBH	PVC	SOLID	HIGH	90.50	31.25	2.00	111.369
PSBH	PVC	SOLID	HIGH	90.50	31.25	0.50	92.607

Table B-4. Air Velocity Data for Treatment POBL

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBL	PVC	OPEN	LOW	8.00	4.25	10.50	19.409
POBL	PVC	OPEN	LOW	8.00	4.25	2.00	26.509
POBL	PVC	OPEN	LOW	8.00	4.25	0.50	56.513
POBL	PVC	OPEN	LOW	8.00	14.75	10.50	52.922
POBL	PVC	OPEN	LOW	8.00	14.75	2.00	51.049
POBL	PVC	OPEN	LOW	8.00	14.75	0.50	57.469
POBL	PVC	OPEN	LOW	8.00	20.75	10.50	71.852
POBL	PVC	OPEN	LOW	8.00	20.75	2.00	39.569
POBL	PVC	OPEN	LOW	8.00	20.75	0.50	37.433
POBL	PVC	OPEN	LOW	8.00	31.25	10.50	39.550
POBL	PVC	OPEN	LOW	8.00	31.25	2.00	23.017
POBL	PVC	OPEN	LOW	8.00	31.25	0.50	57.493
POBL	PVC	OPEN	LOW	15.50	4.25	10.50	65.049
POBL	PVC	OPEN	LOW	15.50	4.25	2.00	33.917
POBL	PVC	OPEN	LOW	15.50	4.25	0.50	75.213
POBL	PVC	OPEN	LOW	15.50	14.75	10.50	24.408
POBL	PVC	OPEN	LOW	15.50	14.75	2.00	21.257
POBL	PVC	OPEN	LOW	15.50	14.75	0.50	38.385
POBL	PVC	OPEN	LOW	15.50	20.75	10.50	24.071
POBL	PVC	OPEN	LOW	15.50	20.75	2.00	24.870
POBL	PVC	OPEN	LOW	15.50	20.75	0.50	46.571
POBL	PVC	OPEN	LOW	15.50	31.25	10.50	40.039
POBL	PVC	OPEN	LOW	15.50	31.25	2.00	12.729
POBL	PVC	OPEN	LOW	15.50	31.25	0.50	69.957
POBL	PVC	OPEN	LOW	23.00	4.25	10.50	41.484
POBL	PVC	OPEN	LOW	23.00	4.25	2.00	42.612
POBL	PVC	OPEN	LOW	23.00	4.25	0.50	34.963
POBL	PVC	OPEN	LOW	23.00	14.75	10.50	14.666
POBL	PVC	OPEN	LOW	23.00	14.75	2.00	21.490
POBL	PVC	OPEN	LOW	23.00	14.75	0.50	19.232
POBL	PVC	OPEN	LOW	23.00	20.75	10.50	26.619
POBL	PVC	OPEN	LOW	23.00	20.75	2.00	44.466
POBL	PVC	OPEN	LOW	23.00	20.75	0.50	43.220
POBL	PVC	OPEN	LOW	23.00	31.25	10.50	32.776
POBL	PVC	OPEN	LOW	23.00	31.25	2.00	13.868
POBL	PVC	OPEN	LOW	23.00	31.25	0.50	35.931
POBL	PVC	OPEN	LOW	30.50	4.25	10.50	48.005
POBL	PVC	OPEN	LOW	30.50	4.25	2.00	49.611
POBL	PVC	OPEN	LOW	30.50	4.25	0.50	46.210
POBL	PVC	OPEN	LOW	30.50	14.75	10.50	24.300
POBL	PVC	OPEN	LOW	30.50	14.75	2.00	18.712
POBL	PVC	OPEN	LOW	30.50	14.75	0.50	58.934
POBL	PVC	OPEN	LOW	30.50	20.75	10.50	18.048
POBL	PVC	OPEN	LOW	30.50	20.75	2.00	15.703

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBL	PVC	OPEN	LOW	30.50	20.75	0.50	19.302
POBL	PVC	OPEN	LOW	30.50	31.25	10.50	19.825
POBL	PVC	OPEN	LOW	30.50	31.25	2.00	23.923
POBL	PVC	OPEN	LOW	30.50	31.25	0.50	30.645
POBL	PVC	OPEN	LOW	38.00	4.25	10.50	29.888
POBL	PVC	OPEN	LOW	38.00	4.25	2.00	73.768
POBL	PVC	OPEN	LOW	38.00	4.25	0.50	43.734
POBL	PVC	OPEN	LOW	38.00	14.75	10.50	39.846
POBL	PVC	OPEN	LOW	38.00	14.75	2.00	9.814
POBL	PVC	OPEN	LOW	38.00	14.75	0.50	26.802
POBL	PVC	OPEN	LOW	38.00	20.75	10.50	38.047
POBL	PVC	OPEN	LOW	38.00	20.75	2.00	11.493
POBL	PVC	OPEN	LOW	38.00	20.75	0.50	23.830
POBL	PVC	OPEN	LOW	38.00	31.25	10.50	30.001
POBL	PVC	OPEN	LOW	38.00	31.25	2.00	21.110
POBL	PVC	OPEN	LOW	38.00	31.25	0.50	25.777
POBL	PVC	OPEN	LOW	45.50	4.25	10.50	21.593
POBL	PVC	OPEN	LOW	45.50	4.25	2.00	10.242
POBL	PVC	OPEN	LOW	45.50	4.25	0.50	66.321
POBL	PVC	OPEN	LOW	45.50	14.75	10.50	20.281
POBL	PVC	OPEN	LOW	45.50	14.75	2.00	29.785
POBL	PVC	OPEN	LOW	45.50	14.75	0.50	72.165
POBL	PVC	OPEN	LOW	45.50	20.75	10.50	19.434
POBL	PVC	OPEN	LOW	45.50	20.75	2.00	12.583
POBL	PVC	OPEN	LOW	45.50	20.75	0.50	19.097
POBL	PVC	OPEN	LOW	45.50	31.25	10.50	13.225
POBL	PVC	OPEN	LOW	45.50	31.25	2.00	15.161
POBL	PVC	OPEN	LOW	45.50	31.25	0.50	12.166
POBL	PVC	OPEN	LOW	53.00	4.25	10.50	22.560
POBL	PVC	OPEN	LOW	53.00	4.25	2.00	4.984
POBL	PVC	OPEN	LOW	53.00	4.25	0.50	6.931
POBL	PVC	OPEN	LOW	53.00	14.75	10.50	23.397
POBL	PVC	OPEN	LOW	53.00	14.75	2.00	13.057
POBL	PVC	OPEN	LOW	53.00	14.75	0.50	46.190
POBL	PVC	OPEN	LOW	53.00	20.75	10.50	9.082
POBL	PVC	OPEN	LOW	53.00	20.75	2.00	7.860
POBL	PVC	OPEN	LOW	53.00	20.75	0.50	14.801
POBL	PVC	OPEN	LOW	53.00	31.25	10.50	16.592
POBL	PVC	OPEN	LOW	53.00	31.25	2.00	4.000
POBL	PVC	OPEN	LOW	53.00	31.25	0.50	22.368
POBL	PVC	OPEN	LOW	60.50	4.25	10.50	44.232
POBL	PVC	OPEN	LOW	60.50	4.25	2.00	5.570
POBL	PVC	OPEN	LOW	60.50	4.25	0.50	11.861
POBL	PVC	OPEN	LOW	60.50	14.75	10.50	20.459

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBL	PVC	OPEN	LOW	60.50	14.75	2.00	4.679
POBL	PVC	OPEN	LOW	60.50	14.75	0.50	8.451
POBL	PVC	OPEN	LOW	60.50	20.75	10.50	6.460
POBL	PVC	OPEN	LOW	60.50	20.75	2.00	10.945
POBL	PVC	OPEN	LOW	60.50	20.75	0.50	12.606
POBL	PVC	OPEN	LOW	60.50	31.25	10.50	16.347
POBL	PVC	OPEN	LOW	60.50	31.25	2.00	3.953
POBL	PVC	OPEN	LOW	60.50	31.25	0.50	41.085
POBL	PVC	OPEN	LOW	68.00	4.25	10.50	25.774
POBL	PVC	OPEN	LOW	68.00	4.25	2.00	9.489
POBL	PVC	OPEN	LOW	68.00	4.25	0.50	15.155
POBL	PVC	OPEN	LOW	68.00	14.75	10.50	14.340
POBL	PVC	OPEN	LOW	68.00	14.75	2.00	9.734
POBL	PVC	OPEN	LOW	68.00	14.75	0.50	23.099
POBL	PVC	OPEN	LOW	68.00	20.75	10.50	25.030
POBL	PVC	OPEN	LOW	68.00	20.75	2.00	11.356
POBL	PVC	OPEN	LOW	68.00	20.75	0.50	20.212
POBL	PVC	OPEN	LOW	68.00	31.25	10.50	34.710
POBL	PVC	OPEN	LOW	68.00	31.25	2.00	3.628
POBL	PVC	OPEN	LOW	68.00	31.25	0.50	17.579
POBL	PVC	OPEN	LOW	75.50	4.25	10.50	54.112
POBL	PVC	OPEN	LOW	75.50	4.25	2.00	20.407
POBL	PVC	OPEN	LOW	75.50	4.25	0.50	25.644
POBL	PVC	OPEN	LOW	75.50	14.75	10.50	36.800
POBL	PVC	OPEN	LOW	75.50	14.75	2.00	8.157
POBL	PVC	OPEN	LOW	75.50	14.75	0.50	18.436
POBL	PVC	OPEN	LOW	75.50	20.75	10.50	23.197
POBL	PVC	OPEN	LOW	75.50	20.75	2.00	10.903
POBL	PVC	OPEN	LOW	75.50	20.75	0.50	18.160
POBL	PVC	OPEN	LOW	75.50	31.25	10.50	39.901
POBL	PVC	OPEN	LOW	75.50	31.25	2.00	29.290
POBL	PVC	OPEN	LOW	75.50	31.25	0.50	33.838
POBL	PVC	OPEN	LOW	83.00	4.25	10.50	44.658
POBL	PVC	OPEN	LOW	83.00	4.25	2.00	23.877
POBL	PVC	OPEN	LOW	83.00	4.25	0.50	32.624
POBL	PVC	OPEN	LOW	83.00	14.75	10.50	15.061
POBL	PVC	OPEN	LOW	83.00	14.75	2.00	18.931
POBL	PVC	OPEN	LOW	83.00	14.75	0.50	16.318
POBL	PVC	OPEN	LOW	83.00	20.75	10.50	31.760
POBL	PVC	OPEN	LOW	83.00	20.75	2.00	27.926
POBL	PVC	OPEN	LOW	83.00	20.75	0.50	29.523
POBL	PVC	OPEN	LOW	83.00	31.25	10.50	26.486
POBL	PVC	OPEN	LOW	83.00	31.25	2.00	19.751
POBL	PVC	OPEN	LOW	83.00	31.25	0.50	42.922

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBL	PVC	OPEN	LOW	90.50	4.25	10.50	66.203
POBL	PVC	OPEN	LOW	90.50	4.25	2.00	20.016
POBL	PVC	OPEN	LOW	90.50	4.25	0.50	37.762
POBL	PVC	OPEN	LOW	90.50	14.75	10.50	13.937
POBL	PVC	OPEN	LOW	90.50	14.75	2.00	32.229
POBL	PVC	OPEN	LOW	90.50	14.75	0.50	42.692
POBL	PVC	OPEN	LOW	90.50	20.75	10.50	39.934
POBL	PVC	OPEN	LOW	90.50	20.75	2.00	30.116
POBL	PVC	OPEN	LOW	90.50	20.75	0.50	51.674
POBL	PVC	OPEN	LOW	90.50	31.25	10.50	44.491
POBL	PVC	OPEN	LOW	90.50	31.25	2.00	12.494
POBL	PVC	OPEN	LOW	90.50	31.25	0.50	74.526

Table B-5. Air Velocity Data for Treatment POBM

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBM	PVC	OPEN	MEDIUM	8.00	4.25	10.50	147.213
POBM	PVC	OPEN	MEDIUM	8.00	4.25	2.00	109.802
POBM	PVC	OPEN	MEDIUM	8.00	4.25	0.50	289.428
POBM	PVC	OPEN	MEDIUM	8.00	14.75	10.50	152.654
POBM	PVC	OPEN	MEDIUM	8.00	14.75	2.00	175.474
POBM	PVC	OPEN	MEDIUM	8.00	14.75	0.50	189.859
POBM	PVC	OPEN	MEDIUM	8.00	20.75	10.50	139.506
POBM	PVC	OPEN	MEDIUM	8.00	20.75	2.00	177.864
POBM	PVC	OPEN	MEDIUM	8.00	20.75	0.50	193.197
POBM	PVC	OPEN	MEDIUM	8.00	31.25	10.50	151.121
POBM	PVC	OPEN	MEDIUM	8.00	31.25	2.00	124.123
POBM	PVC	OPEN	MEDIUM	8.00	31.25	0.50	299.296
POBM	PVC	OPEN	MEDIUM	15.50	4.25	10.50	166.807
POBM	PVC	OPEN	MEDIUM	15.50	4.25	2.00	97.061
POBM	PVC	OPEN	MEDIUM	15.50	4.25	0.50	286.457
POBM	PVC	OPEN	MEDIUM	15.50	14.75	10.50	147.986
POBM	PVC	OPEN	MEDIUM	15.50	14.75	2.00	157.230
POBM	PVC	OPEN	MEDIUM	15.50	14.75	0.50	194.840
POBM	PVC	OPEN	MEDIUM	15.50	20.75	10.50	151.464
POBM	PVC	OPEN	MEDIUM	15.50	20.75	2.00	158.443
POBM	PVC	OPEN	MEDIUM	15.50	20.75	0.50	203.245
POBM	PVC	OPEN	MEDIUM	15.50	31.25	10.50	145.765
POBM	PVC	OPEN	MEDIUM	15.50	31.25	2.00	97.327
POBM	PVC	OPEN	MEDIUM	15.50	31.25	0.50	286.624
POBM	PVC	OPEN	MEDIUM	23.00	4.25	10.50	155.870
POBM	PVC	OPEN	MEDIUM	23.00	4.25	2.00	88.550
POBM	PVC	OPEN	MEDIUM	23.00	4.25	0.50	274.398
POBM	PVC	OPEN	MEDIUM	23.00	14.75	10.50	137.947
POBM	PVC	OPEN	MEDIUM	23.00	14.75	2.00	169.775
POBM	PVC	OPEN	MEDIUM	23.00	14.75	0.50	162.197
POBM	PVC	OPEN	MEDIUM	23.00	20.75	10.50	124.453
POBM	PVC	OPEN	MEDIUM	23.00	20.75	2.00	156.233
POBM	PVC	OPEN	MEDIUM	23.00	20.75	0.50	176.624
POBM	PVC	OPEN	MEDIUM	23.00	31.25	10.50	148.431
POBM	PVC	OPEN	MEDIUM	23.00	31.25	2.00	135.543
POBM	PVC	OPEN	MEDIUM	23.00	31.25	0.50	276.530
POBM	PVC	OPEN	MEDIUM	30.50	4.25	10.50	151.980
POBM	PVC	OPEN	MEDIUM	30.50	4.25	2.00	88.985
POBM	PVC	OPEN	MEDIUM	30.50	4.25	0.50	261.530
POBM	PVC	OPEN	MEDIUM	30.50	14.75	10.50	144.640
POBM	PVC	OPEN	MEDIUM	30.50	14.75	2.00	148.007
POBM	PVC	OPEN	MEDIUM	30.50	14.75	0.50	147.475
POBM	PVC	OPEN	MEDIUM	30.50	20.75	10.50	129.480
POBM	PVC	OPEN	MEDIUM	30.50	20.75	2.00	170.126

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBM	PVC	OPEN	MEDIUM	30.50	20.75	0.50	195.786
POBM	PVC	OPEN	MEDIUM	30.50	31.25	10.50	138.838
POBM	PVC	OPEN	MEDIUM	30.50	31.25	2.00	125.315
POBM	PVC	OPEN	MEDIUM	30.50	31.25	0.50	293.775
POBM	PVC	OPEN	MEDIUM	38.00	4.25	10.50	130.878
POBM	PVC	OPEN	MEDIUM	38.00	4.25	2.00	169.904
POBM	PVC	OPEN	MEDIUM	38.00	4.25	0.50	227.553
POBM	PVC	OPEN	MEDIUM	38.00	14.75	10.50	136.078
POBM	PVC	OPEN	MEDIUM	38.00	14.75	2.00	147.930
POBM	PVC	OPEN	MEDIUM	38.00	14.75	0.50	166.227
POBM	PVC	OPEN	MEDIUM	38.00	20.75	10.50	136.523
POBM	PVC	OPEN	MEDIUM	38.00	20.75	2.00	124.880
POBM	PVC	OPEN	MEDIUM	38.00	20.75	0.50	196.005
POBM	PVC	OPEN	MEDIUM	38.00	31.25	10.50	123.268
POBM	PVC	OPEN	MEDIUM	38.00	31.25	2.00	66.607
POBM	PVC	OPEN	MEDIUM	38.00	31.25	0.50	239.246
POBM	PVC	OPEN	MEDIUM	45.50	4.25	10.50	123.753
POBM	PVC	OPEN	MEDIUM	45.50	4.25	2.00	128.043
POBM	PVC	OPEN	MEDIUM	45.50	4.25	0.50	192.460
POBM	PVC	OPEN	MEDIUM	45.50	14.75	10.50	94.163
POBM	PVC	OPEN	MEDIUM	45.50	14.75	2.00	102.514
POBM	PVC	OPEN	MEDIUM	45.50	14.75	0.50	134.080
POBM	PVC	OPEN	MEDIUM	45.50	20.75	10.50	116.423
POBM	PVC	OPEN	MEDIUM	45.50	20.75	2.00	110.375
POBM	PVC	OPEN	MEDIUM	45.50	20.75	0.50	99.322
POBM	PVC	OPEN	MEDIUM	45.50	31.25	10.50	143.775
POBM	PVC	OPEN	MEDIUM	45.50	31.25	2.00	125.793
POBM	PVC	OPEN	MEDIUM	45.50	31.25	0.50	180.868
POBM	PVC	OPEN	MEDIUM	53.00	4.25	10.50	117.715
POBM	PVC	OPEN	MEDIUM	53.00	4.25	2.00	59.666
POBM	PVC	OPEN	MEDIUM	53.00	4.25	0.50	191.620
POBM	PVC	OPEN	MEDIUM	53.00	14.75	10.50	118.120
POBM	PVC	OPEN	MEDIUM	53.00	14.75	2.00	97.630
POBM	PVC	OPEN	MEDIUM	53.00	14.75	0.50	147.207
POBM	PVC	OPEN	MEDIUM	53.00	20.75	10.50	131.999
POBM	PVC	OPEN	MEDIUM	53.00	20.75	2.00	103.235
POBM	PVC	OPEN	MEDIUM	53.00	20.75	0.50	111.976
POBM	PVC	OPEN	MEDIUM	53.00	31.25	10.50	132.967
POBM	PVC	OPEN	MEDIUM	53.00	31.25	2.00	127.275
POBM	PVC	OPEN	MEDIUM	53.00	31.25	0.50	168.256
POBM	PVC	OPEN	MEDIUM	60.50	4.25	10.50	175.385
POBM	PVC	OPEN	MEDIUM	60.50	4.25	2.00	73.418
POBM	PVC	OPEN	MEDIUM	60.50	4.25	0.50	184.247
POBM	PVC	OPEN	MEDIUM	60.50	14.75	10.50	110.825

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBM	PVC	OPEN	MEDIUM	60.50	14.75	2.00	127.393
POBM	PVC	OPEN	MEDIUM	60.50	14.75	0.50	146.993
POBM	PVC	OPEN	MEDIUM	60.50	20.75	10.50	120.555
POBM	PVC	OPEN	MEDIUM	60.50	20.75	2.00	121.097
POBM	PVC	OPEN	MEDIUM	60.50	20.75	0.50	134.292
POBM	PVC	OPEN	MEDIUM	60.50	31.25	10.50	98.349
POBM	PVC	OPEN	MEDIUM	60.50	31.25	2.00	61.488
POBM	PVC	OPEN	MEDIUM	60.50	31.25	0.50	225.695
POBM	PVC	OPEN	MEDIUM	68.00	4.25	10.50	144.116
POBM	PVC	OPEN	MEDIUM	68.00	4.25	2.00	81.442
POBM	PVC	OPEN	MEDIUM	68.00	4.25	0.50	197.674
POBM	PVC	OPEN	MEDIUM	68.00	14.75	10.50	96.811
POBM	PVC	OPEN	MEDIUM	68.00	14.75	2.00	133.385
POBM	PVC	OPEN	MEDIUM	68.00	14.75	0.50	119.395
POBM	PVC	OPEN	MEDIUM	68.00	20.75	10.50	166.344
POBM	PVC	OPEN	MEDIUM	68.00	20.75	2.00	131.383
POBM	PVC	OPEN	MEDIUM	68.00	20.75	0.50	195.197
POBM	PVC	OPEN	MEDIUM	68.00	31.25	10.50	168.251
POBM	PVC	OPEN	MEDIUM	68.00	31.25	2.00	77.019
POBM	PVC	OPEN	MEDIUM	68.00	31.25	0.50	220.046
POBM	PVC	OPEN	MEDIUM	75.50	4.25	10.50	133.420
POBM	PVC	OPEN	MEDIUM	75.50	4.25	2.00	81.325
POBM	PVC	OPEN	MEDIUM	75.50	4.25	0.50	210.361
POBM	PVC	OPEN	MEDIUM	75.50	14.75	10.50	120.212
POBM	PVC	OPEN	MEDIUM	75.50	14.75	2.00	126.308
POBM	PVC	OPEN	MEDIUM	75.50	14.75	0.50	103.457
POBM	PVC	OPEN	MEDIUM	75.50	20.75	10.50	132.825
POBM	PVC	OPEN	MEDIUM	75.50	20.75	2.00	150.275
POBM	PVC	OPEN	MEDIUM	75.50	20.75	0.50	201.098
POBM	PVC	OPEN	MEDIUM	75.50	31.25	10.50	138.904
POBM	PVC	OPEN	MEDIUM	75.50	31.25	2.00	89.581
POBM	PVC	OPEN	MEDIUM	75.50	31.25	0.50	250.795
POBM	PVC	OPEN	MEDIUM	83.00	4.25	10.50	122.095
POBM	PVC	OPEN	MEDIUM	83.00	4.25	2.00	83.304
POBM	PVC	OPEN	MEDIUM	83.00	4.25	0.50	206.918
POBM	PVC	OPEN	MEDIUM	83.00	14.75	10.50	94.853
POBM	PVC	OPEN	MEDIUM	83.00	14.75	2.00	133.467
POBM	PVC	OPEN	MEDIUM	83.00	14.75	0.50	104.636
POBM	PVC	OPEN	MEDIUM	83.00	20.75	10.50	140.500
POBM	PVC	OPEN	MEDIUM	83.00	20.75	2.00	144.525
POBM	PVC	OPEN	MEDIUM	83.00	20.75	0.50	206.120
POBM	PVC	OPEN	MEDIUM	83.00	31.25	10.50	140.580
POBM	PVC	OPEN	MEDIUM	83.00	31.25	2.00	94.332
POBM	PVC	OPEN	MEDIUM	83.00	31.25	0.50	271.290

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBM	PVC	OPEN	MEDIUM	90.50	4.25	10.50	129.088
POBM	PVC	OPEN	MEDIUM	90.50	4.25	2.00	98.457
POBM	PVC	OPEN	MEDIUM	90.50	4.25	0.50	219.231
POBM	PVC	OPEN	MEDIUM	90.50	14.75	10.50	99.235
POBM	PVC	OPEN	MEDIUM	90.50	14.75	2.00	131.877
POBM	PVC	OPEN	MEDIUM	90.50	14.75	0.50	110.017
POBM	PVC	OPEN	MEDIUM	90.50	20.75	10.50	134.928
POBM	PVC	OPEN	MEDIUM	90.50	20.75	2.00	148.495
POBM	PVC	OPEN	MEDIUM	90.50	20.75	0.50	201.282
POBM	PVC	OPEN	MEDIUM	90.50	31.25	10.50	130.595
POBM	PVC	OPEN	MEDIUM	90.50	31.25	2.00	81.474
POBM	PVC	OPEN	MEDIUM	90.50	31.25	0.50	277.333

Table B-6. Air Velocity Data for Treatment POBH

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBH	PVC	OPEN	HIGH	8.00	4.25	10.50	506.741
POBH	PVC	OPEN	HIGH	8.00	4.25	2.00	445.740
POBH	PVC	OPEN	HIGH	8.00	4.25	0.50	657.252
POBH	PVC	OPEN	HIGH	8.00	14.75	10.50	547.656
POBH	PVC	OPEN	HIGH	8.00	14.75	2.00	619.761
POBH	PVC	OPEN	HIGH	8.00	14.75	0.50	615.839
POBH	PVC	OPEN	HIGH	8.00	20.75	10.50	484.258
POBH	PVC	OPEN	HIGH	8.00	20.75	2.00	611.411
POBH	PVC	OPEN	HIGH	8.00	20.75	0.50	523.990
POBH	PVC	OPEN	HIGH	8.00	31.25	10.50	584.937
POBH	PVC	OPEN	HIGH	8.00	31.25	2.00	527.575
POBH	PVC	OPEN	HIGH	8.00	31.25	0.50	660.153
POBH	PVC	OPEN	HIGH	15.50	4.25	10.50	543.857
POBH	PVC	OPEN	HIGH	15.50	4.25	2.00	509.506
POBH	PVC	OPEN	HIGH	15.50	4.25	0.50	659.625
POBH	PVC	OPEN	HIGH	15.50	14.75	10.50	514.408
POBH	PVC	OPEN	HIGH	15.50	14.75	2.00	611.194
POBH	PVC	OPEN	HIGH	15.50	14.75	0.50	618.419
POBH	PVC	OPEN	HIGH	15.50	20.75	10.50	450.741
POBH	PVC	OPEN	HIGH	15.50	20.75	2.00	613.182
POBH	PVC	OPEN	HIGH	15.50	20.75	0.50	608.940
POBH	PVC	OPEN	HIGH	15.50	31.25	10.50	602.084
POBH	PVC	OPEN	HIGH	15.50	31.25	2.00	598.042
POBH	PVC	OPEN	HIGH	15.50	31.25	0.50	659.998
POBH	PVC	OPEN	HIGH	23.00	4.25	10.50	551.282
POBH	PVC	OPEN	HIGH	23.00	4.25	2.00	493.750
POBH	PVC	OPEN	HIGH	23.00	4.25	0.50	662.374
POBH	PVC	OPEN	HIGH	23.00	14.75	10.50	506.159
POBH	PVC	OPEN	HIGH	23.00	14.75	2.00	600.734
POBH	PVC	OPEN	HIGH	23.00	14.75	0.50	600.393
POBH	PVC	OPEN	HIGH	23.00	20.75	10.50	521.409
POBH	PVC	OPEN	HIGH	23.00	20.75	2.00	617.533
POBH	PVC	OPEN	HIGH	23.00	20.75	0.50	612.025
POBH	PVC	OPEN	HIGH	23.00	31.25	10.50	576.497
POBH	PVC	OPEN	HIGH	23.00	31.25	2.00	597.242
POBH	PVC	OPEN	HIGH	23.00	31.25	0.50	662.569
POBH	PVC	OPEN	HIGH	30.50	4.25	10.50	564.791
POBH	PVC	OPEN	HIGH	30.50	4.25	2.00	398.411
POBH	PVC	OPEN	HIGH	30.50	4.25	0.50	658.877
POBH	PVC	OPEN	HIGH	30.50	14.75	10.50	561.762
POBH	PVC	OPEN	HIGH	30.50	14.75	2.00	598.272
POBH	PVC	OPEN	HIGH	30.50	14.75	0.50	610.729
POBH	PVC	OPEN	HIGH	30.50	20.75	10.50	502.358
POBH	PVC	OPEN	HIGH	30.50	20.75	2.00	614.814

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBH	PVC	OPEN	HIGH	30.50	20.75	0.50	553.094
POBH	PVC	OPEN	HIGH	30.50	31.25	10.50	516.379
POBH	PVC	OPEN	HIGH	30.50	31.25	2.00	443.311
POBH	PVC	OPEN	HIGH	30.50	31.25	0.50	657.645
POBH	PVC	OPEN	HIGH	38.00	4.25	10.50	499.809
POBH	PVC	OPEN	HIGH	38.00	4.25	2.00	498.501
POBH	PVC	OPEN	HIGH	38.00	4.25	0.50	664.328
POBH	PVC	OPEN	HIGH	38.00	14.75	10.50	484.259
POBH	PVC	OPEN	HIGH	38.00	14.75	2.00	616.859
POBH	PVC	OPEN	HIGH	38.00	14.75	0.50	620.143
POBH	PVC	OPEN	HIGH	38.00	20.75	10.50	427.764
POBH	PVC	OPEN	HIGH	38.00	20.75	2.00	577.813
POBH	PVC	OPEN	HIGH	38.00	20.75	0.50	442.752
POBH	PVC	OPEN	HIGH	38.00	31.25	10.50	538.573
POBH	PVC	OPEN	HIGH	38.00	31.25	2.00	549.595
POBH	PVC	OPEN	HIGH	38.00	31.25	0.50	649.909
POBH	PVC	OPEN	HIGH	45.50	4.25	10.50	374.815
POBH	PVC	OPEN	HIGH	45.50	4.25	2.00	438.482
POBH	PVC	OPEN	HIGH	45.50	4.25	0.50	655.731
POBH	PVC	OPEN	HIGH	45.50	14.75	10.50	435.424
POBH	PVC	OPEN	HIGH	45.50	14.75	2.00	614.776
POBH	PVC	OPEN	HIGH	45.50	14.75	0.50	640.023
POBH	PVC	OPEN	HIGH	45.50	20.75	10.50	377.997
POBH	PVC	OPEN	HIGH	45.50	20.75	2.00	616.152
POBH	PVC	OPEN	HIGH	45.50	20.75	0.50	542.159
POBH	PVC	OPEN	HIGH	45.50	31.25	10.50	640.552
POBH	PVC	OPEN	HIGH	45.50	31.25	2.00	627.379
POBH	PVC	OPEN	HIGH	45.50	31.25	0.50	652.760
POBH	PVC	OPEN	HIGH	53.00	4.25	10.50	278.051
POBH	PVC	OPEN	HIGH	53.00	4.25	2.00	400.361
POBH	PVC	OPEN	HIGH	53.00	4.25	0.50	647.043
POBH	PVC	OPEN	HIGH	53.00	14.75	10.50	371.232
POBH	PVC	OPEN	HIGH	53.00	14.75	2.00	560.878
POBH	PVC	OPEN	HIGH	53.00	14.75	0.50	633.510
POBH	PVC	OPEN	HIGH	53.00	20.75	10.50	357.012
POBH	PVC	OPEN	HIGH	53.00	20.75	2.00	575.509
POBH	PVC	OPEN	HIGH	53.00	20.75	0.50	483.202
POBH	PVC	OPEN	HIGH	53.00	31.25	10.50	635.734
POBH	PVC	OPEN	HIGH	53.00	31.25	2.00	628.368
POBH	PVC	OPEN	HIGH	53.00	31.25	0.50	649.292
POBH	PVC	OPEN	HIGH	60.50	4.25	10.50	443.057
POBH	PVC	OPEN	HIGH	60.50	4.25	2.00	414.799
POBH	PVC	OPEN	HIGH	60.50	4.25	0.50	652.619
POBH	PVC	OPEN	HIGH	60.50	14.75	10.50	445.171

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBH	PVC	OPEN	HIGH	60.50	14.75	2.00	611.960
POBH	PVC	OPEN	HIGH	60.50	14.75	0.50	633.641
POBH	PVC	OPEN	HIGH	60.50	20.75	10.50	395.251
POBH	PVC	OPEN	HIGH	60.50	20.75	2.00	589.826
POBH	PVC	OPEN	HIGH	60.50	20.75	0.50	435.920
POBH	PVC	OPEN	HIGH	60.50	31.25	10.50	500.743
POBH	PVC	OPEN	HIGH	60.50	31.25	2.00	565.286
POBH	PVC	OPEN	HIGH	60.50	31.25	0.50	647.161
POBH	PVC	OPEN	HIGH	68.00	4.25	10.50	485.825
POBH	PVC	OPEN	HIGH	68.00	4.25	2.00	365.940
POBH	PVC	OPEN	HIGH	68.00	4.25	0.50	658.628
POBH	PVC	OPEN	HIGH	68.00	14.75	10.50	487.686
POBH	PVC	OPEN	HIGH	68.00	14.75	2.00	554.858
POBH	PVC	OPEN	HIGH	68.00	14.75	0.50	616.116
POBH	PVC	OPEN	HIGH	68.00	20.75	10.50	461.661
POBH	PVC	OPEN	HIGH	68.00	20.75	2.00	602.625
POBH	PVC	OPEN	HIGH	68.00	20.75	0.50	538.250
POBH	PVC	OPEN	HIGH	68.00	31.25	10.50	471.053
POBH	PVC	OPEN	HIGH	68.00	31.25	2.00	377.848
POBH	PVC	OPEN	HIGH	68.00	31.25	0.50	653.180
POBH	PVC	OPEN	HIGH	75.50	4.25	10.50	524.301
POBH	PVC	OPEN	HIGH	75.50	4.25	2.00	413.982
POBH	PVC	OPEN	HIGH	75.50	4.25	0.50	652.619
POBH	PVC	OPEN	HIGH	75.50	14.75	10.50	486.111
POBH	PVC	OPEN	HIGH	75.50	14.75	2.00	577.658
POBH	PVC	OPEN	HIGH	75.50	14.75	0.50	598.771
POBH	PVC	OPEN	HIGH	75.50	20.75	10.50	489.985
POBH	PVC	OPEN	HIGH	75.50	20.75	2.00	614.710
POBH	PVC	OPEN	HIGH	75.50	20.75	0.50	613.445
POBH	PVC	OPEN	HIGH	75.50	31.25	10.50	526.227
POBH	PVC	OPEN	HIGH	75.50	31.25	2.00	491.409
POBH	PVC	OPEN	HIGH	75.50	31.25	0.50	653.338
POBH	PVC	OPEN	HIGH	83.00	4.25	10.50	496.344
POBH	PVC	OPEN	HIGH	83.00	4.25	2.00	422.263
POBH	PVC	OPEN	HIGH	83.00	4.25	0.50	652.541
POBH	PVC	OPEN	HIGH	83.00	14.75	10.50	462.519
POBH	PVC	OPEN	HIGH	83.00	14.75	2.00	588.354
POBH	PVC	OPEN	HIGH	83.00	14.75	0.50	611.592
POBH	PVC	OPEN	HIGH	83.00	20.75	10.50	427.019
POBH	PVC	OPEN	HIGH	83.00	20.75	2.00	574.435
POBH	PVC	OPEN	HIGH	83.00	20.75	0.50	597.037
POBH	PVC	OPEN	HIGH	83.00	31.25	10.50	553.406
POBH	PVC	OPEN	HIGH	83.00	31.25	2.00	584.938
POBH	PVC	OPEN	HIGH	83.00	31.25	0.50	654.880

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
POBH	PVC	OPEN	HIGH	90.50	4.25	10.50	488.951
POBH	PVC	OPEN	HIGH	90.50	4.25	2.00	438.559
POBH	PVC	OPEN	HIGH	90.50	4.25	0.50	653.687
POBH	PVC	OPEN	HIGH	90.50	14.75	10.50	501.861
POBH	PVC	OPEN	HIGH	90.50	14.75	2.00	604.940
POBH	PVC	OPEN	HIGH	90.50	14.75	0.50	620.003
POBH	PVC	OPEN	HIGH	90.50	20.75	10.50	438.586
POBH	PVC	OPEN	HIGH	90.50	20.75	2.00	605.255
POBH	PVC	OPEN	HIGH	90.50	20.75	0.50	558.120
POBH	PVC	OPEN	HIGH	90.50	31.25	10.50	531.508
POBH	PVC	OPEN	HIGH	90.50	31.25	2.00	528.969
POBH	PVC	OPEN	HIGH	90.50	31.25	0.50	659.516

Table B-7. Air Velocity Data for Treatment MSBL

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBL	MASONRY	SOLID	LOW	8.00	4.25	10.50	20.042
MSBL	MASONRY	SOLID	LOW	8.00	4.25	2.00	11.713
MSBL	MASONRY	SOLID	LOW	8.00	4.25	0.50	6.524
MSBL	MASONRY	SOLID	LOW	8.00	14.75	10.50	21.839
MSBL	MASONRY	SOLID	LOW	8.00	14.75	2.00	5.859
MSBL	MASONRY	SOLID	LOW	8.00	14.75	0.50	19.617
MSBL	MASONRY	SOLID	LOW	8.00	20.75	10.50	63.344
MSBL	MASONRY	SOLID	LOW	8.00	20.75	2.00	8.266
MSBL	MASONRY	SOLID	LOW	8.00	20.75	0.50	64.145
MSBL	MASONRY	SOLID	LOW	8.00	31.25	10.50	27.278
MSBL	MASONRY	SOLID	LOW	8.00	31.25	2.00	7.760
MSBL	MASONRY	SOLID	LOW	8.00	31.25	0.50	4.198
MSBL	MASONRY	SOLID	LOW	15.50	4.25	10.50	40.559
MSBL	MASONRY	SOLID	LOW	15.50	4.25	2.00	5.117
MSBL	MASONRY	SOLID	LOW	15.50	4.25	0.50	1.879
MSBL	MASONRY	SOLID	LOW	15.50	14.75	10.50	32.112
MSBL	MASONRY	SOLID	LOW	15.50	14.75	2.00	13.711
MSBL	MASONRY	SOLID	LOW	15.50	14.75	0.50	14.498
MSBL	MASONRY	SOLID	LOW	15.50	20.75	10.50	22.328
MSBL	MASONRY	SOLID	LOW	15.50	20.75	2.00	1.265
MSBL	MASONRY	SOLID	LOW	15.50	20.75	0.50	0.707
MSBL	MASONRY	SOLID	LOW	15.50	31.25	10.50	29.892
MSBL	MASONRY	SOLID	LOW	15.50	31.25	2.00	3.063
MSBL	MASONRY	SOLID	LOW	15.50	31.25	0.50	1.766
MSBL	MASONRY	SOLID	LOW	23.00	4.25	10.50	30.264
MSBL	MASONRY	SOLID	LOW	23.00	4.25	2.00	11.154
MSBL	MASONRY	SOLID	LOW	23.00	4.25	0.50	3.340
MSBL	MASONRY	SOLID	LOW	23.00	14.75	10.50	16.998
MSBL	MASONRY	SOLID	LOW	23.00	14.75	2.00	4.647
MSBL	MASONRY	SOLID	LOW	23.00	14.75	0.50	3.263
MSBL	MASONRY	SOLID	LOW	23.00	20.75	10.50	20.451
MSBL	MASONRY	SOLID	LOW	23.00	20.75	2.00	1.596
MSBL	MASONRY	SOLID	LOW	23.00	20.75	0.50	1.961
MSBL	MASONRY	SOLID	LOW	23.00	31.25	10.50	35.475
MSBL	MASONRY	SOLID	LOW	23.00	31.25	2.00	4.834
MSBL	MASONRY	SOLID	LOW	23.00	31.25	0.50	1.770
MSBL	MASONRY	SOLID	LOW	30.50	4.25	10.50	23.965
MSBL	MASONRY	SOLID	LOW	30.50	4.25	2.00	3.722
MSBL	MASONRY	SOLID	LOW	30.50	4.25	0.50	2.273
MSBL	MASONRY	SOLID	LOW	30.50	14.75	10.50	33.495
MSBL	MASONRY	SOLID	LOW	30.50	14.75	2.00	2.602
MSBL	MASONRY	SOLID	LOW	30.50	14.75	0.50	1.353
MSBL	MASONRY	SOLID	LOW	30.50	20.75	10.50	21.749
MSBL	MASONRY	SOLID	LOW	30.50	20.75	2.00	5.599

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBL	MASONRY	SOLID	LOW	30.50	20.75	0.50	6.532
MSBL	MASONRY	SOLID	LOW	30.50	31.25	10.50	42.160
MSBL	MASONRY	SOLID	LOW	30.50	31.25	2.00	12.283
MSBL	MASONRY	SOLID	LOW	30.50	31.25	0.50	6.687
MSBL	MASONRY	SOLID	LOW	38.00	4.25	10.50	26.142
MSBL	MASONRY	SOLID	LOW	38.00	4.25	2.00	3.714
MSBL	MASONRY	SOLID	LOW	38.00	4.25	0.50	2.359
MSBL	MASONRY	SOLID	LOW	38.00	14.75	10.50	52.563
MSBL	MASONRY	SOLID	LOW	38.00	14.75	2.00	3.457
MSBL	MASONRY	SOLID	LOW	38.00	14.75	0.50	1.376
MSBL	MASONRY	SOLID	LOW	38.00	20.75	10.50	33.548
MSBL	MASONRY	SOLID	LOW	38.00	20.75	2.00	2.447
MSBL	MASONRY	SOLID	LOW	38.00	20.75	0.50	3.928
MSBL	MASONRY	SOLID	LOW	38.00	31.25	10.50	40.886
MSBL	MASONRY	SOLID	LOW	38.00	31.25	2.00	9.053
MSBL	MASONRY	SOLID	LOW	38.00	31.25	0.50	5.287
MSBL	MASONRY	SOLID	LOW	45.50	4.25	10.50	28.979
MSBL	MASONRY	SOLID	LOW	45.50	4.25	2.00	1.795
MSBL	MASONRY	SOLID	LOW	45.50	4.25	0.50	3.612
MSBL	MASONRY	SOLID	LOW	45.50	14.75	10.50	22.809
MSBL	MASONRY	SOLID	LOW	45.50	14.75	2.00	1.681
MSBL	MASONRY	SOLID	LOW	45.50	14.75	0.50	1.862
MSBL	MASONRY	SOLID	LOW	45.50	20.75	10.50	16.943
MSBL	MASONRY	SOLID	LOW	45.50	20.75	2.00	3.134
MSBL	MASONRY	SOLID	LOW	45.50	20.75	0.50	2.202
MSBL	MASONRY	SOLID	LOW	45.50	31.25	10.50	12.691
MSBL	MASONRY	SOLID	LOW	45.50	31.25	2.00	5.746
MSBL	MASONRY	SOLID	LOW	45.50	31.25	0.50	2.574
MSBL	MASONRY	SOLID	LOW	53.00	4.25	10.50	18.928
MSBL	MASONRY	SOLID	LOW	53.00	4.25	2.00	2.545
MSBL	MASONRY	SOLID	LOW	53.00	4.25	0.50	1.748
MSBL	MASONRY	SOLID	LOW	53.00	14.75	10.50	7.494
MSBL	MASONRY	SOLID	LOW	53.00	14.75	2.00	1.644
MSBL	MASONRY	SOLID	LOW	53.00	14.75	0.50	1.826
MSBL	MASONRY	SOLID	LOW	53.00	20.75	10.50	23.016
MSBL	MASONRY	SOLID	LOW	53.00	20.75	2.00	2.121
MSBL	MASONRY	SOLID	LOW	53.00	20.75	0.50	2.456
MSBL	MASONRY	SOLID	LOW	53.00	31.25	10.50	19.035
MSBL	MASONRY	SOLID	LOW	53.00	31.25	2.00	6.241
MSBL	MASONRY	SOLID	LOW	53.00	31.25	0.50	1.707
MSBL	MASONRY	SOLID	LOW	60.50	4.25	10.50	33.465
MSBL	MASONRY	SOLID	LOW	60.50	4.25	2.00	3.007
MSBL	MASONRY	SOLID	LOW	60.50	4.25	0.50	1.878
MSBL	MASONRY	SOLID	LOW	60.50	14.75	10.50	29.010

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBL	MASONRY	SOLID	LOW	60.50	14.75	2.00	2.069
MSBL	MASONRY	SOLID	LOW	60.50	14.75	0.50	1.374
MSBL	MASONRY	SOLID	LOW	60.50	20.75	10.50	7.878
MSBL	MASONRY	SOLID	LOW	60.50	20.75	2.00	2.363
MSBL	MASONRY	SOLID	LOW	60.50	20.75	0.50	1.556
MSBL	MASONRY	SOLID	LOW	60.50	31.25	10.50	20.786
MSBL	MASONRY	SOLID	LOW	60.50	31.25	2.00	2.413
MSBL	MASONRY	SOLID	LOW	60.50	31.25	0.50	1.832
MSBL	MASONRY	SOLID	LOW	68.00	4.25	10.50	22.743
MSBL	MASONRY	SOLID	LOW	68.00	4.25	2.00	1.782
MSBL	MASONRY	SOLID	LOW	68.00	4.25	0.50	1.557
MSBL	MASONRY	SOLID	LOW	68.00	14.75	10.50	31.095
MSBL	MASONRY	SOLID	LOW	68.00	14.75	2.00	1.821
MSBL	MASONRY	SOLID	LOW	68.00	14.75	0.50	1.535
MSBL	MASONRY	SOLID	LOW	68.00	20.75	10.50	26.574
MSBL	MASONRY	SOLID	LOW	68.00	20.75	2.00	1.404
MSBL	MASONRY	SOLID	LOW	68.00	20.75	0.50	1.118
MSBL	MASONRY	SOLID	LOW	68.00	31.25	10.50	19.278
MSBL	MASONRY	SOLID	LOW	68.00	31.25	2.00	1.412
MSBL	MASONRY	SOLID	LOW	68.00	31.25	0.50	1.293
MSBL	MASONRY	SOLID	LOW	75.50	4.25	10.50	49.293
MSBL	MASONRY	SOLID	LOW	75.50	4.25	2.00	1.457
MSBL	MASONRY	SOLID	LOW	75.50	4.25	0.50	1.436
MSBL	MASONRY	SOLID	LOW	75.50	14.75	10.50	27.006
MSBL	MASONRY	SOLID	LOW	75.50	14.75	2.00	1.887
MSBL	MASONRY	SOLID	LOW	75.50	14.75	0.50	1.218
MSBL	MASONRY	SOLID	LOW	75.50	20.75	10.50	9.755
MSBL	MASONRY	SOLID	LOW	75.50	20.75	2.00	2.240
MSBL	MASONRY	SOLID	LOW	75.50	20.75	0.50	1.281
MSBL	MASONRY	SOLID	LOW	75.50	31.25	10.50	36.268
MSBL	MASONRY	SOLID	LOW	75.50	31.25	2.00	1.806
MSBL	MASONRY	SOLID	LOW	75.50	31.25	0.50	1.494
MSBL	MASONRY	SOLID	LOW	83.00	4.25	10.50	23.003
MSBL	MASONRY	SOLID	LOW	83.00	4.25	2.00	1.638
MSBL	MASONRY	SOLID	LOW	83.00	4.25	0.50	0.963
MSBL	MASONRY	SOLID	LOW	83.00	14.75	10.50	15.365
MSBL	MASONRY	SOLID	LOW	83.00	14.75	2.00	1.996
MSBL	MASONRY	SOLID	LOW	83.00	14.75	0.50	1.081
MSBL	MASONRY	SOLID	LOW	83.00	20.75	10.50	36.259
MSBL	MASONRY	SOLID	LOW	83.00	20.75	2.00	1.917
MSBL	MASONRY	SOLID	LOW	83.00	20.75	0.50	1.504
MSBL	MASONRY	SOLID	LOW	83.00	31.25	10.50	12.618
MSBL	MASONRY	SOLID	LOW	83.00	31.25	2.00	1.462
MSBL	MASONRY	SOLID	LOW	83.00	31.25	0.50	0.988

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBL	MASONRY	SOLID	LOW	90.50	4.25	10.50	34.215
MSBL	MASONRY	SOLID	LOW	90.50	4.25	2.00	1.093
MSBL	MASONRY	SOLID	LOW	90.50	4.25	0.50	1.403
MSBL	MASONRY	SOLID	LOW	90.50	14.75	10.50	30.778
MSBL	MASONRY	SOLID	LOW	90.50	14.75	2.00	2.676
MSBL	MASONRY	SOLID	LOW	90.50	14.75	0.50	1.818
MSBL	MASONRY	SOLID	LOW	90.50	20.75	10.50	36.597
MSBL	MASONRY	SOLID	LOW	90.50	20.75	2.00	2.964
MSBL	MASONRY	SOLID	LOW	90.50	20.75	0.50	1.895
MSBL	MASONRY	SOLID	LOW	90.50	31.25	10.50	18.530
MSBL	MASONRY	SOLID	LOW	90.50	31.25	2.00	1.347
MSBL	MASONRY	SOLID	LOW	90.50	31.25	0.50	1.668

Table B-8. Air Velocity Data for Treatment MSBM

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBM	MASONRY	SOLID	MEDIUM	8.00	4.25	10.50	72.563
MSBM	MASONRY	SOLID	MEDIUM	8.00	4.25	2.00	29.762
MSBM	MASONRY	SOLID	MEDIUM	8.00	4.25	0.50	21.613
MSBM	MASONRY	SOLID	MEDIUM	8.00	14.75	10.50	161.428
MSBM	MASONRY	SOLID	MEDIUM	8.00	14.75	2.00	23.956
MSBM	MASONRY	SOLID	MEDIUM	8.00	14.75	0.50	23.640
MSBM	MASONRY	SOLID	MEDIUM	8.00	20.75	10.50	163.880
MSBM	MASONRY	SOLID	MEDIUM	8.00	20.75	2.00	24.064
MSBM	MASONRY	SOLID	MEDIUM	8.00	20.75	0.50	15.731
MSBM	MASONRY	SOLID	MEDIUM	8.00	31.25	10.50	88.423
MSBM	MASONRY	SOLID	MEDIUM	8.00	31.25	2.00	24.055
MSBM	MASONRY	SOLID	MEDIUM	8.00	31.25	0.50	18.225
MSBM	MASONRY	SOLID	MEDIUM	15.50	4.25	10.50	117.957
MSBM	MASONRY	SOLID	MEDIUM	15.50	4.25	2.00	31.929
MSBM	MASONRY	SOLID	MEDIUM	15.50	4.25	0.50	19.112
MSBM	MASONRY	SOLID	MEDIUM	15.50	14.75	10.50	86.238
MSBM	MASONRY	SOLID	MEDIUM	15.50	14.75	2.00	30.746
MSBM	MASONRY	SOLID	MEDIUM	15.50	14.75	0.50	25.040
MSBM	MASONRY	SOLID	MEDIUM	15.50	20.75	10.50	76.941
MSBM	MASONRY	SOLID	MEDIUM	15.50	20.75	2.00	19.073
MSBM	MASONRY	SOLID	MEDIUM	15.50	20.75	0.50	20.483
MSBM	MASONRY	SOLID	MEDIUM	15.50	31.25	10.50	132.065
MSBM	MASONRY	SOLID	MEDIUM	15.50	31.25	2.00	27.968
MSBM	MASONRY	SOLID	MEDIUM	15.50	31.25	0.50	19.710
MSBM	MASONRY	SOLID	MEDIUM	23.00	4.25	10.50	104.497
MSBM	MASONRY	SOLID	MEDIUM	23.00	4.25	2.00	27.639
MSBM	MASONRY	SOLID	MEDIUM	23.00	4.25	0.50	24.077
MSBM	MASONRY	SOLID	MEDIUM	23.00	14.75	10.50	78.181
MSBM	MASONRY	SOLID	MEDIUM	23.00	14.75	2.00	28.640
MSBM	MASONRY	SOLID	MEDIUM	23.00	14.75	0.50	17.991
MSBM	MASONRY	SOLID	MEDIUM	23.00	20.75	10.50	89.271
MSBM	MASONRY	SOLID	MEDIUM	23.00	20.75	2.00	22.906
MSBM	MASONRY	SOLID	MEDIUM	23.00	20.75	0.50	24.424
MSBM	MASONRY	SOLID	MEDIUM	23.00	31.25	10.50	130.160
MSBM	MASONRY	SOLID	MEDIUM	23.00	31.25	2.00	42.554
MSBM	MASONRY	SOLID	MEDIUM	23.00	31.25	0.50	33.829
MSBM	MASONRY	SOLID	MEDIUM	30.50	4.25	10.50	99.661
MSBM	MASONRY	SOLID	MEDIUM	30.50	4.25	2.00	26.815
MSBM	MASONRY	SOLID	MEDIUM	30.50	4.25	0.50	32.018
MSBM	MASONRY	SOLID	MEDIUM	30.50	14.75	10.50	99.679
MSBM	MASONRY	SOLID	MEDIUM	30.50	14.75	2.00	17.374
MSBM	MASONRY	SOLID	MEDIUM	30.50	14.75	0.50	10.954
MSBM	MASONRY	SOLID	MEDIUM	30.50	20.75	10.50	72.095
MSBM	MASONRY	SOLID	MEDIUM	30.50	20.75	2.00	22.170

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBM	MASONRY	SOLID	MEDIUM	30.50	20.75	0.50	19.778
MSBM	MASONRY	SOLID	MEDIUM	30.50	31.25	10.50	123.003
MSBM	MASONRY	SOLID	MEDIUM	30.50	31.25	2.00	28.326
MSBM	MASONRY	SOLID	MEDIUM	30.50	31.25	0.50	31.338
MSBM	MASONRY	SOLID	MEDIUM	38.00	4.25	10.50	89.093
MSBM	MASONRY	SOLID	MEDIUM	38.00	4.25	2.00	22.602
MSBM	MASONRY	SOLID	MEDIUM	38.00	4.25	0.50	17.741
MSBM	MASONRY	SOLID	MEDIUM	38.00	14.75	10.50	109.389
MSBM	MASONRY	SOLID	MEDIUM	38.00	14.75	2.00	18.049
MSBM	MASONRY	SOLID	MEDIUM	38.00	14.75	0.50	17.012
MSBM	MASONRY	SOLID	MEDIUM	38.00	20.75	10.50	86.798
MSBM	MASONRY	SOLID	MEDIUM	38.00	20.75	2.00	23.284
MSBM	MASONRY	SOLID	MEDIUM	38.00	20.75	0.50	13.347
MSBM	MASONRY	SOLID	MEDIUM	38.00	31.25	10.50	90.381
MSBM	MASONRY	SOLID	MEDIUM	38.00	31.25	2.00	28.409
MSBM	MASONRY	SOLID	MEDIUM	38.00	31.25	0.50	30.707
MSBM	MASONRY	SOLID	MEDIUM	45.50	4.25	10.50	71.593
MSBM	MASONRY	SOLID	MEDIUM	45.50	4.25	2.00	26.728
MSBM	MASONRY	SOLID	MEDIUM	45.50	4.25	0.50	15.317
MSBM	MASONRY	SOLID	MEDIUM	45.50	14.75	10.50	97.157
MSBM	MASONRY	SOLID	MEDIUM	45.50	14.75	2.00	19.549
MSBM	MASONRY	SOLID	MEDIUM	45.50	14.75	0.50	19.927
MSBM	MASONRY	SOLID	MEDIUM	45.50	20.75	10.50	66.567
MSBM	MASONRY	SOLID	MEDIUM	45.50	20.75	2.00	20.576
MSBM	MASONRY	SOLID	MEDIUM	45.50	20.75	0.50	14.313
MSBM	MASONRY	SOLID	MEDIUM	45.50	31.25	10.50	72.452
MSBM	MASONRY	SOLID	MEDIUM	45.50	31.25	2.00	15.299
MSBM	MASONRY	SOLID	MEDIUM	45.50	31.25	0.50	14.041
MSBM	MASONRY	SOLID	MEDIUM	53.00	4.25	10.50	70.730
MSBM	MASONRY	SOLID	MEDIUM	53.00	4.25	2.00	30.453
MSBM	MASONRY	SOLID	MEDIUM	53.00	4.25	0.50	28.396
MSBM	MASONRY	SOLID	MEDIUM	53.00	14.75	10.50	73.258
MSBM	MASONRY	SOLID	MEDIUM	53.00	14.75	2.00	22.492
MSBM	MASONRY	SOLID	MEDIUM	53.00	14.75	0.50	18.472
MSBM	MASONRY	SOLID	MEDIUM	53.00	20.75	10.50	75.858
MSBM	MASONRY	SOLID	MEDIUM	53.00	20.75	2.00	16.635
MSBM	MASONRY	SOLID	MEDIUM	53.00	20.75	0.50	27.226
MSBM	MASONRY	SOLID	MEDIUM	53.00	31.25	10.50	72.202
MSBM	MASONRY	SOLID	MEDIUM	53.00	31.25	2.00	31.053
MSBM	MASONRY	SOLID	MEDIUM	53.00	31.25	0.50	27.004
MSBM	MASONRY	SOLID	MEDIUM	60.50	4.25	10.50	168.555
MSBM	MASONRY	SOLID	MEDIUM	60.50	4.25	2.00	26.222
MSBM	MASONRY	SOLID	MEDIUM	60.50	4.25	0.50	30.161
MSBM	MASONRY	SOLID	MEDIUM	60.50	14.75	10.50	115.890

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBM	MASONRY	SOLID	MEDIUM	60.50	14.75	2.00	18.007
MSBM	MASONRY	SOLID	MEDIUM	60.50	14.75	0.50	12.350
MSBM	MASONRY	SOLID	MEDIUM	60.50	20.75	10.50	84.435
MSBM	MASONRY	SOLID	MEDIUM	60.50	20.75	2.00	25.191
MSBM	MASONRY	SOLID	MEDIUM	60.50	20.75	0.50	40.908
MSBM	MASONRY	SOLID	MEDIUM	60.50	31.25	10.50	102.353
MSBM	MASONRY	SOLID	MEDIUM	60.50	31.25	2.00	48.494
MSBM	MASONRY	SOLID	MEDIUM	60.50	31.25	0.50	42.909
MSBM	MASONRY	SOLID	MEDIUM	68.00	4.25	10.50	193.467
MSBM	MASONRY	SOLID	MEDIUM	68.00	4.25	2.00	43.580
MSBM	MASONRY	SOLID	MEDIUM	68.00	4.25	0.50	36.617
MSBM	MASONRY	SOLID	MEDIUM	68.00	14.75	10.50	155.734
MSBM	MASONRY	SOLID	MEDIUM	68.00	14.75	2.00	18.902
MSBM	MASONRY	SOLID	MEDIUM	68.00	14.75	0.50	12.973
MSBM	MASONRY	SOLID	MEDIUM	68.00	20.75	10.50	68.727
MSBM	MASONRY	SOLID	MEDIUM	68.00	20.75	2.00	23.960
MSBM	MASONRY	SOLID	MEDIUM	68.00	20.75	0.50	33.422
MSBM	MASONRY	SOLID	MEDIUM	68.00	31.25	10.50	99.789
MSBM	MASONRY	SOLID	MEDIUM	68.00	31.25	2.00	49.107
MSBM	MASONRY	SOLID	MEDIUM	68.00	31.25	0.50	38.955
MSBM	MASONRY	SOLID	MEDIUM	75.50	4.25	10.50	102.531
MSBM	MASONRY	SOLID	MEDIUM	75.50	4.25	2.00	23.567
MSBM	MASONRY	SOLID	MEDIUM	75.50	4.25	0.50	13.708
MSBM	MASONRY	SOLID	MEDIUM	75.50	14.75	10.50	156.897
MSBM	MASONRY	SOLID	MEDIUM	75.50	14.75	2.00	16.207
MSBM	MASONRY	SOLID	MEDIUM	75.50	14.75	0.50	21.244
MSBM	MASONRY	SOLID	MEDIUM	75.50	20.75	10.50	62.618
MSBM	MASONRY	SOLID	MEDIUM	75.50	20.75	2.00	20.216
MSBM	MASONRY	SOLID	MEDIUM	75.50	20.75	0.50	25.210
MSBM	MASONRY	SOLID	MEDIUM	75.50	31.25	10.50	100.640
MSBM	MASONRY	SOLID	MEDIUM	75.50	31.25	2.00	24.571
MSBM	MASONRY	SOLID	MEDIUM	75.50	31.25	0.50	12.649
MSBM	MASONRY	SOLID	MEDIUM	83.00	4.25	10.50	77.941
MSBM	MASONRY	SOLID	MEDIUM	83.00	4.25	2.00	19.351
MSBM	MASONRY	SOLID	MEDIUM	83.00	4.25	0.50	13.508
MSBM	MASONRY	SOLID	MEDIUM	83.00	14.75	10.50	115.755
MSBM	MASONRY	SOLID	MEDIUM	83.00	14.75	2.00	14.183
MSBM	MASONRY	SOLID	MEDIUM	83.00	14.75	0.50	14.358
MSBM	MASONRY	SOLID	MEDIUM	83.00	20.75	10.50	88.738
MSBM	MASONRY	SOLID	MEDIUM	83.00	20.75	2.00	21.313
MSBM	MASONRY	SOLID	MEDIUM	83.00	20.75	0.50	13.446
MSBM	MASONRY	SOLID	MEDIUM	83.00	31.25	10.50	116.825
MSBM	MASONRY	SOLID	MEDIUM	83.00	31.25	2.00	38.874
MSBM	MASONRY	SOLID	MEDIUM	83.00	31.25	0.50	35.637

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBM	MASONRY	SOLID	MEDIUM	90.50	4.25	10.50	118.070
MSBM	MASONRY	SOLID	MEDIUM	90.50	4.25	2.00	19.545
MSBM	MASONRY	SOLID	MEDIUM	90.50	4.25	0.50	23.312
MSBM	MASONRY	SOLID	MEDIUM	90.50	14.75	10.50	74.685
MSBM	MASONRY	SOLID	MEDIUM	90.50	14.75	2.00	19.986
MSBM	MASONRY	SOLID	MEDIUM	90.50	14.75	0.50	10.966
MSBM	MASONRY	SOLID	MEDIUM	90.50	20.75	10.50	79.833
MSBM	MASONRY	SOLID	MEDIUM	90.50	20.75	2.00	14.785
MSBM	MASONRY	SOLID	MEDIUM	90.50	20.75	0.50	7.556
MSBM	MASONRY	SOLID	MEDIUM	90.50	31.25	10.50	114.315
MSBM	MASONRY	SOLID	MEDIUM	90.50	31.25	2.00	30.827
MSBM	MASONRY	SOLID	MEDIUM	90.50	31.25	0.50	27.412

Table B-9. Air Velocity Data for Treatment MSBH

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBH	MASONRY	SOLID	HIGH	8.00	4.25	10.50	415.802
MSBH	MASONRY	SOLID	HIGH	8.00	4.25	2.00	159.740
MSBH	MASONRY	SOLID	HIGH	8.00	4.25	0.50	99.671
MSBH	MASONRY	SOLID	HIGH	8.00	14.75	10.50	298.201
MSBH	MASONRY	SOLID	HIGH	8.00	14.75	2.00	96.034
MSBH	MASONRY	SOLID	HIGH	8.00	14.75	0.50	81.905
MSBH	MASONRY	SOLID	HIGH	8.00	20.75	10.50	302.554
MSBH	MASONRY	SOLID	HIGH	8.00	20.75	2.00	110.471
MSBH	MASONRY	SOLID	HIGH	8.00	20.75	0.50	99.344
MSBH	MASONRY	SOLID	HIGH	8.00	31.25	10.50	368.536
MSBH	MASONRY	SOLID	HIGH	8.00	31.25	2.00	124.208
MSBH	MASONRY	SOLID	HIGH	8.00	31.25	0.50	84.328
MSBH	MASONRY	SOLID	HIGH	15.50	4.25	10.50	352.940
MSBH	MASONRY	SOLID	HIGH	15.50	4.25	2.00	277.438
MSBH	MASONRY	SOLID	HIGH	15.50	4.25	0.50	311.564
MSBH	MASONRY	SOLID	HIGH	15.50	14.75	10.50	255.646
MSBH	MASONRY	SOLID	HIGH	15.50	14.75	2.00	73.234
MSBH	MASONRY	SOLID	HIGH	15.50	14.75	0.50	62.997
MSBH	MASONRY	SOLID	HIGH	15.50	20.75	10.50	285.171
MSBH	MASONRY	SOLID	HIGH	15.50	20.75	2.00	96.210
MSBH	MASONRY	SOLID	HIGH	15.50	20.75	0.50	99.333
MSBH	MASONRY	SOLID	HIGH	15.50	31.25	10.50	338.105
MSBH	MASONRY	SOLID	HIGH	15.50	31.25	2.00	149.803
MSBH	MASONRY	SOLID	HIGH	15.50	31.25	0.50	104.496
MSBH	MASONRY	SOLID	HIGH	23.00	4.25	10.50	343.169
MSBH	MASONRY	SOLID	HIGH	23.00	4.25	2.00	183.862
MSBH	MASONRY	SOLID	HIGH	23.00	4.25	0.50	160.934
MSBH	MASONRY	SOLID	HIGH	23.00	14.75	10.50	277.939
MSBH	MASONRY	SOLID	HIGH	23.00	14.75	2.00	107.231
MSBH	MASONRY	SOLID	HIGH	23.00	14.75	0.50	86.679
MSBH	MASONRY	SOLID	HIGH	23.00	20.75	10.50	254.048
MSBH	MASONRY	SOLID	HIGH	23.00	20.75	2.00	116.013
MSBH	MASONRY	SOLID	HIGH	23.00	20.75	0.50	101.302
MSBH	MASONRY	SOLID	HIGH	23.00	31.25	10.50	382.853
MSBH	MASONRY	SOLID	HIGH	23.00	31.25	2.00	150.800
MSBH	MASONRY	SOLID	HIGH	23.00	31.25	0.50	148.638
MSBH	MASONRY	SOLID	HIGH	30.50	4.25	10.50	471.756
MSBH	MASONRY	SOLID	HIGH	30.50	4.25	2.00	147.930
MSBH	MASONRY	SOLID	HIGH	30.50	4.25	0.50	170.975
MSBH	MASONRY	SOLID	HIGH	30.50	14.75	10.50	341.288
MSBH	MASONRY	SOLID	HIGH	30.50	14.75	2.00	126.488
MSBH	MASONRY	SOLID	HIGH	30.50	14.75	0.50	101.979
MSBH	MASONRY	SOLID	HIGH	30.50	20.75	10.50	298.172
MSBH	MASONRY	SOLID	HIGH	30.50	20.75	2.00	98.429

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBH	MASONRY	SOLID	HIGH	30.50	20.75	0.50	66.779
MSBH	MASONRY	SOLID	HIGH	30.50	31.25	10.50	474.751
MSBH	MASONRY	SOLID	HIGH	30.50	31.25	2.00	113.592
MSBH	MASONRY	SOLID	HIGH	30.50	31.25	0.50	91.861
MSBH	MASONRY	SOLID	HIGH	38.00	4.25	10.50	425.948
MSBH	MASONRY	SOLID	HIGH	38.00	4.25	2.00	140.948
MSBH	MASONRY	SOLID	HIGH	38.00	4.25	0.50	127.806
MSBH	MASONRY	SOLID	HIGH	38.00	14.75	10.50	352.230
MSBH	MASONRY	SOLID	HIGH	38.00	14.75	2.00	119.973
MSBH	MASONRY	SOLID	HIGH	38.00	14.75	0.50	93.835
MSBH	MASONRY	SOLID	HIGH	38.00	20.75	10.50	255.610
MSBH	MASONRY	SOLID	HIGH	38.00	20.75	2.00	111.023
MSBH	MASONRY	SOLID	HIGH	38.00	20.75	0.50	76.248
MSBH	MASONRY	SOLID	HIGH	38.00	31.25	10.50	368.083
MSBH	MASONRY	SOLID	HIGH	38.00	31.25	2.00	112.860
MSBH	MASONRY	SOLID	HIGH	38.00	31.25	0.50	109.195
MSBH	MASONRY	SOLID	HIGH	45.50	4.25	10.50	436.996
MSBH	MASONRY	SOLID	HIGH	45.50	4.25	2.00	161.291
MSBH	MASONRY	SOLID	HIGH	45.50	4.25	0.50	110.753
MSBH	MASONRY	SOLID	HIGH	45.50	14.75	10.50	316.780
MSBH	MASONRY	SOLID	HIGH	45.50	14.75	2.00	104.507
MSBH	MASONRY	SOLID	HIGH	45.50	14.75	0.50	89.201
MSBH	MASONRY	SOLID	HIGH	45.50	20.75	10.50	260.844
MSBH	MASONRY	SOLID	HIGH	45.50	20.75	2.00	111.174
MSBH	MASONRY	SOLID	HIGH	45.50	20.75	0.50	105.995
MSBH	MASONRY	SOLID	HIGH	45.50	31.25	10.50	277.633
MSBH	MASONRY	SOLID	HIGH	45.50	31.25	2.00	116.325
MSBH	MASONRY	SOLID	HIGH	45.50	31.25	0.50	95.500
MSBH	MASONRY	SOLID	HIGH	53.00	4.25	10.50	377.143
MSBH	MASONRY	SOLID	HIGH	53.00	4.25	2.00	153.146
MSBH	MASONRY	SOLID	HIGH	53.00	4.25	0.50	137.495
MSBH	MASONRY	SOLID	HIGH	53.00	14.75	10.50	251.314
MSBH	MASONRY	SOLID	HIGH	53.00	14.75	2.00	122.785
MSBH	MASONRY	SOLID	HIGH	53.00	14.75	0.50	109.931
MSBH	MASONRY	SOLID	HIGH	53.00	20.75	10.50	222.700
MSBH	MASONRY	SOLID	HIGH	53.00	20.75	2.00	136.261
MSBH	MASONRY	SOLID	HIGH	53.00	20.75	0.50	138.838
MSBH	MASONRY	SOLID	HIGH	53.00	31.25	10.50	283.496
MSBH	MASONRY	SOLID	HIGH	53.00	31.25	2.00	204.344
MSBH	MASONRY	SOLID	HIGH	53.00	31.25	0.50	160.320
MSBH	MASONRY	SOLID	HIGH	60.50	4.25	10.50	470.556
MSBH	MASONRY	SOLID	HIGH	60.50	4.25	2.00	156.337
MSBH	MASONRY	SOLID	HIGH	60.50	4.25	0.50	122.458
MSBH	MASONRY	SOLID	HIGH	60.50	14.75	10.50	347.186

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBH	MASONRY	SOLID	HIGH	60.50	14.75	2.00	130.281
MSBH	MASONRY	SOLID	HIGH	60.50	14.75	0.50	98.847
MSBH	MASONRY	SOLID	HIGH	60.50	20.75	10.50	217.487
MSBH	MASONRY	SOLID	HIGH	60.50	20.75	2.00	142.143
MSBH	MASONRY	SOLID	HIGH	60.50	20.75	0.50	148.203
MSBH	MASONRY	SOLID	HIGH	60.50	31.25	10.50	380.828
MSBH	MASONRY	SOLID	HIGH	60.50	31.25	2.00	274.785
MSBH	MASONRY	SOLID	HIGH	60.50	31.25	0.50	232.726
MSBH	MASONRY	SOLID	HIGH	68.00	4.25	10.50	430.504
MSBH	MASONRY	SOLID	HIGH	68.00	4.25	2.00	194.327
MSBH	MASONRY	SOLID	HIGH	68.00	4.25	0.50	184.561
MSBH	MASONRY	SOLID	HIGH	68.00	14.75	10.50	356.038
MSBH	MASONRY	SOLID	HIGH	68.00	14.75	2.00	129.270
MSBH	MASONRY	SOLID	HIGH	68.00	14.75	0.50	95.123
MSBH	MASONRY	SOLID	HIGH	68.00	20.75	10.50	287.512
MSBH	MASONRY	SOLID	HIGH	68.00	20.75	2.00	142.218
MSBH	MASONRY	SOLID	HIGH	68.00	20.75	0.50	160.032
MSBH	MASONRY	SOLID	HIGH	68.00	31.25	10.50	359.648
MSBH	MASONRY	SOLID	HIGH	68.00	31.25	2.00	266.531
MSBH	MASONRY	SOLID	HIGH	68.00	31.25	0.50	224.260
MSBH	MASONRY	SOLID	HIGH	75.50	4.25	10.50	495.578
MSBH	MASONRY	SOLID	HIGH	75.50	4.25	2.00	171.991
MSBH	MASONRY	SOLID	HIGH	75.50	4.25	0.50	133.593
MSBH	MASONRY	SOLID	HIGH	75.50	14.75	10.50	374.436
MSBH	MASONRY	SOLID	HIGH	75.50	14.75	2.00	124.848
MSBH	MASONRY	SOLID	HIGH	75.50	14.75	0.50	87.335
MSBH	MASONRY	SOLID	HIGH	75.50	20.75	10.50	376.347
MSBH	MASONRY	SOLID	HIGH	75.50	20.75	2.00	140.286
MSBH	MASONRY	SOLID	HIGH	75.50	20.75	0.50	140.163
MSBH	MASONRY	SOLID	HIGH	75.50	31.25	10.50	485.202
MSBH	MASONRY	SOLID	HIGH	75.50	31.25	2.00	207.883
MSBH	MASONRY	SOLID	HIGH	75.50	31.25	0.50	228.292
MSBH	MASONRY	SOLID	HIGH	83.00	4.25	10.50	397.367
MSBH	MASONRY	SOLID	HIGH	83.00	4.25	2.00	155.095
MSBH	MASONRY	SOLID	HIGH	83.00	4.25	0.50	126.403
MSBH	MASONRY	SOLID	HIGH	83.00	14.75	10.50	370.309
MSBH	MASONRY	SOLID	HIGH	83.00	14.75	2.00	83.322
MSBH	MASONRY	SOLID	HIGH	83.00	14.75	0.50	81.316
MSBH	MASONRY	SOLID	HIGH	83.00	20.75	10.50	341.876
MSBH	MASONRY	SOLID	HIGH	83.00	20.75	2.00	133.621
MSBH	MASONRY	SOLID	HIGH	83.00	20.75	0.50	101.574
MSBH	MASONRY	SOLID	HIGH	83.00	31.25	10.50	395.809
MSBH	MASONRY	SOLID	HIGH	83.00	31.25	2.00	168.621
MSBH	MASONRY	SOLID	HIGH	83.00	31.25	0.50	137.596

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MSBH	MASONRY	SOLID	HIGH	90.50	4.25	10.50	473.947
MSBH	MASONRY	SOLID	HIGH	90.50	4.25	2.00	192.585
MSBH	MASONRY	SOLID	HIGH	90.50	4.25	0.50	196.804
MSBH	MASONRY	SOLID	HIGH	90.50	14.75	10.50	532.028
MSBH	MASONRY	SOLID	HIGH	90.50	14.75	2.00	106.943
MSBH	MASONRY	SOLID	HIGH	90.50	14.75	0.50	113.418
MSBH	MASONRY	SOLID	HIGH	90.50	20.75	10.50	546.657
MSBH	MASONRY	SOLID	HIGH	90.50	20.75	2.00	130.273
MSBH	MASONRY	SOLID	HIGH	90.50	20.75	0.50	93.556
MSBH	MASONRY	SOLID	HIGH	90.50	31.25	10.50	479.729
MSBH	MASONRY	SOLID	HIGH	90.50	31.25	2.00	136.318
MSBH	MASONRY	SOLID	HIGH	90.50	31.25	0.50	153.813

Table B-10. Air Velocity Data for Treatment MOBL

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBL	MASONRY	OPEN	LOW	8.00	4.25	10.50	30.125
MOBL	MASONRY	OPEN	LOW	8.00	4.25	2.00	52.465
MOBL	MASONRY	OPEN	LOW	8.00	4.25	0.50	80.832
MOBL	MASONRY	OPEN	LOW	8.00	14.75	10.50	22.211
MOBL	MASONRY	OPEN	LOW	8.00	14.75	2.00	46.620
MOBL	MASONRY	OPEN	LOW	8.00	14.75	0.50	49.068
MOBL	MASONRY	OPEN	LOW	8.00	20.75	10.50	81.234
MOBL	MASONRY	OPEN	LOW	8.00	20.75	2.00	45.251
MOBL	MASONRY	OPEN	LOW	8.00	20.75	0.50	82.116
MOBL	MASONRY	OPEN	LOW	8.00	31.25	10.50	38.695
MOBL	MASONRY	OPEN	LOW	8.00	31.25	2.00	27.357
MOBL	MASONRY	OPEN	LOW	8.00	31.25	0.50	75.138
MOBL	MASONRY	OPEN	LOW	15.50	4.25	10.50	38.589
MOBL	MASONRY	OPEN	LOW	15.50	4.25	2.00	42.304
MOBL	MASONRY	OPEN	LOW	15.50	4.25	0.50	80.895
MOBL	MASONRY	OPEN	LOW	15.50	14.75	10.50	38.673
MOBL	MASONRY	OPEN	LOW	15.50	14.75	2.00	15.112
MOBL	MASONRY	OPEN	LOW	15.50	14.75	0.50	27.617
MOBL	MASONRY	OPEN	LOW	15.50	20.75	10.50	22.976
MOBL	MASONRY	OPEN	LOW	15.50	20.75	2.00	34.186
MOBL	MASONRY	OPEN	LOW	15.50	20.75	0.50	55.465
MOBL	MASONRY	OPEN	LOW	15.50	31.25	10.50	59.456
MOBL	MASONRY	OPEN	LOW	15.50	31.25	2.00	28.089
MOBL	MASONRY	OPEN	LOW	15.50	31.25	0.50	84.731
MOBL	MASONRY	OPEN	LOW	23.00	4.25	10.50	36.721
MOBL	MASONRY	OPEN	LOW	23.00	4.25	2.00	53.364
MOBL	MASONRY	OPEN	LOW	23.00	4.25	0.50	148.316
MOBL	MASONRY	OPEN	LOW	23.00	14.75	10.50	21.774
MOBL	MASONRY	OPEN	LOW	23.00	14.75	2.00	15.701
MOBL	MASONRY	OPEN	LOW	23.00	14.75	0.50	26.352
MOBL	MASONRY	OPEN	LOW	23.00	20.75	10.50	22.440
MOBL	MASONRY	OPEN	LOW	23.00	20.75	2.00	13.650
MOBL	MASONRY	OPEN	LOW	23.00	20.75	0.50	33.146
MOBL	MASONRY	OPEN	LOW	23.00	31.25	10.50	27.205
MOBL	MASONRY	OPEN	LOW	23.00	31.25	2.00	23.273
MOBL	MASONRY	OPEN	LOW	23.00	31.25	0.50	102.503
MOBL	MASONRY	OPEN	LOW	30.50	4.25	10.50	23.561
MOBL	MASONRY	OPEN	LOW	30.50	4.25	2.00	1.850
MOBL	MASONRY	OPEN	LOW	30.50	4.25	0.50	47.967
MOBL	MASONRY	OPEN	LOW	30.50	14.75	10.50	31.552
MOBL	MASONRY	OPEN	LOW	30.50	14.75	2.00	8.638
MOBL	MASONRY	OPEN	LOW	30.50	14.75	0.50	9.083
MOBL	MASONRY	OPEN	LOW	30.50	20.75	10.50	20.975
MOBL	MASONRY	OPEN	LOW	30.50	20.75	2.00	11.550

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBL	MASONRY	OPEN	LOW	30.50	20.75	0.50	19.437
MOBL	MASONRY	OPEN	LOW	30.50	31.25	10.50	30.383
MOBL	MASONRY	OPEN	LOW	30.50	31.25	2.00	20.545
MOBL	MASONRY	OPEN	LOW	30.50	31.25	0.50	127.102
MOBL	MASONRY	OPEN	LOW	38.00	4.25	10.50	29.499
MOBL	MASONRY	OPEN	LOW	38.00	4.25	2.00	2.389
MOBL	MASONRY	OPEN	LOW	38.00	4.25	0.50	33.162
MOBL	MASONRY	OPEN	LOW	38.00	14.75	10.50	30.165
MOBL	MASONRY	OPEN	LOW	38.00	14.75	2.00	8.288
MOBL	MASONRY	OPEN	LOW	38.00	14.75	0.50	14.001
MOBL	MASONRY	OPEN	LOW	38.00	20.75	10.50	31.371
MOBL	MASONRY	OPEN	LOW	38.00	20.75	2.00	9.731
MOBL	MASONRY	OPEN	LOW	38.00	20.75	0.50	17.470
MOBL	MASONRY	OPEN	LOW	38.00	31.25	10.50	24.097
MOBL	MASONRY	OPEN	LOW	38.00	31.25	2.00	15.565
MOBL	MASONRY	OPEN	LOW	38.00	31.25	0.50	35.844
MOBL	MASONRY	OPEN	LOW	45.50	4.25	10.50	30.109
MOBL	MASONRY	OPEN	LOW	45.50	4.25	2.00	8.524
MOBL	MASONRY	OPEN	LOW	45.50	4.25	0.50	11.811
MOBL	MASONRY	OPEN	LOW	45.50	14.75	10.50	18.416
MOBL	MASONRY	OPEN	LOW	45.50	14.75	2.00	5.770
MOBL	MASONRY	OPEN	LOW	45.50	14.75	0.50	5.270
MOBL	MASONRY	OPEN	LOW	45.50	20.75	10.50	15.723
MOBL	MASONRY	OPEN	LOW	45.50	20.75	2.00	9.421
MOBL	MASONRY	OPEN	LOW	45.50	20.75	0.50	15.769
MOBL	MASONRY	OPEN	LOW	45.50	31.25	10.50	26.825
MOBL	MASONRY	OPEN	LOW	45.50	31.25	2.00	17.426
MOBL	MASONRY	OPEN	LOW	45.50	31.25	0.50	12.293
MOBL	MASONRY	OPEN	LOW	53.00	4.25	10.50	4.864
MOBL	MASONRY	OPEN	LOW	53.00	4.25	2.00	8.434
MOBL	MASONRY	OPEN	LOW	53.00	4.25	0.50	8.099
MOBL	MASONRY	OPEN	LOW	53.00	14.75	10.50	14.313
MOBL	MASONRY	OPEN	LOW	53.00	14.75	2.00	4.321
MOBL	MASONRY	OPEN	LOW	53.00	14.75	0.50	4.831
MOBL	MASONRY	OPEN	LOW	53.00	20.75	10.50	20.267
MOBL	MASONRY	OPEN	LOW	53.00	20.75	2.00	3.401
MOBL	MASONRY	OPEN	LOW	53.00	20.75	0.50	15.567
MOBL	MASONRY	OPEN	LOW	53.00	31.25	10.50	14.792
MOBL	MASONRY	OPEN	LOW	53.00	31.25	2.00	3.239
MOBL	MASONRY	OPEN	LOW	53.00	31.25	0.50	33.949
MOBL	MASONRY	OPEN	LOW	60.50	4.25	10.50	35.934
MOBL	MASONRY	OPEN	LOW	60.50	4.25	2.00	6.073
MOBL	MASONRY	OPEN	LOW	60.50	4.25	0.50	17.517
MOBL	MASONRY	OPEN	LOW	60.50	14.75	10.50	15.470

(cont'd)

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBL	MASONRY	OPEN	LOW	60.50	14.75	2.00	3.019
MOBL	MASONRY	OPEN	LOW	60.50	14.75	0.50	3.437
MOBL	MASONRY	OPEN	LOW	60.50	20.75	10.50	9.424
MOBL	MASONRY	OPEN	LOW	60.50	20.75	2.00	5.068
MOBL	MASONRY	OPEN	LOW	60.50	20.75	0.50	16.153
MOBL	MASONRY	OPEN	LOW	60.50	31.25	10.50	23.641
MOBL	MASONRY	OPEN	LOW	60.50	31.25	2.00	5.597
MOBL	MASONRY	OPEN	LOW	60.50	31.25	0.50	50.014
MOBL	MASONRY	OPEN	LOW	68.00	4.25	10.50	17.289
MOBL	MASONRY	OPEN	LOW	68.00	4.25	2.00	8.068
MOBL	MASONRY	OPEN	LOW	68.00	4.25	0.50	23.011
MOBL	MASONRY	OPEN	LOW	68.00	14.75	10.50	23.207
MOBL	MASONRY	OPEN	LOW	68.00	14.75	2.00	4.408
MOBL	MASONRY	OPEN	LOW	68.00	14.75	0.50	4.407
MOBL	MASONRY	OPEN	LOW	68.00	20.75	10.50	30.500
MOBL	MASONRY	OPEN	LOW	68.00	20.75	2.00	2.959
MOBL	MASONRY	OPEN	LOW	68.00	20.75	0.50	9.607
MOBL	MASONRY	OPEN	LOW	68.00	31.25	10.50	22.717
MOBL	MASONRY	OPEN	LOW	68.00	31.25	2.00	3.418
MOBL	MASONRY	OPEN	LOW	68.00	31.25	0.50	18.058
MOBL	MASONRY	OPEN	LOW	75.50	4.25	10.50	27.177
MOBL	MASONRY	OPEN	LOW	75.50	4.25	2.00	34.058
MOBL	MASONRY	OPEN	LOW	75.50	4.25	0.50	43.610
MOBL	MASONRY	OPEN	LOW	75.50	14.75	10.50	24.744
MOBL	MASONRY	OPEN	LOW	75.50	14.75	2.00	4.550
MOBL	MASONRY	OPEN	LOW	75.50	14.75	0.50	4.733
MOBL	MASONRY	OPEN	LOW	75.50	20.75	10.50	22.438
MOBL	MASONRY	OPEN	LOW	75.50	20.75	2.00	3.007
MOBL	MASONRY	OPEN	LOW	75.50	20.75	0.50	6.021
MOBL	MASONRY	OPEN	LOW	75.50	31.25	10.50	51.357
MOBL	MASONRY	OPEN	LOW	75.50	31.25	2.00	8.430
MOBL	MASONRY	OPEN	LOW	75.50	31.25	0.50	15.842
MOBL	MASONRY	OPEN	LOW	83.00	4.25	10.50	29.049
MOBL	MASONRY	OPEN	LOW	83.00	4.25	2.00	23.403
MOBL	MASONRY	OPEN	LOW	83.00	4.25	0.50	77.536
MOBL	MASONRY	OPEN	LOW	83.00	14.75	10.50	17.647
MOBL	MASONRY	OPEN	LOW	83.00	14.75	2.00	22.803
MOBL	MASONRY	OPEN	LOW	83.00	14.75	0.50	24.305
MOBL	MASONRY	OPEN	LOW	83.00	20.75	10.50	44.022
MOBL	MASONRY	OPEN	LOW	83.00	20.75	2.00	21.273
MOBL	MASONRY	OPEN	LOW	83.00	20.75	0.50	26.204
MOBL	MASONRY	OPEN	LOW	83.00	31.25	10.50	22.641
MOBL	MASONRY	OPEN	LOW	83.00	31.25	2.00	7.382
MOBL	MASONRY	OPEN	LOW	83.00	31.25	0.50	43.420

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBL	MASONRY	OPEN	LOW	90.50	4.25	10.50	70.465
MOBL	MASONRY	OPEN	LOW	90.50	4.25	2.00	34.719
MOBL	MASONRY	OPEN	LOW	90.50	4.25	0.50	112.327
MOBL	MASONRY	OPEN	LOW	90.50	14.75	10.50	14.719
MOBL	MASONRY	OPEN	LOW	90.50	14.75	2.00	22.364
MOBL	MASONRY	OPEN	LOW	90.50	14.75	0.50	35.276
MOBL	MASONRY	OPEN	LOW	90.50	20.75	10.50	35.440
MOBL	MASONRY	OPEN	LOW	90.50	20.75	2.00	23.622
MOBL	MASONRY	OPEN	LOW	90.50	20.75	0.50	50.262
MOBL	MASONRY	OPEN	LOW	90.50	31.25	10.50	57.012
MOBL	MASONRY	OPEN	LOW	90.50	31.25	2.00	10.684
MOBL	MASONRY	OPEN	LOW	90.50	31.25	0.50	74.484

Table B-11. Air Velocity Data for Treatment MOBM

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBM	MASONRY	OPEN	MEDIUM	8.00	4.25	10.50	140.141
MOBM	MASONRY	OPEN	MEDIUM	8.00	4.25	2.00	126.659
MOBM	MASONRY	OPEN	MEDIUM	8.00	4.25	0.50	362.128
MOBM	MASONRY	OPEN	MEDIUM	8.00	14.75	10.50	150.645
MOBM	MASONRY	OPEN	MEDIUM	8.00	14.75	2.00	179.329
MOBM	MASONRY	OPEN	MEDIUM	8.00	14.75	0.50	190.914
MOBM	MASONRY	OPEN	MEDIUM	8.00	20.75	10.50	149.300
MOBM	MASONRY	OPEN	MEDIUM	8.00	20.75	2.00	182.652
MOBM	MASONRY	OPEN	MEDIUM	8.00	20.75	0.50	204.771
MOBM	MASONRY	OPEN	MEDIUM	8.00	31.25	10.50	141.456
MOBM	MASONRY	OPEN	MEDIUM	8.00	31.25	2.00	130.049
MOBM	MASONRY	OPEN	MEDIUM	8.00	31.25	0.50	347.271
MOBM	MASONRY	OPEN	MEDIUM	15.50	4.25	10.50	148.157
MOBM	MASONRY	OPEN	MEDIUM	15.50	4.25	2.00	108.752
MOBM	MASONRY	OPEN	MEDIUM	15.50	4.25	0.50	366.876
MOBM	MASONRY	OPEN	MEDIUM	15.50	14.75	10.50	142.771
MOBM	MASONRY	OPEN	MEDIUM	15.50	14.75	2.00	177.506
MOBM	MASONRY	OPEN	MEDIUM	15.50	14.75	0.50	235.628
MOBM	MASONRY	OPEN	MEDIUM	15.50	20.75	10.50	141.497
MOBM	MASONRY	OPEN	MEDIUM	15.50	20.75	2.00	159.170
MOBM	MASONRY	OPEN	MEDIUM	15.50	20.75	0.50	156.921
MOBM	MASONRY	OPEN	MEDIUM	15.50	31.25	10.50	149.984
MOBM	MASONRY	OPEN	MEDIUM	15.50	31.25	2.00	105.477
MOBM	MASONRY	OPEN	MEDIUM	15.50	31.25	0.50	334.855
MOBM	MASONRY	OPEN	MEDIUM	23.00	4.25	10.50	182.548
MOBM	MASONRY	OPEN	MEDIUM	23.00	4.25	2.00	134.911
MOBM	MASONRY	OPEN	MEDIUM	23.00	4.25	0.50	292.709
MOBM	MASONRY	OPEN	MEDIUM	23.00	14.75	10.50	139.679
MOBM	MASONRY	OPEN	MEDIUM	23.00	14.75	2.00	145.249
MOBM	MASONRY	OPEN	MEDIUM	23.00	14.75	0.50	135.517
MOBM	MASONRY	OPEN	MEDIUM	23.00	20.75	10.50	125.839
MOBM	MASONRY	OPEN	MEDIUM	23.00	20.75	2.00	143.474
MOBM	MASONRY	OPEN	MEDIUM	23.00	20.75	0.50	123.042
MOBM	MASONRY	OPEN	MEDIUM	23.00	31.25	10.50	147.251
MOBM	MASONRY	OPEN	MEDIUM	23.00	31.25	2.00	170.005
MOBM	MASONRY	OPEN	MEDIUM	23.00	31.25	0.50	227.266
MOBM	MASONRY	OPEN	MEDIUM	30.50	4.25	10.50	148.626
MOBM	MASONRY	OPEN	MEDIUM	30.50	4.25	2.00	118.492
MOBM	MASONRY	OPEN	MEDIUM	30.50	4.25	0.50	294.557
MOBM	MASONRY	OPEN	MEDIUM	30.50	14.75	10.50	154.548
MOBM	MASONRY	OPEN	MEDIUM	30.50	14.75	2.00	161.488
MOBM	MASONRY	OPEN	MEDIUM	30.50	14.75	0.50	135.609
MOBM	MASONRY	OPEN	MEDIUM	30.50	20.75	10.50	126.139
MOBM	MASONRY	OPEN	MEDIUM	30.50	20.75	2.00	139.462

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBM	MASONRY	OPEN	MEDIUM	30.50	20.75	0.50	151.191
MOBM	MASONRY	OPEN	MEDIUM	30.50	31.25	10.50	133.002
MOBM	MASONRY	OPEN	MEDIUM	30.50	31.25	2.00	184.569
MOBM	MASONRY	OPEN	MEDIUM	30.50	31.25	0.50	313.699
MOBM	MASONRY	OPEN	MEDIUM	38.00	4.25	10.50	135.257
MOBM	MASONRY	OPEN	MEDIUM	38.00	4.25	2.00	109.847
MOBM	MASONRY	OPEN	MEDIUM	38.00	4.25	0.50	270.557
MOBM	MASONRY	OPEN	MEDIUM	38.00	14.75	10.50	239.227
MOBM	MASONRY	OPEN	MEDIUM	38.00	14.75	2.00	138.189
MOBM	MASONRY	OPEN	MEDIUM	38.00	14.75	0.50	116.874
MOBM	MASONRY	OPEN	MEDIUM	38.00	20.75	10.50	126.369
MOBM	MASONRY	OPEN	MEDIUM	38.00	20.75	2.00	144.806
MOBM	MASONRY	OPEN	MEDIUM	38.00	20.75	0.50	200.705
MOBM	MASONRY	OPEN	MEDIUM	38.00	31.25	10.50	154.986
MOBM	MASONRY	OPEN	MEDIUM	38.00	31.25	2.00	95.669
MOBM	MASONRY	OPEN	MEDIUM	38.00	31.25	0.50	284.332
MOBM	MASONRY	OPEN	MEDIUM	45.50	4.25	10.50	133.346
MOBM	MASONRY	OPEN	MEDIUM	45.50	4.25	2.00	94.163
MOBM	MASONRY	OPEN	MEDIUM	45.50	4.25	0.50	237.266
MOBM	MASONRY	OPEN	MEDIUM	45.50	14.75	10.50	117.984
MOBM	MASONRY	OPEN	MEDIUM	45.50	14.75	2.00	124.895
MOBM	MASONRY	OPEN	MEDIUM	45.50	14.75	0.50	132.659
MOBM	MASONRY	OPEN	MEDIUM	45.50	20.75	10.50	100.166
MOBM	MASONRY	OPEN	MEDIUM	45.50	20.75	2.00	103.651
MOBM	MASONRY	OPEN	MEDIUM	45.50	20.75	0.50	125.804
MOBM	MASONRY	OPEN	MEDIUM	45.50	31.25	10.50	126.889
MOBM	MASONRY	OPEN	MEDIUM	45.50	31.25	2.00	60.843
MOBM	MASONRY	OPEN	MEDIUM	45.50	31.25	0.50	154.029
MOBM	MASONRY	OPEN	MEDIUM	53.00	4.25	10.50	155.133
MOBM	MASONRY	OPEN	MEDIUM	53.00	4.25	2.00	85.157
MOBM	MASONRY	OPEN	MEDIUM	53.00	4.25	0.50	179.112
MOBM	MASONRY	OPEN	MEDIUM	53.00	14.75	10.50	124.060
MOBM	MASONRY	OPEN	MEDIUM	53.00	14.75	2.00	116.707
MOBM	MASONRY	OPEN	MEDIUM	53.00	14.75	0.50	143.212
MOBM	MASONRY	OPEN	MEDIUM	53.00	20.75	10.50	114.829
MOBM	MASONRY	OPEN	MEDIUM	53.00	20.75	2.00	123.098
MOBM	MASONRY	OPEN	MEDIUM	53.00	20.75	0.50	123.334
MOBM	MASONRY	OPEN	MEDIUM	53.00	31.25	10.50	175.020
MOBM	MASONRY	OPEN	MEDIUM	53.00	31.25	2.00	90.077
MOBM	MASONRY	OPEN	MEDIUM	53.00	31.25	0.50	103.869
MOBM	MASONRY	OPEN	MEDIUM	60.50	4.25	10.50	268.824
MOBM	MASONRY	OPEN	MEDIUM	60.50	4.25	2.00	98.629
MOBM	MASONRY	OPEN	MEDIUM	60.50	4.25	0.50	124.644
MOBM	MASONRY	OPEN	MEDIUM	60.50	14.75	10.50	163.571

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBM	MASONRY	OPEN	MEDIUM	60.50	14.75	2.00	107.738
MOBM	MASONRY	OPEN	MEDIUM	60.50	14.75	0.50	117.210
MOBM	MASONRY	OPEN	MEDIUM	60.50	20.75	10.50	86.025
MOBM	MASONRY	OPEN	MEDIUM	60.50	20.75	2.00	106.626
MOBM	MASONRY	OPEN	MEDIUM	60.50	20.75	0.50	100.889
MOBM	MASONRY	OPEN	MEDIUM	60.50	31.25	10.50	131.247
MOBM	MASONRY	OPEN	MEDIUM	60.50	31.25	2.00	127.399
MOBM	MASONRY	OPEN	MEDIUM	60.50	31.25	0.50	234.647
MOBM	MASONRY	OPEN	MEDIUM	68.00	4.25	10.50	104.736
MOBM	MASONRY	OPEN	MEDIUM	68.00	4.25	2.00	103.665
MOBM	MASONRY	OPEN	MEDIUM	68.00	4.25	0.50	161.467
MOBM	MASONRY	OPEN	MEDIUM	68.00	14.75	10.50	93.106
MOBM	MASONRY	OPEN	MEDIUM	68.00	14.75	2.00	103.882
MOBM	MASONRY	OPEN	MEDIUM	68.00	14.75	0.50	88.872
MOBM	MASONRY	OPEN	MEDIUM	68.00	20.75	10.50	145.794
MOBM	MASONRY	OPEN	MEDIUM	68.00	20.75	2.00	158.010
MOBM	MASONRY	OPEN	MEDIUM	68.00	20.75	0.50	203.016
MOBM	MASONRY	OPEN	MEDIUM	68.00	31.25	10.50	123.489
MOBM	MASONRY	OPEN	MEDIUM	68.00	31.25	2.00	95.493
MOBM	MASONRY	OPEN	MEDIUM	68.00	31.25	0.50	280.234
MOBM	MASONRY	OPEN	MEDIUM	75.50	4.25	10.50	160.857
MOBM	MASONRY	OPEN	MEDIUM	75.50	4.25	2.00	123.904
MOBM	MASONRY	OPEN	MEDIUM	75.50	4.25	0.50	149.237
MOBM	MASONRY	OPEN	MEDIUM	75.50	14.75	10.50	100.698
MOBM	MASONRY	OPEN	MEDIUM	75.50	14.75	2.00	164.012
MOBM	MASONRY	OPEN	MEDIUM	75.50	14.75	0.50	148.001
MOBM	MASONRY	OPEN	MEDIUM	75.50	20.75	10.50	131.834
MOBM	MASONRY	OPEN	MEDIUM	75.50	20.75	2.00	165.585
MOBM	MASONRY	OPEN	MEDIUM	75.50	20.75	0.50	213.199
MOBM	MASONRY	OPEN	MEDIUM	75.50	31.25	10.50	139.417
MOBM	MASONRY	OPEN	MEDIUM	75.50	31.25	2.00	78.109
MOBM	MASONRY	OPEN	MEDIUM	75.50	31.25	0.50	249.809
MOBM	MASONRY	OPEN	MEDIUM	83.00	4.25	10.50	213.314
MOBM	MASONRY	OPEN	MEDIUM	83.00	4.25	2.00	131.327
MOBM	MASONRY	OPEN	MEDIUM	83.00	4.25	0.50	161.574
MOBM	MASONRY	OPEN	MEDIUM	83.00	14.75	10.50	93.174
MOBM	MASONRY	OPEN	MEDIUM	83.00	14.75	2.00	145.273
MOBM	MASONRY	OPEN	MEDIUM	83.00	14.75	0.50	118.799
MOBM	MASONRY	OPEN	MEDIUM	83.00	20.75	10.50	131.932
MOBM	MASONRY	OPEN	MEDIUM	83.00	20.75	2.00	168.634
MOBM	MASONRY	OPEN	MEDIUM	83.00	20.75	0.50	208.243
MOBM	MASONRY	OPEN	MEDIUM	83.00	31.25	10.50	166.749
MOBM	MASONRY	OPEN	MEDIUM	83.00	31.25	2.00	118.432
MOBM	MASONRY	OPEN	MEDIUM	83.00	31.25	0.50	261.616

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBM	MASONRY	OPEN	MEDIUM	90.50	4.25	10.50	119.744
MOBM	MASONRY	OPEN	MEDIUM	90.50	4.25	2.00	127.680
MOBM	MASONRY	OPEN	MEDIUM	90.50	4.25	0.50	264.693
MOBM	MASONRY	OPEN	MEDIUM	90.50	14.75	10.50	119.877
MOBM	MASONRY	OPEN	MEDIUM	90.50	14.75	2.00	110.120
MOBM	MASONRY	OPEN	MEDIUM	90.50	14.75	0.50	98.405
MOBM	MASONRY	OPEN	MEDIUM	90.50	20.75	10.50	125.909
MOBM	MASONRY	OPEN	MEDIUM	90.50	20.75	2.00	177.215
MOBM	MASONRY	OPEN	MEDIUM	90.50	20.75	0.50	209.609
MOBM	MASONRY	OPEN	MEDIUM	90.50	31.25	10.50	197.883
MOBM	MASONRY	OPEN	MEDIUM	90.50	31.25	2.00	93.917
MOBM	MASONRY	OPEN	MEDIUM	90.50	31.25	0.50	312.102

Table B-12. Air Velocity Data for Treatment MOBH

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBH	MASONRY	OPEN	HIGH	8.00	4.25	10.50	607.135
MOBH	MASONRY	OPEN	HIGH	8.00	4.25	2.00	594.713
MOBH	MASONRY	OPEN	HIGH	8.00	4.25	0.50	674.255
MOBH	MASONRY	OPEN	HIGH	8.00	14.75	10.50	516.523
MOBH	MASONRY	OPEN	HIGH	8.00	14.75	2.00	619.493
MOBH	MASONRY	OPEN	HIGH	8.00	14.75	0.50	527.479
MOBH	MASONRY	OPEN	HIGH	8.00	20.75	10.50	597.010
MOBH	MASONRY	OPEN	HIGH	8.00	20.75	2.00	620.010
MOBH	MASONRY	OPEN	HIGH	8.00	20.75	0.50	629.015
MOBH	MASONRY	OPEN	HIGH	8.00	31.25	10.50	600.845
MOBH	MASONRY	OPEN	HIGH	8.00	31.25	2.00	539.043
MOBH	MASONRY	OPEN	HIGH	8.00	31.25	0.50	669.332
MOBH	MASONRY	OPEN	HIGH	15.50	4.25	10.50	607.690
MOBH	MASONRY	OPEN	HIGH	15.50	4.25	2.00	591.338
MOBH	MASONRY	OPEN	HIGH	15.50	4.25	0.50	670.444
MOBH	MASONRY	OPEN	HIGH	15.50	14.75	10.50	503.480
MOBH	MASONRY	OPEN	HIGH	15.50	14.75	2.00	619.720
MOBH	MASONRY	OPEN	HIGH	15.50	14.75	0.50	491.944
MOBH	MASONRY	OPEN	HIGH	15.50	20.75	10.50	595.966
MOBH	MASONRY	OPEN	HIGH	15.50	20.75	2.00	619.398
MOBH	MASONRY	OPEN	HIGH	15.50	20.75	0.50	623.852
MOBH	MASONRY	OPEN	HIGH	15.50	31.25	10.50	591.958
MOBH	MASONRY	OPEN	HIGH	15.50	31.25	2.00	521.922
MOBH	MASONRY	OPEN	HIGH	15.50	31.25	0.50	665.250
MOBH	MASONRY	OPEN	HIGH	23.00	4.25	10.50	611.975
MOBH	MASONRY	OPEN	HIGH	23.00	4.25	2.00	606.241
MOBH	MASONRY	OPEN	HIGH	23.00	4.25	0.50	673.273
MOBH	MASONRY	OPEN	HIGH	23.00	14.75	10.50	482.708
MOBH	MASONRY	OPEN	HIGH	23.00	14.75	2.00	609.227
MOBH	MASONRY	OPEN	HIGH	23.00	14.75	0.50	443.918
MOBH	MASONRY	OPEN	HIGH	23.00	20.75	10.50	603.445
MOBH	MASONRY	OPEN	HIGH	23.00	20.75	2.00	627.801
MOBH	MASONRY	OPEN	HIGH	23.00	20.75	0.50	640.742
MOBH	MASONRY	OPEN	HIGH	23.00	31.25	10.50	565.789
MOBH	MASONRY	OPEN	HIGH	23.00	31.25	2.00	572.564
MOBH	MASONRY	OPEN	HIGH	23.00	31.25	0.50	669.773
MOBH	MASONRY	OPEN	HIGH	30.50	4.25	10.50	616.185
MOBH	MASONRY	OPEN	HIGH	30.50	4.25	2.00	608.044
MOBH	MASONRY	OPEN	HIGH	30.50	4.25	0.50	671.862
MOBH	MASONRY	OPEN	HIGH	30.50	14.75	10.50	508.997
MOBH	MASONRY	OPEN	HIGH	30.50	14.75	2.00	616.049
MOBH	MASONRY	OPEN	HIGH	30.50	14.75	0.50	479.415
MOBH	MASONRY	OPEN	HIGH	30.50	20.75	10.50	603.307
MOBH	MASONRY	OPEN	HIGH	30.50	20.75	2.00	624.127

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBH	MASONRY	OPEN	HIGH	30.50	20.75	0.50	637.237
MOBH	MASONRY	OPEN	HIGH	30.50	31.25	10.50	544.718
MOBH	MASONRY	OPEN	HIGH	30.50	31.25	2.00	535.782
MOBH	MASONRY	OPEN	HIGH	30.50	31.25	0.50	667.283
MOBH	MASONRY	OPEN	HIGH	38.00	4.25	10.50	608.352
MOBH	MASONRY	OPEN	HIGH	38.00	4.25	2.00	606.394
MOBH	MASONRY	OPEN	HIGH	38.00	4.25	0.50	672.432
MOBH	MASONRY	OPEN	HIGH	38.00	14.75	10.50	522.390
MOBH	MASONRY	OPEN	HIGH	38.00	14.75	2.00	625.597
MOBH	MASONRY	OPEN	HIGH	38.00	14.75	0.50	562.515
MOBH	MASONRY	OPEN	HIGH	38.00	20.75	10.50	570.112
MOBH	MASONRY	OPEN	HIGH	38.00	20.75	2.00	613.093
MOBH	MASONRY	OPEN	HIGH	38.00	20.75	0.50	617.940
MOBH	MASONRY	OPEN	HIGH	38.00	31.25	10.50	553.289
MOBH	MASONRY	OPEN	HIGH	38.00	31.25	2.00	460.842
MOBH	MASONRY	OPEN	HIGH	38.00	31.25	0.50	659.479
MOBH	MASONRY	OPEN	HIGH	45.50	4.25	10.50	581.299
MOBH	MASONRY	OPEN	HIGH	45.50	4.25	2.00	573.476
MOBH	MASONRY	OPEN	HIGH	45.50	4.25	0.50	661.068
MOBH	MASONRY	OPEN	HIGH	45.50	14.75	10.50	535.776
MOBH	MASONRY	OPEN	HIGH	45.50	14.75	2.00	628.142
MOBH	MASONRY	OPEN	HIGH	45.50	14.75	0.50	477.999
MOBH	MASONRY	OPEN	HIGH	45.50	20.75	10.50	520.429
MOBH	MASONRY	OPEN	HIGH	45.50	20.75	2.00	524.379
MOBH	MASONRY	OPEN	HIGH	45.50	20.75	0.50	566.863
MOBH	MASONRY	OPEN	HIGH	45.50	31.25	10.50	553.682
MOBH	MASONRY	OPEN	HIGH	45.50	31.25	2.00	462.152
MOBH	MASONRY	OPEN	HIGH	45.50	31.25	0.50	618.789
MOBH	MASONRY	OPEN	HIGH	53.00	4.25	10.50	552.111
MOBH	MASONRY	OPEN	HIGH	53.00	4.25	2.00	514.564
MOBH	MASONRY	OPEN	HIGH	53.00	4.25	0.50	655.540
MOBH	MASONRY	OPEN	HIGH	53.00	14.75	10.50	520.856
MOBH	MASONRY	OPEN	HIGH	53.00	14.75	2.00	618.359
MOBH	MASONRY	OPEN	HIGH	53.00	14.75	0.50	425.601
MOBH	MASONRY	OPEN	HIGH	53.00	20.75	10.50	452.698
MOBH	MASONRY	OPEN	HIGH	53.00	20.75	2.00	450.504
MOBH	MASONRY	OPEN	HIGH	53.00	20.75	0.50	401.901
MOBH	MASONRY	OPEN	HIGH	53.00	31.25	10.50	553.853
MOBH	MASONRY	OPEN	HIGH	53.00	31.25	2.00	590.634
MOBH	MASONRY	OPEN	HIGH	53.00	31.25	0.50	612.006
MOBH	MASONRY	OPEN	HIGH	60.50	4.25	10.50	557.398
MOBH	MASONRY	OPEN	HIGH	60.50	4.25	2.00	572.156
MOBH	MASONRY	OPEN	HIGH	60.50	4.25	0.50	657.040
MOBH	MASONRY	OPEN	HIGH	60.50	14.75	10.50	503.431

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBH	MASONRY	OPEN	HIGH	60.50	14.75	2.00	621.756
MOBH	MASONRY	OPEN	HIGH	60.50	14.75	0.50	468.747
MOBH	MASONRY	OPEN	HIGH	60.50	20.75	10.50	544.250
MOBH	MASONRY	OPEN	HIGH	60.50	20.75	2.00	604.262
MOBH	MASONRY	OPEN	HIGH	60.50	20.75	0.50	598.580
MOBH	MASONRY	OPEN	HIGH	60.50	31.25	10.50	568.263
MOBH	MASONRY	OPEN	HIGH	60.50	31.25	2.00	499.344
MOBH	MASONRY	OPEN	HIGH	60.50	31.25	0.50	650.421
MOBH	MASONRY	OPEN	HIGH	68.00	4.25	10.50	588.140
MOBH	MASONRY	OPEN	HIGH	68.00	4.25	2.00	589.008
MOBH	MASONRY	OPEN	HIGH	68.00	4.25	0.50	661.351
MOBH	MASONRY	OPEN	HIGH	68.00	14.75	10.50	516.813
MOBH	MASONRY	OPEN	HIGH	68.00	14.75	2.00	623.249
MOBH	MASONRY	OPEN	HIGH	68.00	14.75	0.50	518.327
MOBH	MASONRY	OPEN	HIGH	68.00	20.75	10.50	583.783
MOBH	MASONRY	OPEN	HIGH	68.00	20.75	2.00	620.963
MOBH	MASONRY	OPEN	HIGH	68.00	20.75	0.50	596.462
MOBH	MASONRY	OPEN	HIGH	68.00	31.25	10.50	586.969
MOBH	MASONRY	OPEN	HIGH	68.00	31.25	2.00	541.160
MOBH	MASONRY	OPEN	HIGH	68.00	31.25	0.50	662.690
MOBH	MASONRY	OPEN	HIGH	75.50	4.25	10.50	602.323
MOBH	MASONRY	OPEN	HIGH	75.50	4.25	2.00	583.516
MOBH	MASONRY	OPEN	HIGH	75.50	4.25	0.50	657.922
MOBH	MASONRY	OPEN	HIGH	75.50	14.75	10.50	502.436
MOBH	MASONRY	OPEN	HIGH	75.50	14.75	2.00	614.743
MOBH	MASONRY	OPEN	HIGH	75.50	14.75	0.50	434.202
MOBH	MASONRY	OPEN	HIGH	75.50	20.75	10.50	599.297
MOBH	MASONRY	OPEN	HIGH	75.50	20.75	2.00	625.225
MOBH	MASONRY	OPEN	HIGH	75.50	20.75	0.50	611.681
MOBH	MASONRY	OPEN	HIGH	75.50	31.25	10.50	594.608
MOBH	MASONRY	OPEN	HIGH	75.50	31.25	2.00	591.127
MOBH	MASONRY	OPEN	HIGH	75.50	31.25	0.50	663.948
MOBH	MASONRY	OPEN	HIGH	83.00	4.25	10.50	608.047
MOBH	MASONRY	OPEN	HIGH	83.00	4.25	2.00	598.397
MOBH	MASONRY	OPEN	HIGH	83.00	4.25	0.50	659.430
MOBH	MASONRY	OPEN	HIGH	83.00	14.75	10.50	470.186
MOBH	MASONRY	OPEN	HIGH	83.00	14.75	2.00	605.193
MOBH	MASONRY	OPEN	HIGH	83.00	14.75	0.50	410.366
MOBH	MASONRY	OPEN	HIGH	83.00	20.75	10.50	594.043
MOBH	MASONRY	OPEN	HIGH	83.00	20.75	2.00	627.605
MOBH	MASONRY	OPEN	HIGH	83.00	20.75	0.50	592.819
MOBH	MASONRY	OPEN	HIGH	83.00	31.25	10.50	598.905
MOBH	MASONRY	OPEN	HIGH	83.00	31.25	2.00	593.841
MOBH	MASONRY	OPEN	HIGH	83.00	31.25	0.50	660.946

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
MOBH	MASONRY	OPEN	HIGH	90.50	4.25	10.50	612.747
MOBH	MASONRY	OPEN	HIGH	90.50	4.25	2.00	607.340
MOBH	MASONRY	OPEN	HIGH	90.50	4.25	0.50	666.611
MOBH	MASONRY	OPEN	HIGH	90.50	14.75	10.50	597.081
MOBH	MASONRY	OPEN	HIGH	90.50	14.75	2.00	619.576
MOBH	MASONRY	OPEN	HIGH	90.50	14.75	0.50	474.924
MOBH	MASONRY	OPEN	HIGH	90.50	20.75	10.50	615.596
MOBH	MASONRY	OPEN	HIGH	90.50	20.75	2.00	633.852
MOBH	MASONRY	OPEN	HIGH	90.50	20.75	0.50	620.471
MOBH	MASONRY	OPEN	HIGH	90.50	31.25	10.50	562.614
MOBH	MASONRY	OPEN	HIGH	90.50	31.25	2.00	596.164
MOBH	MASONRY	OPEN	HIGH	90.50	31.25	0.50	665.628

Table B-13. Air Velocity Data for Treatment CSBM

TREAT- MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
CSBM	CONTROL	SOLID	MEDIUM	8.00	4.25	10.50	64.777
CSBM	CONTROL	SOLID	MEDIUM	8.00	4.25	2.00	13.422
CSBM	CONTROL	SOLID	MEDIUM	8.00	4.25	0.50	7.975
CSBM	CONTROL	SOLID	MEDIUM	8.00	14.75	10.50	93.906
CSBM	CONTROL	SOLID	MEDIUM	8.00	14.75	2.00	23.629
CSBM	CONTROL	SOLID	MEDIUM	8.00	14.75	0.50	12.898
CSBM	CONTROL	SOLID	MEDIUM	8.00	20.75	10.50	94.149
CSBM	CONTROL	SOLID	MEDIUM	8.00	20.75	2.00	17.091
CSBM	CONTROL	SOLID	MEDIUM	8.00	20.75	0.50	6.986
CSBM	CONTROL	SOLID	MEDIUM	8.00	31.25	10.50	67.463
CSBM	CONTROL	SOLID	MEDIUM	8.00	31.25	2.00	19.232
CSBM	CONTROL	SOLID	MEDIUM	8.00	31.25	0.50	22.545
CSBM	CONTROL	SOLID	MEDIUM	15.50	4.25	10.50	76.527
CSBM	CONTROL	SOLID	MEDIUM	15.50	4.25	2.00	22.695
CSBM	CONTROL	SOLID	MEDIUM	15.50	4.25	0.50	13.347
CSBM	CONTROL	SOLID	MEDIUM	15.50	14.75	10.50	79.312
CSBM	CONTROL	SOLID	MEDIUM	15.50	14.75	2.00	15.962
CSBM	CONTROL	SOLID	MEDIUM	15.50	14.75	0.50	16.566
CSBM	CONTROL	SOLID	MEDIUM	15.50	20.75	10.50	56.150
CSBM	CONTROL	SOLID	MEDIUM	15.50	20.75	2.00	17.304
CSBM	CONTROL	SOLID	MEDIUM	15.50	20.75	0.50	9.608
CSBM	CONTROL	SOLID	MEDIUM	15.50	31.25	10.50	70.446
CSBM	CONTROL	SOLID	MEDIUM	15.50	31.25	2.00	18.391
CSBM	CONTROL	SOLID	MEDIUM	15.50	31.25	0.50	13.078
CSBM	CONTROL	SOLID	MEDIUM	23.00	4.25	10.50	71.616
CSBM	CONTROL	SOLID	MEDIUM	23.00	4.25	2.00	14.677
CSBM	CONTROL	SOLID	MEDIUM	23.00	4.25	0.50	15.771
CSBM	CONTROL	SOLID	MEDIUM	23.00	14.75	10.50	52.569
CSBM	CONTROL	SOLID	MEDIUM	23.00	14.75	2.00	14.486
CSBM	CONTROL	SOLID	MEDIUM	23.00	14.75	0.50	12.255
CSBM	CONTROL	SOLID	MEDIUM	23.00	20.75	10.50	62.121
CSBM	CONTROL	SOLID	MEDIUM	23.00	20.75	2.00	16.783
CSBM	CONTROL	SOLID	MEDIUM	23.00	20.75	0.50	10.780
CSBM	CONTROL	SOLID	MEDIUM	23.00	31.25	10.50	54.648
CSBM	CONTROL	SOLID	MEDIUM	23.00	31.25	2.00	20.494
CSBM	CONTROL	SOLID	MEDIUM	23.00	31.25	0.50	22.319
CSBM	CONTROL	SOLID	MEDIUM	30.50	4.25	10.50	79.269
CSBM	CONTROL	SOLID	MEDIUM	30.50	4.25	2.00	42.881
CSBM	CONTROL	SOLID	MEDIUM	30.50	4.25	0.50	18.183
CSBM	CONTROL	SOLID	MEDIUM	30.50	14.75	10.50	64.027
CSBM	CONTROL	SOLID	MEDIUM	30.50	14.75	2.00	20.471
CSBM	CONTROL	SOLID	MEDIUM	30.50	14.75	0.50	18.660
CSBM	CONTROL	SOLID	MEDIUM	30.50	20.75	10.50	65.230
CSBM	CONTROL	SOLID	MEDIUM	30.50	20.75	2.00	12.321

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
CSBM	CONTROL	SOLID	MEDIUM	30.50	20.75	0.50	4.341
CSBM	CONTROL	SOLID	MEDIUM	30.50	31.25	10.50	67.095
CSBM	CONTROL	SOLID	MEDIUM	30.50	31.25	2.00	32.525
CSBM	CONTROL	SOLID	MEDIUM	30.50	31.25	0.50	24.271
CSBM	CONTROL	SOLID	MEDIUM	38.00	4.25	10.50	61.700
CSBM	CONTROL	SOLID	MEDIUM	38.00	4.25	2.00	109.991
CSBM	CONTROL	SOLID	MEDIUM	38.00	4.25	0.50	13.979
CSBM	CONTROL	SOLID	MEDIUM	38.00	14.75	10.50	56.503
CSBM	CONTROL	SOLID	MEDIUM	38.00	14.75	2.00	7.199
CSBM	CONTROL	SOLID	MEDIUM	38.00	14.75	0.50	5.772
CSBM	CONTROL	SOLID	MEDIUM	38.00	20.75	10.50	98.430
CSBM	CONTROL	SOLID	MEDIUM	38.00	20.75	2.00	10.965
CSBM	CONTROL	SOLID	MEDIUM	38.00	20.75	0.50	6.852
CSBM	CONTROL	SOLID	MEDIUM	38.00	31.25	10.50	74.685
CSBM	CONTROL	SOLID	MEDIUM	38.00	31.25	2.00	15.819
CSBM	CONTROL	SOLID	MEDIUM	38.00	31.25	0.50	28.114
CSBM	CONTROL	SOLID	MEDIUM	45.50	4.25	10.50	74.160
CSBM	CONTROL	SOLID	MEDIUM	45.50	4.25	2.00	61.422
CSBM	CONTROL	SOLID	MEDIUM	45.50	4.25	0.50	21.184
CSBM	CONTROL	SOLID	MEDIUM	45.50	14.75	10.50	60.371
CSBM	CONTROL	SOLID	MEDIUM	45.50	14.75	2.00	10.260
CSBM	CONTROL	SOLID	MEDIUM	45.50	14.75	0.50	8.121
CSBM	CONTROL	SOLID	MEDIUM	45.50	20.75	10.50	61.867
CSBM	CONTROL	SOLID	MEDIUM	45.50	20.75	2.00	16.950
CSBM	CONTROL	SOLID	MEDIUM	45.50	20.75	0.50	18.875
CSBM	CONTROL	SOLID	MEDIUM	45.50	31.25	10.50	103.269
CSBM	CONTROL	SOLID	MEDIUM	45.50	31.25	2.00	27.883
CSBM	CONTROL	SOLID	MEDIUM	45.50	31.25	0.50	38.465
CSBM	CONTROL	SOLID	MEDIUM	53.00	4.25	10.50	93.155
CSBM	CONTROL	SOLID	MEDIUM	53.00	4.25	2.00	20.016
CSBM	CONTROL	SOLID	MEDIUM	53.00	4.25	0.50	25.728
CSBM	CONTROL	SOLID	MEDIUM	53.00	14.75	10.50	48.913
CSBM	CONTROL	SOLID	MEDIUM	53.00	14.75	2.00	9.165
CSBM	CONTROL	SOLID	MEDIUM	53.00	14.75	0.50	16.118
CSBM	CONTROL	SOLID	MEDIUM	53.00	20.75	10.50	96.467
CSBM	CONTROL	SOLID	MEDIUM	53.00	20.75	2.00	13.137
CSBM	CONTROL	SOLID	MEDIUM	53.00	20.75	0.50	12.040
CSBM	CONTROL	SOLID	MEDIUM	53.00	31.25	10.50	97.491
CSBM	CONTROL	SOLID	MEDIUM	53.00	31.25	2.00	28.413
CSBM	CONTROL	SOLID	MEDIUM	53.00	31.25	0.50	25.214
CSBM	CONTROL	SOLID	MEDIUM	60.50	4.25	10.50	136.109
CSBM	CONTROL	SOLID	MEDIUM	60.50	4.25	2.00	20.561
CSBM	CONTROL	SOLID	MEDIUM	60.50	4.25	0.50	14.442
CSBM	CONTROL	SOLID	MEDIUM	60.50	14.75	10.50	47.885

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
CSBM	CONTROL	SOLID	MEDIUM	60.50	14.75	2.00	9.486
CSBM	CONTROL	SOLID	MEDIUM	60.50	14.75	0.50	13.586
CSBM	CONTROL	SOLID	MEDIUM	60.50	20.75	10.50	69.488
CSBM	CONTROL	SOLID	MEDIUM	60.50	20.75	2.00	14.852
CSBM	CONTROL	SOLID	MEDIUM	60.50	20.75	0.50	10.708
CSBM	CONTROL	SOLID	MEDIUM	60.50	31.25	10.50	60.167
CSBM	CONTROL	SOLID	MEDIUM	60.50	31.25	2.00	21.627
CSBM	CONTROL	SOLID	MEDIUM	60.50	31.25	0.50	11.605
CSBM	CONTROL	SOLID	MEDIUM	68.00	4.25	10.50	84.116
CSBM	CONTROL	SOLID	MEDIUM	68.00	4.25	2.00	20.875
CSBM	CONTROL	SOLID	MEDIUM	68.00	4.25	0.50	20.365
CSBM	CONTROL	SOLID	MEDIUM	68.00	14.75	10.50	44.523
CSBM	CONTROL	SOLID	MEDIUM	68.00	14.75	2.00	8.491
CSBM	CONTROL	SOLID	MEDIUM	68.00	14.75	0.50	9.929
CSBM	CONTROL	SOLID	MEDIUM	68.00	20.75	10.50	98.073
CSBM	CONTROL	SOLID	MEDIUM	68.00	20.75	2.00	5.977
CSBM	CONTROL	SOLID	MEDIUM	68.00	20.75	0.50	6.033
CSBM	CONTROL	SOLID	MEDIUM	68.00	31.25	10.50	61.980
CSBM	CONTROL	SOLID	MEDIUM	68.00	31.25	2.00	11.503
CSBM	CONTROL	SOLID	MEDIUM	68.00	31.25	0.50	14.818
CSBM	CONTROL	SOLID	MEDIUM	75.50	4.25	10.50	110.212
CSBM	CONTROL	SOLID	MEDIUM	75.50	4.25	2.00	15.321
CSBM	CONTROL	SOLID	MEDIUM	75.50	4.25	0.50	10.123
CSBM	CONTROL	SOLID	MEDIUM	75.50	14.75	10.50	57.056
CSBM	CONTROL	SOLID	MEDIUM	75.50	14.75	2.00	9.127
CSBM	CONTROL	SOLID	MEDIUM	75.50	14.75	0.50	7.840
CSBM	CONTROL	SOLID	MEDIUM	75.50	20.75	10.50	70.860
CSBM	CONTROL	SOLID	MEDIUM	75.50	20.75	2.00	12.009
CSBM	CONTROL	SOLID	MEDIUM	75.50	20.75	0.50	7.377
CSBM	CONTROL	SOLID	MEDIUM	75.50	31.25	10.50	57.674
CSBM	CONTROL	SOLID	MEDIUM	75.50	31.25	2.00	12.382
CSBM	CONTROL	SOLID	MEDIUM	75.50	31.25	0.50	10.302
CSBM	CONTROL	SOLID	MEDIUM	83.00	4.25	10.50	85.887
CSBM	CONTROL	SOLID	MEDIUM	83.00	4.25	2.00	13.440
CSBM	CONTROL	SOLID	MEDIUM	83.00	4.25	0.50	7.402
CSBM	CONTROL	SOLID	MEDIUM	83.00	14.75	10.50	55.197
CSBM	CONTROL	SOLID	MEDIUM	83.00	14.75	2.00	14.691
CSBM	CONTROL	SOLID	MEDIUM	83.00	14.75	0.50	10.944
CSBM	CONTROL	SOLID	MEDIUM	83.00	20.75	10.50	131.779
CSBM	CONTROL	SOLID	MEDIUM	83.00	20.75	2.00	18.066
CSBM	CONTROL	SOLID	MEDIUM	83.00	20.75	0.50	14.028
CSBM	CONTROL	SOLID	MEDIUM	83.00	31.25	10.50	60.700
CSBM	CONTROL	SOLID	MEDIUM	83.00	31.25	2.00	16.863
CSBM	CONTROL	SOLID	MEDIUM	83.00	31.25	0.50	6.695

(cont'd)

TREAT-MENT	PIT TYPE	CRATE TYPE	VENT RATE	X (IN.)	Y (IN.)	Z (IN.)	VELOCITY (FT/MIN)
CSBM	CONTROL	SOLID	MEDIUM	90.50	4.25	10.50	52.823
CSBM	CONTROL	SOLID	MEDIUM	90.50	4.25	2.00	39.065
CSBM	CONTROL	SOLID	MEDIUM	90.50	4.25	0.50	14.761
CSBM	CONTROL	SOLID	MEDIUM	90.50	14.75	10.50	66.570
CSBM	CONTROL	SOLID	MEDIUM	90.50	14.75	2.00	23.413
CSBM	CONTROL	SOLID	MEDIUM	90.50	14.75	0.50	9.339
CSBM	CONTROL	SOLID	MEDIUM	90.50	20.75	10.50	73.199
CSBM	CONTROL	SOLID	MEDIUM	90.50	20.75	2.00	14.334
CSBM	CONTROL	SOLID	MEDIUM	90.50	20.75	0.50	6.258
CSBM	CONTROL	SOLID	MEDIUM	90.50	31.25	10.50	55.535
CSBM	CONTROL	SOLID	MEDIUM	90.50	31.25	2.00	9.934
CSBM	CONTROL	SOLID	MEDIUM	90.50	31.25	0.50	10.277

APPENDIX C

PLOTS OF THE EFFECTS OF MODEL LOCATION, PIT VENTILATION DUCT CONSTRUCTION, CRATE DESIGN, AND VENTILATION RATE ON THE AIR VELOCITIES AT PIG LEVEL

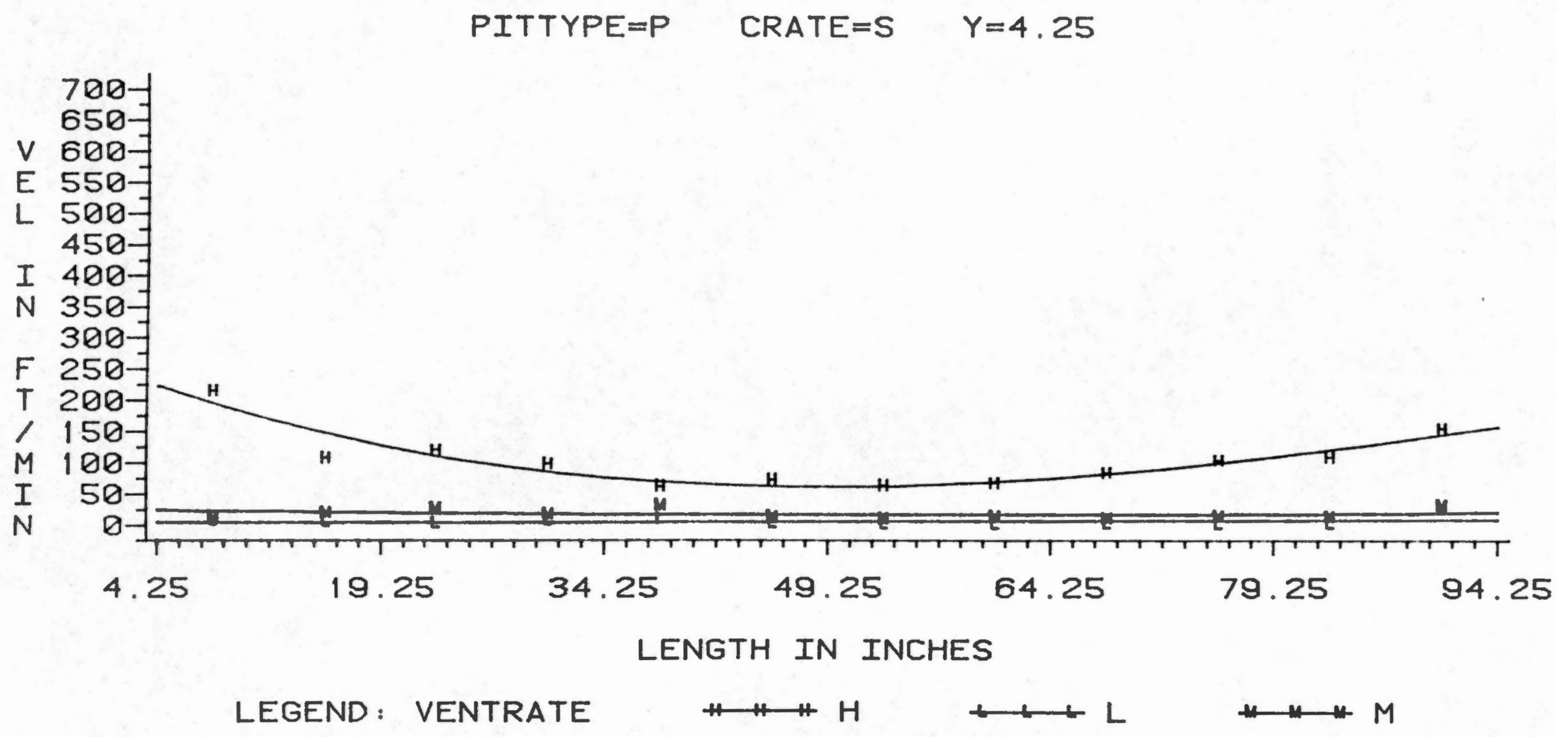

Figure C-1. Pig Level Velocities for PVC Pipe Pit Ventilation, Solid Side Crates, and Y = 4.25 inches.

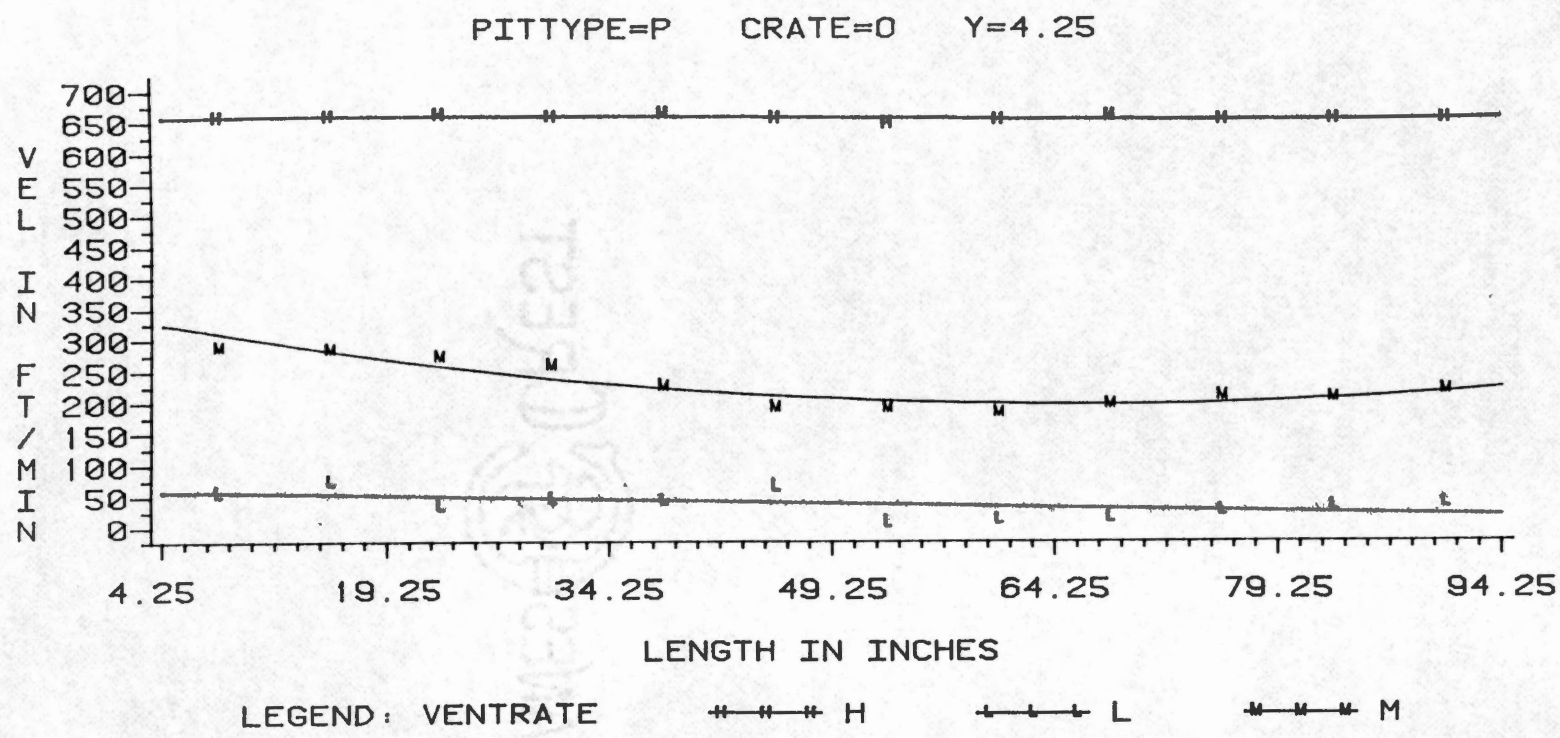

Figure C-2. Pig Level Velocities for PVC Pipe Pit Ventilation, Open Side Crates, and Y = 4.25 inches.

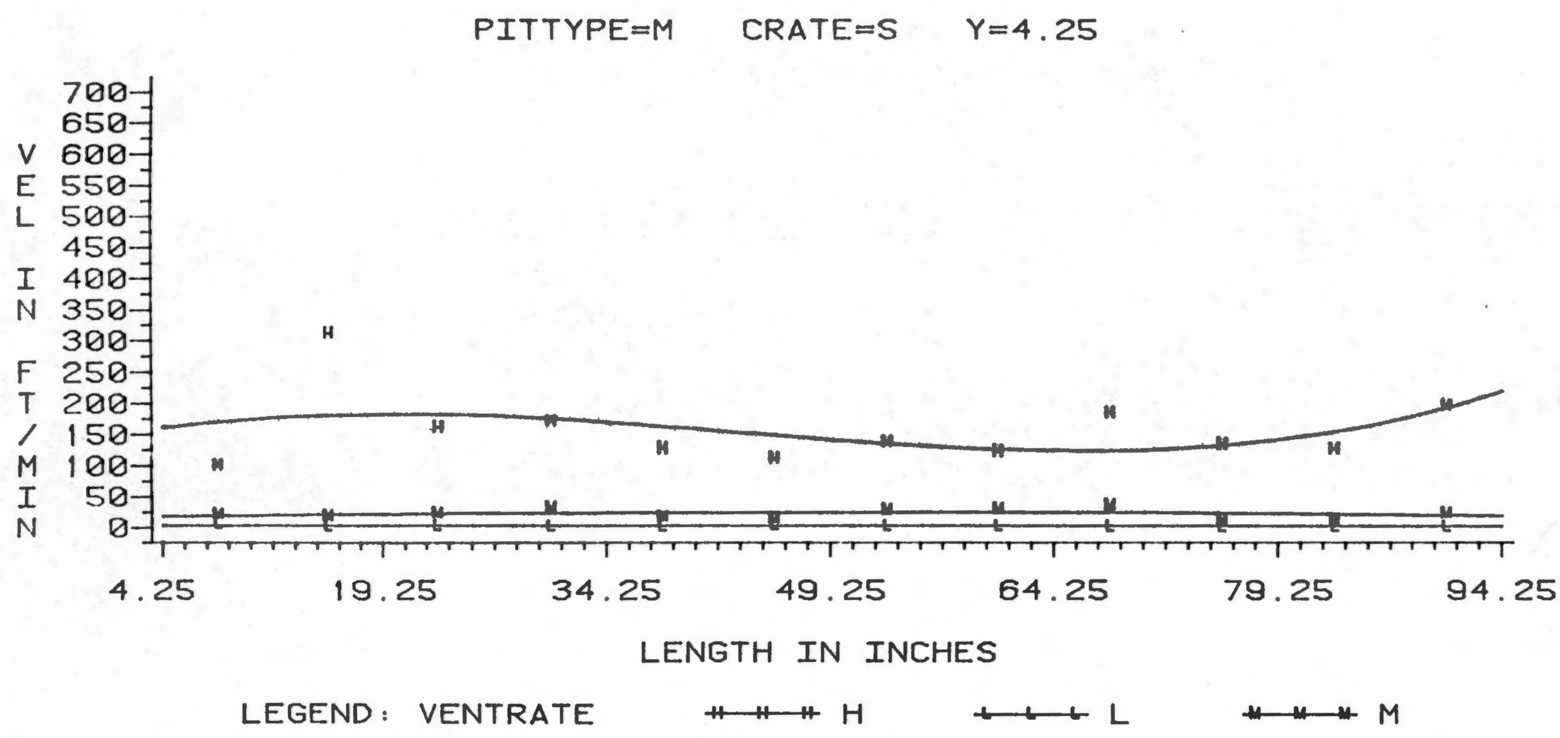

Figure C-3. Pig Level Velocities for Masonry Duct Pit Ventilation, Solid Side Crates, and Y = 4.25 inches.

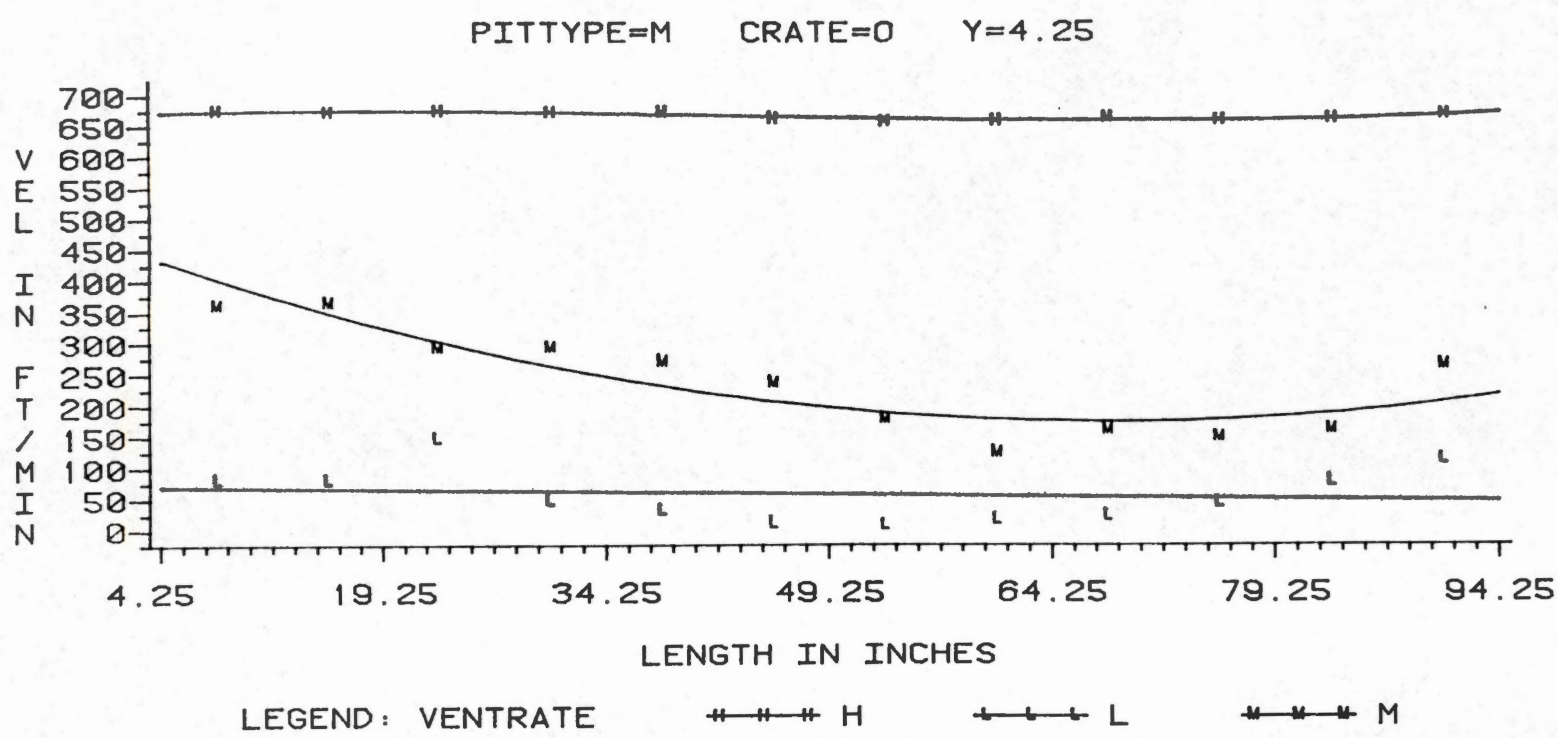

Figure C-4. Pig Level Velocities for Masonry Duct Pit Ventilation, Open Side Crates, and Y = 4.25 inches.

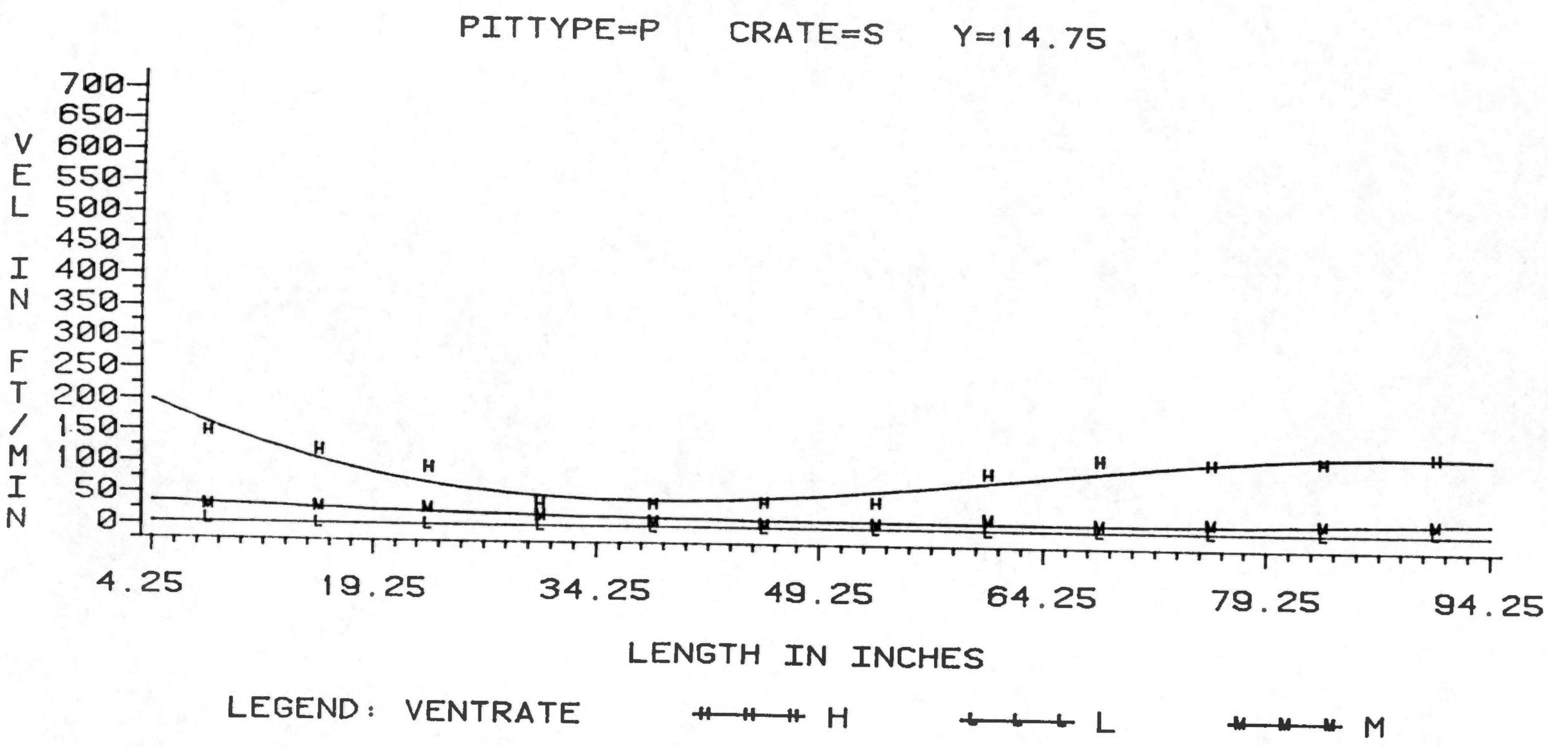

Figure C-5. Pig Level Velocities for PVC Pipe Pit Ventilation, Solid Side Crates, and Y = 14.75 inches.

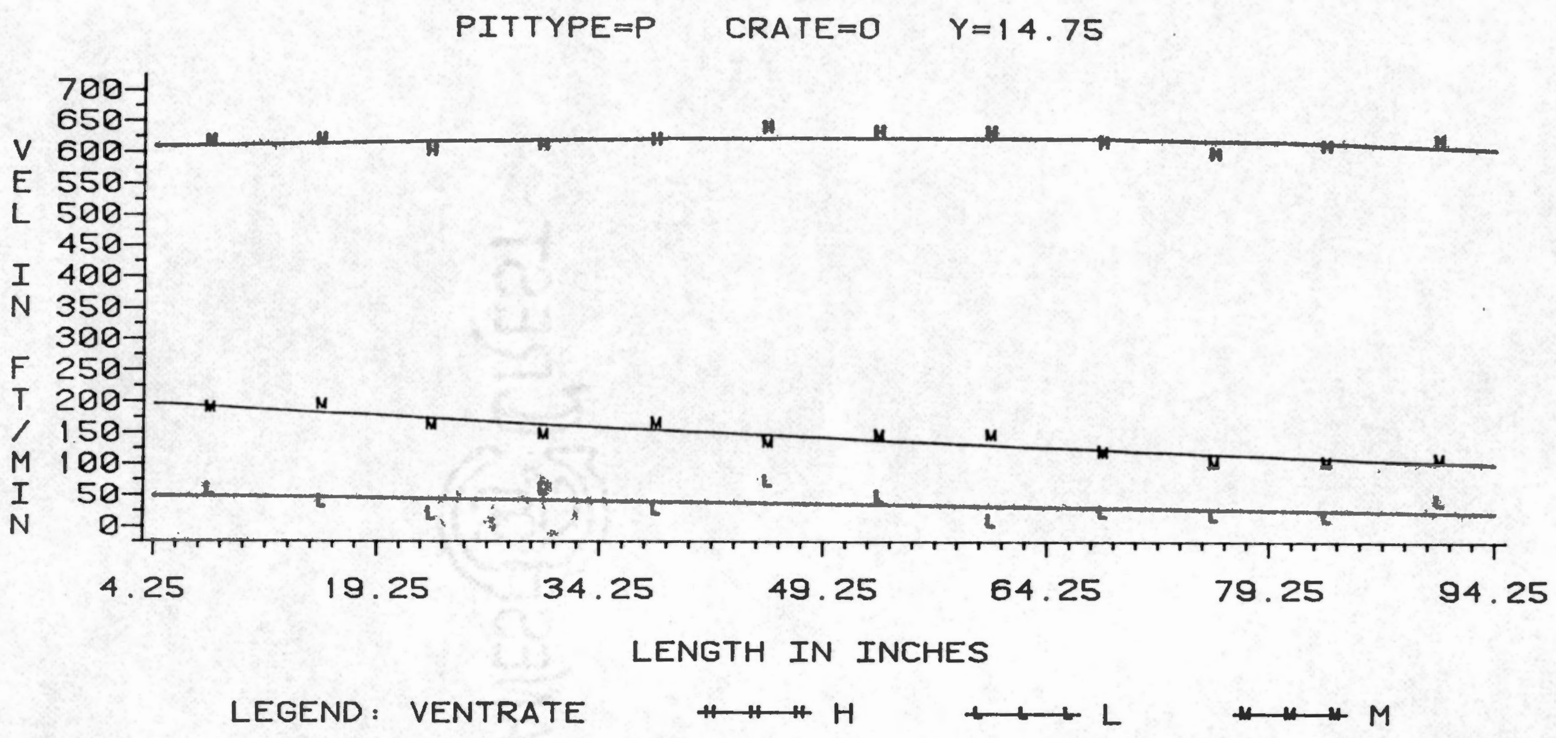

Figure C-6. Pig Level Velocities for PVC Pipe Pit Ventilation, Open Side Crates, and Y = 14.75 inches.

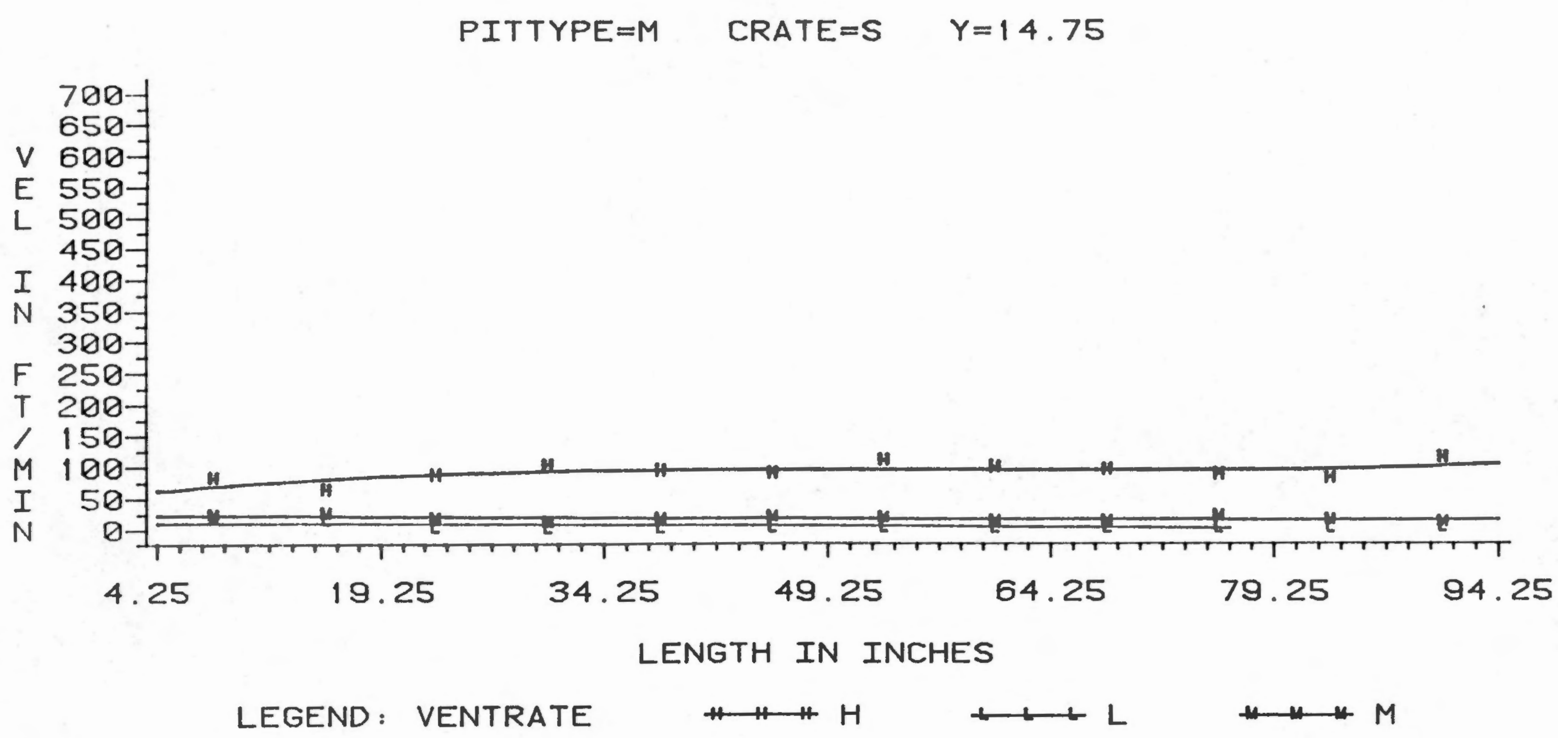

Figure C-7. Pig Level Velocities for Masonry Duct Pit Ventilation, Solid Side Crates, and Y = 14.75 inches.

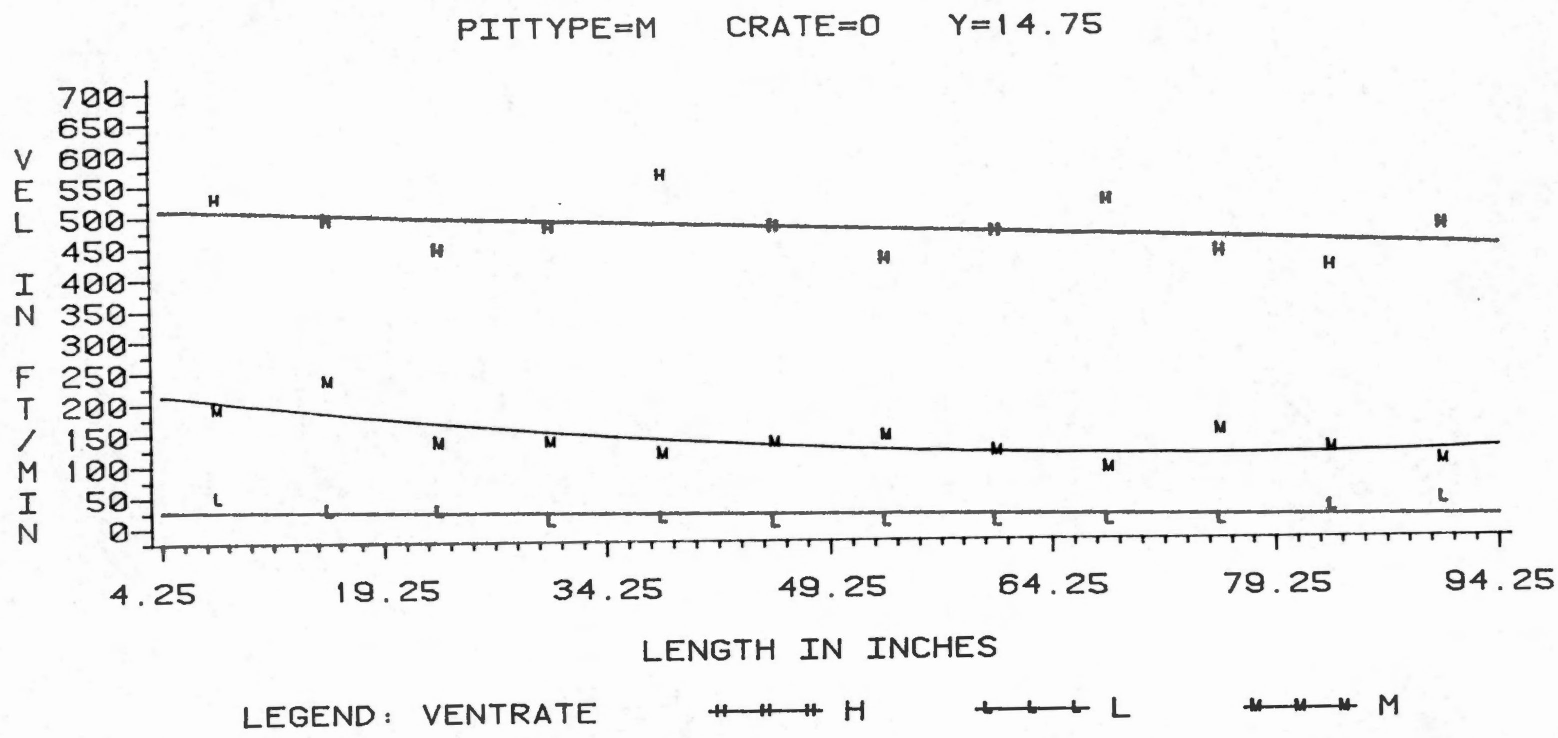

Figure C-8. Pig Level Velocities for Masonry Duct Pit Ventilation, Open Side Crates, and Y = 14.75 inches.

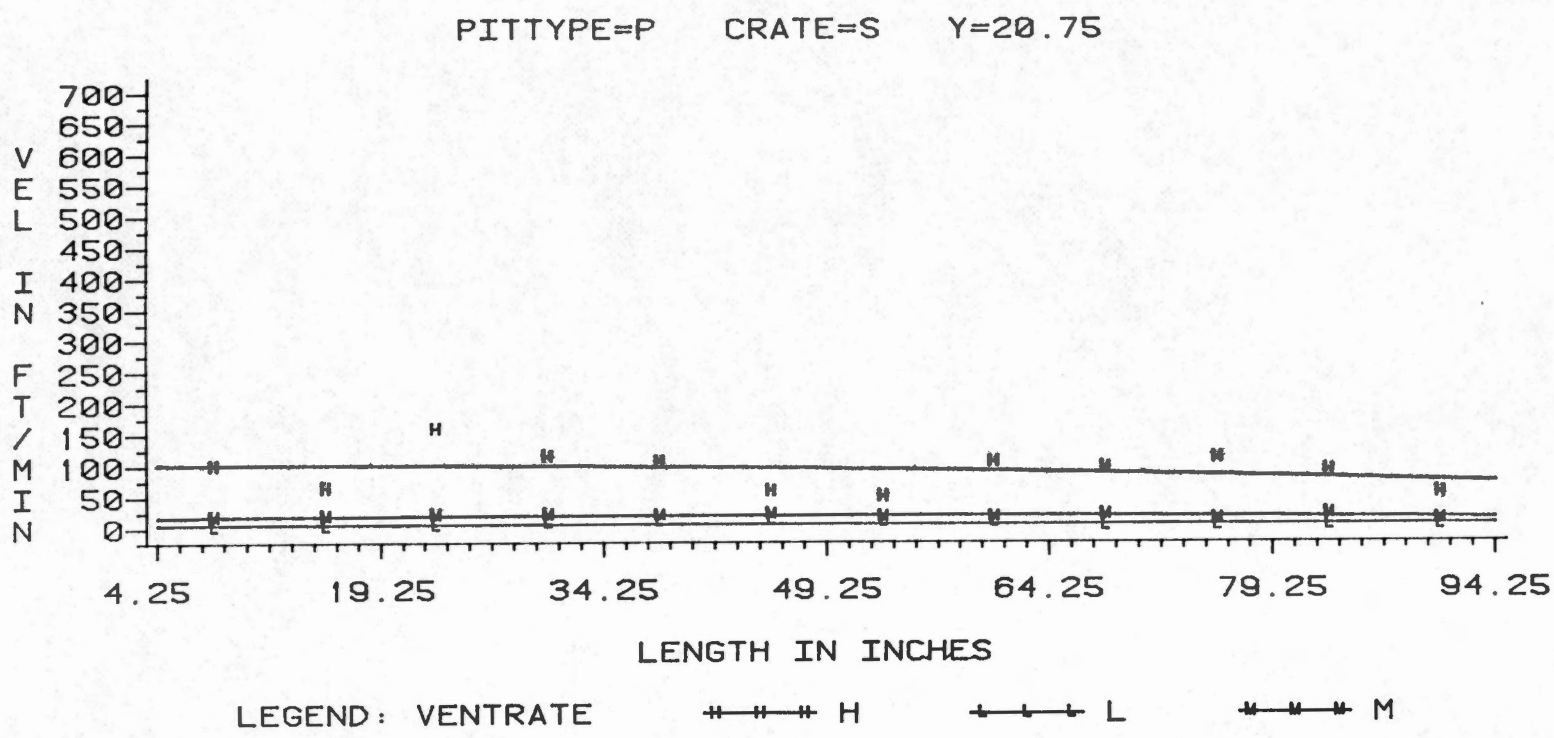

Figure C-9. Pig Level Velocities for PVC Pipe Pit Ventilation, Solid Side Crates, and Y = 20.75 inches.

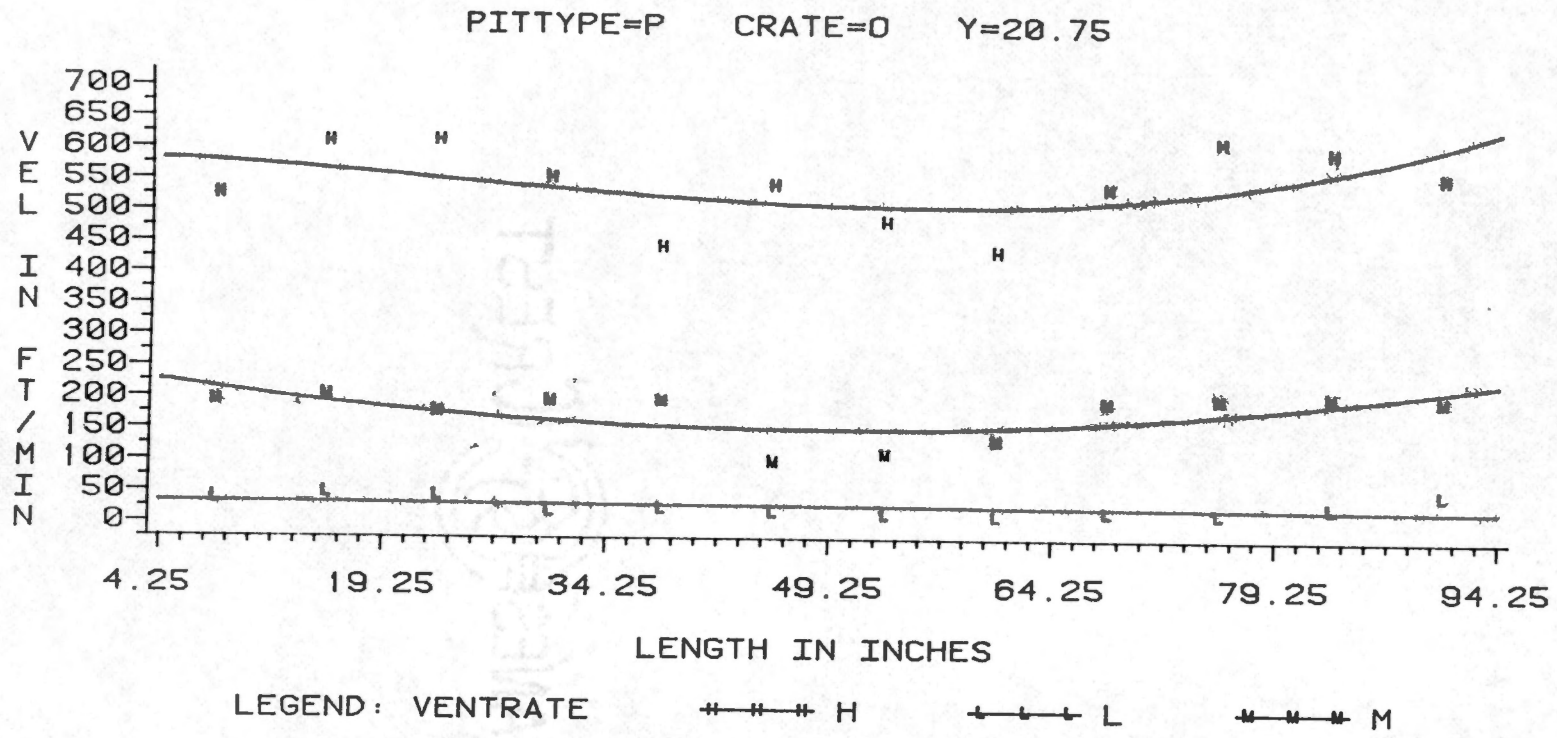

Figure C-10. Pig Level Velocities for PVC Pipe Pit Ventilation, Open Side Crates, and Y = 20.75 inches.

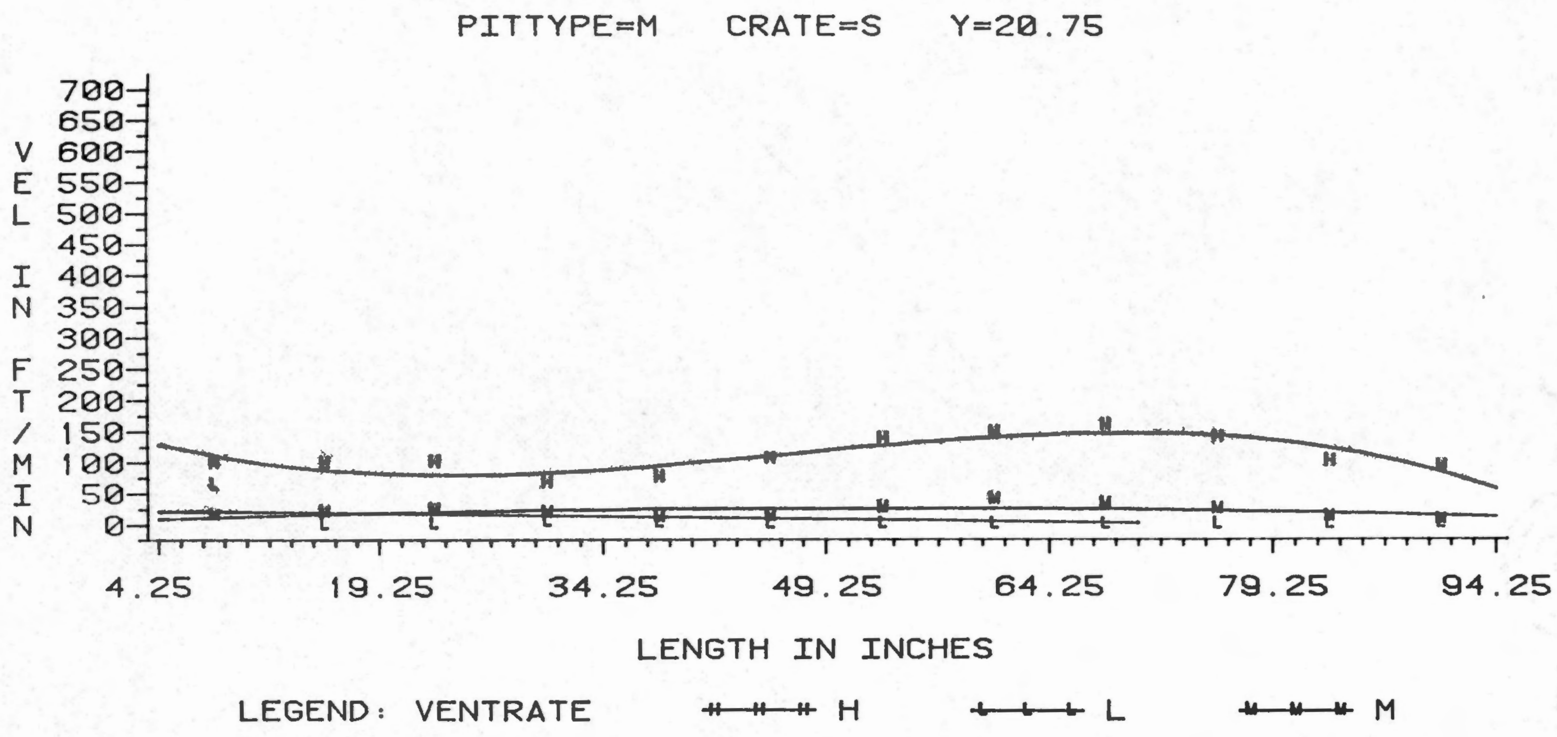

Figure C-11. Pig Level Velocities for Masonry Duct Pit Ventilation, Solid Side Crates, and Y = 20.75 inches.

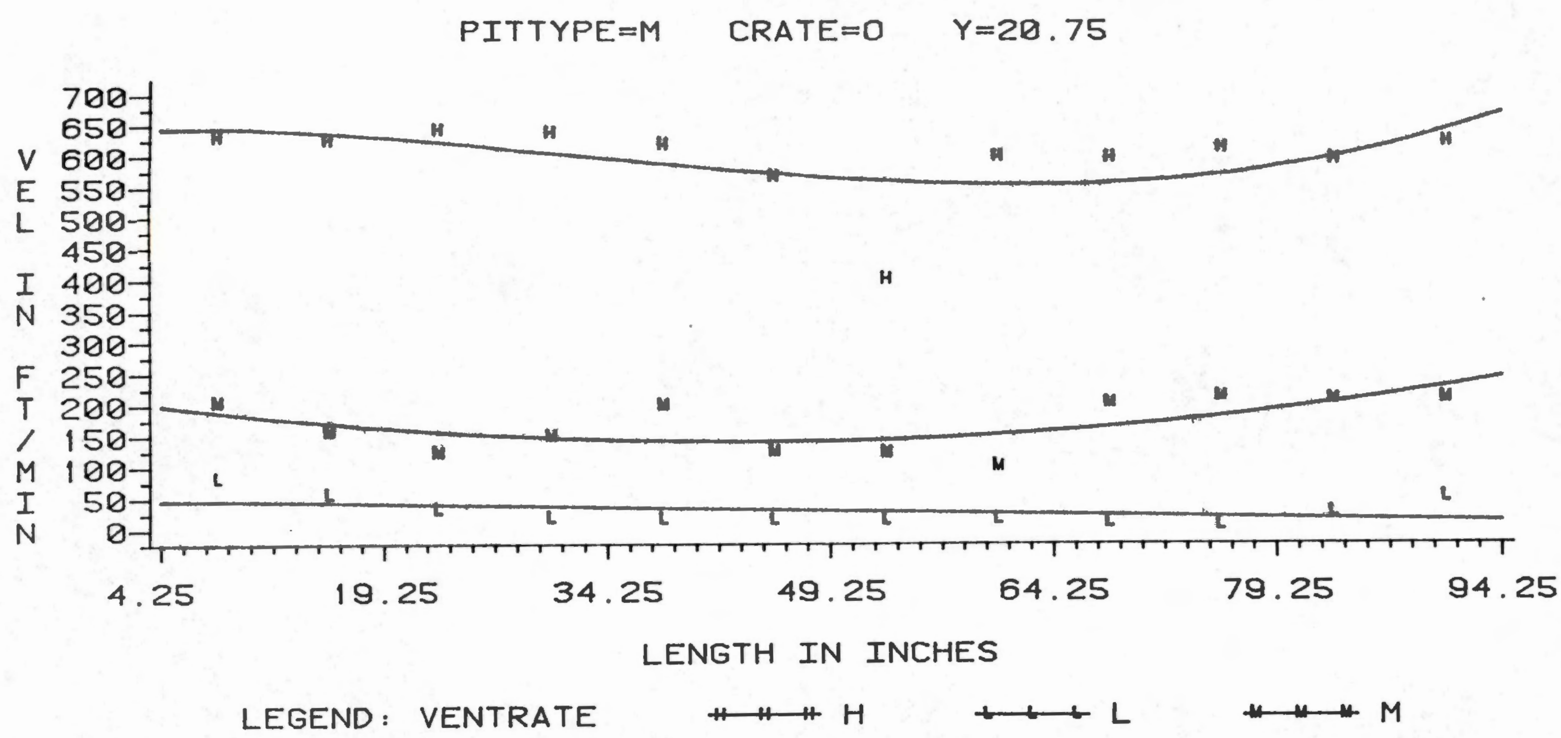

Figure C-12. Pig Level Velocities for Masonry Duct Pit Ventilation, Open Side Crates, and Y = 20.75 inches.

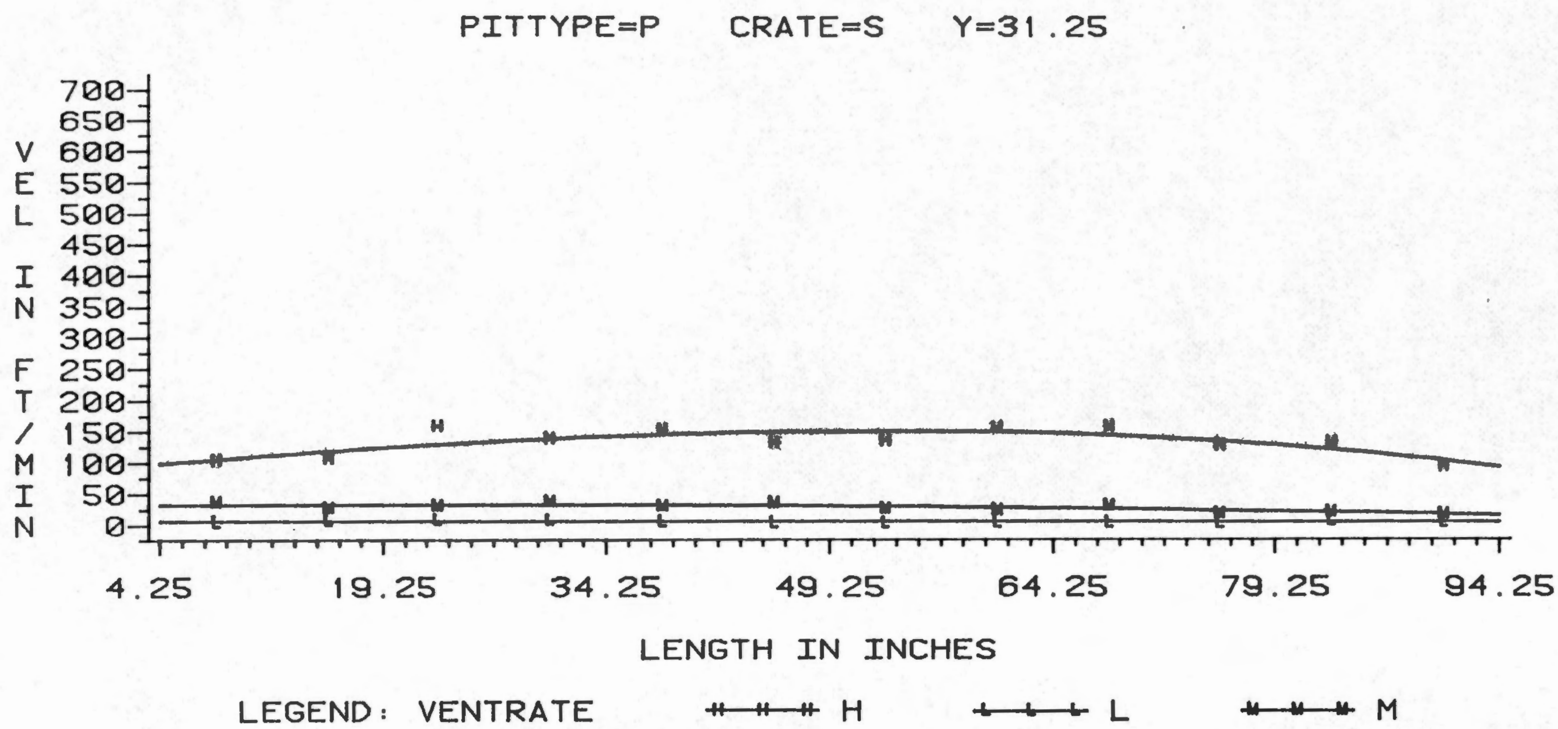

Figure C-13. Pig Level Velocities for PVC Pipe Pit Ventilation, Solid Side Crates, and Y = 31.25 inches.

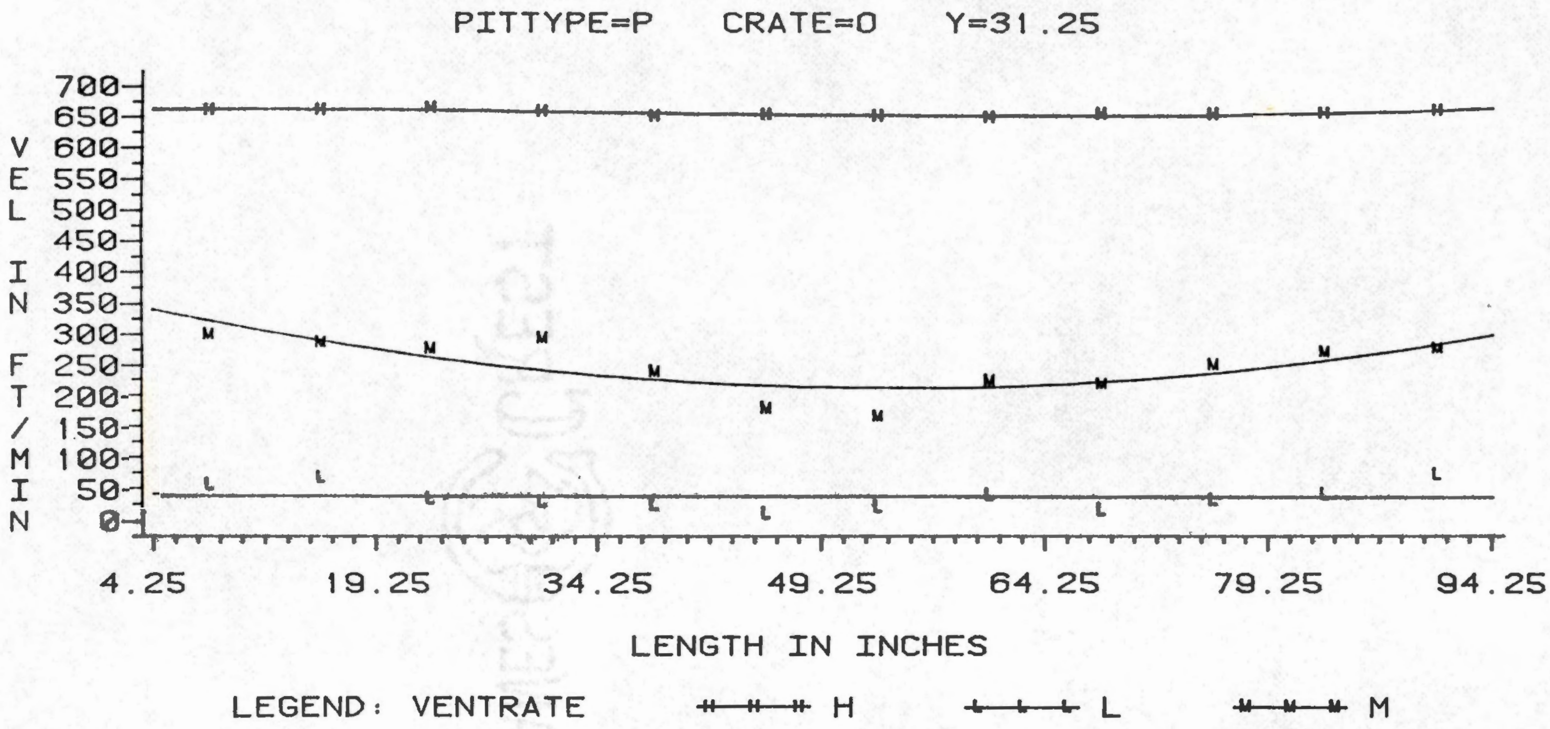

Figure C-14. Pig Level Velocities for PVC Pipe Pit Ventilation, Open Side Crates, and Y = 31.25 inches.

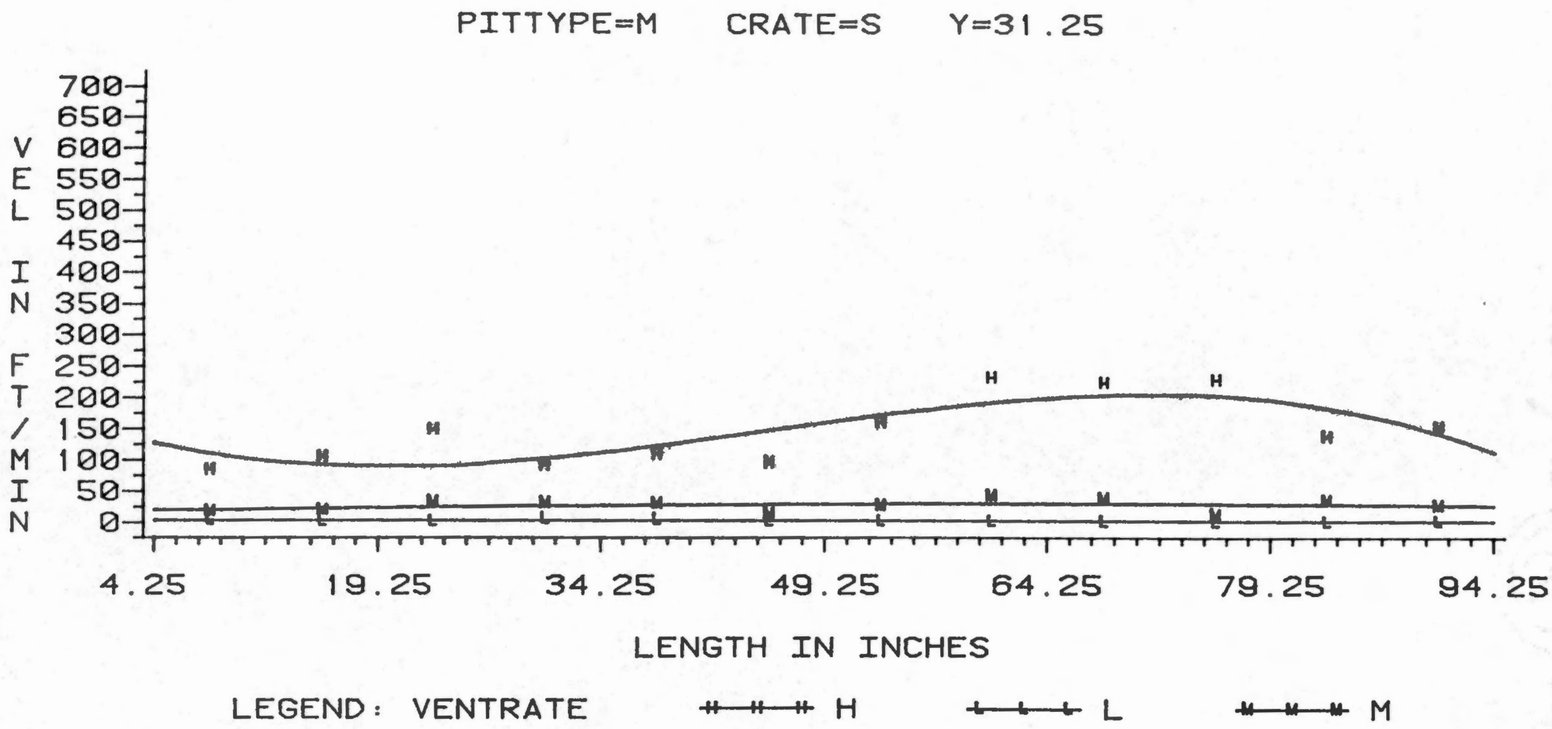

Figure C-15. Pig Level Velocities for Masonry Duct Pit Ventilation, Solid Side Crates, and Y = 31.25 inches.

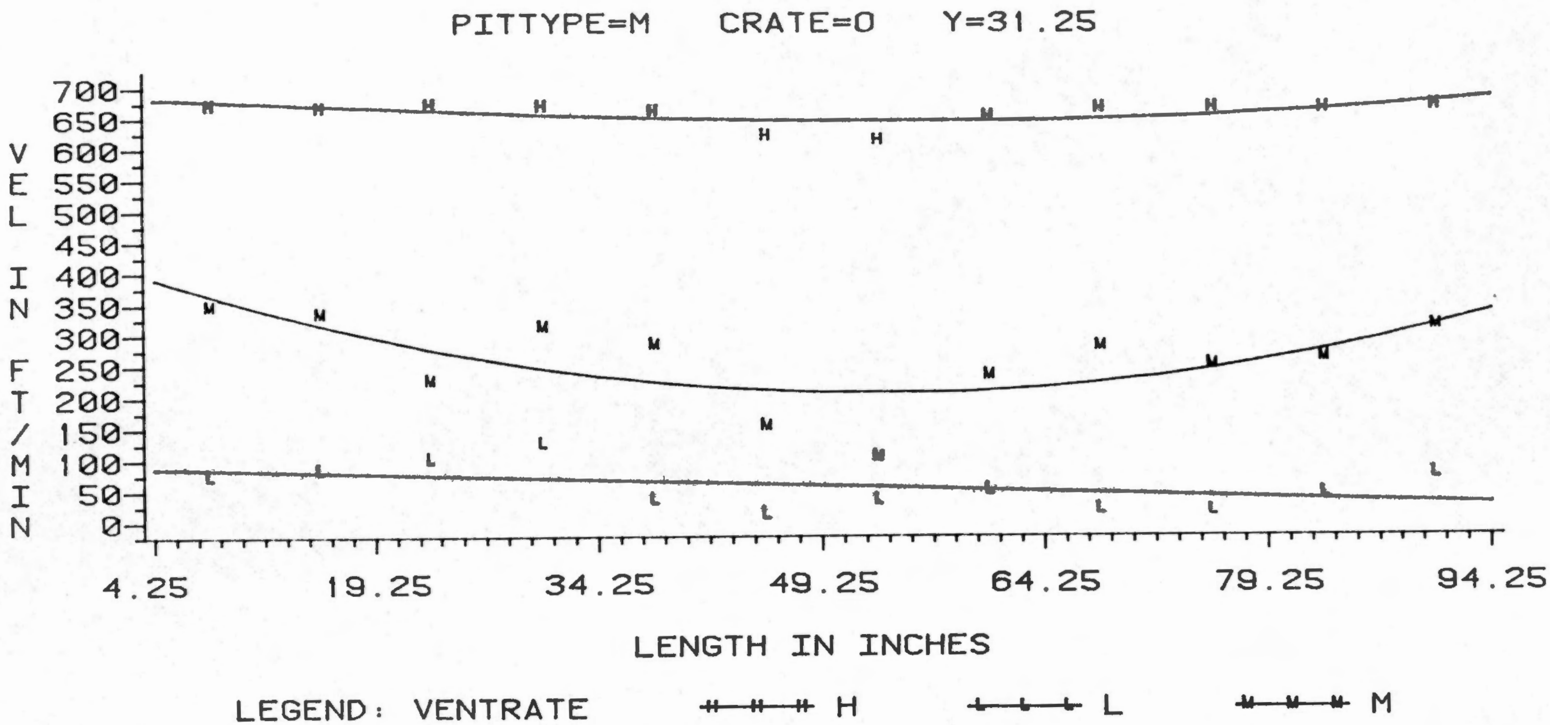

Figure C-16. Pig Level Velocities for Masonry Duct Pit Ventilation, Open Side Crates, and Y = 31.25 inches.

APPENDIX D

PLOTS OF THE EFFECTS OF MODEL LOCATION, PIT VENTILATION DUCT CONSTRUCTION, CRATE DESIGN, AND VENTILATION RATE ON THE AIR VELOCITIES AT THE MODEL SOW NOSE LOCATIONS

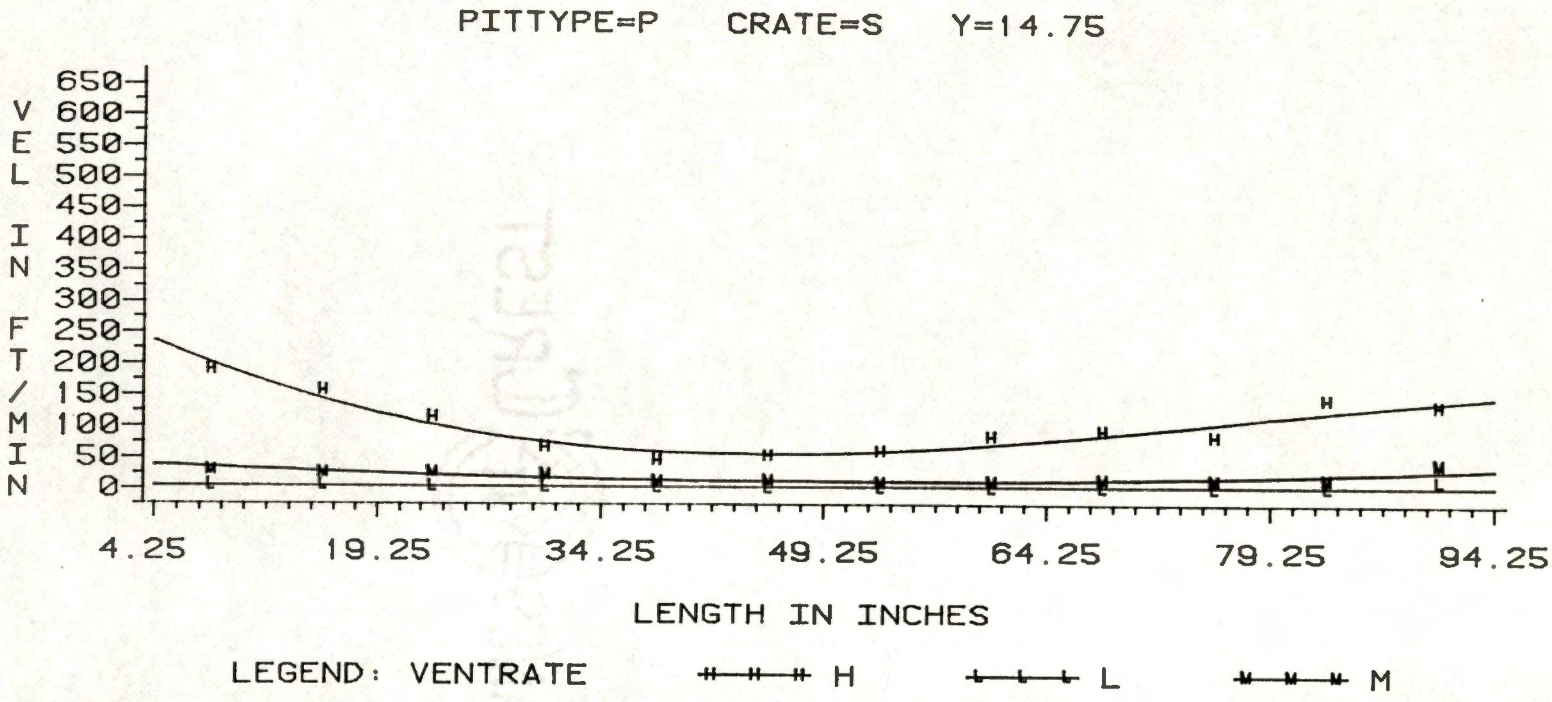

Figure D-1. Sow Nose Velocities for PVC Pipe Pit Ventilation, Solid Side Crates, and Y = 14.75 inches.

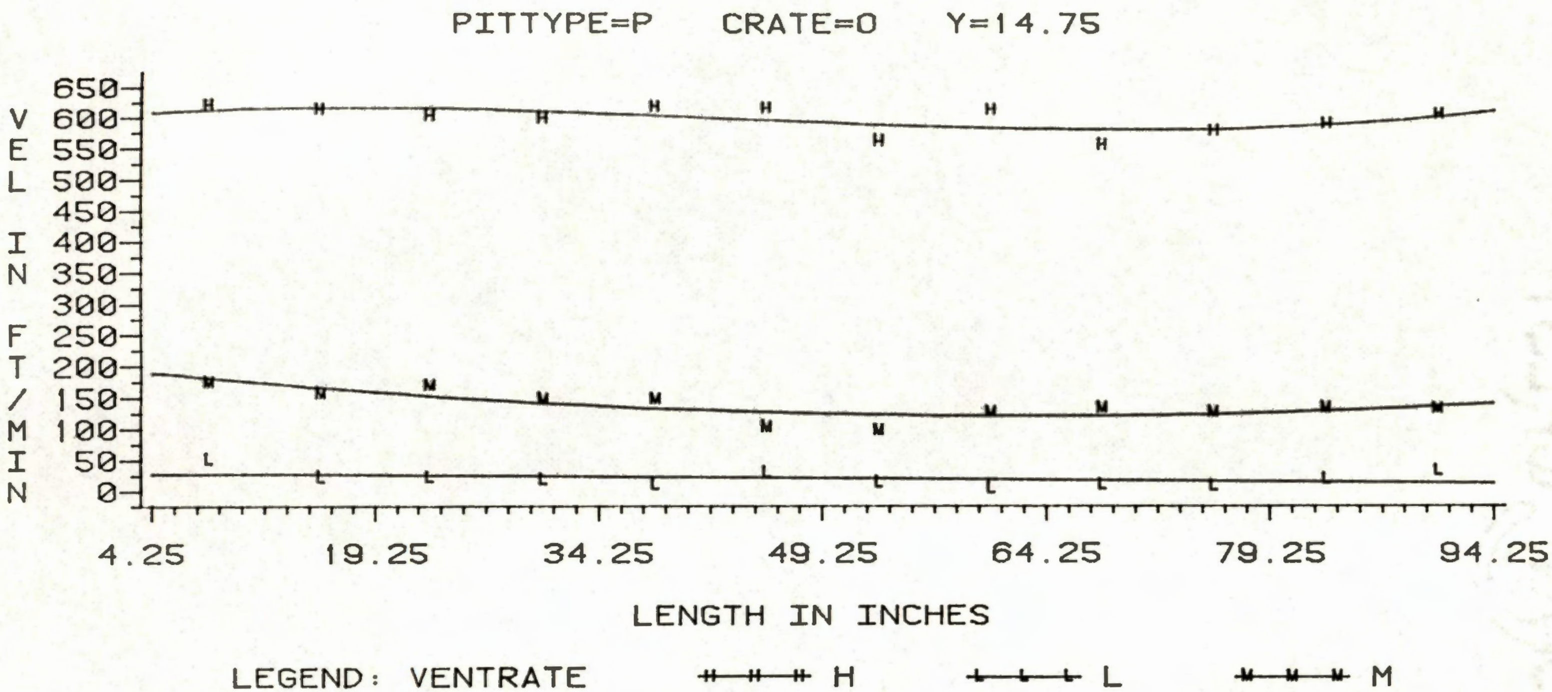

Figure D-2. Sow Nose Velocities for PVC Pipe Pit Ventilation, Open Side Crates, and Y = 14.75 inches.

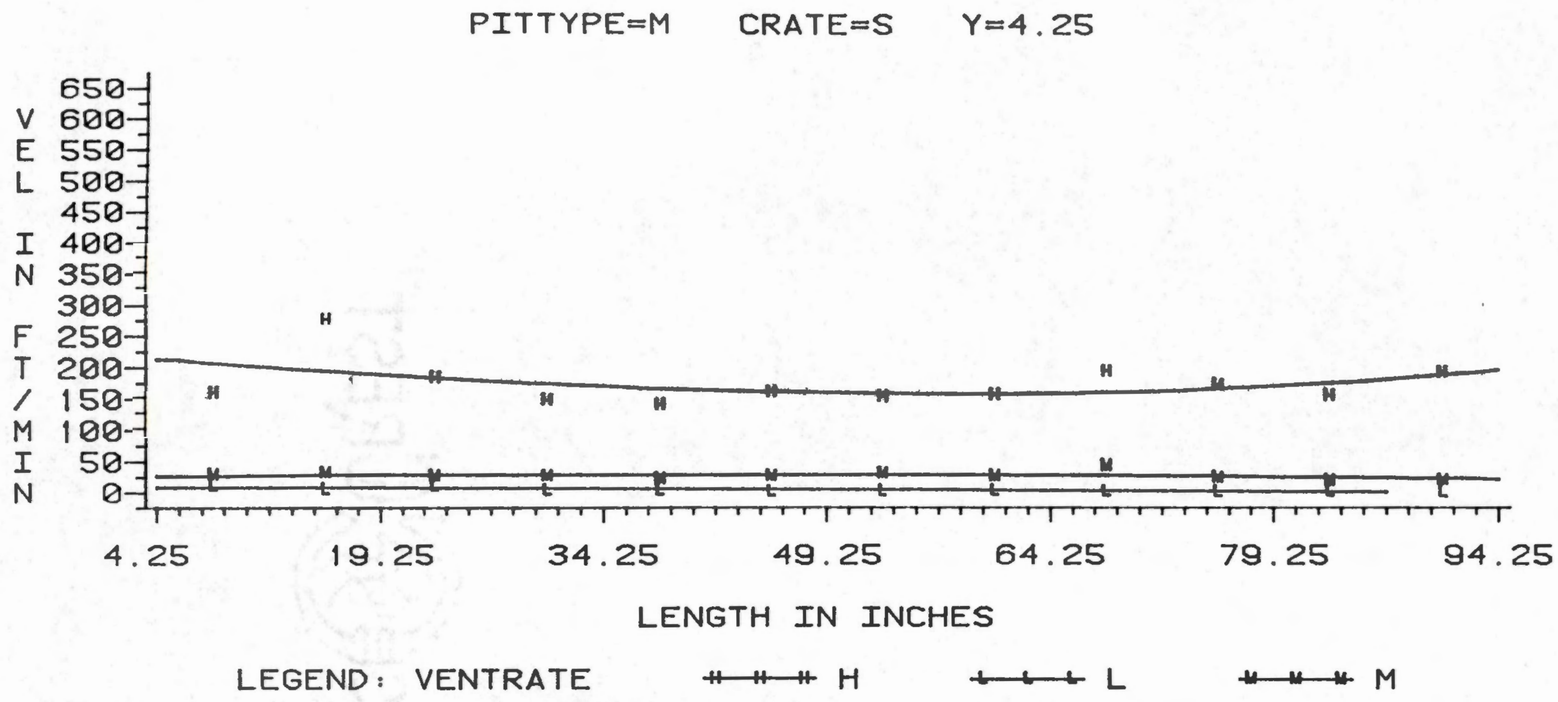

Figure D-3. Sow Nose Velocities for Masonry Duct Pit Ventilation, Solid Side Crates, and Y = 4.25 inches.

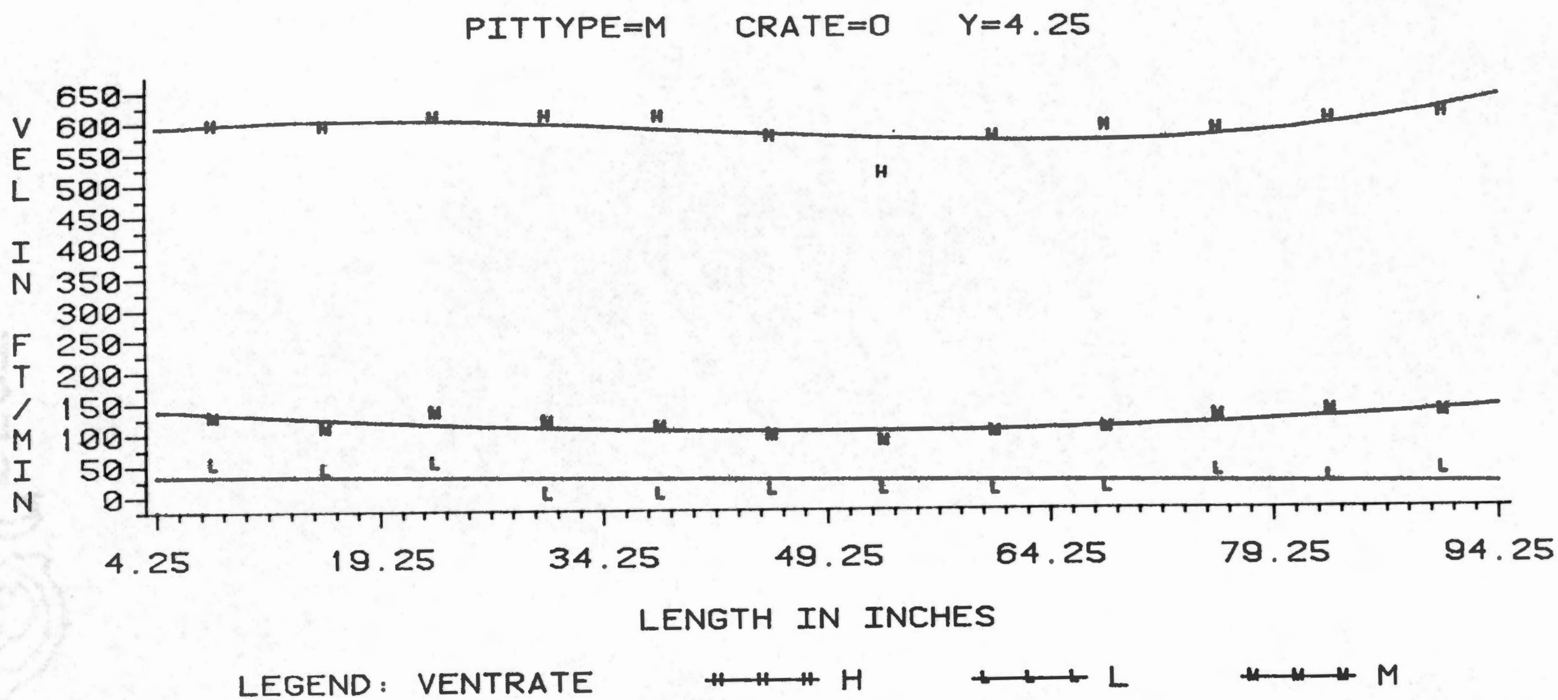

Figure D-4. Sow Nose Velocities for Masonry Duct Pit Ventilation, Open Side Crates, and Y = 4.25 inches.

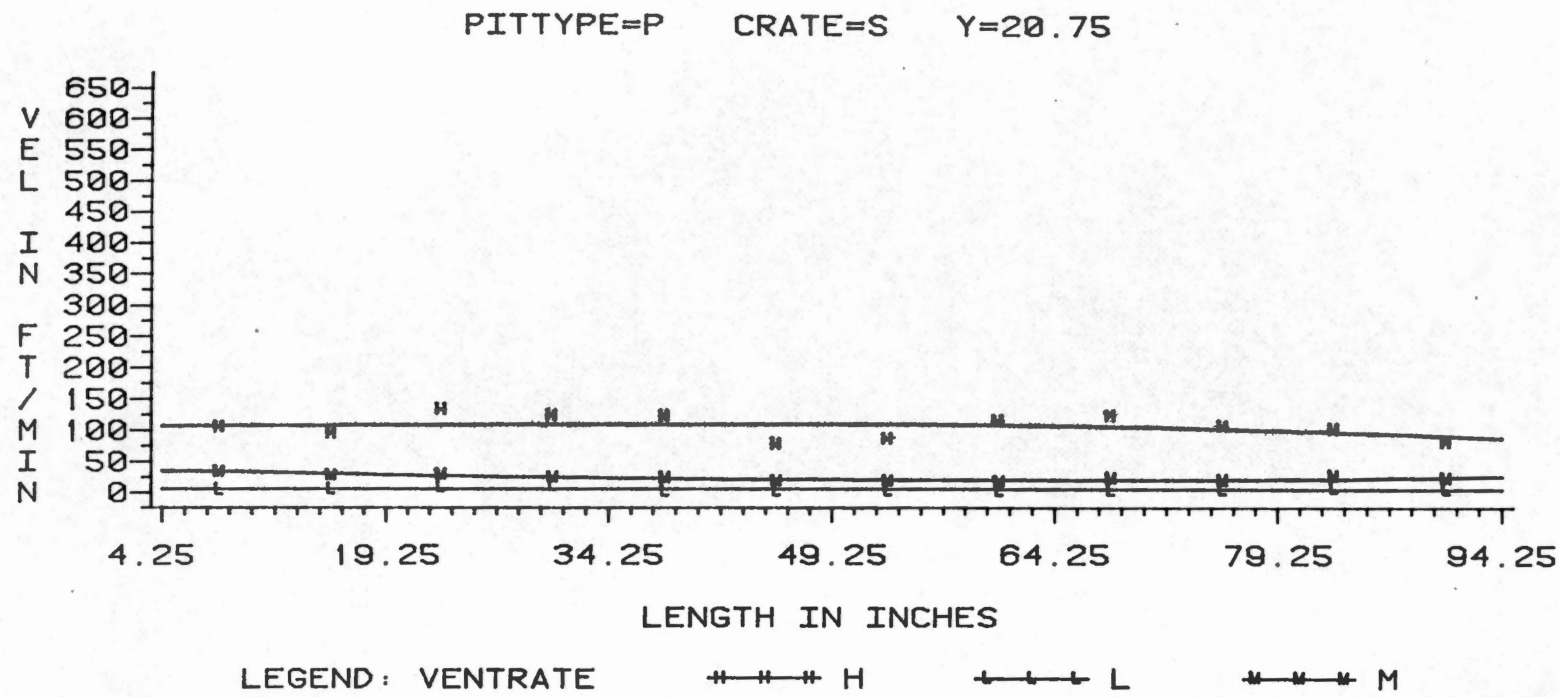

Figure D-5. Sow Nose Velocities for PVC Pipe Pit Ventilation, Solid Side Crates, and Y = 20.75 inches.

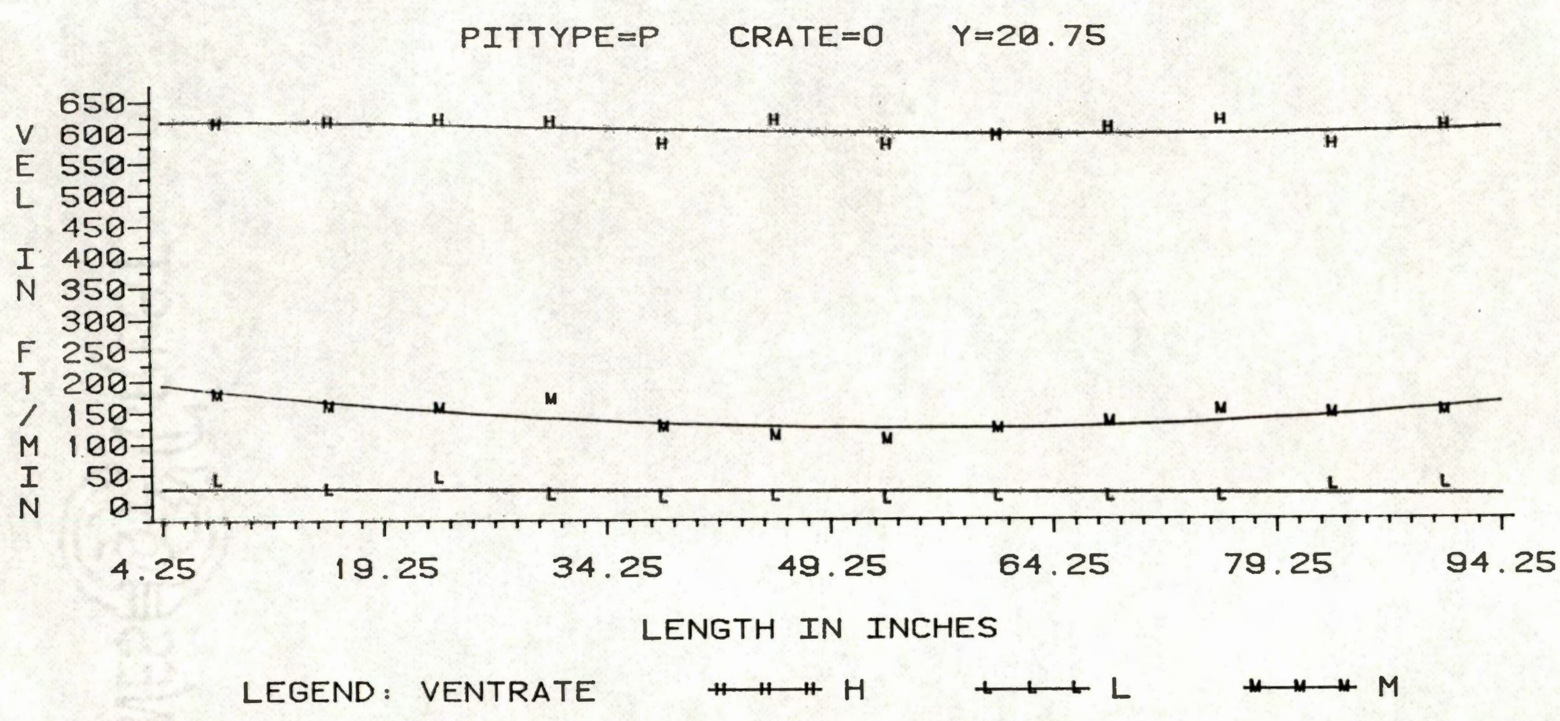

Figure D-6. Sow Nose Velocities for PVC Pipe Pit Ventilation, Open Side Crates, and Y = 20.75 inches.

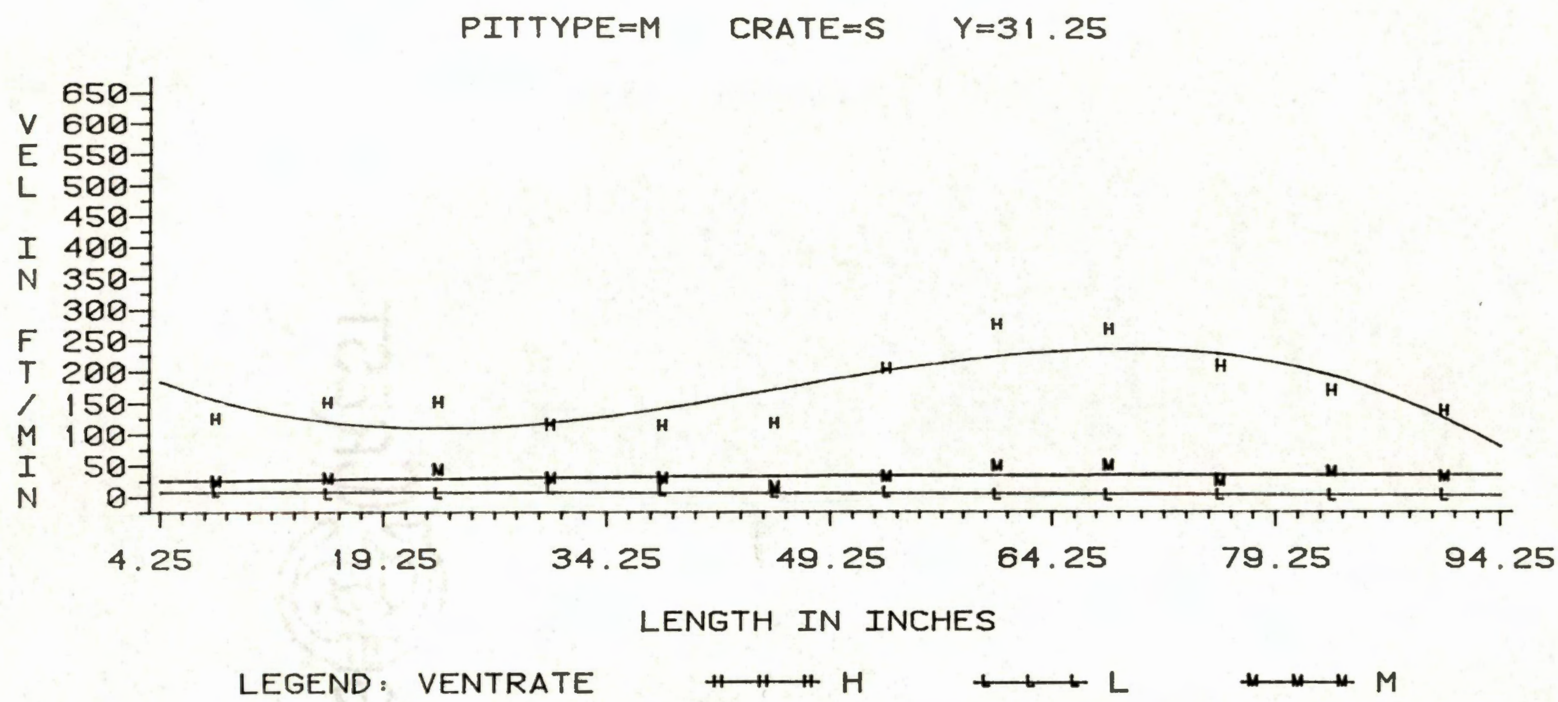

Figure D-7. Sow Nose Velocities for Masonry Duct Pit Ventilation, Solid Side Crates, and Y = 31.25 inches.

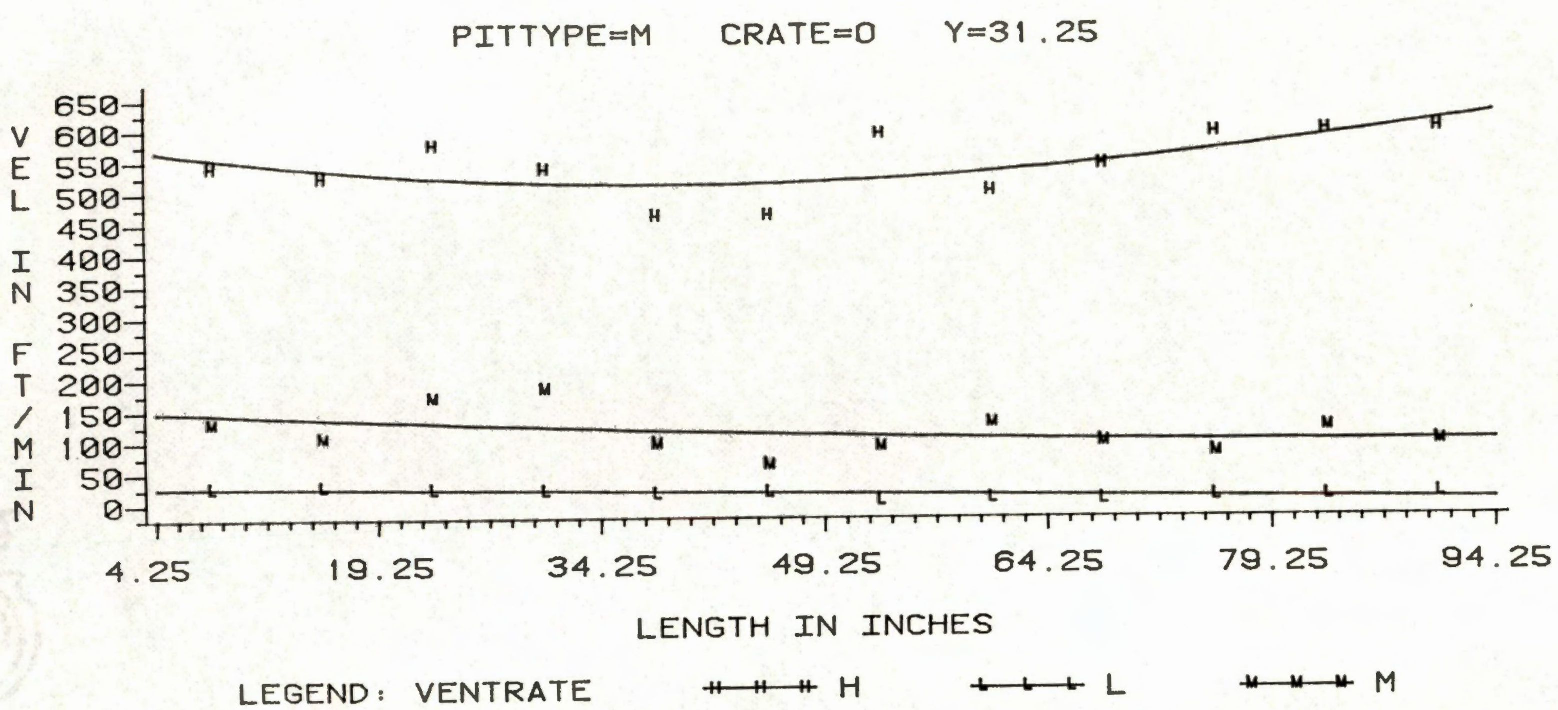

Figure D-8. Sow Nose Velocities for Masonry Duct Pit Ventilation, Open Side Crates, and Y = 31.25 inches.

VITA

George Franklin Grandle was born on August 11, 1948. He was raised near Keezletown, Virginia, on a farm owned by his parents, James F. and Beulah Lee Grandle. He attended Keezletown Elementary School and graduated from Montevideo High School in 1966. He attended the Clifton Forge Division of Virginia Polytechnic Institute and State University (VPI & SU) for one year majoring in Agricultural Education.

He enrolled in the Agricultural Engineering program at VPI & SU in Blacksburg in the fall of 1967. There he finished his B.S. degree in March of 1971. He immediately began his graduate program working as a graduate assistant in Extension. The M.S. degree requirements in Agricultural Engineering were completed in October of 1972.

Mr. Grandle was employed by The University of Tennessee as an Instructor in the Agricultural Extension Service on October 23, 1972. He was accepted into the Graduate School at The University of Tennessee, Knoxville in January 1974 and has studied toward the Doctor of Philosophy degree in Agricultural Engineering. He was promoted to Assistant Professor, Extension Agricultural Engineering in July 1984.

Mr. Grandle was a member of his high school chapter of the Future Farmers of America for five years and was awarded the State Farmer Degree in 1966. As an undergraduate at VPI & SU, he was active in the Student Branch of the American Society of Agricultural Engineers (ASAE) serving as Secretary for one year. He also held offices in the Student Soil Conservation Society and Alpha Epsilon Honor Society. He was a member of Alpha Zeta Honorary Fraternity and the Virginia Society of Professional Engineers. He is an Engineer-in-Training, having passed the Virginia examination in 1971.

He has been an active member of the Tennessee Section ASAE and served as chairman during 1983-84. He is a member of Gamma Sigma Delta, Phi Kappa Phi, Epsilon Sigma Phi, and the National Association of County Agricultural Agents.