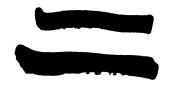
# CHARACTERISTICS OF ASPHALT PAVING MIXTURES UNDER CYCLIC LOAD USING FLEXURAL TESTS

Dissertation for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
KISE LEE
1988





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# CHARACTERISTICS OF ASPHALT PAVING MIXTURES UNDER CYCLIC LOAD USING FLEXURAL TESTS

BY

KISE LEE

# A DISSERTATION

Submitted to
Michigan State University
in partial fulfilment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Civil and Environmental Engineering

1988

### ABSTRACT

# CHARACTERISTICS OF ASPHALT PAVING MIXTURES UNDER CYCLIC LOAD USING FLEXURAL TESTS

BY

## KISE LEE

Increasing heavy wheel loads and truck traffic on flexible highway and airport pavements has necessitated more rational design approaches. Recently, significant progress has been made to develop new pavement structural design models (e.g. elastic and viscoelastic, and finite element models). This gave rise to the problem of material characterization under simulated field loading conditions. Moreover, attempts to directly relate mix design variables to the structural properties of the materials are limited or non-existence. Consequently, the need for quantifying relationships between the structural properties of compacted asphalt mixes and mix design parameters was realized.

In this study, it was hypothesized that relationships between the structural properties of the asphalt mixes and the asphalt mix design parameters can be found using statistical analyses. To verify the hypothesis, laboratory flexural cyclic load tests were designed and conducted to evaluate the structural properties of the mix, and the

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standard Marshall mix design procedures were employed to obtain the mix design parameters. Based upon physical interpretation of the test results, statistical relationships between the structural properties of asphalt mixes and their mix design parameters were examined. These relationships are presented and discussed in this dissertation.

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#### **ACKNOWLEDGEMENTS**

The writer wishes to express his appreciation to his major professor, Dr. Gilbert Y. Baladi, Professor of Civil and Environmental Engineering, for his guidance and numerous helpful suggestions during the conducting of research and preparation of this dissertation. to the other members of the writer's doctoral committee: R. D. Lepage, Professor of Statistics; Dr. R. W. Lyles, Associate Professor of Civil and Environmental Engineering; and Dr. R. S. Harichandran, Assistant Professor of Civil and Environmental Engineering. The writer also owes his appreciation to Dr. Young-Shik Paik, Professor of Civil Engineering of Kyung Hee University, who initiated the writer into the pursuit of learning.

Many thanks are also extended to Mr. Cha-don Lee for his thoughtfulness during the course of this study; Mr. Kyu-bong Kim for his friendship; and Mrs. Siham Baladi for her care and kindness.

Special appreciation, admiration, and love are due his parents who make it all worth while.

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E = marshal

E = percent

≣ = average

I = bulk.

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T = compacto

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t Plastic

近 = exponent

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3: the bulk

# LIST OF SYMBOLS

A and B = parameters of the plastic basin.

Al and Bl = regression coefficients.

AC = the actual percent asphalt content.

ANG = aggregate angularity.

APP = apparent.

AS = marshall stability adjusted to the sample height.

AV = percent air voids.

AVG = average

BK = bulk.

CD; = permanent deformation of LVDT;

CFP = compactor foot pressure (psi).

CL = cyclic loads (pounds).

 $dCD_{i}/dN$  = the rate of change of the cumulative plastic deformation with respect to N.

 $C_0$ ,  $C_1$ ,  $C_2$ , and  $C_3$  = coefficients.

E = total modulus (psi).

 $e_m = total strain.$ 

 $e_E = elastic strain.$ 

 $e_{VE}$  = viscoelastic strain.

e<sub>p</sub> = plastic strain.

EXP = exponential function.

 $F = flow (1/100^{n}).$ 

GB = the bulk specific gravity of the beam specimen.

GAL = gradatio ኔ = specific [ = interce; N = kinemat: (centis: le matural lm = logariti Im = linear v E = resilie: I = number o I = number o R = number o i coeffic i= marshal R = standar i= coeffic 歌 = saturat Ti = Marshal disthe tar T: the tax D . percent m = Aejdyf I = latera; a:ea. I = Percent

percent

m = the max

GMM = the maximum theoretical specific gravity of the mix.

GRAD = gradation of aggregate.

Gs = specific gravity.

I; = intercepts of equation 5.1.

KV = kinematic viscosity of the asphalt binders
 (centistokes).

ln = natural logarithm.

Log = logarithm to base 10.

LVDT = linear variable differential transducer.

MR = resilient modulus (psi).

N = number of load applications.

 $N_{pr}$  = number of load applications to fatigue failure.

NT = number of tamping.

 $R^2$  = coefficient of determination.

S = marshall stability (pounds).

SE = standard error of the estimate.

 $S_i = coefficients of equation 5.1.$ 

SSD = saturated surface dry.

STAB = marshall stability.

TAV = the target percent air voids.

TAC = the target percent asphalt content.

VMA = percent voids in mineral aggregates.

WM = weight of asphalt mixes (grams).

X = lateral distance from the edge of the loaded
area.

X1 = percent passing #200 sieve;

X2 = percent air voids in mix;

E = asphal

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- X3 = asphalt viscosity at 70 °F (10<sup>6</sup> poises);
- X4 = percent asphalt by total weight of mix;
- X5 = test temperature (°F);
- X6 = the logarithmic value of the viscosity (in
   poises) of the asphalt at the test
   temperature;

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### CHAPTER 1

#### INTRODUCTION

#### 1.1 INTRODUCTION

Over the years, Americans alone have invested more than one trillion dollars in their highway systems and are just beginning to realize that the conditions of the highway infrastructures are a major problem that requires the infusion of funds for maintaining, rehabilitating, and rebuilding the systems. Public and legislative attentions have been focused on the scope of public programs to rebuild and upgrade existing facilities and on the financing aspects of these programs. Financing alone cannot solve the problem because the needs far exceed the available resources. Innovation in structural and material mix design is the key to bridging the gap and to accelerate the search for a better solution.

In general, the highway systems were built using two types of surfacing materials: rigid (Portland cement concrete) and flexible (asphalt mixes). The latter pavement type (flexible) is the subject of this research study.

As stated by Yoder and Witczak, the classical definition of flexible pavements includes those pavements that have an asphalt concrete surface (185). An asphalt pavement may consist of thin wearing surface course built over a base course, subbase course, and compacted subgrade. Thus, the

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term pavement herein implies all the layers (courses) in the pavement structure. The load carrying-capacity of a flexible pavement is brought about by the load distribution characteristics of the layered system. The highest quality layer is placed at or near the surface. Hence, the strength of the pavement is the result of building up thick layers and, thereby, distributing the load over the relatively weak subgrade (185).

A typical asphalt paving mix consists of four major components: asphalt, coarse and fine aggregates, mineral fillers, and air. Also, certain types of additives or modifiers could be added to the mix to alter some of its properties. The so called "properties" of an asphalt concrete mix are dependent upon the properties of the material in the mix, the proportioning of the different component in the mix (the asphalt mix design), the test type and procedure, and temperature and environmental conditions.

The structural design of flexible pavements has evolved from rule-of-thumb procedures to methods based primarily on the experience and judgement of highway engineers augmented by empirical relationships developed through research and field observations. Recently, significant progress has been made to develop new pavement structural design models (e.g. elastic and viscoelastic, and finite element models). The accuracy of these models, however, depends upon the accuracy of the input data such as the structural and material

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properties, and others. Several laboratory test procedures were developed for the evaluation of these properties. numerous practical difficulties However, often are encountered in each test to exactly load the test specimen dictated by theoretical considerations and/or duplicate field conditions. Moreover, attempts to directly relate mix design variables (e.g. asphalt type and content) to the structural properties of the materials are either very few or non-existence. Consequently, there have been few links between the newly developed laboratory tests (e.g., flexural tests and indirect tensile tests) traditional mix design methods (e.g., Hveem stabilometer, and Mashall stability and flow method) that have been existence for many decades.

The objectives of this study are to:

- a) Determine the asphalt mix design parameters using the standard Marshall tests.
- b) Determine the structural properties of the asphalt mixes using cyclic load flexural tests.
- c) Quantify relationships between the structural properties of the asphalt mix and the types of the material in the mix.
- d) Identify a laboratory test procedure whereby the asphalt mix design can be tailored to optimize its structural properties.

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# CHAPTER 2

#### LITERATURE REVIEW

# 2.1 GENERAL

The field of flexible pavement design has evolved from empirical rule-of-thumb procedures based on past experience to rational methods based on soil classification systems and later on road test data. Beginning in the 1950s, however, heavy wheel loads and truck traffic resulted in severe breakup of some highways which necessitated more rational approaches. Consequently, analytical (mechanistic) pavement design methods were introduced which provided a better understanding of pavement response under traffic loading. however, gave rise to the problem of material This. characterization under simulated field loading conditions. To solve the problem, new laboratory tests such as the resilient modulus and permanent deformation-creep were developed, which enabled pavement engineers to obtain material properties necessary for mechanistic pavement design models (50).

In order to understand the material properties and to be able to extract the design parameters, the stress-strain responses of the material under simulated traffic loading must be obtained. Statistical and actual variations of the responses and the design parameters relative to other factors (e.g., temperature) should also be determined.

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Existing information concerning these variations of asphalt mixes are presented in the following sections.

# 2.2 Material Evaluation

The mechanical response of most asphalt mixes subjected to static and quasi-static loading is complex and differs considerably from that of the constituent materials in the mixes (109). The response depends on several variables which can be divided into three common groups (26, 32, 35, 44, 47, 71, 100):

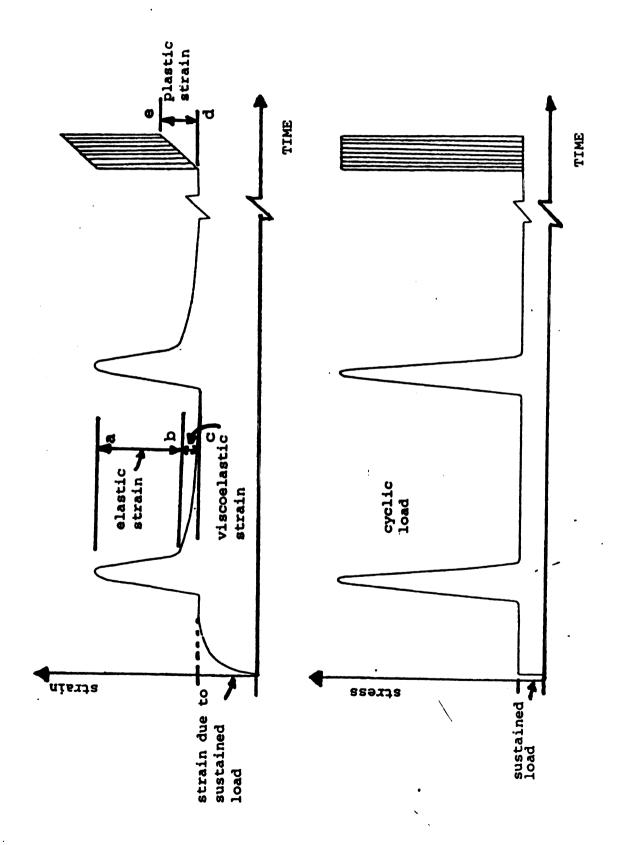
- 1) Asphalt mix variables including types of asphalt, the percent asphalt content, types of aggregate and their proportion and gradation, types and proportion of the mineral filler, and types and concentration of modifier (if any).
- 2) Specimen variables including compaction variables, density or the percent air voids, specimen size, and the amount of induced moisture.
- 3) Test variables including temperature, load intensity and frequency, and loading and relaxation periods.

Figure 1 depicts a typical mechanical response (stress-strain) of asphalt mixes subjected to cyclic loading (81).

The pertinent features of the strain response include:

1) Time-independent elastic strain (also called resilient strain) which is immediately recoverable upon unloading. This is shown as ab in figure 2.1.

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Features of the cyclic stress-strain curve of asphalt mixes. Figure 2.1

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- 2) Time-dependent viscoelastic strain which is recoverable during and after removal of the load (bc in figure 2.1).
- 3) Plastic (permanent) strain which is irrecoverable (ed in the figure).

In order to obtain an analytical assessment of the mechanical response, a constitutive model should be used that can account for the pertinent features of the stress-strain properties of the asphalt mixes. Laboratory observations suggest that several different models can be constructed that include:

- 1) Linear or nonlinear elastic.
- 2) Elasto-plastic.
- 3) Elastic-viscoelastic-plastic.
- 4) Elastic-viscoelastic.
- 5) Viscoelastic-plastic.

The model to be selected for the analysis depends upon the desired type or types of strain to be modeled, degree of accuracy, the desired mathematical simplicity, and the anticipated load intensity. For example: mathematically, the linear elastic model is the simplest. However, the model account for the viscoelastic does not and plastic deformations of the mix. In general, the elasticviscoelastic-plastic model is appropriate because of ability to accurately manage the actual pavement response when subjected to traffic loading (17, 18). The basic

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premise of this model is the assumption that, at each loading increment, the material is capable of undergoing a small plastic (permanent) strain, a small viscoelastic strain, and a small elastic strain. Mathematically, for each loading cycle, the total strain is the sum of the plastic, viscoelastic, and elastic components, i.e.

$$\mathbf{e}_{\mathbf{T}} = \mathbf{e}_{\mathbf{E}} + \mathbf{e}_{\mathbf{VE}} + \mathbf{e}_{\mathbf{p}} \tag{2.1}$$

where :  $e_{T} = total strain;$ 

e<sub>E</sub> = elastic strain;

 $e_{VE}$  = viscoelastic strain; and

e<sub>p</sub> = plastic strain.

Since the elastic strain is time independent, the total strain rate is the sum of the components of the viscoelastic and plastic strain rates. That is:

$$\frac{de_{T}}{d_{t}} = \frac{de_{VE}}{d_{t}} + \frac{de_{p}}{d_{t}}$$
 (2.2)

where: the strain rate is the first derivative of strain with respect to time.

It should be noted that equation 2.2 indicates that the stress is applied and removed instantly. That is, the stress

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intensity is either zero or a prespecified value. If the stress increases gradually with time (as the case of moving wheel load in the field and most laboratory tests) then strain rates in equation 2.2 should be expressed in terms of partial derivatives. All strain rates (including the elastic one) would be stress-dependent. Equation 2.2 represents the strain rates during the period of constant stress.

Nevertheless, using figure 2.1 and the above scenario, one can define the three types of strain as follows:

- a) Resilient strain The resilient strain for each load cycle is defined as the difference between the instantaneous values of the strain at peak and zero loads. This is shown as line ab in figure 2.1.
- b) Viscoelastic strain For each load cycle, the viscoelastic strain can be measured by the differences between the values of strain at zero load and that when the second load cycle commences. In figure 2.1, line bc is a measure of the viscoelastic strain.
- c) Plastic strain The value of the plastic strain per load cycle is very small and difficult to measure. Therefore, the cumulative plastic strain due to a certain number of load repetitions is generally measured. This is shown as line de in figure 2.1.

It should be noted that the accuracy of the actual measurement of strains depends on the rate of unloading.

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A higher rate permits more accurate measurement of the resilient and viscoelastic strains. In reference to figure 2.1, the values of the resilient strain represented by ab increases and the viscoelastic (bc) decreases with decreasing unloading rate. Because, during the unloading period, the test specimen will recover all the resilient and part of the viscoelastic strains. Hence, the actual values of the resilient and viscoelastic strains cannot be accurately determined

In general, the applied cyclic stress, and the resilient, viscoelastic, and plastic strains are used to obtain the structural properties of asphalt mixes. The following definitions of the structural properties are relevant and can be found throughout the literature.

- 1) Resilient modulus is the ratio of the applied cyclic deviatoric stress to the resilient part of the axial strain (ab).
- 2) Resilient Poisson's ratio is the ratio of the radial (not shown in figure 2.1) to the axial resilient strains.
- 3) Viscoelastic modulus is the ratio of the applied cyclic deviatoric stress to the viscoelastic part of the axial strain (bc).
- 4) Total modulus is the ratio of the applied cyclic deviatoric stress to the total axial strain (ac).
- 5) Stiffness is a general term describing any one of the

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- 6) Fatigue life is the number of load repetitions a material can withstand prior to the initiation of microcracks.
- 7) Permanent deformation is the sum (cumulative) of the plastic axial deformation (de) developed during the total number of load repetitions.

Whereas the above terms are generally accepted, one can find (in the literature) several terms describing the modulus of a material (e.g., stiffness modulus, mix modulus, complex modulus, dynamic modulus, elastic modulus, elastic stiffness, flexural stiffness) (81, 104). Unfortunately, most of the existing literature do not properly define these terms nor do they offer any explanations concerning the method of calculation. one can find the same term being used by several authors even though the methods of calculation are different (e.g., one author uses resilient strain, while another uses total strain, to calculate the same modulus).

# 2.3 RESILIENT CHARACTERISTICS OF ASPHALT MIXES

The resilient characteristics of asphalt mixes are the resilient modulus and resilient Poisson's ratio. Existing information concerning the effects of the test, mix, and specimen variables on the resilient characteristics of asphalt mixes are presented below.

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1.1.1 Effects

# 2.3.1 Effects of Test Variables

The effects of test variables on the resilient modulus of asphalt mixes were investigated by several researchers (27, 28, 51, 52, 54, 106, 109). These variables include applied stress, test temperature, load frequency, relaxation period, and number of load repetitions.

The effects of the number of load applications (N) on the resilient modulus (MR) of asphalt mixes are dependent on the test type and boundary conditions. For example; for a continuously supported beam specimen, increasing N results in increasing MR. While for simply supported beam specimen, increasing N yields a decrease in the values of MR (48, 71).

Brown and Cooper (27) stated that, for a stiff asphalt binder and relatively moderate stress levels, the resilient modulus is independent of stress level (51, 52, 54). Similarly, Yeager and Wood (106) found that a constant value of the resilient modulus can be obtained for a stress level up to 70 psi and test temperatures between 40 and 100°F.

The effects of load duration and frequency upon the resilient response of asphalt mixes were also evaluated by several investigators. Generally, it has been found that longer load durations and lower frequencies result in lower values of the resilient modulus (27, 28, 106, 109). Also, since the response of viscoelastic materials, such as asphalt mixes, to load is temperature dependent, higher test

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temperatures result in higher deflections and lower values of the modulus (24, 27, 87, 99, 107, 108,).

The resilient Poisson's ratio for isotropic linear elastic material under uniaxial stress is defined, as noted above, by the ratio of recoverable radial strain to the recoverable axial strain. This definition applies only for zero or constant confining pressure. For variable confining pressure, the definition is more complex. The theoretical range of the values of Poisson's ratio is between -1.0 and 0.5, although values higher than 0.5 were reported (51, 52). This can be attributed to several factors:

- 1) Asphalt mixes are not perfectly linear elastic material.
- 2) Laboratory test conditions do not exactly duplicate those dictated by the theory of elasticity.
- 3) The test specimen experiences volume change during shear which is not permissible in the theory of elasticity.

Because of the problems associated with laboratory measurements of Poisson's ratio and since pavement response is relatively insensitive to variations in this parameter, estimated values of Poisson's ratio are generally used by pavement engineers (108). A typical range of Poisson's ratio for asphalt concrete mixes is between 0.2 and 0.4 (109). Nevertheless, researchers have evaluated the effects of the test variables on the value of Poisson's ratio. It was found

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- a) Higher test temperature yields higher values of Poisson's ratio (104).
- b) Increasing number of load applications yields higher values of Poisson's ratio (15).

# 2.3.2 Effects of Mix and Sample Variables

The resilient modulus of asphalt mixes is also a function of the mix and specimen variables including aggregate type, asphalt type and content, gradation of aggregate, and percent air voids. Bonnaure et al. studied the effects of several factors upon the resilient modulus of asphalt mixes utilizing a two-point bending apparatus for testing trapezoidal specimens (24). Some of their test specimens were fabricated in the laboratory while others were obtained from the field. They concluded that:

- Asphalt content, percent air voids, grade of binder, and volume concentration of the aggregate significantly affect the test results.
- . Accurate estimates of the stiffness modulus and phase angle of the mix can be obtained using the above noted variables with the aid of nomographs (Van Der Poel).

Saraf and Majidzadeh performed dynamic tests on simply supported beams (12 in. long, 2 in. wide, and 2 in. high) to examine the effects of the type of asphalt binder on the

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Some sect dynamic modulus (85). They used six different types of asphalt aged for 2, 4, and 6 hours in an oven heated to a constant temperature of 425°F. The tests were conducted using 0.2 second loading time followed by 0.8 second relaxation period. They concluded that:

- . The dynamic modulus of the compacted mix increases with an increase in the binder viscosity.
- . For any given grade of asphalt, there is an optimum asphalt content at which the value of the dynamic modulus is maximum.
- . Aging of asphalt causes an increase in its viscosity and dynamic modulus.
- . The dynamic modulus increases with an increase in the compacted density of the mix.

The effects of aggregate gradation on the resilient characteristics of aggregates and asphalt mixes were also investigated by several researchers. In general, it was found that these effects are insignificant (64, 90, 91, 105, 108, 109).

Because of the complexity of the laboratory tests to obtain the structural properties of asphalt mixes, and because these tests are expensive and time consuming, several researchers correlated the structural properties of the mixes to some of the mix parameters which are easy to obtain. Some of these correlations are presented in the following section.

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#### 2.3.3 CORRELATIONS

Efforts have been made to correlate the dynamic modulus of asphalt mixes to the test, mix, and sample variables. Shook and Kallas (93) used data from several different tests to develop correlation equations (known as the Asphalt Institute (A.I.) equations) between the dynamic modulus of asphalt mixes and several mix, test, and specimen variables. The tests included:

- le tests included.
  - . Marshall stability and flow at 40, 70, 100, and  $140^{\circ}$ F.
  - . Hveem tests at the same temperatures.
  - . Direct and indirect tensile tests.
  - . Dynamic modulus tests on 4-in diameter and 8-in high cylindrical specimens.

Their statistically correlated equations are:

Log E = 
$$1.54536 + 0.020108(X1) - 0.0318606(X2)$$
  
+  $0.068142(X3) - 0.00127003(X4)^{0.4}(X5)^{1.4}$  (2.3)

$$R^2 = 0.968$$
, and S.E. = 0.0888904

Log E = 
$$3.12197 + 0.0248722(X1) - 0.0345875(X2)$$
  
-  $9.02594(X4)^{0.19}/(X6)^{0.9}$  (2.4)

$$R^2 = 0.971$$
, and S.E. = 0.0849186

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Where: Log = logarithm to base 10;

E = dynamic modulus, 10<sup>5</sup> psi (4 Hz loading
frequency);

X1 = percent passing #200 sieve;

X2 = percent air voids in mix;

X3 = asphalt viscosity at 70 °F (10<sup>6</sup> poises);

X4 = percent asphalt by total weight of mix;

X5 = test temperature (°F);

X6 = the logarithmic value of the viscosity (in
 poises) of the asphalt at the test
 temperature;

S.E. = standard error of the estimate; and

 $R^2$  = coefficient of determination.

#### Shook and Kallas noted that:

- . For a constant asphalt content, the resilient modulus decreases as the percent air voids increases.
- . The resilient modulus of the mix increases as the asphalt viscosity increases, or as penetration decreases.

Later, Witczak utilized an expanded data base to modify the AI equations and to include the test frequency as one of the variables (104).

Miller et al. compared nearly 1200 laboratory measured dynamic modulus values with those predicted using the AI equations (66). They observed that for all mixes made using crushed aggregate, the measured and predicted moduli showed

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a good agreement. However, very poor agreement was noted for mixes made using slag and sand. Thus, they modified the AI equations to obtain a better correlation for all mixes. The findings by Miller support that the modulus of the asphalt mix depends upon the constituent material in the mix. The original AI equations were obtained using crushed and natural gravel. Consequently, when similar aggregates were used, calculated and measured moduli showed a relatively good agreement compared to that of using different aggregates (slag).

Nevertheless, when the AI equations failed to predict the modulus to within reasonable limits, researchers developed alternative equations. For example, Terrel et al. correlated the resilient modulus to the asphalt content, test temperature, and percent air voids in the mix (96). Yeager and Wood correlated the dynamic modulus to the slope of the lines representing the logarithmic values of the kinematic viscosity against the inverse values of the temperature, loading rate, and test temperature (106). Their correlations, however, were limited to a specific aggregate type, gradation, asphalt type, and asphalt content.

To summarize, several correlations relating the resilient and/or total characteristics of asphalt mixes to the mix, test, and specimen variables were developed. These, however, were found to be limited to specific types of aggregate and asphalt, and to the specific tests and

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# 2.4 PLASTIC CHARACTERISTICS

In general, the plastic characteristics of any material can be divided into two categories: permanent deformation and creep. The basic difference between the two categories is that the former is the cumulative plastic deformation under cyclic load (e.g., a moving wheel load) while the latter is, typically, measured as the total deformation under a constant static load (e.g., a parked vehicle).

Theoretically, permanent deformation of a compacted asphalt mix is a manifestation of two different mechanisms: material densification that results in a volume change; and repetitive shear deformation that results in a plastic flow with no volume change (58). The portion of the deformation due to densification can be minimized by proper compaction specifications (17, 18, 19, 58). To control or minimize plastic flow in a pavement section, the applied shear stress should be minimized by a proper design. In practice, the separation of the two components of permanent deformation is not possible. Therefore, the term permanent deformation herein refers to the sum of both deformations.

Permanent deformation represents a basic concern in the structural design of pavement system. It causes two different distress modes in the pavement: ruts and fatigue cracking (85). Ruts in flexible pavements are simply a

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surface distortion that can be found in the wheel paths. This surface distortion can be caused by any one layer or a combination of layers in the pavement system. Water tends to accumulate in the rutted area of the pavement causing a safety problem (hydroplaning). Fatigue cracking (also known as alligator cracking) is the result of the accumulation of cyclic plastic strain induced by repeated traffic loads. These cracks cause slow disintegration of the asphalt course which shortens pavement life.

Concentrated efforts to control both ruts and fatigue cracking resulted in the development of two pavement design methodologies that are based upon limiting permanent deformations (109):

- Empirical methods based on correlations of excessive deformations to preselected failure conditions of the pavement.
- Quasi-elastic or viscoelastic methods that are used to predict the cumulative permanent deformations in pavement systems.

The latter methodology is preferred because it can be used in more theoretical and rational pavement design methods. It should be noted, however, that neither method is perfected to the point where permanent deformations can be accurately predicted.

In the following sections, plastic deformation prediction models and the effects of several variables upon

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the plastic characteristics of asphalt mixes are summarized.

## 2.4.1 Plastic Deformation Prediction Models

Monismith et al. found that, for asphalt mixes, the functional relationship between the permanent strain and the number of load cycles can be described as follows (67, 68, 69, 70, 72).

$$\log (e_p) = c_0 + c_1 \log(N) + c_2 (\log(N))^2 + c_3 (\log(N))^3$$
(2.5)

The basic concept of the model is based upon the assumption that for a given stress and material properties the plastic deformation of asphalt mixes is a function of the number of load applications. This implies that the prediction of permanent deformation can be determined by repeated load laboratory tests. Allen and Deen confirmed the above finding and expanded the relationship to include the effects of test temperature and applied deviatoric stress (16). Comparisons of predicted permanent deformation with actual rut depths measured from full-depth asphalt pavements showed a

reasonable agr Haas and F between the r deformation t repetitions a and the percent A differe They st mas can be b or the voids independent v his implies of the number Permanent de f ase, time isformation o Riables inc incrature, 1 ite, and en <sup>45</sup>, 47, 50, evanie, th Riezent sec is surjected itie the c frier, eve

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reasonable agreement.

Haas and Morris et al. introduced a polynomial function between the ratio of the logarithmic value of the permanent deformation to the logarithmic value of the number of load repetitions and the applied stress, the test temperature, and the percent air voids in the mix (40, 74, 75).

A different approach was proposed by Brown and Cooper (27). They stated that the permanent deformation of asphalt mixes can be better expressed by using the percent air voids or the voids in the mineral aggregate (VMA) independent variable rather than the number of load cycles. This implies that the permanent deformation is independent of the number of load applications. This is true if the permanent deformation term includes only creep. For this case, time becomes important. In general, permanent deformation of asphalt mixes is a function of several variables including time of loading, percent air voids, temperature, material properties, applied stresses, service life, and environmental conditions (26, 32, 35, 40, 42, 44, 45, 47, 50, 53, 55, 71, 73, 76, 78, 79, 83, 86, 173). . For example, the performance and service life of two similar pavement sections are drastically different if one section is subjected to a high number of trucks (high axle loads), while the other is subjected only to automobile traffic. Further, even if the traffic characteristics are the same, pavements located in different geographical areas (e.g.

differently. T ieformations o be included in found in the winly due to effects of all These 1.4.2 Effects imations ( 83, 86). Ever, is erature.

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presence/absence of freeze-thaw cycles) will perform differently. These imply that to properly model permanent deformations of asphalt mixes, all factors involved should be included in the model. Thus, the differences in opinion found in the literature concerning plastic deformation are mainly due to the fact that each study did not include the effects of all possible independent variables and/or their ranges. These are presented in the following section.

#### 2.4.2 Effects of Test Variables

The effects of cyclic stress level and test temperature on permanent deformation of asphalt mixes were investigated by several researchers. They reported that higher stress levels and/or test temperatures result in higher permanent deformations (40, 42, 45, 47, 50, 53, 55, 73, 76, 78, 79, 83, 86).

Allen and Deen found that the permanent deformation at the first load application (initial response) is a function of the stress level and test temperature (16). The increment of permanent deformation between any subsequent cycles, however, is independent of stress level and test temperature. Haas and Meyer, on the other hand, reported that the accumulated permanent deformation (in percent) per the logarithmic value of the number of load application increases with increasing axial stress and test temperature (40). The difference between the two findings could be

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attributed to the total number of independent variables included in the study or to the type of test used. Different tests may yield different stress distributions and, consequently, the results may not be directly compared.

Monismith and Vallerga examined the effects of relaxation period during load-unload cycles on permanent deformation (73). They found that, relative to other the effect of the relaxation period variables. statistically insignificant. Allen and Deen studied the effects of the load duration on permanent deformation (16). showed that regardless of the load frequency. equivalent loading times (number of load cycles multiplied by load duration) yield similar permanent deformation. In practice, the above findings imply that spacing between equally loaded truck axles (relaxation period) does not affect the permanent deformation. Traffic speed (loading period), on the other hand, inversely affects permanent deformation. That is, the higher the speed the lower the permanent deformation.

The finding by Allen and Deen however, was disputed by Brown and Cooper (16, 27). They examined the behavior of asphalt mixes under static and cyclic load (stationary and moving vehicle) using a square wave. In both tests, the peak cyclic load was equal to the static load in the creep test. Thus, the equivalent loading time for the creep test is much higher than that of the cyclic test. They found that the

permanent de significantly Brown and Coc wie. Consec wave forms. Again, related to simusoidal v we form. To summa: deformation ( Pos the ansideration Tatiables Ca to be constan Emestigation Piles in similicant. (16). That THE NIX va 'ঝ cycle Res an semeen any taings imp

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permanent deformation obtained from the cyclic test is significantly higher than that measured from the creep test. Brown and Cooper attributed this to the shape of the loading wave. Consequently, they recommended the use of sinusoidal wave forms.

Again, the differences in the findings are actually related to the variables involved. Allen and Deen used a sinusoidal wave form while Brown and Cooper used a square wave form.

To summarize, the effects of test variables on permanent deformation of asphalt mixes vary. Results appear to depend the number of independent variables consideration. Ideally, the effects of the independent variables can be separated by holding all variables but one Then the test results from two different to be constant. investigations can be compared if and only if the constant both investigations are equal. in significant findings are those reported by Allen and Deen That is, regardless of the applied stress level and other mix variables, the permanent deformation at the first load cycle is dependent on the stress level and mix variables and that the increment of permanent deformation between any subsequent cycles is load independent. findings imply that, in the field, the permanent deformation of a pavement system under the first application of axle load plays a major role in the extent of future ruts of that

pavezent. Thus a newly constr its future per 1.4.3 Effects The effec persanent de stilled exter msistent, Mesented belo . For a Voids 40). · The eff the tip . The ps aggreg∄ permane · Softer deforma · Higher deform these find stiection of ₹÷;es. In the the Viscos !

pavement. Thus, measurements of the permanent deformation of a newly constructed pavement is crucial to the prediction of its future performance.

## 2.4.3 Effects of Sample and Mix Variables

The effects of sample and mix variables upon the permanent deformation of asphalt mixes have been studied extensively. Since the findings are similar and consistent, a summary with illustrative citations is presented below:

- For a constant asphalt content, lower percent air voids results in lower permanent deformation (27, 40).
- . The effects of the percent fine content depend upon the type of the aggregate in the mix (21, 46, 47).
- . The percent of coarse aggregate and top size aggregate in the mix cause no significant effects on permanent deformation (46).
- . Softer asphalt binder causes higher permanent deformation (40).
- . Higher asphalt contents cause higher permanent deformations (46).

These findings have a direct impact on this study in the selection of the specimen and test variables and their ranges. In this study the test matrix was designed to include the following: three values of percent air voids; three viscosity graded asphalts; three types of aggregate

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with one top size and a constant percent fine content; two proportions of fine and coarse aggregates (two gradations); three levels of cyclic load; and two test temperatures. These variables and their ranges are detailed in chapter 3.

### 2.5 FATIGUE PROPERTIES

The subject of fatigue is complex and can be studied in many ways (2, 39, 52, 59, 63, 65, 84, 88, 92, 94, 101, 103). Regardless of the complexity of the subject and the way it is studied, it should be clear that cyclic plastic strain is ultimately responsible for fatigue damage (84). Yoder and Witczak stated that fatigue is the phenomenon of repetitive load-induced cracking due to a repeated stress or strain below the ultimate strength of the material (108).

Fatigue failure is one of the most commonly used failure criterion in structural engineering and has been adopted as a pavement failure criterion. In general, tensile cracks in flexible pavements initiate at the bottom of the asphalt mix layer and are located under or in the vicinity of the wheel loads where the tensile strain is high. Hence, the maximum tensile stress and/or strain that can be permitted at the bottom fiber of the asphalt layer can be specified such that fatigue cracks are minimized.

Fatigue tests (although not standardized) have been conducted utilizing several test methods and various specimen sizes (14, 15, 31, 37, 48, 49, 65, 74, 80, 85, 97).

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It is generally agreed that because of the effects of the stiffness of the asphalt binder upon fatigue properties and because binder stiffness is temperature-dependent, a temperature-controlled chamber should be used around the test specimens.

Fatique test methods vary from the repeated load flexural test using beam specimens to repeated load indirect tensile tests on Marshall-type specimens (14, 15, 31, 41). Recently, test method based upon the principles of fracture mechanics has also been used (43, 63). In addition, fatique tests may be conducted either in stress or straincontrolled modes (26, 35). In the stress-controlled mode, a constant peak cyclic stress is continuously applied and removed which results in a decrease in stiffness and, consequently, an increase in the actual flexural strain with an increasing number of load applications. In the straincontrolled approach, the peak cyclic load is continuously varied to yield a constant flexural strain. This results in a peak cyclic stress that continuously decreases with increasing load applications. It should be noted that it is difficult (especially in the strain-controlled tests) to establish the number of load repetitions to failure. Consequently, arbitrary definitions of fatigue life of a test specimen has been adopted (fatigue life is defined as the number of load cycles for which the specimen stiffness is reduced to half of its initial value) (26). This

definition should not be interpreted as the higher the stiffness modulus the higher the fatigue life. Indeed, it is well known that softer asphalt has longer fatigue life (85). Nevertheless, In practice, strain-controlled tests are considered to be applicable to thin asphalt layer pavements (less than 2-in), while stress-controlled tests are considered applicable to thick (more than 6-in) asphalt pavement layers (35, 109). Other thicknesses are considered to be in the intermediate range.

The cyclic load applied to the beam specimen (in the flexural tests) is normally a sinusoidal wave with 0.1 second loading time and 0.4 second relaxation time (48). Other wave forms and several loading and relaxation periods have also been used (32, 34, 71). Irrespective of the test procedure, specimen size, and loading characteristics, nine test specimens (triplicate for each stress level, three stress levels) are generally used to establish the necessary fatigue relationship for any given asphalt mix and test conditions (44, 48, 109).

In this study, nine specimens were used (triplicate for each of the following cyclic load levels: 100, 200 and 500 pounds). The test results (fatigue life) were then statistically correlated to the applied cyclic load levels to obtain the fatigue life curve of each type of asphalt mix. Also, in this study, several definitions of fatigue life were employed which are detailed in chapter 5.

In the following section, two types of fatigue models are introduced.

## 2.5.1 Fatique Models

Several fatique models have been suggested in the literature. These can be separated into two types (95, 96): phenomenological models (32, 44, 97) and mechanistic models 98). The phenomenological models are (43. 48. 85. essentially based on Miner's law (82) (fatigue damage of asphalt mixes is directly proportional to the number of load application); and they have the advantages of simplicity and availability of data for different materials. principal disadvantages are that they do not account satisfactorily for the influence of geometry and material heterogeneities, and they do not provide a quantitative measure for the extent of cracking in pavements. mechanistic models, although impractical to use due to their complexity, are more amenable than the phenomenological models in providing a quantitative description of the degree of cracking in pavements.

Soussou and Moavenzadeh presented a closed form probabilistic solution based on Miner's law to characterize the accumulation of fatigue damage in flexible pavements (95). Their solution relates the expected values and variances of the measure of damage to the statistical characteristics of load factors and material properties.

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They emphasized the need for obtaining more complete material characterization procedures which include measurements of spatial variabilities to determine the average size of cracked areas.

Fatigue life and fatigue properties of asphalt mixes have been evaluated using several different mechanistic models. Irwin used the fracture energy criterion which is directly related to the mechanism that causes materials to fail due to cracking (43, 44). He showed that:

- . Unlike stress and strain, the minimum energy required to cause fracture is independent of specimen stiffness.
- . Fracture energy is an invariant scalar, relatively simple to calculate, and independent of direction.

Using strain-controlled dynamic bending tests, Van Dijk and Visser found that fatigue behavior of asphalt mixes can be satisfactorily modeled using a mechanistic model (energy concept) (97, 98). Permissible strain and fatigue behavior were shown to depend not only on stiffness, but also on the type of mix. Further, evidence from the data was the positive effect of intermittent loading as opposed to continuous loading on the fatigue life of mixes (i.e., the former results in a longer fatigue life). Secor and Monsmith, on the other hand, showed that a linear viscoelastic model (phenomenological model) predicted the structural response of pavement within 30 percent of the

measured values (89). In general, this model is the most preferred due to the capability of obtaining cumulative deformations of any pavement system (109).

Other researchers introduced guidelines, methodologies, and nomographs for use in the structural design of pavement against fatigue failure (25, 38, 80). Witczak developed a theoretical design procedure for a full depth asphalt concrete airfield pavement based on fatigue failure (102). The procedure limits the development of compressive strain in the subgrade layer and the tensile strains at the bottom fiber of the asphalt layer.

Finally, Kasianchuck et al. suggested a series of required researches and development tasks to improve the design technology. They developed and introduced relationships between fatigue, permanent deformation, and shrinkage cracking for use in the overall design of asphalt pavements (49).

Regardless of the method employed, nomograph, or guide lines, fatigue life of pavement cannot be predicted with reasonable accuracy. Most methods tend to underpredict pavement life (109). Further, there are obvious differences between fatigue failure criteria. These differences exist between methods as well as stiffness levels. At low stiffness, the criterion by Secor and Monismith (71) is more conservative than the others. However, at high stiffness, the Kingham and Kallas criterion (53) is much more

conservative significant curve is mad the critic differences, the design mecessary fo be ample evi fatigue resu life (95, 98 Neverthe investigator mix, and san Were used to: · Unders life. · Corre COMPO: Predi inese are pre 1.5.2 Effect Through tests / tersions,

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conservative than the others. These differences lead to significant variance when interpretation of the fatigue curve is made on the basis of cumulative damage to determine the critical fatigue period. Regardless of these differences, however, there is no significant difference in design thickness of the asphalt concrete necessary for fatigue distress (109). There also appears to be ample evidence that the use of laboratory-developed fatigue results lead to a conservative estimate of fatigue life (95, 98, 109).

Nevertheless, laboratory tests were used by several investigators to evaluate the effects of the different test, mix, and sample variables on fatigue life. The test results were used to:

- . Understand the effects of the variables on fatigue life.
- . Correlate fatigue life to the different mix compositions.
- . Predict the fatigue life of in-service pavements. These are presented in the following sections.

# 2.5.2 Effects of Test, Sample, and Mix Variables

Throughout this presentation, it should be noted that the tests were conducted using different specimen dimensions, different loading modes, different types of test, and different materials. Consequently, there is no

common basis studies. illustrate w done to stand compared. literature ( references as and are prese Bonnaure (rest) peri concrete mixe rectangular controlled asphalt (40-e vith a freque li times <sup>temperatures</sup> ordition ( for a reduc of th 1) Longe: cycle 2) The ! the 1 3) Higher

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common basis to compare the findings of the different studies. The objectives of the presentation are to illustrate what has been done and to define what should be done to standardize the tests so that the results can be compared. It should also be noted that a large volume of literature can be found in this area. Thus, the cited references are not exhaustive, rather they are illustrative and are presented to show the need for standardization.

Bonnaure et al. examined the effects of the relaxation (rest) period upon the fatigue characteristics of asphalt concrete mixes (26). They tested 9- by 1.2- by 0.8-in rectangular beam specimens in the stress and strain-controlled modes utilizing two types of penetration graded asphalt (40-60 and 80-100); a three point bending apparatus with a frequency of 50 Hz; rest periods of 0, 3, 5, 10, and 25 times the length of the loading period; and test temperatures of 41, 68, and 77°F. They defined the failure condition (fatigue life) as the number of cycles required for a reduction of 50 percent of the initial stiffness modulus of the mix. They concluded that:

- 1) Longer rest periods yield higher number of load cycles to failure (longer fatigue life).
- 2) The most beneficial rest period is equal to 25 times the load period.
- 3) Higher test temperatures result in lower mix stiffness and higher service life.

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4) The test results were independent of the test mode (stress or strain-controlled).

Monismith et al. studied the effects of load frequency and stress reversal (from tension to compression) on the fatigue properties of asphalt mixture (71). They tested 12-by 2-by 3-in beam specimens supported on springs. The beams were made using dense graded crushed granite aggregate with (3/4-in top size) and two types of 85-100 penetration graded asphalt cements (a conventional paving asphalt and an air blown material). The tests were conducted under a range of frequencies from 3 to 30 cycles per minute. They concluded that:

- 1) For a given load, higher frequencies result in lower strain.
- 2) The test frequency has no effect upon the mix behavior in repeated flexure due to two reasons:
  - a) The deflections were measured near the load which may reflect densification within the beam itself.
  - b) The spring base did not allow cumulative deformation to build up.
- 3) For the same value of maximum strain, there is no difference in results obtained from beams flexed in two directions compared to those from beams flexed in one direction.
- 4) Higher asphalt contents yield longer fatigue life.

  Irwin and Gallaway examined the influence of laboratory

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test method upon the fatigue life of asphalt mixes (44). Their test methods included uniaxial stress fields (beam specimens), biaxial stress fields (plate specimens), full stress reversal, and no stress reversal. In addition, they compared test results obtained from laboratory-compacted test specimens to those obtained from field-cored specimens (field-compacted asphalt concrete). They concluded that:

- 1) The degree of stress reversal affects fatigue properties of the mixtures.
- 2) Fatigue characteristics obtained from laboratory and field prepared beam specimens are not statistically the same.
- 3) The beam test method allows a better definition of the number of cycles to failure than the biaxial test method using plate specimens.

The results presented above and those found in other references (15, 22, 23, 34, 35, 37, 48, 60, 61, 62) illustrate the fact that different tests and/or specimen sizes lead to different conclusions. A similar point was also made by Epps and Monismith (35). They summarized available information (from 1954 to 1971) concerning the effects of several mixture and test variables upon fatigue properties of asphalt mixes. For convenience, only parts of their summary is presented below.

a) Stress-controlled conditions may not be found in a real pavement subjected to traffic loading. In the

laboratory, however, this mode of testing provides a conservative estimate of fatigue life and it is applicable to relatively thick and stiff asphalt concrete layers.

- b) Load frequencies in the range of 3 to 30 cycles per minute have no effect on specimen fatigue life. Frequencies of 30 to 100 cycles per minute, on the other hand, significantly decrease the fatigue life (by approximately 20 percent).
- d) For stress-controlled tests, lower test temperatures yield higher specimen stiffness and longer fatigue life.
- e) For strain-controlled tests, lower test temperatures result in higher specimen stiffness and shorter fatigue life.
- f) Although not conclusively demonstrated, absorption of moisture by asphalt mixtures may lead to a reduction in stiffness and a potential reduction in fatigue life.
- g) For the stress-controlled mode of loading, a higher mixture stiffness leads to a longer fatigue life and for the strain-controlled mode of loading, a higher mixture stiffness yields a shorter fatigue life. It should be noted that in real pavements a higher mixture stiffness results in a shorter fatigue life. This is because the stress-controlled mode of loading

is never realized in real pavement conditions (32).

- h) For both stress-controlled and strain controlled modes, a lower percent air voids in the mixture leads to a longer fatigue life.
- i) A higher angularity and roughness of the aggregate result in a higher mix stiffness. The effects of stiffness were noted in items g and h above.

Fatigue life of asphalt mixes is also a function of the stress distribution within the material and the magnitude of the applied load. In the field, traffic load is not uniform in intensity and frequency and the actual pavement response is affected by the load variation. Deacon and Monismith studied the effects of load variation on the fatigue life of asphalt mixes (32). They tested 15- by 3.25- by 3.5-in beam specimens made using crushed granite aggregate and penetration graded asphalt cement of 85-100. They employed three types of compound loading ( sequence type, repeated block type, and random type) at a frequency of 0.1 Hz to simulate traffic loads. They concluded that:

1) The mode of loading has a profound influence on the observed fatigue behavior of asphalt-concrete specimens. For the stress-controlled mode, specimens exhibiting the largest initial stiffness moduli tend to perform most satisfactory as long as the mixture is nonbrittle and has a reasonable balance among the proportions of its constituent materials. The reverse

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is true for the strain-controlled mode.

- 2) Fatigue behavior is a stochastic rather than a deterministic phenomenon.
- 3) The mean fracture lives of specimens subjected to two-level decreasing-sequence tests exceeds that of specimens subjected to two-level increasing-sequence tests if the applied percentage of the larger stress level is small.
- 4) The mean fracture lives for random and repeated-block (small block size) load histories are identical if the probabilities of application of the various stress levels for the random loading equal the corresponding applied percentages (expressed in decimal form) for the repeated-block loading.
- 5) The variability of fracture life for random tests exceeds that for comparable repeated-block tests with the relative difference decreasing as the fracture life increases.

Thus, one can conclude that, in the field, traffic pattern and distribution have profound effects on fatigue life. These effects vary from one pavement to another and they cannot be easily simulated in the laboratory. Consequently, the use of laboratory results to predict fatigue life of a pavement is problematic. Laboratory results, however, may be used to analyze the effects of the mix and test variables, on fatigue life and, consequently, to improve the asphalt

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## 2.5.3 Correlations

The characteristics of asphalt mixes such as stiffness modulus, creep, and fatigue life are needed for an adequate design of pavement structures. These characteristics are difficult and time consuming to measure. Thus, the need to estimate these characteristics from the results of simple tests have been recently recognized. Van Der Paul (82) developed a nomograph to estimate the stiffness modulus of asphalt mixes based on the knowledge of the modulus of the bitumen and of the volumetric composition of the mix. noted in section 2.3.3, Shook and Kallas (93) also developed correlation equations (AI equations) to obtain the stiffness Later, other researchers (66, 96, modulus. 104, 106) modified the equations to include the effects of more variables.

Similarly, methods for predicting the fatigue life of asphalt mixes were investigated and developed by several researchers (24, 25, 38, 43, 80, 97, 98). Two of these methods are presented below.

### 2.5.3.1 Bonnaure, Gravois, and Udron Method

Bonnaure et al. studied and analyzed 146 fatigue curves (75 stress-controlled and 71 strain-controlled) utilizing a statistical approach (25). The data (fatigue life, asphalt

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properties, stiffness modulus of the mix, and mix composition) were obtained from five different European laboratories and universities. The objective of their study was to predict the fatigue characteristics of asphalt mixes based on a small number of parameters that are easy to obtain. They made the following general observations.

- 1) Test data from stress-controlled tests showed a shorter lifetime than those from strain-controlled tests.
- 2) For a given level of initial strain, a softer asphalt binder leads to a longer fatigue life.
- 3) The slope of the fatigue line in the log strain versus log number of load repetition space varies from 0.14 for asphalt binders with a high penetration index to 0.3 for those with a low penetration index.
- 4) For a given asphalt stiffness modulus and initial strain, higher asphalt contents and/or lower percent air voids result in longer fatigue life.

Based upon these observations, Bonnaure et al. made the following two approximations.

- 1) Although the slopes of the fatigue lines are dependent on the asphalt type, the test temperature, the asphalt content, and the test type a constant value of 0.2 is assumed to represents all of the 146 fatigue lines.
- 2) The slope of the line representing the initial strain

as a function of the binder stiffness modulus (in logarithmic space) was assigned two values: 0.36 for the constant strain tests, and 0.28 for the constant stress tests.

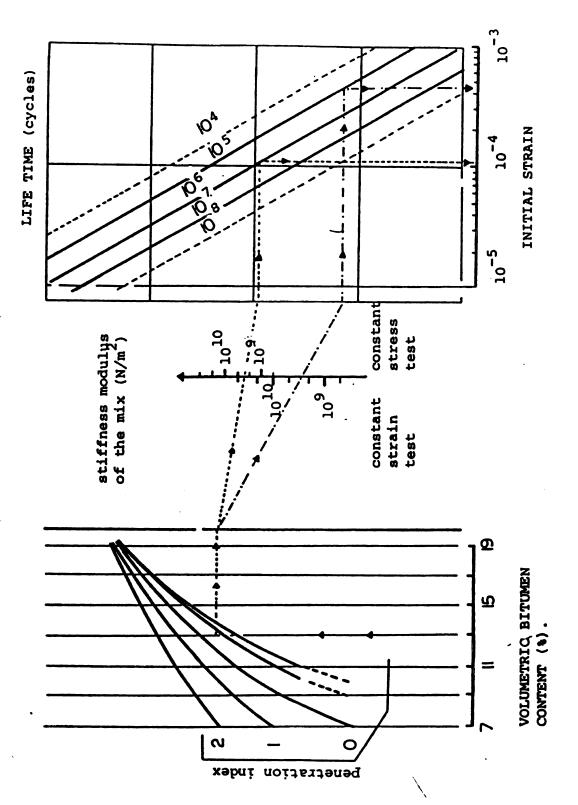
Based on these approximations, statistical analyses were conducted and a general mathematical equation was obtained. Solutions of the equation for all possible parameters were then constructed in the form of a nomograph as shown in figure 2.2. They then examined the accuracy of the predicted fatigue life relative to the available data and concluded that:

- 1) For the 75 fatigue lines obtained in stresscontrolled tests, the accuracy of the equation is around plus or minus 40 percent of the original data.
- 2) For the 71 fatigue lines obtained in straincontrolled tests, the accuracy of the equation is within plus or minus 50 percent of the original data.

Differences between calculated and measured data are mainly due to the two approximations made prior to generating the final equation. Also, the fact that fatigue data were collected from different laboratories where the specimen size and the boundary conditions were not exactly the same contributed to the variance of the data. Nevertheless, the above conclusions indicate that stress-controlled tests are slightly more consistent than strain-controlled tests. It should be remembered that the accuracy

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Nomograph for predicting the fatigue life of bituminous materials (after bonnaure et al.). Figure 2.2

of the calculated data may drop significantly if compared to field measured data. The nomograph, however, represents a significant contribution in the field of fatigue analysis in that it can be used to qualitatively assess the effects of the mix variables on pavement life.

## 2.5.3.2 Pell and Cooper Method

Pell and Cooper examined the effects of test and mix variables on the fatigue life of asphalt mixes (80). They conducted a series of 48 tests on a wide variety of base and wearing course mixes made with gap-graded and continuously-graded aggregates. Stress-controlled flexural tests at 50°F were conducted on necked-type specimens (2.5-in diameter at the neck). The specimens were mounted as a vertical cantilever cylinder on a shaft rotating at a constant speed around the specimen axis, while a single constant point load was applied perpendicular to the axis. This produced a sinusoidal bending stress throughout the specimen with a maximum stress amplitude at the neck.

They established two linear logarithmic relationships: the first relates fatigue life (expressed in terms of the number of load repetitions (N) to failure) and the maximum amplitude of the applied dynamic stress; the second relates (N) to the maximum amplitude of the initial dynamic strain. They assumed that all the fatigue lines for the first relationship meet at one focal point as shown in figure 2.3.

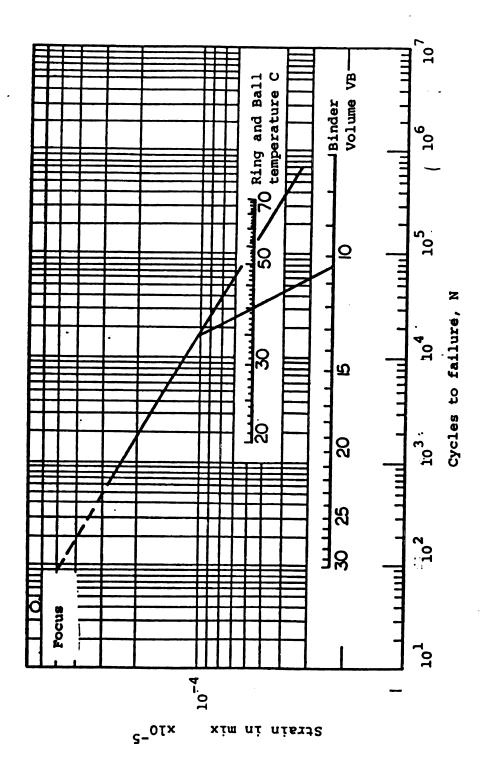
## They concluded that:

- 1) Asphalt content is the most important mix variable affecting fatigue life; higher asphalt contents and lower percent air voids result in higher fatigue lives.
- 2) For good fatigue performance, an aggregate should be rounded to allow effective compaction to take place, have a high crushing strength to prevent fracture during compaction, and have a coarse surface texture for firm binding with the asphalt.
- 3) In the axial load fatigue tests, fatigue life is independent of the confining stress and temperature.

Again, figure 2.3 can be used to assess the effects of the variables (asphalt type, asphalt content, and strain amplitude) upon the fatigue life of asphalt mixes. Such an assessment leads to a better pavement design relative to fatigue life. The figure should not be used, on the other hand, to predict pavement fatigue life.

## 2.5.4 Fatigue Life of Inservice Pavement

Craus et al. and Kenis assessed the effects of heavier axle loads and higher contact pressures on the fatigue life of pavement structures containing relatively thin layers of asphalt concrete (less than 4-in) (17, 29, 30). Their assessment was made by three computer programs: ELSYM5 and PSAD which are based on layered elastic theory; and VESYS



Nomograph for prediction on the fatigue life of bituminous materials (after pell and cooper). Figure 2.3

which is based on a viscoelastic model. Further, the fatigue response of asphalt pavement with less than 10 percent cracking was defined using the Finn equation (36). It was concluded that:

- 1) The influence of the asphalt concrete stiffness on fatigue life is dependent upon the layer thickness. For pavements with 4- and 6-in thick asphalt-bound layers, fatigue life increases as the stiffness of the asphalt concrete increases. For a 2-in thick layer, on the other hand, the fatigue life increases as the stiffness of the asphalt concrete decreases.
- 2) For a constant contact area, an increase in the wheel load and contact pressure causes a proportional decrease in the fatigue life (about 75 percent) for all layer thicknesses.
- 3) For a constant load, an increase in contact pressure (decrease in the contact area) causes a decrease in the fatigue life.
- 4) A reduction of 25 to 50 percent in the thicknesses of the base and subbase courses has little influence on the fatigue life of the 2-in thick asphalt concrete structure. However, rutting becomes important. Similar reductions for the 4- and 6-in thick layers cause a decrease of 20 to 25 percent in the fatigue life.
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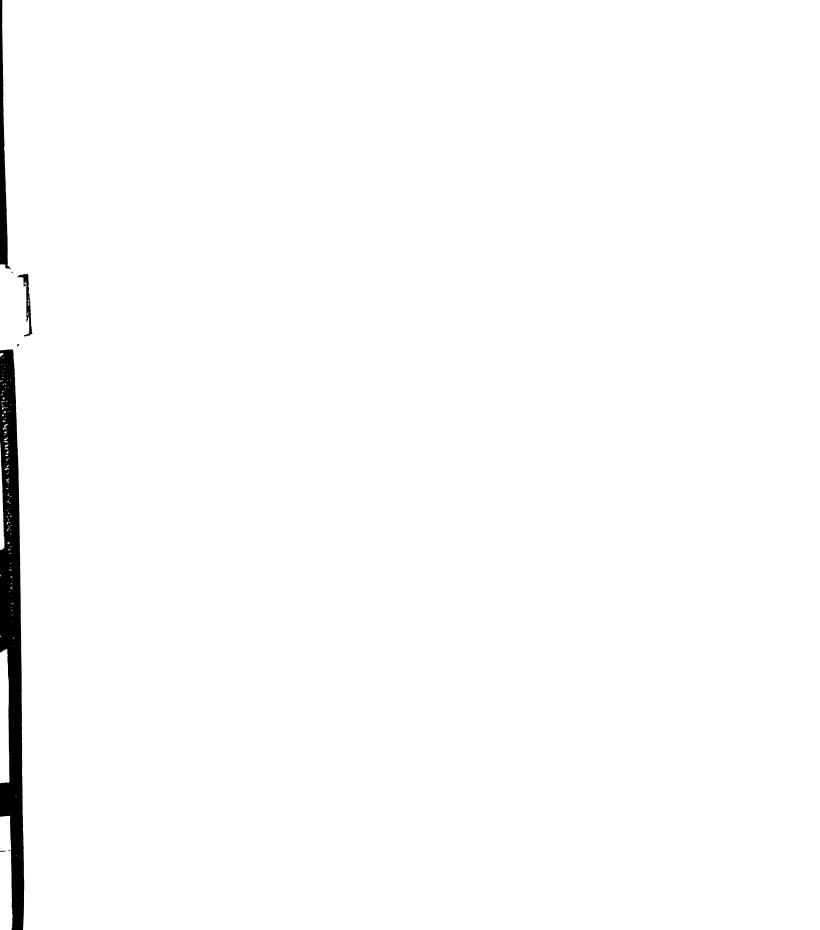
- of the base, subbase, and subgrade layers significantly decreases the fatigue life of thin layer asphalt concrete pavement structures.
- 6) Thin asphalt concrete pavement structures yield longer service lives if the modulus of the asphalt concrete surface course remains low throughout its life.

Based on item (1) above, researchers have agreed to use the stress-controlled tests to study the fatigue life of compacted asphalt mixes in thick (4-in or larger) asphalt layer pavements, and the strain-controlled tests for thin (less than 2-in) asphalt layer pavements. For pavements with asphalt layer thicknesses in between 2- and 4-in however, no test mode has been selected as yet. Item (6), indicates that the fatigue life of asphalt pavement is also a function of the resilient modulus values of the base, subbase, and subgrade materials. This implies that the prediction of pavement fatigue life based solely on the fatigue life data of the asphalt layer is problematic. The properties of all pavement layers should be considered in the prediction of fatigue life.

#### 2.5.5 Summary

It is apparent that no standard test procedure to characterize fatigue life, nor a standard definition of fatigue life, has been developed and universally adopted.





Researchers have utilized different size specimens, several testing procedures, and various analysis methods to characterize the fatigue life of asphalt mixes. Several methods to predict fatigue life using asphalt mix variables have also been developed. Problems still exist since the ability of all of these methods in predicting the fatigue life of pavement systems is very poor. It should be noted that:

- a) Fatigue life depends upon the stress distribution in the materials and other environmental and material factors.
- b) The stress distribution in a pavement system depends upon the characteristics of the different pavement courses.
- c) Fatigue life depends on the values of cyclic plastic strain induced by moving wheel loads and has no relationship to the cyclic elastic or viscoelastic strains.
- d) There is a significant variation in the definition of fatigue life.

There is still no laboratory test available that will duplicate field conditions. Consequently, prediction of pavement fatigue life is problematic. Despite these facts, the understanding of fatigue life and fatigue failure has improved considerably over the last few decades. A better understanding can be developed only after a long-term

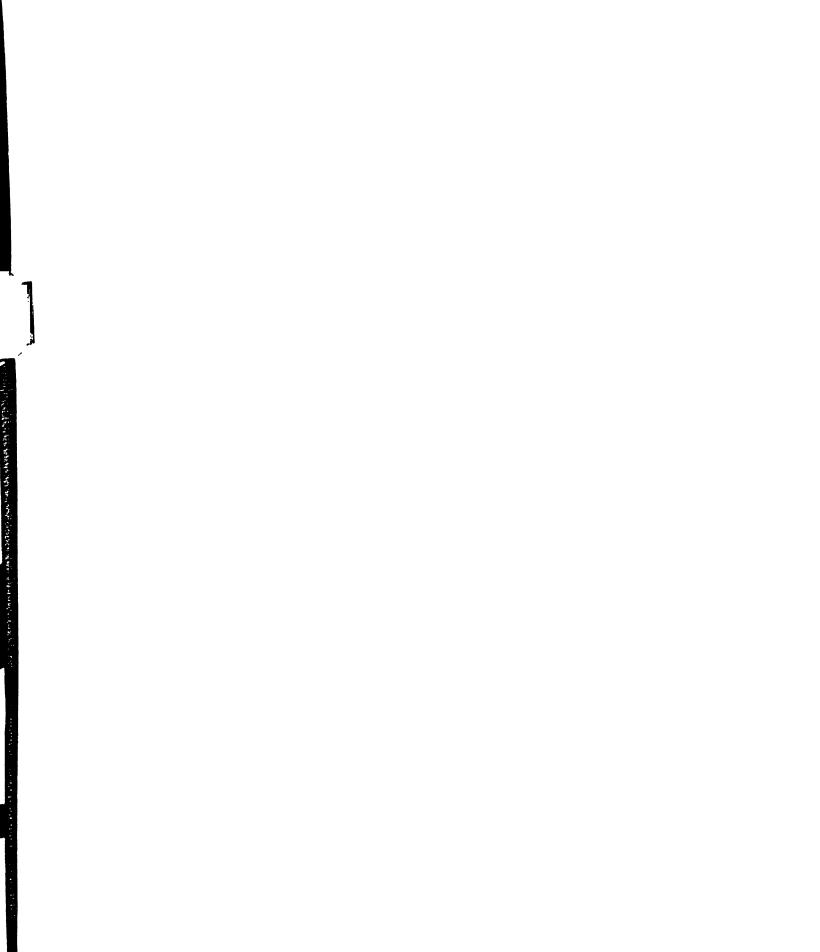


pavement evaluation and monitoring program is established.

Such a program has just begun (the Strategy Highway Research

Program) and the future seems very promising.





#### CHAPTER 3

#### LABORATORY INVESTIGATION

#### 3.1 GENERAL

The primary objective of this study is to quantify relationships between structural properties and asphalt mix parameters. These properties include:

- a) Elastic and resilient characteristics.
- b) Permanent deformation.
- c) Fatigue life.

To accomplish the objective of the study, flexural cyclic load beam tests (or simply, beam tests) were conducted using several asphalt mixes. The mixes were made using several different materials which are described in the next section.

#### 3.2 TEST MATERIALS

Several materials were selected for this study. These include: three types of aggregate, one type of mineral filler (fly ash), and three types of asphalt.

#### 3.2.1 AGGREGATE AND MINERAL FILLER

Two primary types of coarse and fine aggregates were used in this study. These are crushed limestone, and rounded river deposited gravel. A third type of aggregate was obtained by mixing (for each sieve size) fifty percent by weight crushed limestone with fifty percent rounded river



deposited gravel. This last type is designated throughout this dissertation as 50/50 mix.

Each type of aggregate (crushed limestone, rounded river deposited gravel, and 50/50 mix) was sieved using AASHTO T 27-84 (ASTM C 136-84a) test procedure and separated into different size fractions. Each size fraction was washed, dried to a constant weight and then recombined in accordance with the two grain size distribution curves ( A and B) shown in figure 3.1, along with the straight line gradation. should be noted that the abscissa in the figure is scaled to sieve openings raised to the power 0.45. It should also be noted that both grain size distribution curves (gradation curves) had the same top size aggregate of 0.75 inches and percent by weight passing sieve number 200 The percent passing by total weight for each sieve size for gradations A and B are listed in table 3.1.

For each of the coarse and fine portions of each type of aggregate, two values of each of the bulk Gs (BK), saturated surface dry Gs (SSD), and apparent Gs (APP) specific gravity were determined using AASHTO test procedures T-8 (for coarse aggregate) and T-84 (for fine aggregate). The data from each test and the average values are listed in tables 3.2 and 3.3.

It should be noted that neither the limestone dust, nor the material passing sieve number 200 of the natural aggregate was used. Rather, fly ash was used as the mineral



Table 3.1 Percent passing by weight for gradations A and B.

	sieve		percent pass	ing by weight
number	size(inch)	size (mm)	gradation a	gradation b
3/4"	0.750	19.000	100.001	100.001
3/8"	0.375	9.500	70.71	78.46
4.0	0.186	4.750	49.84	61.42
8.0	0.093	2.360	36.91 <sup>2</sup>	43.932
16.0	0.046	1.180	27.54	31.42
30.0	0.024	0.600	20.40	22.65
50.0	0.012	0.300	15.11	16.20
100.0	0.006	0.150	11.19,	11.59,
200.0	0.003	0.075	8.29 <sup>3</sup>	8.29 <sup>3</sup>

Percent coarse aggregate by total weight: 50.16 for gradation A, and 38.58 for B.
Percent fine aggregate (excluding - #200 sieve) by total weight: 41.55 for gradation A and 53.13 for B. Fly ash.





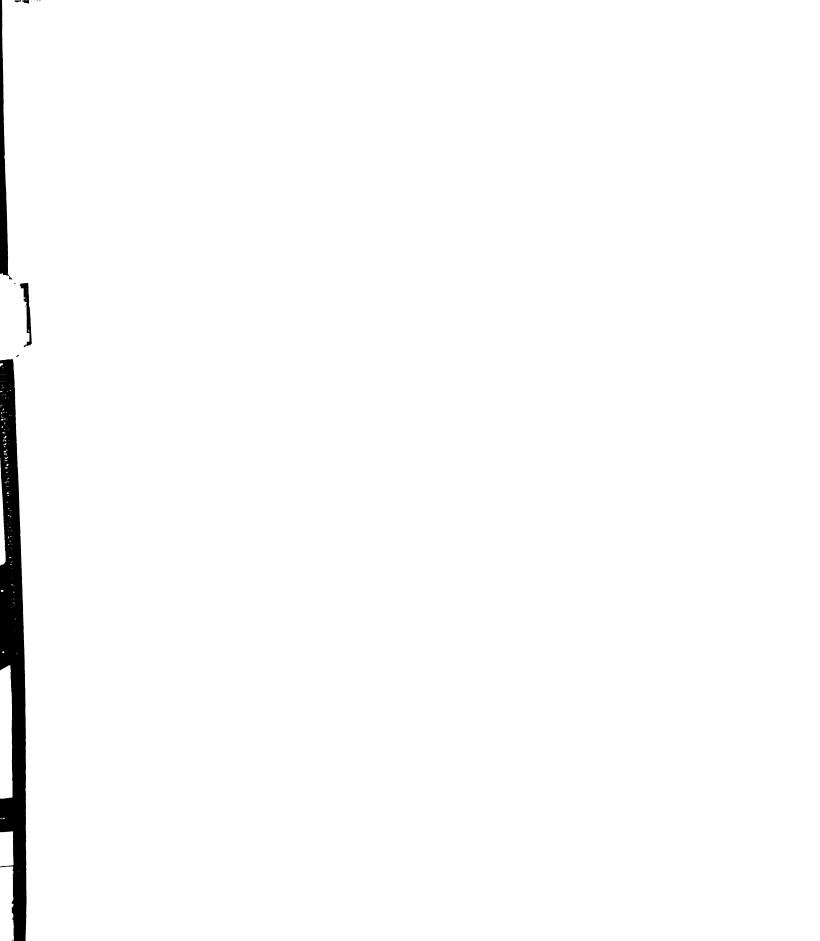


Table 3.2 Specific gravity of the coarse aggregate.

gradation				A			В	
sample number			1	2	AVG	1	2	AVG
	Gs	(BK)	2.665	2.676	2.671	2.757	2.699	2.728
limestone	Gs	(SSD)	2.688	2.699	2.694	2.768	2.716	2.742
	Gs	(APP)	2.728	2.740	2.734	2.789	2.747	2.768
	Gs	(BK)	2.683	2.704	2.694	2.623	2.703	2.663
natural	Gs	(SSD)	2.712	2.732	2.722	2.653	2.732	2.693
gravel	Gs	(APP)	2.763	2.783	2.773	2.702	2.784	2.743
	Gs	(BK)	2.663	2.726	2.695	2.697	2.726	2.712
50/50 mix	Gs	(SSD)	2.686	2.747	2.717	2.722	2.748	2.735
	Gs	(APP)	2.725	2.785	2.755	2.767	2.787	2.777

AVG = average
Gs = specific gravity.
BK = bulk.
SSD = saturated surface dry.
APP = apparent.



Table 3.3 Specific gravity of the fine aggregate.

gradation				A			В	
sample number			1	2	AVG.	1	2	AVG.
limestone	Gs	(BK)	2.794	2.810	2.802	2.809	2.803	2.806
natural gravel	Gs	(BK)	2.720	2.746	2.733	2.722	2.750	2.736
50/50 mix	Gs	(BK)	2.765	2.776	2.771	2.783	2.770	2.777

AVG. = average.

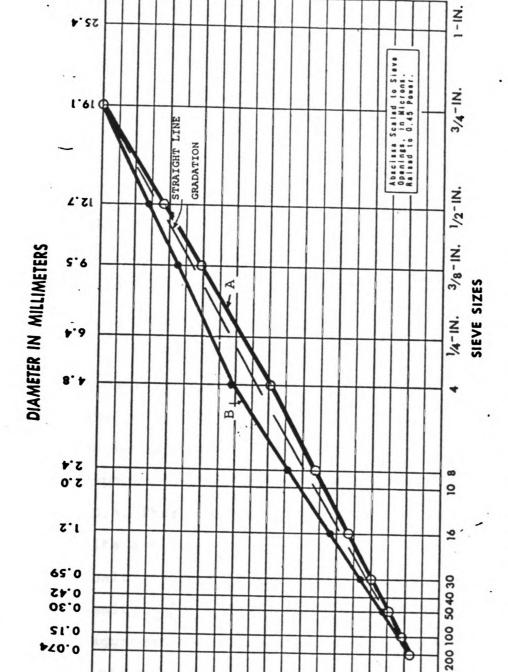
Gs = specific gravity.

BK = bulk.

SSD = saturated surface dry.

APP = apparent.





Straight line and A and B gradations. Figure 3.1



PERCENT RETAINED

₽40.0

PERCENT PASSING

filler.

#### 3.2.2 ASPHALT BINDER

Three viscosity graded asphalt cements (AC10, AC5, and AC2.5) were used in this study. Each of these asphalts was tested in accordance with the proper AASHTO test procedures to determine their properties. The test results are listed in table 3.4.

#### 3.3 ASPHALT MIX DESIGN

The asphalt mix design was conducted in accordance with the standard Marshall test and test procedures and the full-factorial experiment matrix shown in figure 3.2. It can be seen that there are eighteen cells in the matrix for eighteen possible combinations of the variables (3 asphalts; 3 aggregates, 2 gradations). Each cell, represents a total of 12 specimens; one triplicate for each of the following percent asphalt contents by total weight of mix, 3.5, 4.2, 4.9 and 5.6. Thus, total of 216 specimens were tested. The test results are summarized in tables 3.5 through 3.7. For each asphalt content, the average values for stability, flow, density, percent air voids, and percent voids in mineral aggregates were calculated. These values are also listed in the tables.

For each combination of the variables (asphalt, aggregate, and gradation), the stability, flow, density,



Table 3.4 Asphalt properties.

Penetration Grade	75-100	120-150	200-250
Viscosity Grade	AC-10	AC-5	AC-2.5
Laboratory Number	86B-296	86B-297	86B-298
Penetration, 4 C, 200 g., 60 sec.	35	52	84
Penetration, 25 C, 100 g., 5 sec.	96	154	272
Penetration, 30 C, 100 g., 5 sec.	157	233	*
Specific Gravity 25/25 C.	1.024	1.020	1.015
Flash Point (C.O.C.), C.	288	310	314
Softening Point (R&B), C.	42.0	37.5	35.0
Solubility in Trichloroethylene, %	99.60	99.70	99.60
Ductility, 25 C, cm/min, cm.	150+	150+	95
Viscosity (cone) 77 F, K poises	793	407	162
Viscosity (absolute) 140 F, poises	1026	594	271
Viscosity (kinematic) 275 F, cs	270	212	159
1/8 Thin Film, 163 C, 5 hr, 50 g.	<del></del>		
Change in Weight, percent	0.47	0.43	0.34
Penetration, 25 C, 100 g, 5 sec.	48	73	123
<pre>of Original Penetration</pre>	50	47	45
Ductility, 25 C, 5 cm/min, cm	150+	150+	106
Viscosity (abs.) 140 F, poises	3083	1614	727
Viscosity (kin.) 275 F, cs	419	335	237
Viscosity (cone) 77 F, K poises	4554	1742	634

<sup>\*</sup> Hit Bottom.



Table 3.5 Marshall mix design results for viscosity graded asphalt AC-10

&Fedeti			A		ī			1	_			В			Α		ı	В	
<b>E</b> 1 <b>G</b> 440.								<u>'</u>									<u> </u>		
s emple	no.	1	2	3	1	2	3	1	2	1 3 1	1	2	3	1	2	3	1	2	: 1
percent		-																	
esphalt	5	2940			2560	2975	3020	2530	2430	2300	2780	2770	2800	2080	2480	2220	3380	2930	3
content		3114			2669	3116	3174		2589	2473	2879		2909	2208	2621	2332		3064	3
	F	8	7		6	7	,	7	,	7	7	7	7	7	,	8	6	6	
3.5	GS				2.42	2.42	2.43				2.40			2.44	2.44	2.43		2.42	
	۸A		5.86							4.07									
	VMA	14.20	14.20	14.50	14.50	14.40	14.30	13.30	12.70	12.40	14.10	13.80	14.30	13.50	13.40	13.80	14.20	14.10	14
							-		4VOT 04	J. 0.0									
	s		2734			2852			2420			2783			2260			3207	
	AS		2882			2987			2583			2894			2387			3351	
	GS		2.43			2.42			2.44			2.40			2.43			2.42	
	A۷		6.02			6.13			4.46			5.83			5.23			5.85	
	VMA		14.30			14.40			12.80			14.00			13.50			14.10	
	5		2350	2090	2650	2795	2780	1920	2050	2250	1660	1650	1950	1800	1750	1770	2560	2480	2
	AS		2538	2244	2824	2988	2977	2108	2215	2411	1766	1741	2066	1948	1883	1698	2736		2
. 2	P GS	10	9 2.47	9 2.47	8	9 2.46	8	7	6	6		9 2.43	9 2.44	11	11 2.47	11 2.47	8	8	_
• . 2	VA.	2.47		3.35														2.46	
				13.50															
	VESA	13.30	13.40	13.30	13.50	13.60	13.00	12.10	12.30	12.50	12.50	13.70	13.20	12.70	12.60	12.90	13.40	13.30	13
				•					evere	300									
	s		2197			2742			2073			1753			1773			2507	
	AS		2503			2930			2245			1858			1910			2673	
	GS		2.47			2.46			2.47			2.44			2.47			2.45	
	۸A		3.27			3.73			2.40			3.28			2.66			3.38	
	VMA		13.40			13.80			12.50			13.30			12.80			13.40	

S - mershall stability (pounds).



AS = marshall stability adjusted to the sample height.

F = flow (1/100").

GS = specific gravity.

AV - air voids in percent.

voids in mineral aggregates in percent.

Table 3.5 Continued

4555-064	t•	i		lime	stone				1	natura	l grav	•1	1	l	mix of	50/50	by we	ight	
gradati	08.		A		l	3			A		i	В		i	A			В	
semple	no .	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
percent								• • •											
asphalt	3	1450	1450	1530	1670	2070	2040	1070	1000	1050	1480	1530	1850	1210	1360	1200	1459	1470	165
content	AS	1577	1579	1654	1801	2256	2217	1153	1087	1147	1590	1626	2014	1302	1468	1298	1550	1573	176
	F	17	17	17	15	13	14	21	17	16	13	15	12	16	17	17	13	13	1
4.9	GS	2.48	2.48	2.47	2.47	2.48	2.48	2.46	2.47	2.47	2.45	2.44	2.47	2.47	2.47	2.47	2.45	- 45	2.4
	AV	1.65	1.65	1.93	2.32	2.01	2.01	1.66	1.34	1.34	1.91	2.27	0.91	1.72	1.65	1.65	2.32	2.28	2.0
	VMA	13.50	13.50	13.80	14.10	13.80	13.80	13.40	13.20	13.20	13.60	14.00	12.70	13.50	13.50	13.50	14.10	14.00	13.8
									avera	B+0					_				
	s		1477			1927			1040			1520			1257			1523	
	AS		1604			2091			1129			1743			1356			1630	
	GS		2.48			2.47			2.47			2.45			2.47			2.46	
	AV		1.76			2.05			1.45			1.70			1.67			2.19	
	VMA		13.60			13.90			13.30			13.40			13.50			13.90	
	5	1190	1350	1100	1525	1650	1570	880	890	950	1100	1200	1170	1020	1050	950	1080	1160	
	AS T	1287 21	1466 23	1195	1540 17	1790 20	1687 21	972 24	964 27	1052 31	1171	1277 18	1241	1100 24	1144	1029 27	1156 20	1242	114
5.6	GS	2.47	2.47			2.47	2.46	2.46	2.44	2.46			2.42				2.44		
	۸V					0.96									0.36			1.37	
				1.56											13.90				
	ALM	14.60	14.40	13.00	14.90	14.50	14.90	14.00	14.70	14.30	14.80	14.70	15.10	14.40	13.80	14.60	13.00	14.80	14.9
						<u>-</u> :			EVOLE	<b>505</b>									
	s		1213			1582			907			1157			1007			1103	
	AS		1316			1706			996			1230			1091			1181	
	GS		2.46			2.47			2.46			2.32			2.46			2.44	
	۸V		1.21			1.26			0.91			1.58			0.83			1.55	
	VMA		14.70			14.80			14.30			14.90			14.30			14.90	

S - mershall stability (pounds).



as mershall stability adjusted to the sample height.

F = flow (1/100").

GS - specific gravity.

AV - air voids in percent.

voids in mineral aggregates in percent.

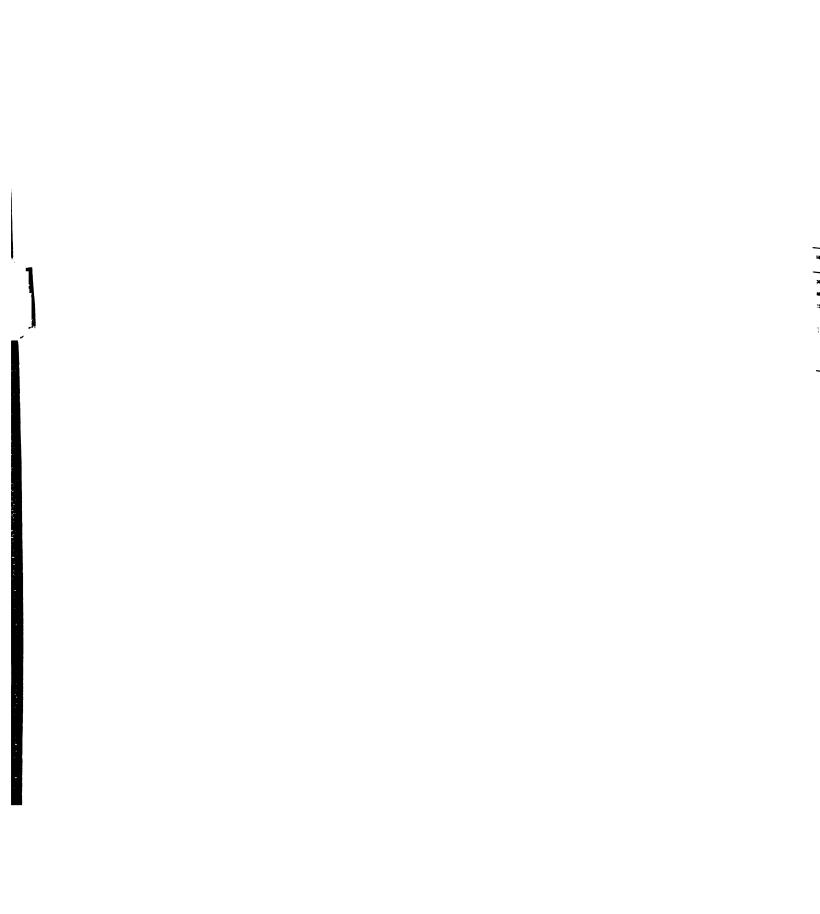


Table 3.6 Marshall mix design results for viscosity graded asphalt AC-5.

4557-6	sete	1		lime	stone			I	,	neture	l grave	-1			mix o	50/50	by we	ight	
gradat	ion		٨		I	3			A		I	В		1	A			В	
semple	no.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
percen	t																		
asphal	t S	2540	2600	2810	2290	2620	2800	1920	2320	2130	2520		2500	2740	2865	2920	3360	3150	31
conten	t AS	2681	2763	2954	2413	2740	2925	2045	2448	2238	2623		2570	2914	3027	3097	3492	3265	33
	7	9	7	8	7	7	7	8	7	6	6	7	6	7	8	8	7	8	
3.5	GS	2.43	2.44	2.43	2.43	2.42	2.42	2.45	2.44	2.43	2.41	2.40	2.39	2.44	2.43	2.44	2.40	2.40	2
	٨V	5.67	5.51	5.90	5.85	6.20	5.24	4.22	4.69	4.93	5.61	5.88	6.20	5.07	5.26	4.95	6.47	6.59	6 .
	VMA	14.00	13.90	14.20	14.20	14.50	14.50	12.60	13.10	13.30	13.90	14.10	14.40	13.40	13.60	14.30	14.70	14.80	14.
									avera	500									_
	s		2650			2570			2123			2410			2842			3230	
	AS		2799			2692			2244			2496			3013			3356	
	GS		2.43			2.43			2.44			2.40			2.44			2.40	
	ΑV		5.69			6.10			4.61			5.91			5.10			6.41	
	VMA		14.00			14.40			12.90			14.10			13.40			14.60	
	8			2250	2600	2530	2510	1480	1450	1450	1950	2040	1990	2205	2030	2170	3030	2880	26
	AS	2374			2766	2702	2677	1580	1561	1550	2056		2107	2383	2182	2332	3236	3059	28
4.2	7	9		9		8	8	11	8	9	8	6	8	9	10	11	6	9	_
2	G8	2.47	-			2.45	2.46	2.46	2.47			2.45	2.44	2.48	2.47		2.45		-
	ΑV			2.99						2.85					2.67		3.26	3.53	
	VHA	13.30	13.30	13.20	14.00	14.10	13.80	12.80	12.50	13.00	13 . 50	13.00	13.40	12.60	12.80	13.00	13.40	13.60	13.
				•					SAOLE	gos.									
	s		2280			2547			1460			1993			2135			2867	
	AS		2452			2715			1564			2110			2299			3050	
	GS		2.47			2.45			2.46			2.44			2.47			2.45	
	A۷		3.08			3.85			2.62			3.26			2.62			3.50	
	VMA		13.20			13.90			12.70			13.30			12.80			13.50	

S - marshall stability (pounds).



AS - mershell stability adjusted to the sample height.

P = flow (1/100").

GS - specific gravity.

Av = air voids in percent.

eir voids in percent.

voids in mineral aggregates in percent.

Table 3.6 Continued.

	•	l		11004	stone			l	1	neture	Lgrave	-1	1	!	mix o	2 30/30	by we	Igne	
sradatio	n.		A		ı	В			A			В			A			В	
sample n	ю.	1	2	j 3	1 1	2	3	1	2	3	1	2	3	1	1 2	3	1 1	2	3
percent																			
esphalt	5	1530	1440	1560	1820	1680	1800	920	1000	1020	1190	1230	1300	1240	1180	1260	1680	1770	18:
content	AS	1656	1564	1681	1961	1808	1950	986	1077	1098	1263	1314	1390	1338	1266	1369	1800	1904	19
	F	14	16	16	12	14	12	20	15	15	13	13	12	19	15	16	16	12	
4.9	GS	2.48	2.48	2.47	2.48	2.47	2.48	2.45	2.47	2.47	2.44	2.45	2.45	2.46	2.46	2.48	2.46	2.47	2.
	٨V				1.89		1.81		1.40						2.20		1.89		
	VMA	13.40	13.60	13.80	13.80	14.20	13.70	14.00	13.20	13.30	13.80	13.50	13.70	13.80	14.00	13.30	13.70	13.50	13.
									AVOIA	505									
	5		1510			1767			980			1240			1227			1760	
	AS		1634			1907			1054			1322			1324			1886	
	GS		2.48			2.47			2.46			2.45			2.46			2.46	
	۸V		1.69			2.01			1.72			1.92			1.83			1.86	
	VMA		13.60			13.80			13.50			13.60			13.60			13.60	
	5	980	1130	1130	1220	1280	1340	750	700	790	890	890	850	870	895	890	1230	1300	12
	AS	1053	1230	1230	1312	1358	1446	795	754	838	945	951	900	935	967	963	1322		
	7	32	1230	21	1312	1336	18	35	33	37	23	18	17	25	26	25	1322	1390	12
5.6	GS	2.45	2.48	2.47		2.46	2.47			-	2.43	2.44	2.43	2.44		2.46			
	ΨĀ	1.88	0.58	0.84	1.40							1.01					1.13		
,					14.90														
									SAGES	Poe									
	8		1080			1273			747			877			885			1247	
	AS		1171			1372			796			932			955			1335	
	GS		2.47			2.46			2.43			2.43			2.45			2.45	
	٧V		1.14			1.30			1.87			1.38		•	1.27			1.29	
			14.60			14.80			15.20			14.70			14.70				

S - mershall stability (pounds).



AS - marshall stability adjusted to the sample height.

F - flow (1/100").

GS - specific gravity.

Av - air voids in percent.

voids in mineral aggregates in percent.

Table 3.7 Marshall mix design results for viscosity graded asphalt AC-2.5.

-EST-etal		!		lime	stone				'	netura	l grav	•1		l	mix o	2 50/5	by w	ight	
gradetic	on.		A		1	В		)	A		l	В		ı	٨		l	В	
sample :	ю.	1	2	3	1	1 2	3	1	2	3	1	2	3	1	2	j 3	1	2	3
percent																			
esphelt	S	2610	2450	2600	2920	2950	3200	2070	2150	1660	2560	2590	2500	2200	2010	2300	2190	2360	230
content	AS	2785	2631	2778	3109	3107	3386	2210	2254	1760	2654	2658	2574	2374	2157	2489	2320	2457	243
	7	10	8	7	6	5	6	5	6	6	6	7	6	6	5	5	6	6	
3.5	GS	2.45	2.45	2.45	2.44	2.44	2.44	2.45	2.42	2.43	2.39	2.38	2.39		2.45	2.47	2.43	2.41	2.4
	A۷	5.01	4.93	4.85	5.27	5.54	5.31	4.23	5.16	4.93	6.08	6.44	6.32	3.70	4.37	3.59	5.07	5.93	5.1
	VMA	13.40	13.40	13.30	13.70	13.90	13.70	12.70	13.50	13.30	14.30	14.70	14.60	12.20	12.80	12.10	13.50	14.20	13.6
									evera	B+8									
	5		2553			3023			1960			2550			2170			2283	
	AS		2731			3201			2075			2632			2340			2403	
	GS		2.45			2.44			2.43			2.39			2.46			2.42	
	A۷		4.93			5.39			4.77			6.27			3.90			5.40	
	VMA		13.30			13.70			13.10			14.40			12.30			13.70	
		1920	1860	2000	2430	2490	2680	1215	1150	1460	2080	2200	2270	1480	1500	1780	1920	1850	178
	AS	2077	2009	2169	2620	2676	2873	1306	1228	1594	2185		2389		1627	1930	2052	1991	-
	7	10	2000	9	2020	20/0	20/3	8	10	1304	9	7	7	8	2027	9	7	8	
4.2	GS.	2.49	2.48	2.48	2.48	2.47	2.47	_	2.45	-	2.44		2.44	-	_	-	2.46	_	2.4
	ΑV						3.25					3.65				-	2.97		
	VHA											13.70							12.9
									ever4	500							-		
	s		1927			2533			1275			2183	ı		1587			1850	
	AS		2085			2723			1376			2296	;		1724			1985	
	GS		2.48			2.47			2.47			2.44			2.48			2.46	
	۸V		2.63			3.16			2.45			3.36	ı		2.17			2.85	
	VHA		12.80			13.30			12.60			13.40			12.30			13.00	

S - marshall stability (pounds).



AS - mershall stability adjusted to the sample height.

F = flow (1/100").

GS - specific gravity.

AV - air voids in percent.

would in mineral aggregates in percent.

Table 3.7 Continued.

-ES regate	ı			lime	stone			l	,	neture	l grav	•1		I	mix o	£ 50/5	0 by w	ai ght	
gradation.			A		l	В		ı	٨		ı	В		ı	٨		ı	8	
s example no		1	1 2	3	1	2	] 3	1	2	1 3	1	2	3	1	2	3	1 1	2	3
percent														-					
esphilt	S 1	180	1400	1390	1650	1560	1560	960	900	1000	1050	1140	1200	890	860	980	1300	1230	138
content /	<b>\S</b> 1	285	1527	1519	1793	1697	1801	1036	983	1082	1117	1211	1284	960	927	1073	1395	1329	149
	F	16	13	14	15	13	12	13	12	14	12	12	10	18	16	15	12	10	1
4.9	S 2	. 48	2.48	2.49	2.49	2.49	2.48	2.46	2.48	2.46	2.44	2.44	2.47	2.46	2.46	2.48	2.46	2.47	2.4
4	V 1	. 51	1.55	1.23	1.47	1.43	1.59	1.72	0.72	1.52	2.09	2.00	1.08	1.82	1.90	1.14	1.98	1.58	1.4
VI	<b>1A</b> 13	. 50	13.50	13.20	13.50	13.40	13.60	13.60	12.70	13.40	13.90	13.80	13.00	13.70	13.80	13.10	13.80	13.50	13.4
									evera	500									
	s		1323			1623			953			1130			910			1303	
	3		1444			1763			1034			1204			987			1406	
(	iS		2.48			2.48			2.47			2.45			2.47			2.47	
	V		1.43			1.50			1.32			1.73			1.62			1.66	
Vi	LA.		13.30			13.40			13.10			13.50			13.40			13.50	
	-	940	900	970		1200	1190	615	745	850	920	820	910	800	830	720	900	970	93
_		024	981	1042		1300	1288	660	800	920	980	889	965	864	910	778	962	1055	99
	7	25	24	21	18	19	19	29	27	21	21	18	20	30	26	32	20	17	1
-		. 47	2.47	2.45		2.48	2.48	2.43	2.44	2.45	2.45	2.43	2.43	2.45	2.46	2.45			2.4
-	A 0	. 96	0.84	1.73	1.12	0.60	0.80	1.90	1.33	1.13	0.85	1.62	1.34	1.17	0.73	1.25			1.2
VF	W 14	. 30	14.30	15.20	14.70	14.30	14.50	15.30	14.80	14.80	14.40	15.00	14.80	14.70	14.30	14.70	14.70	13.80	14.5
									EAGLE	308									
	5		937			1137			737			883			783			933	
	S		1015			1230			793			938			851			1004	
G	3		2.46			2.47			2.44			2.44			2.46			2.46	
	.V		1.18			0.85			1.45			1.28			1.04			0.89	
	M.		14.70			14.40			14.80			14.60			14.50			14.30	

S = marshall stability (pounds).



AS  $\Rightarrow$  mershall stability adjusted to the sample height.

F = flow (1/100").

GS - specific gravity.

AV = air voids in percent.

voids in mineral aggregates in percent.

		LIMESTONE	ROUNDE	ROUNDED GRAVEL	20/2	50/50 MIX
Set of Set of	A	Ø	٧	8	٧	æ
76-100	1	2	က	4	9	9
125-160	4	8	6	10	11	12
200-250	13	14	16	. 16	17	18

Figure 3.2 Full-factorial experiment matrix for marshall tests.



percent air voids, and the percent voids in mineral aggregate were then related to the percent asphalt content. The values of the percent asphalt content corresponding to the three percent air voids were then selected as the design asphalt contents. These values are listed in table 3.8 and were used throughout the rest of the testing program. It should be noted that, for all mixes, the values of the design asphalt content were slightly lower than those determined by the Asphalt Institute criterion and slightly higher than the Corps of Engineers criterion.

Nevertheless, the testing program was designed and conducted to evaluate the effects of the test, mix, and specimen variables on the structural properties of the asphalt mixes. These variables are presented in the following sections.

## 3.4 TEST VARIABLES

The effects of three test variables on the structural Properties of asphalt mixes were investigated in this study.

These are the magnitude of the applied cyclic load, the test temperature, and the number of load applications.

# 3 - 4 - 1 CYCLIC LOAD

The characteristics of the stress-strain diagram of asphalt mixes suggest that the mixes possess a nonlinear behavior. Some researchers, however, found that (for a

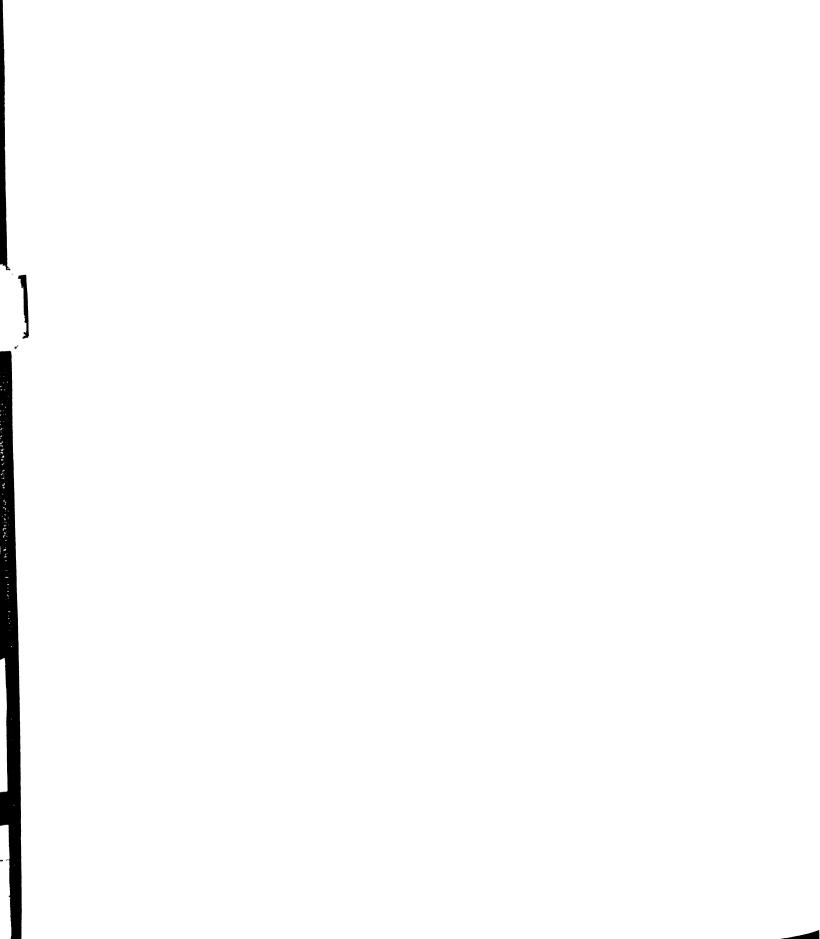


Table 3.8 Asphalt mix design for three percent air voids.

asphalt pen	asphalt mix design variables	aggregate type					
		limestone		rounded		50% mix	
		A	В	A	В	A	В
	% A.C.	4.310	4.460	3.990	4.280	4.160	4.400
	MAX. S. G.	2.546	2.543	2.539	2.520	2.541	2.530
75	BULK S. G.	2.470	2.467	2.463	2.445	2.465	2.454
-	STAB. (lbs)	2242.	2590.	2177.	1984.	1884.	2302.
100	V.M.A		13.75	12.60	13.21	13.01	13.54
	FLOW (0.01")	11.34	10.38	7.33	9.42	10.38	8.95
	% A.C.	4.250	4.480	4.030	4.320	4.140	4.380
	MAX. S. G.	2.547	2.541	2.537	2.517	2.541	2.530
125	BULK S. G.	2.471	2.465	2.460	2.442	2.465	2.454
-	STAB. (lbs)	2289.	2392.	1701.	1896.	2238.	2655.
150	V.M.A.	13.26	13.79	12.70	13.31	12.96	13.49
	FLOW (0.01")	9.90	9.76	7.42	8.34	9.99	9.68
	% A.C.	4.070	4.240	3.990	4.330	3.860	4.200
	MAX. S. G.	2.553	2.549	2.537	2.516	2.551	2.535
200	BULK S. G.	2.477	2.473	2.461	2.441	2.474	2.459
-	STAB. (lbs)	2173.	2548.	1584.	1942.	1955.	1935.
250	V.M.A.	12.85	13.23	12.61	13.31	12.33	13.08
	FLOW (0.01")	8.85	8.85	6.63	7.86	6.39	7.03

AC = percent asphalt content.

GMM = maximum theoretical specific gravity.

STAB = marshall stability.

VMA = percent voids in mineral aggregates.

moderate stress level) the resilient modulus of asphalt mixes are independent of the applied stress level (i.e., they possess a linear behavior). Others stated that increasing stress level yields lower modulus values. To investigate this point, further and to quantify relationships between the structural properties magnitude of the applied cyclic load, three cyclic loads were used throughout the testing program of this study. These are 100, 200, and 500 pounds which resulted in applied cyclic stress levels of 50, 100, and 250 psi, respectively. The reason for selecting these stress levels is to simulate In general, pavements are subjected to field conditions. stresses equal to the vehicle tire pressure which varies from about 50 psi for some vehicles to about 100 psi for The 250 psi value is representative of the tire pressure of a new type of tire (the super tire) that is to be introduced by the tire industry in the near future.

## 3.4.2 TEST TEMPERATURE

properties of asphalt mixes Structural also are functions of the mix temperature. The functional relationships, however, are well known and they are documented throughout the literature (see chapter 2). purpose of the investigation herein is to verify existing information rather than to develop new models relating the structural properties to test temperature. Consequently,

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only two test temperatures were used in this study. These are 40 and  $70^{\circ}$ F.

## 3.4.3 NUMBER OF LOAD APPLICATIONS

The number of load applications plays an insignificant role in determining the resilient characteristics of asphalt mixes. In practice, the resilient characteristics are determined after 500 or 1,000 load applications after which the test is terminated.

Fatigue life, on the other hand, is defined by the of load application at which microcracks are initiated in the test specimen or the flexural modulus of the asphalt mix is reduced to half of its original value. Thus, it is clear that in the fatigue test, the number of load application to failure will vary and is dependent on several variables. Early in the testing program of this study it was found that the number of load applications to fatigue failure varied from a few thousands for the seven percent air void specimens to a few millions for the three percent air void specimens. This represented a problem because the application of one million load repetitions at a frequency of 2 Hz. requires 6 days of continuous testing. Since about 100 specimens were made at the three percent air voids, it implied that more than five years of continuous testing is required. Consequently, it was decided to subject all specimens to about 100,000 load cycles unless

the specimen fails prior to this number. In addition, to verify the extrapolation of the relationships between plastic strain and the number of load application, a few specimens were subjected to more than 600,000 cycles.

# 3.5 MIX VARIABLES

The effects of three mix variables on the structural properties of asphalt mixes were investigated in this study. These are: aggregate angularity, asphalt type, and gradation of the angularity.

# 3.5.1 AGGREGATE ANGULARITY

Aggregate angularity is a measure of the degree of curvature of the aggregate. In qualitative terms, aggregate angularity can be described as rounded, subrounded, subangular, or angular. Quantitatively, aggregate angularity be obtained by estimating and/or calculating proximity of an aggregate to a circumscribing sphere. The has not been standardized. calculation, however, Researchers have suggested several equations (56, and/or scales for calculating or estimating the angularity. In this study, aggregate angularity was "quantified" using a scale from 1.0 to 4.0 (105). A value of 1.0 describes a perfectly spherical and smooth aggregate while a value of describes an angular aggregate such as a crushed 4.0 aggregate. Hence, angularities of the crushed limestone,

natural aggregate and 50/50 mix were assigned the values of four, two, and three, respectively. These numerical values were used to examine the effects of aggregate angularity on the structural properties of the asphalt mixes.

#### 3.5.2 ASPHALT TYPE

Traditionally, penetration or viscosity of the asphalt are used to characterize the asphalt type. Since the beam specimens, in this study, are subjected to cyclic loads (a psudodynamic type load) it was thought that the kinematic viscosity of the asphalt is a better descriptor of the asphalt type because kinematic viscosity is the ratio of the asphalt viscosity to its density. Consequently, kinematic viscosity of the asphalt binder was used to quantify the asphalt type and to examine its effects on the structural properties of the mix. The values of kinematic viscosity of the three types of asphalt (AC AC5, and AC 2.5) used in this study are 159, 212, and 270 centistokes, respectively. These values are listed in table 3.4.

## 3.5.3 AGGREGATE GRADATION

As noted in the Chapter 2, several investigators have found that aggregate gradation have an insignificant effect on the structural properties of asphalt mixes (64, 90, 91, 105, 108, 109). To substantiate their findings, two

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gradations (A and B) are used in this study (see table 3.3 and figure 3.1). It can be noted that gradation A had a higher percent of coarse aggregate than gradation B. For analytical purpose, these gradations can be characterized by the weight ratio of coarse to fine aggregate, by their volume or percent passing ratio, or by the volume concentration of the fine. Since, the same percent fine was used for both gradations (A and B), and since the purpose of the investigation in this study is to determine whether aggregate gradation affects the structural properties or not, it was decided to assign the values of 1 and 2 for gradations A and B, respectively. These two values were then used in the analysis.

#### 3.6 SPECIMEN VARIABLES

The effect of only one specimen variable on the structural properties of asphalt mixes was investigated in This was percent air voids. The percent air this study. voids of the beam specimens were varied by varying the compaction efforts. Three values of the percent air voids five, and seven) were targeted. For each combination of material and for each target value of the percent air voids, three specimens (triplicate) were made. Each specimen was then tested to determine its actual (not target) air voids. This last value was then used in the analysis.

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#### 3.7 TEST MATRICES

As noted above, a total of six independent variables were considered in this study. Each had either two or three levels as follows:

- Three target levels of the percent air voids (AV).

  These are 3, 5, and 7 percent. The actual values of the percent air voids varied from about three to about seven percent.
- . Three values of the kinematic viscosity (KV) of the asphalt binder. The values of KV are 159, 212, and 270 centistokes.
- . Three aggregate angularities (ANG). The value of ANG are: two for rounded gravel, three for the 50/50 mix, and four for crushed limestone.
- . Three magnitudes of the cyclic load (CL). The values of CL are 100, 200, and 500 pounds.
- . Two gradations (GRAD) of the aggregates. The value of GRAD is either one for gradation A or two for gradation B.
- . Two test temperatures (TT). The values of TT are 40 and  $77^{\circ}F$ .

Thus, the possible number of combinations of these values is 324 (3 air voids x 3 kinematic viscosities x 3 aggregates x 3 cyclic loads x 2 gradations x 2 test temperatures). This implies that, for the beam tests and for a full

factorial study, 324 specimens (972 specimens in triplicates) were required. This is impractical because of the time involved. Consequently, a partial factorial experiment design matrix was established based on the concept of separation of variables such that the effects of each variable on the structural properties of asphalt mixes could be independently and satisfactorily assessed. matrix is shown in figure 3.3. There are total of 72 designated cells in the matrix and each cell represents a triplicate for a total of 216 beam tests. The test data can be grouped and subgrouped in certain ways such that the values of all independent variables but one are constants within that group. These groups are:

- . Group 1; percent air voids. This group was subdivided to nine subgroups. The only independent variable within each subgroup is the percent air voids. For example: subgroup 1.1 for cells 1, 2, and 3; subgroup 1.2 for cells 13, 14, and 15.
- . Group 2; cyclic load. The data in this group were separated into 24 subgroups. The independent variables within each subgroup are the cyclic load and the percent air voids although the target values of the percent air voids are the same. For example: subgroup 2.1 for cells 1, 13, and 25; and subgroup 2.2 for cells 70, 71 and 72.
- . Group 3; kinematic viscosity. The data in this group

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Figure 3.3 Partial factorial experiment matrix for the beam tests.

was separated into 9 subgroups. The independent variables within each subgroup are the kinematic viscosity of the asphalt and the percent air voids although the target values of the latter is constant. For example: subgroup 3.1 for cells 1, 4, and 5, and subgroup 3.7 for cells 39, 40, and 41.

- Group 4; aggregate angularity. This group was also subdivided into 9 subgroups. The independent variables within each subgroup are the aggregate angularity and the percent air voids. For example: subgroup 4.1 for cells 1, 6, and 11 and subgroup 4.4 for cells 15, 20, and 24.
- . Group 5; gradation. Twelve subgroups were found herein. For example: subgroup 5.1 for cells 1 and 37 and subgroup 5.10 for cells 7 and 42. The disadvantage herein is that, since only two gradations were used, the effects of this variable cannot be accurately assessed.
- established. For example: subgroup 6.1 for cells 1 and 58 and subgroup 6.6 for cells 29 and 63. Again, since only two temperatures were used, the effects of the test temperature cannot be accurately assessed.

During the analysis, data subgroups were recalled to analyze the effect of the variable within that subgroup. For example, data from three cells that have all variables,

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but one, constant (e.g., cells 1, 4, and 5 in figure 3.3) were analyzed to infer the effects of the independent variable (asphalt type in this case) on test results (e.g., cell 1 corresponds to asphalt type 1; 2 to asphalt type 2; 3 to asphalt type 3; while all other variables are invariant). Similarly, data from cells 1, 2, and 3 can be analyzed to examine the effects of the percent air voids on the structural properties of asphalt mixes.

## 3.8 SPECIMEN DESIGNATION NUMBER

For a proper data storage, retrieval, and management, each test specimen was assigned an unique eight-digit designation number. The designation number was based on the following (the numerical order here is that of the designation, e.g.; number one corresponds to the first significant digit of the designation number):

- 1. Aggregate type: limestone = 1, gravel = 2, 50/50 mix
   by weight = 3.
- 2. Gradation type: gradation A = 1, B = 2.
- 3. Asphalt viscosity, 1, 2, and 3 for kinematic viscosity of 270, 212, and 159 cs, respectively.
- 4. Test temperature:  $77^{\circ}F = 1$ ,  $40^{\circ}F = 2$ .
- 5. Test type: Beam = 0.
- 6. Percent air voids: 3% air voids = 5; 5% air voids = 6;7% air voids = 7.
- 7. Sample number (SN) for a triplicate by order of test:

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(SN = 1 to 3).

8. Load level: 100 pounds cyclic load = 1, 200 pounds
= 2, and 500 pounds = 5).

To illustrate, a designation number of 11110521 implies (from left to right): limestone; gradation A; high viscosity asphalt; 77°F; beam test; 3% air voids; second beam of a triplicate; and 100 pounds cyclic load.

# 3.9 SPECIMEN PREPARATION PROCEDURE

For all beam specimens, each aggregate fraction (size) was washed and oven dried to constant weight at 230°F (100°C) for a 24-hour period. After drying, all aggregate fractions were brought back to room temperature. A portion of each fraction, starting with the top size, was weighed to the nearest 0.1 gram in accordance with the specific gradation curve (A or B). The proper amount of fly ash was then added. The aggregate mix was then placed in an oven to bring its temperature to the compaction temperature as specified in the AASHTO T 245-82 test procedure. proper weight of asphalt was then added to the aggregate blend to yield the design asphalt content. The aggregate and asphalt were mixed according to AASHTO T 245-82 procedure. After mixing, the beam specimens were compacted using a California Kneading compactor model CS-1000 and a beam mold 16-in. long, 4-in. wide, and 4-in. high. Each specimen was compacted in four layers. The compaction parameters (weight of the material, the number of tampings, and the foot pressure per layer) were varied. Three trial beams were made to determine these variables. After compaction, the density of the trial beams were determined as specified in the AASHTO T 166-82. The beams were then sawed to eight equal parts as shown in figure 3.4. The density and the percent air voids of each part was determined. From these trials, the proper weight of asphalt mix, the number of tampings, and the foot pressure per layer were selected to yield uniform beams with near target air voids. The final set of the compaction parameters are listed in tables 3.9 through 3.11.

After compaction, the beam specimen was extracted from the mold, placed on a rubber mat and allowed to cool to room temperature. After cooling, the density and the percent air voids were determined. It should be noted that the maximum variation of the percent air voids of any triplicate was generally less than 0.2 percent. However, the actual air voids in some triplicates varied by as much as one percent from the target air voids, which was mainly related to the hydraulic system of the compactor which did not deliver exactly the specified foot pressure.

The specimen were then air-dried and stored overnight in a temperature-controlled chamber which was set at the test temperature of either 77 or 40°F. The next day, the specimen was tested.

Table 3.9 Typical compaction variables for 3 % air voids using limestone and AC10

layer number	WM	CFP	NT
1	3393	200	78
2	2714	250	78
3	2262	300	78
4	1809	350	78

WM = weight of asphalt mixes (grams).

CFP = compactor foot pressure (psi).

NT = number of tamping.

Table 3.10 Typical compaction variables for 5 % air voids using limestone and AC10

layer number	WM	CFP	NT
1	3383	200	39
2	2706	250	39
3	2255	300	39
4	1804	350	39

WM = weight of asphalt mixes (grams).

CFP = compactor foot pressure (psi).

NT = number of tamping.

Table 3.11 Typical compaction variables for 7 % air voids using limestone and AC10

layer number	WM	CFP	NT
1	3267	200	26
2	2612	250	26
3	2177	300	26
4	1741	350	26

WM = weight of asphalt mixes (grams).

CFP = compactor foot pressure (psi).

NT = number of tamping.

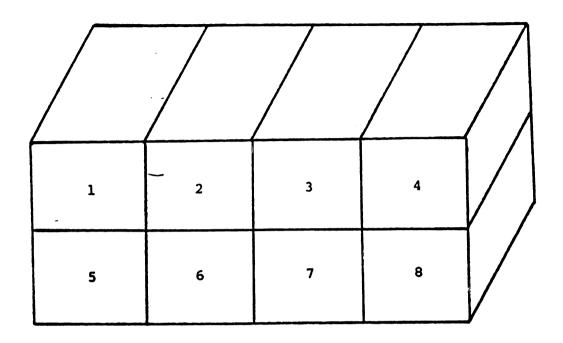


Figure 3.4 Beam specimen sawed to eight equal parts for density analysis.

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# 3.10 MEASUREMENT SYSTEM

Early in the testing program, several beams were instrumented using several types of strain gauges (2-, 3-, and 4-in long) mounted at different heights on the side of the beam. The values of the measured strains were found to be random and inconsistent for three reasons:

- a) The long (4-in) strain gauges spanned along the neutral axis (the tensile and compressive regions) of the beam. Hence, measured strain values represented the net values of the tensile and compressive strains.
- b) Some of the short strain gauges (2-in) spanned only two adjacent aggregates; others spanned only parts of the aggregates; still others were mounted on the asphalt binder on one side and on a part of an aggregate on the other side.
- c) Several types of epoxy resins were used to firmly attach the strain gauges to the side of the beam. The magnitude of the cumulative plastic strains at the higher number of load applications caused the epoxy to crack and hence, the strain gauge was separated from the beam.

Consequently, a different measurement system was used that consisted of four linear variable differential transducers (LVDT) mounted on a steel frame along the central line of the surface of the beam specimen at different distances from

the point of load application. The LVDTs were placed at the center of the beam, 2.25-in., 4.25-in., and 6.31-in from the center as shown in figure 3.5. The total surface deflection of the specimen due to the applied cyclic load was recorded at different number of load applications using a strip chart recorder.

#### 3.11 TEST PROCEDURES

All beam specimens were prepared using the procedure outlined in section 3.9. The tests were conducted at either 77 or  $40^{\circ}$ F in a temperature-controlled chamber. The sustained and cyclic loads were applied using an MTS hydraulic system. Prior to testing, all equipments used in the flexural beam tests (e.g. MTS hydraulic system, LVDT's, strip chart recorders, and so on) were calibrated in accordance with a proper procedure before commencing the test.

After each specimen was conditioned to the test temperature, the beam specimen was continuously supported by placing it on a rubber pad (1 in. thick) which was then rested on a steel block (8 in. thick) in the test chamber. The rubber plate and the steel block, herein, represent the base or subbase course underlain by a rigid foundation.

After placement, all LVDTs were adjusted to a reference position. A loading strip (0.5 inch-wide and 4 inch-long)

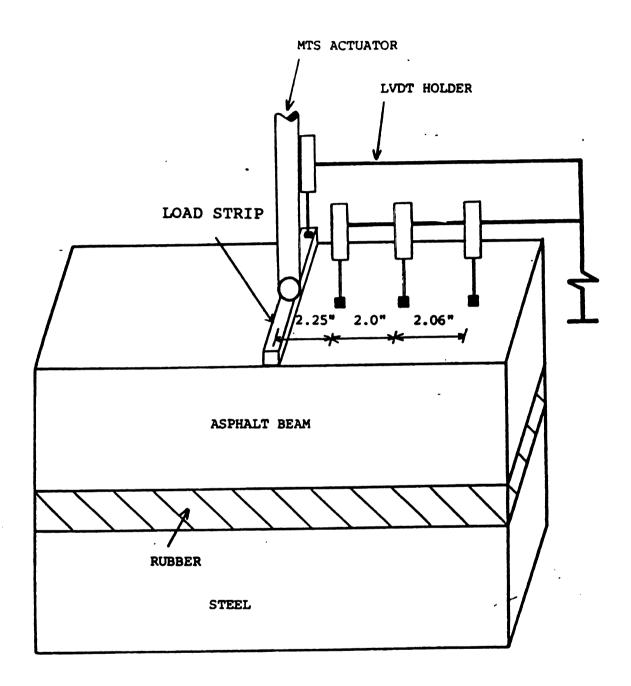


Figure 3.5 Schematic diagram of the beam test set-up.

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attached to the actuator of the MTS system was then lowered to make contact with the beam. A sustained load of 50 pounds was then applied and the consequent deformations were recorded. When the rate of deformation dropped to near zero (10 to 20 minutes), the cyclic load with a sinusoidal wave form was applied and the resulting resilient, viscoelastic, plastic deformations, and number of load applications were recorded. The load frequency was set at two cycles per second with 0.1 second loading time and 0.4-second relaxation period. The peak cyclic load, however, was either 100, 200 or 500 pounds. For each load, three beam specimens (triplicate) were tested.

#### CHAPTER 4

#### TEST RESULTS

## 4.1 GENERAL

In this study, the laboratory tests were performed according to the respective partial factorial experiment matrix shown in chapter 3. The tests were conducted in the laboratory of the Division of Materials and Technology at the Michigan Department of Transportation (MDOT). It should be recalled that all tests were conducted in triplicates. Typical test results are presented in this chapter.

## 4.2 TEST RESULTS

For each of the test materials, the Mashall mix design tests were conducted using four values of the percent asphalt contents by total weight of the mix (3.5, 4.2, 4.9 and 5.6). The test results were analyzed and the design asphalt content was determined as the percent asphalt content by total weight of mix that corresponding to three percent air voids. Typical diagrams relating the stability, specific gravity (density), percent air voids, voids in the mineral aggregates, percent voids filled with asphalt, and flow to the percent asphalt contents are shown in figures 4.1 through 4.6.

Nine specimens (three triplicates) were made at the design asphalt content for each of the test materials. Each

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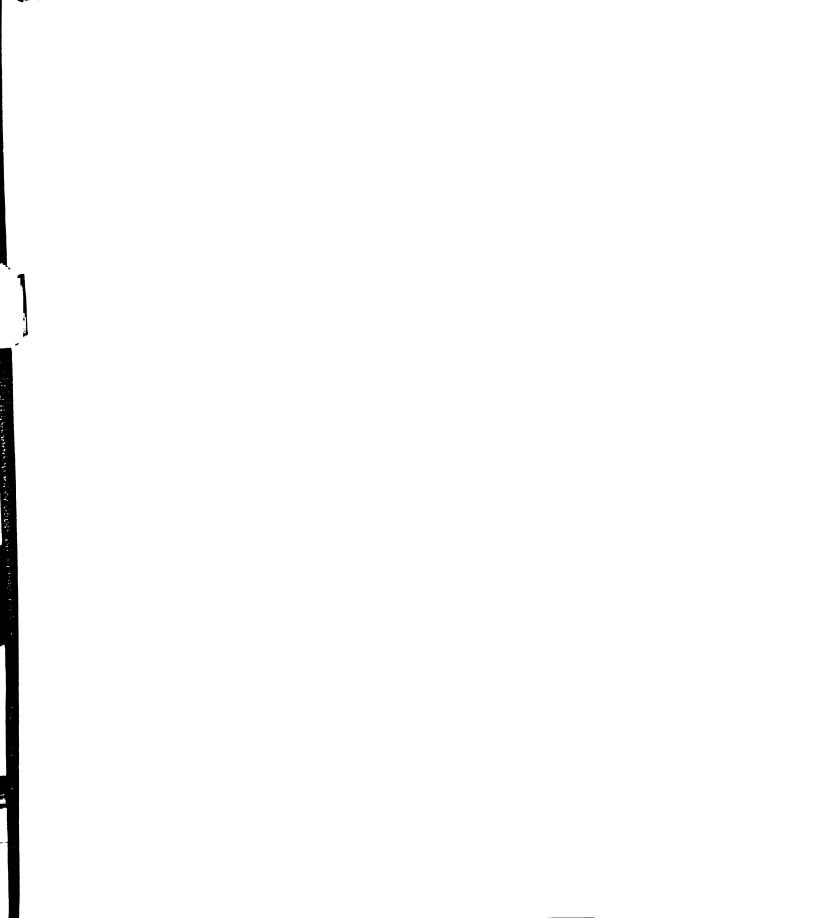
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triplicate was compacted to yield specimens with uniform density near the target values of the percent air voids (AV) of either three, five or seven percent. Figures 4.7 and 4.8 show typical diagrams of Mashall stability and flow versus the percent air voids, respectively. For each beam at the 77°F, the cyclic load was applied for a period of 24 hours or until failure. Beams at 40°F were tested for a period of three to six days (one million load applications). the test, the resilient, total, and plastic deformations at four points on the surface of the beam were measured and recorded. Figures 4.9, 4.10, and 4.11 show typical curves of resilient, total and plastic deformations of the beam versus the number of load applications, respectively. The maximum specific gravity of the mix (GMM), the bulk specific gravity of the beam specimen (GB), the target air voids (TAV), the actual air voids (AV), the target asphalt content (TAC), and the actual asphalt content (AC) are also shown in the Figure 4.12 depicts typical shapes of figures. deflection basin at several numbers of load applications. Figure 4.13 shows typical curves of the resilient and total deformations at cycle number 100 versus the percent air voids. Figure 4.14 depicts typical plots of the cumulative plastic deformation versus the percent air voids for cycles number 100, 1,000, 10,000, and 150,000. The test results, for all beams, are presented in Appendix A.



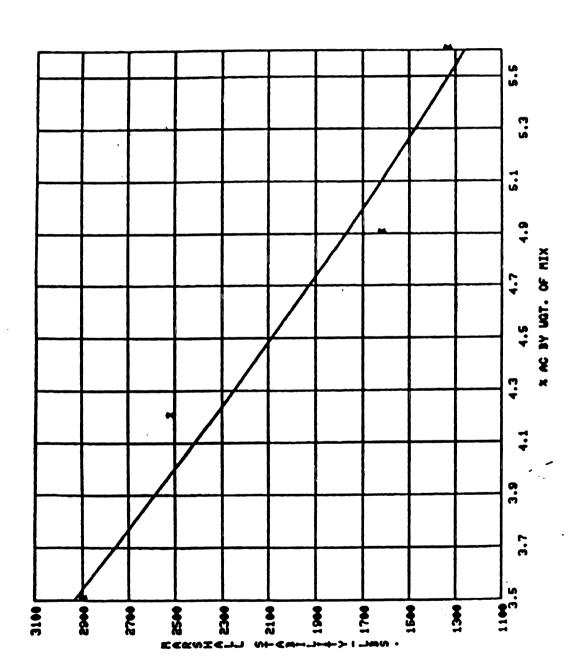


Figure 4.1 Marshall stability versus percent asphalt content for limestone gradation A and viscosity graded asphalt AC-10.

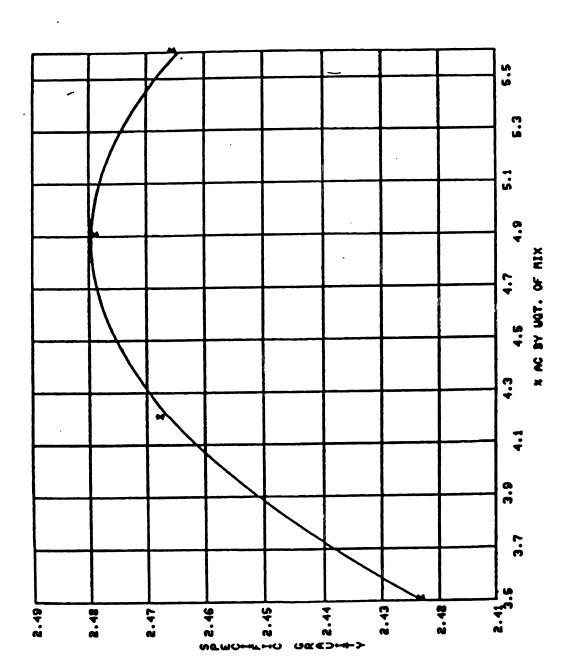


Figure 4.2 bulk specific gravity of the mix versus percent asphalt content for limestone gradation A and viscosity graded asphalt AC-10.

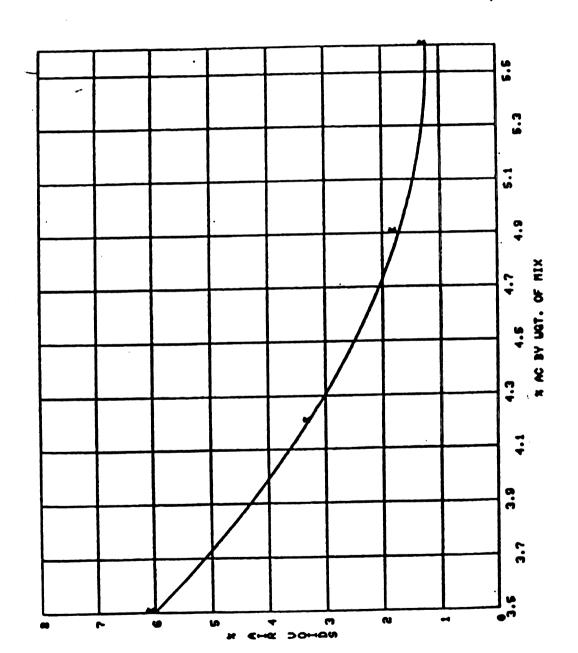
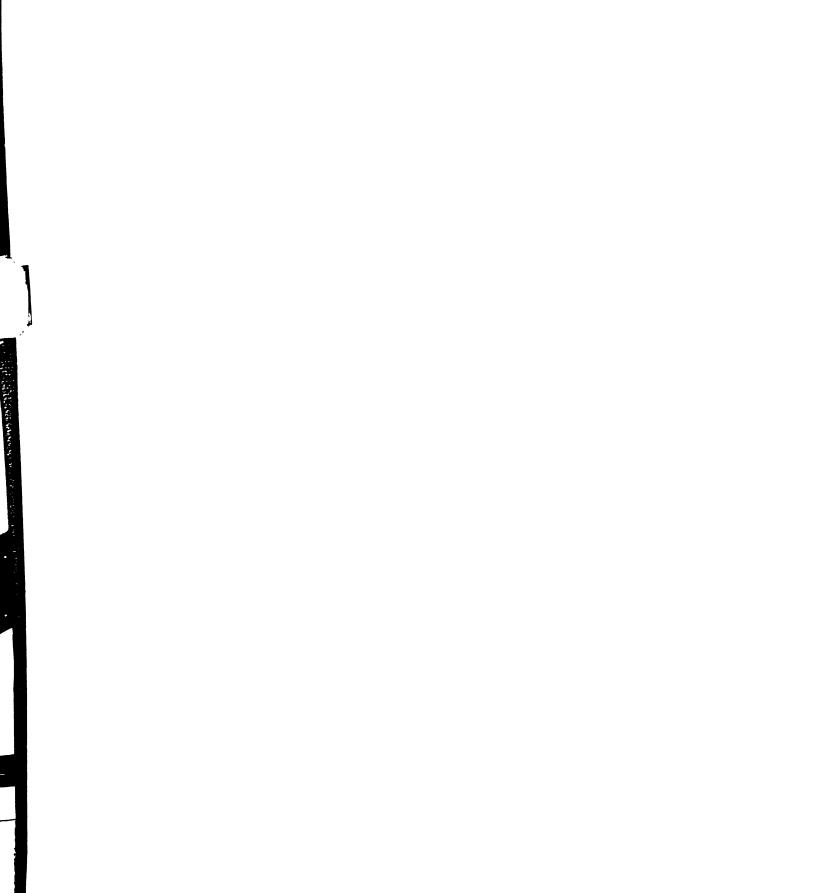


Figure 4.3 Percent air voids versus percent asphalt content for limestone gradation A and viscosity graded asphalt AC-10.



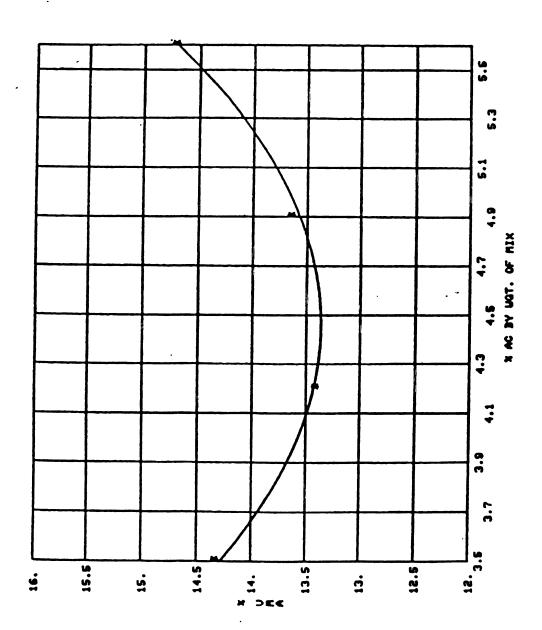


Figure 4.4 Percent voids in mineral aggregate versus percent asphalt content for limestone gradation A and viscosity graded asphalt AC-10.

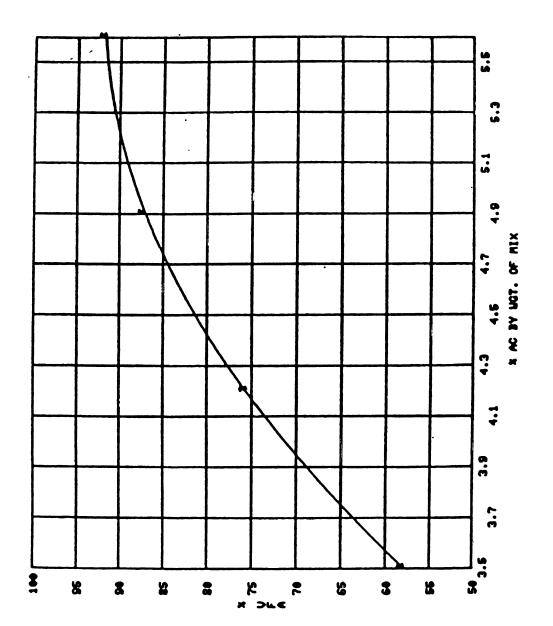


Figure 4.5 Percent voids filled with asphalt versus percent asphalt content for limestone gradation A and viscosity graded asphalt AC-10.

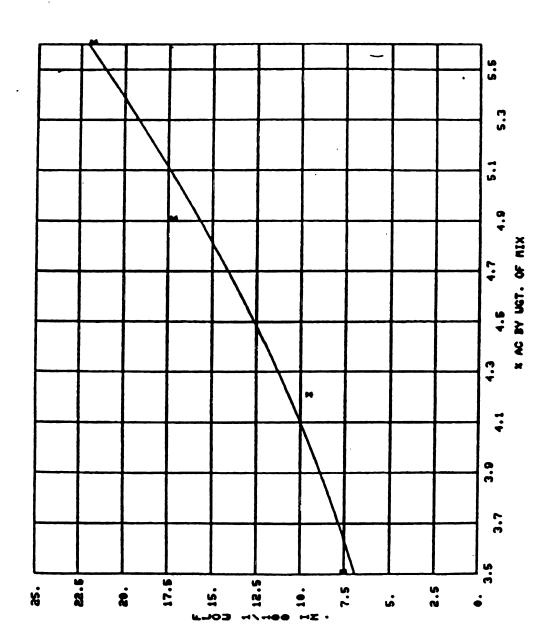
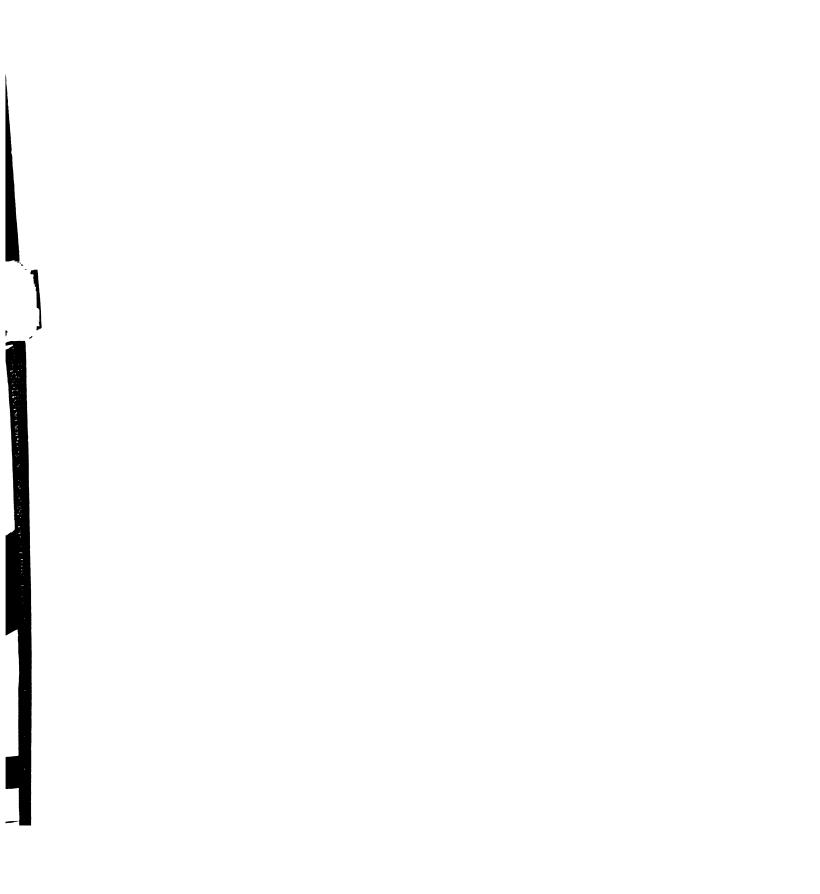


Figure 4.6 Flow versus percent asphalt content for limestone gradation A and viscosity graded asphalt AC-10.



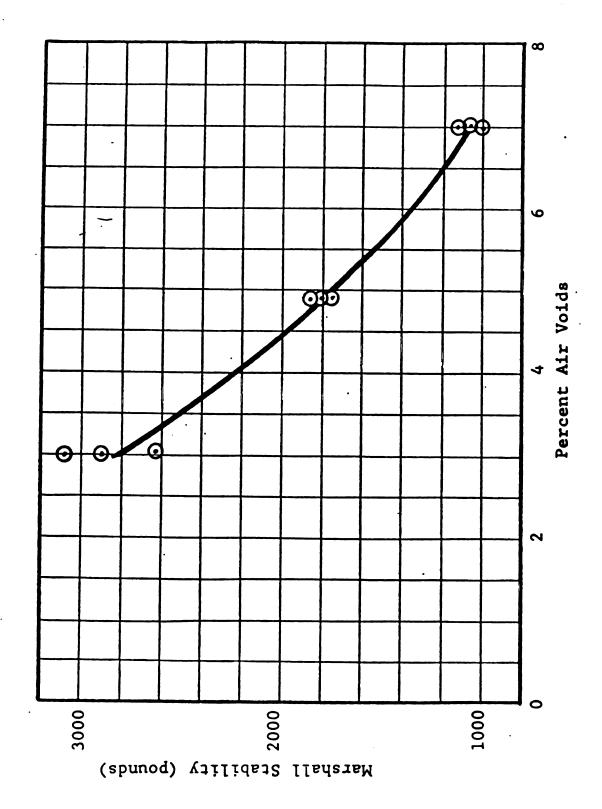
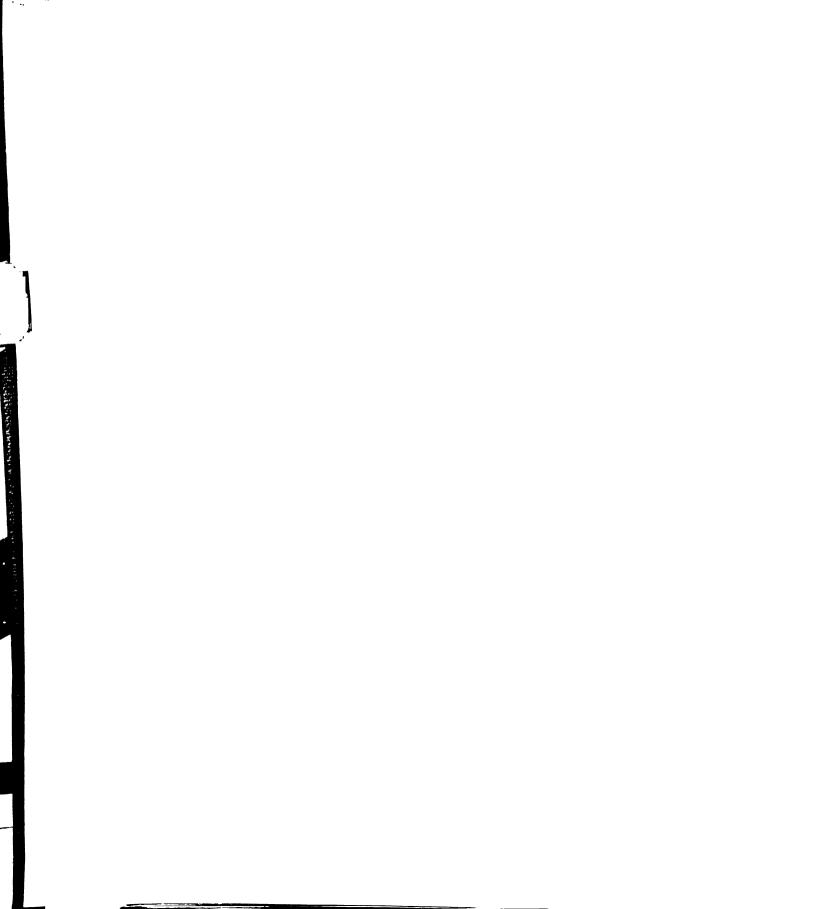


Figure 4.7 Marshall stability versus the percent air voids of the specimen.



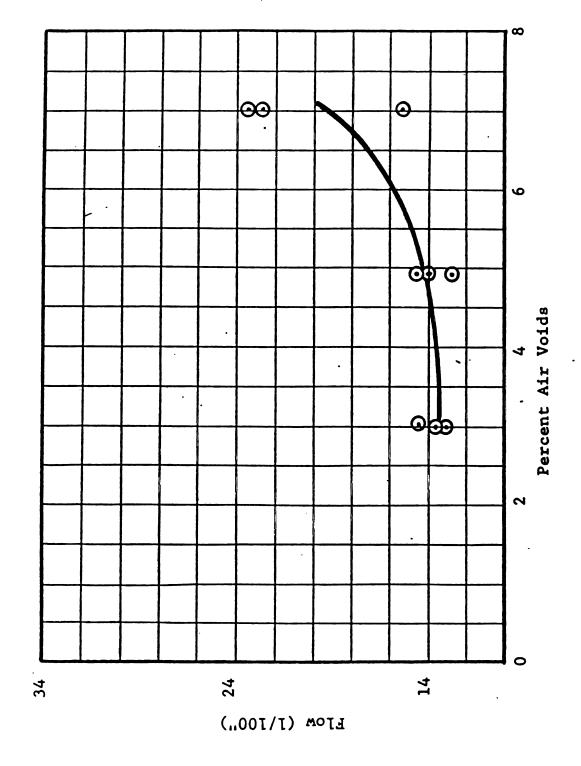
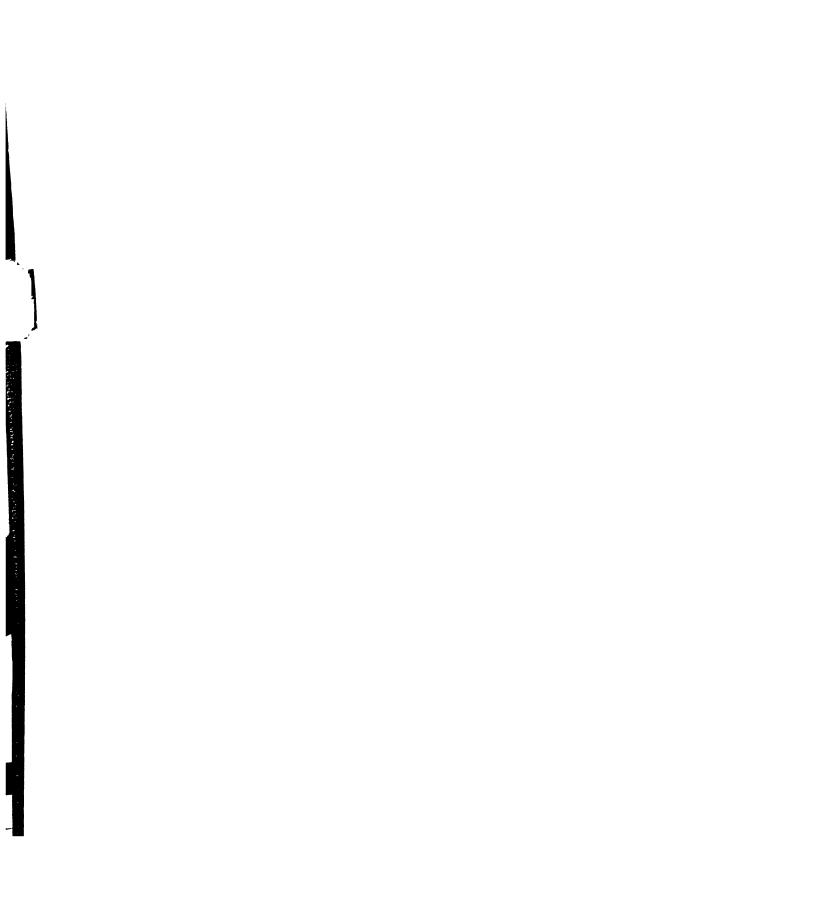
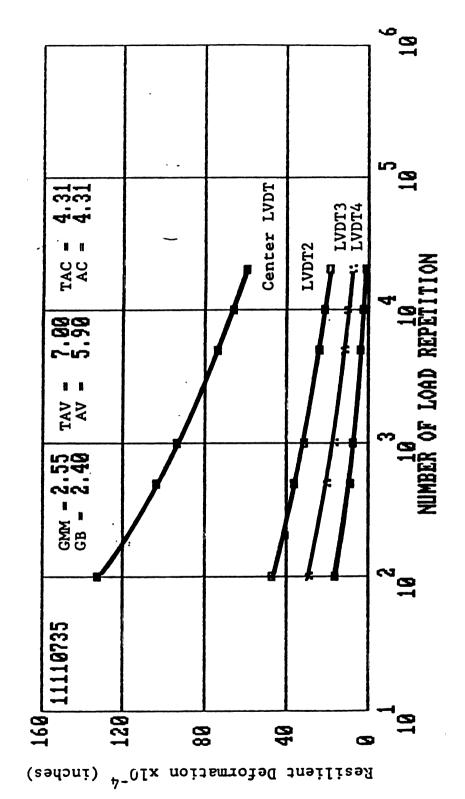


Figure 4.8 Flow values versus the percent air voids of the specimens.





the beam specimen versus the number of load applications. Figure 4.9 Resilient deformations at four points on the surface of

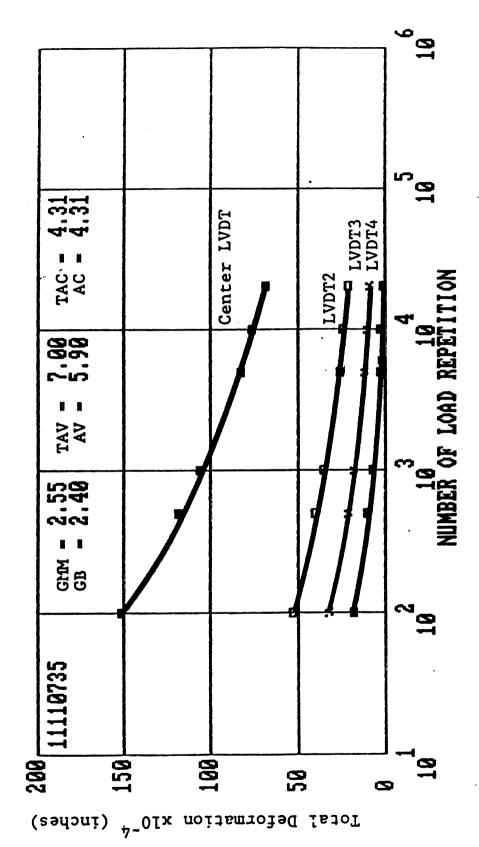


Figure 4.10 Total deformations at four points on the surface of the beam specimen versus the number of load applications.

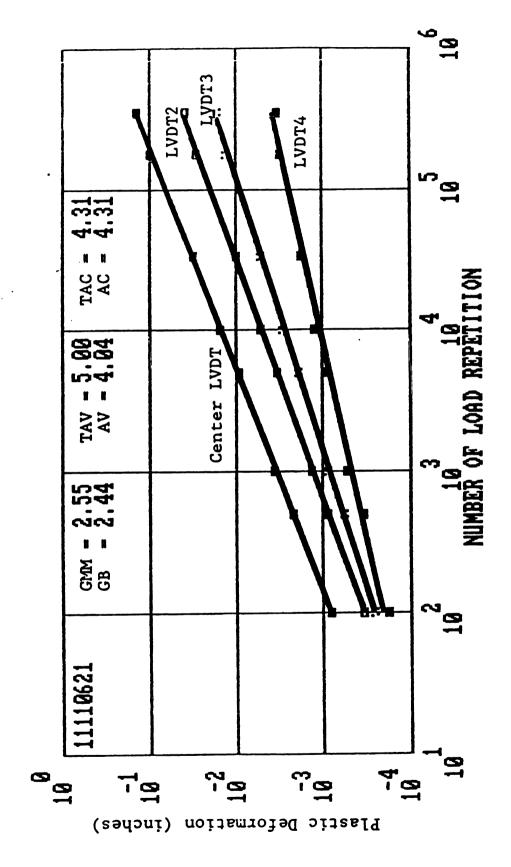


Figure 4.11 Cumulative plastic deformations at four points on the surface of the beam specimen versus the number of load applications.

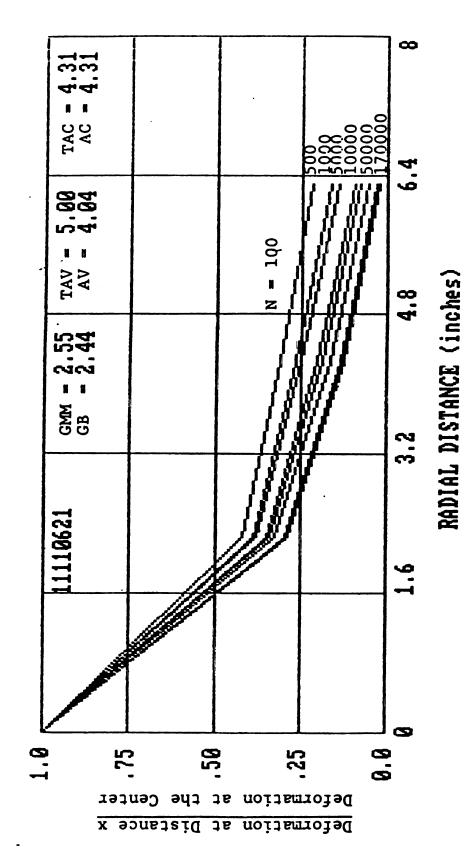
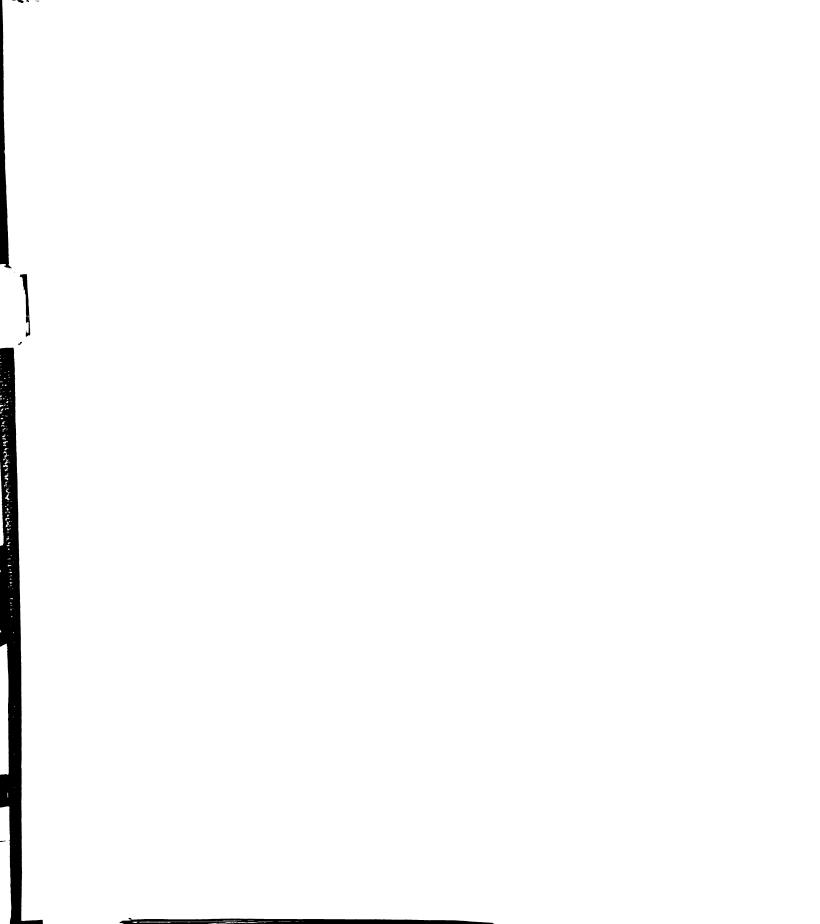


Figure 4.12 Normalized plastic deformation basin of the beam specimen at different number of load applications.



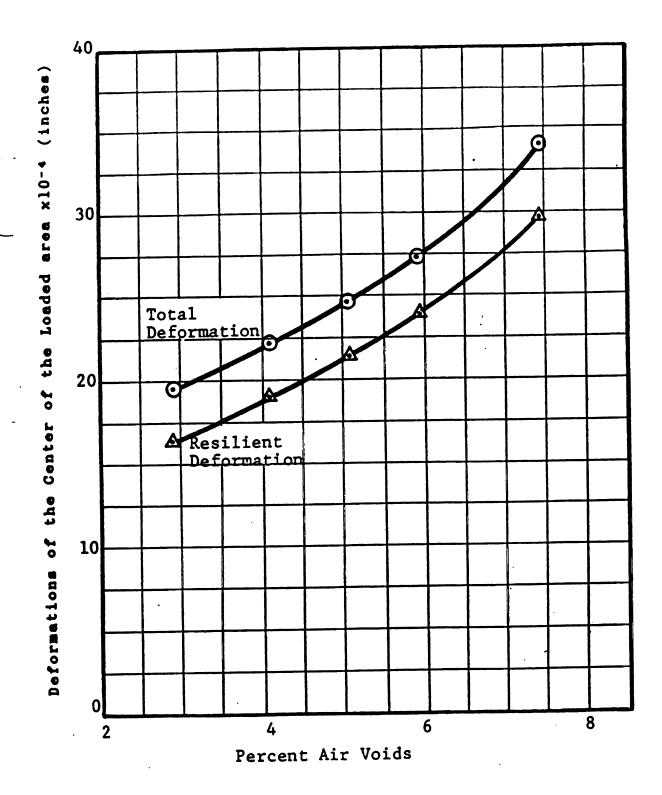
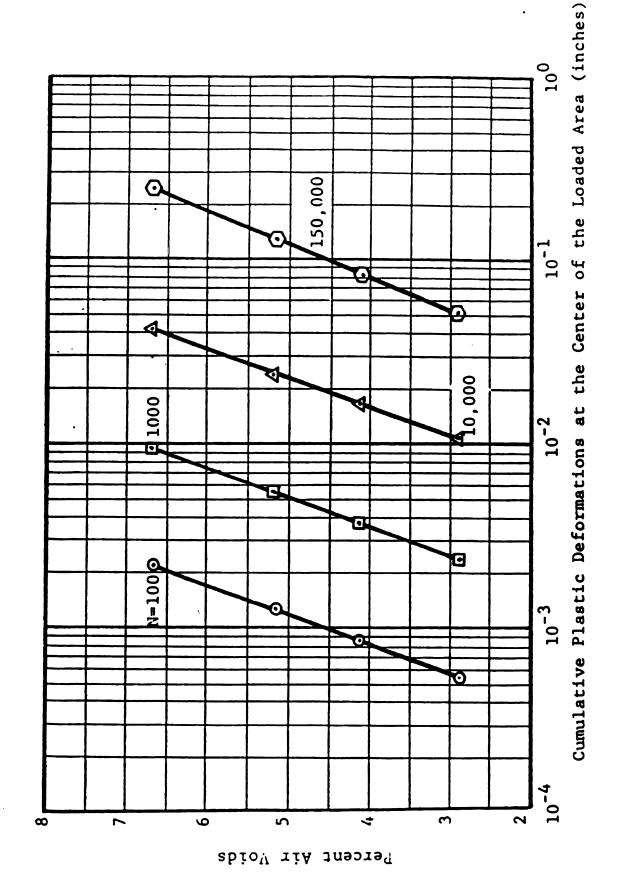


Figure 4.13 Resilient and total deformations at the center of the loaded area at cycle number 100 versus the percent air voids of the beam specimen.



area at different number of load applications versus the percent Figure 4.14 Cumulative plastic deformations at the center of the loaded air voids of the beam specimen.

### CHAPTER 5

## ANALYSIS AND DISCUSSION

### 5.1 GENERAL

Structural properties of asphalt mixes have a direct bearing on the pavement performance under the anticipated traffic loading and environmental conditions (109). determination of relevant structural properties can be very tedious and involved because said properties change with changing environmental conditions. Unlike the mineral aggregate in the mix or in the pavement base and subbase layers whose properties are relatively constant, physical and chemical asphalt binder properties are dynamic in nature and are influenced by temperature, moisture, and time (35). In addition, the response of asphalt mixes to load (as noted in chapter 2) is the result of three different mechanisms: elastic: viscoelastic; and plastic. Thus, some of relevant structural properties of asphalt mixes that needed for the design of asphalt pavement include resilient and/or total characteristics, permanent deformation, creep, and fatigue behavior.

Asphalt mixes are largely composed of coarse and fine aggregates, mineral filler, asphalt binder, and air voids. The proportioning of these components in any given mix (the asphalt mix design) dictates its behavior under traffic loading and affects its structural properties (24, 34, 40,

74, 75, 85). Existing practices, however, divorce the asphalt mix design procedures from those to obtain the structural properties. Hence, a major question facing the pavement engineer is "how to tailor the asphalt mix design procedure to optimize its structural properties which will result in the best pavement performance under traffic loads and environmental conditions?"

#### 5.2 STUDY OBJECTIVES

The objectives of this study include:

- a) Determining the structural properties of asphalt mixes using cyclic load flexural tests.
- b) Determining the asphalt mix design parameters using the standard Marshall tests and test procedures.
- c) Quantifying relationships between the standard properties of the asphalt mix and the types of the material in the mix.
- d) Identifying a laboratory test procedure whereby the asphalt mix design can be tailored to optimize its structural properties.

To accomplish these objectives, it was hypothesized that relationships between the structural properties and the asphalt mix design parameters can be found using statistical analyses. To verify the hypothesis, laboratory flexural cyclic load tests was designed and conducted to evaluate the structural properties of the mix. The asphalt mix design

parameters (on the other hand) were obtained using standard Marshall tests. The measured structural properties and the asphalt mix design parameters were then analyzed to:

- a) Model the structural properties of the compacted mixes as functions of load and temperature.
- b) Model the structural properties of the compacted mixes as a function of the types of material in the mix.
- c) Correlate items a and b.
- d) Evaluate the repeatability of the test results.
- e) Examine the feasibility of the beam test.

Items (a), and (b) above are required to verify the hypothesis (item c). Items (d) and (e) are necessary to determine whether the flexural beam test can be used to identify a laboratory test procedure whereby the asphalt mix design can be tailored to optimize the structural properties of the mix.

# 5.3 DATA PREPARATION

For each test, the applied cyclic and the corresponding specimen total deformation were continuously recorded using strip chart recorders at cycles number 100, 500, and a multiple of 10 of these values thereafter. After the test, each data record was examined and the values of the resilient, total, and plastic (permanent) deformations were digitized separately. This can be illustrated with the aid

of figures 5.1 and 5.2. Figure 5.1 depicts a typical load and deformation record versus time during one load-unload The sustained and cyclic loads, and the loading and cvcle. relaxation periods are shown on the load record in the The total peak deformation, the time lag between the peak load and peak deformation, and the resilient, viscoelastic, and plastic deformations are designated on the deformation record in figure 5.1. The length of the lines DG, DE, EF, and FG in the figure are proportional to the total resilient, viscoelastic, and plastic deformations, respectively. It can be seen that the length of the line FG is much smaller than those of DE and EF. Indeed. it was noted that the values of the plastic deformation due to any one load-unload cycle is very small and within the accuracy of the measurement system. Consequently, the plastic deformation due to any one load cycle was neglected and the total and resilient deformations (lines DG and DE) digitized. The viscoelastic deformation is simply the difference between the total and resilient deformations. It be noted that the value of the viscoelastic should deformation depends on several variables such as temperature loading and relaxation periods. For example, temperatures and/or longer loading and relaxation periods produce higher viscoelastic deformation. Since (in this study) the rate of specimen recovery was not recorded only one loading and relaxation periods were used, the

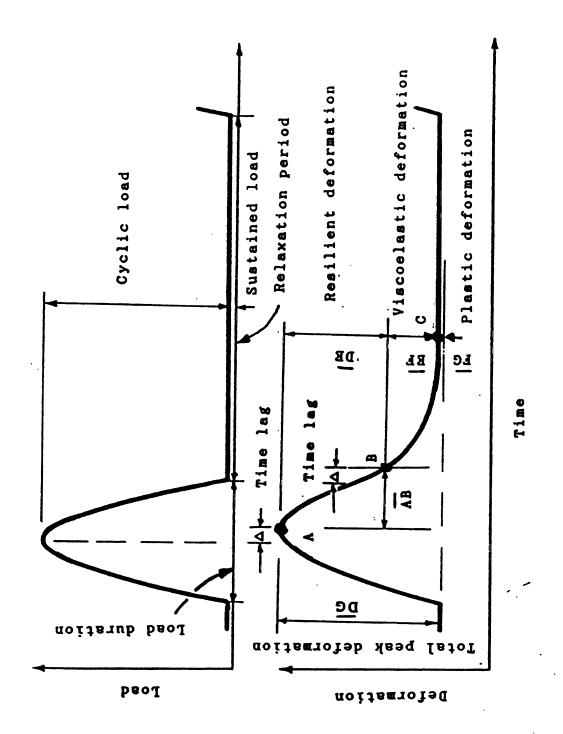


Figure 5.1 Typical load and deformation records versus time.

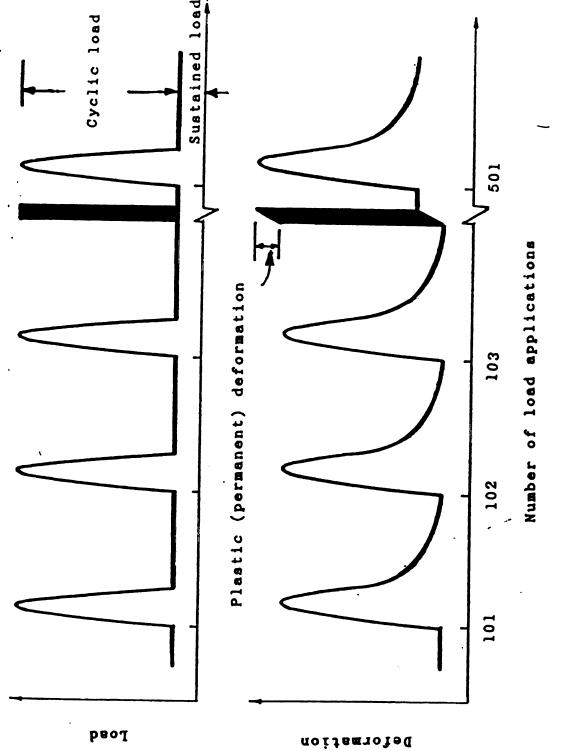
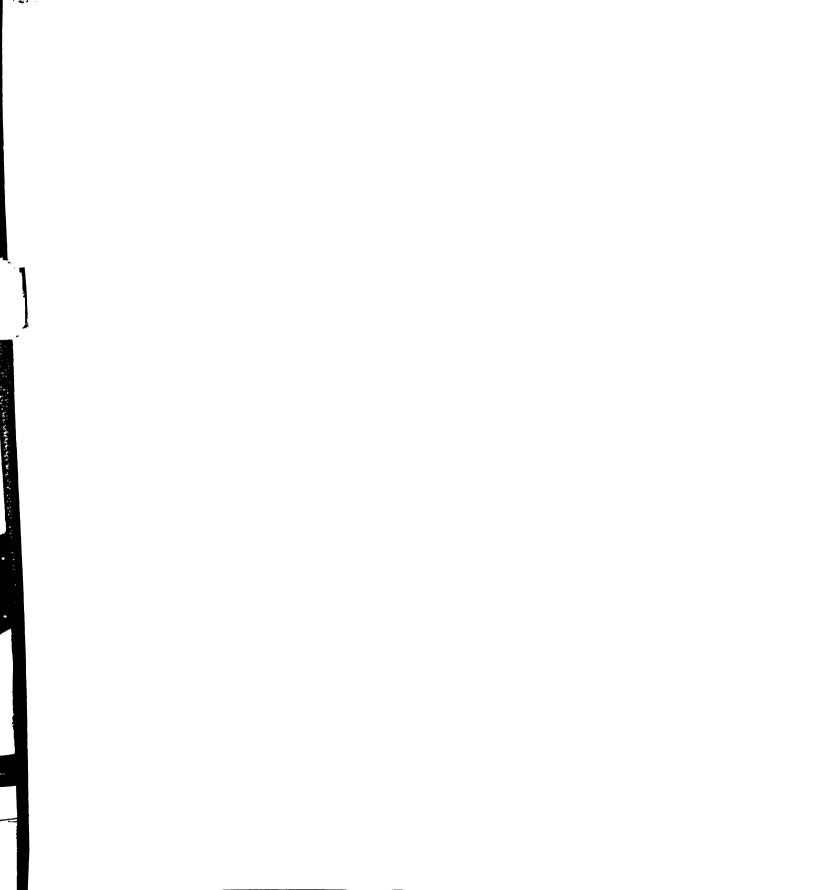


Figure 5.2 Typical load and deformation records versus the number of load application.



calculation of the viscoelastic properties becomes tedious and misleading. Thus, only the resilient, total, and plastic deformations were considered in the analyses.

As noted above, the value of the plastic deformation of the test specimen for any one load cycle is very small and within the accuracy of the measurement system. the cumulative plastic deformation due to a number of load applications were determined and analyzed. This can illustrated using figure 5.2 which shows a typical load record versus the number and deformation of applications. The records for cycles 101, 102, 103, and 501 were obtained using a higher speed setting on the chart-The records between cycles number 104 and recorder. were obtained using a slow speed setting on the chartrecorder. As it can be seen, the deformation signal drifts away from the horizontal axis as the number of load The length of the line AB in the application increases. figure is proportional to the cumulative plastic deformation between load cycles number 103 and 501. In this study, the value of the cumulative plastic deformation between cycle number and any other load cycle in question was used in the analysis.

## 5.4 ANALYSIS METHODS

Analytical and statistical methods were used to analyze the data obtained from the flexural tests. The analytical

method was based on the elastic-viscoelastic-plastic model (equation 2.2). In this method, the magnitude of the applied cyclic load and the measured resilient and total deformations of the beam specimens were analyzed using a linear elastic finite element computer program to extract the resilient and total characteristics of the asphalt mixes. The analyses are presented in section 5.7.

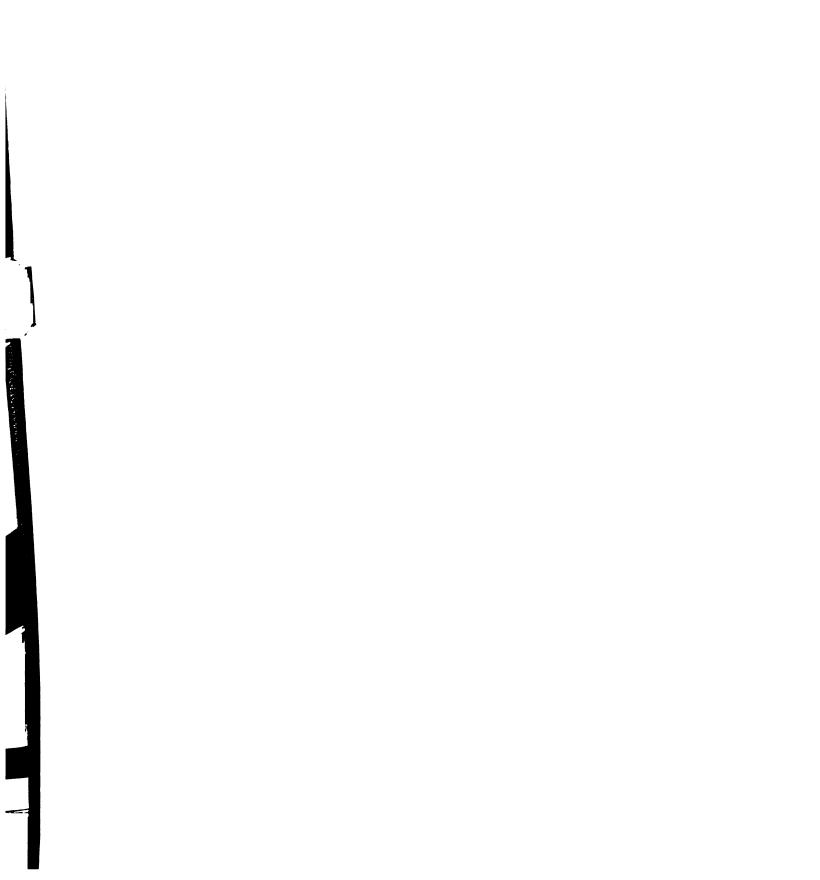
For each beam specimen, the values of the resilient and total characteristics obtained using the finite element program, and the values of the measured plastic deformations (permanent deformations) were statistically correlated to the different mix, specimen, and test variables using an available multiple linear regression analysis computer program (SPSS/PC<sup>+</sup>). In this analysis, three procedures were utilized based on the following concepts:

- a) Separation of variables;
- b) Determination of the general correlation equations;
- c) Stepwise procedure which is based on the order of significance of the variables.

The three procedures are presented in the following sections.

## 5.4.1 SEPARATION OF VARIABLES

The separation of variables method can be illustrated by considering the partial factorial experiment matrix of the



beam tests repeated, for convenience, in figure 5.3. Each cell in the matrix represents three specimens (triplicate). Data from each triplicate were statistically analyzed to assess the repeatability of the test results and the variability of the percent air voids within each triplicate. For each test within any triplicate in the matrix, the only variable is the number of load repetitions. Hence, the data (e.g. permanent deformation) from each test was first plotted against the number of load applications as shown in figure 5.4. From the figure, the plastic deformations were modeled as a function of the number of load applications using the following equation:

$$CD_{i} = I_{i}N^{S}i$$
 (5.1)

where: CD; = permanent deformation of LVDT;

I; and S; = regression constants;

N = number of load applications; and

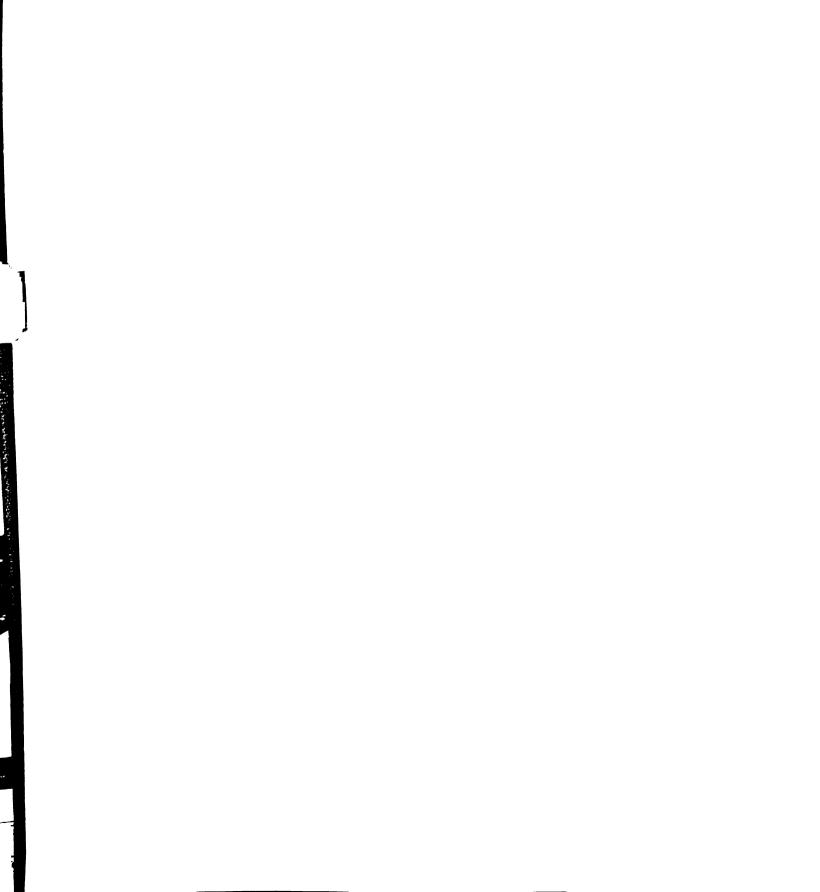
i = LVDT number (location).

In the logarithmic space, equation 5.1 can be written as

$$ln(CD)_{i} = lnI_{i} + S_{i}lnN$$
 (5.2)

where: ln = natural logarithm;

all other variables are as before.



75-100 3 5 7 3 5 7 13 14 15 25 26 27 37 38 39 44 45 46 59 50 60 60

Figure 5.3 Partial factorial experiment matrix for the beam test.

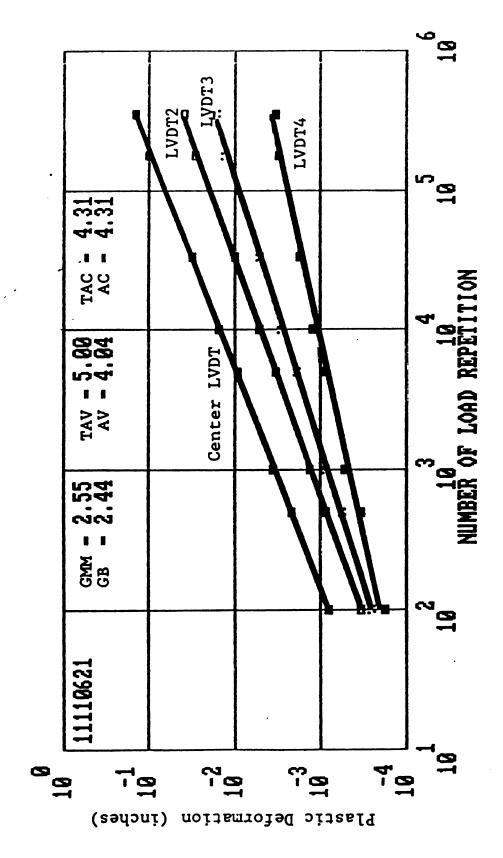


Figure 5.4 Cumulative plastic defromations at four points on the surface of the beam specimen versus the number of load applications.

Equation 5.2 represents a straight line having an intercept of  $lnI_i$  and slope of  $S_i$ . This equation was employed to model the data (permanent deformation) and to obtain the values of  $I_i$  and  $S_i$  for each specimen and for all LVDT(s).

It should be noted that the values of the slope  $(S_i)$  of equation 5.2 should not be interpreted as the rate of change of  $CD_i$  with respect to N. This rate can be obtained by taking the first derivative of equation 5.1 with respect to N as follows:

$$(dCD_i/dN) = (I_i) (S_i) [N^{(S_i-1)}]$$
 (5.3)

where:  $(dCD_i/dN)$  = the rate of change of the cumulative plastic deformation with respect to N; and all else are as before.

Thus, the rate of change of  $CD_i$  is dependent on the values of  $S_i$ ,  $I_i$ , and N.

The values of  $I_i$  and  $S_i$  of equation 5.1 can be regarded as descriptors of the permanent deformation and fatigue life of the compacted asphalt mix in question. For example, higher values of  $I_i$  and  $S_i$  imply higher permanent deformation and perhaps shorter fatigue life of the mix. Nevertheless, the values of the parameters  $I_i$  and  $S_i$  along with the coefficient of determination ( $R^2$ ) and standard error for all beam specimens are tabulated in Appendix B.

The values of  $I_1$  and  $S_1$  for the center LVDT were used in the next step of the analysis. In this step, the values of  $I_1$  and  $S_1$  were first separated into nine groups relative to the independent variables as previously described in section 3.7. After grouping, the values of the slope  $(S_1)$  and intercept  $(I_1)$  of the center LVDT of all tests at  $77^{\circ}$ F were examined. It was found that:

- a) The values of  $S_1$  are independent of the percent air voids, the magnitude of the cyclic load and the gradation of the aggregate (see figures 5.5 and 5.6).
- b) The values of  $S_1$  are dependent on the kinematic viscosity of the asphalt (figure 5.7) and the aggregate angularity (figure 5.8). Increasing KV and ANG causes a decrease in the value of  $S_1$ .
- c) The values of  $I_1$  are independent of the kinematic viscosity of the asphalt, the aggregate angularity and the gradation of the aggregate (see figures 5.9 and 5.10).
- d) The values of  $I_1$  are dependent on both the percent air voids and the magnitude of the cyclic load as shown in figure 5.11.

For each of the curves in figure 5.11, equation 5.4 was selected to express the intercept  $(I_1)$  in term of the percent air voids (AV).

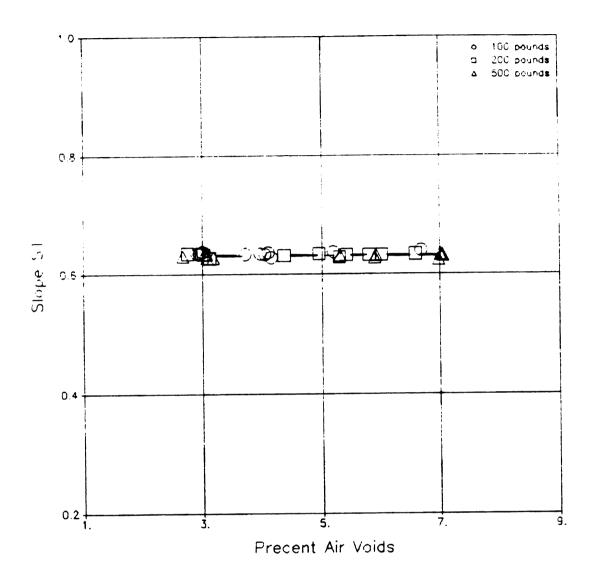


Figure 5.5 Slope of equation 5.1 versus the percent air voids for three levels of the cyclic load and a kinematic viscosity value of 270 centistoke.

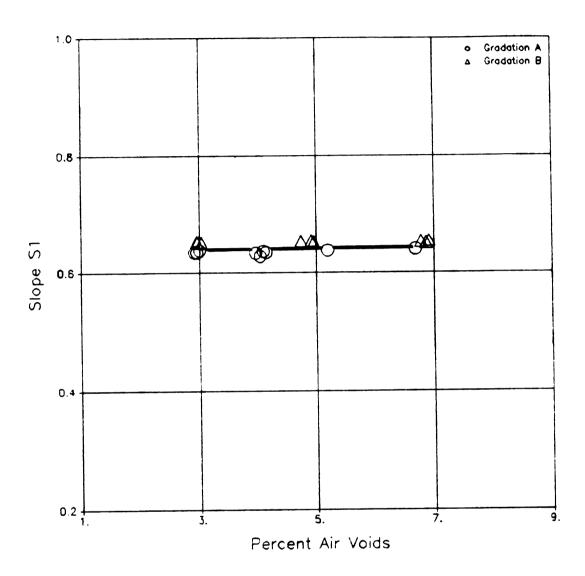


Figure 5.6 Slope of equation 5.1 versus the percent air voids for aggregate gradations A and B.

Figur

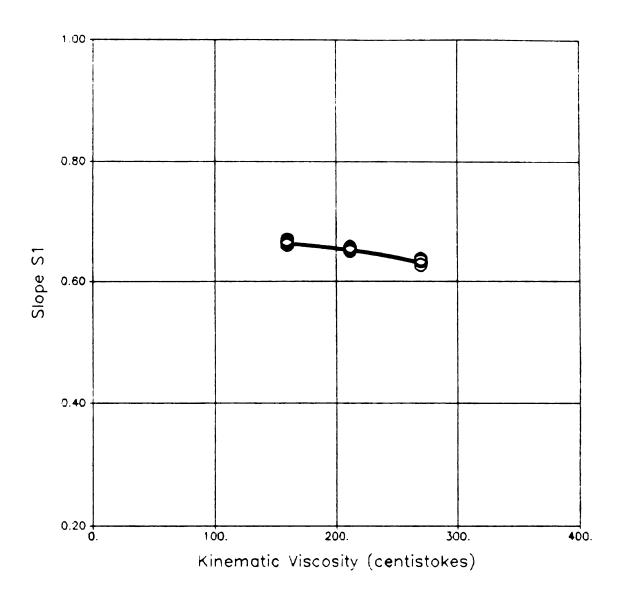


Figure 5.7 Slope of equation 5.1 versus the kinematic viscosity of the asphalt.

: 5

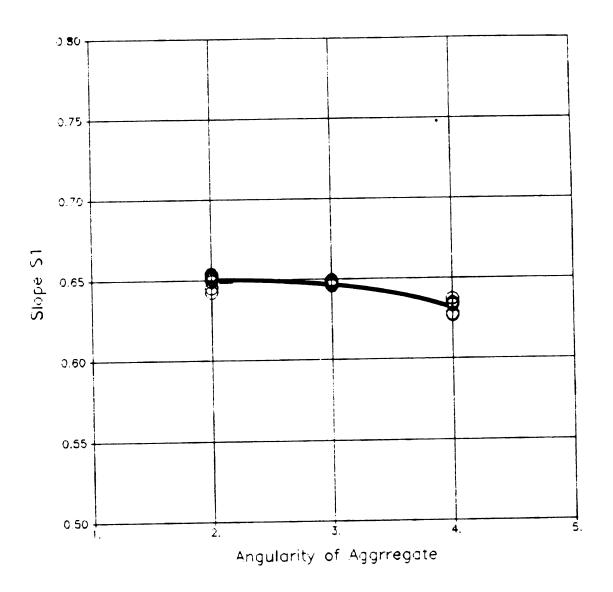


Figure 5.8 Slope of equation 5.1 versus the angularity of aggregate.

Figure

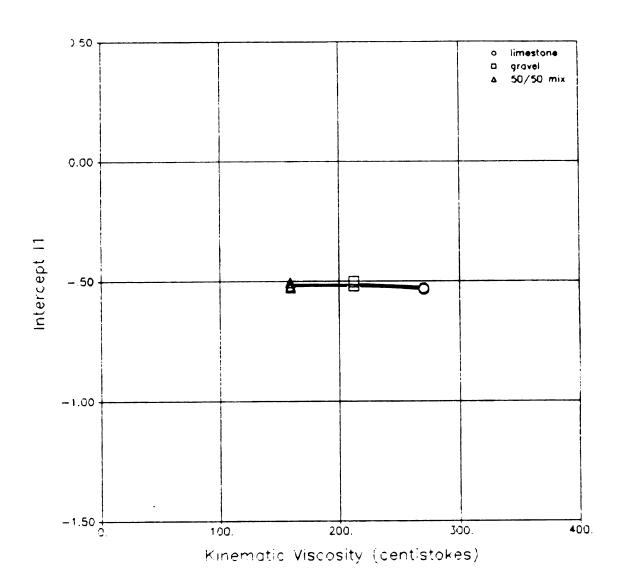


Figure 5.9 Intercept of equation 5.1 versus the kinematic viscosity for three values of the aggregate angularity.

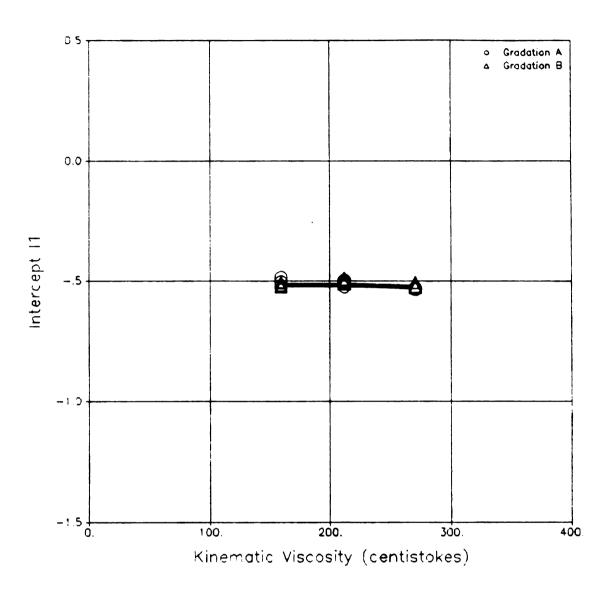


Figure 5.10 Intercept of equation 5.1 versus the kinematic viscosity for aggregate gradations A and B.

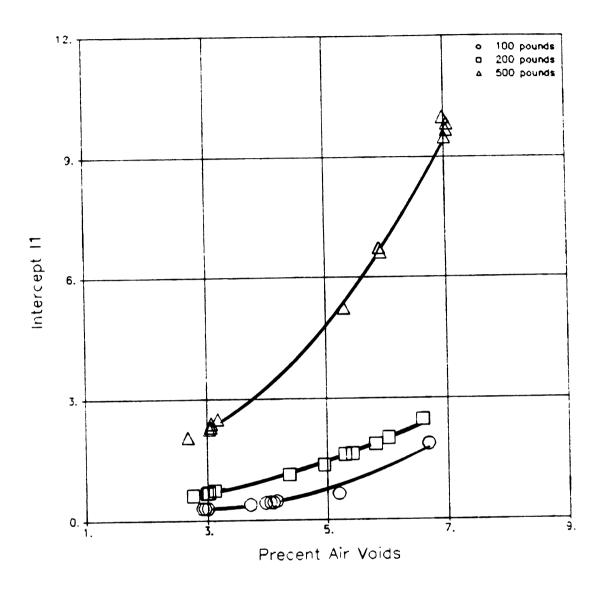


Figure 5.11 Intercept of equation 5.1 versus the percent air voids for three levels of the cyclic load and a kinematic viscosity of 270 centistoke.

$$ln(I_i) = ln(A1) + B1(AV)$$
 (5.4)

where: AV = percent air voids (AV = 3 to 7);

I = intercept of equation 5.1; and
Al and Bl are regression coefficients.

Figure 5.12 depicts the values of Al and Bl plotted against the magnitude of the applied cyclic load. It can be noted that Al is a function of the cyclic load while Bl is independent of the cyclic load. Next, the values of Al were statistically correlated to the cyclic load and the resulting equation was then substituted into equation 5.4. The last step yielded an equation of the intercept  $I_1$  in terms of the percent air voids and the cyclic load.

Similar steps were taken to model the effects of the other variables (kinematic viscosity, aggregate angularity, and cyclic load). Equation 5.5 represents the final regression equation which expresses the plastic deformations as a function of the specimen and test variables.

$$\ln(CD_1) = -7.378 + 2(CL)^{0.204} + 0.357(AV)$$

$$+ \{0.988 - 2.6237 \times 10^{-5}(KV)^{1.3986}\}$$

$$\times \{1.0557 - 0.01447(ANG)\} \times \ln(N)$$
 (5.5)

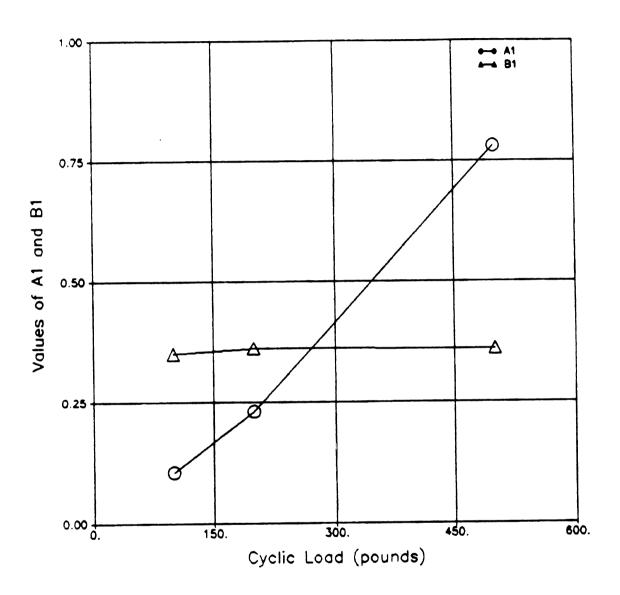


Figure 5.12 Slope and intercept (Al and B1) of equation 5.4 versus the applied cyclic load.

 $R^2 = 0.98$  and S.E. = 0.05

where: ln = natural logarithm;

CD, = permanent deformation at LVDT 1;

N = number of load applications;

CL = cyclic loads (pounds);

AV = percent air voids;

KV = kinematic viscosity (centistokes);

ANG = aggregate angularity;

R<sup>2</sup> = coefficient of determination; and

SE = standard error.

The advantage of the above procedure is that the effects of each variable can be analyzed separately. The disadvantages however are that: a) the interaction between the variables cannot be assessed due to the nature of the procedure; and b) the final equation was of second and third order. Since the objective herein is to obtain a simple procedure not a complicated mathematical equation, it was concluded that the analysis method which yields the simplest, yet accurate, equation be employed. Consequently, two other statistical methods were considered.

In spite of the above noted disadvantages of this procedure, several conclusions can be drawn from the analysis. These are:

a) The arithmetic or logarithmic values of the increment of the plastic deformation due to the first load

- application are functions of the percent air voids and the magnitude of applied cyclic load.
- b) The difference in the logarithmic (not arithmetic) values of the plastic deformation between any subsequent cycles is dependent on the aggregate angularity and the kinematic viscosity of the asphalt.

These findings, in part, support those reported by Allen and Deen (16). The implications of these findings (assuming that the laboratory behavior of compacted asphalt mixes is similar to that in the field) are:

- a) In the field, the increment of the plastic deformation at a point on the surface of the pavement caused by the first vehicle of each type of vehicle (e.g., trucks, semi, cars) trafficking that pavement should be independently measured.
- b) The equivalent value of S for any pavement section can be obtained by knowing the number of load applications (N) and by measuring the plastic deformations (rut depth) at any two points in time.
- c) The equivalent value of the slope (S) is the same for any one pavement section trafficked by trucks, automobiles, or any mixed traffic.
- d) The damage delivered to a pavement section by different type of vehicles can be assessed by knowing the plastic deformation caused by the first vehicle of each type of vehicle trafficking that

pavement section (item a) and the value of S (item b). The cumulative damage due to any number of passages is related to the magnitude of CD which can be estimated using equation 5.5. If the value of I is not measured prior to opening the pavement section to mixed traffic then the assessment of the damage due to different vehicular types becomes very tedious and involved.

# 5.4.2 GENERAL EQUATION

In this procedure, unlike the separation of variables, the entire data base is utilized to correlate the dependent and all independent variables based on a user specified equation form. The outcome of the analysis includes a tabulation of the regression coefficient(s) for each independent variable, and the coefficients of determination and standard error of the entire equation. The disadvantages of this method are:

- a) Separate analysis of the resulting equation should be conducted to determine the most significant variable.
- b) All variables, important or not, are included in the correlation equation.

Item b above implies that the user of the computer program should possess prior knowledge, and/or estimate, of the variables that affect the test results. Further, the inclusion of one or more variables in the equation may or

may not mean that the variable(s) do affect the test results. It may simply mean that the two sets of number are statistically related and the physical meaning of the resulting equation still needs to be examined. Nevertheless, the method, in general, yielded an equation very similar to that obtained in another method "Stepwise Correlations" except that the order of the variables in the resulting equations were different. In the general equation method. the order of the variables were the same as those dictated by the user. The variables in the resulting equation from the stepwise correlation were listed in their order of significance. This last procedure is presented in the next section.

## 5.4.3 STEPWISE CORRELATIONS

In this procedure, first, all available data (e.g. permanent deformation) and the corresponding identified variables were first entered into the memory of a microcomputer. The dependent and independent variables were then correlated using a multivariate regression program (SPSS/PC+). Unlike the general equation method, the independent variables are separately entered in several steps. In the first step, the first variable considered for entry into the equation is the one with the largest positive or negative correlation with the dependent variable. An F test is then conducted for the null hypothesis that the

coefficient of the entered variable is 0. To evaluate whether this variable (and each succeeding variable) should be used, the F value is compared to an established criterion (minimum value of 3.84). If the variable fails to meet this the procedure terminates with no independent criterion. variables in the equation. If it passes the criterion, the second variable is selected based on the highest partial correlation. If it passes the entry criterion, it also enters the equation. After each step of entering a variable, the variables already in the equation are examined for removal based on the removal criterion (minimum value of statistic of 2.71). Again, from each step, new regression matrix (regression coefficients and the coefficients of determination and standard error) was obtained. Variables that did not have a significant level higher than 0.05 percent relative to the previous variable were not included in the final equation. The advantages of this method are:

- In each step, the variables in the equation are listed in the order of their significance and a regression matrix was produced.
- . The interaction between variables can be assessed by comparing the values of the regression constants from two consecutive regressions and partial correlation matrices.
- . The method produced the simplest possible, yet

accurate, equation.

Like the general equation method and any other statistical analyses, the physical meaning of the resulting correlation equation still has to be assessed by the user. Further, a sensitivity analysis of the final equation has to be conducted to assess the rate of change of the values of the dependent variable due to changes in the values of each independent variable with all others held constant.

Due to the above stated advantages, this method was employed for the statistical analysis of all test results. It should be noted that during the analysis several transformation forms (logarithmic, semi-logarithmic, and arithmetic) were employed for the dependent and each of the independent variables. The final selection of the transformation form was based upon:

- . Physical interpretations of the test results.
- . Simplicity of the resulting equation.
- . High value of the coefficient of determination  $(\mathbb{R}^2)$  of the resulting equation.
- Examination of the residuals in order to satisfy the assumptions of the linear regression (independency, constant variance, and normality of residuals).

It should also be noted that the selection of the final form of the dependent variable based only on the value of  $R^2$  may be misleading. Variations in the logarithmic values of any variable are naturally less than those of the arithmetic

values.

Nevertheless, the analysis and discussion of the test results are presented in the following section.

## 5.5 ANALYSIS OF PERMANENT DEFORMATION

The measured plastic deformations at the center of each beam specimen were correlated to the test, mix, and specimen variables using a stepwise linear multivariate regression program SPSS/PC<sup>+</sup> (77). The resulting regression matrices for beam specimens tested at 77°F and those at 40°F are listed in tables 5.1 and 5.2, respectively. Equations 5.6 and 5.7 are the corresponding regression equations.

For 77°F:

$$ln(CD_1) = -7.145 + 0.6481 \times ln(N) + 1.250 \times ln(CL)$$
  
+ 0.3618 x AV - 0.002578 x KV  
- 0.08064 x ANG (5.6)

$$R^2 = 0.99$$
 and  $SE = 0.07$ 

where: all variables are as before.

For 40°F:

$$ln(CD_1) = -1.04940 + 0.2970 \times ln(N) + 0.3854 \times AV$$
  
+ 0.2855 x ln(CL) - 0.001270 x KV  
- 0.02137 x ANG (5.7)

Table 5.1. Regression matrix for the cumulative plastic deformations under the loaded area, flexural beam tests at 77 °F.

plastic defor- mation,	Inter- cept	Regression coefficients of the independent variables						C P
CD1	-	ln(N)	ln(CL)	(AV) (10 <sup>-1</sup> )	(KV) (10 <sup>-3</sup> )	(ANG)	R <sup>2</sup>	SE
		(10 <sup>-1</sup> )				(10 <sup>-2</sup> )		
· · · · · · · · · · · · · · · · · · ·	0.822	6.026	-	-	-	-	0.63	1.03
	-6.310	6.341	1.281	•	-	-	0.88	0.60
ln(CD1)	-8.006	6.465	1.242	3.665	-	-	0.99	0.14
	-7.426	6.474	1.246	3.637	-2.445	-	0.99	0.10
	-7.145	6.481	1.250	3.618	-2.578	-8.064	0.99	0.07
ln	= natura	l log:			<del></del>			

ln = natural log;

CD1 = plastic deformation (inches  $\times 10^{-4}$ );

N = number of load applications;

CL = cyclic loads (100, 200 and 500 lbs);

AV = percent air voids;

KV = kinematic viscosity (centistokes);

ANG = aggregate angularity;

R<sup>2</sup> = coefficient of correlation; and

SE = standard error.

Table 5.2. Regression matrix for the cumulative plastic deformations under the loaded area, flexural beam tests at 40 °F.

plastic defor- mation,	Inter- cept	Regression coefficients of the independent variables						SE
CD1	_	ln(N)	(AV)	ln(CL)	(KV)	(ANG)	R <sup>2</sup>	01
		(10 <sup>-1</sup> )	(10 <sup>-1</sup> )	(10 <sup>-1</sup> )	(10 <sup>-3</sup> )	(10 <sup>-2</sup> )		
	1.6967	2.938	-	-	-	•	0.82	0.40
	0.2689	2.945	3.463	-	_	-	0.95	0.20
ln(CD1)	-1.3570	2.970	3.667	2.868	=	-	0.99	0.07
	-1.1891	2.970	3.998	2.863	-1.245	-	0.99	0.05
	-1.0494	2.970	3.854	2.855	-1.270	-2.137	0.99	0.05
ln CD1	= natural log; = plastic deformation (inches x10 <sup>-4</sup> ); = number of load applications:							

= number of load applications;
= cyclic loads (100, 200 and 500 lbs); CL

= percent air voids; ΑV

= kinematic viscosity (centistokes);
= aggregate angularity; KV

AŊG

= coefficient of correlation; and

SE = standard error.  $R^2 = 0.99$  and SE = 0.05

where: all variables are as before.

It should be noted that the variables in tables 5.1 and 5.2, and in equations 5.6 and 5.7 are listed in their order of significance.

The sensitivity of the arithmetic (not logarithmic) values of  $CD_1$  of equations 5.6 and 5.7 was determined. It was found that:

- a) N is the most significant variable affecting  $CD_1$  at 77 and  $40^{\circ}F$ . Increasing N from 1 to 100,000 cycles causes an increase in the arithmetic value of  $CD_1$  by a factor of 1735 at  $77^{\circ}F$  and by a factor of 30 at  $40^{\circ}F$ .
- b) CL is the second-most significant variable affecting the values of  $CD_1$  at  $77^{\circ}F$ , and the third-most significant at  $40^{\circ}F$ . Increasing CL from 100 to 500 pounds causes an increase in  $CD_1$  at  $77^{\circ}F$  by a factor of 7.5 and at  $40^{\circ}F$  by a factor of 1.6.
- c) The effect of AV on  $CD_1$  at  $77^{\circ}F$  is slightly lower than that at  $40^{\circ}F$ . Increasing AV from three to seven results in increasing  $CD_1$  by factors of 4.3 and 4.7 at 77 and  $40^{\circ}F$ , respectively.
- d) The effect of KV on  $CD_1$  at  $77^{\circ}F$  is higher than that at  $40^{\circ}F$ . Increasing KV from 159 to 270 centistokes causes a decrease in  $CD_1$  by factors of 0.75 and 0.87

at 77 and 40°F, respectively.

e) The effects of aggregate angularity on  $CD_1$  at  $77^{\circ}F$  is also higher than that at  $40^{\circ}F$ . Using angular (crushed) aggregates instead of rounded ones results in a decrease in the value of  $CD_1$  by factors of 0.91 and 0.97 at 77 and  $40^{\circ}F$ , respectively.

It should be noted that the gradation term, which has only two levels, is eliminated for both equations 5.6 and 5.7 during the stepwise procedure because of its insignificant effects on the results of permanent deformation. This finding is consistent with that reported by Kalcheff, et. al. (46).

The above observations imply that plastic deformation (rut potential) of compacted asphalt mixes is a function of the number of cycle, the magnitude of applied cyclic load, the percent air voids, the kinematic viscosity of asphalt, and the aggregate angularity and it can be reduced by using a lower percent air voids in the mix and a higher viscosity graded asphalt. Further, heavy vehicles cause higher rut potential (item b) and, from equations 5.6 and 5.7, it can be also noted that a lower temperature results in less rutting. These test temperature effects on the permanent deformation are also reported in the literature (40, 42, 45, 47, 50, 53, 55, 73, 76, 78, 79, 83, 86).

It should be noted that the values of the coefficient of determination of equations 5.6 and 5.7 are artificially high

because they relate to the correlation between the logarithmic values of the dependent and independent variables. Variations in the arithmetic values are much higher. This point can be illustrated by considering the regression matrix in table 5.1. The value of the coefficient of determination ( $\mathbb{R}^2$ ) in the third step of the analysis (in which  $\mathrm{CD}_1$  is correlated to N, CL, and AV) is 0.99. This value of  $\mathbb{R}^2$  may incorrectly indicate that the other two variables (KV and ANG) have no significant effects on  $\mathrm{CD}_1$ . Arithmetic values of  $\mathrm{CD}_1$  estimated using the third step of table 5.1 varied by as much as thirty-two percent from the measured values. It is clear that a value of  $\mathbb{R}^2$  of 0.99 does not reflect this variation.

The accuracy of equations 5.6 and 5.7 was examined relative to the measured values of  $CD_1$ . It was found that the maximum differences between the arithmetic values of  $CD_1$  estimated using equations 5.6 and 5.7 and the measured values are 7 and 9 percent, respectively.

After determining equations 5.6 and 5.7, the test results at 77 and  $40^{\circ}$ F were combined in one analysis which included the test temperature as one of the independent variables. In this analysis, it was assumed that a semilogarithmic relationship exists between CD1 and the test temperatures. This assumption was necessary because only two values (77 and  $40^{\circ}$ ) of the test temperature were used in this study. Table 5.3 summarizes the resulting regression

matrix of this analysis. Equation 5.8 is the corresponding equation.

$$ln(CD_1) = -8.543 + 0.5459 \times ln(N) + 0.04110 \times TT$$
  
+ 1.0399 x ln(CL) + 0.3650 x AV - 0.001950 x KV  
- 0.07417 x ANG (5.8)

It can be noted that the disadvantage of this analysis is the loss of accuracy of the equation relative to equations 5.6 and 5.7. The reason for this is that the effects of the test and specimen variables (AV, CL, KV, and ANG) are also dependent on the test temperature. These effects can only be modeled by using a complex nonlinear transformation which is not practical. Nevertheless, the maximum arithmetic difference between the estimated values of CD<sub>1</sub> using equation 5.8 and the measured values were 30 percent for the 77°F tests and 45 percent for the 40°F tests. These differences were only 7 and 9 percent for equations 5.6 and 5.7, respectively. Hence, it is concluded herein that equations 5.6 and 5.7 are more reliable than equation 5.8 and therefore they were used to study variations of the values of CD<sub>1</sub> due to variations in the values of the

Table 5.3 Regression matrix for the cumulative plastic deformations under the loaded area, flexural beam tests at 77 and 40 F.

plastic defor- mation,	cept	Regression coefficients of the independent variables						R <sup>2</sup>	SE
CD1		ln(N)	TT	ln(CL)	(AV)	(KV)	(ANG)	•	-
		(10 <sup>-1</sup> )	(10 <sup>-2</sup> )	)	(10 <sup>-1</sup> )	(10 <sup>-3</sup> )	(10 <sup>-2</sup> )		
	1.597	4.638	-	-	-	•	-	0.45	1.23
•	-2.324	5.145	5.017	-	-	-	-	0.64	0.99
ln(CD1)	-8.058	5.356	4.873	1.057	-	-	-	0.82	0.71
•	-9.232	5.451	4.088	1.036	3.684	-	-	0.92	0.46
•	-8.839	5.455	4.096	1.036	3.708	-1.705	-	0.93	0.45
•	-8.543	5.459	4.110	1.040	3.650	-1.950	-7.417	0.93	0.45
<pre>In = natural log; CD1 = plastic deformation (inches x10<sup>-4</sup>); N = number of load applications; TT = test temperature (F); CL = cyclic loads (100, 200 and 500 lbs); AV = percent air voids; KV = kinematic viscosity (centistokes); ANG = aggregate angularity; R = coefficient of correlation; and SE = standard error.</pre>									

independent variables. Similar equations were also obtained for plastic deformations measured at different lateral distances from the edge of the loaded areas (CD2, CD3, and CD4). It was noted, however, that expressing these measurements (CD2, CD3, and CD4) in terms of CD<sub>1</sub> and the lateral distance from the edge of the loaded area would provide a better understanding of the plastic shape (basin) of the beam specimens. It should be noted that the plastic basin of the beam specimen is analogous to the shape of the rut channel of a pavement section. The analysis of the plastic basin is presented in the next section.

# 5.6 ANALYSIS OF PERMANENT DEFORMATION USING DEFLECTION BASIN The plastic basin of each beam specimen was modeled using the following equation:

$$CD(X) = (CD_1)(EXP(A \times X^B))$$
 (5.9)

x = lateral distance from the edge of the
loaded area, (X=2, 4, and 6.06 inch);

EXP = exponential function;

A and B = parameters of the plastic basin; and

## all else are as before.

The A and B parameters of equation 5.9 may be regarded descriptors of the distribution of plastic deflection from the edge of the loaded area. For example, if B is equal to two, equation 5.9 resembles the normal distribution with A being proportional to the variance. Thus, as might be changes in the values of A and B of a beam expected. specimen (or in this sense, of a pavement section) reflect changes in the distribution of the plastic deflections (shape of the rut depth or the shape of the plastic deflection basin) and consequently, the distribution of the damage (distress) delivered to that specimen or pavement section. Further, the shape of the plastic deflection basin can be generally defined by its width (extent of lateral spread from the edge of the loaded area) and its depth. width of the basin (the lateral spread) may be thought of as a measure of the stored energy and its lateral attenuation in the beam. For example, narrower and deeper basins indicate concentration of energy in the vicinity of the loaded area. These observations gave rise to the use of the A and B parameters as indicators of the beam performance under the load.

For each beam and for different number of load applications, closed form solutions of equation 5.9 were obtained and the values of the parameters A and B were

calculated. These values, for all beam specimens, are tabulated in Appendix C. It should be noted that each solution was based on the measured values of  $CD_1$ ,  $CD_2$ , and  $CD_3$  and their corresponding lateral distances of 0.-, 2.-, and 4.-in, respectively. The values of  $CD_4$  were not used because, at low number of load applications, these values were small and in the range of the accuracy of the LVDT. The values of the parameters A and B were then statistically correlated to the number of load applications and to the test, mix and specimen variables. The regression matrices for A and B at  $77^{\circ}F$  are summarized in tables 5.4 and 5.5, respectively. The regression matrices for A and B at  $40^{\circ}F$  are summarized in tables 5.6 and 5.7, respectively. Equations 5.10 through 5.13 are the corresponding equations.

For 77°F:

$$A = -0.3298 - 0.07093 \times AV - 0.009660 \times ln(N)$$
$$- 0.00004082 \times CL + 0.004319 \times ln(KV)$$
(5.10)

 $R^2 = 0.99$ , and SE = 0.06

 $B = 0.2650 + 0.04041 \times ln(N) + 0.0002969 \times CL$ 

 $-0.0001458 \times KV + 0.001756 \times AV$ 

 $-0.0005330 \times ANG$  (5.11)

Table 5.4 Regression matrix for the parameter A of the plastic deflection basin of the surface of the beam at 77 °F.

para- meter A	Inter- Regression coefficients of cept the independent variables							SE	
		AV	AV ln(N) CL ln(KV) ANG						
	(10 <sup>-1</sup> )	(10 <sup>-2</sup> )	(10 <sup>-3</sup> )	(10 <sup>-5</sup> )	(10 <sup>-3</sup> )				
	-3.980	-7.038	-	-	-	-	0.96	0.02	
A	-3.182	-7.111	-9.390	-	_	-	0.99	0.01	
	-3.061	-7.095	-9.651	-4.065	-	-	0.99	0.06	
	-3.298	-7.093	-9.660	-4.082	4.319	-	0.99	0.06	

Table 5.5 Regression matrix for the parameter B of the plastic deflection basin of the surface of the beam at 77 °F.

para- meter B	Inter- cept		Regression coefficients of the independent variables						
		ln(N)	ln(N) CL KV AV ANG						
	(10 <sup>-1</sup> )	$(10^{-2})$	$(10^{-4})$	(10 <sup>-4</sup> )	(10 <sup>-3</sup> )	(10 <sup>-4</sup> )	)		
	3.332	3.833	-	-	-	_	0.74	0.05	
В	2.375	4.028	2.963	-	-	-	0.99	0.10	
	2.728	4.034	2.974	-1.476	-	. •	0.99	0.07	
	2.631	4.041	2.968	-1.450	1.766	-	0.99	0.06	
	2.650	4.041	2.969	-1.458	1.756	-5.330	0.99	0.06	

ln = natural log;

CD1 = plastic deformation (inches  $x10^{-4}$ );

N = number of load applications;

CL = cyclic loads (100, 200 and 500 lbs);

AV = percent air voids;

KV = kinematic viscosity (centistokes);

ANG = aggregate angularity;

R' = coefficient of correlation; and

SE = standard error.

Table 5.6 Regression matrix for the parameter A of the plastic deflection basin of the surface of the beam at 40 °F.

para- meter A	Inter- cept	Regression coefficients of the independent variables	SE
		ANG ln(N) ln(KV) AV CL	
		$(10^{-1})$ $(10^{-2})$ $(10^{-1})$ $(10^{-1})$	
	-1.779	3.0437 0.1	8 0.56
A	-1.096	3.584 -8.785 0.3	3 0.50
	-5.336	4.720 -8.811 7.113 0.3	8 0.49
	-4.973	2.806 -10.193 9.890 -2.678 - 0.4	2 0.47

Table 5.7 Regression matrix for the parameter B of the plastic deflection basin of the surface of the beam at 40 °F.

para- meter B		Regression coefficients of the independent variables						SE
В	•	ANG	CL	AV	ln(KV)	ln(N)	R <sup>2</sup>	01
		(10 <sup>-1</sup> )	(10 <sup>-4</sup> )	(10 <sup>-1</sup> )				
	-0.041	1.723	-	-	-	•	0.03	0.79
В	0.164	1.805	-9.033	•	•	-	0.07	0.77
	-1.366	3.760	-9.102	2.144	-	-	0.09	0.77
In CD1 N CL AV KV ANG R	= natural = plastic = number = cyclic = percent = kinemat = aggrega = coeffic = standar							

$$R^2 = 0.99$$
, and  $SE = 0.06$ 

For 40°F:

$$A = -4.973 + 0.2806 \times ANG - 0.10193 \times ln(N)$$
  
+ 0.9890 x ln(KV) - 0.2678 x CL (5.12)

$$R^2 = 0.42$$
, and  $SE = 0.47$ 

$$B = -1.366 + 0.3760 \times ANG - 0.0009102 \times CL$$
  
+ 0.2144 × AV (5.13)

$$R^2 = 0.09$$
, and  $SE = 0.77$ 

where: all variables are as before.

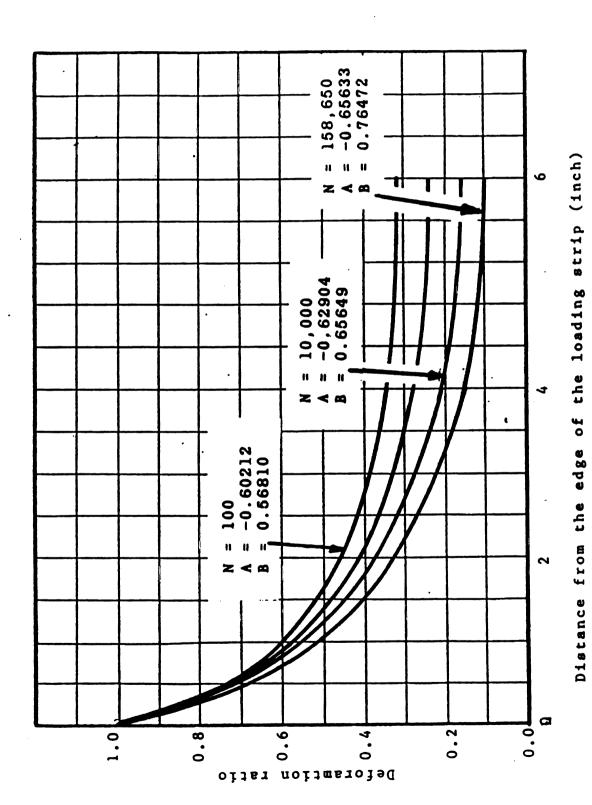
Examinations of the values of the regression coefficients and the coefficient of determinations of equations 5.10 through 5.13 indicated that:

. There is little or no correlation between the values of A and B at  $40^{\circ}$ F and the specimen and test variables. The values of A and B seem to be random and inconsistent. The reason for this is that, for most

tests at 40°F, the values of the measured plastic deformation under the center of the loaded area were very small and those of CD<sub>2</sub> and CD<sub>3</sub> were within the accuracy of the LVDT(s) (0.0001-in.). Plastic deformations of beam specimens tested using 100, or 200 pounds cyclic load were less than 0.0004-in under the point of load application and less than 0.0001-in at a point 4-in away.

- The shape of the plastic deflection basin at 77°F changes with increasing number of load applications. At the start of the test, the basin is shallow and flat; it gets deeper and steeper as the number of load applications increases (see figure 4.4.)
- The effect of N on the values of B at 77°F is higher and opposite to its effect on A. Increasing N from 1 to 100,000 cycles causes a decrease in the value of A by 0.1112, and an increase in the value of B by 0.4652.
- . At 77°F, the effects of AV and KV on the values of the parameter A are higher than those on B. Indeed, AV is the most significant variable affecting A while it is the fourth-most significant for B.
- . Increasing the values of AV and CL cause deeper and steeper deflection basins.
- . Increasing the values of KV and ANG result in shallower and flatter deflection basins.

The significance of the above observations and the values of the parameters A and B can be illustrated with the aid of figure 5.13. The figure shows schematic representation of typical plastic deflection basins with corresponding relative values of the number of load applications (N) the relative values of the A and B parameters. It can seen that higher values of N cause higher values of the B parameter, smaller values of the A parameter, and deeper Implicit in this is that a higher N causes a more rapid lateral attenuation of energy, and a deeper plastic deflection basin. Thus, at the higher number of load applications, more work is done to the beam in the vicinity of the loaded area. Consequently, greater distress might be expected to occur with fewer number of load applications. Visual observations of beam specimens subjected to cyclic loading tend to confirm this. Specimens which showed smaller values of A and higher values of B failed at a fewer number of load applications. The reason for this is that, for the same value of  $CD_1$ , a steeper plastic deflection basin implies a higher tensile plastic strain. The higher the cumulative tensile plastic strain, the closer the beam approaches fatigue failure. Indeed, during the tests at 77°F, it was noticed that hair-size cracks were initiated when the value of CD, is about 30 percent of CD, or when the value of CD, approaches 0.45 inches. These values were 7 percent and 0.1-in for the 40°F tests. Shortly thereafter,



basin of the beam specimen at 77°F and for different Figure 5.13 Schematic representation of the plastic deflection number of load applications.

the beam failed. The definition of the fatigue life of the beam specimens presented in section 5.6 was based upon these observations. It should be noted that the values of 30 and 7 percent are just approximate values based upon visual observations. For example, the thirty percent value could be a function of the mix variables such as KV, AV and others. Indeed, the only difference between tests conducted at 40°F and 77°F is the kinematic viscosity of the asphalt bitumen. This scenario indicates that lower viscosity asphalts yield smaller values for the ratio  $CD_2/CD_1$ . The functional relationship between the viscosity of the asphalt and the value of the deflection ratio however, could not be determined in this study.

The above scenario implies that the fatigue life of the beam specimen can be estimated using either equations 5.6 and 5.7 or equations 5.9, 5.10 and 5.11. Eventually, only one fatigue life will be estimated, the one that corresponds to the smallest of the number of load applications obtained from equations 5.6 and 5.7 or equations 5.9, 5.10, and 5.11. Equations 5.12 and 5.13 were not used because of their poor accuracy. The procedures to estimate the fatigue life are explained in the following section.

# 5.7 FATIGUE LIFE

Traditionally, stress- or strain- controlled flexural tests are conducted using simply supported beams flexed in

one or two directions. Beam theory is then used to calculate the stiffness of the beam assuming that the neutral axis of the beam (the axis along which the strain is zero) located at mid-height of the beam. In addition, fatigue life is defined by the number of load applications at which the stiffness of the beam decreases to half of its original value (26). In this study, beam specimens were continuously supported during the tests by a rubber pad which was rested on a steel block. This boundary condition was thought to better reflect field conditions than simply supported beams. During early tests, however, it was noticed that the neutral axis of the continuously supported beam was closer to the top of the beam. This implies that the asphalt mix behavior in tension is different than that in compression. the deflected shape of the continuously supported beam (shown in figure 5.14) was similar to the shape of the deflected pavement under actual traffic loading. These two observations gave rise to a new problem. That is, the use of the traditional beam theory to analyze the test data and to extract the fatigue life of the test specimens is not adequate because of the assumptions involved in the theory.

Nevertheless, laboratory fatigue-life data of asphalt mixes has been accumulated in large quantities. These fatigue life data of asphalt mixes are traditionally plotted as stress or strain amplitude versus the resulting fatigue life expressed by the number of load application to fatigue

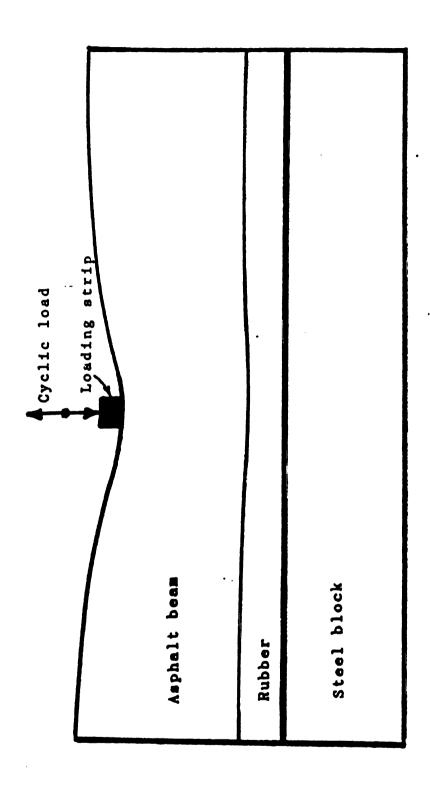


Figure 5.14 Schematic representation of the deflected shape of the beam specimen.

failure. For asphalt mixes, as for most materials, fatigue life steadily increases with decreasing stress or strain amplitude until the stress or strain level of the fatigue limit is reached. In general, stresses at or below the fatigue limit cause only elastic strains and the fatigue life becomes infinitely long. Regardless of the applied stress, it should be noted that cyclic plastic strain is ultimately responsible for fatigue damage and the consequent fatigue failure. In fact, a perfectly elastic material will never experience any fatigue damage regardless of the number of load applications.

As noted above, due to the shape of the plastic deflection basin, beam theory is inadequate and it cannot be used for data analysis. Also, the behavior of the short and square specimens would be expected to deviate significantly from the elementary beam theory that is only valid for relatively long and slender beams. Hence, the traditional definition of fatigue life based on the reduction in the value of the initial stiffness modulus is not applicable in this study. Consequently, a new definition of fatigue life was established as follows: The fatigue life of asphalt mixes tested in flexure is defined by the smaller of the number of load applications at which:

a) The measured total cumulative plastic deformation under the load reaches values of 0.45- and 0.10-inches for tests conducted at 77 and 40°F,

respectively (equations 5.6 and 5.7).

b) The measured total cumulative plastic deformation at a point two inches away from the edge of the loaded area reaches a value of about 30 and 7 percent of that under the load for tests conducted at 77 and 40°F, respectively (equations 5.9, 5.10, and 5.11).

It should be noted that the above definition is based on visual observations of the beam specimens which showed the initiation of hair-size cracks at the stated number of load applications.

The estimations of fatigue life based upon the above two definitions are presented and discussed in the following sections.

# 5.7.1 Fatique Life: Total Plastic Deformation

In this method, the fatigue life ( $N_{FL}$ ) of each beam specimen was estimated using equation 5.6 or 5.7 to calculate the value of N that corresponds to a value of  $CD_1$  of 0.45- or 0.1-in for the 77 and 40  $^{\rm O}F$  tests, respectively.

For 77°F:

$$N_{FL} = EXP{24.0032 - 1.9281 \times ln(CL) - 0.5583 \times AV} + 0.004278 \times KV + 0.07196 \times ANG}$$
 (5.14)

For 40°F:

$$N_{FL} = EXP(26.7928 - 1.2976 \times AV - 0.96121 \times ln(CL) + 0.004278 \times KV + 0.12442 \times ANG)$$
 (5.15)

where: N<sub>FL</sub> = number of load applications to fatigue failure; and

all other parameters are as before.

A summary of the values of  $N_{\rm FL}$  for all beam specimens along with the values of the test and specimen variables and the values of the ratio of  ${\rm CD_2}$  to  ${\rm CD_1}$  is tabulated in Appendix D.

Examination of the fatigue life listed in Appendix D and equations 5.14 and 5.15 indicated that:

- a) Increasing the magnitude of the cyclic load from 100 to 500 pounds (50 to 250 psi) results in a decrease of fatigue life by factors of about 22 and 5 for the 77 and 40°F tests, respectively.
- b) Increasing the percent air voids from three to seven yields a decrease in the fatigue life by factors of 9 and 180 for the 77 and 40°F tests, respectively.
- c) Increasing the kinematic viscosity of the asphalt binder from 159 to 270 centistokes causes an increase of the fatigue life by a factor of about 1.6 for all tests at 77 and 40°F. It should be noted that field

data does not support this observation and it indicates that higher viscosities yields lower fatigue life (higher crack potential). The reason for the difference between the laboratory and field data could be attributed to the nature of the definition of fatigue life. Recall that the fatigue life is defined by the value of N at which CD<sub>1</sub> is 0.45-in. A constant value of CD<sub>1</sub> of 0.45-in for all beams may not be reasonable. Unfortunately, visual observation of hair cracks is difficult and inaccurate. Hence, discrepancy in the data should be expected.

- d) The fatigue life of asphalt mixes made using crushed aggregate is longer than those made using rounded aggregate by factors of about 1.2 and 1.3 for tests at 77 and 40°F, respectively.
- e) The variations of the fatigue life, estimated from the equations, for the most favorable and the most unfavorable combinations of the test and specimen variables are from 3,500,000 to 9,000 cycles for all tests at 77°F; and from 75,000,000,000 to 22,000,000 cycles for the 40 °F tests.
- f) Although the value of  ${\rm CD}_1$  for all beams is 0.45 inches, the value of the ratio of  ${\rm CD}_2$  to  ${\rm CD}_1$  varies and it depends upon the specimen and test variables. Thus using a constant value of  ${\rm CD}_1$  of 0.45 does not necessarily mean that the deflection basin is the



same for all beam specimens.

The implications of the above observations based upon the definition of fatigue life are that:

- Fatigue life of asphalt mixes can be increased by using higher viscosity asphalts, angular aggregates, and lower percent air voids in the mix.
- 2) The effect of the percent air voids on the fatigue life of asphalt mixes subjected to cyclic loads in cold regions (e.g., Michigan, Minnesota) is much higher than that in moderate climates (e.g., Arizona, Florida).
- 3) Temperature is the most important factor affecting the fatigue life of asphalt mixes.

It should be noted that the above findings do not mean that fatigue life of asphalt pavement in a cold region is higher than that of a compatible pavement in a moderate region. The cyclic strain caused by environmental changes should be assessed before such a conclusion can be made. Indeed, there is ample evidence indicating that cyclic plastic strains due to freeze-thaw cycles are much higher than those caused by traffic loads.

Further, the values of the fatigue life listed in Appendix D are expected to be much lower than those expected in the field. The reasons for this include:

1) The beam specimens were loaded using a loading strip that is fixed in one position during the entire test. In the field, the wheel path is not fixed in one position for all vehicles. Traffic tends to weave close and away from the pavement edge (lateral wander or lateral placement). Hence, a point on the surface of the pavement will not always be located under the tire of each passing vehicle.

2) The beam specimens were loaded at the edge. The number of vehicles which travel at the edge of an inservice pavement is much lower than the total number of vehicles traveling that pavement.

To relate the laboratory fatigue life to that of inservice pavements, a study of the lateral weaving, and the edge effects should be conducted. For example, if one assumes that a point located on the surface of the pavement is subjected to direct load 50 percent of the time, and that the edge effects shorten the fatigue life by a factor of two, then it should be expected that the laboratory fatigue lives listed in Appendix D are shorter than the actual fatigue life of the pavement by, at least, a factor of four. Actual fatigue life data of inservice pavements should help the engineer to relate laboratory results to field conditions.

In addition, the observation in item f above is very important, and was to be expected. The value of the ratio of  ${\rm CD}_2$  to  ${\rm CD}_1$  can be regarded as a measure of the tensile strain. The lower the ratio, the steeper is the deflection

basin, and the higher is the tensile strain. The value of the tensile strain at failure varies and is dependent upon the test and specimen variables. Hence, one may expect that the value of the ratio of  $\mathrm{CD}_2$  to  $\mathrm{CD}_1$  is also a function of the same variables. To verify this, a statistical correlation between the ratio of  $\mathrm{CD}_2$  to  $\mathrm{CD}_1$  at 77  $^{\mathrm{O}}\mathrm{F}$  (listed in Appendix D) and the test and specimen variables was conducted. This resulted in the following equation.

$$ln(CD_2/CD_1) = -0.89264 - 0.09375 \times AV + 0.00005105 \times CL$$
  
- 0.004896 × ANG - 0.00004482 × KV (5.16)

where all variables are as before.

Sensitivity analysis of equation 5.16 indicated that:

- a) The percent air voids (AV) in the mix is the most significant variable affecting and  $CD_2/CD_1$ . Increasing AV from three to seven yields a decrease in the values of  $CD_2/CD_1$  by a factor of 1.45.
- b) The values of CD<sub>2</sub>/CD<sub>1</sub> is affected by the magnitude of the cyclic load. Increasing the magnitude of CL from 100 to 500 pounds causes an increase in the ratio of CD<sub>2</sub>/CD<sub>1</sub> by a factor of 1.02.
- c) Using crushed aggregate causes a decrease in the values of  ${\rm CD_2/CD_1}$  by a factor of 1.01 relative to rounded aggregate.



d) Increasing kinematic viscosity causes a decrease in the values of CD<sub>2</sub>/CD<sub>1</sub> by a factor of 1.005.

The above observations support the concept that the ratio of  ${\rm CD}_2/{\rm CD}_1$  is a measure of the tensile strain in the beam. It should be noted that a decrease in the values of  ${\rm CD}_2/{\rm CD}_1$  causes a decrease in the fatigue life. Item b was also expected because the shape of the deflected beam is load dependent. Higher loads cause steeper deflection basins.

Finally, figure 5.15 depicts the fatigue life of beam specimens (using equation 5.14 for  $77^{\circ}F$ ) as a function of the applied cyclic stress. A similar plot can be obtained for the  $40^{\circ}F$  tests using equation 5.15.

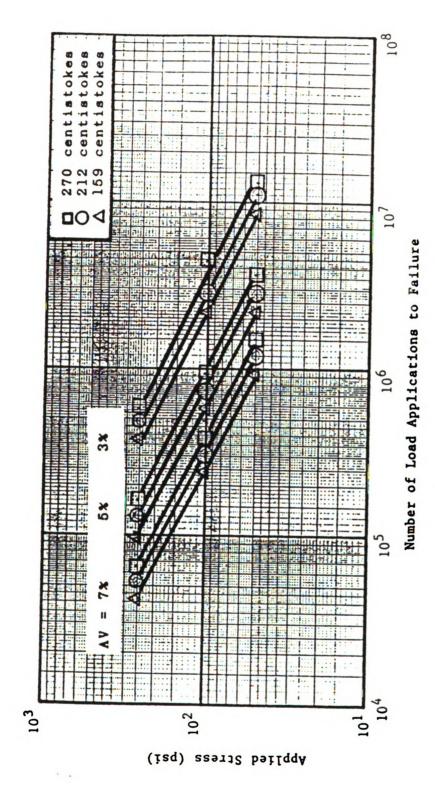
## 5.7.2 Fatigue Life: Plastic Deformation Ratio

The fatigue life of each beam specimen was also estimated using item b of the definition of the fatigue life of section 5.6 and equation 5.9 as follows:

$$(CD_2/CD_1) = 0.3 \text{ or } 0.07 = EXP(A x X^B)$$
 (5.17)

Equations 5.10 and 5.11 (for the  $77^{\circ}F$  tests) and equations 5.12 and 5.13 (for the  $40^{\circ}F$ ) were then substituted into equation 5.9 for the parameters A and B. The resulting equation was solved to calculate the number of load applications ( $N_{FL}$ ) at which the fatigue life is reached. Calculated values of  $N_{FL}$  for the higher percent air voids





3 viscosity graded asphalts and 3 values of the percent Stress-fatigue life curves for the beam specimens for air voids. Figure 5.15



(AV larger than 4 percent) were much smaller than those observed during the tests. This implied that constant ratios of  $CD_2/CD_1$  of 0.3 for all beams tested at  $77^{\circ}F$  and 0.07 for the 40°F tests are invalid. This was expected because the fatigue lives of the beams and the values of the plastic deformation ratios for different beams should be different. Recall that the values of 0.3 (at  $77^{\circ}F$ ) and 0.07 (at  $40^{\circ}F$ ) were assigned based upon the visual detection of hair-size This is neither accurate nor consistent. cracks. addition, the accuracy of equations 5.12 and 5.13 is poor. Thus, it is recommended that this method deformation ratio) not be used until a better and more accurate techniques for the detection of crack initiation and the determination of the corresponding value of the ratio of CD, to CD, can be found. Hence, it is recommended that equations 5.15 and 5.16 be used to estimate the fatigue life of beam specimens.

## 5.8 ANALYSIS OF THE RESILIENT AND TOTAL MODULI

## 5.8.1 GENERAL

As noted in the previous section, elementary beam theory cannot be used in the analysis of the beam test data because the deflected shape of the beam specimen, and the location of the neutral axis do not satisfy the assumptions of the theory. Hence, an existing two dimensional finite element (FEM) computer program was modified based on the assumption



of plane-stress and employed in the analysis of the resilient and total moduli.

All test data was analyzed using the FEM mesh depicted in figure 5.16. It should be noted that only half the domain of the beam specimen needs to be modeled since the y-axis is an axis of symmetry. A two layer system (asphalt and rubber) was used in the analysis of each beam specimen as shown in figure 5.16. Line AB, in the figure, represents the boundary between the asphalt beam and the rubber pad, while line CD represents the boundary of the rigid support (steel block). The boundary conditions along the line of symmetry and along the rigid boundary are also shown in the figure.

The following data were used in the analysis of all the test results:

- a) Poisson's ratio of the asphalt mix of 0.25. This is an average value which was obtained from cyclic load indirect tensile tests.
- b) Beam dimensions; 4-in. thick and 16-in. long.
- c) Modulus of elasticity and Poisson's ratio of the rubber of 3,000 psi and 0.4, respectively. These values were obtained from the rubber industry.
- d) Rubber pad dimensions: 1-in. thick and 16.-in.long.

The FEM analysis was based on an iterative process as depicted in figure 5.17. First, for a given mix, specimen, and test variables, a seed (initial) modulus value of the



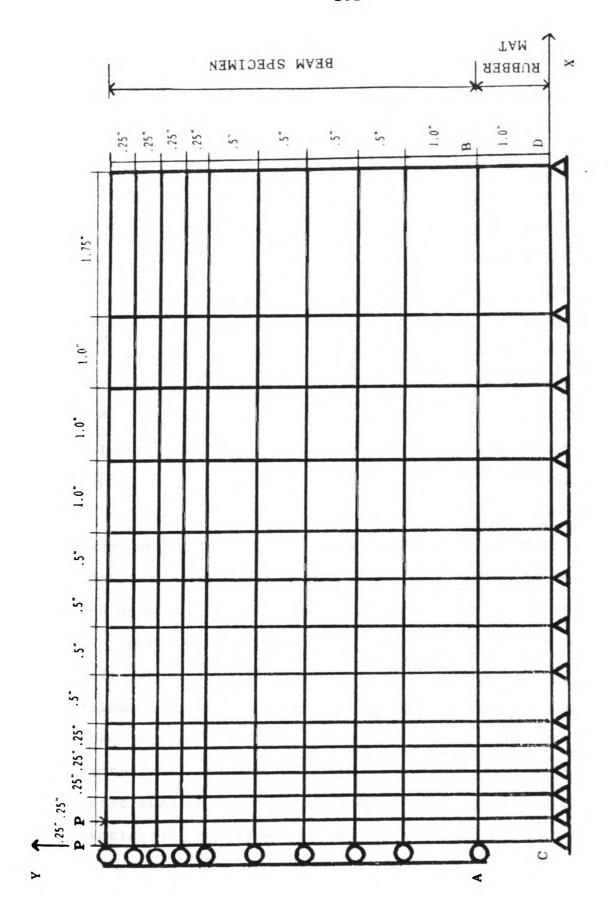


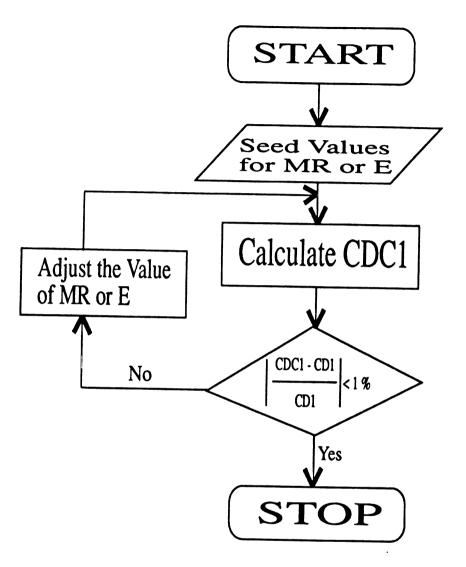
Figure 5.16 Boundary conditions and the finite element mesh.





asphalt mix was assumed and the corresponding surface deflection basin was calculated at several lateral distances from the line of symmetry that correspond to the actual locations of the LVDT(s). The calculated basin was then compared to the measured one and the ratio of calculated to measured deflection (RCM) under the load was determined. subsequent iterations, the value of the modulus was adjusted by multiplying the value of the RCM by the value of the modulus from the previous iteration. The value of the modulus which produced an RCM values between 0.99 and 1.01 was accepted as the final modulus value of the asphalt mix and the iteration process was terminated. In general, value of RCM between 0.99 and 1.01 was reached within a few iterations (generally 2 to 4). That is, the value of the calculated deflection under the load converged to the measured value within 2 to 4 iterations. It should be noted that the maximum percent difference between the calculated and measured deflections at LVDT 2 and 3 at 77°F were 42 and percent, respectively. For the 40°F tests. differences were 7 and 24 percent, respectively. The final values of the resilient and total moduli for each beam specimen and for several number of load applications are listed in Appendix E. These values were statistically correlated to the mix, specimen, and test variables. The statistical analysis is presented in the next section.





MR = Resilient modulus of asphalt mix
E = Total modulus of asphalt mix

CDC1 = Calculated deflection at the center LVDT
CD1 = Measured deflection at the center LVDT

Figure 5.17 Flow chart of the iteration procedure of the finite element computer program.

## 5.8.2 STATISTICAL ANALYSIS

Figures 5.18 an 5.19 depict, respectively, the values of the resilient (MR) and total (E) moduli of beam specimens at and 7 percent air voids plotted against the 3. logarithmic values of the number of load applications (N). It can be seen that increasing N produces higher values of resilient and total moduli. That is, the resilient and as the number total deflections decrease of applications increases (see figure 4.9). This was expected because the specimen experienced densification and plastic flow under the cyclic load. This can be explained with the aid of figure 5.20. In this figure, the logarithmic values of the cumulative permanent deformations (of the same specimens of figures 5.18 and 5.19) are plotted against the logarithmic values of the number of load applications. can be seen that increasing N yields an increase in the permanent deformation. That is the total volume of the beam specimen decreases and hence, its density increases. Further examination of figures 5.18 and 5.19 have indicated that the rate of increase in the resilient and total moduli (the slope of the curves) are dependent on the percent air voids of the beam specimens. Lower percent air voids produces higher rates (slopes) of resilient and total moduli. This was expected because higher percent air voids results in higher plastic flow and relatively lower densification in the asphalt mix. This can also be noted in



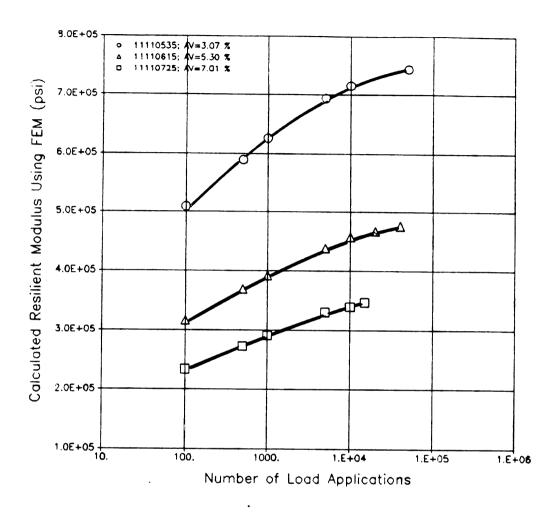




Figure 5.18 Calculated resilient modulus using FEM program versus the number of load application at different percent air voids.

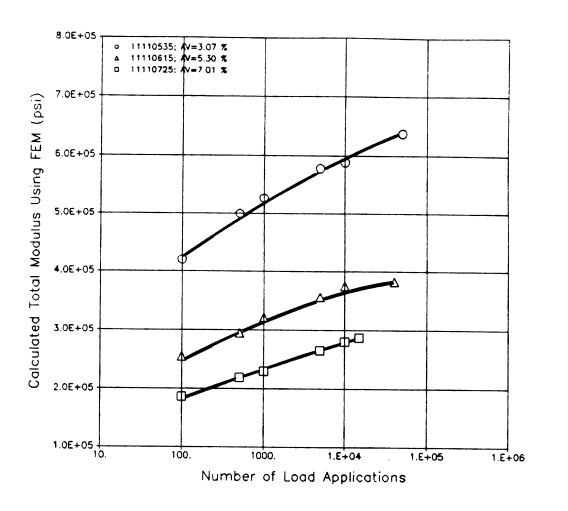




Figure 5.19 Calculated total modulus using FEM program versus the number of load application at different percent air voids.

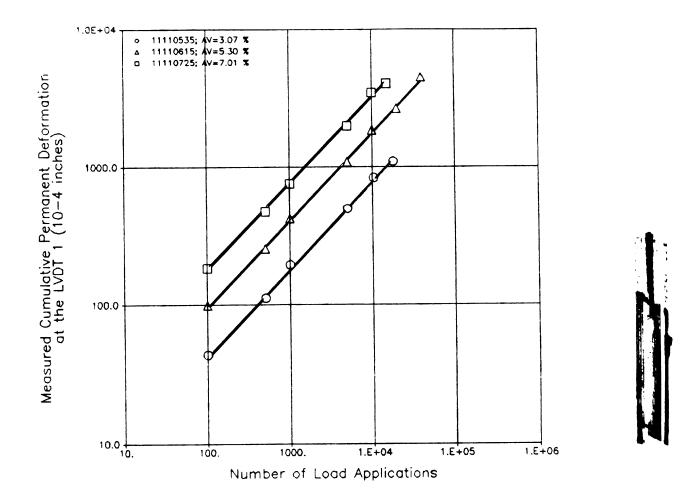


Figure 5.20 Measured cumulative permanent deformation versus the number of load application at differnt percent air voids.

figure 5.20. which indicates that the slope of the curves increases as the percent air voids increases. That is, for the same magnitude of cyclic load, the net volume change of the asphalt mix at high percent air voids is less than those at the lower percent air voids.

It should be noted that, although the slope of the curves in figures 5.18 and 5.19 increases with decreasing air voids, the percent increase in the values of MR relative to its initial value is higher for the 7 percent air voids curve than that for the 3 percent air voids. This can be illustrated with the aid of figure 5.21. In this figure, the values of the resilient modulus for any number of load application is divided (normalized) by the corresponding value of MR at load cycle number 100. It can be seen that, for the 7 percent air voids curve, the value of MR at N equal 10,000 cycles increases by a factor of 1.455 relative to its value at N equal 100 cycles. This factor is 1.405 for the 3 percent air voids. The implication of this is that asphalt pavement constructed using high percent air voids in the mix will experience (due to traffic effects) higher plastic flow (rut depth) and higher increase in the initial resilient modulus than pavement constructed at lower percent air voids.

Nevertheless, in practice, resilient modulus tests are conducted only to 100 or 500 load cycles for sample conditioning. After which the resilient modulus is



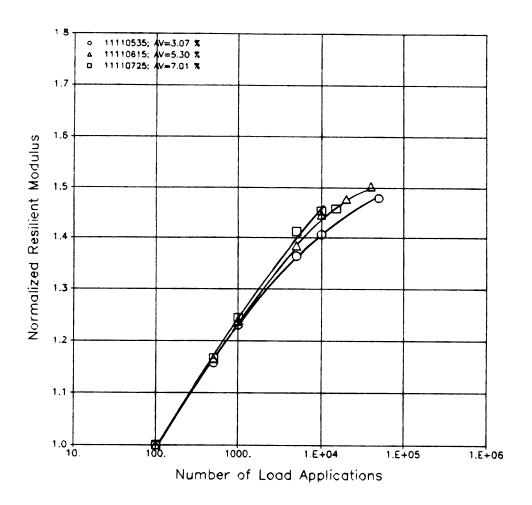




Figure 5.21 Normalized resilient modulus versus the number of load application at different percent air voids.

determined and tests are terminated. Hence, in the statistical analysis of this study, the values of MR and E at load cycle number 100 were correlated to the specimen, test, and asphalt mix variables. The reader should keep in mind that MR increases with increasing N and that the value of MR at load cycle number 100 is a very conservative value.

Tables 5.8 and 5.9 summarize the regression matrices of the resilient and total moduli at 77°F, respectively. The regression coefficients, coefficient of determination (R²), and standard error (SE) obtained from each step of the stepwise procedure are listed in the tables. It should be noted that the variables in the tables are listed in their order of significance. For example, the percent air voids in table 5.8 is the most significant variable while the gradation of the aggregate is the least significant one. Nevertheless, equations 5.18 and 5.19 are the corresponding equations to tables 5.8 and 5.9, respectively.

$$ln(MR) = 13.895 - 0.1974 \times AV - 0.0007096 \times KV$$
  
+ 0.007225 × ANG + 0.008685 × GRAD (5.18)

 $R^2 = 0.998$  and SE = 0.014

$$\ln(E) = 13.745 - 0.2089 \times AV - 0.000712 \times KV + 0.0108 \times ANG$$
 (5.19)



Table 5.8 Regression matrix for the resilient modulus at 77°F.

MR	Regression coefficients of the independent variables Intercept					R <sup>2</sup>	SE
	102.00p	(10 AV <sub>1</sub> )	(10 KY <sub>4</sub> )	ANG <sub>3</sub>	GRAD (10 <sup>3</sup> )	<b>.</b>	-2
	14.750	-1.959	-	-	-	0.988	0.034
ln(MR)	13.928	-1.967	-7.157	-	-	0.997	0.017
	13.897	-1.965	-7.038	8.569		0.998	0.015
	13.895	-1.974	-7.096	7.225	8.685	0.998	0.014

ln = natural log;

MR MR = resilient modulus (psi); AV = air voids (%);

ANG = angularity;

KV = kinematic viscosity (centistokes);

GRAD = gradation of aggregate;
R = coefficient of correlati = coefficient of correlation; and

SE = standard error.



Table 5.9 Regression matrix for the total modulus at 77°F.

E	Intercept_	Regression coefficients of the independent variables			R <sup>2</sup>	SE
	Incercept_	(10 <sup>AV</sup> 1)	(10 <sup>KV</sup> <sub>4</sub> )	ANG (10 2)	R	3E
	13.604	-2.084	-	-	0.987	0.039
ln(E)	13.786	-2.091	-7.274	-	0.995	0.024
	13.745	-2.089	-7.120	1.108	0.996	0.022

ln = natural log;

E = total modulus (psi);

= air voids (%); ΑV

ANG = angularity;

KY = kinematic viscosity (centistokes);

R = coefficient of correlation; and

SE = standard error.



 $R^2 = 0.996$  and SE = 0.022

where: ln = natural log;

MR = resilient modulus (psi);

E = total modulus (psi); and

AV = air voids (%);

ANG = angularity;

KV = kinematic viscosity (centistokes);

GRAD = gradation of aggregate;

R<sup>2</sup> = coefficient of correlation; and

SE = standard error.

Examination of the values of the regression coefficients and the order of significance of the independent variables of tables 5.8 and 5.9, and equations 5.18 and 5.19 have indicated:

1) The resilient modulus at 77°F is affected (in order of decreasing significance) by the air voids (AV), the kinematic viscosity (KV), the aggregate angularity (ANG), and the gradation of the aggregate (GRAD) while the total modulus is affected by AV, KV, and ANG. The effects of the AV and KV on the arithmetic values of MR are slightly lower than those on E. Increasing AV from 3 to 7 percent causes a decrease in MR and E by factors of 0.45 and 0.43, respectively. While increasing KV from 159 to 270



centistoke yields a decrease in MR and E by factors of 0.93 and 0.92, respectively. The effect of aggregate angularity on the values of MR and E is less than 1.5 percent. Finally, aggregate gradation has no significant effect (less than 1 percent) on either modulus.

The above observations were anticipated because the values of MR were calculated using the resilient deformation while the values of E were obtained using the total deformation (elastic and viscoelastic). Since asphalt binders are viscoelastic material and since the AV is a measure of the ability of the material to flow under the load (higher AV produces higher flow), one can expect that the effects of KV and AV on the viscoelastic component of the deformation are higher than those on the elastic (resilient) one.

Equations 5.18 and 5.19 indicate that MR is inversely proportional to the kinematic viscosity of the asphalt binder. That is, increasing KV (harder asphalt binder) causes a higher resilient deformation and hence a lower resilient modulus. This finding is in contrast to that reported in the literature and to that relative to plastic deformation reported in section 5.5. From an engineering view point, higher KV (harder asphalt binder) should result in lower

resilient and total deformations and consequently, higher resilient and total moduli. The test results however, do not support this view. Unfortunately, no sound explanation can be offered at this time to explain this discrepancy.

- 2) The magnitude of the cyclic load possesses significant effects on the values of the resilient This indicates a linear behavior and total moduli. of the beam specimens within the range of the load. magnitude the applied cyclic of The implication of this finding is that the application of linear elasticity in the analysis of the resilient and total moduli is valid. It should be noted that results obtained from indirect tensile tests showed a nonlinear behavior (increasing cyclic load causes a decrease in the values of the resilient and total The difference in the finding between the moduli). two tests can be related to the physical dimensions of the test specimens and to the boundary conditions. Beam specimens are 4-in. thick and subjected mainly to compression while indirect tensile test specimens are 2.5-in. thick and subjected to both compression and tension.
- 3) The values of the regression coefficients (see tables 5.8 and 5.9) for all variables are only slightly changed as more variables are added in the stepwise

procedure (e.g., the values of the coefficient of AV in both tables change very little as additional variables entered into the analysis). This implies that there is no significant interaction between the This conclusion was reached independent variables. after examination of the partial correlation matrix (PCM) shown in table 5.10. The values of the partial correlation coefficients (PCC) listed under each variable in the table indicate the degree dependency of that variable on the others. The value of PCC may range from -1.0 to +1.0. A negative value of PCC between any two variables implies that the variables are inversely proportional to each other value indicates while positive direct a proportionality. Nevertheless, the values of the PCC in the PCM of table 5.10 indicate some degree of interaction between AV and GRAD, and ANG and GRAD. This was expected because the percent air voids in an aggregate mix is a function of the gradation of the mix. A well graded mix possesses lower air voids than a uniform mix. Similarly, aggregate angularity affects its gradation. Angular aggregates tend to interlock causing higher friction and therefore, offer higher resistance for finer materials to enter and fill the air space between the larger size aggregates. Due to these interactions, the AV and

Table 5.10 Partial correlation matrix for resilient modulus at 77 F

	ln(MR)	AV	AG	KV	CL	GR
ln(MR)	1.000	994	.060	055	058	286
AV	994	1.000	029	040	.054	.302
AG	.060	029	1.000	064	.018	.275
KV	055	040	064	1.000	.013	.027
CL	058	.054	.018	.013	1.000	015
GR	286	.302	.275	.027	015	1.000

ln = natural log;

MR = resilient modulus (psi);

AV = air voids (%);

ANG = angularity;

KV = kinematic viscosity (centistokes);

Cl = cyclic load;
GR = gradation;

GR = gradation;
R<sup>2</sup> = coefficient of correlation; and

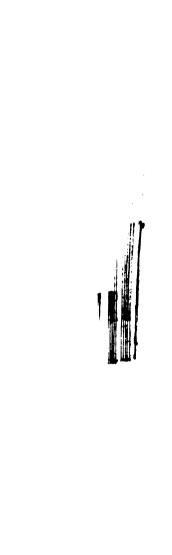
SE = standard error.

ANG terms in equations 5.18 and 5.19 may also include some of the effects of aggregate gradation on MR and E. Unfortunately, the separation of the effects of these variables cannot be obtained due to the limited number of gradation (only two gradations were used) employed in this study.

4) The final values of the coefficient of determination and standard error in both tables indicate a high degree of correlation between the dependent and independent variables. That is no significant scatter of the logarithmic values of the resilient and total moduli about the mean. It should be noted that the values of R<sup>2</sup> in the tables may artificially high because of the nature of transformation (logarithmic). Variations in the arithmetic values are naturally much higher than those in the logarithmic values.

The scenario in items 1 and 3 above implies that equation 5.18 can be simplified by eliminating the gradation term (GRAD has no statistical significance on MR). Considering the third step of table 5.8, the following equation was obtained.

 $ln(MR) = 13.897 - 0.1965 \times AV - 0.0007038 \times KV$ + 0.008569 × ANG (5.20)



 $R^2 = 0.998$  and SE = 0.015

where: all variables are as before.

The advantages of this last equation are it is simpler than equation 5.18 and that it is similar to equation 5.19.

Figures 5.22 and 5.23 depict, respectively, the values of the resilient and total moduli obtained from FEM and those calculated using equations 5.20 and 5.19. The straight lines in the figures represent the locus of points of equality. It should be noted that the maximum percent difference between the values of resilient and total moduli obtained using FEM and those from equations 5.20 and 5.19 were 6 and 7 percent, respectively.

Tables 5.11 and 5.12 summarize, respectively, the regression matrices (regression coefficients, coefficient of determination, and standard error) of the resilient and total moduli of the beam specimens tested at 40°F. Equations 5.21 and 5.22 are the resulting equations.

$$ln(MR) = 14.736 - 0.1248 \times AV - 0.0002116 \times CL$$
 (5.21)

 $R^2 = 0.882$  and SE = 0.049

where: CL = applied cyclic load; and all other variables are as before.

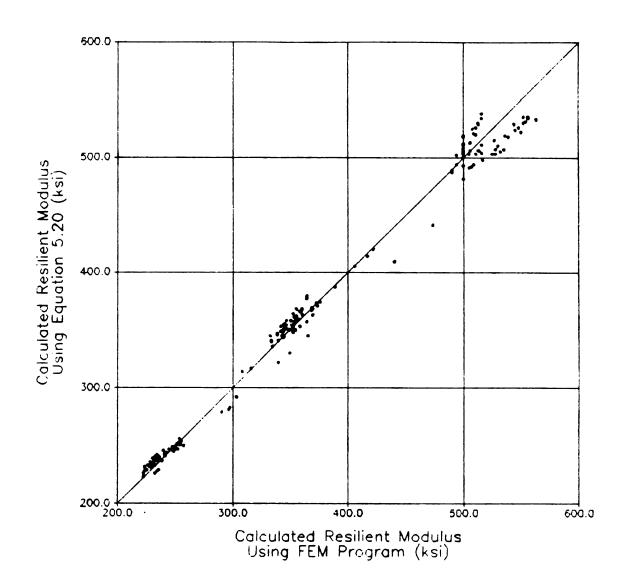


Figure 5.22 Calculated resilient modulus using equation 5.20 versus calculated resilient modulus using FEM program.

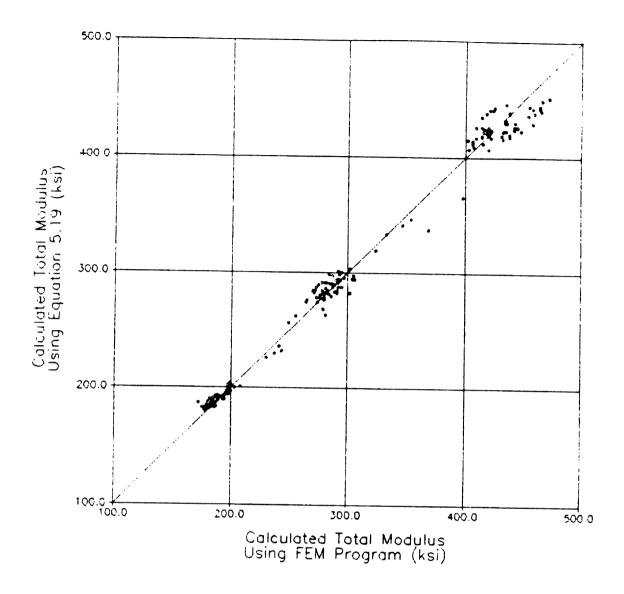


Figure 5.23 Calculated total modulus using equation 5.19 versus calculated total modulus using FEM program.

 $ln(E) = 14.42 - 0.139 \times AV$  (5.22)

 $R^2 = .679$  and SE = 0.099

where: all other variables are as before.

Examination of the values of the coefficient of correlation in tables 5.11 and 5.12, and equations 5.21 and 5.22 have indicated that:

1) The resilient modulus at 40°F is affected (in order of decreasing significant) by the air voids (AV) and the applied cyclic load (CL), while the total modulus is affected only by AV. This implies that the total response (elastic and viscoelastic) of the specimen is linearly proportional to the magnitude of the applied cyclic load. Each component of the total response (elastic and viscoelastic), however, nonlinearly related to CL. That is increasing CL causes an increase in both elastic and viscoelastic deformations such that the ratio of load to elastic deformation decreases while the ratio of load to viscoelastic deformation increases. This finding was not expected and it departs from that found in the literature. The reason of the discrepancy could be related to the magnitude of the total deformation which was within the accuracy of the measurement

Table 5.11 Regression matrix for the resilient modulus at 40°F.

MR	t		coefficients of dent variables	R <sup>2</sup>	SE
	Intercept	(10 <sup>AV</sup> 1)	(10 <sup>CL</sup> <sub>4</sub> )		
1 m (MD)	14.671	-1.220	-	0.813	0.060
ln(MR)	14.736	-1.248	-2.116	0.882	0.049
MR =	natural log; resilient modulu	ıs (psi);			

= air voids (%);
= cyclic load (pounds);
= coefficient of correlation; and

SE = standard error.

Table 5.12 Regression matrix for the total modulus at 40°F.

MR	Intercept_	Regression coefficients of the independent variables	R <sup>2</sup>	SE
		(10 <sup>AV</sup> 1)		
ln(MR)	14.420	-1.390	0.678	0.099

ln = natural log;

<sup>=</sup> resilient modulus (psi); E

<sup>=</sup> air voids (%); = coefficient of correlation; and

<sup>=</sup> standard error.

system. Nevertheless, increasing AV from 3 to 7 percent caused decreases in MR and E by factors of 0.61 and 0.57, respectively. While increasing CL from 100 to 500 pounds caused a decrease in MR by a factor of 0.82.

2) The values of the coefficient of determination and standard error of tables 5.11 and 5.12 indicate a low degree of correlation between the dependent and independent variables compared to the results from 77°F. This observation does not mean that the values of the resilient and total moduli at 40°F are inconsistent or, in a statistical sense, random. This is mainly due, as noted above, to the magnitude of the measured deflection which was within the accuracy of the measurement system.

Figures 5.24 and 5.25 depict the values of the resilient and total moduli calculated using the FEM program and the corresponding moduli calculated using equations 5.21 and 5.22, respectively. Again, the straight line in the figures represents the locus of the points of equality. It was found that the maximum per cent difference between the values of resilient and total moduli calculated using FEM and those calculated using equations 5.20 and 5.21 were 13 and 20 percent, respectively.

A second statistical analysis was performed using the test results at 77 and  $40^{\circ}$ F. In this analysis, the test

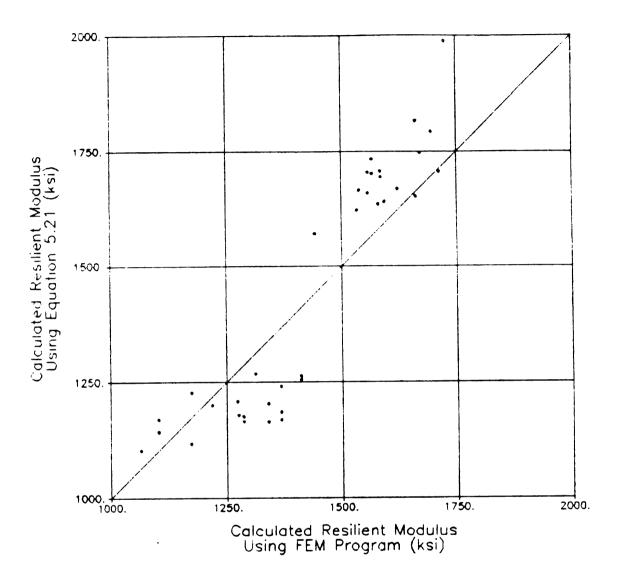


Figure 5.24 Calculated resilient modulus using equation 5.21 versus calculated resilient modulus using FEM program.



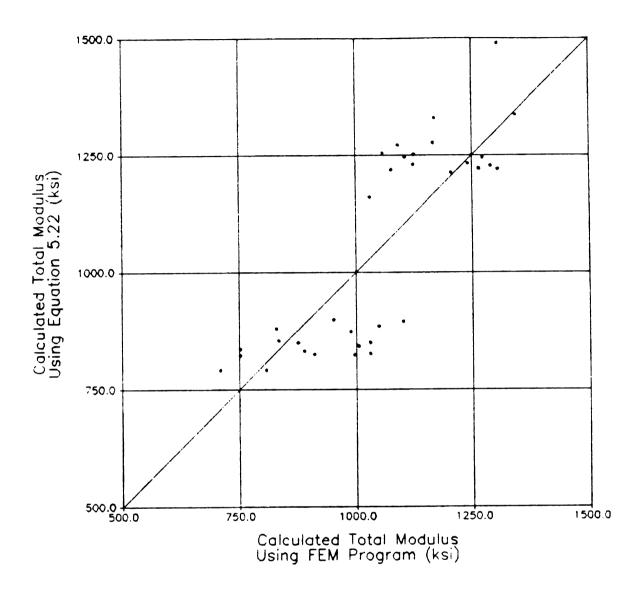


Figure 5.25 Calculated total modulus using equation 5.22 versus calculated total modulus using FEM program.

temperature was included as one of the independent variable. A semi-logarithmic relationship between MR or E and the test temperature (TT) was assumed based on the Asphalt Institute equation which was reported in chapter 2. Tables 5.13 and 5.15 summarize the resulting regression matrices (regression coefficients, coefficient of determination, standard error) for the resilient and the total moduli, respectively. Equations 5.23 and 5.24 are the corresponding equations.

$$ln(MR) = 16.382 -0.03326 \times TT -0.1899 \times AV$$

$$- 0.0004148 \times KV$$
(5.23)

 $R^2 = 0.994$  and SE = 0.046

where: TT = test temperature; and

all variables are as before.

$$ln(E) = 15.969 -0.02982 \times TT - 0.2029 \times AV$$
  
- 0.0003927 × KV (5.24)

 $R^2 = 0.990$  and SE = 0.057

where: all other variables are as before.

Examination of the values of the correlation coefficient of tables 5.13 and 5.14, and equations 5.23 and 5.24 has indicated:

Table 5.13 Regression matrix for the resilient modulus at 77 and 40°F.

MR	Intercept_		ion coefficependent v	R <sup>2</sup>	SE	
	Incercapt_	(10 <sup>TT</sup> 2)	(10 <sup>AV</sup> 1)	(10 <sup>KV</sup> <sub>4</sub> )	_ ^	52
	15.671	-3.755	_	-	0.763	0.291
ln(MR)	16.284	-3.327	-1.903	-	0.993	0.049
	16.382	-3.326	-1.899	-4.148	0.994	0.046

ln = natural log;

= resilient modulus (psi); MR

= test temperature (°F); TT

ΑV = air voids (%);

KY R = kinematic viscosity (centistokes);

= coefficient of correlation; and

SE = standard error.

Table 5.14 Regression matrix for the total modulus at 77 and 40 °F.

E	Intercept_		ion coeffic ependent v		R <sup>2</sup>	SE
		(10 <sup>TT</sup> 2)	(10 <sup>AV</sup> 1)	(10 <sup>KV</sup> <sub>4</sub> )		02
	15.234	-3.456	-	•	0.699	0.312
ln(E)	15.877	-2.984	-2.032	-	0.989	0.060
	15.969	-2.982	-2.029	-3.927	0.990	0.057

ln = natural log;

= total modulus (psi);

= test temperature (°F); TT

ΑV = air voids (%);

= kinematic viscosity (centistokes); KY R

= coefficient of correlation; and

SE = standard error.

- 1) Both resilient and total moduli are affected (in of decreasing significance) by the test order temperature, the percent air voids, and the kinematic viscosity of the asphalt binder. Increasing TT form 40 to 77°F causes a decrease in MR and E by factors of 3.42 and 2.99, respectively. It should be noted that, in equations 5.23 and 5.24, the KV term is also function of the test temperature. Lower temperatures cause higher KV (harder asphalt). In order to separate the two variables (KV and TT), value of KV at the test temperature should be used in the analysis. Unfortunately, this data was not available to the author nor it was possible to conduct the laboratory tests because of lack of Hence, it is recommended, for future equipment. study, to obtain the values of KV at the test temperatures whenever possible and to use these values in the analysis.
- 2) The values of the coefficient of determination and standard error show a high degree of correlation between the dependent and the independent variables. Again, it should be noted that the values of R<sup>2</sup> in the tables may be artificially high because of the nature of the transformation (logarithmic).

It should noted that (in the range of the mix, test, and specimen variables) the maximum differences between the

values of MR and E at 77°F predicted using equations 5.23 and 5.24, and those calculated using the finite element program were found to be 7.6 and 9 percent respectively. These differences were 17 and 24.5 percent for the 40°F.

In addition, equation 5.23 was compared to the asphalt institute equation (equation 2.3) which is repeated below for convenience.

$$Log MR = 1.54536 + 0.020108(X1) - 0.0318606(X2) + 0.068142(X3) - 0.00127003(X4)^{0.4}(X5)^{1.4}$$
 (2.3)

$$R^2 = 0.968$$
, and S.E. = 0.0888904

Log MR = 
$$3.12197 + 0.0248722(X1) - 0.0345875(X2)$$
  
-  $9.02594((X4)^{0.19}/(X6)^{0.9}$  (2.4)

 $R^2 = 0.971$ , and S.E. = 0.0849186

Where: Log = logarithm to base 10;

MR = dynamic (resilient) modulus, 10<sup>5</sup> psi (4 Hz
loading frequency);

X1 = percent passing #200 sieve;

X2 = percent air voids in mix;

X3 = asphalt viscosity at 70 °F (10<sup>6</sup> poises);

X4 = percent asphalt by total weight of mix;

X5 = test temperature (OF);

- X6 = the logarithmic value of the viscosity (in
   poises) of the asphalt at the test
   temperature;
- SE = standard error of the estimate; and
- $R^2$  = coefficient of determination.

The results of this comparison are illustrated in figure 5.26. The straight line in the figure represents the locus of the points of equality. Further, a sensitivity analysis of the calculated values of MR from both equation to the range of the mix, test, and specimen variables was conducted. It was found that:

- 1) The agreement between the values of MR obtained from both equations was found to be dependent on the value of the percent air voids. In general, the values of MR obtained using equation 5.23 were higher than, equal to, and lower than those obtained using equation 2.3 for 3, 5, and 7 percent air voids, respectively.
- 2) Increasing AV from 3 to 7 percent causes a decrease in MR by factors of 0.75 and 0.47 for equations 2.3 and 5.23, respectively.
- 3) The values of the resilient modulus from A.I. equation increase by factor of 3.81 as the temperature decreases from 77°F to 40°F, while those of equation 5.23 increase by a factor of 3.42.

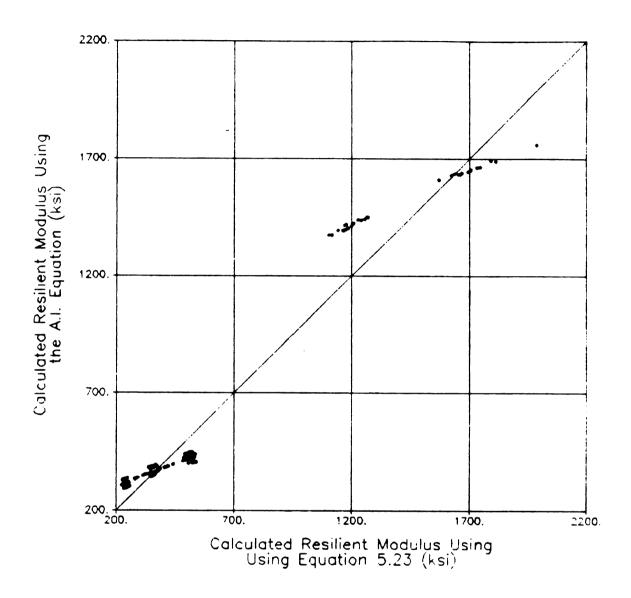


Figure 5.26 Calculated resilient modulus using the A.I. equation versus calculated resilient modulus using equation 5.23.

- 4) An increase in the kinematic viscosity of the asphalt binder from 159 to 270 centistokes leads to an increase in the value of the resilient modulus by a factor of 1.0001 for A.I. equation, and a decrease by a factor of 0.95 for equation 5.23.
- 5) The values of MR in equation 2.3 are also functions of the percent passing sieve number 200 (percent fine) and the percent asphalt content in the mix. These two variables were not included in this study (equation 5.23).

The above observations imply that the values of MR of equation 5.23 are more sensitive to the variation of the percent air voids than those of the A.I. equation. The effects of the test temperature on the values of MR of both equations are almost the same. In addition, although the effects of kinematic viscosity of the asphalt on the values of MR is small, the trend in both equations is not compatible as noted before.

Equations 5.23 and 5.24 were also compared to the equations 5.25 and 5.26 which were obtained from indirect tensile cyclic load tests. The tests were conducted using the same test, mix, and specimen variables as those used in this study (82).

 $ln(M_R) = 16.092 - 0.03658 \times TT - 0.1401 \times AV$ 

 $-0.0003409 \times CL + 0.04353 \times ANG$ 

+ 0.0008793 x KV

(5.25)

 $R^2 = 0.997$ ; and SE = 0.033where: all variables are as before.

 $ln(E) = 16.385 - 0.04529 \times TT - 0.1549 \times AV - 0.0003339 \times CL + 0.04258 \times ANG + 0.0008364 \times KV$  (5.26)

Figures 5.27 and 5.28 depict, respectively, the values of MR and E obtained using equations 5.25 and 5.26 plotted against those from equations 5.23 and 5.24. The straight line in the figures depict the locus of the points of equality. This comparison and a sensitivity analysis of both equations revealed that:

- 1) Increasing AV from 3 to 7 percent results in:
  - a) decrease in MR by factors of 0.468 and 0.571 for equations 5.23 and 5.25, respectively.
  - b) decrease in E by factors of 0.444 and 0.538 for equations 5.24 and 5.26, respectively.
- 2) Decreasing test temperatures from 77 to 40°F yields:
  - a) an increase in MR by factors of 3.42 and 3.87 for equations 5.23 and 5.25, respectively.

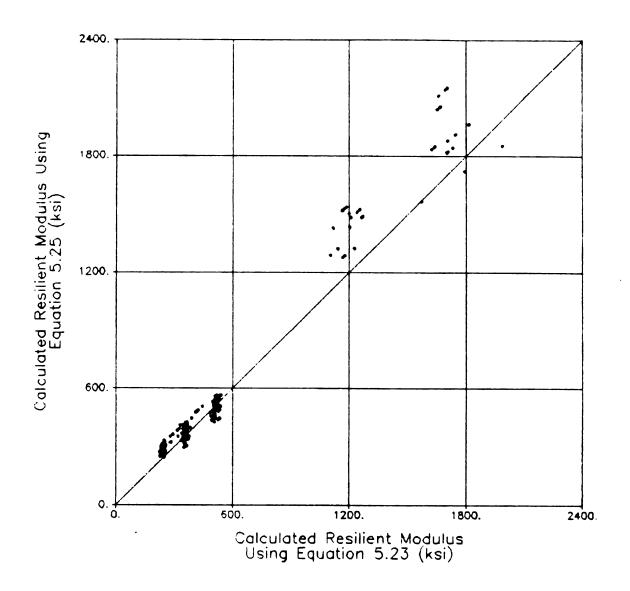


Figure 5.27 Calculated resilient modulus using equation 5.25 versus calculated resilient modulus using equation 5.23.



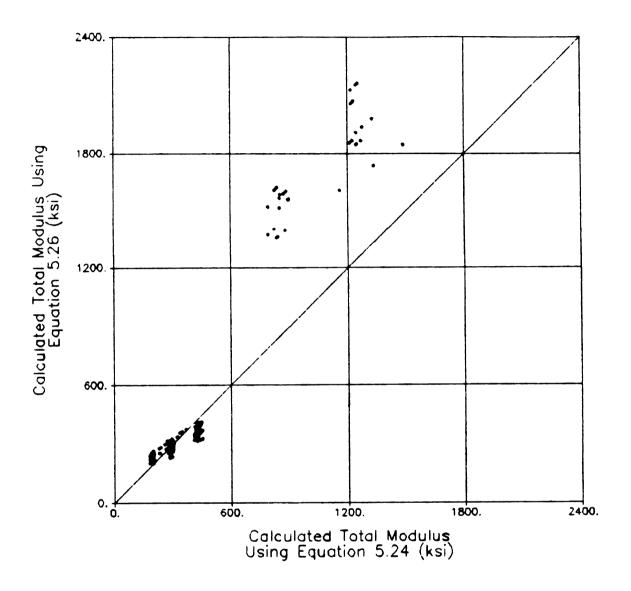


Figure 5.28 Calculated total modulus using equation 5.26 versus calculated total modulus using equation 5.24.

- b) an increase in E by factors of 3.014 and 5.16 for equations 5.24 and 5.26, respectively.
- 3) Increasing kinematic viscosity from 159 to 270 centistokes causes the values of MR and E to increase by a factor of 1.1 for the indirect equations and to decrease by a factor of 0.95 for equations 5.23 and 5.25.
- 4) The values of the resilient and total moduli obtained from the indirect tensile tests are affected by the aggregate angularity (ANG) the magnitude of the cyclic load (CL). Increasing CL or decreasing ANG results in lower values of MR and E. The values of MR and E of equations 5.23 and 5.24, on the other hand, are independent of CL and ANG.

The above observations imply that:

- 1) The percent air voids of the test specimen posses similar effects on both results obtained from the indirect tensile and beam tests.
- 2) Although the effects of the test temperature on the values of MR are almost the same for both types of tests, its effects on E are different. Since the values of E are calculated using the measured total specimen deformation (resilient and viscoelastic) and since the values of MR are calculated using only the measured resilient deformation, one can conclude that the viscoelastic behavior of the indirect tensile

specimens is different than that of the beam specimens. That is, the asphalt binder in the indirect tensile test specimens appears to become much stiffer, at 40°F relative to its stiffness at 77°F, than the binder in the beam specimen. Again, this could be related to the boundary conditions of the both tests.

- 3) Once again, the discrepancy relative to the effects of the kinematic viscosity between the two test results cannot be explained at this time.
- 4) The asphalt mixes in the indirect tensile test posses a nonlinear behavior (increasing load causes a decrease in the values of MR and E), while they showed a linear behavior in the beam tests.

## 5.9 SUMMARY

Laboratory test results obtained using the standard Marshall mix design procedures and flexural cyclic beam tests are presented and discussed. It is shown that statistical correlations between the structural properties of compacted asphalt mixes and their mix design parameters are useful to analyze the effects of the different mix, specimen, and test variables on the structural properties of the mix.

The statistical equations presented in this dissertation were proven to be accurate within the range of the values of

the independent variables employed in this study. Any interpolation should be checked with some laboratory test results. Extrapolation, however, is strongly discouraged.

#### 5.10 IMPLEMENTATION

The statistical equations presented in this dissertation can be used to analyze the effects (in a qualitative terms) the independent variables on the structural properties (resilient and total moduli, permanent deformations, fatigue life) of compacted asphalt mixes. The statistical equations, however, should not be used for predicting the properties and behaviors of inservice pavements unless they are calibrated using field data. A limited field data base (4 pavement sections) has indicated that the effects of some of the independent variables on the laboratory test results almost the same as their effects on the inservice pavements. However, the effects of the kinematic viscosity the asphalt binder on the laboratory test results life) are inconsistent with its effects inservice pavements.

### CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 CONCLUSIONS

Based upon the test results, the analysis, and the findings presented in this dissertation, the following conclusions may be drawn:

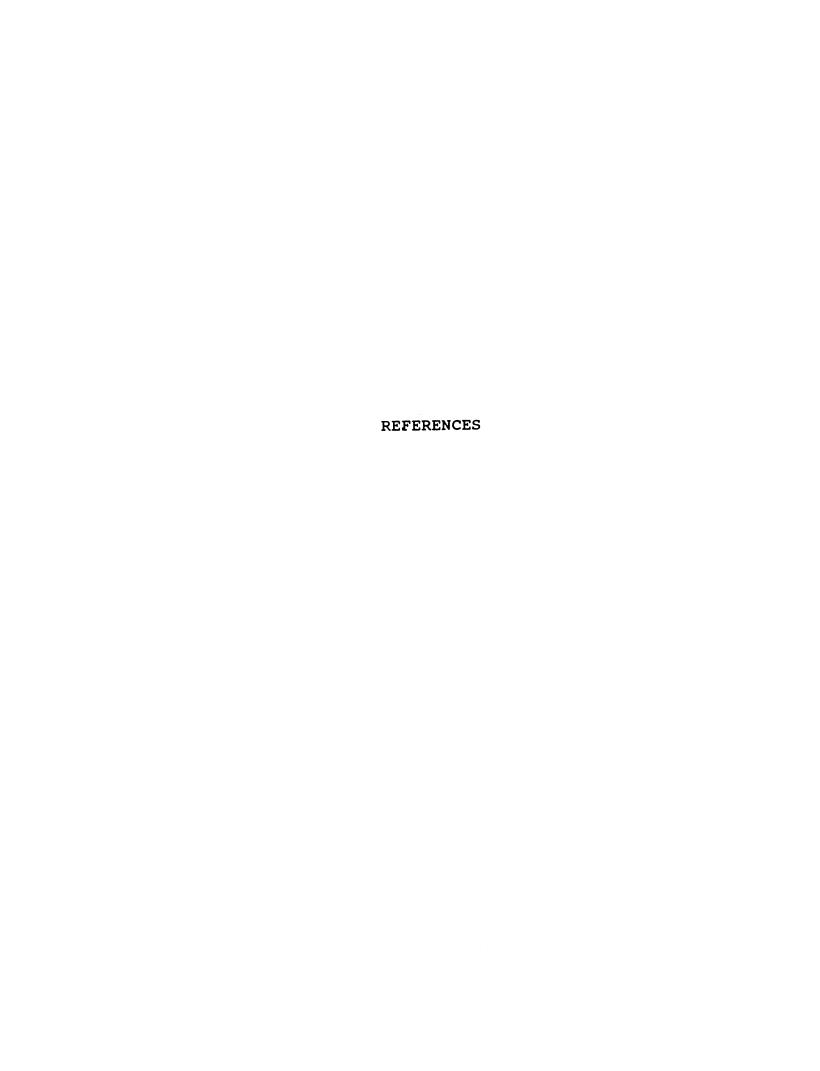
- 1) Statistical relationships between the structural properties and the test, mix, and specimen variables have been found. These relationships can be used, in the laboratory, to assess the effect of each variable upon the structural properties of the asphalt mixes. The application of these relationships to field data need to be verified.
- 2) Rutting (Permanent deformation) in the flexible pavement can be improved by using a lower percent air voids, harder asphalt binder, higher aggregate angularity, or combinations thereof in the asphalt mixes.
- 3) Fatigue life of asphalt mixes can be increased by using a lower percent air voids, angular aggregates, or a combination thereof in the mix.
- 4) The use of beam theory in the analysis of resilient and total moduli of beam specimens is inadequate because of the assumptions involved in the theory.
- 5) The modulus of asphalt mixes can be increased by the

use of a lower percent air voids, higher aggregate angularity, or a combination thereof in the asphalt mixes.

#### 6.2 RECOMMENDATIONS

The results of this study showed that it is possible to evaluate, in the laboratory, the effects of the test, mix, and specimen variables on the structural properties of asphalt mixes. It is recommended that the statistical equations presented in this dissertation be calibrated to field data prior to their use. It is further recommended that the effects of the asphalt content on the structural properties of asphalt mixes be calculated.

It was shown that the criterion used to determine the fatigue life of the beam specimens led to an erroneous conclusion relative to the effects of the kinematic viscosity of the asphalt binder. Therefore, it is recommended that, in future studies, the criterion be refined and the actual net assumed limit on the value of the cumulative plastic deformation under the load at which the fatigue life is reached be monitored and, perhaps, be related to the test, mix, and specimen variables.



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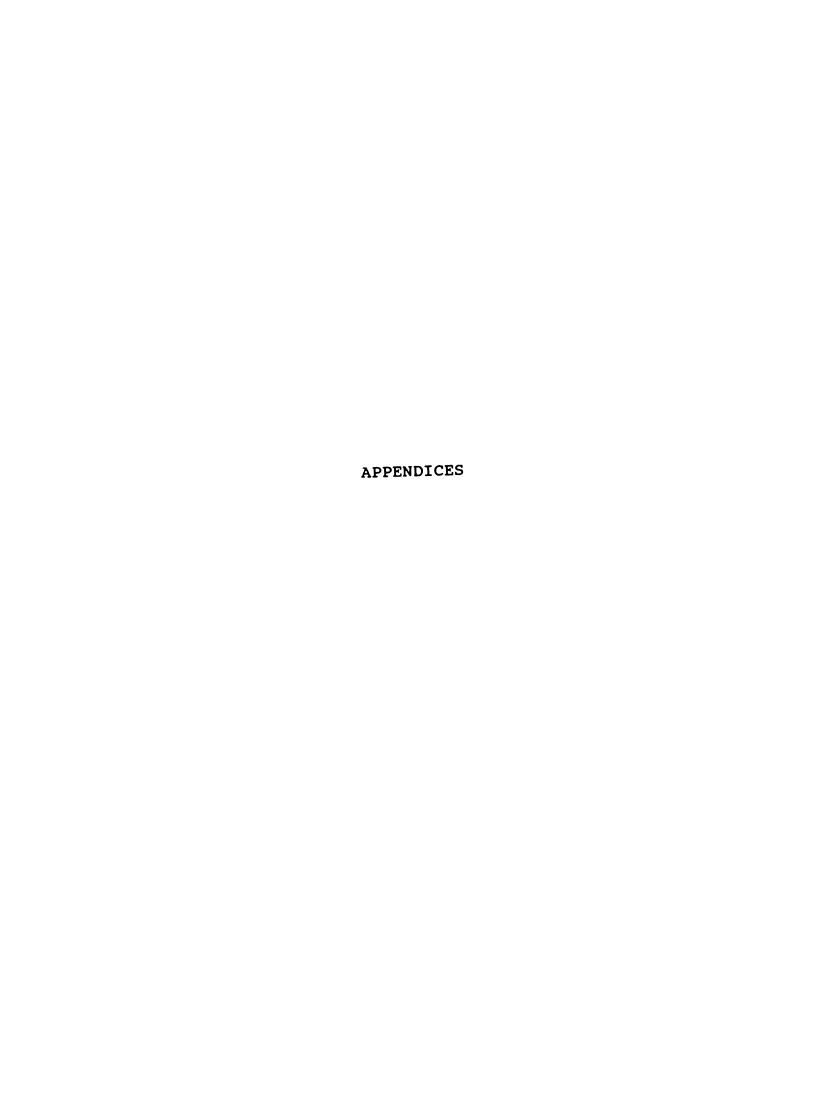
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## APPENDIX A

Physical characteristics (weights, percent air voids, applied sustained and cyclic loads, and the maximum theoretical specific gravity), and the measured elastic, total, and plastic deformations at several number of load applications are presented in this Appendix.

BEAM CYCLIC LOAD DATA

SAMPLE		-IA	WB	AC		L	CL	WBW		BA	GMM	ΑV
NUMBER	(1	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	(;	gr)		(%)
11110511	100	000	449	4.30	5	0	100	6032.		130.0	2.55	2.9
				DEF	ORMATI	ON (inc	ches X	0.0001)				
CYCLE _	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
150	16.7	19.4	7.3	9.0	10.4	3.4	7.2	8.4	2.5	5.6	6.5	1.8
520	13.9	16.1	14.8	7.4	8.5	6.5	5.7	6.6	4.6	4.1	4.7	3.0
1000	12.6	14.5	24.0	6.6	7.6	10.3	5.0	5.8	7.0	3.4	3.9	4.3
5000	9.9	11.4	60.8	5.1	5.9	24.3	3.6	4.2	15.1	2.1	2.4	7.8
10000	8.9	10.2	104.7	4.6	5.2	40.6	3.1	3.6	24.2	1.7	2.0	11.5
21940	7.9	9.0	158.4	4.0	4.5	59.4	2.6	3.0	33.7	1.3	1.5	14.3
164925	5.8	6.7	618.0	2.9	3.3	212.1	1.7	1.9	104.0	0.6	0.7	31.0
NUMBER	(1	gr)	(gr)	AC (%)		L bs)	(lbs)	(gr)	(	gr)		(%)
NUMBER 11110521		gr)	(gr)	4.30	5	bs) 0	100	6035.	0 10	gr) 138.0	2.55	2.9
				4.30	5	bs) 0		6035.	0 10		2.55	
11110521	100	000		4.30 DEF	(1 5 DRMATI	ON (inc	100	6035.	0 10	138.0		2.9
11110521 — CYCLE _	100	#1(0.	449 0 IN.)	4.30 DEFC	50RMATI	ON (inc	100 ches X	6035. 0.0001) #3(4.0	0 10	138.0	#4(6.0	2.9 0625 I
11110521 —	LVDT ELA.	#1(0.	449 0 IN.)	4.30 DEFC	50RMATI	ON (inc	LVDT	6035. 0.0001) #3(4.0	0 10	138.0	#4(6.0	2.9 0625 I
11110521  CYCLE _	100 LVDT ELA. 17.9	#1(0.	0 IN.) PLA.	(Z) 4.30 DEFC LVDT ELA. 9.6	50RMATI #2(2. TOT.	ON (inc	LVDT ELA.	6035. 0.0001) #3(4.0	0 10 ) IN.)	LVDT	#4(6.0 TOT.	2.9 0625 I
11110521  CYCLE _ NUMBER	100 LVDT ELA. 17.9 14.0	#1(0. TOT. 20.3 16.3	0 IN.) PLA. 5.7	(Z) 4.30 DEFC LVDT ELA. 9.6 7.4	(1 5 DRMATI #2(2. TOT.	ON (inc 0 IN.) PLA.	100 LVDT ELA. 7.8 5.7	6035. 0.0001) #3(4.0	0 10 ) IN.) PLA. 2.0	138.0 LVDT ELA.	#4(6.0 TOT. 7.0 4.7	2.9 9625 I PLA. 1.5 2.9
11110521  CYCLE NUMBER  100 500 1000 5000	100 LVDT ELA. 17.9 14.0 12.7	#1(0. TOT. 20.3 16.3 14.6	449 0 IN.) PLA. 5.7 14.3 24.7 62.7	(Z) 4.30 DEF( LVDT ELA. 9.6 7.4 6.6 5.1	(1 5 DRMATI #2(2. TOT. 10.9 8.6 7.7 6.1	ON (inc O IN.) PLA. 2.7 6.3 10.5 25.0	100 LVDT ELA. 7.8 5.7 5.0 3.6	6035. 0.0001) #3(4.0 TOT.  8.9 6.6 5.8 4.3	0 10 PLA. 2.0 4.4 7.1 15.5	LVDT  ELA.  6.2 4.1 3.4	#4(6.0 TOT. 7.0 4.7 3.9	2.9 9625 I PLA. 1.5 2.9 4.4
11110521  CYCLE NUMBER  100 500 1000 5000	100 LVDT ELA. 17.9 14.0 12.7 9.9	#1(0. TOT. 20.3 16.3 14.6	449 0 IN.) PLA. 5.7 14.3 24.7 62.7	(Z) 4.30 DEF( LVDT ELA. 9.6 7.4 6.6 5.1	(1 5 DRMATI #2(2. TOT. 10.9 8.6 7.7 6.1	ON (inc O IN.) PLA. 2.7 6.3 10.5	100 LVDT ELA. 7.8 5.7 5.0 3.6 3.1	#3(4.C) TOT.  8.9 6.6 5.8 4.3 3.6	0 10 PLA. 2.0 4.4 7.1 15.5 24.0	LVDT  ELA.  6.2 4.1 3.4 2.1	#4(6.0 TOT. 7.0 4.7 3.9 2.5	2.9 9625 I PLA. 1.5 2.9 4.4
11110521  CYCLE NUMBER  100 500 1000 5000	100 LVDT ELA. 17.9 14.0 12.7 9.9 9.0	#1(0. TOT. 20.3 16.3 14.6 11.8	0 IN.) PLA. 5.7 14.3 24.7 62.7 104.3	(7) 4.30 DEFC LVDT ELA. 9.6 7.4 6.6 5.1 4.6	TOT.  10.9 8.6 7.7 6.1 5.3	ON (inc O IN.) PLA. 2.7 6.3 10.5 25.0	100 LVDT ELA. 7.8 5.7 5.0 3.6 3.1	6035. 0.0001) #3(4.0 TOT.  8.9 6.6 5.8 4.3	0 10 PLA. 2.0 4.4 7.1 15.5 24.0	LVDT  ELA.  6.2 4.1 3.4 2.1 1.7	#4(6.0 TOT. 7.0 4.7 3.9 2.5 1.9	2.9 9625 I PLA. 1.5 2.9 4.4 8.0
11110521  CYCLE NUMBER  100 500 1000 5000	100 LVDT ELA. 17.9 14.0 12.7 9.9 9.0 7.4	#1(0. TOT. 20.3 16.3 14.6 11.8	0 IN.) PLA. 5.7 14.3 24.7 62.7 104.3 215.6	(7) 4.30 DEFC LVDT ELA. 9.6 7.4 6.6 5.1 4.6 7.2	50RMATI #2(2.  TOT.  10.9 8.6 7.7 6.1 5.3 11.0	ON (inc O IN.) PLA. 2.7 6.3 10.5 25.0 40.3	100 LVDT ELA. 7.8 5.7 5.0 3.6 3.1 7.3	#3(4.C) TOT.  8.9 6.6 5.8 4.3 3.6	0 10 PLA.  2.0 4.4 7.1 15.5 24.0	LVDT ELA. 6.2 4.1 3.4 2.1 1.7	#4(6.0 TOT. 7.0 4.7 3.9 2.5 1.9	2.9 PLA. 1.5 2.9 4.4 8.0
11110521  CYCLE NUMBER  100 500 1000 5000 10000 36235 170420	100 LVDT ELA. 17.9 14.0 12.7 9.9 9.0 7.4 5.9	#1(0. TOT. 20.3 16.3 14.6 11.8 10.3 8.7 6.7	0 IN.) PLA. 5.7 14.3 24.7 62.7 104.3 215.6	(Z) 4.30 DEF( LVDT ELA. 9.6 7.4 6.6 5.1 4.6 7.2 2.9	(1 5 DRMATI #2(2. TOT. 10.9 8.6 7.7 6.1 5.3 11.0 3.3	ON (inc O IN.) PLA. 2.7 6.3 10.5 25.0 40.3	100 LVDT ELA. 7.8 5.7 5.0 3.6 3.1 7.3	#3(4.0 TOT. 8.9 6.6 5.8 4.3 3.6 10.7	0 10 PLA.  2.0 4.4 7.1 15.5 24.0	LVDT  ELA.  6.2 4.1 3.4 2.1 1.7 7.0 0.6	#4(6.0 TOT. 7.0 4.7 3.9 2.5 1.9 9.7 0.7	2.9 PLA.  1.5 2.9 4.4 8.0 11.3
11110521  CYCLE NUMBER  100 500 1000 5000 10000 36235 170420	100 LVDT ELA. 17.9 14.0 12.7 9.9 9.0 7.4 5.9	#1(0. TOT. 20.3 16.3 14.6 11.8 10.3 8.7 6.7	0 IN.) PLA. 5.7 14.3 24.7 62.7 104.3 215.6 649.5	(7) 4.30 DEFC LVDT ELA. 9.6 7.4 6.6 5.1 4.6 7.2 2.9	(1 5 DRMATI #2(2. TOT. 10.9 8.6 7.7 6.1 5.3 11.0 3.3	ON (inc O IN.) PLA. 2.7 6.3 10.5 25.0 40.3	100 LVDT ELA. 7.8 5.7 5.0 3.6 3.1 7.3	#3(4.00 TOT. 8.9 6.6 5.8 4.3 3.6 10.7 1.9	0 10 PLA. 2.0 4.4 7.1 15.5 24.0	138.0 LVDT  ELA.  6.2 4.1 3.4 2.1 1.7 7.0 0.6	#4(6.0 TOT. 7.0 4.7 3.9 2.5 1.9 9.7 0.7	2.9 PLA.  1.5 2.9 4.4 8.0 11.3 - 31.8
11110521  CYCLE NUMBER  100 500 1000 5000 10000 36235 170420  A = T(C = P)	100 LVDT ELA. 17.9 14.0 12.7 9.9 9.0 7.4 5.9	#1(0. TOT. 20.3 16.3 14.6 11.8 10.3 8.7 6.7	0 IN.) PLA. 5.7 14.3 24.7 62.7 104.3 215.6 649.5	(7) 4.30 DEFC LVDT ELA. 9.6 7.4 6.6 5.1 4.6 7.2 2.9 AGGREG	(1 5 DRMATI #2(2. TOT. 10.9 8.6 7.7 6.1 5.3 11.0 3.3	ON (inc O IN.) PLA. 2.7 6.3 10.5 25.0 40.3	100 LVDT ELA. 7.8 5.7 5.0 3.6 3.1 7.3	#3(4.0 TOT. 8.9 6.6 5.8 4.3 3.6 10.7 1.9	0 10 PLA. 2.0 4.4 7.1 15.5 24.0 -	LVDT  ELA.  6.2 4.1 3.4 2.1 1.7 7.0 0.6  T OF B INED L6	#4(6.0 TOT. 7.0 4.7 3.9 2.5 1.9 9.7 0.7	2.9 PLA.  1.5 2.9 4.4 8.0 11.3 - 31.8

PLA. - CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

## BEAM CYCLIC LOAD DATA

DEFORMATION (inches X 0.0001)   LVDT \$4 (6.0625	SAMPLE NUMBER		MA \	WB	AC	-	L hal	CL	WBW		BA \	GMM	AV
DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE  NUMBER  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA  100 18.0 20.7 5.7 9.7 11.1 2.7 7.8 9.0 2.0 6.2 7.1 1.  500 14.2 16.3 14.6 7.5 8.6 6.4 5.7 6.6 4.5 4.1 4.7 2.  1000 12.8 14.7 25.2 6.7 7.7 10.7 5.0 5.8 7.2 3.4 3.9 4.  5010 10.0 11.7 62.7 5.1 6.0 24.8 3.6 4.2 15.3 2.1 2.5 7.  10025 9.0 10.4 109.3 4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11.  21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 1-  164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA GPM A  NUMBER (gr) (gr) (Z) (1bs) (1bs) (gr) (gr) (gr)  CYCLE  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625)  CYCLE  NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3.  525 28.1 31.8 33.8 14.5 18.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.0 3.4 22.  26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30.  169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.	HUPDER		Br)	(gr)	(%)	(1	D8 )	(LDS)	(gr)		Br)		(2)
CYCLE  NUMBER  ELA. TOT. FLA.  100 18.0 20.7 5.7 9.7 11.1 2.7 7.8 9.0 2.0 6.2 7.1 1.  500 14.2 16.3 14.6 7.5 8.6 6.4 5.7 6.6 4.5 4.1 4.7 2.  1000 12.8 14.7 25.2 6.7 7.7 10.7 5.0 5.8 7.2 3.4 3.9 4.  5010 10.0 11.7 62.7 5.1 6.0 24.8 3.6 4.2 15.3 2.1 2.5 7.  10025 9.0 10.4 109.3 4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11.  21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 -  164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA GRY (3T)  NUMBER (gr) (gr) (Z) (1bs) (1bs) (gr) (gr) (Z)  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3.  525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  1000 25.5 28.9	11110531	10	000	449	4.30	5	0	100	6040.	0 10	150.0	2.55	3.00
TYPE PLANE BELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 18.0 20.7 5.7 9.7 11.1 2.7 7.8 9.0 2.0 6.2 7.1 1.  500 14.2 16.3 14.6 7.5 8.6 6.4 5.7 6.6 4.5 4.1 4.7 2.  1000 12.8 14.7 25.2 6.7 7.7 10.7 5.0 5.8 7.2 3.4 3.9 4.  5010 10.0 11.7 62.7 5.1 6.0 24.8 3.6 4.2 15.3 2.1 2.5 7.  10025 9.0 10.4 109.3 4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11.  21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 - 164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA CMM ANUMBER (gr) (gr) (Z) (1bs) (1bs) (gr) (gr) (Z  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 C) C) (2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 C) C) (2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 C) C) (2.0 IN.) LVDT \$4(6.0625 C) (2.0 IN.) LVDT \$4(6.0					DEF	ORMATI	ON (in	ches X	0.0001)				
NUMBER ELA. TOT. PLA. ELA. TOT. FLA. ELA. TOT. PLA. ELA. TOT. PLA  100 18.0 20.7 5.7 9.7 11.1 2.7 7.8 9.0 2.0 6.2 7.1 1.  500 14.2 16.3 14.6 7.5 8.6 6.4 5.7 6.6 4.5 4.1 4.7 2.  1000 12.8 14.7 25.2 6.7 7.7 10.7 5.0 5.8 7.2 3.4 3.9 4.  5010 10.0 11.7 62.7 5.1 6.0 24.8 3.6 4.2 15.3 2.1 2.5 7.  10025 9.0 10.4 109.3 4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11.  21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 -  164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA GRM A  NUMBER (gr) (gr) (X) (1bs) (1bs) (gr) (gr) (Z  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3.  525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15.  10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22.  26730 15.6 17.9 414.0 7.8 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30.  169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  CC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;	- -	LVDT	#1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
14.2 16.3 14.6 7.5 8.6 6.4 5.7 6.6 4.5 4.1 4.7 2.   1000   12.8 14.7   25.2 6.7 7.7 10.7 5.0 5.8 7.2 3.4 3.9 4.5010   10.0 11.7 62.7 5.1 6.0 24.8 3.6 4.2 15.3 2.1 2.5 7.   10025   9.0 10.4 109.3   4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11.   21200   8.1 9.2 156.7   2.6 3.1   - 2.1 2.5   - 1.7 1.9 1.1 1.9 1.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	_	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
1000 12.8 14.7 25.2 6.7 7.7 10.7 5.0 5.8 7.2 3.4 3.9 4. 5010 10.0 11.7 62.7 5.1 6.0 24.8 3.6 4.2 15.3 2.1 2.5 7. 10025 9.0 10.4 109.3 4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11. 21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 - 164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA GRM A NUMBER (gr) (gr) (%) (lbs) (lbs) (gr) (gr) (%  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. PLA  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3. 525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6. 1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8. 5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 1000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  WA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; CC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; CC = CYCLIC LOAD;	100	18.0	20.7	5.7	9.7	11.1	2.7	7.8	9.0	2.0	6.2	7.1	1.5
5010 10.0 11.7 62.7 5.1 6.0 24.8 3.6 4.2 15.3 2.1 2.5 7. 10025 9.0 10.4 109.3 4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11. 21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 - 164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA CMM A NUMBER (gr) (gr) (X) (1bs) (1bs) (gr) (gr) (X  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. PLA  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3. 525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6. 1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8. 5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  NA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; CC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; CRA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	500	14.2	16.3	14.6	7.5	8.6	6.4	5.7	6.6	4.5	4.1	4.7	2.9
10025 9.0 10.4 109.3 4.6 5.3 42.0 3.1 3.6 24.9 1.7 1.9 11. 21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 - 164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA CMM A NUMBER (gr) (gr) (X) (1bs) (1bs) (gr) (gr) (X  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. PLA  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3. 525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6. 1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8. 5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  NA - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF BITUMEN; CC - PERCENT ASPHALT CONTENT; SL - SUSTAINED LOAD; CRA - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD;	1000	12.8	14.7	25.2	6.7	7.7	10.7	5.0	5.8	7.2	3.4	3.9	4.4
21200 8.1 9.2 156.7 2.6 3.1 - 2.1 2.5 - 1.7 1.9 - 164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA CMM A NUMBER (gr) (gr) (Z) (lbs) (lbs) (gr) (gr) (Z  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. PLA  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3. 525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6. 1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8. 5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; CC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; RBA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	5010	10.0	11.7	62.7	5.1	6.0	24.8	3.6	4.2	15.3	2.1	2.5	7.9
164725 5.9 6.8 646.4 2.9 3.3 219.6 1.7 1.9 106.8 0.6 0.7 31.  SAMPLE WA WB AC SL CL WBW WBA GMM A NUMBER (gr) (gr) (X) (lbs) (lbs) (gr) (gr) (X  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3. 525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6. 1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8. 5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; CC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; ERA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	10025	9.0	10.4	109.3	4.6	5.3	42.0	3.1	3.6	24.9	1.7	1.9	11.7
SAMPLE WA WB AC SL CL WBW WBA GMM A NUMBER (gr) (gr) (Z) (lbs) (lbs) (gr) (gr) (Z) (Z) (lbs) (lbs) (gr) (gr) (Z) (Z) (Z) (Z) (Z) (Z) (Z) (Z) (Z) (Z	21200	8.1	9.2	156.7	2.6	3.1	-	2.1	2.5	-	1.7	1.9	-
NUMBER (gr) (gr) (Z) (1bs) (1bs) (gr) (gr) (Z  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.    DEFORMATION (inches X 0.0001)    LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)   CYCLE	164725	5.9	6.8	646.4	2.9	3.3	219.6	1.7	1.9	106.8	0.6	0.7	31.4
NUMBER (gr) (gr) (Z) (lbs) (lbs) (gr) (gr) (Z  11110512 10000 449 4.30 50 200 6042.0 10152.0 2.55 2.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3. 525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6. 1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8. 5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  WB = WEIGHT OF BITUMEN; C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; TEA = WEIGHT OF SAMPLE IN AIR; C = CYCLIC LOAD;	SAMPLE	,	AA.	WB	AC	S	L	CL	WBW	W	BA.	GMM	AV
DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3.  525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15.  10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22.  26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30.  169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA - TOTAL WEIGHT OF DRY AGGREGATES;  WB - WEIGHT OF BITUMEN;  CC - PERCENT ASPHALT CONTENT;  CL - CYCLIC LOAD;	NUMBER	C	gr)	(gr)	(1)	(1	bs)	(lbs)	(gr)	C	gr)		(1)
LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3.  525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15.  10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22.  26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30.  169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  TA = TOTAL WEIGHT OF DRY AGGREGATES;  WB = WEIGHT OF BITUMEN;  CC = PERCENT ASPHALT CONTENT;  SL = SUSTAINED LOAD;  CL = CYCLIC LOAD;	11110512	100	000	449	4.30	5	0	200	6042.	0 10	152.0	2.55	2.98
CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3.  525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15.  10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22.  26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30.  169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  A = TOTAL WEIGHT OF DRY AGGREGATES;  WB = WEIGHT OF BITUMEN;  CC = PERCENT ASPHALT CONTENT;  CL = CYCLIC LOAD;					DEF	ORMATI	ON (in	ches X	0.0001)				
NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  155 33.7 38.1 17.1 17.6 19.9 7.7 13.7 15.5 5.5 10.2 11.5 3.  525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15.  10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22.  26730 15.6 17.9 414.0 7.8 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30.  169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  A = TOTAL WEIGHT OF DRY AGGREGATES;  WB = WEIGHT OF BITUMEN;  C = PERCENT ASPHALT CONTENT;  C = PERCENT ASPHALT CONTENT;  C = CYCLIC LOAD;	CYCLE	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
525 28.1 31.8 33.8 14.5 16.4 14.5 10.8 12.2 9.8 7.3 8.3 6.  1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8.  5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15.  10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22.  26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30.  169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  CC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  THA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	_	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
1000 25.5 28.9 54.9 13.0 14.8 22.8 9.5 10.7 14.9 6.1 6.9 8. 5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF BITUMEN; CC - PERCENT ASPHALT CONTENT; SL - SUSTAINED LOAD; THAT TOTAL WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD;	155	33.7	38.1	17.1	17.6	19.9	7.7	13.7	15.5	5.5	10.2	11.5	3.8
5000 20.0 22.9 142.0 10.0 11.5 55.1 6.8 7.8 32.8 3.7 4.3 15. 10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA - TOTAL WEIGHT OF DRY AGGREGATES;  WB - WEIGHT OF BITUMEN;  CC - PERCENT ASPHALT CONTENT;  SL - SUSTAINED LOAD;  CL - CYCLIC LOAD;	525	28.1	31.8	33.8	14.5	16.4	14.5	10.8	12.2	9.8	7.3	8.3	6.1
10000 18.0 20.6 237.4 9.0 10.2 89.4 5.9 6.7 50.9 3.0 3.4 22. 26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA = TOTAL WEIGHT OF DRY AGGREGATES;  WB = WEIGHT OF BITUMEN;  CC = PERCENT ASPHALT CONTENT;  CL = CYCLIC LOAD;  CL = CYCLIC LOAD;	1000	25.5	28.9	54.9	13.0	14.8	22.8	9.5	10.7	14.9	6.1	6.9	8.7
26730 15.6 17.9 414.0 7.6 8.8 149.3 4.7 5.4 79.5 2.1 2.4 30. 169100 11.8 13.5 1435.9 5.6 8.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; THAT HE WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	5000	20.0	22.9	142.0	10.0	11.5	55.1	6.8	7.8	32.8	3.7	4.3	15.9
169100 11.8 13.5 1435.9 5.6 6.4 476.8 3.1 3.6 220.3 1.0 1.1 58.  IA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  IC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  IBA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	10000	18.0	20.6	237.4	9.0	10.2	89.4	5.9	6.7	50.9	3.0	3.4	22.5
TA = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; CC = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; TBA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	26730	15.6	17.9	414.0	7.6	8.8	149.3	4.7	5.4	79.5	2.1	2.4	30.2
C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;	169100	11.8	13.5	1435.9	5.6	6.4	476.8	3.1	3.6	220.3	1.0	1.1	58.4
THA - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD;	A - T	OTAL V	VEIGHT	OF DRY	AGGRE	GATES;			WB -	WEIGH:	OF B	ITUMEN;	
,	C = P	ERCEN:	r asph	ALT CON	TENT;				SL -	SUSTA	INED L	OAD;	
BW - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;	IBA - W	EIGHT	OF SA	MPLE IN	AIR;				CL -	CYCLIC	CLOAD	;	
	IBW - W	EIGHT	OF SA	MPLE IN	WATER	;			AV -	PERCE	NT AIR	VOIDS;	

ELA. AND TOT. = ELASTIC AND TOTAL DEFORMATION/CYCLE;
PLA. = CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

# BEAM CYCLIC LOAD DATA

SAMPLE	W	A	WB	AC	Si	L	CL	WBW	V	√BA	GMM	AV
NUMBER	(g	r)	(gr)	(%)	(1)	bs)	(lbs)	(gr)	) (	(gr)		(%)
11110522	100	00	449	4.30	5	0	200	6050.	0 10	175.0	2.55	3.12
				DEF	ORMATIO	ON (inc	ches X (	0.0001)				
_	LVDT	#1(0.	0 IN.)	LVDT	#2(2.	O IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	36.8	42.3	13.4	19.1	21.9	6.1	15.0	17.2	4.5	11.4	13.0	3.1
500	28.9	32.9	34.1	14.7	16.8	14.4	10.9	12.4	9.7	7.4	8.4	6.0
1000	26.1	29.6	58.6	13.2	14.9	24.0	9.5	10.8	15.6	6.1	6.9	9.0
5025	20.5	23.4	149.1	10.1	11.6	57.0	6.8	7.8	33.6	3.7	4.2	16.1
10000	18.5	20.8	253.9	9.0	10.2	94.2	5.8	6.6	53.2	2.9	3.3	23.2
158650	12.2	13.9	1312.1	5.7	6.5	430.2	3.1	3.6	197.3	1.0	1.1	51.8
SAMPLE	W		WB	AC	Si		CL	WBW		√BA	GMM	AV
NUMBER	(g	r)	(gr)	(Z)	(11	DS)	(lbs)	(gr)	,	(gr)		(%)
11110532	100	00	449	4.30	5	n	200			0151.0	2.55	3.0
	100	•				•	200	6040.	.0 10	3131.0	2.33	3.0
							ches X			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<b>2</b> .33	J. U.
			.0 IN.)	DEF	ORMATI(	ON (in	ches X	0.0001)	)			
_	LVDT	<b>#</b> 1(0.		DEFO	P2(2.	ON (in	LVDT	0.0001)	) IN.)	LVDT		)62 <b>5</b> I
_	LVDT	#1(0.	0 IN.)	DEFO LVDT ELA.	P2(2.	ON (inc	LVDT	#3(4.0	) IN.)	LVDT ELA.	<b>#</b> 4(6.0	0625 I
NUMBER	LVDT	#1(0. TOT.	0 IN.) PLA.	LVDT ELA. 19.0	#2(2.)	ON (inc	LVDT ELA. 14.9	#3(4.0	) IN.) PLA.	LVDT ELA. 11.4	<b>#</b> 4(6.0	0625 I
NUMBER 100	LVDT ELA. 36.2	#1(0. TOT. 42.1 32.3	0 IN.) PLA.	LVDT ELA. 19.0 14.6	#2(2. TOT.	ON (inc	LVDT ELA. 14.9 10.9	#3(4.0 TOT.	) IN.) PLA.	LVDT ELA. 11.4 7.4	#4(6.0 TOT.	PLA. 3.1 6.0
100 500 1000	LVDT ELA. 36.2 28.4 25.6	#1(0. TOT. 42.1 32.3 29.8	0 IN.) PLA. 13.0 33.6	DEFO LVDT ELA. 19.0 14.6 13.1	#2(2.1 TOT. 22.1 16.6 15.2	ON (income of the come of the	LVDT  ELA.  14.9 10.9 9.5	#3(4.0 TOT.	PLA.  4.4  9.7  15.0	LVDT ELA. 11.4 7.4 6.1	#4(6.0 TOT. 13.2 8.5	PLA. 3.1 6.0
100 500 1000 5000	LVDT ELA. 36.2 28.4 25.6 20.1	#1(0. TOT. 42.1 32.3 29.8 22.9	0 IN.) PLA. 13.0 33.6 55.5	DEFO LVDT ELA. 19.0 14.6 13.1 10.0	#2(2.1 TOT. 22.1 16.6 15.2 11.4	ON (inc) PLA. 5.9 14.3 23.0 54.6	LVDT  ELA.  14.9 10.9 9.5 6.8	#3(4.0 TOT. 17.4 12.4	PLA.  4.4  9.7  15.0  32.4	LVDT ELA. 11.4 7.4 6.1 3.7	#4(6.0 TOT. 13.2 8.5 7.1 4.2	PLA.  3.1 6.0 8.7 15.7
100 500 1000 5000	LVDT ELA. 36.2 28.4 25.6 20.1 18.1	#1(0. TOT. 42.1 32.3 29.8 22.9 20.8	13.0 33.6 55.5	DEFC LVDT ELA. 19.0 14.6 13.1 10.0 9.0	#2(2.1 TOT. 22.1 16.6 15.2 11.4 10.3	ON (inc 0 IN.) PLA. 5.9 14.3 23.0 54.6 90.2	LVDT  ELA.  14.9 10.9 9.5 6.8 5.8	#3(4.0 TOT. 17.4 12.4 11.0 7.7 6.7	PLA.  4.4 9.7 15.0 32.4 51.2	LVDT ELA. 11.4 7.4 6.1 3.7 3.0	#4(6.0 TOT. 13.2 8.5 7.1 4.2 3.4	PLA.  3.1 6.0 8.7 15.7 22.6
100 500 1000 5000 10000 30000	LVDT ELA. 36.2 28.4 25.6 20.1 18.1 15.4	#1(0. TOT. 42.1 32.3 29.8 22.9 20.8	13.0 33.6 55.5 141.2 240.3 444.3	DEFC LVDT ELA. 19.0 14.6 13.1 10.0 9.0 7.5	#2(2.1 TOT. 22.1 16.6 15.2 11.4 10.3 8.5	ON (inc) PLA. 5.9 14.3 23.0 54.6 90.2 158.8	LVDT  ELA.  14.9 10.9 9.5 6.8 5.8 4.6	#3(4.0 TOT. 17.4 12.4 11.0 7.7 6.7	PLA.  4.4  9.7  15.0  32.4  51.2  83.6	LVDT ELA.  11.4 7.4 6.1 3.7 3.0 2.0	#4(6.0 TOT. 13.2 8.5 7.1 4.2 3.4 2.3	PLA.  3.1 6.0 8.7 15.7 22.6 31.0
500 1000 5000 10000 30000 163740	LVDT  ELA.  36.2 28.4 25.6 20.1 18.1 15.4 11.9	#1(0. TOT. 42.1 32.3 29.8 22.9 20.8 17.4 13.7	13.0 33.6 55.5 141.2 240.3 444.3	DEFO LVDT ELA. 19.0 14.6 13.1 10.0 9.0 7.5 5.7	#2(2.1 TOT. 22.1 16.6 15.2 11.4 10.3 8.5 6.5	ON (inc 0 IN.) PLA. 5.9 14.3 23.0 54.6 90.2 158.8 471.0	LVDT  ELA.  14.9 10.9 9.5 6.8 5.8 4.6	#3(4.0 TOT. 17.4 12.4 11.0 7.7 6.7 5.2 3.6	PLA.  4.4  9.7  15.0  32.4  51.2  83.6  217.5	LVDT ELA.  11.4 7.4 6.1 3.7 3.0 2.0	#4(6.0 TOT. 13.2 8.5 7.1 4.2 3.4 2.3 1.1	PLA.  3.1 6.0 8.7 15.7 22.6 31.0 57.7
100 500 1000 5000 10000 30000 163740	LVDT ELA. 36.2 28.4 25.6 20.1 18.1 15.4 11.9	#1(0. TOT. 42.1 32.3 29.8 22.9 20.8 17.4 13.7	13.0 33.6 55.5 141.2 240.3 444.3 1421.8	DEFO LVDT ELA. 19.0 14.6 13.1 10.0 9.0 7.5 5.7	#2(2.1 TOT. 22.1 16.6 15.2 11.4 10.3 8.5 6.5	ON (inc 0 IN.) PLA. 5.9 14.3 23.0 54.6 90.2 158.8 471.0	LVDT  ELA.  14.9 10.9 9.5 6.8 5.8 4.6	#3(4.0 TOT. 17.4 12.4 11.0 7.7 6.7 5.2 3.6	PLA.  4.4 9.7 15.0 32.4 51.2 83.6 217.5	LVDT ELA.  11.4 7.4 6.1 3.7 3.0 2.0 1.0	#4(6.0 TOT. 13.2 8.5 7.1 4.2 3.4 2.3 1.1	PLA.  3.1 6.0 8.7 15.7 22.6 31.0 57.7
100 500 1000 5000 10000 30000 163740 A = TC	LVDT  ELA.  36.2 28.4 25.6 20.1 18.1 15.4 11.9  OTAL WERCENT	#1(0. TOT. 42.1 32.3 29.8 22.9 20.8 17.4 13.7	13.0 33.6 55.5 141.2 240.3 444.3 1421.8	DEFO LVDT ELA. 19.0 14.6 13.1 10.0 9.0 7.5 5.7 AGGREG	#2(2.1 TOT. 22.1 16.6 15.2 11.4 10.3 8.5 6.5	ON (inc 0 IN.) PLA. 5.9 14.3 23.0 54.6 90.2 158.8 471.0	LVDT  ELA.  14.9 10.9 9.5 6.8 5.8 4.6	#3(4.0 TOT. 17.4 12.4 11.0 7.7 6.7 5.2 3.6	PLA.  4.4 9.7 15.0 32.4 51.2 83.6 217.5 WEIGH	LVDT  ELA.  11.4  7.4  6.1  3.7  3.0  2.0  1.0	#4(6.0 TOT. 13.2 8.5 7.1 4.2 3.4 2.3 1.1	PLA.  3.1 6.0 8.7 15.7 22.6 31.0 57.7
100 500 1000 5000 10000 30000 163740 A = TC C = PI	LVDT  ELA.  36.2 28.4 25.6 20.1 18.1 15.4 11.9  OTAL WERCENT	#1(0. TOT. 42.1 32.3 29.8 22.9 20.8 17.4 13.7 EIGH1	13.0 33.6 55.5 141.2 240.3 444.3 1421.8	DEFO LVDT ELA. 19.0 14.6 13.1 10.0 9.0 7.5 5.7 AGGREC TENT; AIR;	#2(2.1 TOT. 22.1 16.6 15.2 11.4 10.3 8.5 6.5	ON (inc 0 IN.) PLA. 5.9 14.3 23.0 54.6 90.2 158.8 471.0	LVDT  ELA.  14.9 10.9 9.5 6.8 5.8 4.6	#3(4.0 TOT. 17.4 12.4 11.0 7.7 6.7 5.2 3.6	PLA.  4.4  9.7  15.0  32.4  51.2  83.6  217.5  WEIGI	LVDT  ELA.  11.4  7.4 6.1 3.7 3.0 2.0 1.0  HT OF B	#4(6.0 TOT. 13.2 8.5 7.1 4.2 3.4 2.3 1.1 ITUMEN;	PLA.  3.1 6.0 8.7 15.7 22.6 31.0 57.7

PLA. - CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

SAMPLE	WA	WB	AC	SL		CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1b	s)	(lbs)	(gr	)	(gr)		(%)
11110515	10000	449	4.30	50		500	6047	. 0	10166.0	2.55	3.0
			DEF	RMATIO	N (inc	hes X (	0.0001	)			
CYCLE _	LVDT #1(0	.0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	625 I
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	91.2104.6	44.0	44.5	51.1	18.7	31.6	36.2	12.	4 21.3	24.4	7.8
500	71.6 81.0	112.7	34.2	38.7	44.7	22.7	25.6	<b>27</b> .	0 13.3	15.0	14.4
1000	64.6 74.7	192.8	30.6	35.3	74.2	19.6	22.6	42.	8 10.7	12.3	21.0
5000	50.7 58.8	481.3	23.5	27.2	172.4	13.8	16.0	89.	1 6.1	7.1	34.8
10000	45.7 52.6	809.3	20.9	24.1	281.0	11.8	13.6	137.	8 4.7	5.4	47.8
50000	35.9 41.2	2111.2	16.0	18.4	681.0	8.1	9.3	292.	4 2.4	2.7	72.8
100000	32.4 36.6	3589.6	14.3	16.2 1	121.2	6.8	7.7	452.	1 1.7	1.9	94.7
SAMPLE	WA	WB	AC	SL		CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1b	s)	(lbs)	(gr	)	(gr)		(2)
11110525	10000	449	4.30	50	<del></del>	500	6047	. 0	10164.0	2.55	3.0
			DEF	RMATIO	M (inc	hes X (	0.0001	)	. 1 . 1 . 1 . 1 . 1 . 1 . 1		
	LVDT #1(0	.0 IN.)	LVDī	#2(2.0	IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	62 <b>5</b> I
_	LVDT #1(0			#2(2.0 TOT.			#3(4.0				
_		. PLA.	ELA.		PLA.	ELA.		PLA	. ELA.		PLA.
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA. 31.6	TOT.	PLA	. ELA.	TOT.	PLA.
NUMBER 100	ELA. TOT	43.4 111.0	ELA. 44.5 34.2	TOT. 51.4 38.8	PLA. 18.5 44.2	ELA. 31.6 22.7	TOT. 36.5 25.7	PLA 12.: 26.	. ELA.	TOT. 24.7 15.1	PLA. 7.7 14.3
100 500 1000 5000	90.8105.0 71.3 80.9 64.3 73.1 50.5 58.0	. PLA. 43.4 111.0 186.4 483.4	ELA. 44.5 34.2 30.5 23.4	TOT. 51.4 38.8 34.7 26.9	PLA.  18.5 44.2 72.0 173.7	ELA. 31.6 22.7 19.6 13.8	TOT.  36.5 25.7 22.3 15.8	PLA 12.: 26.: 41.:	. ELA. 3 21.3 7 13.3 6 10.7 0 6.1	TOT.  24.7 15.1 12.2 7.0	7.7 14.3 20.5 35.2
100 500 1000 5000	90.8105.0 71.3 80.9 64.3 73.1	. PLA. 43.4 111.0 186.4 483.4	ELA. 44.5 34.2 30.5 23.4	TOT. 51.4 38.8 34.7 26.9	PLA.  18.5 44.2 72.0 173.7	ELA. 31.6 22.7 19.6 13.8	TOT.  36.5 25.7 22.3 15.8	PLA 12.: 26.: 41.:	. ELA. 3 21.3 7 13.3 6 10.7 0 6.1	TOT.  24.7 15.1 12.2 7.0	7.7 14.3 20.5 35.2
100 500 1000 5000	90.8105.0 71.3 80.9 64.3 73.1 50.5 58.0	43.4 111.0 186.4 483.4 819.0	ELA. 44.5 34.2 30.5 23.4 20.9	TOT. 51.4 38.8 34.7 26.9 24.3	PLA.  18.5 44.2 72.0 173.7 285.3	ELA. 31.6 22.7 19.6 13.8 11.8	TOT.  36.5 25.7 22.3 15.8 13.7	PLA 12.3 26.41.4 90.4	3 21.3 7 13.3 6 10.7 0 6.1 3 4.7	TOT.  24.7 15.1 12.2 7.0 5.5	7.7 14.3 20.5 35.2 48.8
100 500 1000 5000 10000 50000	90.8105.0 71.3 80.9 64.3 73.1 50.5 58.0 45.5 52.9 35.7 40.4	. PLA. 43.4 111.0 186.4 483.4 819.0 2070.5	ELA.  44.5 34.2 30.5 23.4 20.9 16.0	TOT. 51.4 38.8 34.7 26.9 24.3 18.1	PLA.  18.5 44.2 72.0 173.7 285.3 670.2	ELA.  31.6 22.7 19.6 13.8 11.8 8.1	TOT.  36.5 25.7 22.3 15.8 13.7 9.2	PLA  12.: 26.: 41.: 90.: 140.: 288.:	21.3 7 13.3 6 10.7 0 6.1 3 4.7 7 2.4	TOT.  24.7 15.1 12.2 7.0 5.5	PLA. 7.7 14.3 20.5 35.2 48.8 72.2
100 500 1000 5000 10000 50000	90.8105.0 71.3 80.9 64.3 73.1 50.5 58.0 45.5 52.9 35.7 40.4 32.2 36.8	. PLA.  43.4 111.0 186.4 483.4 819.0 2070.5 3508.7	ELA.  44.5 34.2 30.5 23.4 20.9 16.0 14.3	TOT.  51.4 38.8 34.7 26.9 24.3 18.1 16.3 1	PLA.  18.5 44.2 72.0 173.7 285.3 670.2	31.6 22.7 19.6 13.8 11.8 8.1 6.9	TOT.  36.5 25.7 22.3 15.8 13.7 9.2 7.8	PLA  12.3 26.41.0 90.0 140.3 288.444.3	21.3 7 13.3 6 10.7 0 6.1 3 4.7 7 2.4	TOT.  24.7 15.1 12.2 7.0 5.5 2.7 2.0	7.7 14.3 20.5 35.2 48.8 72.2 93.8
100 500 1000 5000 10000 50000 100000	90.8105.0 71.3 80.9 64.3 73.1 50.5 58.0 45.5 52.9 35.7 40.4 32.2 36.8 DTAL WEIGH ERCENT ASP	. PLA. 43.4 111.0 186.4 483.4 819.0 2070.5 3508.7 T OF DRY	ELA.  44.5 34.2 30.5 23.4 20.9 16.0 14.3  AGGREGIENT;	TOT.  51.4 38.8 34.7 26.9 24.3 18.1 16.3 1	PLA.  18.5 44.2 72.0 173.7 285.3 670.2	31.6 22.7 19.6 13.8 11.8 8.1 6.9	TOT.  36.5 25.7 22.3 15.8 13.7 9.2 7.8	PLA  12.: 26.: 41.: 90.: 140.: 288.: 444.: = WEIG	. ELA.  3 21.3 7 13.3 6 10.7 0 6.1 3 4.7 7 2.4 9 1.7  GHT OF B. TAINED LO	TOT.  24.7 15.1 12.2 7.0 5.5 2.7 2.0  ITUMEN; OAD;	7.7 14.3 20.5 35.2 48.8 72.2 93.8
500 1000 5000 10000 50000 100000 A = TC C = PI	90.8105.0 71.3 80.9 64.3 73.1 50.5 58.0 45.5 52.9 35.7 40.4 32.2 36.8 OTAL WEIGH ERCENT ASP	. PLA. 43.4 111.0 186.4 483.4 819.0 2070.5 3508.7 T OF DRY HALT CONTAMPLE IN	ELA.  44.5 34.2 30.5 23.4 20.9 16.0 14.3  AGGRECTENT; AIR;	TOT.  51.4 38.8 34.7 26.9 24.3 18.1 16.3 1	PLA.  18.5 44.2 72.0 173.7 285.3 670.2	31.6 22.7 19.6 13.8 11.8 8.1 6.9	TOT.  36.5 25.7 22.3 15.8 13.7 9.2 7.8  WB = SL = CL = CL	PLA  12 26. 41 90 140 288. 444  WEIG SUS	21.3 7 13.3 6 10.7 0 6.1 3 4.7 7 2.4 9 1.7 GHT OF B. TAINED LC	TOT.  24.7 15.1 12.2 7.0 5.5 2.7 2.0  ITUMEN; DAD;	PLA. 7.7 14.3 20.5 35.2 48.8 72.2 93.8
100 500 1000 5000 10000 50000 100000	90.8105.0 71.3 80.9 64.3 73.1 50.5 58.0 45.5 52.9 35.7 40.4 32.2 36.8 DTAL WEIGH ERCENT ASP	. PLA. 43.4 111.0 186.4 483.4 819.0 2070.5 3508.7 T OF DRY HALT CONTAMPLE IN	ELA.  44.5 34.2 30.5 23.4 20.9 16.0 14.3  AGGRECTENT; AIR;	TOT.  51.4 38.8 34.7 26.9 24.3 18.1 16.3 1	PLA.  18.5 44.2 72.0 173.7 285.3 670.2	31.6 22.7 19.6 13.8 11.8 8.1 6.9	TOT.  36.5 25.7 22.3 15.8 13.7 9.2 7.8  WB = SL = CL = CL	PLA  12 26. 41 90 140 288. 444  WEIG SUS	. ELA.  3 21.3 7 13.3 6 10.7 0 6.1 3 4.7 7 2.4 9 1.7  GHT OF B. TAINED LO	TOT.  24.7 15.1 12.2 7.0 5.5 2.7 2.0  ITUMEN; DAD;	PLA. 7.7 14.3 20.5 35.2 48.8 72.2 93.8

Sample Number	WA (gr)	WB (gr)	AC	S (1	L bs)	CL (lbs)	WBW (gr	_	BA gr)	GMM	AV (2)
11110525						500				2 55	3 0
11110535	10000	449	4.30	5		500	6058	.0 10	185.0	2.55	3.0
			DEF	ORMATI	ON (inc	ches X (	0.0001	)			
CYCLE	LVDT #1(0	).O IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. TO	r. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	91.5103.6	5 43.7	44.6	50.5	18.5	31.7	35.9	12.3	21.3	24.2	7.7
500	71.9 83.2	2 111.7	34.3	39.7	44.3	22.7	26.3	26.7	13.3	15.4	14.2
1000	64.8 73.3	3 192.7	30.6	34.7	74.1	19.6	22.2	42.7	10.7	12.1	21.0
5027	50.8 59.0	493.1	23.5	27.3	176.4	13.8	16.0	91.1	6.1	7.1	35.5
10400	45.6 52.1	L 833.4	20.8	23.8	288.6	11.7	13.4	141.0	4.6	5.3	48.5
18000	42.0 49.1	1 1093.2	19.0	22.2	369.3	10.3	12.1	172.8	3.7	4.3	53.5
,											
SAMPLE	WA	WB	AC	s	L	CL	WBW	W	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
11210511	10000	444	4.25	5	0	100	6032	.0 10	146.0	2.55	3.1
											*****
			DEF	ORMATI	ON (in	ches X	0.0001	)			
_	LVDT #1(0	).0 IN.)			ON (ind	· · · · <u>-</u>		) 0 IN.)	LVDT	<b>#</b> 4(6.0	625 I
_	LVDT #1(C				0 IN.)	· · · · <u>-</u>			LVDT	#4(6.0	9625 I
_		r. PLA.	LVDT ELA.	#2(2.	0 IN.)	LVDT	#3(4. TOT.	0 IN.)		тот.	
NUMBER	ELA. TO	r. PLA.	LVDT ELA.	#2(2. TOT.	O IN.)	LVDT	#3(4. TOT.	O IN.)	ELA.	TOT.	PLA.
NUMBER 100	ELA. TO	7. PLA. 5 5.8 9 18.0	LVDT ELA. 9.4	#2(2. TOT. 10.7 8.1	0 IN.) PLA. 3.1	LVDT ELA. 7.5	#3(4. TOT. 8.6 6.2	PLA.	ELA.	TOT.	PLA.
100 500	ELA. TOT	7. PLA. 5 5.8 9 18.0	ELA. 9.4 7.2 6.4	#2(2. TOT. 10.7 8.1	0 IN.) PLA. 3.1 7.7	LVDT ELA. 7.5 5.4 4.7	#3(4. TOT. 8.6 6.2	PLA.  2.3 5.3 8.4	5.8 3.8 3.1	TOT.	PLA. 1.7 3.3 5.0
100 500 1000	17.9 20.5 14.1 15.8 12.7 14.4 9.9 11.3	7. PLA. 5 6.8 9 18.0 4 30.8	LVDT  ELA.  9.4  7.2  6.4  5.0	#2(2. TOT. 10.7 8.1 7.3	0 IN.) PLA. 3.1 7.7 12.7 31.1	TVDT  ELA.  7.5 5.4 4.7 3.4	#3(4. TOT. 8.6 6.2 5.4	PLA.  2.3 5.3 8.4 18.8	5.8 3.8 3.1 1.9	TOT. 6.6 4.3 3.6	PLA. 1.7 3.3 5.0 9.3
100 500 1000 5000	17.9 20.5 14.1 15.6 12.7 14.4 9.9 11.3 9.0 10.3	F. PLA.  5 6.8  9 18.0  4 30.8  3 80.7	LVDT ELA.  9.4 7.2 6.4 5.0 4.4	#2(2. TOT. 10.7 8.1 7.3 5.6 5.1	0 IN.) PLA. 3.1 7.7 12.7 31.1 53.0	7.5 5.4 4.7 3.4 2.9	#3(4. TOT. 8.6 6.2 5.4 3.9 3.4	PLA.  2.3 5.3 8.4 18.8	5.8 3.8 3.1 1.9	TOT. 6.6 4.3 3.6 2.2	PLA. 1.7 3.3 5.0 9.3
100 500 1000 5000 10000 30500	17.9 20.5 14.1 15.6 12.7 14.4 9.9 11.3 9.0 10.3	5 6.8 9 18.0 4 30.8 3 80.7 3 141.6 3 265.5	9.4 7.2 6.4 5.0 4.4	#2(2. TOT. 10.7 8.1 7.3 5.6 5.1 4.3	0 IN.) PLA. 3.1 7.7 12.7 31.1 53.0 94.6	7.5 5.4 4.7 3.4 2.9 2.3	#3(4. TOT. 8.6 6.2 5.4 3.9 3.4 2.7	PLA.  2.3 5.3 8.4 18.8 30.6 50.7	5.8 3.8 3.1 1.9 1.5	TOT. 6.6 4.3 3.6 2.2 1.8	PLA.  1.7 3.3 5.0 9.3 13.9 19.4
100 500 1000 5000 10000 30500 683000	17.9 20.5 14.1 15.6 12.7 14.4 9.9 11.3 9.0 10.3 7.6 8.6	7. PLA. 5 6.8 9 18.0 4 30.8 3 80.7 3 141.6 3 265.5 4 2231.5	9.4 7.2 6.4 5.0 4.4 3.7 2.2	#2(2. TOT. 10.7 8.1 7.3 5.6 5.1 4.3 2.5	0 IN.) PLA.  3.1 7.7 12.7 31.1 53.0 94.6 690.7	7.5 5.4 4.7 3.4 2.9 2.3	#3(4. TOT. 8.6 6.2 5.4 3.9 3.4 2.7 1.3	PLA.  2.3 5.3 8.4 18.8 30.6 50.7	5.8 3.8 3.1 1.9 1.5 1.0	TOT. 6.6 4.3 3.6 2.2 1.8 1.2 0.3	PLA.  1.7 3.3 5.0 9.3 13.9 19.4 55.4
100 500 1000 5000 10000 30500 683000	17.9 20.5 14.1 15.8 12.7 14.4 9.9 11.3 9.0 10.3 7.6 8.8 4.8 5.4	F. PLA.  5 6.8  9 18.0  4 30.8  3 80.7  3 141.6  3 265.5  4 2231.5	ELA.  9.4 7.2 6.4 5.0 4.4 3.7 2.2	#2(2. TOT. 10.7 8.1 7.3 5.6 5.1 4.3 2.5	0 IN.) PLA.  3.1 7.7 12.7 31.1 53.0 94.6 690.7	7.5 5.4 4.7 3.4 2.9 2.3	#3(4. TOT. 8.6 6.2 5.4 3.9 3.4 2.7 1.3	PLA.  2.3 5.3 8.4 18.8 30.6 50.7 287.5  - WEIGH	5.8 3.8 3.1 1.9 1.5 1.0 0.3	TOT.  6.6 4.3 3.6 2.2 1.8 1.2 0.3	PLA.  1.7 3.3 5.0 9.3 13.9 19.4 55.4
100 500 1000 5000 10000 30500 683000 A = TC C = PI	ELA. TOTAL WEIGHT OF SEIGHT OF SE	F. PLA.  5 6.8  9 18.0  4 30.8  3 80.7  3 141.6  3 265.5  4 2231.5  HT OF DRY PHALT CONT	ELA.  9.4 7.2 6.4 5.0 4.4 3.7 2.2  AGGREGIENT; AIR;	#2(2. TOT.  10.7 8.1 7.3 5.6 5.1 4.3 2.5	0 IN.) PLA.  3.1 7.7 12.7 31.1 53.0 94.6 690.7	7.5 5.4 4.7 3.4 2.9 2.3	#3(4. TOT. 8.6 6.2 5.4 3.9 3.4 2.7 1.3	PLA.  2.3 5.3 8.4 18.8 30.6 50.7 287.5	5.8 3.8 3.1 1.9 1.5 1.0 0.3	TOT.  6.6 4.3 3.6 2.2 1.8 1.2 0.3	PLA.  1.7 3.3 5.0 9.3 13.9 19.4 55.4
500 1000 5000 10000 30500 683000 A = TC C = PI	ELA. TOTAL WEIGHT ASSET	F. PLA.  5 6.8  9 18.0  4 30.8  3 80.7  3 141.6  3 265.5  4 2231.5  HT OF DRY PHALT CONT	ELA.  9.4 7.2 6.4 5.0 4.4 3.7 2.2  AGGREGIENT; AIR;	#2(2. TOT.  10.7 8.1 7.3 5.6 5.1 4.3 2.5	0 IN.) PLA.  3.1 7.7 12.7 31.1 53.0 94.6 690.7	7.5 5.4 4.7 3.4 2.9 2.3	#3(4. TOT. 8.6 6.2 5.4 3.9 3.4 2.7 1.3 WB SL CL	PLA.  2.3 5.3 8.4 18.8 30.6 50.7 287.5  - WEIGH	5.8 3.8 3.1 1.9 1.5 1.0 0.3 T OF B	TOT.  6.6 4.3 3.6 2.2 1.8 1.2 0.3  ITUMEN; OAD;	PLA.  1.7 3.3 5.0 9.3 13.9 19.4 55.4

BEAM CYCLIC LOAD DATA

SAMPLE	٢	ŀΑ	WB	AC	S	L	CL	WBW	WE	BA	GMM	AV
NUMBER	( 8	;r)	(gr)	(%)	(1)	bs)	(lbs)	(gr)	( g	r)		(%)
11210521	100	000	444	4.25	5	0	100	6041.	0 101	50.0	2.55	3.02
<u> </u>				DEF	ORMATI	ON (inc	ches X (	0.0001)				
	LVDT	#1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
CYCLE NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	17.5	20.6	6.4	9.3	10.9	3.0	7.4	8.8	2.2	5.8	6.8	1.6
500	13.7	15.5	17.0	7.2	8.1	7.4	5.4	6.1	5.1	3.8	4.3	3.3
1000	12.4	14.0	29.1	6.4	7.2	12.2	4.7	5.4	8.2	3.2	3.6	4.9
5000	9.7	11.0	76.4	4.9	5.6	30.0	3.4	3.9	18.3	1.9	2.2	9.2
10000	8.8	10.1	134.5	4.4	5.1	51.2	2.9	3.4	29.9	1.6	1.8	13.8
30550	7.4	8.4	255.4	3.7	4.2	92.6	2.3	2.6	50.2	1.1	1.2	19.5
40000	7.1	8.2	327.6	3.5	4.0	117.4	2.2	2.5	62.4	1.0	1.1	23.2
352030	5.1	5.9	1255.1	2.4	2.8	407.9	1.3	1.5	182.9	0.4	0.4	43.4
					_							
SAMPLE		₹A	WB	AC		L	CL	WBW		BA	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1	bs)	(1bs)	(gr)	(1	gr)		(%)
11210531	100	000	444	4.25	5	0	100	6032.	0 10	136.0	2.55	3.0
11210531	100	000	444				100			136.0	2.55	3.0
			444 .0 IN.)	DEF	ORMATI		ches X				2.55 #4(6.0	****
			.0 IN.)	DEF	ORMATI #2(2.	ON (inc	ches X	0.0001)				****
	LVDT ELA. 16.4	#1(0. TOT.	.0 IN.) PLA.	DEFO	#2(2. TOT.	ON (inc 0 IN.) PLA. 3.8	LVDT ELA.	#3(4.0 TOT.	PLA.	LVDT ELA. 5.2	#4(6.0 TOT.	PLA.
	LVDT ELA. 16.4 13.5	#1(0. TOT. 19.1 15.3	.0 IN.) PLA. 8.4 18.0	LVDT ELA. 8.7	\$2(2.	ON (inc	LVDT ELA.	#3(4.0	PLA.	LVDT ELA.	#4(6.0 TOT.	)625 II
CYCLENUMBER	LVDT ELA. 16.4 13.5 12.4	#1(0. TOT. 19.1 15.3 14.2	.0 IN.) PLA. 8.4 18.0 29.7	LVDT  ELA.  8.7 7.0 6.4	#2(2. TOT.  10.1 7.9	ON (incomposition)  PLA.  3.8  7.8	LVDT ELA. 6.9 5.3	#3(4.0 TOT.	PLA.  2.8 5.3 8.3	LVDT ELA. 5.2 3.7 3.1	#4(6.0 TOT. 6.1 4.2 3.6	PLA.  2.0 3.4 5.0
CYCLE NUMBER 150 550	LVDT ELA. 16.4 13.5 12.4	#1(0. TOT. 19.1 15.3 14.2	.0 IN.) PLA. 8.4 18.0	LVDT  ELA.  8.7 7.0 6.4	#2(2. TOT.  10.1 7.9	ON (inc 0 IN.) PLA. 3.8 7.8 12.4	LVDT ELA. 6.9 5.3 4.7	#3(4.0 TOT. 8.0 6.0 5.4	PLA.  2.8 5.3	LVDT ELA. 5.2 3.7 3.1	#4(6.0 TOT. 6.1 4.2 3.6	PLA.  2.0 3.4 5.0
CYCLE	LVDT ELA. 16.4 13.5 12.4 9.7	#1(0. TOT. 19.1 15.3 14.2 11.2	.0 IN.) PLA. 8.4 18.0 29.7	BLA.  8.7 7.0 6.4 4.9 4.4	#2(2. TOT.  10.1 7.9 7.3 5.7 5.1	ON (inc 0 IN.) PLA. 3.8 7.8 12.4 29.9 50.9	LVDT ELA. 6.9 5.3 4.7 3.4 2.9	#3(4.0 TOT. 8.0 6.0 5.4 3.9 3.4	PLA.  2.8 5.3 8.3 18.2 29.6	LVDT  ELA.  5.2 3.7 3.1 1.9 1.6	#4(6.0 TOT. 6.1 4.2 3.6 2.2	PLA.  2.0 3.4 5.0
150 550 1000 5000	LVDT ELA. 16.4 13.5 12.4 9.7 8.8	#1(0. TOT. 19.1 15.3 14.2 11.2	.0 IN.) PLA. 8.4 18.0 29.7 76.4 133.8	ELA.  8.7 7.0 6.4 4.9	#2(2. TOT.  10.1 7.9 7.3 5.7 5.1	ON (inc 0 IN.) PLA. 3.8 7.8 12.4 29.9	LVDT ELA. 6.9 5.3 4.7 3.4 2.9	#3(4.0 TOT.  8.0 6.0 5.4 3.9	PLA.  2.8 5.3 8.3 18.2 29.6	LVDT  ELA.  5.2 3.7 3.1 1.9 1.6	#4(6.0 TOT. 6.1 4.2 3.6 2.2 1.8 1.1	PLA.  2.0 3.4 5.0 9.2 13.6
CYCLE	LVDT ELA. 16.4 13.5 12.4 9.7 8.8 7.3	#1(0. TOT. 19.1 15.3 14.2 11.2	8.4 18.0 29.7 76.4 133.8 266.2	DEFO LVDT ELA. 8.7 7.0 6.4 4.9 4.4 3.6	#2(2. TOT.  10.1 7.9 7.3 5.7 5.1 4.1	ON (inc 0 IN.) PLA. 3.8 7.8 12.4 29.9 50.9	LVDT ELA. 6.9 5.3 4.7 3.4 2.9 2.3	#3(4.0 TOT. 8.0 6.0 5.4 3.9 3.4	PLA.  2.8 5.3 8.3 18.2 29.6 51.6	LVDT  ELA.  5.2 3.7 3.1 1.9 1.6 1.0	#4(6.0 TOT. 6.1 4.2 3.6 2.2 1.8	PLA.  2.0 3.4 5.0 9.2 13.6 19.8
150 550 1000 5000 10000 33100 145000	LVDT ELA. 16.4 13.5 12.4 9.7 8.8 7.3 5.9	#1(0. 19.1 15.3 14.2 11.2 10.1 8.3 6.7	8.4 18.0 29.7 76.4 133.8 266.2	LVDT ELA.  8.7 7.0 6.4 4.9 4.4 3.6 2.8	#2(2. TOT. 10.1 7.9 7.3 5.7 5.1 4.1 3.2	ON (inc 0 IN.) PLA. 3.8 7.8 12.4 29.9 50.9 96.0 265.3	LVDT ELA. 6.9 5.3 4.7 3.4 2.9 2.3	#3(4.0 TOT.  8.0 6.0 5.4 3.9 3.4 2.6 1.9	PLA.  2.8 5.3 8.3 18.2 29.6 51.6 127.8	5.2 3.7 3.1 1.9 1.6 1.0 0.6	#4(6.0 TOT. 6.1 4.2 3.6 2.2 1.8 1.1 0.6	PLA.  2.0 3.4 5.0 9.2 13.6 19.8 37.1
150 550 1000 5000 10000 33100 145000	LVDT ELA.  16.4 13.5 12.4 9.7 8.8 7.3 5.9	#1(0. TOT. 19.1 15.3 14.2 11.2 10.1 8.3 6.7	8.4 18.0 29.7 76.4 133.8 266.2 785.6	DEFO LVDT ELA. 8.7 7.0 6.4 4.9 4.4 3.6 2.8	#2(2. TOT. 10.1 7.9 7.3 5.7 5.1 4.1 3.2	ON (inc 0 IN.) PLA. 3.8 7.8 12.4 29.9 50.9 96.0 265.3	LVDT ELA. 6.9 5.3 4.7 3.4 2.9 2.3	#3(4.0 TOT.  8.0 6.0 5.4 3.9 3.4 2.6 1.9	PLA.  2.8 5.3 8.3 18.2 29.6 51.6 127.8 WEIGH	LVDT  5.2 3.7 3.1 1.9 1.6 1.0 0.6	#4(6.0 TOT. 6.1 4.2 3.6 2.2 1.8 1.1 0.6	PLA.  2.0 3.4 5.0 9.2 13.6 19.8 37.1
150 550 1000 5000 10000 33100 145000	LVDT ELA.  16.4 13.5 12.4 9.7 8.8 7.3 5.9  OTAL VERCEN	#1(0. TOT. 19.1 15.3 14.2 10.1 8.3 6.7 WEIGHT	8.4 18.0 29.7 76.4 133.8 266.2 785.6	DEFO LVDT ELA. 8.7 7.0 6.4 4.9 4.4 3.6 2.8 AGGRE	#2(2. TOT. 10.1 7.9 7.3 5.7 5.1 4.1 3.2	ON (inc 0 IN.) PLA. 3.8 7.8 12.4 29.9 50.9 96.0 265.3	LVDT ELA. 6.9 5.3 4.7 3.4 2.9 2.3	0.0001)  #3(4.0  TOT.  8.0 6.0 5.4 3.9 3.4 2.6 1.9  WB = SL = CL =	PLA.  2.8 5.3 8.3 18.2 29.6 51.6 127.8	LVDT  ELA.  5.2 3.7 3.1 1.9 1.6 1.0 0.6 T OF B INED LC LOAD	#4(6.0 TOT. 6.1 4.2 3.6 2.2 1.8 1.1 0.6	PLA.  2.0 3.4 5.0 9.2 13.6 19.8 37.1

ELA. AND TOT. - ELASTIC AND TOTAL DEFORMATION/CYCLE; PLA. - CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

Sample Number	WA (gr)	WB (gr)	AC (%)	(1)	L bs)	CL (lbs)	WBW (gr		BA Br)	GMM	AV (Z)
11210512	10000	444	4.25	5	0	200	6034	.0 10	143.0	2.55	3.08
			DEF	ORMATI	ON (inc	ches X (	0.0001	)			
_	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	35.3 40.5	14.9	18.2	20.9	6.7	14.2	16.3	4.9	•	-	-
500	27.7 32.2	39.5	14.0	16.3	16.6	10.3	12.0	11.1	-	-	-
1000	25.0 28.5	66.9	12.5	14.3	27.3	8.9	10.2	17.5	•	-	-
5000	19.6 22.1	178.7	9.6	10.9	68.0	6.4	7.2	39.7	-	-	-
10000	17.7 20.0	304.2		9.7	112.4		6.2	62.6	-	-	-
20000	15.9 18.5			8.9	157.2		5.5	83.4	-	-	-
34000 164600	14.7 17.1 11.6 13.4	691.2		8.2 6.2	241.8 583.2		4.9 3.4	123.4 262.5	•	-	-
····				<del></del>						<del></del>	
SAMPLE	WA	WB	AC	s	L	CL	WBW	W	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	(	gr)		(%)
11210522	10000	444	4.25		0		6001	0 10	140.0	2.55	3.11
	10000		7.23			200	6031	10		2.33	3.11
						ches X				2.33	J. 11
CYCLE	LVDT #1(0		DEF	ORMATI	ON (in	ches X	0.0001			#4(6.0	
_		.0 IN.)	DEF	ORMATI #2(2.	ON (in	ches X	#3(4.	) 0 IN.)		<b>#</b> 4(6.0	625 IN
_	LVDT #1(0	.0 IN.)	DEFO	ORMATI #2(2.	ON (inc	LVDT	#3(4.	) 0 IN.)	LVDT	<b>#</b> 4(6.0	625 IN
NUMBER	LVDT #1(0 ELA. TOT 35.4 41.2 27.8 32.1	.0 IN.) . PLA. 15.1 39.4	DEFO LVDT ELA. 18.2 14.1	#2(2. TOT. 21.2 16.2	ON (inc 0 IN.) PLA. 6.8 16.5	LVDT ELA. 14.2 10.3	#3(4. TOT. 16.5	) 0 IN.) PLA.	LVDT	<b>#</b> 4(6.0	625 IN
NUMBER 100	LVDT #1(0 ELA. TOT 35.4 41.2	.0 IN.) . PLA. 15.1 39.4	DEFO LVDT ELA. 18.2 14.1	#2(2. TOT. 21.2 16.2	ON (inc 0 IN.) PLA. 6.8 16.5	LVDT ELA. 14.2 10.3	#3(4. TOT.	) 0 IN.) PLA. 4.9	LVDT	<b>#</b> 4(6.0	625 IN
100 500 1000 5000	LVDT #1(0 ELA. TOT 35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9	.0 IN.) . PLA. 15.1 39.4 68.2 181.4	DEFO LVDT ELA. 18.2 14.1 12.6 9.7	#2(2. TOT. 21.2 16.2 14.6 11.2	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8	LVDT ELA. 14.2 10.3 8.9 6.4	#3(4. TOT. 16.5 11.9 10.4 7.4	) PLA. 4.9 11.0 17.8 40.1	LVDT ELA.	<b>#</b> 4(6.0	625 IN
100 500 1000 5000 10000	LVDT #1(0 ELA. TOT 35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7	.0 IN.) . PLA. 15.1 39.4 68.2 181.4 304.1	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6	#2(2. TOT. 21.2 16.2 14.6 11.2	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0	LVDT ELA. 14.2 10.3 8.9 6.4 5.5	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4	) PLA. 4.9 11.0 17.8 40.1 62.2	LVDT ELA	<b>#</b> 4(6.0	625 IN
100 500 1000 5000 10000 44000	LVDT #1(0 ELA. TOT 35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7 14.2 16.1	.0 IN.) . PLA. 15.1 39.4 68.2 181.4 304.1 743.1	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6 6.8	#2(2. TOT. 21.2 16.2 14.6 11.2 10.0 7.6	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0 256.1	LVDT ELA.  14.2 10.3 8.9 6.4 5.5 4.0	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4 4.5	) PLA. 4.9 11.0 17.8 40.1 62.2 127.9	LVDT ELA	<b>#</b> 4(6.0	625 IN
100 500 1000 5000 10000 44000	LVDT #1(0 ELA. TOT 35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7	.0 IN.) . PLA. 15.1 39.4 68.2 181.4 304.1 743.1	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6 6.8	#2(2. TOT. 21.2 16.2 14.6 11.2 10.0 7.6	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0 256.1	LVDT ELA.  14.2 10.3 8.9 6.4 5.5 4.0	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4 4.5	) PLA. 4.9 11.0 17.8 40.1 62.2 127.9	LVDT ELA	<b>#</b> 4(6.0	625 IN
100 500 1000 5000 10000 44000 165000	LVDT #1(0 ELA. TOT 35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7 14.2 16.1	.0 IN.) . PLA. 15.1 39.4 68.2 181.4 304.1 743.1 1968.2	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6 6.8 5.4	#2(2. TOT. 21.2 16.2 14.6 11.2 10.0 7.6 6.2	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0 256.1 639.0	LVDT ELA.  14.2 10.3 8.9 6.4 5.5 4.0	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4 4.5 3.3	) PLA. 4.9 11.0 17.8 40.1 62.2 127.9	LVDT ELA.	#4(6.0 TOT.	PLA.
100 500 1000 5000 10000 44000 165000	LVDT #1(0  ELA. TOT  35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7 14.2 16.1 11.7 13.4	.0 IN.) . PLA	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6 6.8 5.4	#2(2. TOT. 21.2 16.2 14.6 11.2 10.0 7.6 6.2	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0 256.1 639.0	LVDT ELA.  14.2 10.3 8.9 6.4 5.5 4.0	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4 4.5 3.3	) PLA. 4.9 11.0 17.8 40.1 62.2 127.9 286.7	LVDT ELA T OF B	#4(6.0 TOT.	PLA.
100 500 1000 5000 10000 44000 165000	LVDT #1(0  ELA. TOT  35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7 14.2 16.1 11.7 13.4	.0 IN.) . PLA	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6 6.8 5.4 AGGREG	#2(2. TOT. 21.2 16.2 14.6 11.2 10.0 7.6 6.2	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0 256.1 639.0	LVDT ELA.  14.2 10.3 8.9 6.4 5.5 4.0	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4 4.5 3.3	)  PLA.  4.9 11.0 17.8 40.1 62.2 127.9 286.7	LVDT  ELA.  I OF B INED L	#4(6.0	PLA.
100 500 1000 5000 10000 44000 165000 A = Tr C = P. BA = W.	LVDT #1(0  ELA. TOT  35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7 14.2 16.1 11.7 13.4  OTAL WEIGHT ERCENT ASPI	.0 IN.) . PLA 15.1 .39.4 .68.2 .181.4 .304.1 .743.1 .1968.2 T OF DRY HALT CON: AMPLE IN	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6 6.8 5.4 AGGRECTENT; AIR;	#2(2. TOT.  21.2 16.2 14.6 11.2 10.0 7.6 6.2  GATES;	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0 256.1 639.0	LVDT ELA.  14.2 10.3 8.9 6.4 5.5 4.0 2.9	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4 4.5 3.3	)  O IN.)  PLA.  4.9 11.0 17.8 40.1 62.2 127.9 286.7  = WEIGH	LVDT ELA.  I OF B INED L C LOAD	#4(6.0 TOT.	PLA.
500 1000 5000 10000 44000 165000 A = T C = P BA = W BW = W	LVDT #1(0  ELA. TOT  35.4 41.2 27.8 32.1 25.1 29.2 19.7 22.9 17.8 20.7 14.2 16.1 11.7 13.4  OTAL WEIGHT ERCENT ASPI	.0 IN.) . PLA	DEFO LVDT ELA. 18.2 14.1 12.6 9.7 8.6 6.8 5.4 AGGRECTENT; AIR; WATER SPECII	#2(2. TOT.  21.2 16.2 14.6 11.2 10.0 7.6 6.2  GATES;	ON (inc 0 IN.) PLA. 6.8 16.5 27.8 68.8 112.0 256.1 639.0	LVDT ELA.  14.2 10.3 8.9 6.4 5.5 4.0 2.9	#3(4. TOT. 16.5 11.9 10.4 7.4 6.4 4.5 3.3	)  PLA.  4.9 11.0 17.8 40.1 62.2 127.9 286.7  = WEIGH = SUSTA	LVDT ELA.  I OF B INED L C LOAD	#4(6.0 TOT.	PLA.

SAMPLE	٢	AF	WB	AC	S	L	CL	WBW	W.	BA	GMM	AV
NUMBER	( 8	gr)	(gr)	(%)	(1	.bs)	(lbs)	(gr)	(,	gr)		(%)
11210532	100	000	444	4.25	5	0	200	6028	.0 10	138.0	2.55	3.1
				DEF	ORMATI	ON (in	ches X (	0.0001	)			
_	LVDT	#1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	35.6	41.5	15.3	18.3	21.3	6.8	14.2	16.5	4.9	10.6	12.3	3.4
500		32.5	40.3		16.3	16.8		11.9	11.2	6.9		6.8
1000	25.2		69.3		14.5	28.1		10.3	18.0	5.6		10.2
5000		23.1	183.3		11.3	69.2		7.4	40.2	3.4		18.8
10000	17.9		317.4		9.9	116.3		6.3	64.4	2.7		27.3
27100		17.5	551.9		8.3	193.5		5.0	99.9	1.9		36.0
49800	14.0	16.2	912.2	6.6	7.7	311.2	3.8	4.4	153.4		1.7	49.4
195000	11.4	13.0	2042.3	5.3	6.0	654.6	2.8	3.2	288.4	0.8	0.9	68.9
· · · · · · · · ·											<del></del>	
SAMPLE	V	NA AF	WB	AC	S	iL	CL	WBW	W	BA	GMM	AV
NUMBER	(8	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
11210515	100	000	444	4.25	5	0	500	6035	.0 10	142.0	2.55	3.0
				DEF	ORMATI	ON (in	ches X	0.0001	)			
 CYCLE	LVDT	#1(0.	0 IN.)	LVDī	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	0625 I
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	87.6	99.0	49.0	42.5	48.0	20.7	29.8	33.7	13.5	19.8	22.3	8.4
500	68.8	79.1	127.2	32.7	37.6	50.1	21.3	24.5	29.8	12.3	14.1	15.6
1000	62.0	70.1	219.6	29.2	32.9	83.9	18.4	20.8	47.8	9.8	11.1	23.0
5000	48.7	55.1	582.1	22.4	25.3	207.1	12.9	14.6	105.3	5.6	6.3	40.0
10000	43.9	49.7	1000.9	20.0	22.6	345.1	11.1	12.5	166.4	4.3	4.8	56.0
21000	39.3	45.1	1473.4	17.7	20.3	491.1	9.3	10.7	222.9	3.1	3.6	64.9
21000	37.2	42.9	2076.5	16.6	19.2	680.5	8.5	9.8	299.4	2.7	3.1	80.5
30400		34.7	4763.7	13.2	15.1	1462.9	6.1	7.0	566.5	1.4	1.6	107.6
	30.2											
30400 122877		Æ IGH1	OF DRY	AGGRE	gates;			WB *	• WEIGH	I OF B	ITUMEN	;
30400 122877	OTAL W		OF DRY		gates;				• WEIGH • SUSTA			;
30400 122877 A = TC C = PI	OTAL W	ASPE		IENT;	gates;			SL -		INED L	OAD;	;

ELA. AND TOT. = ELASTIC AND TOTAL DEFORMATION/CYCLE;
PLA. = CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

Sample Number	WA (gr)	WB (gr)	AC (Z)	SL (lbs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
11210525	10000	444	4.25	50	500	6029.	0 10	134.0	2.55	3.07
			DEF	DRMATION (	(inches X	0.0001	)			
- CYCLE	LVDT #1(0	.0 IN.)	LVDT	#2(2.0 II	N.) LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	. PLA.	ELA.	TOT. PI	LA. ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	88.0101.8	48.8	42.5	49.2 20	0.6 29.8	34.4	13.4	19.7	22.8	8.3
500	69.1 82.5	129.7	32.7	39.0 50	0.9 21.3	25.4	30.2	12.2	14.6	15.8
1000	62.3 70.6	225.6	29.2			20.8	48.8	9.8	11.1	23.4
5200	48.6 55.2	596.4				14.5	106.7		6.2	40.1
10000	44.1 49.9					12.5	166.4		4.8	55.8
20000 98850	39.7 47.5 31.3 35.5			21.3 483 15.5 1423		11.2 7.3	219.2 562.5	3.2	3.8	64.2 -
SAMPLE	WA	WB	AC	SL	CL	WBW	W	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(lbs)	/14-1	/	١ (	gr)		(%)
		\ <b>G</b> _ /	(*)	(25)	(1bs)	(gr	, `	647		(~)
11210535		444	4.25	50	500	6057		186.0	2.55	3.1
11210535			4.25	50	····	6057	.0 10		2.55	
-		444	4.25 DEF	50	500	6057	.0 10	186.0	2.55 \$4(6.0	3.1
CYCLE _	10000	.0 IN.)	4.25 DEF	50  DRMATION  #2(2.0 II	500	6057 0.0001 #3(4.0	.0 10	186.0		3.1
CYCLE _	10000 LVDT #1(0	.0 IN.)	4.25 DEFO	50  DRMATION  #2(2.0 II  TOT. PI	500 (inches X N.) LVDT	6057 0.0001 #3(4.0	.0 10 ) D IN.)	LVDT	<b>#</b> 4(6.€	3.1 0625 I
CYCLE _ NUMBER	10000  LVDT #1(0  ELA. TOT	.0 IN.)	LVDT ELA.	50    50     50	500 (inches X N.) LVDT LA. ELA. 0.8 29.9	6057 0.0001 #3(4.0	0 10 ) D IN.)	LVDT ELA. 19.7	#4(6.0	3.1 0625 I
CYCLE NUMBER	10000 LVDT #1(0 ELA. TOT 89.4102.4 70.2 79.7 63.3 72.4	.0 IN.) . PLA. 49.8 133.8 230.0	4.25 DEFC LVDT ELA. 42.9 33.0 29.4	50    50     50	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 5.9 18.4	6057 0.0001 #3(4.0 TOT. 34.2 24.3 21.1	0 IN.) PLA. 13.5 30.8 49.1	LVDT ELA. 19.7 12.2 9.7	#4(6.6 TOT.	3.1 0625 II PLA. 8.3
CYCLE NUMBER	10000  LVDT #1(0  ELA. TOT  89.4102.4 70.2 79.7	.0 IN.) . PLA. 49.8 133.8 230.0	4.25 DEFC LVDT ELA. 42.9 33.0 29.4	50  DRMATION  #2(2.0 II  TOT. PI  49.1 2: 37.4 5:	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 5.9 18.4	6057 0.0001 #3(4.0 TOT. 34.2 24.3 21.1	) IN.) PLA. 13.5 30.8	LVDT ELA. 19.7 12.2 9.7	#4(6.4 TOT. 22.6 13.8	3.1 D625 II PLA. 8.3 16.0 23.4
100 500 1000 5000	10000  LVDT #1(0  ELA. TOT  89.4102.4 70.2 79.7 63.3 72.4 49.7 56.9 44.8 51.3	444 .0 IN.) . PLA. 49.8 133.8 230.0 599.3 1041.2	4.25  DEFC  LVDT  ELA.  42.9  33.0  29.4  22.6  20.1	50  PRMATION  #2(2.0 II  TOT. PI  49.1 2: 37.4 5: 33.6 8: 25.8 21: 23.1 35:	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 5.9 18.4 0.7 12.9 4.7 11.0	#3(4.0 TOT. 34.2 24.3 21.1 14.8 12.6	0 IN.) PLA. 13.5 30.8 49.1 106.2 169.4	186.0 LVDT  ELA.  19.7 12.2 9.7 5.5 4.2	#4(6.0 TOT. 22.6 13.8 11.1	3.1 PLA. 8.3 16.0 23.4 39.8 56.2
100 500 1000 5000 10000 20000	10000  LVDT #1(0  ELA. TOT  89.4102.4 70.2 79.7 63.3 72.4 49.7 56.9 44.8 51.3 40.4 46.3	.0 IN.) . PLA. 49.8 133.8 230.0 599.3 1041.2 1477.3	4.25  DEFC  LVDT  ELA.  42.9  33.0  29.4  22.6  20.1  17.9	50  PRMATION  #2(2.0 II  TOT. PI  49.1 20  37.4 50  33.6 80  25.8 210  23.1 350  20.5 48	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 5.9 18.4 0.7 12.9 4.7 11.0 7.5 9.4	6057 0.0001 #3(4.0 TOT. 34.2 24.3 21.1 14.8 12.6 10.8	D IN.)  PLA.  13.5 30.8 49.1 106.2 169.4 220.0	186.0 LVDT  ELA.  19.7 12.2 9.7 5.5 4.2 3.2	#4(6.6 TOT. 22.6 13.8 11.1 6.3 4.8 3.6	3.1 PLA. 8.3 16.0 23.4 39.8 56.2 63.6
100 500 1000 5000 10000 20000 37500	10000  LVDT #1(0  ELA. TOT  89.4102.4  70.2 79.7 63.3 72.4 49.7 56.9 44.8 51.3 40.4 46.3 36.7 41.4	444 .0 IN.) . PLA. 49.8 133.8 230.0 599.3 1041.2 1477.3 2455.3	4.25  DEFC  LVDT  ELA.  42.9  33.0  29.4  22.6  20.1  17.9  16.2	50  DRMATION  #2(2.0 II  TOT. PI  49.1 20 37.4 53 33.6 80 25.8 210 23.1 350 20.5 48 18.2 78	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 6.9 18.4 0.7 12.9 4.7 11.0 7.5 9.4 7.0 8.1	#3(4.0 TOT. 34.2 24.3 21.1 14.8 12.6 10.8 9.1	13.5 30.8 49.1 106.2 169.4 220.0 336.4	186.0 LVDT  ELA.  19.7 12.2 9.7 5.5 4.2 3.2 2.4	#4(6.0 TOT. 22.6 13.8 11.1 6.3 4.8 3.6 2.7	3.10 PLA. 8.3 16.0 23.4 39.8 56.2 63.6 84.7
100 500 1000 5000 10000 20000 37500	10000  LVDT #1(0  ELA. TOT  89.4102.4 70.2 79.7 63.3 72.4 49.7 56.9 44.8 51.3 40.4 46.3	444 .0 IN.) . PLA. 49.8 133.8 230.0 599.3 1041.2 1477.3 2455.3	4.25  DEFC  LVDT  ELA.  42.9  33.0  29.4  22.6  20.1  17.9  16.2	50  DRMATION  #2(2.0 II  TOT. PI  49.1 20 37.4 53 33.6 80 25.8 210 23.1 350 20.5 48 18.2 78	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 6.9 18.4 0.7 12.9 4.7 11.0 7.5 9.4 7.0 8.1	#3(4.0 TOT. 34.2 24.3 21.1 14.8 12.6 10.8 9.1	13.5 30.8 49.1 106.2 169.4 220.0 336.4	186.0 LVDT  ELA.  19.7 12.2 9.7 5.5 4.2 3.2 2.4	#4(6.6 TOT. 22.6 13.8 11.1 6.3 4.8 3.6	3.10 PLA. 8.3 16.0 23.4 39.8 56.2 63.6 84.7
100 500 1000 5000 10000 20000 37500 100900	10000  LVDT #1(0  ELA. TOT  89.4102.4 70.2 79.7 63.3 72.4 49.7 56.9 44.8 51.3 40.4 46.3 36.7 41.4 31.7 36.2	444  .0 IN.) . PLA. 49.8 133.8 230.0 599.3 1041.2 1477.3 2455.3 4369.1	4.25  DEFC  LVDT  ELA.  42.9 33.0 29.4 22.6 20.1 17.9 16.2 13.7	50  ORMATION  #2(2.0 II  TOT. PI  49.1 2: 37.4 5: 33.6 8: 25.8 21: 23.1 35: 20.5 48: 18.2 78: 15.6 133	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 6.9 18.4 0.7 12.9 4.7 11.0 7.5 9.4 7.0 8.1	6057 0.0001 #3(4.0 TOT. 34.2 24.3 21.1 14.8 12.6 10.8 9.1 7.3	D IN.)  PLA.  13.5 30.8 49.1 106.2 169.4 220.0 336.4 521.6	186.0 LVDT  ELA.  19.7 12.2 9.7 5.5 4.2 3.2 2.4 1.5	#4(6.6) TOT.  22.6 13.8 11.1 6.3 4.8 3.6 2.7 1.7	3.1 PLA. 8.3 16.0 23.4 39.8 56.2 63.6 84.7 102.3
100 500 1000 5000 10000 20000 37500 100900	10000  LVDT #1(0  ELA. TOT  89.4102.4  70.2 79.7 63.3 72.4 49.7 56.9 44.8 51.3 40.4 46.3 36.7 41.4 31.7 36.2  OTAL WEIGHT	444  .0 IN.) . PLA. 49.8 133.8 230.0 599.3 1041.2 1477.3 2455.3 4369.1 I OF DRY	4.25  DEFC  LVDT  ELA.  42.9  33.0  29.4  22.6  20.1  17.9  16.2  13.7  AGGREGIENT;	50  ORMATION  #2(2.0 II  TOT. PI  49.1 2: 37.4 5: 33.6 8: 25.8 21: 23.1 35: 20.5 48: 18.2 78: 15.6 133	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 6.9 18.4 0.7 12.9 4.7 11.0 7.5 9.4 7.0 8.1	#3(4.0 TOT. 34.2 24.3 21.1 14.8 12.6 10.8 9.1 7.3	13.5 30.8 49.1 106.2 169.4 220.0 336.4 521.6	186.0 LVDT  ELA.  19.7 12.2 9.7 5.5 4.2 3.2 2.4 1.5  T OF B INED L	#4(6.4)  TOT.  22.6 13.8 11.1 6.3 4.8 3.6 2.7 1.7  ITUMEN OAD;	3.10 PLA. 8.3 16.0 23.4 39.8 56.2 63.6 84.7 102.3
100 500 1000 5000 10000 20000 37500 100900	10000  LVDT #1(0  ELA. TOT  89.4102.4 70.2 79.7 63.3 72.4 49.7 56.9 44.8 51.3 40.4 46.3 36.7 41.4 31.7 36.2	444  .0 IN.) . PLA. 49.8 133.8 230.0 599.3 1041.2 1477.3 2455.3 4369.1 T OF DRY HALT CON	4.25  DEFC  LVDT  ELA.  42.9  33.0  29.4  22.6  20.1  17.9  16.2  13.7  AGGRECTENT;  AIR;	50  DRMATION  #2(2.0 III  TOT. PI  49.1 2  37.4 5  33.6 86  25.8 21  23.1 35  20.5 48  18.2 78  15.6 133	500 (inches X N.) LVDT LA. ELA. 0.8 29.9 2.1 21.4 6.9 18.4 0.7 11.0 7.5 9.4 7.0 8.1 7.1 6.4	#3(4.0 TOT. 34.2 24.3 21.1 14.8 12.6 10.8 9.1 7.3	D IN.)  PLA.  13.5 30.8 49.1 106.2 169.4 220.0 336.4 521.6	186.0  LVDT  ELA.  19.7 12.2 9.7 5.5 4.2 2.4 1.5  T OF B INED L C LOAD	#4(6.0 TOT. 22.6 13.8 11.1 6.3 4.8 3.6 2.7 1.7 ITUMEN OAD;	3.10 PLA. 8.3 16.0 23.4 39.8 56.2 63.6 84.7 102.3

BEAM CYCLIC LOAD DATA

SAMPLE NUMBER		MA Br)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr)		BA Br)	GMM	AV (%)
11310511	100	000	424	4.07	5	0 <del></del>	100	6074.	0 10:	188.0	2.55	3.00
				DEF	ORMATI	ON (in	ches X 0	.0001)				
CYCLE	LVDT	<b>#</b> 1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	17.1	19.6	6.9	9.1	10.4	3.2	7.2	8.3	2.4	5.6	5.4	1.7
500	13.4	15.5	18.1	7.0	8.0	7.8	5.3	6.1	5.4	3.7	4.2	3.4
1000	12.1	14.1	31.7	6.2	7.2	13.3	4.6	5.3	8.8	3.0	3.5	5.2
5000	9.5	10.8	86.1	4.8	5.5	33.7	3.3	3.8	20.4	1.9	2.1	10.2
10000	8.6	9.7	148.2	4.3	4.9	56.3	2.9	3.2	32.6	1.5	1.7	14.8
32142	7.2	8.4	304.2	3.5	4.1	109.7	2.2	2.6	58.7	1.0	1.1	22.4
172900	5.6	6.3	1001.7	2.7	3.0	335.2	1.5	1.7	158.0	0.5	0.6	43.5
SAMPLE		NA.	WB	AC	S	L	CL	WBW	W	 ВА	GMM	VA
NUMBER		gr)	(gr)	<b>(Z)</b>		bs)	(lbs)	(gr)		gr)		(%)
11310521	100	000	424	4.07	5	0	100	6048.	0 10	144.0	2.55	2.99
				DEF	ORMATI	ON (in	ches X 0	.0001)				
CYCLE _	LVDT	#1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
	17.0	19.6	6.9	9.0	10.4	3.2	7.2	8.3	2.4	5.6	6.4	1.7
100			19.2	6.9	8.1	8.3	5.3	6.1	5.7	3.7	4.2	3.6
100 500		15.5	18.2	0.0						2 0	3.5	5.3
	13.4	15.5 13.8	32.0	6.2	7.1	13.4	4.6	5.2	8.9	3.0		
500	13.4 12.0				7.1 5.4	13.4 34.0	4.6 3.3	5.2 3.7	8.9 20.6	1.9	2.1	10.3
500 1000	13.4 12.0 9.5	13.8	32.0	6.2							2.1 1.7	10.3 15.0
500 1000 5000	13.4 12.0 9.5	13.8 10.7 9.9	32.0 87.0	6.2 4.8	5.4	34.0	3.3	3.7	20.6	1.9		
500 1000 5000 10000	13.4 12.0 9.5 8.5 7.6	13.8 10.7 9.9 8.9	32.0 87.0 150.0	6.2 4.8 4.3 3.8	5.4 5.0 4.4	34.0 57.0 81.8	3.3 2.8 2.4	3.7 3.3 2.8	20.6 33.0 45.1	1.9 1.5 1.1	1.7	15.0
500 1000 5000 10000 21000 50535	13.4 12.0 9.5 8.5 7.6 6.7	13.8 10.7 9.9 8.9 7.5	32.0 87.0 150.0 222.5	6.2 4.8 4.3 3.8 3.3	5.4 5.0 4.4 3.7	34.0 57.0 81.8 157.1	3.3 2.8 2.4 2.0	3.7 3.3 2.8 2.3	20.6 33.0 45.1 81.4	1.9 1.5 1.1 0.8	1.7 1.3	15.0 18.4
500 1000 5000 10000 21000 50535 154500	13.4 12.0 9.5 8.5 7.6 6.7 5.7	13.8 10.7 9.9 8.9 7.5 6.5	32.0 87.0 150.0 222.5 444.0	6.2 4.8 4.3 3.8 3.3 2.7	5.4 5.0 4.4 3.7 3.1	34.0 57.0 81.8 157.1 284.3	3.3 2.8 2.4 2.0	3.7 3.3 2.8 2.3 1.8	20.6 33.0 45.1 81.4 135.3	1.9 1.5 1.1 0.8 0.5	1.7 1.3 0.9	15.0 18.4 28.7 38.2
500 1000 5000 10000 21000 50535 154500	13.4 12.0 9.5 8.5 7.6 6.7 5.7	13.8 10.7 9.9 8.9 7.5 6.5	32.0 87.0 150.0 222.5 444.0 844.8	6.2 4.8 4.3 3.8 3.3 2.7	5.4 5.0 4.4 3.7 3.1	34.0 57.0 81.8 157.1 284.3	3.3 2.8 2.4 2.0	3.7 3.3 2.8 2.3 1.8	20.6 33.0 45.1 81.4 135.3	1.9 1.5 1.1 0.8 0.5	1.7 1.3 0.9 0.6	15.0 18.4 28.7 38.2
500 1000 5000 10000 21000 50535 154500 A = Tr	13.4 12.0 9.5 8.5 7.6 6.7 5.7	13.8 10.7 9.9 8.9 7.5 6.5	32.0 87.0 150.0 222.5 444.0 844.8	6.2 4.8 4.3 3.8 3.3 2.7	5.4 5.0 4.4 3.7 3.1	34.0 57.0 81.8 157.1 284.3	3.3 2.8 2.4 2.0	3.7 3.3 2.8 2.3 1.8	20.6 33.0 45.1 81.4 135.3	1.9 1.5 1.1 0.8 0.5	1.7 1.3 0.9 0.6 ITUMEN;	15.0 18.4 28.7 38.2
500 1000 5000 10000 21000 50535 154500 A = Tr C = P.	13.4 12.0 9.5 8.5 7.6 6.7 5.7 OTAL WERCENT	13.8 10.7 9.9 8.9 7.5 6.5 WEIGHT	32.0 87.0 150.0 222.5 444.0 844.8	6.2 4.8 4.3 3.8 3.3 2.7 AGGREC TENT; AIR;	5.4 5.0 4.4 3.7 3.1	34.0 57.0 81.8 157.1 284.3	3.3 2.8 2.4 2.0	3.7 3.3 2.8 2.3 1.8 WB = SL = CL =	20.6 33.0 45.1 81.4 135.3 WEIGH	1.9 1.5 1.1 0.8 0.5	1.7 1.3 0.9 0.6 ITUMEN;	15.0 18.4 28.7 38.2

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BEAM CYCLIC LOAD DATA

Sample Number		MA Br)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
11310531	100	000	424	4.07	5	0	100	6048.	0 10:	145.0	2.55	3.01
	*****			DEF	ORMATI	ON (in	ches X	0.0001)				25222
-	LVDT	#1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _												
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	17.0	19.8	6.9	9.0	10.5	3.2	7.2	8.3	2.4	5.6	6.5	1.7
200	15.4	17.6	10.1	8.1	9.2	4.5	6.3	7.2	3.3	4.7	5.3	2.2
500	13.4	15.5	20.0	7.0	8.0	8.6	5.3	6.1	5.9	3.7	4.2	3.8
1000	12.1	13.7	29.7	6.2	7.0	12.5	4.6	5.2	8.3	3.0	3.4	4.9
5000	9.5	11.0	95.1	4.8	5.5	37.2	3.3	3.8	22.5	1.9	2.1	11.2
10000	8.5	9.9	138.9	4.3	4.9	52.7	2.8	3.3	30.5	1.5	1.7	13.9
30000	7.2	8.2	314.6	3.6	4.0	113.7	2.2	2.5	61.1	1.0	1.1	23.5
164700	5.6	6.4	888.2	2.7	3.1	297.6	1.5	1.8	140.7	0.5	0.6	39.1
SAMPLE NUMBER		NA gr)	WB (gr)	AC (Z)		L bs)	CL (1bs)	WBW		BA gr)	GMM	AV (Z)
11310512	100	000	424	4.07	5	0	200	6043.	0 10	137.0	2.55	3.01
				DEF	ORMATI	ON (in	ches X	0.0001)	)		<del> </del>	*****
	LVDT	<b>#</b> 1(0.	0 IN.)	LVDI	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDI	#4(6.0	625 IN
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	34.1	39.2	15.4	17.7	20.3	6.9	13.7	15.7	5.0	10.2	11.7	3.5
500	26.8	31.1	41.2	13.6	15.8	17.4	9.9	11.5	11.5	6.6	7.7	7.0
1000	24.1	27.5	70.9	12.2	13.9	29.0	8.6	9.8	18.6	5.4	6.2	10.5
5000	19.0	21.7	193.0	9.3	10.7	73.7	6.2	7.1	42.8	3.3	3.8	20.0
10000	17.1	19.7	339.3	8.3	9.6	125.7	5.3	6.1	69.7	2.6	3.0	29.6
30000											2.0	41.9
75200	12.6	14.5	1307.6	6.0	6.9	442.8	3.4	3.9	211.6	1.2	1.4	62.9
	OTAL V	EIGHT	OF DRY	AGGRE	GATES;			WB -	WEIGH:	OF B	I TUMEN ;	
				PENT.				SL -	SUSTA	INED L	DAD;	
A = TO		C ASPH	ALT CON	,								
A = TO C = PI	ERCENT		alt con MPLE IN	-				CL -	CYCLIC	LOAD	;	
A - TO C - PI BA - WI	ercent Eight	OF SA		AIR;	;				CYCLIC PERCE			

BEAM CYCLIC LOAD DATA

SAMPLE	WA	WB	AC		L	CL	WBW			GMM	A۷
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	, (	gr)		(%)
11310522	10000	424	4.07	5	0	200	6044	.0 10:	142.0	2.55	3.06
			DEF	ORMATI	ON (in	ches X (	0.0001	)			
_	LVDT #1(	0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
CYCLE _											
NUMBER	ELA. TO	T. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	34.4 39.	5 15.7	17.7	20.4	7.1	13.7	15.8	5.1	-	-	-
500	27.0 30.	8 41.7	13.6	15.6	17.5	9.9	11.3	11.6	-	-	-
1000	24.3 27.	5 72.7	12.2	13.8	29.6	8.6	9.8	18.9	-	-	-
5000	19.1 21.	9 199.5	9.4	10.7	75.8	6.2	7.1	43.9	-	-	-
10000	17.2 19.	9 338.0	8.4	9.7	124.6	5.3	6.1	68. <b>8</b>	-	-	-
30000	14.6 17.		7.0	8.1	231.5	4.2	4.8	118.3	-	-	-
56700		4 1113.5	6.3	7.3	379.8	3.6	4.2	184.9			
SAMPLE	WA	WB	AC	S	L	CL	WBW	W	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
11310532	10000	424	4.07	5	0	200	6061	.0 10	172.0	2.55	3.08
			DEF	ORMATI	ON (in	ches X	0.0001	)			
CVCI P	LVDT #1(	0.0 IN.)			ON (in			) 0 IN.)	LVDT	#4(6.0	625 IN
_	LVDT #1(				0 IN.)				LVDT	#4(6.0	625 IN
_		T. PLA.	LVDT ELA.	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.	0 IN.)			
NUMBER	ELA. TO	T. PLA.	LVDT ELA. 17.3	#2(2. TOT.	O IN.)	LVDT ELA. 13.3	#3(4. TOT.	O IN.)			
NUMBER 120	ELA. TO	T. PLA.  8 17.8 9 42.8	LVDT ELA. 17.3 13.7	#2(2. TOT.	0 IN.) PLA. 7.9	LVDT ELA. 13.3 10.0	#3(4. TOT.	0 IN.) PLA. 5.6			
120 500	ELA. TO 33.6 38. 27.2 30.	T. PLA.  8 17.8 9 42.8 2 72.8	LVDT ELA. 17.3 13.7 12.2	#2(2. TOT. 19.9 15.6	0 IN.) PLA. 7.9 17.9	LVDT ELA. 13.3 10.0	#3(4. TOT. 15.3 11.4 10.0	0 IN.) PLA. 5.6 11.9			
120 500 1000	ELA. TO  33.6 38. 27.2 30. 24.5 28.	T. PLA.  8 17.8 9 42.8 2 72.8 2 196.3	LVDT ELA. 17.3 13.7 12.2	#2(2. TOT. 19.9 15.6 14.1	0 IN.) PLA. 7.9 17.9 29.6	LVDT ELA. 13.3 10.0 8.7	#3(4. TOT. 15.3 11.4 10.0	0 IN.) PLA. 5.6 11.9 18.9			
500 1000 5000 10000 35340	33.6 38. 27.2 30. 24.5 28. 19.2 22. 17.3 19. 14.3 16.	T. PLA.  8 17.8 9 42.8 2 72.8 2 196.3 7 343.3 2 767.9	LVDT ELA.  17.3 13.7 12.2 9.4 8.4 6.8	#2(2. TOT. 19.9 15.6 14.1 10.9 9.6 7.7	0 IN.) PLA. 7.9 17.9 29.6 74.4 126.2 266.9	LVDT  ELA.  13.3 10.0 8.7 6.2 5.3 4.0	#3(4. TOT. 15.3 11.4 10.0 7.1 6.1 4.5	0 IN.)  FLA.  5.6 11.9 18.9 43.0 69.7 134.5			
120 500 1000 5000 10000 35340	33.6 38. 27.2 30. 24.5 28. 19.2 22. 17.3 19. 14.3 16.	T. PLA.  8 17.8 9 42.8 2 72.8 2 196.3 7 343.3	LVDT ELA.  17.3 13.7 12.2 9.4 8.4 6.8	#2(2. TOT. 19.9 15.6 14.1 10.9 9.6 7.7	0 IN.) PLA. 7.9 17.9 29.6 74.4 126.2 266.9	LVDT  ELA.  13.3 10.0 8.7 6.2 5.3 4.0	#3(4. TOT. 15.3 11.4 10.0 7.1 6.1 4.5	0 IN.)  FLA.  5.6 11.9 18.9 43.0 69.7 134.5			
120 500 1000 5000 10000 35340 41700	ELA. TO  33.6 38. 27.2 30. 24.5 28. 19.2 22. 17.3 19. 14.3 16. 14.0 16.	T. PLA.  8 17.8 9 42.8 2 72.8 2 196.3 7 343.3 2 767.9	LVDT ELA.  17.3 13.7 12.2 9.4 8.4 6.8 6.6	#2(2. TOT. 19.9 15.6 14.1 10.9 9.6 7.7 7.7	0 IN.) PLA. 7.9 17.9 29.6 74.4 126.2 266.9 310.6	LVDT  ELA.  13.3 10.0 8.7 6.2 5.3 4.0	#3(4. TOT. 15.3 11.4 10.0 7.1 6.1 4.5 4.5	0 IN.)  FLA.  5.6 11.9 18.9 43.0 69.7 134.5		TOT.	PLA.
120 500 1000 5000 10000 35340 41700	ELA. TO  33.6 38. 27.2 30. 24.5 28. 19.2 22. 17.3 19. 14.3 16. 14.0 16.	T. PLA.  8 17.8 9 42.8 2 72.8 2 196.3 7 343.3 2 767.9 1 900.4	LVDT ELA.  17.3 13.7 12.2 9.4 8.4 6.8 6.6	#2(2. TOT. 19.9 15.6 14.1 10.9 9.6 7.7 7.7	0 IN.) PLA. 7.9 17.9 29.6 74.4 126.2 266.9 310.6	LVDT  ELA.  13.3 10.0 8.7 6.2 5.3 4.0	#3(4. TOT. 15.3 11.4 10.0 7.1 6.1 4.5 4.5	0 IN.) PLA. 5.6 11.9 18.9 43.0 69.7 134.5	ELA.	TOT.	PLA.
120 500 1000 5000 10000 35340 41700	ELA. TO  33.6 38. 27.2 30. 24.5 28. 19.2 22. 17.3 19. 14.3 16. 14.0 16.  OTAL WEIGERCENT AS	T. PLA.  8 17.8 9 42.8 2 72.8 2 196.3 7 343.3 2 767.9 1 900.4	LVDT ELA.  17.3 13.7 12.2 9.4 8.4 6.8 6.6 AGGRETENT;	#2(2. TOT. 19.9 15.6 14.1 10.9 9.6 7.7 7.7	0 IN.) PLA. 7.9 17.9 29.6 74.4 126.2 266.9 310.6	LVDT  ELA.  13.3 10.0 8.7 6.2 5.3 4.0	#3(4. TOT. 15.3 11.4 10.0 7.1 6.1 4.5 4.5 WB SL	0 IN.) PLA. 5.6 11.9 18.9 43.0 69.7 134.5 154.6	ELA.	TOT.	PLA.
120 500 1000 5000 10000 35340 41700	ELA. TO  33.6 38. 27.2 30. 24.5 28. 19.2 22. 17.3 19. 14.3 16. 14.0 16.  OTAL WEIGERCENT AS	T. PLA.  8 17.8 9 42.8 2 72.8 2 196.3 7 343.3 2 767.9 1 900.4  HT OF DRY PHALT CON	LVDT ELA.  17.3 13.7 12.2 9.4 8.4 6.8 6.6 AGGRE TENT; AIR;	#2(2. TOT.  19.9 15.6 14.1 10.9 9.6 7.7 7.7	0 IN.) PLA. 7.9 17.9 29.6 74.4 126.2 266.9 310.6	LVDT  ELA.  13.3 10.0 8.7 6.2 5.3 4.0	#3(4. TOT. 15.3 11.4 10.0 7.1 6.1 4.5 4.5 WB SL CL	0 IN.) PLA. 5.6 11.9 18.9 43.0 69.7 134.5 154.6 - WEIGH-	ELA.	TOT.	PLA.

BEAM CYCLIC LOAD DATA

SAMPLE	WA		WB	AC	Si		CL	WBW		₹BA	GMM	٧A
NUMBER	(gr	:)	(gr)	(%)	(1)	bs)	(lbs)	(gr)	) (	(gr)		(%)
11310515	1000	0	424	4.07	5	0	500	6058.	0 10	164.0	2.55	3.04
				DEF	ORMATI	ON (inc	ches X (	0.0001)	)			
CYCLE	LVDT 4	1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.	0625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	85.8	97.8	52.2	41.4	47.2	22.0	28.8	32.9	14.3	18.9	21.6	8.7
500	67.4 7	76.7	138.0	31.9	36.2	54.1	20.6	23.5	31.9	11.7	13.3	16.5
1000	60.7 6	9.0	244.2	28.4	32.3	92.9	17.8	20.2	52.4	9.4	10.6	24.9
5000	47.7	53.9	655.9	21.8	24.6	232.3	12.5	14.1	116.9	5.3	6.0	43.7
10000	43.0	50.0	1124.1	19.5	22.6	385.8	10.7	12.4	184.0	4.0	4.7	60.8
30000	36.5 4	1.6	2192.4	20.2	32.0	-	16.0	24.4			7.6	<u>-</u>
SAMPLE	W		WB	AC	S		CL	WBW			GMM	AV
NUMBER	(gr	:)	(gr)	(%)	(11	bs)	(lbs)	(gr)	) (	(gr)		(%)
11310525	1000	00	424	4.07	5	0	500	6070	.0 10	197.0	2.55	3.2
				DEF	ORMATI	ON (in	hes X	0.0001	)		*****	
CYCLE	LVDT 4	1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.	0625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	88.510	0.7	54.6	41.9	47.7	22.5	28.8	32.8	14.5	18.7	21.3	8.8
500	69.5 7	79.6	150.1	32.2	36.8	57.7	20.6	23.5	33.6	11.5	13.2	17.1
1000	62.7 7	71.8	257.6	28.7	32.9	95.9	17.7	20.3	53.4	9.2	10.5	24.9
5000	49.2	57.1	687.2	22.0	25.5	238.1	12.4	14.4	117.9	5.1	6.0	43.0
10000	44.4 5	50.5	1204.0	19.6	22.3	404.1	10.6	12.0	189.4	3.9	4.4	60.9
20300	39.9 4	5.9	1789.2	17.5	20.1	581.2	8.9	10.3	256.8	2.9	3.3	71.5
	OTAL WE	IGHT	OF DRY	AGGRE	GATES;			WB =	WEIGH	T OF B	ITUMEN	;
A = T	ERCENT	ASPE	LALT CON	TENT;						AINED L		
			ME STOWN	ATD.				CL -	- CYCL	C LOAD	;	
C = P	EIGHT (	OF SA	AULTE IN	nin,								
C = Pi BA = Wi			MPLE IN	•	;			AV =	PERCI	ENT AIR	VOIDS	;
C = P1 BA = W1 BW = W1	EIGHT (	OF SA		WATER	•	AVITY;		AV =	• PERCI	ENT AIR	VOIDS	;



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### BEAM CYCLIC LOAD DATA

Sample Number	WA (gr)	WB (gr)	AC (Z)	S (1	L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (%)
11210525	10000	424	4.07			500	6056	0 10	152.0	2 55	2 02
11310535	10000	424	4.07	5		300	6056	.0 10	153.0	2.55	2.93
			DEF	ORMATI	ON (inc	ches X (	0.0001	)			
CYCLE _	LVDT #1(0	).0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TO	r. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	84.2 97.7	49.6	41.2	47.7	21.1	28.8	33.4	13.8	19.1	22.1	8.5
500	66.2 75.8	134.9	31.7	36.3	53.6	20.7	23.6	31.8	11.8	13.6	16.6
1000	59.6 69.1	235.0	28.3	32.7	90.6	17.8	20.6	51.5	9.5	11.0	24.7
5300	46.4 52.4	640.7	21.5	24.3	229.3	12.4	14.0	116.0	5.3	6.0	43.5
10000	42.2 49.0	1088.9	19.4	22.4	378.8	10.7	12.4	182.5	4.1	4.8	61.3
30000	35.8 40.8	2110.0	16.1	18.4	698.2	8.3	9.5	307.4	2.6	3.0	82.8
42100	34.0 38.9			17.4	918.8		8.7	392.9	-	<del>-</del>	-
SAMPLE	WA	WB	AC	s	L	CL	MBM	· W	/BA	GMM	AV
NUMBER	(gr)	(gr)	(2)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
11110611	10000	450	4.31	5	0	100	£007		143 0	2 55	
						100	5987	.0 10	143.0	2.55	4.14
					*****	ches X		******	143.0	<b>2.</b> 33	4.14
CYCLE	LVDT #1(C		DEF	ORMATI	*****	ches X	0.0001	******		<b>#</b> 4(6.0	
CYCLE		).O IN.)	DEF	ORMATI	ON (in	ches X	0.0001	) 0 IN.)			******
_	LVDT #1(0	).0 IN.)	LVDT ELA.	P2(2.	ON (inc	LVDT	#3(4. TOT.	) 0 IN.)	LVDT	<b>#</b> 4(6.0	625 IN
NUMBER	LVDT #1(C	).0 IN.) C. PLA.	LVDT ELA.	#2(2.	ON (inc	LVDT	#3(4. TOT.	O IN.)	LVDT ELA.	<b>#</b> 4(6.0	625 IN
NUMBER 100	LVDT #1(0 ELA. TOT 21.5 24.7	0.0 IN.) 7. PLA. 7. 8.8	LVDT ELA. 10.3 7.9	#2(2. TOT.	ON (inc 0 IN.) PLA. 3.7	LVDT ELA. 8.0	#3(4. TOT. 9.3 6.6	) 0 IN.) PLA. 2.7	LVDT ELA.	<b>#</b> 4(6.0	625 IN
100 500	LVDT #1(0 ELA. TOT 21.5 24.7 16.9 19.3	7. PLA. 7. 8.8 3. 22.0 7. 38.0	DEFC LVDT ELA. 10.3 7.9 7.1	#2(2. TOT. 11.8 9.0	ON (inc 0 IN.) PLA. 3.7 8.6	LVDT ELA. 8.0 5.8	#3(4. TOT. 9.3 6.6 5.8	) O IN.) PLA. 2.7 5.7	LVDT ELA.	<b>#</b> 4(6.0	625 IN
100 500 1000	LVDT #1(0 ELA. TOT 21.5 24.7 16.9 19.3 15.2 17.7	7. PLA. 7. 8.8 3. 22.0 7. 38.0 7. 57.0	DEFO LVDT ELA. 10.3 7.9 7.1 6.2	#2(2. TOT. 11.8 9.0 8.2	ON (inc) PLA. 3.7 8.6	ELA.  8.0 5.8 5.0	#3(4. TOT. 9.3 6.6 5.8 4.9	PLA.  2.7 5.7 9.2	LVDT ELA.	<b>#</b> 4(6.0	625 IN
100 500 1000 2170	LVDT #1(0 ELA. TOT 21.5 24.7 16.9 19.3 15.2 17.7 13.5 15.7	7. PLA. 7. 8.8 3. 22.0 7. 38.0 7. 57.0 5. 116.4	DEFO LVDT ELA. 10.3 7.9 7.1 6.2 5.3	#2(2. TOT. 11.8 9.0 8.2 7.2	ON (inc) PLA. 3.7 8.6 14.3 20.7	ELA.  8.0 5.8 5.0 4.3 3.4	#3(4. TOT. 9.3 6.6 5.8 4.9	)  PLA.  2.7 5.7 9.2 12.7	LVDT ELA.	<b>#</b> 4(6.0	625 IN
100 500 1000 2170 5870 10350	ELA. TOT 21.5 24.7 16.9 19.3 15.2 17.7 13.5 15.7 11.7 13.5	7. PLA. 7. 8.8 3. 22.0 7. 38.0 7. 57.0 5. 116.4 1. 149.4	DEFC LVDT ELA. 10.3 7.9 7.1 6.2 5.3 4.8	#2(2. TOT. 11.8 9.0 8.2 7.2 6.1 5.4	ON (inc 0 IN.) PLA. 3.7 8.6 14.3 20.7 40.6 50.7	ELA.  8.0 5.8 5.0 4.3 3.4 3.0	#3(4. TOT. 9.3 6.6 5.8 4.9 4.0 3.4	PLA.  2.7 5.7 9.2 12.7 23.3 28.0	LVDT ELA.	#4(6.0	625 IN
100 500 1000 2170 5870 10350 30000	ELA. TOT 21.5 24.7 16.9 19.3 15.2 17.7 13.5 15.7 11.7 13.5 10.7 12.1	7. PLA.  7. 8.8  8.22.0  7. 38.0  7. 57.0  5. 116.4  1. 149.4  5. 329.4	DEFC LVDT ELA. 10.3 7.9 7.1 6.2 5.3 4.8	#2(2. TOT. 11.8 9.0 8.2 7.2 6.1 5.4 4.6	ON (inc 0 IN.) PLA. 3.7 8.6 14.3 20.7 40.6 50.7	ELA.  8.0 5.8 5.0 4.3 3.4 3.0 2.4	9.3 6.6 5.8 4.9 4.0 3.4 2.7	) PLA. 2.7 5.7 9.2 12.7 23.3 28.0 54.2	LVDT ELA.	#4(6.0	625 IN PLA
100 500 1000 2170 5870 10350 30000	LVDT #1(0 ELA. TOT 21.5 24.7 16.9 19.3 15.2 17.7 13.5 15.7 11.7 13.5 10.7 12.1 9.1 10.5	7. PLA. 7. 8.8 8.22.0 7. 38.0 7. 57.0 8.116.4 8.149.4 8.329.4 8.819.8	DEFC LVDT ELA. 10.3 7.9 7.1 6.2 5.3 4.8 4.0 3.1	#2(2. TOT. 11.8 9.0 8.2 7.2 6.1 5.4 4.6 3.5	ON (inc 0 IN.) PLA. 3.7 8.6 14.3 20.7 40.6 50.7 106.5 245.8	ELA.  8.0 5.8 5.0 4.3 3.4 3.0 2.4	9.3 6.6 5.8 4.9 4.0 3.4 2.7	) PLA.  2.7 5.7 9.2 12.7 23.3 28.0 54.2 109.4	LVDT ELA.	#4(6.0	625 IN PLA
100 500 1000 2170 5870 10350 30000	LVDT #1(0 ELA. TOT 21.5 24.7 16.9 19.3 15.2 17.7 13.5 15.7 11.7 13.5 10.7 12.1 9.1 10.5 7.2 8.3	0.0 IN.)  7. PLA.  7. 8.8  8. 22.0  7. 38.0  7. 57.0  8. 116.4  1. 149.4  8. 329.4  8. 819.8	DEFC LVDT ELA. 10.3 7.9 7.1 6.2 5.3 4.8 4.0 3.1	#2(2. TOT. 11.8 9.0 8.2 7.2 6.1 5.4 4.6 3.5	ON (inc 0 IN.) PLA. 3.7 8.6 14.3 20.7 40.6 50.7 106.5 245.8	ELA.  8.0 5.8 5.0 4.3 3.4 3.0 2.4	9.3 6.6 5.8 4.9 4.0 3.4 2.7 1.9	) PLA.  2.7 5.7 9.2 12.7 23.3 28.0 54.2 109.4	LVDT ELA.	#4(6.0 TOT.	625 IN PLA
100 500 1000 2170 5870 10350 30000 150000	LVDT #1(0 ELA. TOT 21.5 24.7 16.9 19.3 15.2 17.7 13.5 15.7 11.7 13.5 9.1 10.5 7.2 8.3	7. PLA. 7. 8.8 8.22.0 7. 38.0 7. 57.0 5. 116.4 1. 149.4 6. 329.4 8. 819.8 8T OF DRY	DEFC  LVDT  ELA.  10.3 7.9 7.1 6.2 5.3 4.8 4.0 3.1  AGGRECTENT;	#2(2. TOT. 11.8 9.0 8.2 7.2 6.1 5.4 4.6 3.5	ON (inc 0 IN.) PLA. 3.7 8.6 14.3 20.7 40.6 50.7 106.5 245.8	ELA.  8.0 5.8 5.0 4.3 3.4 3.0 2.4	9.3 6.6 5.8 4.9 4.0 3.4 2.7 1.9	)  PLA.  2.7 5.7 9.2 12.7 23.3 28.0 54.2 109.4	LVDT ELA.  IT OF B	#4(6.0 TOT	625 IN PLA
100 500 1000 2170 5870 10350 30000 150000 A = TC C = PI BA = WE	LVDT #1(0  ELA. TO7  21.5 24.7  16.9 19.3  15.2 17.7  13.5 15.7  10.7 12.1  9.1 10.5  7.2 8.3  OTAL WEIGH	7. PLA. 7. 8.8 8.22.0 7. 38.0 7. 57.0 6. 116.4 1. 149.4 6. 329.4 8. 819.8 9. 819.8 9. 819.8	DEFO LVDT ELA. 10.3 7.9 7.1 6.2 5.3 4.8 4.0 3.1 AGGREGIENT; AIR;	#2(2.  TOT.  11.8 9.0 8.2 7.2 6.1 5.4 4.6 3.5	ON (inc 0 IN.) PLA. 3.7 8.6 14.3 20.7 40.6 50.7 106.5 245.8	ELA.  8.0 5.8 5.0 4.3 3.4 3.0 2.4	9.3 6.6 5.8 4.9 4.0 3.4 2.7 1.9	) PLA.  2.7 5.7 9.2 12.7 23.3 28.0 54.2 109.4  - WEIGH - CYCLI	LVDT  ELA.  LT OF B  LINED L  C LOAD	#4(6.0 TOT	625 IN PLA

DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 I  CYCLE  RUMBER  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  100 21.1 24.0 8.3 10.2 11.6 3.5 8.0 9.1 2.6 6.1 6.9 1.8  500 16.6 19.3 21.6 7.9 9.1 8.5 5.8 6.7 5.7 3.9 4.5 3.5  1000 15.0 17.2 36.0 7.0 8.1 13.7 5.0 5.8 8.9 3.2 3.7 5.1  5000 10.6 12.2 155.3 4.8 5.5 53.4 3.1 3.5 29.7 1.5 1.7 12.7  33000 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8  181000 6.9 7.9 993.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0  351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2  DEFORMATION (inches X 0.0001)   LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 I  CYCLE  RUMBER  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  100 20.9 23.7 8.3 10.2 11.5 3.5 8.0 9.1 2.6 6.1 6.9 1.8  500 16.4 19.0 20.4 7.8 9.1 8.1 5.8 6.7 5.5 3.9 4.5 3.1  1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4  1000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5  30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1	Sample Number	WA (gr		WB (gr)	AC (%)	(1)	L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 I CYCLE  NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  100 21.1 24.0 8.3 10.2 11.6 3.5 8.0 9.1 2.6 6.1 6.9 1.8 500 16.6 19.3 21.6 7.9 9.1 8.5 5.8 6.7 5.7 3.9 4.5 3.5 1000 15.0 17.2 36.0 7.0 8.1 13.7 5.0 5.8 8.9 3.2 3.7 5.1 5000 11.8 13.6 92.8 5.4 6.3 32.9 3.6 4.1 19.2 1.9 2.2 9.0 10000 10.6 12.2 155.3 4.8 5.5 53.4 3.1 3.5 29.7 1.5 1.7 12.7 3300 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8 181000 6.9 7.9 993.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0 351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2  SAMPLE WA WB AC SL CL WBW WBA GRM AV NUMBER (gr) (gr) (X) (lbs) (lbs) (gr) (gr) (X) (1110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 111110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 111110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 1111110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 111110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 111110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 1.5 1.7 1.7 1.2 1.5 1.7 1.7 1.5 1.7 1.7 1.5 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7										· <del>-</del> -			
LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 I CYCLE  NUMBER  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  100 21.1 24.0 8.3 10.2 11.6 3.5 8.0 9.1 2.6 6.1 6.9 1.8 500 16.6 19.3 21.6 7.9 9.1 8.5 5.8 6.7 5.7 3.9 4.5 3.5 1000 15.0 17.2 36.0 7.0 8.1 13.7 5.0 5.8 8.9 3.2 3.7 5.1 5000 11.8 13.6 92.8 5.4 6.3 32.9 3.6 4.1 19.2 1.9 2.2 9.0 10000 10.6 12.2 155.3 4.8 5.5 53.4 3.1 3.5 29.7 1.5 1.7 12.7 33000 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8 181000 6.9 7.9 903.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0 351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2  SAMPLE WA WB AC SL CL WEM WEA GMM AV NUMBER (gr) (gr) (x)  INTIMOSE (gr) (x) (lbs) (lbs) (gr) (gr) (x)  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 I CYCLE NUMBER ELA. TOT. FLA. ELA. TOT. FL	11110621	1000	0	450	4.31	5	0	100	5991.	0 10	142.0	2.55	4.0
TYCLE    NUMBER   ELA. TOT.   FLA.					DEFO	ORMATI	ON (inc	hes X (	0.0001)	)			
NUMBER ELA. TOT. PLA.  100 21.1 24.0 8.3 10.2 11.6 3.5 8.0 9.1 2.6 6.1 6.9 1.8 500 16.6 19.3 21.6 7.9 9.1 8.5 5.8 6.7 5.7 3.9 4.5 3.5 1000 15.0 17.2 36.0 7.0 8.1 13.7 5.0 5.8 8.9 3.2 3.7 5.1 5000 11.8 13.6 92.8 5.4 6.3 32.9 3.6 4.1 19.2 1.9 2.2 9.0 10000 10.6 12.2 155.3 4.8 5.5 53.4 3.1 3.5 29.7 1.5 1.7 12.7 33000 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8 181000 6.9 7.9 993.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0 351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2  SAMPLE HA WB AC SL CL WBW WBA GPM AV NUMBER (gr) (gr) (7) (1bs) (1bs) (gr) (gr) (gr) (7)  INTERPRETATION (inches X 0.0001)  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 I 1.0 1.3 1.5 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	-	LVDT #	1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
SAMPLE   WA   WB   AC   SL   CL   WBW   WBA   CAM   AV   NUMBER   (gr)   (gr)   (Z)   (lbs)   (lbs)   (lbs)   (gr)   (gr)   (Z)   (lbs)   (lbs)   (lbs)   (gr)   (gr)   (Z)   (lbs)   (l	_	ELA.	TOT .	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
1000 15.0 17.2 36.0 7.0 8.1 13.7 5.0 5.8 8.9 3.2 3.7 5.1 5000 11.8 13.6 92.8 5.4 6.3 32.9 3.6 4.1 19.2 1.9 2.2 9.0 10000 10.6 12.2 155.3 4.8 5.5 53.4 3.1 3.5 29.7 1.5 1.7 12.7 33000 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8 181000 6.9 7.9 993.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0 351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2    SAMPLE MA WB AC SL CL WBW WBA GPM AV NUMBER (gr) (gr) (%) (1bs) (1bs) (gr) (gr) (%) (131110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9    DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 I	100	21.1 2	4.0	8.3	10.2	11.6	3.5	8.0	9.1	2.6	6.1	6.9	1.8
5000 11.8 13.6 92.8 5.4 6.3 32.9 3.6 4.1 19.2 1.9 2.2 9.0 10000 10.6 12.2 155.3 4.8 5.5 53.4 3.1 3.5 29.7 1.5 1.7 12.7 33000 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8 181000 6.9 7.9 993.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0 351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2 SAMPLE WA WB AC SL CL WBH WBA GAM AV NUMBER (gr) (gr) (X) (1bs) (1bs) (gr) (G	500	16.6 1	9.3	21.6	7.9	9.1	8.5	5.8	6.7	5.7	3.9	4.5	3.5
10000 10.6 12.2 155.3 4.8 5.5 53.4 3.1 3.5 29.7 1.5 1.7 12.7 33000 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8 181000 6.9 7.9 993.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0 351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2 SAMPLE WA WB AC SL CL WBW WBA GMM AV NUMBER (gr) (gr) (Z) (lbs) (lbs) (gr) (gr) (Z) (11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 I CYCLE NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. 1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 5.0 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 14.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 3000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 1.6 1.8 - WEIGHT OF SAMPLE IN WATER; WB = WEIGHT OF SAMPLE IN WATER; WB = WEIGHT OF SITUMEN; SL = SUSTAINED LOAD; CL = CYCLIC LOAD; BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;													5.1
33000 8.9 10.1 307.9 3.9 4.5 100.3 2.3 2.7 51.0 1.0 1.1 17.8 181000 6.9 7.9 993.4 3.0 3.4 298.7 1.6 1.8 132.0 0.5 0.5 32.0 351000 6.2 7.1 1386.4 2.7 3.0 404.0 1.3 1.5 167.9 0.3 0.4 34.2 SAMPLE WA WB AC SL CL WBW WBA GMM AV NUMBER (gr) (gr) (%) (1bs) (1bs) (gr) (gr) (%) (%) (11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9 DEFORMATION (inches X 0.0001)  LVDT \$\psi 1(0.0 \text{ IN.}) \text{ LVDT \$\psi 2(2.0 \text{ IN.}) \text{ LVDT \$\psi 3(4.0 \text{ IN.}) \text{ LVDT \$\psi 4(6.0625 \text{ I S.5 } 1.9 2.2 8.8 1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 5.000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0													9.0
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SAMPLE WA WB AC SL CL WBW WBA GMM AV NUMBER (gr) (gr) (Z) (lbs) (lbs) (gr) (gr) (Z)  11110631 10000 450 4.31 50 100 5992.0 10138.0 2.55 3.9  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 I CYCLE NUMBER ELA. TOT. PLA. 500 16.4 19.0 20.4 7.8 9.1 8.1 5.8 6.7 5.5 3.9 4.5 3.4 1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 500 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1  A - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;													
SAMPLE WA WB AC SL CL WBW WBA GRM AV NUMBER (gr) (gr) (x) (lbs) (lbs) (gr) (gr) (x) (x) (lbs) (lbs) (gr) (gr) (x) (x) (lbs) (lbs) (gr) (gr) (x) (x) (x) (lbs) (gr) (gr) (x) (x) (x) (lbs) (lbs) (gr) (gr) (x) (x) (x) (lbs) (lbs) (gr) (gr) (x) (x) (x) (x) (x) (x) (x) (x) (x) (x													
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DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 I  CYCLE  NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 20.9 23.7 8.3 10.2 11.5 3.5 8.0 9.1 2.6 6.1 6.9 1.8 500 16.4 19.0 20.4 7.8 9.1 8.1 5.8 6.7 5.5 3.9 4.5 3.4 1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 5000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 A TOTAL WEIGHT OF DRY AGGREGATES;  C = PERCENT ASPHALT CONTENT;  C = PERCENT ASPHALT ASPHALT CONTENT;  C = PERCENT ASPHALT CONTENT;  C = PERCENT ASPHALT CONTENT;  C = PERCENT ASPHALT CONTENT;  C = PERCENT ASPHALT CONTENT	NUMBER	(gr	)	(gr)	(%)	(11	bs)	(lbs)	(gr)	) (i	gr)		(%)
LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 I CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 20.9 23.7 8.3 10.2 11.5 3.5 8.0 9.1 2.6 6.1 6.9 1.8 500 16.4 19.0 20.4 7.8 9.1 8.1 5.8 6.7 5.5 3.9 4.5 3.4 1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 5000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 1.4 TOTAL WEIGHT OF DRY AGGREGATES;  WB - WEIGHT OF SAMPLE IN AIR;  C - PERCENT ASPHALT CONTENT;  SL - SUSTAINED LOAD;  BN - WEIGHT OF SAMPLE IN WATER;  AV - PERCENT AIR VOIDS;	11110631	1000	0	450	4.31	5	0	100	5992	0 10	138.0	2.55	3.9
CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 20.9 23.7 8.3 10.2 11.5 3.5 8.0 9.1 2.6 6.1 6.9 1.8  500 16.4 19.0 20.4 7.8 9.1 8.1 5.8 6.7 5.5 3.9 4.5 3.4  1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4  5000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8  10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5  30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1  165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1  A = TOTAL WEIGHT OF DRY AGGREGATES;  C = PERCENT ASPHALT CONTENT;  BA = WEIGHT OF SAMPLE IN WATER;  CL = CYCLIC LOAD;  CL = CYCLIC LOAD;  AV = PERCENT AIR VOIDS;					DEF	ORMATIC	ON (inc	hes X (	0.0001	•			
NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 20.9 23.7 8.3 10.2 11.5 3.5 8.0 9.1 2.6 6.1 6.9 1.8 500 16.4 19.0 20.4 7.8 9.1 8.1 5.8 6.7 5.5 3.9 4.5 3.4 1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 5000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 A - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF BITUMEN; BA - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD; BW - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;		LVDT #	1(0.	0 TN )		#2/2	O IN.)		#2//	IN )	I Wht		625 T
500 16.4 19.0 20.4 7.8 9.1 8.1 5.8 6.7 5.5 3.9 4.5 3.4 1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 5000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 A - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF BITUMEN; C - PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; CL - CYCLIC LOAD; BW - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD; AV - PERCENT AIR VOIDS;	- ILLE		•	V 1M.,	LVDT	TE\E.		LVDT	<b>#</b> 3(4.0		LVDI	#4(6.0	
1170 14.4 16.9 39.0 6.8 8.0 14.9 4.9 5.7 9.5 3.1 3.6 5.4 5000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 A - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF BITUMEN; C - PERCENT ASPHALT CONTENT; SL - SUSTAINED LOAD; BA - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD; BW - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;	_	ELA.					·					-	
5000 11.6 13.5 88.3 5.4 6.2 31.6 3.6 4.2 18.5 1.9 2.2 8.8 10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; SL = SUSTAINED LOAD; BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD; BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	NUMBER	20.9 2	TOT.	PLA. 8.3	ELA.	TOT.	PLA.	ELA.	TOT.	PLA. 2.6	ELA. 6.1	TOT.	PLA.
10000 10.5 11.9 149.9 4.8 5.5 52.0 3.1 3.5 29.1 1.5 1.7 12.5 30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; CL = CYCLIC LOAD; BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD; AV = PERCENT AIR VOIDS;	100 500	20.9 2 16.4 1	TOT. 3.7 9.0	PLA. 8.3 20.4	ELA. 10.2 7.8	TOT. 11.5 9.1	PLA. 3.5 8.1	ELA. 8.0 5.8	9.1 6.7	PLA. 2.6 5.5	ELA. 6.1 3.9	TOT. 6.9 4.5	PLA. 1.8 3.4
30000 8.9 10.1 280.3 4.0 4.6 92.5 2.4 2.7 47.7 1.0 1.1 17.1 165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1 A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD; BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100 500 1170	20.9 2 16.4 1 14.4 1	3.7 9.0 6.9	PLA. 8.3 20.4 39.0	ELA. 10.2 7.8 6.8	TOT.  11.5 9.1 8.0	PLA. 3.5 8.1 14.9	ELA. 8.0 5.8 4.9	9.1 6.7 5.7	PLA.  2.6 5.5 9.5	6.1 3.9 3.1	TOT. 6.9 4.5 3.6	PLA. 1.8 3.4 5.4
165000 6.9 7.8 906.4 3.0 3.4 276.2 1.6 1.8 123.9 0.5 0.6 31.1  A - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF BITUMEN; C - PERCENT ASPHALT CONTENT; SL - SUSTAINED LOAD; BA - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD; BW - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;	100 500 1170 5000	20.9 2 16.4 1 14.4 1 11.6 1	3.7 9.0 6.9 3.5	PLA.  8.3 20.4 39.0 88.3	ELA. 10.2 7.8 6.8 5.4	TOT.  11.5 9.1 8.0 6.2	PLA.  3.5 8.1 14.9 31.6	ELA. 8.0 5.8 4.9 3.6	9.1 6.7 5.7 4.2	PLA.  2.6 5.5 9.5 18.5	6.1 3.9 3.1 1.9	TOT. 6.9 4.5 3.6 2.2	PLA.  1.8 3.4 5.4 8.8
A - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF BITUMEN; C - PERCENT ASPHALT CONTENT; SL - SUSTAINED LOAD; BA - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD; BW - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;	100 500 1170 5000 10000	20.9 2 16.4 1 14.4 1 11.6 1 10.5 1	3.7 9.0 6.9 3.5	PLA.  8.3 20.4 39.0 88.3 149.9	ELA. 10.2 7.8 6.8 5.4 4.8	TOT.  11.5 9.1 8.0 6.2 5.5	PLA.  3.5 8.1 14.9 31.6 52.0	8.0 5.8 4.9 3.6 3.1	9.1 6.7 5.7 4.2 3.5	PLA.  2.6 5.5 9.5 18.5 29.1	6.1 3.9 3.1 1.9	TOT. 6.9 4.5 3.6 2.2 1.7	PLA.  1.8 3.4 5.4 8.8 12.5
C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;  BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100 500 1170 5000 10000 30000	20.9 2 16.4 1 14.4 1 11.6 1 10.5 1 8.9 1	3.7 9.0 6.9 3.5 1.9	PLA.  8.3 20.4 39.0 88.3 149.9 280.3	10.2 7.8 6.8 5.4 4.8	TOT.  11.5 9.1 8.0 6.2 5.5 4.6	PLA.  3.5 8.1 14.9 31.6 52.0 92.5	8.0 5.8 4.9 3.6 3.1 2.4	9.1 6.7 5.7 4.2 3.5 2.7	PLA.  2.6 5.5 9.5 18.5 29.1 47.7	6.1 3.9 3.1 1.9 1.5	TOT. 6.9 4.5 3.6 2.2 1.7 1.1	PLA.  1.8 3.4 5.4 8.8 12.5 17.1
BA - WEIGHT OF SAMPLE IN AIR; CL - CYCLIC LOAD; BW - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;	100 500 1170 5000 10000 30000	20.9 2 16.4 1 14.4 1 11.6 1 10.5 1 8.9 1	3.7 9.0 6.9 3.5 1.9	PLA.  8.3 20.4 39.0 88.3 149.9 280.3	10.2 7.8 6.8 5.4 4.8	TOT.  11.5 9.1 8.0 6.2 5.5 4.6	PLA.  3.5 8.1 14.9 31.6 52.0 92.5	8.0 5.8 4.9 3.6 3.1 2.4	9.1 6.7 5.7 4.2 3.5 2.7	PLA.  2.6 5.5 9.5 18.5 29.1 47.7	6.1 3.9 3.1 1.9 1.5	TOT. 6.9 4.5 3.6 2.2 1.7 1.1	PLA.  1.8 3.4 5.4 8.8 12.5
BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100 500 1170 5000 10000 30000 165000	20.9 2: 16.4 1: 14.4 1: 11.6 1: 10.5 1: 8.9 1: 6.9	3.7 9.0 6.9 3.5 1.9 0.1 7.8	PLA.  8.3 20.4 39.0 88.3 149.9 280.3 906.4	ELA.  10.2 7.8 6.8 5.4 4.8 4.0 3.0	TOT.  11.5 9.1 8.0 6.2 5.5 4.6 3.4	PLA.  3.5 8.1 14.9 31.6 52.0 92.5 276.2	8.0 5.8 4.9 3.6 3.1 2.4	9.1 6.7 5.7 4.2 3.5 2.7	PLA.  2.6 5.5 9.5 18.5 29.1 47.7 123.9	6.1 3.9 3.1 1.9 1.5 1.0	TOT. 6.9 4.5 3.6 2.2 1.7 1.1 0.6	PLA.  1.8 3.4 5.4 8.8 12.5 17.1 31.1
·	100 500 1170 5000 10000 30000 165000	20.9 2: 16.4 1: 14.4 1: 11.6 1: 10.5 1: 8.9 1: 6.9	3.7 9.0 6.9 3.5 1.9 0.1 7.8	PLA.  8.3 20.4 39.0 88.3 149.9 280.3 906.4	ELA.  10.2 7.8 6.8 5.4 4.8 4.0 3.0	TOT.  11.5 9.1 8.0 6.2 5.5 4.6 3.4	PLA.  3.5 8.1 14.9 31.6 52.0 92.5 276.2	8.0 5.8 4.9 3.6 3.1 2.4	9.1 6.7 5.7 4.2 3.5 2.7 1.8	PLA.  2.6 5.5 9.5 18.5 29.1 47.7 123.9	6.1 3.9 3.1 1.9 1.5 1.0 0.5	TOT. 6.9 4.5 3.6 2.2 1.7 1.1 0.6	PLA.  1.8 3.4 5.4 8.8 12.5 17.1 31.1
	100 500 1170 5000 10000 30000 165000 A = TC C = PI	20.9 2 16.4 1 14.4 1 11.6 1 10.5 1 8.9 1 6.9 OTAL WE ERCENT	3.7 9.0 6.9 3.5 1.9 0.1 7.8	PLA.  8.3 20.4 39.0 88.3 149.9 280.3 906.4  OF DRY MALT CONT	ELA.  10.2 7.8 6.8 5.4 4.8 4.0 3.0  AGGRECIENT; AIR;	TOT.  11.5 9.1 8.0 6.2 5.5 4.6 3.4  GATES;	PLA.  3.5 8.1 14.9 31.6 52.0 92.5 276.2	8.0 5.8 4.9 3.6 3.1 2.4	9.1 6.7 5.7 4.2 3.5 2.7 1.8	PLA.  2.6 5.5 9.5 18.5 29.1 47.7 123.9  WEIGH: CYCLIG	6.1 3.9 3.1 1.9 1.5 1.0 0.5	TOT.  6.9 4.5 3.6 2.2 1.7 1.1 0.6	PLA.  1.8 3.4 5.4 8.8 12.5 17.1 31.1

BEAM CYCLIC LOAD DATA

Sample Number	WA (gr)	WB (gr)	AC	(1)	L bs)	CL (lbs)	WBW (gr)	WE (a	A F)	GMM	AV (Z)
11110612	10000	450	4.31	5	0	200	6044.	0 101	39.0	2.55	2.75
**************************************	*******		DEF	ORMATIO	ON (inc	hes X (	0.0001)				
	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.0	IN.)	LVDT	<b>#</b> 4(6.0	625 IN
CYCLE _ NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	34.6 39.8	11.8	18.6	21.4	5.5	14.8	17.0	4.1	11.4	13.1	2.9
500	27.2 31.5	30.5	14.4	16.7	13.4	10.8	12.5	9.2	7.5	8.7	5.8
1000	24.5 27.9	50.5	12.9	14.7	21.5	9.4	10.8	14.2	6.2	7.1	8.4
5000	19.3 22.0	130.1	9.9	11.3	51.8	6.8	7.7	31.2	3.8	4.4	15.5
10000	17.4 20.1	220.4	8.8	10.2	85.2	5.9	6.8	49.2	3.1	3.5	22.3
42200	14.0 16.0	497.7	7.0	8.0	180.6	4.3	4.9	94.7	1.8	2.1	34.4
163500	11.4 13.2	1283.9	5.6	6.5	438.7	3.2	3.7	207.7	1.1	1.2	57.8
216000	11.0 12.7	1438.8	5.3	6.2	485.5	3.0	3.5	224.7	0.9	1.1	58.8
337750	10.2 11.7	2066.3	5.0	5.7	683.4	2.7	3.1	304.7	0.8	0.9	71.6
510000	9.6 10.9	2438.1	4.6	5.2	791.5	2.4	2.7	340.5	0.6	0.7	72.0
855300	8.9 10.1	3755.0	4.3	4.8	1190.6	2.1	2.4	488.9	0.5	0.5	89.4
SAMPLE	WA	WB	AC	S	 T.	CL	WBW	<u></u>	SA.	GMM	AV
NUMBER	(gr)	(gr)	(X)		bs)	(lbs)	(gr)		r)	<b>W.1.</b>	(Z)
11110622	10000	450	4.31	5	0	200	5936	0 103	152.0	2.55	5,4
			DEF	ORMATI	ON (in	ches X	0.0001	)			1 <b></b>
CYCLE	LVDT #1(0	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IW.)	LVDT	#3(4.0	IN.)	LVDī	#4(6.0	625 I
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	51.8 59.5			24.4	11.0		17.6	7.4	10.5	12.0	4.7
500	40.7 45.9		16.2	18.4	26.3		12.2	15.9	6.4	7.2	8.6
1000	36.6 42.6	133.6	14.5	16.8	42.9	9.3	10.8	24.8	5.1	5.9	12.2
5000	28.8 32.5	338.3	11.0	12.5	100.5	6.4	7.2	51.4	2.8	3.2	19.9
	25.9 29.5	574.3	9.8	11.2	165.0	5.4	6.2	79.7	2.1	2.4	27.1
10000											
10000 30000	22.0 25.4	1050.2	8.2	9.4	285.8	4.2	4.8	125.1	1.3	1.5	33.8

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BEAM CYCLIC LOAD DATA

SAMPLE	WA	WB	AC	SL	,	CL
NUMBER	(gr)	(gr)	(%)	(11:		(lbs)
11110632	10000	450	4.31	50		200
			DEF	ORMATIO	ON (in	ches X
CYCLE	LVDT #1(0.	0 IN.)	LVDT	#2(2.	O IN.)	LVD
NUMBER	ELA. TOT.	PLA.	ELA.	TOT.	PLA.	ELA
100	44.3 50.0	21.3	20.3	22.9	8.5	15.
500	34.8 39.9	54.0	15.6	17.8	20.0	10.
1000	31.4 36.5	90.2	13.9	16.1	32.4	9.
5000	24.7 28.1	231.7	10.6	12.1	77.3	6.
10000	22.2 25.3	390.5	9.5	10.8	126.2	5.
36000	18.3 21.8	805.2	7.6	9.1	245.1	4.
161600	14.6 16.8	2269.1	5.9	6.8	642.6	2.
<del></del>						
SAMPLE	WA	WB	AC	S	L	CL
NUMBER						
NUMBER	(gr)	(gr)	(Z)	(11	bs)	(lbs)
11110615		(gr) 450	4.31	(1) 5		(1bs)
			4.31		0	500
11110615		450	4.31 DEF	50	ON (in	500
	10000	450 O IN.)	4.31 DEF	50RMATIC	ON (in	500 ches >
11110615  CYCLE _ NUMBER	10000 LVDT #1(0.	450 0 IN.) PLA.	4.31 DEPO	50RMATIC	ON (in	500 ches >
11110615  CYCLE _ NUMBER	10000  LVDT #1(0.	450 0 IN.) PLA. 99.2	4.31 DEFO LVDT ELA. 48.2	50000000000000000000000000000000000000	ON (inc	LVI
11110615  CYCLE _ NUMBER	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8	450 0 IN.) PLA. 99.2	4.31 DEFO LVDT ELA. 48.2 36.8	50RMATIC #2(2.0	ON (inc) PLA. 32.8	500 ches > LVI ELA 30.
11110615  CYCLE _ NUMBER  100 500	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8	99.2 251.5 416.9	4.31  DEFC  LVDT  ELA.  48.2 36.8 32.8	50RMATIC #2(2.1) TOT. 55.6 42.7	ON (in.) PLA. 32.8	500 ches > LVI ELA 30. 21.
11110615  CYCLE _ NUMBER  100 500 1000	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8 90.0102.4	99.2 251.5 416.9 1082.8	4.31 DEFO LVDT ELA. 48.2 36.8 32.8 24.9	50RMATIC #2(2.0 TOT. 55.6 42.7 37.3	ON (incomplete of the complete	500 ches > LVI ELA 30. 21.
11110615  CYCLE _ NUMBER  100 500 1000 5000 10000 20000	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0 57.4 66.7	99.2 251.5 416.9 1082.8 1837.8 2646.8	4.31 DEFO LVDT ELA. 48.2 36.8 32.8 24.9 22.2 19.7	50RMATIO #2(2.0 TOT. 55.6 42.7 37.3 28.7 25.4 22.9	ON (inc) PLA.  32.8 77.0 123.4 296.0 485.1 674.5	500  LVI  ELA  30. 21. 17. 12.
11110615  CYCLE _ NUMBER  100 500 1000 5000 10000 20000	LVDT #1(0. ELA. TOT. 127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0	99.2 251.5 416.9 1082.8 1837.8 2646.8	4.31 DEFO LVDT ELA. 48.2 36.8 32.8 24.9 22.2 19.7	50RMATIO #2(2.0 TOT. 55.6 42.7 37.3 28.7 25.4 22.9	ON (inc) PLA.  32.8 77.0 123.4 296.0 485.1 674.5	500  LVI  ELA  30. 21. 17. 12.
11110615  CYCLE NUMBER  100 500 1000 5000 10000 20000 40000	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0 57.4 66.7	99.2 251.5 416.9 1082.8 1837.8 2646.8 4463.1	4.31 DEFO LVDT ELA. 48.2 36.8 32.8 24.9 22.2 19.7 17.5	50RMATIO #2(2.4 TOT. 55.6 42.7 37.3 28.7 25.4 22.9 20.3	ON (inc) PLA.  32.8 77.0 123.4 296.0 485.1 674.5	500  LVI  ELA  30. 21. 17. 12. 10 8
11110615  CYCLE _ NUMBER  100 500 1000 5000 10000 20000 40000 44200	LVDT #1(0. ELA. TOT. 127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0 57.4 66.7 51.7 60.1	99.2 251.5 416.9 1082.8 1837.8 2646.8 4463.1 4336.6	4.31 DEFO LVDT ELA. 48.2 36.8 32.8 24.9 22.2 19.7 17.5 17.2	50RMATIC #2(2.0 TOT. 55.6 42.7 37.3 28.7 25.4 22.9 20.3 19.5	ON (inc) PLA.  32.8 77.0 123.4 296.0 485.1 674.5	500  LVI  ELA  30. 21. 17. 12. 10 8
11110615  CYCLE _ NUMBER  100 500 1000 5000 40000 40000 44200	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0 57.4 66.7 51.7 60.1 51.0 57.8	99.2 251.5 416.9 1082.8 1837.8 2646.8 4463.1 4336.6	4.31  DEFC  LVDT  ELA.  48.2 36.8 32.8 24.9 22.2 19.7 17.5 17.2	50RMATIC #2(2.0 TOT. 55.6 42.7 37.3 28.7 25.4 22.9 20.3 19.5	ON (inc) PLA.  32.8 77.0 123.4 296.0 485.1 674.5	500  LVI  ELA  30. 21. 17. 12. 10 8
11110615  CYCLE _ NUMBER  100 500 1000 20000 40000 44200  NA = T	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0 57.4 66.7 51.7 60.1 51.0 57.8	99.2 251.5 416.9 1082.8 1837.8 2646.8 4463.1 4336.6	4.31  DEFC  LVDT  ELA.  48.2 36.8 32.8 24.9 22.2 19.7 17.5 17.2  AGGREGIENT;	50RMATIC #2(2.0 TOT. 55.6 42.7 37.3 28.7 25.4 22.9 20.3 19.5	ON (inc) PLA.  32.8 77.0 123.4 296.0 485.1 674.5	500  LVI  ELA  30. 21. 17. 12. 10 8
11110615  CYCLE _ NUMBER  100 500 1000 20000 40000 44200  NA = T AC = P WBA = W	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0 57.4 66.7 51.7 60.1 51.0 57.8  COTAL WEIGHT	450 0 IN.) PLA. 99.2 251.5 416.9 1082.8 1837.8 2646.8 4463.1 4336.6	4.31  DEFC  LVDT  ELA.  48.2 36.8 32.8 24.9 22.2 19.7 17.5 17.2  AGGREC  TENT; AIR;	#2(2.0 TOT. 55.6 42.7 37.3 28.7 25.4 22.9 20.3 19.5	ON (inc) PLA.  32.8 77.0 123.4 296.0 485.1 674.5	500  LVI  ELA  30. 21. 17. 12. 10 8
11110615  CYCLE NUMBER  100 500 1000 20000 40000 44200  NA = T AC = P WBA = W	LVDT #1(0.  ELA. TOT.  127.1146.5 99.9115.8 90.0102.4 70.7 81.4 63.7 73.0 57.4 66.7 51.7 60.1 51.0 57.8  COTAL WEIGHT PERCENT ASPE	450  0 IN.)  PLA.  99.2  251.5  416.9  1082.8  1837.8  2646.8  4463.1  4336.6  OF DRY  MAPLE IN	4.31  DEFC  LVDT  ELA.  48.2 36.8 32.8 24.9 22.2 19.7 17.5 17.2  AGGREG  TENT; AIR; WATER	50RMATIO #2(2.0 TOT.  55.6 42.7 37.3 28.7 25.4 22.9 20.3 19.5	ON (ind) PLA.  32.8 77.0 123.4 296.0 485.1 674.5 1097.4	500  LVI  ELA  30. 21. 17. 12. 10 8



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CYCLE NUMBER I		0	(gr) 450 0 IN.)		5	.bs)	(1bs) 500	(gr 6046		gr) 137.0	2.55	2.68
CYCLE NUMBER 1	LVDT #	1(0.		DEF			500	6046	.0 10	137.0	2.55	2.68
CYCLE NUMBER I			0 IN.)		ORMATI	ON (1-						
CYCLE NUMBER I			0 IN.)	LUDT		ON (1n	ches X (	0.0001	)			
100 8 500 6	ELA.	ro <del>r</del>		PADI	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	0625 IN
500		.01.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
	85.5 9	5.7	38.7	43.6	49.3	17.2	31.6	35.7	11.6	21.8	24.7	7.5
1000	67.2 7	8.8	97.1	33.6	38.3	40.3	22.8	26.0	24.9	13.8	15.7	13.7
	60.6 6	9.7	163.6	30.0	34.5	65.8	19.7	22.7	39.0	11.1	12.8	19.9
5000	47.6 5	4.7	426.6	23.0	26.5	160.1	14.0	16.1	85.4	6.5	7.5	35.0
10000	42.9 4	9.5	709.9	20.6	23.8	258.4	12.0	13.9	131.2	5.0	5.8	48.1
26000	37.1 4	2.4	1212.1	17.6	20.0	422.7	9.7	11.0	199.5	3.5	3.9	61.3
51000 3	33.6 3	8.8	2014.8	15.7	18.2	681.6	8.3	9.5	304.5	2.6	3.0	81.3
166770 2	28.1 3	2.3	3923.3	12.9	14.9	1257.5	6.2	7.2	505.9	1.5	1.7	100.9
SAMPLE NUMBER	WA (gr	)	WB (gr)	AC (Z)		L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (2)
11110635	1000	)	450	4.31	5	i0	500	5982	.0 10	065.0	2.55	3.18
				DEF	ORMATI	ON (in	ches X	0.0001	)			
CYCLE	LVDT #	1(0.	0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.	0625 IN
	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100 9	92.010	1.9	45.3	44.3	50.5	19.0	31.3	35.6	12.5	-	-	-
600	70.3 8	0.1	132.7	33.1	37.7	51.5	21.5	24.5	30.5	-	-	-
1000	65.1 7	5.2	198.6	30.4	35.1	75.4	19.3	22.3	43.2	-	-	-
5050	51.1 5	7.9	512.0	23.3	26.4	180.7	13.5	15.3	92.4	-	-	-
10150	46.0 5	2.4	866.8	20.7	23.7	296.5	11.6	13.2	143.7	-	-	-
47000	36.5 4	2.5	2089.7	16.1	18.7	666.1	8.1	9.4	284.1	-	-	•
A = TO	TAL WE	IGHT	OF DRY	AGGRE	GATES;			WB	- WEIGH	T OF B	ITUMEN	:
C = PEI	RCENT	ASPH	ALT CON	TENT;				SL	- SUSTA	INED L	OAD;	
BA - WE	IGHT O	F SA	MPLE IN	AIR;				CL	- CYCLI	C LOAD	;	
IBW - WE	IGHT O	? SA	MPLE IN	WATER	;			AV	- PERCE	NT AIR	VOIDS	;
KAM - MAS	XIMUM 1	THEÓ	RETICAL	SPECI	FIC GR	AVITY;						

SAMPLE	١	ΝA	WB	AC	S	Ĺ	CL	WBW	W	BA	GMM	AV
NUMBER	( (	gr)	(gr)	(%)	(11	bs)	(lbs)	(gr)	(1	gr)		(%)
11110711	100	000	450	4.31	5	0	100	5630.	0 9	722.0	2.55	6.68
				DEF	RMATI	ON (inc	hes X	0.0001)	)			
CYCLE _	LVDT	#1(0	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	29.5	34.2	21.1	11.0	12.7	6.9	7.9	9.2	4.6	5.4	6.3	2.9
500	23.2	27.0	55.9	8.4	9.8	16.8	5.6	6.5	10.1	3.2	3.8	5.4
1050	20.8	24.2	96.1	7.4	8.6	27.9	4.7	5.5	15.9	2.5	2.9	7.7
5000	16.4	18.8	237.3	5.7	6.5	63.6	3.3	3.7	32.0	1.4	1.6	12.0
10200	14.8	17.1	405.5	5.0	5.8	104.8	2.7	3.2	49.5	1.0	1.2	16.3
36700	12.2	13.8	876.6	4.0	4.6	212.2	2.0	2.2	88.7	0.6	0.6	21.8
159340	9.8	11.4	2382.4	3.1	3.6	533.7	1.3	1.6	190.4	0.3	0.3	30.8
SAMPLE		ria	WB	AC	S		CL	WBW	<u></u>	BA	GMM	AV
NUMBER		gr)	(gr)	(%)		bs)	(lbs)	(gr)		gr)	<b>G2</b> 1	(2)
11110711	100	000	450	4.31	5	0	100	5756.	.0 9	721.0	2.55	3.70
			*******	DEF	RMATI	ON (in	ches X	0.0001	)			
CYCLE _	LVDT	#1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	19.3	21.8	7.5	9.6	10.9	3.3	7.6	8.7	2.4	5.8	6.6	1.7
500	15.1	17.2	18.7	7.4	8.4	7.6	5.5	6.3	5.2	3.8	4.3	3.2
1000	13.6	15.5	31.7	6.6	7.5	12.5	4.8	5.5	8.2	3.1	3.5	4.8
5000	10.7	12.5	81.5	5.1	5.9	30.0	3.4	4.0	17.8	1.9	2.2	8.6
10000	9.7	11.2	137.7	4.5	5.3	49.1	3.0	3.4	27.9	1.5	1.7	12.3
30000	8.2	9.3	253.5	3.8	4.3	86.0	2.3	2.6	45.1	1.0	1.1	16.7
	6.4	7.5	774.8	2.9	3.4	243.9	1.6	1.9	112.6	0.5	0.6	30.0
152000		JF TGH	I OF DRY	AGGREC	SATES;			WB •	- WEIGH	T OF B	I TUMEN ;	
	OTAL V							SL -	SUSTA	INED L	DAD;	
7A - T			HALT CON	TENT ;								
IA - T	ERCENT	T ASPI	HALT CON	•				CL :	- CYCLI	C LOAD	;	
7A = T C = P 7BA = W	ercent Eight	OF S		AIR;	;				- CYCLI		-	
IA = T IC = P IBA = W	ERCENT EIGHT EIGHT	OF SA	AMPLE IN	AIR; WATER		AVITY;					-	

NUMBER		MA gr)	WB (gr)	AC (%)	S (1	L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
11110721	100	000	450	4.31	5	0	100	5685	.0 9	706.0	2.55	5.19
				DEF	RMATI	ON (inc	hes X (	0.0001	)			
_	IVDT	#1/0	0 IN.)	I VIDT	#2/2	0 TW )	LVDT	#3/4 (	) TN )	I VIDT	#4(6.0	625 TX
CYCLE _	LVDI	<b>#</b> 1(0.	U IN.,	LVDI	¥2(2.	U 1N.,	LVDI	#3(4.0	, IN.,	LVDI	#4(0.0	025 11
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	23.9	27.6	12.6	10.3	11.9	4.7	7.8	9.0	3.3	5.6	6.5	2.2
500	18.8	21.8	31.9	7.9	9.2	11.2	5.6	6.5	7.1	3.5	4.1	4.1
1000	17.0	19.6	54.9	7.1	8.1	18.6	4.8	5.5	11.4	2.8	3.3	6.1
5400	13.2	15.2	148.2	5.3	6.2	46.4	3.3	3.8	25.2	1.6	1.8	10.6
10400	11.9	13.9	237.3	4.8	5.6	72.0	2.8	3.3	37.2	1.2	1.4	14.1
43000	9.6	10.9	555.3	3.8	4.2	157.2	2.0	2.3	72.1	0.7	0.8	20.6
169500	7.8	8.9	1448.1	3.0	3.4	383.0	1.4	1.6	154.2	0.3	0.4	31.3
SAMPLE			WB	AC	s	L	CL	WBW	w	BA	GMM	VA
NUMBER	(8	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	• (	gr)		(%)
11110731	100	000	450	4.31	5	0	100	5736	.0 9	714.0	2.55	4.0
				DEF	ORMATI	ON (in	ches X (	0.0001	)			
	LVDT	<b>#</b> 1(0.	0 IN.)		-		ches X (			LVDT	#4(6.0	625 I
_	LVDT	#1(0.			<b>#</b> 2(2.			#3(4.0		LVDT	#4(6.0 TOT.	625 I
_	ELA.			LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	O IN.)	ELA.		
NUMBER	ELA.	TOT.	PLA.	LVDT ELA. 9.8	#2(2. TOT.	O IN.)	LVDT ELA. 7.7	#3(4.0	PLA.	ELA.	TOT.	PLA.
NUMBER 100	ELA. 20.4	TOT.	PLA. 8.5	LVDT ELA. 9.8 7.5	#2(2. TOT.	0 IN.) PLA. 3.5	LVDT ELA. 7.7 5.6	#3(4.0 TOT.	PLA.	ELA. 5.8 3.7	TOT.	PLA.
100 500	ELA. 20.4 16.0	TOT. 23.0 18.4 16.5	PLA. 8.5 21.7	LVDT ELA. 9.8 7.5	#2(2. TOT. 11.1 8.7 7.7	0 IN.) PLA. 3.5	LVDT ELA. 7.7 5.6 4.8	#3(4.0 TOT. 8.7 6.4	PLA.  2.6 5.7	5.8 3.7 3.0	TOT. 6.6 4.3	PLA. 1.8 3.5
100 500 1000	ELA. 20.4 16.0 14.4 11.3	TOT. 23.0 18.4 16.5	PLA. 8.5 21.7 36.6	ELA. 9.8 7.5 6.7	#2(2. TOT. 11.1 8.7 7.7 6.0	0 IN.) PLA. 3.5 8.5 13.9	7.7 5.6 4.8 3.4	#3(4.0 TOT. 8.7 6.4 5.5 4.0	PLA.  2.6 5.7 8.9	5.8 3.7 3.0	TOT. 6.6 4.3 3.5 2.1	PLA. 1.8 3.5 5.1
100 500 1000 5000	ELA. 20.4 16.0 14.4 11.3 10.2	TOT.  23.0 18.4 16.5 13.2	PLA. 8.5 21.7 36.6 94.1	9.8 7.5 6.7 5.2	#2(2. TOT. 11.1 8.7 7.7 6.0	0 IN.) PLA. 3.5 8.5 13.9 33.2	7.7 5.6 4.8 3.4	#3(4.0 TOT. 8.7 6.4 5.5 4.0 3.4	PLA.  2.6 5.7 8.9 19.3	5.8 3.7 3.0 1.8	TOT. 6.6 4.3 3.5 2.1	PLA.  1.8 3.5 5.1 9.1
500 1000 5000 10000	20.4 16.0 14.4 11.3 10.2 8.7	TOT.  23.0 18.4 16.5 13.2 11.8 10.0	8.5 21.7 36.6 94.1 159.7	9.8 7.5 6.7 5.2 4.6	#2(2. TOT. 11.1 8.7 7.7 6.0 5.3 4.4	0 IN.) PLA. 3.5 8.5 13.9 33.2 54.6	LVDT ELA. 7.7 5.6 4.8 3.4 2.9 2.3	#3(4.0 TOT. 8.7 6.4 5.5 4.0 3.4 2.6	PLA.  2.6 5.7 8.9 19.3 30.3	5.8 3.7 3.0 1.8 1.4	TOT. 6.6 4.3 3.5 2.1 1.6	PLA.  1.8 3.5 5.1 9.1 12.8
100 500 1000 5000 10000 30000 159800	20.4 16.0 14.4 11.3 10.2 8.7 6.7	TOT.  23.0 18.4 16.5 13.2 11.8 10.0 7.8	8.5 21.7 36.6 94.1 159.7 292.7	LVDT  ELA.  9.8 7.5 6.7 5.2 4.6 3.8 2.9	#2(2. TOT. 11.1 8.7 7.7 6.0 5.3 4.4 3.4	0 IN.) PLA. 3.5 8.5 13.9 33.2 54.6 95.2 280.0	LVDT ELA. 7.7 5.6 4.8 3.4 2.9 2.3	#3(4.0 TOT. 8.7 6.4 5.5 4.0 3.4 2.6 1.8	PLA.  2.6 5.7 8.9 19.3 30.3 48.6	5.8 3.7 3.0 1.8 1.4 0.9	TOT. 6.6 4.3 3.5 2.1 1.6 1.1 0.5	PLA.  1.8 3.5 5.1 9.1 12.8 17.2 30.8
100 500 1000 5000 10000 30000 159800	20.4 16.0 14.4 11.3 10.2 8.7 6.7	TOT.  23.0 18.4 16.5 13.2 11.8 10.0 7.8	PLA.  8.5 21.7 36.6 94.1 159.7 292.7 931.3	LVDT  ELA.  9.8 7.5 6.7 5.2 4.6 3.8 2.9	#2(2. TOT. 11.1 8.7 7.7 6.0 5.3 4.4 3.4	0 IN.) PLA. 3.5 8.5 13.9 33.2 54.6 95.2 280.0	LVDT ELA. 7.7 5.6 4.8 3.4 2.9 2.3	#3(4.0 TOT. 8.7 6.4 5.5 4.0 3.4 2.6 1.8	PLA.  2.6 5.7 8.9 19.3 30.3 48.6 124.5	5.8 3.7 3.0 1.8 1.4 0.9 0.5	TOT.  6.6 4.3 3.5 2.1 1.6 1.1 0.5	PLA.  1.8 3.5 5.1 9.1 12.8 17.2 30.8
100 500 1000 5000 10000 30000 159800	20.4 16.0 14.4 11.3 10.2 8.7 6.7	TOT.  23.0 18.4 16.5 13.2 11.8 10.0 7.8	PLA.  8.5 21.7 36.6 94.1 159.7 292.7 931.3	LVDT  ELA.  9.8 7.5 6.7 5.2 4.6 3.8 2.9  AGGRECTENT;	#2(2. TOT. 11.1 8.7 7.7 6.0 5.3 4.4 3.4	0 IN.) PLA. 3.5 8.5 13.9 33.2 54.6 95.2 280.0	LVDT ELA. 7.7 5.6 4.8 3.4 2.9 2.3	#3(4.0 TOT. 8.7 6.4 5.5 4.0 3.4 2.6 1.8	PLA.  2.6 5.7 8.9 19.3 30.3 48.6 124.5	5.8 3.7 3.0 1.8 1.4 0.9 0.5	TOT.  6.6 4.3 3.5 2.1 1.6 1.1 0.5	PLA.  1.8 3.5 5.1 9.1 12.8 17.2 30.8
100 500 1000 5000 10000 30000 159800	ELA.  20.4 16.0 14.4 11.3 10.2 8.7 6.7  OTAL WERCENTEIGHT	23.0 18.4 16.5 13.2 11.8 10.0 7.8	PLA.  8.5 21.7 36.6 94.1 159.7 292.7 931.3 C OF DRY	LVDT  ELA.  9.8 7.5 6.7 5.2 4.6 3.8 2.9  AGGREGIENT; AIR;	#2(2. TOT. 11.1 8.7 7.7 6.0 5.3 4.4 3.4 GATES;	0 IN.) PLA. 3.5 8.5 13.9 33.2 54.6 95.2 280.0	LVDT ELA. 7.7 5.6 4.8 3.4 2.9 2.3	#3(4.0 TOT. 8.7 6.4 5.5 4.0 3.4 2.6 1.8	PLA.  2.6 5.7 8.9 19.3 30.3 48.6 124.5  - WEIGH	5.8 3.7 3.0 1.8 1.4 0.9 0.5 T OF B INED L/C LOAD	TOT.  6.6 4.3 3.5 2.1 1.6 1.1 0.5  ITUMEN; OAD;	PLA.  1.8 3.5 5.1 9.1 12.8 17.2 30.8

NUMBER	WA (gr)	WB (gr)	AC (7)		L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (Z)
						(220)					
11110712	10000	450	4.31	5	0	200	5670	.0 9	725.0	2.55	5.80
			DEF	ORMATI	ON (in	ches X (	0.0001	)			
	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
CYCLE _	77.4 707										
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	52.3 60.7	35.5	20.6	23.9	12.2	14.6	17.0	8.1	9.9	11.5	5.1
500	41.1 47.7	89.4	15.8	18.3	28.5	10.3	12.0	17.0	6.0	6.9	8.9
1000	37.0 42.9	155.3	14.0	16.3	47.9	8.8	10.2	27.1	4.7	5.4	13.0
5000	29.1 33.4	385.1	10.7	12.3	109.8	6.1	7.0	54.9	2.6	3.0	20.4
10600	26.0 29.5	687.0	9.4	10.7	188.7	5.1	5.8	88.4	1.9	2.1	28.6
33400	21.9 25.3	1310.7	7.8	9.0	339.8	3.8	4.4	143.0	1.1	1.3	35.8
151100	17.4 20.0	3614.3	6.0	6.8	867.1	2.6	2.9	311.6	0.5	0.6	51.3
SAMPLE	WA	WB	AC	s	L	CL	WBW	ı w	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	•) (	gr)		(%)
11110712	10000	450	4.31	5	0	200	5636	.0 9	725.0	2.55	6.59
			DEF	ORMATI	ON (in	ches X	0.0001	.)	*****		
	LVDT #1(0	.0 IN.)						) 0 IN.)	LVDT	#4(6.0	625 IN
	LVDT #1(0			#2(2.	0 IN.)			0 IN.)	LVDT ELA.	#4(6.0	0625 IN
		. PLA.	LVDT ELA.	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	ELA.		
NUMBER	ELA. TOT	. PLA.	LVDT ELA. 21.2	#2(2. TOT.	O IN.)	LVDT ELA. 14.6	#3(4. TOT.	O IN.)	ELA. 9.6	тот.	PLA.
NUMBER 100	ELA. TOT 58.3 66.1	. PLA. 47.5 119.0	LVDT ELA. 21.2 16.2	#2(2. TOT.	0 IN.) PLA. 15.1	LVDT ELA. 14.6 10.2	#3(4. TOT.	0 IN.) PLA. 9.7	ELA. 9.6 5.6	TOT.	PLA.
100 500	ELA. TOT  58.3 66.1 45.8 54.0	. PLA. 47.5 119.0 205.0	LVDT ELA. 21.2 16.2 14.4	#2(2. TOT. 24.1 19.1	0 IN.) PLA. 15.1 34.9	LVDT ELA. 14.6 10.2 8.7	#3(4. TOT. 16.6 12.0	0 IN.) PLA. 9.7 20.1	9.6 5.6 4.4	TOT.	PLA. 5.9 10.1
100 500 1000	ELA. TOT  58.3 66.1 45.8 54.0 41.3 46.9	. PLA. 47.5 119.0 205.0 518.3	LVDT ELA. 21.2 16.2 14.4	#2(2. TOT. 24.1 19.1 16.4 13.1	0 IN.) PLA. 15.1 34.9 58.2	LVDT ELA. 14.6 10.2 8.7 5.9	#3(4. TOT. 16.6 12.0 9.9	9.7 20.1 31.7	9.6 5.6 4.4 2.3	TOT. 10.8 6.6 5.0	PLA. 5.9 10.1 14.4
100 500 1000 5000	58.3 66.1 45.8 54.0 41.3 46.9 32.4 38.7	. PLA. 47.5 119.0 205.0 518.3 1278.5	LVDT  ELA.  21.2 16.2 14.4 11.0 8.8	#2(2. TOT. 24.1 19.1 16.4 13.1	0 IN.) PLA. 15.1 34.9 58.2 135.6 313.2	LVDT  ELA.  14.6 10.2 8.7 5.9 4.3	#3(4. TOT. 16.6 12.0 9.9 7.1 4.9	9.7 20.1 31.7 64.5	9.6 5.6 4.4 2.3 1.3	TOT.  10.8 6.6 5.0 2.8	PLA. 5.9 10.1 14.4 22.4
100 500 1000 5000 18000	ELA. TOT 58.3 66.1 45.8 54.0 41.3 46.9 32.4 38.7 26.8 30.3	. PLA. 47.5 119.0 205.0 518.3 1278.5 1591.5	LVDT  ELA.  21.2 16.2 14.4 11.0 8.8 8.1	#2(2. TOT. 24.1 19.1 16.4 13.1 9.9 9.3	0 IN.) PLA. 15.1 34.9 58.2 135.6 313.2	LVDT  ELA.  14.6 10.2 8.7 5.9 4.3 3.8	#3(4. TOT. 16.6 12.0 9.9 7.1 4.9 4.3	9.7 20.1 31.7 64.5 132.1	9.6 5.6 4.4 2.3 1.3	TOT.  10.8 6.6 5.0 2.8 1.5	PLA. 5.9 10.1 14.4 22.4 34.8
100 500 1000 5000 18000 30000 61232	ELA. TOT 58.3 66.1 45.8 54.0 41.3 46.9 32.4 38.7 26.8 30.3 24.8 28.6	. PLA. 47.5 119.0 205.0 518.3 1278.5 1591.5 2798.7	LVDT  ELA.  21.2 16.2 14.4 11.0 8.8 8.1 7.1	#2(2. TOT. 24.1 19.1 16.4 13.1 9.9 9.3 8.3	0 IN.) PLA. 15.1 34.9 58.2 135.6 313.2 379.6 642.9	LVDT  ELA.  14.6 10.2 8.7 5.9 4.3 3.8	#3(4. TOT. 16.6 12.0 9.9 7.1 4.9 4.3 3.6	9.7 20.1 31.7 64.5 132.1 152.0	9.6 5.6 4.4 2.3 1.3 1.0	TOT.  10.8 6.6 5.0 2.8 1.5 1.2 0.8	PLA. 5.9 10.1 14.4 22.4 34.8 35.3 45.4
100 500 1000 5000 18000 30000 61232	ELA. TOT  58.3 66.1 45.8 54.0 41.3 46.9 32.4 38.7 26.8 30.3 24.8 28.6 22.3 25.9	. PLA.  47.5 119.0 205.0 518.3 1278.5 1591.5 2798.7	LVDT  ELA.  21.2 16.2 14.4 11.0 8.8 8.1 7.1	#2(2. TOT. 24.1 19.1 16.4 13.1 9.9 9.3 8.3	0 IN.) PLA. 15.1 34.9 58.2 135.6 313.2 379.6 642.9	LVDT  ELA.  14.6 10.2 8.7 5.9 4.3 3.8	#3(4. TOT. 16.6 12.0 9.9 7.1 4.9 4.3 3.6	9.7 20.1 31.7 64.5 132.1 152.0 238.5	9.6 5.6 4.4 2.3 1.3 1.0 0.7	TOT.  10.8 6.6 5.0 2.8 1.5 1.2 0.8	PLA. 5.9 10.1 14.4 22.4 34.8 35.3 45.4
100 500 1000 5000 18000 30000 61232	ELA. TOT  58.3 66.1 45.8 54.0 41.3 46.9 32.4 38.7 26.8 30.3 24.8 28.6 22.3 25.9  OTAL WEIGHT	. PLA. 47.5 119.0 205.0 518.3 1278.5 1591.5 2798.7	LVDT  ELA.  21.2 16.2 14.4 11.0 8.8 8.1 7.1  AGGREGIENT;	#2(2. TOT. 24.1 19.1 16.4 13.1 9.9 9.3 8.3	0 IN.) PLA. 15.1 34.9 58.2 135.6 313.2 379.6 642.9	LVDT  ELA.  14.6 10.2 8.7 5.9 4.3 3.8	#3(4. TOT. 16.6 12.0 9.9 7.1 4.9 4.3 3.6 WB SL	0 IN.)  PLA.  9.7 20.1 31.7 64.5 132.1 152.0 238.5	9.6 5.6 4.4 2.3 1.3 1.0 0.7	TOT.  10.8 6.6 5.0 2.8 1.5 1.2 0.8  ITUMEN; OAD;	PLA. 5.9 10.1 14.4 22.4 34.8 35.3 45.4
500 1000 5000 18000 30000 61232 A = TO C = PI BA = WI	ELA. TOT  58.3 66.1 45.8 54.0 41.3 46.9 32.4 38.7 26.8 30.3 24.8 28.6 22.3 25.9  OTAL WEIGHT  ERCENT ASPI	. PLA. 47.5 119.0 205.0 518.3 1278.5 1591.5 2798.7 T OF DRY HALT CON	LVDT  ELA.  21.2 16.2 14.4 11.0 8.8 8.1 7.1  AGGREGIENT; AIR;	#2(2. TOT. 24.1 19.1 16.4 13.1 9.9 9.3 8.3	0 IN.) PLA. 15.1 34.9 58.2 135.6 313.2 379.6 642.9	LVDT  ELA.  14.6 10.2 8.7 5.9 4.3 3.8	#3(4. TOT. 16.6 12.0 9.9 7.1 4.9 4.3 3.6 WB SL CL	0 IN.)  PLA.  9.7 20.1 31.7 64.5 132.1 152.0 238.5  - WEIGH	9.6 5.6 4.4 2.3 1.3 1.0 0.7 T OF B INED L	TOT.  10.8 6.6 5.0 2.8 1.5 1.2 0.8  ITUMEN; OAD;	PLA. 5.9 10.1 14.4 22.4 34.8 35.3 45.4

SAMPLE	WA	WB	AC	S		CL	WBW		WBA	CMM	AV
NUMBER	(gr)	(gr)	(1)	(11	bs)	(lbs)	(gr)	)	(gr)		(%)
11110712	10000	450	4.31	5	0	200	5703.	0	9719.0	2.55	4.95
			DEF	DRMATI	ON (inc	ches X (	0.0001)	)			
 CYCLE	LVDT #1(0	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.	LVDT	#4(6.0	625 II
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	46.3 52.4	26.0	19.9	22.6	9.8	14.6	16.5	6.3	7 10.2	11.6	4.4
500	36.4 41.1	66.9	15.3	17.3	23.3	10.4	11.8	14.5	5 6.3	7.1	8.0
1000	32.8 37.6	112.5	13.6	15.6	38.0	8.9	10.3	22.	5 5.1	5.8	11.5
5000	25.7 29.3	282.8	10.4	11.8	88.5	6.2	7.1	46.0	5 2.9	3.2	18.8
10000	23.2 27.0	492.3	9.3	10.8	149.1	5.3	6.2	74.4	4 2.2	2.5	26.7
30000	19.7 22.5	894.9	7.7	8.8	257.0	4.1	4.7	116.	7 1.4	1.6	33.6
173100	15.1 17.5	2944.1	5.7	6.6	775.5	2.6	3.0	297.	4 0.6	0.7	54.8
SAMPLE	WA	WB	AC	S	L	CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	)	(gr)		(%)
11110722	10000	450	4.31	5	0	200	5650	. 0	9707.0	2.55	6.0
		************	DEF	ORMATI	ON (in	ches X (	0.0001	)			
_	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	I VDT	#3(4.0	IN.	) LVDT	#4(6.0	625 I
avar B	2.21 21(0		2.01			LVDI					
_	ELA. TOT			TOT.	PLA.		TOT.		. ELA.		PLA.
_		. PLA.	ELA.		PLA.	ELA.	TOT.	PLA			
NUMBER	ELA. TOT	PLA.	ELA. 20.5			ELA. 14.3		PLA	0 9.5	TOT.	5.6
NUMBER 110	ELA. TOT	PLA. 41.2 96.1	ELA. 20.5 15.9	23.8 18.4	13.8	ELA. 14.3 10.3	16.6	9.0	0 9.5 6 5.9	TOT.	5.6 9.2
110 500	ELA. TOT 53.1 61.7 42.3 49.0	41.2 96.1 163.6	ELA. 20.5 15.9 14.1	23.8 18.4 16.2	13.8	ELA. 14.3 10.3 8.8	16.6 11.9	9. 17. 27.	0 9.5 6 5.9 6 4.6	TOT. 11.0 6.8	5.6 9.2 13.1
110 500 1000 5000	ELA. TOT 53.1 61.7 42.3 49.0 38.1 43.7	41.2 96.1 163.6 420.6	ELA. 20.5 15.9 14.1 10.8	23.8 18.4 16.2 12.6	13.8 29.9 49.3 117.0	ELA. 14.3 10.3 8.8 6.0	16.6 11.9 10.1 7.1	9. 17. 27.	0 9.5 6 5.9 6 4.6 7 2.5	TOT.  11.0 6.8 5.3 2.9	5.6 9.2 13.1 21.1 28.9
110 500 1000 5000	ELA. TOT  53.1 61.7 42.3 49.0 38.1 43.7 29.9 35.2	41.2 96.1 163.6 420.6 725.5	20.5 15.9 14.1 10.8 9.6	23.8 18.4 16.2 12.6 11.1	13.8 29.9 49.3 117.0 195.0	ELA. 14.3 10.3 8.8 6.0 5.1	16.6 11.9 10.1 7.1	9.0 17.0 27.0 57.	0 9.5 6 5.9 6 4.6 7 2.5 4 1.9	TOT.  11.0 6.8 5.3 2.9 2.2	5.6 9.2 13.1 21.1 28.9
110 500 1000 5000 10000 38000	53.1 61.7 42.3 49.0 38.1 43.7 29.9 35.2 27.0 31.4	41.2 96.1 163.6 420.6 725.5	20.5 15.9 14.1 10.8 9.6 7.6	23.8 18.4 16.2 12.6 11.1 8.7	13.8 29.9 49.3 117.0 195.0 377.6	ELA.  14.3 10.3 8.8 6.0 5.1 3.6	16.6 11.9 10.1 7.1 5.9	9.0 17.0 27.0 57.	0 9.5 6 5.9 6 4.6 7 2.5 4 1.9 2 1.0	TOT.  11.0 6.8 5.3 2.9 2.2	5.6 9.2 13.1 21.1 28.9 36.3
110 500 1000 5000 10000 38000 164800	53.1 61.7 42.3 49.0 38.1 43.7 29.9 35.2 27.0 31.4 22.1 25.4	41.2 96.1 163.6 420.6 725.5 1503.5 4153.6	20.5 15.9 14.1 10.8 9.6 7.6 5.9	23.8 18.4 16.2 12.6 11.1 8.7 6.8	13.8 29.9 49.3 117.0 195.0 377.6 966.6	ELA.  14.3 10.3 8.8 6.0 5.1 3.6	16.6 11.9 10.1 7.1 5.9 4.2 2.9	9.4 17.4 27.4 57. 90.4 154.3 336.	0 9.5 6 5.9 6 4.6 7 2.5 4 1.9 2 1.0 9 0.5	TOT.  11.0 6.8 5.3 2.9 2.2 1.2 0.5	5.6 9.2 13.1 21.1 28.9 36.3 51.8
110 500 1000 5000 10000 38000 164800	ELA. TOT  53.1 61.7 42.3 49.0 38.1 43.7 29.9 35.2 27.0 31.4 22.1 25.4 17.7 20.5  OTAL WEIGH ERCENT ASP	41.2 96.1 163.6 420.6 725.5 1503.5 4153.6	20.5 15.9 14.1 10.8 9.6 7.6 5.9 AGGREG	23.8 18.4 16.2 12.6 11.1 8.7 6.8	13.8 29.9 49.3 117.0 195.0 377.6 966.6	ELA.  14.3 10.3 8.8 6.0 5.1 3.6	16.6 11.9 10.1 7.1 5.9 4.2 2.9	9.0 17.0 27.0 57. 90. 154. 336. WEIG	0 9.5 6 5.9 6 4.6 7 2.5 4 1.9 2 1.0 9 0.5 GHT OF B	TOT.  11.0 6.8 5.3 2.9 2.2 1.2 0.5	5.6 9.2 13.1 21.1 28.9 36.3 51.8
500 1000 5000 10000 38000 164800 A = TC C = PI	ELA. TOT  53.1 61.7 42.3 49.0 38.1 43.7 29.9 35.2 27.0 31.4 22.1 25.4 17.7 20.5  OTAL WEIGH ERCENT ASP EIGHT OF S	41.2 96.1 163.6 420.6 725.5 1503.5 4153.6 TOF DRY	ELA.  20.5 15.9 14.1 10.8 9.6 7.6 5.9  AGGRECTENT; AIR;	23.8 18.4 16.2 12.6 11.1 8.7 6.8	13.8 29.9 49.3 117.0 195.0 377.6 966.6	ELA.  14.3 10.3 8.8 6.0 5.1 3.6	16.6 11.9 10.1 7.1 5.9 4.2 2.9	9.17.6 27.6 57.90.154.3 336.3 - WEII	0 9.5 6 5.9 6 4.6 7 2.5 4 1.9 2 1.0 9 0.5 GHT OF B TAINED LOAD	TOT.  11.0 6.8 5.3 2.9 2.2 1.2 0.5	5.6 9.2 13.1 21.1 28.9 36.3 51.8
110 500 1000 5000 10000 38000 164800 A = TC C = PI	ELA. TOT  53.1 61.7 42.3 49.0 38.1 43.7 29.9 35.2 27.0 31.4 22.1 25.4 17.7 20.5  OTAL WEIGH ERCENT ASP	41.2 96.1 163.6 420.6 725.5 1503.5 4153.6 TOF DRY	ELA.  20.5 15.9 14.1 10.8 9.6 7.6 5.9  AGGRECTENT; AIR;	23.8 18.4 16.2 12.6 11.1 8.7 6.8	13.8 29.9 49.3 117.0 195.0 377.6 966.6	ELA.  14.3 10.3 8.8 6.0 5.1 3.6	16.6 11.9 10.1 7.1 5.9 4.2 2.9	9.17.6 27.6 57.90.154.3 336.3 - WEII	0 9.5 6 5.9 6 4.6 7 2.5 4 1.9 2 1.0 9 0.5 GHT OF B	TOT.  11.0 6.8 5.3 2.9 2.2 1.2 0.5	5.6 9.2 13.1 21.1 28.9 36.3 51.8

BEAM CYCLIC LOAD DATA

SAMPLE	WA	WB	AC	S		CL	WBW		BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	(	gr)		(%)
11110732	10000	450	4.31	5	0	200	5690.	0 9	722.0	2.55	5.29
			DEF	ORMATI	ON (inc	ches X (	0.0001)	)			
CYCLE _	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	48.7 55.0	29.6	20.2	22.9	10.7	14.6	16.5	7.2	10.1	11.4	4.6
500	38.2 43.7	75.5	15.5	17.7	25.4	10.4	11.8	15.5	6.2	7.1	8.4
1000	34.5 40.0	129.1	13.8	16.0	42.0	8.9	10.3	24.4	4.9	5.7	12.2
5000	27.1 31.2	325.6	10.5	12.1	98.1	6.2	7.1	50.6	2.7	3.2	19.8
10000	24.4 28.4	547.8	9.4	10.9	159.6	5.2	6.1	77.8	2.1	2.4	26.9
30000	20.7 23.9	1024.7	7.8	9.0	282.9	4.0	4.6	125.1	1.3	1.5	34.4
33300	20.4 23.3	1188.5	7.6	8.7	326.5	3.9	4.5	142.9	1.2	1.4	38.4
163200	16.0 18.4	2946.9	5.8	6.7	747.4	2.6	3.0	279.1	0.5	0.6	49.1
SAMPLE NUMBER	WA (gr)	WB (gr)	AC (I)		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
11110715	10000	450	4.31	5	0	500	5633	.0 9	755.0	2.55	7.0
			DEF	ORMATI	ON (in	ches X	0.0001	)	*****		
_	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	) IN.)	LVDT	#4(6.0	625 I
CYCLE _ NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	155.7179.9	185.1	48.6	56.1	50.3	27.9	32.2	26.9	14.7	17.0	13.2
500	122.3138.2	471.2	36.9	41.7	117.9	18.9	21.3	55.0	7.9	9.0	21.0
1000	110.2124.5	792.4	32.7	37.0	191.2	15.9	17.9	83.6	5.9	6.7	28.1
5000	86.6 98.9	2015.6	24.8	28.3	446.4	10.4	11.9	165.5	2.8	3.2	38.9
11200	76.7 87.0	3730.1	21.5	24.4	790.6	8.4	9.5	267.5	1.8	2.1	50.6
12000	75.9 87.9	3500.4	21.3	24.6	739.1	8.2	9.5	248.1	1.8	2.0	46.0
13100	74.9 84.6	4081.6	20.9	23.6	857.7	8.0	9.0	284.9	1.7	1.9	51.4
A = T	OTAL WEIGHT	T OF DRY	AGGRE	GATES;		<del></del>	WB =	- WEIGH	T OF B	I TUMEN ;	
T	ERCENT ASPI	HALT CON	TENT;				SL •	- SUSTA	INED L	OAD;	
C = P	EIGHT OF SA	AMPLE IN	AIR;				CL •	<ul><li>CYCLI</li></ul>	C LOAD	;	
C = P BA = W			-	;				• CYCLI • PERCE		•	

DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 :  CYCLE NUMBER ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  100 155.6178.9 184.0 48.6 55.9 50.1 27.9 32.0 26.8 14.7 16.9 13.:  500 122.2141.5 481.8 36.9 42.7 115.6 18.9 21.9 54.0 7.9 9.2 20.:  1000 110.2124.7 795.5 32.7 37.1 192.1 15.9 18.0 84.0 5.9 6.7 28.:  5000 80.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.  5000 80.6 93.3 3002.8 22.8 26.4 648.8 92.10.6 228.3 2.2 2.5 47.  10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.  12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GRM AN NUMBER (gr) (gr) (X) (lbs) (lbs) (gr) (gr) (X  11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 CYCLE NUMBER ELA. TOT. FLA. 500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18. 500 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38. 1000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48. 20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.	SAMPLE	WA	WB	AC	S		CL	WBW		WBA	GMM	AV
DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 INT)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 INT)  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 155.6178.9 184.0 48.6 55.9 50.1 27.9 32.0 26.8 14.7 16.9 13.5  500 122.2141.5 461.8 36.9 42.7 115.6 18.9 21.9 54.0 7.9 9.2 20.0  1000 110.2124.7 795.5 32.7 37.1 192.1 15.9 18.0 84.0 5.9 6.7 28.5  5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.8  8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.1  1000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 4.4  12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GRM AND NUMBER (gr) (gr) (x) (1bs) (1bs) (gr) (gr) (x)  11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 CYCLE NUMBER ELA. TOT. PLA. ELA. TOT. PLA	NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	)	(gr)		(%)
LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE  NNMBER  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 155.6178.9 184.0 48.6 55.9 50.1 27.9 32.0 26.8 14.7 16.9 13  500 122.2141.5 461.8 36.9 42.7 115.6 18.9 21.9 54.0 7.9 9.2 20.1  1000 110.2124.7 795.5 32.7 37.1 192.1 15.9 18.0 84.0 5.9 6.7 28.0  5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GMM ANDER (gr) (x) (lbs) (lbs) (gr) (gr) (x  11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625 CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. 100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11. 500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18. 1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26. 500 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38. 2000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48. 2000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51. 22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DAY AGGREGATES; WB = WEIGHT OF SAMPLE IN MATE; SLE WEIGHT OF SAMPLE IN MATE; AV = PERCENT AIR VOIDS;	1111071	5 10000	450	4.31	5	0	500	5635	. 0	9758.0	2.55	7.0
TYCLE  NUMBER  ELA. TOT. PLA.  100 155.6178.9 184.0 48.6 55.9 50.1 27.9 32.0 26.8 14.7 16.9 13  500 122.2141.5 461.8 36.9 42.7 115.6 18.9 21.9 54.0 7.9 9.2 20.1  1000 110.2124.7 795.5 32.7 37.1 192.1 15.9 18.0 84.0 5.9 6.7 28  5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.  8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.  10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.  12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE HA WB AC SL CL WBW WBA CFM ACTION (gr) (Z.)  SAMPLE HA WB AC SL CL WBW WBA CFM ACTION (gr) (Z.)  INTEREM (gr) (gr) (I) (lbs) (lbs) (gr) (gr) (Z.)  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A - TOTAL WEIGHT OF DRY AGGREGATES;  C - PERCENT ASPRALT CONTENT;  EBA - WEIGHT OF SAMPLE IN MATER;  V - PERCENT AIR VOIDS;				DEF	DRMATI	ON (inc	ches X (	0.0001	)			
NUMBER ELA. TOT. PLA.  100 155.6178.9 184.0 48.6 55.9 50.1 27.9 32.0 26.8 14.7 16.9 13.50 122.2141.5 461.8 36.9 42.7 115.6 18.9 21.9 54.0 7.9 9.2 20.1000 110.2124.7 795.5 32.7 37.1 192.1 15.9 18.0 84.0 5.9 6.7 28.5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 278.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA CRM ANUMBER (gr) (gr) (T) (Lbs) (Lbs) (gr) (gr) (T) (T) (T) (T) (T) (T) (T) (T) (T) (T	-	LVDT #1(0	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	O IN.)	LVDT	#4(6.0	625 I
500 122.2141.5 461.8 36.9 42.7 115.6 18.9 21.9 54.0 7.9 9.2 20.1000 110.2124.7 795.5 32.7 37.1 192.1 15.9 18.0 84.0 5.9 6.7 28.5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GRM ANNUMBER (gr) (gr) (gr) (7.2 11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 CYCLE 10.0 13.1 13.2 13.3 12.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.1000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.2000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  A - TOTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF SAMPLE IN WATER; SL - SUSTAINED LOAD; EACH CLARD; EACH CHARLES AV - PERCENT AIR VOIDS;	-	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
1000 110.2124.7 795.5 32.7 37.1 192.1 15.9 18.0 84.0 5.9 6.7 28.5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBH WBA GRY ANUMBER (gr) (gr) (gr) (Z.11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (Inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 CYCLE NIMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. 500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.1000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.2000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51. 22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100	155.6178.9	184.0	48.6	55.9	50.1	27.9	32.0	26.8	14.7	16.9	13.2
5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 278.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GPM AND MEET (gr) (gr) (x) (lbs) (lbs) (gr) (gr) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (x) (x) (x) (x) (x) (x) (x) (x) (x	500	122.2141.5	461.8	36.9	42.7	115.6	18.9	21.9	54.0	7.9	9.2	20.6
5000 86.5 99.8 1991.8 24.8 28.6 441.5 10.4 12.0 163.8 2.8 3.2 38.8000 80.6 93.3 3002.8 22.8 26.4 648.8 9.2 10.6 228.3 2.2 2.5 47.10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 278.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GPM AND MEET (gr) (gr) (x) (lbs) (lbs) (gr) (gr) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (x) (10.0 10.1) (lbs) (gr) (gr) (x) (x) (x) (x) (x) (x) (x) (x) (x) (x											6.7	28.3
10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.  12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GMM A NUMBER (gr) (gr) (X) (lbs) (lbs) (gr) (gr) (Z  11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BM = WEIGHT OF SAMPLE IN MATER; AV = PERCENT AIR VOIDS;				24.8	28.6						3.2	38.5
10000 78.0 90.3 3133.9 21.9 25.4 668.9 8.6 10.0 229.5 1.9 2.2 44.  12100 75.8 87.1 3898.7 21.2 24.4 823.5 8.2 9.4 276.3 1.7 2.0 51.  SAMPLE WA WB AC SL CL WBW WBA GMM A NUMBER (gr) (gr) (X) (lbs) (lbs) (gr) (gr) (Z  11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BM = WEIGHT OF SAMPLE IN MATER; AV = PERCENT AIR VOIDS;	8000	80.6 93.3	3002.8	22.8	26.4	648.8	9.2	10.6	228.3	2.2	2.5	47.5
SAMPLE   WA   WB   AC   SL   CL   WBW   WBA   CPM   ANUMBER   (gr)   (gr)   (X)   (lbs)   (lbs)   (gr)   (gr)   (X   (lbs)   (lbs)   (lbs)   (gr)   (gr)   (X   (lbs)   (lbs)   (lbs)   (gr)   (gr)   (Ibs)												44.8
NUMBER (gr) (gr) (Z) (lbs) (lbs) (gr) (gr) (Z) (Z) (11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.    DEFORMATION (inches X 0.0001)   LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625 CYCLE	12100	75.8 87.1	3898.7	21.2	24.4	823.5	8.2	9.4	276.3	1.7	2.0	51.1
NUMBER (gr) (gr) (X) (lbs) (lbs) (gr) (gr) (Z  11110725 10000 450 4.31 50 500 5656.0 9710.0 2.55 5.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 15.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;  BB = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;									_			
DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0625)  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES;  C = PERCENT ASPHALT CONTENT;  EN = WEIGHT OF SAMPLE IN MATER;  CL = CYCLIC LOAD;  EN = WEIGHT OF SAMPLE IN MATER;  AV = PERCENT AIR VOIDS;											GMM	AV
DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	)	(gr)		(%)
LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0625  CYCLE  NUMBER  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES;  C = PERCENT ASPHALT CONTENT;  BA = WEIGHT OF SAMPLE IN AIR;  CL = CYCLIC LOAD;  BW = WEIGHT OF SAMPLE IN WATER;  AV = PERCENT AIR VOIDS;	1111072	10000	450	4.31	5	0	500	5656	. 0	9710.0	2.55	5.9
CYCLE  NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;  BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	*********		<del></del>	DEF	ORMATI	ON (inc	ches X	0.0001	)			38823
NUMBER ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  100 132.8153.5 124.9 47.0 54.3 38.5 28.6 33.1 21.9 16.2 18.7 11.  500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN;  C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;  BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	-	LVDT #1(0	.0 IN.)		#2(2.	0 IN.)		#3(4.)	0 IN.)	LVDT	1116	625 I
500 104.3121.3 312.8 35.8 41.6 89.1 19.7 22.9 44.7 9.1 10.6 18.  1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.  5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.  10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.  20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.  22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A - TOTAL WEIGHT OF DRY AGGREGATES;  C - PERCENT ASPHALT CONTENT;  BA - WEIGHT OF SAMPLE IN AIR;  CL - CYCLIC LOAD;  BW - WEIGHT OF SAMPLE IN WATER;  AV - PERCENT AIR VOIDS;				LADI			LVDT				#4(0.0	
1000 94.0109.4 534.8 31.8 37.0 147.2 16.7 19.4 69.6 6.9 8.1 26.5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38.10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48.20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51.22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD; AV = PERCENT AIR VOIDS;	-	ELA. TOT			TOT.	PLA.			PLA.	ELA.		PLA.
5000 73.9 86.0 1374.3 24.2 28.2 348.5 11.2 13.0 141.9 3.4 4.0 38. 10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48. 20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51. 22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES;  C = PERCENT ASPHALT CONTENT;  BA = WEIGHT OF SAMPLE IN AIR;  CL = CYCLIC LOAD;  BA = WEIGHT OF SAMPLE IN WATER;  AV = PERCENT AIR VOIDS;	NUMBER		. PLA.	ELA.		· ·	ELA.	TOT.			TOT.	PLA.
10000 66.6 77.4 2287.8 21.5 25.0 559.7 9.3 10.9 212.3 2.5 2.9 48. 20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51. 22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES;  C = PERCENT ASPHALT CONTENT;  BA = WEIGHT OF SAMPLE IN AIR;  CL = CYCLIC LOAD;  BW = WEIGHT OF SAMPLE IN WATER;  AV = PERCENT AIR VOIDS;	NUMBER 100	132.8153.5	7. PLA. 5 124.9	ELA.	54.3	38.5	ELA. 28.6	TOT.	21.9	16.2	TOT.	PLA.
20000 60.0 69.1 3245.6 19.1 22.0 765.8 7.8 9.0 269.4 1.7 2.0 51. 22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES;  C = PERCENT ASPHALT CONTENT;  BA = WEIGHT OF SAMPLE IN AIR;  CL = CYCLIC LOAD;  BW = WEIGHT OF SAMPLE IN WATER;  AV = PERCENT AIR VOIDS;	100 500	132.8153.5 104.3121.3	7. PLA. 5 124.9 3 312.8	ELA. 47.0 35.8	54.3 41.6	38.5 89.1	ELA. 28.6 19.7	TOT. 33.1 22.9	21.9	9.1	TOT. 18.7 10.6	PLA.
22544 58.9 68.5 3895.9 18.7 21.7 913.4 7.5 8.7 317.0 1.6 1.9 58.  A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD; BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100 500 1000	132.8153.5 104.3121.3 94.0109.4	7. PLA. 5 124.9 6 312.8 6 534.8	ELA. 47.0 35.8 31.8	54.3 41.6 37.0	38.5 89.1 147.2	28.6 19.7 16.7	TOT. 33.1 22.9 19.4	21.9 44.7 69.6	9.1 6.9	TOT.  18.7 10.6 8.1	PLA. 11.5 18.8 26.0
A = TOTAL WEIGHT OF DRY AGGREGATES; WB = WEIGHT OF BITUMEN; C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD; BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD; BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100 500 1000 5000	132.8153.5 104.3121.3 94.0109.4 73.9 86.0	FLA.  5 124.9  6 312.8  6 534.8  1 1374.3	ELA. 47.0 35.8 31.8 24.2	54.3 41.6 37.0 28.2	38.5 89.1 147.2 348.5	28.6 19.7 16.7 11.2	TOT.  33.1 22.9 19.4 13.0	21.9 44.7 69.6 141.9	9.1 6.9 3.4	TOT.  18.7 10.6 8.1 4.0	PLA. 11.5 18.8 26.0 38.5
C = PERCENT ASPHALT CONTENT; SL = SUSTAINED LOAD;  BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD;  BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100 500 1000 5000 10000	132.8153.5 104.3121.3 94.0109.4 73.9 86.0 66.6 77.4	7. PLA. 5 124.9 6 312.8 6 534.8 9 1374.3 6 2287.8	47.0 35.8 31.8 24.2 21.5	54.3 41.6 37.0 28.2 25.0	38.5 89.1 147.2 348.5 559.7	28.6 19.7 16.7 11.2 9.3	TOT.  33.1 22.9 19.4 13.0 10.9	21.9 44.7 69.6 141.9 212.3	16.2 9.1 6.9 3.4 2.5	TOT.  18.7 10.6 8.1 4.0 2.9	PLA. 11.5 18.8 26.0 38.5 48.7
BA = WEIGHT OF SAMPLE IN AIR; CL = CYCLIC LOAD; BW = WEIGHT OF SAMPLE IN WATER; AV = PERCENT AIR VOIDS;	100 500 1000 5000 10000 20000	132.8153.5 104.3121.3 94.0109.4 73.9 86.0 66.6 77.4 60.0 69.1	5 124.9 3 312.8 5 534.8 1 1374.3 6 2287.8 1 3245.6	47.0 35.8 31.8 24.2 21.5	54.3 41.6 37.0 28.2 25.0 22.0	38.5 89.1 147.2 348.5 559.7 765.8	28.6 19.7 16.7 11.2 9.3 7.8	TOT.  33.1 22.9 19.4 13.0 10.9 9.0	21.9 44.7 69.6 141.9 212.3 269.4	16.2 9.1 6.9 3.4 2.5	TOT.  18.7 10.6 8.1 4.0 2.9 2.0	PLA. 11.5 18.8 26.0 38.5 48.7 51.3
BW - WEIGHT OF SAMPLE IN WATER; AV - PERCENT AIR VOIDS;	100 500 1000 5000 10000 20000 22544	132.8153.5 104.3121.3 94.0109.4 73.9 86.0 66.6 77.4 60.0 69.1 58.9 68.5	3 124.9 3 312.8 5 534.8 9 1374.3 9 2287.8 1 3245.6 5 3895.9	47.0 35.8 31.8 24.2 21.5 19.1 18.7	54.3 41.6 37.0 28.2 25.0 22.0 21.7	38.5 89.1 147.2 348.5 559.7 765.8 913.4	28.6 19.7 16.7 11.2 9.3 7.8	33.1 22.9 19.4 13.0 10.9 9.0 8.7	21.8 44.7 69.6 141.8 212.3 269.4 317.0	16.2 9.1 6.9 3.4 2.5 1.7	TOT.  18.7 10.6 8.1 4.0 2.9 2.0 1.9	PLA. 11.5 18.8 26.0 38.5 48.7 51.3 58.3
,	100 500 1000 5000 10000 20000 22544	132.8153.5 104.3121.3 94.0109.4 73.9 86.0 66.6 77.4 60.0 69.1 58.9 68.5	5 124.9 3 312.8 5 534.8 1 1374.3 6 2287.8 1 3245.6 5 3895.9	ELA.  47.0 35.8 31.8 24.2 21.5 19.1 18.7	54.3 41.6 37.0 28.2 25.0 22.0 21.7	38.5 89.1 147.2 348.5 559.7 765.8 913.4	28.6 19.7 16.7 11.2 9.3 7.8	TOT.  33.1 22.9 19.4 13.0 10.9 9.0 8.7	21.8 44.7 69.6 141.8 212.3 269.4 317.0	9.16.2 9.16.9 3.4 2.5 1.7 1.6	TOT.  18.7 10.6 8.1 4.0 2.9 2.0 1.9	PLA. 11.5 18.8 26.0 38.5 48.7 51.3 58.3
MM = MAXIMUM THEORETICAL SPECIFIC GRAVITY;	100 500 1000 5000 10000 20000 22544 A = 1	132.8153.5 104.3121.3 94.0109.4 73.9 86.0 66.6 77.4 60.0 69.1 58.9 68.5	1. PLA. 1. 124.9 1. 312.8 1. 534.8 1. 1374.3 1. 2287.8 1. 3245.6 1. 3895.9 1. OF DRY	ELA.  47.0 35.8 31.8 24.2 21.5 19.1 18.7  AGGREG	54.3 41.6 37.0 28.2 25.0 22.0 21.7	38.5 89.1 147.2 348.5 559.7 765.8 913.4	28.6 19.7 16.7 11.2 9.3 7.8	TOT.  33.1 22.9 19.4 13.0 10.9 9.0 8.7	21.8 44.7 69.6 141.8 212.3 269.4 317.0	16.2 9.1 6.9 3.4 2.5 1.7 1.6 SHT OF B	TOT.  18.7 10.6 8.1 4.0 2.9 2.0 1.9  ITUMEN; OAD;	PLA. 11.5 18.8 26.0 38.5 48.7 51.3 58.3
	100 500 1000 5000 10000 20000 22544 A = 1 C = E	132.8153.5 104.3121.3 94.0109.4 73.9 86.0 66.6 77.4 60.0 69.1 58.9 68.5 TOTAL WEIGH PERCENT ASE	124.9 3 312.8 5 334.8 1 374.3 2 2287.8 1 3245.6 3 3895.9 2 TOF DRY 2 PHALT CON'	ELA.  47.0 35.8 31.8 24.2 21.5 19.1 18.7  AGGRECTENT; AIR;	54.3 41.6 37.0 28.2 25.0 22.0 21.7	38.5 89.1 147.2 348.5 559.7 765.8 913.4	28.6 19.7 16.7 11.2 9.3 7.8	TOT.  33.1 22.9 19.4 13.0 10.9 9.0 8.7	21.8 44.7 69.8 141.8 212.3 269.4 317.0 - WEIG - SUST	16.2 9.1 6.9 3.4 2.5 1.7 1.6 HT OF B	TOT.  18.7 10.6 8.1 4.0 2.9 2.0 1.9  ITUMEN; OAD;	PLA. 11.5 18.8 26.0 38.5 48.7 51.3 58.3
	100 500 1000 5000 10000 20000 22544 A = 1 C = E BA = W BW = W	132.8153.5 104.3121.3 94.0109.4 73.9 86.0 66.6 77.4 60.0 69.1 58.9 68.5 TOTAL WEIGHT PERCENT ASE WEIGHT OF S	124.9 3 312.8 3 312.8 3 534.8 3 1374.3 3 2287.8 3 3245.6 5 3895.9 TOF DRY PHALT CON SAMPLE IN CORETICAL	ELA.  47.0 35.8 31.8 24.2 21.5 19.1 18.7  AGGRECTENT; AIR; WATER, SPECII	54.3 41.6 37.0 28.2 25.0 22.0 21.7 GATES;	38.5 89.1 147.2 348.5 559.7 765.8 913.4	28.6 19.7 16.7 11.2 9.3 7.8 7.5	TOT.  33.1 22.9 19.4 13.0 10.9 9.0 8.7	21.8 44.7 69.8 141.8 212.3 269.4 317.0 - WEIG - SUST	16.2 9.1 6.9 3.4 2.5 1.7 1.6 HT OF B	TOT.  18.7 10.6 8.1 4.0 2.9 2.0 1.9  ITUMEN; OAD;	PLA. 11.5 18.8 26.0 38.5 48.7 51.3 58.3

NUMBER		A (r)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr)		WBA (gr)	GMM	AV (Z)
11110725	100	000	450	4.31	5	0	500	5632	. 0	9750.0	2.55	7.00
				DEF	ORMATI	ON (in	hes X	0.0001	)			# <b>##</b> ##
- CYCLE _	LVDT	#1(0.	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	O IN.	) LVDT	#4(6.0	625 I
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	154.71	76.7	181.8	48.5	55.4	49.7	27.9	31.8	26.	6 14.7	16.8	13.1
500	121.51	39.0	467.4	36.8	42.1	117.5	18.9	21.6	55.	0 8.0	9.1	21.1
1000	109.51	27.1	755.7	32.7	37.9	183.3	15.9	18.5	80.	4 6.0	6.9	27.1
5000	86.0	99.0	1970.1	24.7	28.5	438.6	10.5	12.0	163.	2 2.8	3.2	38.5
10000	77.5	88.3	3419.6	21.9	24.9	733.1	8.7	9.9	252.	3 2.0	2.2	49.6
15000	73.0	82.5	3999.6	20.4	23.1	838.6	7.7	8.7	275.	2 1.6	1.8	48.0
16000	72.3	84.1	4633.8	20.2	23.5	968.2	7.6	8.8	315.	2 1.5	1.7	53.9
SAMPLE	<u> </u>	ia	WB	AC	s	L	CL	WBW		WBA	GMM	AV
NUMBER		r)	(gr)	(2)		bs)	(lbs)	(gr		(gr)		(7)
11110735	100	000	450	4.31	5	0	500	5660	.0	9715.0	2.55	5.9
					ORMATI	ON (in	-b V	0.001	)			
				DEF	~~~~		Ches A	0.0001	•			
_	LVDT	#1(0.	.0 IN.)			0 IN.)		_		) LVDT	#4(6.0	625 I
- Cycle _ Number	LVDT				<b>#</b> 2(2.			#3(4.	0 IN.			
NUMBER		TOT	. PLA.	LVDT ELA.	<b>#</b> 2(2.		LVDT	#3(4.	0 IN.	. ELA.		PLA.
NUMBER 100	ELA.	TOT .	. PLA.	LVDT ELA. 47.0	#2(2. TOT.	PLA.	LVDT ELA. 28.7	#3(4.)	O IN.	. ELA.	TOT.	PLA.
100 500	ELA. 132.41 104.01	TOT	. PLA.	LVDT ELA. 47.0 35.8	#2(2. TOT. 53.5 41.0	PLA. 38.1 89.2	LVDT ELA. 28.7 19.7	#3(4.0 TOT. 32.6 22.6	0 IN. PLA 21. 44.	. ELA.	TOT. 18.5 10.5	PLA. 11.4 18.9
100 500 1000	ELA. 132.41 104.01 93.81	TOT.	PLA.  123.3 312.2 533.6	LVDT ELA. 47.0 35.8 31.8	#2(2. TOT. 53.5 41.0 36.1	PLA. 38.1 89.2 147.3	LVDT ELA. 28.7 19.7 16.7	#3(4.) TOT. 32.6 22.6 19.0	0 IN. PLA 21. 44. 69.	. ELA. 7 16.2 8 9.1	TOT.  18.5 10.5 7.9	PLA. 11.4 18.9 26.2
100 500 1000 5000	ELA. 132.41 104.01 93.81 73.6	TOT. 150.8 119.2 106.4 83.2	PLA.  123.3 312.2 533.6 1384.1	LVDT ELA. 47.0 35.8 31.8 24.2	#2(2. TOT. 53.5 41.0 36.1 27.3	PLA.  38.1 89.2 147.3 352.1	28.7 19.7 16.7	#3(4.4 TOT. 32.6 22.6 19.0 12.7	0 IN. PLA 21. 44. 69.	. ELA. 7 16.2 8 9.1 8 7.0	TOT.  18.5 10.5 7.9 3.9	PLA. 11.4 18.9 26.2 39.1
100 500 1000 5000 10000	ELA. 132.41 104.01 93.81 73.6 66.4	TOT. 150.8 119.2 106.4 83.2 76.9	PLA.  123.3 312.2 533.6 1384.1	LVDT ELA. 47.0 35.8 31.8 24.2 21.5	#2(2. TOT. 53.5 41.0 36.1 27.3 24.9	PLA.  38.1 89.2 147.3 352.1 561.9	28.7 19.7 16.7 11.2 9.4	#3(4.6 TOT. 32.6 22.6 19.0 12.7 10.9	0 IN. PLA 21. 44. 69. 143.	7 16.2 8 9.1 8 7.0 6 3.5 6 2.5	TOT.  18.5 10.5 7.9 3.9	PLA.  11.4 18.9 26.2 39.1 49.2
100 500 1000 5000 10000 20200	ELA. 132.41 104.01 93.81 73.6 66.4 59.7	TOT. 150.8 19.2 106.4 83.2 76.9 69.2	PLA.  123.3 312.2 533.6 1384.1 2289.5 3288.6	LVDT ELA. 47.0 35.8 31.8 24.2 21.5 19.0	#2(2. TOT. 53.5 41.0 36.1 27.3 24.9 22.1	PLA.  38.1 89.2 147.3 352.1 561.9 777.9	28.7 19.7 16.7 11.2 9.4	#3(4.4 TOT. 32.6 22.6 19.0 12.7 10.9 9.0	0 IN. PLA 21. 44. 69. 143. 213. 274.	7 16.2 8 9.1 8 7.0 6 3.5 6 2.5 0 1.7	TOT.  18.5 10.5 7.9 3.9 2.9 2.0	PLA. 11.4 18.9 26.2 39.1 49.2 52.3
100 500 1000 5000 10000 20200 A = T	ELA. 132.41 104.01 93.81 73.6 66.4 59.7	TOT. 150.8 119.2 106.4 83.2 76.9 69.2	PLA.  123.3 312.2 533.6 1384.1 2289.5 3288.6 F OF DRY	LVDT ELA. 47.0 35.8 31.8 24.2 21.5 19.0  AGGREI	#2(2. TOT. 53.5 41.0 36.1 27.3 24.9 22.1	PLA.  38.1 89.2 147.3 352.1 561.9 777.9	28.7 19.7 16.7 11.2 9.4	#3(4.4 TOT.  32.6 22.6 19.0 12.7 10.9 9.0 WB	0 IN.  PLA  21. 44. 69. 143. 213. 274.	7 16.2 8 9.1 8 7.0 6 3.5 6 2.5 0 1.7 GHT OF B	TOT.  18.5 10.5 7.9 3.9 2.9 2.0  ITUMEN; OAD;	PLA. 11.4 18.9 26.2 39.1 49.2 52.3
100 500 1000 5000 10000 20200 A = T	ELA. 132.41 104.01 93.81 73.6 66.4 59.7	TOT. 150.8 119.2 106.4 83.2 76.9 69.2	PLA.  123.3 312.2 533.6 1384.1 2289.5 3288.6	LVDT ELA. 47.0 35.8 31.8 24.2 21.5 19.0  AGGREI	#2(2. TOT. 53.5 41.0 36.1 27.3 24.9 22.1	PLA.  38.1 89.2 147.3 352.1 561.9 777.9	28.7 19.7 16.7 11.2 9.4	#3(4.4) TOT.  32.6 22.6 19.0 12.7 10.9 9.0 WB SL CL	0 IN.  PLA  21. 44. 69. 143. 213. 274.  WEI  SUS  CYC	7 16.2 8 9.1 8 7.0 6 3.5 6 2.5 0 1.7 GHT OF B TAINED L	TOT.  18.5 10.5 7.9 3.9 2.9 2.0  ITUMEN; OAD;	PLA.  11.4 18.9 26.2 39.1 49.2 52.3
100 500 1000 5000 10000 20200 A = T C = P	ELA.  132.41  104.01  93.81  73.6  66.4  59.7  OTAL WERCENTIEIGHT	TOT. 150.8 119.2 106.4 83.2 76.9 69.2 WEIGHT	PLA.  123.3 312.2 533.6 1384.1 2289.5 3288.6 F OF DRY	LVDT  ELA.  47.0 35.8 31.8 24.2 21.5 19.0  AGGRET  TENT; AIR;	#2(2. TOT. 53.5 41.0 36.1 27.3 24.9 22.1	PLA.  38.1 89.2 147.3 352.1 561.9 777.9	28.7 19.7 16.7 11.2 9.4	#3(4.4) TOT.  32.6 22.6 19.0 12.7 10.9 9.0 WB SL CL	0 IN.  PLA  21. 44. 69. 143. 213. 274.  WEI  SUS  CYC	7 16.2 8 9.1 8 7.0 6 3.5 6 2.5 0 1.7 GHT OF B	TOT.  18.5 10.5 7.9 3.9 2.9 2.0  ITUMEN; OAD;	PLA.  11.4 18.9 26.2 39.1 49.2 52.3
100 500 1000 5000 10000 20200 A = T C = P BA = W	ELA.  132.41 104.03 93.81 73.6 66.4 59.7  TOTAL WERCENTIFEIGHT MAXIMUM	TOT. 150.8 119.2 106.4 83.2 76.9 69.2 WEIGHT OF SA	123.3 312.2 533.6 1384.1 2289.5 3288.6 F OF DRY HALT CON AMPLE IN ORETICAL	LVDT  ELA.  47.0 35.8 31.8 24.2 21.5 19.0  AGGRETENT; AIR; WATER SPECI:	#2(2. TOT. 53.5 41.0 36.1 27.3 24.9 22.1 GATES;	PLA.  38.1 89.2 147.3 352.1 561.9 777.9	28.7 19.7 16.7 11.2 9.4 7.8	#3(4.4) TOT.  32.6 22.6 19.0 12.7 10.9 9.0 WB SL CL	0 IN.  PLA  21. 44. 69. 143. 213. 274.  WEI  SUS  CYC	7 16.2 8 9.1 8 7.0 6 3.5 6 2.5 0 1.7 GHT OF B TAINED L	TOT.  18.5 10.5 7.9 3.9 2.9 2.0  ITUMEN; OAD;	PLA.  11.4 18.9 26.2 39.1 49.2 52.3

SAMPLE	WA	WB	AC	SL		CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(11	bs)	(lbs)	(gr)	)	(gr)		(%)
11110735	10000	450	4.31	5	0	500	5636.	0	9755.0	2.55	6.98
			DEF	ORMATI	ON (in	ches X	0.0001)	)			
- CYCLE	LVDT #1(0	.0 IN.)	LVDT	#2(2.	) IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	625 II
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	154.3177.1	181.7	48.5	55.7	49.8	27.9	32.0	26.	7 14.8	16.9	13.2
500	121.2140.2	452.6	36.8	42.6	114.2	18.9	21.9	<b>53</b> .	5 8.0	9.2	20.6
1000	109.2126.7	775.1	32.7	37.9	188.5	15.9	18.5	82.	8 6.0	6.9	28.0
5000	85.8 97.7	1962.9	24.7	28.2	438.3	10.5	11.9	163.	4 2.8	3.2	38.7
10000	77.3 88.5	3372.7	21.9	25.1	725.3	8.7	9.9	250.	2 2.0	2.2	49.3
20200	69.6 79.5	4728.0	19.4	22.1	978.3	7.1	8.2	310.	3 1.3	1.5	49.6
SAMPLE	WA	WB	AC	SL		CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	<b>(</b> Z)	(1	bs)	(lbs)	(gr)	)	(gr)		(%)
21110511	10000	416	3.99	5	0	100	6149	. 0	10349.0	2.54	2.9
21110511	10000	416				100			10349.0	2.54	2.9
<del>-</del>	LVDT #1(0		DEF	ORMATI	ON (in	ches X	0.0001	)			
		.0 IN.)	DEF	#2(2.	ON (inc	ches X	0.0001; #3(4.0	) IN.	) LVDI	#4(6.0	)625 I
	LVDT #1(0	.0 IN.)	DEFO	#2(2.	ON (inc	LVDT	0.0001; #3(4.0	) IN.	) LVDT	#4(6.0	0625 I
CYCLE _	LVDT #1(0	.0 IN.) . PLA.	DEFO	#2(2.	ON (inc	LVDT ELA. 8.0	#3(4.0	) IN.	) LVDT	TOT.	0625 I
CYCLE _ NUMBER	LVDT #1(0 ELA. TOT	0.0 IN.)  PLA.  6.2 16.3	LVDT ELA. 9.8 7.6	#2(2. TOT.	ON (inc 0 IN.) PLA. 2.9	LVDT ELA. 8.0 5.8	#3(4.0 TOT.	) IN. PLA	) LVDT  1. ELA.  2 6.3 0 4.2	TOT.	PLA.  1.6 3.3
EYCLE _NUMBER	LVDT #1(0 ELA. TOT 18.3 21.4 14.4 16.7	6.2 16.3 28.0	DEF0 LVDT ELA. 9.8 7.6 6.8	#2(2.) TOT. 11.5 8.8 7.7	ON (income)  PLA.  2.9	LVDT  ELA.  8.0 5.8 5.1	#3(4.0 TOT. 9.3 6.8	) IN. PLA 2. 5.	2 6.3 0 4.2 1 3.4	TOT.	PLA.  1.6 3.3 4.9
100 500 1000 5020	LVDT #1(0 ELA. TOT 18.3 21.4 14.4 16.7 13.0 14.8	6.2 16.3 28.0 73.1	DEFC LVDT ELA. 9.8 7.6 6.8 5.2	#2(2. TOT. 11.5 8.8 7.7 5.9	ON (inc) PLA. 2.9 7.2 11.9 29.0	ELA.  8.0 5.8 5.1	#3(4.0 TOT. 9.3 6.8 5.8	PLA 2. 5. 8.	) LVDT  1. ELA.  2 6.3  0 4.2  1 3.4  0 2.1	TOT. 7.3 4.8 3.9	PLA.  1.6 3.3 4.9 9.2
100 500 1000 5020 10300	LVDT #1(0 ELA. TOT 18.3 21.4 14.4 16.7 13.0 14.8 10.2 11.5	6.2 16.3 28.0 73.1 128.1	DEFC LVDT ELA. 9.8 7.6 6.8 5.2 4.6	#2(2. TOT. 11.5 8.8 7.7 5.9 5.3	ON (inc) PLA. 2.9 7.2 11.9 29.0 49.4	ELA.  8.0 5.8 5.1 3.7	#3(4.0 TOT. 9.3 6.8 5.8 4.1 3.6	2. 5. 8. 18.	2 6.3 0 4.2 1 3.4 0 2.1 2 1.7	TOT. 7.3 4.8 3.9 2.4	PLA.  1.6 3.3 4.9 9.2 13.7
100 500 1000 5020 10300 31220	LVDT \$1(0 ELA. TOT 18.3 21.4 14.4 16.7 13.0 14.8 10.2 11.5 9.1 10.5 7.7 8.9	6.2 16.3 28.0 73.1 128.1 239.7	DEFC LVDT ELA. 9.8 7.6 6.8 5.2 4.6 3.9	#2(2. TOT. 11.5 8.8 7.7 5.9 5.3 4.5	ON (inc) PLA. 2.9 7.2 11.9 29.0 49.4 88.0	ELA.  8.0 5.8 5.1 3.7 3.2 2.5	#3(4.0 TOT. 9.3 6.8 5.8 4.1 3.6 2.9	PLJ  2. 5. 8. 18. 29.	LVDT  2 6.3 0 4.2 1 3.4 0 2.1 2 1.7 4 1.2	7,3 4,8 3,9 2,4 2,0	PLA.  1.6 3.3 4.9 9.2 13.7 19.4
100 500 1000 5020 10300 31220	LVDT #1(0 ELA. TOT 18.3 21.4 14.4 16.7 13.0 14.8 10.2 11.5 9.1 10.5 7.7 8.9	6.2 16.3 28.0 73.1 128.1 239.7 824.3	DEFO LVDT ELA. 9.8 7.6 6.8 5.2 4.6 3.9 2.9	#2(2. TOT. 11.5 8.8 7.7 5.9 5.3 4.5 3.4	PLA.  2.9 7.2 11.9 29.0 49.4 88.0 280.4	ELA.  8.0 5.8 5.1 3.7 3.2 2.5	#3(4.0 TOT.  9.3 6.8 5.8 4.1 3.6 2.9 1.9	PLA  2. 5. 8. 18. 29. 48.	LVDT  2 6.3 0 4.2 1 3.4 0 2.1 2 1.7 4 1.2	TOT.  7.3 4.8 3.9 2.4 2.0 1.3	PLA.  1.6 3.3 4.9 9.2 13.7 19.4 39.5
100 500 1000 5020 10300 31220 176550	LVDT #1(0 ELA. TOT 18.3 21.4 14.4 16.7 13.0 14.8 10.2 11.5 9.1 10.5 7.7 8.9 6.0 6.9	6.2 16.3 28.0 73.1 128.1 239.7 824.3	DEFO LVDT ELA. 9.8 7.6 6.8 5.2 4.6 3.9 2.9	#2(2. TOT. 11.5 8.8 7.7 5.9 5.3 4.5 3.4	PLA.  2.9 7.2 11.9 29.0 49.4 88.0 280.4	ELA.  8.0 5.8 5.1 3.7 3.2 2.5	#3(4.0 TOT. 9.3 6.8 5.8 4.1 3.6 2.9 1.9	PLJ  2. 5. 8. 18. 29. 48. 135.	2 6.3 0 4.2 1 3.4 0 2.1 2 1.7 4 1.2 9 0.6	7.3 4.8 3.9 2.4 2.0 1.3 0.7	PLA.  1.6 3.3 4.9 9.2 13.7 19.4 39.5
100 500 1000 5020 10300 31220 176550	LVDT #1(0 ELA. TOT 18.3 21.4 14.4 16.7 13.0 14.8 10.2 11.5 9.1 10.5 7.7 8.9 6.0 6.9	6.2 16.3 28.0 73.1 128.1 239.7 824.3	DEFO LVDT ELA. 9.8 7.6 6.8 5.2 4.6 3.9 2.9	#2(2. TOT. 11.5 8.8 7.7 5.9 5.3 4.5 3.4	PLA.  2.9 7.2 11.9 29.0 49.4 88.0 280.4	ELA.  8.0 5.8 5.1 3.7 3.2 2.5	#3(4.0 TOT.  9.3 6.8 5.8 4.1 3.6 2.9 1.9	PLJ  2. 5. 8. 18. 29. 48. 135 WEI	2 6.3 0 4.2 1 3.4 0 2.1 2 1.7 4 1.2 9 0.6	7.3 4.8 3.9 2.4 2.0 1.3 0.7	PLA.  1.6 3.3 4.9 9.2 13.7 19.4 39.5
100 500 1000 5020 10300 31220 176550	LVDT #1(0  ELA. TOT  18.3 21.4  14.4 16.7  13.0 14.8  10.2 11.5  9.1 10.5  7.7 8.9  6.0 6.9  COTAL WEIGH	6.2 16.3 28.0 73.1 128.1 239.7 824.3 T OF DRY	DEFO LVDT ELA. 9.8 7.6 6.8 5.2 4.6 3.9 2.9 AGGRECTENT; AIR;	#2(2. TOT. 11.5 8.8 7.7 5.9 5.3 4.5 3.4	PLA.  2.9 7.2 11.9 29.0 49.4 88.0 280.4	ELA.  8.0 5.8 5.1 3.7 3.2 2.5	9.3 6.8 5.8 4.1 3.6 2.9 1.9	PLA  2. 5. 8. 18. 29. 48. 135 WEI	2 6.3 0 4.2 1 3.4 0 2.1 2 1.7 4 1.2 9 0.6	7.3 4.8 3.9 2.4 2.0 1.3 0.7	PLA.  1.6 3.3 4.9 9.2 13.7 19.4 39.5
100 500 1000 5020 10300 31220 176550 A = I	LVDT #1(0  ELA. TOT  18.3 21.4  14.4 16.7  13.0 14.8  10.2 11.5  9.1 10.5  7.7 8.9  6.0 6.9  COTAL WEIGH PERCENT ASP	6.2 16.3 28.0 73.1 128.1 239.7 824.3 T OF DRY HALT CON	DEFO LVDT ELA. 9.8 7.6 6.8 5.2 4.6 3.9 2.9 AGGRECI TENT; AIR; WATER SPECII	#2(2 TOT.  11.5 8.8 7.7 5.9 5.3 4.5 3.4  GATES;	PLA.  2.9 7.2 11.9 29.0 49.4 88.0 280.4	ELA.  8.0 5.8 5.1 3.7 3.2 2.5	9.3 6.8 5.8 4.1 3.6 2.9 1.9	PLA  2. 5. 8. 18. 29. 48. 135 WEI	2 6.3 0 4.2 1 3.4 0 2.1 2 1.7 4 1.2 9 0.6	7.3 4.8 3.9 2.4 2.0 1.3 0.7	PLA.  1.6 3.3 4.9 9.2 13.7 19.4 39.5

SAMPLE	١	NA	WB	AC	SL		CL	WBW	WBA	1	GMM	ΑV
NUMBER	()	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	((	gr)		(%)
21110521	100	000	416	3.99	5	0	100	6145.	0 103	348.0	2.54	<b>3</b> .03
				DEF	ORMATI	ON (inc	ches X	0.0001)	1			
	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	18.5	21.2	6.5	9.9	11.3	3.0	8.0	9.2	2.3	6.3	7.2	1.7
500	14.6	16.6	17.0	7.6	8.7	7.4	5.9	6.7	5.2	4.2	4.7	3.3
1050	13.0	14.8	29.7	6.8	7.7	12.5	5.0	5.7	8.4	3.4	3.8	5.1
5000	10.3	11.7	75.7	5.2	6.0	29.8	3.7	4.2	18.4	2.1	2.4	9.4
10000	9.3	10.5	128.5	4.7	5.3	49.2	3.2	3.6	29.0	1.7	1.9	13.6
35000	7.7	8.7	269.2	3.8	4.3	97.5	2.4	2.7	53.0	1.1	1.3	20.6
150600	6.2	7.2	767.7	3.0	3.5	260.6	1.8	2.0	127.1	0.6	0.7	37.7
SAMPLE			WB	AC	SL		CL	WBW	WB/		GMM	AV
NUMBER		gr)	(gr)	(7)		bs)	(lbs)	(gr)		gr)	<b></b>	(%)
21110531		000	416	3.99	5	0	100	6144.	0 10:	341.0	2.54	2.90
											******	
*********		*****		DEF	ORMATI	ON (in	ches X	0.0001)	)			
_	LVDT	<b>#</b> 1(0.	0 IN.)			ON (inc			) IN.)	LVDī	#4(6.0	)625 II
_	LVDT	#1(0. TOT.			#2(2.	0 IN.)				LVDT	#4(6.0	)625 II
_	ELA.			LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	) IN.)		TOT.	
NUMBER	ELA. 18.3	TOT.	PLA.	LVDT ELA. 9.8	#2(2. TOT.	O IN.)	LVDT ELA. 8.0	#3(4.0	PLA.	ELA.	TOT.	PLA.
NUMBER 100	ELA. 18.3 14.4	TOT. 21.2' 16.5	PLA.	LVDT ELA. 9.8 7.6	#2(2. TOT.	0 IN.) PLA. 2.9	ELA. 8.0 5.8	#3(4.0 TOT.	PLA.	ELA. 6.3 4.2	TOT.	PLA.
100 500	ELA. 18.3 14.4 12.8	TOT. 21.2 16.5 14.5	PLA. 6.3 16.3	P.8 7.6 6.7	#2(2. TOT. 11.4 8.7	0 IN.) PLA. 2.9 7.1	ELA. 8.0 5.8 5.0	#3(4.0 TOT. 9.2 6.7	PLA.  2.2 5.0	ELA. 6.3 4.2 3.4	7.3 4.8	PLA. 1.6 3.2
100 500 1100	ELA. 18.3 14.4 12.8 10.2	TOT. 21.2 16.5 14.5	PLA. 6.3 16.3 29.6 74.2	LVDT  ELA.  9.8 7.6 6.7 5.2	#2(2. TOT. 11.4 8.7 7.6	0 IN.) PLA. 2.9 7.1 12.6 29.5	ELA. 8.0 5.8 5.0 3.7	#3(4.0 TOT. 9.2 6.7 5.7 4.2	PLA.  2.2 5.0 8.5 18.2	ELA. 6.3 4.2 3.4 2.1	7.3 4.8 3.8	PLA.  1.6 3.2 5.1
100 500 1100 5000 10200	ELA. 18.3 14.4 12.8 10.2 9.1	TOT.  21.2  16.5  14.5  11.6	PLA. 6.3 16.3 29.6 74.2 126.4	LVDT ELA.  9.8 7.6 6.7 5.2 4.6	#2(2. TOT. 11.4 8.7 7.6 5.9 5.3	0 IN.) PLA. 2.9 7.1 12.6 29.5	8.0 5.8 5.0 3.7	#3(4.0 TOT. 9.2 6.7 5.7 4.2	PLA.  2.2 5.0 8.5 18.2 28.8	6.3 4.2 3.4 2.1	TOT.  7.3 4.8 3.8 2.4	PLA.  1.6 3.2 5.1 9.4
100 500 1100 5000 10200 33500	ELA. 18.3 14.4 12.8 10.2 9.1 7.7	TOT.  21.2  16.5  14.5  11.6  10.4	PLA. 6.3 16.3 29.6 74.2 126.4 250.8	P.8 7.6 6.7 5.2 4.6 3.8	#2(2. TOT. 11.4 8.7 7.6 5.9 5.3 4.3	0 IN.) PLA. 2.9 7.1 12.6 29.5 48.7	ELA. 8.0 5.8 5.0 3.7 3.2 2.5	#3(4.0 TOT. 9.2 6.7 5.7 4.2 3.6 2.8	PLA.  2.2 5.0 8.5 18.2 28.8	6.3 4.2 3.4 2.1 1.7	7.3 4.8 3.8 2.4 1.9	PLA.  1.6 3.2 5.1 9.4 13.6
500 1100 5000 10200 33500 159300	ELA.  18.3 14.4 12.8 10.2 9.1 7.7 6.1	TOT.  21.2  16.5  14.5  11.6  10.4  8.7  7.0	PLA. 6.3 16.3 29.6 74.2 126.4 250.8	P. S.	#2(2. TOT. 11.4 8.7 7.6 5.9 5.3 4.3 3.4	0 IN.) PLA. 2.9 7.1 12.6 29.5 48.7 91.8 263.8	ELA. 8.0 5.8 5.0 3.7 3.2 2.5	#3(4.0 TOT. 9.2 6.7 5.7 4.2 3.6 2.8 2.0	PLA.  2.2 5.0 8.5 18.2 28.8 50.2	6.3 4.2 3.4 2.1 1.7 1.1	7.3 4.8 3.8 2.4 1.9 1.3 0.7	PLA.  1.6 3.2 5.1 9.4 13.6 19.9 38.2
100 500 1100 5000 10200 33500 159300	ELA.  18.3 14.4 12.8 10.2 9.1 7.7 6.1	TOT.  21.2  16.5  14.5  11.6  10.4  8.7  7.0	PLA. 6.3 16.3 29.6 74.2 126.4 250.8 772.6	LVDT  9.8 7.6 6.7 5.2 4.6 3.8 3.0	#2(2. TOT. 11.4 8.7 7.6 5.9 5.3 4.3 3.4	0 IN.) PLA. 2.9 7.1 12.6 29.5 48.7 91.8 263.8	ELA. 8.0 5.8 5.0 3.7 3.2 2.5	#3(4.0 TOT. 9.2 6.7 5.7 4.2 3.6 2.8 2.0	PLA.  2.2 5.0 8.5 18.2 28.8 50.2 128.8	6.3 4.2 3.4 2.1 1.7 1.1 0.6	7.3 4.8 3.8 2.4 1.9 1.3 0.7	PLA.  1.6 3.2 5.1 9.4 13.6 19.9 38.2
100 500 1100 5000 10200 33500 159300	ELA.  18.3 14.4 12.8 10.2 9.1 7.7 6.1	TOT.  21.2  16.5  14.5  11.6  10.4  8.7  7.0	PLA.  6.3 16.3 29.6 74.2 126.4 250.8 772.6	LVDT  9.8 7.6 6.7 5.2 4.6 3.8 3.0  AGGREG	#2(2. TOT. 11.4 8.7 7.6 5.9 5.3 4.3 3.4	0 IN.) PLA. 2.9 7.1 12.6 29.5 48.7 91.8 263.8	ELA. 8.0 5.8 5.0 3.7 3.2 2.5	#3(4.0 TOT. 9.2 6.7 5.7 4.2 3.6 2.8 2.0	PLA.  2.2 5.0 8.5 18.2 28.8 50.2 128.8	6.3 4.2 3.4 2.1 1.7 1.1 0.6	7.3 4.8 3.8 2.4 1.9 1.3 0.7	PLA.  1.6 3.2 5.1 9.4 13.6 19.9 38.2
100 500 1100 5000 10200 33500 159300	ELA.  18.3 14.4 12.8 10.2 9.1 7.7 6.1  OTAL VERCENT	TOT.  21.2  16.5  14.5  11.6  10.4  8.7  7.0  WEIGHT  F ASPH  OF SA	PLA.  6.3 16.3 29.6 74.2 126.4 250.8 772.6 POF DRY	LVDT  ELA.  9.8 7.6 6.7 5.2 4.6 3.8 3.0  AGGRECTENT; AIR;	#2(2. TOT. 11.4 8.7 7.6 5.9 5.3 4.3 3.4 GATES;	0 IN.) PLA. 2.9 7.1 12.6 29.5 48.7 91.8 263.8	ELA. 8.0 5.8 5.0 3.7 3.2 2.5	#3(4.0 TOT. 9.2 6.7 5.7 4.2 3.6 2.8 2.0	PLA.  2.2 5.0 8.5 18.2 28.8 50.2 128.8 WEIGH	6.3 4.2 3.4 2.1 1.7 1.1 0.6	7.3 4.8 3.8 2.4 1.9 1.3 0.7 ITUMEN;	PLA.  1.6 3.2 5.1 9.4 13.6 19.9 38.2

Sample Number		NA gr)	WB (gr)	AC (Z)	SL (1	bs)	CL (lbs)	WBW (gr	WB/ (1)	A gr)	GMM	AV (Z)
21110512	100	000	416	3.99	5	0	200	6134	. 0 103	321.0	2.54	2.91
*********				DEF	ORMATI	ON (in	ches X (	0.0001	)			
_	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	O IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	36.3	41.1	13.7	19.2	21.7	6.3	15.2	17.2	4.6	11.6	13.1	3.3
500	28.5	32.2	36.4	14.8	16.7	15.7	11.0	12.5	10.7	7.6	8.6	6.7
1000	25.7	29.2	61.6	13.2	15.1	25.8	9.6	10.9	16.9	6.2	7.1	9.9
5000	20.2		161.6	10.2	11.6	63.1	6.9	7.9	37.6	3.8	4.4	18.4
10600		20.5		9.0		109.3		6.7	62.1	3.0		27.4
20900		18.5		8.1		151.4	5.1		82.2	2.3		32.7
158700	12.0	14.0	1706.6	J. 6	6.7	572.2	3.2	3.7	266.7	1.0	1.2	72.2
SAMPLE	6	·A	WB	AC	SL		CL	WBW	WBA	۸	GMM	AV
NUMBER	(g	r)	(gr)	(1)	(1)	bs)	(lbs)	(gr	) (1	gr)		(%)
21110522	100	000	416	3.99	5	0	200	6128	. 0 10	317.0	2.54	3.00
				DEF	ORMATI	ON (in	ches X (	0.0001	)			
CYCLE -	LVDT	<b>#</b> 1(0.	0 IN.)	LVDī	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.6	O IN.)	LVDT	#4(6.0	625 IN
_	LVDT				#2(2.			#3(4.0	PLA.	LVDT		PLA.
_		TOT.		ELA.			ELA.			ELA.		
100 500	ELA. 36.8 28.9	TOT.	PLA. 14.1 36.7	ELA. 19.3 14.9	TOT. 22.2 17.1	PLA. 6.4 15.7	ELA. 15.2 11.0	TOT. 17.5 12.7	PLA. 4.7 10.6	ELA. 11.5 7.5	TOT. 13.3 8.7	PLA. 3.4 6.6
100 500 1000	ELA. 36.8 28.9 26.0	TOT. 42.3 33.3 30.9	PLA. 14.1 36.7 64.3	ELA. 19.3 14.9 13.3	TOT. 22.2 17.1 15.8	PLA. 6.4 15.7 26.7	15.2 11.0 9.6	TOT.  17.5 12.7 11.4	PLA. 4.7 10.6 17.4	ELA. 11.5 7.5 6.2	TOT.  13.3 8.7 7.4	PLA. 3.4 6.6 10.1
100 500 1000 5000	ELA. 36.8 28.9 26.0 20.4	TOT. 42.3 33.3 30.9 23.5	PLA.  14.1 36.7 64.3 165.1	ELA. 19.3 14.9 13.3 10.2	TOT.  22.2 17.1 15.8 11.8	PLA. 6.4 15.7 26.7 63.9	15.2 11.0 9.6 6.9	TOT.  17.5 12.7 11.4 7.9	PLA. 4.7 10.6 17.4 37.9	11.5 7.5 6.2 3.8	TOT.  13.3 8.7 7.4 4.4	PLA.  3.4 6.6 10.1 18.3
100 500 1000 5000	ELA. 36.8 28.9 26.0 20.4 18.4	TOT. 42.3 33.3 30.9 23.5 20.9	PLA.  14.1 36.7 64.3 165.1 289.6	ELA. 19.3 14.9 13.3 10.2 9.1	TOT.  22.2 17.1 15.8 11.8 10.3	PLA. 6.4 15.7 26.7 63.9 108.7	15.2 11.0 9.6 6.9 5.9	TOT.  17.5 12.7 11.4 7.9 6.7	PLA. 4.7 10.6 17.4 37.9 61.7	ELA. 11.5 7.5 6.2 3.8 3.0	TOT.  13.3 8.7 7.4 4.4 3.4	PLA.  3.4 6.6 10.1 18.3 27.1
500 1000 5000 10000 31300	ELA.  36.8 28.9 26.0 20.4 18.4 15.5	TOT. 42.3 33.3 30.9 23.5 20.9 17.7	PLA.  14.1 36.7 64.3 165.1 289.6 549.9	19.3 14.9 13.3 10.2 9.1 7.6	TOT.  22.2 17.1 15.8 11.8 10.3 8.6	PLA. 6.4 15.7 26.7 63.9 108.7 196.4	15.2 11.0 9.6 6.9 5.9 4.6	TOT.  17.5 12.7 11.4 7.8 6.7 5.3	PLA. 4.7 10.6 17.4 37.9 61.7 103.0	11.5 7.5 6.2 3.8 3.0 2.0	TOT.  13.3 8.7 7.4 4.4 3.4 2.3	PLA.  3.4 6.6 10.1 18.3 27.1 37.9
100 500 1000 5000 10000 31300	ELA.  36.8 28.9 26.0 20.4 18.4 15.5	TOT. 42.3 33.3 30.9 23.5 20.9 17.7	PLA.  14.1 36.7 64.3 165.1 289.6 549.9	19.3 14.9 13.3 10.2 9.1 7.6	TOT.  22.2 17.1 15.8 11.8 10.3 8.6	PLA. 6.4 15.7 26.7 63.9 108.7 196.4	15.2 11.0 9.6 6.9 5.9 4.6	TOT.  17.5 12.7 11.4 7.9 6.7 5.3	PLA. 4.7 10.6 17.4 37.9 61.7 103.0	11.5 7.5 6.2 3.8 3.0 2.0	TOT.  13.3 8.7 7.4 4.4 3.4	PLA.  3.4 6.6 10.1 18.3 27.1 37.9
100 500 1000 5000 10000 31300 176600	ELA.  36.8 28.9 26.0 20.4 18.4 15.5 12.0	TOT. 42.3 33.3 30.9 23.5 20.9 17.7 13.7	PLA.  14.1 36.7 64.3 165.1 289.6 549.9 1877.5	19.3 14.9 13.3 10.2 9.1 7.6 5.7	TOT.  22.2 17.1 15.8 11.8 10.3 8.6 6.5	PLA. 6.4 15.7 26.7 63.9 108.7 196.4 620.3	15.2 11.0 9.6 6.9 5.9 4.6	TOT.  17.5 12.7 11.4 7.9 6.7 5.3 3.6	PLA.  4.7 10.6 17.4 37.9 61.7 103.0 284.4	11.5 7.5 6.2 3.8 3.0 2.0 1.0	TOT.  13.3 8.7 7.4 4.4 3.4 2.3 1.1	PLA.  3.4 6.6 10.1 18.3 27.1 37.9 74.0
100 500 1000 5000 10000 31300 176600	ELA.  36.8 28.9 26.0 20.4 18.4 15.5 12.0  DTAL WERCENT	TOT. 42.3 33.3 30.9 23.5 20.9 17.7 13.7	PLA.  14.1 36.7 64.3 165.1 289.6 549.9 1877.5	19.3 14.9 13.3 10.2 9.1 7.6 5.7	TOT.  22.2 17.1 15.8 11.8 10.3 8.6 6.5	PLA. 6.4 15.7 26.7 63.9 108.7 196.4 620.3	15.2 11.0 9.6 6.9 5.9 4.6	TOT.  17.5 12.7 11.4 7.9 6.7 5.3 3.6	PLA.  4.7 10.6 17.4 37.9 61.7 103.0 284.4  - WEIGHT	11.5 7.5 6.2 3.8 3.0 2.0 1.0	TOT.  13.3 8.7 7.4 4.4 3.4 2.3 1.1  ITUMEN; OAD;	PLA.  3.4 6.6 10.1 18.3 27.1 37.9 74.0
100 500 1000 5000 10000 31300 176600	ELA.  36.8 28.9 26.0 20.4 18.4 15.5 12.0  DTAL WERCENTEIGHT	42.3 33.3 30.9 23.5 20.9 17.7 13.7 WEIGHT	PLA.  14.1 36.7 64.3 165.1 289.6 549.9 1877.5	ELA.  19.3 14.9 13.3 10.2 9.1 7.6 5.7  AGGRECIENT; AIR;	TOT.  22.2 17.1 15.8 11.8 10.3 8.6 6.5	PLA. 6.4 15.7 26.7 63.9 108.7 196.4 620.3	15.2 11.0 9.6 6.9 5.9 4.6	TOT.  17.5 12.7 11.4 7.9 6.7 5.3 3.6	PLA.  4.7 10.6 17.4 37.9 61.7 103.0 284.4  - WEIGHT - CYCLIC	ELA.  11.5 7.5 6.2 3.8 3.0 2.0 1.0 T OF B	TOT.  13.3 8.7 7.4 4.4 3.4 2.3 1.1  ITUMEN; OAD;	PLA.  3.4 6.6 10.1 18.3 27.1 37.9 74.0
100 500 1000 5000 10000 31300 176600 A = TC C = PI BA = WI	ELA.  36.8 28.9 26.0 20.4 18.4 15.5 12.0  DTAL WERCENTEIGHT	42.3 33.3 30.9 23.5 20.9 17.7 13.7 WEIGHT	PLA.  14.1 36.7 64.3 165.1 289.6 549.9 1877.5 OF DRY IALT CON' MPLE IN	ELA.  19.3 14.9 13.3 10.2 9.1 7.6 5.7  AGGRECIENT; AIR; WATER;	TOT.  22.2 17.1 15.8 11.8 10.3 8.6 6.5	PLA. 6.4 15.7 26.7 63.9 108.7 196.4 620.3	15.2 11.0 9.6 6.9 5.9 4.6	TOT.  17.5 12.7 11.4 7.9 6.7 5.3 3.6	PLA.  4.7 10.6 17.4 37.9 61.7 103.0 284.4  - WEIGHT	ELA.  11.5 7.5 6.2 3.8 3.0 2.0 1.0 T OF B	TOT.  13.3 8.7 7.4 4.4 3.4 2.3 1.1  ITUMEN; OAD;	PLA.  3.4 6.6 10.1 18.3 27.1 37.9 74.0
100 500 1000 5000 10000 31300 176600 A = TC C = PI BA = WI	26.0 20.4 18.4 15.5 12.0 DTAL WERCENT EIGHT	42.3 33.3 30.9 23.5 20.9 17.7 13.7 VEIGHT C ASPE OF SA	PLA.  14.1 36.7 64.3 165.1 289.6 549.9 1877.5 OF DRY MALT CON MPLE IN RETICAL	ELA.  19.3 14.9 13.3 10.2 9.1 7.6 5.7  AGGRECITENT; AIR; WATER; SPECII	TOT.  22.2 17.1 15.8 11.8 10.3 8.6 6.5 GATES;	PLA. 6.4 15.7 26.7 63.9 108.7 196.4 620.3	ELA. 15.2 11.0 9.6 6.9 5.9 4.6 3.1	TOT.  17.5 12.7 11.4 7.9 6.7 5.3 3.6	PLA.  4.7 10.6 17.4 37.9 61.7 103.0 284.4  - WEIGHT - CYCLIC	ELA.  11.5 7.5 6.2 3.8 3.0 2.0 1.0 T OF B	TOT.  13.3 8.7 7.4 4.4 3.4 2.3 1.1  ITUMEN; OAD;	PLA.  3.4 6.6 10.1 18.3 27.1 37.9 74.0

WA	WB	AC	SL		CL	WBW	WB.	1	GMM	AV
(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	) (8	gr)		(%)
10000	416	3.99	5	0	200	6126	.0 103	321.0	2.54	3.10
		DEF	ORMATI	ON (inc	ches X	0.0001	)			
LVDT #1(	0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.0	IN.)	LVDT	#4(6.0	625 IN
ELA. TO	T. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
37.4 43.	0 14.9	19.4	22.3	6.7	15.2	17.5	4.9	11.5	13.2	3.5
29.4 33.4	6 38.8	14.9	17.1	16.4	11.1	12.7	11.1	7.5	8.6	6.8
26.5 30.	0 65.9	13.4	15.1	27.0	9.6	10.9	17.5	6.2	7.0	10.1
20.8 23.	8 172.1	10.3	11.8	65.8	6.9	7.9	38.8	3.7	4.3	18.6
18.6 21.	5 305.1	9.1	10.5	113.1	5.9	6.8	63.6	2.9	3.4	27.5
15.9 18.	4 550.4	7.7	8.8	194.7	4.7	5.4	101.6	2.0	2.3	37.1
12.3 14.	2 1845.4	5.8	6.7	604.2	3.2	3.6	275.8	1.0	1.1	71.4
	L.M.		GI.			1.701.3	LTD		COM	AV
									Gran	AV
(gr)	(gr)	(4)	(1	D8 )	(LDS)	(gr	, (	gr)		(%)
10000	416	3.99	5	0	500	6124	.0 10	319.0	2.54	3.1
<del></del>		DEF	ORMATI	ON (in	ches X	0.0001	)			: 2 2 2 7 V
								I VDT	#4/6 C	625 II
LVDT #1(	0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	) IN.)	LVDI	#4(0.0	
	0.0 IN.) T. PLA.	LVDT		O IN.)		#3(4.0		ELA.		
	T. PLA.	ELA.	TOT.		ELA.	TOT.		ELA.		PLA.
ELA. TO	T. PLA.	ELA.	TOT.	PLA. 23.6	ELA.	TOT.	PLA.	ELA. 20.4	TOT.	PLA.
ELA. TO	T. PLA.	ELA. 44.0 34.9	TOT. 50.5 40.6	PLA. 23.6 50.6	ELA. 30.9 23.0	TOT.	PLA. 15.4 30.4	ELA. 20.4 13.3	TOT.	PLA.
ELA. TO 91.1 104 73.6 85 66.3 76	T. PLA.  .6 56.4  .6 128.7	ELA. 44.0 34.9 31.1	TOT. 50.5 40.6 36.0	PLA. 23.6 50.6 85.8	30.9 23.0 19.8	TOT. 35.4 26.7	PLA. 15.4 30.4 49.2	ELA. 20.4 13.3 10.7	TOT. 23.4 15.5	PLA. 9.5 16.1
91.1 104 73.6 85 66.3 76 52.1 61	T. PLA.  .6 56.4  .6 128.7  .8 224.7	ELA. 44.0 34.9 31.1 23.9	TOT. 50.5 40.6 36.0 28.1	PLA.  23.6 50.6 85.8 209.2	30.9 23.0 19.8 13.9	TOT.  35.4 26.7 22.9 16.4	PLA. 15.4 30.4 49.2	ELA. 20.4 13.3 10.7 6.1	TOT.  23.4 15.5 12.4 7.2	PLA. 9.5 16.1 23.9 41.4
91.1 104 73.6 85 66.3 76 52.1 61 46.9 53	T. PLA.  .6 56.4  .6 128.7  .8 224.7  .4 588.9	ELA. 44.0 34.9 31.1 23.9 21.3	TOT.  50.5 40.6 36.0 28.1 24.4	PLA.  23.6 50.6 85.8 209.2 343.9	30.9 23.0 19.8 13.9 11.9	TOT.  35.4 26.7 22.9 16.4 13.6	PLA.  15.4 30.4 49.2 107.3 167.3	20.4 13.3 10.7 6.1 4.7	TOT.  23.4 15.5 12.4 7.2	PLA. 9.5 16.1 23.9 41.4
91.1 104 73.6 85 66.3 76 52.1 61 46.9 53 39.2 44	T. PLA.  .6 56.4  .6 128.7  .8 224.7  .4 588.9  .7 998.8	ELA.  44.0 34.9 31.1 23.9 21.3 17.5	TOT.  50.5 40.6 36.0 28.1 24.4 19.9	PLA.  23.6 50.6 85.8 209.2 343.9 650.0	30.9 23.0 19.8 13.9 11.9	TOT.  35.4 26.7 22.9 16.4 13.6 10.3	PLA.  15.4 30.4 49.2 107.3 167.3	20.4 13.3 10.7 6.1 4.7 2.8	TOT.  23.4 15.5 12.4 7.2 5.3 3.2	9.5 16.1 23.9 41.4 57.3 77.1
91.1 104 73.6 85 66.3 76 52.1 61 46.9 53 39.2 44	T. PLA.  .6 56.4  .6 128.7  .8 224.7  .4 588.9  .7 998.8  .8 1994.4	ELA.  44.0 34.9 31.1 23.9 21.3 17.5	TOT.  50.5 40.6 36.0 28.1 24.4 19.9	PLA.  23.6 50.6 85.8 209.2 343.9 650.0	30.9 23.0 19.8 13.9 11.9	TOT.  35.4 26.7 22.9 16.4 13.6 10.3	PLA.  15.4 30.4 49.2 107.3 167.3 286.6	20.4 13.3 10.7 6.1 4.7 2.8	TOT.  23.4 15.5 12.4 7.2 5.3 3.2	9.5 16.1 23.9 41.4 57.3 77.1
91.1 104 73.6 85 66.3 76 52.1 61 46.9 53 39.2 44 OTAL WEIG	T. PLA.  .6 56.4  .6 128.7  .8 224.7  .4 588.9  .7 998.8  .8 1994.4	ELA.  44.0 34.9 31.1 23.9 21.3 17.5  AGGREG	TOT.  50.5 40.6 36.0 28.1 24.4 19.9	PLA.  23.6 50.6 85.8 209.2 343.9 650.0	30.9 23.0 19.8 13.9 11.9	TOT.  35.4 26.7 22.9 16.4 13.6 10.3	PLA.  15.4 30.4 49.2 107.3 167.3 286.6	20.4 13.3 10.7 6.1 4.7 2.8	TOT.  23.4 15.5 12.4 7.2 5.3 3.2  ITUMEN;	9.5 16.1 23.9 41.4 57.3 77.1
91.1 104 73.6 85 66.3 76 52.1 61 46.9 53 39.2 44  OTAL WEIGHT OF	T. PLA.  .6 56.4  .6 128.7  .8 224.7  .4 588.9  .7 998.8  .8 1994.4  HT OF DRY PHALT CON	ELA.  44.0 34.9 31.1 23.9 21.3 17.5  AGGRECTENT; AIR;	TOT.  50.5 40.6 36.0 28.1 24.4 19.9	PLA.  23.6 50.6 85.8 209.2 343.9 650.0	30.9 23.0 19.8 13.9 11.9	TOT.  35.4 26.7 22.9 16.4 13.6 10.3	PLA.  15.4 30.4 49.2 107.3 167.3 286.6  - WEIGHT	20.4 13.3 10.7 6.1 4.7 2.8 I OF B	TOT.  23.4 15.5 12.4 7.2 5.3 3.2  ITUMEN; OAD;	9.5 16.1 23.9 41.4 57.3 77.1
91.1 104 73.6 85 66.3 76 52.1 61 46.9 53 39.2 44  OTAL WEIGHT OF	T. PLA.  .6 56.4  .6 128.7  .8 224.7  .4 588.9  .7 998.8  .8 1994.4  HT OF DRY PHALT CONS	ELA.  44.0 34.9 31.1 23.9 21.3 17.5  AGGREG TENT; AIR; WATER	TOT.  50.5 40.6 36.0 28.1 24.4 19.9 GATES;	PLA.  23.6 50.6 85.8 209.2 343.9 650.0	30.9 23.0 19.8 13.9 11.9	TOT.  35.4 26.7 22.9 16.4 13.6 10.3	PLA.  15.4 30.4 49.2 107.3 167.3 286.6  - WEIGHT - SUSTA:	20.4 13.3 10.7 6.1 4.7 2.8 I OF B	TOT.  23.4 15.5 12.4 7.2 5.3 3.2  ITUMEN; OAD;	9.5 16.1 23.9 41.4 57.3 77.1
	(gr)  10000  LVDT #1(  ELA. TO  37.4 43.4 29.4 33.4 26.5 30.4 20.8 23.4 18.6 21. 15.9 18.1 12.3 14.4	(gr) (gr)  10000 416  LVDT #1(0.0 IN.)  ELA. TOT. PLA.  37.4 43.0 14.9 29.4 33.6 38.8 26.5 30.0 65.9 20.8 23.8 172.1 18.6 21.5 305.1 15.9 18.4 550.4 12.3 14.2 1845.4	(gr) (gr) (Z)  10000 416 3.99  DEFC  LVDT \$1(0.0 IN.) LVDT  ELA. TOT. PLA. ELA.  37.4 43.0 14.9 19.4 29.4 33.6 38.8 14.9 26.5 30.0 65.9 13.4 20.8 23.8 172.1 10.3 18.6 21.5 305.1 9.1 15.9 18.4 550.4 7.7 12.3 14.2 1845.4 5.8  WA WB AC (gr) (gr) (Z)  10000 416 3.99	(gr) (gr) (X) (1)  10000 416 3.99 5  DEFORMATI  LVDT #1(0.0 IN.) LVDT #2(2.  ELA. TOT. PLA. ELA. TOT.  37.4 43.0 14.9 19.4 22.3 29.4 33.6 38.8 14.9 17.1 26.5 30.0 65.9 13.4 15.1 20.8 23.8 172.1 10.3 11.8 18.6 21.5 305.1 9.1 10.5 15.9 18.4 550.4 7.7 8.8 12.3 14.2 1845.4 5.8 6.7  WA WB AC SL (gr) (gr) (X) (1)  10000 416 3.99 5	(gr) (gr) (X) (lbs)  10000 416 3.99 50  DEFORMATION (inc)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA.  37.4 43.0 14.9 19.4 22.3 6.7 29.4 33.6 38.8 14.9 17.1 16.4 26.5 30.0 65.9 13.4 15.1 27.0 20.8 23.8 172.1 10.3 11.8 65.8 18.6 21.5 305.1 9.1 10.5 113.1 15.9 18.4 550.4 7.7 8.8 194.7 12.3 14.2 1845.4 5.8 6.7 604.2  WA WB AC SL (gr) (gr) (X) (1bs)  10000 416 3.99 50	(gr) (gr) (X) (lbs) (lbs)  10000 416 3.99 50 200  DEFORMATION (inches X (lvd) #1(0.0 IN.) Lvdf #2(2.0 IN.) Lvdf  ELA. TOT. PLA. ELA. TOT. PLA. ELA.  37.4 43.0 14.9 19.4 22.3 6.7 15.2 29.4 33.6 38.8 14.9 17.1 16.4 11.1 26.5 30.0 65.9 13.4 15.1 27.0 9.6 20.8 23.8 172.1 10.3 11.8 65.8 6.9 18.6 21.5 305.1 9.1 10.5 113.1 5.9 18.6 21.5 305.1 9.1 10.5 113.1 5.9 15.9 18.4 550.4 7.7 8.8 194.7 4.7 12.3 14.2 1845.4 5.8 6.7 604.2 3.2	(gr) (gr) (X) (lbs) (lbs) (gr)   10000   416   3.99   50   200   6126	(gr) (gr) (X) (lbs) (lbs) (gr) (gr)  10000 416 3.99 50 200 6126.0 103  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  37.4 43.0 14.9 19.4 22.3 6.7 15.2 17.5 4.9 29.4 33.6 38.8 14.9 17.1 16.4 11.1 12.7 11.1 26.5 30.0 65.9 13.4 15.1 27.0 9.6 10.9 17.5 20.8 23.8 172.1 10.3 11.8 65.8 6.9 7.9 38.8 18.6 21.5 305.1 9.1 10.5 113.1 5.9 6.8 63.6 15.9 18.4 550.4 7.7 8.8 194.7 4.7 5.4 101.6 12.3 14.2 1845.4 5.8 6.7 604.2 3.2 3.6 275.8  WA WB AC SL CL WBW WBM (gr) (gr) (gr) (10000 416 3.99 50 500 6124.0 103	(gr) (gr) (X) (lbs) (lbs) (gr) (gr)  10000 416 3.99 50 200 6126.0 10321.0  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA.  37.4 43.0 14.9 19.4 22.3 6.7 15.2 17.5 4.9 11.5 29.4 33.6 38.8 14.9 17.1 16.4 11.1 12.7 11.1 7.5 26.5 30.0 65.9 13.4 15.1 27.0 9.6 10.9 17.5 6.2 20.8 23.8 172.1 10.3 11.8 65.8 6.9 7.9 38.8 3.7 18.6 21.5 305.1 9.1 10.5 113.1 5.9 6.8 63.6 2.9 15.9 18.4 550.4 7.7 8.8 194.7 4.7 5.4 101.6 2.0 12.3 14.2 1845.4 5.8 6.7 604.2 3.2 3.6 275.8 1.0  DEFORMATION (inches X 0.0001)	(gr) (gr) (X) (lbs) (lbs) (gr) (gr)  10000 416 3.99 50 200 6126.0 10321.0 2.54  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0 IN

	,	AA.	WB	AC	SL		CL	WBW		BA	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	)	(gr)		(%)
21110525	100	000	416	3.99	5	0	500	6129.	0 10	317.0	2.54	2.9
				DEF	DRMATI	ON (inc	ches X (	0.0001)				
CYCLE	LVDT	<b>#</b> 1(0.0	IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	91.6	105.2	47.3	45.1	51.8	20.3	32.1	36.9	13.5	21.7	24.9	8.5
500	71.9	82.6	124.7	34.7	39.8	49.9	23.0	26.5	30.2	13.5	15.6	16.2
1000	64.8	73.6	213.1	31.0	35.2	82.7	19.9	22.6	47.9	10.9	12.4	23.7
5000	50.9	58.0	566.2	23.8	27.1	204.7	14.0	16.0	106.2	6.3	7.1	41.7
10000	45.9	52.1	952.2	21.2	24.1	333.7	12.0	13.6	164.5	4.8	5.5	57.5
20600	41.2	47.3	1413.7	18.8	21.6	479.4	10.2	11.7	223.2	3.6	4.1	68.0
SAMPLE			WB	AC	SL		CL	WBW	W	BA	GMM	ΑV
NUMBER	(1	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	)	(gr)		(%)
								<del>-</del> -				<del></del>
21110535	100	000	416	3.99	5	0	500	6114.	0 10	0306.0	2.54	3.1
				DEF	)RMATI	ON (inc	ches X (	0.0001	)			
	LVDT	#1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.0	IN.)	LVDT	#4(6.	0625 I
_	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
_		TOT.	PLA. 50.2	ELA.		PLA. 21.0		TOT.	PLA.		TOT.	
NUMBER					52.0		32.0			21.4		
NUMBER 100	94.3	108.0	50.2	45.4	52.0 39.8	21.0	32.0 22.9	36.6	13.8	21.4	24.5	8.6
100 500	94.3 74.1	108.0 84.5	50.2 131.6	45.4 34.9 31.2	52.0 39.8	21.0 51.5 83.3	32.0 22.9 19.8	36.6 26.1	13.8	21.4 13.3 10.6	24.5 15.1	8.6 16.2
100 500 1000	94.3 74.1 66.8 52.5	108.0 84.5 75.9 59.7	50.2 131.6 219.7 590.0	45.4 34.9 31.2 23.9	52.0 39.8 35.4 27.2	21.0 51.5 83.3 208.3	32.0 22.9 19.8 13.9	36.6 26.1 22.5 15.8	13.8 30.8 47.6 106.4	21.4 13.3 10.6 6.0	24.5 15.1 12.1	8.6 16.2 23.1 40.7
100 500 1000 5000	94.3 74.1 66.8 52.5 47.3	108.0 84.5 75.9 59.7 54.9	50.2 131.6 219.7 590.0 1016.0	45.4 34.9 31.2 23.9 21.3	52.0 39.8 35.4 27.2 24.8	21.0 51.5 83.3 208.3 347.6	32.0 22.9 19.8 13.9 11.9	36.6 26.1 22.5 15.8 13.8	13.8 30.8 47.6 106.4 168.3	21.4 13.3 10.6 6.0 4.6	24.5 15.1 12.1 6.9	8.6 16.2 23.1 40.7 57.2
500 1000 5000 10000	94.3 74.1 66.8 52.5 47.3 40.1	108.0 84.5 75.9 59.7 54.9 46.4	50.2 131.6 219.7 590.0 1016.0 1915.1	45.4 34.9 31.2 23.9 21.3 17.8	52.0 39.8 35.4 27.2 24.8 20.6	21.0 51.5 83.3 208.3 347.6 623.0	32.0 22.9 19.8 13.9 11.9	36.6 26.1 22.5 15.8 13.8 10.6	13.8 30.8 47.6 106.4 168.3 275.6	21.4 13.3 10.6 6.0 4.6 2.9	24.5 15.1 12.1 6.9 5.4	8.6 16.2 23.1 40.7 57.2 75.1
100 500 1000 5000 10000 30000 66000	94.3 74.1 66.8 52.5 47.3 40.1 35.6	108.0 84.5 75.9 59.7 54.9 46.4 41.1	50.2 131.6 219.7 590.0 1016.0 1915.1	45.4 34.9 31.2 23.9 21.3 17.8 15.6	52.0 39.8 35.4 27.2 24.8 20.6 18.0	21.0 51.5 83.3 208.3 347.6 623.0 1088.6	32.0 22.9 19.8 13.9 11.9 9.2	36.6 26.1 22.5 15.8 13.8 10.6 8.8	13.8 30.8 47.6 106.4 168.3 275.6 449.1	21.4 13.3 10.6 6.0 4.6 2.9	24.5 15.1 12.1 6.9 5.4 3.4 2.3	8.6 16.2 23.1 40.7 57.2 75.1 101.6
100 500 1000 5000 10000 30000 66000	94.3 74.1 66.8 52.5 47.3 40.1 35.6	108.0 84.5 75.9 59.7 54.9 46.4 41.1	50.2 131.6 219.7 590.0 1016.0 1915.1 3471.5	45.4 34.9 31.2 23.9 21.3 17.8 15.6	52.0 39.8 35.4 27.2 24.8 20.6 18.0	21.0 51.5 83.3 208.3 347.6 623.0 1088.6	32.0 22.9 19.8 13.9 11.9 9.2	36.6 26.1 22.5 15.8 13.8 10.6 8.8	13.8 30.8 47.6 106.4 168.3 275.6 449.1	21.4 13.3 10.6 6.0 4.6 2.9 2.0	24.5 15.1 12.1 6.9 5.4 3.4 2.3	8.6 16.2 23.1 40.7 57.2 75.1 101.6
100 500 1000 5000 10000 30000 66000	94.3 74.1 66.8 52.5 47.3 40.1 35.6 DTAL WERCENT	108.0 84.5 75.9 59.7 54.9 46.4 41.1	50.2 131.6 219.7 590.0 1016.0 1915.1 3471.5	45.4 34.9 31.2 23.9 21.3 17.8 15.6	52.0 39.8 35.4 27.2 24.8 20.6 18.0	21.0 51.5 83.3 208.3 347.6 623.0 1088.6	32.0 22.9 19.8 13.9 11.9 9.2	36.6 26.1 22.5 15.8 13.8 10.6 8.8	13.8 30.8 47.6 106.4 168.3 275.6 449.1	21.4 13.3 10.6 6.0 4.6 2.9 2.0	24.5 15.1 12.1 6.9 5.4 3.4 2.3	8.6 16.2 23.1 40.7 57.2 75.1 101.6
100 500 1000 5000 10000 30000 66000 A = TC C = PI	94.3 74.1 66.8 52.5 47.3 40.1 35.6 DTAL VERCENT	108.0 84.5 75.9 59.7 54.9 46.4 41.1 VEIGHT	50.2 131.6 219.7 590.0 1016.0 1915.1 3471.5 OF DRY	45.4 34.9 31.2 23.9 21.3 17.8 15.6 AGGRECENT;	52.0 39.8 35.4 27.2 24.8 20.6 18.0	21.0 51.5 83.3 208.3 347.6 623.0 1088.6	32.0 22.9 19.8 13.9 11.9 9.2	36.6 26.1 22.5 15.8 13.8 10.6 8.8	13.8 30.8 47.6 106.4 168.3 275.6 449.1 WEIGH	21.4 13.3 10.6 6.0 4.6 2.9 2.0	24.5 15.1 12.1 6.9 5.4 3.4 2.3 ITUMEN DAD;	8.6 16.2 23.1 40.7 57.2 75.1 101.6
100 500 1000 5000 10000 30000 66000 A = TO C = PI BA = WI	94.3 74.1 66.8 52.5 47.3 40.1 35.6 DTAL V ERCENT EIGHT	108.0 84.5 75.9 59.7 54.9 46.4 41.1 VEIGHT OF SAM OF SAM	50.2 131.6 219.7 590.0 1016.0 1915.1 3471.5 OF DRY LT CONT	45.4 34.9 31.2 23.9 21.3 17.8 15.6 AGGRECENT; AIR;	52.0 39.8 35.4 27.2 24.8 20.6 18.0	21.0 51.5 83.3 208.3 347.6 623.0 1088.6	32.0 22.9 19.8 13.9 11.9 9.2 7.6	36.6 26.1 22.5 15.8 13.8 10.6 8.8	13.8 30.8 47.6 106.4 168.3 275.6 449.1 WEIGH	21.4 13.3 10.6 6.0 4.6 2.9 2.0 HT OF B	24.5 15.1 12.1 6.9 5.4 3.4 2.3 ITUMEN DAD;	8.6 16.2 23.1 40.7 57.2 75.1 101.6
100 500 1000 5000 10000 30000 66000 A = TO C = PI BA = WI BW = WI	94.3 74.1 66.8 52.5 47.3 40.1 35.6 OTAL V ERCENT EIGHT EIGHT AXIMUN	108.0 84.5 75.9 59.7 54.9 46.4 41.1 VEIGHT IT ASPHA OF SAM 4 THEOR	50.2 131.6 219.7 590.0 1016.0 1915.1 3471.5 OF DRY LT CONT PLE IN PLE IN ETICAL	45.4 34.9 31.2 23.9 21.3 17.8 15.6 AGGRECIENT; AIR; WATER; SPECIE	52.0 39.8 35.4 27.2 24.8 20.6 18.0 GATES;	21.0 51.5 83.3 208.3 347.6 623.0 1088.6	32.0 22.9 19.8 13.9 11.9 9.2 7.6	36.6 26.1 22.5 15.8 13.8 10.6 8.8	13.8 30.8 47.6 106.4 168.3 275.6 449.1 WEIGH	21.4 13.3 10.6 6.0 4.6 2.9 2.0 HT OF B	24.5 15.1 12.1 6.9 5.4 3.4 2.3 ITUMEN DAD;	8.6 16.2 23.1 40.7 57.2 75.1 101.6

BEAM CYCLIC LOAD DATA

SAMPLE	ı	₹A	WB	AC	SL		CL	WBW	WBA	A	GMM	AV
NUMBER	(1	;r)	(gr)	(%)	(1	bs)	(lbs)	(gr)	(1	gr)		(%)
21110611	100	000	416	3.99	5	0	100	5926.	0 10	103.0	2.54	4.74
				DEF	ORMATI	ON (inc	ches X (	0.0001)	1			
 CYCLE	LVDT	<b>#</b> 1(0	.0 IN.)	LVDī	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	23.4	26.5	11.7	10.6	11.9	4.6	8.1	9.1	3.3	5.9	6.7	2.3
500	18.4	20.8	31.3	8.1	9.2	11.5	5.8	6.6	7.5	3.7	4.2	4.4
1000	16.6	19.3	53.4	7.2	8.4	18.9	5.0	5.8	11.8	3.0	3.5	6.4
5000	13.0	15.0	139.5	5.5	6.4	45.9	3.5	4.1	25.7	1.8	2.0	11.4
10000	11.7	13.4	239.5	4.9	5.6	76.3	3.0	3.4	40.5	1.4	1.6	16.1
30300	9.9	11.4	454.3	4.1	4.7	137.3	2.3	2.7	66.8	0.9	1.0	21.7
160300	7.7	8.8	1464.4	3.1	3.5	408.4	1.6	1.8	171.2	0.4	0.5	37.8
SAMPLE	•		WB	AC	SL		CL	WBW	WB	A	GMM	AV
NUMBER	(8	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	(	gr)		(%)
21110621	100	000	416	3.99	5	0	100	5923	0 10	111.0	2.54	4.91
				DEF	RMATI	ON (in	ches X	0.0001	)		2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
										LVDT		C25 T
	LVDT	<b>#</b> 1(0	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	) IN.)	LVDI	#4(6.0	1023 11
	LVDT					PLA.		#3(4.0		ELA.		PLA.
	ELA.	TOT		ELA.	TOT.	PLA.		TOT.		ELA.		
NUMBER	ELA. 24.0	TOT	. PLA.	ELA.	TOT.	PLA.	ELA. 8.1	TOT.	PLA.	ELA.	TOT.	PLA.
NUMBER 100	ELA. 24.0 18.9	TOT 27.7 21.5	. PLA.	ELA. 10.6 8.2	TOT.	PLA. 4.8 11.8	ELA. 8.1 5.8	TOT.	PLA.	ELA. 5.9 3.7	TOT.	PLA.
100 500	ELA. 24.0 18.9 17.0	TOT 27.7 21.5 19.6	. PLA.	ELA. 10.6 8.2 7.3	TOT. 12.3 9.3 8.4	PLA. 4.8 11.8 20.0	8.1 5.8 5.0	TOT. 9.3 6.6	PLA. 3.4 7.6 12.4	5.9 3.7 3.0	TOT.	PLA. 2.3 4.4 6.7
100 500 1000 5400	ELA. 24.0 18.9 17.0 13.2	TOT 27.7 21.5 19.6 15.2	12.5 32.7 57.4	ELA. 10.6 8.2 7.3 5.5	TOT.  12.3 9.3 8.4 6.3	PLA. 4.8 11.8 20.0 50.0	8.1 5.8 5.0 3.4	TOT.  9.3 6.6 5.8 4.0	PLA. 3.4 7.6 12.4 27.6	5.9 3.7 3.0 1.7	TOT. 6.8 4.2 3.5	PLA. 2.3 4.4 6.7 11.9
100 500 1000 5400	ELA. 24.0 18.9 17.0 13.2 11.9	TOT  27.7 21.5 19.6 15.2 13.7	. PLA.  12.5 32.7 57.4 155.5	ELA. 10.6 8.2 7.3 5.5 4.9	TOT. 12.3 9.3 8.4 6.3 5.6	PLA. 4.8 11.8 20.0 50.0 84.1	8.1 5.8 5.0 3.4 2.9	TOT.  9.3 6.6 5.8 4.0	PLA.  3.4 7.6 12.4 27.6 43.9	5.9 3.7 3.0 1.7	TOT. 6.8 4.2 3.5 1.9	PLA. 2.3 4.4 6.7 11.9
100 500 1000 5400 10900 31050	ELA. 24.0 18.9 17.0 13.2 11.9	TOT  27.7  21.5  19.6  15.2  13.7  11.8	12.5 32.7 57.4 155.5 270.0 485.8	10.6 8.2 7.3 5.5 4.9	TOT.  12.3 9.3 8.4 6.3 5.6 4.8	PLA. 4.8 11.8 20.0 50.0 84.1 143.8	8.1 5.8 5.0 3.4 2.9 2.3	9.3 6.6 5.8 4.0 3.4 2.7	PLA.  3.4  7.6  12.4  27.6  43.9  69.0	5.9 3.7 3.0 1.7 1.3	TOT. 6.8 4.2 3.5 1.9	PLA.  2.3 4.4 6.7 11.9 16.9 21.8
500 1000 5400 10900 31050 168930	ELA.  24.0 18.9 17.0 13.2 11.9 10.2 7.9	TOT  27.7  21.5  19.6  15.2  13.7  11.8  9.1	12.5 32.7 57.4 155.5 270.0 485.8	ELA. 10.6 8.2 7.3 5.5 4.9 4.1 3.1	TOT.  12.3 9.3 8.4 6.3 5.6 4.8 3.5	PLA.  4.8 11.8 20.0 50.0 84.1 143.8 445.3	8.1 5.8 5.0 3.4 2.9 2.3	TOT.  9.3 6.6 5.8 4.0 3.4 2.7 1.7	PLA.  3.4  7.6  12.4  27.6  43.9  69.0	5.9 3.7 3.0 1.7 1.3 0.8	TOT.  6.8 4.2 3.5 1.9 1.5 1.0 0.4	PLA.  2.3 4.4 6.7 11.9 16.9 21.8 38.7
100 500 1000 5400 10900 31050 168930	24.0 18.9 17.0 13.2 11.9 10.2 7.9	TOT  27.7 21.5 19.6 15.2 13.7 11.8 9.1	. PLA.  12.5 32.7 57.4 155.5 270.0 485.8 1633.3	ELA. 10.6 8.2 7.3 5.5 4.9 4.1 3.1	TOT.  12.3 9.3 8.4 6.3 5.6 4.8 3.5	PLA.  4.8 11.8 20.0 50.0 84.1 143.8 445.3	8.1 5.8 5.0 3.4 2.9 2.3	9.3 6.6 5.8 4.0 3.4 2.7 1.7	PLA.  3.4 7.6 12.4 27.6 43.9 69.0 183.0	5.9 3.7 3.0 1.7 1.3 0.8 0.4	TOT.  6.8 4.2 3.5 1.9 1.5 1.0 0.4	PLA.  2.3 4.4 6.7 11.9 16.9 21.8 38.7
100 500 1000 5400 10900 31050 168930 A = TC	24.0 18.9 17.0 13.2 11.9 10.2 7.9	TOT  27.7 21.5 19.6 15.2 13.7 11.8 9.1	12.5 32.7 57.4 155.5 270.0 485.8 1633.3	ELA. 10.6 8.2 7.3 5.5 4.9 4.1 3.1 AGGREGIENT;	TOT.  12.3 9.3 8.4 6.3 5.6 4.8 3.5	PLA.  4.8 11.8 20.0 50.0 84.1 143.8 445.3	8.1 5.8 5.0 3.4 2.9 2.3 1.5	9.3 6.6 5.8 4.0 3.4 2.7 1.7	PLA.  3.4  7.6  12.4  27.6  43.9  69.0  183.0  WEIGH*  CYCLIG	5.9 3.7 3.0 1.7 1.3 0.8 0.4	TOT.  6.8 4.2 3.5 1.9 1.5 1.0 0.4  ITUMEN; OAD;	PLA.  2.3  4.4  6.7  11.9  16.9  21.8  38.7
100 500 1000 5400 10900 31050 168930 A = TC C = PI	ELA.  24.0 18.9 17.0 13.2 11.9 10.2 7.9  OTAL WERCENTEIGHT	TOT  27.7 21.5 19.6 15.2 13.7 11.8 9.1  VEIGHT ASPI	. PLA.  12.5 32.7 57.4 155.5 270.0 485.8 1633.3 I OF DRY	ELA.  10.6 8.2 7.3 5.5 4.9 4.1 3.1  AGGRETIENT; AIR;	TOT.  12.3 9.3 8.4 6.3 5.6 4.8 3.5	PLA.  4.8 11.8 20.0 50.0 84.1 143.8 445.3	8.1 5.8 5.0 3.4 2.9 2.3 1.5	9.3 6.6 5.8 4.0 3.4 2.7 1.7	PLA.  3.4 7.6 12.4 27.6 43.9 69.0 183.0  WEIGHT	5.9 3.7 3.0 1.7 1.3 0.8 0.4	TOT.  6.8 4.2 3.5 1.9 1.5 1.0 0.4  ITUMEN; OAD;	PLA.  2.3 4.4 6.7 11.9 16.9 21.8 38.7

NUMBER	۷ ( و	M gr)	WB (gr)	AC (Z)	SL (1		CL (lbs)	WBW (gr)	WE	gr)	GMM	AV (Z)
21110631	100	000	416	3.99	5	0	100	5910.	.0 10	092.0	2.54	4.95
			· · · · · · · · · · · · · · · · · · ·	DEF	ORMATI	ON (in	ches X	0.0001)	)			
 CYCLE	LVDT	<b>#</b> 1(0	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	24.1	27.5	12.7	10.6	12.1	4.9	8.1	9.2	3.5	5.9	6.7	2.4
500	19.0	21.6	33.6	8.2	9.3	12.0	5.8	6.6	7.8	3.7	4.2	4.5
1000	17.1	19.8	58.1	7.3	8.4	20.1	5.0	5.8	12.4	3.0	3.5	6.7
5000	13.4	15.3	150.1	5.6	6.3	48.3	3.5	4.0	26.7	1.7	2.0	11.6
10000	12.1	13.8	261.5	5.0	5.7	81.4	3.0	3.4	42.7	1.3	1.5	16.6
50000	9.5	10.8	676.1	3.8	4.3	194.7	2.0	2.3	89.4	0.7	0.8	25.4
100000	8.6	9.7	1173.1	3.4	3.8	326.6	1.7	2.0	140.7	0.5	0.6	33.9
SAMPLE	6	ia	WB	AC	SL		CL	WBW	WE	JA	GMM	AV
NUMBER	(g	r)	(gr)	(1)	(1	bs)	(lbs)	(gr)	) (	gr)		(%)
21110612	100	000	416	3.99	5	0	200	5901.	.0 10	078.0	2.54	4.9
				DEF	ORMATI	ON (in	ches X	0.0001	)		*****	
	LVDT	#1(0	.0 IN.)	LVDī	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
	LVDT			LVDT				#3(4.0				9625 I
	ELA.		. PLA.	ELA.		PLA.	ELA.		PLA.	ELA.		PLA.
NUMBER	ELA.	TOT .	. PLA.	ELA. 20.7	тот.	PLA.	ELA. 15.1	TOT.	PLA.	ELA.	TOT.	PLA.
NUMBER 100	ELA. 48.3 38.0	TOT . 54 . 6 43 . 6	. PLA.	ELA. 20.7 15.9	TOT.	PLA.	ELA. 15.1 10.8	TOT.	PLA.	ELA. 10.6 6.5	TOT. 11.9 7.5	PLA. 4.8 8.9
100 500	ELA. 48.3 38.0 34.2	TOT. 54.6 43.6 38.7	. PLA. 29.1 75.5	ELA. 20.7 15.9 14.1	TOT. 23.4 18.2 16.0	PLA. 10.9 26.2	ELA. 15.1 10.8 9.3	TOT. 17.1 12.4	PLA. 7.4 16.2	ELA. 10.6 6.5 5.2	TOT. 11.9 7.5 5.9	PLA. 4.8 8.9 13.1
100 500 1000	ELA. 48.3 38.0 34.2 26.9	TOT. 54.6-43.6 38.7 31.3	. PLA. 29.1 75.5 130.3	ELA. 20.7 15.9 14.1 10.8	TOT.  23.4  18.2  16.0  12.6	PLA. 10.9 26.2 43.8 106.7	ELA. 15.1 10.8 9.3 6.4	TOT. 17.1 12.4 10.5	PLA. 7.4 16.2 25.8 56.0	ELA. 10.6 6.5 5.2 2.9	TOT.  11.9 7.5 5.9 3.4	PLA. 4.8 8.9 13.1 22.5
100 500 1000 5000	ELA. 48.3 38.0 34.2 26.9 24.2	TOT. 54.6 43.6 38.7 31.3 28.1	. PLA. 29.1 75.5 130.3 342.5	ELA. 20.7 15.9 14.1 10.8 9.6	TOT.  23.4 18.2 16.0 12.6 11.2	PLA. 10.9 26.2 43.8 106.7 173.3	ELA. 15.1 10.8 9.3 6.4 5.5	TOT.  17.1 12.4 10.5 7.5	PLA.  7.4  16.2  25.8  56.0  86.0	ELA. 10.6 6.5 5.2 2.9	TOT.  11.9 7.5 5.9 3.4 2.6	PLA. 4.8 8.9 13.1 22.5 30.6
100 500 1000 5000 10000 30000	ELA. 48.3 38.0 34.2 26.9 24.2 20.5	TOT. 54.6 43.6 38.7 31.3 28.1 23.6	. PLA. 29.1 75.5 130.3 342.5 574.7 1095.4	20.7 15.9 14.1 10.8 9.6 8.0	TOT.  23.4  18.2  16.0  12.6  11.2  9.2	PLA.  10.9 26.2 43.8 106.7 173.3 313.2	15.1 10.8 9.3 6.4 5.5	TOT. 17.1 12.4 10.5 7.5 6.4 4.9	PLA.  7.4 16.2 25.8 56.0 86.0 141.5	10.6 6.5 5.2 2.9 2.2	TOT.  11.9 7.5 5.9 3.4 2.6 1.6	PLA. 4.8 8.9 13.1 22.5 30.6 40.3
100 500 1000 5000 10000 30000 169200	ELA.  48.3 38.0 34.2 26.9 24.2 20.5 15.8	TOT.  54.6 43.6 38.7 31.3 28.1 23.6 18.1	. PLA. 29.1 75.5 130.3 342.5 574.7 1095.4	20.7 15.9 14.1 10.8 9.6 8.0 6.0	TOT.  23.4  18.2  16.0  12.6  11.2  9.2  6.8	PLA.  10.9 26.2 43.8 106.7 173.3 313.2 981.8	15.1 10.8 9.3 6.4 5.5	TOT.  17.1 12.4 10.5 7.5 6.4 4.9 3.1	PLA.  7.4  16.2  25.8  56.0  86.0  141.5  375.1	ELA.  10.6 6.5 5.2 2.9 2.2 1.4 0.6	TOT.  11.9 7.5 5.9 3.4 2.6 1.6 0.7	PLA. 4.8 8.9 13.1 22.5 30.6 40.3 68.7
100 500 1000 5000 10000 30000 169200	ELA.  48.3 38.0 34.2 26.9 24.2 20.5 15.8  DTAL WERCENT	TOT. 54.6 43.6 38.7 31.3 28.1 23.6 18.1	29.1 75.5 130.3 342.5 574.7 1095.4 3740.9	ELA.  20.7 15.9 14.1 10.8 9.6 8.0 6.0  AGGREGIENT;	TOT.  23.4  18.2  16.0  12.6  11.2  9.2  6.8	PLA.  10.9 26.2 43.8 106.7 173.3 313.2 981.8	15.1 10.8 9.3 6.4 5.5	TOT.  17.1 12.4 10.5 7.5 6.4 4.9 3.1	PLA.  7.4  16.2  25.8  56.0  86.0  141.5  375.1	ELA.  10.6 6.5 5.2 2.9 2.2 1.4 0.6 IT OF B	TOT.  11.9 7.5 5.9 3.4 2.6 1.6 0.7	PLA. 4.8 8.9 13.1 22.5 30.6 40.3 68.7
100 500 1000 5000 10000 30000 169200 A = TC C = PI	ELA.  48.3 38.0 34.2 26.9 24.2 20.5 15.8  OTAL WERCENTEIGHT	TOT.  54.6 43.6 38.7 31.3 28.1 23.6 18.1  7EIGHT	29.1 75.5 130.3 342.5 574.7 1095.4 3740.9	ELA.  20.7 15.9 14.1 10.8 9.6 8.0 6.0  AGGREGIENT; AIR;	TOT.  23.4  18.2  16.0  12.6  11.2  9.2  6.8  GATES;	PLA.  10.9 26.2 43.8 106.7 173.3 313.2 981.8	15.1 10.8 9.3 6.4 5.5	TOT.  17.1 12.4 10.5 7.5 6.4 4.9 3.1	PLA.  7.4  16.2  25.8  56.0  86.0  141.5  375.1  WEIGH  CYCLI	ELA.  10.6 6.5 5.2 2.9 2.2 1.4 0.6 IT OF B	TOT.  11.9 7.5 5.9 3.4 2.6 1.6 0.7  ITUMEN;	PLA. 4.8 8.9 13.1 22.5 30.6 40.3 68.7
500 1000 5000 10000 30000 169200 A = TC C = PF	ELA.  48.3 38.0 34.2 26.9 24.2 20.5 15.8  OTAL WERCENTEIGHT	TOT.  54.6 43.6 38.7 31.3 28.1 23.6 18.1  7EIGHT	29.1 75.5 130.3 342.5 574.7 1095.4 3740.9	ELA.  20.7 15.9 14.1 10.8 9.6 8.0 6.0  AGGREGIENT; AIR;	TOT.  23.4  18.2  16.0  12.6  11.2  9.2  6.8	PLA.  10.9 26.2 43.8 106.7 173.3 313.2 981.8	15.1 10.8 9.3 6.4 5.5	TOT.  17.1 12.4 10.5 7.5 6.4 4.9 3.1	PLA.  7.4  16.2  25.8  56.0  86.0  141.5  375.1  WEIGH  CYCLI	ELA.  10.6 6.5 5.2 2.9 2.2 1.4 0.6 IT OF B	TOT.  11.9 7.5 5.9 3.4 2.6 1.6 0.7	PLA. 4.8 8.9 13.1 22.5 30.6 40.3 68.7

SAMPLE	WA	WB	AC	SL		CL	WBW	WB		GMM	AV
NUMBER	(gr)	(gr)	(%)	(11	os)	(lbs)	(gr)	(	gr)		(%)
21110622	10000	416	3.99	50	)	200	5914.	0 10	109.0	2.54	5.09
			DEF	RMATIC	ON (inc	ches X (	0.0001)				
 CYCLE	LVDT #1(0	.0 IN.)	LVDT	#2(2.0	O IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	49.3 55.9	29.8	20.9	23.7	11.0	15.2	17.2	7.5	10.5	12.0	4.8
500	38.7 44.1	78.0	16.0	18.2	26.7	10.8	12.3	16.4	6.5	7.4	9.0
1000	34.9 40.2	137.0	14.3	16.4	45.5	9.3	10.7	26.7	5.2	6.0	13.4
5000	27.4 31.3	358.1	10.9	12.4	110.2	6.4	7.3	57.4	2.9	3.3	22.8
10000	24.7 28.2	616.3	9.7	11.1	183.4	5.5	6.3	90.3	2.2	2.5	31.7
30000	21.0 24.4	1130.1	8.1	9.4	318.8	4.2	4.9	142.7	1.4	1.6	40.1
162310	16.3 18.7	3761.2	6.0	6.9	975.7	2.7	3.2	370.3	0.6	0.7	67.2
SAMPLE	WA	WB	AC	SL	-	CL	WBW	WB	<u> </u>	GMM:	AV
NUMBER	(gr)	(gr)	(%)	(II	bs)	(1bs)	(gr)	•	gr)		(%)
21110632	10000	416	3.99	5(	0	200	5915.	.0 10	111.0	2.54	5.0
			DEF	ORMATIC	ON (in	ches X	0.0001)	)			
				#2(2)	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4/6 0	625 I
	LVDT #1(0	.0 IN.)	LVDT	,-(						<b>#</b> *(0.0	
_	LVDT #1(0		ELA.		PLA.		тот.	PLA.	ELA.		
_		. PLA.	ELA.			ELA.		PLA.			PLA.
NUMBER	ELA. TOT	. PLA.	ELA. 20.9	TOT.	PLA.	ELA.	TOT.		10.5	TOT.	PLA.
NUMBER	ELA. TOT	30.3 79.3	ELA. 20.9 16.0	TOT. 23.7 18.6	PLA.	ELA. 15.2 10.8	TOT.	7.6	10.5	TOT.	PLA.
100 500	ELA. TOT 49.3 55.9 38.7 45.1	30.3 79.3 137.2	ELA. 20.9 16.0 14.3	TOT. 23.7 18.6 16.1	PLA. 11.2 27.2	ELA. 15.2 10.8 9.3	TOT. 17.2 12.5	7.6 15.7 26.7	10.5 6.5 5.2	TOT. 12.0 7.5 5.9	PLA. 4.9 9.1 13.4
100 500 1000	ELA. TOT 49.3 55.9 38.7 45.1 34.9 39.6 27.4 31.2	30.3 79.3 137.2 353.2	ELA. 20.9 16.0 14.3 10.9	TOT.  23.7 18.6 16.1 12.4	PLA. 11.2 27.2 45.5 108.6	ELA. 15.2 10.8 9.3 6.4	TOT. 17.2 12.5 10.5	7.6 16.7 26.7 56.6	10.5 6.5 5.2 2.9	TOT. 12.0 7.5 5.9	PLA. 4.9 9.1 13.4 22.4
100 500 1000 5000 10000	ELA. TOT 49.3 55.9 38.7 45.1 34.9 39.6 27.4 31.2	30.3 79.3 137.2 353.2 610.7	ELA. 20.9 16.0 14.3 10.9 9.7	TOT.  23.7 18.6 16.1 12.4 11.2	PLA. 11.2 27.2 45.5 108.6 181.7	15.2 10.8 9.3 6.4 5.5	TOT.  17.2 12.5 10.5 7.3	7.6 16.7 26.7 56.6 89.4	10.5 6.5 5.2 2.9 2.2	TOT.  12.0 7.5 5.9 3.3 2.5	PLA. 4.9 9.1 13.4 22.4 31.4
100 500 1000 5000 10000 30000	ELA. TOT  49.3 55.9 38.7 45.1 34.9 39.6 27.4 31.2 24.7 28.5	30.3 79.3 137.2 353.2 610.7 1142.3	20.9 16.0 14.3 10.9 9.7 8.1	TOT.  23.7 18.6 16.1 12.4 11.2 9.3	PLA. 11.2 27.2 45.5 108.6 181.7 322.1	15.2 10.8 9.3 6.4 5.5	TOT.  17.2 12.5 10.5 7.3 6.3	7.6 16.7 26.7 56.6 89.4 144.2	10.5 6.5 5.2 2.9 2.2	TOT.  12.0 7.5 5.9 3.3 2.5	PLA. 4.9 9.1 13.4
500 1000 5000 10000 30000	49.3 55.9 38.7 45.1 34.9 39.6 27.4 31.2 24.7 28.5 21.0 24.3	30.3 79.3 137.2 353.2 610.7 1142.3 3819.2	20.9 16.0 14.3 10.9 9.7 8.1 6.0	TOT.  23.7 18.6 16.1 12.4 11.2 9.3 6.8	PLA.  11.2 27.2 45.5 108.6 181.7 322.1 989.6	15.2 10.8 9.3 6.4 5.5	TOT.  17.2 12.5 10.5 7.3 6.3 4.9 3.1	7.6 16.7 26.7 56.6 89.4 144.2 374.9	10.5 6.5 5.2 2.9 2.2 1.4	TOT.  12.0 7.5 5.9 3.3 2.5 1.6	PLA. 4.9 9.1 13.4 22.4 31.4 40.5 67.8
100 500 1000 5000 10000 30000 164500	ELA. TOT  49.3 55.9 38.7 45.1 34.9 39.6 27.4 31.2 24.7 28.5 21.0 24.3 16.2 18.3	. PLA.  30.3 79.3 137.2 353.2 610.7 1142.3 3819.2	20.9 16.0 14.3 10.9 9.7 8.1 6.0	TOT.  23.7 18.6 16.1 12.4 11.2 9.3 6.8	PLA.  11.2 27.2 45.5 108.6 181.7 322.1 989.6	15.2 10.8 9.3 6.4 5.5	TOT.  17.2 12.5 10.5 7.3 6.3 4.9 3.1	7.6 16.7 26.7 56.6 89.4 144.2 374.9	10.5 6.5 5.2 2.9 2.2 1.4 0.6	TOT.  12.0 7.5 5.9 3.3 2.5 1.6 0.7	PLA. 4.9 9.1 13.4 22.4 31.4 40.5 67.8
100 500 1000 5000 10000 30000 164500	ELA. TOT  49.3 55.9 38.7 45.1 34.9 39.6 27.4 31.2 24.7 28.5 21.0 24.3 16.2 18.3	30.3 79.3 137.2 353.2 610.7 1142.3 3819.2 T OF DRY	ELA.  20.9 16.0 14.3 10.9 9.7 8.1 6.0  AGGREG	TOT.  23.7 18.6 16.1 12.4 11.2 9.3 6.8	PLA.  11.2 27.2 45.5 108.6 181.7 322.1 989.6	15.2 10.8 9.3 6.4 5.5	TOT.  17.2 12.5 10.5 7.3 6.3 4.9 3.1  WB = SL = CL = CL	7.6 16.7 26.7 56.6 89.4 144.2 374.9 - WEIGH SUSTA	10.5 6.5 5.2 2.9 2.2 1.4 0.6 T OF B	TOT.  12.0 7.5 5.9 3.3 2.5 1.6 0.7  ITUMEN; OAD;	PLA. 4.9 9.1 13.4 22.4 31.4 40.5 67.8
100 500 1000 5000 10000 30000 164500 A = TC C = PI	49.3 55.9 38.7 45.1 34.9 39.6 27.4 31.2 24.7 28.5 21.0 24.3 16.2 18.3  DTAL WEIGH ERCENT ASP	30.3 79.3 137.2 353.2 610.7 1142.3 3819.2 T OF DRY HALT CONTAMPLE IN	ELA.  20.9 16.0 14.3 10.9 9.7 8.1 6.0  AGGRECTENT; AIR;	TOT.  23.7 18.6 16.1 12.4 11.2 9.3 6.8  GATES;	PLA.  11.2 27.2 45.5 108.6 181.7 322.1 989.6	15.2 10.8 9.3 6.4 5.5	TOT.  17.2 12.5 10.5 7.3 6.3 4.9 3.1  WB = SL = CL = CL	7.6 16.7 26.7 56.6 89.4 144.2 374.9 - WEIGH SUSTA	10.5 6.5 5.2 2.9 2.2 1.4 0.6 T OF B	TOT.  12.0 7.5 5.9 3.3 2.5 1.6 0.7	PLA. 4.9 9.1 13.4 22.4 31.4 40.5 67.8

SAMPLE	WA	WB	AC	SL		CL	WBW		BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	•)	(gr)		(%)
21110615	10000	416	3.99	5	0	500	5913	.0 1	0107.0	2.54	5.09
			DEF	ORMATI	ON (in	ches X	0.0001	)			
- CYCLE	LVDT #1(0	).0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	123.1 143.	0 101.5	47.8	55.5	34.3	30.4	35.3	20.4	18.0	20.9	11.3
500	96.7 112.	3 266.3	36.5	42.4	83.5	21.2	24.6	44.0	10.4	12.1	19.8
1000	87.2 99.	3 458.5	32.5	37.0	139.0	18.0	20.5	69.4	8.1	9.2	28.0
5000	68.5 79.			28.8			14.2			4.9	43.7
10000	61.7 71.				551.5		11.9			3.5	57.8
30700	51.9 58.				1005.3		8.7			1.9	69.7
31700	52.2 59.	4 4210.7	16.2	20.7	10/6.6	7.7		J91.Z	1.7	2.0	75.5
SAMPLE	WA	WB	AC	SL	,	CL	WBW	W	ВА	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	)	(gr)		(%)
21110625	10000	416	3.99								
		720	3.99	3	0	500	5914	.0 1	0103.0	2.54	5.01
	******************					ches X			0103.0	2.54	5.01
_	LVDT #1(0		DEF	ORMATI	ON (in	ches X	0.0001	)			
CYCLE _	LVDT #1(0		DEFO	ORMATI #2(2.	ON (in	ches X	0.0001 #3(4.	)	LVDT	<b>#</b> 4(6.0	0625 IN
CYCLE _	LVDT #1(0	.0 IN.)	LVDT ELA.	#2(2.	ON (inc	LVDT	0.0001 #3(4.	) 0 IN.) PLA.	LVDT ELA.	<b>#</b> 4(6.0	0625 IN
CYCLE _ NUMBER	LVDT #1(0 ELA. TOT 121.8 137. 95.6 111.	7 98.1 3 258.2	DEF() LVDT ELA. 47.7 36.4	#2(2. TOT. 53.9 42.4	ON (in.) PLA. 33.5	LVDT ELA. 30.4 21.2	0.0001 #3(4. TOT. 34.4 24.7	) 0 IN.) PLA. 19.9 43.3	LVDT ELA. 18.1 10.5	#4(6.0	0625 IN
CYCLE _ NUMBER	LVDT #1(0 ELA. TOT 121.8 137.	7 98.1 3 258.2	DEF() LVDT ELA. 47.7 36.4	#2(2. TOT. 53.9 42.4	ON (in.) PLA. 33.5	LVDT ELA. 30.4 21.2	0.0001 #3(4. TOT. 34.4 24.7	) 0 IN.) PLA. 19.9 43.3	LVDT ELA. 18.1 10.5	#4(6.0 TOT.	PLA.
100 500 1000 5000	LVDT #1(0 ELA. TOT 121.8 137. 95.6 111. 86.2 99. 67.7 79.	7 98.1 3 258.2 6 434.3 8 1148.9	DEF( LVDT ELA. 47.7 36.4 32.4 24.7	#2(2. TOT. 53.9 42.4 37.5 29.1	ON (inc) PLA. 33.5 81.6 132.8 324.8	LVDT  ELA.  30.4 21.2 18.1 12.3	#3(4. TOT. 34.4 24.7 20.9 14.5	) PLA. 19.9 43.3 66.7 142.2	LVDT ELA. 18.1 10.5 8.1 4.2	#4(6.0 TOT. 20.5 12.2 9.4	PLA. 11.1 19.6
100 500 1000 5000	LVDT #1(0 ELA. TOT 121.8 137. 95.6 111. 86.2 99. 67.7 79. 61.0 70.	7. PLA.  7. 98.1 3. 258.2 6. 434.3 8. 1148.9 9. 2003.0	DEFC LVDT ELA. 47.7 36.4 32.4 24.7 22.0	#2(2. TOT. 53.9 42.4 37.5 29.1 25.5	ON (inc 0 IN.) PLA. 33.5 81.6 132.8 324.8 547.1	LVDT  ELA.  30.4 21.2 18.1 12.3 10.3	#3(4. TOT. 34.4 24.7 20.9 14.5 12.0	) PLA. 19.9 43.3 66.7 142.2 224.4	LVDT ELA.  18.1 10.5 8.1 4.2 3.1	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6	PLA.  11.1 19.6 27.1 43.1 58.4
100 500 1000 5000 10000 30800	LVDT #1(0 ELA. TOT 121.8 137. 95.6 111. 86.2 99. 67.7 79. 61.0 70. 51.5 59.	7.0 IN.) 7. PLA. 7. 98.1 3. 258.2 6. 434.3 8. 1148.9 9. 2003.0 9. 3784.3	DEFC LVDT ELA. 47.7 36.4 32.4 24.7 22.0 18.1	#2(2. TOT. 53.9 42.4 37.5 29.1 25.5 21.1	ON (inc 0 IN.) PLA. 33.5 81.6 132.8 324.8 547.1 976.7	LVDT ELA. 30.4 21.2 18.1 12.3 10.3 7.8	#3(4. TOT. 34.4 24.7 20.9 14.5 12.0 9.0	) PLA. 19.9 43.3 66.7 142.2 224.4	LVDT ELA.  18.1 10.5 8.1 4.2 3.1 1.8	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6 2.1	PLA.  11.1 19.6 27.1 43.1 58.4 69.9
100 500 1000 5000 10000 30800	LVDT #1(0 ELA. TOT 121.8 137. 95.6 111. 86.2 99. 67.7 79. 61.0 70.	7.0 IN.) 7. PLA. 7. 98.1 3. 258.2 6. 434.3 8. 1148.9 9. 2003.0 9. 3784.3	DEFC LVDT ELA. 47.7 36.4 32.4 24.7 22.0 18.1	#2(2. TOT. 53.9 42.4 37.5 29.1 25.5 21.1	ON (inc 0 IN.) PLA. 33.5 81.6 132.8 324.8 547.1 976.7	LVDT ELA. 30.4 21.2 18.1 12.3 10.3 7.8	#3(4. TOT. 34.4 24.7 20.9 14.5 12.0 9.0	) PLA. 19.9 43.3 66.7 142.2 224.4	LVDT ELA.  18.1 10.5 8.1 4.2 3.1 1.8	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6	PLA.  11.1 19.6 27.1 43.1 58.4
100 500 1000 5000 10000 30800 35000	ELA. TOT  121.8 137. 95.6 111. 86.2 99. 67.7 79. 61.0 70. 51.5 59. 50.6 58.	7.0 IN.) 7. PLA. 7. 98.1 3. 258.2 6. 434.3 8. 1148.9 9. 2003.0 9. 3784.3 0. 4506.8	DEFC LVDT ELA. 47.7 36.4 32.4 24.7 22.0 18.1 17.7	#2(2. TOT. 53.9 42.4 37.5 29.1 25.5 21.1 20.4	ON (in.)  PLA.  33.5 81.6 132.8 324.8 547.1 976.7 1155.6	LVDT ELA. 30.4 21.2 18.1 12.3 10.3 7.8	34.4 24.7 20.9 14.5 12.0 9.0 8.6	PLA.  19.9 43.3 66.7 142.2 224.4 357.5	LVDT ELA.  18.1 10.5 8.1 4.2 3.1 1.8	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6 2.1 1.9	PLA.  11.1 19.6 27.1 43.1 58.4 69.9 78.7
100 500 1000 5000 10000 30800 35000	LVDT #1(0  ELA. TOT  121.8 137.  95.6 111.  86.2 99. 67.7 79. 61.0 70. 51.5 59. 50.6 58.  COTAL WEIGH	7.0 IN.) 7. PLA. 7. 98.1 3. 258.2 6. 434.3 8. 1148.9 9. 2003.0 9. 3784.3 0. 4506.8 TOF DRY	DEFC  LVDT  ELA.  47.7 36.4 32.4 24.7 22.0 18.1 17.7  AGGREGIENT;	#2(2. TOT. 53.9 42.4 37.5 29.1 25.5 21.1 20.4	ON (in.)  PLA.  33.5 81.6 132.8 324.8 547.1 976.7 1155.6	LVDT ELA. 30.4 21.2 18.1 12.3 10.3 7.8	#3(4. TOT. 34.4 24.7 20.9 14.5 12.0 9.0 8.6	) PLA.  19.9 43.3 66.7 142.2 224.4 357.5 417.2	LVDT ELA.  18.1 10.5 8.1 4.2 3.1 1.8 1.7	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6 2.1 1.9	PLA.  11.1 19.6 27.1 43.1 58.4 69.9 78.7
100 500 1000 5000 10000 30800 35000 A = T	LVDT #1(0  ELA. TOT  121.8 137.  95.6 111.  86.2 99. 67.7 79. 61.0 70. 51.5 59. 50.6 58.  COTAL WEIGHT PERCENT ASE	7 98.1 3 258.2 6 434.3 8 1148.9 9 2003.0 9 3784.3 0 4506.8 TT OF DRY	DEFC  LVDT  ELA.  47.7 36.4 32.4 24.7 22.0 18.1 17.7  AGGREC  TENT; AIR;	#2(2. TOT. 53.9 42.4 37.5 29.1 25.5 21.1 20.4	ON (in.)  PLA.  33.5 81.6 132.8 324.8 547.1 976.7 1155.6	LVDT ELA.  30.4 21.2 18.1 12.3 10.3 7.8	34.4 24.7 20.9 14.5 12.0 9.0 8.6 WB SL CL	) PLA.  19.9 43.3 66.7 142.2 224.4 357.5 417.2  - WEIG - SUST - CYCL	LVDT  ELA.  18.1 10.5 8.1 4.2 3.1 1.8 1.7  HT OF B AINED LOAD	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6 2.1 1.9	PLA.  11.1 19.6 27.1 43.1 58.4 69.9 78.7
100 500 1000 5000 10000 30800 35000 A = T C = P BA = W	LVDT #1(0  ELA. TOT  121.8 137. 95.6 111. 86.2 99. 67.7 79. 61.0 70. 51.5 59. 50.6 58.  COTAL WEIGHT PERCENT ASE FEIGHT OF SE	7 98.1 3 258.2 6 434.3 8 1148.9 9 2003.0 9 3784.3 0 4506.8 T OF DRY	DEFC  LVDT  ELA.  47.7 36.4 32.4 24.7 22.0 18.1 17.7  AGGREC TENT; AIR; WATER	#2(2. TOT.  53.9 42.4 37.5 29.1 25.5 21.1 20.4  GATES;	ON (in.) PLA. 33.5 81.6 132.8 324.8 547.1 976.7 1155.6	LVDT ELA.  30.4 21.2 18.1 12.3 10.3 7.8	34.4 24.7 20.9 14.5 12.0 9.0 8.6 WB SL CL	) PLA.  19.9 43.3 66.7 142.2 224.4 357.5 417.2  - WEIG - SUST - CYCL	LVDT  ELA.  18.1 10.5 8.1 4.2 3.1 1.8 1.7  HT OF B AINED L	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6 2.1 1.9	PLA.  11.1 19.6 27.1 43.1 58.4 69.9 78.7
100 500 1000 5000 10000 30800 35000 A = T C = F BA = W BW = W	LVDT #1(0  ELA. TOT  121.8 137.  95.6 111.  86.2 99. 67.7 79. 61.0 70. 51.5 59. 50.6 58.  COTAL WEIGHT PERCENT ASE	7 98.1 3 258.2 6 434.3 8 1148.9 9 2003.0 9 3784.3 0 4506.8 T OF DRY HALT CONT	DEFO  LVDT  ELA.  47.7 36.4 32.4 24.7 22.0 18.1 17.7  AGGRECTENT; AIR; WATER SPECII	#2(2. TOT. 53.9 42.4 37.5 29.1 25.5 21.1 20.4 GATES;	ON (inc 0 IN.) PLA. 33.5 81.6 132.8 324.8 547.1 976.7 1155.6	LVDT  ELA.  30.4 21.2 18.1 12.3 10.3 7.8	34.4 24.7 20.9 14.5 12.0 9.0 8.6 WB SL CL	) PLA.  19.9 43.3 66.7 142.2 224.4 357.5 417.2  - WEIG - SUST - CYCL	LVDT  ELA.  18.1 10.5 8.1 4.2 3.1 1.8 1.7  HT OF B AINED LOAD	#4(6.0 TOT. 20.5 12.2 9.4 5.0 3.6 2.1 1.9	PLA. 11.1 19.6 27.1 43.1 58.4 69.9 78.7

SAMPLE		NA >	WB	AC	SL		CL	WBW		WBA	GMM	AV
NUMBER	( )	gr)	(gr)	(%)	(11	bs)	(lbs)	(gr)		(gr)		(%)
21110635	100	000	416	3.99	5	0	500	5902.	0	10080.0	2.54	4.9
				DEF	ORMATI	ON (inc	ches X (	0.0001)				
- CYCLE	LVDT	#1(0.0	O IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	120.9	139.2	97.6	47.5	54.7	33.4	30.4	35.0	19.	9 18.1	20.9	11.1
500	95.0	108.2	250.8	36.3	41.4	79.6	21.2	24.1	42.	3 10.5	12.0	19.2
1000	85.6	99.6	432.7	32.3	37.6	132.8	18.1	21.0	66.	9 8.2	9.5	27.3
5000	67.2	75.9	1147.9	24.6	27.8	325.8	12.3	13.9	143.	0 4.2	4.8	43.5
10600	60.1	68.6	2017.6	21.7	24.8	551.7	10.2	11.6	225.	7 3.0	3.5	58.2
30300	51.3	58.9	3686.3	18.1	20.8	956.1	7.8	8.9	351.	8 1.8	2.1	69.5
SAMPLE	<u>-</u>	-AA	WB	AC	SL		CL	WBW		WBA	GMM	AV
NUMBER	(8	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	)	(gr)		(%)
21110711	100	000	416	3.99	5	0	100	5715.	0	9896.0	2.54	6.7
<del></del>				DEF	ORMATI	ON (in	ches X	0.0001)				
CYCLE	LVDT	<b>#1</b> (0.0	O IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	625 I
_	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
_		TOT.	PLA. 24.7		TOT.	PLA.	ELA. 8.0		PLA			
NUMBER	30.5			11.3			· · · · · · · · · · · · · · · · · · ·	9.3		3 5.5	6.3	3.4
NUMBER 100	30.5 24.0	35.3	24.7	11.3	13.0	7.9	8.0	9.3 6.5	5.	3 5.5 7 3.3	6.3	3.4 6.2
100 500	30.5 24.0 21.6	35.3 27.5	24.7 65.6 112.9	11.3 8.6 7.6	13.0	7.9 19.5 32.4	8.0 5.6 4.8	9.3 6.5	5. 11. 18.	3 5.5 7 3.3 4 2.6	6.3	3.4 6.2 8.9
100 500 1000 5000	30.5 24.0 21.6 17.0 15.3	35.3 27.5 24.8 19.5 17.4	24.7 65.6 112.9 288.9 496.0	11.3 8.6 7.6 5.8 5.2	13.0 9.8 8.7 6.7 5.9	7.9 19.5 32.4 76.5 126.8	8.0 5.6 4.8 3.3 2.8	9.3 6.5 5.5 3.8 3.2	5. 11. 18. 38. 59.	3 5.5 7 3.3 4 2.6 2 1.4 5 1.0	6.3 3.7 2.9 1.6 1.2	3.4 6.2 8.9 14.2 19.3
100 500 1000 5000	30.5 24.0 21.6 17.0 15.3	35.3 27.5 24.8 19.5 17.4	24.7 65.6 112.9 288.9 496.0	11.3 8.6 7.6 5.8 5.2	13.0 9.8 8.7 6.7 5.9	7.9 19.5 32.4 76.5 126.8	8.0 5.6 4.8 3.3 2.8	9.3 6.5 5.5 3.8 3.2	5. 11. 18. 38. 59.	3 5.5 7 3.3 4 2.6 2 1.4	6.3 3.7 2.9 1.6 1.2	3.4 6.2 8.9 14.2 19.3
100 500 1000 5000 10000 31900	30.5 24.0 21.6 17.0 15.3 12.9	35.3 27.5 24.8 19.5 17.4 15.0	24.7 65.6 112.9 288.9 496.0 979.2	11.3 8.6 7.6 5.8 5.2 4.2	13.0 9.8 8.7 6.7 5.9 4.9	7.9 19.5 32.4 76.5 126.8 235.8	8.0 5.6 4.8 3.3 2.8 2.1	9.3 6.5 5.5 3.8 3.2 2.4	5. 11. 18. 38. 59.	3 5.5 7 3.3 4 2.6 2 1.4 5 1.0 0 0.6	6.3 3.7 2.9 1.6 1.2	3.4 6.2 8.9 14.2 19.3 24.8
100 500 1000 5000	30.5 24.0 21.6 17.0 15.3 12.9	35.3 27.5 24.8 19.5 17.4 15.0 11.4	24.7 65.6 112.9 288.9 496.0 979.2 3295.9	11.3 8.6 7.6 5.8 5.2 4.2 3.1	13.0 9.8 8.7 6.7 5.9 4.9 3.6	7.9 19.5 32.4 76.5 126.8 235.8 725.1	8.0 5.6 4.8 3.3 2.8 2.1	9.3 6.5 5.5 3.8 3.2 2.4 1.5	5. 11. 18. 38. 59. 99.	3 5.5 7 3.3 4 2.6 2 1.4 5 1.0 0 0.6	6.3 3.7 2.9 1.6 1.2 0.7	3.4 6.2 8.9 14.2 19.3 24.8 38.7
100 500 1000 5000 10000 31900 175800	30.5 24.0 21.6 17.0 15.3 12.9 10.0	35.3 27.5 24.8 19.5 17.4 15.0 11.4	24.7 65.6 112.9 288.9 496.0 979.2 3295.9	11.3 8.6 7.6 5.8 5.2 4.2 3.1	13.0 9.8 8.7 6.7 5.9 4.9 3.6	7.9 19.5 32.4 76.5 126.8 235.8 725.1	8.0 5.6 4.8 3.3 2.8 2.1	9.3 6.5 5.5 3.8 3.2 2.4 1.5	5. 11. 18. 38. 59. 99. 252.	3 5.5 7 3.3 4 2.6 2 1.4 5 1.0 0 0.6 7 0.2	6.3 3.7 2.9 1.6 1.2 0.7 0.3	3.4 6.2 8.9 14.2 19.3 24.8 38.7
100 500 1000 5000 10000 31900 175800	30.5 24.0 21.6 17.0 15.3 12.9 10.0	35.3 27.5 24.8 19.5 17.4 15.0 11.4	24.7 65.6 112.9 288.9 496.0 979.2 3295.9	11.3 8.6 7.6 5.8 5.2 4.2 3.1	13.0 9.8 8.7 6.7 5.9 4.9 3.6	7.9 19.5 32.4 76.5 126.8 235.8 725.1	8.0 5.6 4.8 3.3 2.8 2.1	9.3 6.5 5.5 3.8 3.2 2.4 1.5	5. 11. 18. 38. 59. 99. 252.	3 5.5 7 3.3 4 2.6 2 1.4 5 1.0 0 0.6 7 0.2	6.3 3.7 2.9 1.6 1.2 0.7 0.3	3.4 6.2 8.9 14.2 19.3 24.8 38.7
100 500 1000 5000 10000 31900 175800 A = T C = P	30.5 24.0 21.6 17.0 15.3 12.9 10.0 OTAL V	35.3 27.5 24.8 19.5 17.4 15.0 11.4 3	24.7 65.6 112.9 288.9 496.0 979.2 3295.9 OF DRY	11.3 8.6 7.6 5.8 5.2 4.2 3.1 AGGREC	13.0 9.8 8.7 6.7 5.9 4.9 3.6	7.9 19.5 32.4 76.5 126.8 235.8 725.1	8.0 5.6 4.8 3.3 2.8 2.1	9.3 6.5 5.5 3.8 3.2 2.4 1.5	5. 11. 38. 39. 99. 252. WEI	3 5.5 7 3.3 4 2.6 2 1.4 5 1.0 0 0.6 7 0.2 GHT OF B	6.3 3.7 2.9 1.6 1.2 0.7 0.3 ITUMEN	3.4 6.2 8.9 14.2 19.3 24.8 38.7

SAMPLE	٧	۸A	WB	AC	SL		CL	WBW	WBA	<b>L</b>	GMM	AV
NUMBER	(1	gr)	(gr)	(2)	(1	bs)	(lbs)	(gr)	) (g	;r)		(%)
21110721	100	000	416	3.99	5	0	100	5711.	0 98	96.0	2.54	6.8
				DEF	ORMATI	ON (in	ches X (	0.0001)				
-	LVDT	#1(0.	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
				_								
100	30.9	35.9	25.7	11.3	13.1	8.2	8.0	9.3	5.4	5.5	6.3	3.4
500	24.3	27.7	66.7	8.6	9.8	19.6	5.6	6.4	11.7	3.3	3.7	6.2
1000	21.9	24.8	116.3	7.7	8.7	33.1	4.8	5.5	18.7	2.6	2.9	9.0
5300	17.0	19.7	314.1	5.8	6.7	82.2	3.2	3.7	40.6	1.3	1.6	14.8
10000	15.5	18.0	512.2	5.2	6.0	129.7	2.8	3.2	60.5	1.0	1.2	19.5
31000	13.1	14.9	997.0	4.3	4.9	238.1	2.1	2.4	99.6	0.6	0.7	24.8
171000	10.1	11.6	3267.8	3.2	3.6	712.8	1.3	1.5	247.3	0.2	0.3	37.6
	<del></del>											
SAMPLE		∛A	WB	AC	SL		CL	WBW	WBA		GMM	AV
NUMBER	( (	gr)	(gr)	(%)	(I	bs)	(lbs)	(gr)	) (8	gr)		(%)
21110731	100	000	416	3.99	5	0	100	5703.	0 98	386.0	2.54	6.9
				DEF	ORMATI	ON (in	ches X	0.0001	)			
 CYCLE	LVDT	#1(0.	.0 IN.)	LVDI	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	31.1	35.6	25.9	11.3	13.0	8.2	8.0	9.2	5.4	5.4	6.2	3.4
500	24.4	28.4	67.6	8.6	10.0	19.8	5.6	6.5	11.8	3.2	3.8	6.2
1000	22.0	24.8	116.3	7.7	8.6	32.9	4.8	5.4	18.6	2.5	2.9	8.9
5000	17.3	20.0	308.0	5.8	6.7	80.4	3.3	3.8	39.8	1.4	1.6	14.6
10000	15.6	17.9	519.9	5.2	6.0	131.0	2.8	3.2	60.9	1.0	1.2	19.5
			992.7								0.7	24.7
	10.2	11.8	3367.1	3.2	3.7	730.5	1.3	1.5	252.5	0.2	0.3	38.2
					CATES.			WB =	- WEIGHT	OFB	I TUMEN ;	;
170000 A = To			OF DRY		mies;							
170000 A = TC C = PI	ercent	C ASPE	HALT CON	TENT;	mies;				SUSTA		•	
170000 A = TC C = PI	ercent	C ASPE		TENT;	milo;				SUSTA		•	

ELA. AND TOT. - ELASTIC AND TOTAL DEFORMATION/CYCLE;
PLA. - CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

Sample Number	WA (gr)	WB (gr)	AC (Z)	SL (1)	bs)	CL (lbs)	WBW (gr)	WB ) (	A gr)	GMM	AV (%)
21110712	10000	416	3.99	5		200	5700.	0 9	894.0	2.54	7.09
		410									
_			DEFO	ORMATI	ON (inc	hes X (	0.0001	)			
CYCLE	LVDT #1(0.	0 IN.)	LVDI	<b>#</b> 2(2.	0 IN.)	LVDī	#3(4.0	IN.)	LVDT	#4(6.0	)625 IN
NUMBER	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	63.7 73.1	62.4	22.0	25.3	18.8	14.8	17.0	11.8	9.5	10.8	7.0
500	50.0 56.5	165.4	16.8	18.9	46.0	10.3	11.6	25.7	5.5	6.2	12.5
1000	45.1 52.2	276.6	14.9	17.2	74.3	8.7	10.1	39.3	4.2	4.9	17.2
5000	35.4 41.0	730.9		13.1	180.7		6.8	83.1	2.2		27.3
10000	31.9 36.3			11.4	302.1		5.6	130.0	1.6		36.8
30900	26.9 31.0			9.5	536.0		4.2	205.1	0.9		43.9
68500	23.9 27.5	4349.8	7.2	8.3	935.7	3.0	3.4	327.2	0.6	0.7	55.4
							1,994.1				
SAMPLE	WA (TOTA)	WB	AC	SL		CL	WBW	WB		GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	, ,	gr)		(1)
21110722	10000	416	3.99	5	0	200	5701.	.0 9	892.0	2.54	7.04
			DEF	DRMATI	ON (in	ches X	0.0001	)			
											506 TV
	LVDT #1(0	.O IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	<b>#</b> 3(4.0	IN.)	LVDT	#4(6.0	623 IN
	LVDT #1(0		LVDT	#2(2. TOT.	O IN.)	LVDT	#3(4.0	PLA.	ELA.	#4(6.0 TOT.	PLA.
NUMBER 100	ELA. TOT.	PLA. 61.2	ELA. 22.0	TOT.	PLA.	ELA. 14.8	TOT.	PLA.	ELA. 9.5	TOT.	PLA.
100 500	ELA. TOT. 63.2 73.6 49.7 56.5	PLA. 61.2 161.8	ELA. 22.0 16.7	TOT. 25.6 19.0	PLA. 18.5 45.2	ELA. 14.8 10.3	TOT. 17.3 11.7	PLA. 11.7 25.4	ELA. 9.5 5.5	TOT. 11.0 6.3	PLA.
100 500 1000	ELA. TOT. 63.2 73.6 49.7 56.5 44.8 50.5	FLA. 61.2 161.8 274.4	ELA. 22.0 16.7 14.9	TOT. 25.6 19.0 16.8	PLA. 18.5 45.2 74.0	ELA. 14.8 10.3 8.8	TOT. 17.3 11.7 9.9	PLA. 11.7 25.4 39.3	9.5 5.5 4.3	TOT.  11.0 6.3 4.8	PLA.
100 500 1000 5200	ELA. TOT. 63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5	FLA. 61.2 161.8 274.4 743.9	ELA. 22.0 16.7 14.9 11.2	TOT.  25.6 19.0 16.8 12.7	PLA.  18.5 45.2 74.0 184.5	ELA. 14.8 10.3 8.8 5.9	TOT.  17.3 11.7 9.9 6.6	PLA. 11.7 25.4 39.3 84.8	9.5 5.5 4.3 2.2	TOT.  11.0 6.3 4.8 2.5	PLA. 6.9 12.3 17.3 27.8
100 500 1000 5200	63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5 31.7 36.3	FLA. 61.2 161.8 274.4 743.9 1222.1	22.0 16.7 14.9 11.2	TOT.  25.6 19.0 16.8 12.7 11.5	PLA.  18.5 45.2 74.0 184.5 292.9	ELA. 14.8 10.3 8.8 5.9 5.0	TOT.  17.3 11.7 9.9 6.6 5.7	PLA.  11.7 25.4 39.3 84.8 126.4	9.5 5.5 4.3 2.2 1.6	TOT.  11.0 6.3 4.8 2.5 1.9	PLA. 6.9 12.3 17.3 27.8 36.0
500 1000 5200 10000 30000	63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5 31.7 36.3 26.9 30.9	FLA. 61.2 161.8 274.4 743.9 1222.1 2306.0	22.0 16.7 14.9 11.2 10.0 8.3	TOT.  25.6 19.0 16.8 12.7 11.5 9.5	PLA.  18.5 45.2 74.0 184.5	ELA. 14.8 10.3 8.8 5.9	TOT.  17.3 11.7 9.9 6.6 5.7	PLA. 11.7 25.4 39.3 84.8	9.5 5.5 4.3 2.2 1.6	TOT.  11.0 6.3 4.8 2.5	PLA. 6.9 12.3 17.3 27.8
100 500 1000 5200 10000 30000	63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5 31.7 36.3	FLA. 61.2 161.8 274.4 743.9 1222.1 2306.0	22.0 16.7 14.9 11.2 10.0 8.3	TOT.  25.6 19.0 16.8 12.7 11.5 9.5	PLA.  18.5 45.2 74.0 184.5 292.9	ELA. 14.8 10.3 8.8 5.9 5.0	TOT.  17.3 11.7 9.9 6.6 5.7	PLA.  11.7 25.4 39.3 84.8 126.4	9.5 5.5 4.3 2.2 1.6	TOT.  11.0 6.3 4.8 2.5 1.9	PLA. 6.9 12.3 17.3 27.8 36.0
100 500 1000 5200 10000 30000 64335	63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5 31.7 36.3 26.9 30.9	PLA. 61.2 161.8 274.4 743.9 1222.1 2306.0 4137.3	22.0 16.7 14.9 11.2 10.0 8.3	TOT.  25.6 19.0 16.8 12.7 11.5 9.5	PLA.  18.5 45.2 74.0 184.5 292.9 521.5	ELA. 14.8 10.3 8.8 5.9 5.0	TOT.  17.3 11.7 9.9 6.6 5.7 4.3	PLA.  11.7 25.4 39.3 84.8 126.4 200.9	9.5 5.5 4.3 2.2 1.6 0.9	TOT.  11.0 6.3 4.8 2.5 1.9	PLA. 6.9 12.3 17.3 27.8 36.0 43.6
100 500 1000 5200 10000 30000 64335	ELA. TOT. 63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5 31.7 36.3 26.9 30.9 24.0 27.5	FLA.  61.2 161.8 274.4 743.9 1222.1 2306.0 4137.3	22.0 16.7 14.9 11.2 10.0 8.3	TOT.  25.6 19.0 16.8 12.7 11.5 9.5	PLA.  18.5 45.2 74.0 184.5 292.9 521.5	ELA. 14.8 10.3 8.8 5.9 5.0	TOT.  17.3 11.7 9.9 6.6 5.7 4.3	PLA.  11.7 25.4 39.3 84.8 126.4 200.9	9.5 5.5 4.3 2.2 1.6 0.9	TOT.  11.0 6.3 4.8 2.5 1.9 1.1	PLA. 6.9 12.3 17.3 27.8 36.0 43.6
100 500 1000 5200 10000 30000 64335	ELA. TOT. 63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5 31.7 36.3 26.9 30.9 24.0 27.5	FLA.  61.2 161.8 274.4 743.9 1222.1 2306.0 4137.3	22.0 16.7 14.9 11.2 10.0 8.3	TOT.  25.6 19.0 16.8 12.7 11.5 9.5	PLA.  18.5 45.2 74.0 184.5 292.9 521.5	ELA. 14.8 10.3 8.8 5.9 5.0	TOT.  17.3 11.7 9.9 6.6 5.7 4.3 - WB = SL =	PLA.  11.7 25.4 39.3 84.8 126.4 200.9 -	9.5 5.5 4.3 2.2 1.6 0.9	TOT.  11.0 6.3 4.8 2.5 1.9 1.1 - TUMEN;	PLA. 6.9 12.3 17.3 27.8 36.0 43.6
100 500 1000 5200 10000 30000 64335 A = TO C = PI BA = WI BW = WI	ELA. TOT. 63.2 73.6 49.7 56.5 44.8 50.5 35.0 39.5 31.7 36.3 26.9 30.9 24.0 27.5  DTAL WEIGHT ERCENT ASPE	61.2 161.8 274.4 743.9 1222.1 2306.0 4137.3 C OF DRY MALT CON:	22.0 16.7 14.9 11.2 10.0 8.3 - AGGREC TENT; AIR; WATER;	TOT.  25.6 19.0 16.8 12.7 11.5 9.5	PLA.  18.5 45.2 74.0 184.5 292.9 521.5	ELA. 14.8 10.3 8.8 5.9 5.0	TOT.  17.3 11.7 9.9 6.6 5.7 4.3 - WB = SL = CL =	PLA.  11.7 25.4 39.3 84.8 126.4 200.9	9.5 5.5 4.3 2.2 1.6 0.9	TOT.  11.0 6.3 4.8 2.5 1.9 1.1 - TUMEN;	PLA. 6.9 12.3 17.3 27.8 36.0 43.6

•	iA.	WB	AC	SL		CL	WBW	W	BA	GMM	AV
( <b>a</b>	(r)	(gr)	(%)	(1)	bs)	(lbs)	(gr)	ı	(gr)		(%)
100	000	416	3.99	5	0	200		_			7.0
			DEF	ORMATI	ON (inc						
LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 1
ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
63.2	71.5	61.0	22.0	24.8	18.5	14.8	16.8	11.6	9.5	10.7	6.9
49.6	56.1	161.1	16.7	18.9	45.0	10.3	11.6	25.2	5.5	6.2	12.3
44.7	51.1	278.2	14.9	17.0	75.1	8.7	10.0	39.8	4.3	4.9	17.5
35.1	39.8	716.6	11.3	12.8	178.1	5.9	6.7	82.2	2.2	2.5	27.1
31.7	36.5	1246.5	10.0	11.5	298.8	5.0	5.7	129.0	1.6	1.9	36.7
26.9	30.5	2281.6	8.3	9.4	516.0	3.7	4.2	198.8	0.9	1.1	43.1
24.7	28.5	3657.7	-	-	-	-	-	-	-	-	-
100	000	416	3.99	5	0	500	5698	. 0	9889.0	2.54	7.0
	10 S S S S	******	DEF	ORMAT I	ON (inc	ches X			*******		
LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	O IN.)	LVDT	#4(6.0	625
ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA
160 7	180.1	. 207.3	49.3	56.0	56.1	28.2	31.9	29.9	14.8	16.7	14.6
130.7											24.
		572.2	36.8	42.4	141.9	18.6	21.4	65.3	7.6	0.0	
122.9	141.4	572.2 922.1								6.9	32.2
122.9 112.3	141.4 130.4		33.2	38.6	221.6	16.0	18.6	96.4	5.9		32.
122.9 112.3 88.2	141.4 130.4 101.1	922.1	33.2 25.1	38.6 28.8	221.6 524.9	16.0 10.5	18.6 12.1	96.4 193.5	5.9 2.8	6.9	32.2 45.0
122.9 112.3 88.2 79.5	141.4 130.4 101.1 90.6	922.1 2380.5	33.2 25.1 22.3	38.6 28.8 25.4	221.6 524.9	16.0 10.5	18.6 12.1 9.9	96.4 193.5	5.9 2.8	5.9 3.2	32.3 45.0
122.9 112.3 88.2 79.5 76.1	141.4 130.4 101.1 90.5 87.0	922.1 2380.5 4198.5	33.2 25.1 22.3	38.6 28.8 25.4	221.6 524.9 891.5	16.0 10.5 8.7	18.6 12.1 9.9	96.4 193.5 303.8	5.9 2.8 1.9	5.9 3.2 2.2	32.3 45.0 58.3
122.9 112.3 88.2 79.5 76.1	141.4 130.4 101.1 90.5 87.0	922.1 . 2380.5 6 4198.5 4661.0	33.2 25.1 22.3 -	38.6 28.8 25.4	221.6 524.9 891.5	16.0 10.5 8.7	18.6 12.1 9.9	96.4 193.5 303.8	5.9 2.8 1.9	6.9 3.2 2.2 -	32.3 45.0 58.3
122.9 112.3 88.2 79.5 76.1	141.4 130.4 101.1 90.5 87.0	922.1 . 2380.5 6 4198.5 9 4661.0	33.2 25.1 22.3 - AGGREC	38.6 28.8 25.4	221.6 524.9 891.5	16.0 10.5 8.7	18.6 12.1 9.9 	96.4 193.5 303.8 - - WEIG	5.9 2.8 1.9	5.9 3.2 2.2 - ITUMEN OAD;	32.3 45.0 58.3
	LVDT  ELA.  63.2 49.6 44.7 35.1 31.7 26.9 24.7	10000  LVDT #1(0.  ELA. TOT.  63.2 71.5 49.6 56.1 44.7 51.1 35.1 39.8 31.7 36.5 26.9 30.5 24.7 28.5  WA (gr)  10000  LVDT #1(0.	(gr) (gr)  10000 416  LVDT #1(0.0 IN.)  ELA. TOT. PLA.  63.2 71.5 61.0 49.6 56.1 161.1 44.7 51.1 278.2 35.1 39.8 716.6 31.7 36.5 1246.5 26.9 30.5 2281.6 24.7 28.5 3657.7  WA WB (gr) (gr)  10000 416  LVDT #1(0.0 IN.)  ELA. TOT. PLA.	(gr) (gr) (Z)  10000 416 3.99  DEFC  LVDT \$1(0.0 IN.) LVDT  ELA. TOT. PLA. ELA.  63.2 71.5 61.0 22.0 49.6 56.1 161.1 16.7 44.7 51.1 278.2 14.9 35.1 39.8 716.6 11.3 31.7 36.5 1246.5 10.0 26.9 30.5 2281.6 8.3 24.7 28.5 3657.7 -  WA WB AC (gr) (gr) (Z)  DEFC  LVDT \$1(0.0 IN.) LVDT  ELA. TOT. PLA. ELA.	(gr) (gr) (Z) (E)  10000 416 3.99 5  DEFORMATION  LVDT \$1(0.0 IN.) LVDT \$2(2.0 ELA. TOT. PLA. ELA. TOT.  63.2 71.5 61.0 22.0 24.8 49.6 56.1 161.1 16.7 18.9 44.7 51.1 278.2 14.9 17.0 35.1 39.8 716.6 11.3 12.8 31.7 36.5 1246.5 10.0 11.5 26.9 30.5 2281.6 8.3 9.4 24.7 28.5 3657.7  WA WB AC S (gr) (Z) (E)  10000 416 3.99 5  DEFORMATION  LVDT \$1(0.0 IN.) LVDT \$2(2.0 ELA. TOT. PLA. ELA. TOT.	(gr) (gr) (Z) (1bs)  10000 416 3.99 50  DEFORMATION (inc.)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA.  63.2 71.5 61.0 22.0 24.8 18.5 49.6 56.1 161.1 16.7 18.9 45.0 44.7 51.1 278.2 14.9 17.0 75.1 35.1 39.8 716.6 11.3 12.8 178.1 31.7 36.5 1246.5 10.0 11.5 298.8 26.9 30.5 2281.6 8.3 9.4 516.0 24.7 28.5 3657.7	(gr) (gr) (Z) (lbs) (lbs)  10000 416 3.99 50 200  DEFORMATION (inches X (100))  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA.  63.2 71.5 61.0 22.0 24.8 18.5 14.8 49.6 56.1 161.1 16.7 18.9 45.0 10.3 44.7 51.1 278.2 14.9 17.0 75.1 8.7 35.1 39.8 716.6 11.3 12.8 178.1 5.9 31.7 36.5 1246.5 10.0 11.5 298.8 5.0 26.9 30.5 2281.6 8.3 9.4 516.0 3.7 24.7 28.5 3657.7	(gr) (gr) (Z) (lbs) (lbs) (gr)  10000 416 3.99 50 200 5697.  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.)	(gr) (gr) (Z) (1bs) (1bs) (gr)  10000 416 3.99 50 200 5697.0  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  63.2 71.5 61.0 22.0 24.8 18.5 14.8 16.8 11.6 49.6 56.1 161.1 16.7 18.9 45.0 10.3 11.6 25.2 44.7 51.1 278.2 14.9 17.0 75.1 8.7 10.0 39.8 35.1 39.8 716.6 11.3 12.8 178.1 5.9 6.7 82.2 31.7 36.5 1246.5 10.0 11.5 298.8 5.0 5.7 129.0 26.9 30.5 2281.6 8.3 9.4 516.0 3.7 4.2 198.8 24.7 28.5 3657.7	(gr) (gr) (Z) (lbs) (lbs) (gr) (gr)  10000 416 3.99 50 200 5697.0 9885.0  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA.  63.2 71.5 61.0 22.0 24.8 18.5 14.8 16.8 11.6 9.5 49.6 56.1 161.1 16.7 18.9 45.0 10.3 11.6 25.2 5.5 44.7 51.1 278.2 14.9 17.0 75.1 8.7 10.0 39.8 4.3 35.1 39.8 716.6 11.3 12.8 178.1 5.9 6.7 82.2 2.2 31.7 36.5 1246.5 10.0 11.5 298.8 5.0 5.7 129.0 1.6 26.9 30.5 2281.6 8.3 9.4 516.0 3.7 4.2 198.8 0.9 24.7 28.5 3657.7  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA.	(gr) (gr) (X) (lbs) (lbs) (gr) (gr)  10000 416 3.99 50 200 5697.0 9885.0 2.54  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0 IN.

Sample Number	۱ (۱	NA 5r)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr		WBA (gr)	GMM	AV (%)
21110725	100	000	416	3.99	5	0	500	5701	. 0	9896.0	2.54	7.09
				DEE/	DMATT	ON (in		0.0001				
_				DEF		ON (III	hes X (		, 			
CYCLE	LVDT	#1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	N.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	159.3	182.3	206.8	49.4	56.5	55.8	28.2	32.2	29.7	14.7	16.9	14.5
500	125.1	144.8	545.7	37.5	43.4	135.6	19.1	22.1	62.9	7.9	9.2	23.8
1000	112.8	127.4	933.0	33.2	37.6	223.6	16.0	18.1	97.1	5.9	6.7	32.3
5000	88.6	101.2	2400.0	25.1	28.7	527.8	10.5	12.0	194.2	2.8	3.2	45.1
10000	79.8	92.8	4150.0	22.3	25.9	878.7	8.7	10.1	298.8	1.9	2.2	57.5
11432	78.2	89.2	4628.8	21.8	24.8	972.9	8.4	9.6	325.7	1.8	2.0	60.3
SAMPLE		√A	WB	AC	s	L	CL	WBW	,		GMM	AV
NUMBER	(8	gr)	(gr)	(2)	(1	bs)	(lbs)	(gr	)	(gr)		(%)
21110735	100	000	416	3.99	5	60	500	5696	. 0	9890.0	2.54	7.1
				DEF	RMATI	ON (in	ches X	0.0001	)			
CYCLE	LVDT	#1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	O IN.)	LVDŤ	#4(6.0	625 I
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	159.9	181.7	211.1	49.4	56.1	56.8	28.1	31.9	30.2	14.7	16.7	14.7
500	125.6	143.0	547.2	37.5	42.6	135.5	19.0	21.7	62.6	7.9	9.0	23.7
1000	113.2	128.6	932.3	33.2	37.8	222.5	16.0	18.1	96.4	5.9	6.7	32.0
5000	88.9	103.4	2432.8	25.1	29.2	532.8	10.5	12.2	195.4	2.8	3.2	45.2
10000	80.2	91.2	4200.3	22.3	25.3	885.7	8.7	9.9	300.2	1.9	2.2	57.5
11050	79.0	90.7	4485.1	-	-	-	-	-	-	-	-	-
	OTAL S	VEIGHT	OF DRY	AGGRE	GATES;			WB ·	- WEIG	HT OF B	I TUMEN ;	
A - T	OIAL I							SL :	SUST	AINED L	OAD:	
		ASPE	ALI CONI	ENT;								
C = P	ERCENT		alt cont aple in	-						IC LOAD	-	
C = P BA = W	ERCENT EIGHT	OF SAM		AIR;	i			CL :	- CYCL		;	

SAMPLE	WA	WB	AC	Si		CL	WBW		BA .	GMM	AV
NUMBER	(gr)	(gr)	(%)	(11	bs)	(lbs)	(gr)	(1	gr)		(%)
31110511	10000	434	4.16	5	0	100	6127.	0 10:	308.0	2.54	2.97
			DEF	ORMATI	ON (in	ches X	0.0001)				
 CYCLE	LVDT #1(0	).0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TO	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
110	18.0 20.7	6.7	9.7	11.1	3.1	7.8	8.9	2.3	6.1	7.0	1.7
500	14.4 16.6	16.0	7.6	8.7	7.0	5.8	6.7	4.9	4.1	4.8	3.2
1000	12.9 14.7	27.7	6.8	7.7	11.8	5.1	5.7	7.9	3.4	3.9	4.8
5000	10.2 11.6	72.1	5.2	5.9	28.6	3.6	4.1	17.6	2.1	2.4	9.0
10000	9.2 10.4	122.3	4.6	5.3	47.1	3.2	3.6	27.8	1.7	1.9	13.1
30500	7.8 8.9	233.4	3.9	4.5	85.5	2.5	2.9	47.0	1.2	1.3	18.8
162050	6.0 7.0	745.8	2.9	3.4	253.8	1.7	2.0	123.5	0.6	0.7	36.3
SAMPLE	WA	WB	AC	s	L	CL	WBW	w	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(11	bs)	(lbs)	(gr)	(	gr)		(%)
31110521	10000	434	4.16	5	0	100	6128.	0 10	310.0	2.54	2.98
31110521	10000	434				100 ches X			310.0	2.54	2.98
_	10000 LVDT #1(0		DEF	ORMATI(		ches X				2.54 #4(6.0	
CYCLE _		).0 IN.)	DEF	ORMATI(	ON (ind	ches X	0.0001)				
CYCLE _	LVDT #1(C	).0 IN.)	LVDT	P2(2.	ON (ind	LVDT	0.0001) #3(4.0	) IN.)	LVDT	#4(6.0	625 II
	LVDT #1(C	).0 IN.)  P. PLA.	DEFO	#2(2.)	ON (inc	LVDT	#3(4.0	) IN.)	LVDT ELA. 6.2	#4(6.0	0625 II
CYCLE	LVDT #1(0 ELA. TOT	0.0 IN.)  PLA.  6.1  16.6	LVDT ELA.  9.8 7.5	#2(2.0 TOT.	ON (inc	LVDT ELA. 7.9 5.8	#3(4.0 TOT.	PLA.  2.1 5.1	LVDT ELA. 6.2 4.1	#4(6.0 TOT.	0625 II PLA.
CYCLE	LVDT #1(0 ELA. TOT 18.3 20.8 14.3 16.3	).0 IN.)  7. PLA.  9 6.1  16.6  7 28.1	DEFC LVDT ELA. 9.8 7.5 6.8	#2(2.0 TOT. 11.2 8.6 7.7	ON (inc 0 IN.) PLA. 2.8 7.2 11.9	LVDT ELA. 7.9 5.8 5.1	#3(4.0 TOT. 9.1 6.6	PLA.  2.1 5.1 8.0	ELA. 6.2 4.1 3.4	#4(6.0 TOT. 7.1 4.7	PLA.  1.6 3.3
100 520 1000 5250	LVDT #1(0 ELA. TOT 18.3 20.6 14.3 16.3 13.0 14.7	7. PLA.  6.1  16.6  28.1  3. 73.9	DEFC LVDT ELA.  9.8 7.5 6.8 5.2	#2(2.0 TOT. 11.2 8.6 7.7 5.9	ON (inc 0 IN.) PLA. 2.8 7.2 11.9	LVDT  ELA.  7.9 5.8 5.1 3.6	#3(4.0 TOT. 9.1 6.6 5.8 4.1	PLA.  2.1 5.1 8.0	ELA. 6.2 4.1 3.4 2.1	#4(6.0 TOT. 7.1 4.7 3.9	PLA.  1.6 3.3 4.9
100 520 1000 5250 10400	LVDT #1(0 ELA. TOT 18.3 20.8 14.3 16.3 13.0 14.7 10.1 11.5	0.0 IN.)  PLA.  6.1  16.6  28.1  3 73.9  3 121.8	DEFC LVDT ELA. 9.8 7.5 6.8 5.2 4.6	#2(2.0 TOT. 11.2 8.6 7.7 5.9 5.5	ON (inc 0 IN.) PLA. 2.8 7.2 11.9 29.2 46.8	LVDT ELA. 7.9 5.8 5.1 3.6 3.1	#3(4.0 TOT. 9.1 6.6 5.8 4.1 3.7	PLA.  2.1 5.1 8.0 18.0	ELA. 6.2 4.1 3.4 2.1 1.7	#4(6.0 TOT. 7.1 4.7 3.9 2.4	PLA.  1.6 3.3 4.9 9.2
100 520 1000 5250 10400 30000	LVDT #1(0 ELA. TOT 18.3 20.8 14.3 16.3 13.0 14.7 10.1 11.5 9.1 10.8	0.0 IN.)  7. PLA.  9 6.1  16.6  7 28.1  5 73.9  3 121.8  9 229.8	DEFC LVDT ELA. 9.8 7.5 6.8 5.2 4.6 3.9	#2(2.0 TOT. 11.2 8.6 7.7 5.9 5.5 4.4	ON (inc 0 IN.) PLA. 2.8 7.2 11.9 29.2 46.8 84.3	LVDT ELA.  7.9 5.8 5.1 3.6 3.1 2.5	9.1 6.6 5.8 4.1 3.7 2.9	PLA.  2.1 5.1 8.0 18.0 27.6	ELA. 6.2 4.1 3.4 2.1 1.7	#4(6.0 TOT. 7.1 4.7 3.9 2.4 2.0	PLA.  1.6 3.3 4.9 9.2 12.9 18.6
100 520 1000 5250 10400 30000	LVDT #1(0 ELA. TOT 18.3 20.8 14.3 16.3 13.0 14.7 10.1 11.5 9.1 10.8 7.8 8.9	0.0 IN.)  7. PLA.  6.1  16.6  7. 28.1  3. 121.8  9. 229.8  9. 758.6	DEFC LVDT ELA. 9.8 7.5 6.8 5.2 4.6 3.9 2.9	TOT.  11.2 8.6 7.7 5.9 5.5 4.4 3.4	ON (inc 0 IN.) PLA. 2.8 7.2 11.9 29.2 46.8 84.3 257.8	LVDT ELA.  7.9 5.8 5.1 3.6 3.1 2.5	9.1 6.6 5.8 4.1 3.7 2.9	PLA.  2.1 5.1 8.0 18.0 27.6 46.4	6.2 4.1 3.4 2.1 1.7 1.2 0.6	#4(6.0 TOT. 7.1 4.7 3.9 2.4 2.0 1.3 0.7	PLA.  1.6 3.3 4.9 9.2 12.9 18.6 36.6
100 520 1000 5250 10400 30000 165600	LVDT #1(0 ELA. TOT 18.3 20.8 14.3 16.3 13.0 14.7 10.1 11.5 9.1 10.8 7.8 8.8 6.0 6.8	0.0 IN.)  7. PLA.  9 6.1 9 16.6 9 28.1 9 73.9 9 121.8 9 229.8 9 758.6	DEFC LVDT ELA. 9.8 7.5 6.8 5.2 4.6 3.9 2.9	TOT.  11.2 8.6 7.7 5.9 5.5 4.4 3.4	ON (inc 0 IN.) PLA. 2.8 7.2 11.9 29.2 46.8 84.3 257.8	LVDT ELA.  7.9 5.8 5.1 3.6 3.1 2.5	9.1 6.6 5.8 4.1 3.7 2.9 2.0	PLA.  2.1 5.1 8.0 18.0 27.6 46.4 125.1	ELA. 6.2 4.1 3.4 2.1 1.7 1.2 0.6	#4(6.0 TOT. 7.1 4.7 3.9 2.4 2.0 1.3 0.7	PLA.  1.6 3.3 4.9 9.2 12.9 18.6 36.6
100 520 1000 5250 10400 30000 165600	LVDT #1(0 ELA. TOT 18.3 20.8 14.3 16.3 13.0 14.7 10.1 11.5 9.1 10.6 7.8 8.9 6.0 6.9	0.0 IN.)  7. FLA.  9 6.1  16.6  7 28.1  5 73.9  3 121.8  9 229.8  9 758.6  IT OF DRY	DEFC  LVDT  ELA.  9.8 7.5 6.8 5.2 4.6 3.9 2.9  AGGRECTENT;	TOT.  11.2 8.6 7.7 5.9 5.5 4.4 3.4	ON (inc 0 IN.) PLA. 2.8 7.2 11.9 29.2 46.8 84.3 257.8	LVDT ELA.  7.9 5.8 5.1 3.6 3.1 2.5	9.1 6.6 5.8 4.1 3.7 2.9 2.0	PLA.  2.1 5.1 8.0 18.0 27.6 46.4 125.1	ELA. 6.2 4.1 3.4 2.1 1.7 1.2 0.6	#4(6.0 TOT. 7.1 4.7 3.9 2.4 2.0 1.3 0.7	PLA.  1.6 3.3 4.9 9.2 12.9 18.6 36.6
100 520 1000 5250 10400 30000 165600 A = TC C = PF	LVDT #1(0 ELA. TOT 18.3 20.9 14.3 16.3 13.0 14.7 10.1 11.5 9.1 10.8 7.8 8.9 6.0 6.9 OTAL WEIGH	0.0 IN.)  7. PLA.  9 6.1  9 16.6  7 28.1  9 121.8  9 229.8  9 758.6  IT OF DRY  PHALT CONSAMPLE IN	DEFC  LVDT  ELA.  9.8 7.5 6.8 5.2 4.6 3.9 2.9  AGGRECTENT; AIR;	#2(2.0 TOT. 11.2 8.6 7.7 5.9 5.5 4.4 3.4	ON (inc 0 IN.) PLA. 2.8 7.2 11.9 29.2 46.8 84.3 257.8	LVDT ELA.  7.9 5.8 5.1 3.6 3.1 2.5	9.1 6.6 5.8 4.1 3.7 2.9 2.0	PLA.  2.1 5.1 8.0 18.0 27.6 46.4 125.1 WEIGHT	LVDT  ELA.  6.2 4.1 3.4 2.1 1.7 1.2 0.6 I OF B	#4(6.0 TOT. 7.1 4.7 3.9 2.4 2.0 1.3 0.7 ITUMEN;	PLA.  1.6 3.3 4.9 9.2 12.9 18.6 36.6

SAMPLE NUMBER	WA (gr)	WB (gr)	AC (7)	s (1	L bs)	CL (lbs)	WBW (gr)		BA Br)	GMM	AV (Z)
31110531	10000	434	4.16	5	0	100	6138.	0 103	333.0	2.54	3.06
			DEF	ORMATI	ON (inc	ches X (	0.0001)				*****
	LVDT #1(0	).0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA. TO	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	18.6 21.4	6.4	9.9	11.4	2.9	8.0	9.2	2.2	6.2	7.2	1.6
500	14.6 16.7	17.0	7.6	8.7	7.4	5.8	6.7	5.1	4.1	4.7	3.3
1000	13.2 14.9	28.8	6.8	7.7	12.1	5.1	5.8	8.1	3.4	3.9	4.9
5000	10.3 11.9	75.2	5.2	6.0	29.5	3.7	4.2	18.1	4.9	6.5	-
10000	9.3 10.7	126.3	4.7	5.4	48.1	3.2	3.6	28.3	4.3	5.4	-
30000	7.9 9.1	240.5	3.9	4.5	87.3	2.5	2.9	47.8	3.0	3.7	-
162900	6.1 7.3	784.9	3.0	3.5	264.4	1.7	2.0	127.5	2.0	2.2	-
SAMPLE	WA	WB	AC	s		CL	WBW	w	BA	GMM	AV
NUMBER	(gr)	(gr)	(2)		bs)	(lbs)	(gr)		gr)	~	(%)
31110512	10000	434	4.16	5	0	200	6142.	.0 10	341.0	2.54	3.08
31110512	10000	434				200 ches X			341.0	2.54	3.08
_	10000 LVDT #1(0		DEF	ORMATI	ON (in	*******	0.0001	)			
CYCLE _		).0 IN.)	DEF	ORMATI #2(2.	ON (in	ches X	#3(4.0	) ) IN.)		<b>#</b> 4(6.0	
CYCLE _	LVDT #1(0	).0 IN.)	DEFO	ORMATI #2(2.	ON (inc	LVDT	#3(4.0	) ) IN.)	LVDT ELA.	<b>#</b> 4(6.0	)625 II
	LVDT #1(C	).0 IN.) r. PLA.	DEFO LVDT ELA. 19.4	#2(2.	ON (inc	LVDT ELA. 15.2	#3(4.0	) IN.)	LVDT ELA. 11.5	#4(6.0	0625 II
CYCLE NUMBER	LVDT #1(0 ELA. TOT	D.O IN.)  F. PLA.  14.5  13.7.2	LVDT ELA. 19.4 14.9	#2(2. TOT.	ON (inc 0 IN.) PLA. 6.6 15.7	LVDT ELA. 15.2 11.1	#3(4.0 TOT.	PLA. 4.8 10.6	LVDT ELA. 11.5 7.5	#4(6.0 TOT.	0625 II PLA.
CYCLE NUMBER  100 500	LVDT #1(0 ELA. TOT 37.3 43.3 29.3 34.1	).0 IN.)  7. PLA.  3 14.5 1 37.2 0 64.8	DEF0 LVDT ELA. 19.4 14.9 13.3	#2(2. TOT. 22.5 17.4 15.2	ON (inc 0 IN.) PLA. 6.6 15.7	LVDT  ELA.  15.2 11.1 9.6	#3(4.0 TOT.	PLA.  4.8 10.6 17.3	LVDT ELA. 11.5 7.5 6.1	#4(6.0 TOT. 13.3 8.7	PLA.  3.4 6.5
CYCLENUMBER	ELA. TOT 37.3 43.3 29.3 34.1 26.4 30.0	).0 IN.)  7. PLA.  8. 14.5 1. 37.2 9. 64.8 8. 168.1	DEFC LVDT ELA. 19.4 14.9 13.3 10.3	#2(2. TOT. 22.5 17.4 15.2	ON (inc 0 IN.) PLA. 6.6 15.7 26.6 64.4	LVDT  ELA.  15.2 11.1 9.6 6.9	#3(4.0 TOT. 17.6 12.9	PLA.  4.8 10.6 17.3 38.0	LVDT ELA. 11.5 7.5 6.1 3.7	#4(6.0 TOT. 13.3 8.7 7.0	PLA.  3.4 6.5 10.0 18.2
100 500 1000 5000	ELA. TOT 37.3 43.3 29.3 34.1 26.4 30.0 20.7 23.6	7. PLA.  3 14.5 1 37.2 64.8 3 168.1 3 285.7	DEFO LVDT ELA. 19.4 14.9 13.3 10.3 9.2	#2(2. TOT. 22.5 17.4 15.2 11.7	ON (inc 0 IN.) PLA. 6.6 15.7 26.6 64.4 106.2	LVDT  ELA.  15.2 11.1 9.6 6.9 5.9	#3(4.0 TOT. 17.6 12.9 10.9 7.8 6.8	PLA.  4.8 10.6 17.3 38.0 59.8	LVDT ELA. 11.5 7.5 6.1 3.7 3.0	#4(6.0 TOT. 13.3 8.7 7.0 4.3	PLA.  3.4 6.5 10.0
100 500 1000 5000 10000 30600	LVDT #1(0 ELA. TOT 37.3 43.3 29.3 34.1 26.4 30.0 20.7 23.6 18.7 21.5 15.8 17.6	D.O IN.)  7. PLA.  8 14.5 1 37.2 9 64.8 8 168.1 9 285.7 9 553.3	DEFO LVDT ELA. 19.4 14.9 13.3 10.3 9.2 7.6	#2(2. TOT. 22.5 17.4 15.2 11.7 10.6 8.6	ON (inc 0 IN.) PLA. 6.6 15.7 26.6 64.4 106.2 195.8	LVDT  ELA.  15.2 11.1 9.6 6.9 5.9 4.6	#3(4.0 TOT. 17.6 12.9 10.9 7.8 6.8	PLA.  4.8 10.6 17.3 38.0 59.8 102.0	LVDT  ELA.  11.5 7.5 6.1 3.7 3.0 2.0	#4(6.0 TOT. 13.3 8.7 7.0 4.3 3.4	PLA.  3.4 6.5 10.0 18.2 26.1
100 500 1000 5000 10000 30600 167400	LVDT #1(0 ELA. TOT 37.3 43.3 29.3 34.1 26.4 30.0 20.7 23.6 18.7 21.5 15.8 17.6	7. PLA.  3 14.5 1 37.2 64.8 3 168.1 5 285.7 9 553.3 9 1777.9	DEFO LVDT ELA. 19.4 14.9 13.3 10.3 9.2 7.6 5.8	#2(2. TOT. 22.5 17.4 15.2 11.7 10.6 8.6 6.5	ON (inc 0 IN.) PLA. 6.6 15.7 26.6 64.4 106.2 195.8 582.7	LVDT  ELA.  15.2 11.1 9.6 6.9 5.9 4.6	707. 17.6 12.9 10.9 7.8 6.8 5.2 3.6	PLA.  4.8 10.6 17.3 38.0 59.8 102.0	LVDT ELA.  11.5 7.5 6.1 3.7 3.0 2.0 1.0	#4(6.0 TOT. 13.3 8.7 7.0 4.3 3.4 2.2 1.1	PLA.  3.4 6.5 10.0 18.2 26.1 37.2 68.7
100 500 1000 5000 10000 30600 167400	ELA. TOT 37.3 43.3 29.3 34.1 26.4 30.0 20.7 23.6 18.7 21.5 15.8 17.6 12.2 13.6	7. PLA.  3 14.5 1 37.2 64.8 3 168.1 5 285.7 9 553.3 9 1777.9	DEFO LVDT ELA. 19.4 14.9 13.3 10.3 9.2 7.6 5.8	#2(2. TOT. 22.5 17.4 15.2 11.7 10.6 8.6 6.5	ON (inc 0 IN.) PLA. 6.6 15.7 26.6 64.4 106.2 195.8 582.7	LVDT  ELA.  15.2 11.1 9.6 6.9 5.9 4.6	TOT.  17.6 12.9 10.9 7.8 6.8 5.2 3.6	PLA.  4.8 10.6 17.3 38.0 59.8 102.0 265.8	LVDT ELA.  11.5 7.5 6.1 3.7 3.0 2.0 1.0	#4(6.0 TOT. 13.3 8.7 7.0 4.3 3.4 2.2 1.1	PLA.  3.4 6.5 10.0 18.2 26.1 37.2 68.7
100 500 1000 5000 10000 30600 167400	ELA. TOT  37.3 43.3 29.3 34.1 26.4 30.0 20.7 23.6 18.7 21.5 15.8 17.6 12.2 13.6	D.O IN.)  PLA.  14.5 1.37.2 0.64.8 3.168.1 5.285.7 0.553.3 0.1777.9  HT OF DRY PHALT CON	DEFO LVDT ELA. 19.4 14.9 13.3 10.3 9.2 7.6 5.8 AGGREG	#2(2. TOT. 22.5 17.4 15.2 11.7 10.6 8.6 6.5	ON (inc 0 IN.) PLA. 6.6 15.7 26.6 64.4 106.2 195.8 582.7	LVDT  ELA.  15.2 11.1 9.6 6.9 5.9 4.6	73(4.0 TOT. 17.6 12.9 10.9 7.8 6.8 5.2 3.6	PLA.  4.8 10.6 17.3 38.0 59.8 102.0 265.8	LVDT  ELA.  11.5 7.5 6.1 3.7 3.0 2.0 1.0  T OF B	#4(6.0 TOT. 13.3 8.7 7.0 4.3 3.4 2.2 1.1	PLA.  3.4 6.5 10.0 18.2 26.1 37.2 68.7
100 500 1000 5000 10000 30600 167400 A = TC C = PI	ELA. TOTAL WEIGHT ASI	2.0 IN.)  7. PLA.  8 14.5  1 37.2  9 64.8  9 168.1  9 285.7  9 553.3  9 1777.9  HT OF DRY  PHALT CON	DEFO LVDT ELA. 19.4 14.9 13.3 10.3 9.2 7.6 5.8 AGGREC TENT; AIR;	#2(2. TOT.  22.5 17.4 15.2 11.7 10.6 8.6 6.5	ON (inc 0 IN.) PLA. 6.6 15.7 26.6 64.4 106.2 195.8 582.7	LVDT  ELA.  15.2 11.1 9.6 6.9 5.9 4.6	#3(4.0 TOT. 17.6 12.9 10.9 7.8 6.8 5.2 3.6	PLA.  4.8 10.6 17.3 38.0 59.8 102.0 265.8  WEIGH	LVDT  ELA.  11.5 7.5 6.1 3.7 3.0 2.0 1.0  T OF B INED L C LOAD	#4(6.0 TOT. 13.3 8.7 7.0 4.3 3.4 2.2 1.1 ITUMEN;	PLA.  3.4 6.5 10.0 18.2 26.1 37.2 68.7

SAMPLE	WA	WB	AC	S	L	CL	WBW	WI	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1)	bs)	(lbs)	(gr	) (į	gr)		(%)
31110522	10000	434	4.16	5	0	200	6132	0 103	322.0	2.54	3.0
			DEF	ORMATI	ON (in	ches X	0.0001	)			
CYCLE _	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	37.1 42.4	14.2	19.3	22.1	6.5	15.2	17.3	4.7	11.5	13.1	3.3
500	29.1 33.9	38.4	14.9	17.3	16.3	11.0	12.8	11.0	7.5	8.7	6.8
1000	26.2 29.7	63.1	13.3	15.1	26.0	9.6	10.9	16.9	6.2	7.0	9.8
5000	20.6 23.4	165.7	10.2	11.6	63.7	6.9	7.8	37.6	3.7	4.2	18.1
10300	18.5 21.3	293.3	9.1	10.5	109.3	5.9	6.8	61.6	2.9	3.4	26.8
30000	15.8 17.9	529.1	7.6	8.7	188.0	4.7	5.3	98.3	2.0	2.3	36.1
164500	12.2 14.0	1747.8	5.8	6.6	575.3	3.2	3.6	263.6	1.0	1.1	68.8
SAMPLE	WA	WB	AC	s	L	CL	WBW	w	BA	GMM	VA
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
NUMBER 31110532	(gr)	(gr)	4.16	5		(lbs) 200	(gr 6127		gr) 311.0	2.54	
·			4.16	5	0		6127	.0 10		2.54	
31110532		434	4.16 DEF	5 ORMATI	ON (in	200 ches X	6127 0.0001	.0 10	311.0		3.0
31110532 ————————————————————————————————————	10000 LVDT #1(0	434	4.16 DEF	5 DRMATI #2(2.	ON (in	200 ches X	6127 0.0001	0 10:	311.0	#4(6.0	3.0 0625 I
31110532 ————————————————————————————————————	10000 LVDT #1(0	.0 IN.)	4.16 DEFO	5 DRMATI #2(2.	ON (inc	200 Ches X	6127 0.0001	0 10:	LVDT	#4(6.0	3.0 0625 I
31110532  CYCLE	10000  LVDT #1(0  ELA. TOT	.0 IN.)	4.16 DEFO	5 DRMATI #2(2.	ON (inc	LVDT ELA.	6127 0.0001 #3(4.0	0 10: 0 IN.) PLA.	LVDT ELA.	#4(6.0	3.0 0625 I
31110532 ————————————————————————————————————	10000  LVDT #1(0  ELA. TOT  36.8 41.9	.0 IN.) . PLA. 14.3 36.6	4.16  DEFC  LVDT  ELA.  19.3  14.8	5 DRMATI #2(2. TOT. 21.9 17.1	0 ON (inc	200 ches X LVDT ELA. 15.1 11.0	6127 0.0001 #3(4.0	0 IN.) PLA. 4.8	LVDT  ELA.  11.5 7.5	#4(6.0 TOT.	3.0 9625 I PLA. 3.4 6.5
31110532 ————————————————————————————————————	10000 LVDT #1(0 ELA. TOT 36.8 41.9 28.9 33.4	.0 IN.) . PLA. 14.3 36.6 62.3	4.16  DEFC  LVDT  ELA.  19.3 14.8 13.3	50RMATI #2(2. TOT. 21.9 17.1 15.2	0 ON (inc 0 IN.) PLA. 6.5 15.6 25.8	200 ches X LVDT ELA. 15.1 11.0 9.6	6127 0.0001 #3(4.0	0 10: 0 IN.) PLA. 4.8 10.6 16.8	LVDT  ELA.  11.5 7.5 6.2	#4(6.0 TOT. 13.1 8.7 7.1	3.0 9625 I PLA. 3.4 6.5 9.7
231110532  CYCLE	10000 LVDT #1(0 ELA. TOT 36.8 41.9 28.9 33.4 26.1 29.9	.0 IN.) . PLA14.3 .36.6 .62.3 .165.1	4.16  DEFC  LVDT  ELA.  19.3 14.8 13.3 10.2	50RMATI #2(2. TOT. 21.9 17.1 15.2 11.8	0 ON (inc) 0 IN.) PLA. 6.5 15.6 25.8 63.7	200 Ches X LVDT ELA. 15.1 11.0 9.6 6.9	6127 0.0001 #3(4.0 TOT. 17.2 12.7 11.0 8.0	0 IN.) PLA. 4.8 10.6 16.8 37.7	11.5 7.5 6.2 3.8	#4(6.0 TOT. 13.1 8.7 7.1 4.4	3.0 9625 I PLA. 3.4 6.5 9.7 18.2
231110532  CYCLE  NUMBER  100 500 1000 5000	10000  LVDT #1(0  ELA. TOT  36.8 41.9 28.9 33.4 26.1 29.9 20.5 23.7	.0 IN.) . PLA. 14.3 36.6 62.3 165.1 280.1	4.16  DEFC  LVDT  ELA.  19.3 14.8 13.3 10.2 9.1	50RMATI #2(2. TOT. 21.9 17.1 15.2 11.8 10.4	0 ON (inc 0 IN.) PLA. 6.5 15.6 25.8 63.7 104.9	200 Ches X LVDT ELA. 15.1 11.0 9.6 6.9 5.9	#3(4.0 TOT. 17.2 12.7 11.0 8.0 6.8	0 IN.) PLA. 4.8 10.6 16.8 37.7 59.4	LVDT  ELA.  11.5 7.5 6.2 3.8 3.0	#4(6.0 TOT. 13.1 8.7 7.1 4.4	3.0 PLA. 3.4 6.5 9.7 18.2 26.0
31110532 CYCLE	10000 LVDT #1(0 ELA. TOT 36.8 41.9 28.9 33.4 26.1 29.9 20.5 23.7 18.4 21.0	.0 IN.) . PLA14.3 .36.6 .62.3 .165.1 .280.1 .535.5	4.16  DEFC  LVDT  ELA.  19.3 14.8 13.3 10.2 9.1 7.6	50RMATI #2(2. TOT. 21.9 17.1 15.2 11.8 10.4 9.0	0 ON (inc) PLA. 6.5 15.6 25.8 63.7 104.9 190.9	200 Ches X LVDT ELA. 15.1 11.0 9.6 6.9 5.9 4.6	#3(4.0 TOT. 17.2 12.7 11.0 8.0 6.8 5.5	0 IN.) PLA. 4.8 10.6 16.8 37.7 59.4	LVDT  ELA.  11.5 7.5 6.2 3.8 3.0 2.0	#4(6.0 TOT. 13.1 8.7 7.1 4.4 3.4 2.4	PLA.  3.4 6.5 9.7 18.2 26.0 36.8
231110532  CYCLE	10000  LVDT #1(0  ELA. TOT  36.8 41.9 28.9 33.4 26.1 29.9 20.5 23.7 18.4 21.0 15.6 18.6	.0 IN.) . PLA14.3 .36.6 .62.3 .165.1 .280.1 .535.5 .1734.0	4.16  DEFC  LVDT  ELA.  19.3  14.8  13.3  10.2  9.1  7.6  5.7	50RMATI #2(2. TOT. 21.9 17.1 15.2 11.8 10.4 9.0 6.6	0 ON (inc) 0 IN.) PLA. 6.5 15.6 25.8 63.7 104.9 190.9 572.6	200 Ches X LVDT ELA. 15.1 11.0 9.6 6.9 5.9 4.6	6127 0.0001 #3(4.0 TOT. 17.2 12.7 11.0 8.0 6.8 5.5 3.7	O IN.) PLA.  4.8 10.6 16.8 37.7 59.4 100.0	LVDT  ELA.  11.5 7.5 6.2 3.8 3.0 2.0 1.0	#4(6.0 TOT. 13.1 8.7 7.1 4.4 3.4 2.4 1.1	3.0 PLA. 3.4 6.5 9.7 18.2 26.0 36.8 68.7
231110532  CYCLE	10000  LVDT #1(0  ELA. TOT  36.8 41.9 28.9 33.4 26.1 29.9 20.5 23.7 18.4 21.0 15.6 18.6 12.1 14.0	.0 IN.) . PLA14.3 .36.6 .62.3 .165.1 .280.1 .535.5 .1734.0	4.16  DEFC  LVDT  ELA.  19.3 14.8 13.3 10.2 9.1 7.6 5.7	50RMATI #2(2. TOT. 21.9 17.1 15.2 11.8 10.4 9.0 6.6	0 ON (inc) 0 IN.) PLA. 6.5 15.6 25.8 63.7 104.9 190.9 572.6	200 Ches X LVDT ELA. 15.1 11.0 9.6 6.9 5.9 4.6	#3(4.0 TOT. 17.2 12.7 11.0 8.0 6.8 5.5 3.7	.0 10: D IN.) PLA. 4.8 10.6 16.8 37.7 59.4 100.0 262.7	11.5 7.5 6.2 3.8 3.0 2.0 1.0	#4(6.0 TOT. 13.1 8.7 7.1 4.4 3.4 2.4 1.1	3.0 PLA. 3.4 6.5 9.7 18.2 26.0 36.8 68.7
31110532  CYCLE	10000  LVDT #1(0  ELA. TOT  36.8 41.9 28.9 33.4 26.1 29.9 20.5 23.7 18.4 21.0 15.6 18.6 12.1 14.0	434 .0 IN.) . PLA14.3 .36.6 .62.3 .165.1 .280.1 .535.5 .1734.0 T OF DRY	4.16  DEFC  LVDT  ELA.  19.3 14.8 13.3 10.2 9.1 7.6 5.7  AGGREGIENT;	50RMATI #2(2. TOT. 21.9 17.1 15.2 11.8 10.4 9.0 6.6	0 ON (inc) 0 IN.) PLA. 6.5 15.6 25.8 63.7 104.9 190.9 572.6	200 Ches X LVDT ELA. 15.1 11.0 9.6 6.9 5.9 4.6	#3(4.0 TOT. 17.2 12.7 11.0 6.8 5.5 3.7	0 IN.) PLA. 4.8 10.6 16.8 37.7 59.4 100.0 262.7	11.5 7.5 6.2 3.8 3.0 2.0 1.0	#4(6.0 TOT. 13.1 8.7 7.1 4.4 3.4 2.4 1.1 ITUMEN; OAD;	3.0 PLA. 3.4 6.5 9.7 18.2 26.0 36.8 68.7
231110532  CYCLE	10000  LVDT #1(0  ELA. TOT  36.8 41.9 28.9 33.4 26.1 29.9 20.5 23.7 18.4 21.0 15.6 18.6 12.1 14.0  OTAL WEIGHT	434 .0 IN.) . PLA14.3 .36.6 .62.3 .165.1 .280.1 .535.5 .1734.0 T OF DRY HALT CON'	4.16  DEFC  LVDT  ELA.  19.3 14.8 13.3 10.2 9.1 7.6 5.7  AGGRECTENT; AIR;	50RMATI #2(2. TOT. 21.9 17.1 15.2 11.8 10.4 9.0 6.6	0 ON (inc) 0 IN.) PLA. 6.5 15.6 25.8 63.7 104.9 190.9 572.6	200 Ches X LVDT ELA. 15.1 11.0 9.6 6.9 5.9 4.6	#3(4.0 TOT. 17.2 12.7 11.0 8.0 6.8 5.5 3.7	.0 10: D IN.) PLA. 4.8 10.6 16.8 37.7 59.4 100.0 262.7 WEIGHT	11.5 7.5 6.2 3.8 3.0 2.0 1.0	#4(6.0 TOT. 13.1 8.7 7.1 4.4 3.4 2.4 1.1 ITUMEN; OAD;	3.0 PLA. 3.4 6.5 9.7 18.2 26.0 36.8 68.7

SAMPLE		A.	WB	AC	SI		CL	WBW		WBA	GMM	AV
NUMBER	( g	r)	(gr)	(%)	(11	bs)	(lbs)	(gr	,	(gr)		(%)
31110515	100	00	434	4.16	5(	0	500	6134	. 0	10333.0	2.54	3.16
				DEF	ORMATIO	ON (inc	ches X	0.0001	)			
 CYCLE	LVDT	<b>#</b> 1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	O IN.	) LVDT	#4(6.	0625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	94.3	107.3	50.4	45.4	51.7	21.2	32.0	36.4	13.	9 21.3	24.3	8.7
500	74.1	84.5	130.8	34.9	39.9	51.2	22.9	26.1	30.	6 13.2	15.1	16.1
1000	66.7	77.3	222.6	31.2	36.1	84.5	19.8	22.9	48.	3 10.6	12.3	23.4
5000	52.4	60.7	576.3	23.9	27.7	203.7	13.9	16.1	104.	0 14.0	14.0	-
10000	47.3	54.1	994.7	21.3	24.4	340.7	11.9	13.6	164.	9 13.4	13.4	-
30000	40.1	46.5	1867.6	17.8	20.6	608.2	9.2	10.7	269.	0 12.0	12.0	-
63188	35.8	41.6	3263.5	15.7	18.2	1026.7	7.7	8.9	425.	1 -	-	-
SAMPLE		ıA	WB	AC	Si		CL	WBW		WBA	GMM	AV
NUMBER	(g	r)	(gr)	(%)	(11	bs)	(lbs)	(gr	)	(gr)		(%)
31110525	100	00	434	4.16	5(	0	500	6118	. 0	10294.0	2.54	2.99
31110525	100	00	434			<del></del>	500			10294.0	2.54	2.99
_		#1(0.0		DEF	ORMATI(	<del></del>	ches X		)			
CYCLE _				DEF	ORMATI(	ON (in	ches X	0.0001	) 0 IN.	) LVDT		
CYCLE _	LVDT	<b>#</b> 1(0.0	) IN.)	LVDT	P2(2.	ON (inc	LVDT	0.0001 #3(4.	) 0 IN.	) LVDT	#4(6.	0625 IN
	LVDT	#1(0.0 TOT.	PLA.	LVDT ELA.	#2(2.)	ON (inc	LVDT ELA. 31.9	#3(4. TOT.	O IN.	) LVDT	#4(6.)	0625 IN
CYCLE NUMBER	LVDT ELA. 91.5	#1(0.0 TOT.	PLA.	LVDT ELA. 44.9 34.6	#2(2.0 TOT.	ON (inc	LVDT ELA. 31.9 22.9	#3(4. TOT.	) 0 IN. PLA	) LVDT 1. ELA. 1 21.5 0 13.4	#4(6.) TOT.	0625 IN PLA. 8.3
CYCLE NUMBER	LVDT ELA. 91.5 71.9 64.8	#1(0.0 TOT. 103.3 82.1 73.3	PLA. 46.3 120.3	DEFO LVDT ELA. 44.9 34.6 30.9	#2(2.) TOT. 50.7 39.5 34.9	ON (inc 0 IN.) PLA. 19.8 48.0 81.2	LVDT  ELA.  31.9 22.9 19.8	#3(4. TOT. 36.0 26.2	) O IN. PLA 13. 29. 46.	) LVDT  1 21.5 0 13.4 9 10.8	#4(6.) TOT. 24.3 15.3	PLA.  8.3 15.5
CYCLE NUMBER  100 500 1000	LVDT ELA. 91.5 71.9 64.8 50.6	#1(0.0 TOT. 103.3 82.1 73.3 57.2	PLA. 46.3 120.3 209.8	DEPO LVDT ELA. 44.9 34.6 30.9 23.5	#2(2.0 TOT. 50.7 39.5 34.9 26.6	ON (inc 0 IN.) PLA. 19.8 48.0 81.2	LVDT  ELA.  31.9 22.9 19.8 13.8	#3(4. TOT. 36.0 26.2 22.4	) 0 IN. PLA 13. 29. 46. 103.	) LVDT  1 21.5 0 13.4 9 10.8 0 6.1	#4(6.4) TOT. 24.3 15.3 12.2	PLA.  8.3 15.5 23.1 40.0
	ELA. 91.5 71.9 64.8 50.6 45.9	#1(0.0 TOT. 103.3 82.1 73.3 57.2 53.2	PLA. 46.3 120.3 209.8 554.2	DEPO LVDT ELA. 44.9 34.6 30.9 23.5 21.1	#2(2.0 TOT. 50.7 39.5 34.9 26.6 24.5	ON (inc 0 IN.) PLA. 19.8 48.0 81.2 199.5 325.3	LVDT  ELA.  31.9 22.9 19.8 13.8 11.9	#3(4. TOT. 36.0 26.2 22.4 15.6 13.8	)  O IN.  PLA  13. 29. 46. 103.	) LVDT  1 21.5 0 13.4 9 10.8 0 6.1 9 4.8	#4(6 TOT. 24.3 15.3 12.2 6.9	PLA.  8.3 15.5 23.1 40.0 55.6
100 500 1000 5200	ELA. 91.5 71.9 64.8 50.6 45.9 38.9	#1(0.0 TOT. 103.3 82.1 73.3 57.2 53.2 44.8	PLA. 46.3 120.3 209.8 554.2 930.7	DEFO LVDT ELA. 44.9 34.6 30.9 23.5 21.1 17.6	#2(2.0 TOT. 50.7 39.5 34.9 26.6 24.5 20.3	ON (inc 0 IN.) PLA. 19.8 48.0 81.2 199.5 325.3 574.9	LVDT ELA.  31.9 22.9 19.8 13.8 11.9 9.2	#3(4. TOT. 36.0 26.2 22.4 15.6 13.8 10.7	)  PLA  13. 29. 46. 103. 159. 258.	) LVDT  1 21.5 0 13.4 9 10.8 0 6.1 9 4.8 5 3.0	#4(6.4 TOT. 24.3 15.3 12.2 6.9 5.5	8.3 15.5 23.1 40.0 55.6 72.3
500 1000 5200 10000 30200 98000	ELA. 91.5 71.9 64.8 50.6 45.9 38.9 32.6	#1(0.0 TOT. 103.3 82.1 73.3 57.2 53.2 44.8 37.9	PLA.  46.3 120.3 209.8 554.2 930.7 1729.5	DEFO LVDT ELA. 44.9 34.6 30.9 23.5 21.1 17.6 14.5	#2(2.0 TOT. 50.7 39.5 34.9 26.6 24.5 20.3 16.8	ON (inc 0 IN.) PLA. 19.8 48.0 81.2 199.5 325.3 574.9	LVDT ELA.  31.9 22.9 19.8 13.8 11.9 9.2	0.0001 #3(4. TOT. 36.0 26.2 22.4 15.6 13.8 10.7 8.1	)  O IN.  PLA  13. 29. 46. 103. 159. 258. 515.	) LVDT  1 21.5 0 13.4 9 10.8 0 6.1 9 4.8 5 3.0	#4(6 TOT. 24.3 15.3 12.2 6.9 5.5 3.5 2.0	PLA.  8.3 15.5 23.1 40.0 55.6 72.3 109.1
100 500 1000 5200 10000 30200 98000	LVDT ELA. 91.5 71.9 64.8 50.6 45.9 38.9 32.6	#1(0.0 TOT. 103.3 82.1 73.3 57.2 53.2 44.8 37.9	PLA.  46.3 120.3 209.8 554.2 930.7 1729.5 4039.7	DEPO LVDT ELA. 44.9 34.6 30.9 23.5 21.1 17.6 14.5	#2(2.0 TOT. 50.7 39.5 34.9 26.6 24.5 20.3 16.8	ON (inc 0 IN.) PLA. 19.8 48.0 81.2 199.5 325.3 574.9	LVDT ELA.  31.9 22.9 19.8 13.8 11.9 9.2	#3(4. TOT. 36.0 26.2 22.4 15.6 13.8 10.7 8.1	)  O IN.  PLA  13. 29. 46. 103. 159. 258. 515.	1 21.5 0 13.4 9 10.8 0 6.1 9 4.8 5 3.0 3 1.8	#4(6.1 TOT. 24.3 15.3 12.2 6.9 5.5 3.5 2.0	PLA.  8.3 15.5 23.1 40.0 55.6 72.3 109.1
100 500 1000 5200 10000 30200 98000	ELA.  91.5 71.9 64.8 50.6 45.9 38.9 32.6  DTAL WERCENT	#1(0.0 TOT.  103.3 82.1 73.3 57.2 53.2 44.8 37.9	PLA.  46.3 120.3 209.8 554.2 930.7 1729.5 4039.7 OF DRY	DEPO LVDT ELA. 44.9 34.6 30.9 23.5 21.1 17.6 14.5	#2(2.0 TOT. 50.7 39.5 34.9 26.6 24.5 20.3 16.8	ON (inc 0 IN.) PLA. 19.8 48.0 81.2 199.5 325.3 574.9	LVDT ELA.  31.9 22.9 19.8 13.8 11.9 9.2	#3(4. TOT. 36.0 26.2 22.4 15.6 13.8 10.7 8.1	)  O IN.  PLA  13. 29. 46. 103. 159. 258. 515.  - WEI  - SUS	) LVDT  1 21.5 0 13.4 9 10.8 0 6.1 9 4.8 5 3.0 3 1.8	#4(6.4 TOT. 24.3 15.3 12.2 6.9 5.5 3.5 2.0 ITUMEN OAD;	PLA.  8.3 15.5 23.1 40.0 55.6 72.3 109.1
100 500 1000 5200 10000 30200 98000 A = TC C = PI	ELA.  91.5 71.9 64.8 50.6 45.9 38.9 32.6  OTAL WERCENT	#1(0.0 TOT. 103.3 82.1 73.3 57.2 53.2 44.8 37.9	PLA.  46.3 120.3 209.8 554.2 930.7 1729.5 4039.7 OF DRY LT CONT	DEPO LVDT ELA. 44.9 34.6 30.9 23.5 21.1 17.6 14.5 AGGREC ENT; AIR;	#2(2.0 TOT. 50.7 39.5 34.9 26.6 24.5 20.3 16.8	ON (inc 0 IN.) PLA. 19.8 48.0 81.2 199.5 325.3 574.9	LVDT ELA.  31.9 22.9 19.8 13.8 11.9 9.2	0.0001 #3(4. TOT. 36.0 26.2 22.4 15.6 13.8 10.7 8.1 WB SL CL	)  0 IN.  PLA  13. 29. 46. 103. 159. 258. 515.  - WEI - SUS	) LVDT  1 21.5 0 13.4 9 10.8 0 6.1 9 4.8 5 3.0 3 1.8 GHT OF B	#4(6.) TOT.  24.3 15.3 12.2 6.9 5.5 2.0  ITUMEN OAD;	PLA.  8.3 15.5 23.1 40.0 55.6 72.3 109.1

SAMPLE		∛A	WB	AC	S		CL	WBW		BA.	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	) (	gr)		(2)
31110535	100	000	434	4.16	5	0	500	6136.	0 10	322.0	2.54	2.96
				DEF	ORMATI	ON (in	ches X	0.0001	)			
 CYCLE	LVDī	#1(0.0	O IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	) IN.)	LVDT	#4(6.0	)625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	91.3	105.0	45.7	45.0	51.8	19.6	32.0	36.8	13.0	21.6	24.9	8.2
500	71.7	81.2	118.9	34.6	39.2	47.6	23.0	26.0	28.8	13.5	15.3	15.4
1000	64.6	74.6	209.3	30.9	35.7	81.3	19.9	22.9	47.1	10.9	12.5	23.2
5000	50.8	57.8	539.9	23.7	27.0	195.4	14.0	15.9	101.4	6.2	7.1	39.8
10000	45.8	52.2	923.3	21.2	24.1	323.9	12.0	13.7	159.7	4.8	5.5	55.8
30000	38.8	45.1	1726.6	17.6	20.5	576.4	9.3	10.8	260.1	3.1	3.6	73.3
112800	31.8	36.1	4404.7	14.2	16.1	1383.2	6.8	7.7	555.2	1.7	1.9	114.0
SAMPLE						L	CL	WBW		/BA	GMM	AV
Orac III DID		NA.	WB	AC	9	_						•••
NUMBER		gr)	WB (gr)	(Z)		bs)	(lbs)	(gr		(gr)		(%)
	(1	_			(1				) (		2.54	
NUMBER	(1	gr)	(gr)	4.16	5	bs) 0	(lbs)	(gr)	.0 8	(gr)		(Z)
NUMBER 31110711 	100	3r) 000	(gr)	4.16 DEF	(1 5 ORMATI	ON (inc	(1bs)	5694	0 8	(gr) 9865.0	2.54	6.92
NUMBER 31110711	100	#1(0.0	(gr)	4.16 DEF	5 ORMATI	ON (inc	100 ches X	5694	0 ( ) ) ) IN.)	(gr) 9865.0	2.54	6.9
NUMBER 31110711	LVDT ELA.	#1(0.0	(gr) 434 D IN.)	4.16 DEFC	5 ORMATI	0 ON (inc	(1bs)  100  ches X  LVDT  ELA.	5694.	0 ( ) ) ) IN.)	(gr) 9865.0 LVDT	2.54 #4(6.0	6.93 0625 II
NUMBER 31110711	100 LVDT ELA. 31.0	#1(0.(	(gr) 434 0 IN.) PLA.	(Z) 4.16 DEFC LVDT ELA. 11.3	(1 5 DRMATI #2(2. TOT.	ON (inc	(lbs)  100  ches X  LVDT  ELA.  8.0	5694 5694 0.0001) #3(4.0	0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0	(gr) 0865.0 LVDT ELA.	2.54 #4(6.0	6.9: 0625 II
NUMBER 31110711  CYCLE NUMBER 100	100 LVDT ELA. 31.0 24.4	#1(0.0 TOT.	(gr) 434 0 IN.) PLA. 26.2	(Z) 4.16 DEFC LVDT ELA. 11.3 8.6	(1 5 0RMATI #2(2. TOT.	ON (inc 0 IN.) PLA. 8.3 19.6	(1bs)  100  ches X (100)  LVDT  ELA.  8.0  5.6	5694 0.0001 #3(4.0	0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0	(gr) 0885.0 LVDT ELA. 5.4	2.54 #4(6.0 TOT.	(Z) 6.92 0625 II PLA. 3.5
NUMBER 31110711  CYCLE NUMBER  100 500	100 LVDT ELA. 31.0 24.4 22.0	#1(0.0 TOT. 35.3 28.3 25.0	(gr) 434 0 IN.) PLA. 26.2 67.0	(Z) 4.16 DEFC LVDT ELA. 11.3 8.6 7.6	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7	ON (inc 0 IN.) PLA. 8.3 19.6	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8	(gr) 5694 0.0001; #3(4.0	) (0 (10 (10 (10 (10 (10 (10 (10 (10 (10	(gr) 0865.0 LVDT ELA. 5.4 3.2 2.5	#4(6.0 TOT. 6.2 3.7	6.93 6.93 PLA. 3.5 6.1
NUMBER 31110711	100 LVDT ELA. 31.0 24.4 22.0 17.2	#1(0.0 TOT. 35.3 28.3 25.0	(gr) 434 0 IN.) PLA. 26.2 67.0 115.0	(Z) 4.16 DEF( LVDT  ELA. 11.3 8.6 7.6 5.8	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7 6.7	ON (inc O IN.)  PLA.  8.3 19.6 32.5 78.3	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8  3.3	(gr) 5694 0.0001) #3(4.0 TOT. 9.1 6.5 5.4	0 IN.) PLA. 5.5 11.6 18.3 38.7	(8r) 0865.0 LVDT ELA. 5.4 3.2 2.5 9.8	#4(6.0 TOT. 6.2 3.7 2.9	(Z) 6.93 0625 II PLA. 3.5 6.1 8.7
TOO 5000 10000 10000	LVDT ELA. 31.0 24.4 22.0 17.2 15.5	#1(0.0 TOT. 35.3 28.3 25.0 19.9	(gr) 434 2 IN.) PLA. 26.2 67.0 115.0 300.3	(Z) 4.16  DEF( LVDT  ELA.  11.3 8.6 7.6 5.8 5.2	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7 6.7 5.8	ON (inc O IN.) PLA. 8.3 19.6 32.5 78.3 128.1	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8  3.3  2.7	(gr) 5694 0.0001) #3(4.0 TOT.  9.1 6.5 5.4 3.8 3.1	0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0	2855.0 LVDT ELA. 5.4 3.2 2.5 9.8 8.4	#4(6.0 TOT. 6.2 3.7 2.9 16.3	(Z) 6.925 II PLA. 3.5 6.1 8.7
NUMBER 31110711	100 LVDT ELA. 31.0 24.4 22.0 17.2 15.5 12.9	#1(0.0 TOT. 35.3 28.3 25.0 19.9 17.6	(gr)  434  2 IN.)  PLA.  26.2 67.0 115.0 300.3 509.3	LVDT  ELA.  11.3 8.6 7.6 5.8 5.2 4.2	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7 6.7 5.8 4.8	ON (inc 0 IN.) PLA. 8.3 19.6 32.5 78.3 128.1 249.7	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8  3.3  2.7  2.0	#3(4.0 TOT. 9.1 6.5 5.4 3.8 3.1 2.3	0 S 0 IN.) PLA. 5.5 11.6 18.3 38.7 59.5	2855.0 LVDT ELA. 5.4 3.2 2.5 9.8 8.4 5.5	#4(6.0 TOT. 6.2 3.7 2.9 16.3 13.7	(Z) 6.92 0625 II PLA. 3.5 6.1 8.7
NUMBER 31110711	100 LVDT ELA. 31.0 24.4 22.0 17.2 15.5 12.9 10.2	#1(0.0 TOT. 35.3 28.3 25.0 19.9 17.6 14.8 11.7 3	(gr)  434  2 IN.)  PLA.  26.2 67.0 115.0 300.3 509.3	LVDT  LVDT  ELA.  11.3 8.6 7.6 5.8 5.2 4.2 3.2	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7 6.7 5.8 4.8 3.7	ON (inc.) PLA. 8.3 19.6 32.5 78.3 128.1 249.7 694.4	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8  3.3  2.7  2.0	5694 5694 0.0001 #3(4.0 TOT. 9.1 6.5 5.4 3.8 3.1 2.3 1.5	0 IN.) PLA. 5.5 11.6 18.3 38.7 59.5 102.6 240.1	2855.0 LVDT ELA. 5.4 3.2 2.5 9.8 8.4 5.5	#4(6.0 TOT. 6.2 3.7 2.9 16.3 13.7 9.7 4.7	(Z) 6.925 II PLA. 3.5 6.1 8.7
TOUMBER  31110711	100 LVDT ELA. 31.0 24.4 22.0 17.2 15.5 12.9 10.2	#1(0.0 TOT. 35.3 28.3 25.0 19.9 17.6 14.8 11.7 3	(gr) 434 2 IN.) PLA. 26.2 67.0 115.0 300.3 509.3 1059.3	LVDT  ELA.  11.3 8.6 7.6 5.8 5.2 4.2 3.2	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7 6.7 5.8 4.8 3.7	ON (inc.) PLA. 8.3 19.6 32.5 78.3 128.1 249.7 694.4	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8  3.3  2.7  2.0	9.1 6.5 5.4 3.8 3.1 2.3 1.5	0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0 (0	ELA.  5.4 3.2 2.5 9.8 8.4 5.5 2.6	#4(6.0 TOT. 6.2 3.7 2.9 16.3 13.7 9.7 4.7	(Z) 6.93 0625 II PLA. 3.5 6.1 8.7
NUMBER  31110711	100 LVDT ELA. 31.0 24.4 22.0 17.2 15.5 12.9 10.2	#1(0.0 TOT. 35.3 28.3 25.0 19.9 17.6 14.8 1 11.7 3	(gr) 434 2 IN.) PLA. 26.2 67.0 115.0 300.3 509.3 1059.3 3201.2	LVDT  ELA.  11.3 8.6 7.6 5.8 5.2 4.2 3.2  AGGRECIENT;	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7 6.7 5.8 4.8 3.7	ON (inc.) PLA. 8.3 19.6 32.5 78.3 128.1 249.7 694.4	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8  3.3  2.7  2.0	#3(4.0 TOT. 9.1 6.5 5.4 3.8 3.1 2.3 1.5	0 (10.1) PLA. 5.5 11.6 18.3 38.7 59.5 102.6 240.1	2855.0 LVDT ELA. 5.4 3.2 2.5 9.8 8.4 5.5 2.6	#4(6.0 TOT. 6.2 3.7 2.9 16.3 13.7 9.7 4.7	(Z) 6.93 0625 II PLA. 3.5 6.1 8.7
NUMBER 31110711  CYCLE	100 LVDT ELA. 31.0 24.4 22.0 17.2 15.5 12.9 10.2 OTAL VERCENTE	#1(0.0 #1(0.0 TOT. 35.3 28.3 25.0 19.9 17.6 14.8 : 11.7 :	(gr) 434 2 IN.) PLA. 26.2 67.0 115.0 300.3 509.3 1059.3 3201.2 OF DRY	LVDT  ELA.  11.3 8.6 7.6 5.8 5.2 4.2 3.2  AGGRECIENT; AIR;	(1 5 DRMATI #2(2. TOT. 12.8 10.0 8.7 6.7 5.8 4.8 3.7	ON (inc.) PLA. 8.3 19.6 32.5 78.3 128.1 249.7 694.4	(1bs)  100  ches X  LVDT  ELA.  8.0  5.6  4.8  3.3  2.7  2.0	#3(4.0 TOT.  9.1 6.5 5.4 3.8 3.1 2.3 1.5	0 (10.1) PLA. 5.5 11.6 18.3 38.7 59.5 102.6 240.1  WEIGH	2855.0 LVDT ELA. 5.4 3.2 2.5 9.8 8.4 5.5 2.6	#4(6.0 TOT. 6.2 3.7 2.9 16.3 13.7 9.7 4.7	(Z) 6.9 0625 II PLA. 3.5 6.1 8.7

Sample Number	WA (gr		WB (gr)	AC (Z)		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
31110721	1000	0	434	4.16	5	0	100	5705.	.0 9	886.0	2.54	6.9
				DEF	ORMATI	ON (in	ches X	0.0001	)			
	LVDT #	1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
135	29.8 3	4.1	31.6	10.7	12.3	9.8	7.5	8.6	6.4	4.9	5.6	3.9
500	24.5 2	7.9	68.5	8.6	9.8	20.0	5.6	6.4	11.9	3.2	3.7	6.2
1150	21.6 2	4.4	129.2	7.5	8.4	36.2	4.6	5.2	20.1	2.4	2.7	9.4
5000	17.3 1	9.8	305.8	5.8	6.6	79.5	3.3	3.7	39.2	1.4	1.5	14.3
10000	15.6 1	7.9	515.7	5.2	5.9	129.4	2.8	3.1	60.0	1.0	1.1	19.1
32000	13.1 1	5.0	994.1	4.2	4.8	234.7	2.0	2.3	97.1	0.6	0.7	23.7
162650	10.3 1	2.0	3212.5	3.2	3.7	695.6	1.3	1.5	240.5	0.2	0.3	36.6
SAMPLE	WA	<u></u>	WB	AC	s	L	CL	WBW		/BA	GMM	AV
NUMBER	(gr		(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
		•	\ <b>6</b> -7		•	•	`,		· ·			
31110731			434	4.16		0	100	5708		896.0	2.54	7.0
31110731				4.16	5	0		5708	. 0 9		2.54	
	1000	0		4.16 DEF	5 ORMATI	0	100	5708 0.0001	. 0 9	896.0	<b>2.54</b>	7.0
CYCLE _	1000	0	434 0 IN.)	4.16 DEF	50RMATI	ON (inc	100	5708 0.0001 #3(4.0	.0 9 ) D IN.)	896.0	<b>#</b> 4(6.0	7.0 0625 I
CYCLE _	1000	0 1(0.	434 0 IN.)	4.16 DEFO	50RMATI	ON (inc	100 ches X (	5708 0.0001 #3(4.0	.0 9 ) D IN.)	LVDT	#4(6.0	7.0 0625 I
CYCLE _	1000 LVDT # ELA. 29.3 3 24.7 2	0 1(0. TOT.	434 0 IN.) PLA. 36.4 68.5	4.16 DEFO LVDT ELA. 10.5	5 DRMATI #2(2.	ON (inc) PLA. 11.2 19.9	LVDT ELA. 7.2 5.6	5708 0.0001 #3(4.0 TOT. 8.3 6.4	O IN.)	LVDT	#4(6.0 TOT.	7.0 0625 I
CYCLE NUMBER	1000 LVDT # ELA. 29.3 3	0 1(0. TOT.	434 0 IN.) PLA. 36.4 68.5 119.5	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7	#2(2. TOT.	ON (inc O IN.) PLA.	LVDT ELA. 7.2 5.6	5708 0.0001 #3(4.0 TOT.	0 IN.) PLA. 7.2 11.8 18.8	LVDT ELA. 4.7 3.2 2.5	#4(6.0 TOT.	7.0 0625 I PLA. 4.3 6.1
CYCLE NUMBER 160 500	1000 LVDT # ELA. 29.3 3 24.7 2	0 1(0. TOT. 3.7 8.1	434 0 IN.) PLA. 36.4 68.5 119.5	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7	\$2(2. TOT. 12.0 9.8 8.8	ON (inc) PLA. 11.2 19.9	100 ches X (  LVDT  ELA.  7.2  5.6  4.8	5708 0.0001 #3(4.0 TOT. 8.3 6.4	) D IN.) PLA. 7.2 11.8	LVDT ELA. 4.7 3.2 2.5	#4(6.0 TOT. 5.4 3.6	7.0 0625 I PLA. 4.3 6.1 8.9
160 500	1000 LVDT # ELA. 29.3 3 24.7 2 22.3 2 17.5 1	TOT. 3.7 8.1 5.4 9.7	434 0 IN.) PLA. 36.4 68.5 119.5	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7 5.8	#2(2. TOT. 12.0 9.8 8.8 6.6	ON (inc) O IN.) PLA. 11.2 19.9 33.5 80.1	100 LVDT ELA. 7.2 5.6 4.8 3.2	5708 0.0001 #3(4.0 TOT. 8.3 6.4 5.5 3.7 3.1	7.2 11.8 18.8 39.3 63.2	LVDT  ELA.  4.7 3.2 2.5 1.3	#4(6.0 TOT. 5.4 3.6 2.9 1.5	7.0 0625 I PLA. 4.3 6.1 8.9
160 500 1000 5100	1000 LVDT # ELA. 29.3 3 24.7 2 22.3 2 17.5 1 15.6 1	TOT	434 0 IN.) PLA. 36.4 68.5 119.5 310.4	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7 5.8 5.1	#2(2. TOT. 12.0 9.8 8.8 6.6 5.8	ON (incomplete of the complete	100 LVDT ELA. 7.2 5.6 4.8 3.2 2.7	5708 0.0001 #3(4.0 TOT. 8.3 6.4 5.5 3.7 3.1	7.2 11.8 18.8 39.3	LVDT  ELA.  4.7 3.2 2.5 1.3	#4(6.0 TOT. 5.4 3.6 2.9 1.5	7.0 0625 I PLA. 4.3 6.1 8.9 14.2
160 500 1000 5100	1000 LVDT # ELA. 29.3 3 24.7 2 22.3 2 17.5 1 15.6 1 14.2 1	TOT. 3.7 8.1 5.4 9.7 7.7 6.0	434 0 IN.) PLA. 36.4 68.5 119.5 310.4 556.8 772.2	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7 5.8 5.1 4.6	#2(2. TOT. 12.0 9.8 8.8 6.6 5.8	ON (inc O IN.) PLA. 11.2 19.9 33.5 80.1 138.1 185.4	100 LVDT ELA. 7.2 5.6 4.8 3.2 2.7 2.3	#3(4.0 TOT. 8.3 6.4 5.5 3.7 3.1 2.6	7.2 11.8 18.8 39.3 63.2	LVDT ELA. 4.7 3.2 2.5 1.3 1.0	#4(6.0 TOT. 5.4 3.6 2.9 1.5 1.1	7.0
160 500 1000 5100 11000 20500 169500	1000 LVDT # ELA. 29.3 3 24.7 2 22.3 2 17.5 1 15.6 1 14.2 1 10.3 1	TOT. 3.7 8.1 5.4 9.7 7.7 6.0 2.3	434 0 IN.) PLA. 36.4 68.5 119.5 310.4 556.8 772.2 3342.5	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7 5.8 5.1 4.6 3.2	#2(2. TOT. 12.0 9.8 8.8 6.6 5.8 5.2 3.8	ON (incomplete of the complete	100 LVDT ELA. 7.2 5.6 4.8 3.2 2.7 2.3	5708 0.0001 #3(4.0 TOT. 8.3 6.4 5.5 3.7 3.1 2.6 1.6	7.2 11.8 18.8 39.3 63.2 79.9 245.4	LVDT  ELA.  4.7 3.2 2.5 1.3 1.0 0.7 0.2	#4(6.0 TOT. 5.4 3.6 2.9 1.5 1.1 0.8 0.3	7.0 0625 I PLA. 4.3 6.1 8.9 14.2 19.6 21.6 36.4
160 500 1000 5100 11000 20500 169500	1000 LVDT # ELA. 29.3 3 24.7 2 22.3 2 17.5 1 15.6 1 10.3 1 OTAL WE ERCENT	0 TOT. 3.7 8.1 15.4 9.7 7.7 6.0 2.3	434  0 IN.)  PLA.  36.4 68.5 119.5 310.4 556.8 772.2 3342.5 C OF DRY	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7 5.8 5.1 4.6 3.2  AGGRECTENT;	#2(2. TOT. 12.0 9.8 8.8 6.6 5.8 5.2 3.8	ON (incomplete of the complete	100 LVDT ELA. 7.2 5.6 4.8 3.2 2.7 2.3	#3(4.0 TOT. 8.3 6.4 5.5 3.7 3.1 2.6 1.6	7.2 11.8 18.8 39.3 63.2 79.9 245.4	LVDT  ELA.  4.7 3.2 2.5 1.3 1.0 0.7 0.2  T OF B.	#4(6.0 TOT. 5.4 3.6 2.9 1.5 1.1 0.8 0.3	7.0 0625 I PLA. 4.3 6.1 8.9 14.2 19.6 21.6 36.4
160 500 1000 5100 11000 20500 169500 A = TC C = PI	1000  LVDT #  ELA.  29.3 3 24.7 2 22.3 2 17.5 1 15.6 1 14.2 1 10.3 1  OTAL WE ERCENT EIGHT O	71(0. TOT. 33.7 88.1 55.4 99.7 77.7 60.0 22.3	434 0 IN.) PLA. 36.4 68.5 119.5 310.4 556.8 772.2 3342.5	4.16  DEFC  LVDT  ELA.  10.5 8.6 7.7 5.8 5.1 4.6 3.2  AGGRECIENT; AIR;	#2(2. TOT. 12.0 9.8 8.8 6.6 5.8 5.2 3.8	ON (incomplete of the complete	100 LVDT ELA. 7.2 5.6 4.8 3.2 2.7 2.3	#3(4.0 TOT. 8.3 6.4 5.5 3.7 3.1 2.6 1.6	7.2 11.8 18.8 39.3 63.2 79.9 245.4 - WEIGH	LVDT  ELA.  4.7 3.2 2.5 1.3 1.0 0.7 0.2	#4(6.0 TOT. 5.4 3.6 2.9 1.5 1.1 0.8 0.3	7.0 0625 I PLA. 4.3 6.1 8.9 14.2 19.6 21.6 36.4

SAMPLE	WA	WB	AC		L	CL	WBW	_	BA	GMM	AV
number	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(1)
31110712	10000	434	4.16	5	0	200	5709	.0 9	896.0	2.54	6.99
			DEF	ORMATI	ON (in	ches X (	0.0001	)			
CYCLE	LVDT #1	(0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	O IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. I	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	62.8 71	.4 59.7	21.9	24.9	18.1	14.8	16.8	11.4	9.5	10.7	6.8
500	49.3 56	.6 152.5	16.7	19.2	42.8	10.3	11.8	24.0	5.5	6.3	11.7
1000	44.4 50	.9 259.5	14.8	17.0	70.3	8.7	10.0	37.4	4.3	4.9	16.4
5200	34.7 39	.6 700.1	11.2	12.8	174.5	5.8	6.7	80.3	2.2	2.5	26.3
10400	31.3 36	.1 1214.2	9.9	11.4	291.8	4.9	5.7	125.7	1.6	1.8	35.5
23500	27.7 31	.6 1906.2	8.6	9.8	438.8	4.0	4.5	173.8	1.1	1.2	40.4
SAMPLE	WA	WB	AC	s	L	CIL	WBW	<u> </u>	BA	GMM	
NUMBER	(gr)		(2)		bs)	(lbs)	(gr		gr)		(%)
31110722	10000	434	4.16	5	0	200	5689	.0 9	853.0	2.54	6.8
			DEF	ORMATI	ON (in	ches X	0.0001	)	*****		
- CYCLE	LVDT #1	(0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. T	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	61.6 70	.2 57.8	21.7	24.8	17.8	14.7	16.8	11.3	9.5	10.8	6.7
500	48.4 56	.0 147.9	16.5	19.2	42.0	10.2	11.9	23.7	5.5	6.4	11.6
1000	43.5 49	.7 257.2	14.7	16.8	70.5	8.7	9.9	37.7	4.3	4.9	16.7
5500	33.8 38	.5 699.5	11.0	12.5	175.9	5.8	6.6	81.0	2.2	2.5	26.6
10400	30.7 35	.7 1148.3	9.9	11.5	279.3	4.9	5.7	121.1	1.6	1.9	34.7
27800	26.5 31	.5 2002.5	8.3	9.9	462.5	3.8	4.5	181.5	1.0	1.2	40.9
52500	24.1 27	.9 3361.8	7.4	8.6	750.6	3.2	3.7	274.7	0.7	0.8	51.8
A - T/		GHT OF DRY		GATES;			WB ·	- WEIGH	T OF B	I TUMEN ;	
	ERCENT A	SPHALT CON	•				SL	SUSTA	INED L	DAD;	
C = P1											
C = P1 BA = W1		SAMPLE IN	·-				CL :	- CYCLI	C LOAD	;	
C = P1 BA = W1		SAMPLE IN	·-	;				PERCE		•	

Sample Number	WA (gr)	WB (gr)	AC (Z)		L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (%)
31110732	2 10000	434	4.16	5	50	200	5716	.0 9	908.0	2.54	6.98
		**********	DEF	ORMATI	ON (in	ches X (	0.0001	)		******	
-	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
CYCLE _							_				
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	62.8 72.6	59.3	21.9	25.3	18.0	14.8	17.1	11.4	9.5	10.9	6.8
500	49.4 56.4	155.5	16.7	19.1	43.7	10.3	11.8	24.5	5.5	6.3	11.9
1000	44.5 50.6	267.7	14.8	16.9	72.6	8.7	9.9	38.6	4.3	4.9	17.0
5750	34.2 40.9	756.7		13.1	187.6		6.8	85.5	2.1		27.5
10900	31.1 35.1			11.1	298.5		5.5	128.0	1.6		35.8
26800	27.2 30.7			9.5	472.6	3.8		184.7	1.0	1.1	41.4
62100	23.9 27.3		7.3	8.3	853.4	3.1	3.5	303.7	0.6	0.7	53.6
SAMPLE	WA	WB	AC	s	iL	CL	WBW	W	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
31110715	10000	434	4.16	5	i0	500	5708	.0 9	876.0	2.54	6.75
			DEF	ORMATI	ON (in	ches X	0.0001	)			
- CYCLE	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
110	149.5 168.	7 194.9	48.0	54.2	54.3	27.7	31.2	29.2	14.6	16.5	14.3
500	119.1 137.7			42.8	121.3		22.2	57.3	8.2		22.3
1000	107.4 125.0			38.3	200.9		18.9	89.1	6.2		30.6
5500	83.2 94.8							189.2			
	75.9 87.1										
12450	73.6 83.2	2 3777.9	21.3	24.1	823.0	8.4	9.4	280.7	1.8	2.1	53.1
	OTAL WEIGHT			GATES;				- WEIGH			
	PERCENT ASPE		•					- SUSTA		-	
	EIGHT OF SA							- CYCLI		-	
				_			A 77	_ DEDCE	77 A TT	TIOTEC	
	veight of sa Maximum theo						AV	- PERCE	NT AIR	VOIDS;	

SAMPLE NUMBER	W		WB	AC		L	CL (lbs)	WBW		/BA	GMM	AV
NUMBER	(8	r)	(gr)	(%)	(1	bs)	(LDS)	(gr	, (	gr)		(%)
31110725	100	00	434	4.16	5	0	500	5716	.0 9	903.0	2.54	6.92
				DEF	ORMATI	ON (inc	ches X	0.0001	)			
CYCLE _	LVDT	<b>#</b> 1(0.0	) IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
110	153.4	178.3	205.3	48.3	56.2	56.2	27.6	32.1	29.9	14.4	16.7	14.5
580	119.6	136.9	552.4	36.4	41.6	138.8	18.5	21.1	64.0	7.6	8.7	23.9
1000	110.2	127.7	868.0	33.1	38.4	212.0	16.1	18.7	93.0	6.0	7.0	31.4
5500	85.3	99.1	2349.7	24.6	28.6	524.1	10.3	12.0	193.1	18.4	21.3	-
10000	78.0	90.7	3887.3	22.2	25.8	839.4	8.8	10.2	289.1	18.4	20.4	-
13800	74.3	85.5	4346.3	21.0	24.1	922.1	8.0	9.2	305.8	17.5	18.5	-
							CL	WBW	<u> </u>	<i>Т</i> ВА	GMM	AV
SAMPLE	W	A	WB	AC	3	L	<b>U</b>					
SAMPLE NUMBER		A r)	WB (gr)	AC (I)			(lbs)	(gr	) (	gr)		(%)
									•	gr)		
NUMBER	(g	r)			(1					(gr) (897.0	2.54	(1)
	(g	r)	(gr)	4.16	5	bs)	(lbs)	(gr)	.0 8		2.54	(1)
NUMBER 31110735	100	00	(gr)	4.16 DEF	5 ORMATI	ON (inc	(1bs) 500	5710 0.0001	.0 (	9897.0		6.9
NUMBER 31110735	100	00	(gr) 434	4.16 DEFC	5 DRMATI	ON (inc	(1bs) 500 ches X (	5710 0.0001	.0 E	9897.0	#4(6.0	6.9
NUMBER 31110735	100  LVDT  ELA.	r) 00	(gr) 434	4.16 DEFC	50RMATI #2(2.	ON (inc	(1bs) 500 ches X (	5710 0.0001	.0 E	LVDT	#4(6.0	6.96 6.25 II
NUMBER 31110735  CYCLE NUMBER 110	100  LVDT  ELA.	7) 00 707.	(gr) 434 (IN.)	(Z) 4.16 DEFC LVDT ELA. 48.4	50RMATI #2(2.	0 ON (inc 0 IN.) PLA.	(1bs) 500 ches X ( LVDT ELA. 27.5	5710 0.0001 #3(4.0	) ) ) ) PLA.	LVDT ELA.	#4(6.0	6.9625 II
NUMBER 31110735  CYCLE NUMBER  110 530	LVDT ELA. 154.5 122.1	7) 000 707. 176.9	(gr) 434 ) IN.) PLA. 210.0	(I) 4.16 DEPC LVDT ELA. 48.4 36.9	(1 50RMATI #2(2. TOT. 55.4 42.7	ON (inc 0 IN.) PLA. 57.1 133.5	(1bs) 500 ches X ( LVDT ELA. 27.5 18.8	5710 0.0001 #3(4.0 TOT.	0 IN.) PLA. 30.3	LVDT  ELA.  14.3  7.8	#4(6.0 TOT.	6.96 625 II PLA.
31110735  CYCLE _ NUMBER  110 530 1000	LVDT	TOT.  176.9 141.1 128.0	(gr) 434 (IN.) PLA. 210.0 532.3	4.16 DEFC LVDT ELA. 48.4 36.9 33.1	(1 5 DRMATI #2(2. TOT. 55.4 42.7 38.2	ON (inc O IN.) PLA. 57.1 133.5 212.9	(1bs) 500 ches X ( LVDT ELA. 27.5 18.8 16.0	5710 0.0001 #3(4.0 TOT. 31.5 21.8 18.5	0 IN.) PLA. 30.3 61.9 93.0	LVDT  ELA.  14.3  7.8 6.0	#4(6.0 TOT. 16.4 9.0	6.9625 III PLA. 14.7 23.4
NUMBER 31110735	LVDT ELA.  154.5 122.1 111.0 86.2	TOT.  176.9 141.1 128.0 101.3	(gr) 434 ) IN.) PLA. 210.0 532.3 877.6	4.16 DEFC LVDT ELA. 48.4 36.9 33.1 24.7	(1 50RMATI #2(2. TOT. 55.4 42.7 38.2 29.1	ON (inc O IN.) PLA. 57.1 133.5 212.9 538.7	(1bs) 500  LVDT  ELA. 27.5 18.8 16.0 10.3	5710 0.0001 #3(4.0 TOT. 31.5 21.8 18.5 12.1	0 IN.) PLA. 30.3 61.9 93.0 197.9	LVDT  ELA.  14.3  7.8 6.0 2.7	#4(6.0 TOT. 16.4 9.0 6.9	6.9625 III PLA. 14.7 23.4 31.2
NUMBER 31110735  CYCLE NUMBER  110 530 1000 5400 6820	LVDT ELA.  154.5 122.1 111.0 86.2 83.2	TOT.  176.9 141.1 128.0 101.3 95.9	(gr) 434 1 IN.) PLA. 210.0 532.3 877.6 2429.5	4.16  DEPC  LVDT  ELA.  48.4 36.9 33.1 24.7 23.7	(1 5 DRMATI #2(2. TOT. 55.4 42.7 38.2 29.1 27.4	ON (inc O IN.) PLA. 57.1 133.5 212.9 538.7 661.3	(1bs) 500 ches X ( LVDT ELA. 27.5 18.8 16.0 10.3 9.7	5710 0.0001 #3(4.0 TOT. 31.5 21.8 18.5 12.1 11.2	0 IN.) PLA. 30.3 61.9 93.0 197.9 236.7	LVDT  ELA.  14.3 7.8 6.0 2.7 2.4	#4(6.0 TOT. 16.4 9.0 6.9 3.2	(Z) 6.96 625 II PLA. 14.7 23.4 31.2 45.5 51.2
NUMBER 31110735  CYCLE NUMBER  110 530 1000 5400 6820	LVDT ELA.  154.5 122.1 111.0 86.2 83.2 80.1	TOT.  176.9 141.1 128.0 101.3 95.9 92.7	434 210.0 532.3 877.6 2429.5 3020.2 3333.6	4.16  DEFC  LVDT  ELA.  48.4 36.9 33.1 24.7 23.7 22.7	55.4 42.7 38.2 29.1 27.4 26.3	ON (inc O IN.) PLA. 57.1 133.5 212.9 538.7 661.3 719.8	27.5 18.8 16.0 10.3 9.7	5710 0.0001 #3(4.0 TOT. 31.5 21.8 18.5 12.1 11.2	O IN.)  PLA.  30.3 61.9 93.0 197.9 236.7 250.3	LVDT  ELA.  14.3 7.8 6.0 2.7 2.4 2.1	#4(6.0 TOT. 16.4 9.0 6.9 3.2 2.8	6.9625 III PLA. 14.7 23.4 31.2 45.5 51.2 50.6
NUMBER 31110735  CYCLE NUMBER  110 530 1000 5400 6820 8800 10800	LVDT ELA.  154.5 122.1 111.0 86.2 83.2 80.1 77.7	TOT.  176.9 141.1 128.0 101.3 95.9 92.7 89.3	(8r) 434 210.0 532.3 877.6 2429.5 3020.2 3333.6 4119.7 OF DRY	4.16  DEPC  LVDT  ELA.  48.4 36.9 33.1 24.7 23.7 21.9  AGGGREC	(1 5 DRMATI #2(2. TOT. 55.4 42.7 38.2 29.1 27.4 26.3 25.2	ON (inc O IN.) PLA. 57.1 133.5 212.9 538.7 661.3 719.8 879.7	27.5 18.8 16.0 10.3 9.7	5710 0.0001 #3(4.0 TOT. 31.5 21.8 18.5 12.1 11.2 10.5 9.8	0 IN.) PLA. 30.3 61.9 93.0 197.9 236.7 250.3 298.7	LVDT  ELA.  14.3 7.8 6.0 2.7 2.4 2.1 1.9	#4(6.0 TOT. 16.4 9.0 6.9 3.2 2.8 2.4 2.2	6.98  6.98  PLA.  14.7  23.4  31.2  45.5  51.2  50.6  57.0
NUMBER 31110735  CYCLE NUMBER  110 530 1000 5400 6820 8800 10800  A = Tr	LVDT ELA.  154.5 122.1 111.0 86.2 83.2 80.1 77.7  OTAL WERCENT	TOT.  176.9 141.1 128.0 101.3 95.9 92.7 89.3 EIGHT ASPHA	434 210.0 532.3 877.6 2429.5 3020.2 3333.6 4119.7 OF DRY	4.16 DEFC LVDT ELA. 48.4 36.9 33.1 24.7 23.7 22.7 21.9 AGGGRECENT;	(1 5 DRMATI #2(2. TOT. 55.4 42.7 38.2 29.1 27.4 26.3 25.2	ON (inc O IN.) PLA. 57.1 133.5 212.9 538.7 661.3 719.8 879.7	27.5 18.8 16.0 10.3 9.7	5710 0.0001 #3(4.6 TOT. 31.5 21.8 18.5 12.1 11.2 10.5 9.8	0 IN.) PLA. 30.3 61.9 93.0 197.9 236.7 250.3 298.7	LVDT  ELA.  14.3 7.8 6.0 2.7 2.4 2.1 1.9  ET OF B	#4(6.0 TOT. 16.4 9.0 6.9 3.2 2.8 2.4 2.2	6.98  6.98  PLA.  14.7  23.4  31.2  45.5  51.2  50.6  57.0
NUMBER  31110735  CYCLE NUMBER  110 530 1000 5400 6820 8800 10800  A = TO C = PO BA = W	LVDT ELA.  154.5 122.1 111.0 86.2 80.1 77.7  OTAL WERCENT EIGHT	TOT.  176.9 141.1 128.0 101.3 95.9 92.7 89.3 EIGHT ASPHA	(gr)  434  210.0 532.3 877.6 2429.5 3020.2 3333.6 4119.7  OF DRY LIT CONT	4.16 DEF( LVDT  ELA.  48.4 36.9 33.1 24.7 23.7 21.9  AGGRECENT; AIR;	(1 50RMATI #2(2. TOT. 55.4 42.7 38.2 29.1 27.4 26.3 25.2	ON (inc O IN.) PLA. 57.1 133.5 212.9 538.7 661.3 719.8 879.7	27.5 18.8 16.0 10.3 9.7	5710 0.0001 #3(4.0 TOT. 31.5 21.8 18.5 12.1 11.2 10.5 9.8	0 IN.) PLA. 30.3 61.9 93.0 197.9 250.3 298.7 WEIGH	LVDT  ELA.  14.3 7.8 6.0 2.7 2.4 2.1 1.9  ET OF B	#4(6.0 TOT. 16.4 9.0 6.9 3.2 2.8 2.4 2.2 ITUMEN;	6.98  6.98  PLA.  14.7  23.4  31.2  45.5  51.2  50.6  57.0
NUMBER 31110735	LVDT  ELA.  154.5 122.1 111.0 86.2 83.2 80.1 77.7  OTAL W ERCENT EIGHT	#1(0.0 TOT. 176.9 141.1 128.0 101.3 95.9 92.7 89.3 EIGHT ASPHA	434 210.0 532.3 877.6 2429.5 3020.2 3333.6 4119.7 OF DRY	4.16  DEFC  LVDT  ELA.  48.4  36.9  33.1  24.7  23.7  21.9  AGGREC ENT; AIR; WATER	(1 50RMATI #2(2. TOT. 55.4 42.7 38.2 29.1 27.4 26.3 25.2	ON (inc O IN.) PLA. 57.1 133.5 212.9 538.7 661.3 719.8 879.7	27.5 18.8 16.0 10.3 9.7	5710 0.0001 #3(4.0 TOT. 31.5 21.8 18.5 12.1 11.2 10.5 9.8	0 IN.) PLA. 30.3 61.9 93.0 197.9 250.3 298.7 WEIGH	LVDT  ELA.  14.3 7.8 6.0 2.7 2.4 2.1 1.9  ET OF B	#4(6.0 TOT. 16.4 9.0 6.9 3.2 2.8 2.4 2.2 ITUMEN;	6.9625 III PLA.  14.7 23.4 31.2 45.5 51.2 50.6 57.0

SAMPLE NUMBER	W/ (g:		WB (gr)	AC (Z)		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (2)
21210611	1000	00	419	4.02	5	0	100	5918	.0 10	114.0	2.54	4.9
				DEF	ORMATI	ON (in	ches X (	0.0001	)			
	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
130	22.6	25.6	17.4	9.8	11.1	6.5	7.3	8.2	4.5		-	-
500	18.5	21.4	39.8	7.8	9.1	14.1	5.5	6.3	8.9	-	-	-
1030	16.6	18.9	69.7	7.0	7.9	23.8	4.7	5.3	14.4	-	-	-
5000	13.1	15.0	183.5	5.3	6.1	58.2	3.3	3.8	31.5	-	-	-
10000	11.8	13.4	329.5	4.8	5.4	101.1	2.8	3.2	51.9	-	-	-
24050	10.3	12.0	545.5	4.1	4.8	160.4	2.3	2.6	76.7	-	-	-
177800	7.6	8.8	2245.4	2.9	3.4	598.8	1.4	1.6	237.6	-	-	-
SAMPLE	W			AC	s	L		WBW	w	BA	GMM	VA
NUMBER	(gi	r)	(gr)	(%)		bs)	(lbs)	(gr	• (	gr)		(%)
21210621	1000	00	419	4.02	5	0	100	5912	.0 10	104.0	2.54	4.9
				DEF	ORMATI	ON (in	ches X (	0.0001	)			
	LVDT	<b>P</b> 1(0.	0 IN.)			ON (inc		#3(4.0	· · · · ·	LVDT	#4(6.0	625 I
<b>-</b> -	LVDT 1	#1(0. TOT.				0 IN.)			) IN.)	LVDT	#4(6.0	625 I
<b>-</b>		TOT.		LVDT ELA.	#2(2.	0 IN.)	LVDT ELA.	#3(4.0	) IN.)			PLA.
NUMBER	ELA.	TOT.	PLA.	LVDT ELA. 10.1	#2(2. TOT.	O IN.)	LVDT ELA. 7.5	#3(4.0	PLA.	ELA.	TOT.	PLA.
NUMBER 110	ELA.	TOT. 26.4 20.8	PLA.	LVDT ELA. 10.1	#2(2. TOT.	0 IN.) PLA. 5.9	LVDT ELA. 7.5	#3(4.0 TOT.	PLA.	ELA.	TOT.	PLA. 2.7 5.1
110 500	23.2 2 18.4 2 16.6	TOT. 26.4 20.8 19.2	PLA. 15.6 39.6	LVDT ELA. 10.1 7.8 7.0	#2(2. TOT. 11.5 8.9	0 IN.) PLA. 5.9 14.0 24.0	LVDT ELA. 7.5 5.5 4.7	#3(4.0 TOT. 8.6 6.2 5.4	PLA. 4.1 8.9	5.3 3.4 2.7	TOT. 6.1 3.9	PLA. 2.7 5.1 7.7
110 500 1020	23.2 2 18.4 2 16.6 1 12.8 1	TOT. 26.4 20.8 19.2	PLA. 15.6 39.6 70.4	LVDT ELA. 10.1 7.8 7.0 5.2	#2(2. TOT. 11.5 8.9 8.1 6.0	0 IN.) PLA. 5.9 14.0 24.0 64.1	LVDT ELA. 7.5 5.5 4.7 3.2	#3(4.0 TOT. 8.6 6.2 5.4 3.6	PLA. 4.1 8.9 14.6 34.4	5.3 3.4 2.7 1.5	TOT. 6.1 3.9 3.2	PLA. 2.7 5.1 7.7 14.3
110 500 1020 5600	23.2 2 18.4 2 16.6 1 12.8 1	TOT. 26.4 20.8 19.2 14.6	PLA. 15.6 39.6 70.4 203.4	LVDT ELA.  10.1 7.8 7.0 5.2 4.7	#2(2. TOT. 11.5 8.9 8.1 6.0 5.5	0 IN.) PLA. 5.9 14.0 24.0 64.1 102.2	LVDT ELA. 7.5 5.5 4.7 3.2 2.8	#3(4.0 TOT. 8.6 6.2 5.4 3.6	PLA. 4.1 8.9 14.6 34.4 52.3	5.3 3.4 2.7 1.5	TOT. 6.1 3.9 3.2 1.7	PLA. 2.7 5.1 7.7 14.3 19.4
110 500 1020 5600 10600 24500	ELA.  23.2 2 18.4 2 16.6 1 12.8 1 11.7 1 10.3 1	TOT.  26.4  20.8  19.2  14.6  13.5  11.6	PLA.  15.6 39.6 70.4 203.4 334.2 543.6	LVDT ELA.  10.1 7.8 7.0 5.2 4.7 4.1	#2(2. TOT. 11.5 8.9 8.1 6.0 5.5	0 IN.) PLA. 5.9 14.0 24.0 64.1 102.2 159.7	LVDT  ELA.  7.5 5.5 4.7 3.2 2.8 2.3	#3(4.0 TOT. 8.6 6.2 5.4 3.6 3.2 2.6	PLA. 4.1 8.9 14.6 34.4 52.3	5.3 3.4 2.7 1.5 1.2 0.8	TOT. 6.1 3.9 3.2 1.7 1.4 0.9	PLA.  2.7 5.1 7.7 14.3 19.4 24.2
110 500 1020 5600 10600 24500 177100	23.2 2 18.4 2 16.6 2 12.8 1 11.7 1 10.3 1 7.6	TOT. 26.4 20.8 19.2 14.6 13.5 11.6 8.6	PLA.  15.6 39.6 70.4 203.4 334.2 543.6	LVDT ELA.  10.1 7.8 7.0 5.2 4.7 4.1 2.9	#2(2. TOT. 11.5 8.9 8.1 6.0 5.5 4.6 3.3	0 IN.) PLA. 5.9 14.0 24.0 64.1 102.2 159.7 603.8	LVDT  ELA.  7.5 5.5 4.7 3.2 2.8 2.3	#3(4.0 TOT. 8.6 6.2 5.4 3.6 3.2 2.6 1.6	PLA. 4.1 8.9 14.6 34.4 52.3 76.2	5.3 3.4 2.7 1.5 1.2 0.8 0.3	TOT. 6.1 3.9 3.2 1.7 1.4 0.9 0.4	PLA. 2.7 5.1 7.7 14.3 19.4 24.2 47.2
110 500 1020 5800 10600 24500 177100	23.2 2 18.4 2 16.6 12.8 111.7 1 10.3 1 7.6	TOT. 26.4 20.8 19.2 14.6 13.5 11.6 8.6	PLA.  15.6 39.6 70.4 203.4 334.2 543.6 2264.7	LVDT  ELA.  10.1 7.8 7.0 5.2 4.7 4.1 2.9	#2(2. TOT. 11.5 8.9 8.1 6.0 5.5 4.6 3.3	0 IN.) PLA. 5.9 14.0 24.0 64.1 102.2 159.7 603.8	LVDT  ELA.  7.5 5.5 4.7 3.2 2.8 2.3	#3(4.0 TOT. 8.6 6.2 5.4 3.6 3.2 2.6 1.6	PLA. 4.1 8.9 14.6 34.4 52.3 76.2 239.6	5.3 3.4 2.7 1.5 1.2 0.8 0.3	TOT. 6.1 3.9 3.2 1.7 1.4 0.9 0.4	PLA. 2.7 5.1 7.7 14.3 19.4 24.2 47.2
110 500 1020 5600 10600 24500 177100	23.2 2 18.4 2 16.6 1 12.8 1 11.7 1 10.3 1 7.6	TOT. 26.4 20.8 19.2 14.6 13.5 11.6 8.6	PLA.  15.6 39.6 70.4 203.4 334.2 543.6 2264.7	LVDT  ELA.  10.1 7.8 7.0 5.2 4.7 4.1 2.9  AGGREC	#2(2. TOT. 11.5 8.9 8.1 6.0 5.5 4.6 3.3	0 IN.) PLA. 5.9 14.0 24.0 64.1 102.2 159.7 603.8	LVDT  ELA.  7.5 5.5 4.7 3.2 2.8 2.3	#3(4.0 TOT. 8.6 6.2 5.4 3.6 3.2 2.6 1.6	PLA. 4.1 8.9 14.6 34.4 52.3 76.2 239.6	5.3 3.4 2.7 1.5 1.2 0.8 0.3	TOT.  6.1 3.9 3.2 1.7 1.4 0.9 0.4  ITUMEN;	PLA. 2.7 5.1 7.7 14.3 19.4 24.2 47.2
500 1020 5600 10600 24500 177100  A = TC C = PI BA = WI BW = WI	23.2 2 18.4 2 16.6 2 12.8 2 11.7 2 10.3 2 7.6 DTAL WIERCENT EIGHT (EIGHT	TOT.  26.4 19.2 14.6 13.5 11.6 8.6 ASPE	PLA.  15.6 39.6 70.4 203.4 334.2 543.6 2264.7	LVDT  ELA.  10.1 7.8 7.0 5.2 4.7 4.1 2.9  AGGREC TENT; AIR; WATER;	#2(2. TOT. 11.5 8.9 8.1 6.0 5.5 4.6 3.3	0 IN.) PLA. 5.9 14.0 24.0 64.1 102.2 159.7 603.8	LVDT  ELA.  7.5 5.5 4.7 3.2 2.8 2.3	#3(4.0 TOT.  8.6 6.2 5.4 3.6 3.2 2.6 1.6  WB = SL = CL =	PLA. 4.1 8.9 14.6 34.4 52.3 76.2 239.6 WEIGH	5.3 3.4 2.7 1.5 1.2 0.8 0.3 T OF BIINED LCC LOAD;	TOT.  6.1 3.9 3.2 1.7 1.4 0.9 0.4  ITUMEN;	PLA. 2.7 5.1 7.7 14.3 19.4 24.2 47.2

Sample Number		NA ST)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr		WBA (gr)	GMM	AV (Z)
21210631	100	000	419	4.02	5	0	100	5911	.0 1	0112.0	2.54	5.12
												J. 1.
_				DEF	DRMATI	ON (in	ches X (	0.0001	)			
CYCLE _	LVDT	#1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	23.9	27.2	15.4	10.3	11.7	5.8	7.7	8.7	4.0	5.5	6.2	2.7
500	18.8	21.6	41.7	7.9	9.0	14.5	5.5	6.3	9.2	3.4	3.9	5.2
1000	17.0	19.3	71.8	7.0	8.0	24.2	4.7	5.4	14.6	2.7	3.1	7.6
5000	13.3	15.1	194.6	5.4	6.1	60.8	3.3	3.7	32.7	1.6	1.8	13.6
10620	11.9	13.8	358.3	4.7	5.5	108.0	2.8	3.2	54.8	1.2	1.3	20.1
23600	10.5	12.2	553.7	4.1	4.8	160.7	2.3	2.6	76.2	0.8	1.0	24.0
154400	8.0	9.2	2094.1	3.0	3.5	553.9	1.4	1.7	220.4	0.3	0.4	44.1
SAMPLE		√A	WB	AC	S	L	CL	WBW		WBA	GMM	AV
NUMBER	(8	;r)	(gr)	(%)	(1	bs)	(lbs)	(gr	)	(gr)		(%)
21210612	100	000	419	4.02	5	0	200	5905	.0 1	0106.0	2.54	5.1
21210612 	100	000	419				200 ches X			0106.0	2.54	5.1
_			.0 IN.)	DEF	ORMATI	ON (in	ches X	0.0001	)	0106.0		
CYCLE _		<b>#</b> 1(0	.0 IN.)	DEF	ORMATI #2(2.	ON (ind	ches X	0.0001 #3(4.	) 0 IN.)		#4(6.0	
CYCLE _	LVDT	<b>#</b> 1(0	.0 IN.)	DEFO	ORMATI #2(2.	ON (ind	LVDT	0.0001 #3(4.	) 0 IN.)	LVDT ELA.	#4(6.0	0625 I
 CYCLE _ NUMBER	LVDT	#1(0 TOT 55.1	.0 IN.)	DEFO LVDT ELA. 20.1	#2(2.	ON (inc	LVDT ELA.	#3(4.)	) 0 IN.) PLA.	LVDT ELA. 9.8	#4(6.0	0625 I PLA. 5.3
TYCLE	LVDT ELA. 48.2 37.7 34.2	#1(0 TOT 55.1 43.8 39.0	.0 IN.) . PLA. 34.4 96.9 166.8	DEFO LVDT ELA. 20.1 15.3 13.7	#2(2. TOT. 22.9 17.7 15.6	ON (inc 0 IN.) PLA. 12.5 32.5 54.3	LVDT ELA. 14.3 10.1 8.7	0.0001 #3(4.) TOT.	) 0 IN.) PLA. 8.3 19.5	LVDT ELA. 9.8 5.9	#4(6.0 TOT.	PLA. 5.3
TYCLE	LVDT ELA. 48.2 37.7 34.2	#1(0 TOT 55.1 43.8 39.0	.0 IN.) . PLA. 34.4 96.9	DEFO LVDT ELA. 20.1 15.3 13.7	#2(2. TOT. 22.9 17.7 15.6	ON (inc 0 IN.) PLA. 12.5 32.5 54.3	LVDT ELA. 14.3 10.1 8.7	#3(4.) TOT. 16.4 11.7 9.9	) 0 IN.) PLA. 8.3 19.5	LVDT ELA.  9.8 5.9 4.7	#4(6.0 TOT. 11.1 6.8 5.4	9625 I PLA. 5.3 10.4 15.2
100 520 1000 5120 10700	LVDT ELA. 48.2 37.7 34.2 26.7 23.9	#1(0 TOT 55.1 43.8 39.0 30.8 27.7	.0 IN.) . PLA	DEFC LVDT ELA. 20.1 15.3 13.7 10.4 9.2	#2(2. TOT. 22.9 17.7 15.6 12.0 10.6	ON (incomplete of the complete	LVDT  ELA.  14.3 10.1 8.7 6.0 5.0	#3(4.4 TOT. 16.4 11.7 9.9 6.9 5.8	PLA.  8.3 19.5 31.2 69.6 111.8	LVDT ELA.  9.8 5.9 4.7 2.6 1.9	#4(6.0 TOT. 11.1 6.8 5.4	PLA. 5.3 10.4 15.2 26.5
100 520 1000 5120 10700	LVDT ELA. 48.2 37.7 34.2 26.7 23.9	#1(0 TOT 55.1 43.8 39.0 30.8 27.7	.0 IN.) . PLA. 34.4 96.9 166.8 456.1	DEFC LVDT ELA. 20.1 15.3 13.7 10.4 9.2	#2(2. TOT. 22.9 17.7 15.6 12.0 10.6	ON (incomplete of the complete	LVDT  ELA.  14.3 10.1 8.7 6.0 5.0	#3(4.4 TOT. 16.4 11.7 9.9 6.9 5.8	PLA.  8.3 19.5 31.2 69.6 111.8	LVDT ELA.  9.8 5.9 4.7 2.6 1.9	#4(6.0 TOT. 11.1 6.8 5.4 3.0 2.2	PLA. 5.3 10.4 15.2 26.5 37.2
100 520 1000 5120 10700 23650	LVDT ELA. 48.2 37.7 34.2 26.7 23.9 21.3	#1(0 TOT 55.1 43.8 39.0 30.8 27.7 24.0	.0 IN.) . PLA	DEFO LVDT ELA. 20.1 15.3 13.7 10.4 9.2 8.0	#2(2. TOT. 22.9 17.7 15.6 12.0 10.6 9.1	ON (inc 0 IN.) PLA. 12.5 32.5 54.3 137.3 234.4 359.9	LVDT  ELA.  14.3 10.1 8.7 6.0 5.0 4.2	#3(4.) TOT.  16.4 11.7 9.9 6.9 5.8 4.7	PLA.  8.3 19.5 31.2 69.6 111.8	LVDT ELA.  9.8 5.9 4.7 2.6 1.9	#4(6.0 TOT. 11.1 6.8 5.4 3.0 2.2	0625 I PLA.
100 520 1000 5120 10700 23650 51700	LVDT ELA. 48.2 37.7 34.2 26.7 23.9 21.3 18.9	#1(0 TOT 55.1 43.8 39.0 30.8 27.7 24.0 21.4	.0 IN.) . PLA	DEFO LVDT ELA. 20.1 15.3 13.7 10.4 9.2 8.0 7.0	#2(2. TOT. 22.9 17.7 15.6 12.0 10.6 9.1 8.0	ON (incomplete of the complete	LVDT  ELA.  14.3 10.1 8.7 6.0 5.0 4.2	0.0001 #3(4.) TOT. 16.4 11.7 9.9 6.9 5.8 4.7 3.9	PLA.  8.3 19.5 31.2 69.6 111.8 160.0 259.4	LVDT ELA.  9.8 5.9 4.7 2.6 1.9 1.4 0.9	#4(6.0 TOT. 11.1 6.8 5.4 3.0 2.2 1.5 1.1	5.3 10.4 15.2 26.5 37.2 45.1 60.7
100 520 1000 5120 10700 23650 51700	LVDT ELA. 48.2 37.7 34.2 26.7 23.9 21.3 18.9 DTAL VERCENT	#1(0 TOT 55.1 43.8 39.0 30.8 27.7 24.0 21.4	.0 IN.) . PLA	DEFO LVDT ELA. 20.1 15.3 13.7 10.4 9.2 8.0 7.0	#2(2. TOT. 22.9 17.7 15.6 12.0 10.6 9.1 8.0	ON (incomplete of the complete	LVDT  ELA.  14.3 10.1 8.7 6.0 5.0 4.2	#3(4.)  TOT.  16.4 11.7 9.9 6.9 5.8 4.7 3.9	PLA.  8.3 19.5 31.2 69.6 111.8 160.0 259.4  - WEIG	LVDT  ELA.  9.8 5.9 4.7 2.6 1.9 1.4 0.9  HT OF B	#4(6.0 TOT. 11.1 6.8 5.4 3.0 2.2 1.5 1.1	5.3 10.4 15.2 26.5 37.2 45.1 60.7
100 520 1000 5120 10700 23650 51700 A = TC C = PI	LVDT  ELA.  48.2 37.7 34.2 26.7 23.9 21.3 18.9  OTAL VERCENTE	#1(0 TOT 55.1 43.8 39.0 30.8 27.7 24.0 21.4	.0 IN.) . PLA	DEFO LVDT ELA. 20.1 15.3 13.7 10.4 9.2 8.0 7.0 AGGREC TENT; AIR;	#2(2. TOT. 22.9 17.7 15.6 12.0 10.6 9.1 8.0	ON (incomplete of the complete	LVDT  ELA.  14.3 10.1 8.7 6.0 5.0 4.2	0.0001 #3(4.4 TOT. 16.4 11.7 9.9 6.9 5.8 4.7 3.9	PLA.  8.3 19.5 31.2 69.6 111.8 160.0 259.4  - WEIG - SUST - CYCL	LVDT ELA.  9.8 5.9 4.7 2.6 1.9 1.4 0.9	#4(6.0 TOT. 11.1 6.8 5.4 3.0 2.2 1.5 1.1 ITUMEN;	PLA. 5.3 10.4 15.2 26.5 37.2 45.1 60.7

Sample Number	WA (gr)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (Z)
21210622	10000	419	4.02		0	200	5911	0 10	116.0	2.54	5.18
	10000		7.02		*****	200	7011				J. 10
			DEF	DRMATI	ON (in	ches X (	0.0001	)			
- CYCLE	LVDT #1(0	).0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	48.3 57.1	. 34.5	20.1	23.8	12.5	14.3	17.0	8.3	9.8	11.6	5.3
500	37.9 43.4	94.1	15.4	17.6	31.7	10.2	11.6	19.1	6.0	6.8	10.2
1000	34.2 39.3	162.2	13.7	15.7	52.8	8.7	10.0	30.3	4.7	5.4	14.8
5000	26.8 30.6	464.3	10.5	11.9	140.0	6.0	6.9	71.2	2.6	3.0	27.2
10000	24.2 28.1	778.4	9.3	10.8	227.0	5.1	5.9	108.9	2.0	2.3	36.7
30500	20.5 23.3	1550.3	7.7	8.8	428.1	3.9	4.4	185.9	1.2	1.4	49.5
67800	18.2 21.1	. 2873.7	6.7	7.8	762.5	3.2	3.7	306.6	0.8	1.0	66.9
SAMPLE	WA	WB	AC	S	L	CL	WBW	ı w	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(1bs)	(gr	•) (	gr)		(%)
21210632	10000	419	4.02	5	0	200	5913	.0 10	111.0	2.54	5.06
21210632	10000	419				200 ches X			111.0	2.54	5.06
	10000 LVDT #1(0		DEF	ORMATI		ches X	0.0001			2.54 #4(6.0	
CYCLE _		).0 IN.)	DEF	ORMATI	ON (inc	ches X	0.0001	) 0 IN.)			
CYCLE _	LVDT #1(C	).0 IN.)	DEFO	ORMATI #2(2.	ON (inc	LVDT	0.0001 #3(4.	) 0 IN.)	LVDT ELA.	#4(6.0	0625 IN
CYCLE _ NUMBER	LVDT #1(C	0.0 IN.) C. PLA.	DEF6 LVDT ELA. 20.0 15.3	#2(2. TOT. 23.2 17.6	ON (inc	LVDT ELA. 14.3	#3(4. TOT.	) 0 IN.) PLA.	LVDT ELA. 9.8	#4(6.0	0625 IN
CYCLE NUMBER 100 500	LVDT #1(0 ELA. TOT 47.5 55.1 37.3 43.0 33.6 38.0	).0 IN.)  C. PLA.  33.0  89.3  155.9	DEF6 LVDT ELA. 20.0 15.3 13.6	#2(2. TOT. 23.2 17.6 15.4	ON (inc 0 IN.) PLA. 12.1 30.4 51.4	LVDT  ELA.  14.3 10.2 8.7	#3(4. TOT. 16.6 11.7 9.9	)  O IN.)  PLA.  8.1  18.4  29.7	LVDT ELA.  9.8 6.0 4.8	#4(6.0 TOT. 11.4 6.9 5.4	PLA. 5.2 9.9 14.6
CYCLE NUMBER  100 500 1000 5000	LVDT #1(0 ELA. TOT 47.5 55.1 37.3 43.0 33.6 38.0 26.4 30.1	33.0 33.0 39.3 155.9	DEFO LVDT ELA. 20.0 15.3 13.6 10.4	#2(2. TOT. 23.2 17.6 15.4 11.9	ON (inc 0 IN.) PLA. 12.1 30.4 51.4 129.5	LVDT  ELA.  14.3 10.2 8.7 6.1	#3(4. TOT. 16.6 11.7 9.9 6.9	) PLA.  8.1 18.4 29.7 66.3	LVDT  ELA.  9.8 6.0 4.8 2.7	#4(6.0 TOT. 11.4 6.9 5.4 3.0	PLA. 5.2 9.9 14.6 25.6
100 500 1000 5000	LVDT #1(0 ELA. TOT 47.5 55.1 37.3 43.0 33.6 38.0 26.4 30.1 23.8 27.4	33.0 33.0 89.3 155.9 424.1 750.7	DEFO LVDT ELA. 20.0 15.3 13.6 10.4 9.3	#2(2. TOT. 23.2 17.6 15.4 11.9	ON (inc 0 IN.) PLA. 12.1 30.4 51.4 129.5 221.7	LVDT  ELA.  14.3 10.2 8.7 6.1 5.1	#3(4. TOT. 16.6 11.7 9.9 6.9 5.9	) PLA.  8.1 18.4 29.7 66.3 107.2	LVDT  ELA.  9.8 6.0 4.8 2.7 2.0	#4(6.0 TOT. 11.4 6.9 5.4 3.0 2.3	PLA.  5.2 9.9 14.6 25.6 36.6
CYCLE NUMBER  100 500 1000 5000 10000 30000	LVDT #1(0 ELA. TOT 47.5 55.1 37.3 43.0 33.6 38.0 26.4 30.1 23.8 27.4 20.2 23.3	33.0 89.3 155.9 424.1 750.7	DEFG LVDT ELA. 20.0 15.3 13.6 10.4 9.3 7.7	#2(2. TOT. 23.2 17.6 15.4 11.9 10.7 8.9	ON (inc 0 IN.) PLA. 12.1 30.4 51.4 129.5 221.7 404.6	LVDT  ELA.  14.3 10.2 8.7 6.1 5.1 3.9	#3(4. TOT. 16.6 11.7 9.9 6.9 5.9 4.5	0 IN.) PLA.  8.1 18.4 29.7 66.3 107.2 177.6	9.8 6.0 4.8 2.7 2.0	#4(6.0 TOT. 11.4 6.9 5.4 3.0 2.3 1.4	PLA. 5.2 9.9 14.6 25.6 36.6 48.2
CYCLE NUMBER  100 500 1000 5000 10000 30000	LVDT #1(0 ELA. TOT 47.5 55.1 37.3 43.0 33.6 38.0 26.4 30.1 23.8 27.4	33.0 89.3 155.9 424.1 750.7	DEFG LVDT ELA. 20.0 15.3 13.6 10.4 9.3 7.7	#2(2. TOT. 23.2 17.6 15.4 11.9 10.7 8.9	ON (inc 0 IN.) PLA. 12.1 30.4 51.4 129.5 221.7 404.6	LVDT  ELA.  14.3 10.2 8.7 6.1 5.1 3.9	#3(4. TOT. 16.6 11.7 9.9 6.9 5.9 4.5	) PLA.  8.1 18.4 29.7 66.3 107.2	9.8 6.0 4.8 2.7 2.0	#4(6.0 TOT. 11.4 6.9 5.4 3.0 2.3	PLA. 5.2 9.9 14.6 25.6 36.6
100 500 1000 5000 10000 30000 71600	LVDT #1(0 47.5 55.1 37.3 43.0 33.6 38.0 26.4 30.1 23.8 27.4 20.2 23.3 17.7 20.0	33.0 33.0 39.3 155.9 424.1 750.7 1445.5 2873.4	DEFO LVDT ELA. 20.0 15.3 13.6 10.4 9.3 7.7 6.6	#2(2. TOT.  23.2 17.6 15.4 11.9 10.7 8.9 7.5	ON (inc 0 IN.) PLA. 12.1 30.4 51.4 129.5 221.7 404.6 770.3	LVDT  ELA.  14.3 10.2 8.7 6.1 5.1 3.9	0.0001 #3(4. TOT. 16.6 11.7 9.9 6.9 5.9 4.5 3.6	0 IN.) PLA.  8.1 18.4 29.7 66.3 107.2 177.6 311.0	LVDT  ELA.  9.8 6.0 4.8 2.7 2.0 1.2 0.8	#4(6.0 TOT. 11.4 6.9 5.4 3.0 2.3 1.4 0.9	PLA. 5.2 9.9 14.6 25.6 36.6 48.2 68.1
100 500 1000 5000 10000 30000 71600	LVDT #1(0 47.5 55.1 37.3 43.0 33.6 38.0 26.4 30.1 23.8 27.4 20.2 23.3 17.7 20.0 OTAL WEIGE ERCENT ASI	2.0 IN.) 2. PLA. 33.0 39.3 155.9 424.1 750.7 31445.5 2873.4	DEFO LVDT ELA. 20.0 15.3 13.6 10.4 9.3 7.7 6.6	#2(2. TOT.  23.2 17.6 15.4 11.9 10.7 8.9 7.5	ON (inc 0 IN.) PLA. 12.1 30.4 51.4 129.5 221.7 404.6 770.3	LVDT  ELA.  14.3 10.2 8.7 6.1 5.1 3.9	#3(4. TOT. 16.6 11.7 9.9 6.9 5.9 4.5 3.6	)  O IN.)  PLA.  8.1 18.4 29.7 66.3 107.2 177.6 311.0  = WEIGH = SUSTA	LVDT  ELA.  9.8 6.0 4.8 2.7 2.0 1.2 0.8 T OF B	#4(6.0 TOT. 11.4 6.9 5.4 3.0 2.3 1.4 0.9	PLA. 5.2 9.9 14.6 25.6 36.6 48.2 68.1
100 500 1000 5000 10000 30000 71600	LVDT #1(0 47.5 55.1 37.3 43.0 33.6 38.0 26.4 30.1 23.8 27.4 20.2 23.3 17.7 20.0	33.0 33.0 39.3 155.9 424.1 750.7 1445.5 2873.4 TOF DRY	DEFC LVDT ELA. 20.0 15.3 13.6 10.4 9.3 7.7 6.6 AGGREC TENT; AIR;	#2(2. TOT.  23.2 17.6 15.4 11.9 10.7 8.9 7.5	ON (inc 0 IN.) PLA. 12.1 30.4 51.4 129.5 221.7 404.6 770.3	LVDT  ELA.  14.3 10.2 8.7 6.1 5.1 3.9	0.0001 #3(4. TOT. 16.6 11.7 9.9 6.9 5.9 4.5 3.6 WB SL CL	0 IN.) PLA.  8.1 18.4 29.7 66.3 107.2 177.6 311.0	LVDT  ELA.  9.8 6.0 4.8 2.7 2.0 1.2 0.8 T OF B INED L C LOAD	#4(6.0 TOT. 11.4 6.9 5.4 3.0 2.3 1.4 0.9 ITUMEN;	PLA. 5.2 9.9 14.6 25.6 36.6 48.2 68.1

		NA	WB	AC	S		CL	WBW		√BA ·	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1)	bs)	(lbs)	(gr		(gr)		(%)
21210615	5 100	000	419	4.02	5	0	500	5918	.0 10	117.0	2.54	5.03
				DEF	ORMATI	ON (in	ches X (	0.0001	)			
- CYCLE	LVDT	<b>#1</b> (0.0	) IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	O IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	118.2	134.3	108.7	45.7	51.9	36.6	28.6	32.5	21.4	16.7	18.9	11.6
500	92.8	107.4	293.7	34.9	40.4	91.6	19.9	23.0	47.6	9.6	11.1	20.9
1000	83.7	97.1	517.8	31.1	36.0	156.2	16.9	19.6	76.8	7.4	8.6	30.2
5000	65.7	74.3	1421.5	23.7	26.7	396.3	11.5	13.0	169.2	3.8	4.3	49.2
10000	59.2	68.6	2433.3	21.0	24.3	655.3	9.6	11.2	261.8	2.8	3.2	65.2
19500	53.6	61.6	3513.1	18.8	21.6	914.7	8.1	9.3	341.5	2.0	2.3	71.8
GAMES P.							CT.					
SAMPLE		₹A \	WB	AC	S		CL	WBW		VBA	GMM	AV
NUMBER	()	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	, ,	(gr)		(1)
21210625	100	000	419	4.02	5	0	500	5920	.0 10	122.0	2.54	5.0
					~~~	Off (in		0.0001	)			
				DEF	MMAII	011 (2111	ches X	0.0001	•			
- CVCI <b>P</b>	LVDT	<b>#</b> 1(0.0	) IN.)			0 IN.)		#3(4.		LVDT	<b>#4(6.</b> 0	)625 I
_	LVDT	#1(0.0	PLA.							LVDT	#4(6.0	)625 II
_	ELA.			LVDT ELA.	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	ELA.		
NUMBER	ELA. 118.6	TOT.	PLA.	LVDT ELA.	#2(2. TOT.	O IN.)	LVDT ELA. 28.6	#3(4.0	O IN.)	ELA. 16.6	TOT.	PLA.
NUMBER 100	ELA. 118.6	TOT.	PLA.	LVDT ELA. 45.7 34.9	#2(2. TOT.	0 IN.) PLA. 37.4	LVDT ELA. 28.6 19.9	#3(4.0 TOT.	D IN.) PLA. 21.8	ELA. 16.6 9.6	TOT.	PLA.
100 500	ELA. 118.6 93.2	TOT. 135.0 105.5 97.0	PLA. 111.3 301.3	LVDT ELA. 45.7 34.9 31.1	#2(2. TOT. 52.1 39.6	0 IN.) PLA. 37.4 93.7	LVDT ELA. 28.6 19.9 16.9	#3(4.0 TOT. 32.6 22.5	PLA. 21.8 48.6	ELA. 16.6 9.6	TOT.  18.9 10.8 8.5	PLA. 11.8 21.3
500 1000 5000	ELA. 118.6 93.2 84.0 66.0	TOT.  135.0 105.5 97.0 74.9	PLA.  111.3 301.3 523.0	LVDT ELA. 45.7 34.9 31.1 23.7	#2(2. TOT. 52.1 39.6 35.9 26.9	0 IN.) PLA. 37.4 93.7 157.4 389.5	28.6 19.9 16.9	#3(4.0 TOT. 32.6 22.5 19.5 13.0	PLA. 21.8 48.6 77.2 166.0	ELA. 16.6 9.6 7.4 3.8	TOT.  18.9 10.8 8.5 4.3	PLA. 11.8 21.3 30.3
100 500 1000 5000 10000	ELA. 118.6 93.2 84.0 66.0 59.4	TOT.  135.0 105.5 97.0 74.9 67.4	PLA.  111.3 301.3 523.0 1400.9	LVDT ELA. 45.7 34.9 31.1 23.7 21.0	#2(2. TOT. 52.1 39.6 35.9 26.9 23.9	PLA.  37.4 93.7 157.4 389.5 675.5	28.6 19.9 16.9 11.5 9.6	#3(4.0 TOT. 32.6 22.5 19.5 13.0	PLA. 21.8 48.6 77.2 166.0 269.3	ELA. 16.6 9.6 7.4 3.8 2.7	TOT.  18.9 10.8 8.5 4.3 3.1	PLA.  11.8 21.3 30.3 48.2 66.8
100 500 1000 5000 10000 16500	ELA. 118.6 93.2 84.0 66.0 59.4 55.1	TOT. 135.0 105.5 97.0 74.9 67.4 64.0	PLA.  111.3 301.3 523.0 1400.9 2514.9	LVDT ELA. 45.7 34.9 31.1 23.7 21.0 19.3	#2(2. TOT. 52.1 39.6 35.9 26.9 23.9 22.4	0 IN.) PLA. 37.4 93.7 157.4 389.5 675.5 842.0	28.6 19.9 16.9 11.5 9.6	#3(4.0 TOT. 32.6 22.5 19.5 13.0 10.9 9.8	PLA.  21.8 48.6 77.2 166.0 269.3 319.2	ELA. 16.6 9.6 7.4 3.8 2.7	TOT.  18.9 10.8 8.5 4.3 3.1 2.5	PLA. 11.8 21.3 30.3 48.2 66.8 69.9
100 500 1000 5000 10000 16500	ELA.  118.6 93.2 84.0 66.0 59.4 55.1	TOT.  135.0 105.5 97.0 74.9 67.4 64.0	PLA.  111.3 301.3 523.0 1400.9 2514.9 3215.0	LVDT ELA. 45.7 34.9 31.1 23.7 21.0 19.3	#2(2. TOT. 52.1 39.6 35.9 26.9 23.9 22.4	0 IN.) PLA. 37.4 93.7 157.4 389.5 675.5 842.0	28.6 19.9 16.9 11.5 9.6	#3(4.0 TOT. 32.6 22.5 19.5 13.0 10.9 9.8	21.8 48.6 77.2 166.0 269.3 319.2	ELA. 16.6 9.6 7.4 3.8 2.7 2.1	TOT.  18.9 10.8 8.5 4.3 3.1 2.5	PLA. 11.8 21.3 30.3 48.2 66.8 69.9
100 500 1000 5000 10000 16500 A = T	ELA. 118.6 93.2 84.0 66.0 59.4 55.1	TOT.  135.0 105.5 97.0 74.9 67.4 64.0 WEIGHT	PLA.  111.3 301.3 523.0 1400.9 2514.9 3215.0  OF DRY	LVDT  ELA.  45.7 34.9 31.1 23.7 21.0 19.3  AGGREG	#2(2. TOT. 52.1 39.6 35.9 26.9 23.9 22.4	0 IN.) PLA. 37.4 93.7 157.4 389.5 675.5 842.0	28.6 19.9 16.9 11.5 9.6	#3(4.0 TOT. 32.6 22.5 19.5 13.0 10.9 9.8	PLA.  21.8 48.6 77.2 166.0 269.3 319.2  - WEIGH	ELA.  16.6 9.6 7.4 3.8 2.7 2.1	TOT.  18.9 10.8 8.5 4.3 3.1 2.5	PLA. 11.8 21.3 30.3 48.2 66.8 69.9
100 500 1000 5000 10000 16500 A = T C = P BA = W	ELA.  118.6 93.2 84.0 66.0 59.4 55.1  COTAL VERCENTIFICIENT	TOT.  135.0  105.5  97.0  74.9  67.4  64.0  VEIGHT  CASPHA  OF SAN	PLA.  111.3 301.3 523.0 1400.9 2514.9 3215.0  OF DRY	LVDT  ELA.  45.7 34.9 31.1 23.7 21.0 19.3  AGGRECIENT; AIR;	#2(2. TOT. 52.1 39.6 35.9 26.9 23.9 22.4 GATES;	0 IN.) PLA. 37.4 93.7 157.4 389.5 675.5 842.0	28.6 19.9 16.9 11.5 9.6	#3(4.0 TOT.  32.6 22.5 19.5 13.0 10.9 9.8  WB : CL :	PLA.  21.8 48.6 77.2 166.0 269.3 319.2  - WEIGH - CYCLI	ELA.  16.6 9.6 7.4 3.8 2.7 2.1  ST OF B	TOT.  18.9 10.8 8.5 4.3 3.1 2.5  ITUMEN; OAD;	PLA.  11.8 21.3 30.3 48.2 66.8 69.9

SAMPLE	W	A	WB	AC	SI	L	CL	WBW		WBA	GMM	AV
NUMBER	(g	r)	(gr)	(%)	(11	bs)	(lbs)	(gr)	)	(gr)		(%)
21210635	100	00	419	4.02	50	0	500	5916.	0	10110.0	2.54	4.9
				DEF	ORMATIC	ON (in	ches X (	0.0001)	)			
- CYCLE	LVDT	#1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	)625 I
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	117.3	135.7	106.4	45.6	52.7	36.0	28.6	33.1	21.	1 16.7	19.3	11.5
500	92.2	105.3	290.6	34.8	39.8	91.1	19.9	22.8	47.	5 9.6	11.0	20.9
1000	83.1	94.7	514.7	31.0	35.3	156.2	17.0	19.3	77.	0 7.4	8.5	30.5
5000	65.2	74.5	1398.1	23.6	27.0	392.0	11.5	13.1	168.	1 3.8	4.4	49.2
10000	58.8	68.0	2430.1	21.0	24.3	658.3	9.7	11.2	264.	1 2.8	3.2	66.2
27600	50.5	57.8	4427.9	17.7	20.2	1139.5	7.4	8.5	412.	1 1.7	1.9	79.5
27850	50.4	57.3	4790.2	17.6	20.0	1232.2	7.4	8.4	445.	1 8.3	8.7	-
SAMPLE		ıa	WB	AC	S	L	CL	WBW		WBA	GMM	AV
NUMBER	(g	r)	(gr)	(2)	(11	bs)	(lbs)	(gr)	)	(gr)		(7)
21310611	100	00	416	3.99	5	0	100	5910	. 0	10100.0	2.54	4.9
21310611	100	00	416				100			10100.0	2.54	4.9
<del>-</del>				DEF	ORMATI(	ON (in	ches X	0.0001	)	10100.0	*****	
CYCLE _	LVDT	<b>#</b> 1(0.		DEF	#2(2.	ON (in	LVDT	0.0001	) IN.	) LVDT	#4(6.0	0625 I
CYCLE _	LVDT	#1(0. TOT.	0 IN.)	DEFO	#2(2.)	ON (in	LVDT	0.0001) #3(4.0	) IN.	) LVDT	#4(6.0	0625 I
	LVDT	#1(0. TOT.	O IN.)	LVDT ELA.	#2(2.)	ON (in	LVDT ELA.	#3(4.0	) IN.	) LVDT	#4(6.0 TOT.	0625 I PLA.
CYCLENUMBER	LVDT ELA. 23.0 18.1	#1(0. TOT. 25.1 21.0	0 IN.) PLA.	LVDT ELA. 10.0 7.6	#2(2.) TOT. 11.3 8.9	ON (in O IN.) PLA. 5.8	LVDT ELA. 7.4 5.3	#3(4.0 TOT. 8.4 6.1	) IN. PLA 4. 9.	) LVDT . ELA. 0 5.3 4 3.3	#4(6.0 TOT.	PLA. 2.7 5.3
TOO 1000	LVDT ELA. 23.0 18.1 16.3	#1(0. TOT. 25.1 21.0 18.7	0 IN.) PLA. 15.4 42.7 75.7	DEF6 LVDT ELA. 10.0 7.6 6.8	#2(2.0 TOT. 11.3 8.9 7.8	ON (in O IN.) PLA. 5.8 15.0 25.7	LVDT ELA. 7.4 5.3 4.5	#3(4.0 TOT. 8.4 6.1 5.2	) IN. PLA 4. 9.	) LVDT . ELA. 0 5.3 4 3.3	#4(6.0 TOT. 6.0 3.8 3.0	PLA. 2.7 5.3 8.1
100 500 1000	LVDT ELA. 23.0 18.1 16.3 12.8	#1(0. TOT. 26.1 21.0 18.7 14.8	0 IN.) PLA. 15.4 42.7 75.7	DEF6 LVDT ELA. 10.0 7.6 6.8 5.2	#2(2.0 TOT. 11.3 8.9 7.8 6.0	ON (in.) PLA. 5.8 15.0 25.7 66.6	LVDT ELA. 7.4 5.3 4.5 3.2	#3(4.0 TOT. 8.4 6.1 5.2 3.7	PLA 4. 9. 15.	) LVDT  . ELA.  0 5.3 4 3.3 5 2.6 7 1.5	#4(6.0 TOT. 6.0 3.8 3.0	PLA.  2.7 5.3 8.1 14.8
100 500 1000 5000	LVDT ELA. 23.0 18.1 16.3 12.8 11.4	#1(0. TOT. 25.1 21.0 18.7 14.8 13.1	0 IN.) PLA.  15.4 42.7 75.7 211.2	DEFC LVDT ELA. 10.0 7.6 6.8 5.2 4.6	#2(2.0 TOT. 11.3 8.9 7.8 6.0 5.3	ON (inc) PLA. 5.8 15.0 25.7 66.6	LVDT  ELA.  7.4 5.3 4.5 3.2 2.7	#3(4.0 TOT. 8.4 6.1 5.2 3.7 3.1	PLA 4. 9. 15. 35.	) LVDT  . ELA.  0 5.3 4 3.3 5 2.6 7 1.5 9 1.1	#4(6.0 TOT. 6.0 3.8 3.0 1.7	PLA.  2.7 5.3 8.1 14.8 21.5
100 500 1000 5000 10700 29500	LVDT ELA. 23.0 18.1 16.3 12.8 11.4 9.8	#1(0. TOT. 25.1 21.0 18.7 14.8 13.1 11.2	0 IN.) PLA.  15.4 42.7 75.7 211.2 383.3 717.8	DEFO LVDT ELA. 10.0 7.6 6.8 5.2 4.6 3.9	#2(2.0 TOT. 11.3 8.9 7.8 6.0 5.3 4.4	ON (inc.) PLA. 5.8 15.0 25.7 66.6 116.6 207.9	LVDT  ELA.  7.4 5.3 4.5 3.2 2.7 2.1	#3(4.0 TOT.  8.4 6.1 5.2 3.7 3.1 2.4	PLA 4. 9. 15. 35. 58.	) LVDT  . ELA.  0 5.3 4 3.3 5 2.6 7 1.5 9 1.1 5 0.7	#4(6.0 TOT. 6.0 3.8 3.0 1.7 1.3	PLA.  2.7 5.3 8.1 14.8 21.5 28.9
100 500 1000 5000 10700 29500	23.0 18.1 16.3 12.8 11.4 9.8 7.6	#1(0. TOT. 25.1 21.0 18.7 14.8 13.1 11.2 8.8	0 IN.) PLA.  15.4 42.7 75.7 211.2 383.3 717.8	DEFO LVDT ELA. 10.0 7.6 6.8 5.2 4.6 3.9 2.9	#2(2.0 TOT. 11.3 8.9 7.8 6.0 5.3 4.4 3.4	ON (in.) PLA. 5.8 15.0 25.7 66.6 116.6 207.9 677.0	LVDT  ELA.  7.4 5.3 4.5 3.2 2.7 2.1	#3(4.0 TOT. 8.4 6.1 5.2 3.7 3.1 2.4 1.6	PLA 4. 9. 15. 35. 58. 96. 267.	) LVDT  . ELA.  0 5.3 4 3.3 5 2.6 7 1.5 9 1.1 5 0.7 2 0.3	#4(6.0 TOT. 6.0 3.8 3.0 1.7 1.3 0.8 0.4	PLA.  2.7 5.3 8.1 14.8 21.5 28.9 52.4
100 500 1000 5000 10700 29500 163900	23.0 18.1 16.3 12.8 11.4 9.8 7.6	#1(0. TOT. 25.1 21.0 18.7 14.8 13.1 11.2 8.8	0 IN.) PLA.  15.4 42.7 75.7 211.2 383.3 717.8 2543.5  OF DRY ALT CONT	DEFO LVDT ELA. 10.0 7.6 6.8 5.2 4.6 3.9 2.9	#2(2.0 TOT. 11.3 8.9 7.8 6.0 5.3 4.4 3.4	ON (in.) PLA. 5.8 15.0 25.7 66.6 116.6 207.9 677.0	LVDT  ELA.  7.4 5.3 4.5 3.2 2.7 2.1	#3(4.0 TOT. 8.4 6.1 5.2 3.7 3.1 2.4 1.6	PLA 4. 9. 15. 35. 58. 96. 267.	) LVDT  0 5.3 4 3.3 5 2.6 7 1.5 9 1.1 5 0.7 2 0.3	#4(6.0 TOT. 6.0 3.8 3.0 1.7 1.3 0.8 0.4	PLA.  2.7 5.3 8.1 14.8 21.5 28.9 52.4
100 500 1000 5000 10700 29500 163900 A = TCC = P.	23.0 18.1 16.3 12.8 11.4 9.8 7.6 OTAL W ERCENT	#1(0. TOT. 26.1 21.0 18.7 14.8 13.1 11.2 8.8 EIGHT	0 IN.) PLA.  15.4 42.7 75.7 211.2 383.3 717.8 2543.5  OF DRY ALT CONT	DEFO LVDT ELA. 10.0 7.6 6.8 5.2 4.6 3.9 2.9 AGGREC TENT; AIR;	#2(2.0 TOT. 11.3 8.9 7.8 6.0 5.3 4.4 3.4	ON (in.) PLA. 5.8 15.0 25.7 66.6 116.6 207.9 677.0	LVDT  ELA.  7.4 5.3 4.5 3.2 2.7 2.1	#3(4.0 TOT.  8.4 6.1 5.2 3.7 3.1 2.4 1.6	PLA  4. 9. 15. 35. 58. 96. 267.	) LVDT  . ELA.  0 5.3 4 3.3 5 2.6 7 1.5 9 1.1 5 0.7 2 0.3	#4(6.0 TOT. 6.0 3.8 3.0 1.7 1.3 0.8 0.4	PLA.  2.7 5.3 8.1 14.8 21.5 28.9 52.4
100 500 1000 5000 10700 29500 163900 A = TCC = P.	23.0 18.1 16.3 12.8 11.4 9.8 7.6 OTAL W ERCENT	#1(0. TOT. 26.1 21.0 18.7 14.8 13.1 11.2 8.8 EIGHT	0 IN.) PLA.  15.4 42.7 75.7 211.2 383.3 717.8 2543.5  OF DRY ALT CONT	DEFO LVDT ELA. 10.0 7.6 6.8 5.2 4.6 3.9 2.9 AGGREC TENT; AIR;	#2(2.0 TOT. 11.3 8.9 7.8 6.0 5.3 4.4 3.4	ON (in.) PLA. 5.8 15.0 25.7 66.6 116.6 207.9 677.0	LVDT  ELA.  7.4 5.3 4.5 3.2 2.7 2.1	#3(4.0 TOT.  8.4 6.1 5.2 3.7 3.1 2.4 1.6  WB = SL = CL =	PLA 4. 9. 15. 35. 58. 96. 267.	) LVDT  . ELA.  0 5.3 4 3.3 5 2.6 7 1.5 9 1.1 5 0.7 2 0.3  GHT OF B	#4(6.0 TOT. 6.0 3.8 3.0 1.7 1.3 0.8 0.4 ITUMEN;	PLA.  2.7 5.3 8.1 14.8 21.5 28.9 52.4

Sample Number	WA (gr)	WB (gr)	AC (%)	SL (1b		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
21310621	10000	416	3.99	50	)	100	5923.	0 10	118.0	2.54	4.93
			DEEC	DMATIO	M (in	hes X (	00011				
_			DEF	APA 110	W (Inc						
CYCLE _	LVDT #1(0	.0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
150	21.5 25.5	20.1	9.3	11.1	7.5	6.8	8.1	5.1	4.7	5.6	3.3
550	17.7 20.0	44.1	7.5	8.5	15.5	5.2	5.9	9.7	3.2	3.6	5.4
1040	16.1 18.2	75.8	6.8	7.7	25.9	4.5	5.1	15.6	2.6	3.0	8.1
5000	12.7 14.6	203.0	5.2	6.0	64.4	3.2	3.6	34.7	1.5	1.7	14.5
10000	11.4 13.3	361.3	4.6	5.4	110.9	2.7	3.2	56.6	1.2	1.3	21.0
32000	9.6 10.9	727.5	3.8	4.3	211.2	2.1	2.3	97.7	0.7	0.8	28.9
167500	7.5 8.7	2555.3	2.9	3.3	683.8	1.4	1.6	270.7	0.3	0.4	53.3
SAMPLE	WA	WB	AC	SL		CL	WBW	W	BA	GMM	AV
NUMBER	(gr)	(gr)	<b>(Z)</b>	(1b	<b>(2</b> )	(lbs)	(gr)	C	gr)		(%)
NUMBER 21310631	(gr) 10000	(gr) 416	3.99	(1b		(lbs)	(gr) 5910.		gr) 094.0	2.54	
			3.99	50	)		5910.	0 10		2.54	
21310631		416	3.99 DEFC	50	) ) ) (inc	100 ches X (	5910.	0 10	094.0	2.54 #4(8.0	4.9
21310631 ————————————————————————————————————	10000	416 .0 IN.)	3.99 DEFC	50 DRMATIC	) ) ) (inc	100 ches X (	5910. 0.0001)	0 10	094.0		4.9
21310631 ————————————————————————————————————	10000 LVDT #1(0	.0 IN.)	3.99 DEFO	50 DRMATIO	ON (inc	100 ches X (	5910. 0.0001) #3(4.0	0 10 IN.)	094.0 LVDT	#4(8.0	4.9 625 II
21310631 — CYCLE _ UMBER	10000  LVDT #1(0  ELA. TOT	.0 IN.) . PLA. 14.9	3.99 DEFC	50  PRMATIO  #2(2.0  TOT.	ON (inc)	LVDT	5910. 0.0001) #3(4.0	0 10 IN.)	LVDT	#4(6.0	4.9: 625 II
21310631  CYCLE NUMBER	10000 LVDT #1(0 ELA. TOT 22.7 26.4	.0 IN.) . PLA. 14.9	3.99 DEFC	50 PRMATIO #2(2.0 TOT. 11.5 8.7	ON (inc) IN.) PLA.	LVDT ELA.	5910.  5910.  70001)  707.  8.6 6.1	0 10 IN.) PLA.	LVDT ELA. 5.3	#4(6.0 TOT.	4.9 625 II PLA.
21310631	10000 LVDT #1(0 ELA. TOT 22.7 26.4 17.8 20.5	.0 IN.) . PLA. 14.9 41.1 72.9	3.99 DEFC LVDT ELA. 9.9 7.6 6.8	50 DRMATIO #2(2.0 TOT. 11.5 8.7 7.8	PLA. 5.7 14.6 25.0	100 LVDT ELA. 7.4 5.3 4.5	5910.  5910.  70001)  707.  8.6 6.1 5.2	0 10 IN.) PLA. 3.9 9.2 15.1	LVDT ELA. 5.3 3.3 2.6	#4(5.0 TOT. 6.1 3.8 3.0	4.9. 625 II PLA. 2.6 5.2 7.9
21310631  CYCLE	10000 LVDT #1(0 ELA. TOT 22.7 26.4 17.8 20.5 16.1 18.4	.0 IN.) . PLA. 14.9 41.1 72.9 202.6	3.99  DEFC  LVDT  ELA.  9.9  7.6  6.8  5.2	50  PRMATIC  \$2(2.0)  TOT.  11.5  8.7  7.8  6.1	PLA.  5.7 14.6 25.0 64.4	LVDT  ELA.  7.4 5.3 4.5 3.2	5910.  0.0001)  #3(4.0  TOT.  8.6 6.1 5.2 3.7	0 10 IN.) PLA. 3.9 9.2 15.1 34.7	LVDT  ELA.  5.3 3.3 2.6 1.5	#4(6.0 TOT. 6.1 3.8 3.0 1.8	4.9 625 II PLA. 2.6 5.2 7.9 14.5
21310631	10000  LVDT #1(0  ELA. TOT  22.7 26.4  17.8 20.5  16.1 18.4  12.6 14.8  11.3 12.9	.0 IN.) . PLA. 14.9 41.1 72.9 202.6 368.7	3.99  DEFC  LVDT  ELA.  9.9  7.6  6.8  5.2  4.6	50 PRMATIC  \$2(2.0 TOT.  11.5 8.7 7.8 6.1 5.2	PLA. 5.7 14.6 25.0 64.4	LVDT  ELA.  7.4 5.3 4.5 3.2 2.7	5910.  5910.  700.  8.6  6.1  5.2  3.7  3.1	0 10 IN.) PLA. 3.9 9.2 15.1 34.7 57.6	D94.0  LVDT  ELA.  5.3 3.3 2.6 1.5	#4(6.0 TOT. 6.1 3.8 3.0 1.8 1.3	4.93 PLA. 2.6 5.2 7.9 14.5 21.3
21310631  CYCLE NUMBER  100 500 1000 5050 10500 18500	10000 LVDT #1(0 ELA. TOT 22.7 26.4 17.8 20.5 16.1 18.4 12.6 14.8	.0 IN.) . PLA. 14.9 41.1 72.9 202.6 368.7 506.7	3.99 DEFC LVDT ELA. 9.9 7.6 6.8 5.2 4.6 4.2	\$2(2.0 TOT. 11.5 8.7 7.8 6.1 5.2 4.8	PLA.  5.7 14.6 25.0 64.4 113.2 151.4	100 LVDT ELA. 7.4 5.3 4.5 3.2 2.7 2.3	5910.  5910.  70001)  707.  8.6  8.1  5.2  3.7  3.1  2.7	0 10 IN.) PLA. 3.9 9.2 15.1 34.7 57.6 73.6	LVDT  ELA.  5.3 3.3 2.6 1.5 1.1	#4(6.0 TOT. 6.1 3.8 3.0 1.8 1.3	4.93 PLA. 2.6 5.2 7.9 14.5 21.3 24.4
21310631	10000  LVDT #1(0  ELA. TOT  22.7 26.4  17.8 20.5  16.1 18.4  12.6 14.8  11.3 12.9  10.4 12.0	.0 IN.) . PLA. 14.9 41.1 72.9 202.6 368.7 506.7 2426.1	3.99  DEFC  LVDT  ELA.  9.9  7.6  6.8  5.2  4.6  4.2  2.9	#2(2.0 TOT. 11.5 8.7 7.8 6.1 5.2 4.8 3.3	PLA.  5.7 14.6 25.0 64.4 113.2 151.4	100 LVDT ELA. 7.4 5.3 4.5 3.2 2.7 2.3	5910.  5910.  7001)  \$3(4.0)  TOT.  8.6 6.1 5.2 3.7 3.1 2.7 1.6	0 10 IN.) PLA. 3.9 9.2 15.1 34.7 57.6 73.6 259.7	ELA.  5.3 3.3 2.6 1.5 1.1 0.9 0.3	#4(6.0 TOT. 6.1 3.8 3.0 1.8 1.3	4.93 PLA. 2.6 5.2 7.9 14.5 21.3 24.4 51.8
21310631  CYCLE	10000  LVDT #1(0  ELA. TOT  22.7 26.4  17.8 20.5 16.1 18.4 12.6 14.8 11.3 12.9 10.4 12.0 7.5 8.6	.0 IN.) . PLA. 14.9 41.1 72.9 202.6 368.7 506.7 2426.1	3.99 DEFC LVDT ELA. 9.9 7.6 6.8 5.2 4.6 4.2 2.9	#2(2.0 TOT. 11.5 8.7 7.8 6.1 5.2 4.8 3.3	PLA.  5.7 14.6 25.0 64.4 113.2 151.4	100 LVDT ELA. 7.4 5.3 4.5 3.2 2.7 2.3 1.4	5910.  5910.  7001)  \$3(4.0)  TOT.  8.6 6.1 5.2 3.7 3.1 2.7 1.6	0 10 IN.) PLA. 3.9 9.2 15.1 34.7 57.6 73.6 259.7	5.3 3.3 2.6 1.5 1.1 0.9 0.3	#4(5.0 TOT. 6.1 3.8 3.0 1.8 1.3 1.0 0.4	4.93 PLA. 2.6 5.2 7.9 14.5 21.3 24.4 51.8
21310631  CYCLE NUMBER  100 500 1000 5050 10500 18500 161600  A = TC	10000  LVDT #1(0  ELA. TOT  22.7 26.4  17.8 20.5  16.1 18.4  12.6 14.8  11.3 12.9  10.4 12.0  7.5 8.6	.0 IN.) . PLA. 14.9 41.1 72.9 202.6 368.7 506.7 2426.1 T OF DRY	3.99 DEFC LVDT ELA. 9.9 7.6 6.8 5.2 4.6 4.2 2.9 AGGREC	\$2(2.0 TOT. 11.5 8.7 7.8 6.1 5.2 4.8 3.3	PLA.  5.7 14.6 25.0 64.4 113.2 151.4	100  LVDT  ELA.  7.4 5.3 4.5 3.2 2.7 2.3 1.4	5910.  5910.  700.  8.6  6.1  5.2  3.7  3.1  2.7  1.6	0 10 IN.) PLA. 3.9 9.2 15.1 34.7 57.6 73.6 259.7 WEIGH	LVDT  ELA.  5.3 3.3 2.6 1.5 1.1 0.9 0.3 I OF B. INED L	#4(5.0 TOT. 6.1 3.8 3.0 1.8 1.3 1.0 0.4	4.93 PLA. 2.6 5.2 7.9 14.5 21.3 24.4 51.8
21310631  CYCLE NUMBER  100 500 1000 5050 10500 18500 161600  A = TC	10000  LVDT #1(0  ELA. TOT  22.7 26.4  17.8 20.5  16.1 18.4  12.6 14.8  11.3 12.9  10.4 12.0  7.5 8.6  DTAL WEIGH  ERCENT ASP	.0 IN.) . PLA. 14.9 41.1 72.9 202.6 368.7 506.7 2426.1 T OF DRY HALT CONTAMPLE IN	3.99  DEFC  LVDT  ELA.  9.9 7.6 6.8 5.2 4.6 4.2 2.9  AGGRECTENT; AIR;	\$2(2.0 TOT. 11.5 8.7 7.8 6.1 5.2 4.8 3.3	PLA.  5.7 14.6 25.0 64.4 113.2 151.4	100  LVDT  ELA.  7.4 5.3 4.5 3.2 2.7 2.3 1.4	5910.  5910.  70001)  \$3(4.0)  TOT.  8.6  6.1  5.2  3.7  3.1  2.7  1.6	0 10 IN.) PLA. 3.9 9.2 15.1 34.7 57.6 73.6 259.7 WEIGH SUSTA CYCLIC	5.3 3.3 2.6 1.5 1.1 0.9 0.3 T OF B	#4(5.0 TOT. 6.1 3.8 3.0 1.8 1.3 1.0 0.4 ITUMEN;	4.93 PLA. 2.6 5.2 7.9 14.5 21.3 24.4 51.8

SAMPLE NUMBER	WA (gr)	WB (gr)	AC		L bs)	CL (lbs)	WBW (gr		BA Br)	GMM	AV (Z)
21210612			3 00			200	5014	0 10		2.54	
21310612 	10000	416	3.99		0	200	5914	.0 10.	103.0	2.54	4.9
			DEF	ORMATI	ON (in	ches X (	0.0001	)			
CYCLE _	LVDT #1	(0.0 IN.)	LVDĪ	#2(2.	0 IN.)	LVDT	#3(4.	O IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. T	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
150	42.9 49	.0 44.5	18.1	20.6	16.1	12.7	14.5	10.5	8.4	9.5	6.4
500	35.9 41	.7 94.8	14.8	17.2	32.5	9.8	11.4	19.6	5.8	6.7	10.5
1000	32.3 37	.6 164.7	13.2	15.4	54.7	8.4	9.8	31.5	4.6	5.3	15.4
5000	25.4 29	.2 458.9	10.1	11.6	141.3	5.8	6.7	72.1	2.6	2.9	27.7
10200	22.8 26	.1 813.5	8.9	10.2	242.0	4.9	5.7	116.5	1.9	2.2	39.4
28000		.4 1523.9	7.5	8.6	431.6	3.9	4.4	190.1	1.2	1.4	52.1
48000	18.1 20	.7 2424.6	6.9	7.9	668.7	3.4	3.9	280.0		<u>.</u>	
SAMPLE	WA	WB	AC	s	L	CL	WBW	WI	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) ((	gr)		(%)
21310622	10000	416	3.99	5	0	200	5911	.0 10	102.0	2.54	4.9
			DEF	ORMATI	ON (in	ches X	0.0001	)			
	LVDT #1	(0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 I
CYCLE _ NUMBER	ELA. T	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	46.0 52	.0 34.1	19.4	21.9	12.5	13.8	15.7	8.3	9.4	10.6	5.3
500	36.1 41	.4 96.2	14.8	17.0	32.8	9.8	11.2	19.7	5.7	6.6	10.5
1000	32.6 37	.5 168.1	13.2	15.2	55.5	8.4	9.7	31.8	4.6	5.3	15.6
5000	25.6 29	.7 475.6			145.5		6.8	74.0	2.5	2.9	28.3
10000	23.1 26	.6 830.4	9.0	10.4	245.7	5.0	5.7	118.0	1.9	2.2	39.8
30000	19.6 22	.4 1628.1	7.5	8.5	456.6	3.8	4.3	199.0	7.2	4.2	-
33000	19.3 22	.2 1908.0	7.4	8.5	532.7	3.7	4.3	230.1	•	-	-
	OTAL WEI	GHT OF DR	AGGRE	GATES;			WB ·	- WEIGH	OF B	ITUMEN;	
A - TO			TTENT.				SL	SUSTA	INED LO	DAD:	
	ercent a	SPHALT CO	ATEM1;								
= PI		SPHALT COI SAMPLE II						- CYCLIC		•	

ELA. AND TOT. = ELASTIC AND TOTAL DEFORMATION/CYCLE;
PLA. = CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

SAMPLE	WA	WB	AC		SL	CL	WBW		BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	.bs)	(1bs)	(gr	) (;	gr)		(%)
21310632	10000	416	3.99	5	50	200	5913	.0 10	104.0	2.54	4.97
			DEF	ORMATI	ON (inc	ches X	0.0001	)			
CYCLE _	LVDT #1	(0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	O IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TO	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	45.9 52.	1 34.3	19.4	22.0	12.6	13.8	15.7	8.4	9.4	10.7	5.3
500	36.0 41.	.3 93.9	14.8	17.0	32.1	9.8	11.3	19.3	5.8	6.6	10.3
1000	32.5 36.	9 168.4	13.2	15.0	55.7	8.4	9.6	32.0	4.6	5.2	15.7
5000	25.5 28.	9 471.3	10.1	11.4	144.5	5.8	6.6	73.6	2.5	2.9	28.2
10000	23.0 26.	5 815.8	9.0	10.3	241.9	5.0	5.7	116.3	1.9	2.2	39.3
29000	19.6 22.	5 1552.6	7.5	8.6	437.1	3.8	4.4	191.4	1.2	1.4	51.8
123300	15.8 18.	.2 4687.0	5.9	6.8	1228.1	2.7	3.1	466.4	0.6	0.7	86.8
SAMPLE	WA	WB	AC	S	SL	CL	WBW	w	BA	GMM	ΑV
NUMBER	(gr)	(gr)	(Z)		lbs)	(lbs)	(gr		gr)		(%)
21310615	10000	416	3.99		50	500	5913	.0 10	105.0	2.54	4.9
			DEF	ORMATI	ON (in	ches X	0.0001	)			
-	LVDT #10	(0.0 IN.)			ON (inc			) O IN.)	LVDT	<b>#4</b> (6.0	)625 II
		(0.0 IN.) OT. FLA.			0 IN.)				LVDT	#4(6.0	0625 II
NUMBER		OT. PLA.	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	ELA.		
NUMBER	ELA. TO	OT. PLA.	ELA.	#2(2. TOT.	O IN.)	ELA.	#3(4.)	O IN.)	ELA. 15.0	TOT.	
NUMBER 120	ELA. TO	OT. PLA.	LVDT ELA. 43.0 33.9	#2(2. TOT.	0 IN.) PLA. 43.7	LVDT ELA. 26.5 19.2	#3(4.) TOT.	PLA.	ELA. 15.0 14.7	TOT.	
120 500	ELA. TO 111.8 126 90.3 102 81.4 92	OT. PLA.  3.5 131.2 2.9 318.5	LVDT ELA. 43.0 33.9 30.2	#2(2. TOT. 48.7 38.6 34.1	0 IN.) PLA. 43.7 99.2 167.4	LVDT ELA. 26.5 19.2 16.3	#3(4.) TOT. 29.9 21.8 18.4	PLA.  25.0 51.1	ELA. 15.0 14.7 15.0	TOT. 17.8 17.2	
120 500 1000 5000	ELA. TO  111.8 126  90.3 102  81.4 92  63.9 74	OT. PLA.  3.5 131.2 2.9 318.5 2.1 555.5	LVDT ELA. 43.0 33.9 30.2 23.0	#2(2. TOT. 48.7 38.6 34.1 26.6	0 IN.) PLA. 43.7 99.2 167.4 428.5	LVDT ELA. 26.5 19.2 16.3 11.0	#3(4.9 TOT. 29.9 21.8 18.4 12.8	PLA.  25.0 51.1 81.5 181.1	15.0 14.7 15.0 15.0	TOT.  17.8 17.2 17.2	PLA.
120 500 1000 5000	ELA. TO  111.8 126 90.3 102 81.4 92 63.9 74 57.5 66	OT. FLA.  3.5 131.2 2.9 318.5 2.1 555.5 3.0 1539.1	LVDT ELA. 43.0 33.9 30.2 23.0 20.4	#2(2. TOT. 48.7 38.6 34.1 26.6 23.7	0 IN.) PLA. 43.7 99.2 167.4 428.5 735.7	LVDT  ELA.  26.5 19.2 16.3 11.0 9.2	#3(4. TOT. 29.9 21.8 18.4 12.8 10.7	PLA.  25.0 51.1 81.5 181.1 290.6	15.0 14.7 15.0 15.0 14.0	TOT. 17.8 17.2 17.2 16.0 14.5	PLA.
120 500 1000 5000 10100 22000	ELA. TO  111.8 126  90.3 102  81.4 92  63.9 74  57.5 66  51.2 58	OT. PLA.  3.5 131.2 2.9 318.5 2.1 555.5 3.0 1539.1 5.8 2736.9	LVDT ELA. 43.0 33.9 30.2 23.0 20.4	#2(2. TOT. 48.7 38.6 34.1 26.6 23.7 20.5	0 IN.) PLA. 43.7 99.2 167.4 428.5 735.7 1127.6	LVDT  ELA.  26.5 19.2 16.3 11.0 9.2	#3(4.) TOT. 29.9 21.8 18.4 12.8 10.7 8.7	PLA.  25.0 51.1 81.5 181.1 290.6	15.0 14.7 15.0 15.0 15.0 14.0	TOT.  17.8 17.2 17.2 16.0 14.5 12.8	PLA.
500 1000 5000 10100 22000	ELA. TO  111.8 126  90.3 102  81.4 92  63.9 74  57.5 66  51.2 58	OT. PLA.  3.5 131.2 2.9 318.5 2.1 555.5 3.0 1539.1 5.8 2736.9 3.8 4363.1	LVDT ELA. 43.0 33.9 30.2 23.0 20.4 17.9	#2(2. TOT. 48.7 38.6 34.1 26.6 23.7 20.5	0 IN.) PLA. 43.7 99.2 167.4 428.5 735.7 1127.6	LVDT  ELA.  26.5 19.2 16.3 11.0 9.2	#3(4.) TOT. 29.9 21.8 18.4 12.8 10.7 8.7	PLA.  25.0 51.1 81.5 181.1 290.6 411.1	ELA.  15.0 14.7 15.0 15.0 14.0 13.8	TOT.  17.8 17.2 17.2 16.0 14.5 12.8	PLA.
120 500 1000 5000 10100 22000 A = T	ELA. TO  111.8 126 90.3 102 81.4 92 63.9 74 57.5 66 51.2 58  OTAL WEIG	OT. FLA.  3.5 131.2 2.9 318.5 2.1 555.5 3.0 1539.1 5.8 2736.9 3.8 4363.1  SHT OF DRY	LVDT  ELA.  43.0 33.9 30.2 23.0 20.4 17.9  AGGREGIENT;	#2(2. TOT. 48.7 38.6 34.1 26.6 23.7 20.5	0 IN.) PLA. 43.7 99.2 167.4 428.5 735.7 1127.6	LVDT  ELA.  26.5 19.2 16.3 11.0 9.2	#3(4.) TOT.  29.9 21.8 18.4 12.8 10.7 8.7	PLA.  25.0 51.1 81.5 181.1 290.6 411.1	15.0 14.7 15.0 15.0 14.0 13.8 T OF B	TOT.  17.8 17.2 17.2 16.0 14.5 12.8  ITUMEN; OAD;	PLA.
120 500 1000 5000 10100 22000 A = T C = P	ELA. TO  111.8 126 90.3 102 81.4 92 63.9 74 57.5 66 51.2 58  OTAL WEIGHT OF	OT. PLA.  3.5 131.2 2.9 318.5 2.1 555.5 3.0 1539.1 5.8 2736.9 3.8 4363.1  GHT OF DRY SPHALT CON	LVDT  ELA.  43.0 33.9 30.2 23.0 20.4 17.9  AGGRET  TENT; AIR;	#2(2. TOT. 48.7 38.6 34.1 26.6 23.7 20.5	0 IN.) PLA. 43.7 99.2 167.4 428.5 735.7 1127.6	LVDT  ELA.  26.5 19.2 16.3 11.0 9.2	#3(4.) TOT. 29.9 21.8 18.4 12.8 10.7 8.7	PLA.  25.0 51.1 81.5 181.1 290.6 411.1  - WEIGH	ELA. 15.0 14.7 15.0 15.0 14.0 13.8 T OF B	TOT.  17.8  17.2  17.2  16.0  14.5  12.8  ITUMEN;	PLA.
120 500 1000 5000 10100 22000 A = T C = P BA = W	ELA. TO  111.8 126 90.3 102 81.4 92 63.9 74 57.5 66 51.2 58  OTAL WEIGHT OF EIGHT OF	OT. FLA.  3.5 131.2 2.9 318.5 2.1 555.5 3.0 1539.1 5.8 2736.9 3.8 4363.1  GHT OF DRY SPHALT CONS	LVDT  ELA.  43.0 33.9 30.2 23.0 20.4 17.9  AGGREGIENT; AIR; WATER	#2(2. TOT. 48.7 38.6 34.1 26.6 23.7 20.5	0 IN.) PLA. 43.7 99.2 167.4 428.5 735.7 1127.6	LVDT  ELA.  26.5 19.2 16.3 11.0 9.2	#3(4.) TOT. 29.9 21.8 18.4 12.8 10.7 8.7	PLA.  25.0 51.1 81.5 181.1 290.6 411.1  - WEIGH - SUSTA - CYCLIG	ELA. 15.0 14.7 15.0 15.0 14.0 13.8 T OF B	TOT.  17.8  17.2  17.2  16.0  14.5  12.8  ITUMEN;	PLA.

SAMPLE NUMBER		M gr)	WB (gr)	AC	S (1	L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (Z)
21310625	100	000	416	3.99	5	0	500	5918	.0 10	129.0	2.54	5.19
				DEF	DMAT I	ON (in	ches X (	0 0001			******	******
_				DEF	JAMII	————	- Lites A					
CYCLE	LVDT	#1(0.0	) IN.)	LVDī	#2(2.	0 IN.)	LVDT	#3(4.)	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	118.6	134.3	123.7	44.7	50.7	40.6	27.5	31.1	23.3	15.6	17.7	12.3
500	93.2	107.0	346.0	34.2	39.2	105.2	19.0	21.8	53.4	8.9	10.2	22.7
1000	84.0	95.5	611.8	30.4	34.5	179.9	16.2	18.4	86.3	6.8	7.8	32.8
5100	65.8	74.4	1693.6	23.0	26.1	459.4	10.9	12.3	190.4	3.4	3.9	52.8
10000	59.5	67.7	2998.2	20.6	23.4	786.1	9.1	10.4	304.8	2.5	2.8	72.2
20756	53.3	62.0	4551.4	18.1	21.1	1149.8	7.6	8.8	413.0	1.7	2.0	80.8
SAMPLE		····	WB	AC	s	L.	CL	WBW	W	BA	GMM	AV
NUMBER	( g	r)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
										_		
21310635	100		416	3.99	5	0	500	5899	.0 10	087.0	2.54	5.06
21310635	100		416				500 ches X			087.0	2.54	5.06
_				DEF	ORMATI		ches X	0.0001			2.54 #4(6.0	
CYCLE _		000		DEF	ORMATI	ON (inc	ches X	0.0001	) 0 IN.)		******	
CYCLE _ NUMBER	LVDT ELA.	<b>#1(0.0</b>	) IN.)	DEFO	ORMATI #2(2.	ON (ind	LVDT	0.0001 #3(4.0	) 0 IN.)	LVDT	<b>#</b> 4(6.0	)625 II
CYCLE _ NUMBER	LVDT ELA. 116.0	#1(0.0	PLA.	DEFO	#2(2.	ON (inc	LVDT ELA.	#3(4.)	O IN.)	LVDT	<b>#</b> 4(6.0	)625 II
CYCLE _ NUMBER	LVDT ELA. 116.0	#1(0.0 TOT.	) IN.) PLA. 119.3	DEFO	#2(2. TOT.	ON (inc	LVDT ELA. 27.4 19.1	#3(4.) TOT.	) 0 IN.) PLA. 22.9	LVDT	<b>#</b> 4(6.0	)625 II
CYCLE _ NUMBER 100 500	LVDT ELA. 116.0 91.1	#1(0.0 TOT. 134.9 103.0 94.7	PLA. 119.3 326.9	DEFC LVDT ELA. 44.4 33.9 30.2	#2(2. TOT. 51.6 38.3	OH (income)  PLA.  39.8	LVDT  ELA.  27.4 19.1 16.2	#3(4.0 TOT. 31.9 21.5	) O IN.) PLA. 22.9 51.7	LVDT	<b>#</b> 4(6.0	)625 II
CYCLE NUMBER  100 500 1000	LVDT ELA. 116.0 91.1 82.1 64.5	#1(0.0 TOT. 134.9 103.0 94.7 73.4	PLA. 119.3 326.9 576.4	DEFC LVDT ELA. 44.4 33.9 30.2 23.0	#2(2. TOT. 51.6 38.3 34.8 26.1	ON (inc 0 IN.) PLA. 39.8 100.9 172.0 443.1	LVDT  ELA.  27.4 19.1 16.2 11.0	#3(4.0 TOT. 31.9 21.5 18.7 12.5	PLA.  22.9 51.7 83.3 186.0	LVDT	<b>#</b> 4(6.0	)625 IN
CYCLE NUMBER  100 500 1000 5000 9850	LVDT  ELA.  116.0 91.1 82.1 64.5 58.3	#1(0.0 TOT. 134.9 103.0 94.7 73.4 67.5	PLA.  119.3 326.9 576.4 1606.8 2789.0	DEFO LVDT ELA. 44.4 33.9 30.2 23.0 20.5	#2(2. TOT. 51.6 38.3 34.8 26.1 23.7	ON (inc 0 IN.) PLA. 39.8 100.9 172.0 443.1 743.4	LVDT  ELA.  27.4 19.1 16.2 11.0	#3(4.0 TOT.  31.9 21.5 18.7 12.5 10.7	PLA.  22.9 51.7 83.3 186.0 292.1	LVDT ELA.  T OF B	#4(6.0	PLA.
CYCLE NUMBER  100 500 1000 5000 9850  IA = T	LVDT  ELA.  116.0 91.1 82.1 64.5 58.3  COTAL WERCENT	#1(0.0 TOT. 134.9 103.0 94.7 73.4 67.5	PLA.  119.3 326.9 576.4 1606.8 2789.0  OF DRY	DEFO LVDT ELA. 44.4 33.9 30.2 23.0 20.5	#2(2. TOT. 51.6 38.3 34.8 26.1 23.7	ON (inc 0 IN.) PLA. 39.8 100.9 172.0 443.1 743.4	LVDT  ELA.  27.4 19.1 16.2 11.0	#3(4.0 TOT.  31.9 21.5 18.7 12.5 10.7	) PLA.  22.9 51.7 83.3 186.0 292.1  WEIGH SUSTA	LVDT ELA T OF B INED L	#4(6.C	PLA.
100 500 1000 5000 9850	LVDT  ELA.  116.0 91.1 82.1 64.5 58.3  COTAL WERCENT	#1(0.0 TOT. 134.9 103.0 94.7 73.4 67.5	PLA.  119.3 326.9 576.4 1606.8 2789.0  OF DRY	DEFO LVDT ELA. 44.4 33.9 30.2 23.0 20.5 AGGREC	#2(2. TOT. 51.6 38.3 34.8 26.1 23.7	ON (inc 0 IN.) PLA. 39.8 100.9 172.0 443.1 743.4	LVDT  ELA.  27.4 19.1 16.2 11.0	#3(4.4)  TOT.  31.9 21.5 18.7 12.5 10.7	) PLA.  22.9 51.7 83.3 186.0 292.1  - WEIGH- SUSTA - CYCLIG	LVDT  ELA.  T OF B INED LC C LOAD	#4(6.0	PLA.
100 500 1000 5000 9850 A = T C = P	LVDT ELA. 116.0 91.1 82.1 64.5 58.3 COTAL WERCENT	#1(0.0 TOT. 134.9 103.0 94.7 73.4 67.5	PLA.  119.3 326.9 576.4 1606.8 2789.0  OF DRY ALT CONT	LVDT ELA. 44.4 33.9 30.2 23.0 20.5 AGGRECENT; AIR;	#2(2. TOT. 51.6 38.3 34.8 26.1 23.7 GATES;	ON (inc 0 IN.) PLA. 39.8 100.9 172.0 443.1 743.4	LVDT  ELA.  27.4 19.1 16.2 11.0 9.2	#3(4.4)  TOT.  31.9 21.5 18.7 12.5 10.7	) PLA.  22.9 51.7 83.3 186.0 292.1  WEIGH SUSTA	LVDT  ELA.  T OF B INED LC C LOAD	#4(6.0	PLA.
100 500 1000 5000 9850 IA = T IC = P	LVDT ELA. 116.0 91.1 82.1 64.5 58.3 COTAL WERCENTIEIGHT	#1(0.0 TOT. 134.9 103.0 94.7 73.4 67.5 TEIGHT ASPHA OF SAN	PLA.  119.3 326.9 576.4 1606.8 2789.0  OF DRY ALT CONT APLE IN APLE IN	LVDT ELA. 44.4 33.9 30.2 23.0 20.5 AGGRECIENT; AIR; WATER SPECII	#2(2. TOT. 51.6 38.3 34.8 26.1 23.7 GATES;	ON (inc 0 IN.) PLA. 39.8 100.9 172.0 443.1 743.4	LVDT  ELA.  27.4 19.1 16.2 11.0 9.2	#3(4.4)  TOT.  31.9 21.5 18.7 12.5 10.7	) PLA.  22.9 51.7 83.3 186.0 292.1  - WEIGH- SUSTA - CYCLIG	LVDT  ELA.  T OF B INED LC C LOAD	#4(6.0	PLA.

SAMPLE		A.	WB	AC		L	CL	WBW		BA.	GMM	AV
NUMBER	(1	gr)	(gr)	(7)	(1	bs)	(lbs)	(gr)	· (į	gr)		(%)
12110511	100	000	467	4.46	5	0	100	6176	0 103	388.0	2.54	3.0
				DEF	ORMATI	ON (inc	ches X (	0.0001	)			
	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	) IN.)	LVDT	#4(6.0	625 II
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	18.2	21.2	6.0	9.7	11.3	2.8	7.9	9.1	2.1	6.2	7.2	1.5
500	14.3	16.5	14.9	7.5	8.6	6.5	5.8	6.6	4.5	4.1	4.7	2.9
1000	12.9	14.7	25.0	6.7	7.6	10.6	5.0	5.7	7.1	3.4	3.9	4.3
5000	10.1	11.8	64.2	5.2	6.0	25.3	3.6	4.2	15.6	2.1	2.4	8.0
10000	9.1	10.6	108.4	4.6	5.4	41.5	3.1	3.6	24.5	1.7	2.0	11.5
30300	7.7	8.9	203.7	3.8	4.4	74.4	2.5	2.8	40.8	1.1	1.3	16.2
157000	6.0	7.0	635.0	2.9	3.4	215.4	1.7	2.0	104.7	0.6	0.7	30.8
<del> </del>											•	
SAMPLE	V	ia	WB	AC	s	L	CL	WBW	WI	 BA	GMM	AV
NUMBER	(8	;r)	(gr)	(2)	(1	bs)	(lbs)	(gr	) (į	gr)		(%)
12110521	100	000	467	4.46	5	0	100	6172	.0 103	375.0	2.54	2.9
				DEF	RMATI	ON (inc	ches X (	0.0001	)			
	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	<b>#</b> 3(4.0	IN.)	LVDT	#4(6.0	625 I
CYCLE _	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
NUMBER												1.5
100	17.9	20.8	5.7	9.7	11.2	2.7	7.8	9.1	2.0	6.2	7.2	
		20.8 16.0	5.7 14.3		11.2 8.5	2.7 6.3	7.8 5.7		2.0 4.4		7.2 4.7	2.9
100	14.1		14.3	7.5			5.7	6.5		4.1		
500	14.1 12.7	16.0 14.3	14.3	7.5 6.7	8.5 7.5	6.3	5.7 5.0	6.5	4.4 7.0	4.1 3.4	4.7	2.9 4.3
100 500 1000	14.1 12.7 9.9	16.0 14.3 11.5	14.3 24.3	7.5 6.7 5.1	8.5 7.5	6.3 10.4	5.7 5.0 3.6	6.5 5.6	4.4 7.0 15.7	4.1 3.4 2.1	4.7 3.8	2.9 4.3 8.0
100 500 1000 5300	14.1 12.7 9.9 9.0	16.0 14.3 11.5 10.5	14.3 24.3 63.9	7.5 6.7 5.1 4.6	8.5 7.5 5.9 5.3	6.3 10.4 25.4	5.7 5.0 3.6 3.1	6.5 5.6 4.1	4.4 7.0 15.7	4.1 3.4 2.1 1.7	4.7 3.8 2.4	2.9
100 500 1000 5300 10000 30000	14.1 12.7 9.9 9.0 7.6	16.0 14.3 11.5 10.5 8.8	14.3 24.3 63.9 105.9	7.5 6.7 5.1 4.6 3.8	8.5 7.5 5.9 5.3	6.3 10.4 25.4 40.9 70.9	5.7 5.0 3.6 3.1 2.5	6.5 5.6 4.1 3.6	4.4 7.0 15.7 24.3 39.2	4.1 3.4 2.1 1.7	4.7 3.8 2.4 2.0	2.9 4.3 8.0 11.5
100 500 1000 5300 10000 30000	14.1 12.7 9.9 9.0 7.6 5.9	16.0 14.3 11.5 10.5 8.8 6.9	14.3 24.3 63.9 105.9 192.4	7.5 6.7 5.1 4.6 3.8 2.9	8.5 7.5 5.9 5.3 4.4 3.4	6.3 10.4 25.4 40.9 70.9 213.0	5.7 5.0 3.6 3.1 2.5	6.5 5.6 4.1 3.6 2.8 2.0	4.4 7.0 15.7 24.3 39.2	4.1 3.4 2.1 1.7 7.5	4.7 3.8 2.4 2.0 9.0	2.9 4.3 8.0 11.5
100 500 1000 5300 10000 30000 166200	14.1 12.7 9.9 9.0 7.6 5.9	16.0 14.3 11.5 10.5 8.8 6.9	14.3 24.3 63.9 105.9 192.4 623.3	7.5 6.7 5.1 4.6 3.8 2.9	8.5 7.5 5.9 5.3 4.4 3.4	6.3 10.4 25.4 40.9 70.9 213.0	5.7 5.0 3.6 3.1 2.5	6.5 5.6 4.1 3.6 2.8 2.0	4.4 7.0 15.7 24.3 39.2 103.8	4.1 3.4 2.1 1.7 7.5	4.7 3.8 2.4 2.0 9.0	2.9 4.3 8.0 11.5
100 500 1000 5300 10000 30000 166200	14.1 12.7 9.9 9.0 7.6 5.9 OTAL V	16.0 14.3 11.5 10.5 8.8 6.9	14.3 24.3 63.9 105.9 192.4 623.3	7.5 6.7 5.1 4.6 3.8 2.9 AGGREC	8.5 7.5 5.9 5.3 4.4 3.4	6.3 10.4 25.4 40.9 70.9 213.0	5.7 5.0 3.6 3.1 2.5	6.5 5.6 4.1 3.6 2.8 2.0	4.4 7.0 15.7 24.3 39.2 103.8	4.1 3.4 2.1 1.7 7.5	4.7 3.8 2.4 2.0 9.0 -	2.9 4.3 8.0 11.5
100 500 1000 5300 10000 30000 166200 A = TC C = PI	14.1 12.7 9.9 9.0 7.6 5.9 OTAL V ERCENT	16.0 14.3 11.5 10.5 8.8 6.9 VEIGHT	14.3 24.3 63.9 105.9 192.4 623.3 OF DRY	7.5 6.7 5.1 4.6 3.8 2.9 AGGREC	8.5 7.5 5.9 5.3 4.4 3.4	6.3 10.4 25.4 40.9 70.9 213.0	5.7 5.0 3.6 3.1 2.5	6.5 5.6 4.1 3.6 2.8 2.0	4.4 7.0 15.7 24.3 39.2 103.8	4.1 3.4 2.1 1.7 7.5 - T OF BI	4.7 3.8 2.4 2.0 9.0 -	2.9 4.3 8.0 11.5

ELA. AND TOT. - ELASTIC AND TOTAL DEFORMATION/CYCLE;
PLA. - CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

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## BEAM CYCLIC LOAD DATA

SAMPLE NUMBER		M gr)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM.	AV (%)
12110521	100		467	4.46		0	100	6177.	0 103	81.0	2.54	2.90
12110531	100	. <del></del>		7.70			100	01//.			2.J7	2.50
				DEF	ORMATI	ON (inc	ches X (	0.0001)				
_	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
CYCLE NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	17.9	20.6	5.7	9.7	11.1	2.7	7.8	9.0	2.0	6.2	7.1	1.5
500	14.0	16.0	14.2	7.4	8.5	6.3	5.7	6.5	4.4	4.1	4.7	2.9
1000	12.6	14.7	24.0	6.7	7.7	10.3	5.0	5.8	7.0	3.4	3.9	4.3
5150	9.9	11.5	63.7	5.1	5.9	25.4	3.6	4.2	15.7	2.1	2.4	8.1
10000	9.0	10.4	103.4	4.6	5.3	40.1	3.1	3.6	23.8	1.7	2.0	11.3
30000	7.6	8.8	191.4	3.8	4.4	70.8	2.5	2.9	39.2	0.7	2.4	-
189900	5.8	6.6	684.0	2.8	3.3	233.2	1.6	1.9	112.8	-	-	-
SAMPLE NUMBER		NA gr)	WB (gr)	AC (I)		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
			(81)									
12110512	100	)00	467	4.46	5	0 <del></del>	200	6170.	0 10:	373.0	2.54	2.9
				DEF	ORMATI	ON (in	ches X (	0.0001)				
CYCLE _	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	<b>#</b> 3(4.0	IN.)	LVDT	#4(6.0	625 I
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	36.0	41.7	13.0	19.0	22.0	5.9	14.9	17.3	4.4	11.4	13.2	3.1
500	28.3	32.3	32.3		16.7	13.8	10.9	12.4	9.4	7.4	8.5	5.9
1000		29.3			15.0	22.8		10.9	14.9		7.0	8.7
5000			142.4		11.4			7.7	32.9	3.7	4.2	16.0
10000			242.7					6.7	52.1		3.4	23.0
26600			409.1					5.4	78.7	2.1	2.4	29.9
L44000	12.1	14.1	1301.8	5.8	6.7	436.4	3.2	3.8	204.2	1.1	1.2	56.0
	OTAL W	Æ IGHT	OF DRY	AGGRE	GATES;			WB =	WEIGH:	OF B	TUMEN;	
• TO		4000	ALT CONT	ENT.				SL -	SUSTA	INED LO	DAD;	
	ERCEN1	ASPE	- COII								•	
- Pf			MPLE IN					CL -	CYCLIC	LOAD	;	

ELA. AND TOT. = ELASTIC AND TOTAL DEFORMATION/CYCLE;
PLA. = CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.



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SAMPLE NUMBER		A ;r)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr)		WBA (gr)	GMM	AV (Z)
12110522	100	000	467	4.46	5	0	200	6169	. 0	10372.0	2.54	2.96
•				DEF	ORMATI	ON (in	hes X	0.0001	)			
CYCLE	LVDT	<b>#</b> 1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
150	33.9	39.4	16.7	17.8	20.7	7.5	13.8	16.1	5.	4 10.3	11.9	3.7
500	28.3	32.9	32.8	14.6	17.0	14.1	10.9	12.6	9.	5 7.4	8.6	5.9
1100	25.2	28.8	58.9	12.9	14.7	24.4	9.3	10.6	15.	9 6.0	6.8	9.2
5200	19.9	23.0	146.4	10.0	11.5	56.8	6.7	7.8	33.	7 3.7	4.3	16.2
10100	18.0	20.6	239.0	9.0	10.3	90.0	5.8	6.7	51.	2 3.0	3.4	22.6
27400	15.5			7.6	8.6	151.5	4.7	5.3	80.	4 2.1	2.3	30.3
175550	11.8	13.4	1495.1	5.6	6.4	496.2	3.1	3.5	228.	2 1.0	1.1	59.8
SAMPLE		ia	WB	AC	s	iL	CL	WBW		WBA	GMM	VA
NUMBER	(8	r)	(gr)	<b>(Z)</b>	(1	bs)	(lbs)	(gr	)	(gr)		(%)
12110532	100	000	467	4.46	5	0	200	6166	. 0	10369.0	2.54	2.9
				DEF	ORMATI	ON (in	ches X	0.0001	)	******		
-	LVDT	<b>#</b> 1(0	.0 IN.)							) LVDT	#4(6.0	)625 I
_	LVDT		<del></del>	LVDT	<b>#</b> 2(2.			#3(4.0	O IN.			)625 I
_	ELA.	TOT	<del></del>	LVDT	#2(2. TOT.	0 IN.)	LVDT ELA.	#3(4.)	O IN.	. ELA.		PLA.
NUMBER	ELA.	TOT	. PLA.	ELA.	#2(2. TOT.	O IN.)	ELA.	#3(4.)	O IN.	2 11.4	TOT.	PLA.
NUMBER 100	ELA. 36.2 28.4	TOT 41.0 32.9	. PLA.	LVDT ELA. 19.0 14.6	#2(2. TOT. 21.5 16.9	0 IN.) PLA. 5.7	LVDT ELA. 14.9 10.9	#3(4.0 TOT.	PLA 4. 9.	2 11.4 5 7.4	TOT.	PLA. 3.0 5.9
100 500	ELA. 36.2 28.4 24.4	TOT 41.0 32.9 28.0	. PLA. 12.6 32.9	LVDT ELA. 19.0 14.6 12.4	#2(2. TOT. 21.5 16.9 14.2	0 IN.) PLA. 5.7 14.0	LVDT ELA. 14.9 10.9 8.8	#3(4.0 TOT. 16.9 12.6	PLA 4. 9. 18.	2 11.4 5 7.4 3 5.5	TOT. 12.9 8.6	PLA. 3.0 5.9 10.3
100 500 1400 5000	ELA. 36.2 28.4 24.4 20.1	TOT 41.0 32.9 28.0 22.8	12.6 32.9 69.8	LVDT  ELA.  19.0 14.6 12.4 10.1	#2(2. TOT. 21.5 16.9 14.2 11.4	0 IN.) PLA. 5.7 14.0 28.6 54.8	LVDT ELA. 14.9 10.9 8.8 6.8	#3(4.0 TOT. 16.9 12.6 10.2	PLA 4. 9. 18.	2 11.4 5 7.4 3 5.5 5 3.7	TOT. 12.9 8.6 6.4	PLA. 3.0 5.9 10.3 15.7
100 500 1400 5000 12300	ELA. 36.2 28.4 24.4 20.1 17.6	TOT 41.0 32.9 28.0 22.8 20.0	. PLA.  12.6 32.9 69.8 141.5	LVDT  ELA.  19.0 14.6 12.4 10.1 8.7	#2(2. TOT. 21.5 16.9 14.2 11.4 9.9	0 IN.) PLA. 5.7 14.0 28.6 54.8 102.1	LVDT ELA. 14.9 10.9 8.8 6.8 5.6	#3(4.0 TOT. 16.9 12.6 10.2 7.7	PLA 4. 9. 18. 32.	2 11.4 5 7.4 3 5.5 5 3.7 1 2.8	TOT.  12.9 8.6 6.4 4.2	PLA.  3.0 5.9 10.3 15.7 24.4
100 500 1400 5000 12300 20100	ELA.  36.2 28.4 24.4 20.1 17.6 16.3	TOT 41.0 32.9 28.0 22.8 20.0 18.6	12.6 32.9 69.8 141.5 274.2	LVDT  ELA.  19.0 14.6 12.4 10.1 8.7 8.0	#2(2. TOT. 21.5 16.9 14.2 11.4 9.9 9.1	0 IN.) PLA. 5.7 14.0 28.6 54.8 102.1 124.0	LVDT ELA. 14.9 10.9 8.8 6.8 5.6	#3(4.0 TOT. 16.9 12.6 10.2 7.7 6.4 5.7	PLA 4. 9. 18. 32. 57.	2 11.4 5 7.4 3 5.5 5 3.7 1 2.8 1 2.3	TOT.  12.9 8.6 6.4 4.2 3.1	PLA.  3.0 5.9 10.3 15.7
500 1400 5000 12300 20100 167500	ELA.  36.2 28.4 24.4 20.1 17.6 16.3 11.9	TOT 41.0 32.9 28.0 22.8 20.0 18.6 13.5	12.6 32.9 69.8 141.5 274.2 340.2	19.0 14.6 12.4 10.1 8.7 8.0 5.7	#2(2. TOT. 21.5 16.9 14.2 11.4 9.9 9.1 6.4	0 IN.) PLA. 5.7 14.0 28.6 54.8 102.1 124.0 477.3	LVDT ELA. 14.9 10.9 8.8 6.8 5.6	#3(4.0 TOT. 16.9 12.6 10.2 7.7 6.4 5.7 3.5	PLA 4. 9. 18. 32. 57. 67.	2 11.4 5 7.4 3 5.5 5 3.7 1 2.8 1 2.3	TOT.  12.9 8.6 6.4 4.2 3.1 2.6	3.0 5.9 10.3 15.7 24.4 26.6
100 500 1400 5000 12300 20100 167500	28.4 24.4 20.1 17.6 16.3 11.9	TOT 41.0 32.9 28.0 22.8 20.0 18.6 13.5	12.6 32.9 69.8 141.5 274.2 340.2 1439.9	LVDT  ELA.  19.0 14.6 12.4 10.1 8.7 8.0 5.7	#2(2. TOT. 21.5 16.9 14.2 11.4 9.9 9.1 6.4	0 IN.) PLA. 5.7 14.0 28.6 54.8 102.1 124.0 477.3	LVDT ELA. 14.9 10.9 8.8 6.8 5.6	#3(4.6 TOT. 16.9 12.6 10.2 7.7 6.4 5.7 3.5	9. 18. 32. 57. 219.	2 11.4 5 7.4 3 5.5 5 3.7 1 2.8 1 2.3	TOT.  12.9 8.6 6.4 4.2 3.1 2.6 -	3.0 5.9 10.3 15.7 24.4 26.6
100 500 1400 5000 12300 20100 167500 A = TC	ELA.  36.2 28.4 24.4 20.1 17.6 16.3 11.9  OTAL VERCENT	TOT 41.0 32.9 28.0 22.8 20.0 18.6 13.5	12.6 32.9 69.8 141.5 274.2 340.2 1439.9	LVDT  ELA.  19.0 14.6 12.4 10.1 8.7 8.0 5.7  AGGREA	#2(2. TOT. 21.5 16.9 14.2 11.4 9.9 9.1 6.4	0 IN.) PLA. 5.7 14.0 28.6 54.8 102.1 124.0 477.3	LVDT ELA. 14.9 10.9 8.8 6.8 5.6	#3(4.0 TOT. 16.9 12.6 10.2 7.7 6.4 5.7 3.5	PLA 4. 9. 18. 32. 57. 67. 219.	2 11.4 5 7.4 3 5.5 5 3.7 1 2.8 1 2.3 8 -	TOT.  12.9 8.6 6.4 4.2 3.1 2.6 - ITUMEN;	3.0 5.9 10.3 15.7 24.4 26.6
100 500 1400 5000 12300 20100 167500 A = TC C = PI	ELA.  36.2 28.4 24.4 20.1 17.6 16.3 11.9  OTAL V ERCENT	TOT 41.0 32.9 28.0 22.8 20.0 18.6 13.5 VEIGHT	12.6 32.9 69.8 141.5 274.2 340.2 1439.9	LVDT  ELA.  19.0 14.6 12.4 10.1 8.7 8.0 5.7  AGGREGIENT; AIR;	#2(2. TOT. 21.5 16.9 14.2 11.4 9.9 9.1 6.4	0 IN.) PLA. 5.7 14.0 28.6 54.8 102.1 124.0 477.3	LVDT ELA. 14.9 10.9 8.8 6.8 5.6	#3(4.0 TOT. 16.9 12.6 10.2 7.7 6.4 5.7 3.5	9. 18. 32. 57. 67. 219.	2 11.4 5 7.4 3 5.5 5 3.7 1 2.8 1 2.3 8 -	TOT.  12.9 8.6 6.4 4.2 3.1 2.6 - ITUMEN;	PLA.  3.0 5.9 10.3 15.7 24.4 26.6



SAMPLE		ia	WB	AC		L	CL	WBW		√BA	GMM	VA
NUMBER	(8	gr)	(gr)	(%)	(1	.bs)	(lbs)	(gr	)	(gr)		(%)
12110515	100	000	467	4.46	5	0	500	6168	.0 10	372.0	2.54	2.98
				DEF	ORMATI	ON (in	ches X	0.0001	)			
CYCLE _	LVDT	#1(0.0	O IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	) IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	90.4	105.2	42.8	44.5	51.7	18.3	31.6	36.8	12.1	21.3	24.8	7.7
500	71.0	83.5	110.9	34.2	40.2	44.3	22.7	26.7	26.8	13.3	15.7	14.3
1000	64.0	74.5	188.0	30.5	35.5	72.9	19.6	22.8	42.2	10.7	12.5	20.8
5000	50.3	58.2	470.6	23.4	27.1	169.9	13.8	16.0	88.1	6.1	7.1	34.5
10000	45.3	51.3	813.5	20.9	23.7	284.7	11.8	13.4	140.1	4.7	5.4	48.8
30000	38.4	44.1	1492.1	17.4	20.0	496.8	9.2	10.5	223.8	3.0	3.5	62.9
102631	32.0	36.4	3493.4	14.2	16.2	1098.9	6.8	7.8	444.1	1.7	1.9	93.2
SAMPLE			WB	AC	s	L	CL	WBW			GMM	AV
NUMBER	(g	r)	(gr)	(%)	(1	bs)	(lbs)	(gr	)	(gr)		(2)
12110525	100	000	467	4.46	5	0	500	6161	.0 10	0371.0	2.54	3.13
12110525	100	000	467				500		*****	0371.0	2.54	3.13
		#1(0.0		DEF	ORMATI		ches X		)		2.54 \$4(6.0	
CYCLE _				DEF	ORMATI	ON (ind	ches X	0.0001	)			
CYCLE _	LVDT	#1(0.0	O IN.)	DEFO	P2(2.	ON (ind	LVDT	0.0001 #3(4.0	) D IN.)	LVDT	<b>#</b> 4(6.0	0625 IN
	LVDT	#1(0.0 TOT.	PLA.	DEFO	#2(2.	ON (inc	LVDT ELA. 29.1	#3(4.)	) D IN.) PLA.	LVDT	<b>#</b> 4(6.0	0625 IN
CYCLE	LVDT ELA. 87.1	#1(0.0 TOT. 99.5 87.0	PLA.	DEF() LVDT ELA. 41.9 34.4	#2(2. TOT.	ON (inc 0 IN.) PLA. 24.8	LVDT  ELA.  29.1 22.6	0.0001 #3(4.0 TOT.	) D IN.) PLA. 15.9	LVDT	<b>#</b> 4(6.0	0625 IN
CYCLE	ELA. 87.1 72.7 65.5	#1(0.0 TOT. 99.5 87.0 75.8	PLA. 59.8 115.4	DEFC LVDT ELA. 41.9 34.4 30.7	#2(2. TOT. 47.9 41.2 35.5	ON (inc 0 IN.) PLA. 24.8 45.3 74.1	LVDT  ELA.  29.1 22.6 19.5	#3(4.0 TOT.	) IN.) FLA. 15.9 27.1 42.5	LVDT ELA.	<b>#</b> 4(6.0	0625 IN
150 500 1000	ELA. 87.1 72.7 65.5 51.5	#1(0.0 TOT. 99.5 87.0 75.8 59.4	PLA. 59.8 115.4 194.5	DEFC LVDT ELA. 41.9 34.4 30.7 23.6	#2(2. TOT. 47.9 41.2 35.5 27.2	ON (inc) PLA. 24.8 45.3 74.1 179.4	LVDT  ELA.  29.1 22.6 19.5 13.7	#3(4.0 TOT. 33.2 27.1 22.6	) PLA. 15.9 27.1 42.5 91.9	LVDT ELA.	<b>#</b> 4(6.0	0625 IN
150 500 1000 5000	ELA. 87.1 72.7 65.5 51.5 45.4	#1(0.0 TOT. 99.5 87.0 75.8 59.4 52.9	PLA. 59.8 115.4 194.5 506.0	DEFO LVDT ELA. 41.9 34.4 30.7 23.6 20.5	#2(2. TOT. 47.9 41.2 35.5 27.2 23.9	ON (inc 0 IN.) PLA. 24.8 45.3 74.1 179.4 321.8	LVDT  ELA.  29.1 22.6 19.5 13.7 11.3	#3(4.0 TOT. 33.2 27.1 22.6 15.8 13.2	) PLA. 15.9 27.1 42.5 91.9 154.6	ELA.	<b>#</b> 4(6.0	0625 IN
150 500 1000 5000	ELA. 87.1 72.7 65.5 51.5 45.4 39.3	#1(0.0 TOT. 99.5 87.0 75.8 59.4 52.9 44.4	PLA.  59.8 115.4 194.5 506.0 942.2	DEFO LVDT ELA. 41.9 34.4 30.7 23.6 20.5 17.5	#2(2. TOT. 47.9 41.2 35.5 27.2 23.9 19.8	ON (inc 0 IN.) PLA. 24.8 45.3 74.1 179.4 321.8 504.5	ELA.  29.1 22.6 19.5 13.7 11.3 9.1	#3(4.6 TOT.  33.2 27.1 22.6 15.8 13.2 10.2	PLA.  15.9 27.1 42.5 91.9 154.6 223.9	LVDT ELA	<b>#</b> 4(6.0	0625 IN
150 500 1000 5000 11500 30000 65100	ELA. 87.1 72.7 65.5 51.5 45.4 39.3 35.0	#1(0.0 TOT. 99.5 87.0 75.8 59.4 52.9 44.4 1	PLA.  59.8 115.4 194.5 506.0 942.2	DEFO LVDT ELA. 41.9 34.4 30.7 23.6 20.5 17.5	#2(2. TOT. 47.9 41.2 35.5 27.2 23.9 19.8 17.9	ON (inc 0 IN.) PLA. 24.8 45.3 74.1 179.4 321.8 504.5 887.8	ELA.  29.1 22.6 19.5 13.7 11.3 9.1	33.2 27.1 22.6 15.8 13.2 10.2 8.8	PLA.  15.9 27.1 42.5 91.9 154.6 223.9 368.0	LVDT ELA	#4(6.0 TOT.	PLA.
150 500 1000 5000 11500 30000 65100	ELA.  87.1 72.7 65.5 51.5 45.4 39.3 35.0	#1(0.0 TOT. 99.5 87.0 75.8 59.4 52.9 44.4 1	PLA.  59.8 115.4 194.5 506.0 942.2 1543.7 2815.6	DEFO LVDT ELA. 41.9 34.4 30.7 23.6 20.5 17.5 15.4	#2(2. TOT. 47.9 41.2 35.5 27.2 23.9 19.8 17.9	ON (inc 0 IN.) PLA. 24.8 45.3 74.1 179.4 321.8 504.5 887.8	ELA.  29.1 22.6 19.5 13.7 11.3 9.1	707.  33.2 27.1 22.6 15.8 13.2 10.2 8.8	) PLA. 15.9 27.1 42.5 91.9 154.6 223.9 368.0	LVDT  ELA.  AT OF B	#4(6.0 TOT ITUMEN;	PLA.
150 500 1000 5000 11500 30000 65100	ELA.  87.1 72.7 65.5 51.5 45.4 39.3 35.0  DTAL WERCENT	#1(0.0 TOT. 99.5 87.0 75.8 59.4 52.9 44.4 1 40.8 2	PLA.  59.8 115.4 194.5 506.0 942.2 1543.7 2815.6	DEFO LVDT ELA. 41.9 34.4 30.7 23.6 20.5 17.5 15.4 AGGREC	#2(2. TOT. 47.9 41.2 35.5 27.2 23.9 19.8 17.9	ON (inc 0 IN.) PLA. 24.8 45.3 74.1 179.4 321.8 504.5 887.8	ELA.  29.1 22.6 19.5 13.7 11.3 9.1	707.  33.2 27.1 22.6 15.8 13.2 10.2 8.8	) PLA. 15.9 27.1 42.5 91.9 154.6 223.9 368.0	LVDT  ELA.	#4(6.0 TOT ITUMEN;	PLA.
150 500 1000 5000 11500 30000 65100 A = TC	ELA.  87.1 72.7 65.5 51.5 45.4 39.3 35.0  OTAL WERCENT	#1(0.0 TOT. 99.5 87.0 75.8 59.4 52.9 44.4 1 40.8 2	PLA.  59.8 115.4 194.5 506.0 942.2 1543.7 2815.6  OF DRY	DEFO LVDT ELA. 41.9 34.4 30.7 23.6 20.5 17.5 15.4 AGGREC	#2(2. TOT. 47.9 41.2 35.5 27.2 23.9 19.8 17.9	ON (inc 0 IN.) PLA. 24.8 45.3 74.1 179.4 321.8 504.5 887.8	ELA.  29.1 22.6 19.5 13.7 11.3 9.1	0.0001 #3(4.0 TOT.  33.2 27.1 22.6 15.8 13.2 10.2 8.8	PLA.  15.9 27.1 42.5 91.9 154.6 223.9 368.0  WEIGH	LVDT  ELA.  AT OF B	#4(6.0 TOT.	PLA.



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SAMPLE		AA	WB	AC		L 	CL	WBW		√BA	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	)	(gr)		(%)
12110535	100	000	467	4.46	5	0	500	6170.	0 10	375.0	2.54	2.98
				DEF	ORMATI	ON (inc	ches X	0.0001)	)			
	LVDT	#1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	90.4	102.5	43.9	44.5	50.4	18.8	31.6	35.9	12.5	21.4	24.2	7.9
500	71.0	81.7	110.6		39.4	44.2		26.1	26.7		15.3	14.3
1000	64.0	72.5	188.2		34.6	73.0		22.2	42.3	-	-	-
5300	49.8	57.9	488.8		27.0	176.1		15.9	90.9	-	-	-
10300	45.1	51.3	821.5		23.7	287.3		13.4	141.1	-	_	_
30000	38.4		1485.6		20.0	494.9		10.5	223.1	-	-	_
62200	34.4		2597.5		17.7	836.8		8.9	354.2	-	-	-
SAMPLE NUMBER		-iA gr)	WB	AC (Z)		L bs)	CL (lbs)	WBW (gr)		√BA (gr)	GMM	AV (Z)
12110611	100	000	467	4.46	5	0	100	5958.	0 10	0168.0	2.54	5.0
				DEF	ORMATI	ON (in	ches X	0.0001)	· · · · · · · · · · · · · · · · · · ·			
	LVDT	#1(0.0	O IN.)			ON (ind		#3(4.0		LVDT	#4(6.0	625 11
_	LVDT	#1(0.0	PLA.							LVDT	#4(6.0	625 II
_	ELA.			LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	) IN.)			
NUMBER	ELA. 24.1	TOT.	PLA.	LVDT	<b>#</b> 2(2. TOT.	O IN.)	LVDT	#3(4.0 TOT.	PLA.	ELA.	TOT.	PLA.
NUMBER 100	ELA. 24.1 18.9	TOT.	PLA.	LVDT ELA. 10.6	#2(2. TOT.	0 IN.) PLA. 4.6	ELA.	#3(4.0 TOT.	PLA.	ELA.	TOT.	PLA.
100 500 1000	ELA. 24.1 18.9 17.1	TOT. 28.0 21.5 19.4	PLA. 12.0 30.4	LVDT  ELA.  10.6 8.1 7.2	#2(2. TOT. 12.3 9.2 8.2	0 IN.) PLA. 4.6 10.8 17.8	ELA. 8.0 5.7 4.9	#3(4.0 TOT. 9.3 6.5	PLA.  3.2 6.9 11.0	5.8 3.6 2.9	TOT.	PLA. 2.2 4.0 5.9
100 500 1000 5000	ELA. 24.1 18.9 17.1 13.4	TOT.  28.0 21.5 19.4 15.2	PLA.  12.0 30.4 51.9 131.4	LVDT  ELA.  10.6 8.1 7.2 5.5	#2(2. TOT. 12.3 9.2 8.2 6.3	0 IN.) PLA. 4.6 10.8 17.8 41.9	ELA. 8.0 5.7 4.9 3.4	#3(4.0 TOT. 9.3 6.5 5.6 3.9	PLA.  3.2 6.9 11.0 23.1	5.8 3.6 2.9	TOT. 6.7 4.1 3.3	PLA. 2.2 4.0 5.9 9.9
500 1000 5000 10000	ELA. 24.1 18.9 17.1 13.4 12.1	TOT.  28.0 21.5 19.4 15.2 13.7	PLA.  12.0 30.4 51.9 131.4 227.2	LVDT ELA.  10.6 8.1 7.2 5.5 4.9	#2(2. TOT. 12.3 9.2 8.2 6.3 5.6	0 IN.) PLA. 4.6 10.8 17.8 41.9 70.1	ELA. 8.0 5.7 4.9 3.4 2.9	#3(4.0 TOT. 9.3 6.5 5.6 3.9 3.3	PLA.  3.2 6.9 11.0 23.1 36.6	5.8 3.6 2.9 1.7	TOT. 6.7 4.1 3.3 1.9 1.5	PLA.  2.2 4.0 5.9 9.9 14.1
100 500 1000 5000 10000 30250	24.1 18.9 17.1 13.4 12.1 10.2	TOT.  28.0 21.5 19.4 15.2 13.7 11.7	PLA.  12.0 30.4 51.9 131.4 227.2 421.9	LVDT ELA.  10.6 8.1 7.2 5.5 4.9 4.1	#2(2. TOT. 12.3 9.2 8.2 6.3 5.6 4.7	0 IN.) PLA. 4.6 10.8 17.8 41.9 70.1 123.5	ELA. 8.0 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.3 6.5 5.6 3.9 3.3 2.6	PLA.  3.2 6.9 11.0 23.1 36.6 58.8	5.8 3.6 2.9 1.7 1.3	TOT. 6.7 4.1 3.3 1.9 1.5 0.9	PLA.  2.2 4.0 5.9 9.9 14.1 18.4
100 500 1000 5000 10000 30250 143700	24.1 18.9 17.1 13.4 12.1 10.2 8.1	TOT.  28.0 21.5 19.4 15.2 13.7 11.7 9.2	PLA.  12.0 30.4 51.9 131.4 227.2 421.9	LVDT ELA.  10.6 8.1 7.2 5.5 4.9 4.1 3.1	#2(2. TOT. 12.3 9.2 8.2 6.3 5.6 4.7 3.6	0 IN.) PLA. 4.6 10.8 17.8 41.9 70.1 123.5 328.1	ELA. 8.0 5.7 4.9 3.4 2.9 2.3	9.3 6.5 5.6 3.9 3.3 2.6 1.8	PLA.  3.2 6.9 11.0 23.1 36.6 58.8 135.5	5.8 3.6 2.9 1.7 1.3	TOT. 6.7 4.1 3.3 1.9 1.5 0.9 0.5	PLA.  2.2 4.0 5.9 9.9 14.1 18.4 29.4
100 500 1000 5000 10000 30250 143700	24.1 18.9 17.1 13.4 12.1 10.2 8.1	TOT.  28.0 21.5 19.4 15.2 13.7 11.7 9.2	PLA.  12.0 30.4 51.9 131.4 227.2 421.9 1209.9	LVDT  ELA.  10.6 8.1 7.2 5.5 4.9 4.1 3.1	#2(2. TOT. 12.3 9.2 8.2 6.3 5.6 4.7 3.6	0 IN.) PLA. 4.6 10.8 17.8 41.9 70.1 123.5 328.1	ELA. 8.0 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.3 6.5 5.6 3.9 3.3 2.6 1.8	PLA.  3.2 6.9 11.0 23.1 36.6 58.8 135.5	5.8 3.6 2.9 1.7 1.3 0.8	TOT. 6.7 4.1 3.3 1.9 1.5 0.9 0.5	PLA.  2.2 4.0 5.9 9.9 14.1 18.4 29.4
100 500 1000 5000 10000 30250 143700 A = TC	ELA.  24.1 18.9 17.1 13.4 12.1 10.2 8.1	TOT.  28.0 21.5 19.4 15.2 13.7 11.7 9.2	PLA.  12.0 30.4 51.9 131.4 227.2 421.9 1209.9	LVDT  ELA.  10.6 8.1 7.2 5.5 4.9 4.1 3.1  AGGREG	#2(2. TOT. 12.3 9.2 8.2 6.3 5.6 4.7 3.6	0 IN.) PLA. 4.6 10.8 17.8 41.9 70.1 123.5 328.1	ELA. 8.0 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.3 6.5 5.6 3.9 3.3 2.6 1.8	PLA.  3.2 6.9 11.0 23.1 36.6 58.8 135.5 WEIGH	5.8 3.6 2.9 1.7 1.3 0.8 0.4	TOT.  6.7 4.1 3.3 1.9 1.5 0.9 0.5	PLA.  2.2 4.0 5.9 9.9 14.1 18.4 29.4
100 500 1000 5000 10000 30250 143700 A = TC C = PE	ELA.  24.1 18.9 17.1 13.4 12.1 10.2 8.1  OTAL VERCENT	TOT.  28.0 21.5 19.4 15.2 13.7 11.7 9.2	PLA.  12.0 30.4 51.9 131.4 227.2 421.9 1209.9  OF DRY	LVDT  ELA.  10.6 8.1 7.2 5.5 4.9 4.1 3.1  AGGRECIENT; AIR;	#2(2. TOT. 12.3 9.2 8.2 6.3 5.6 4.7 3.6 GATES;	0 IN.) PLA. 4.6 10.8 17.8 41.9 70.1 123.5 328.1	ELA. 8.0 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT.  9.3 6.5 5.6 3.9 3.3 2.6 1.8  WB = SL = CL =	PLA.  3.2 6.9 11.0 23.1 36.6 58.8 135.5 WEIG	5.8 3.6 2.9 1.7 1.3 0.8 0.4	TOT.  6.7  4.1  3.3  1.9  1.5  0.9  0.5	PLA.  2.2 4.0 5.9 9.9 14.1 18.4 29.4

SAMPLE	WA		WB	AC	S		CL	WBW		BA	GMM	AV
NUMBER	(gr)	)	(gr)	(%)	(1)	bs)	(lbs)	(gr)	(1	gr)		(%)
12110621	10000	0	467	4.46	5	0	100	5926.	0 10	106.0	2.54	4.93
				DEF	RMATI	ON (inc	ches X (	0.0001)	1			
 CYCLE	LVDT #	1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	23.6 20	5.9	11.8	10.4	11.9	4.6	7.9	9.0	3.2	5.8	6.6	2.2
500	18.6 20	0.9	29.6	8.0	9.0	10.6	5.7	6.4	6.8	3.6	4.1	4.0
1000	16.7 19	9.2	50.8	7.1	8.2	17.6	4.9	5.6	10.9	2.9	3.4	5.9
5500	12.9 1	5.0	136.2	5.4	6.2	43.7	3.4	3.9	24.0	1.6	1.9	10.3
10700	11.7 13	3.6	226.5	4.8	5.6	70.4	2.9	3.4	36.8	1.3	1.5	14.1
30000	10.0 1	1.6	398.8	4.0	4.7	118.0	2.3	2.6	56.7	0.8	1.0	18.0
192000	7.6	8.6 14	411.0	3.0	3.4	381.4	1.4	1.6	154.4	0.4	0.4	31.4
SAMPLE	WA		WB	AC	S	ī.	CL	WBW		BA	GMM	AV
NUMBER	(gr	)	(gr)	(Z)		bs)	(lbs)	(gr)		Br)		(%)
12110631	10000	0	467	4.46	5	0	100	5960.	0 10	183.0	2.54	5.1
12110631	10000	0	467				100			183.0	2.54	5.1
_	10000			DEFO	ORMATI		ches X (	0.0001			2.54 #4(6.0	
CYCLE _	LVDT #			DEFO	ORMATI	ON (in	ches X (	0.0001	)			
CYCLE _	LVDT #	1(0.0 TOT.	IN.)	DEFO	#2(2.	ON (inc	ches X (	#3(4.0	) ) IN.)	LVDT	<b>#</b> 4(6.0	)625 I
- CYCLE _ NUMBER	LVDT #:	1(0.0 TOT.	IN.)	DEFO	#2(2.	ON (inc	LVDT	#3(4.0	) IN.)	LVDT ELA.	#4(6.0	0625 I PLA. 2.3
	LVDT #:	1(0.0 TOT. 8.0 2.0	IN.) PLA. 12.8	DEFO LVDT ELA. 10.6	#2(2. TOT. 12.1 9.3	ON (inc	LVDT ELA. 8.0	#3(4.0 TOT.	) IN.) PLA. 3.4	LVDT ELA. 5.8	#4(6.0 TOT.	PLA.
	LVDT #3 ELA. 3 24.7 20 19.4 22	1(0.0 TOT. 8.0 2.0	IN.) PLA. 12.8 32.6 54.7	DEFO LVDT ELA. 10.6 8.2 7.3	#2(2. TOT. 12.1 9.3 8.4	ON (inc 0 IN.) PLA. 4.8 11.4 18.5	LVDT  ELA.  8.0 5.7 4.9	#3(4.0 TOT.	) IN.) PLA. 3.4 7.3	LVDT  ELA.  5.8 3.6 2.9	#4(6.0 TOT. 6.6 4.1	PLA.  2.3 4.2 6.0
TOO 1000	LVDT #: ELA. 1 24.7 26 19.4 22 17.5 26	1(0.0 TOT. 8.0 2.0 0.1 5.5	IN.) PLA. 12.8 32.6 54.7 139.7	DEFC LVDT ELA. 10.6 8.2 7.3 5.6	#2(2. TOT.  12.1 9.3 8.4 6.3	ON (inc 0 IN.) PLA. 4.8 11.4 18.5	LVDT  ELA.  8.0 5.7 4.9 3.4	#3(4.0 TOT.  9.1 6.5 5.7	PLA.  3.4 7.3 11.3 23.9	LVDT  ELA.  5.8 3.6 2.9 1.7	#4(6.0 TOT. 6.6 4.1 3.3	PLA.  2.3 4.2 6.0 10.2
100 500 1000	LVDT #1  ELA. 1  24.7 26  19.4 26  17.5 26  13.7 15  12.4 16	1(0.0 TOT. 8.0 2.0 0.1 5.5	IN.) PLA. 12.8 32.6 54.7 139.7 239.3	DEFC LVDT ELA. 10.6 8.2 7.3 5.6 4.9	#2(2. TOT. 12.1 9.3 8.4 6.3 5.7	ON (inc) PLA. 4.8 11.4 18.5 43.8 72.6	LVDT  ELA.  8.0 5.7 4.9 3.4	#3(4.0 TOT. 9.1 6.5 5.7 3.9	PLA.  3.4 7.3 11.3 23.9 37.5	LVDT  ELA.  5.8 3.6 2.9 1.7 1.3	#4(6.0 TOT. 6.6 4.1 3.3 1.9	PLA.  2.3 4.2 6.0 10.2 14.2
100 500 1000 5000 10000 50000	LVDT #1  ELA. 1  24.7 26  19.4 26  17.5 26  13.7 15  12.4 16	1(0.0 FOT. 8.0 2.0 0.1 5.5 4.3	IN.) PLA.  12.8 32.6 54.7 139.7 239.3 602.5	DEFO LVDT ELA. 10.6 8.2 7.3 5.6 4.9 3.8	#2(2. TOT. 12.1 9.3 8.4 6.3 5.7 4.3	ON (inc) PLA.  4.8 11.4 18.5 43.8 72.6 169.2	LVDT  ELA.  8.0 5.7 4.9 3.4 2.9 2.0	#3(4.0 TOT.  9.1 6.5 5.7 3.9 3.4 2.3	PLA.  3.4  7.3  11.3  23.9  37.5  76.3	LVDT  ELA.  5.8 3.6 2.9 1.7 1.3 0.6	#4(6.0 TOT. 6.6 4.1 3.3 1.9 1.5 0.7	PLA.  2.3 4.2 6.0 10.2 14.2 21.0
100 500 1000 5000 10000 50000	LVDT #3  24.7 26  19.4 23  17.5 26  13.7 13  12.4 14  9.7 13	B.0 2.0 0.1 5.5 : 4.3 :	IN.) PLA.  12.8 32.6 54.7 139.7 239.3 602.5	DEFO LVDT ELA. 10.6 8.2 7.3 5.6 4.9 3.8 3.4	#2(2. TOT. 12.1 9.3 8.4 6.3 5.7 4.3 3.9	ON (inc 0 IN.) PLA. 4.8 11.4 18.5 43.8 72.6 169.2 279.8	LVDT  ELA.  8.0 5.7 4.9 3.4 2.9 2.0	9.1 6.5 5.7 3.9 3.4 2.3	PLA.  3.4  7.3  11.3  23.9  37.5  76.3	LVDT  ELA.  5.8 3.6 2.9 1.7 1.3 0.6 0.5	#4(6.0 TOT. 6.6 4.1 3.3 1.9 1.5 0.7	PLA.  2.3 4.2 6.0 10.2 14.2 21.0 27.5
100 500 1000 5000 10000 50000 100000	LVDT #:  ELA. 1  24.7 20  19.4 2: 17.5 20  13.7 1: 12.4 16  9.7 1: 8.8 10	1(0.0 FOT. 8.0 2.0 0.1 5.5 4.3 1.1 (0.1 10	IN.) PLA.  12.8 32.6 54.7 139.7 239.3 602.5 031.1	DEFC LVDT ELA. 10.6 8.2 7.3 5.6 4.9 3.8 3.4	#2(2. TOT. 12.1 9.3 8.4 6.3 5.7 4.3 3.9	ON (inc 0 IN.) PLA. 4.8 11.4 18.5 43.8 72.6 169.2 279.8	LVDT  ELA.  8.0 5.7 4.9 3.4 2.9 2.0	#3(4.0 TOT. 9.1 6.5 5.7 3.9 3.4 2.3 1.9	PLA.  3.4 7.3 11.3 23.9 37.5 76.3 118.2	LVDT  ELA.  5.8 3.6 2.9 1.7 1.3 0.6 0.5	#4(6.0 TOT. 6.6 4.1 3.3 1.9 1.5 0.7 0.5	PLA.  2.3 4.2 6.0 10.2 14.2 21.0 27.5
100 500 1000 5000 10000 50000 100000	LVDT #:  ELA. 1  24.7 26  19.4 22  17.5 26  13.7 1:  12.4 16  9.7 1:  8.8 16  OTAL WE:	1(0.0 FOT. 8.0 2.0 0.1 5.5 4.3 1.1 0.1 1GHT (ASPHAI	IN.) PLA.  12.8 32.6 54.7 139.7 239.3 602.5 031.1  OF DRY LT CON	DEFC  LVDT  ELA.  10.6 8.2 7.3 5.6 4.9 3.8 3.4  AGGREC	#2(2. TOT. 12.1 9.3 8.4 6.3 5.7 4.3 3.9	ON (inc 0 IN.) PLA. 4.8 11.4 18.5 43.8 72.6 169.2 279.8	LVDT  ELA.  8.0 5.7 4.9 3.4 2.9 2.0	9.1 6.5 5.7 3.9 3.4 2.3 1.9	PLA.  3.4  7.3  11.3  23.9  37.5  76.3  118.2  WEIGH  SUSTA	LVDT  5.8 3.6 2.9 1.7 1.3 0.6 0.5 T OF B. INED LC C LOAD	#4(6.0 TOT. 6.6 4.1 3.3 1.9 1.5 0.7 0.5	PLA.  2.3 4.2 6.0 10.2 14.2 21.0 27.5
100 500 1000 5000 10000 50000 100000 A = TC C = PI	LVDT #:  ELA. 1  24.7 26  19.4 26  17.5 26  13.7 1:  12.4 16  9.7 1:  8.8 16  OTAL WE:  ERCENT 6	1(0.0 B.0 2.0 0.1 5.5 4.3 1.1 (0 0.1 10 IGHT (ASPHAI	IN.) PLA.  12.8 32.6 54.7 139.7 239.3 602.5 031.1  OF DRY LT CON' PLE IN	DEFO LVDT ELA. 10.6 8.2 7.3 5.6 4.9 3.8 3.4 AGGREC TENT; AIR;	#2(2. TOT. 12.1 9.3 8.4 6.3 5.7 4.3 3.9	ON (inc 0 IN.) PLA. 4.8 11.4 18.5 43.8 72.6 169.2 279.8	LVDT  ELA.  8.0 5.7 4.9 3.4 2.9 2.0	9.1 6.5 5.7 3.9 3.4 2.3 1.9	PLA.  3.4 7.3 11.3 23.9 37.5 76.3 118.2  WEIGHT	LVDT  5.8 3.6 2.9 1.7 1.3 0.6 0.5 T OF B. INED LC C LOAD	#4(6.0 TOT. 6.6 4.1 3.3 1.9 1.5 0.7 0.5	PLA.  2.3 4.2 6.0 10.2 14.2 21.0 27.5



SAMPLE	WA	WB	AC	SL		CL	WBW		BA	GMM	AV
number	(gr)	(gr)	(%)	(lb	5)	(lbs)	(gr	) (į	gr)		(%)
12110612	10000	467	4.46	50		200	5956	.0 10:	169.0	2.54	<b>5</b> .08
			DEF	ORMATIO	N (inc	ches X (	0.0001	)			
CYCLE	LVDT #1(0	.0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
130	46.7 54.2	32.9	19.7	22.9	12.0	14.2	16.4	8.0	9.6	11.2	5.1
500	38.2 43.3	70.8	15.8	17.9	24.3	10.6	12.1	14.9	-	-	-
1000	34.4 38.9	118.9	14.1	15.9	39.5	9.1	10.3	23.1	-	-	-
6000	26.3 29.8	345.4	10.4	11.8	105.4	6.1	6.9	54.1	-	-	-
10100	24.3 27.5	524.6	9.5	10.8	156.1	5.4	6.1	76.8	-	-	-
30200	20.6 23.4	937.4	7.9	9.0	264.4	4.1	4.7	118.2	-	-	-
186800	15.7 17.8	3307.1	5.8	6.6	852.0	2.6	3.0	318.3	-	<u>-</u>	-
SAMPLE	WA	WB	AC	SL		CL	WBW	w	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1b		(lbs)	(gr	_	gr)		(%)
12110622	10000	467	4.46	50		200	5963	.0 10	163.0	2.54	4.85
		*******	DEF	ORMATIO	M (inc	ches X	0.0001	>			
	LVDT #1(0	.0 IN.)	LVDT	#2(2.0	IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDT	<b>#</b> 4(6.0	625 IN
_	LVDT #1(0			#2(2.0 TOT.			#3(4. TOT.			#4(6.0	
_	<del></del>	. PLA.	ELA.	<u>.</u> :		ELA.			ELA.		
NUMBER	ELA. TOT	. PLA.	ELA. 20.4	TOT.	PLA. 9.6	ELA. 14.9	TOT.	PLA. 6.6	ELA.	TOT.	PLA.
NUMBER 100	ELA. TOT	. PLA. 25.3 65.9	ELA. 20.4 15.6	TOT. 23.7 17.9	PLA. 9.6 23.2	ELA. 14.9 10.6	TOT.	PLA. 6.6 14.4	ELA. 10.5 6.5	TOT.	PLA.
100 500 1000	ELA. TOT 46.9 54.6 36.9 42.4	. PLA. 25.3 65.9 111.1	ELA. 20.4 15.6 13.9	TOT. 23.7 17.9 15.8	PLA. 9.6 23.2 37.8	ELA. 14.9 10.6 9.2 6.4	TOT.  17.4 12.2 10.4 7.2	PLA. 6.6 14.4 22.4 47.0	ELA. 10.5 6.5 5.2 2.9	TOT.  12.2 7.5 5.9	PLA. 4.3 8.0
100 500 1000 5000	ELA. TOT 46.9 54.6 36.9 42.4 33.2 37.7	. PLA. 25.3 65.9 111.1 281.9	20.4 15.6 13.9 10.6	TOT. 23.7 17.9 15.8	PLA. 9.6 23.2 37.8 89.0	ELA. 14.9 10.6 9.2 6.4	TOT.  17.4 12.2 10.4 7.2	PLA. 6.6 14.4 22.4	ELA. 10.5 6.5 5.2 2.9	TOT.  12.2 7.5 5.9	PLA. 4.3 8.0 11.5 19.1
100 500 1000 5000 10000	ELA. TOT 46.9 54.6 36.9 42.4 33.2 37.7 26.1 29.6	. PLA.  25.3 65.9 111.1 281.9 475.3	ELA. 20.4 15.6 13.9 10.6 9.5	TOT.  23.7 17.9 15.8 12.1 11.4	9.6 23.2 37.8 89.0 145.3	ELA. 14.9 10.6 9.2 6.4 5.4	17.4 12.2 10.4 7.2 6.5	PLA. 6.6 14.4 22.4 47.0 72.6	ELA. 10.5 6.5 5.2 2.9 2.3	TOT.  12.2 7.5 5.9 3.3	PLA. 4.3 8.0 11.5 19.1 26.2
100 500 1000 5000 10000 27900	ELA. TOT  46.9 54.6 36.9 42.4 33.2 37.7 26.1 29.6 23.5 28.2	. PLA.  25.3 65.9 111.1 281.9 475.3 843.0	20.4 15.6 13.9 10.6 9.5 8.0	TOT.  23.7 17.9 15.8 12.1 11.4 9.0	PLA.  9.6 23.2 37.8 89.0 145.3 245.2	ELA. 14.9 10.6 9.2 6.4 5.4	TOT.  17.4 12.2 10.4 7.2 6.5 4.8	PLA. 6.6 14.4 22.4 47.0 72.6	10.5 6.5 5.2 2.9 2.3 1.5	TOT.  12.2 7.5 5.9 3.3 2.7	PLA. 4.3 8.0 11.5 19.1 26.2 33.1
100 500 1000 5000 10000 27900	ELA. TOT  46.9 54.6 36.9 42.4 33.2 37.7 26.1 29.6 23.5 28.2 20.2 22.8	. PLA.  25.3 65.9 111.1 281.9 475.3 843.0 3100.9	20.4 15.8 13.9 10.6 9.5 8.0 5.8	TOT.  23.7 17.9 15.8 12.1 11.4 9.0 6.5	PLA.  9.6 23.2 37.8 89.0 145.3 245.2	ELA. 14.9 10.6 9.2 6.4 5.4	17.4 12.2 10.4 7.2 6.5 4.8 3.0	PLA. 6.6 14.4 22.4 47.0 72.6 112.5	ELA. 10.5 6.5 5.2 2.9 2.3 1.5 0.6	TOT.  12.2 7.5 5.9 3.3 2.7 1.7 0.6	PLA.  4.3 8.0 11.5 19.1 26.2 33.1 56.4
100 500 1000 5000 10000 27900 191500	ELA. TOT  46.9 54.6 36.9 42.4 33.2 37.7 26.1 29.6 23.5 28.2 20.2 22.8 15.1 17.1	. PLA.  25.3 65.9 111.1 281.9 475.3 843.0 3100.9	20.4 15.6 13.9 10.6 9.5 8.0 5.8	TOT.  23.7 17.9 15.8 12.1 11.4 9.0 6.5	PLA.  9.6 23.2 37.8 89.0 145.3 245.2	ELA. 14.9 10.6 9.2 6.4 5.4	17.4 12.2 10.4 7.2 6.5 4.8 3.0	PLA.  6.6 14.4 22.4 47.0 72.6 112.5 312.8	ELA.  10.5 6.5 5.2 2.9 2.3 1.5 0.6	TOT.  12.2  7.5 5.9 3.3 2.7 1.7 0.6	PLA.  4.3 8.0 11.5 19.1 26.2 33.1 56.4
100 500 1000 5000 10000 27900 191500	ELA. TOT  46.9 54.6 36.9 42.4 33.2 37.7 26.1 29.6 23.5 28.2 20.2 22.8 15.1 17.1	. PLA.  25.3 65.9 111.1 281.9 475.3 843.0 3100.9  T OF DRY	20.4 15.6 13.9 10.6 9.5 8.0 5.8	TOT.  23.7 17.9 15.8 12.1 11.4 9.0 6.5	PLA.  9.6 23.2 37.8 89.0 145.3 245.2	ELA. 14.9 10.6 9.2 6.4 5.4	17.4 12.2 10.4 7.2 6.5 4.8 3.0	PLA.  6.6 14.4 22.4 47.0 72.6 112.5 312.8	ELA.  10.5 6.5 5.2 2.9 2.3 1.5 0.6 f OF B.	TOT.  12.2 7.5 5.9 3.3 2.7 1.7 0.6	PLA.  4.3 8.0 11.5 19.1 26.2 33.1 56.4
500 1000 5000 10000 27900 191500 A = TC C = PI	ELA. TOT  46.9 54.6 36.9 42.4 33.2 37.7 26.1 29.6 23.5 28.2 20.2 22.8 15.1 17.1  OTAL WEIGHT	. PLA.  25.3 65.9 111.1 281.9 475.3 843.0 3100.9 T OF DRY HALT CON'	20.4 15.8 13.9 10.6 9.5 8.0 5.8 AGGRECIENT; AIR;	TOT.  23.7 17.9 15.8 12.1 11.4 9.0 6.5	PLA.  9.6 23.2 37.8 89.0 145.3 245.2	ELA. 14.9 10.6 9.2 6.4 5.4	17.4 12.2 10.4 7.2 6.5 4.8 3.0 WB SL CL	PLA.  6.6 14.4 22.4 47.0 72.6 112.5 312.8  - WEIGH	ELA.  10.5 6.5 5.2 2.9 2.3 1.5 0.6 T OF B. INED LO	TOT.  12.2 7.5 5.9 3.3 2.7 1.7 0.6	PLA.  4.3 8.0 11.5 19.1 26.2 33.1 56.4

Sample Number	WA (gr)	WE (gr			SL Lbs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (%)
12110632	10000	) 467	4.46		50	200	5961	0 10	168.0	2.54	4.96
			DEF	ORMATI	ON (in	ches X	0.0001	.)			
_	LVDT #1	L(0.0 IN.	) LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA. 1	TOT. PLA	. ELA.	TOT .	PLA.	ELA.	TOT .	PLA.	ELA.	TOT.	PLA.
100	47.7 55	5.0 26.	4 20.5	23.6	9.9	15.0	17.2	6.7	10.4	12.0	4.4
500	37.5 43	3.2 67.	4 15.7	18.1	23.4	10.6	12.3	14.5	6.4	7.4	8.0
1000	33.8 38	3.5 112.	8 14.0	15.9	38.0	9.2	10.4	22.4	5.1	5.9	11.4
5100	26.5 30	0.6 298.	6 10.7	12.3	93.1	6.3	7.3	48.8	2.9	3.3	19.5
10800	23.6 27	7.2 511.	5 9.4	10.8	153.8	5.3	6.1	75.9	2.1	2.5	26.6
30000	20.3 23	3.3 912.	2 7.9	9.1	261.1	4.2	4.8	118.0	1.4	1.6	33.6
166100	15.7 18	3.3 2973.	0 5.9	6.9	781.9	2.7	3.2	299.4	0.6	0.7	55.2
SAMPLE	WA	WE	a AC		SL	CL	WBW		/BA	GMM	AV
NUMBER	(gr)	) (gr			_	(lbs)	(gr	;) (	gr)		(%)
12110615	10000	467	4.46	•	50	500	5960	0.0 10	169.0	2.54	4.99
			DEF	ORMAT1	ON (in	ches X	0.0001	.)			*****
	LVDT #1	L(0.0 IN.	) LVDT	#2(2.	0 IN.)		<b>#</b> 3(4.	0 IN.)	LVDT	#4(6.0	625 IN
		I(0.0 IN.			O IN.)	LVDT	#3(4.		LVDT		625 IN
NUMBER		TOT. PLA		тот.	PLA.	LVDT		PLA.	ELA.		
NUMBER	ELA. 1	TOT. PLA	A. ELA.	тот.	PLA.	LVDT ELA. 27.4	тот.	PLA.	ELA. 15.7	TOT.	PLA.
NUMBER 150	ELA. 1 112.9 13 94.2 10 84.9 9	31.3 114 37.8 229 38.8 381	A. ELA. 0.2 44.0 0.1 35.9 1.5 32.0	TOT. 51.1 41.1 37.2	38.3 72.5 116.8	LVDT ELA. 27.4 20.9	TOT.	PLA.	ELA. 15.7 10.4	TOT.	PLA.
150 500	ELA. 1 112.9 13 94.2 10 84.9 9	31.3 114 37.8 229 38.8 381	A. ELA.	TOT. 51.1 41.1 37.2	38.3 72.5 116.8	LVDT ELA. 27.4 20.9 17.8	TOT. 31.9 23.9 20.7	PLA. 22.1 38.5	ELA. 15.7 10.4 8.0	TOT. 18.2 11.9	PLA. 11.7 17.4
150 500 1000	ELA. 1 112.9 13 94.2 10 84.9 9 65.9 7	TOT. PLA 01.3 114 07.8 229 08.8 381 76.0 1028	A. ELA. 0.2 44.0 0.1 35.9 1.5 32.0	TOT. 51.1 41.1 37.2 27.7	9LA. 38.3 72.5 116.8 290.1	LVDT ELA. 27.4 20.9 17.8 11.9	TOT. 31.9 23.9 20.7 13.7	PLA.  22.1 38.5 58.7 126.1	ELA. 15.7 10.4 8.0 4.0	TOT.  18.2 11.9 9.3	PLA. 11.7 17.4 23.9
150 500 1000 5400 11100 30100	ELA. 1 112.9 13 94.2 10 84.9 9 65.9 7 59.2 6 51.0 5	TOT. PLA 31.3 114 27.8 229 98.8 381 76.0 1028 37.7 1766 59.3 3105	A. ELA.  0.2 44.0  0.1 35.9  1.5 32.0  3.6 24.1  3.2 21.3  3.8 18.0	TOT.  51.1 41.1 37.2 27.7 24.3 20.9	38.3 72.5 116.8 290.1 480.6 803.7	27.4 20.9 17.8 11.9 9.9 7.7	31.9 23.9 20.7 13.7 11.4 9.0	PLA.  22.1 38.5 58.7 126.1 195.2 295.0	15.7 10.4 8.0 4.0	TOT.  18.2 11.9 9.3	PLA. 11.7 17.4 23.9
150 500 1000 5400 11100 30100	ELA. 1 112.9 13 94.2 10 84.9 9 65.9 7 59.2 6 51.0 5	TOT. PLA 31.3 114 27.8 229 98.8 381 76.0 1028 37.7 1766 59.3 3105	A. ELA.  0.2 44.0 0.1 35.9 1.5 32.0 3.6 24.1 3.2 21.3	TOT.  51.1 41.1 37.2 27.7 24.3 20.9	38.3 72.5 116.8 290.1 480.6 803.7	27.4 20.9 17.8 11.9 9.9 7.7	31.9 23.9 20.7 13.7 11.4 9.0	PLA.  22.1 38.5 58.7 126.1 195.2 295.0	15.7 10.4 8.0 4.0	TOT.  18.2 11.9 9.3	PLA. 11.7 17.4 23.9
500 1000 5400 11100 30100 51000	ELA. 1 112.9 13 94.2 10 84.9 9 65.9 7 59.2 6 51.0 5 47.1 5	707. PLA 31.3 114 97.8 229 98.8 381 76.0 1028 37.7 1766 59.3 3105 53.4 4678	A. ELA.  9.2 44.0  9.1 35.9  1.5 32.0  9.6 24.1  9.2 21.3  9.8 18.0  9.3 16.4	51.1 41.1 37.2 27.7 24.3 20.9 18.6	PLA.  38.3 72.5 116.8 290.1 480.6 803.7 1178.4	27.4 20.9 17.8 11.9 9.9 7.7	31.9 23.9 20.7 13.7 11.4 9.0 7.6	PLA.  22.1 38.5 58.7 126.1 195.2 295.0 408.5	ELA.  15.7 10.4 8.0 4.0	TOT.  18.2 11.9 9.3 4.7 ITUMEN;	PLA.  11.7 17.4 23.9 37.6
150 500 1000 5400 11100 30100 51000	ELA. 1 112.9 13 94.2 10 84.9 9 65.9 7 59.2 6 51.0 5 47.1 5	707. PLA 91.3 114 97.8 229 98.8 381 76.0 1028 97.7 1766 99.3 3105 99.3 3105 99.3 3105 99.3 3105	A. ELA.  0.2 44.0 0.1 35.9 1.5 32.0 0.6 24.1 0.2 21.3 0.8 18.0 0.3 16.4  DRY AGGREGONTENT;	51.1 41.1 37.2 27.7 24.3 20.9 18.6	PLA.  38.3 72.5 116.8 290.1 480.6 803.7 1178.4	27.4 20.9 17.8 11.9 9.9 7.7	31.9 23.9 20.7 13.7 11.4 9.0 7.6	PLA.  22.1 38.5 58.7 126.1 195.2 295.0 408.5  = WEIGH	ELA.  15.7 10.4 8.0 4.0	TOT.  18.2 11.9 9.3 4.7 ITUMEN; OAD;	PLA.  11.7 17.4 23.9 37.6 -
150 500 1000 5400 11100 30100 51000 A = TC C = PI	ELA. 1 112.9 13 94.2 10 84.9 9 65.9 7 59.2 6 51.0 5 47.1 5 OTAL WEI	707. PLA 91.3 114 97.8 229 98.8 381 76.0 1028 97.7 1766 99.3 3105 93.4 4678 GGHT OF D ASPHALT OF	A. ELA.  0.2 44.0  0.1 35.9  0.5 32.0  0.6 24.1  0.2 21.3  0.8 18.0  0.3 16.4  ORY AGGREGIONTENT;  IN AIR;	TOT.  51.1 41.1 37.2 27.7 24.3 20.9 18.6	PLA.  38.3 72.5 116.8 290.1 480.6 803.7 1178.4	27.4 20.9 17.8 11.9 9.9 7.7	31.9 23.9 20.7 13.7 11.4 9.0 7.6 WB SL CL	PLA.  22.1 38.5 58.7 126.1 195.2 295.0 408.5  = WEIGH = SUSTA	ELA.  15.7 10.4 8.0 4.0 T OF B	TOT.  18.2 11.9 9.3 4.7 ITUMEN; OAD;	PLA.  11.7 17.4 23.9 37.6
150 500 1000 5400 11100 30100 51000 A = TO C = PI BA = WI BW = WI	ELA. 1 112.9 13 94.2 10 84.9 9 65.9 7 59.2 6 51.0 5 47.1 5 OTAL WEI ERCENT A EIGHT OF	707. PLA 207.8 229 208.8 381 207.0 1028 37.7 1766 39.3 3105 33.4 4678 4678 4671 OF E	A. ELA.  0.2 44.0 0.1 35.9 1.5 32.0 0.6 24.1 0.2 21.3 0.8 18.0 0.3 16.4  DRY AGGREGONTENT;	TOT.  51.1 41.1 37.2 27.7 24.3 20.9 18.6	PLA.  38.3 72.5 116.8 290.1 480.6 803.7 1178.4	27.4 20.9 17.8 11.9 9.9 7.7 6.7	31.9 23.9 20.7 13.7 11.4 9.0 7.6 WB SL CL	PLA.  22.1 38.5 58.7 126.1 195.2 295.0 408.5  = WEIGH	ELA.  15.7 10.4 8.0 4.0 T OF B	TOT.  18.2 11.9 9.3 4.7 ITUMEN; OAD;	PLA.  11.7 17.4 23.9 37.6

SAMPLE NUMBER	WA (gr)	WB (gr)	AC (Z)	(1	L bs)	CL (lbs)	WBW (gr		/BA gr)	GMM	AV (Z)
12110625	10000	467	4.46	5	0	500	5966	.0 10	166.0	2.54	4.82
			DEF	RMATI	ON (inc	ches X	0.0001	)			
- CYCLE	LVDT #1	(0.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. T	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	116.9 13	3.0 84.3	46.8	53.2	29.4	30.1	34.2	17.6	18.1	20.6	9.9
500	91.9 10	6.3 216.6	35.8	41.4	70.0	21.1	24.4	37.5	10.6	12.3	17.2
1000	82.8 9	3.5 364.6	31.8	36.0	113.9	18.0	20.3	58.0	8.2	9.3	24.0
5000	65.0 7	4.2 931.6	24.3	27.7	269.4		14.0	119.7	4.3	4.9	37.1
10000		8.2 1586.7		25.1	443.4		12.0	184.9		3.7	49.4
30000		6.7 2902.5			767.9		8.9	287.0		2.1	58.3
53800	43.3 3	1.8 4510.7	16.2	18.5	1158.6	6.7	7.6	406.9	1.4	1.5	70.0
SAMPLE	WA	WB	AC	s	L	CL	WBW	\$i	/BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
12110635	10000	467	4.46	5	0	500	5933	.0 10	130.0	2.54	5.09
12110635	10000	467	*********			500			0130.0	2.54	5.09
-		467 (0.0 IN.)	DEF	ORMATI		ches X	0.0001			2.54 #4(6.0	
CYCLE _	LVDT #1		DEF	DRMATI #2(2.	ON (inc	ches X	0.0001 #3(4.	) 0 IN.)		<b>#</b> 4(6.0	
CYCLE _	LVDT #1	(0.0 IN.) OT. PLA.	DEFO	DRMATI #2(2.	ON (inc	LVDT	0.0001 #3(4.	) 0 IN.)	LVDT	<b>#</b> 4(6.0	0625 II
CYCLE _ NUMBER	LVDT #1 ELA. T 117.1 13 95.1 10	(0.0 IN.) OT. PLA. 5.9 107.3 9.3 238.6	LVDT ELA. 3 45.3	PRMATI	ON (inc	LVDT ELA. 28.4	#3(4. TOT.	) 0 IN.) PLA.	LVDT ELA. 16.4	#4(6.0 TOT.	0625 II
125 500	LVDT #1 ELA. T 117.1 13 95.1 10 85.8 9	(0.0 IN.) OT. PLA. 5.9 107.3 9.3 238.6	LVDT  ELA.  3 45.3 3 35.9 3 32.0	\$2(2. TOT. 52.5 41.2 36.6	ON (inc) PLA. 35.9 74.7 120.8	LVDT ELA. 28.4 20.8	#3(4. TOT. 32.9 23.9 20.3	) PLA. 20.9 39.4 60.3	LVDT ELA. 16.4	#4(6.0 TOT.	PLA.
125 500 1000 5100	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7	(0.0 IN.) OT. PLA. 5.9 107.3 9.3 238.6 8.2 398.6 5.8 1036.6	LVDT  ELA.  3 45.3 3 35.9 32.0 24.3	#2(2. TOT. 52.5 41.2 36.6 27.4	ON (inc) PLA. 35.9 74.7 120.8 290.0	LVDT  ELA.  28.4 20.8 17.7 12.0	#3(4. TOT. 32.9 23.9 20.3 13.5	)  PLA.  20.9 39.4 60.3 125.7	LVDT ELA. 16.4 10.2 7.9 4.1	#4(6.0 TOT. 19.1 11.7 9.0 4.6	PLA.  11.3 17.7
125 500 1000 5100	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6	(0.0 IN.)  OT. PLA.  5.9 107.3  9.3 238.6  8.2 398.8  5.8 1036.8  9.3 1707.4	LVDT  ELA.  3 45.3 3 35.9 3 32.0 24.3 21.6	#2(2. TOT. 52.5 41.2 36.6 27.4 24.7	ON (inc) PLA. 35.9 74.7 120.8 290.0 461.2	LVDT  ELA.  28.4 20.8 17.7 12.0 10.1	#3(4. TOT. 32.9 23.9 20.3 13.5 11.5	PLA.  20.9 39.4 60.3 125.7 187.3	LVDT ELA. 16.4 10.2 7.9 4.1 3.0	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4	PLA.  11.3 17.7 24.3 37.5 47.9
125 500 1000 5100 10200 21600	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6  54.1 6	(0.0 IN.) OT. PLA. 5.9 107.3 9.3 238.6 8.2 398.6 5.8 1036.6 9.3 1707.4 1.2 2646.5	LVDT  ELA.  3 45.3 3 35.9 3 32.0 2 24.3 5 19.0	#2(2. TOT. 52.5 41.2 36.6 27.4 24.7 21.5	ON (inc 0 IN.) PLA. 35.9 74.7 120.8 290.0 461.2 688.3	LVDT  ELA.  28.4 20.8 17.7 12.0 10.1 8.3	#3(4. TOT. 32.9 23.9 20.3 13.5 11.5 9.4	) PLA.  20.9 39.4 60.3 125.7 187.3 259.2	LVDT ELA. 16.4 10.2 7.9 4.1 3.0 2.0	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4 2.3	PLA.  11.3 17.7 24.3 37.5 47.9
125 500 1000 5100 10200 21600	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6  54.1 6	(0.0 IN.)  OT. PLA.  5.9 107.3  9.3 238.6  8.2 398.8  5.8 1036.8  9.3 1707.4	LVDT  ELA.  3 45.3 3 35.9 3 32.0 2 24.3 5 19.0	#2(2. TOT. 52.5 41.2 36.6 27.4 24.7 21.5	ON (inc 0 IN.) PLA. 35.9 74.7 120.8 290.0 461.2 688.3	LVDT  ELA.  28.4 20.8 17.7 12.0 10.1 8.3	#3(4. TOT. 32.9 23.9 20.3 13.5 11.5 9.4	) PLA.  20.9 39.4 60.3 125.7 187.3 259.2	LVDT ELA. 16.4 10.2 7.9 4.1 3.0 2.0	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4	PLA.  11.3 17.7 24.3 37.5 47.9
125 500 1000 5100 10200 21600 27700	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6  54.1 6  52.1 5	(0.0 IN.)  OT. PLA.  5.9 107.3  9.3 238.6  8.2 398.8  5.8 1036.8  9.3 1707.4  1.2 2646.5  9.8 3338.3  GHT OF DRY	DEFO LVDT ELA. 3 45.3 3 35.9 9 32.0 9 24.3 6 19.0 3 18.2	\$2(2. TOT. 52.5 41.2 36.6 27.4 24.7 21.5 20.9	ON (inc) PLA. 35.9 74.7 120.8 290.0 461.2 688.3 857.4	LVDT  ELA.  28.4 20.8 17.7 12.0 10.1 8.3	0.0001 #3(4. TOT. 32.9 23.9 20.3 13.5 11.5 9.4 8.9	)  O IN.)  PLA.  20.9 39.4 60.3 125.7 187.3 259.2 314.5	LVDT  ELA.  16.4  10.2  7.9  4.1  3.0  2.0	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4 2.3	PLA.  11.3 17.7 24.3 37.5 47.9 54.9
125 500 1000 5100 10200 21600 27700	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6  54.1 6  52.1 5	(0.0 IN.) OT. PLA. 5.9 107.3 9.3 238.6 8.2 398.9 5.8 1036.9 9.3 1707.4 1.2 2646.5 9.8 3338.3 GHT OF DRY	DEFO LVDT ELA. 3 45.3 3 35.9 9 32.0 9 24.3 5 19.0 8 18.2 7 AGGREG	\$2(2. TOT. 52.5 41.2 36.6 27.4 24.7 21.5 20.9	ON (inc) PLA. 35.9 74.7 120.8 290.0 461.2 688.3 857.4	LVDT  ELA.  28.4 20.8 17.7 12.0 10.1 8.3	#3(4. TOT. 32.9 23.9 20.3 13.5 11.5 9.4 8.9 WB	)  O IN.)  PLA.  20.9 39.4 60.3 125.7 187.3 259.2 314.5  - WEIGH	LVDT  ELA.  16.4  10.2  7.9  4.1  3.0  2.0   IT OF B	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4 2.3	PLA.  11.3 17.7 24.3 37.5 47.9 54.9
125 500 1000 5100 10200 21600 27700	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6  54.1 6  52.1 5  COTAL WEI  PERCENT A  JEIGHT OF	(0.0 IN.)  OT. PLA.  5.9 107.3  9.3 238.6  8.2 398.6  5.8 1036.9  9.3 1707.4  1.2 2646.9  9.8 3338.3  GHT OF DRY SPHALT CON	DEFO LVDT ELA. 3 45.3 3 35.9 9 32.0 9 24.3 6 19.0 9 18.2 7 AGGREG	#2(2. TOT. 52.5 41.2 36.6 27.4 24.7 21.5 20.9	ON (inc) PLA. 35.9 74.7 120.8 290.0 461.2 688.3 857.4	LVDT  ELA.  28.4 20.8 17.7 12.0 10.1 8.3	0.0001 #3(4. TOT. 32.9 23.9 20.3 13.5 11.5 9.4 8.9 WB SL CL	)  PLA.  20.9 39.4 60.3 125.7 187.3 259.2 314.5  WEIGHE SUSTA CYCLI	LVDT  ELA.  16.4  10.2  7.9  4.1  3.0  2.0   ST OF B	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4 2.3 -	PLA.  11.3 17.7 24.3 37.5 47.9 54.9
125 500 1000 5100 10200 21600 27700 A = T C = F BA = W	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6  54.1 6  52.1 5  COTAL WEI  PERCENT A  JEIGHT OF	(0.0 IN.)  OT. PLA.  5.9 107.3  9.3 238.6  8.2 398.6  5.8 1036.6  9.3 1707.4  1.2 2646.5  9.8 3338.3  GHT OF DRY SPHALT CON SAMPLE IN	DEFO LVDT ELA. 3 45.3 3 35.9 9 32.0 9 24.3 6 21.6 5 19.0 8 18.2 7 AGGREG STENT; WATER;	#2(2. TOT. 52.5 41.2 36.6 27.4 24.7 21.5 20.9	ON (inc 0 IN.) PLA. 35.9 74.7 120.8 290.0 461.2 688.3 857.4	LVDT  ELA.  28.4 20.8 17.7 12.0 10.1 8.3	0.0001 #3(4. TOT. 32.9 23.9 20.3 13.5 11.5 9.4 8.9 WB SL CL	)  O IN.)  PLA.  20.9 39.4 60.3 125.7 187.3 259.2 314.5  - WEIGH	LVDT  ELA.  16.4  10.2  7.9  4.1  3.0  2.0   ST OF B	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4 2.3 -	PLA.  11.3 17.7 24.3 37.5 47.9 54.9
125 500 1000 5100 10200 21600 27700 A = T C = F BA = W BW = W	LVDT #1  ELA. T  117.1 13  95.1 10  85.8 9  67.2 7  60.5 6  54.1 6  52.1 5  COTAL WEI  PERCENT A  WEIGHT OF  WAXIMUM T	(0.0 IN.)  OT. PLA.  5.9 107.3  9.3 238.6  8.2 398.6  5.8 1036.9  9.3 1707.4  1.2 2646.9  9.8 3338.3  GHT OF DRY SPHALT CON	DEFO  LVDT  ELA.  3 45.3 3 35.9 32.0 24.3 5 19.0 3 18.2 7 AGGRECUTENT; 8 AIR; 8 WATER; 9 WATER;	#2(2. TOT. 52.5 41.2 36.6 27.4 24.7 21.5 20.9 GATES;	ON (inc 0 IN.) PLA. 35.9 74.7 120.8 290.0 461.2 688.3 857.4	ELA.  28.4 20.8 17.7 12.0 10.1 8.3 7.8	0.0001 #3(4. TOT. 32.9 23.9 20.3 13.5 11.5 9.4 8.9 WB SL CL	)  PLA.  20.9 39.4 60.3 125.7 187.3 259.2 314.5  WEIGHE SUSTA CYCLI	LVDT  ELA.  16.4  10.2  7.9  4.1  3.0  2.0   ST OF B	#4(6.0 TOT. 19.1 11.7 9.0 4.6 3.4 2.3 -	PLA.  11.3 17.7 24.3 37.5 47.9 54.9

sample Number	WA (gr)	WB (gr)	AC (%)	SI (1)	L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
12110711	10000	467	4.46	5(	0	100	5737.	0 9:	942.0	2.54	7.0
*******	*********		DEF	ORMATIC	ON (inc	ches X (	0.0001)		******		
_									LIDE	44.6.0	.cos 71
CYCLE	LVDT #1(0	.U IN.)	LADI	#2(2.)	0 IN.)	TADI	#3(4.0	1N.)	LVDI	#4(6.0	1025 11
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	31.1 35.1	25.0	11.2	12.6	7.8	7.9	8.9	5.2	5.3	6.0	3.2
500	24.5 28.0	63.8	8.5	9.8	18.5	5.5	6.3	10.9	3.2	3.6	5.7
1000	22.0 25.6	107.0	7.6	8.8	29.9	4.7	5.5	16.8	2.5	2.9	8.0
5300	17.2 19.7	280.4	5.7	6.5	72.1	3.2	3.6	35.3	1.3	1.5	12.7
10000	15.6 17.6	463.3	5.1	5.8	115.3	2.7	3.1	53.2	1.0	1.1	16.9
25500	13.6 15.7	758.3	4.4	5.1	179.7	2.1	2.5	75.7	0.6	0.7	19.4
148700	10.4 11.8	2569.7	3.2	3.6	554.3	1.3	1.5	192.6	0.2	0.3	29.8
SAMPLE	WA	WB	AC	Si	L	CL	WBW	W	BA	GMM	AV
NUMBER	(gr)	(gr)	<b>(Z)</b>	(11	bs)	(lbs)	(gr)	(	gr)		(%)
12110721	10000	467	4.46	5	0	100	5735.	.0 9	937.0	2.54	7.0
12110721	10000	467				100 ches X			937.0	2.54	7.0
<del></del>	10000 LVDT #1(0		DEF	ORMATI		ches X	0.0001)			2.54 #4(6.0	
CYCLE _		.0 IN.)	DEF	ORMATI	ON (in	ches X	0.0001)	)			
CYCLE _	LVDT #1(0	.0 IN.)	LVDT ELA.	P2(2.0	ON (inc	LVDT	#3(4.0	) ) IN.)	LVDī	<b>#</b> 4(6.0	0625 I
 Cycle _ Number	LVDT #1(0	.0 IN.)	DEFO LVDT ELA. 10.8	#2(2.)	ON (inc	LVDT	#3(4.0 TOT.	) IN.)	LVDT ELA.	#4(6.0	0625 I
CYCLE	LVDT #1(0 ELA. TOT 30.2 34.6	.0 IN.) . PLA.	LVDT ELA. 10.8 8.5	#2(2.) TOT.	ON (inc 0 IN.) PLA. 8.6 18.4 29.5	LVDT  ELA.  7.6 5.5 4.7	#3(4.0 TOT.	) IN.) PLA. 5.6	LVDT ELA. 5.0	#4(6.0 TOT. 5.8 3.7	PLA. 3.5
CYCLE NUMBER	LVDT #1(0 ELA. TOT 30.2 34.6 24.3 28.7	.0 IN.) . PLA. 27.7 63.5 105.2	DEFO LVDT ELA. 10.8 8.5 7.6	#2(2.) TOT. 12.4 10.0	ON (inc O IN.) PLA. 8.6 18.4	LVDT  ELA.  7.6 5.5 4.7	#3(4.0 TOT. 8.7 6.5 5.5	PLA. 5.6 10.9	LVDT ELA. 5.0 3.1	#4(6.0 TOT. 5.8 3.7 2.9	PLA. 3.5 5.7
120 510	LVDT #1(0 ELA. TOT 30.2 34.6 24.3 28.7 22.0 25.5 17.1 19.3 15.2 17.6	.0 IN.) . PLA. 27.7 63.5 105.2 281.9 506.1	LVDT  ELA.  10.8 8.5 7.6 5.7 5.0	#2(2.0 TOT. 12.4 10.0 8.8 6.4 5.8	ON (inc) PLA. 8.6 18.4 29.5 72.5	LVDT  ELA.  7.6 5.5 4.7 3.2 2.6	#3(4.0 TOT. 8.7 6.5 5.5 3.6 3.0	DIN.) PLA. 5.6 10.9 16.6 35.4 57.1	LVDT ELA. 5.0 3.1 2.5 1.3	#4(6.0 TOT. 5.8 3.7 2.9 1.5	9625 I PLA. 3.5 5.7 7.9 12.7
120 510 1000 5420	LVDT #1(0 ELA. TOT 30.2 34.6 24.3 28.7 22.0 25.5 17.1 19.3	.0 IN.) . PLA. 27.7 63.5 105.2 281.9 506.1	LVDT  ELA.  10.8 8.5 7.6 5.7 5.0	#2(2.0 TOT. 12.4 10.0 8.8 6.4 5.8	ON (inc) PLA. 8.6 18.4 29.5 72.5	LVDT  ELA.  7.6 5.5 4.7 3.2 2.6	#3(4.0 TOT. 8.7 6.5 5.5 3.6	DIN.) PLA. 5.6 10.9 16.6 35.4 57.1	LVDT ELA. 5.0 3.1 2.5 1.3 0.9	#4(6.0 TOT. 5.8 3.7 2.9 1.5 1.1	3.5 5.7 7.9 12.7
120 510 1000 5420 11580	LVDT #1(0 ELA. TOT 30.2 34.6 24.3 28.7 22.0 25.5 17.1 19.3 15.2 17.6	.0 IN.) . PLA. 27.7 63.5 105.2 281.9 506.1 587.6	DEFO LVDT ELA. 10.8 8.5 7.6 5.7 5.0 4.7	#2(2.4 10.0 8.8 6.4 5.8 5.4	ON (inc) PLA.  8.6 18.4 29.5 72.5 125.3 142.6	LVDT ELA.  7.6 5.5 4.7 3.2 2.6 2.4	#3(4.0 TOT. 8.7 6.5 5.5 3.6 3.0 2.8	DIN.) PLA. 5.6 10.9 16.6 35.4 57.1	LVDT  ELA.  5.0 3.1 2.5 1.3 0.9 0.8	#4(6.0 TOT. 5.8 3.7 2.9 1.5 1.1	9625 I PLA. 3.5 5.7 7.9 12.7 17.6
120 510 1000 5420 11580 16800	LVDT #1(0 ELA. TOT 30.2 34.6 24.3 28.7 22.0 25.5 17.1 19.3 15.2 17.6 14.4 16.7	.0 IN.) . PLA. 27.7 63.5 105.2 281.9 506.1 587.6 2722.1	DEFO LVDT ELA. 10.8 8.5 7.6 5.7 5.0 4.7 3.1	#2(2.0 TOT. 12.4 10.0 8.8 6.4 5.8 5.4 3.6	PLA.  8.6 18.4 29.5 72.5 125.3 142.6 584.7	LVDT ELA.  7.6 5.5 4.7 3.2 2.6 2.4	#3(4.0 TOT.  8.7 6.5 5.5 3.6 3.0 2.8 1.5	PLA.  5.6 10.9 16.6 35.4 57.1 62.7	LVDT  ELA.  5.0 3.1 2.5 1.3 0.9 0.8 0.2	#4(6.0 TOT. 5.8 3.7 2.9 1.5 1.1 0.9 0.3	PLA.  3.5 5.7 7.9 12.7 17.6 17.8 30.0
120 510 1000 5420 11580 16800 167300	LVDT #1(0 ELA. TOT 30.2 34.6 24.3 28.7 22.0 25.5 17.1 19.3 15.2 17.6 14.4 16.7 10.2 11.6	.0 IN.) . PLA. 27.7 63.5 105.2 281.9 506.1 587.6 2722.1	DEFO LVDT ELA. 10.8 8.5 7.6 5.7 5.0 4.7 3.1	#2(2.0 TOT. 12.4 10.0 8.8 6.4 5.8 5.4 3.6	PLA.  8.6 18.4 29.5 72.5 125.3 142.6 584.7	LVDT ELA.  7.6 5.5 4.7 3.2 2.6 2.4	#3(4.0 TOT. 8.7 6.5 5.5 3.6 3.0 2.8 1.5	DIN.) PLA.  5.6 10.9 16.6 35.4 57.1 62.7 200.7	LVDT ELA. 5.0 3.1 2.5 1.3 0.9 0.8 0.2	#4(6.0 TOT. 5.8 3.7 2.9 1.5 1.1 0.9 0.3	PLA.  3.5 5.7 7.9 12.7 17.6 17.8 30.0
120 510 1000 5420 11580 16800 167300 A = TO	LVDT #1(0  ELA. TOT  30.2 34.6 24.3 28.7 22.0 25.5 17.1 19.3 15.2 17.6 14.4 16.7 10.2 11.6	.0 IN.) . PLA. 27.7 63.5 105.2 281.9 506.1 587.6 2722.1	DEFO LVDT ELA. 10.8 8.5 7.6 5.7 5.0 4.7 3.1	#2(2.0 TOT. 12.4 10.0 8.8 6.4 5.8 5.4 3.6	PLA.  8.6 18.4 29.5 72.5 125.3 142.6 584.7	LVDT ELA.  7.6 5.5 4.7 3.2 2.6 2.4	#3(4.0 TOT.  8.7 6.5 5.5 3.6 3.0 2.8 1.5	DIN.) PLA. 5.6 10.9 16.6 35.4 57.1 62.7 200.7	LVDT ELA. 5.0 3.1 2.5 1.3 0.9 0.8 0.2 T OF B INED L	#4(6.0 TOT. 5.8 3.7 2.9 1.5 1.1 0.9 0.3	PLA.  3.5 5.7 7.9 12.7 17.6 17.8 30.0
120 510 1000 5420 11580 16800 167300 A = TC C = PI	LVDT #1(0  ELA. TOT  30.2 34.6 24.3 28.7 22.0 25.5 17.1 19.3 15.2 17.6 14.4 16.7 10.2 11.6  DTAL WEIGHT	.0 IN.) . PLA. 27.7 63.5 105.2 281.9 506.1 587.6 2722.1 I OF DRY HALT CON:	DEFO LVDT ELA. 10.8 8.5 7.6 5.7 5.0 4.7 3.1 AGGRECIENT; AIR;	#2(2.4 10.0 8.8 6.4 5.8 5.4 3.6	PLA.  8.6 18.4 29.5 72.5 125.3 142.6 584.7	LVDT ELA.  7.6 5.5 4.7 3.2 2.6 2.4	#3(4.0 TOT.  8.7 6.5 5.5 3.6 3.0 2.8 1.5	5.6 10.9 16.6 35.4 57.1 62.7 200.7	LVDT  ELA.  5.0 3.1 2.5 1.3 0.9 0.8 0.2 T OF B INED L C LOAD	#4(6.0 TOT. 5.8 3.7 2.9 1.5 1.1 0.9 0.3	PLA.  3.5 5.7 7.9 12.7 17.6 17.8 30.0

SAMPLE NUMBER	WA (gr)	WB (gr)	AC (7)		L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (%)
12110731	10000	467	4.46	5	0	100	5738	.0 99	946.0	2.54	7.05
		********	DEF	ORMATI	ON (in	ches X (	0.0001	)			
-	LVDT #1(0	) () TN )	ז עוז ז	#212	0 IN.)	T.VDT	#3/4	0 IN.)	I.VDT	#4(6.0	625 IN
CYCLE	2,21 71(0	,	2.01	,,,,,,		2.51		2,	2.51	<b>#</b> *(0.0	023 11
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	31.3 35.8	25.3	11.2	12.8	7.9	7.9	9.1	5.2	5.3	6.1	3.3
500	24.6 28.2	64.2	8.5	9.8	18.5	5.5	6.4	10.9	3.2	3.6	5.7
1000	22.1 25.5	109.2	7.6	8.7	30.4	4.7	5.4	17.1	2.5	2.8	8.1
5000	17.4 19.7	275.3	5.8	6.5	70.8	3.2	3.6	34.7	1.3	1.5	12.6
11700	15.3 17.8	516.0	5.0	5.8	127.0	2.6	3.0	57.6	0.9	1.1	17.6
26800	13.5 15.3	809.0	4.3	4.9	190.6	2.1	2.4	79.8	0.6	0.7	20.1
159000	10.3 11.9	2681.6	3.2	3.7	574.4	1.3	1.5	197.5	0.2	0.3	29.8
SAMPLE	WA	WB	AC	s	L	CL	WBW	ı wı	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	•) (	gr)		(%)
	10-7	.0_,		•		, ,					
12110712	10000	467	4.46		0	200	5720		911.0	2.54	7.01
			4.46	5			5720	.0 9	911.0	2.54	7.01
12110712		467	4.46 DEF	5 ORMATI		200	5720 0.0001	.0 9		2.54 #4(6.0	
12110712 —	10000	467 0.0 IN.)	4.46 DEF	5 DRMATI #2(2.	ON (in	200	5720 0.0001	0 IN.)		#4(6.0	
12110712 —	10000 LVDT #1(0	467	4.46 DEFC	5 DRMATI #2(2.	ON (inc	200  Ches X (  LVDT  ELA.	5720 0.0001 #3(4.	0 IN.)	LVDT	#4(6.0	625 IN
12110712  CYCLE	10000  LVDT #1(0	467 0.0 IN.) 1. PLA. 5 55.5	4.46 DEFC	5 DRMATI #2(2.	ON (inc	LVDT ELA.	5720 0.0001 #3(4.	.0 99	LVDT ELA.	#4(6.0	625 IN
12110712  CYCLE NUMBER	10000 LVDT #1(0 ELA. TOT	467 0.0 IN.) 1. PLA. 1. 55.5 141.9	4.46 DEFC LVDT ELA. 21.6 16.4	5 DRMATI #2(2. TOT.	ON (income) O IN.) PLA. 16.8	200 LVDT ELA. 14.6 10.1	5720 0.0001 #3(4. TOT.	.0 99 0 IN.) PLA. 10.6	LVDT ELA.	#4(6.0 TOT. 10.6 6.2	PLA.
12110712 ————————————————————————————————————	10000 LVDT #1(0 ELA. TOT 61.9 70.5 48.6 55.6	467 2.0 IN.) 2. PLA. 3. 55.5 3. 141.9 3. 240.5	4.46  DEFG  LVDT  ELA.  21.6 16.4 14.6	5 DRMATI #2(2. TOT. 24.5 18.8 16.6	ON (in O IN.) PLA. 16.8 39.8	200 LVDT ELA. 14.6 10.1 8.6	5720 0.0001 #3(4. TOT. 16.6 11.6	0 IN.) PLA. 10.6 22.3 34.6	LVDT ELA. 9.3 5.4	#4(6.0 TOT. 10.6 6.2	PLA. 6.3 10.9
12110712  CYCLE NUMBER  100 500 1000 5600 10000	10000 LVDT #1(0 ELA. TOT 61.9 70.5 48.6 55.6 43.8 49.8 33.8 39.2 31.0 36.1	467  2.0 IN.)  2. PLA.  3. 55.5  3. 141.9  3. 240.5  3. 653.5  1018.4	4.46  DEFC  LVDT  ELA.  21.6 16.4 14.6 10.9 9.8	#2(2. TOT. 24.5 18.8 16.6 12.6	ON (inc 0 IN.) PLA. 16.8 39.8 65.1 161.9 244.8	200 LVDT ELA. 14.6 10.1 8.6 5.6 4.9	5720 0.0001 #3(4. TOT. 16.6 11.6 9.8 6.5 5.7	0 IN.) PLA. 10.6 22.3 34.6 74.0 105.8	9.3 5.4 4.2	#4(6.0 TOT. 10.6 6.2	PLA. 6.3 10.9
12110712  CYCLE NUMBER  100 500 1000 5600 10000 27000	10000 LVDT #1(0 ELA. TOT 61.9 70.5 48.6 55.6 43.8 49.8 33.8 39.2 31.0 36.1 26.7 30.7	467  2.0 IN.)  3. PLA.  3. 55.5  3. 141.9  3. 240.5  3. 653.5  1018.4  1791.9	4.46  DEFC  LVDT  ELA.  21.6 16.4 14.6 10.9 9.8 8.3	#2(2. TOT. 24.5 18.8 16.6 12.6	ON (inc 0 IN.) PLA. 16.8 39.8 65.1 161.9 244.8	200 LVDT ELA. 14.6 10.1 8.6 5.6 4.9	5720 0.0001 #3(4. TOT. 16.6 11.6 9.8 6.5	0 IN.) PLA. 10.6 22.3 34.6 74.0 105.8	LVDT ELA.  9.3 5.4 4.2	#4(6.0 TOT. 10.6 6.2	PLA. 6.3 10.9
12110712  CYCLE NUMBER  100 500 1000 5600 10000	10000 LVDT #1(0 ELA. TOT 61.9 70.5 48.6 55.6 43.8 49.8 33.8 39.2 31.0 36.1	467  2.0 IN.)  3. PLA.  3. 55.5  3. 141.9  3. 240.5  3. 653.5  1018.4  1791.9	LVDT  ELA.  21.6 16.4 14.6 10.9 9.8 8.3	#2(2. TOT. 24.5 18.8 16.6 12.6 11.4 9.5	ON (inc 0 IN.) PLA. 16.8 39.8 65.1 161.9 244.8	200 LVDT ELA. 14.6 10.1 8.6 5.6 4.9 3.8	5720 0.0001 #3(4.  TOT.  16.6 11.6 9.8 6.5 5.7 4.3	0 IN.) PLA. 10.6 22.3 34.6 74.0 105.8	LVDT ELA.  9.3 5.4 4.2	#4(6.0 TOT. 10.6 6.2	PLA. 6.3 10.9
12110712  CYCLE NUMBER  100 500 1000 5600 10000 27000	10000 LVDT #1(0 ELA. TOT 61.9 70.5 48.6 55.6 43.8 49.8 33.8 39.2 31.0 36.1 26.7 30.7	467  2.0 IN.)  3. PLA.  3. 55.5  3. 141.9  3. 240.5  3. 653.5  1018.4  1791.9  4461.2	4.46  DEFC  LVDT  ELA.  21.6 16.4 14.6 10.9 9.8 8.3 6.6	50RMATI #2(2. TOT. 24.5 18.8 16.6 12.6 11.4 9.5 7.6	ON (inc 0 IN.) PLA. 16.8 39.8 65.1 161.9 244.8 408.7 947.1	200 LVDT ELA. 14.6 10.1 8.6 5.6 4.9 3.8	5720 0.0001 #3(4.  TOT.  16.6 11.6 9.8 6.5 5.7 4.3 3.0	0 IN.) PLA. 10.6 22.3 34.6 74.0 105.8 159.4	LVDT ELA.  9.3 5.4 4.2	#4(6.0 TOT. 10.6 6.2 4.8	PLA. 6.3 10.9 15.2
12110712  CYCLE NUMBER  100 500 1000 5600 10000 27000 102200	10000  LVDT #1(0  ELA. TOT  61.9 70.5  48.6 55.6  43.8 49.8  33.8 39.2  31.0 36.1  26.7 30.7  21.9 25.4	467  D.O IN.)  PLA.  5 55.5  6 141.9  2 240.5  6 653.5  1018.4  1791.9  4461.2	4.46  DEFC  LVDT  ELA.  21.6 16.4 14.6 10.9 9.8 8.3 6.6	50RMATI #2(2. TOT. 24.5 18.8 16.6 12.6 11.4 9.5 7.6	ON (inc 0 IN.) PLA. 16.8 39.8 65.1 161.9 244.8 408.7 947.1	200 LVDT ELA. 14.6 10.1 8.6 5.6 4.9 3.8	5720 0.0001 #3(4.  TOT.  16.6 11.6 9.8 6.5 5.7 4.3 3.0	0 IN.) PLA.  10.6 22.3 34.6 74.0 105.8 159.4 317.5	LVDT ELA.  9.3 5.4 4.2	#4(6.0 TOT. 10.6 6.2 4.8 - -	PLA. 6.3 10.9 15.2
12110712  CYCLE NUMBER  100 500 1000 5600 10000 27000 102200  A = TC	10000  LVDT #1(0  ELA. TOT  61.9 70.5 48.6 55.6 43.8 49.8 33.8 39.2 31.0 36.1 26.7 30.7 21.9 25.4	467  2.0 IN.)  3. PLA.  3. 55.5  3. 141.9  3. 240.5  3. 653.5  1018.4  1791.9  4461.2  IT OF DRY  PHALT CON	4.46  DEFC  LVDT  ELA.  21.6 16.4 14.6 10.9 9.8 8.3 6.6  AGGREG	50RMATI #2(2. TOT. 24.5 18.8 16.6 12.6 11.4 9.5 7.6	ON (inc 0 IN.) PLA. 16.8 39.8 65.1 161.9 244.8 408.7 947.1	200 LVDT ELA. 14.6 10.1 8.6 5.6 4.9 3.8	5720 0.0001 #3(4.  TOT. 16.6 11.6 9.8 6.5 5.7 4.3 3.0 WB SL	0 IN.) PLA. 10.6 22.3 34.6 74.0 105.8 159.4 317.5	LVDT ELA.  9.3 5.4 4.2 I OF B	#4(6.0 TOT.  10.6 6.2 4.8 ITUMEN; OAD;	PLA. 6.3 10.9 15.2

SAMPLE NUMBER	WA (gr)	WB (gr)	AC (%)	S1 (11	L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
12110722	10000	467	4.46	5	0	200	5736.	0 9	946.0	2.54	7.1
			DEF	RMATI	ON (inc	ches X	0.0001)				
- CYCLE	LVDT #1(0	).0 IN.)	LVDī	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
NUMBER	ELA. TO	r. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
130	60.5 71.4	66.8	20.8	24.5	19.8	13.8	16.3	12.2	8.5	10.1	7.0
500	49.4 56.9	147.6	16.5	19.0	40.9	10.1	11.7	22.9	5.4	6.2	11.1
1000	44.5 50.8	3 247.0	14.7	16.7	66.2	8.6	9.8	35.0	4.2	4.8	15.3
5250	34.7 39.7	7 637.8	11.1	12.6	156.9	5.7	6.6	71.7	2.1	2.4	23.3
7500	32.9 38.2	2 876.4	10.4	12.0	211.7	5.2	6.1	93.5	1.8	2.1	28.1
10300	31.4 36.2	2 1007.7	9.8	11.4	239.4	4.8	5.6	102.5	-	-	-
30000	26.7 30.9	9 2147.8	8.2	9.4	482.0	3.7	4.2	184.6	-	-	-
110500	22.0 24.9	9 4540.9	6.5	7.4	949.6	2.6	2.9	312.7	-	-	-
SAMPLE NUMBER	WA (gr)	WB (gr)	AC (Z)	S:	L bs)	CL (lbs)	WBW		BA gr)	GMM	AV (2)
12110732	10000	467	4.46	5	0	200	5734	.0 9	950.0	2.54	7.1
<del></del>			DEF	RMATI	ON (in	ches X	0.0001	)			<del>188249</del>
_	LVDT #1(0	0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	) IN.)	LVDT	#4(6.0	625 I
CYCLE _ NUMBER	ELA. TO	Γ. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	63.8 72.9	9 58.9	21.8	24.9	17.5	14.6	16.7	11.0	9.3	10.6	6.5
500	50.1 56.3			18.8	41.2	10.1	11.5	22.9	5.4	6.1	11.0
		8 255.0		16.9	67.6	8.6	9.9	35.6	4.1	4.7	15.4
1000		8 679.4	11.2	12.8	165.9	5.8	6.7	75.7	2.1	2.5	24.6
1000 5000	35.5 40.8				263 4	4.9	5.6	112.4	1.6	1.8	31.4
	35.5 40.8 32.0 37.3		9.9	11.5							40.1
5000 10000		1 1118.9				3.2	3.6	219.0	0.7	0.8	
5000 10000 50000	32.0 37.	1 1118.9 5 2824.5	7.5	8.6	610.1			219.0 329.5		0.5	48.3
5000 10000 50000 100000	32.0 37.3 25.1 28.0	1 1118.9 6 2824.5 0 4792.4	7.5 6.6	8.6 7.6	610.1 996.6		3.0		0.5	0.5	
5000 10000 50000 100000	32.0 37.3 25.1 28.0 22.6 26.0	1 1118.9 6 2824.5 0 4792.4 HT OF DRY	7.5 6.6 AGGREC	8.6 7.6	610.1 996.6		3.0 WB =	329.5	0.5	0.5	
5000 10000 50000 100000 A = TC	32.0 37.3 25.1 28.0 22.6 26.0 OTAL WEIGH	1 1118.9 6 2824.5 D 4792.4 HT OF DRY	7.5 6.6 AGGREG	8.6 7.6	610.1 996.6		3.0 WB =	329.5 • WEIGH	0.5 T OF B	0.5 ITUMEN; OAD;	
5000 10000 50000 100000 A = TC C = PI	32.0 37.1 25.1 28.0 22.6 26.0 OTAL WEIGH ERCENT AS	1 1118.9 6 2824.5 0 4792.4 HT OF DRY PHALT CON SAMPLE IN	7.5 6.6 AGGREG TENT; AIR;	8.6 7.6 GATES;	610.1 996.6		3.0 WB = SL = CL =	329.5 • WEIGH • SUSTA	0.5 T OF B INED L C LOAD	0.5 ITUMEN; OAD;	

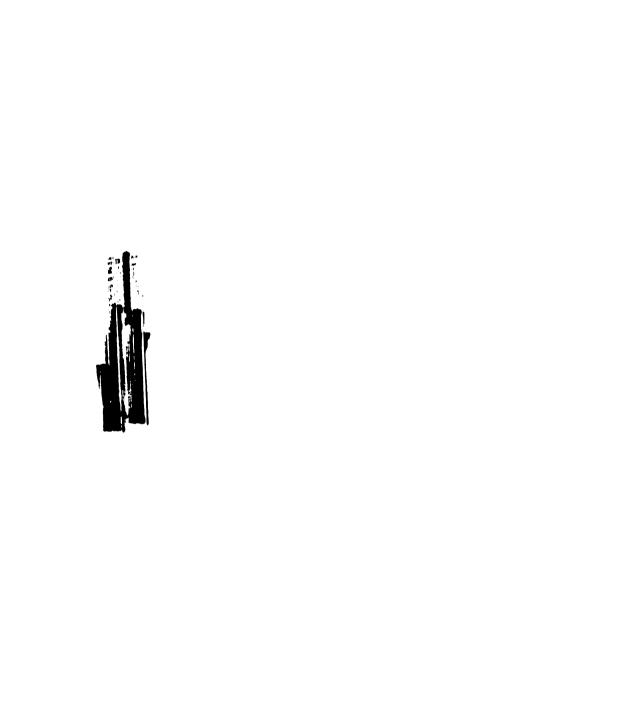
NUMBER		WA gr)	WB (gr)	AC (%)	(1)	L bs)	CL (lbs)	WBW (gr		∛BA (gr)	GMM	AV (Z)
12110716	100		467	4 46			500	6700		2024 0	2.54	
12110715	) 100	000	467 	4.46	5	·	500	5728	.0 8	9934.0	2.54	7.12
				DEF	ORMATI	ON (in	ches X	0.0001	)			
- CYCLE	LVDT	#1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	157.6	179.1	194.1	48.6	55.3	52.2	27.7	31.4	27.7		-	-
500	123.8	143.9	489.2	36.9	42.9	121.0	18.7	21.8	55.9	-	-	-
1000	111.6	127.5	823.2	32.7	37.4	196.4	15.7	18.0	85.0	-	-	-
5000	87.6	101.4	2131.6	24.8	28.6	466.5	10.3	11.9	170.9	-	-	-
10800	78.1	90.8	3733.3	21.6	25.2	783.3	8.3	9.7	262.8	-	-	-
11300	77.6	87.6	3556.5	21.5	24.2	744.4	8.2	9.3	248.4	-	-	-
SAMPLE	١	₹A	WB	AC	S	L	CL	WBW	' '	√BA	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1)	bs)	(lbs)	(gr	)	(gr)		(%)
12110725	5 100	000	467	4.46	5	0	500	5741	.0	9942.0	2.54	6.9
12110725	3 100	000	467				500	*****		9942.0	2.54	6.9
-			467 D IN.)	DEF	DRMATI	ON (in	ches X	0.0001	)			
CYCLE _	LVDT		) IN.)	DEF	PRMATI	ON (in	LVDT	0.0001 #3(4.	)	LVDT		)625 I
CYCLE _	LVDT ELA.	#1(0.0	PLA.	DEFO	#2(2.	ON (inc	LVDT	#3(4. TOT.	) 0 IN.)	LVDT	#4(6.0	)625 I
Cycle _ number	LVDT ELA. 153.8	#1(0.0	PLA.	DEPO	#2(2.	ON (inc	LVDT ELA. 27.8	#3(4. TOT.	) 0 IN.) PLA.	LVDT ELA. 14.7	#4(6.0	0625 I PLA.
CYCLE _ NUMBER	LVDT ELA. 153.8 120.8	#1(0.0 TOT. 175.9 140.0	PLA.	DEFO LVDT ELA. 48.5 36.8	#2(2. TOT.	ON (in.)  PLA.  49.0 116.3	LVDT ELA. 27.8 18.9	#3(4. TOT.	) 0 IN.) PLA. 26.3	LVDT ELA. 14.7 7.9	#4(6.0 TOT.	PLA. 12.9 20.9
CYCLE _NUMBER	LVDT ELA. 153.8 120.8 108.9	#1(0.0 TOT. 175.9 140.0 123.8	PLA.  178.5 460.2	DEFC LVDT ELA. 48.5 36.8 32.7	#2(2. TOT. 55.4 42.6 37.1	ON (in.)  PLA.  49.0 116.3	LVDT  ELA.  27.8 18.9 15.9	#3(4. TOT. 31.8 21.9	) 0 IN.) PLA. 26.3 54.4	LVDT ELA. 14.7 7.9 5.9	#4(6.0 TOT. 16.8 9.2	PLA.  12.9 20.9 28.2
500 1000 5000	LVDT ELA. 153.8 120.8 108.9 85.5	#1(0.0 TOT. 175.9 140.0 123.8 98.8	PLA.  178.5 460.2 781.2	DEFC LVDT ELA. 48.5 36.8 32.7 24.7	#2(2. TOT. 55.4 42.6 37.1 28.6	ON (inc 0 IN.) PLA. 49.0 116.3 190.5 447.1	LVDT  ELA.  27.8 18.9 15.9 10.5	#3(4. TOT. 31.8 21.9 18.1 12.1	) PLA. 26.3 54.4 83.5 166.3	LVDT  ELA.  14.7 7.9 5.9 2.8	#4(6.0 TOT. 16.8 9.2 6.8	PLA.  12.9 20.9 28.2 39.3
100 500 1000 5000	LVDT ELA. 153.8 120.8 108.9 85.5 77.1	#1(0.0 TOT. 175.9 140.0 123.8 98.8 88.9	PLA.  178.5 460.2 781.2 1997.6	DEFO LVDT ELA. 48.5 36.8 32.7 24.7 21.9	#2(2. TOT. 55.4 42.6 37.1 28.6 25.3	ON (inc 0 IN.) PLA. 49.0 116.3 190.5 447.1 716.0	LVDT  ELA.  27.8 18.9 15.9 10.5 8.7	#3(4. TOT. 31.8 21.9 18.1 12.1 10.0	) PLA. 26.3 54.4 83.5 166.3 246.5	LVDT  ELA.  14.7 7.9 5.9 2.8 2.0	#4(6.0 TOT. 16.8 9.2 6.8 3.2 2.2	PLA.  12.9 20.9 28.2 39.3 48.4
100 500 1000 5000 10000 13300	LVDT ELA. 153.8 120.8 108.9 85.5 77.1 73.9	#1(0.0 TOT. 175.9 140.0 123.8 98.8 68.9 85.4	PLA.  178.5 460.2 781.2 1997.6 3321.6	DEFO LVDT ELA. 48.5 36.8 32.7 24.7 21.9 20.8	#2(2. TOT. 55.4 42.6 37.1 28.6 25.3 24.1	ON (inc 0 IN.) PLA. 49.0 116.3 190.5 447.1 716.0 791.5	LVDT  ELA.  27.8 18.9 15.9 10.5 8.7	31.8 21.9 18.1 12.1 10.0 9.2	) PLA. 26.3 54.4 83.5 166.3 246.5 263.5	LVDT  ELA.  14.7 7.9 5.9 2.8 2.0	#4(6.0 TOT. 16.8 9.2 6.8 3.2 2.2 1.9	PLA.  12.9 20.9 28.2 39.3 48.4 47.7
100 500 1000 5000 10000 13300	LVDT  ELA.  153.8 120.8 108.9 85.5 77.1 73.9	#1(0.0 TOT. 175.9 140.0 123.8 98.8 88.9 85.4	PLA.  178.5 460.2 781.2 1997.6 3321.6 3729.7	DEFO LVDT ELA. 48.5 36.8 32.7 24.7 21.9 20.8	#2(2. TOT. 55.4 42.6 37.1 28.6 25.3 24.1	ON (inc 0 IN.) PLA. 49.0 116.3 190.5 447.1 716.0 791.5	LVDT  ELA.  27.8 18.9 15.9 10.5 8.7	#3(4. TOT. 31.8 21.9 18.1 12.1 10.0 9.2	) PLA. 26.3 54.4 83.5 166.3 246.5 263.5	LVDT ELA. 14.7 7.9 5.9 2.8 2.0 -1.7	#4(6.0 TOT. 16.8 9.2 6.8 3.2 2.2 1.9	PLA.  12.9 20.9 28.2 39.3 48.4 47.7
100 500 1000 5000 10000 13300	LVDT  ELA.  153.8 120.8 108.9 85.5 77.1 73.9  ROTAL W	#1(0.0 TOT. 175.9 140.0 123.8 98.8 88.9 85.4	PLA.  178.5 460.2 781.2 1997.6 3321.6 3729.7	DEFO LVDT ELA. 48.5 36.8 32.7 24.7 21.9 20.8	#2(2. TOT. 55.4 42.6 37.1 28.6 25.3 24.1	ON (inc 0 IN.) PLA. 49.0 116.3 190.5 447.1 716.0 791.5	LVDT  ELA.  27.8 18.9 15.9 10.5 8.7	31.8 21.9 18.1 12.1 10.0 9.2	) PLA.  26.3 54.4 83.5 166.3 246.5 263.5  - WEIGH	LVDT  ELA.  14.7 7.9 5.9 2.8 2.0 -1.7	#4(6.0 TOT. 16.8 9.2 6.8 3.2 2.2 1.9	PLA.  12.9 20.9 28.2 39.3 48.4 47.7
100 500 1000 5000 10000 13300 A = 7 C = F	LVDT ELA. 153.8 120.8 108.9 85.5 77.1 73.9 TOTAL VERCENT	#1(0.0 TOT. 175.9 140.0 123.8 98.8 88.9 85.4 VEIGHT	PLA.  178.5 460.2 781.2 1997.6 3321.6 3729.7  OF DRY	DEFO LVDT ELA. 48.5 36.8 32.7 24.7 21.9 20.8 AGGREC	#2(2. TOT. 55.4 42.6 37.1 28.6 25.3 24.1	ON (inc 0 IN.) PLA. 49.0 116.3 190.5 447.1 716.0 791.5	LVDT  ELA.  27.8 18.9 15.9 10.5 8.7	#3(4. TOT. 31.8 21.9 18.1 12.1 10.0 9.2 WB SL CL	) PLA. 26.3 54.4 83.5 166.3 246.5 263.5  - WEIGH	LVDT  ELA.  14.7 7.9 5.9 2.8 2.0 -1.7  HT OF B	#4(6.0 TOT. 16.8 9.2 6.8 3.2 2.2 1.9 ITUMEN; OAD;	PLA.  12.9 20.9 28.2 39.3 48.4 47.7



SAMPLE NUMBER		A Gr)	WB (gr)			CL (lbs)	WBW (gr		WBA (gr)	GMM	AV (Z)	
12110735	5 100	000	467	4.46	5	0	500	5723	. 0	9913.0	2.54	6.97
******				DEF	ORMATI	ON (inc	ches X	0.0001	)			
<b>-</b>	LVDT	#1(0.0	) IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDī	#4(6.0	625 IN
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
145	145.6	164.7	232.6	45.4	51.3	62.5	25.4	28.7	32.4	12.8	14.4	15.1
500	120.9	138.8	454.9	36.7	42.2	114.6	18.8	21.6	53.5	7.9	9.1	20.5
1000	109.0	128.0	792.5	32.6	38.3	192.6	15.8	18.6	84.3	5.9	6.9	28.3
5100	85.4	96.9	2035.3	24.6	27.9	453.5	10.3	11.7	168.0	2.8	3.1	39.3
8700	78.8	90.5	3073.6	22.4	25.7	665.3	9.0	10.3	232.1	2.1	2.4	47.2
9700	77.5	89.1	2998.9	22.0	25.2	645.3	8.7	10.0	222.4	2.0	2.3	43.9
SAMPLE		·A	WB	AC	s	L	CL	WBW		WBA	GMM	AV
NUMBER	(1	gr)	(gr)	(2)	(1	bs)	(lbs)	(gr	)	(gr)		(%)
11110715	5 100	000	450	4.31	5	0	500	5746	.0	9955.0	2.55	7.10
				DEF	ORMATI	ON (inc	ches X	0.0001	)	****		*****
- CYCLE _	LVDT	#1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	160.1	182.2	188.2	49.6	56.5	50.8	28.4	32.3	27.1	14.9	17.0	13.3
500	125.7	143.9	474.1	37.7	43.1	117.9	19.2	22.0	54.8	8.0	9.2	20.9
1000	113.3	130.2	803.7	33.4	38.4	192.7	16,2	18.6	83.9	6.0	6.9	28.1
5000	89.0	102.7	2038.4	25.3	29.2	448.5	10.6	12.2	165.5	2.8	3.2	38.6
11200	78.9	89.8	3757.3	22.0	25.0	791.1	8.5	9.7	266.3	1.8	2.1	49.9
12000	78.1	88.3	3585.7	21.7	24.5	752.1	8.3	9.4	251.1	1.8	2.0	46.1
	77.0	86.9	4132.8	21.4	24.1	862.6	8.1	9.2	285.1	1.7	1.9	51.0
								WB	- WEIG	HT OF B	I TUMEN :	
13100	TOTAL V	EIGHT	OF DRY	AGGRE	Sates;			_			· · ,	
13100 A = 7			OF DRY		gates ;			SL	- SUST	AINED L	OAD;	
13100 A = 1 C = E BA = W	Percent Veight	CASPEA OF SAM	alt cont aple in	ENT; AIR;	·			SL CL	= SUST = CYCL	AINED LOAD	OAD;	
13100  A = 7  C = E  BA = W  BW = W	Percent Veight Veight	OF SAM	LT CONT	ENT; AIR; WATER				SL CL	= SUST = CYCL	AINED L	OAD;	



sample number	WA (gr)	WB (gr)	AC (I)		L bs)	CL (lbs)	WBW (gr		MBA (gr)	GMM	AV (2)
12210711	10000	469	4.48	5	0	100	5719	.0 9	940.0	2.54	7.32
			DEF	ORMATI	ON (in	ches X	0.0001	)			
CYCLE	LVDT #1(0	).0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. TO	r. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT .	PLA.
100	31.3 35.4	30.8	10.8	12.2	9.3	7.5	8.4	6.0	4.9	5.5	3.6
500	24.6 28.4	80.1	8.2	9.5	22.2	5.2	6.0	12.7	2.8	3.3	6.4
1000	22.2 25.4	141.2	7.3	8.4	37.8	4.4	5.0	20.5	2.2	2.5	9.3
5000	17.4 19.9	371.9	5.5	6.3	91.7	3.0	3.4	43.4	1.2	1.3	14.8
10000	15.7 18.1	634.1	4.9	5.7	150.8	2.5	2.9	66.8	0.9	1.0	19.8
30000	13.3 15.3	1207.4	4.1		270.9	1.9	2.2	107.2	0.5	0.6	24.3
159200	10.4 12.0	3914.0	3.0	3.5	801.9	1.2	1.4	261.6	0.2	0.2	35.6
SAMPLE	WA	WB	AC	s	L	CL	WBW			GMM	AV
NUMBER	(gr)	(gr)	(%)		bs)	(lbs)	(gr	) (	(gr)		(%)
12210721	10000	469	4.48	5	0	100	5731	.0 9	9924.0	2.54	6.8
12210721	10000	469				100			9924.0	2.54	6.8
	10000		DEF	ORMATI	ON (in		0.0001	)		2.54 #4(6.0	
CYCLE _		).0 IN.)	DEF	ORMATI #2(2.	ON (in	ches X	0.0001 #3(4.	)			)625 I
CYCLE _	LVDT #1(0	).0 IN.)	DEFO	ORMATI #2(2.	ON (inc	LVDT	0.0001 #3(4.	) 0 IN.)	LVDT	#4(6.0	)625 I PLA.
	LVDT #1(C	).0 IN.) T. PLA.	DEFO LVDT ELA. 10.6	#2(2.	ON (inc	LVDT ELA.	#3(4. TOT.	) 0 IN.) PLA.	LVDT ELA.	#4(6.0 TOT.	0625 I PLA.
CYCLE	ELA. TOT 29.4 33.8 23.1 26.6 20.8 23.8	).0 IN.)  7. PLA.  9 25.8  9 68.7  9 116.5	DEF( LVDT  ELA.  10.6 8.1 7.2	#2(2. TOT.	ON (inc 0 IN.) PLA. 8.1	LVDT ELA. 7.4 5.2	#3(4. TOT.	) 0 IN.) PLA. 5.3	LVDT ELA. 4.9 2.9	#4(6.0 TOT.	PLA. 3.3 6.0
CYCLE	LVDT #1(0 ELA. TOT 29.4 33.8 23.1 26.6	).0 IN.)  7. PLA.  9 25.8  9 68.7  9 116.5	DEF( LVDT  ELA.  10.6 8.1 7.2	#2(2. TOT. 12.3 9.3 8.3	ON (income of the original of	LVDT  ELA.  7.4  5.2 4.4	#3(4. TOT. 8.6 6.0 5.1	) 0 IN.) PLA. 5.3 11.7	LVDT ELA. 4.9 2.9 2.3	#4(6.0 TOT. 5.7 3.4	PLA.  3.3 6.0 8.5
	LVDT #1(0 ELA. TOT 29.4 33.8 23.1 26.6 20.8 23.8	D.O IN.)  T. PLA.  25.8 3 68.7 9 116.5 5 323.2	LVDT  ELA.  10.6 8.1 7.2 5.4	#2(2. TOT. 12.3 9.3 8.3 6.2	ON (inc 0 IN.) PLA. 8.1 20.0 32.8 83.8	LVDT  ELA.  7.4  5.2  4.4  3.0	#3(4. TOT. 8.6 6.0 5.1 3.4	)  PLA.  5.3 11.7 18.2 40.6	LVDT ELA. 4.9 2.9 2.3 1.2	#4(6.0 TOT. 5.7 3.4 2.6	PLA.  3.3 6.0 8.5
100 500 1000 5100	ELA. TOT 29.4 33.5 23.1 26.6 20.8 23.5 16.3 18.5	25.8 3 68.7 9 116.5 5 323.2 3 530.5	DEFO LVDT ELA. 10.6 8.1 7.2 5.4 4.9	#2(2. TOT. 12.3 9.3 8.3 6.2 5.5	ON (inc 0 IN.) PLA. 8.1 20.0 32.8 83.8 132.8	LVDT  ELA.  7.4  5.2  4.4  3.0  2.5	#3(4. TOT. 8.6 6.0 5.1 3.4 2.9	) PLA. 5.3 11.7 18.2 40.6 60.6	LVDT ELA. 4.9 2.9 2.3 1.2	#4(6.0 TOT. 5.7 3.4 2.6	PLA.  3.3 6.0 8.5
100 500 1000 5100 10000 30000	LVDT #1(0 ELA. TOT 29.4 33.6 23.1 26.6 20.8 23.6 16.3 18.5 14.7 16.6	25.8 3 68.7 9 116.5 5 323.2 3 530.5 5 1030.0	DEFO LVDT ELA. 10.6 8.1 7.2 5.4 4.9 4.0	#2(2. TOT. 12.3 9.3 8.3 6.2 5.5 4.7	ON (inc 0 IN.) PLA. 8.1 20.0 32.8 83.8 132.8 243.5	LVDT  ELA.  7.4  5.2  4.4  3.0  2.5  1.9	#3(4. TOT. 8.6 6.0 5.1 3.4 2.9 2.2	) PLA. 5.3 11.7 18.2 40.6 60.6 99.6	LVDT ELA. 4.9 2.9 2.3 1.2	#4(6.0 TOT. 5.7 3.4 2.6	PLA.  3.3 6.0 8.5
100 500 1000 5100 10000 30000 167000	ELA. TOT 29.4 33.8 23.1 26.6 20.8 23.8 16.3 18.5 14.7 16.6 12.5 14.5 9.6 11.1	25.8 3 68.7 9 116.5 5 323.2 3 530.5 5 1030.0 1 3406.5	DEFO LVDT ELA. 10.6 8.1 7.2 5.4 4.9 4.0 4.8	#2(2. TOT. 12.3 9.3 8.3 6.2 5.5 4.7 5.6	ON (inc 0 IN.) PLA. 8.1 20.0 32.8 83.8 132.8 243.5	LVDT  ELA.  7.4  5.2  4.4  3.0  2.5  1.9	#3(4. TOT. 8.6 6.0 5.1 3.4 2.9 2.2 1.4	)  O IN.)  PLA.  5.3 11.7 18.2 40.6 60.6 99.6 248.4	LVDT ELA. 4.9 2.9 2.3 1.2	#4(6.0 TOT. 5.7 3.4 2.6 1.4	PLA.  3.3 6.0 8.5 14.4
100 500 1000 5100 10000 30000 167000	LVDT #1(0 ELA. TOT 29.4 33.8 23.1 26.6 20.8 23.8 16.3 18.5 14.7 16.6 12.5 14.5 9.6 11.5	25.8 3 68.7 9 116.5 5 323.2 3 530.5 5 1030.0 1 3406.5 ET OF DRY	DEFO LVDT ELA. 10.6 8.1 7.2 5.4 4.9 4.0 4.8 AGGREG	#2(2. TOT. 12.3 9.3 8.3 6.2 5.5 4.7 5.6	ON (inc 0 IN.) PLA. 8.1 20.0 32.8 83.8 132.8 243.5	LVDT  ELA.  7.4  5.2  4.4  3.0  2.5  1.9	#3(4. TOT. 8.6 6.0 5.1 3.4 2.9 2.2 1.4	)  PLA.  5.3 11.7 18.2 40.6 60.6 99.6 248.4  - WEIGH	LVDT ELA. 4.9 2.9 2.3 1.2	#4(6.0 TOT. 5.7 3.4 2.6 1.4 - - ITUMEN;	PLA.  3.3 6.0 8.5 14.4
100 500 1000 5100 10000 30000 167000 A = TC C = PI	LVDT #1(0 ELA. TOT 29.4 33.6 23.1 26.6 20.8 23.6 16.3 18.5 14.7 16.6 12.5 14.5 9.6 11.5 DTAL WEIGHT OF SEIGHT OF SEIG	25.8 3 68.7 9 116.5 5 323.2 3 530.5 5 1030.0 1 3406.5 TT OF DRY PHALT CON'	DEFO LVDT ELA. 10.6 8.1 7.2 5.4 4.9 4.0 4.8 AGGREG TENT; AIR;	#2(2. TOT. 12.3 9.3 8.3 6.2 5.5 4.7 5.6	ON (inc 0 IN.) PLA. 8.1 20.0 32.8 83.8 132.8 243.5	LVDT  ELA.  7.4  5.2  4.4  3.0  2.5  1.9	#3(4. TOT. 8.6 6.0 5.1 3.4 2.9 2.2 1.4 WB SL CL	)  O IN.)  PLA.  5.3 11.7 18.2 40.6 60.6 99.6 248.4  - WEIGH - SUSTA - CYCL1	LVDT ELA. 4.9 2.9 2.3 1.2	#4(6.0 TOT. 5.7 3.4 2.6 1.4 - - ITUMEN; OAD;	PLA.  3.3 6.0 8.5 14.4
100 500 1000 5100 10000 30000 167000 A = TO C = PI BA = WI	LVDT #1(0 ELA. TOT 29.4 33.8 23.1 26.6 20.8 23.8 16.3 18.5 14.7 16.6 12.5 14.5 9.6 11.5	25.8 3 68.7 9 116.5 5 323.2 3 530.5 5 1030.0 1 3406.5 HT OF DRY PHALT CON SAMPLE IN	DEFO LVDT ELA. 10.6 8.1 7.2 5.4 4.9 4.0 4.8 AGGREG TENT; AIR;	#2(2. TOT.  12.3 9.3 8.3 6.2 5.5 4.7 5.6	ON (inc 0 IN.) PLA. 8.1 20.0 32.8 83.8 132.8 243.5	LVDT  ELA.  7.4 5.2 4.4 3.0 2.5 1.9	#3(4. TOT. 8.6 6.0 5.1 3.4 2.9 2.2 1.4 WB SL CL	)  O IN.)  PLA.  5.3 11.7 18.2 40.6 60.6 99.6 248.4  - WEIGH - SUSTA - CYCL1	LVDT ELA. 4.9 2.9 2.3 1.2	#4(6.0 TOT. 5.7 3.4 2.6 1.4 - - ITUMEN; OAD;	PLA.  3.3 6.0 8.5 14.4



SAMPLE NUMBER	WA (gr)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (%)
	(8-7		(-/								
12210731	10000	469	4.48	5	0	100	5732	.0 9	954.0	2.54	7.2
			DEF	RMATI	ON (inc	ches X (	0.0001	)			
 CYCLE	LVDT #1(0	).0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 I
NUMBER	ELA. TO	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
120	30.1 34.5	33.4	10.5	12.0	10.0	7.2	8.2	6.4	4.6	5.3	3.8
500	24.3 27.6	78.8	8.2	9.3	22.1	5.2	5.9	12.7	2.9	3.3	6.4
1000	21.9 24.9	132.8	7.3	8.3	36.0	4.4	5.0	19.6	2.2	2.5	9.0
5200	17.1 19.6	360.6	5.5	6.3	89.8	3.0	3.4	42.6	-	-	-
10000	15.5 17.6	618.6	4.9	5.6	148.9	2.5	2.9	66.4	-	-	-
30000	13.1 15.1	L 1145.0	4.1	4.7	260.0	1.9	2.2	103.7	-	-	-
191300	10.0 11.3	4195.3	2.9	3.4	861.6	1.1	1.3	277.4	-	-	-
SAMPLE	WA	WB	AC	s	L	CL	WBW	· W	/BA	GR <b>4</b> M	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
12210712	10000	469	4.48	5	0	200	5735	0 8	950.0	2.54	7.1
	10000					200	3,03				
				RMAT I	Off (in	ches X				*******	
_	LVDT #1(0		DEF		ON (inc	ches X	0.0001		LVDT	#4(6.0	)625 I
CYCLE _		D.O IN.)	DEF		0 IN.)	ches X	0.0001	) 0 IN.)	LVDT	#4(6.0 TOT.	)625 I
CYCLE _	LVDT #1(0	).0 IN.)	DEFO	<b>#</b> 2(2.	0 IN.)	LVDT	0.0001 #3(4.	) 0 IN.)			PLA.
	LVDT #1(0	).0 IN.) r. PLA.	DEFO LVDT ELA. 20.7	#2(2. TOT.	O IN.)	LVDT ELA. 13.7	#3(4. TOT.	) 0 IN.) PLA.	ELA.	TOT.	PLA.
	LVDT #1(0 ELA. TO:	0.0 IN.) T. PLA. 63.8 5 167.1	DEF() LVDT ELA. 20.7 15.8	#2(2. TOT.	0 IN.) PLA. 18.9	LVDT ELA. 13.7 9.5	#3(4. TOT.	) 0 IN.) PLA. 11.7	ELA. 8.6	TOT.	PLA. 5.8 11.8
CYCLE TUMBER  100 500	ELA. TOT 60.8 69.4 47.8 54.5 43.1 50.0	D.O IN.)  F. PLA.  63.8 5 167.1	DEF( LVDT ELA. 20.7 15.8 14.0	#2(2. TOT. 23.7 18.0 16.3	0 IN.) PLA. 18.9 45.8 76.3	LVDT  ELA.  13.7  9.5 8.0	#3(4. TOT. 15.7	)  PLA.  11.7 25.1 39.5	ELA. 8.6 4.9 3.8	TOT. 9.8 5.6 4.4	PLA. 6.8 11.8 16.8
	ELA. TOT 60.8 69.4 47.8 54.5 43.1 50.0 32.6 36.6	0.0 IN.)  7. PLA.  4. 63.8  5. 167.1  9. 288.2	DEFC LVDT ELA. 20.7 15.8 14.0	#2(2. TOT. 23.7 18.0 16.3 11.5	0 IN.) PLA. 18.9 45.8 76.3 217.2	LVDT  ELA.  13.7  9.5  8.0  5.1	#3(4. TOT. 15.7 10.8 9.3	)  PLA.  11.7 25.1 39.5 95.1	8.6 4.9 3.8 1.7	TOT.  9.8 5.6 4.4 2.0	PLA. 6.8 11.8 16.8 28.5
100 500 1000 6400	ELA. TOT 60.8 69.4 47.8 54.5 43.1 50.0 32.6 36.6	7. PLA.  63.8 5. 167.1 9. 288.2 9. 903.4 7. 1286.0	DEFO LVDT ELA. 20.7 15.8 14.0 10.2 9.4	#2(2. TOT. 23.7 18.0 16.3 11.5	0 IN.) PLA. 18.9 45.8 76.3 217.2 302.0	LVDT  ELA.  13.7  9.5  8.0  5.1  4.5	#3(4. TOT. 15.7 10.8 9.3 5.8 5.2	)  PLA.  11.7 25.1 39.5 95.1	8.6 4.9 3.8 1.7	TOT.  9.8 5.6 4.4 2.0	PLA. 6.8 11.8 16.8 28.5 34.3
TOO 1000 6400 10000 28500	ELA. TO: 60.8 69.4 47.8 54.3 43.1 50.0 32.6 36.6 30.5 34.7	0.0 IN.)  7. PLA.  4 63.8 5 167.1 9 288.2 9 903.4 7 1286.0 0 2412.7	DEFO LVDT ELA. 20.7 15.8 14.0 10.2 9.4 7.9	#2(2. TOT. 23.7 18.0 16.3 11.5 10.8 9.1	0 IN.) PLA. 18.9 45.8 76.3 217.2 302.0 535.7	LVDT ELA.  13.7 9.5 8.0 5.1 4.5 3.4	#3(4. TOT. 15.7 10.8 9.3 5.8 5.2 4.0	) PLA. 11.7 25.1 39.5 95.1 126.5	8.6 4.9 3.8 1.7 1.4	9.8 5.6 4.4 2.0	PLA.  6.8 11.8 16.8 28.5 34.3 41.7
100 500 1000 6400 10000 28500 54000	ELA. TOT 60.8 69.4 47.8 54.5 43.1 50.0 32.6 36.6 30.5 34.7 26.1 30.0	7. PLA.  4. 63.8 5. 167.1 7. 288.2 9. 903.4 7. 1286.0 7. 1286.0 7. 1286.0	DEFC LVDT ELA. 20.7 15.8 14.0 10.2 9.4 7.9	#2(2. TOT. 23.7 18.0 16.3 11.5 10.8 9.1 8.1	0 IN.) PLA.  18.9 45.8 76.3 217.2 302.0 535.7 843.6	LVDT ELA.  13.7 9.5 8.0 5.1 4.5 3.4	0.0001 #3(4. TOT. 15.7 10.8 9.3 5.8 5.2 4.0 3.3	) PLA.  11.7 25.1 39.5 95.1 126.5 200.8	8.6 4.9 3.8 1.7 1.4 0.8	9.8 5.6 4.4 2.0 1.6 1.0	PLA.  6.8 11.8 16.8 28.5 34.3 41.7 50.6
100 500 1000 6400 10000 28500 54000	ELA. TOT 60.8 69.4 47.8 54.5 43.1 50.0 32.6 36.8 30.5 34.7 26.1 30.0 23.7 27.4	D.O IN.)  F. PLA.  63.8 5 167.1 D 288.2 D 903.4 7 1286.0 D 2412.7 A 3933.0  HT OF DRY	DEFO LVDT ELA. 20.7 15.8 14.0 10.2 9.4 7.9 7.0	#2(2. TOT. 23.7 18.0 16.3 11.5 10.8 9.1 8.1	0 IN.) PLA.  18.9 45.8 76.3 217.2 302.0 535.7 843.6	LVDT ELA.  13.7 9.5 8.0 5.1 4.5 3.4	#3(4. TOT. 15.7 10.8 9.3 5.8 5.2 4.0 3.3	) PLA.  11.7 25.1 39.5 95.1 126.5 200.8 294.0	8.6 4.9 3.8 1.7 1.4 0.8 0.6	9.8 5.6 4.4 2.0 1.6 1.0 0.7	PLA.  6.8 11.8 16.8 28.5 34.3 41.7 50.6
100 500 1000 6400 10000 28500 54000	ELA. TOTO  60.8 69.4  47.8 54.3  43.1 50.0  32.6 36.6  30.5 34.7  26.1 30.0  23.7 27.4	0.0 IN.)  PLA.  63.8 5 167.1 0 288.2 9 903.4 7 1286.0 0 2412.7 4 3933.0  HT OF DRY PHALT CON	DEFO LVDT ELA. 20.7 15.8 14.0 10.2 9.4 7.9 7.0	#2(2. TOT. 23.7 18.0 16.3 11.5 10.8 9.1 8.1	0 IN.) PLA.  18.9 45.8 76.3 217.2 302.0 535.7 843.6	LVDT ELA.  13.7 9.5 8.0 5.1 4.5 3.4	#3(4. TOT. 15.7 10.8 9.3 5.8 5.2 4.0 3.3	)  O IN.)  PLA.  11.7  25.1  39.5  95.1  126.5  200.8  294.0	8.6 4.9 3.8 1.7 1.4 0.8 0.6	9.8 5.6 4.4 2.0 1.6 1.0 0.7	FLA.  6.8 11.8 16.8 28.5 34.3 41.7 50.6
100 500 1000 6400 10000 28500 54000	ELA. TOTO  60.8 69.4  47.8 54.3  43.1 50.0  32.6 36.6  30.5 34.7  26.1 30.0  23.7 27.4  OTAL WEIGH	0.0 IN.)  7. PLA.  4. 63.8  5. 167.1  9. 288.2  9. 903.4  7. 1286.0  9. 2412.7  4. 3933.0  HT OF DRY  PHALT CON'  SAMPLE IN	DEFO LVDT ELA. 20.7 15.8 14.0 10.2 9.4 7.9 7.0 AGGRECTENT; AIR;	#2(2. TOT. 23.7 18.0 16.3 11.5 10.8 9.1 8.1	0 IN.) PLA.  18.9 45.8 76.3 217.2 302.0 535.7 843.6	LVDT ELA.  13.7 9.5 8.0 5.1 4.5 3.4	#3(4. TOT. 15.7 10.8 9.3 5.8 5.2 4.0 3.3 WB SL CL	) PLA.  11.7 25.1 39.5 95.1 126.5 200.8 294.0  - WEIGH	8.6 4.9 3.8 1.7 1.4 0.8 0.6	TOT.  9.8 5.6 4.4 2.0 1.6 1.0 0.7	FLA.  6.8 11.8 28.5 34.3 41.7 50.6

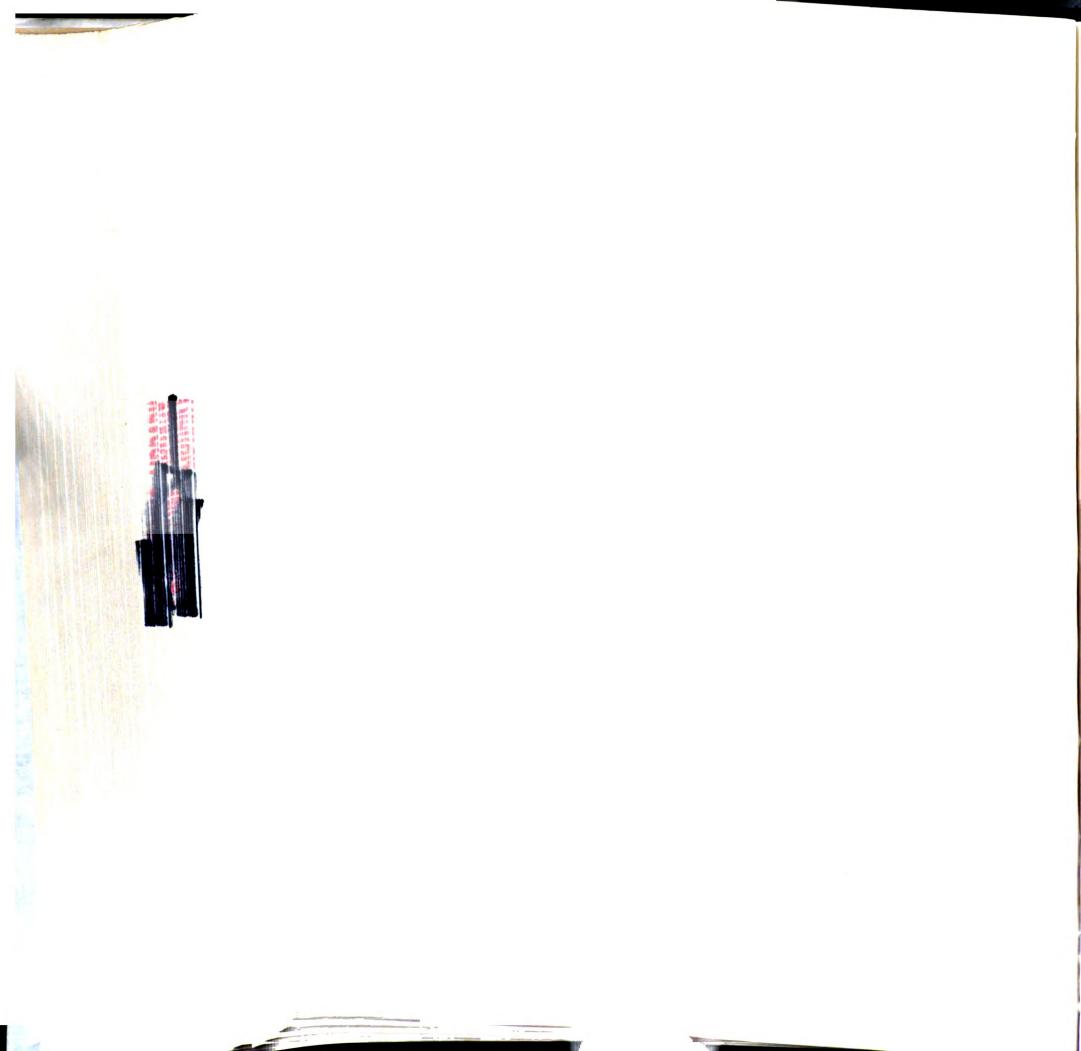


NUMBER	WA (gr)	WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr		BA Br)	GMM	AV (Z)
12210722	10000	469	4.48	5	0	200	5738	. 0 9:	953.0	2.54	7.07
			DEF	ORMAT I	ON (in	ches X (	0.0001	)			
 CYCLE	LVDT #1(0	.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.	O IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	60.6 70.1	63.6	20.7	24.0	18.9	13.7	15.9	11.7	8.6	9.9	6.8
500	47.6 55.2	163.7	15.8	18.3	45.0	9.5	11.0	24.7	4.9	5.7	11.7
1000	42.9 49.6	289.4	14.0	16.2	76.8	8.1	9.3	39.8	3.8	4.4	16.9
5500	33.2 37.9	809.0	10.5	11.9	196.6	5.3	6.0	87.5	1.9	2.1	27.2
10000	30.4 34.6	1300.7	9.4	10.8	306.4	4.5	5.2	128.5	9.1	10.6	-
29000	25.9 29.7	2422.7	7.8	9.0	539.2	8.7	10.2	-	-	-	-
70900	22.7 26.0	4729.4	6.7	7.7	1002.7	2.7	3.1	339.2	-	<u>-</u>	-
SAMPLE	WA	WB	AC		SL	CL	WBW	w	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
12210732	10000	469	4.48	5	i0	200	5739	.0 9	942.0	2.54	6.91
******			DEF	ORMATI	ON (in	ches X	0.0001	)			
	LVDT #1(0	.0 IN.)			ON (in		<del></del>	) 0 IN.)	LVDT	#4(6.0	625 II
-	LVDT #1(0				0 IN.)		<del></del>		LVDT ELA.	#4(6.0	0625 II
-		. PLA.	LVDT	#2(2.	0 IN.)	LVDT ELA.	#3(4.	0 IN.)	ELA.		·
NUMBER	ELA. TOT	PLA.	LVDT ELA. 20.6	#2(2. TOT.	0 IN.) PLA.	ELA.	#3(4.)	PLA.	ELA.	TOT.	PLA.
NUMBER 100	59.2 68.5 46.5 53.5 41.9 47.4	58.7 154.4 267.8	LVDT ELA. 20.6 15.7 13.9	#2(2. TOT. 23.8 18.0 15.7	0 IN.) PLA. 17.8 43.2 72.3	LVDT ELA. 13.7 9.5 8.1	#3(4.0 TOT.	PLA.  11.1 23.9 37.8	8.6 5.0 3.9	TOT.	PLA.
100 500	ELA. TOT 59.2 68.5 46.5 53.5	58.7 154.4 267.8	LVDT ELA. 20.6 15.7 13.9	#2(2. TOT. 23.8 18.0 15.7	0 IN.) PLA. 17.8 43.2	LVDT ELA. 13.7 9.5 8.1	#3(4.0 TOT. 15.9 10.9	PLA.  11.1 23.9	8.6 5.0 3.9	TOT.	PLA. 6.5 11.4
100 500 1000 5000	59.2 68.5 46.5 53.5 41.9 47.4	58.7 154.4 267.8 701.2	LVDT ELA. 20.6 15.7 13.9 10.6	#2(2. TOT. 23.8 18.0 15.7 12.0	0 IN.) PLA. 17.8 43.2 72.3 174.4	LVDT ELA. 13.7 9.5 8.1 5.5	#3(4.0 TOT. 15.9 10.9 9.1 6.2	PLA.  11.1 23.9 37.8 79.1	8.6 5.0 3.9 2.0	TOT. 10.0 5.7 4.4	PLA. 6.5 11.4 16.3 25.5
100 500 1000 5000 10000	59.2 68.5 46.5 53.5 41.9 47.4 32.9 37.3	58.7 154.4 267.8 701.2 1232.7	LVDT ELA. 20.6 15.7 13.9 10.6 9.4	#2(2. TOT. 23.8 18.0 15.7 12.0 10.8	0 IN.) PLA. 17.8 43.2 72.3 174.4 295.7	LVDT ELA.  13.7 9.5 8.1 5.5 4.6	#3(4.0 TOT. 15.9 10.9 9.1 6.2 5.2	PLA.  11.1 23.9 37.8 79.1 125.5	8.6 5.0 3.9 2.0	TOT.  10.0 5.7 4.4 2.3	PLA. 6.5 11.4 16.3 25.5 34.8
100 500 1000 5000 10000 50000	59.2 68.5 46.5 53.5 41.9 47.4 32.9 37.3 29.7 34.0	58.7 154.4 267.8 701.2 1232.7 3219.6	LVDT  ELA.  20.6 15.7 13.9 10.6 9.4 7.1	#2(2. TOT. 23.8 18.0 15.7 12.0 10.8 8.2	0 IN.) PLA. 17.8 43.2 72.3 174.4 295.7 709.0	LVDT  ELA.  13.7 9.5 8.1 5.5 4.6 3.0	#3(4.0 TOT. 15.9 10.9 9.1 6.2 5.2 3.4	PLA.  11.1 23.9 37.8 79.1 125.5 253.4	8.6 5.0 3.9 2.0 1.5 0.6	TOT.  10.0 5.7 4.4 2.3 1.7 0.7	PLA. 6.5 11.4 16.3 25.5 34.8 46.0
500 1000 5000 10000 50000 80000	59.2 68.5 46.5 53.5 41.9 47.4 32.9 37.3 29.7 34.0 23.3 26.8	58.7 154.4 267.8 701.2 1232.7 3219.6 4746.4	LVDT  ELA.  20.6 15.7 13.9 10.6 9.4 7.1 6.5	#2(2. TOT. 23.8 18.0 15.7 12.0 10.8 8.2 7.6	0 IN.) PLA.  17.8 43.2 72.3 174.4 295.7 709.0 1018.9	LVDT  ELA.  13.7 9.5 8.1 5.5 4.6 3.0	#3(4.4) TOT.  15.9 10.9 9.1 6.2 5.2 3.4 3.1	PLA.  11.1 23.9 37.8 79.1 125.5 253.4	8.6 5.0 3.9 2.0 1.5 0.6	TOT.  10.0 5.7 4.4 2.3 1.7 0.7 0.6	PLA. 6.5 11.4 16.3 25.5 34.8 46.0 54.0
100 500 1000 5000 10000 50000 80000	59.2 68.5 46.5 53.5 41.9 47.4 32.9 37.3 29.7 34.0 23.3 26.8 21.7 25.3	58.7 154.4 267.8 701.2 1232.7 3219.6 4746.4	LVDT  ELA.  20.6 15.7 13.9 10.6 9.4 7.1 6.5	#2(2. TOT. 23.8 18.0 15.7 12.0 10.8 8.2 7.6	0 IN.) PLA.  17.8 43.2 72.3 174.4 295.7 709.0 1018.9	LVDT  ELA.  13.7 9.5 8.1 5.5 4.6 3.0	#3(4.4) TOT.  15.9 10.9 9.1 6.2 5.2 3.4 3.1	PLA.  11.1 23.9 37.8 79.1 125.5 253.4 344.7	8.6 5.0 3.9 2.0 1.5 0.6	TOT.  10.0 5.7 4.4 2.3 1.7 0.7 0.6	PLA. 6.5 11.4 16.3 25.5 34.8 46.0 54.0
100 500 1000 5000 10000 50000 80000	59.2 68.5 46.5 53.5 41.9 47.4 32.9 37.3 29.7 34.0 23.3 26.8 21.7 25.3	58.7 154.4 267.8 701.2 1232.7 3219.6 4746.4	LVDT  ELA.  20.6 15.7 13.9 10.6 9.4 7.1 6.5  AGGREGIENT;	#2(2. TOT. 23.8 18.0 15.7 12.0 10.8 8.2 7.6	0 IN.) PLA.  17.8 43.2 72.3 174.4 295.7 709.0 1018.9	LVDT  ELA.  13.7 9.5 8.1 5.5 4.6 3.0	#3(4.0 TOT. 15.9 10.9 9.1 6.2 5.2 3.4 3.1	PLA.  11.1 23.9 37.8 79.1 125.5 253.4 344.7	8.6 5.0 3.9 2.0 1.5 0.6 0.5	TOT.  10.0 5.7 4.4 2.3 1.7 0.7 0.6	PLA. 6.5 11.4 16.3 25.5 34.8 46.0 54.0
100 500 1000 5000 10000 50000 80000 A = TC C = PI	59.2 68.5 46.5 53.5 41.9 47.4 32.9 37.3 29.7 34.0 23.3 26.8 21.7 25.3	58.7 154.4 267.8 701.2 1232.7 3219.6 4746.4 T OF DRY	LVDT  ELA.  20.6 15.7 13.9 10.6 9.4 7.1 6.5  AGGREGIENT; AIR;	#2(2. TOT. 23.8 18.0 15.7 12.0 10.8 8.2 7.6 GATES;	0 IN.) PLA.  17.8 43.2 72.3 174.4 295.7 709.0 1018.9	LVDT  ELA.  13.7 9.5 8.1 5.5 4.6 3.0	#3(4.0 TOT. 15.9 10.9 9.1 6.2 5.2 3.4 3.1	PLA.  11.1 23.9 37.8 79.1 125.5 253.4 344.7  WEIGH	8.6 5.0 3.9 2.0 1.5 0.6 0.5	TOT.  10.0 5.7 4.4 2.3 1.7 0.7 0.6	PLA. 6.5 11.4 16.3 25.5 34.8 46.0 54.0



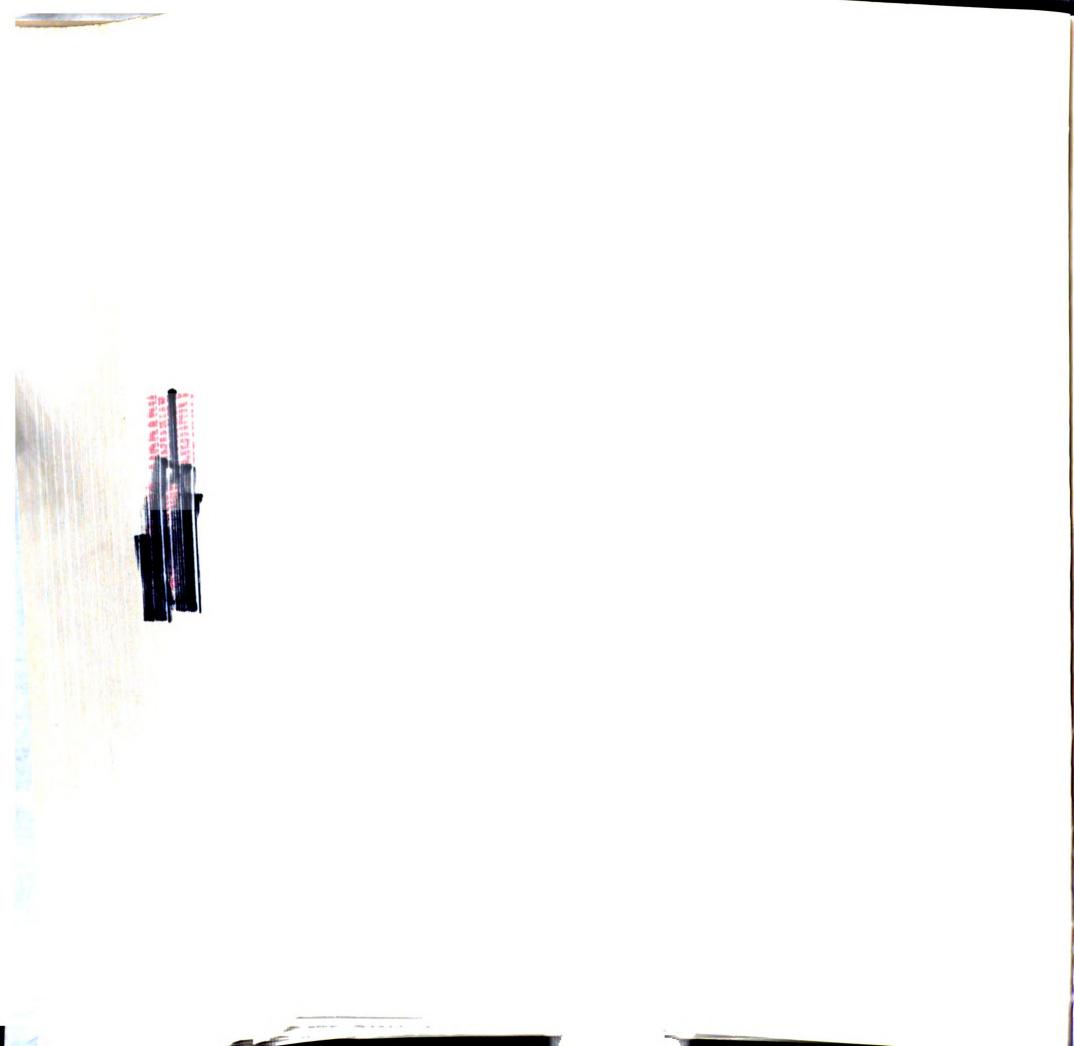
WA WB AC SL (gr) (gr) (1) (1bs)			CL (lbs)	WBW (gr)		WBA (gr)	GMM	AV (Z)			
100	000	469	4.48		50	500	5755.	.0	9966.0	2.54	6.86
	No. 11 (10 (10 (10 (10 (10 (10 (10 (10 (10		DEF	ORMAT I	ON (inc	ches X (	0.0001)	)	<del></del>	· <del></del>	
LVDT	#1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	<b>#4(6.</b> 0	625 IN
ELA.	TOT.	PLA.	ELA.	TOT .	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
147.5	171.3	191.7	46.3	53.7	52.4	26.1	30.3	27.6	-	-	-
115.9	134.4	519.3	35.1	40.8	130.7	17.7	20.5	59.9	-	-	-
104.0	119.3	887.4	31.0	35.6	215.0	14.8	16.9	92.1		-	-
82.0	93.8	2353.3	23.6	27.0	524.2	9.8	11.2	190.8	-	-	-
73.9	84.1	4049.2	20.9	23.8	868.6	8.1	9.2	292.1	. <b>-</b>	-	-
71.5	81.1	4312.0	20.1	22.8	913.7	7.6	8.6	299.3	-	-	-
71.1	81.5	4773.5	20.0	22.9	1009.4	7.5	8.6	329.1	. <del>-</del>	-	-
	₹A	WB	AC	S	SL	CL	WBW		WBA	GMM	AV
(8	gr)	(gr)	(1)	(1	lbs)	(lbs)	(gr)	)	(gr)		(%)
100	000	469	4.48		50	500	5756	. 0	9963.0	2.54	6.8
			DEF	ORMATI	ON (in	ches X	0.0001	)		• • • • • •	
LVDT	<b>#1</b> (0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	0625 I
ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
146.3	169.8	189.2	46.2	53.6	52.0	26.2	30.4	27.5	13.6	15.7	13.3
114.9	131.9	495.4	35.1	40.3	125.5	17.7	20.4	57.8	7.3	8.4	21.7
71.2	82.6	4122.4	20.2	23.4	881.8	7.7	8.9	291.6	1.6	1.9	52.5
				GATES ;							;
			•							•	
	OF CAM	DIF IN	ATR .				CL.	- CYCL	IC LOAD	•	
EIGHT		PLE IN	•						ENT AIR		
	LVDT  ELA.  147.5 115.9 104.0 82.0 73.9 71.5 71.1  LVDT  ELA.  146.3 114.9 103.6 81.3 73.3 71.2	LVDT #1(0.0  ELA. TOT.  147.5 171.3  115.9 134.4  104.0 119.3  82.0 93.8  73.9 84.1  71.5 81.1  71.1 81.5  WA  (gr)  10000  LVDT #1(0.0  ELA. TOT.  146.3 169.8  114.9 131.9  103.6 117.1  81.3 94.5  73.3 83.3  71.2 82.6	LVDT #1(0.0 IN.)  ELA. TOT. PLA.  147.5 171.3 191.7 115.9 134.4 519.3 104.0 119.3 887.4 82.0 93.8 2353.3 73.9 84.1 4049.2 71.5 81.1 4312.0 71.1 81.5 4773.5  WA WB (gr) (gr)  LVDT #1(0.0 IN.)  ELA. TOT. PLA.  146.3 169.8 189.2 114.9 131.9 495.4 103.6 117.1 859.2 81.3 94.5 2277.7 73.3 83.3 3970.8 71.2 82.6 4122.4	DEFO LVDT #1(0.0 IN.) LVDT ELA. TOT. PLA. ELA. 147.5 171.3 191.7 46.3 115.9 134.4 519.3 35.1 104.0 119.3 887.4 31.0 82.0 93.8 2353.3 23.6 73.9 84.1 4049.2 20.9 71.5 81.1 4312.0 20.1 71.1 81.5 4773.5 20.0 WA WB AC (gr) (gr) (Z) LVDT #1(0.0 IN.) LVDT ELA. TOT. PLA. ELA. 146.3 169.8 189.2 46.2 114.9 131.9 495.4 35.1 103.6 117.1 859.2 31.1 81.3 94.5 2277.7 23.6 73.3 83.3 3970.8 20.9 71.2 82.6 4122.4 20.2	DEFORMATI  LVDT #1(0.0 IN.) LVDT #2(2.  ELA. TOT. PLA. ELA. TOT.  147.5 171.3 191.7 46.3 53.7  115.9 134.4 519.3 35.1 40.8  104.0 119.3 887.4 31.0 35.6  82.0 93.8 2353.3 23.6 27.0  73.9 84.1 4049.2 20.9 23.8  71.5 81.1 4312.0 20.1 22.8  71.1 81.5 4773.5 20.0 22.9  WA WB AC S (gr) (gr) (Z) (1  10000 469 4.48 5  DEFORMATI  LVDT #1(0.0 IN.) LVDT #2(2.  ELA. TOT. PLA. ELA. TOT.  146.3 169.8 189.2 46.2 53.6  114.9 131.9 495.4 35.1 40.3  103.6 117.1 859.2 31.1 35.2  81.3 94.5 2377.7 23.6 27.4  73.3 83.3 3970.8 20.9 23.7  71.2 82.6 4122.4 20.2 23.4	DEFORMATION (inc.  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA.  147.5 171.3 191.7 46.3 53.7 52.4  115.9 134.4 519.3 35.1 40.8 130.7  104.0 119.3 887.4 31.0 35.6 215.0  82.0 93.8 2353.3 23.6 27.0 524.2  73.9 84.1 4049.2 20.9 23.8 868.6  71.5 81.1 4312.0 20.1 22.8 913.7  71.1 81.5 4773.5 20.0 22.9 1009.4  WA WB AC SL (gr) (gr) (T) (lbs)  DEFORMATION (inc.)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA.  146.3 169.8 189.2 46.2 53.6 52.0  114.9 131.9 495.4 35.1 40.3 125.5  103.6 117.1 859.2 31.1 35.2 210.0  81.3 94.5 2277.7 23.6 27.4 511.1  73.3 83.3 3970.8 20.9 23.7 858.2  71.2 82.6 4122.4 20.2 23.4 881.8	DEFORMATION (inches X (1)	DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0)  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT.  147.5 171.3 191.7 46.3 53.7 52.4 26.1 30.3  115.9 134.4 519.3 35.1 40.8 130.7 17.7 20.5  104.0 119.3 887.4 31.0 35.6 215.0 14.8 16.9  82.0 93.8 2353.3 23.6 27.0 524.2 9.8 11.2  73.9 84.1 4049.2 20.9 23.8 868.6 8.1 9.2  71.5 81.1 4312.0 20.1 22.8 913.7 7.6 8.6  71.1 81.5 4773.5 20.0 22.9 1009.4 7.5 8.6  WA WB AC SL CL WBW  (gr) (gr) (X) (lbs) (lbs) (gr)  10000 469 4.48 50 500 5756  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0)  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT.  146.3 169.8 189.2 46.2 53.6 52.0 26.2 30.4  114.9 131.9 495.4 35.1 40.3 125.5 17.7 20.4  103.6 117.1 859.2 31.1 35.2 210.0 14.9 16.9  81.3 94.5 2277.7 23.6 27.4 511.1 9.8 11.4  73.3 83.3 3970.8 20.9 23.7 858.2 8.1 9.2  71.2 82.6 4122.4 20.2 23.4 881.8 7.7 8.9	DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.)  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  147.5 171.3 191.7 46.3 53.7 52.4 26.1 30.3 27.6 11.5 11.5 11.3 191.7 46.3 53.7 52.4 26.1 30.3 27.6 104.0 119.3 887.4 31.0 35.6 215.0 14.8 16.9 92.1 104.0 119.3 887.4 31.0 35.6 215.0 14.8 16.9 92.1 73.9 84.1 4049.2 20.9 23.8 868.6 8.1 9.2 292.1 71.5 81.1 4312.0 20.1 22.8 913.7 7.6 8.6 299.3 71.1 81.5 4773.5 20.0 22.9 1009.4 7.5 8.6 329.1 11.1 11.5 4773.5 20.0 22.9 1009.4 7.5 8.6 329.1 11.1 11.1 11.1 11.1 11.1 11.1 11.1	DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. FLA. ELA.  147.5 171.3 191.7 46.3 53.7 52.4 26.1 30.3 27.6 - 115.9 134.4 519.3 35.1 40.8 130.7 17.7 20.5 59.9 - 104.0 119.3 887.4 31.0 35.6 215.0 14.8 16.9 92.1 - 82.0 93.8 2353.3 23.6 27.0 524.2 9.8 11.2 190.8 - 73.9 84.1 4049.2 20.9 23.8 888.6 8.1 9.2 292.1 - 71.5 81.1 4312.0 20.1 22.8 913.7 7.6 8.6 299.3 - 71.1 81.5 4773.5 20.0 22.9 1009.4 7.5 8.6 329.1 -  WA WB AC SL CL WBW WBA  (gr) (gr) (7) (1bs) (1bs) (gr) (gr)  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA.  146.3 169.8 189.2 46.2 53.6 52.0 26.2 30.4 27.5 13.6 114.9 131.9 495.4 35.1 40.3 125.5 17.7 20.4 57.8 7.3 103.6 117.1 859.2 31.1 35.2 210.0 14.9 16.9 90.6 5.5 81.3 94.5 2277.7 23.6 27.4 511.1 9.8 11.4 187.0 2.6 73.3 83.3 3970.8 20.9 23.7 858.2 8.1 9.2 290.3 1.8 71.2 82.6 4122.4 20.2 23.4 881.8 7.7 8.9 291.6 1.6   OTAL WEIGHT OF DRY AGGREGATES; WB - WEIGHT OF B.	DEFORMATION (Inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT \$4(6.0 IN.) LVDT \$4(6

Sample Number		MA Br)	WB (gr)	AC (Z)		L bs)	CL (lbs)	WBW (gr		BA gr)	GMM	AV (Z)
1221073	5 100	000	469	4.48	5	0	500	5717	.0 9	923.0	2.54	7.15
				DEF	RMATI	ON (inc	ches X (	0.0001	)			*****
-	LVDT	#1(0.	0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDī	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	152.8	172.7	214.9	46.4	52.4	56.8	25.7	29.1	29.4	13.1	14.7	13.9
500	120.0	137.1	563.4	35.2	40.2	137.0	17.4	19.8	61.6	6.9	7.9	22.4
1000	108.2	122.4	985.6	31.2	35.3	231.0	14.6	16.5	97.2	5.1	5.8	30.9
5000	85.0	96.3	2544.3	23.6	26.7	546.9	9.5	10.8	194.0	2.4	2.7	42.5
10000	76.6	86.8	4488.2	20.9	23.7	928.6	7.8	8.9	303.9	1.6	1.8	54.9
13000	73.6	84.9	4835.9	19.9	23.0	986.1	7.3	8.4	312.6	1.4	1.6	52.2
SAMPLE		√A.	WB	AC	s	iL	CL	WBW		/BA	GMM	AV
NUMBER	((	gr)	(gr)	(%)		.bs)	(lbs)	(gr	) (	gr)		(1)
12310711	100	000	443	4.24	5	60	100	5749	.0 9	963.0	2.55	7.25
				DEF	RMATI	ON (in	ches X	0.0001	)	<del></del>		*****
CYCLE _	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	30.4	34.6	31.8	10.5	11.9	9.6	7.2	8.2	6.1	4.6	5.3	3.7
500	23.8	27.3	85.0	8.0	9.1	23.6	5.0	5.7	13.4	2.7	3.1	6.7
1000	21.5	24.9	146.9	7.1	8.2	39.4	4.2	4.9	21.2	2.1	2.4	9.5
5000	16.9	19.3	406.3	5.4		100.3		3.3	47.0	1.1	1.3	15.9
10000		17.2			5.4			2.7	72.9		0.9	21.3
			1268.2									
167440	10.0	11.6	4651.7	2.9	3.4	951.1	1.1	1.3	305.0	0.2	0.2	39.9
			OF DRY		GATES;				- WEIGH		-	
A = 1	ERCEN1	( ASPEL	ALT CONT	-				SL	= SUSTA	INED L	DAD;	
C - 1												
C = 1 BA = V	EIGHT		MPLE IN					CL	- CYCLI	C LOAD	;	
C = 1 BA = V BW = V	Æ IGHT Æ IGHT	OF SAL	MPLE IN MPLE IN RETICAL	WATER	,				= CYCLI = PERCE		-	



BEAM CYCLIC LOAD DATA

					CL (lbs)				GMM	AV (%)
10000	443	4.24	5	0	100	5753	.0 9	964.0	2.55	7.17
		DEF	ORMATI	ON (in	ches X	0.0001	)			
LVDT #1(0	).0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	O IN.)	LVDT	#4(6.0	625 IN
ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
30.1 34.5	30.8	10.5	12.0	9.3	7.2	8.2	6.0	4.7	5.4	3.6
23.6 27.5	83.2	8.0	9.3	23.3	5.0	5.8	13.3	2.7	3.2	6.6
21.3 24.3	143.3	7.1	8.1	38.7	4.2	4.8	20.9	2.1	2.4	9.4
16.7 19.0	395.8	5.4	6.1	98.5	2.9	3.3	46.3	1.1	1.3	15.8
15.0 17.4	689.3	4.7	5.5	165.2	2.4	2.8	72.6	0.8	0.9	21.2
12.7 14.8	1310.5	3.9	4.6	296.2	1.8	2.1	116.3	0.5	0.5	26.0
10.1 11.7	4037.6	3.0	3.5	839.6	1.2	1.4	276.1	0.2	0.2	38.6
WA	WB	AC	s	L	CL	WBW	W	BA	GMM	AV
(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) (	gr)		(%)
10000	443	4.24	5	0	100	5749	. 0 8	954.0	2.55	7.13
		DEF	ORMATI	ON (in	ches X	0.0001	)			
LVDT #1(0	).0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDI	#3(4.	O IN.)	LVDT	#4(6.0	625 II
ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
29.9 34.3	30.3	10.4	12.0	9.2	7.2	8.2	5.9	-	-	-
23.5 27.3	83.2	7.9	9.2	23.4	5.0	5.8	13.4	-	-	-
21.1 24.6	141.3	7.1	8.2	38.3			20.8	-	-	-
16.4 19.0	415.3	5.3	6.1	103.3	2.8	3.3	48.3	-	•	-
									-	-
12 7 14 3	1290.2						115.9		-	-
			3.4	781.6	1.2	1.4	261.4	-	-	-
10.2 11.5										
				714.6	1.2	1.4	238.8	•	•	-
10.2 11.5 10.2 11.5 OTAL WEIGH	3401.4 IT OF DRY	3.0	3.5		1.2	WB :	- WEIGH	T OF B	•	<u>-</u>
10.2 11.5 10.2 11.5 OTAL WEIGH	3401.4 IT OF DRY	3.0 AGGREC	3.5		1.2	WB SL	= WEIGH	T OF B	OAD;	-
10.2 11.5 10.2 11.5 OTAL WEIGH	3401.4 IT OF DRY PHALT CON	3.0 AGGRECIENT; AIR;	3.5 GATES;		1.2	WB SL CL	- WEIGH	T OF B	OAD;	
	LVDT #1(0  ELA. TOT  30.1 34.5 23.6 27.5 21.3 24.3 16.7 19.0 15.0 17.4 12.7 14.8 10.1 11.7  WA (gr)  10000  LVDT #1(0  ELA. TOT  29.9 34.3 23.5 27.3 21.1 24.6 16.4 19.0	(gr) (gr)  10000 443  LVDT \$1(0.0 IN.)  ELA. TOT. FLA.  30.1 34.5 30.8 23.6 27.5 83.2 21.3 24.3 143.3 16.7 19.0 395.8 15.0 17.4 689.3 12.7 14.8 1310.5 10.1 11.7 4037.6  WA WB (gr) (gr)  10000 443  LVDT \$1(0.0 IN.)  ELA. TOT. FLA.  29.9 34.3 30.3 23.5 27.3 83.2 21.1 24.6 141.3 16.4 19.0 415.3	(gr) (gr) (Z)  10000 443 4.24  LVDT \$1(0.0 IN.) LVDT  ELA. TOT. PLA. ELA.  30.1 34.5 30.8 10.5 23.6 27.5 83.2 8.0 21.3 24.3 143.3 7.1 16.7 19.0 395.8 5.4 15.0 17.4 689.3 4.7 12.7 14.8 1310.5 3.9 10.1 11.7 4037.6 3.0  WA WB AC (gr) (gr) (Z)  LVDT \$1(0.0 IN.) LVDT  ELA. TOT. PLA. ELA.  29.9 34.3 30.3 10.4 23.5 27.3 83.2 7.9 21.1 24.6 141.3 7.1 16.4 19.0 415.3 5.3	(gr) (gr) (X) (X)  10000 443 4.24 5  DEFORMATION  LVDT \$1(0.0 IN.) LVDT \$2(2.  ELA. TOT. PLA. ELA. TOT.  30.1 34.5 30.8 10.5 12.0 23.6 27.5 83.2 8.0 9.3 21.3 24.3 143.3 7.1 8.1 16.7 19.0 395.8 5.4 6.1 15.0 17.4 689.3 4.7 5.5 12.7 14.8 1310.5 3.9 4.6 10.1 11.7 4037.6 3.0 3.5  WA WB AC S (gr) (gr) (X) (1  10000 443 4.24 5  DEFORMATION  LVDT \$1(0.0 IN.) LVDT \$2(2.  ELA. TOT. PLA. ELA. TOT.  29.9 34.3 30.3 10.4 12.0 23.5 27.3 83.2 7.9 9.2 21.1 24.6 141.3 7.1 8.2 16.4 19.0 415.3 5.3 6.1	(gr) (gr) (Z) (1bs)  10000 443 4.24 50  DEFORMATION (inc)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA.  30.1 34.5 30.8 10.5 12.0 9.3 23.6 27.5 83.2 8.0 9.3 23.3 21.3 24.3 143.3 7.1 8.1 38.7 16.7 19.0 395.8 5.4 6.1 98.5 15.0 17.4 689.3 4.7 5.5 165.2 12.7 14.8 1310.5 3.9 4.6 296.2 10.1 11.7 4037.6 3.0 3.5 839.6  WA WB AC SL (gr) (gr) (Z) (1bs)  DEFORMATION (inc)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA. 29.9 34.3 30.3 10.4 12.0 9.2 23.5 27.3 83.2 7.9 9.2 23.4 21.1 24.6 141.3 7.1 8.2 38.3 16.4 19.0 415.3 5.3 6.1 103.3	(gr) (gr) (Z) (lbs) (lbs)  10000 443 4.24 50 100  DEFORMATION (inches X of the property of the	(gr) (gr) (Z) (lbs) (lbs) (gr)   (10000   443   4.24   50   100   5753	(gr) (gr) (X) (lbs) (lbs) (gr) (  10000 443 4.24 50 100 5753.0 9  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.)  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA.  30.1 34.5 30.8 10.5 12.0 9.3 7.2 8.2 6.0 23.6 27.5 83.2 8.0 9.3 23.3 5.0 5.8 13.3 21.3 24.3 143.3 7.1 8.1 38.7 4.2 4.8 20.9 16.7 19.0 395.8 5.4 6.1 98.5 2.9 3.3 46.3 15.0 17.4 689.3 4.7 5.5 165.2 2.4 2.8 72.6 12.7 14.8 1310.5 3.9 4.6 296.2 1.8 2.1 116.3 10.1 11.7 4037.6 3.0 3.5 839.6 1.2 1.4 276.1  WA WB AC SL CL WBN W (gr) (gr) (X) (lbs) (lbs) (gr) (  10000 443 4.24 50 100 5749.0 9  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.)  ELA. TOT. FLA. ELA. TOT. FLA. ELA. TOT. FLA. 29.9 34.3 30.3 10.4 12.0 9.2 7.2 8.2 5.9 23.5 27.3 83.2 7.9 9.2 23.4 5.0 5.8 13.4 21.1 24.6 141.3 7.1 8.2 38.3 4.2 4.9 20.8 16.4 19.0 415.3 5.3 6.1 103.3 2.8 3.3 48.3	(gr) (gr) (X) (lbs) (lbs) (gr) (gr)  10000 443 4.24 50 100 5753.0 9964.0  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA.  30.1 34.5 30.8 10.5 12.0 9.3 7.2 8.2 6.0 4.7 23.6 27.5 83.2 8.0 9.3 23.3 5.0 5.8 13.3 2.7 21.3 24.3 143.3 7.1 8.1 38.7 4.2 4.8 20.9 2.1 16.7 19.0 395.8 5.4 6.1 98.5 2.9 3.3 46.3 1.1 15.0 17.4 689.3 4.7 5.5 165.2 2.4 2.8 72.6 0.8 12.7 14.8 1310.5 3.9 4.6 296.2 1.8 2.1 116.3 0.5 10.1 11.7 4037.6 3.0 3.5 839.6 1.2 1.4 276.1 0.2  WA WB AC SL CL WBM WBA (gr) (gr) (X) (lbs) (lbs) (gr) (gr)  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. 29.9 34.3 30.3 10.4 12.0 9.2 7.2 8.2 5.9 - 23.5 27.3 83.2 7.9 9.2 23.4 5.0 5.8 13.4 - 21.1 24.6 141.3 7.1 8.2 38.3 4.2 4.9 20.8 -	(gr) (gr) (X) (lbs) (lbs) (gr) (gr)  10000 443 4.24 50 100 5753.0 9964.0 2.55  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0 IN.) IN. LVDT #4(6.0 IN.) IN. LVDT #4(6.0 IN.) LVDT #4



Sample Number	WA (gr)	WB (gr)	AC	SL (1b:	s.)	CL (lbs)	WBW (gr		SA Sr)	GMM	AV (Z)
NOTEL	(81)	(647	(4)	(10.	· ,			, \e			
12310712	10000	443	4.24	50		200	5740	.0 99	35.0	2.55	7.09
			DEF	ORMATION	N (inc	hes X (	0.0001	)			
- CYCLE	LVDT #1(0	).0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	59.3 67.9	66.6	20.1	23.0	19.6	13.1	15.1	12.0	8.1	9.3	6.9
500	46.6 52.8	183.0	15.3	17.3	49.8	9.1	10.3	27.0	4.6	5.3	12.6
1000	42.0 47.9	316.7	13.6	15.5	83.2	7.7	8.8	42.6	3.6	4.1	17.8
5700	32.3 36.9	912.6	10.1	11.5	219.2	5.0	5.7	95.7	1.7	2.0	28.8
22160	26.4 30.4	2506.5	8.0	9.2	560.3	3.5	4.0	212.6	0.9	1.0	46.1
31570	25.0 29.1	2899.9	7.5	8.7	636.0	3.2	3.7	232.0	0.7	0.9	45.6
52000	23.2 26.9	4488.2	6.9	8.0	958.0	2.8	3.2	329.9	0.6	0.6	55.8
SAMPLE	WA	WB	AC	SL		CL	WBW	WI	BA.	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1b	s)	(lbs)	(gr	) (8	gr)		(1)
12310722	10000	443	4.24	50	-	200	5745	. 0 99	947.0	2.55	7.1
			DEF	ORMATIO	W (inc	hes X	0.0001	)		*******	
	LVDT #1(0	).0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 II
		).0 IN.)	LVDT	#2(2.0 TOT.		LVDT	#3(4.)	PLA.	LVDT	#4(6.0	625 II
		r. PLA.	ELA.			ELA.				тот.	
TUMBER	ELA. TO	F. PLA.	ELA. 20,1	TOT.	PLA.	ELA. 13.2	TOT.	PLA.	ELA.	TOT.	PLA.
100	ELA. TO	68.1 1 68.1	ELA. 20.1 15.3	TOT.	PLA. 20.0	ELA. 13.2 9.1	TOT.	PLA.	ELA. 8.1 4.6	TOT.	<b>PLA</b> .
100 500	ELA. TOT	68.1 9 183.8 1 319.4	20.1 15.3 13.6	TOT. 23.0 18.3	PLA. 20.0 49.8 83.6	ELA. 13.2 9.1 7.7	TOT. 15.0 10.8	PLA. 12.2 26.9	B.1 4.6 3.6	TOT. 9.2 5.5	7.0 12.5 17.8
100 500 1000 5200 10300	59.7 68.1 46.9 55.8 42.3 48.1 33.0 38.4 29.8 34.1	68.1 9 183.8 1 319.4 8 898.1 1 1528.1	20.1 15.3 13.6 10.2 9.1	TOT.  23.0 18.3 15.5 11.9 10.4	PLA.  20.0 49.8 83.6 215.8 354.1	ELA. 13.2 9.1 7.7 5.1 4.3	TOT.  15.0 10.8 8.8 6.0 4.9	PLA.  12.2 26.9 42.6 94.8 145.3	8.1 4.6 3.6 1.8	TOT. 9.2 5.5 4.1	7.0 12.5 17.8 29.0
500 1000 5200 10300 27000	59.7 68.1 46.9 55.6 42.3 48.1 33.0 38.4 29.8 34.1 25.8 29.6	68.1 9 183.8 1 319.4 8 898.1 1 1528.1 9 2663.5	20.1 15.3 13.6 10.2 9.1 7.7	TOT.  23.0 18.3 15.5 11.9 10.4 8.9	PLA.  20.0 49.8 83.6 215.8 354.1 586.2	ELA. 13.2 9.1 7.7 5.1 4.3 3.3	TOT. 15.0 10.8 8.8 6.0 4.9 3.9	PLA.  12.2 26.9 42.6 94.8 145.3 216.9	8.1 4.6 3.6 1.8 1.3	9.2 5.5 4.1 2.1	7.0 12.5 17.8 29.0 38.1
100 500 1000 5200 10300 27000	59.7 68.1 46.9 55.8 42.3 48.1 33.0 38.4 29.8 34.1	68.1 9 183.8 1 319.4 8 898.1 1 1528.1 9 2663.5	20.1 15.3 13.6 10.2 9.1 7.7	TOT.  23.0 18.3 15.5 11.9 10.4 8.9	PLA.  20.0 49.8 83.6 215.8 354.1 586.2	ELA. 13.2 9.1 7.7 5.1 4.3 3.3	TOT. 15.0 10.8 8.8 6.0 4.9 3.9	PLA.  12.2 26.9 42.6 94.8 145.3 216.9	8.1 4.6 3.6 1.8 1.3	9.2 5.5 4.1 2.1 1.5	PLA. 7.0 12.5 17.8 29.0 38.1 44.3
100 500 1000 5200 10300 27000 55200	59.7 68.1 46.9 55.6 42.3 48.1 33.0 38.4 29.8 34.1 25.8 29.6	68.1 9 183.8 1 319.4 9 898.1 1 1528.1 9 2663.5 8 4685.8	20.1 15.3 13.6 10.2 9.1 7.7 6.8	TOT.  23.0 18.3 15.5 11.9 10.4 8.9 7.7	PLA.  20.0 49.8 83.6 215.8 354.1 586.2	ELA. 13.2 9.1 7.7 5.1 4.3 3.3	TOT.  15.0 10.8 8.8 6.0 4.9 3.9 3.1	PLA.  12.2 26.9 42.6 94.8 145.3 216.9	8.1 4.6 3.6 1.8 1.3 0.8	9.2 5.5 4.1 2.1 1.5 0.9 0.6	7.0 12.5 17.8 29.0 38.1 44.3 55.7
100 500 1000 5200 10300 27000 55200	59.7 68.1 46.9 55.8 42.3 48.1 33.0 38.4 29.8 34.1 25.8 29.8 23.2 26.3	68.1 9 183.8 1 319.4 8 898.1 1 1528.1 9 2663.5 3 4685.8	20.1 15.3 13.6 10.2 9.1 7.7 6.8	TOT.  23.0 18.3 15.5 11.9 10.4 8.9 7.7	PLA.  20.0 49.8 83.6 215.8 354.1 586.2	ELA. 13.2 9.1 7.7 5.1 4.3 3.3	TOT.  15.0 10.8 8.8 6.0 4.9 3.9 3.1	PLA.  12.2 26.9 42.6 94.8 145.3 216.9 337.9	8.1 4.6 3.6 1.8 1.3 0.8 0.5	9.2 5.5 4.1 2.1 1.5 0.9 0.6	7.0 12.5 17.8 29.0 38.1 44.3 55.7
100 500 1000 5200 10300 27000 55200	ELA. TOT 59.7 68.1 46.9 55.8 42.3 48.1 33.0 38.4 29.8 34.1 25.8 29.8 23.2 26.3	68.1 9 183.8 1 319.4 9 898.1 1 1528.1 9 2663.5 3 4685.8 HT OF DRY	20.1 15.3 13.6 10.2 9.1 7.7 6.8	TOT.  23.0 18.3 15.5 11.9 10.4 8.9 7.7	PLA.  20.0 49.8 83.6 215.8 354.1 586.2	ELA. 13.2 9.1 7.7 5.1 4.3 3.3	TOT.  15.0 10.8 8.8 6.0 4.9 3.9 3.1	PLA.  12.2 26.9 42.6 94.8 145.3 216.9 337.9	8.1 4.6 3.6 1.8 1.3 0.8 0.5	9.2 5.5 4.1 2.1 1.5 0.9 0.6	7.0 12.5 17.8 29.0 38.1 44.3 55.7
100 500 1000 5200 10300 27000 55200 1 = TC 1 = PI	59.7 68.1 46.9 55.8 42.3 48.1 33.0 38.4 29.8 34.1 25.8 29.8 23.2 26.3	68.1 9 183.8 1 319.4 9 898.1 1 1528.1 9 2663.5 8 4685.8 HT OF DRY	20.1 15.3 13.6 10.2 9.1 7.7 6.8 AGGRETIENT; AIR;	TOT.  23.0 18.3 15.5 11.9 10.4 8.9 7.7 GATES;	PLA.  20.0 49.8 83.6 215.8 354.1 586.2	ELA. 13.2 9.1 7.7 5.1 4.3 3.3	TOT.  15.0 10.8 8.8 6.0 4.9 3.9 3.1	PLA.  12.2 26.9 42.6 94.8 145.3 216.9 337.9	8.1 4.6 3.6 1.8 1.3 0.8 0.5	9.2 5.5 4.1 2.1 1.5 0.9 0.6	7.0 12.5 17.8 29.0 38.1 44.3 55.7



SAMPLE	WA	WB	AC		L ·	CL	WBW		BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	·) (1	gr)		(%)
12310732	10000	443	4.24	5	0	200	5763	.0 9	969.0	2.55	7.02
			DEF	ORMATI	ON (inc	ches X	0.0001	)			
- CYCLE	LVDT #1	(0.0 IN.)	LVDT	<b>#</b> 2(2.	0 IN.)	LVDT	<b>#</b> 3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TO	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	58.9 67.	1 65.3	20.1	22.9	19.4	13.2	15.0	11.9	8.2	9.3	6.9
500	46.2 53.	1 180.9	15.3	17.6	49.6	9.1	10.5	27.0	4.7	5.4	12.6
1000	41.7 47.	1 305.8	13.6	15.3	81.0	7.7	8.7	41.6	3.6	4.1	17.5
5500	32.3 36.	9 898.1	10.1	11.6	218.0	5.1	5.8	96.0	1.8	2.0	29.3
10900	29.1 33.	5 1504.2	9.0	10.4	352.2	4.3	4.9	144.9	1.3	1.5	38.0
30000	25.0 28.	6 2771.3	7.6	8.6	614.7	3.3	3.7	226.9	0.8	0.9	45.7
57000	22.7 26.	.2 4586.3	6.8	7.8	982.5	2.7	3.1	336.9	0.5	0.6	56.0
SAMPLE	WA	WB	AC	S	L	CL	WBW	i Wi	BA	GMM	ΑV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	:) (	gr)		(1)
NUMBER 12310715		(gr) 443	4.24		bs) 0	(1bs) 500	(gr 5748		948.0	2.55	
			4.24	5	0		5748	.0 9		2.55	
12310715	5 10000		4.24 DEF	5 ORMATI	0	500 ches X	5748 0.0001	.0 9	948.0	2.55 #4(6.0	7.08
12310715	10000 LVDT #1(	443	4.24 DEF	5 ORMATI	OM (inc	500 ches X	5748 0.0001	0 IN.)	948.0		7.08
12310715	10000 LVDT #1(	443 (0.0 IN.) OT. PLA.	4.24 DEFC	5 ORMATI #2(2.	OM (inc	bhes X (	5748 0.0001 #3(4.	0 IN.)	LVDT	#4(6.0	7.08
12310715 	LVDT #10	443 (0.0 IN.) OT. PLA. 2.3 221.0	4.24 DEFC LVDT ELA. 45.0	50RMATI #2(2.	ON (inc	LVDT ELA. 24.7	5748 0.0001 #3(4.	0 IN.)	LVDT ELA.	#4(6.0 TOT.	7.08
12310715  CYCLE _ NUMBER	LVDT #1( ELA. TO 148.1 172 116.4 131	443 (0.0 IN.) OT. PLA. 2.3 221.0	4.24 DEFO LVDT ELA. 45.0 34.1	50RMATI #2(2. TOT.	ON (inc O IN.) PLA. 58.5	ELA. 24.7	5748 0.0001 #3(4. TOT.	0 IN.) PLA. 30.0	LVDT ELA.	#4(6.0 TOT.	7.08 625 IN PLA.
12310715	LVDT #10  ELA. TO  148.1 172 116.4 131 104.9 121 94.5 108	443 (0.0 IN.) OT. PLA. 2.3 221.0 1.8 605.2 1.8 1034.4 3.7 1513.1	4.24 DEFC LVDT ELA. 45.0 34.1 30.3 26.8	\$2(2. TOT. \$2.3 38.6 35.1 30.9	0 ON (inc 0 IN.) PLA. 58.5 147.2 242.6 342.0	ELA.  24.7 16.7 14.0 11.7	5748 0.0001 #3(4.  TOT. 28.8 18.9 16.2	0 IN.) PLA. 30.0 65.6	LVDT  ELA.  12.4 6.6	#4(6.0 TOT. 14.4 7.4	7.08 625 IN PLA. 14.0 23.5
12310715  CYCLE _ NUMBER  100 500 1000 2000 5000	LVDT #10  ELA. TO  148.1 172 116.4 131 104.9 121 94.5 108 82.4 95	443 (0.0 IN.) OT. PLA. 2.3 221.0 1.8 605.2 1.8 1034.4 3.7 1513.1 5.0 3117.1	4.24 DEFO LVDT ELA. 45.0 34.1 30.3 26.8 22.9	\$2(2. TOT. 52.3 38.6 35.1 30.9 26.4	ON (inc O IN.) PLA. 58.5 147.2 242.6 342.0 670.4	24.7 16.7 11.7 9.1	5748 0.0001 #3(4.  TOT.  28.8 18.9 16.2 13.4 10.5	0 IN.) PLA. 30.0 65.6 101.0 132.7 235.2	LVDT ELA.  12.4 6.6	#4(6.0 TOT. 14.4 7.4	7.08 625 IN PLA. 14.0 23.5
12310715  CYCLE _ NUMBER  100 500 1000 2000 5000 7000	LVDT #10  ELA. TO  148.1 172 116.4 131 104.9 121 94.5 108 82.4 95 78.3 90	443 (0.0 IN.) OT. PLA. 2.3 221.0 1.8 605.2 1.8 1034.4 3.7 1513.1 5.0 3117.1 0.2 3587.9	4.24 DEFO LVDT ELA. 45.0 34.1 30.3 26.8 22.9 21.6	#2(2. TOT. 52.3 38.6 35.1 30.9 26.4 24.8	ON (inc O IN.) PLA. 58.5 147.2 242.6 342.0 670.4 757.5	ELA.  24.7 16.7 14.0 11.7 9.1 8.3	5748 0.0001 #3(4.  TOT. 28.8 18.9 16.2 13.4 10.5 9.6	0 IN.) PLA. 30.0 65.6 101.0 132.7 235.2	LVDT ELA.  12.4 6.6	#4(6.0 TOT. 14.4 7.4	7.08 625 IN PLA. 14.0 23.5
12310715  CYCLE _ NUMBER  100 500 1000 2000 5000	LVDT #10  ELA. TO  148.1 172 116.4 131 104.9 121 94.5 108 82.4 95 78.3 90	443 (0.0 IN.) OT. PLA. 2.3 221.0 1.8 605.2 1.8 1034.4 3.7 1513.1 5.0 3117.1	4.24 DEFO LVDT ELA. 45.0 34.1 30.3 26.8 22.9 21.6	#2(2. TOT. 52.3 38.6 35.1 30.9 26.4 24.8	ON (inc O IN.) PLA. 58.5 147.2 242.6 342.0 670.4 757.5	ELA.  24.7 16.7 14.0 11.7 9.1 8.3	5748 0.0001 #3(4.  TOT.  28.8 18.9 16.2 13.4 10.5	0 IN.) PLA. 30.0 65.6 101.0 132.7 235.2	LVDT ELA.  12.4 6.6	#4(6.0 TOT. 14.4 7.4	7.08 625 IN PLA. 14.0 23.5
12310715  CYCLE NUMBER  100 500 1000 2000 7000 9000	LVDT #10  ELA. TO  148.1 172 116.4 131 104.9 121 94.5 108 82.4 95 78.3 90 75.4 86	443 (0.0 IN.) OT. PLA. 2.3 221.0 1.8 605.2 1.8 1034.4 3.7 1513.1 5.0 3117.1 0.2 3587.9	4.24 DEFC LVDT ELA. 45.0 34.1 30.3 26.8 22.9 21.6 20.6	\$2(2. TOT. 52.3 38.6 35.1 30.9 26.4 24.8 23.6	ON (inc O IN.) PLA. 58.5 147.2 242.6 342.0 670.4 757.5 957.9	ELA.  24.7 16.7 14.0 11.7 9.1 8.3	5748 0.0001 #3(4.  TOT.  28.8 18.9 16.2 13.4 10.5 9.6	0 IN.) PLA. 30.0 65.6 101.0 132.7 235.2	LVDT  ELA.  12.4 6.6	#4(6.0 TOT. 14.4 7.4 - -	7.08 PLA. 14.0 23.5
12310715  CYCLE _ NUMBER  100 500 1000 2000 5000 7000 9000	LVDT #10  ELA. TO  148.1 172 116.4 131 104.9 121 94.5 108 82.4 95 78.3 90 75.4 86	443 (0.0 IN.) OT. PLA. 2.3 221.0 1.8 605.2 1.8 1034.4 3.7 1513.1 5.0 3117.1 0.2 3587.9 6.2 4600.4 GHT OF DRY SPHALT CONT	4.24 DEFO LVDT ELA. 45.0 34.1 30.3 26.8 22.9 21.6 20.6	\$2(2. TOT. 52.3 38.6 35.1 30.9 26.4 24.8 23.6	ON (inc O IN.) PLA. 58.5 147.2 242.6 342.0 670.4 757.5 957.9	ELA.  24.7 16.7 14.0 11.7 9.1 8.3	5748 0.0001 #3(4.  TOT.  28.8 18.9 16.2 13.4 10.5 9.6	0 IN.) PLA. 30.0 65.6 101.0 132.7 235.2 255.7  - WEIGH	12.4 6.6	#4(6.0 TOT.  14.4 7.4 ITUMEN; OAD;	7.08 PLA. 14.0 23.5
12310715  CYCLE _ NUMBER  100 500 1000 2000 5000 7000 9000  A = I	ELA. TO  148.1 172 116.4 131 104.9 121 94.5 108 82.4 95 78.3 90 75.4 86  COTAL WEIGHT OF	443 (0.0 IN.) OT. PLA. 2.3 221.0 1.8 605.2 1.8 1034.4 3.7 1513.1 5.0 3117.1 0.2 3587.9 6.2 4600.4	4.24  DEFO  LVDT  ELA.  45.0 34.1 30.3 26.8 22.9 21.6 20.6  AGGRECENT; AIR;	\$2(2. TOT. 52.3 38.6 35.1 30.9 26.4 24.8 23.6 GATES;	ON (inc O IN.) PLA. 58.5 147.2 242.6 342.0 670.4 757.5 957.9	ELA.  24.7 16.7 14.0 11.7 9.1 8.3	5748 0.0001 #3(4.  TOT. 28.8 18.9 16.2 13.4 10.5 9.6	0 IN.) PLA. 30.0 65.6 101.0 132.7 235.2 255.7	LVDT  ELA.  12.4 6.6 T OF B INED LC LOAD	#4(6.0 TOT.  14.4 7.4 ITUMEN;	7.08 PLA. 14.0 23.5

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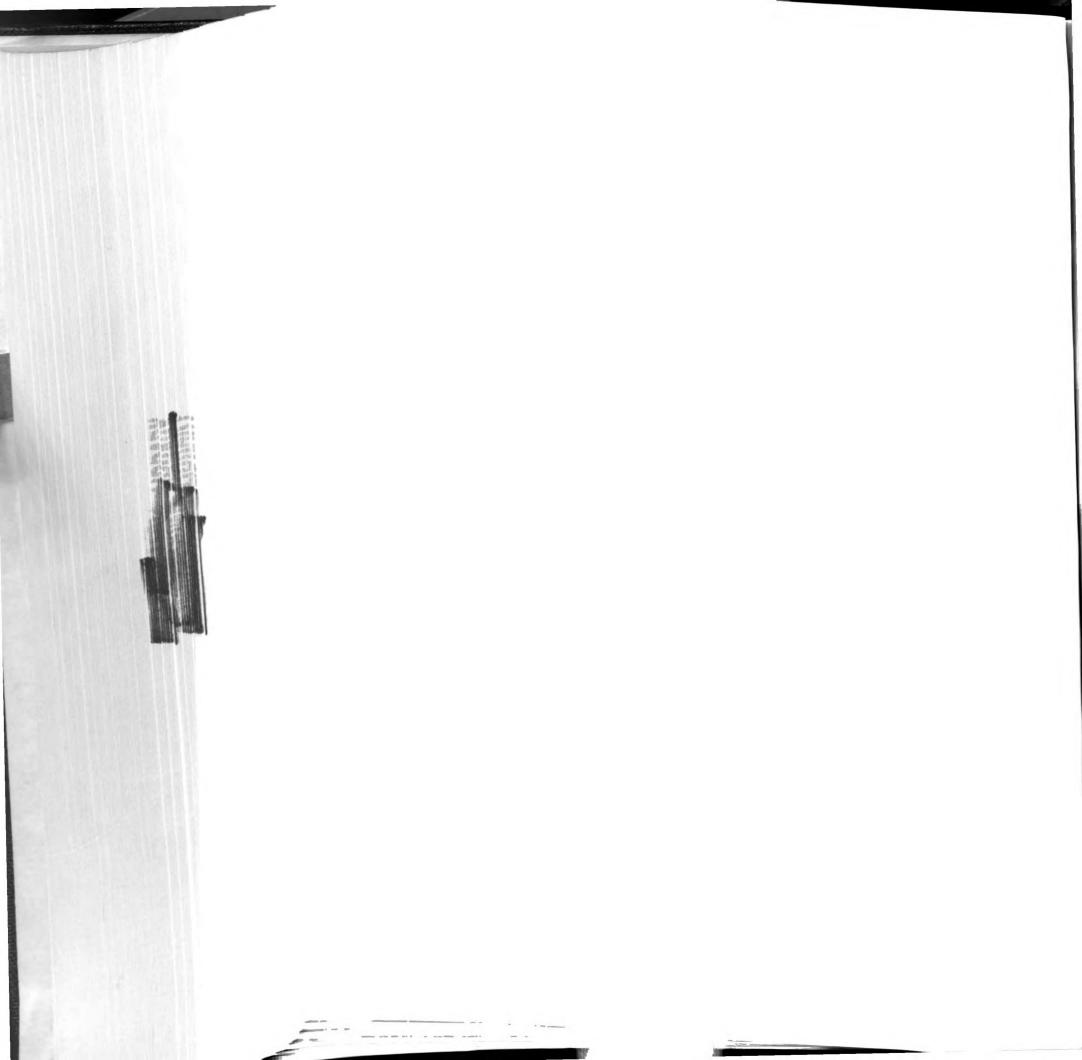
Sample Number		NA gr)	WB (gr)	AC (Z)	(1	L bs)	CL (lbs)	WBW (gr		WBA (gr)	GMM	AV (Z)
												• • • •
12310725	100	000	443	4.24	5	0	500	5743	. 0	9943.0	2.55	7.1
				DEF	ORMATI	ON (inc	ches X (	0.0001	)			
 CYCLE	LVDT	#1(0.0	IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDī	#4(6.0	625 I
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	149.0	172.2	224.9	45.0	52.0	59.2	24.7	28.5	30.3	12.3	14.3	14.1
500	117.1	134.5	602.4	34.1	39.2	145.8	16.6	19.1	64.7	6.5	7.5	23.1
1000	105.5	119.7	1043.7	30.3	34.3	243.4	13.9	15.8	101.0	-	-	-
2000	95.1	109.0	1547.6	26.8	30.8	347.8	11.6	13.3	134.4	-	-	-
5000	82.9	94.1	3153.6	22.9	26.0	674.3	9.1	10.3	235.6	-	-	-
8000	77.2	89.5	3872.8	21.1	24.4	807.0	8.0	9.2	267.0	-	-	-
9000	75.9	86.6	4653.3	20.6	23.6	963.3	7.7	8.8	314.3	_	-	<u>-</u>
SAMPLE		·A	WB	AC	<u> </u>	L.	CL	WBW		WBA	GMM	AV
		wa.										
NUMBER		gr)	(gr)	(Z)		bs)	(lbs)	(gr		(gr)		
NUMBER	(1				(1			_	)		2.55	(2)
NUMBER	(1	gr)	(gr)	4.24	5	bs)	(lbs)	(gr 5767	.0	(gr)	2.55	(2)
12310735	100	gr)	(gr)	4.24 DEFC	(1 5 DRMATI	bs)	500 ches X (	5767 0.0001	.0	(gr) 9974.0	2.55 #4(6.0	6.9
NUMBER  12310735  —  CYCLE _	100	gr) 000	(gr)	4.24 DEFC	(1 5 DRMATI	0 ON (inc	500 ches X (	5767 0.0001	.0 .0 )	(gr) 9974.0 LVDT		6.9 6625 I
NUMBER  12310735  — CYCLE NUMBER	LVDT	#1(0.0	(gr) 443	4.24 DEFC	5 DRMATI	0 ON (inc	(lbs) 500 ches X (	5767 0.0001	.0 .0 )	(gr) 9974.0 LVDT ELA.	#4(6.0	6.9 625 I
NUMBER  12310735  CYCLE NUMBER	100 LVDT ELA. 146.8	#1(0.0	(gr) 443 D IN.) PLA.	(Z) 4.24 DEFC LVDT ELA. 45.0	5 DRMATI #2(2.	ON (inc	(lbs) 500 ches X (lbs) LVDT ELA.	(gr 5767 0.0001 #3(4.	) .0 ) 0 IN.) PLA.	(gr) 9974.0 LVDT ELA.	#4(6.0 TOT.	6.9 6625 I PLA.
NUMBER  12310735  CYCLE NUMBER  100 500	LVDT ELA. 146.8 115.3 103.9	#1(0.0 TOT. 169.9 130.7 120.8	(gr) 443  IN.)  PLA.  214.4 582.8 1016.2	4.24  DEFC  LVDT  ELA.  45.0 34.2 30.3	(1 50RMATI #2(2. TOT. 52.1 38.7 35.2	ON (inc O IN.) PLA. 57.3 143.3 240.9	(1bs) 500 Ches X (1bs) LVDT ELA. 24.9 16.8 14.1	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4	) 0 IN.) PLA. 29.5 64.2 101.0	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9	#4(6.0 TOT. 14.5 7.6	6.9 625 I PLA. 13.9 23.2
NUMBER  12310735	LVDT ELA. 146.8 115.3 103.9 81.6	#1(0.0 TOT. 169.9 130.7 120.8 93.2	(gr) 443  DIN.) PLA. 214.4 582.8 1016.2 2712.4	4.24 DEFC LVDT ELA. 45.0 34.2 30.3 22.9	(1 5 DRMATI #2(2. TOT. 52.1 38.7 35.2 26.2	ON (inc O IN.) PLA. 57.3 143.3 240.9 589.7	(lbs) 500  LVDT  ELA. 24.9 16.8 14.1	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4 10.5	) 0 IN.) PLA. 29.5 64.2 101.0 208.5	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9 2.3	#4(6.0 TOT. 14.5 7.6 5.7 2.6	(Z) 6.9 625 I PLA. 13.9 23.2 31.9
12310735  CYCLE NUMBER  100 500 1000 5000 6000	LVDT ELA. 146.8 115.3 103.9 81.6 79.4	#1(0.0 TOT. 169.9 130.7 120.8 93.2 90.8	(8r) 443  PLA.  214.4 582.8 1016.2 2712.4 3343.4	LVDT ELA. 45.0 34.2 30.3 22.9 22.2	(1 5 DRMATI #2(2. TOT. 52.1 38.7 35.2 26.2 25.4	ON (inc O IN.) PLA. 57.3 143.3 240.9 589.7 719.6	(lbs) 500 ches X ( LVDT ELA. 24.9 16.8 14.1 9.2 8.8	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4 10.5 10.0	) .0 0 IN.) PLA. 29.5 64.2 101.0 208.5 249.3	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9 2.3 2.1	#4(6.0 TOT. 14.5 7.6 5.7 2.6 2.4	6.9 625 I PLA. 13.9 23.2 31.9 45.4 51.7
NUMBER  12310735	LVDT ELA. 146.8 115.3 103.9 81.6 79.4 77.6	#1(0.0 TOT. 169.9 130.7 120.8 93.2 90.8 87.8	(8r) 443 DIN.) PLA. 214.4 582.8 1016.2 2712.4 3343.4 3432.4	4.24  DEFC  LVDT  ELA.  45.0  34.2  30.3  22.9  22.2  21.6	50RMATI #2(2. TOT. 52.1 38.7 35.2 26.2 25.4 24.4	ON (inc O IN.) PLA. 57.3 143.3 240.9 589.7 719.6 732.6	(lbs) 500 Ches X ( LVDT ELA. 24.9 16.8 14.1 9.2 8.8 8.4	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4 10.5 10.0 9.5	) 0 IN.) PLA. 29.5 64.2 101.0 208.5 249.3 249.3	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9 2.3 2.1 1.9	#4(6.0 TOT. 14.5 7.6 5.7 2.6 2.4 2.2	6.9 6.25 I PLA. 13.9 23.2 31.9 45.4 51.7 49.5
NUMBER  12310735	LVDT ELA. 146.8 115.3 103.9 81.6 79.4 77.6	#1(0.0 TOT. 169.9 130.7 120.8 93.2 90.8 87.8	(8r) 443  PLA.  214.4 582.8 1016.2 2712.4 3343.4	4.24  DEFC  LVDT  ELA.  45.0  34.2  30.3  22.9  22.2  21.6	50RMATI #2(2. TOT. 52.1 38.7 35.2 26.2 25.4 24.4	ON (inc O IN.) PLA. 57.3 143.3 240.9 589.7 719.6	(lbs) 500 Ches X ( LVDT ELA. 24.9 16.8 14.1 9.2 8.8 8.4	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4 10.5 10.0 9.5	) .0 0 IN.) PLA. 29.5 64.2 101.0 208.5 249.3	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9 2.3 2.1 1.9	#4(6.0 TOT. 14.5 7.6 5.7 2.6 2.4 2.2	6.9 625 I PLA. 13.9 23.2 31.9 45.4 51.7
NUMBER  12310735	LVDT ELA. 146.8 115.3 103.9 81.6 79.4 77.6 76.1	#1(0.0 TOT. 169.9 130.7 120.8 93.2 90.8 87.8 86.9	(8r) 443  PLA.  214.4 582.8 1016.2 2712.4 3343.4 3432.4 4056.5	4.24 DEFC LVDT ELA. 45.0 34.2 30.3 22.9 22.2 21.6	#2(2. TOT. 52.1 38.7 35.2 26.2 25.4 24.4	ON (incomplete of the complete	(lbs) 500 Ches X ( LVDT ELA. 24.9 16.8 14.1 9.2 8.8 8.4	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4 10.5 10.0 9.5	) O IN.) PLA. 29.5 64.2 101.0 208.5 249.3 249.3	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9 2.3 2.1 1.9	#4(6.0 TOT. 14.5 7.6 5.7 2.6 2.4 2.2	6.9 625 I PLA. 13.9 23.2 31.9 45.4 51.7 49.5
12310735  CYCLE NUMBER  100 500 1000 5000 6000 7000 8000	LVDT ELA. 146.8 115.3 103.9 81.6 79.4 77.6 76.1 OTAL VERCENT	#1(0.0 TOT. 169.9 130.7 120.8 93.2 90.8 87.8 86.9	(8r) 443  214.4 582.8 1016.2 2712.4 3343.4 4056.5  OF DRY	4.24  DEFC  LVDT  ELA.  45.0  34.2  30.3  22.9  22.2  21.6  AGGGRECTENT;	#2(2. TOT. 52.1 38.7 35.2 26.2 25.4 24.4	ON (incomplete of the complete	(lbs) 500 Ches X ( LVDT ELA. 24.9 16.8 14.1 9.2 8.8 8.4	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4 10.0 9.5	) .0 .0 .0 .1N.) PLA29.5 .64.2 .101.0 .208.5 .249.3 .249.3 .249.3	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9 2.3 2.1 1.9  HT OF B	#4(6.0 TOT. 14.5 7.6 5.7 2.6 2.4 2.2 -	6.9 625 I PLA. 13.9 23.2 31.9 45.4 51.7 49.5
12310735  CYCLE NUMBER  100	LVDT  ELA.  146.8 115.3 103.9 81.6 79.4 77.6 76.1  OTAL VERCENT	#1(0.0 TOT. 169.9 130.7 120.8 93.2 90.8 87.8 86.9	(8r) 443  PLA.  214.4 582.8 1016.2 2712.4 3343.4 3432.4 4056.5	4.24  DEFC  LVDT  ELA.  45.0 34.2 30.3 22.9 22.2 21.6  AGGREC ENT; AIR;	50RMATI #2(2. TOT. 52.1 38.7 35.2 26.2 25.4 24.4	ON (incomplete of the complete	(lbs) 500 Ches X ( LVDT ELA. 24.9 16.8 14.1 9.2 8.8 8.4	5767 0.0001 #3(4. TOT. 28.8 19.0 16.4 10.5 10.0 9.5	) O IN.) PLA. 29.5 64.2 101.0 208.5 249.3 249.3	(gr) 9974.0  LVDT  ELA. 12.5 6.7 4.9 2.3 2.1 1.9	#4(6.0 TOT. 14.5 7.6 5.7 2.6 2.4 2.2	6.9 625 I PLA. 13.9 23.2 31.9 45.4 51.7 49.5



14 664

BEAM CYCLIC LOAD DATA

SAMPLE		₹A	WB	AC	S		CL (lbs)	WBW		WBA	GMM	AV
NUMBER		gr)	(gr)	(%)		bs)	(lbs)	(gr)		(gr)		(%)
22110611	100	000	447	4.28	5	0	100	5859.	0 :	10045.0	2.52	4.7
				DEF	ORMATI	ON (inc	ches X (	0.0001)	)			
CYCLE _	LVDT	#1(0.	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.	LVDT	#4(6.0	625 I
NUMBER	ELA.	TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	23.2	26.2	12.3	10.4	11.7	4.8	7.9	8.9	3.4	4 5.8	6.5	2.3
500	18.2	21.2	31.3	8.0	9.3	11.4	5.7	6.6	7.4	4 3.7	4.2	4.3
1000	16.4	18.7	54.9	7.1	8.1	19.3	4.9	5.6	12.	0 2.9	3.4	6.5
5000	12.9	14.8	144.9	5.4	6.2	47.4	3.4	3.9	26.	4 1.7	2.0	11.6
10000	11.6	13.5	246.5	4.8	5.6	78.0	2.9	3.4	41.	2 1.3	1.5	16.2
30000	9.8	11.3	460.6	4.0	4.6	138.4	2.3	2.6	67.	0.9	1.0	21.5
163000	7.6	8.8	1512.7	3.0	3.5	418.8	1.5	1.7	174.	0 0.4	0.4	37.7
22110621	100	000	447	4.28	5	<del></del>	100	5838		10011.0	2.52	4.8
				D.E.W.			V					
	LVDT	#1/0	0 TN )				ches X			\ IVDT	#4/6 (	1625 T
	LVDT	<b>#</b> 1(0	.0 IN.)							) LVDT	#4(6.0	625 I
			.0 IN.)	LVDī	#2(2.			#3(4.0	IN.			
_		TOT		LVDT ELA.	#2(2.	0 IN.)	LVDT	#3(4.0	IN.	. ELA.		PLA.
NUMBER	ELA. 23.2	TOT	. PLA.	LVDT ELA. 10.4 8.0	#2(2. TOT. 12.0 9.0	0 IN.) PLA. 4.9 11.6	LVDT ELA. 7.9 5.7	#3(4.0 TOT.	IN.	. ELA.	TOT.	PLA.
NUMBER 100	ELA. 23.2 18.2	TOT. 26.8 20.7	. PLA.	LVDT ELA. 10.4 8.0	#2(2. TOT. 12.0 9.0	0 IN.) PLA. 4.9	LVDT ELA. 7.9 5.7	#3(4.0 TOT.	) IN. PLA 3.4 7.	. ELA. 4 5.8 5 3.6	TOT.	PLA. 2.4 4.4
100 500 1000	ELA. 23.2 18.2 16.4	TOT. 26.8 20.7 18.5	12.5 31.9	LVDT ELA. 10.4 8.0 7.1	#2(2. TOT. 12.0 9.0 8.0	PLA. 4.9 11.6 19.1	LVDT ELA. 7.9 5.7 4.9	#3(4.0 TOT. 9.1 6.4	3.4 7.3	ELA.  5.8 5.3.6 9.2.9	TOT. 6.7 4.1	PLA. 2.4 4.4 6.4
100 500 1000 5500	ELA. 23.2 18.2 16.4 12.7	TOT.  26.8 20.7 18.5 14.6	12.5 31.9 54.5 151.4	LVDT ELA. 10.4 8.0 7.1 5.3	#2(2. TOT. 12.0 9.0 8.0 6.1	PLA. 4.9 11.6 19.1 49.1	LVDT ELA. 7.9 5.7 4.9 3.4	#3(4.0 TOT. 9.1 6.4 5.5 3.8	3.4 7 11.5 27	ELA.  5.8 5.3.6 9.2.9	TOT. 6.7 4.1 3.3 1.9	PLA. 2.4 4.4 6.4 11.7
100 500 1000 5500 10200 27800	23.2 18.2 16.4 12.7 11.6 10.0	TOT.  26.8 20.7 18.5 14.6 13.3 11.3	12.5 31.9 54.5 151.4 254.9 447.3	LVDT ELA.  10.4 8.0 7.1 5.3 4.8 4.1	#2(2. TOT. 12.0 9.0 8.0 6.1 5.5 4.6	PLA.  4.9 11.6 19.1 49.1 80.4 134.5	7.9 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.1 6.4 5.5 3.8 3.3 2.6	3.4 7 11.5 27 42 65	. ELA. 4 5.8 5 3.6 9 2.9 1 1.6 3 1.3 4 0.9	TOT. 6.7 4.1 3.3 1.9	PLA.  2.4 4.4 6.4 11.7 16.5
100 500 1000 5500 10200 27800	23.2 18.2 16.4 12.7 11.6 10.0	TOT.  26.8 20.7 18.5 14.6 13.3 11.3	12.5 31.9 54.5 151.4 254.9 447.3	LVDT ELA.  10.4 8.0 7.1 5.3 4.8 4.1	#2(2. TOT. 12.0 9.0 8.0 6.1 5.5 4.6	PLA.  4.9 11.6 19.1 49.1 80.4 134.5	7.9 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.1 6.4 5.5 3.8 3.3 2.6	3.4 7 11.5 27 42 65	. ELA. 4 5.8 5 3.6 9 2.9 1 1.6 3 1.3 4 0.9	TOT. 6.7 4.1 3.3 1.9 1.5	PLA.  2.4 4.4 6.4 11.7 16.5
100 500 1000 5500 10200 27800 189865	ELA.  23.2 18.2 16.4 12.7 11.6 10.0 7.5	TOT.  26.8 20.7 18.5 14.6 13.3 11.3 8.5	12.5 31.9 54.5 151.4 254.9 447.3	LVDT ELA.  10.4 8.0 7.1 5.3 4.8 4.1 2.9	#2(2. TOT. 12.0 9.0 8.0 6.1 5.5 4.6 3.3	PLA.  4.9 11.6 19.1 49.1 80.4 134.5 461.4	7.9 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.1 6.4 5.5 3.8 3.3 2.6 1.6	3.7.11.527.42.565.188.	. ELA. 4 5.8 5 3.6 9 2.9 1 1.6 3 1.3 4 0.9	TOT. 6.7 4.1 3.3 1.9 1.5	PLA.  2.4 4.4 6.4 11.7 16.5 21.3
100 500 1000 5500 10200 27800 189865	23.2 18.2 16.4 12.7 11.6 10.0 7.5	26.8 20.7 18.5 14.6 13.3 11.3 8.5	12.5 31.9 54.5 151.4 254.9 447.3 1684.4	LVDT ELA.  10.4 8.0 7.1 5.3 4.8 4.1 2.9	#2(2. TOT. 12.0 9.0 8.0 6.1 5.5 4.6 3.3	PLA.  4.9 11.6 19.1 49.1 80.4 134.5 461.4	7.9 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.1 6.4 5.5 3.8 3.3 2.6 1.6	3. 7. 11. 27. 42. 65. 188.	. ELA. 4 5.8 5 3.6 9 2.9 1 1.6 3 1.3 4 0.9 4 -	TOT. 6.7 4.1 3.3 1.9 1.5 1.0	PLA.  2.4 4.4 6.4 11.7 16.5 21.3
100 500 1000 5500 10200 27800 189865	23.2 18.2 16.4 12.7 11.6 10.0 7.5	26.8 20.7 18.5 14.6 13.3 11.3 8.5	12.5 31.9 54.5 151.4 254.9 447.3 1684.4	LVDT  ELA.  10.4 8.0 7.1 5.3 4.8 4.1 2.9  AGGREGIENT;	#2(2. TOT. 12.0 9.0 8.0 6.1 5.5 4.6 3.3	PLA.  4.9 11.6 19.1 49.1 80.4 134.5 461.4	7.9 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT. 9.1 6.4 5.5 3.8 3.3 2.6 1.6	3. 7. 11. 27. 42. 65. 188. WEIG	. ELA. 4 5.8 5 3.6 9 2.9 1 1.6 3 1.3 4 0.9 4 -	TOT.  6.7 4.1 3.3 1.9 1.5 1.0 - ITUMEN; OAD;	PLA.  2.4 4.4 6.4 11.7 16.5 21.3
100 500 1000 5500 10200 27800 189865 A = TC C = PI	23.2 18.2 16.4 12.7 11.6 10.0 7.5	26.8 20.7 18.5 14.6 13.3 11.3 8.5	12.5 31.9 54.5 151.4 254.9 447.3 1684.4	LVDT  ELA.  10.4 8.0 7.1 5.3 4.8 4.1 2.9  AGGREGIENT; AIR;	#2(2. TOT. 12.0 9.0 8.0 6.1 5.5 4.6 3.3	PLA.  4.9 11.6 19.1 49.1 80.4 134.5 461.4	7.9 5.7 4.9 3.4 2.9 2.3	#3(4.0 TOT.  9.1 6.4 5.5 3.8 3.3 2.6 1.6	3 7 11 27 42 65 188 WEIG	. ELA. 4 5.8 5 3.6 9 2.9 1 1.6 3 1.3 4 0.9 4 -	TOT.  6.7 4.1 3.3 1.9 1.5 1.0 - ITUMEN; OAD;	PLA.  2.4 4.4 6.4 11.7 16.5 21.3



Sample Number	۱ ٤)		WB (gr)	AC (%)		L bs)	CL (lbs)	WBW (gr)		WBA (gr)	GMM	AV (Z)
			-									
22110631	100	000	447	4.28		0 <del></del>	100	5826	.0 1	0000.0	2.52	4.9
				DEF	ORMATI	ON (in	ches X (	0.0001	)			
CYCLE	LVDT	#1(0	.O IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDĪ	#4(6.0	625 I
NUMBER	ELA.	TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	23.6	26.7	13.0	10.4	11.8	5.0	7.9	8.9	3.5	5.7	6.5	2.4
500	18.5	20.9	33.5	8.0	9.0	12.0	5.6	6.4	7.7	3.6	4.1	4.5
1000	16.7	19.2	57.1	7.1	8.2	19.8	4.9	5.6	12.2	2.9	3.3	6.6
5000	13.1	15.5	152.0	5.4	6.4	48.9	3.4	4.0	27.0	1.7	2.0	11.7
10300	11.8	13.3	266.7	4.8	5.5	82.9	2.9	3.3	43.3	1.3	1.4	16.7
24100	10.4	11.9	423.6	4.2	4.8	126.5	2.4	2.7	61.7	0.9	1.0	20.3
180000	7.7	8.8	1697.8	3.0	3.4	459.6	1.5	1.7	186.6	0.4	0.4	38.4
SAMPLE		·····	WB	AC	s	 L	CL	WBW			GMM	AV
NUMBER	(1	r)	(gr)	(%)	(1	bs)	(lbs)	(gr	)	(gr)		(2)
22110612	100	000	447	4.28	5	0	200	5838	.0 1	0023.0	2.52	4.9
			*******	DEF	ORMATI	ON (in	ches X	0.0001	)			
	LVDT	<b>#</b> 1(0.	.0 IN.)							LVDT	#4(6.0	625 I
_			0 IN.)	LVDT	#2(2.		LVDT		O IN.)	·		625 I
NUMBER	ELA.	TOT	· · · ·	LVDT	#2(2. TOT.	0 IN.)	LVDT	#3(4.0	PLA.	ELA.		PLA.
100 500	ELA. 47.5 37.3	TOT.	. PLA. 29.0 77.3	LVDT ELA. 20.4 15.6	#2(2. TOT. 23.7 17.7	0 IN.) PLA. 10.8 26.8	LVDT ELA. 14.8 10.5	#3(4.0 TOT. 17.3 12.0	PLA. 7.4 16.5	ELA. 10.3 6.4	TOT. 12.0 7.2	PLA.
100 500	ELA. 47.5 37.3	TOT.	. PLA.	LVDT ELA. 20.4 15.6	#2(2. TOT. 23.7 17.7	0 IN.) PLA. 10.8 26.8	LVDT ELA. 14.8 10.5	#3(4.0 TOT.	PLA. 7.4 16.5	ELA. 10.3 6.4	TOT.	PLA. 4.8 9.1
100 500 1000 5000	ELA. 47.5 37.3 33.6 26.4	TOT. 55.3 42.4 38.4 30.4	29.0 77.3 131.2 348.5	LVDT  ELA.  20.4 15.6 13.9 10.6	#2(2. TOT. 23.7 17.7 15.9 12.2	0 IN.) PLA. 10.8 26.8 44.1 108.5	LVDT ELA. 14.8 10.5 9.1 6.3	#3(4.0 TOT. 17.3 12.0 10.4 7.3	PLA. 7.4 16.5 25.9 56.8	ELA. 10.3 6.4 5.1 2.9	TOT.  12.0 7.2 5.8	PLA. 4.8 9.1 13.1
100 500 1000 5000 10000	ELA. 47.5 37.3 33.6 26.4 23.8	TOT. 55.3 42.4 38.4 30.4 27.0	29.0 77.3 131.2 348.5 590.2	LVDT  ELA.  20.4 15.6 13.9 10.6 9.5	#2(2. TOT. 23.7 17.7 15.9 12.2 10.7	0 IN.) PLA.  10.8 26.8 44.1 108.5 177.8	LVDT ELA.  14.8 10.5 9.1 6.3 5.4	#3(4.0 TOT. 17.3 12.0 10.4 7.3 6.1	PLA. 7.4 16.5 25.9 56.8	ELA. 10.3 6.4 5.1 2.9 2.2	TOT.  12.0 7.2 5.8	PLA. 4.8 9.1 13.1 22.7
500 1000 5000 10000 30000	ELA. 47.5 37.3 33.6 26.4 23.8 20.2	TOT.  55.3 42.4 38.4 30.4 27.0 23.5	29.0 77.3 131.2 348.5 590.2 1106.2	LVDT ELA. 20.4 15.6 13.9 10.6 9.5 7.9	#2(2. TOT. 23.7 17.7 15.9 12.2 10.7 9.1	PLA.  10.8 26.8 44.1 108.5 177.8 316.0	LVDT ELA.  14.8 10.5 9.1 6.3 5.4 4.1	#3(4.0 TOT. 17.3 12.0 10.4 7.3 6.1 4.8	PLA.  7.4  16.5  25.9  56.8  88.0  142.3	ELA. 10.3 6.4 5.1 2.9 2.2	TOT.  12.0 7.2 5.8 3.3 2.5	PLA. 4.8 9.1 13.1 22.7 31.1
100 500 1000 5000 10000 30000	ELA. 47.5 37.3 33.6 26.4 23.8 20.2	TOT.  55.3 42.4 38.4 30.4 27.0 23.5	29.0 77.3 131.2 348.5 590.2 1106.2	LVDT ELA. 20.4 15.6 13.9 10.6 9.5 7.9	#2(2. TOT. 23.7 17.7 15.9 12.2 10.7 9.1	PLA.  10.8 26.8 44.1 108.5 177.8 316.0	LVDT ELA.  14.8 10.5 9.1 6.3 5.4 4.1	#3(4.0 TOT. 17.3 12.0 10.4 7.3 6.1 4.8	PLA.  7.4  16.5  25.9  56.8  88.0  142.3	ELA. 10.3 6.4 5.1 2.9 2.2	TOT.  12.0 7.2 5.8 3.3 2.5	PLA. 4.8 9.1 13.1 22.7 31.1 40.3
100 500 1000 5000 10000 30000 167200	ELA.  47.5 37.3 33.6 26.4 23.8 20.2 15.6	TOT.  55.3 42.4 38.4 30.4 27.0 23.5 18.1	29.0 77.3 131.2 348.5 590.2 1106.2 3676.0	LVDT  ELA.  20.4 15.6 13.9 10.6 9.5 7.9 5.9	#2(2. TOT. 23.7 17.7 15.9 12.2 10.7 9.1 6.8	0 IN.) PLA.  10.8 26.8 44.1 108.5 177.8 316.0 964.6	LVDT ELA.  14.8 10.5 9.1 6.3 5.4 4.1	#3(4.0 TOT. 17.3 12.0 10.4 7.3 6.1 4.8 3.1	PLA.  7.4 16.5 25.9 56.8 88.0 142.3 367.6	ELA. 10.3 6.4 5.1 2.9 2.2	TOT.  12.0 7.2 5.8 3.3 2.5 1.6 0.7	PLA. 4.8 9.1 13.1 22.7 31.1 40.3 67.1
100 500 1000 5000 10000 30000 167200	ELA.  47.5 37.3 33.6 26.4 23.8 20.2 15.6  DTAL VERCENT	TOT.  55.3 42.4 38.4 30.4 27.0 23.5 18.1	29.0 77.3 131.2 348.5 590.2 1106.2 3676.0	LVDT  ELA.  20.4 15.6 13.9 10.6 9.5 7.9 5.9  AGGREG	#2(2. TOT. 23.7 17.7 15.9 12.2 10.7 9.1 6.8	0 IN.) PLA.  10.8 26.8 44.1 108.5 177.8 316.0 964.6	LVDT ELA.  14.8 10.5 9.1 6.3 5.4 4.1	#3(4.0 TOT. 17.3 12.0 10.4 7.3 6.1 4.8 3.1	7.4 16.5 25.9 56.8 88.0 142.3 367.6	ELA.  10.3 6.4 5.1 2.9 2.2 1.4 0.6 HT OF B	TOT.  12.0 7.2 5.8 3.3 2.5 1.6 0.7	PLA. 4.8 9.1 13.1 22.7 31.1 40.3 67.1
100 500 1000 5000 10000 30000 167200 A = TC C = PE	ELA.  47.5 37.3 33.6 26.4 23.8 20.2 15.6  DTAL VERCENT	55.3 42.4 38.4 30.4 27.0 23.5 18.1	29.0 77.3 131.2 348.5 590.2 1106.2 3676.0	LVDT  ELA.  20.4 15.6 13.9 10.6 9.5 7.9 5.9  AGGREGIENT; AIR;	#2(2. TOT.  23.7 17.7 15.9 12.2 10.7 9.1 6.8  GATES;	0 IN.) PLA.  10.8 26.8 44.1 108.5 177.8 316.0 964.6	LVDT ELA.  14.8 10.5 9.1 6.3 5.4 4.1	#3(4.0 TOT. 17.3 12.0 10.4 7.3 6.1 4.8 3.1	7.4 16.5 25.9 56.8 88.0 142.3 367.6	ELA.  10.3 6.4 5.1 2.9 2.2 1.4 0.6	TOT.  12.0 7.2 5.8 3.3 2.5 1.6 0.7	PLA. 4.8 9.1 13.1 22.7 31.1 40.3 67.1
100 500 1000 5000 10000 30000 167200 A = TC C = PE BA = WE	ELA.  47.5 37.3 33.6 26.4 23.8 20.2 15.6  DTAL VERCENT	55.3 42.4 38.4 30.4 27.0 23.5 18.1 EIGHT	29.0 77.3 131.2 348.5 590.2 1106.2 3676.0	LVDT  ELA.  20.4 15.6 13.9 10.6 9.5 7.9 5.9  AGGREGIENT; AIR; WATER	#2(2. TOT. 23.7 17.7 15.9 12.2 10.7 9.1 6.8 GATES;	0 IN.) PLA.  10.8 26.8 44.1 108.5 177.8 316.0 964.6	LVDT ELA.  14.8 10.5 9.1 6.3 5.4 4.1	#3(4.0 TOT. 17.3 12.0 10.4 7.3 6.1 4.8 3.1	7.4 16.5 25.9 56.8 88.0 142.3 367.6 WEIG	ELA.  10.3 6.4 5.1 2.9 2.2 1.4 0.6 HT OF B	TOT.  12.0 7.2 5.8 3.3 2.5 1.6 0.7  ITUMEN; OAD;	PLA.  4.8 9.1 13.1 22.7 31.1 40.3 67.1



sample number	WA (gr)	WB (gr)	AC	(1)	L bs)	CL (lbs)	WBW (gr)		WBA (gr)	GMM	AV (Z)
22110622	10000	447	4.28	5	0	200	5821.	0 1	0000.0	2.52	5.04
			DEF	ORMATI	ON (in	ches X	0.0001)	)			
CVCI P	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDī	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	48.0 55.0	30.2	20.4	23.4	11.2	14.8	17.0	7.6	10.3	11.8	4.9
500	37.7 43.4	78.7	15.6	18.0	27.1	10.5	12.1	16.6	6.3	7.3	9.1
1000	34.0 38.7	134.6	13.9	15.9	44.8	9.0	10.3	26.2	5.0	5.7	13.2
5000	26.7 30.1			12.0	109.7		7.1	57.1			22.6
10000	24.0 27.6		9.5		183.7		6.1	90.4			31.7
26800	20.7 24.0			9.3	301.1	4.2		136.1			39.1
169010	15.7 18.0			6.7	986.1	2.7	3.0	372.5	0.6	0.7	66.7
SAMPLE	WA	WB	AC	s	L	CL	WBW	<u> </u>	WBA	GMM	ΑV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	)	(gr)		(%)
22110632	10000	447	4 00						0010 0		
	10000	77/	4.28	3	0	200	5825	0 1	0012.0	2.52	5.1
					<del></del>	ches X				2.52	5.1
	LVDT #1(0		DEF	ORMATI	ON (in		0.0001	)		#4(6.0	*****
		.0 IN.)	DEFO	ORMATI	ON (inc	LVDT	0.0001	) ) IN.)	LVDT	#4(6.0	*****
	LVDT #1(0	.0 IN.)	DEFO	P2(2.	ON (inc	LVDT	0.0001) #3(4.0	) ) IN.)	LVDT ELA.	#4(6.0	0625 II
	LVDT #1(0	.0 IN.) . PLA.	LVDT ELA. 20.5	#2(2.	ON (inc	LVDT ELA. 14.8	#3(4.0	) IN.)	LVDT ELA.	#4(6.0	0625 II
CYCLE NUMBER	LVDT #1(0 ELA. TOT 48.5 56.3	.0 IN.) . PLA. 30.6 84.7	DEF() LVDT ELA. 20.5 15.4	#2(2. TOT. 23.8 17.6	ON (inc 0 IN.) PLA. 11.3 28.8	LVDT ELA. 14.8	#3(4.0 TOT.	PLA. 7.6	LVDT ELA.	#4(6.0 TOT.	PLA. 4.9 9.4
CYCLE	LVDT #1(0 ELA. TOT 48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8	.0 IN.) . PLA. 30.6 84.7 138.4 384.4	DEFO LVDT ELA. 20.5 15.4 14.0	#2(2. TOT. 23.8 17.6 16.3 12.1	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1	LVDT  ELA.  14.8 10.3 9.0 6.1	#3(4.0 TOT. 17.2 11.7 10.6 7.1	7.6 17.5 26.7	LVDT ELA. 10.3 6.1 5.0 2.7	#4(6.0 TOT. 11.9 7.0 5.9 3.1	PLA. 4.9 9.4 13.4 23.2
100 550 1000 5600	LVDT #1(0 ELA. TOT 48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4	DEFC LVDT ELA. 20.5 15.4 14.0 10.5 9.4	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1	7.6 17.5 26.7 60.1	LVDT ELA.  10.3 6.1 5.0 2.7 2.1	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4	PLA. 4.9 9.4 13.4 23.2 32.8
100 550 1000 5600 10850 20250	LVDT #1(0 ELA. TOT 48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0 21.9 25.4	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4 900.9	DEFO LVDT ELA. 20.5 15.4 14.0 10.5 9.4 8.4	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9 9.8	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7 257.9	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2 4.5	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1 5.2	7.6 17.5 26.7 60.1 95.7	LVDT ELA.  10.3 6.1 5.0 2.7 2.1 1.6	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4 1.8	PLA. 4.9 9.4 13.4 23.2 32.8 36.0
100 550 1000 5600 10850 20250 36000	LVDT #1(0 ELA. TOT 48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0 21.9 25.4 20.1 22.6	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4 900.9 1420.0	DEFO LVDT ELA. 20.5 15.4 14.0 10.5 9.4 8.4 7.6	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9 9.8 8.6	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7 257.9 395.2	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2 4.5	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1 5.2 4.4	PLA.  7.6 17.5 26.7 60.1 95.7 118.9	LVDT ELA. 10.3 6.1 5.0 2.7 2.1 1.6 1.2	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4 1.8 1.4	PLA. 4.9 9.4 13.4 23.2 32.8 36.0 46.1
100 550 1000 5600 10850 20250 36000	LVDT #1(0 ELA. TOT 48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0 21.9 25.4	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4 900.9 1420.0	DEFO LVDT ELA. 20.5 15.4 14.0 10.5 9.4 8.4 7.6	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9 9.8 8.6	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7 257.9 395.2	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2 4.5	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1 5.2 4.4	PLA.  7.6 17.5 26.7 60.1 95.7 118.9	LVDT ELA. 10.3 6.1 5.0 2.7 2.1 1.6 1.2	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4 1.8	PLA. 4.9 9.4 13.4 23.2 32.8 36.0 46.1
100 550 1000 5600 10850 20250 36000 164600	LVDT #1(0 ELA. TOT 48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0 21.9 25.4 20.1 22.6 16.0 18.5	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4 900.9 1420.0 3537.9	DEFO LVDT ELA. 20.5 15.4 14.0 10.5 9.4 7.6 5.9	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9 9.8 8.6 6.8	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7 257.9 395.2 912.8	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2 4.5 3.9 2.7	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1 5.2 4.4 3.1	PLA.  7.6 17.5 26.7 60.1 95.7 118.9 173.0 343.5	LVDT ELA.  10.3 6.1 5.0 2.7 2.1 1.6 1.2 0.6	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4 1.8 1.4 0.7	PLA. 4.9 9.4 13.4 23.2 32.8 36.0 46.1 61.3
100 550 1000 5600 10850 20250 36000 164600 A = TO	LVDT #1(0  ELA. TOT  48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0 21.9 25.4 20.1 22.6 16.0 18.5  DTAL WEIGHT	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4 900.9 1420.0 3537.9 T OF DRY	DEFO LVDT ELA. 20.5 15.4 14.0 10.5 9.4 7.6 5.9 AGGREG	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9 9.8 8.6 6.8	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7 257.9 395.2 912.8	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2 4.5 3.9 2.7	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1 5.2 4.4 3.1	PLA.  7.6 17.5 26.7 60.1 95.7 118.9 173.0 343.5	LVDT  ELA.  10.3 6.1 5.0 2.7 2.1 1.6 1.2 0.6  HT OF B AINED L	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4 1.8 1.4 0.7	PLA. 4.9 9.4 13.4 23.2 32.8 36.0 46.1 61.3
CYCLE	LVDT #1(0  ELA. TOT  48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0 21.9 25.4 20.1 22.6 16.0 18.5  OTAL WEIGHT ERCENT ASPECIGHT OF S.	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4 900.9 1420.0 3537.9 T OF DRY HALT CON	DEFO LVDT ELA. 20.5 15.4 14.0 10.5 9.4 7.6 5.9 AGGREC FENT; AIR;	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9 9.8 8.6 6.8 GATES;	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7 257.9 395.2 912.8	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2 4.5 3.9 2.7	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1 5.2 4.4 3.1 WB = SL = CL =	PLA. 7.6 17.5 26.7 60.1 95.7 118.9 173.0 343.5 WEIG	LVDT  ELA.  10.3 6.1 5.0 2.7 2.1 1.6 1.2 0.6  HT OF B AINED L	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4 1.8 1.4 0.7	PLA.  4.9 9.4 13.4 23.2 32.8 36.0 46.1 61.3
100 550 1000 5600 10850 20250 36000 164600 A = TO C = PI BA = WI	LVDT #1(0  ELA. TOT  48.5 56.3 37.5 42.8 34.3 40.2 26.5 30.8 24.0 28.0 21.9 25.4 20.1 22.6 16.0 18.5  DTAL WEIGHT	.0 IN.) . PLA. 30.6 84.7 138.4 384.4 666.4 900.9 1420.0 3537.9 T OF DRY HALT CON: AMPLE IN	DEFO LVDT ELA. 20.5 15.4 14.0 10.5 9.4 7.6 5.9 AGGREC TENT; AIR;	#2(2. TOT. 23.8 17.6 16.3 12.1 10.9 9.8 8.6 6.8	ON (inc 0 IN.) PLA. 11.3 28.8 45.7 117.1 196.7 257.9 395.2 912.8	LVDT  ELA.  14.8 10.3 9.0 6.1 5.2 4.5 3.9 2.7	#3(4.0 TOT. 17.2 11.7 10.6 7.1 6.1 5.2 4.4 3.1 WB = SL = CL =	PLA. 7.6 17.5 26.7 60.1 95.7 118.9 173.0 343.5 WEIG	LVDT  ELA.  10.3 6.1 5.0 2.7 2.1 1.6 1.2 0.6  HT OF B AINED L	#4(6.0 TOT. 11.9 7.0 5.9 3.1 2.4 1.8 1.4 0.7	PLA.  4.9 9.4 13.4 23.2 32.8 36.0 46.1 61.3



SAMPLE		MA >	WB	AC		SL	CL	WBW		WBA	GMM	AV
NUMBER	( <sub>1</sub>	gr)	(gr)	(%)	(1	Lbs)	(TDE)	(gr	)	(gr)		(%)
22110615	100	000	447	4.28	-	50	500	5805	. 0	9968.0	2.52	4.98
				DEF	ORMAT I	ON (in	ches X	0.0001	)			
CYCLE	LVDT	#1(0.0	) IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	118.5	135.4	98.2	46.4	53.1	33.5	29.6	33.8	19.9	17.6	20.1	11.0
500	93.1	106.2	254.6	35.5	40.5	80.6	20.6	23.5	42.6	10.2	11.6	19.2
1000	83.9	95.4	438.6	31.6	35.9	134.2	17.6	20.0	67.3	7.9	9.0	27.3
5000	65.9	75.8	1154.9	24.1	27.7	326.8	11.9	13.7	142.7	4.1	4.7	43.1
10000	59.4	68.0	1960.6	21.4	24.5	536.0	10.1	11.5	219.4	3.0	3.4	56.8
20000	53.5		2887.8					9.7			2.4	63.7
30000			3912.9								2.0	72.6
NUMBER	(1	gr)	(gr)	(%)	(1	Lbs)	(lbs)	(gr	)	(gr)		(%)
		gr)  000	(gr)	4.28		Lbs)  50	(1bs) 500	(gr 5825		(gr)	2.52	
				4.28		50		5825	.0 1		2.52	
22110625	100	000		4.28 DEF	DRMAT]	ON (in	500	5825 0.0001	.0 1	.0010.0	2.52	5.08
22110625	100	000	447	4.28 DEF	DRMAT]	ON (in	500	5825 0.0001	.0 1	.0010.0		5.08
22110625 ————————————————————————————————————	100	#1(0.0	447	4.28 DEF	DRMAT1 #2(2.	ON (in	500 ches X	5825 0.0001	.0 1 ) O IN.)	.0010.0 LVDT	<b>#</b> 4(6.0	5.08
22110625  CYCLE _ NUMBER	100 LVDT ELA. 120.7	#1(0.0 TOT.	447  DIN.)  PLA.  102.7	4.28 DEFO	#2(2. TOT.	ON (inc.) O IN.) PLA. 34.7	500 ches X (LVDT ELA. 29.6	5825 0.0001 #3(4.	.0 1 ) 0 IN.) PLA.	LVDT	<b>#</b> 4(6.0	5.08 0625 II
22110625  CYCLE _ NUMBER	100 LVDT ELA. 120.7	#1(0.0 TOT.	447 ) IN.) PLA.	4.28 DEFO	#2(2. TOT.	ON (inc.) O IN.) PLA. 34.7	500 ches X (LVDT ELA. 29.6	5825 0.0001 #3(4.	.0 1 ) 0 IN.) PLA.	LVDT	<b>#</b> 4(6.0	5.08 0625 II
22110625  CYCLE _ NUMBER	LVDT ELA. 120.7 94.8	#1(0.0 TOT. 136.8 108.5	447  DIN.)  PLA.  102.7	4.28 DEFC LVDT ELA. 46.8 35.7	#2(2. TOT. 53.0	ON (in.) O IN.) PLA. 34.7	500 ches X (  LVDT  ELA.  29.6 20.6	5825 0.0001 #3(4. TOT. 33.6 23.6	.0 1 0 IN.) PLA. 20.5 43.3	LVDT ELA.	<b>#</b> 4(6.0	5.08 0625 IN
22110625  CYCLE _ NUMBER  100 500	LVDT ELA. 120.7 94.8 85.5	#1(0.0 TOT. 136.8 108.5 99.0	447  PLA.  102.7 263.5	4.28 DEFC LVDT ELA. 46.8 35.7 31.8	#2(2. TOT. 53.0 40.9 36.8	ON (in.)  PLA.  34.7 82.4 138.5	500 ches X LVDT ELA. 29.6 20.6 17.6	5825 0.0001 #3(4. TOT. 33.6 23.6	.0 1 ) 0 IN.) PLA. 20.5 43.3 69.0	LVDT ELA.	<b>#</b> 4(6.0	5.08 0625 IN
22110625  CYCLE NUMBER  100 500 1000	LVDT ELA. 120.7 94.8 85.5 66.2	#1(0.0 TOT. 136.8 108.5 99.0 77.0	102.7 263.5 458.0	4.28  DEFC  LVDT  ELA.  46.8  35.7  31.8  23.8	#2(2. TOT. 53.0 40.9 36.8 27.7	ON (inc.) O IN.) PLA. 34.7 82.4 138.5 352.1	500 Ches X (1) LVDT ELA. 29.6 20.6 17.6 11.6	5825 0.0001 #3(4. TOT. 33.6 23.6 20.3	.0 1 0 IN.) PLA. 20.5 43.3 69.0 151.2	LVDT ELA.	<b>#</b> 4(6.0	5.08 0625 IN
22110625  CYCLE _ NUMBER  100 500 1000 5500	LVDT ELA. 120.7 94.8 85.5 66.2 60.2	#1(0.0 TOT. 136.8 108.5 99.0 77.0 69.5	102.7 263.5 458.0 1265.7 2083.0	4.28  DEFC  LVDT  ELA.  46.8 35.7 31.8 23.8 21.4	#2(2. TOT. 53.0 40.9 36.8 27.7 24.7	ON (ind.) O IN.) PLA. 34.7 82.4 138.5 352.1 561.6	500 Ches X (1) LVDT ELA. 29.6 20.6 17.6 11.6 10.0	5825 0.0001 #3(4. TOT. 33.6 23.6 20.3 13.5 11.5	.0 1 ) 0 IN.) PLA. 20.5 43.3 69.0 151.2 227.1	LVDT ELA.	<b>#</b> 4(6.0	5.08 0625 IN
22110625  CYCLE NUMBER  100 500 1000 5500 10300	LVDT ELA. 120.7 94.8 85.5 66.2 60.2 52.1	#1(0.0 TOT. 136.8 108.5 99.0 77.0 69.5 58.9	102.7 263.5 458.0 1265.7 2083.0 3614.2	4.28 DEFC LVDT ELA. 46.8 35.7 31.8 23.8 21.4 18.2	#2(2. TOT. 53.0 40.9 36.8 27.7 24.7 20.5	ON (ind.)  PLA.  34.7 82.4 138.5 352.1 561.6 928.1	500 LVDT ELA. 29.6 20.6 17.6 11.6 10.0 7.8	5825 0.0001 #3(4. TOT. 33.6 23.6 20.3 13.5 11.5 8.8	.0 1N.) PLA. 20.5 43.3 69.0 151.2 227.1 340.1	LVDT ELA.	<b>#</b> 4(6.0	5.08 0625 IN
22110625  CYCLE NUMBER  100 500 1000 5500 10300 27000 31000	100 LVDT ELA. 120.7 94.8 85.5 66.2 60.2 52.1 51.1	#1(0.0 TOT. 136.8 108.5 99.0 77.0 69.5 58.9 59.4	102.7 263.5 458.0 1265.7 2083.0 3614.2	4.28  DEFC  LVDT  ELA.  46.8 35.7 31.8 23.8 21.4 18.2 17.8	#2(2. TOT. 53.0 40.9 36.8 27.7 24.7 20.5 20.7	34.7 82.4 138.5 352.1 561.6 928.1 1110.4	500 LVDT ELA. 29.6 20.6 17.6 11.6 10.0 7.8	5825 0.0001 #3(4. TOT. 33.6 23.6 20.3 13.5 11.5 8.8 8.7	.0 1 ) 0 IN.) PLA. 20.5 43.3 69.0 151.2 227.1 340.1 400.9	LVDT ELA.	#4(6.C	5.08
22110625  CYCLE NUMBER  100 500 1000 5500 10300 27000 31000	LVDT  ELA.  120.7 94.8 85.5 66.2 60.2 52.1 51.1	#1(0.0 TOT. 136.8 108.5 99.0 77.0 69.5 58.9 59.4	102.7 263.5 458.0 1265.7 2083.0 3614.2 4354.3	4.28  DEFC  LVDT  ELA.  46.8 35.7 31.8 23.8 21.4 18.2 17.8	#2(2. TOT. 53.0 40.9 36.8 27.7 24.7 20.5 20.7	34.7 82.4 138.5 352.1 561.6 928.1 1110.4	500 LVDT ELA. 29.6 20.6 17.6 11.6 10.0 7.8	5825 0.0001 #3(4. TOT. 33.6 23.6 20.3 13.5 11.5 8.8 8.7	.0 1 ) 0 IN.) PLA. 20.5 43.3 69.0 151.2 227.1 400.9	LVDT  ELA.	#4(6.0	5.08
22110625  CYCLE NUMBER  100 500 1000 5500 10300 27000 31000  A = T	100 LVDT ELA. 120.7 94.8 85.5 66.2 52.1 51.1 OTAL V	#1(0.0 TOT. 136.8 108.5 99.0 77.0 69.5 58.9 59.4	102.7 263.5 458.0 1265.7 2083.0 3614.2 4354.3	4.28  DEFC  LVDT  ELA.  46.8 35.7 31.8 23.8 21.4 18.2 17.8  AGGREG	#2(2. TOT. 53.0 40.9 36.8 27.7 24.7 20.5 20.7	34.7 82.4 138.5 352.1 561.6 928.1 1110.4	500 LVDT ELA. 29.6 20.6 17.6 11.6 10.0 7.8	5825 0.0001 #3(4. TOT. 33.6 23.6 20.3 13.5 11.5 8.8 8.7	.0 1N.) PLA. 20.5 43.3 69.0 151.2 227.1 400.9 - WEIG-	LVDT ELA.	#4(6.0 TOT.	5.08
22110625  CYCLE NUMBER  100 500 1000 5500 10300 27000 31000  A = T	100 LVDT ELA. 120.7 94.8 85.5 66.2 52.1 51.1 OTAL V	#1(0.0 TOT. 136.8 108.5 99.0 77.0 69.5 58.9 59.4	447 PLA. 102.7 263.5 458.0 1265.7 2083.0 3614.2 4354.3 OF DRY	4.28  DEFC  LVDT  ELA.  46.8 35.7 31.8 23.8 21.4 18.2 17.8  AGGREG	#2(2. TOT. 53.0 40.9 36.8 27.7 24.7 20.5 20.7	34.7 82.4 138.5 352.1 561.6 928.1 1110.4	500 LVDT ELA. 29.6 20.6 17.6 11.6 10.0 7.8	5825 0.0001 #3(4. TOT. 33.6 23.6 20.3 13.5 11.5 8.8 8.7	.0 1N.) PLA. 20.5 43.3 69.0 151.2 227.1 400.9 - WEIG-	LVDT ELA.	#4(6.0 TOT.	5.00625 PLA



sample number	WA (gr)	WB (gr)	AC (Z)	(1)	L bs)	CL (lbs)	WBW (gr	_	BA gr)	GMM	AV (Z)
22110635	10000	447	4.28	5	0	500	5824	.0 10	010.0	2.52	5.11
			DEF	DRMATI	ON (inc	ches X	0.0001	)			
- CYCLE	LVDT #1(0	).0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	O IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	121.1 140.	9 101.6	46.8	54.5	34.2	29.6	34.4	20.2	17.4	20.3	11.1
500	95.1 109.	1 269.0	35.8	41.0	83.9	20.6	23.6	44.0	10.1	11.6	19.6
1000	85.8 98.	5 464.7	31.8	36.5	140.2	17.5	20.1	69.7	7.8	8.9	27.9
5000		9 1219.0		28.0			13.8	146.9		4.6	43.6
10000		1 2078.2			559.6		11.4	226.5	2.9		57.6
23200 33000		7 3333.1 7 4518.4		21.5	860.2 1145.3		9.3	319.6 409.8	1.9 1.6	•	65.8 76.5
SAMPLE	WA	WB	AC	S	L	CL	WBW	W	ВА	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1)	bs)	(lbs)	(gr	) (	gr)		(%)
32110611	10000	460	4.40	5	0	100	5825	.0 9	990.0	2.53	5.20
			DEF	ORMATI	ON (inc	ches X	0.0001	)			
								n TN )	LVDT	#4(6.0	625 II
CYCLE	LVDT #1(0	).0 IN.)	LVDT	#2(2.	O IN.)	LVDT	#3(4.	J 1,			
_	LVDT #1(0				PLA.	ELA.			ELA.	TOT.	PLA.
_		. PLA.	ELA.				TOT.		ELA.	тот.	PLA.
NUMBER	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100 500 1000	ELA. TOT 24.4 27.6 19.2 21.6 17.3 19.6	7. PLA. 3 14.0 3 36.9 3 62.4	ELA. 10.5 8.0 7.2	TOT.  11.9 9.1 8.1	PLA. 5.2 12.9 21.0	7.9 5.6 4.8	TOT. 8.9 6.3 5.5	PLA. 3.7 8.2 12.8	- - -	TOT.	PLA.
100 500 1000 5000	24.4 27.6 19.2 21.6 17.3 19.6 13.6 15.6	FLA.  14.0  3 36.9  3 62.4  3 164.1	ELA. 10.5 8.0 7.2 5.5	TOT.  11.9 9.1 8.1 6.3	PLA. 5.2 12.9 21.0 51.3	7.9 5.6 4.8 3.4	TOT.  8.9 6.3 5.5 3.9	PLA. 3.7 8.2 12.8 27.8		TOT.	PLA.
100 500 1000 5000	24.4 27.6 19.2 21.6 17.3 19.6 13.6 15.6 12.2 14.0	FLA.  14.0 3 36.9 3 62.4 3 164.1 281.8	ELA. 10.5 8.0 7.2 5.5 4.9	TOT.  11.9 9.1 8.1 6.3 5.6	FLA. 5.2 12.9 21.0 51.3 85.2	7.9 5.6 4.8 3.4 2.9	TOT.  8.9 6.3 5.5 3.9 3.3	PLA.  3.7 8.2 12.8 27.8 43.8	-	TOT.	PLA.
100 500 1000 5000 10000 27000	24.4 27.6 19.2 21.6 17.3 19.6 13.6 15.6 12.2 14.0	3 14.0 3 36.9 3 62.4 3 164.1 9 281.8 2 488.4	10.5 8.0 7.2 5.5 4.9	TOT.  11.9 9.1 8.1 6.3 5.6 4.8	PLA. 5.2 12.9 21.0 51.3 85.2 140.7	FLA. 7.9 5.6 4.8 3.4 2.9 2.3	8.9 6.3 5.5 3.9 3.3 2.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6		TOT.	PLA.
100 500 1000 5000 10000 27000	24.4 27.6 19.2 21.6 17.3 19.6 13.6 15.6 12.2 14.0	3 14.0 3 36.9 3 62.4 3 164.1 9 281.8 2 488.4	10.5 8.0 7.2 5.5 4.9	TOT.  11.9 9.1 8.1 6.3 5.6 4.8	PLA. 5.2 12.9 21.0 51.3 85.2 140.7	FLA. 7.9 5.6 4.8 3.4 2.9 2.3	8.9 6.3 5.5 3.9 3.3 2.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6		TOT.	PLA.
100 500 1000 5000 10000 27000 184700	ELA. TOTAL WEIGE	3 14.0 3 36.9 3 62.4 3 164.1 2 281.8 2 488.4 9 1835.3	ELA. 10.5 8.0 7.2 5.5 4.9 4.1 3.0	TOT. 11.9 9.1 8.1 6.3 5.6 4.8 3.4	FLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	FLA. 7.9 5.6 4.8 3.4 2.9 2.3	TOT.  8.9 6.3 5.5 3.9 3.3 2.6 1.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8			
500 1000 5000 10000 27000 184700	24.4 27.6 19.2 21.6 17.3 19.6 13.6 15.6 12.2 14.0 10.5 12.2 7.9 8.9	14.0 3 36.9 3 62.4 3 164.1 2 281.8 2 488.4 9 1835.3	ELA. 10.5 8.0 7.2 5.5 4.9 4.1 3.0 AGGREGIENT;	TOT. 11.9 9.1 8.1 6.3 5.6 4.8 3.4	FLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	FLA. 7.9 5.6 4.8 3.4 2.9 2.3	TOT.  8.9 6.3 5.5 3.9 3.3 2.6 1.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8  - WEIGH	T OF B		
100 500 1000 5000 10000 27000 184700 A = T C = P BA = W	24.4 27.6 19.2 21.6 17.3 19.6 13.6 15.6 12.2 14.0 10.5 12.2 7.9 8.9 OTAL WEIGH	14.0 3 36.9 3 62.4 3 164.1 2 281.8 2 488.4 9 1835.3 TOF DRY PHALT CONT	ELA.  10.5 8.0 7.2 5.5 4.9 4.1 3.0  AGGRECIENT; AIR;	TOT.  11.9 9.1 8.1 6.3 5.6 4.8 3.4	FLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	FLA. 7.9 5.6 4.8 3.4 2.9 2.3	8.9 6.3 5.5 3.9 3.3 2.6 1.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8  - WEIGH - SUSTA - CYCLI	T OF B	ITUMEN;	
100 500 1000 5000 10000 27000 184700 A = T C = P BA = W BW = W	24.4 27.6 19.2 21.6 17.3 19.6 13.6 15.6 12.2 14.0 10.5 12.2 7.9 8.9	14.0 3 36.9 3 62.4 3 164.1 2 281.8 2 488.4 9 1835.3 IT OF DRY PHALT CONT SAMPLE IN	ELA.  10.5 8.0 7.2 5.5 4.9 4.1 3.0  AGGREG TENT; AIR;	TOT.  11.9 9.1 8.1 6.3 5.6 4.8 3.4  GATES;	FLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	7.9 5.6 4.8 3.4 2.9 2.3 1.4	8.9 6.3 5.5 3.9 3.3 2.6 1.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8  - WEIGH	T OF B	ITUMEN;	

NUMBER	WA (gr)	WB (gr)	AC (Z)		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (%)
32110621	10000	460	4.40	5	0	100	5871.	0 10	060.0	2.53	<b>5</b> .08
			DEF	ORMATI	ON (inc	ches X	0.0001)	)			
CYCLE	LVDT #1	(0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. T	OT. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	24.1 28	.1 13.3	10.5	12.2	5.0	7.9	9.2	3.5	5.7	6.6	2.4
500	19.0 21	.8 34.9	8.0	9.2	12.3	5.6	6.5	7.8	3.6	4.1	4.5
1000	17.1 19	.7 60.5	7.2	8.2	20.6	4.9	5.6	12.6	2.9	3.3	6.7
5000	13.4 15	.3 154.7	5.5	6.3	49.0	3.4	3.9	26.7	1.6	1.9	11.4
10345	12.0 14	.4 274.9	4.9	5.8	84.0	2.9	3.5	43.4	1.3	1.5	16.4
25000	10.5 12	.0 444.1	4.2	4.8	130.1	2.3	2.7	62.5	0.9	1.0	20.0
162000	8.0 9	1.1 1606.4	3.1	3.5	429.4	1.5	1.7	173.5	0.4	0.4	35.7
SAMPLE	WA	WB	AC	s	L	CL	MBM	w	BA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	• (	gr)		(%)
32110631	10000	460	4.40	5	0	100	5839.	0 10	013.0	2.53	5.18
	<del>,,,,,,,,,</del>		D <b>EF</b> (	ORMATI	Off (inc	ches X	0.0001	)			
_	LVDT #1	(0.0 IN.)			ON (inc			) IN.)	LVDT	#4(6.0	)625 II
		(0.0 IN.)		<b>#</b> 2(2.				) IN.)	LVDT ELA.		0625 IN
		OT. PLA.	LVDT ELA.	<b>#</b> 2(2.	0 IN.)	LVDT	#3(4.0	) IN.)	ELA.		
NUMBER	ELA. T	OT. PLA.	LVDT ELA. 10.5	#2(2. TOT.	O IN.)	LVDT ELA. 7.9	#3(4.0 TOT.	PLA.	ELA. 5.7	TOT.	PLA.
NUMBER 100	ELA. T	OT. PLA.  7.8 14.19 36.4	LVDT ELA. 10.5 8.0	#2(2. TOT.	0 IN.) PLA. 5.3	LVDT ELA. 7.9 5.6	#3(4.0 TOT.	PLA.	ELA. 5.7 3.5	TOT.	PLA. 2.5
100 500 1000	ELA. T 24.4 27 19.2 21 17.3 19	OT. PLA.  7.8 14.19 36.4	LVDT ELA. 10.5 8.0 7.2	#2(2. TOT. 12.0 9.2 8.2	0 IN.) PLA. 5.3 12.7	LVDT ELA. 7.9 5.6 4.8	#3(4.0 TOT. 9.0 6.4 5.5	PLA.  3.7 8.1	5.7 3.5 2.8	TOT.	PLA. 2.5 4.6
100 500 1000 5000 10850	ELA. T  24.4 27 19.2 21 17.3 19 13.6 15 12.1 13	OT. PLA.  7.8 14.1 7.9 36.4 7.8 62.1 7.7 162.4 7.8 293.4	LVDT ELA.  10.5 8.0 7.2 5.5 4.8	#2(2. TOT. 12.0 9.2 8.2 6.3 5.5	0 IN.) PLA. 5.3 12.7 20.9 50.8 88.5	7.9 5.6 4.8 3.4 2.8	#3(4.0 TOT. 9.0 6.4 5.5 3.9 3.2	PLA.  3.7 8.1 12.7 27.6 45.2	5.7 3.5 2.8 1.6	TOT. 6.5 4.0 3.3 1.9 1.4	PLA.  2.5 4.6 6.7 11.7 16.8
100 500 1000 5000 10850 30000	24.4 27 19.2 21 17.3 19 13.6 15 12.1 13 10.4 11	OT. PLA.  7.8 14.1 1.9 36.4 1.8 62.1 1.7 162.4 1.8 293.4 1.9 525.1	LVDT ELA.  10.5 8.0 7.2 5.5 4.8 4.1	#2(2. TOT. 12.0 9.2 8.2 6.3 5.5 4.6	0 IN.) PLA. 5.3 12.7 20.9 50.8 88.5 150.7	7.9 5.6 4.8 3.4 2.8 2.2	#3(4.0 TOT. 9.0 6.4 5.5 3.9 3.2 2.5	PLA.  3.7 8.1 12.7 27.6 45.2 70.8	5.7 3.5 2.8 1.6 1.2 0.8	TOT. 6.5 4.0 3.3 1.9 1.4 0.9	PLA.  2.5 4.6 6.7 11.7 16.8 21.6
100 500 1000 5000 10850 30000	24.4 27 19.2 21 17.3 19 13.6 15 12.1 13 10.4 11	OT. PLA.  7.8 14.1 7.9 36.4 7.8 62.1 7.7 162.4 7.8 293.4	LVDT ELA.  10.5 8.0 7.2 5.5 4.8 4.1	#2(2. TOT. 12.0 9.2 8.2 6.3 5.5 4.6	0 IN.) PLA. 5.3 12.7 20.9 50.8 88.5 150.7	7.9 5.6 4.8 3.4 2.8 2.2	#3(4.0 TOT. 9.0 6.4 5.5 3.9 3.2 2.5	PLA.  3.7 8.1 12.7 27.6 45.2 70.8	5.7 3.5 2.8 1.6 1.2 0.8	TOT. 6.5 4.0 3.3 1.9 1.4 0.9	PLA.  2.5 4.6 6.7 11.7 16.8 21.6
500 1000 5000 10850 30000 164300	24.4 27 19.2 21 17.3 19 13.6 15 12.1 13 10.4 11 8.0 9	OT. PLA.  7.8 14.1 1.9 36.4 1.8 62.1 1.7 162.4 1.8 293.4 1.9 525.1	LVDT ELA.  10.5 8.0 7.2 5.5 4.8 4.1 3.0	#2(2. TOT. 12.0 9.2 8.2 6.3 5.5 4.6 3.4	0 IN.) PLA. 5.3 12.7 20.9 50.8 88.5 150.7 453.5	7.9 5.6 4.8 3.4 2.8 2.2	#3(4.0 TOT. 9.0 6.4 5.5 3.9 3.2 2.5 1.6	PLA.  3.7 8.1 12.7 27.6 45.2 70.8	5.7 3.5 2.8 1.6 1.2 0.8	TOT. 6.5 4.0 3.3 1.9 1.4 0.9 0.4	PLA.  2.5 4.6 6.7 11.7 16.8 21.6 36.5
100 500 1000 5000 10850 30000 164300 A = TC	24.4 27 19.2 21 17.3 19 13.6 15 12.1 13 10.4 11 8.0 9	OT. PLA.  2.8 14.19 36.4 2.8 62.1 2.7 162.4 2.8 293.4 2.9 525.1 2.1 1718.2  GHT OF DRY SPHALT CON	LVDT  ELA.  10.5 8.0 7.2 5.5 4.8 4.1 3.0 AGGREGIENT;	#2(2. TOT. 12.0 9.2 8.2 6.3 5.5 4.6 3.4	0 IN.) PLA. 5.3 12.7 20.9 50.8 88.5 150.7 453.5	7.9 5.6 4.8 3.4 2.8 2.2	#3(4.0 TOT. 9.0 6.4 5.5 3.9 3.2 2.5 1.6	PLA.  3.7 8.1 12.7 27.6 45.2 70.8 181.4  WEIGH	5.7 3.5 2.8 1.6 1.2 0.8 0.4	TOT. 6.5 4.0 3.3 1.9 1.4 0.9 0.4 ITUMEN;	PLA.  2.5 4.6 6.7 11.7 16.8 21.6 36.5
100 500 1000 5000 10850 30000 164300 A = TC	24.4 27 19.2 21 17.3 19 13.6 15 12.1 13 10.4 11 8.0 9	OT. PLA.  2.8 14.1 2.9 36.4 2.8 62.1 2.7 162.4 2.8 293.4 2.9 525.1 2.1 1718.2  GHT OF DRY	LVDT  ELA.  10.5 8.0 7.2 5.5 4.8 4.1 3.0 AGGREGIENT;	#2(2. TOT. 12.0 9.2 8.2 6.3 5.5 4.6 3.4	0 IN.) PLA. 5.3 12.7 20.9 50.8 88.5 150.7 453.5	7.9 5.6 4.8 3.4 2.8 2.2	#3(4.0 TOT. 9.0 6.4 5.5 3.9 3.2 2.5 1.6	PLA.  3.7 8.1 12.7 27.6 45.2 70.8 181.4	5.7 3.5 2.8 1.6 1.2 0.8 0.4	TOT. 6.5 4.0 3.3 1.9 1.4 0.9 0.4 ITUMEN;	PLA.  2.5 4.6 6.7 11.7 16.8 21.6 36.5
100 500 1000 5000 10850 30000 164300 A = TO C = PI	ELA. T  24.4 27  19.2 21  17.3 19  13.6 15  12.1 13  10.4 11  8.0 9  OTAL WEI  ERCENT A	OT. PLA.  2.8 14.19 36.4 2.8 62.1 2.7 162.4 2.8 293.4 2.9 525.1 2.1 1718.2  GHT OF DRY SPHALT CON	LVDT  ELA.  10.5 8.0 7.2 5.5 4.8 4.1 3.0  AGGREC TENT; AIR;	#2(2. TOT.  12.0 9.2 8.2 6.3 5.5 4.6 3.4  GATES;	0 IN.) PLA. 5.3 12.7 20.9 50.8 88.5 150.7 453.5	7.9 5.6 4.8 3.4 2.8 2.2	#3(4.0 TOT.  9.0 6.4 5.5 3.9 3.2 2.5 1.6  WB = SL = CL =	PLA.  3.7 8.1 12.7 27.6 45.2 70.8 181.4  WEIGH	5.7 3.5 2.8 1.6 1.2 0.8 0.4 T OF B	TOT.  6.5 4.0 3.3 1.9 1.4 0.9 0.4  ITUMEN; OAD;	PLA.  2.5 4.6 6.7 11.7 16.8 21.6 36.5

Sample Number	WA (gr)	WB (gr)	AC (%)	SL (lbs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
32110612	10000	460	4.40	50	200	5842.	0 100	014.0	2.53	5.13
	*****		DEF	ORMATION (i	nches X	0.0001)				
_	LVDT #1(0	.O IN.)	LVDT	#2(2.0 IN.	) LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA. TOT	. PLA.	ELA.	TOT. PLA	. ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	48.4 55.4	30.9	20.4	23.3 11.	3 14.7	16.9	7.7	10.2	11.6	4.9
500	38.0 43.8	81.0		18.0 27.		12.1	16.8		7.2	9.1
1000	34.3 39.9	137.5		16.2 45.		10.4	26.4		5.8	13.2
5100	26.8 31.0	361.2	10.6	12.2 110.	3 6.2	7.2	56.9	2.8	3.2	22.2
10000	24.3 28.0	607.0	9.5	10.9 179.	4 5.3	6.1	87.6	2.1	2.4	30.4
28000	20.8 24.0	1080.7	7.9	9.2 303.	7 4.1	4.8	135.6	1.4	1.6	38.1
206700	15.4 17.6	4320.7	5.7	6.4 1098.	8 2.5	2.8	402.0	0.5	0.6	66.4
C41/27/ 7	774				~			n 4	~~.	
SAMPLE	WA	WB	AC	SL	CL	WBW		BA	GMM	AV
SAMPLE NUMBER	WA (gr)	WB (gr)	AC		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (%)
NUMBER	(gr)			(lbs)			(		2.53	(%)
NUMBER	(gr)	(gr)	4.40	(lbs)	(lbs) 200	(gr) 5870.	0 10	gr)		(%)
32110622 ———————————————————————————————————	(gr)	(gr) 460	4.40 DEF	(1bs) 50	(1bs) 200 nches X	5870. 0.0001)	0 10	gr) 049.0		4.95
NUMBER 32110622  — CYCLE	(gr)	(gr) 460	4.40 DEF	(1bs) 50  ORMATION (i	(lbs)  200  nches X  ) LVDT	5870. 0.0001)	0 10	gr) 049.0	2.53	4.95
NUMBER 32110622  — CYCLE	(gr) 10000  LVDT #1(0	(gr) 460	4.40 DEF	(1bs) 50  ORMATION (i	(1bs) 200 nches X ) LVDT	5870. 0.0001)	0 10	gr) 049.0  LVDT	2.53 #4(6.0	4.93 625 IN
NUMBER 32110622 — CYCLE NUMBER	(gr) 10000  LVDT #1(0  ELA. TOT	(gr) 460 .0 IN.) . PLA. 29.1	(Z) 4.40 DEFC LVDT ELA. 20.3	(1bs) 50  DRMATION (i	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8	5870. 0.0001) #3(4.0	0 100 0 IN.)	D49.0 LVDT ELA.	2.53	4.95 625 IN
NUMBER 32110622  CYCLE NUMBER	(gr) 10000  LVDT #1(0  ELA. TOT  47.4 54.9	(gr) 460 .0 IN.) . PLA. 29.1 76.2	(Z) 4.40 DEFC LVDT ELA. 20.3	(1bs) 50  DRMATION (1: #2(2.0 IN. TOT. PLA 23.5 10.	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8	5870. 0.0001) #3(4.0 TOT.	0 100 0 IN.) PLA.	ELA.  10.3 6.3	2.53 #4(6.0 TOT.	4.95 625 IN PLA.
32110622	(gr)  10000  LVDT #1(0  ELA. TOT  47.4 54.9 37.2 43.2 33.6 38.6 26.4 30.9	(gr) 460 .0 IN.) . PLA. 29.1 76.2 130.4 338.1	(Z) 4.40 DEFC LVDT ELA. 20.3 15.6 13.9 10.6	(1bs)  50  ORMATION (i  #2(2.0 IN.  TOT. PLA  23.5 10. 18.0 26. 16.0 43. 12.4 105.	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8 4 10.5 8 9.0 3 6.3	(gr) 5870. 0.0001) #3(4.0 TOT. 17.1 12.2 10.4 7.4	0 100 0 IN.) PLA. 7.4 16.3 25.7 55.0	LVDT ELA. 10.3 6.3 5.1 2.8	#4(6.0 TOT. 11.9 7.3 5.8 3.3	4.95 FLA. 4.8 8.9 13.0 21.9
NUMBER  32110622  — CYCLE NUMBER  100 500 1000 5000 11300	(gr)  10000  LVDT #1(0  ELA. TOT  47.4 54.9 37.2 43.2 33.6 38.6 26.4 30.9 23.3 26.7	(gr) 460 .0 IN.) . PLA. 29.1 76.2 130.4 338.1 617.3	(Z) 4.40 DEFC LVDT ELA. 20.3 15.6 13.9 10.6 9.2	(1bs)  50  ORMATION (i  #2(2.0 IN  TOT. PLA  23.5 10 18.0 26 16.0 43 12.4 105 10.6 184	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8 4 10.5 8 9.0 3 6.3 9 5.2	5870. 0.0001) #3(4.0  TOT. 17.1 12.2 10.4 7.4 6.0	0 100 0 IN.) PLA. 7.4 16.3 25.7 55.0 90.4	LVDT  ELA.  10.3 6.3 5.1 2.8 2.1	#4(6.0 TOT. 11.9 7.3 5.8 3.3 2.4	4.95 PLA. 4.8 8.9 13.0 21.9 31.2
NUMBER  32110622  CYCLE NUMBER  100 500 1000 5000 11300 26000	10000 LVDT #1(0 ELA. TOT 47.4 54.9 37.2 43.2 33.6 38.6 26.4 30.9 23.3 26.7 20.6 23.6	(gr) 460  .0 IN.) . PLA. 29.1 76.2 130.4 338.1 617.3 965.2	(Z) 4.40 DEFC LVDT ELA. 20.3 15.6 13.9 10.6 9.2 8.0	(1bs)  50  ORMATION (i  #2(2.0 IN.  TOT. PLA  23.5 10. 18.0 26. 16.0 43. 12.4 105. 10.6 184. 9.2 277.	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8 4 10.5 8 9.0 3 6.3 9 5.2 6 4.3	5870. 0.0001) #3(4.0  TOT. 17.1 12.2 10.4 7.4 6.0 4.9	0 100 0 IN.) PLA. 7.4 16.3 25.7 55.0 90.4 126.4	LVDT  ELA.  10.3 6.3 5.1 2.8 2.1 1.4	2.53 #4(6.0 TOT. 11.9 7.3 5.8 3.3 2.4 1.7	4.95 PLA. 4.8 8.9 13.0 21.9 31.2
NUMBER  32110622  CYCLE NUMBER  100 500 1000 5000 11300 26000	10000 LVDT #1(0 ELA. TOT 47.4 54.9 37.2 43.2 33.6 38.6 26.4 30.9 23.3 26.7 20.6 23.6	(gr) 460  .0 IN.) . PLA. 29.1 76.2 130.4 338.1 617.3 965.2	(Z) 4.40 DEFC LVDT ELA. 20.3 15.6 13.9 10.6 9.2 8.0	(1bs)  50  ORMATION (i  #2(2.0 IN  TOT. PLA  23.5 10 18.0 26 16.0 43 12.4 105 10.6 184	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8 4 10.5 8 9.0 3 6.3 9 5.2 6 4.3	5870. 0.0001) #3(4.0  TOT. 17.1 12.2 10.4 7.4 6.0 4.9	0 100 0 IN.) PLA. 7.4 16.3 25.7 55.0 90.4 126.4	LVDT  ELA.  10.3 6.3 5.1 2.8 2.1 1.4	#4(6.0 TOT. 11.9 7.3 5.8 3.3 2.4	4.95 PLA. 4.8 8.9 13.0 21.9 31.2
NUMBER  32110622  CYCLE NUMBER  100 500 1000 5000 11300 26000 170200	(gr)  10000  LVDT #1(0  ELA. TOT  47.4 54.9 37.2 43.2 33.6 38.6 26.4 30.9 23.3 26.7 20.6 23.6 15.5 18.0	(gr) 460 .0 IN.) . PLA. 29.1 76.2 130.4 338.1 617.3 965.2 3648.2	(Z) 4.40 DEFC LVDT ELA. 20.3 15.6 13.9 10.6 9.2 8.0 5.8	(1bs)  50  ORMATION (1  #2(2.0 IN.  TOT. PLA  23.5 10. 18.0 26. 16.0 43. 12.4 105. 10.6 184. 9.2 277. 6.8 956.	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8 4 10.5 8 9.0 3 6.3 9 5.2 6 4.3	5870. 0.0001) #3(4.0 TOT. 17.1 12.2 10.4 7.4 6.0 4.9 3.1	0 100 0 IN.) PLA. 7.4 16.3 25.7 55.0 90.4 126.4	LVDT  ELA.  10.3 6.3 5.1 2.8 2.1 1.4	#4(6.0 TOT. 11.9 7.3 5.8 3.3 2.4 1.7	4.95 PLA. 4.8 8.9 13.0 21.9 31.2 36.9
NUMBER  32110622	(gr)  10000  LVDT #1(0  ELA. TOT  47.4 54.9 37.2 43.2 33.6 38.6 26.4 30.9 23.3 26.7 20.6 23.6 15.5 18.0  OTAL WEIGHT	(gr) 460 .0 IN.) . PLA. 29.1 76.2 130.4 338.1 617.3 965.2 3648.2 I OF DRY	(Z) 4.40 DEFC LVDT ELA. 20.3 15.6 13.9 10.6 9.2 8.0 5.8 AGGRECIENT;	(1bs)  50  ORMATION (1  #2(2.0 IN.  TOT. PLA  23.5 10. 18.0 26. 16.0 43. 12.4 105. 10.6 184. 9.2 277. 6.8 956.	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8 4 10.5 8 9.0 3 6.3 9 5.2 6 4.3	(gr) 5870. 0.0001) #3(4.0 TOT. 17.1 12.2 10.4 7.4 6.0 4.9 3.1	0 100 1N.) PLA. 7.4 16.3 25.7 55.0 90.4 126.4 363.1	LVDT  ELA.  10.3 6.3 5.1 2.8 2.1 1.4	#4(6.0 TOT. 11.9 7.3 5.8 3.3 2.4 1.7	4.95 PLA. 4.8 8.9 13.0 21.9 31.2 36.9
100 500 11300 26000 170200 A = TC C = PIBA = WI	(gr)  10000  LVDT #1(0  ELA. TOT  47.4 54.9 37.2 43.2 33.6 38.6 26.4 30.9 23.3 26.7 20.6 23.6 15.5 18.0	(gr) 460 .0 IN.) . PLA. 29.1 76.2 130.4 338.1 617.3 965.2 3648.2 I OF DRY	LVDT  LVDT  ELA.  20.3 15.6 13.9 10.6 9.2 8.0 5.8  AGGREGIENT; AIR;	(1bs)  50  ORMATION (1:  \$2(2.0 IN.)  TOT. PLA  23.5 10. 18.0 26. 16.0 43. 12.4 105. 10.6 184. 9.2 277. 6.8 956.  GATES;	(1bs)  200  nches X  ) LVDT  . ELA.  8 14.8 4 10.5 8 9.0 3 6.3 9 5.2 6 4.3	5870. 0.0001) #3(4.0  TOT. 17.1 12.2 10.4 7.4 6.0 4.9 3.1	7.4 16.3 25.7 55.0 90.4 126.4 363.1	D49.0  LVDT  ELA.  10.3 6.3 5.1 2.8 2.1 1.4 T OF B INED L C LOAD	2.53  #4(6.0  TOT.  11.9  7.3  5.8  3.3  2.4  1.7   ITUMEN; OAD;	4.95 625 IN PLA. 4.8 8.9 13.0 21.9 31.2 36.9

SAMPLE NUMBER	WA (gr)	WB (gr)	AC (7)	(1	L bs)	CL (lbs)	WBW (gr	_	SA ;r)	GMM	AV (Z)
32110632	10000	460	4.40	5	0	200	5868	.0 100	38.0	2.53	4.85
			DEF	ORMATI	ON (in	ches X	0.0001	)			
CYCLE _	LVDT #1(0	.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.	0 IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	46.7 53.5	27.7	20.2	23.2	10.5	14.8	16.9	7.1	10.3	11.8	4.6
500	36.7 42.1	72.2	15.5	17.8	25.3	10.5	12.1	15.6	6.4	7.3	8.6
1000	33.0 37.7	124.3	13.8	15.8	42.2	9.0	10.3	24.9	5.1	5.8	12.7
5000	25.9 30.0			12.2	102.2		7.3	53.7		3.3	21.6
10000	23.4 26.4			10.6	168.2		6.1	83.7		2.5	29.9
24000 161500	20.5 23.7 15.4 18.0		8.1		264.7 889.0		5.0 3.2	122.3 342.7	1.5	1.8	36.8
					· · · · · · · · ·						
SAMPLE	WA	WB	AC	s	L	CL	WBW	W	3A	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr	) ((	gr)		(%)
22110616											
32110615	10000	460	4.40	5	0	500	5861	.0 100	036.0	2.53	4.99
32110613	10000	450				500 ches X		*******	035.0	2.53	4.99
_	LVDT #1(0		DEF	ORMATI	ON (in	ches X	0.0001	*******			
CYCLE _		.0 IN.)	DEF	ORMATI #2(2.	ON (in	LVDT	0.0001	) 0 IN.)			625 IN
CYCLE _ NUMBER	LVDT #1(0	.0 IN.)	DEFO	ORMATI #2(2.	ON (inc	LVDT	0.0001 #3(4.	O IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	LVDT #1(0	.0 IN.) . PLA. 96.8	DEFO LVDT ELA. 46.5	#2(2.	ON (inc	LVDT ELA. 29.6	#3(4. TOT.	O IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	LVDT #1(0 ELA. TOT 118.9136.3	.0 IN.) . PLA. 96.8 257.4	DEF6 LVDT ELA. 46.5 35.6	#2(2. TOT.	ON (inc O IN.) PLA. 33.0 81.3	LVDT ELA. 29.6 20.6	0.0001 #3(4. TOT.	) 0 IN.) PLA. 19.6	LVDT	#4(6.0	625 IN
100 500 1000 5000	LVDT #1(0 ELA. TOT 118.9136.3 93.4107.8 84.2 96.2 66.1 76.8	.0 IN.) . PLA. 96.8 257.4 433.9 1147.3	LVDT ELA. 46.5 35.6 31.6 24.1	#2(2. TOT. 53.3 41.0 36.2 28.0	ON (inc) PLA. 33.0 81.3 132.6 324.2	LVDT  ELA.  29.6 20.6 17.6 11.9	0.0001 #3(4. TOT. 33.9 23.8 20.1 13.9	) PLA.  19.6 43.0 66.4 141.3	LVDT ELA.	#4(6.0	625 IN
100 500 1000 5000	LVDT #1(0 ELA. TOT 118.9136.3 93.4107.8 84.2 96.2 66.1 76.8 59.6 68.9	.0 IN.) . PLA. 96.8 257.4 433.9 1147.3	DEFO LVDT ELA. 46.5 35.6 31.6 24.1 21.4	#2(2. TOT. 53.3 41.0 36.2 28.0 24.8	ON (inc 0 IN.) PLA. 33.0 81.3 132.6 324.2 522.5	LVDT  ELA.  29.6 20.6 17.6 11.9	#3(4. TOT. 33.9 23.8 20.1 13.9 11.6	) PLA.  19.6 43.0 66.4 141.3 213.3	LVDT ELA.	#4(6.0	625 IN
100 500 1000 5000 10000 25000	LVDT #1(0 ELA. TOT 118.9136.3 93.4107.8 84.2 96.2 66.1 76.8 59.6 68.9 51.9 60.0	.0 IN.) . PLA. 96.8 257.4 433.9 1147.3 1914.0 3204.4	DEFO LVDT ELA. 46.5 35.6 31.6 24.1 21.4 18.3	#2(2. TOT. 53.3 41.0 36.2 28.0 24.8 21.2	ON (inc 0 IN.) PLA. 33.0 81.3 132.6 324.2 522.5 835.4	LVDT  ELA.  29.6 20.6 17.6 11.9 10.1 7.9	#3(4. TOT. 33.9 23.8 20.1 13.9 11.6 9.2	) PLA.  19.6 43.0 66.4 141.3 213.3 311.0	LVDT ELA.	#4(6.0	625 IN
100 500 1000 5000	LVDT #1(0 ELA. TOT 118.9136.3 93.4107.8 84.2 96.2 66.1 76.8 59.6 68.9 51.9 60.0	.0 IN.) . PLA. 96.8 257.4 433.9 1147.3 1914.0 3204.4	DEFO LVDT ELA. 46.5 35.6 31.6 24.1 21.4 18.3	#2(2. TOT. 53.3 41.0 36.2 28.0 24.8 21.2	ON (inc 0 IN.) PLA. 33.0 81.3 132.6 324.2 522.5 835.4	LVDT  ELA.  29.6 20.6 17.6 11.9 10.1 7.9	#3(4. TOT. 33.9 23.8 20.1 13.9 11.6 9.2	) PLA.  19.6 43.0 66.4 141.3 213.3 311.0	LVDT ELA.	#4(6.0	625 IN
100 500 1000 5000 10000 25000 30000	LVDT #1(0 ELA. TOT 118.9136.3 93.4107.8 84.2 96.2 66.1 76.8 59.6 68.9 51.9 60.0 50.5 58.4	.0 IN.) . PLA. 96.8 257.4 433.9 1147.3 1914.0 3204.4 3912.0	DEFO LVDT ELA. 46.5 35.6 31.6 24.1 21.4 18.3 17.8	#2(2. TOT. 53.3 41.0 36.2 28.0 24.8 21.2 20.5	ON (inc 0 IN.) PLA. 33.0 81.3 132.6 324.2 522.5 835.4 1010.5	LVDT  ELA.  29.6 20.6 17.6 11.9 10.1 7.9	#3(4. TOT. 33.9 23.8 20.1 13.9 11.6 9.2 8.8	) PLA.  19.6 43.0 66.4 141.3 213.3 311.0 369.0	LVDT ELA.	#4(6.0	PLA.
100 500 1000 5000 10000 25000 30000	LVDT #1(0  ELA. TOT  118.9136.3  93.4107.8  84.2 96.2  66.1 76.8  59.6 68.9  51.9 60.0  50.5 58.4  COTAL WEIGH	.0 IN.)  . PLA.  96.8 257.4 433.9 1147.3 1914.0 3204.4 3912.0  T OF DRY	DEFO LVDT ELA. 46.5 35.6 31.6 24.1 21.4 18.3 17.8 AGGREG	#2(2. TOT. 53.3 41.0 36.2 28.0 24.8 21.2 20.5	ON (inc 0 IN.) PLA. 33.0 81.3 132.6 324.2 522.5 835.4 1010.5	LVDT  ELA.  29.6 20.6 17.6 11.9 10.1 7.9	#3(4. TOT. 33.9 23.8 20.1 13.9 11.6 9.2 8.8	) PLA.  19.6 43.0 66.4 141.3 213.3 311.0 369.0  - WEIGHT	LVDT  ELA.	#4(6.0	PLA.
100 500 1000 5000 10000 25000 30000 A = T	LVDT #1(0  ELA. TOT  118.9136.3  93.4107.8  84.2 96.2  66.1 76.8  59.6 68.9  51.9 60.0  50.5 58.4  COTAL WEIGH  PERCENT ASP  WEIGHT OF S	.0 IN.) . PLA	DEFO LVDT ELA. 46.5 35.6 31.6 24.1 21.4 18.3 17.8 AGGREG TENT; AIR;	#2(2. TOT. 53.3 41.0 36.2 28.0 24.8 21.2 20.5	ON (inc 0 IN.) PLA. 33.0 81.3 132.6 324.2 522.5 835.4 1010.5	LVDT  ELA.  29.6 20.6 17.6 11.9 10.1 7.9	#3(4. TOT. 33.9 23.8 20.1 13.9 11.6 9.2 8.8 WB SL CL	) PLA.  19.6 43.0 66.4 141.3 213.3 311.0 369.0  - WEIGHT - SUSTAL	LVDT  ELA.	#4(6.0 TOT.	PLA.
100 500 1000 5000 10000 25000 30000 A = T C = P BA = W	LVDT #1(0  ELA. TOT  118.9136.3  93.4107.8  84.2 96.2  66.1 76.8  59.6 68.9  51.9 60.0  50.5 58.4  COTAL WEIGH	.0 IN.) . PLA	DEFO LVDT ELA. 46.5 35.6 31.6 24.1 21.4 18.3 17.8 AGGRECTENT; AIR; WATER	#2(2. TOT. 53.3 41.0 36.2 28.0 24.8 21.2 20.5 GATES;	ON (inc 0 IN.) PLA. 33.0 81.3 132.6 324.2 522.5 835.4 1010.5	LVDT  ELA.  29.6 20.6 17.6 11.9 7.6	#3(4. TOT. 33.9 23.8 20.1 13.9 11.6 9.2 8.8 WB SL CL	) PLA.  19.6 43.0 66.4 141.3 213.3 311.0 369.0  - WEIGHT	LVDT  ELA.	#4(6.0 TOT.	PLA.

SAMPLE	WA	WB	AC		SL .	CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(1bs)	(gr)	)	(gr)		(%)
32110625	10000	460	4.40		50	500	5870.	.0	10049.0	2.53	4.9
			DEF	ORMAT I	ON (in	ches X (	0.0001)	)			
- CYCLE	LVDT #1(0	0.0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	625 I
NUMBER	ELA. TO	r. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	118.5133.9	97.2	46.6	52.6	33.3	29.6	33.5	19.	8 17.6	19.9	11.0
500	93.1105.3	3 255.9	35.6	40.2	81.2	20.7	23.4	43.	0 10.2	11.6	19.3
1000	83.9 95.4	433.7	31.7	36.0	133.1	17.6	20.0	66.	7 7.9	9.0	27.0
5000	65.9 76.6	3 1130.3	24.1	28.1	320.6	12.0	13.9	140.	1 4.1	4.8	42.3
13900	56.5 64.1	2353.6	20.3	23.0	634.5	9.3	10.5	251.	5 2.6	2.9	60.3
30300	50.3 56.8	3629.1	17.8	20.1	940.7	7.6	8.6	344.	3 1.7	2.0	67.3
32000	49.9 56.9	9 4114.2	17.6	20.1	1063.5	7.5	8.5	386.	9 1.7	1.9	74.5
		470									
SAMPLE	WA (DE)	WB	AC		SL SL-N	CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(1	Lbs)	(lbs)	(gr)	,	(gr)		(%)
32110635	10000	460	4.40		50	500	5880	. 0	10063.0	2.53	4.9
<del></del>	***********		DEF	ORMAT]	ON (in	ches X (	0.0001	)			
	LVDT #1(0	).0 IN.)							) LVDT	#4(6.0	)625 I
- CYCLE _ NUMBER		).0 IN.)		#2(2.	0 IN.)		#3(4.0	o IN.		#4(6.0	
NUMBER		r. PLA.	LVDT ELA.	#2(2.	O IN.)	LVDT ELA.	#3(4.0	o IN.	. ELA.		PLA.
100 500	ELA. TOT	7. PLA. 1. 95.1 7. 246.9	LVDT ELA. 46.6 35.6	#2(2. TOT. 52.9 40.2	0 IN.) PLA. 32.7 78.7	LVDT ELA. 29.7 20.7	#3(4.0 TOT. 33.8 23.4	PLA 19.	5 17.7 8 10.3	TOT.	PLA.
100 500	ELA. TO	7. PLA. 1. 95.1 7. 246.9	LVDT ELA. 46.6 35.6	#2(2. TOT. 52.9 40.2	0 IN.) PLA. 32.7 78.7	LVDT ELA. 29.7 20.7	#3(4.0 TOT. 33.8 23.4	PLA 19.	5 17.7 8 10.3	TOT.	PLA. 10.8 18.9
100 500 1000 5000	ELA. TOT 118.0134.1 92.7104.7 83.5 96.4 65.6 76.3	FLA.  95.1 7 246.9 4 418.2 3 1098.8	LVDT ELA. 46.6 35.6 31.7 24.1	#2(2. TOT. 52.9 40.2 36.6 28.1	0 IN.) PLA. 32.7 78.7 128.9 313.3	LVDT ELA. 29.7 20.7 17.7 12.0	#3(4.0 TOT. 33.8 23.4 20.4 14.0	PLA 19. 41. 64.	5 17.7 8 10.3 8 8.0 4 4.1	TOT. 20.1 11.6	PLA. 10.8 18.9 26.4
100 500 1000 5000 10000	ELA. TOTAL 118.0134.1 92.7104.7 83.5 96.4 65.6 76.3 59.1 68.5	PLA.  95.1  246.9  418.2  3 1098.8  5 1873.2	LVDT ELA. 46.6 35.6 31.7 24.1 21.5	#2(2. TOT. 52.9 40.2 36.6 28.1 24.9	0 IN.) PLA. 32.7 78.7 128.9 313.3 516.0	29.7 20.7 17.7 12.0 10.1	#3(4.0 TOT. 33.8 23.4 20.4 14.0 11.7	19. 41. 64. 137.	5 17.7 8 10.3 8 8.0 4 4.1	TOT.  20.1 11.6 9.2 4.8	PLA. 10.8 18.9
100 500 1000 5000 10000 20000	ELA. TOTAL 118.0134.1 92.7104.7 83.5 96.4 65.6 76.3 59.1 68.5 53.3 61.6	7. PLA. 1 95.1 7 246.9 8 418.2 3 1098.8 5 1873.2 3 2700.3	LVDT ELA. 46.6 35.6 31.7 24.1 21.5	#2(2. TOT. 52.9 40.2 36.6 28.1 24.9 22.1	0 IN.) PLA. 32.7 78.7 128.9 313.3 516.0 718.5	29.7 20.7 17.7 12.0 10.1 8.5	#3(4.0 TOT. 33.8 23.4 20.4 14.0 11.7 9.8	PLA  19. 41. 64. 137. 212.	5 17.7 8 10.3 8 8.0 4 4.1 1 3.0	TOT.  20.1 11.6 9.2 4.8	PLA. 10.8 18.9 26.4 41.7
100 500 1000 5000 10000 20000	ELA. TOTAL 118.0134.1 92.7104.7 83.5 96.4 65.6 76.3 59.1 68.5	7. PLA. 1 95.1 7 246.9 8 418.2 3 1098.8 5 1873.2 3 2700.3	LVDT ELA. 46.6 35.6 31.7 24.1 21.5	#2(2. TOT. 52.9 40.2 36.6 28.1 24.9 22.1	0 IN.) PLA. 32.7 78.7 128.9 313.3 516.0 718.5	29.7 20.7 17.7 12.0 10.1 8.5	#3(4.0 TOT. 33.8 23.4 20.4 14.0 11.7 9.8	PLA  19. 41. 64. 137. 212.	5 17.7 8 10.3 8 8.0 4 4.1 1 3.0 7 2.2	TOT.  20.1 11.6 9.2 4.8 3.5	PLA.  10.8 18.9 26.4 41.7 55.3
100 500 1000 5000 10000 20000 35000	ELA. TOTAL WEIGHT	7. PLA.  1 95.1  7 246.9  8 418.2  3 1098.8  5 1873.2  3 2700.3  7 4236.4	LVDT  ELA.  46.6 35.6 31.7 24.1 21.5 19.1 17.3	#2(2. TOT. 52.9 40.2 36.6 28.1 24.9 22.1 19.7	0 IN.) PLA. 32.7 78.7 128.9 313.3 516.0 718.5 1095.8	29.7 20.7 17.7 12.0 10.1 8.5	#3(4.0 TOT. 33.8 23.4 20.4 14.0 11.7 9.8 8.4	PLA 19. 41. 64. 137. 212. 275. 396.	5 17.7 8 10.3 8 8.0 4 4.1 1 3.0 7 2.2	TOT.  20.1 11.6 9.2 4.8 3.5 2.5 1.8	PLA.  10.8 18.9 26.4 41.7 55.3 60.7 75.1
100 500 1000 5000 10000 20000 35000	ELA. TOT 118.0134.1 92.7104.7 83.5 96.4 65.6 76.3 59.1 68.5 53.3 61.6 49.0 55.7	7. PLA.  1 95.1  7 246.9  8 418.2  3 1098.8  5 1873.2  3 2700.3  7 4236.4	LVDT  ELA.  46.6 35.6 31.7 24.1 21.5 19.1 17.3	#2(2. TOT. 52.9 40.2 36.6 28.1 24.9 22.1 19.7	0 IN.) PLA. 32.7 78.7 128.9 313.3 516.0 718.5 1095.8	29.7 20.7 17.7 12.0 10.1 8.5	#3(4.0 TOT. 33.8 23.4 20.4 14.0 11.7 9.8 8.4	PLA  19. 41. 64. 137. 212. 275. 396.	5 17.7 8 10.3 8 8.0 4 4.1 1 3.0 7 2.2 6 1.6	TOT.  20.1 11.6 9.2 4.8 3.5 2.5 1.8	PLA.  10.8 18.9 26.4 41.7 55.3 60.7 75.1
100 500 1000 5000 10000 20000 35000	ELA. TOTAL WEIGHT	7. PLA.  1 95.1  7 246.9  4 418.2  3 1098.8  5 1873.2  3 2700.3  7 4236.4  ET OF DRY  PHALT CON	LVDT  ELA.  46.6 35.6 31.7 24.1 21.5 19.1 17.3  AGGREGIENT;	#2(2. TOT. 52.9 40.2 36.6 28.1 24.9 22.1 19.7	0 IN.) PLA. 32.7 78.7 128.9 313.3 516.0 718.5 1095.8	29.7 20.7 17.7 12.0 10.1 8.5	#3(4.0 TOT.  33.8 23.4 20.4 14.0 11.7 9.8 8.4	PLA  19. 41. 64. 137. 212. 275. 396.	5 17.7 8 10.3 8 8.0 4 4.1 1 3.0 7 2.2 6 1.6	TOT.  20.1 11.6 9.2 4.8 3.5 2.5 1.8	PLA.  10.8 18.9 26.4 41.7 55.3 60.7 75.1

Sample Number		NA Br)	WB (gr)	AC (Z)	SL (1b:		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
11120511	100	000	450	4.31	50		100	6144.	0 10	329.0	2.55	3.00
					ORMATIO	N (in						****
_	LIDE	#1/0	·							LUDE	#4.46.0	625 71
CYCLE	LVDT	#1(0.	0 IN.)	LVDI	#2(2.0	IN.)	LADI	#3(4.0	TM.)	FADI	#4(6.0	625 1
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
120	9.7	13.2	12.3	8.6	11.7	31.0	8.3	11.2	36.3	7.9	10.6	39.0
560	9.3	12.6	19.3	8.2	11.1	37.3	7.8	10.5	42.8	7.3	9.8	45.0
1000	8.9	11.7	22.2	7.8	10.3	40.3	7.4	9.8	45.8	6.9	9.0	47.5
5000	7.9	9.7	33.1	6.9	8.5	49.1	6.4	7.9	56.8	5.8	7.1	58.5
13600	8.4	11.5	49.0	7.4	10.0	56.6	6.8	9.3	65.5	6.0	8.2	67.5
20000	8.0	10.5	52.7	7.0	9.1	61.7	6.4	8.4	68.8	5.6	7.3	70.7
27900	7.5	9.2	54.8	6.5	8.0	64.1	6.0	7.4	71.6	5.2	6.4	73.4
172800	7.1	8.7	93.1	6.1	7.5	75.1	5.5	6.8	83.1	4.5	5.5	74.9
338300	6.9	8.5	113.4	6.0	7.4	78.1	5.3	6.6	86.1	4.2	5.2	86.4
715700	7.0	9.0	146.9	6.1	7.8	84.6	5.4	6.9	91.1	4.1	5.3	93.4
861900	7.0	9.1	155.6	6.1	7.8	84.6	5.3	6.9	91.1	4.0	5.2	93.4
SAMPLE		NA.	WB	AC	SL		CL	WBW		BA	GMM	AV
NUMBER		gr)	(gr)	(%)	(1b		(lbs)	(gr)		gr)	<b>~</b>	(2)
11120521	100	000	449	4.30	50		100	6162.	0 10	357.0	2.55	3.0
					YPMATTO:	M (in	hes X (	0.0001)	-			*****
				DEF	JAINI IO	. (200		,				
	LVDT	#1(O.	0 IN.)		#2(2.0					LVDT	#4(6.0	625 I
_	LVDT	#1(0.								LVDT	#4(6.0	0625 I
_	ELA.			LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	ELA.		PLA.
NUMBER	ELA. 10.0	TOT.	PLA.	LVDT ELA. 8.9	#2(2.0 TOT.	IN.)	LVDT ELA. 8.5	#3(4.0	PLA.	ELA.	TOT.	PLA.
NUMBER 100	ELA. 10.0 8.7	TOT.	PLA.	ELA. 8.9 7.7	#2(2.0 TOT.	IN.) PLA. 44.5	ELA. 8.5 7.3	#3(4.0 TOT.	PLA.	ELA.	TOT. 11.2 8.6	PLA. 43.0 47.2
100 500	ELA. 10.0 8.7 9.0	TOT.	PLA. 11.8 17.2	ELA. 8.9 7.7 7.9	#2(2.0 TOT. 12.3 9.7	IN.) PLA. 44.5 50.0	ELA. 8.5 7.3	#3(4.0 TOT. 11.8 9.2 10.0	PLA. 44.4 48.8	ELA. '8.1 6.8	TOT. 11.2 8.6 9.2	PLA. 43.0 47.2 50.8
100 500 1000	ELA. 10.0 8.7 9.0 8.0	TOT.  13.9 11.0 12.0	PLA. 11.8 17.2 22.2	ELA. 8.9 7.7 7.9 7.1	#2(2.0 TOT. 12.3 9.7 10.5	IN.) PLA. 44.5 50.0 54.0	ELA. 8.5 7.3 7.5	#3(4.0 TOT. 11.8 9.2 10.0 8.3	PLA. 44.4 48.8 52.3	8.1 6.8 6.9	TOT.  11.2 8.6 9.2 7.5	PLA. 43.0 47.2 50.8 59.8
500 1000 5000	ELA. 10.0 8.7 9.0 8.0 8.4	TOT.  13.9 11.0 12.0 10.1	PLA.  11.8 17.2 22.2 33.5	ELA. 8.9 7.7 7.9 7.1	#2(2.0 TOT. 12.3 9.7 10.5 8.9 10.0	IN.) PLA. 44.5 50.0 54.0 66.0	ELA. 8.5 7.3 7.5 6.6	#3(4.0 TOT. 11.8 9.2 10.0 8.3 9.2	PLA.  44.4 48.8 52.3 63.4	8.1 6.8 6.9 5.9	TOT.  11.2 8.6 9.2 7.5 8.2	
100 500 1000 5000 10500 155600	ELA. 10.0 8.7 9.0 8.0 8.4 7.6	TOT.  13.9 11.0 12.0 10.1 11.4	PLA.  11.8 17.2 22.2 33.5 44.6	ELA. 8.9 7.7 7.9 7.1	#2(2.0 TOT. 12.3 9.7 10.5 8.9 10.0 8.8	IN.) PLA. 44.5 50.0 54.0 66.0 73.2	ELA. 8.5 7.3 7.5 6.6	#3(4.0 TOT. 11.8 9.2 10.0 8.3 9.2 7.9	PLA.  44.4 48.8 52.3 63.4 69.4	8.1 6.8 6.9 5.9	TOT. 11.2 8.6 9.2 7.5 8.2 6.5	PLA. 43.0 47.2 50.8 59.8 63.9 79.4
100 500 1000 5000 10500 10500 155600	ELA. 10.0 8.7 9.0 8.0 8.4 7.6 7.8	TOT.  13.9 11.0 12.0 10.1 11.4 10.1	PLA.  11.8 17.2 22.2 33.5 44.6 96.2	ELA. 8.9 7.7 7.9 7.1 7.4 6.6	#2(2.0 TOT. 12.3 9.7 10.5 8.9 10.0 8.8 9.2	IN.) PLA. 44.5 50.0 54.0 66.0 73.2	ELA. 8.5 7.3 7.5 6.6 6.8 6.0	#3(4.0 TOT. 11.8 9.2 10.0 8.3 9.2 7.9 8.2	PLA.  44.4 48.8 52.3 63.4 69.4 96.1	8.1 6.8 6.9 5.9 6.1	TOT.  11.2 8.6 9.2 7.5 8.2 6.5 6.7	PLA. 43.0 47.2 50.8 59.8 63.9 79.4
100 500 1000 5000 10500 155600 187200 333040	ELA. 10.0 8.7 9.0 8.4 7.6 7.8 6.7	TOT.  13.9 11.0 12.0 10.1 11.4 10.1 10.6 8.0	PLA.  11.8 17.2 22.2 33.5 44.6 96.2 104.1	ELA.  8.9 7.7 7.9 7.1 7.4 6.6 6.7 5.8	#2(2.0 TOT. 12.3 9.7 10.5 8.9 10.0 8.8 9.2 6.9	IN.) PLA. 44.5 50.0 54.0 66.0 73.2 110.4	ELA. 8.5 7.3 7.5 6.6 6.8 6.0 6.1	#3(4.0 TOT. 11.8 9.2 10.0 8.3 9.2 7.9 8.2 6.2	PLA.  44.4 48.8 52.3 63.4 69.4 96.1 100.1 107.0	8.1 6.8 6.9 5.9 6.1 4.9	TOT.  11.2 8.6 9.2 7.5 8.2 6.5 6.7 4.9	PLA. 43.0 47.2 50.8 59.8 63.9 79.4 82.0 85.1
100 500 1000 5000 10500 155600 187200 333040	ELA.  10.0 8.7 9.0 8.4 7.6 7.8 6.7	TOT.  13.9 11.0 12.0 10.1 11.4 10.1 10.6 8.0 WEIGHT	PLA.  11.8 17.2 22.2 33.5 44.6 96.2 104.1 108.0	ELA.  8.9 7.7 7.9 7.1 7.4 6.6 6.7 5.8 AGGREGIENT;	#2(2.0 TOT. 12.3 9.7 10.5 8.9 10.0 8.8 9.2 6.9	IN.) PLA. 44.5 50.0 54.0 66.0 73.2 110.4	ELA. 8.5 7.3 7.5 6.6 6.8 6.0 6.1	#3(4.0 TOT. 11.8 9.2 10.0 8.3 9.2 7.9 8.2 6.2	PLA.  44.4 48.8 52.3 63.4 69.4 96.1 100.1 107.0	8.1 6.8 6.9 5.9 6.1 4.9 4.9	TOT.  11.2 8.6 9.2 7.5 8.2 6.5 6.7 4.9	FLA. 43.0 47.2 50.8 59.8 63.9 79.4 82.0 85.1

GMM = MAXIMUM THEORETICAL SPECIFIC GRAVITY;
ELA. AND TOT. = ELASTIC AND TOTAL DEFORMATION/CYCLE;
PLA. = CUMULATIVE PLASTIC (PERMANENT) DEFORMATION.

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BEAM CYCLIC LOAD DATA

NUMBER		√A gr)	WB (gr)	AC (%)	SL		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (%)
NOLDEN							(100)	.6-/				
11120531	100	000	449	4.30	50		100	6162.	0 10	367.0	2.55	3.17
				DEF	ORMATIO	N (inc	hes X (	0.0001)				
CVCI P	LVDT	#1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	10.0	13.7	12.2	8.9	12.1	27.4	8.5	11.6	30.1	8.1	11.0	30.1
500	8.8	11.1	18.0	7.8	9.8	33.4	7.4	9.3	35.0	6.9	8.7	35.3
1000	9.2	12.4	23.6	8.1	10.9	37.2	7.6	10.3	39.0	7.1	9.5	39.4
5000	8.7	11.6	37.4	7.6	10.2	50.9	7.1	9.5	51.8	6.4	8.5	51.6
10000	8.5	11.4	45.7	7.4	9.9	59. <b>5</b>	6.9	9.2	59.2	6.1	8.1	58.2
166500	7.7	10.1	102.2	6.6	8.7	102.2	6.0	7.8	97.1	4.8	6.4	84.0
352725	7.8	10.6	131.7	6.7	9.1	121.9	6.0	8.1	107.5	4.7	6.4	95.1
SAMPLE			WB	AC	SL		CL	WBW	w	BA	GMM	AV
NUMBER		gr)	(gr)	(1)			(lbs)	(gr)	(	gr)		(%)
11120512	100	200	440	4.30	50	·	200	6160	0 10	360.0	2.55	
	100	000	449	4.00		,	200	6160.	0 10	300.0	2.33	3.12
	100					******	ches X			300.0	<b>2.</b> 33	3.12
	*******	*****	0 IN.)	DEF	ORMATIO	N (inc	ches X	0.0001)	)			
	LVDT	<b>#</b> 1(0.		DEF	ORMATIO	N (inc	LVDT	0.0001)	) IN.)		<b>#</b> 4(6.0	
	LVDT	#1(0.º	0 IN.)	DEFO	#2(2.0	N (inc	LVDT	0.0001) #3(4.0	PLA.	LVDT	<b>#</b> 4(6.0	0625 IN
CYCLE _ NUMBER	LVDT ELA. 19.3	#1(0. TOT.	O IN.)	LVDT ELA. 17.0	#2(2.0	N (ind IN.) PLA. 31.5	LVDT ELA. 16.2	#3(4.0	PLA.	LVDT ELA. 15.4	#4(6.0	0625 IN
CYCLE NUMBER  100 510	LVDT ELA. 19.3 19.7	#1(0. TOT. 24.3 26.6	0 IN.) PLA.	DEF0 LVDT ELA. 17.0 17.3	#2(2.0 TOT. 21.4 23.3	PLA. 31.5 38.0	LVDT ELA. 16.2 16.3	#3(4.0 TOT.	PLA. 29.2 35.9	LVDT ELA. 15.4 15.1	#4(6.0 TOT. 19.4 20.4	PLA.  25.8 27.8
CYCLE NUMBER 100 510 1020	LVDT ELA. 19.3 19.7 19.3	#1(0. TOT. 24.3 26.6 26.0	0 IN.) PLA. 13.4 23.1	DEF6 LVDT ELA. 17.0 17.3 16.9	#2(2.0 TOT. 21.4 23.3 22.8	PLA.  31.5 38.0 40.6	LVDT  ELA.  16.2 16.3 15.8	#3(4.0 TOT. 20.4 22.0 21.4	PLA. 29.2 35.9 39.4	LVDT ELA. 15.4 15.1 14.5	#4(6.0 TOT. 19.4 20.4	PLA.  25.8 27.8
CYCLE	LVDT ELA. 19.3 19.7 19.3 17.1	#1(0. TOT. 24.3 26.6 26.0 21.5	0 IN.) PLA.  13.4 23.1 28.3	DEFO LVDT ELA. 17.0 17.3 16.9 14.9	#2(2.0 TOT. 21.4 23.3 22.8 18.8	PLA.  31.5 38.0 40.6 49.5	LVDT  ELA.  16.2 16.3 15.8 13.8	#3(4.0 TOT. 20.4 22.0 21.4	PLA. 29.2 35.9 39.4 48.3	LVDT ELA. 15.4 15.1 14.5 12.2	#4(6.0 TOT. 19.4 20.4	PLA.  25.8 27.8 31.4 41.2
CYCLE	LVDT ELA. 19.3 19.7 19.3 17.1 16.5	#1(0. TOT. 24.3 26.6 26.0 21.5 20.5	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7	DEFO LVDT ELA. 17.0 17.3 16.9 14.9	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9	PLA.  31.5 38.0 40.6 49.5 53.4	LVDT  ELA.  16.2 16.3 15.8 13.8	#3(4.0 TOT. 20.4 22.0 21.4 17.3	PLA.  29.2 35.9 39.4 48.3 52.3	LVDT ELA. 15.4 15.1 14.5 12.2 11.5	#4(6.0 TOT. 19.4 20.4 19.6 15.4	PLA.  25.8 27.8 31.4 41.2 45.2
100 510 1020 5000 10000 31000	LVDT ELA. 19.3 19.7 19.3 17.1 16.5 16.7	#1(0. TOT. 24.3 26.6 26.0 21.5 20.5 21.7	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7 73.8	DEFO LVDT ELA. 17.0 17.3 16.9 14.9 14.4	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9 18.8	PLA.  31.5 38.0 40.6 49.5 53.4 59.4	LVDT  ELA.  16.2 16.3 15.8 13.8 13.2 13.1	#3(4.0 TOT. 20.4 22.0 21.4 17.3 16.4	PLA.  29.2 35.9 39.4 48.3 52.3 58.5	LVDT  ELA.  15.4 15.1 14.5 12.2 11.5 11.1	#4(6.0 TOT. 19.4 20.4 19.6 15.4	PLA.  25.8 27.8 31.4 41.2 45.2
100 510 1020 5000 10000 31000	LVDT ELA.  19.3 19.7 19.3 17.1 16.5 16.7 16.3	#1(0 TOT.  24.3 26.6 26.0 21.5 20.5 21.7 21.8	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7 73.8 122.7	DEFO LVDT ELA. 17.0 17.3 16.9 14.9 14.4 14.5	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9 18.8	PLA.  31.5 38.0 40.6 49.5 53.4 59.4 72.3	LVDT  ELA.  16.2 16.3 15.8 13.8 13.2 13.1 12.5	#3(4.0 TOT. 20.4 22.0 21.4 17.3 16.4 17.1 16.8	PLA.  29.2 35.9 39.4 48.3 52.3 58.5 68.5	LVDT  ELA.  15.4 15.1 14.5 12.2 11.5 11.1	#4(6.0 TOT. 19.4 20.4 19.6 15.4 14.4	PLA.  25.8 27.8 31.4 41.2 45.2 50.6 60.1
100 510 1020 5000 10000 31000 161500 327700	LVDT ELA. 19.3 19.7 19.3 17.1 16.5 16.7 16.3 14.7	#1(0 TOT.  24.3 26.6 26.0 21.5 20.5 21.7 21.8 18.2	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7 73.8 122.7 139.3	DEFO LVDT ELA. 17.0 17.3 16.9 14.9 14.4 14.5 14.1	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9 18.8 18.9	PLA.  31.5 38.0 40.6 49.5 53.4 59.4 72.3	LVDT  ELA.  16.2 16.3 15.8 13.8 13.2 13.1 12.5	#3(4.0 TOT. 20.4 22.0 21.4 17.3 16.4 17.1 16.8 13.8	PLA.  29.2 35.9 39.4 48.3 52.3 58.5 68.5 84.5	LVDT  ELA.  15.4 15.1 14.5 12.2 11.5 11.1 10.0 8.6	#4(6.0 TOT. 19.4 20.4 19.6 15.4 14.4 14.5	PLA.  25.8 27.8 31.4 41.2 45.2 50.6 60.1 74.6
100 510 1020 5000 10000 31000 161500 327700 501370	LVDT ELA.  19.3 19.7 19.3 17.1 16.5 16.7 16.3 14.7 15.0	#1(0. TOT. 24.3 26.6 26.0 21.5 20.5 21.7 21.8 18.2 19.2	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7 73.8 122.7 139.3	DEFO LVDT ELA. 17.0 17.3 16.9 14.9 14.4 14.5 14.1 12.7 12.9	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9 18.8 18.9 15.7 16.5	PLA.  31.5 38.0 40.6 49.5 53.4 59.4 72.3	LVDT  ELA.  16.2 16.3 15.8 13.8 13.2 13.1 12.5	#3(4.0 TOT. 20.4 22.0 21.4 17.3 16.4 17.1 16.8 13.8 14.5	PLA.  29.2 35.9 39.4 48.3 52.3 58.5 68.5 84.5	LVDT  ELA.  15.4 15.1 14.5 12.2 11.5 11.1 10.0 8.6 8.6	#4(6.0 TOT. 19.4 20.4 19.6 15.4 14.5 13.4	PLA.  25.8 27.8 31.4 41.2 45.2 50.6 60.1 74.6 77.6
100 510 1020 5000 10000 31000 161500 327700 501370	LVDT  ELA.  19.3 19.7 19.3 17.1 16.5 16.7 16.3 14.7 15.0	#1(0  TOT.  24.3 26.6 26.0 21.5 20.5 21.7 21.8 18.2 19.2	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7 73.8 122.7 139.3 163.0	DEFO LVDT ELA. 17.0 17.3 16.9 14.9 14.4 14.5 14.1 12.7 12.9	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9 18.8 18.9 15.7 16.5	PLA.  31.5 38.0 40.6 49.5 53.4 59.4 72.3	LVDT  ELA.  16.2 16.3 15.8 13.8 13.2 13.1 12.5	#3(4.0 TOT. 20.4 22.0 21.4 17.3 16.4 17.1 16.8 13.8 14.5	PLA.  29.2 35.9 39.4 48.3 52.3 58.5 68.5 84.5	LVDT  ELA.  15.4 15.1 14.5 12.2 11.5 11.1 10.0 8.6 8.6	#4(6.0 TOT. 19.4 20.4 19.6 15.4 14.5 13.4 10.7 10.9	PLA.  25.8 27.8 31.4 41.2 45.2 50.6 60.1 74.6 77.6
100 510 1020 5000 10000 31000 161500 327700 501370 A = TC	LVDT  ELA.  19.3 19.7 19.3 17.1 16.5 16.7 15.0  OTAL VERCENT	#1(0  24.3 26.6 26.0 21.5 20.5 21.7 21.8 18.2 19.2	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7 73.8 122.7 139.3 163.0 OF DRY	DEFO LVDT ELA. 17.0 17.3 16.9 14.4 14.5 14.1 12.7 12.9 AGGREG	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9 18.8 18.9 15.7 16.5	PLA.  31.5 38.0 40.6 49.5 53.4 59.4 72.3	LVDT  ELA.  16.2 16.3 15.8 13.8 13.2 13.1 12.5	#3(4.0 TOT. 20.4 22.0 21.4 17.3 16.4 17.1 16.8 13.8 14.5	PLA.  29.2 35.9 39.4 48.3 52.3 58.5 68.5 84.5	LVDT  ELA.  15.4 15.1 14.5 12.2 11.5 11.1 10.0 8.6 8.6 T OF B INED L	#4(6.0  TOT.  19.4 20.4 19.6 15.4 14.5 13.4 10.7 10.9  ITUMEN; OAD;	PLA.  25.8 27.8 31.4 41.2 45.2 50.6 60.1 74.6 77.6
100 510 1020 5000 10000 31000 161500 327700 501370 A = TC C = PI BA = WI	LVDT  ELA.  19.3 19.7 19.3 17.1 16.5 16.7 16.3 14.7 15.0  OTAL VERCENTEIGHT	#1(0  24.3 26.6 26.0 21.5 20.5 21.7 21.8 18.2 19.2  WEIGHT ASPH	0 IN.) PLA.  13.4 23.1 28.3 41.9 50.7 73.8 122.7 139.3 163.0  OF DRY	DEFO LVDT ELA. 17.0 17.3 16.9 14.9 14.4 14.5 14.1 12.7 12.9 AGGREGIENT; AIR;	#2(2.0 TOT. 21.4 23.3 22.8 18.8 17.9 18.8 18.9 15.7 16.5	PLA.  31.5 38.0 40.6 49.5 53.4 59.4 72.3	LVDT  ELA.  16.2 16.3 15.8 13.8 13.2 13.1 12.5 11.2 11.3	#3(4.0 TOT. 20.4 22.0 21.4 17.3 16.4 17.1 16.8 13.8 14.5	PLA.  29.2 35.9 39.4 48.3 52.3 58.5 68.5 84.5 86.0  WEIGH	LVDT  ELA.  15.4 15.1 14.5 12.2 11.5 11.1 10.0 8.6 8.6 T OF B INED L C LOAD	#4(6.0  TOT.  19.4 20.4 19.6 15.4 14.5 13.4 10.7 10.9  ITUMEN; OAD;	PLA.  25.8 27.8 31.4 41.2 45.2 50.6 60.1 74.6 77.6

Sample Number	WA (gr)	WB	AC (%)	SI (1b		CL (lbs)	WBW (gr)		BA	GMM	AV (%)
NUMBER	(81)	(gr)		(11.	,•,	(108)	(81)		gr)		
11120522	10000	449	4.30	50	) 	200	6124.0	10	303.0	2.55	3.16
			DEF	ORMATIC	M (inc	ches X (	0.0001)				
 CYCLE	LVDT #1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	18.9 23.3	13.4	16.6	20.5	16.3	15.9	19.5	16.2	15.0	18.5	15.5
500	17.9 21.9	21.2	15.7	19.2	20.3	14.8	18.1	19.7	13.7	16.8	17.8
1000	18.4 23.7	27.3	16.1	20.7	23.3	15.1	19.4	21.9	13.8	17.8	18.8
5100	16.8 20.8	42.2	14.6	18.1	37.3	13.5	16.7	30.6	12.0	14.9	20.8
10400	18.1 24.7	57.2	15.7	21.5	47.3	14.4	19.7	35.9	12.6	17.2	20.8
20300	17.7 24.2	69.5	15.4	21.0	59.6	14.0	19.1	41.9	12.0	16.4	19.8
176900	14.8 18.2	117.1	12.8	15.7	112.1	11.4	13.9	66.9	9.0	11.0	12.8
516800	15.5 20.4	172.4	13.3	17.5	139.6	11.6	15.3	76.9	8.8	11.5	4.8
691600	15.8 21.6	194.0	13.6	18.5	146.6	11.8	16.1	78.4	8.8	12.0	3.8
SAMPLE	WA	WB	AC	SI		CL	WBW		/BA	- COM	AV
NUMBER			(Z)	(11:		(lbs)				GMM	
HUMBER	(gr)	(gr)				(104)	(gr)	'	gr)		(%)
11120532	10000	449	4.30	50	) 	200	6140.0	10	327.0	2.55	3.12
			DEF	ORMATIC	M (in	ches X (	0.0001)				
CYCLE _	LVDT #1(0.	0 IN.)	LVDT	<b>\$</b> 2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
	LVDT #1(0.		LVDT	#2(2.0	PLA.	LVDT	#3(4.0 TOT.	IN.)	LVDT	#4(6.0	PLA.
			ELA.			ELA.			ELA. 15.7	TOT.	
130 500	ELA. TOT.	PLA.	ELA. 17.4 16.3	TOT. 22.8 20.8	PLA.	ELA. 16.6 15.4	TOT. 21.7 19.6	PLA.	ELA. 15.7	TOT.	PLA.
NUMBER 130	ELA. TOT.	PLA.	ELA. 17.4 16.3	TOT.	PLA. 21.0	ELA. 16.6 15.4	TOT.	PLA. 23.5	ELA. 15.7 14.2	TOT.	PLA. 25.0
130 500	ELA. TOT.  19.8 25.9 18.6 23.7	PLA. 15.1 21.8 25.0	ELA. 17.4 16.3 14.9	TOT. 22.8 20.8	PLA. 21.0 24.0	ELA. 16.6 15.4 14.0 14.1	TOT. 21.7 19.6 16.8 18.1	PLA. 23.5 27.0	ELA. 15.7 14.2 12.8	TOT. 20.5 18.2	PLA. 25.0 28.0
130 500 1000	ELA. TOT.  19.8 25.9 18.6 23.7 17.1 20.4	PLA.  15.1 21.8 25.0 43.0	ELA. 17.4 16.3 14.9 15.2	TOT.  22.8 20.8 17.9	PLA. 21.0 24.0 26.0	ELA. 16.6 15.4 14.0 14.1	TOT. 21.7 19.6 16.8	PLA. 23.5 27.0 29.0	15.7 14.2 12.8 12.5	TOT. 20.5 18.2 15.4	PLA. 25.0 28.0 30.0
130 500 1000 5000	ELA. TOT.  19.8 25.9 18.6 23.7 17.1 20.4 17.4 22.5	PLA.  15.1 21.8 25.0 43.0 52.1	ELA. 17.4 16.3 14.9 15.2 14.6	TOT.  22.8 20.8 17.9 19.6	PLA. 21.0 24.0 26.0 32.0	ELA. 16.6 15.4 14.0 14.1	TOT. 21.7 19.6 16.8 18.1	PLA.  23.5 27.0 29.0 33.0	15.7 14.2 12.8 12.5 11.7	TOT.  20.5 18.2 15.4 16.1	PLA. 25.0 28.0 30.0 32.5
130 500 1000 5000	ELA. TOT.  19.8 25.9 18.6 23.7 17.1 20.4 17.4 22.5 16.8 21.3	PLA.  15.1 21.8 25.0 43.0 52.1 60.2	17.4 16.3 14.9 15.2 14.6 13.5	TOT.  22.8 20.8 17.9 19.6 18.5	PLA. 21.0 24.0 26.0 32.0 36.0	ELA. 16.6 15.4 14.0 14.1 13.4	TOT.  21.7 19.6 16.8 18.1 17.0	PLA.  23.5 27.0 29.0 33.0 35.0	15.7 14.2 12.8 12.5 11.7	TOT.  20.5 18.2 15.4 16.1 14.9	PLA.  25.0 28.0 30.0 32.5 34.0
130 500 1000 5000 10200 20000 177600	19.8 25.9 18.6 23.7 17.1 20.4 17.4 22.5 16.8 21.3 15.6 18.8	PLA.  15.1 21.8 25.0 43.0 52.1 60.2 125.5	ELA. 17.4 16.3 14.9 15.2 14.6 13.5	TOT.  22.8 20.8 17.9 19.6 18.5 16.3	PLA. 21.0 24.0 26.0 32.0 36.0 40.0	ELA. 16.6 15.4 14.0 14.1 13.4 12.4	TOT.  21.7 19.6 16.8 18.1 17.0 14.9	PLA.  23.5 27.0 29.0 33.0 35.0 37.0	ELA. 15.7 14.2 12.8 12.5 11.7 10.6 9.8	TOT.  20.5 18.2 15.4 16.1 14.9 12.7	PLA.  25.0 28.0 30.0 32.5 34.0 34.0
130 500 1000 5000 10200 20000 177600 341000	19.8 25.9 18.6 23.7 17.1 20.4 17.4 22.5 16.8 21.3 15.6 18.8 16.1 21.4	PLA.  15.1 21.8 25.0 43.0 52.1 60.2 125.5	17.4 16.3 14.9 15.2 14.6 13.5 13.9	TOT.  22.8 20.8 17.9 19.6 18.5 16.3 18.4 17.1	PLA. 21.0 24.0 26.0 32.0 36.0 40.0 55.0	ELA. 16.6 15.4 14.0 14.1 13.4 12.4	TOT.  21.7 19.6 16.8 18.1 17.0 14.9 16.4 15.0	PLA.  23.5 27.0 29.0 33.0 35.0 37.0 42.5 45.5	ELA. 15.7 14.2 12.8 12.5 11.7 10.6 9.8	TOT.  20.5 18.2 15.4 16.1 14.9 12.7 13.0 11.6	PLA.  25.0 28.0 30.0 32.5 34.0 31.0 28.5
130 500 1000 5000 10200 20000 177600 341000	19.8 25.9 18.6 23.7 17.1 20.4 17.4 22.5 16.8 21.3 15.6 18.8 16.1 21.4 15.3 19.8	PLA.  15.1 21.8 25.0 43.0 52.1 60.2 125.5 147.7	ELA. 17.4 16.3 14.9 15.2 14.6 13.5 13.9 13.2	TOT.  22.8 20.8 17.9 19.6 18.5 16.3 18.4 17.1	PLA. 21.0 24.0 26.0 32.0 36.0 40.0 55.0	ELA. 16.6 15.4 14.0 14.1 13.4 12.4	TOT.  21.7 19.6 16.8 18.1 17.0 14.9 16.4 15.0	PLA.  23.5 27.0 29.0 33.0 35.0 37.0 42.5 45.5	15.7 14.2 12.8 12.5 11.7 10.6 9.8 9.0	TOT.  20.5 18.2 15.4 16.1 14.9 12.7 13.0 11.6	PLA.  25.0 28.0 30.0 32.5 34.0 31.0 28.5
130 500 1000 5000 10200 20000 177600 341000	19.8 25.9 18.6 23.7 17.1 20.4 17.4 22.5 16.8 21.3 15.6 18.8 16.1 21.4 15.3 19.8	15.1 21.8 25.0 43.0 52.1 60.2 125.5 147.7	ELA.  17.4 16.3 14.9 15.2 14.6 13.5 13.9 13.2  AGGREGIENT;	TOT.  22.8 20.8 17.9 19.6 18.5 16.3 18.4 17.1	PLA. 21.0 24.0 26.0 32.0 36.0 40.0 55.0	ELA. 16.6 15.4 14.0 14.1 13.4 12.4	TOT.  21.7 19.6 16.8 18.1 17.0 14.9 16.4 15.0  WB = SL =	PLA.  23.5 27.0 29.0 33.0 35.0 37.0 42.5 45.5	ELA.  15.7 14.2 12.8 12.5 11.7 10.6 9.8 9.0	TOT.  20.5 18.2 15.4 16.1 14.9 12.7 13.0 11.6	PLA.  25.0 28.0 30.0 32.5 34.0 31.0 28.5

Sample Number	WA (gr		WB (gr)	AC (Z)	SL (1b:		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
						-						
11120515	1000	0	449	4.30	50		500	6112.	0 10:	282.0	2.55	3.15
				DEF	ORMATIO	N (inc	hes X (	0.0001)				
	LVDT #	1(0.0	IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	49.4 5	9.8	17.2	42.9	51.9	30.0	40.1	48.5	33.8	37.1	44.9	28.3
500	49.1 6	2.2	28.8	42.4	53.7	36.3	39.1	49.5	38.8	35.2	44.6	33.3
1000	45.6 5	4.7	33.4	39.3	47.2	40.0	36.0	43.2	41.8	31.9	38.3	35.8
5600	47.0 6	1.4	60.0	40.3	52.7	50.0	36.2	47.4	48.0	30.8	40.2	38.8
10000	46.5 6	1.3	71.7	39.9	52.6	55.0	35.6	46.9	51.0	29.7	39.1	40.0
19500	45.2 5	9.1	86.4	38.7	50.6	61.3	34.2	44.8	54.8	27.9	36. <b>5</b>	40.8
170900	44.0 6	0.1	169.6	37.4	51.0	87.8	32.1	43.8	64.8	23.7	32.4	34.3
346100	38.8 4	7.7	187.7	32.9	40.4	99.3	27.8	34.2	68.3	19.8	24.3	32.8
11120525	1000	0	449	4.30	50		500	6124.	0 10	301.0	2.55	3.1
					TOMATIO			00011				
				DEF	MANITO	N (inc	ches X (	0.00017				
	LVDT #	1(0.0	) IN.)		#2(2.0			#3(4.0		LVDT	#4(6.0	625 II
		1(0.0 TOT.	PLA.		<b>#</b> 2(2.0			<b>#</b> 3(4.0	IN.)	LVDT		9625 II
		TOT.		LVDT	<b>#</b> 2(2.0	IN.)	LVDT	<b>#</b> 3(4.0	IN.)	ELA.		······································
NUMBER	ELA.	TOT.	PLA.	LVDT ELA. 42.5	#2(2.0 TOT.	IN.)	LVDT ELA. 39.8	#3(4.0 TOT.	IN.)	ELA. 36.8	TOT.	PLA.
NUMBER 100	ELA. 49.0 5	TOT.	PLA.	LVDT ELA. 42.5 45.5	#2(2.0 TOT.	IN.) PLA. 27.0	LVDT ELA. 39.8 41.9	#3(4.0 TOT.	IN.) PLA. 24.3	ELA. 36.8 37.8	TOT.	PLA. 18.8
100 500	ELA. 49.0 5 52.6 7	TOT. 8.8 1.4 2.1	PLA. 17.0 30.7	LVDT ELA. 42.5 45.5 41.8	#2(2.0 TOT. 51.1 61.7	IN.) PLA. 27.0 39.0	LVDT ELA. 39.8 41.9 38.3	#3(4.0 TOT. 47.8 56.9	PLA. 24.3 36.3	ELA. 36.8 37.8 33.9	TOT. 44.2 51.2	PLA. 18.8 30.5 38.0
100 500 1100	ELA. 49.0 5 52.6 7 48.5 6	TOT. 88.8 1.4 52.1 51.2	PLA. 17.0 30.7 36.4	LVDT ELA. 42.5 45.5 41.8 40.3	#2(2.0 TOT. 51.1 61.7 53.6 52.6	IN.) PLA. 27.0 39.0 47.0	LVDT ELA. 39.8 41.9 38.3 36.3	#3(4.0 TOT. 47.8 56.9 49.1	IN.) PLA. 24.3 36.3 45.1	36.8 37.8 33.9 30.8	TOT. 44.2 51.2 43.4	PLA. 18.8 30.5 38.0 56.3
100 500 1100 5400 10400	ELA. 49.0 5 52.6 7 48.5 6 46.9 6	TOT. 88.8 1.4 62.1 61.2 7.8	PLA. 17.0 30.7 36.4 59.0	LVDT ELA. 42.5 45.5 41.8 40.3 38.7	#2(2.0 TOT. 51.1 61.7 53.6 52.6	IN.) PLA. 27.0 39.0 47.0 67.9 78.6	LVDT ELA. 39.8 41.9 38.3 36.3 34.5	#3(4.0 TOT. 47.8 56.9 49.1 47.3	PLA.  24.3 36.3 45.1 63.3	ELA.  36.8  37.8  33.9  30.8  28.8	TOT. 44.2 51.2 43.4 40.2	PLA.  18.8 30.5 38.0 56.3 63.8
100 500 1100 5400 10400 23200	ELA.  49.0 5 52.6 7 48.5 6 46.9 6 45.1 5	TOT. 88.8 1.4 62.1 61.2 67.8 8.8	PLA.  17.0 30.7 36.4 59.0 70.0 82.3	LVDT ELA. 42.5 45.5 41.8 40.3 38.7 35.0	\$2(2.0 TOT. 51.1 61.7 53.6 52.6 49.5	IN.) PLA. 27.0 39.0 47.0 67.9 78.6 92.4	ELA.  39.8 41.9 38.3 36.3 34.5	#3(4.0 TOT. 47.8 56.9 49.1 47.3 44.2 36.9	PLA.  24.3 36.3 45.1 63.3 73.0	36.8 37.8 33.9 30.8 28.8 25.1	TOT. 44.2 51.2 43.4 40.2 36.9	PLA. 18.8 30.5 38.0 56.3
500 1100 5400 10400 23200	ELA.  49.0 5 52.6 7 48.5 6 46.9 6 45.1 5 40.9 4	TOT.  88.8 1.4 2.1 1.2 7.8 8.8	PLA.  17.0 30.7 36.4 59.0 70.0 82.3	LVDT ELA. 42.5 45.5 41.8 40.3 38.7 35.0 35.1	#2(2.0 TOT. 51.1 61.7 53.6 52.6 49.5 41.7 44.5	IN.) PLA. 27.0 39.0 47.0 67.9 78.6 92.4	ELA.  39.8 41.9 38.3 36.3 34.5 30.9 30.3	#3(4.0 TOT. 47.8 56.9 49.1 47.3 44.2 36.9	PLA.  24.3 36.3 45.1 63.3 73.0 85.1 106.5	36.8 37.8 33.9 30.8 28.8 25.1 22.8	TOT.  44.2 51.2 43.4 40.2 36.9 29.9	PLA.  18.8 30.5 38.0 56.3 63.8 72.5
100 500 1100 5400 10400 23200 123900 339200	ELA.  49.0 5 52.6 7 48.5 6 46.9 6 45.1 5 40.9 4 41.3 5	TOT. 8.8 1.4 62.1 61.2 7.8 8.8 62.3 9.8	PLA. 17.0 30.7 36.4 59.0 70.0 82.3 142.6 189.5	LVDT ELA. 42.5 45.5 41.8 40.3 38.7 35.0 35.1 33.6	\$2(2.0 TOT.  51.1 61.7 53.6 52.6 49.5 41.7 44.5 42.2	IN.) PLA. 27.0 39.0 47.0 67.9 78.6 92.4	ELA.  39.8 41.9 38.3 36.3 34.5 30.9 30.3 28.5	#3(4.0 TOT. 47.8 56.9 49.1 47.3 44.2 36.9 38.4 35.8	PLA.  24.3 36.3 45.1 63.3 73.0 85.1 106.5	36.8 37.8 33.9 30.8 28.8 25.1 22.8 20.3	TOT. 44.2 51.2 43.4 40.2 36.9 29.9 28.9	PLA.  18.8 30.5 38.0 56.3 63.8 72.5 84.0
100 500 1100 5400 10400 23200 123900 339200 470000	ELA.  49.0 5 52.6 7 48.5 6 46.9 6 45.1 5 40.9 4 41.3 5 39.6 4	TOT. 88.8 11.4 62.1 61.2 67.8 8.8 62.3 9.8 65.3	PLA. 17.0 30.7 36.4 59.0 70.0 82.3 142.6 189.5 220.7	LVDT  ELA.  42.5 45.5 41.8 40.3 38.7 35.0 35.1 33.6 35.2	#2(2.0 TOT.  51.1 61.7 53.6 52.6 49.5 41.7 44.5 42.2 46.8	IN.) PLA. 27.0 39.0 47.0 67.9 78.6 92.4 121.8	ELA.  39.8 41.9 38.3 36.3 34.5 30.9 30.3 28.5	#3(4.0 TOT. 47.8 56.9 49.1 47.3 44.2 36.9 38.4 35.8 39.5	PLA.  24.3 36.3 45.1 63.3 73.0 85.1 106.5 119.6 123.4	36.8 37.8 33.9 30.8 28.8 25.1 22.8 20.3	TOT.  44.2 51.2 43.4 40.2 36.9 29.9 28.9 25.5	PLA.  18.8 30.5 38.0 56.3 63.8 72.5 84.0 90.0 91.5
100 500 1100 5400 10400 23200 123900 339200 470000	ELA.  49.0 5 52.6 7 48.5 6 46.9 6 45.1 5 40.9 4 41.3 5 39.6 4 41.5 5	TOT.  88.8 1.4 2.1 61.2 7.8 8.8 2.3 9.8 65.3	PLA. 17.0 30.7 36.4 59.0 70.0 82.3 142.6 189.5 220.7	LVDT  ELA.  42.5 45.5 41.8 40.3 38.7 35.0 35.1 33.6 35.2	#2(2.0 TOT.  51.1 61.7 53.6 52.6 49.5 41.7 44.5 42.2 46.8	IN.) PLA. 27.0 39.0 47.0 67.9 78.6 92.4 121.8	ELA.  39.8 41.9 38.3 36.3 34.5 30.9 30.3 28.5	#3(4.0 TOT. 47.8 56.9 49.1 47.3 44.2 36.9 38.4 35.8 39.5	PLA.  24.3 36.3 45.1 63.3 73.0 85.1 106.5 119.6 123.4	ELA.  36.8 37.8 33.9 30.8 28.8 25.1 22.8 20.3 20.7	TOT.  44.2 51.2 43.4 40.2 36.9 29.9 28.9 25.5 27.5	PLA.  18.8 30.5 38.0 56.3 63.8 72.5 84.0 90.0 91.5
100 500 1100 5400 10400 23200 123900 339200 470000	ELA.  49.0 5 52.6 7 48.5 6 46.9 6 45.1 5 40.9 4 41.3 5 39.6 4 41.5 5	TOT.  88.8 1.4 2.1 1.2 7.8 8.8 2.3 9.8 5.3	PLA.  17.0 30.7 36.4 59.0 70.0 82.3 142.6 189.5 220.7  OF DRY	LVDT  42.5 45.5 41.8 40.3 38.7 35.0 35.1 33.6 35.2  AGGREG	#2(2.0 TOT.  51.1 61.7 53.6 52.6 49.5 41.7 44.5 42.2 46.8	IN.) PLA. 27.0 39.0 47.0 67.9 78.6 92.4 121.8	ELA.  39.8 41.9 38.3 36.3 34.5 30.9 30.3 28.5	#3(4.0 TOT. 47.8 56.9 49.1 47.3 44.2 36.9 38.4 35.8 39.5	PLA.  24.3 36.3 45.1 63.3 73.0 85.1 106.5 119.6 123.4	36.8 37.8 33.9 30.8 28.8 25.1 22.8 20.3 20.7	TOT.  44.2 51.2 43.4 40.2 36.9 29.9 28.9 25.5 27.5	PLA.  18.8 30.5 38.0 56.3 63.8 72.5 84.0 90.0 91.5

SAMPLE NUMBER		√A gr)	WB (gr)	AC (%)	SL (1b)	- 1	CL (lbs)	WBW (gr)		BA Br)	GMM.	AV (Z)
NOTEDIA	\ <del>-</del>		(81)			• /	(100)	(81)				
11120535	100	000	449	4.30	50		500	6121.0	10:	300.0	2.55	3.19
				DEF	ORMATIO	(inc	ches X (	0.0001)				
CYCLE	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
110	50.3	61.8	18.2	43.6	53.6	35.5	40.7	50.0	35.5	37.6	46.2	37.3
500	53.1	72.1	31.3	45.8	62.3	40.8	42.2	57.4	40.0	38.0	51.6	42.3
1000	52.0	70.8	38.4	44.8	61.1	42.5	41.0	55.9	41.8	36.4	49.5	43.5
5100	49.4	67.3	61.7	42.4	57.7	49.5	38.1	51.9	45.8	32.4	44.1	47.3
10500	42.8	51.7	67.6	36.7	44.3	53.0	32.7	39.5	47.8	27.2	32.8	48.3
27000	43.3	54.4	92.6	36.9	46.4	59.0	32.5	40.9	51.8	26.1	32.9	49.8
184100	42.6	55.9	169.3	36.1	47.4	74.0	30.9	40.6	61.8	22.7	29.8	53.8
510000	42.8	58.4	236.5	36.2	49.3	85.0	30.4	41.5	68.3	21.0	28.7	51.3
.061500	40.6	53.7	284.0	34.2	45.3	86.6	28.3	37.5	68.3	18.6	24.6	52.3
SAMPLE	۲	A.	WB	AC	SL		CL	WBW	W	BA	GMM	VA
NUMBER	g) 	gr) 	(gr)	(%)	(1b)	J)	(lbs)	(gr)	()	gr)		(2)
11320511	100	)00	424	4.07	50		100	6127.	0 10:	290.0	2.55	3.18
				DEF	ORMATIO	N (inc	ches X (	0.0001)				
			A TW \	LVDT	#2(2.0	IN.)	LUDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
CYCLE _	LVDī	<b>#</b> 1(0.	U IN.)				FADI					
_	LVDT	#1(0. TOT.		ELA.	TOT.	PLA.	ELA.	тот.	PLA.	ELA.	TOT.	PLA.
_	ELA.			ELA.			ELA.		PLA.		TOT.	PLA. 38.3
100 550	ELA. 9.4 8.2	TOT. 12.8 10.2	PLA. 13.2 20.5	ELA. 8.3 7.2	TOT. 11.3 9.0	PLA. 20.9 24.7	FLA. 7.9 6.8	TOT.	47.2 49.2	7.5 6.3	10.3	38.3 39.8
100 550 1000	ELA. 9.4 8.2	TOT.	PLA. 13.2 20.5 25.7	ELA. 8.3 7.2 7.3	TOT.  11.3 9.0 9.5	PLA. 20.9 24.7 26.3	7.9 6.8 6.9	TOT.  10.8 8.5 9.0	47.2 49.2 51.2	7.5 6.3 6.3	10.3 7.9 8.3	38.3
100 550	9.4 8.2 8.4	TOT. 12.8 10.2	PLA.  13.2 20.5 25.7 39.1	ELA. 8.3 7.2 7.3 6.4	TOT. 11.3 9.0	PLA. 20.9 24.7 26.3 26.7	7.9 6.8 6.9	TOT.	47.2 49.2	7.5 6.3 6.3	10.3	38.3 39.8
100 550 1000 5000 10200	9.4 8.2 8.4 7.4	TOT.  12.8 10.2 10.9 8.9 8.9	PLA.  13.2 20.5 25.7 39.1 49.3	ELA. 8.3 7.2 7.3 6.4 6.4	TOT.  11.3 9.0 9.5 7.8 7.8	PLA. 20.9 24.7 26.3	7.9 6.8 6.9	TOT.  10.8 8.5 9.0	47.2 49.2 51.2	7.5 6.3 6.3 5.3	10.3 7.9 8.3	38.3 39.8 40.6
100 550 1000 5000	9.4 8.2 8.4 7.4	TOT.  12.8 10.2 10.9 8.9 8.9	PLA.  13.2 20.5 25.7 39.1	ELA. 8.3 7.2 7.3 6.4 6.4	TOT.  11.3 9.0 9.5 7.8 7.8	PLA. 20.9 24.7 26.3 26.7	7.9 6.8 6.9 6.0 5.9	TOT.  10.8 8.5 9.0 7.2	47.2 49.2 51.2 55.0	7.5 6.3 6.3 5.3 5.1	10.3 7.9 8.3 6.5	38.3 39.8 40.6 43.4
100 550 1000 5000 10200 30975	9.4 8.2 8.4 7.4 7.3	TOT.  12.8 10.2 10.9 8.9 8.9 9.6	PLA.  13.2 20.5 25.7 39.1 49.3 73.1	8.3 7.2 7.3 6.4 6.5	TOT.  11.3 9.0 9.5 7.8 7.8 8.3	PLA. 20.9 24.7 26.3 26.7 29.1	7.9 6.8 6.9 6.0 5.9	TOT.  10.8 8.5 9.0 7.2 7.2 7.6	47.2 49.2 51.2 55.0 60.9	7.5 6.3 6.3 5.3 5.1 5.0	10.3 7.9 8.3 6.5 6.3	38.3 39.8 40.6 43.4 46.2
100 550 1000 5000 10200 30975 327866	9.4 8.2 8.4 7.4 7.3 7.4 6.7	TOT.  12.8 10.2 10.9 8.9 8.9 9.6 8.4	PLA.  13.2 20.5 25.7 39.1 49.3 73.1 147.0	ELA. 8.3 7.2 7.3 6.4 6.4 6.5	TOT.  11.3 9.0 9.5 7.8 7.8 8.3 7.3	PLA.  20.9 24.7 26.3 26.7 29.1 33.8 38.4	7.9 6.8 6.9 6.0 5.9 5.9	TOT.  10.8 8.5 9.0 7.2 7.2 7.6	47.2 49.2 51.2 55.0 60.9 62.3 74.3	7.5 6.3 6.3 5.3 5.1 5.0 4.0	10.3 7.9 8.3 6.5 6.3	38.3 39.8 40.6 43.4 46.2 51.1 72.1
100 550 1000 5000 10200 30975 327866 511050	9.4 8.2 8.4 7.4 7.3 7.4 6.7 7.0	TOT.  12.8  10.2  10.9  8.9  8.9  9.6  8.4  9.4	PLA.  13.2 20.5 25.7 39.1 49.3 73.1 147.0 178.9	ELA.  8.3 7.2 7.3 6.4 6.5 5.8 6.0	TOT.  11.3 9.0 9.5 7.8 7.8 8.3 7.3	PLA.  20.9 24.7 26.3 26.7 29.1 33.8 38.4	7.9 6.8 6.9 6.0 5.9 5.9	TOT.  10.8 8.5 9.0 7.2 7.6 6.4 7.1	47.2 49.2 51.2 55.0 60.9 62.3 74.3 75.5	7.5 6.3 6.3 5.3 5.1 5.0 4.0 4.1	10.3 7.9 8.3 6.5 6.3 6.4 5.0 5.4	38.3 39.8 40.6 43.4 46.2 51.1 72.1 73.1
100 550 1000 5000 10200 30975 327866 511050	9.4 8.2 8.4 7.4 7.3 7.4 6.7 7.0	TOT.  12.8 10.2 10.9 8.9 8.9 9.6 8.4 9.4	PLA.  13.2 20.5 25.7 39.1 49.3 73.1 147.0 178.9  OF DRY	ELA.  8.3 7.2 7.3 6.4 6.5 5.8 6.0  AGGREG	TOT.  11.3 9.0 9.5 7.8 7.8 8.3 7.3	PLA.  20.9 24.7 26.3 26.7 29.1 33.8 38.4	7.9 6.8 6.9 6.0 5.9 5.9	TOT.  10.8 8.5 9.0 7.2 7.6 6.4 7.1  WB = SL =	47.2 49.2 51.2 55.0 60.9 62.3 74.3 75.5 WEIGH	7.5 6.3 6.3 5.1 5.0 4.0 4.1	10.3 7.9 8.3 6.5 6.3 6.4 5.0 5.4	38.3 39.8 40.6 43.4 46.2 51.1 72.1 73.1
550 1000 5000 10200 30975 327866 511050 IA = TC C = PI	ELA.  9.4 8.2 8.4 7.4 7.3 7.4 6.7 7.0  OTAL WERCENTEIGHT	TOT.  12.8 10.2 10.9 8.9 8.9 9.6 8.4 9.4  WEIGHT T ASPH. OF SAI	PLA.  13.2 20.5 25.7 39.1 49.3 73.1 147.0 178.9	ELA.  8.3 7.2 7.3 6.4 6.4 6.5 5.8 6.0  AGGREGIENT; AIR;	TOT.  11.3 9.0 9.5 7.8 7.8 8.3 7.3 8.1	PLA.  20.9 24.7 26.3 26.7 29.1 33.8 38.4	7.9 6.8 6.9 6.0 5.9 5.9	TOT.  10.8 8.5 9.0 7.2 7.6 6.4 7.1  WB = SL =	47.2 49.2 51.2 55.0 60.9 62.3 74.3 75.5 WEIGH	7.5 6.3 6.3 5.3 5.1 5.0 4.0 4.1	10.3 7.9 8.3 6.5 6.3 6.4 5.0 5.4	38.3 39.8 40.6 43.4 46.2 51.1 72.1 73.1

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# BEAM CYCLIC LOAD DATA

SAMPLE		∛A	WB	AC	SL		CL	WBW		BA	GMM	AV
NUMBER	(1	gr)	(gr)	(1)	(11ь	8)	(lbs)	(gr)	C	gr)		(%)
11320521	100	000	424	4.07	50		100	6145.	0 10	329.0	2.55	3.30
				DEF	ORMATIO	N (in	ches X	0.0001)				
 CYCLE	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	9.2	11.9	13.2	8.1	10.5	7.7	7.7	10.0	6.0	7.3	9.5	5.4
500	8.3	10.3	20.7	7.3	9.0	9.1	6.9	8.5	7.5	6.4	7.9	7.1
1000	8.4	10.9	26.6	7.4	9.5	10.1	6.9	8.9	8.2	6.4	8.2	8.1
5500	8.4	11.5	47.4	7.3	10.0	13.5	6.8	9.3	11.7	6.0	8.2	11.7
10000	7.6	9.4	52.0	6.6	8.2	15.1	6.0	7.5	13.1	5.3	6.6	13.0
30140	7.2	8.9	72.4	6.3	7.7	18.1	5.7	7.0	16.1	4.8	6.0	15.6
167820	7.4	9.9	132.9	6.4	8.5	23.1	5.7	7.6	21.1	4.5	6.1	19.9
497250	6.5	7.9	168.4	5.6	6.8	26.0	4.9	5.9	23.0	3.7	4.5	20.9
11320531	100	000	424	4.07	50		100	6145.	0 10	306.0	2.55	2.98
11320531	100	000	424					6145. 0.0001)	0 10	306.0	2.55	2.98
11320531			424 0 IN.)	DEF	DRMATIO	ff (in	ches X				2.55 #4(6.0	
			0 IN.)	DEF	PRMATIO	M (inc	ches X	#3(4.0	IN.)		<b>#</b> 4(6.0	
	LVDT	<b>#</b> 1(0.	0 IN.)	DEFO	PRMATIO	M (inc	LVDT	#3(4.0	IN.)	LVDT ELA.	<b>#</b> 4(6.0	625 IN
CYCLE NUMBER  160 500	LVDT ELA. 9.1	#1(0. TOT.	0 IN.) PLA. 14.2 18.2	DEFO	#2(2.0	IN.) PLA. 18.9 20.4	LVDT ELA. 7.6 6.6	#3(4.0 TOT.	IN.) PLA. 13.3 14.4	LVDT ELA. 7.2 6.1	#4(6.0 TOT. 9.8 7.5	625 IN
CYCLENUMBER	LVDT ELA. 9.1 7.9 8.5	#1(0. TOT. 12.3 9.7 11.5	0 IN.) PLA. 14.2 18.2 24.8	DEF6 LVDT ELA. 8.0 6.9 7.5	#2(2.0 TOT. 10.9 8.5 10.1	N (inc IN.) PLA. 18.9 20.4 21.5	LVDT  ELA.  7.6 6.6 7.0	#3(4.0 TOT.	IN.) PLA. 13.3	LVDT ELA. 7.2 6.1 6.5	#4(6.0 TOT. 9.8 7.5 8.8	625 IN PLA. 7.7
CYCLE NUMBER  160 500	LVDT ELA. 9.1 7.9 8.5	#1(0. TOT. 12.3 9.7	0 IN.) PLA. 14.2 18.2	DEF6 LVDT ELA. 8.0 6.9 7.5	#2(2.0 TOT.	IN.) PLA. 18.9 20.4	LVDT  ELA.  7.6 6.6 7.0 6.0	#3(4.0 TOT. 10.4 8.1 9.5 7.4	IN.) PLA. 13.3 14.4	LVDT ELA. 7.2 6.1 6.5 5.4	#4(6.0 TOT. 9.8 7.5 8.8 6.6	625 IN PLA. 7.7 8.5
CYCLE	LVDT ELA. 9.1 7.9 8.5 7.4	#1(0. TOT. 12.3 9.7 11.5	0 IN.) PLA. 14.2 18.2 24.8	LVDT  ELA.  8.0 6.9 7.5 6.4	#2(2.0 TOT. 10.9 8.5 10.1	N (inc IN.) PLA. 18.9 20.4 21.5	LVDT  ELA.  7.6 6.6 7.0 6.0	#3(4.0 TOT. 10.4 8.1 9.5	IN.) PLA. 13.3 14.4 14.9	LVDT ELA. 7.2 6.1 6.5 5.4	#4(6.0 TOT. 9.8 7.5 8.8	625 IN PLA. 7.7 8.5 9.0
CYCLE	LVDT ELA. 9.1 7.9 8.5 7.4 7.4	#1(0. TOT. 12.3 9.7 11.5 9.1	0 IN.) PLA. 14.2 18.2 24.8 37.1	ELA.  8.0 6.9 7.5 6.4	#2(2.0 TOT. 10.9 8.5 10.1 7.9	N (inc IN.) PLA. 18.9 20.4 21.5 25.9	LVDT  ELA.  7.6 6.6 7.0 6.0 5.9	#3(4.0 TOT. 10.4 8.1 9.5 7.4	IN.) PLA. 13.3 14.4 14.9 19.4	LVDT ELA. 7.2 6.1 6.5 5.4	#4(6.0 TOT. 9.8 7.5 8.8 6.6 6.6	PLA. 7.7 8.5 9.0 11.5
160 500 1000 5000	LVDT ELA. 9.1 7.9 8.5 7.4 7.5	#1(0. TOT. 12.3 9.7 11.5 9.1 9.3	0 IN.) PLA.  14.2 18.2 24.8 37.1 49.2 73.6	DEFO LVDT ELA. 8.0 6.9 7.5 6.4 6.4	#2(2.0 TOT. 10.9 8.5 10.1 7.9 8.1	PLA.  18.9 20.4 21.5 25.9 28.8	LVDT  ELA.  7.6 6.6 7.0 6.0 5.9	#3(4.0 TOT. 10.4 8.1 9.5 7.4 7.5	IN.) PLA. 13.3 14.4 14.9 19.4 20.9	LVDT  ELA.  7.2 6.1 6.5 5.4 5.2 5.0	#4(6.0 TOT. 9.8 7.5 8.8 6.6 6.6	7.7 8.5 9.0 11.5 12.7
160 500 1000 5000 11500 36300	LVDT ELA. 9.1 7.9 8.5 7.4 7.5 7.0	#1(0. TOT. 12.3 9.7 11.5 9.1 9.3 9.9	0 IN.) PLA.  14.2 18.2 24.8 37.1 49.2 73.6 151.3	DEFO LVDT ELA. 8.0 6.9 7.5 6.4 6.5 6.1	#2(2.0 TOT. 10.9 8.5 10.1 7.9 8.1 8.6	N (ind IN.) PLA. 18.9 20.4 21.5 25.9 28.8 31.7	LVDT  ELA.  7.6 6.6 7.0 6.0 5.9 5.9	#3(4.0 TOT. 10.4 8.1 9.5 7.4 7.5 7.9 7.2	IN.) PLA. 13.3 14.4 14.9 19.4 20.9 23.4	LVDT  ELA.  7.2 6.1 6.5 -5.4 5.2 5.0 4.2	#4(6.0 TOT. 9.8 7.5 8.8 6.6 6.6 6.7 5.7	7.7 8.5 9.0 11.5 12.7
CYCLE	ELA.  9.1 7.9 8.5 7.4 7.5 7.0 6.4	#1(0. TOT. 12.3 9.7 11.5 9.1 9.3 9.9	0 IN.) PLA.  14.2 18.2 24.8 37.1 49.2 73.6 151.3 169.9	LVDT  ELA.  8.0 6.9 7.5 6.4 6.4 6.5 6.1	#2(2.0 TOT. 10.9 8.5 10.1 7.9 8.1 8.6 8.2	N (ind IN.) PLA. 18.9 20.4 21.5 25.9 28.8 31.7 38.4	LVDT  ELA.  7.6 6.6 7.0 6.0 5.9 5.4 4.8	#3(4.0 TOT. 10.4 8.1 9.5 7.4 7.5 7.9 7.2 6.0	IN.) PLA. 13.3 14.4 14.9 19.4 20.9 23.4 28.4	LVDT  ELA.  7.2 6.1 6.5 5.4 5.2 5.0 4.2 3.7	#4(6.0 TOT. 9.8 7.5 8.8 6.6 6.6 6.7 5.7	PLA.  7.7 8.5 9.0 11.5 12.7 13.4 14.6
160 500 1000 5000 11500 36300 362000 682000 699350	LVDT ELA. 9.1 7.9 8.5 7.4 7.5 7.0 6.4 6.6	#1(0. TOT. 12.3 9.7 11.5 9.1 9.3 9.9 9.4 7.9 8.5	0 IN.) PLA.  14.2 18.2 24.8 37.1 49.2 73.6 151.3 169.9	DEFO LVDT ELA. 8.0 6.9 7.5 6.4 6.5 6.1 5.5	#2(2.0 TOT. 10.9 8.5 10.1 7.9 8.1 8.6 8.2 6.8 7.3	N (ind IN.) PLA. 18.9 20.4 21.5 25.9 28.8 31.7 38.4 40.5	LVDT  ELA.  7.6 6.6 7.0 6.0 5.9 5.4 4.8	#3(4.0 TOT. 10.4 8.1 9.5 7.4 7.5 7.9 7.2 6.0 6.4	IN.) PLA.  13.3 14.4 14.9 19.4 20.9 23.4 28.4 29.5	LVDT  FLA.  7.2 6.1 6.5 5.4 5.2 5.0 4.2 3.7 3.8	#4(6.0 TOT. 9.8 7.5 8.8 6.6 6.6 6.7 5.7 4.5	7.7 8.5 9.0 11.5 12.7 13.4 14.6 15.3 16.0
160 500 1000 5000 11500 36300 362000 682000 699350	PLA.  9.1 7.9 8.5 7.4 7.5 7.0 6.4 6.6	#1(0. TOT. 12.3 9.7 11.5 9.1 9.3 9.9 9.4 7.9 8.5	0 IN.) PLA.  14.2 18.2 24.8 37.1 49.2 73.6 151.3 169.9 177.2	DEFO LVDT ELA. 8.0 6.9 7.5 6.4 6.5 6.1 5.5 5.7	#2(2.0 TOT. 10.9 8.5 10.1 7.9 8.1 8.6 8.2 6.8 7.3	N (ind IN.) PLA. 18.9 20.4 21.5 25.9 28.8 31.7 38.4 40.5	LVDT  ELA.  7.6 6.6 7.0 6.0 5.9 5.4 4.8	#3(4.0 TOT. 10.4 8.1 9.5 7.4 7.5 7.9 7.2 6.0 6.4	IN.) PLA.  13.3 14.4 14.9 19.4 20.9 23.4 28.4 29.5	LVDT  FLA.  7.2 6.1 6.5 5.4 5.2 5.0 4.2 3.7 3.8	#4(6.0 TOT. 9.8 7.5 8.8 6.6 6.6 6.7 5.7 4.5 4.8	7.7 8.5 9.0 11.5 12.7 13.4 14.6 15.3 16.0
160 500 1000 5000 11500 36300 362000 682000 699350 A = TC	PLA.  9.1 7.9 8.5 7.4 7.5 7.0 6.4 6.6  OTAL N	#1(0. TOT. 12.3 9.7 11.5 9.1 9.3 9.9 9.4 7.9 8.5	0 IN.) PLA.  14.2 18.2 24.8 37.1 49.2 73.6 151.3 169.9 177.2 OF DRY	DEFO LVDT ELA. 8.0 6.9 7.5 6.4 6.5 6.1 5.5 5.7	#2(2.0 TOT. 10.9 8.5 10.1 7.9 8.1 8.6 8.2 6.8 7.3	N (ind IN.) PLA. 18.9 20.4 21.5 25.9 28.8 31.7 38.4 40.5	LVDT  ELA.  7.6 6.6 7.0 6.0 5.9 5.4 4.8	0.0001) #3(4.0 TOT.  10.4 8.1 9.5 7.4 7.5 7.9 7.2 6.0 6.4  WB = SL =	IN.) PLA.  13.3 14.4 14.9 19.4 20.9 23.4 29.5 WEIGH	LVDT  ELA.  7.2 6.1 6.5 5.4 5.2 5.0 4.2 3.7 3.8	#4(6.0 TOT.  9.8 7.5 8.8 6.6 6.7 5.7 4.5 4.8  ITUMEN; OAD;	PLA.  7.7 8.5 9.0 11.5 12.7 13.4 14.6 15.3 16.0

SAMPLE	WA		WB	AC	SL		CL	WBW	WI	BA	GMM	AV
NUMBER	(gr	)	(gr)	(%)	(1b	B)	(lbs)	(gr)	(1	;r)		(%)
11320512	1000	0	424	4.07	50		200	6108.0	102	265.0	2.55	3.28
				DEF	RMATIO	N (inc	ches X (	0.0001)				
 CYCLE	LVDT #	1(0.0	O IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDī	#4(6.0	625 II
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	19.7 2	6.4	16.4	17.2	23.1	13.9	16.3	21.9	13.9	15.4	20.7	12.6
500	18.7 2	5.1	26.8	16.3	21.9	17.3	15.3	20.5	16.9	14.1	18.9	14.5
1000	16.6 2	0.1	30.1	14.4	17.5	19.2	13.4	16.4	18.2	12.2	14.9	15.2
5000	15.6 1	8.8	48.9	13.5	16.3	25.5	12.4	14.9	22.7	10.9	13.1	18.3
10200	16.3 2		65.0	14.1	18.1	28.6	12.8	16.5	25.3	11.1	14.2	19.3
21900	16.6 2		86.1	14.4	19.4	32.0	13.0	17.5	27.8	11.0	14.8	20.8
135600	14.6 1		140.3		15.7	39.8		13.9	33.0	8.7	11.0	22.2
493400	15.0 2	0.1	223.5	12.8	17.2	44.7	11.1	14.9	36.5	8.2	11.1	22.6
843950	14.0 1	7.7	249.5	11.9	15.1	46.8	10.2	13.0	37.8	7.4	9.3	22.6
SAMPLE NUMBER	WA (gr		WB (gr)	(Z)	SL (1b		CL (lbs)	WBW (gr)		BA Br)	GMM	(Z)
11320522	1000	0	424	4.07	50		200	6125.	10:	295.0 	2.55	3.3
				DEF	DRMATIO	N (inc	ches X (	0.0001)				
												CO 6 T
- CYCLE	LVDT #	1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	1023 1
_	· · ·	1(0.0 TOT.	PLA.	LVDT ELA.				#3(4.0 TOT.		ELA.		PLA.
_		TOT.		ELA.			ELA.			ELA.		
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA. 16.5	тот.	PLA.	ELA.	TOT.	PLA.
NUMBER 100	ELA.	TOT.	PLA. 16.6 24.7	ELA. 17.4 15.0	TOT.	PLA.	ELA. 16.5 14.0	TOT.	PLA.	ELA. 15.5 12.9	TOT.	PLA.
100 500	ELA. 19.9 2 17.2 2	TOT. 86.8 21.1 23.7	PLA. 16.6 24.7	ELA. 17.4 15.0 15.7	TOT. 23.5 18.4	PLA. 22.1 28.9	ELA. 16.5 14.0 14.6	TOT. 22.3 17.3	PLA. 20.8 25.7	ELA. 15.5 12.9 13.3	TOT. 21.0 15.9	PLA. 16.0 19.1 20.1
100 500 1000	ELA.  19.9 2 17.2 2 18.0 2	TOT.  6.8  1.1  3.7	PLA. 16.6 24.7 32.8	17.4 15.0 15.7 14.3	TOT. 23.5 18.4 20.5	PLA. 22.1 28.9 33.7	ELA. 16.5 14.0 14.6 13.1	TOT.  22.3 17.3 19.2	PLA. 20.8 25.7 28.7	ELA. 15.5 12.9 13.3 11.6	TOT. 21.0 15.9 17.5	PLA. 16.0 19.1 20.1 23.7
100 500 1000 5000	ELA.  19.9 2 17.2 2 18.0 2 16.5 2	TOT. 6.8 1.1 3.7 1.0	PLA.  16.6 24.7 32.8 51.9	ELA. 17.4 15.0 15.7 14.3 15.1	TOT.  23.5 18.4 20.6 18.1	PLA.  22.1 28.9 33.7 50.0 59.6	ELA. 16.5 14.0 14.6 13.1 13.7	TOT.  22.3 17.3 19.2 16.7	PLA. 20.8 25.7 28.7 39.6	ELA. 15.5 12.9 13.3 11.6 11.9	TOT. 21.0 15.9 17.5 14.7	PLA. 16.0 19.1 20.1 23.7 26.8
100 500 1000 5000 10000	ELA.  19.9 2 17.2 2 18.0 2 16.5 2 17.4 2	TOT.  36.8  3.7  3.9  30.3	PLA.  16.6 24.7 32.8 51.9 69.3 88.7	17.4 15.0 15.7 14.3 15.1	TOT.  23.5 18.4 20.6 18.1 20.6 17.5	PLA.  22.1 28.9 33.7 50.0 59.6	ELA. 16.5 14.0 14.6 13.1 13.7	TOT.  22.3 17.3 19.2 16.7 18.8 15.8	PLA.  20.8 25.7 28.7 39.6 45.5	15.5 12.9 13.3 11.6 11.9	TOT.  21.0 15.9 17.5 14.7 16.3 13.2	PLA. 16.0 19.1
100 500 1000 5000 10000 27600	19.9 2 17.2 2 18.0 2 16.5 2 17.4 2 15.8 2	TOT.  36.8  3.7  3.9  3.9  3.7.6	PLA.  16.6 24.7 32.8 51.9 69.3 88.7 187.0	17.4 15.0 15.7 14.3 15.1 13.6 6.3	TOT.  23.5 18.4 20.6 18.1 20.6 17.5 9.3	PLA.  22.1 28.9 33.7 50.0 59.6 73.6	ELA.  16.5 14.0 14.6 13.1 13.7 12.3 6.0 8	TOT.  22.3 17.3 19.2 16.7 18.8 15.8	PLA.  20.8 25.7 28.7 39.6 45.5 54.2	15.5 12.9 13.3 11.6 11.9 10.3	TOT.  21.0 15.9 17.5 14.7 16.3 13.2	PLA.  16.0 19.1 20.1 23.7 26.8 28.9
100 500 1000 5000 10000 27600 344800 501150	ELA.  19.9 2 17.2 2 18.0 2 16.5 2 17.4 2 15.8 2 14.2 1 13.5 1	TOT. 26.8 21.1 23.7 21.0 23.9 20.3 7.6 6.2	PLA.  16.6 24.7 32.8 51.9 69.3 88.7 187.0	ELA. 17.4 15.0 15.7 14.3 15.1 13.6 6.3 11.5	TOT.  23.5 18.4 20.6 18.1 20.6 17.5 9.3 13.8	PLA.  22.1 28.9 33.7 50.0 59.6 73.6	ELA.  16.5 14.0 14.6 13.1 13.7 12.3 6.0 8	TOT.  22.3 17.3 19.2 16.7 18.8 15.8 .9 - 12.0	PLA.  20.8 25.7 28.7 39.6 45.5 54.2 5.7 70.5	ELA. 15.5 12.9 13.3 11.6 11.9 10.3 8.8 7.4	TOT.  21.0 15.9 17.5 14.7 16.3 13.2	PLA.  16.0 19.1 20.1 23.7 26.8 28.9
100 500 1000 5000 10000 27600 344800 501150	ELA.  19.9 2 17.2 2 18.0 2 16.5 2 17.4 2 15.8 2 14.2 1 13.5 1	TOT.  66.8  11.1  3.7  1.0  3.9  0.3  7.6  6.2	PLA.  16.6 24.7 32.8 51.9 69.3 88.7 187.0 202.4	ELA. 17.4 15.0 15.7 14.3 15.1 13.6 6.3 11.5	TOT.  23.5 18.4 20.6 18.1 20.6 17.5 9.3 13.8	PLA.  22.1 28.9 33.7 50.0 59.6 73.6	ELA.  16.5 14.0 14.6 13.1 13.7 12.3 6.0 8	TOT.  22.3 17.3 19.2 16.7 18.8 15.8 .9 - 12.0	PLA.  20.8 25.7 28.7 39.6 45.5 54.2 5.7 70.5	ELA. 15.5 12.9 13.3 11.6 11.9 10.3 8.8 7.4	TOT.  21.0 15.9 17.5 14.7 16.3 13.2 - 8.9	PLA.  16.0 19.1 20.1 23.7 26.8 28.9
100 500 1000 5000 10000 27600 344800 501150 A = TC	ELA.  19.9 2 17.2 2 18.0 2 16.5 2 17.4 2 15.8 2 14.2 1 13.5 1  OTAL WE ERCENT	TOT.  66.8 21.1 23.7 21.0 23.9 20.3 7.6 6.2 21GHT	PLA.  16.6 24.7 32.8 51.9 69.3 88.7 187.0 202.4	ELA. 17.4 15.0 15.7 14.3 15.1 13.6 6.3 11.5 AGGREG	TOT.  23.5 18.4 20.6 18.1 20.6 17.5 9.3 13.8	PLA.  22.1 28.9 33.7 50.0 59.6 73.6	ELA.  16.5 14.0 14.6 13.1 13.7 12.3 6.0 8	TOT.  22.3 17.3 19.2 16.7 18.8 15.8 .9 - 12.0  WB = SL =	PLA.  20.8 25.7 28.7 39.6 45.5 54.2 5.7 70.5  WEIGH'SUSTAL	ELA.  15.5 12.9 13.3 11.6 11.9 10.3 8.8 7.4	TOT.  21.0 15.9 17.5 14.7 16.3 13.2 - 8.9  ITUMEN; OAD;	PLA.  16.0 19.1 20.1 23.7 26.8 28.9

Sample Number	WA (gr)	WB (gr)	AC		L bs)	CL (lbs)	WBW (gr)		BA gr)	GMM	AV (Z)
	<del></del>										
11320532	10000	424	4.07		0	200	6141.0	103	315.0	2.55	3.20
			DEF	ORMATI	ON (inc	hes X (	0.0001)				
 CYCLE	LVDT #1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
NUMBER	ELA. TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	19.9 27.1	16.2	17.4	23.8	22.1	16.6	22.6	20.8	15.6	21.3	16.0
500	18.9 25.7	26.5	16.5	22.4	28.9	15.5	21.1	25.7	14.3	19.4	19.1
1000	18.5 25.2	32.8	16.1	21.9	33.7	15.0	20.5	28.7	13.7	18.7	20.1
5000	17.0 22.3	52.0	14.7	19.4	50.0	13.5	17.8	39.6	11.9	15.7	23.7
11100	16.6 21.8	64.4	14.4	18.9	59.6	13.1	17.3	45.5	11.4	15.0	26.8
31800	14.9 18.2	81.5	12.9	15.7	73.6	11.6	14.2	54.2	9.8	11.9	28.9
171600	14.7 19.2	152.0	12.7	15.6	91.0	11.2	14.0	66.6	9.5	12.0	32.1
349400	14.6 18.9	188.1	12.0	15.2	101.0	13.0	16.0	71.0	10.5	12.0	34.0
627900	14.3 18.4	209.5	12.3	15.8	107.6	12.5	15.0	72.0	10.2	11.7	34.5
720000	14.2 18.6	219.5	12.5	15.6	110.0	12.6	15.2	72.2	10.1	11.2	34.0
							-				
SAMPLE	WA	WB	AC	S	L	CL	WBW	W	BA	CMM	AV
NUMBER	(gr)	(gr)	(%)	(1	bs)	(lbs)	(gr)	(1	gr)		(2)
11320515	10000	424	4.07	5	0	500	6180.	0 103	380.0	2.53	2.4
11320515	10000	424					6180.0 0.0001)	0 10:	380.0	2.53	2.4
_	10000 LVDT #1(0.		DEF	ORMATI		ches X				2.53	
CYCLE _		0 IN.)	DEF	ORMATI	ON (inc	ches X	0.0001)	IN.)		<b>#4(6.</b> 0	
CYCLE _	LVDT #1(0.	0 IN.)	DEFO LVDT ELA.	#2(2. TOT.	ON (inc	LVDT	0.0001) #3(4.0	IN.)	LVDT ELA.	<b>#4(6.</b> 0	625 I
CYCLE _ NUMBER	LVDT #1(0.	O IN.)	DEFO LVDT ELA.	#2(2.	ON (inc	LVDT ELA. 37.7	#3(4.0 TOT.	IN.)	LVDT ELA. 35.0	#4(6.0 TOT.	)625 II
CYCLE NUMBER	LVDT #1(0. ELA. TOT. 45.7 58.2	0 IN.) PLA.	LVDT ELA. 40.2 38.4	#2(2. TOT.	ON (inc 0 IN.) PLA. 44.3	LVDT ELA. 37.7 35.6	#3(4.0 TOT.	IN.) PLA. 44.2	LVDT ELA. 35.0 32.2	#4(6.0 TOT.	PLA.
CYCLE NUMBER  100 500	LVDT #1(0. ELA. TOT. 45.7 58.2 43.8 56.4	0 IN.) PLA. 15.1 25.0	DEF( LVDT ELA. 40.2 38.4 36.5	#2(2. TOT. 51.2	ON (inc 0 IN.) PLA. 44.3 52.0	LVDT  ELA.  37.7 35.6 33.6	#3(4.0 TOT. 48.0 45.8	IN.) PLA. 44.2 49.2	LVDT ELA. 35.0 32.2 30.0	#4(6.0 TOT. 44.6 41.4	PLA. 42.7 45.8
CYCLE NUMBER  100 500	LVDT #1(0. ELA. TOT. 45.7 58.2 43.8 56.4 41.7 52.2	0 IN.) PLA. 15.1 25.0 30.1 53.4	DEFO LVDT ELA. 40.2 38.4 36.5 37.3	#2(2. TOT. 51.2 49.4 45.7	ON (inc 0 IN.) PLA. 44.3 52.0 56.8	LVDT  ELA.  37.7 35.6 33.6 33.8	#3(4.0 TOT. 48.0 45.8 42.1	IN.) PLA. 44.2 49.2 52.2	LVDT ELA. 35.0 32.2 30.0 29.1	#4(6.0 TOT. 44.6 41.4 37.6	PLA. 42.7 45.8 46.9
100 500 1000	LVDT #1(0. ELA. TOT. 45.7 58.2 43.8 56.4 41.7 52.2 42.9 58.0	0 IN.) PLA. 15.1 25.0 30.1 53.4 58.9	DEFO LVDT ELA. 40.2 38.4 36.5 37.3 32.4	#2(2. TOT. 51.2 49.4 45.7 50.6	ON (inc 0 IN.) PLA. 44.3 52.0 56.8 69.3	LVDT  ELA.  37.7 35.6 33.6 33.8 29.1	#3(4.0 TOT. 48.0 45.8 42.1 45.8	IN.) PLA. 44.2 49.2 52.2 57.1	LVDT ELA. 35.0 32.2 30.0 29.1 24.5	#4(6.0 TOT. 44.6 41.4 37.6 39.4	PLA. 42.7 45.8 46.9 43.8
100 500 1000 5000 10150	LVDT #1(0. ELA. TOT. 45.7 58.2 43.8 56.4 41.7 52.2 42.9 58.0 37.2 44.8	0 IN.) PLA. 15.1 25.0 30.1 53.4 58.9 91.5	DEFO LVDT ELA. 40.2 38.4 36.5 37.3 32.4 32.6	#2(2. TOT. 51.2 49.4 45.7 50.6 38.9 41.3	ON (inc 0 IN.) PLA. 44.3 52.0 56.8 69.3 75.6	LVDT  ELA.  37.7 35.6 33.6 33.8 29.1 28.9	#3(4.0 TOT. 48.0 45.8 42.1 45.8 35.0	IN.) PLA. 44.2 49.2 52.2 57.1 60.1	LVDT ELA. 35.0 32.2 30.0 29.1 24.5 23.3	#4(6.0 TOT. 44.6 41.4 37.6 39.4 29.5	PLA. 42.7 45.8 46.9 43.8 43.2
100 500 1000 5000 10150 35900	LVDT #1(0. ELA. TOT. 45.7 58.2 43.8 56.4 41.7 52.2 42.9 58.0 37.2 44.8 37.7 47.7	0 IN.) PLA.  15.1 25.0 30.1 53.4 58.9 91.5 138.3	DEFC LVDT ELA. 40.2 38.4 36.5 37.3 32.4 32.6 29.7	#2(2. TOT. 51.2 49.4 45.7 50.6 38.9 41.3 36.1	ON (inc 0 IN.) PLA. 44.3 52.0 56.8 69.3 75.6 86.7	ELA.  37.7 35.6 33.6 33.8 29.1 28.9 25.8	#3(4.0 TOT. 48.0 45.8 42.1 45.8 35.0 36.6	IN.) PLA. 44.2 49.2 52.2 57.1 60.1 64.6 69.5	LVDT  ELA.  35.0 32.2 30.0 29.1 24.5 23.3 19.5	#4(6.0 TOT. 44.6 41.4 37.6 39.4 29.5 29.5	PLA.  42.7 45.8 46.9 43.8 43.2 41.2 38.1
100 500 1000 5000 10150 35900 157900	LVDT #1(0. ELA. TOT. 45.7 58.2 43.8 56.4 41.7 52.2 42.9 58.0 37.2 44.8 37.7 47.7 34.4 41.8	0 IN.) PLA.  15.1 25.0 30.1 53.4 58.9 91.5 138.3 188.2	DEFO LVDT ELA. 40.2 38.4 36.5 37.3 32.4 32.6 29.7 31.3	#2(2. TOT. 51.2 49.4 45.7 50.6 38.9 41.3 36.1 41.0	ON (inc 0 IN.) PLA. 44.3 52.0 56.8 69.3 75.6 86.7 98.5 104.3	ELA.  37.7 35.6 33.6 33.8 29.1 28.9 25.8	#3(4.0 TOT. 48.0 45.8 42.1 45.8 35.0 36.6 31.3 35.1	IN.) PLA. 44.2 49.2 52.2 57.1 60.1 64.6 69.5 71.5	LVDT  ELA.  35.0 32.2 30.0 29.1 24.5 23.3 19.5	#4(6.0 TOT. 44.6 41.4 37.6 39.4 29.5 29.5 23.7	PLA.  42.7 45.8 46.9 43.8 43.2 41.2 38.1 36.5
100 500 1000 5000 10150 35900 157900 334600	LVDT #1(0. **ELA. TOT.  45.7 58.2  43.8 56.4  41.7 52.2  42.9 58.0  37.2 44.8  37.7 47.7  34.4 41.8  36.3 47.6	0 IN.)  PLA.  15.1 25.0 30.1 53.4 58.9 91.5 138.3 188.2	DEFO LVDT ELA. 40.2 38.4 36.5 37.3 32.4 32.6 29.7 31.3	#2(2. TOT. 51.2 49.4 45.7 50.6 38.9 41.3 36.1 41.0	ON (inc 0 IN.) PLA. 44.3 52.0 56.8 69.3 75.6 86.7 98.5 104.3	ELA.  37.7 35.6 33.6 33.8 29.1 28.9 25.8	#3(4.0 TOT. 48.0 45.8 42.1 45.8 35.0 36.6 31.3 35.1	IN.) PLA. 44.2 49.2 52.2 57.1 60.1 64.6 69.5 71.5	LVDT ELA. 35.0 32.2 30.0 29.1 24.5 23.3 19.5	#4(6.0 TOT. 44.6 41.4 37.6 39.4 29.5 29.5 23.7 25.6	PLA.  42.7 45.8 46.9 43.8 43.2 41.2 38.1 36.5
100 500 1000 5000 10150 35900 157900 334600	LVDT #1(0.  ELA. TOT.  45.7 58.2 43.8 56.4 41.7 52.2 42.9 58.0 37.2 44.8 37.7 47.7 34.4 41.8 36.3 47.6  OTAL WEIGHT	0 IN.) PLA.  15.1 25.0 30.1 53.4 58.9 91.5 138.3 188.2  OF DRY	DEFO LVDT ELA. 40.2 38.4 36.5 37.3 32.4 32.6 29.7 31.3	#2(2. TOT. 51.2 49.4 45.7 50.6 38.9 41.3 36.1 41.0	ON (inc 0 IN.) PLA. 44.3 52.0 56.8 69.3 75.6 86.7 98.5 104.3	ELA.  37.7 35.6 33.6 33.8 29.1 28.9 25.8	#3(4.0 TOT. 48.0 45.8 42.1 45.8 35.0 36.6 31.3 35.1 WB =	IN.) PLA. 44.2 49.2 52.2 57.1 60.1 64.6 69.5 71.5	LVDT  ELA.  35.0 32.2 30.0 29.1 24.5 23.3 19.5 19.5	#4(6.0 TOT. 44.6 41.4 37.6 39.4 29.5 29.5 23.7 25.6 ITUMEN;	PLA.  42.7 45.8 46.9 43.8 43.2 41.2 38.1 36.5

SAMPLE	WA	WB	AC	SI		CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(11	) <b>s</b> )	(1bs)	(gr)		(gr)		(%)
11320525	10000	424	4.07	50	)	500	6180.	0 :	10363.0	2.55	2.96
			DEF	ORMATIC	ON (inc	ches X (	0.0001)	١			
CYCLE _	LVDT #1(0.	.0 IN.)	LVDT	#2(2.0	) IN.)	LVDT	#3(4.0	IN.	) LVDT	#4(6.0	625 II
NUMBER	ELA. TOT	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA	. ELA.	TOT.	PLA.
100	46.4 56.8	17.5	40.3	49.3	61.3	37.6	46.0	60.	0 34.7	42.5	65.0
500	44.7 55.6	29.2	38.7	48.1	73.8	35.6	44.3	70.	0 32.0	39.7	75.0
1000	43.9 54.7	36.2	37.9	47.2	79.3	34.7	43.2	75.	5 30.6	38.2	80.0
5000	44.8 59.9	63.8	38.6	51.6	92.6	34.6	46.3	85.	5 29.4	39.3	87.5
10700	41.6 52.9	76.6	35.7	45.4	98.1	31.8	40.4	90.	5 26.3	33.5	89.5
20750	43.7 59.5	100.7	37.4	51.0	104.1	33.0	45.0	94.	5 26.7	36.4	91.5
191200	39.9 53.4	195.6	34.0	45.4	125.4	29.0	38.7	107.	0 21.2	28.3	92.8
351450	38.9 51.6	234.2	33.0	43.8	131.4	27.9	37.0	109.	8 19.7	26.1	92.8
SAMPLE	WA	WB	AC	SI	,	CL	WBW		WBA	GMM	AV
number	(gr)	(gr)	(2)	(11	) <b>s</b> )	(lbs)	(gr)	)	(gr)		(2)
11320535	10000	424	4.07	50	)	500	6024.	0	10150.0	2.55	3.6
							0024				
			DEF	ORMATIC	ON (inc	ches X					
	LVDT #1(0	.0 IN.)				ches X	0.0001)	)	) LVDĪ	#4(6.0	)625 I
	LVDT #1(0		LVDT		O IN.)	LVDT	0.0001)	) IN.		#4(6.0 TOT.	
		. PLA.	LVDT ELA.	#2(2.0	PLA.	LVDT	0.0001) #3(4.0	) IN.	. ELA.		
NUMBER	ELA. TOT	. PLA.	LVDT ELA. 45.8	#2(2.0 TOT.	PLA.	LVDT ELA.	#3(4.0	) IN.	. ELA.	TOT.	PLA.
NUMBER 100	ELA. TOT.	. PLA. 24.3 40.5	LVDT ELA. 45.8 44.0	#2(2.0 TOT.	PLA. 22.4 27.7	LVDT ELA. 42.4 40.1	#3(4.0 TOT.	) IN. PLA	. ELA. 4 38.8 9 35.5	TOT.	PLA.
100 500	ELA. TOT. 53.5 71.0 51.6 69.5	24.3 40.5 45.2	LVDT ELA. 45.8 44.0 38.8	#2(2.0 TOT. 60.8 59.2	PLA.  22.4 27.7 31.2	LVDT  ELA.  42.4 40.1 35.1	#3(4.C TOT. 56.3	PLA 21.4 25.5	. ELA. 4 38.8 9 35.5 4 30.6	TOT. 51.5 47.9	PLA. 20.5 24.4
100 500 1000	ELA. TOT 53.5 71.0 51.6 69.5 45.6 55.5	24.3 40.5 45.2 81.4	LVDT ELA. 45.8 44.0 38.8 39.4	#2(2.0 TOT. 60.8 59.2 47.2	PLA.  22.4 27.7 31.2 41.4	LVDT  ELA.  42.4 40.1 35.1 35.0	#3(4.0 TOT. 56.3 54.0 42.7	PLA 21. 25. 28.	. ELA. 4 38.8 9 35.5 4 30.6 4 29.1	TOT. 51.5 47.9 37.3	PLA. 20.5 24.4 25.9
100 500 1000 5300	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2	24.3 40.5 45.2 81.4 103.7	LVDT ELA. 45.8 44.0 38.8 39.4 40.1	#2(2.0 TOT. 60.8 59.2 47.2 51.8	PLA.  22.4 27.7 31.2 41.4 46.8	LVDT  ELA.  42.4 40.1 35.1 35.0 35.3	#3(4.0 TOT. 56.3 54.0 42.7 45.9	PLA 21 25 28 35 38	. ELA. 4 38.8 9 35.5 4 30.6 4 29.1 9 28.7	TOT. 51.5 47.9 37.3 38.2	PLA. 20.5 24.4 25.9 30.4
100 500 1000 5300 10225 30000	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2 47.5 64.8	24.3 40.5 45.2 81.4 103.7 138.3	LVDT ELA. 45.8 44.0 38.8 39.4 40.1 37.0	#2(2.0 TOT. 60.8 59.2 47.2 51.8 54.7	PLA.  22.4 27.7 31.2 41.4 46.8 56.1	LVDT ELA. 42.4 40.1 35.1 35.0 35.3 32.0	#3(4.0 TOT. 56.3 54.0 42.7 45.9 48.1	21. 25.: 28.: 35.: 38.: 46.	. ELA. 4 38.8 9 35.5 4 30.6 4 29.1 9 28.7 1 24.9	TOT. 51.5 47.9 37.3 38.2 39.1	PLA. 20.5 24.4 25.9 30.4 32.8 38.2
100 500 1000 5300 10225 30000 153100	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2 47.5 64.8 44.0 57.5	24.3 40.5 45.2 81.4 103.7 138.3 210.9	LVDT ELA. 45.8 44.0 38.8 39.4 40.1 37.0 32.3	#2(2.0 TOT. 60.8 59.2 47.2 51.8 54.7 48.4	PLA.  22.4 27.7 31.2 41.4 46.8 56.1 68.8	LVDT  ELA.  42.4 40.1 35.1 35.0 35.3 32.0 27.2	#3(4.0 TOT. 56.3 54.0 42.7 45.9 48.1 41.9	PLA 21 25 28 35 38 46 57	. ELA. 4 38.8 9 35.5 4 30.6 4 29.1 9 28.7 1 24.9 9 19.5	TOT.  51.5 47.9 37.3 38.2 39.1 32.6	PLA. 20.5 24.4 25.9 30.4 32.8 38.2 46.7
100 500 1000 5300 10225 30000 153100 325300	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2 47.5 64.8 44.0 57.5 38.6 46.6	24.3 40.5 45.2 81.4 103.7 138.3 210.9 262.8	LVDT  ELA.  45.8 44.0 38.8 39.4 40.1 37.0 32.3 31.1	#2(2.0 TOT. 60.8 59.2 47.2 51.8 54.7 48.4 39.0	PLA.  22.4 27.7 31.2 41.4 46.8 56.1 68.8 75.4	LVDT  ELA.  42.4 40.1 35.1 35.0 35.3 32.0 27.2 25.8	#3(4.0 TOT. 56.3 54.0 42.7 45.9 48.1 41.9 32.8	PLA 21 25 35 38 46 57 62	. ELA.  4 38.8 9 35.5 4 30.6 4 29.1 9 28.7 1 24.9 9 19.5 9 17.6	TOT.  51.5 47.9 37.3 38.2 39.1 32.6 23.5	PLA.  20.5 24.4 25.9 30.4 32.8 38.2 46.7 50.4
500 1000 5300 10225 30000 153100 325300 501200	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2 47.5 64.8 44.0 57.5 38.6 46.6 37.2 44.4	24.3 40.5 45.2 81.4 103.7 138.3 210.9 262.8 303.6	LVDT  ELA.  45.8 44.0 38.8 39.4 40.1 37.0 32.3 31.1 30.9	#2(2.0 TOT. 60.8 59.2 47.2 51.8 54.7 48.4 39.0 37.1 37.3	PLA.  22.4 27.7 31.2 41.4 46.8 56.1 68.8 75.4	LVDT  ELA.  42.4 40.1 35.1 35.0 35.3 32.0 27.2 25.8	#3(4.0 TOT. 56.3 54.0 42.7 45.9 48.1 41.9 32.8 30.8	PLA 21 25 28 35 36 66	. ELA.  4 38.8 9 35.5 4 30.6 4 29.1 9 28.7 1 24.9 9 19.5 9 17.6	TOT.  51.5 47.9 37.3 38.2 39.1 32.6 23.5 21.0 20.3	PLA.  20.5 24.4 25.9 30.4 32.8 38.2 46.7 50.4 53.3
100 500 1000 5300 10225 30000 153100 325300 501200	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2 47.5 64.8 44.0 57.5 38.8 46.6 37.2 44.4 37.1 44.8	24.3 40.5 45.2 81.4 103.7 138.3 210.9 262.8 303.6	LVDT  ELA.  45.8 44.0 38.8 39.4 40.1 37.0 32.3 31.1 30.9	#2(2.0 TOT. 60.8 59.2 47.2 51.8 54.7 48.4 39.0 37.1 37.3	PLA.  22.4 27.7 31.2 41.4 46.8 56.1 68.8 75.4	LVDT  ELA.  42.4 40.1 35.1 35.0 35.3 32.0 27.2 25.8	#3(4.0 TOT. 56.3 54.0 42.7 45.9 48.1 41.9 32.8 30.8 30.8	PLA 21 25 28 35 36 66 WEIGHT	. ELA.  4 38.8  9 35.5  4 30.6  4 29.1  9 28.7  1 24.9  9 19.5  9 17.6  2 16.8	TOT.  51.5 47.9 37.3 38.2 39.1 32.6 23.5 21.0 20.3	PLA.  20.5 24.4 25.9 30.4 32.8 38.2 46.7 50.4 53.3
100 500 1000 5300 10225 30000 153100 325300 501200 A = TO	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2 47.5 64.8 44.0 57.5 38.6 46.6 37.2 44.4 37.1 44.8	24.3 40.5 45.2 81.4 103.7 138.3 210.9 262.8 303.6	LVDT  ELA.  45.8 44.0 38.8 39.4 40.1 37.0 32.3 31.1 30.9  AGGREGIENT;	#2(2.0 TOT. 60.8 59.2 47.2 51.8 54.7 48.4 39.0 37.1 37.3	PLA.  22.4 27.7 31.2 41.4 46.8 56.1 68.8 75.4	LVDT  ELA.  42.4 40.1 35.1 35.0 35.3 32.0 27.2 25.8	#3(4.0 TOT. 56.3 54.0 42.7 45.9 48.1 41.9 32.8 30.8 WB =	2125353846576266	. ELA.  4 38.8 9 35.5 4 30.6 4 29.1 9 28.7 1 24.9 9 19.5 9 17.6 2 16.8	TOT.  51.5 47.9 37.3 38.2 39.1 32.6 23.5 21.0 20.3	PLA.  20.5 24.4 25.9 30.4 32.8 38.2 46.7 50.4 53.3
100 500 1000 5300 10225 30000 153100 325300 501200 A = TC C = PI	53.5 71.0 51.6 69.5 45.6 55.5 46.6 61.2 47.5 64.8 44.0 57.5 38.6 46.6 37.2 44.4 37.1 44.8 OTAL WEIGHT	24.3 40.5 45.2 81.4 103.7 138.3 210.9 262.8 303.6	LVDT  ELA.  45.8 44.0 38.8 39.4 40.1 37.0 32.3 31.1 30.9  AGGRECTENT; AIR;	#2(2.0 TOT.  60.8 59.2 47.2 51.8 54.7 48.4 39.0 37.1 37.3	PLA.  22.4 27.7 31.2 41.4 46.8 56.1 68.8 75.4	LVDT  ELA.  42.4 40.1 35.1 35.0 35.3 32.0 27.2 25.8	#3(4.0 TOT. 56.3 54.0 42.7 45.9 48.1 41.9 32.8 30.8 30.8	2125353846576266	. ELA. 4 38.8 9 35.5 4 30.6 4 29.1 9 28.7 1 24.9 9 19.5 9 17.6 2 16.8  GHT OF B TAINED L	TOT.  51.5 47.9 37.3 38.2 39.1 32.6 23.5 21.0 20.3  ITUMEN; OAD;	PLA.  20.5 24.4 25.9 30.4 32.8 38.2 46.7 50.4 53.3

BEAM CYCLIC LOAD DATA

		₹A.	WB	AC	SL		CL	WBW		BA	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1b	B)	(lbs)	(gr)	(	gr)		(%)
22120611	100	000	447	4.28	50		100	5790.0	9	935.0	2.52	4.89
				DEF	ORMATIO	N (inc	ches X (	0.0001)				
_	LVDT	<b>#</b> 1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.	0625 IN
NUMBER	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	10.9	14.0	22.4	9.3	12.0	13.0	8.8	11.3	8.6	8.3	10.7	4.3
500	10.4	13.4	36.4	8.8	11.4	14.9	8.3	10.7	9.6	7.6	9.8	4.8
1000	10.1	12.9	44.4	8.6	10.9	16.1	7.9	10.1	10.5	7.2	9.2	5.0
7700	9.3	11.6	80.0	7.8	9.7	22.9	7.1	8.9	14.5	6.1	7.6	7.0
10500	10.0	13.6	95.7	8.4	11.5	24.4	7.6	10.4	15.1	6.5	8.9	7.2
134600	8.9	11.7	198.6	7.4	9.8	34.9	6.5	8.6	19.8	5.0	6.6	6.5
309300	8.4	10.8	247.5	7.0	9.0	37.1	6.0	7.7	19.3	4.5	5.7	4.5
1011900	8.2	10.5	354.5	6.8	8.7	40.9	5.7	7.3	19.6	3.9	5.0	2.2
SAMPLE			WB	AC	SL		CL	WBW	w	BA	GMM	AV
NUMBER	(1	gr)	(gr)	(%)	(1b	<b>s</b> )	(lbs)	(gr)	(	gr)		(%)
22120621	100	000	447	4.28	50		100	5770.	0 9	905.0	2.52	4.9
				DEF	ORMATIO	N (in	ches X	0.0001)				
CYCLE	LVDT	#1(O.	0 IN.)		P2(2.0			#3(4.0	IN.)	LVDT	#4(6.	0625 II
CYCLE _ NUMBER	LVDT	#1(0.			#2(2.0				IN.)	LVDT	#4(6. TOT.	0625 II
_	ELA.			LVDT	#2(2.0	IN.)	LVDT ELA.	#3(4.0		ELA.		
NUMBER	ELA.	TOT.	PLA.	LVDT ELA. 9.5	#2(2.0 TOT.	IN.)	LVDT ELA. 9.0	#3(4.0 TOT.	PLA.	ELA. 8.5	тот.	PLA.
NUMBER 100	ELA. 11.2 10.9	TOT.	PLA. 23.4 38.6	LVDT ELA. 9.5 9.2	#2(2.0 TOT.	IN.) PLA. 10.1	ELA. 9.0 8.6	#3(4.0 TOT.	PLA.	ELA. 8.5 7.9	TOT.	PLA.
100 500	ELA. 11.2 10.9 9.7	TOT.  14.7  14.5  11.8	PLA. 23.4 38.6	LVDT  ELA.  9.5 9.2 8.2	#2(2.0 TOT. 12.5 12.3	IN.) PLA. 10.1 13.0	LVDT ELA. 9.0 8.6 7.6	#3(4.0 TOT. 11.8 11.5	PLA. 6.4 8.6	ELA. 8.5 7.9 6.9	TOT.  11.1 10.6 8.4	PLA. 4.8 7.3
100 500 1000	ELA. 11.2 10.9 9.7 9.8	TOT.  14.7  14.5  11.8  12.7	PLA. 23.4 38.6 43.3	LVDT  ELA.  9.5  9.2  8.2  8.3	#2(2.0 TOT. 12.5 12.3 10.0	IN.) PLA. 10.1 13.0 15.0	ELA. 9.0 8.6 7.6 7.5	#3(4.0 TOT. 11.8 11.5 9.3	PLA. 6.4 8.6 10.1	ELA. 8.5 7.9 6.9 6.6	TOT.  11.1 10.6 8.4	PLA. 4.8 7.3 8.4
100 500 1000 5000	ELA. 11.2 10.9 9.7 9.8 9.8	TOT.  14.7  14.5  11.8  12.7	PLA.  23.4 38.6 43.3 74.7 94.0	LVDT  ELA.  9.5 9.2 8.2 8.3 8.2	#2(2.0 TOT. 12.5 12.3 10.0	IN.) PLA. 10.1 13.0 15.0 22.4	9.0 8.6 7.6 7.5	#3(4.0 TOT. 11.8 11.5 9.3 9.8	PLA. 6.4 8.6 10.1 14.5	8.5 7.9 6.9 6.6	TOT.  11.1 10.6 8.4 8.5 8.5	PLA. 4.8 7.3 8.4 12.2
100 500 1000 5000 10000	ELA. 11.2 10.9 9.7 9.8 9.8	TOT.  14.7 14.5 11.8 12.7 13.0	PLA.  23.4 38.6 43.3 74.7 94.0 136.4	ELA.  9.5 9.2 8.2 8.3 8.2 8.2	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0	IN.) PLA.  10.1 13.0 15.0 22.4 27.2	9.0 8.6 7.6 7.5 7.5	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9	PLA. 6.4 8.6 10.1 14.5 17.5	8.5 7.9 6.9 6.6 6.4	TOT.  11.1 10.6 8.4 8.5 8.5	PLA. 4.8 7.3 8.4 12.2 14.9 19.0
100 500 1000 5000 10000 30500	ELA. 11.2 10.9 9.7 9.8 9.8 9.8	TOT.  14.7 14.5 11.8 12.7 13.0 13.6 11.1	PLA.  23.4 38.6 43.3 74.7 94.0 136.4	LVDT  ELA.  9.5 9.2 8.2 8.3 8.2 7.2	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0	IN.) PLA.  10.1 13.0 15.0 22.4 27.2 35.8	9.0 8.6 7.6 7.5 7.4 6.2	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9	PLA. 6.4 8.6 10.1 14.5 17.5 22.2	8.5 7.9 6.9 6.6 6.4 6.0	TOT.  11.1 10.6 8.4 8.5 8.5 8.4	PLA. 4.8 7.3 8.4 12.2 14.9
100 500 1000 5000 10000 30500 185800	ELA. 11.2 10.9 9.7 9.8 9.8 9.8 8.6 8.5	TOT.  14.7 14.5 11.8 12.7 13.0 13.6 11.1	PLA.  23.4 38.6 43.3 74.7 94.0 136.4 218.2 259.7	ELA.  9.5 9.2 8.2 8.3 8.2 7.2	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0 11.4 9.3	IN.) PLA.  10.1 13.0 15.0 22.4 27.2 35.8 52.3	9.0 8.6 7.6 7.5 7.4 6.2 6.1	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9 10.2 8.0	PLA. 6.4 8.6 10.1 14.5 17.5 22.2 31.5	8.5 7.9 6.9 6.6 6.4 6.0 4.7	TOT.  11.1 10.6 8.4 8.5 8.5 8.4 6.1	PLA. 4.8 7.3 8.4 12.2 14.9 19.0 24.2
100 500 1000 5000 10000 30500 185800 330538	ELA. 11.2 10.9 9.7 9.8 9.8 9.8 8.6 8.5	TOT.  14.7 14.5 11.8 12.7 13.0 13.6 11.1	PLA.  23.4 38.6 43.3 74.7 94.0 136.4 218.2 259.7 304.9	ELA.  9.5 9.2 8.2 8.3 8.2 7.1 7.1	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0 11.4 9.3 9.1	IN.) PLA.  10.1 13.0 15.0 22.4 27.2 35.8 52.3 60.0	9.0 8.6 7.5 7.5 7.4 6.2 6.1	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9 10.2 8.0 7.8	PLA. 6.4 8.6 10.1 14.5 17.5 22.2 31.5 34.6	8.5 7.9 6.9 6.4 6.0 4.7 4.5	TOT.  11.1 10.6 8.4 8.5 8.5 8.4 6.1 5.8	PLA. 4.8 7.3 8.4 12.2 14.9 19.0 24.2 27.0
100 500 1000 5000 10000 30500 185800 330538 515900	11.2 10.9 9.7 9.8 9.8 9.8 8.6 8.5	TOT.  14.7 14.5 11.8 12.7 13.0 13.6 11.1 11.0 11.4	PLA.  23.4 38.6 43.3 74.7 94.0 136.4 218.2 259.7 304.9 321.1	ELA.  9.5 9.2 8.2 8.3 8.2 7.1 7.1	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0 11.4 9.3 9.1 9.5	IN.) PLA.  10.1 13.0 15.0 22.4 27.2 35.8 52.3 60.0 67.6	9.0 8.6 7.5 7.5 7.4 6.2 6.1 8.1	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9 10.2 8.0 7.8 8.1	PLA.  6.4  8.6 10.1 14.5 17.5 22.2 31.5 34.6 37.6	8.5 7.9 6.9 6.4 6.0 4.7 4.5	TOT. 11.1 10.6 8.4 8.5 8.5 8.4 6.1 5.8 5.8	PLA.  4.8  7.3  8.4  12.2  14.9  19.0  24.2  27.0  29.3
100 500 1000 5000 10000 30500 185800 330538 515900 676900 695700	ELA. 11.2 10.9 9.7 9.8 9.8 9.8 8.6 8.5 8.6 8.3	TOT.  14.7 14.5 11.8 12.7 13.0 13.6 11.1 11.0 11.4 10.7 11.5	PLA.  23.4 38.6 43.3 74.7 94.0 136.4 218.2 259.7 304.9 321.1	ELA.  9.5 9.2 8.2 8.3 8.2 7.2 7.1 6.9 7.1	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0 11.4 9.3 9.1 9.5 8.8 9.5	IN.) PLA.  10.1 13.0 15.0 22.4 27.2 35.8 52.3 60.0 67.6 69.0	9.0 8.6 7.5 7.5 7.4 6.2 6.1 8.1	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9 10.2 8.0 7.8 8.1 7.5 8.0	PLA.  6.4 8.6 10.1 14.5 17.5 22.2 31.5 34.6 37.6 38.8 39.0	8.5 7.9 6.9 6.6 6.4 6.0 4.7 4.5 4.4	TOT. 11.1 10.6 8.4 8.5 8.5 8.4 6.1 5.8 5.8 5.7	PLA.  4.8 7.3 8.4 12.2 14.9 19.0 24.2 27.0 29.3 30.3 30.5
100 500 1000 5000 10000 30500 185800 330538 515900 676900 695700	ELA.  11.2 10.9 9.7 9.8 9.8 9.8 8.6 8.5 8.6 8.3 8.6	TOT.  14.7  14.5  11.8  12.7  13.0  13.6  11.1  11.0  11.4  10.7  11.5	PLA.  23.4 38.6 43.3 74.7 94.0 136.4 218.2 259.7 304.9 321.1 335.6	ELA.  9.5 9.2 8.2 8.3 8.2 7.1 7.1 6.9 7.1	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0 11.4 9.3 9.1 9.5 8.8 9.5	IN.) PLA.  10.1 13.0 15.0 22.4 27.2 35.8 52.3 60.0 67.6 69.0	9.0 8.6 7.5 7.5 7.4 6.2 6.1 8.1	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9 10.2 8.0 7.8 8.1 7.5 8.0	PLA.  6.4  8.6 10.1 14.5 17.5 22.2 31.5 34.6 38.8 39.0	8.5 7.9 6.9 6.6 6.4 6.0 4.7 4.5 4.4	TOT. 11.1 10.6 8.4 8.5 8.5 8.4 6.1 5.8 5.8 5.3 5.7	4.8 7.3 8.4 12.2 14.9 19.0 24.2 27.0 29.3 30.3 30.5
100 500 1000 5000 10000 30500 185800 330538 515900 676900 695700	11.2 10.9 9.7 9.8 9.8 8.6 8.5 8.6 8.3 8.6	TOT.  14.7  14.5  11.8  12.7  13.0  13.6  11.1  11.0  11.4  10.7  11.5	PLA.  23.4 38.6 43.3 74.7 94.0 136.4 218.2 259.7 304.9 321.1 335.6	ELA.  9.5 9.2 8.2 8.2 8.2 7.1 7.1 6.9 7.1 AGGREGIENT;	#2(2.0 TOT. 12.5 12.3 10.0 10.7 11.0 11.4 9.3 9.1 9.5 8.8 9.5	IN.) PLA.  10.1 13.0 15.0 22.4 27.2 35.8 52.3 60.0 67.6 69.0	9.0 8.6 7.5 7.5 7.4 6.2 6.1 8.1	#3(4.0 TOT. 11.8 11.5 9.3 9.8 9.9 10.2 8.0 7.8 8.1 7.5 8.0	PLA.  6.4  8.6  10.1  14.5  17.5  22.2  31.5  34.6  37.6  38.8  39.0  WEIGH	ELA.  8.5 7.9 6.9 6.6 6.4 6.0 4.7 4.5 4.4 4.1 4.2	TOT.  11.1 10.6 8.4 8.5 8.5 8.4 6.1 5.8 5.8 5.7  ITUMEN OAD;	PLA.  4.8 7.3 8.4 12.2 14.9 19.0 24.2 27.0 29.3 30.3 30.5

Sample Number	WA (gr)	WB (gr)	AC (Z)	SL (1b		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (2)
22120631	10000	447	4.28	50		100	5805.0	) 9	975.0	2.52	5.08
			DEF	RMATIO	N (in	ches X (	0.0001)				
- CYCLE	LVDT #1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	<b>#</b> 4(6.0	625 II
NUMBER	ELA. TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	11.9 16.2	25.5	10.1	13.8	9.3	9.6	13.1	8.7	9.0	12.3	8.7
500	10.8 14.0	39.3	9.1	11.9	10.8	8.5	11.1	9.7	7.8	10.1	9.7
1240	9.9 12.1	48.7	8.3	10.2	11.9	7.7	9.4	10.9	6.9	8.5	10.5
5000	10.5 14.3	82.2	8.8	12.0	14.6	8.0	11.0	14.3	7.0	9.5	13.7
10000	10.5 14.6	103.4	8.8	12.3	17.0	8.0	11.1	16.5	6.8	9.5	15.6
49400	9.5 12.5	158.3	7.9	10.5	26.1	7.0	9.3	24.3	5.6	7.4	23.9
171600	8.8 11.4	223.2	7.3	9.4	33.4	6.4	8.2	31.5	4.8	6.2	31.2
359000	8.8 11.4	282.4	7.3	9.5	38.3	6.2	8.1	35.9	4.5	5.9	35.0
511400	8.8 11.7	319.5	7.3	9.7	40.8	6.2	8.2	38.3	4.4	5.9	37.2
706000	8.7 11.4	349.6	7.2	9.4	43.2	6.1	8.0	40.7	4.2	5.6	39.4
SAMPLE	WA	WB	AC	SL	)	CL	WBW	þ	⁄BA	GMM	AV
number	(gr)	(gr)	(%)	(16	s)	(lbs)	(gr)		(gr)		(%)
22120612	10000	447	4.28	50	1	200	5772.	0 8	900.0	2.52	4.8
*********	<del></del>		DEP	RMATIO	W (in	ches X	0.0001)				
	LVDT #1(0.	0 IN.)		#2(2.0			Ø.0001) <b>#</b> 3(4.0	IN.)	LVDT	#4(6.0	625 I
_	LVDT #1(0.							IN.)	LVDT	#4(6.0	625 I
_		PLA.	LVDT ELA.	#2(2.0 TOT.	IN.)	LVDT	#3(4.0		ELA.		PLA.
NUMBER	ELA. TOT.	PLA. 25.6	LVDT ELA. 18.5	#2(2.0 TOT.	IN.)	LVDT ELA. 17.4	#3(4.0 TOT.	PLA.	ELA. 16.3	TOT.	PLA.
NUMBER 100	ELA. TOT.	PLA. 25.6 45.7	LVDT ELA. 18.5 19.4	#2(2.0 TOT. 22.9 26.4	IN.) PLA. 42.6	LVDT ELA. 17.4 18.0	#3(4.0 TOT. 21.5 24.5	PLA.	ELA. 16.3 16.3	TOT.	PLA. 41.3 45.6
100 500	ELA. TOT. 21.8 26.9 22.9 31.2	PLA. 25.6 45.7 54.2	LVDT ELA. 18.5 19.4 18.2	#2(2.0 TOT. 22.9 26.4	PLA. 42.6 47.4	LVDT ELA. 17.4 18.0 16.8	#3(4.0 TOT. 21.5 24.5	PLA. 41.8 46.9	ELA. 16.3 16.3 15.0	TOT. 20.1 22.2	PLA. 41.3 45.6 48.1
100 500 1000	ELA. TOT.  21.8 26.9 22.9 31.2 21.6 28.3	PLA.  25.6 45.7 54.2 82.7	LVDT  ELA.  18.5 19.4 18.2 16.2	#2(2.0 TOT. 22.9 26.4 23.9	PLA. 42.6 47.4 51.9	LVDT ELA. 17.4 18.0 16.8 14.7	#3(4.0 TOT. 21.5 24.5 22.0	PLA. 41.8 46.9 50.0	ELA. 16.3 16.3 15.0 12.6	TOT. 20.1 22.2 19.7	PLA. 41.3 45.6 48.1 52.7
100 500 1000 5000	ELA. TOT.  21.8 26.9 22.9 31.2 21.6 28.3 19.3 23.9	PLA.  25.6 45.7 54.2 82.7 105.8	LVDT  ELA.  18.5 19.4 18.2 16.2	#2(2.0 TOT. 22.9 26.4 23.9 20.1 21.2	PLA. 42.6 47.4 51.9 63.1	LVDT ELA. 17.4 18.0 16.8 14.7 14.8	#3(4.0 TOT. 21.5 24.5 22.0 18.2 19.0	PLA. 41.8 46.9 50.0 60.5	ELA. 16.3 16.3 15.0 12.6	TOT.  20.1 22.2 19.7 15.6	PLA. 41.3 45.6 48.1 52.7 54.7
100 500 1000 5000	ELA. TOT.  21.8 26.9 22.9 31.2 21.6 28.3 19.3 23.9 19.6 25.3	PLA.  25.6 45.7 54.2 82.7 105.8 239.5	LVDT ELA.  18.5 19.4 18.2 16.2 16.5 15.6	#2(2.0 TOT. 22.9 26.4 23.9 20.1 21.2	PLA. 42.6 47.4 51.9 63.1 69.4 76.7	17.4 18.0 16.8 14.7 14.8	#3(4.0 TOT. 21.5 24.5 22.0 18.2 19.0	PLA. 41.8 46.9 50.0 60.5 66.1	ELA. 16.3 16.3 15.0 12.6 12.4	TOT.  20.1 22.2 19.7 15.6 16.0	PLA. 41.3 45.6 48.1 52.7 54.7 57.2
100 500 1000 5000 10000 136200	ELA. TOT.  21.8 26.9 22.9 31.2 21.6 28.3 19.3 23.9 19.6 25.3 18.7 25.0	PLA.  25.6 45.7 54.2 82.7 105.8 239.5 114.5	LVDT  ELA.  18.5 19.4 18.2 16.2 16.5 17.6	#2(2.0 TOT. 22.9 26.4 23.9 20.1 21.2 20.7 23.2	PLA. 42.6 47.4 51.9 63.1 69.4 76.7	LVDT  ELA.  17.4 18.0 16.8 14.7 14.8 13.4	#3(4.0 TOT. 21.5 24.5 22.0 18.2 19.0 17.9 20.8	PLA. 41.8 46.9 50.0 60.5 66.1 72.1	ELA. 16.3 16.3 15.0 12.6 12.4 10.1	TOT.  20.1 22.2 19.7 15.6 16.0 13.5	PLA. 41.3 45.6 48.1 52.7 54.7 57.2 59.6
100 500 1000 5000 10000 136200 11111 322900	21.8 26.9 22.9 31.2 21.6 28.3 19.3 23.9 19.6 25.3 18.7 25.0 20.5 27.7	PLA.  25.6 45.7 54.2 82.7 105.8 239.5 114.5 293.2	LVDT ELA.  18.5 19.4 18.2 16.2 16.5 15.6 17.2 14.3	#2(2.0 TOT. 22.9 26.4 23.9 20.1 21.2 20.7 23.2 18.0	PLA. 42.6 47.4 51.9 63.1 69.4 76.7 93.0 100.8	LVDT  ELA.  17.4 18.0 16.8 14.7 14.8 13.4 15.4	#3(4.0 TOT. 21.5 24.5 22.0 18.2 19.0 17.9 20.8	PLA. 41.8 46.9 50.0 60.5 66.1 72.1 85.8 91.5	ELA.  16.3 15.0 12.6 12.4 10.1 12.9 8.7	TOT.  20.1 22.2 19.7 15.6 16.0 13.5 17.4	PLA. 41.3 45.6 48.1 52.7 54.7 57.2 59.6
500 1000 5000 10000 136200 11111 322900 495600	21.8 26.9 22.9 31.2 21.6 28.3 19.3 23.9 19.6 25.3 18.7 25.0 20.5 27.7 17.2 21.7	PLA.  25.6 45.7 54.2 82.7 105.8 239.5 114.5 293.2 360.9	LVDT  ELA.  18.5 19.4 18.2 16.2 16.5 17.6 17.2 14.3 15.2	#2(2.0 TOT. 22.9 26.4 23.9 20.1 21.2 20.7 23.2 18.0 20.7	PLA.  42.6 47.4 51.9 63.1 69.4 76.7 93.0 100.8	LVDT  ELA.  17.4 18.0 16.8 14.7 14.8 13.4 15.4	#3(4.0 TOT. 21.5 24.5 22.0 18.2 19.0 17.9 20.8 15.3 17.5	PLA. 41.8 46.9 50.0 60.5 66.1 72.1 85.8 91.5 94.0	ELA.  16.3 15.0 12.6 12.4 10.1 12.9 8.7	TOT.  20.1 22.2 19.7 15.6 16.0 13.5 17.4 11.0 12.3	PLA. 41.3 45.6 48.1 52.7 54.7 57.2 59.6 59.6
100 500 1000 5000 10000 136200 11111 322900 495600	ELA. TOT.  21.8 26.9 22.9 31.2 21.6 28.3 19.3 23.9 19.6 25.3 18.7 25.0 20.5 27.7 17.2 21.7 18.4 25.1	PLA.  25.6 45.7 54.2 82.7 105.8 239.5 114.5 293.2 360.9	LVDT  ELA.  18.5 19.4 18.2 16.2 16.5 15.6 17.2 14.3 15.2	#2(2.0 TOT. 22.9 26.4 23.9 20.1 21.2 20.7 23.2 18.0 20.7	PLA.  42.6 47.4 51.9 63.1 69.4 76.7 93.0 100.8	LVDT  ELA.  17.4 18.0 16.8 14.7 14.8 13.4 15.4	#3(4.0 TOT. 21.5 24.5 22.0 18.2 19.0 17.9 20.8 15.3 17.5	PLA. 41.8 46.9 50.0 60.5 66.1 72.1 85.8 91.5 94.0	ELA.  16.3 15.0 12.6 12.4 10.1 12.9 8.7 9.0	TOT.  20.1 22.2 19.7 15.6 16.0 13.5 17.4 11.0 12.3	PLA. 41.3 45.6 48.1 52.7 54.7 57.2 59.6 59.6
100 500 1000 5000 10000 136200 11111 322900 495600	21.8 26.9 22.9 31.2 21.6 28.3 19.3 23.9 19.6 25.3 18.7 25.0 20.5 27.7 17.2 21.7 18.4 25.1	25.6 45.7 54.2 82.7 105.8 239.5 114.5 293.2 360.9	LVDT  ELA.  18.5 19.4 18.2 16.2 16.5 15.6 17.2 14.3 15.2  AGGREGIENT;	#2(2.0 TOT. 22.9 26.4 23.9 20.1 21.2 20.7 23.2 18.0 20.7	PLA.  42.6 47.4 51.9 63.1 69.4 76.7 93.0 100.8	LVDT  ELA.  17.4 18.0 16.8 14.7 14.8 13.4 15.4	#3(4.0 TOT. 21.5 24.5 22.0 18.2 19.0 17.9 20.8 15.3 17.5 WB = SL =	PLA. 41.8 46.9 50.0 60.5 66.1 72.1 85.8 91.5 94.0 WEIGH	ELA.  16.3 15.0 12.6 12.4 10.1 12.9 8.7 9.0	TOT.  20.1 22.2 19.7 15.6 16.0 13.5 17.4 11.0 12.3 ITUMEN; OAD;	PLA. 41.3 45.6 48.1 52.7 54.7 57.2 59.6 59.6

ELA. AND TOT. - ELASTIC AND TOTAL DEFORMATION/CYCLE;

GMM - MAXIMUM THEORETICAL SPECIFIC GRAVITY;

SAMPLE NUMBER		NA Br)	WB (gr)	AC (%)	SL (lb)		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (%)
	``											
22120622	100	000	447	4.28	50		200	5815.0	9	972.0	2.52	4.8
				DEF	ORMATIO	M (in	ches X	0.0001)				
	LVDT	#1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 II
cycle _ number	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	23.2	30.3	26.9	19.7	25.8	14.6	18.6	24.3	13.9	17.3	22.6	11.7
500	21.1	26.3	41.5	17.8	22.2	15.8	16.5	20.6	14.9	15.0	18.7	12.7
1000	22.5	30.6	55.8	19.0	25.9	17.3	17.5	23.8	16.0	15.7	21.4	13.7
5000	19.6	24.5	82.9	16.5	20.6	25.6	14.9	18.6	22.1	12.8	16.0	19.0
10000	20.2	26.6	107.4	16.9	22.3	31.4	15.2	20.0	27.0	12.8	16.8	23.4
33500	20.6	28.7	163.4	17.2	24.0	37.5	15.2	21.2	31.9	12.2	17.1	28.3
143000	18.8	25.0	240.7	15.6	20.7	42.9	13.5	17.9	35.7	10.1	13.5	30.7
328500	18.6	25.1	313.4	15.4	20.7	46.1	13.1	17.6	38.2	9.4	12.7	32.0
490000	16.3	19.5	313.7	13.5	16.1	48.5	11.4	13.6	39.4	8.0	9.6	32.5
687000	17.3	22.4	373.9	14.3	18.5	49.5	12.0	15.5	39.7	8.2	10.6	32.5
SAMPLE		λA	WB	AC	SL		CL (lbs)	WBW	_	BA	GMM	
SAMPLE NUMBER 22120632	(1	MA Br)	WB (gr)	AC (X)	SL (1b)		CL (1bs)	WBW (gr)	(	BA gr) 980.0	2.52	(%)
NUMBER	(1	Br)	(gr)	4.28	(1b)	•)	(1bs)	(gr) 5808.	(	gr)		(%)
NUMBER 22120632	100	Br)	(gr)	4.28 DEF	(1b)	N (inc	(1bs) 200 ches X (	(gr) 5808.	0 9	8r) 980.0		5.0
22120632 	100	Br)	(gr) 447 0 IN.)	4.28 DEF	50 DRMATIO	N (inc	(1bs) 200 ches X (	5808.0 0.0001)	0 9	8r) 980.0	2.52	5.0
22120632 	LVDT ELA.	#1(0.	(gr) 447 0 IN.)	4.28 DEFC LVDT ELA.	50  ORMATIO  #2(2.0	N (inc	(lbs) 200 ches X (	5808.( 0.0001) #3(4.0	IN.)	980.0 LVDT ELA.	2.52 #4(6.0	5.0 625 I
NUMBER  22120632  CYCLE  NUMBER	100 LVDT ELA. 22.8	#1(0.	(gr) 447 0 IN.) PLA.	(X) 4.28 DEFC LVDT ELA. 19.3	50 DRMATIO #2(2.0 TOT.	N (inc	(1bs) 200 ches X ( LVDT ELA. 18.1	(gr) 5808.( 0.0001) #3(4.0 TOT.	(0 9 IN.)	980.0 LVDT ELA.	2.52 #4(6.0	5.0 625 I PLA.
NUMBER  22120632  CYCLE NUMBER	100 LVDT ELA. 22.8 21.8	#1(0. TOT.	(gr) 447 0 IN.) PLA. 28.2 45.9	(Z) 4.28 DEFC LVDT ELA. 19.3 18.3	50 DRMATIO  \$2(2.0 TOT.  24.1	N (inc IN.) PLA.	200  ches X (  LVDT  ELA.  18.1  17.0	(gr) 5808.( 0.0001) #3(4.0 TOT. 22.6	IN.) PLA.	980.0 LVDT ELA. 16.9 15.3	2.52 #4(6.0 TOT.	5.0 625 I PLA. 12.8 14.7
NUMBER  22120632  CYCLE  NUMBER  100 500	LVDT  ELA.  22.8 21.8 22.8	#1(0. TOT. 28.4 27.2	(gr) 447 0 IN.) PLA. 28.2 45.9	(Z) 4.28 DEFC LVDT ELA. 19.3 18.3 19.2	50  DRMATIO  \$2(2.0)  TOT.  24.1 22.9	IN.) PLA. 12.1 14.5	200  ches X (  LVDT  ELA.  18.1  17.0  17.6	(gr) 5808.( 0.0001) #3(4.0 TOT. 22.6 21.2	IN.) PLA. 11.4 13.4	980.0 LVDT ELA. 16.9 15.3 15.7	2.52 #4(6.0 TOT. 21.1 19.2	5.0 625 I PLA. 12.8 14.7 15.9
NUMBER  22120632  CYCLE  NUMBER  100  500  1000	LVDT  ELA.  22.8 21.8 22.8 19.3	#1(0. TOT. 28.4 27.2	(gr) 447 0 IN.) PLA. 28.2 45.9 60.5 87.2	(X) 4.28  DEF( LVDT  ELA.  19.3 18.3 19.2 16.1	50  DRMATION #2(2.0  TOT.  24.1 22.9 25.8	IN.) PLA. 12.1 14.5 16.5	200  ches X (  LVDT  ELA.  18.1  17.0  14.6	(gr) 5808.( 0.0001) #3(4.0 TOT.  22.6 21.2 23.7	IN.) PLA. 11.4 13.4 15.0	980.0 LVDT ELA. 16.9 15.3 15.7 12.5	#4(6.0 TOT. 21.1 19.2 21.1	5.0 625 I PLA. 12.8 14.7 15.9 18.3
NUMBER  22120632  CYCLE NUMBER  100 500 1000 5000	LVDT  ELA.  22.8 21.8 22.8 19.3 21.1	#1(0. TOT. 28.4 27.2 30.7 23.1	(gr)  447  0 IN.)  PLA.  28.2 45.9 60.5 87.2 123.2	(Z) 4.28 DEF( LVDT ELA. 19.3 18.3 19.2 16.1 17.6	50 DRMATIO #2(2.0 TOT. 24.1 22.9 25.8 19.3	IN.) PLA. 12.1 14.5 16.5 22.6	200 ches X (LVDT ELA. 18.1 17.0 17.6 14.6 15.7	(gr) 5808.( 0.0001) #3(4.0 TOT. 22.6 21.2 23.7 17.4	IN.) PLA. 11.4 13.4 15.0 18.5	8r) 980.0 LVDT ELA. 16.9 15.3 15.7 12.5 13.1	2.52 #4(6.0 TOT. 21.1 19.2 21.1 14.9	
NUMBER  22120632  CYCLE NUMBER  100 500 1000 5000 10800	100 LVDT ELA. 22.8 21.8 22.8 19.3 21.1	#1(0. TOT. 28.4 27.2 30.7 23.1 28.3	(gr)  447  0 IN.)  PLA.  28.2 45.9 60.5 87.2 123.2 253.7	(X) 4.28 DEFC LVDT ELA. 19.3 18.3 19.2 16.1 17.6 15.1	50  DRMATIO  \$2(2.0)  TOT.  24.1 22.9 25.8 19.3 23.6	IN.) PLA.  12.1 14.5 16.5 22.6 29.0	200  ches X (  LVDT  ELA.  18.1 17.0 17.6 14.6 15.7 13.0	(gr) 5808.( 0.0001) #3(4.0 TOT. 22.6 21.2 23.7 17.4 21.1	IN.) PLA. 11.4 13.4 15.0 18.5 22.9	980.0 LVDT ELA. 16.9 15.3 15.7 12.5 13.1 9.7	2.52 #4(6.0 TOT. 21.1 19.2 21.1 14.9 17.6	5.0 625 I PLA. 12.8 14.7 15.9 18.3 21.7 24.0
NUMBER  22120632  CYCLE NUMBER  100 500 1000 5000 10800 147150 320100	LVDT  ELA.  22.8 21.8 22.8 19.3 21.1 18.3 17.3	#1(0. TOT. 28.4 27.2 30.7 23.1 28.3 23.2	(gr)  447  0 IN.)  PLA.  28.2 45.9 60.5 87.2 123.2 253.7	(X) 4.28 DEF( LVDT ELA. 19.3 18.3 19.2 16.1 17.6 15.1 14.2	50  DRMATION #2(2.0  TOT.  24.1 22.9 25.8 19.3 23.6 19.1	IN.) PLA. 12.1 14.5 16.5 22.6 29.0 48.2	200  ches X (  LVDT  ELA.  18.1 17.0 17.6 14.6 15.7 13.0 12.1	(gr) 5808.( 0.0001) #3(4.0 TOT.  22.6 21.2 23.7 17.4 21.1 16.4	IN.) PLA.  11.4 13.4 15.0 18.5 22.9 30.5	980.0 LVDT ELA. 16.9 15.3 15.7 12.5 13.1 9.7 8.6	2.52 #4(6.0 TOT. 21.1 19.2 21.1 14.9 17.6 12.2	5.0 625 I PLA. 12.8 14.7 15.9 18.3 21.7 24.0 23.5
NUMBER  22120632  CYCLE NUMBER  100 500 1000 5000 10800 147150 320100 505000	LVDT  ELA.  22.8 21.8 22.8 21.1 18.3 17.3 16.8	#1(0. TOT. 28.4 27.2 30.7 23.1 28.3 23.2 21.2 20.2	(gr)  447  0 IN.)  PLA.  28.2 45.9 60.5 87.2 123.2 253.7 309.9	19.3 18.3 19.2 16.1 17.6 15.1 14.2 13.8	50  DRMATION  \$2(2.0)  TOT.  24.1  22.9  25.8  19.3  23.6  19.1  17.4  16.6	IN.) PLA. 12.1 14.5 16.5 22.6 29.0 48.2 54.2	200  ches X (  LVDT  ELA.  18.1 17.0 17.6 14.6 15.7 13.0 12.1	(gr) 5808.( 0.0001) #3(4.0 TOT.  22.6 21.2 23.7 17.4 21.1 16.4 14.7 13.9	IN.) PLA.  11.4 13.4 15.0 18.5 22.9 30.5 32.0 33.0	8r)  980.0  LVDT  ELA.  16.9 15.3 15.7 12.5 13.1 9.7 8.6 8.0	#4(6.0 TOT. 21.1 19.2 21.1 14.9 17.6 12.2 10.5	5.0 5.0 625 I PLA. 12.8 14.7 15.9 18.3 21.7 24.0 23.5
100 5000 10800 147150 320100 505000 A = TO	LVDT  ELA.  22.8 21.8 22.8 19.3 21.1 18.3 17.3 16.8	#1(0. TOT. 28.4 27.2 30.7 23.1 28.3 23.2 21.2 20.2	(gr)  447  0 IN.)  PLA.  28.2 45.9 60.5 87.2 123.2 253.7 309.9 349.4	19.3 18.3 19.2 16.1 17.6 15.1 14.2 13.8	50  DRMATION  \$2(2.0)  TOT.  24.1  22.9  25.8  19.3  23.6  19.1  17.4  16.6	IN.) PLA. 12.1 14.5 16.5 22.6 29.0 48.2 54.2	200  ches X (  LVDT  ELA.  18.1 17.0 17.6 14.6 15.7 13.0 12.1	(gr) 5808.( 0.0001) #3(4.0 TOT.  22.6 21.2 23.7 17.4 21.1 16.4 14.7 13.9	IN.) PLA.  11.4 13.4 15.0 18.5 22.9 30.5 32.0 33.0	8r)  980.0  LVDT  ELA.  16.9 15.3 15.7 12.5 13.1 9.7 8.6 8.0	2.52 #4(6.0 TOT. 21.1 19.2 21.1 14.9 17.6 12.2 10.5 9.6	5.0 5.0 625 I PLA. 12.8 14.7 15.9 18.3 21.7 24.0 23.5

GMM - MAXIMUM THEORETICAL SPECIFIC GRAVITY;

ELA. AND TOT. = ELASTIC AND TOTAL DEFORMATION/CYCLE;

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BEAM CYCLIC LOAD DATA

A. T 0.4 72 1.6 86 1.6 66 1.4 78 1.1 69 1.1 65	(0.0 IN OT. PL .5 36 .2 65 .7 83 .8 121 .2 163 .8 232	i.9 i.4 i.7 i.8 i.5	LVDT ELA. 49.4 51.0 51.7 44.0 46.9 43.2	#2(2.0 TOT. 60.2 67.9 71.5 54.8 64.0	IN.) PLA. 33.8 36.8 38.5 43.9	45.8 46.0	#3(4.0		ELA. 40.7 39.8 39.3	TOT. 49.7 53.1 54.3	PLA. 31.2 33.1 34.1
DT #1  A. T  1.4 72  1.7 82  1.6 86  1.6 66  1.4 78  1.1 69  1.1 65	(0.0 IN OT. PL .5 36 .2 65 .7 83 .8 121 .2 163 .8 232 .0 356	i.9 i.4 i.7 i.8 i.5	DEFO LVDT ELA. 49.4 51.0 51.7 44.0 46.9 43.2	#2(2.0 TOT. 60.2 67.9 71.5 54.8 64.0	IN.) PLA. 33.8 36.8 38.5 43.9	LVDT  ELA.  45.2 45.8 46.0	#3(4.0 TOT. 55.1 61.0 63.6	IN.) PLA. 32.6 35.0 36.6	LVDT ELA. 40.7 39.8 39.3	#4(6.0 TOT. 49.7 53.1 54.3	625 IN PLA. 31.2 33.1 34.1
A. T 0.4 72 1.6 86 1.6 66 1.4 78 1.1 69 1.1 65	OT. PL .5 36 .2 65 .7 83 .8 121 .2 163 .8 232 .0 356	A. 6.9 6.3 6.4 6.7 6.8 6.5	LVDT ELA. 49.4 51.0 51.7 44.0 46.9 43.2	#2(2.0 TOT. 60.2 67.9 71.5 54.8 64.0	IN.) PLA. 33.8 36.8 38.5 43.9	LVDT ELA. 45.2 45.8 46.0	#3(4.0 TOT. 55.1 61.0 63.6	PLA. 32.6 35.0 36.6	ELA. 40.7 39.8 39.3	TOT. 49.7 53.1 54.3	PLA. 31.2 33.1 34.1
A. T 0.4 72 1.6 86 1.6 66 1.4 78 1.1 69 1.1 65	OT. PL .5 36 .2 65 .7 83 .8 121 .2 163 .8 232 .0 356	A. 6.9 6.3 6.4 6.7 6.8 6.5	ELA. 49.4 51.0 51.7 44.0 46.9 43.2	TOT. 60.2 67.9 71.5 54.8 64.0	PLA. 33.8 36.8 38.5 43.9	ELA. 45.2 45.8 46.0	TOT.  55.1 61.0 63.6	PLA. 32.6 35.0 36.6	ELA. 40.7 39.8 39.3	TOT. 49.7 53.1 54.3	PLA. 31.2 33.1 34.1
	.5 36 .2 65 .7 83 .8 121 .2 163 .8 232 .0 356	3.9 3.3 3.4 7 3.8 3.5	49.4 51.0 51.7 44.0 46.9 43.2	60.2 67.9 71.5 54.8 64.0	33.8 36.8 38.5 43.9	45.2 45.8 46.0	55.1 61.0 63.6	32.6 35.0 36.6	40.7 39.8 39.3	49.7 53.1 54.3	31.2 33.1 34.1
7 82 6 86 6 66 4 78 1 69	.2 65 .7 83 .8 121 .2 163 .8 232 .0 356	3.4 7 3.8 3.5	51.0 51.7 44.0 46.9 43.2	67.9 71.5 54.8 64.0	36.8 38.5 43.9	45.8 46.0	61.0 63.6	35.0 36.6	39.8 39.3	53.1 54.3	33.1 34.1
.6 86 .6 66 .4 78 .1 69	.7 83 .8 121 .2 163 .8 232 .0 356	7 8 5	51.7 44.0 46.9 43.2	71.5 54.8 64.0	38.5 43.9	46.0	63.6	36.6	39.3	54.3	34.1
.6 66 .4 78 .1 69	.8 121 .2 163 .8 232 .0 356	7	44.0 46.9 43.2	54.8 64.0	43.9						
.4 78 .1 69 .1 65	.2 163 .8 232 .0 356	. 8 5 7	46.9 43.2	64.0		38.3	47.7	40.1	31 0		
.1 69	.8 232 .0 356	3.5	43.2					-	51.0	38.6	35.6
.1 65	.0 356	5.7		56 8	46.8	40.4	55.1	42.1	31.8	43.4	36.2
			40 5	50.0	52.0	36.4	47.8	45.5	26.9	35.4	36.8
.6 55	.2 415		₹0.5	52.5	58.3	33.1	43.0	50.8	22.4	29.0	37.0
		, , <b>,</b>	36.7	44.5	61.0	29.6	35.8	53.5	18.9	22.9	37.0
WA		7B	AC	SL		CIL	WBW	w	BA	GMM	AV
	(a	; <b>r</b> )	(2)			(lbs)	(gr)		_		(%)
10000	44	7	4.28	50	1	500	5815.	0 99	980.0	2.52	4.91
	******		DEFO	RMATIC	N (in	ches X	0.0001)		*****		2227K
DT #1	(0.0 IN	1.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
A. T	OT. PL	Α.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
.7 84	.6 37	.4	53.1	70.6	20.8	48.7	64.7	25.2	44.0	58.6	29.3
.3 74	. 6 58	1.4	48.4	62.0	24.4	43.6	55.8	29.0	38.0	48.7	34.2
.0 68	.1 71	5	45.5	56.4	26.3	40.6	50.3	29.4	34.7	43.0	36.6
.3 77	. 8 126	. 9	47.2	64.1	30.8	41.2	55.9	30.6	33.4	45.3	41.5
.3 76	.8 156	. 4	46.3	63.1	32.8	39.9	54.5	32.3	31.5	42.9	43.9
.0 74	.9 192	8.8	45.1	61.4	35.6	38.4	52.4	34.3	29.4	40.0	46.1
.7 55	.0 309	1.7	37.1	44.7	42.9	30.5	36.7	40.4	20.8	25.0	52.2
.2 65	.4 431	. 8	39.8	52.9	42.9	32.2	42.7	40.4	20.7	27.5	52.2
L WEI	GHT OF	DRY A	AGGREG	GATES;			WB =	WEIGH:	OF B	I TUMEN ;	
ENT A	SPHALT	CONTE	ent ;				SL =	SUSTA	INED L	DAD;	
HT OF	SAMPLE	IN A	AIR;				CL -	CYCLIC	LOAD	;	
HT OF	SAMPLE	IN W	vater;	;			AA -	PERCE	NT AIR	VOIDS;	
	10000 VDT #1 LA. To 3.7 84 3.7 84 3.7 85 5.0 68 7.3 76 5.0 74 5.7 55 9.2 65 AL WEIC CENT A. GHT OF GHT OF	(gr) (8  10000 44  7DT \$1(0.0 IN  LA. TOT. PL  3.7 84.6 37  3.3 74.6 58  5.0 68.1 71  7.3 77.8 126  5.3 76.8 156  5.0 74.9 192  5.7 55.0 309  9.2 65.4 431  AL WEIGHT OF CENT ASPHALT GHT OF SAMPLE GHT OF SAMPLE IMUM THEORETI	(gr) (gr)  10000 447  707 \$1(0.0 IN.)  LA. TOT. PLA.  3.7 84.6 37.4  3.3 74.6 58.4  5.0 68.1 71.5  7.3 77.8 126.9  6.3 76.8 156.4  5.0 74.9 192.8  5.7 55.0 309.7  9.2 65.4 431.8  AL WEIGHT OF DRY A  CENT ASPHALT CONTI GHT OF SAMPLE IN A  SHIT OF SAMPLE IN A  SH	(gr) (gr) (7)  10000 447 4.28  DEFC  DEFC	(gr) (gr) (Z) (1b)  10000 447 4.28 50  DEFORMATION  VDT \$1(0.0 IN.) LVDT \$2(2.0 IN.)  LA. TOT. PLA. ELA. TOT.  3.7 84.6 37.4 53.1 70.6 IN.  3.3 74.6 58.4 48.4 62.0 IN.  5.0 68.1 71.5 45.5 56.4 IN.  7.3 77.8 126.9 47.2 64.1 IN.  5.0 74.9 192.8 45.1 61.4 IN.  5.7 55.0 309.7 37.1 44.7 IN.  9.2 65.4 431.8 39.8 52.9  AL WEIGHT OF DRY AGGREGATES;  CENT ASPHALT CONTENT;  GHT OF SAMPLE IN WATER;  IMUM THEORETICAL SPECIFIC GRA	(gr) (gr) (Z) (lbs)  10000 447 4.28 50  DEFORMATION (inc.)  JULY #1(0.0 IN.) LVDT #2(2.0 IN.)  LA. TOT. PLA. ELA. TOT. PLA.  3.7 84.6 37.4 53.1 70.6 20.8  3.3 74.6 58.4 48.4 62.0 24.4  5.0 68.1 71.5 45.5 56.4 26.3  7.3 77.8 126.9 47.2 64.1 30.8  5.3 76.8 156.4 46.3 63.1 32.8  5.0 74.9 192.8 45.1 61.4 35.6  5.7 55.0 309.7 37.1 44.7 42.9  9.2 65.4 431.8 39.8 52.9 42.9  AL WEIGHT OF DRY AGGREGATES; CENT ASPHALT CONTENT; SHT OF SAMPLE IN WATER; IMUM THEORETICAL SPECIFIC GRAVITY;	(gr) (gr) (Z) (lbs) (lbs)  10000 447 4.28 50 500  DEFORMATION (inches X (1000)	(gr) (gr) (Z) (lbs) (lbs) (gr)  10000 447 4.28 50 500 5815.6  DEFORMATION (inches X 0.0001)  VDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0  LA. TOT. PLA. ELA. TOT. PLA. ELA. TOT.  3.7 84.6 37.4 53.1 70.6 20.8 48.7 64.7  3.3 74.6 58.4 48.4 62.0 24.4 43.6 55.8  5.0 68.1 71.5 45.5 56.4 26.3 40.6 50.3  7.3 77.8 126.9 47.2 64.1 30.8 41.2 55.9  5.3 76.8 156.4 46.3 63.1 32.8 39.9 54.5  5.0 74.9 192.8 45.1 61.4 35.6 38.4 52.4  5.7 55.0 309.7 37.1 44.7 42.9 30.5 36.7  9.2 65.4 431.8 39.8 52.9 42.9 32.2 42.7  AL WEIGHT OF DRY AGGREGATES;  CENT ASPHALT CONTENT;  SHT OF SAMPLE IN WATER;  CHUM THEORETICAL SPECIFIC GRAVITY;	(gr) (gr) (X) (lbs) (lbs) (gr) (x)   (gr) (gr) (gr) (gr) (gr) (gr) (gr) (gr)	(gr) (gr) (Z) (lbs) (lbs) (gr) (gr)  DEFORMATION (inches X 0.0001)  DEFORMATION (inches X 0.0001)  DEFORMATION (inches X 0.0001)  LA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA.  3.7 84.6 37.4 53.1 70.6 20.8 48.7 64.7 25.2 44.0  3.3 74.6 58.4 48.4 62.0 24.4 43.6 55.8 29.0 38.0  5.0 68.1 71.5 45.5 56.4 26.3 40.6 50.3 29.4 34.7  7.3 77.8 126.9 47.2 64.1 30.8 41.2 55.9 30.6 33.4  5.0 74.9 192.8 45.1 61.4 35.6 38.4 52.4 34.3 29.4  5.7 55.0 309.7 37.1 44.7 42.9 30.5 36.7 40.4 20.8  9.2 65.4 431.8 39.8 52.9 42.9 32.2 42.7 40.4 20.7  AL WEIGHT OF DRY AGGREGATES;  CENT ASPHALT CONTENT;  CHI OF SAMPLE IN MATER;  CHI OF SAMPLE IN WATER;  CHI OF SAMPLE IN WATER;  CHI MUM THEORETICAL SPECIFIC GRAVITY;	(gr) (gr) (Z) (lbs) (lbs) (gr) (gr)   (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr)   (lbs) (gr) (gr) (gr) (gr)   (lbs) (gr) (gr) (gr) (gr) (gr) (gr) (gr) (gr

BEAM CYCLIC LOAD DATA

SAMPLE NUMBER	WA (gr)	WB (gr)	AC (I)	SL (1b		CL (lbs)	WBW (gr)		BA gr)	GMM	AV (%)
···											
22120635	10000	447	4.28	50		500	5812.	0 9	993.0	2.52	5.15
			DEF	ORMATIO	N (in	ches X	0.0001)	ı			
	LVDT #1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA. TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	67.1 91.5	41.9	55.7	76.0	17.1	50.9	69.4	16.7	45.9	62.6	17.7
500	63.3 85.8	67.4	52.3	70.8	22.4	47.0	63.6	22.5	40.8	55.3	23.1
1000	54.5 64.9	72.9	44.9	53.4	24.9	39.9	47.6	24.9	34.1	40.6	26.2
5500	57.1 75.3	134.3	46.8	61.6	35.6	40.6	53.5	36.1	32.7	43.1	38.4
10000	56.3 74.5	161.3	46.0	60.8	39.3	39.6	52.3	42.4	31.1	41.1	44.5
128000	47.9 58.6	319.5	38.7	47.3	56.4	31.8	38.9	66.8	21.8	26.6	72.6
337900	46.0 55.6	422.8	37.0	44.8	64.9	29.8	36.0	78.0	18.9	22.9	83.6
SAMPLE	WA	WB	AC	SL		CL	WBW	w	BA	GMM	VA
NUMBER	(gr)	(gr)	(%)	(1b		(lbs)	(gr)		gr)		(%)
	10-7										,
32120611	10000	460	4.40	50		100	5826.	0 9	994.0	2.53	5.23
		~	DEF	ORMATIO	N (in	-b V	0.0001	)			
						Ches A					
	LVDT #1(0.	0 IN.)		#2(2.0	IN.)		<b>#</b> 3(4.0	) IN.)	LVDT	#4(6.0	625 II
_	LVDT #1(0.			#2(2.0	IN.)		#3(4.0	PLA.	LVDT	#4(6.0	625 II
_			LVDT			LVDT					
NUMBER	ELA. TOT.	PLA.	LVDT ELA. 9.6	тот.	PLA.	ELA.	TOT.	PLA.			
NUMBER	ELA. TOT.	PLA. 25.3	ELA. 9.6 9.6 9.2	TOT.  12.4 13.1 12.1	PLA. 5.2 12.9 21.0	ELA. 9.1 9.0	TOT.	PLA.			
100 500	ELA. TOT.  11.4 14.6 11.4 15.6	PLA. 25.3 43.2 51.6	ELA. 9.6 9.6 9.2	TOT. 12.4 13.1	PLA. 5.2 12.9 21.0	ELA. 9.1 9.0 8.5	TOT. 11.7 12.3	PLA. 3.7 8.2 12.8	ELA. - -		
100 500 1000 5500	ELA. TOT.  11.4 14.6  11.4 15.6  10.9 14.4	PLA. 25.3 43.2 51.6 86.4	LVDT  ELA.  9.6  9.6  9.2  8.7	TOT.  12.4 13.1 12.1	PLA. 5.2 12.9 21.0 51.3	ELA. 9.1 9.0 8.5 7.9	TOT.  11.7 12.3 11.2	PLA. 3.7 8.2 12.8 27.8	ELA. - - -		
500 1000 5500 12000	ELA. TOT.  11.4 14.6 11.4 15.6 10.9 14.4 10.4 13.9	PLA.  25.3 43.2 51.6 86.4 104.5	LVDT ELA.  9.6 9.6 9.2 8.7 8.1	TOT.  12.4 13.1 12.1 11.6 10.4	PLA. 5.2 12.9 21.0 51.3 85.2	9.1 9.0 8.5 7.9	TOT.  11.7 12.3 11.2 10.6 9.4	PLA.  3.7 8.2 12.8 27.8 43.8	ELA.	TOT.	
100 500 1000 5500 12000 37000	ELA. TOT.  11.4 14.6 11.4 15.6 10.9 14.4 10.4 13.9 9.7 12.4	PLA.  25.3 43.2 51.6 86.4 104.5 153.4	ELA.  9.6 9.6 9.2 8.7 8.1 8.2	TOT.  12.4 13.1 12.1 11.6 10.4 11.0	PLA. 5.2 12.9 21.0 51.3 85.2 140.7	9.1 9.0 8.5 7.9 7.3	TOT.  11.7 12.3 11.2 10.6 9.4	PLA.  3.7 8.2 12.8 27.8 43.8 66.6	- - - - -	TOT.	
100 500 1000 5500 12000 37000	11.4 14.6 11.4 15.6 10.9 14.4 10.4 13.9 9.7 12.4 9.8 13.2	PLA.  25.3 43.2 51.6 86.4 104.5 153.4 225.5	ELA.  9.6 9.6 9.2 8.7 8.1 8.2 7.3	TOT.  12.4 13.1 12.1 11.6 10.4 11.0	PLA. 5.2 12.9 21.0 51.3 85.2 140.7	9.1 9.0 8.5 7.9 7.3	TOT.  11.7 12.3 11.2 10.6 9.4 9.8	PLA.  3.7 8.2 12.8 27.8 43.8 66.6	- - - - -	TOT.	
100 500 1000 5500 12000 37000 164500	ELA. TOT.  11.4 14.6 11.4 15.6 10.9 14.4 10.4 13.9 9.7 12.4 9.8 13.2 8.9 11.2	PLA.  25.3 43.2 51.6 86.4 104.5 153.4 225.5 275.9	LVDT  ELA.  9.6 9.6 9.2 8.7 8.1 8.2 7.3	TOT.  12.4 13.1 12.1 11.6 10.4 11.0 9.3	PLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	ELA.  9.1 9.0 8.5 7.9 7.3 6.3	TOT.  11.7 12.3 11.2 10.6 9.4 9.8 8.0	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8		TOT.	PLA.
100 500 1000 5500 12000 37000 164500 365550	ELA. TOT.  11.4 14.6 11.4 15.6 10.9 14.4 10.4 13.9 9.7 12.4 9.8 13.2 8.9 11.2 8.3 10.2	PLA.  25.3 43.2 51.6 86.4 104.5 153.4 225.5 275.9	LVDT  ELA.  9.6 9.6 9.2 8.7 8.1 8.2 7.3 -	TOT.  12.4 13.1 12.1 11.6 10.4 11.0 9.3	PLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	ELA.  9.1 9.0 8.5 7.9 7.3 6.3	TOT.  11.7 12.3 11.2 10.6 9.4 9.8 8.0 -	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	ELA.	TOT.	PLA.
100 500 1000 5500 12000 37000 164500 365550	ELA. TOT.  11.4 14.6 11.4 15.6 10.9 14.4 10.4 13.9 9.7 12.4 9.8 13.2 8.9 11.2 8.3 10.2	PLA.  25.3 43.2 51.6 86.4 104.5 153.4 225.5 275.9	ELA.  9.6 9.6 9.2 8.7 8.1 8.2 7.3 - AGGREG	TOT.  12.4 13.1 12.1 11.6 10.4 11.0 9.3	PLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	ELA.  9.1 9.0 8.5 7.9 7.3 6.3	TOT.  11.7 12.3 11.2 10.6 9.4 9.8 8.0	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	ELA.	TOT.  ITUMEN;	PLA.
100 500 1000 5500 12000 37000 164500 365550 A = TC C = PI	ELA. TOT.  11.4 14.6 11.4 15.6 10.9 14.4 10.4 13.9 9.7 12.4 9.8 13.2 8.9 11.2 8.3 10.2  OTAL WEIGHT ERCENT ASPE	PLA.  25.3  43.2  51.6  86.4  104.5  153.4  225.5  275.9  OF DRY  IALT CON	ELA.  9.6 9.6 9.2 8.7 8.1 8.2 7.3 AGGREGIENT; AIR;	TOT.  12.4 13.1 12.1 11.6 10.4 11.0 9.3 - GATES;	PLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	ELA.  9.1 9.0 8.5 7.9 7.3 6.3	TOT.  11.7 12.3 11.2 10.6 9.4 9.8 8.0	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	ELA.	TOT.  ITUMEN;	PLA.

BEAM CYCLIC LOAD DATA

SAMPLE	WA		WB	AC	_	L	CL	WBW		BA .	GMM	AV
NUMBER	(gr)	) 	(gr)	(2)	(1	bs)	(lbs)	(gr)	(	gr)		(%)
32120621	10000	0	460	4.40	5	0	100	5828.	0 9	997.0	2.53	5.22
				DEF	ORMATI	ON (in	ches X (	0.0001)				
CYCLE	LVDT #1	1(0.	0 IN.)	LVDT	#2(2.	0 IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
NUMBER	ELA. 1	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
100	11.8 15	5.7	26.1	10.0	13.3	5.2	9.4	12.6	3.7	-	_	-
500	10.6 13	3.5	40.1	9.0	11.4	12.9	8.4	10.6	8.2	-	-	-
1000	10.0 12	2.3	47.5	8.4	10.3	21.0	7.8	9.6	12.8	-	-	-
5000	10.6 14		85.4		12.1	51.3		11.0	27.8	-	-	-
10000	9.5 12		96.6		10.0	85.2		9.0	43.8	-	-	_
29500			142.5		11.0	140.7		9.8	66.6	-	_	-
154700			218.9		9.1			7.9	189.8	_	_	_
387450	9.1 12			-		-	-	-	-	_	_	_
	<del> </del>			<del></del> -								
SAMPLE	WA		WB	AC	S	L	CL	WBW	W	<b>BA</b>	GMM	AV
number	(gr)	)	(gr)	(%)	(1	bs)	(lbs)	(gr)	•	gr)		(2)
32120631	10000	0	460	4.40	5	0	100	5825.	0 8	991.0	2.53	5.21
32120631	10000	0	460			***********	100 ches X (			991.0	2.53	5.21
_	10000			DEF	ORMATI	***********	ches X				2.53 #4(6.0	
CYCLE _	LVDT #1		0 IN.)	DEF	ORMATI #2(2.	ON (inc	ches X	#3(4.0			#4(6.0	625 IN
CYCLE _	LVDT #1	1(0.	0 IN.)	DEFO LVDT ELA.	ORMATI #2(2.	ON (inc	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	LVDT #1	1(0.) TOT.	O IN.)	DEFO LVDT ELA. 9.5	#2(2.	ON (inc	LVDT	#3(4.0	PLA.	LVDT	#4(6.0	625 IN
CYCLE NUMBER	LVDT #1 ELA. 1	1(0. TOT.	0 IN.) PLA. 24.8	LVDT ELA. 9.5 9.4	#2(2. TOT.	ON (in.)  PLA.  5.2 12.9	LVDT ELA. 9.0 8.8	#3(4.0 TOT.	PLA.	LVDT ELA.	#4(6.0	625 IN
CYCLE NUMBER  100 500	LVDT #1  ELA. 1  11.2 14  11.2 15  11.0 14	1(0. TOT. 4.2 5.0	0 IN.) PLA. 24.8 42.1	DEF( LVDT  ELA.  9.5 9.4 9.2	#2(2. TOT. 12.1 12.6 12.4	ON (in.)  PLA.  5.2 12.9	LVDT ELA.  9.0 8.8 8.6	#3(4.0 TOT.	PLA. 3.7 8.2	LVDT ELA.	#4(6.0	625 IN
CYCLE NUMBER 100 500	LVDT #1  ELA. 1  11.2 14  11.2 15  11.0 14  10.8 15	1(0. 10T. 4.2 5.0 4.7 5.0	0 IN.) PLA. 24.8 42.1 51.9	DEFO LVDT ELA. 9.5 9.4 9.2 9.0	#2(2. TOT. 12.1 12.6 12.4 12.6	ON (inc 0 IN.) PLA. 5.2 12.9 21.0 51.3	LVDT ELA.  9.0 8.8 8.6 8.2	#3(4.0 TOT.	PLA.  3.7 8.2 12.8	LVDT ELA.	#4(6.0	625 IN
CYCLE	LVDT #1  ELA. 1  11.2 14  11.2 15  11.0 14  10.8 15  9.7 12	1(0.4 10T. 4.2 5.0 4.7 5.0 2.3	0 IN.) PLA. 24.8 42.1 51.9 87.3	DEFO LVDT ELA. 9.5 9.4 9.2 9.0 8.1	#2(2. TOT. 12.1 12.6 12.4 12.6	ON (inc 0 IN.) PLA. 5.2 12.9 21.0 51.3 85.2	LVDT ELA.  9.0 8.8 8.6 8.2 7.3	#3(4.0 TOT. 11.4 11.8 11.5	PLA.  3.7 8.2 12.8 27.8 43.8	LVDT ELA.	#4(6.0	625 IN
100 500 1000 5100	LVDT #1  11.2 14  11.2 15  11.0 14  10.8 15  9.7 12  9.7 12	TOT. 4.2 5.0 4.7 5.0 2.3	PLA.  24.8 42.1 51.9 87.3 99.3	DEFO LVDT ELA. 9.5 9.4 9.2 9.0 8.1	#2(2. TOT. 12.1 12.6 12.4 12.6 10.3 10.6	ON (inc 0 IN.) PLA. 5.2 12.9 21.0 51.3 85.2	LVDT ELA.  9.0 8.8 8.6 8.2 7.3 7.2	#3(4.0 TOT. 11.4 11.8 11.5 11.4 9.3 9.5	PLA.  3.7 8.2 12.8 27.8 43.8 66.6	LVDT ELA.	#4(6.0	625 IN
CYCLE NUMBER  100 500 1000 5100 10500 28800	LVDT #1  11.2 14  11.2 15  11.0 14  10.8 15  9.7 12  8.6 10	TOT. 4.2 5.0 4.7 5.0 2.3 2.8	PLA.  24.8 42.1 51.9 87.3 99.3 138.6	DEFO LVDT ELA. 9.5 9.4 9.2 9.0 8.1	#2(2. TOT. 12.1 12.6 12.4 12.6 10.3 10.6	ON (inc 0 IN.) PLA. 5.2 12.9 21.0 51.3 85.2 140.7	LVDT ELA.  9.0 8.8 8.6 8.2 7.3 7.2	#3(4.0 TOT. 11.4 11.8 11.5 11.4 9.3 9.5	PLA.  3.7 8.2 12.8 27.8 43.8 66.6	LVDT ELA.	#4(6.0	625 IN
100 500 1000 5100 10500 28800 154700 412350	LVDT #1  11.2 14  11.2 15  11.0 14  10.8 15  9.7 12  8.6 10	11(0. 4.2 5.0 4.7 5.0 2.3 2.8 0.6 2.5	PLA.  24.8 42.1 51.9 87.3 99.3 138.6 213.8 315.9	DEFC LVDT ELA. 9.5 9.4 9.2 9.0 8.1 8.1 7.1	#2(2. TOT. 12.1 12.6 12.4 12.6 10.3 10.6 8.8	ON (inc 0 IN.) PLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	LVDT ELA.  9.0 8.8 8.6 8.2 7.3 7.2 6.2	#3(4.0 TOT. 11.4 11.5 11.4 9.3 9.5 7.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	LVDT ELA.	#4(6.0	PLA.
CYCLE NUMBER  100 500 1000 5100 10500 28800 154700 412350	LVDT #1  ELA. 1  11.2 14  11.2 15  11.0 14  10.8 15  9.7 12  8.6 10  9.2 12	11(0.4.2 5.0 4.7 5.0 2.3 2.8 0.6 2.5	PLA.  24.8 42.1 51.9 87.3 99.3 138.6 213.8 315.9  OF DRY	DEFC LVDT ELA. 9.5 9.4 9.2 9.0 8.1 8.1 7.1	#2(2. TOT. 12.1 12.6 12.4 12.6 10.3 10.6 8.8	ON (inc 0 IN.) PLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	LVDT ELA.  9.0 8.8 8.6 8.2 7.3 7.2 6.2	#3(4.0 TOT. 11.4 11.8 11.5 11.4 9.3 9.5 7.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	LVDT ELA.	#4(6.0 TOT	PLA.
100 500 1000 5100 10500 28800 154700 412350	LVDT #1  11.2 14  11.2 15  11.0 14  10.8 15  9.7 12  8.6 10  9.2 12	100. 100. 4.2 5.0 4.7 5.0 2.3 2.8 0.6 2.5	PLA.  24.8 42.1 51.9 87.3 99.3 138.6 213.8 315.9  OF DRY	DEFO LVDT ELA. 9.5 9.4 9.2 9.0 8.1 7.1	#2(2. TOT. 12.1 12.6 12.4 12.6 10.3 10.6 8.8	ON (inc 0 IN.) PLA. 5.2 12.9 21.0 51.3 85.2 140.7 480.9	LVDT ELA.  9.0 8.8 8.6 8.2 7.3 7.2 6.2	#3(4.0 TOT. 11.4 11.8 11.5 11.4 9.3 9.5 7.6	PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	LVDT ELA	#4(6.0 TOT ITUMEN;	PLA.

SAMPLE	WA	WB	AC	SL		CL	WBW		WBA	GMM	AV
NUMBER	(gr)	(gr)	(%)	(11:	) <b>S</b> )	(lbs)	(gr)	)	(gr)		(1)
32120612	10000	460	4.40	50	١	100	5820.	0	9980.0	2.53	5.1
			DEF	ORMATIC	N (in	ches X	0.0001)	)			
-	LVDT #1(0.	0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
CYCLE _ NUMBER	FIA TOT	Df A	PT A	TOT.	DT A	ELA.	TOT	Df A	FIA	TOT.	DT A
NUMBER	ELA. TOT	. PLA.	ELA.	101.	PLA.	ELA.	TOT.	PLA.	ELA.	101.	PLA.
100	11.8 16.0	26.0	10.0	13.5	5.2	9.5	12.8	3.7	-	-	_
500	11.1 14.8	41.4	9.4	12.5	12.9	8.7	11.6	8.2	-	-	-
2000	9.9 12.2	58.2	8.3	10.3	21.0	7.6	9.4	12.8	-	-	-
5100	9.4 11.4	75.3	7.9	9.5	51.3	7.2	8.7	27.8	-	-	-
14200	9.8 12.8	110.3	8.2	10.7	85.2	7.4	9.6	43.8	-	-	-
27150	9.0 11.0	124.9	7.5	9.1	140.7	6.7	8.1	66.6	_	-	-
194700	8.7 11.1	232.5		9.1	480.9	6.2		189.8	-	-	_
416600	9.2 12.5	313.8	-	-	-	-	-	-	-	_	-
NUMBER	(gr)	(gr)	(%)	(11:	-	(lbs)	(gr)		(gr)		(%)
			······································								
32120622	10000	460	4.40	50	)	200	5795.	. 0	9955.0	2.53	5.4
32120622	10000	460				200			9955.0	2.53	5.4
_	10000 LVDT #1(0		DEF		ON (in	ches X		)		2.53 \$4(6.0	
CYCLE _		.0 IN.)	DEF	ORMATIC	ON (in	ches X	0.0001)	)			
CYCLE _	LVDT #1(0	.0 IN.)	LVDT ELA.	P2(2.0	) IN.)	LVDT	0.0001) #3(4.0	) ) IN.)	LVDT ELA.	#4(6.0	)625 I
CYCLE NUMBER	LVDT #1(0	.0 IN.)	DEFO	#2(2.0	ON (inc)	LVDT ELA. 20.1	#3(4.0	) IN.)	LVDT ELA. 18.6	#4(6.0 TOT.	0625 I PLA. 18.5
CYCLE NUMBER	LVDT #1(0. ELA. TOT. 25.5 34.6	.0 IN.) PLA.	DEFO LVDT ELA. 21.4 20.4	#2(2.0 TOT.	ON (inc) IN.) PLA. 26.4	LVDT ELA. 20.1 18.8	#3(4.0 TOT.	) IN.) PLA. 23.4	LVDT ELA. 18.6 16.9	#4(6.0 TOT.	PLA.  18.5
CYCLE NUMBER  100 500	LVDT #1(0. ELA. TOT. 25.5 34.6 24.4 33.2	.0 IN.) PLA. 34.6 56.1 60.5	DEF6 LVDT ELA. 21.4 20.4 17.4	#2(2.0 TOT. 29.1 27.8	ON (inc) IN.) PLA. 26.4 31.3	LVDT  ELA.  20.1 18.8 16.0	#3(4.0 TOT. 27.3 25.6	PLA. 23.4 27.9	LVDT ELA. 18.6 16.9 14.2	#4(6.0 TOT. 25.3 23.1	PLA.  18.5 22.0 23.9
CYCLE	LVDT #1(0. ELA. TOT. 25.5 34.6 24.4 33.2 20.9 25.0	.0 IN.) PLA. 34.6 56.1 60.5	LVDT  ELA.  21.4 20.4 17.4 18.1	#2(2.0 TOT. 29.1 27.8 20.9	PLA.  26.4 31.3 34.3	LVDT  ELA.  20.1 18.8 16.0 16.3	#3(4.0 TOT. 27.3 25.6 19.1	PLA.  23.4  27.9 30.3	LVDT ELA. 18.6 16.9 14.2 13.8	#4(6.0 TOT. 25.3 23.1 17.0	PLA.  18.5 22.0 23.9 29.9
100 500 1000 5000	LVDT #1(0.25.5 34.6 24.4 33.2 20.9 25.0 21.8 28.7	.0 IN.) PLA. 34.6 56.1 60.5 107.2 125.9	DEFO LVDT ELA. 21.4 20.4 17.4 18.1 16.9	#2(2.0 TOT. 29.1 27.8 20.9 23.8	PLA.  26.4 31.3 34.3 41.2	LVDT  ELA.  20.1 18.8 16.0 16.3	#3(4.0 TOT. 27.3 25.6 19.1 21.4	PLA.  23.4 27.9 30.3 37.0	LVDT ELA.  18.6 16.9 14.2 13.8 12.5	#4(6.0 TOT. 25.3 23.1 17.0 18.2	PLA.  18.5 22.0 23.9 29.9 32.8
100 500 1000 5000 10000 10000	ELA. TOT.  25.5 34.6 24.4 33.2 20.9 25.0 21.8 28.7 20.4 25.6	.0 IN.) PLA. 34.6 56.1 60.5 107.2 125.9	DEFO LVDT ELA. 21.4 20.4 17.4 18.1 16.9 14.7	#2(2.0 TOT. 29.1 27.8 20.9 23.8 21.2	PLA.  26.4 31.3 34.3 41.2 44.6	ELA.  20.1 18.8 16.0 16.3 15.0 12.5	#3(4.0 TOT. 27.3 25.6 19.1 21.4 18.8	23.4 27.9 30.3 37.0 39.5	LVDT ELA.  18.6 16.9 14.2 13.8 12.5 9.2	#4(6.0 TOT. 25.3 23.1 17.0 18.2 15.7	PLA.  18.5 22.0 23.9 29.9 32.8 44.5
CYCLE	LVDT #1(0. ELA. TOT. 25.5 34.6 24.4 33.2 20.9 25.0 21.8 28.7 20.4 25.6 17.9 21.5	34.6 56.1 60.5 107.2 125.9 271.6 373.4	DEFO LVDT ELA. 21.4 20.4 17.4 18.1 16.9 14.7	#2(2.0 TOT. 29.1 27.8 20.9 23.8 21.2 17.6	PLA.  26.4 31.3 34.3 41.2 44.6 58.4	ELA.  20.1 18.8 16.0 16.3 15.0 12.5	#3(4.0 TOT. 27.3 25.6 19.1 21.4 18.8 15.0	23.4 27.9 30.3 37.0 39.5 50.5	LVDT ELA.  18.6 16.9 14.2 13.8 12.5 9.2 9.3	#4(6.0 TOT. 25.3 23.1 17.0 18.2 15.7 11.0	PLA.  18.5 22.0 23.9 29.9 32.8 44.5
100 500 1000 5000 10000 153600 322400	LVDT #1(0. ELA. TOT. 25.5 34.6 24.4 33.2 20.9 25.0 21.8 28.7 20.4 25.6 17.9 21.5 19.3 25.5	34.6 56.1 60.5 107.2 125.9 271.6 373.4 383.4	DEFO LVDT ELA. 21.4 20.4 17.4 18.1 16.9 14.7 15.7	#2(2.0 TOT. 29.1 27.8 20.9 23.8 21.2 17.6 20.8	PLA.  26.4 31.3 34.3 41.2 44.6 58.4 62.3	LVDT  ELA.  20.1 18.8 16.0 16.3 15.0 12.5 13.2 11.9	#3(4.0 TOT. 27.3 25.6 19.1 21.4 18.8 15.0 17.5	PLA.  23.4 27.9 30.3 37.0 39.5 50.5	LVDT  ELA.  18.6 16.9 14.2 13.8 12.5 9.2 9.3 8.1	#4(6.0 TOT. 25.3 23.1 17.0 18.2 15.7 11.0 12.3	PLA.  18.5 22.0 23.9 29.9 32.8 44.5 47.5
100 500 1000 5000 10000 153600 322400 471900 698000	ELA. TOT.  25.5 34.6 24.4 33.2 20.9 25.0 21.8 28.7 20.4 25.6 17.9 21.5 19.3 25.5 17.5 21.2	34.6 56.1 60.5 107.2 125.9 271.6 373.4 383.4 476.7	DEFO LVDT ELA. 21.4 20.4 17.4 18.1 16.9 14.7 15.7 14.2 15.5	TOT.  29.1 27.8 20.9 23.8 21.2 17.6 20.8 17.3 20.9	PLA.  25.4 31.3 34.3 41.2 44.6 58.4 62.3 64.7	LVDT  ELA.  20.1 18.8 16.0 16.3 15.0 12.5 13.2 11.9	#3(4.0 TOT. 27.3 25.6 19.1 21.4 18.8 15.0 17.5 14.4 17.3	PLA.  23.4 27.9 30.3 37.0 39.5 50.5 53.5 57.3	LVDT  ELA.  18.6 16.9 14.2 13.8 12.5 9.2 9.3 8.1	#4(6.0 TOT. 25.3 23.1 17.0 18.2 15.7 11.0 12.3 9.9 11.5	PLA.  18.5 22.0 23.9 29.9 32.8 44.5 47.5 50.9
CYCLE	LVDT #1(0. ELA. TOT. 25.5 34.6 24.4 33.2 20.9 25.0 21.8 28.7 20.4 25.6 17.9 21.5 19.3 25.5 17.5 21.2 19.1 25.7	34.6 56.1 60.5 107.2 125.9 271.6 373.4 383.4 476.7	DEFO LVDT ELA. 21.4 20.4 17.4 18.1 16.9 14.7 15.7 14.2 15.5	TOT.  29.1 27.8 20.9 23.8 21.2 17.6 20.8 17.3 20.9	PLA.  25.4 31.3 34.3 41.2 44.6 58.4 62.3 64.7	LVDT  ELA.  20.1 18.8 16.0 16.3 15.0 12.5 13.2 11.9	707. 27.3 25.6 19.1 21.4 18.8 15.0 17.5 14.4 17.3	PLA.  23.4 27.9 30.3 37.0 39.5 50.5 53.5 57.3	LVDT  ELA.  18.6 16.9 14.2 13.8 12.5 9.2 9.3 8.1 8.5	#4(6.0 TOT. 25.3 23.1 17.0 18.2 15.7 11.0 12.3 9.9 11.5	PLA.  18.5 22.0 23.9 29.9 32.8 44.5 47.5 50.9
TOO 5000 10000 153600 322400 471900 698000 A = TOC C = PE	LVDT #1(0.  ELA. TOT.  25.5 34.6 24.4 33.2 20.9 25.0 21.8 28.7 20.4 25.6 17.9 21.5 19.3 25.5 17.5 21.2 19.1 25.7  DTAL WEIGHT	34.6 56.1 60.5 107.2 125.9 271.6 373.4 383.4 476.7	DEFO LVDT ELA. 21.4 20.4 17.4 18.1 16.9 14.7 15.7 14.2 15.5	TOT.  29.1 27.8 20.9 23.8 21.2 17.6 20.8 17.3 20.9	PLA.  25.4 31.3 34.3 41.2 44.6 58.4 62.3 64.7	LVDT  ELA.  20.1 18.8 16.0 16.3 15.0 12.5 13.2 11.9	707. 27.3 25.6 19.1 21.4 18.8 15.0 17.5 14.4 17.3	PLA.  23.4 27.9 30.3 37.0 39.5 50.5 53.5 57.3  WEIG	LVDT ELA.  18.6 16.9 14.2 13.8 12.5 9.2 9.3 8.1 8.5	#4(6.0 TOT. 25.3 23.1 17.0 18.2 15.7 11.0 12.3 9.9 11.5	PLA.  18.5 22.0 23.9 29.9 32.8 44.5 47.5 50.9

BEAM CYCLIC LOAD DATA

SAMPLE	WA	WB	AC	SL		CL	WBW		BA	GMM	VA
number	(gr)	(gr)	(%)	(1Ь	s)	(lbs)	(gr)	(1	gr)		(%)
32120632	10000	460	4.40	50		200	5805.0	99	945.0	2.53	5.05
			DEF	ORMATIO	N (in	ches X (	0.0001)				
_	LVDT #1(0	.0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 IN
CYCLE _ NUMBER	ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
NOTEER	ELA. 101	. FLAR.	ELIA.	101.	run.	DLA.	101.	run.	ELA.	101.	III.
100	24.7 33.7	30.5	20.9	28.5	19.0	19.6	26.8	15.2	18.3	24.9	11.7
500	20.5 24.4	43.0	17.3	20.6	22.0	16.0	19.0	17.1	14.5	17.2	12.7
1000	21.8 28.1	57.4	18.3	23.7	24.0	16.8	21.7	18.0	15.0	19.4	13.7
5000	20.1 25.3	90.1	16.8	21.2	30.1	15.2	19.1	21.5	13.0	16.3	15.6
10000	21.3 29.0	119.9	17.8	24.2	34.1	15.9	21.6	23.7	13.3	18.1	16.1
22700	20.1 26.5	148.2	16.7	22.0	38.9	14.8	19.5	26.1	12.0	15.9	16.8
147950	18.4 23.6	251.5	15.2	19.5	49.3		16.7	30.6	9.7	12.5	16.3
481600	18.7 25.3	376.8	15.4	20.7	56.1		17.4	33.9		12.1	15.6
1025500	16.1 19.2			15.7	60.1		13.0	35.6		8.5	15.5
1194900	18.3 25.0	498.0	15.0	20.4	59.6	12.4	16.8	35.0	8.0	10.9	14.4
SAMPLE	WA	WB	AC	SL		CL	WBW	w	BA	GMM	VA
SAMPLE NUMBER 32120615	(gr)	WB (gr)	AC (Z)	SL (1b	) <b>s</b> )	CL (1bs)	WBW (gr)	(1	BA gr) 989.0	GM 2.53	AV (Z)
NUMBER	(gr)	(gr)	4.40	50	)	(lbs)	(gr)	(1	gr)		
NUMBER 32120615	(gr)	(gr) 460	4.40 DEF	50 ORMATIO	ON (in	100 ches X (	(gr)	0 99	989.0	2.53	5.14
NUMBER	(gr) 10000  LVDT #1(0	(gr) 460	4.40 DEF	50 ORMATIO	W (inc	(lbs)  100  ches X (	(gr) 5827.(	() 0 99	BF) 989.0 LVDT	2.53 \$4(6.0	5.14 5.25 II
32120615 ————————————————————————————————————	(gr) 10000  LVDT #1(0	(gr) 460 .0 IN.) . PLA.	4.40 DEF	50 ORMATIO	ON (inc) IN.)	(1bs)  100  ches X (  LVDT  ELA.	(gr) 5827.( 0.0001) #3(4.0	() 0 99 IN.) PLA.	BF) 989.0 LVDT	2.53 \$4(6.0	5.14 5.25 II
NUMBER  32120615  CYCLE NUMBER	(gr) 10000  LVDT #1(0  ELA. TOT	(gr) 450 .0 IN.) . PLA. 24.3	(Z) 4.40 DEFC LVDT ELA. 9.5	50 DRMATIO #2(2.0	(inc) IN.) PLA. 5.2	(lbs)  100  ches X (  LVDT  ELA.  9.0	(gr) 5827.( 0.0001) #3(4.0	IN.) PLA. 3.7	Br) 989.0  LVDT  ELA.	2.53	5.1 625 II
NUMBER  32120615  CYCLE NUMBER  100	(gr) 10000  LVDT #1(0  ELA. TOT  11.2 14.2	(gr) 460 .0 IN.) . PLA. 24.3 39.7	(Z) 4.40 DEFC LVDT ELA. 9.5 9.1	50 DRMATIO #2(2.0 TOT. 12.1	PLA.  5.2 12.9	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5	(gr) 5827.( 0.0001) #3(4.0 TOT.	IN.) PLA. 3.7 8.2	Br) 989.0  LVDT  ELA.	2.53	5.1 625 II
NUMBER  32120615  CYCLE _ NUMBER  100 500	(gr)  10000  LVDT #1(0  ELA. TOT  11.2 14.2 10.7 13.9 11.1 15.0 10.5 14.4	(gr) 460 .0 IN.) . PLA. 24.3 39.7 51.3 83.2	(Z) 4.40 DEFC LVDT ELA. 9.5 9.1 9.3 8.9	50  DRMATIO  #2(2.0  TOT.  12.1  11.7  12.7  12.1	PLA.  5.2 12.9 21.0 51.3	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1	(gr) 5827.( 0.0001) #3(4.0 TOT. 11.4 10.9	IN.) PLA. 3.7 8.2	BF)  989.0  LVDT  ELA.	2.53	5.1 625 II
NUMBER  32120615  CYCLE NUMBER  100 500 1000 5000 12000	(gr)  10000  LVDT #1(0  ELA. TOT  11.2 14.2 10.7 13.9 11.1 15.0	(gr) 460 .0 IN.) . PLA. 24.3 39.7 51.3 83.2	(Z) 4.40 DEFC LVDT ELA. 9.5 9.1 9.3 8.9	50  DRMATIO  #2(2.0  TOT.  12.1  11.7  12.7  12.1	PLA.  5.2 12.9 21.0 51.3	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1 7.5	(gr) 5827.( 0.0001) #3(4.0 TOT.  11.4 10.9 11.8 11.0 9.9	IN.) PLA.  3.7 8.2 12.8 27.8 43.8	BF)  B89.0  LVDT  ELA.	2.53	5.1 625 II
NUMBER  32120615	(gr)  10000  LVDT #1(0  ELA. TOT  11.2 14.2 10.7 13.9 11.1 15.0 10.5 14.4	(gr) 460 .0 IN.) . PLA. 24.3 39.7 51.3 83.2 104.7	(Z) 4.40 DEFC LVDT ELA. 9.5 9.1 9.3 8.9 8.3	50  DRMATIO  #2(2.0  TOT.  12.1 11.7 12.7 12.1 11.0	PLA.  5.2 12.9 21.0 51.3 85.2	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1 7.5	(gr) 5827.( 0.0001) #3(4.0 TOT. 11.4 10.9 11.8 11.0	IN.) PLA.  3.7 8.2 12.8 27.8 43.8	BF)  B89.0  LVDT  ELA.	2.53	5.14 5.25 II PLA.
NUMBER  32120615  CYCLE NUMBER  100 500 1000 5000 12000 32500	10000 LVDT #1(0 ELA. TOT 11.2 14.2 10.7 13.9 11.1 15.0 10.5 14.4 10.0 13.2	(gr) 460 .0 IN.) . PLA. 24.3 39.7 51.3 83.2 104.7 146.2	4.40 DEFC LVDT ELA. 9.5 9.1 9.3 8.9 8.3 8.3	50  DRMATIO  #2(2.0  TOT.  12.1 11.7 12.7 12.1 11.0	PLA.  5.2 12.9 21.0 51.3 85.2 140.7	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1 7.5 7.4	(gr) 5827.( 0.0001) #3(4.0 TOT.  11.4 10.9 11.8 11.0 9.9	IN.) PLA. 3.7 8.2 12.8 27.8 43.8 66.6	BF)  989.0  LVDT  ELA.	2.53	5.14 5.25 II PLA.
NUMBER  32120615	10000  LVDT #1(0  ELA. TOT  11.2 14.2 10.7 13.9 11.1 15.0 10.5 14.4 10.0 13.2 10.0 13.8	(gr) 460 .0 IN.) . PLA. 24.3 39.7 51.3 83.2 104.7 146.2 208.7	(Z)  4.40  DEFC  LVDT  ELA.  9.5  9.1  9.3  8.9  8.3  6.8	50  DRMATIO  \$2(2.0)  TOT.  12.1  11.7  12.7  12.1  11.0  11.5	PLA.  5.2 12.9 21.0 51.3 85.2 140.7	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1 7.5 7.4 5.9	(gr) 5827.( 0.0001) #3(4.0 TOT.  11.4 10.9 11.8 11.0 9.9 10.2	IN.) PLA. 3.7 8.2 12.8 27.8 43.8 66.6	BF)  989.0  LVDT  ELA.	2.53	5.14 625 II PLA.
NUMBER  32120615  CYCLE NUMBER  100 500 1000 5000 12000 32500 174350 390500	10000  LVDT #1(0  ELA. TOT  11.2 14.2 10.7 13.9 11.1 15.0 10.5 14.4 10.0 13.2 10.0 13.8 8.2 9.8	(gr) 460 .0 IN.) . PLA. 24.3 39.7 51.3 83.2 104.7 146.2 208.7 282.1	(Z) 4.40 DEF LVDT ELA. 9.5 9.1 9.3 8.9 8.3 6.8	TOT.  12.1 11.7 12.7 12.1 11.0 11.5 8.1	PLA.  5.2 12.9 21.0 51.3 85.2 140.7 480.9	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1 7.5 7.4 5.9	(gr) 5827.0 0.0001) #3(4.0 TOT. 11.4 10.9 11.8 11.0 9.9 10.2 7.0	IN.) PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	Br)  989.0  LVDT  ELA.	2.53	5.14 5.14 625 II PLA.
NUMBER  32120615	10000  LVDT #1(0  ELA. TOT  11.2 14.2 10.7 13.9 11.1 15.0 10.5 14.4 10.0 13.2 10.0 13.8 8.2 9.8 8.5 10.8  OTAL WEIGH ERCENT ASP	(gr) 460  .0 IN.) . PLA. 24.3 39.7 51.3 83.2 104.7 146.2 208.7 282.1 T OF DRY HALT CON	(Z)  4.40  DEFC  LVDT  ELA.  9.5  9.1  9.3  8.9  8.3  6.8  AGGREGIENT;	TOT.  12.1 11.7 12.7 12.1 11.0 11.5 8.1	PLA.  5.2 12.9 21.0 51.3 85.2 140.7 480.9	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1 7.5 7.4 5.9	(gr) 5827.0 0.0001) #3(4.0 TOT.  11.4 10.9 11.8 11.0 9.9 10.2 7.0	IN.) PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	LVDT ELA.	2.53 #4(6.0 TOT ITUMEN;	5.14 5.14 625 II PLA.
NUMBER  32120615	(gr)  10000  LVDT #1(0  ELA. TOT  11.2 14.2 10.7 13.9 11.1 15.0 10.5 14.4 10.0 13.2 10.0 13.8 8.2 9.8 8.5 10.8	(gr) 460  .0 IN.) . PLA. 24.3 39.7 51.3 83.2 104.7 146.2 208.7 282.1 T OF DRY HALT CON	(Z)  4.40  DEFC  LVDT  ELA.  9.5  9.1  9.3  8.9  8.3  6.8  AGGREGIENT;	TOT.  12.1 11.7 12.7 12.1 11.0 11.5 8.1	PLA.  5.2 12.9 21.0 51.3 85.2 140.7 480.9	(1bs)  100  ches X (  LVDT  ELA.  9.0 8.5 8.6 8.1 7.5 7.4 5.9	(gr) 5827.0 0.0001) #3(4.0 TOT.  11.4 10.9 11.8 11.0 9.9 10.2 7.0	IN.) PLA.  3.7 8.2 12.8 27.8 43.8 66.6 189.8	LVDT ELA.	2.53 #4(6.0 TOT ITUMEN;	5.14 5.14 625 II PLA.

WA (RI)	WB (gr)	AC (I)			CL (lbs)	WBW (gr)		WBA (gr)	GMM	AV (Z)
			•							
10000	460	4.40	50	-	500	5800.	) <del></del>	9950.0	2.53	5.2
		DEF	ORMATIO	N (inc	hes X (	0.0001)				
LVDT #1(0.	.0 IN.)	LVDT	#2(2.0	IN.)	LVDT	#3(4.0	IN.)	LVDT	#4(6.0	625 I
ELA. TOT	. PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.	ELA.	TOT.	PLA.
67.1 91.5	42.9	55.6	75.8	25.9	50.8	69.2	23.8	45.7	62.3	21.5
62.9 84.8	68.4	51.9	69.9	31.7	46.5	62.6	28.7	40.4	54.4	24.4
61.9 83.9	84.6	50.9	68.9	35.5	45.2	61.3	31.1	38.5	52.2	25.8
57.4 75.7	133.1	46.9	61.9	49.7	40.7	53.8	40.4	32.8	43.3	28.7
53.4 66.9	155.5	43.5	54.6	57.9	37.4	46.9	45.7	29.3	36.7	30.2
53.2 69.0	222.2	43.2	55.9	71.6	36.4	47.2	51.1	27.1	35.1	30.2
52.6 71.4	410.5	42.3	57.5	92.6	34.3	46.6	61.1	22.7	30.8	28.7
47.4 59.8	498.1	38.0	48.0	101.5	30.2	38.1	65.8	18.5	23.4	28.2
47.3 60.5	597.8	37.8	48.4	106.2	29.6	37.9	67.5	5 17.2	22.1	27.7
									2 52	(Z) 5.4
	400							9093.0	2.33	), 4 <del>12222</del>
							TM 1	TUNT		
LVDT #1(0.	.0 IN.)	LVDī	#2(2.0	IN.)	LADI	#3(4.0	IN.	LVDI	#4(6.0	J025 I
LVDT #1(0.		LVDT	#2(2.0	PLA.	ELA.		PLA.		#4(6.0	PLA.
		ELA.			ELA.			ELA.		PLA.
ELA. TOT	. PLA.	ELA. 57.0	TOT.	PLA.	ELA. 52.0	TOT.	PLA.	ELA.	TOT.	PLA.
ELA. TOT.	. PLA. 46.6 72.2	<b>ELA.</b> 57.0 51.8	TOT.	PLA. 25.4	ELA. 52.0 46.3	TOT.	PLA.	ELA. 2 46.7 3 40.1	TOT.	PLA. 19.0 21.0
ELA. TOT. 69.1 95.8 63.1 84.0	. PLA. 46.6 72.2 84.6	<b>ELA.</b> 57.0 51.8	79.1 68.9 61.1	PLA. 25.4 28.3	52.0 46.3 42.7	TOT. 72.1 61.7	PLA.	ELA. 2 46.7 3 40.1 3 36.2	TOT. 64.8 53.4	PLA. 19.0 21.0 22.0
ELA. TOT. 69.1 95.8 63.1 84.0 58.8 74.6	. PLA. 46.6 72.2 84.6 130.3	57.0 51.8 48.1 43.4	79.1 68.9 61.1	PLA. 25.4 28.3 30.3	52.0 46.3 42.7 37.6	TOT. 72.1 61.7 54.1	PLA. 22.2 24.3 25.8	ELA.  2 46.7 3 40.1 3 36.2 30.1	TOT. 64.8 53.4 45.9	PLA. 19.0 21.0 22.0 25.5
ELA. TOT. 69.1 95.8 63.1 84.0 58.8 74.6 53.3 64.5	46.6 72.2 84.6 130.3 178.2	57.0 51.8 48.1 43.4 47.1	79.1 68.9 61.1 52.4	PLA. 25.4 28.3 30.3 35.7	52.0 46.3 42.7 37.6 40.3	TOT. 72.1 61.7 54.1 45.4	PLA. 22.2 24.3 25.8 30.2	ELA.  2 46.7 3 40.1 3 36.2 2 30.1 7 31.4	TOT. 64.8 53.4 45.9 36.5	
ELA. TOT. 69.1 95.8 63.1 84.0 58.8 74.6 53.3 64.5 58.0 78.2	. PLA. 46.6 72.2 84.6 130.3 178.2 229.4	57.0 51.8 48.1 43.4 47.1 40.6	79.1 68.9 61.1 52.4 63.4 49.2	PLA.  25.4 28.3 30.3 35.7 37.8	52.0 46.3 42.7 37.6 40.3 34.0	72.1 61.7 54.1 45.4 54.3	PLA.  22.2 24.3 25.8 30.2 31.7	ELA.  2 46.7  3 40.1  3 36.2  2 30.1  7 31.4	TOT. 64.8 53.4 45.9 36.5 42.3	PLA.  19.0 21.0 22.0 25.5 26.9 27.9
ELA. TOT. 69.1 95.8 63.1 84.0 58.8 74.6 53.3 64.5 58.0 78.2 50.3 60.9	46.6 72.2 84.6 130.3 178.2 229.4 402.2	57.0 51.8 48.1 43.4 47.1 40.6	79.1 68.9 61.1 52.4 63.4 49.2 58.4	PLA.  25.4 28.3 30.3 35.7 37.8 40.9	52.0 46.3 42.7 37.6 40.3 34.0	72.1 61.7 54.1 45.4 54.3 41.2	PLA.  22.2 24.3 25.8 30.2 31.7 33.8	ELA.  2 46.7  3 40.1  3 36.2  2 30.1  7 31.4  9 25.0  2 33.4	TOT. 64.8 53.4 45.9 36.5 42.3 30.3	PLA.  19.0 21.0 22.0 25.5 26.9
69.1 95.8 63.1 84.0 58.8 74.6 53.3 64.5 58.0 78.2 50.3 60.9 53.7 72.8	46.6 72.2 84.6 130.3 178.2 229.4 402.2 520.6	57.0 51.8 48.1 43.4 47.1 40.6 43.0 41.9	79.1 68.9 61.1 52.4 63.4 49.2 58.4 57.0	PLA.  25.4 28.3 30.3 35.7 37.8 40.9 45.0	52.0 46.3 42.7 37.6 40.3 34.0	72.1 61.7 54.1 45.4 54.3 41.2 47.4 45.5	PLA.  22.2 24.3 25.8 30.2 31.7 33.9 37.2	ELA.  2 46.7  3 40.1  3 36.2  2 30.1  7 31.4  9 25.0  2 33.4	TOT. 64.8 53.4 45.9 36.5 42.3 30.3 31.7 28.4	PLA.  19.0 21.0 22.0 25.5 26.9 27.9 29.1 30.1
ELA. TOT. 69.1 95.8 63.1 84.0 58.8 74.6 53.3 64.5 58.0 78.2 50.3 60.9 53.7 72.8 52.4 71.4	46.6 72.2 84.6 130.3 178.2 229.4 402.2 520.6	57.0 51.8 48.1 43.4 47.1 40.6 43.0 41.9	79.1 68.9 61.1 52.4 63.4 49.2 58.4 57.0	PLA.  25.4 28.3 30.3 35.7 37.8 40.9 45.0	52.0 46.3 42.7 37.6 40.3 34.0	TOT.  72.1 61.7 54.1 45.4 54.3 41.2 47.4 45.5	PLA.  22.2 24.3 25.8 30.2 31.7 33.9 37.2 39.3	ELA.  2 46.7  3 40.1  3 36.2  2 30.1  7 31.4  9 25.0  2 23.4  3 20.9	TOT.  64.8 53.4 45.9 36.5 42.3 30.3 31.7 28.4	PLA.  19.0 21.0 22.0 25.5 26.9 27.9 29.1 30.1
ELA. TOT. 69.1 95.8 63.1 84.0 58.8 74.6 53.3 64.5 58.0 78.2 50.3 60.9 53.7 72.8 52.4 71.4	46.6 72.2 84.6 130.3 178.2 229.4 402.2 520.6	57.0 51.8 48.1 43.4 47.1 40.6 43.0 41.9	79.1 68.9 61.1 52.4 63.4 49.2 58.4 57.0	PLA.  25.4 28.3 30.3 35.7 37.8 40.9 45.0	52.0 46.3 42.7 37.6 40.3 34.0	TOT.  72.1 61.7 54.1 45.4 54.3 41.2 47.4 45.5  WB = SL =	PLA.  22.2 24.3 25.8 30.2 31.7 33.9 37.2 39.3	ELA.  2 46.7  3 40.1  3 36.2  2 30.1  7 31.4  9 25.0  2 23.4  3 20.9	TOT.  64.8 53.4 45.9 36.5 42.3 30.3 31.7 28.4  ITUMEN; OAD;	PLA.  19.0 21.0 22.0 25.5 26.9 27.9 29.1 30.1
	(gr)  10000  LVDT #1(0  ELA. TOT  67.1 91.5 62.9 84.8 61.9 83.9 57.4 75.7 53.4 66.9 53.2 69.0 52.6 71.4 47.4 59.8 47.3 60.5	(gr) (gr)  10000 460  LVDT #1(0.0 IN.)  ELA. TOT. PLA.  67.1 91.5 42.9 62.9 84.8 68.4 61.9 83.9 84.6 57.4 75.7 133.1 53.4 66.9 155.5 53.2 69.0 222.2 52.6 71.4 410.5 47.4 59.8 498.1 47.3 60.5 597.8  WA WB (gr) (gr)	(gr) (gr) (Z)  10000 460 4.40  DEFG  LVDT \$1(0.0 IN.) LVDT  ELA. TOT. PLA. ELA.  67.1 91.5 42.9 55.6 62.9 84.8 68.4 51.9 61.9 83.9 84.6 50.9 57.4 75.7 133.1 46.9 53.4 66.9 155.5 43.5 53.2 69.0 222.2 43.2 52.6 71.4 410.5 42.3 47.4 59.8 498.1 38.0 47.3 60.5 597.8 37.8  WA WB AC (gr) (gr) (Z)	(gr) (gr) (Z) (1b)  10000 460 4.40 50  DEFORMATIO  LVDT \$1(0.0 IN.) LVDT \$2(2.0)  ELA. TOT. PLA. ELA. TOT.  67.1 91.5 42.9 55.6 75.8 62.9 84.8 68.4 51.9 69.9 61.9 83.9 84.6 50.9 68.9 57.4 75.7 133.1 46.9 61.9 53.4 66.9 155.5 43.5 54.6 53.2 69.0 222.2 43.2 55.9 52.6 71.4 410.5 42.3 57.5 47.4 59.8 498.1 38.0 48.0 47.3 60.5 597.8 37.8 48.4  WA WB AC SL (gr) (gr) (Z) (1b)	(gr) (gr) (Z) (lbs)  10000 460 4.40 50  DEFORMATION (inc.  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA.  67.1 91.5 42.9 55.6 75.8 25.9 62.9 84.8 68.4 51.9 69.9 31.7 61.9 83.9 84.6 50.9 68.9 35.5 57.4 75.7 133.1 46.9 61.9 49.7 53.4 66.9 155.5 43.5 54.6 57.9 53.2 69.0 222.2 43.2 55.9 71.6 52.6 71.4 410.5 42.3 57.5 92.6 47.4 59.8 498.1 38.0 48.0 101.5 47.3 60.5 597.8 37.8 48.4 106.2  WA WB AC SL (gr) (gr) (Z) (lbs)	(gr) (gr) (Z) (lbs) (lbs)  10000 460 4.40 50 500  DEFORMATION (inches X (logs))  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA.  67.1 91.5 42.9 55.6 75.8 25.9 50.8 62.9 84.8 68.4 51.9 69.9 31.7 46.5 61.9 83.9 84.6 50.9 68.9 35.5 45.2 57.4 75.7 133.1 46.9 61.9 49.7 40.7 53.4 66.9 155.5 43.5 54.6 57.9 37.4 53.2 69.0 222.2 43.2 55.9 71.6 36.4 52.6 71.4 410.5 42.3 57.5 92.6 34.3 47.4 59.8 498.1 38.0 48.0 101.5 30.2 47.3 60.5 597.8 37.8 48.4 106.2 29.6	(gr) (gr) (Z) (lbs) (lbs) (gr)  10000 460 4.40 50 500 5800.6  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT.  67.1 91.5 42.9 55.6 75.8 25.9 50.8 69.2 62.9 84.8 68.4 51.9 69.9 31.7 46.5 62.6 61.9 83.9 84.6 50.9 68.9 35.5 45.2 61.3 57.4 75.7 133.1 46.9 61.9 49.7 40.7 53.8 53.4 66.9 155.5 43.5 54.6 57.9 37.4 46.9 53.2 69.0 222.2 43.2 55.9 71.6 36.4 47.2 52.6 71.4 410.5 42.3 57.5 92.6 34.3 46.6 47.4 59.8 498.1 38.0 48.0 101.5 30.2 38.1 47.3 60.5 597.8 37.8 48.4 106.2 29.6 37.9	(gr) (gr) (X) (lbs) (lbs) (gr)  10000 460 4.40 50 500 5800.0  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA.  67.1 91.5 42.9 55.6 75.8 25.9 50.8 69.2 23.6 62.9 84.8 68.4 51.9 69.9 31.7 46.5 62.6 28.7 61.9 83.9 84.6 50.9 68.9 35.5 45.2 61.3 31.3 57.4 75.7 133.1 46.9 61.9 49.7 40.7 53.8 40.4 53.4 66.9 155.5 43.5 54.6 57.9 37.4 46.9 45.7 53.2 69.0 222.2 43.2 55.9 71.6 36.4 47.2 51.3 52.6 71.4 410.5 42.3 57.5 92.6 34.3 46.6 61.3 47.4 59.8 498.1 38.0 48.0 101.5 30.2 38.1 65.8 47.3 60.5 597.8 37.8 48.4 106.2 29.6 37.9 67.5 97.6 (gr) (gr) (X) (lbs) (lbs) (gr)	(gr) (gr) (X) (lbs) (lbs) (gr) (gr)  10000 460 4.40 50 500 5800.0 9950.0  DEFORMATION (inches X 0.0001)  LVDT \$1(0.0 IN.) LVDT \$2(2.0 IN.) LVDT \$3(4.0 IN.) LVDT  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA.  67.1 91.5 42.9 55.6 75.8 25.9 50.8 69.2 23.9 45.7 62.9 84.8 68.4 51.9 69.9 31.7 46.5 62.6 28.7 40.4 61.9 83.9 84.6 50.9 68.9 35.5 45.2 61.3 31.1 38.5 57.4 75.7 133.1 46.9 61.9 49.7 40.7 53.8 40.4 32.8 53.4 66.9 155.5 43.5 54.6 57.9 37.4 46.9 45.7 29.3 53.2 69.0 222.2 43.2 55.9 71.6 36.4 47.2 51.1 27.1 52.6 71.4 410.5 42.3 57.5 92.6 34.3 46.6 61.1 22.7 47.4 59.8 498.1 38.0 48.0 101.5 30.2 38.1 65.8 18.5 47.3 60.5 597.8 37.8 48.4 106.2 29.6 37.9 67.5 17.2  WA WE AC SL CL WEW WEA (gr) (gr) (gr)  10000 460 4.40 50 500 5760.0 9895.0	(gr) (gr) (X) (1bs) (1bs) (gr) (gr)  10000 460 4.40 50 500 5800.0 9950.0 2.53  DEFORMATION (inches X 0.0001)  LVDT #1(0.0 IN.) LVDT #2(2.0 IN.) LVDT #3(4.0 IN.) LVDT #4(6.0 IN.)  ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT. PLA. ELA. TOT.  67.1 91.5 42.9 55.6 75.8 25.9 50.8 69.2 23.9 45.7 62.3 62.9 84.8 68.4 51.9 69.9 31.7 46.5 62.6 28.7 40.4 54.4 61.9 83.9 84.6 50.9 68.9 35.5 45.2 61.3 31.1 38.5 52.2 57.4 75.7 133.1 46.9 61.9 49.7 40.7 53.8 40.4 32.8 43.3 53.4 66.9 155.5 43.5 54.6 57.9 37.4 46.9 45.7 29.3 36.7 53.2 69.0 222.2 43.2 55.9 71.6 36.4 47.2 51.1 27.1 35.1 52.6 71.4 410.5 42.3 57.5 92.6 34.3 46.6 61.1 22.7 30.8 47.4 59.8 498.1 38.0 48.0 101.5 30.2 38.1 65.8 18.5 23.4 47.3 60.5 597.8 37.8 48.4 106.2 29.6 37.9 67.5 17.2 22.1  WA WB AC SL CL WBW WBA GPM (gr) (gr)  10000 460 4.40 50 500 5760.0 9895.0 2.53

# APPENDIX B

The values of the slope and intercept of equation 5.1 are presented in this Appendix.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

SAMPLE NUMBER	LVDT #	5	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	SE
11110511	1	0.6343	5347	0.9991	0.02227	11110535	1	0.6278	0.3792	0.9988	0.02130
	2	0.5909	7728	0.9989	0.02260		2	0.5841	0.0945	0.9986	0.02115
	3	0.5325	7683	0.9990	0.01914		3	0.5164	0.0556	0.9982	0.02148
	4	0.4088	6165	0.9967	0.02668		4	0.3803	0.1407	0.9939	0.02886
11110521	1	0.6342	5300	0.9989	0.02555	11210511	1	0.6567	4973	0.9993	0.0234
	2	0.6034	9043	0.9991	0.02310		2	0.6127	7491	0.9993	0.02270
	3	0.5459	8977	0.9992	0.01960		3	0.5475	7350	0.9993	0.02027
	4	0.4183	7152	0.9965	0.03110		4	0.3990	5244	0.9915	0.05144
11110531	1	0.6372	5330	0.9987	0.02707	11210521	1	0.6516	5043	0.9993	0.0212
	2	0.6212	9425	0.9988	0.02605		2	0.6071	7458	0.9992	0.02109
	3	0.5612	9297	0.9989	0.02309		3	0.5468	7451	0.9987	0.0242
	•	0.4311	7454	0.9955	0.03503		4	0.4133	5752	0.9905	0.0504
11110512	1	0.6346	1755	0.9993	0.01996	11210531	1	0.6582	5240	0.9988	0.0266
	2	0.5909	4255	0.9992	0.01932		2	0.6153	7729	0.9987	0.0254
	3	0.5288	4272	0 . 9992	0.01680		3	0.5544	7692	0.9984	0.0251
	•	0.3944	2656	0.9963	0.02786		•	0.4252	6087	0.9965	0.0288
11110522	1	0.6267	1310	0.9991	0.02400	11210512	1	0.6520	1419	0.9993	0.0203
	2	0.5824	3851	0.9989	0.02425		2	0.6086	4012	0.9992	0.0203
	3	0.5183	3828	0.9983	0.02716		3	0.5440	4016	0.9989	0.0208
	•	0.3869	2435	0.9890	0.05110		•	-	•	•	•
11110532	1	0.6331	1667	0.9993	0.02098	11210522	1	0.6555	1489	0.9992	0.0230
	2	0.5904	4228	0 . 9992	0.02052		2	0.6115	4072	0.9991	0.0231
	3	0.5266	4180	0.9991	0.01872		3	0.5475	4123	0.9991	0.0205
	•	0.3968	2777	0.9961	0.03012		4	-	-	•	-
11110515	1	0.6341	0.3624	0.9991	0.02278	11210532	1	0.6523	1303	0.9992	0.0223
	2	0.5894	0.0811	0.9990	0.02253		2	0.6090	3939	0.9991	0.0223
	3	0.5171	0.0555	0.9989	0.02080		3	0.5442	3966	0.9987	0.0235
	•	0.3575	0.2085	0.9937	0.03399		•	0.4060	2420	0.9919	0.0438
11110525	1	0.6345	0.3555	0.9992	0.02130	11210515	1	0.6501	0.3777	0.9990	0.0223
	2	0.5898	0.0756	0.9991	0.02107		2	0.6054	0.0938	0.9989	0.0223
	3	0.5180	0.0501	0.9989	0.02048		3	0.5325	0.0634	0.9984	0.0234
	4	0.3592	0.2005	0.9926	0.03686		4	0.3594	0.2198	0.9890	0.0433

S.I = regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE = standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

MPLE NUMBER	LVDT 4	s	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	SZ
11210525	1	0.6570	0.3607	0.9989	0.02508	11310515	1	0.6619	0.3832	0.9989	0.0223
	2	0.6119	0.0764	0.9987	0.02489		2	0.5418	0.2045	0.9980	0.0255
	3	0.5395	0.0433	0.9986	0.02265		3	0.4830	0.1424	0.9977	0.0245
	4	0.3340	0.2616	0.9936	0.03073		4	0.3665	0.1813	0.9962	0.0240
11210535	1	0.6515	0.3883	0.9991	0.02138	11310525	1	0.6624	0.4059	0.9990	0.0205
	2	0.5055	0.0999	0.9990	0.02139		2	0.6176	0.1121	0.9989	0.0203
	3	0.5331	0.0581	0.9985	0.02239		3	0.5465	0.0674	0.9985	0.0206
	4	0.3700	0.2190	0.9900	0.04104		4	0.3998	0.1613	0.9950	0.0276
11310511	1	0.6695	5209	0.9993	0.02205	11310535	1	0.6667	0.3519	0.9990	0.0221
	2	0.6260	7678	0.9991	0.02235		2	0.6224	0.0702	0.9989	0.0219
	3	0.5640	7621	0.9992	0.01970		3	0.5518	0.0328	0.9987	0.0214
	4	0.4393	6284	0.9967	0.03093		4	0.3613	0.1452	0.9941	0.0319
11310521	1	0.6602	4859	0.9993	0.01991	11110611	1	0.6278	3226	0.9987	0.0249
	2	0.6168	7328	0 . 9992	0.02007		2	0.5818	6074	0.9985	0.0249
	3	0.5555	7293	0.9989	0.02109		3	0.5149	6021	0.9978	0.0268
	•	0.4317	5972	0.9942	0.03821		4	•	-	-	-
11310531	1	0.6651	5045	0.9993	0.02094	11110621	1	0.6331	3567	0.9995	0.0189
	2	0.6220	7533	0.9992	0.02144		2	0.5878	6400	0.9994	0.0187
	3	0.5600	7476	0.9989	0.02240		3	0.5169	6187	0.9992	0.0202
	•	0.4377	6239	0.9931	0.04391		•	0.3657	4225	0.9901	0.0492
11310512	1	0.6708	1717	0.9991	0.02236	11110631	1	0.6341	3724	0.9988	0.0261
	2	0.6281	4327	0.9991	0.02149		2	0.5898	6559	0.9988	0.0250
	3	0.5657	4429	0.9989	0.02074		3	0.5224	6439	0.9988	0.0218
	4	0.4373	3173	0.9972	0.02592		•	0.3865	4912	0.9950	0.0330
11310522	1	0.6702	1621	0.9991	0.02224	11110612	1	0.6345	2123	0.9995	0.0204
	2	0.5261	4191	0.9989	0.02247		2	0.5915	4546	0.9994	0.0199
	3	0.5644	4331	0.9989	0.02057		3	0.5254	4379	0.9993	0.0191
	4	•	-	•	-		4	0.3745	2236	0.9927	0.0456
11310532	1	0.6708	1599	0.9992	0.01963	11110622	1	0.6318	0.2129	0.9993	0.0209
	2	0.5276	4219	0.9991	0.01938		2	0.5831	1346	0.9991	0.0206
	3	0.5659	4360	0.9991	0.01751		3	0.5025	1355	0.9989	0.0202
	4	•	-	-	-		4	0.3279	0.0637	0.9865	0.0463

S,I = regression coefficients (slope and intercept of

equation 5.1);

2 = coefficient of determination; and

SE = standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

SAMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	SE
11110632	1	0.6314	0.0495	0.9992	0.02122	11110712	1	0.6322	0.2723	0.9990	0.0236
	2	0.5852	2566	0.9991	0.02108		2	0.5831	0919	0.9989	0.0233
	3	0.5133	2607	0.9991	0.01926		3	0.4997	0927	0.9986	0.0225
	4	0.3565	0796	0.9928	0.03692		4	0.3194	0.1107	0.9851	0.0474
11110615	1	0.6313	0.7188	0.9990	0.02060	11110712	1	0.6332	0.3939	0.9987	0.0259
	2	0.5818	0.3363	0.9989	0.02038		2	0.5826	0020	0.9985	0.0258
	3	0.4921	0.2956	0.9985	0.01961		3	0.4965	0130	0.9982	0.0238
	4	0.1876	0.5409	0.9937	0.02027		4	0.3155	0.1670	0.9911	0.0336
11110625	1	0.6303	0.3130	0.9993	0.01986	11110712	1	0.6338	0.1341	0.9991	0.0230
	2	0.5863	0.0496	0.9992	0.01975		2	0.5860	1940	0.9989	0.0231
	3	0.5170	0.0267	0.9988	0.02075		3	0.5087	1935	0.9988	0.0215
	•	0.3612	0.1868	0.9900	0.04271		•	0.3414	0001	0.9890	0.0436
11110635	1	0.6275	0.3990	0.9991	0.01980	11110722	1	0.6321	0.3058	0.9989	0.0253
	2	0.5829	0.1117	0.9990	0.01997		2	0.5823	0667	0.9987	0.0252
	3	0.5124	0.0771	0.9984	0.02170		3	0.4971	0673	0.9984	0.0243
	4	-	-	-	-		4	0.3084	0.1581	0.9835	0.0484
11110711	1	0.6397	0.0344	0.9995	0.01798	11110732	1	0.6282	0.2082	0.9992	0.0210
	2	0.5886	3489	0.9994	0.01799		2	0.5802	1362	0.9990	0.02110
	3	0.5040	3432	0.9993	0.01610		3	0.5012	1389	0.9983	0.02394
	4	0.3212	1276	0.9860	0.04644		4	0.3305	0.0532	0.9812	0.05290
11110711	1	0.6335	4118	0.9991	0.02315	11110715	1	0.6312	0.9924	0.9983	0.02380
	2	0.5883	6793	0.9989	0.02348		2	0.5783	0.5331	0.9980	0.02360
	3	0.5255	6795	0.9990	0.02016		3	0.4791	0.4658	0.9974	0.02231
	4	0.3947	5357	0.9950	0.03359		4	0.2684	0.6019	0.9882	0.02649
11110721	1	0.6371	1901	0.9993	0.02127	11110715	1	0.6328	0.9853	0.9977	0.02617
	2	0.5903	5209	0.9993	0.01991		2	0.5798	0.5266	0.9973	0.02608
	3	0.5161	5168	0.9991	0.01925		3	0.4815	0.4573	0.9965	0.02474
	4	0.3573	3315	0.9914	0.04121		4	0.2740	0.5859	0.9866	0.02771
11110731	1	0.6360	3583	0.9992	0.02230	11110725	1	0.6309	0.8206	0.9985	0.02361
	2	0.5925	6512	0.9991	0.02094		2	0.5803	0.4115	0.9983	0.02346
	3	0.5241	6392	0.9990	0.01968		3	0.4882	0.3574	0.9978	0.02257
	4	0.3860	4832	0.9943	0.03526		4	0.2909	0.5004	0.9885	0.03066

S,I = regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE = standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

SAMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	SE
11110725	1	0.6336	0.9768	0.9984	0.02370	21110532	1	0.6492	1421	0.9991	0.02347
	2	0.5806	0.5201	0.9981	0.02351		2	0.6062	4014	0.9990	0.02279
	3	0.4812	0.4544	0.9977	0.02146		3	0.5428	4019	0.9990	0.0204
	4	0.2682	0.5988	0.9697	0.02545		•	0.4090	2511	0.9959	0.0318
11110735	1	0.6276	0.8275	0.9988	0.02107	21110515	1	0.6424	0.4059	0.9987	0.0233
	2	0.5772	0.4190	0.9986	0.02105		2	0.5980	0.1204	0.9985	0.0234
	3	0.4865	0.3616	0.9979	0.02183		3	0.5282	0.0850	0.9960	0.0237
	4	0.2952	0.4896	0.9856	0.03476		•	0.3818	0.1982	0.9927	0.0331
11110735	1	0.6244	0.9995	0.9982	0.02564	21110525	1	0.6450	0.3778	0.9991	0.0191
	2	0.5714	0.5440	0.9979	0.02553		2	0.6009	0.0990	0.9989	0.0191
	3	0.4723	0.4784	0.9959	0.02566		3	0.5339	0.0597	0.9986	0.0193
	4	0.2593	0.6248	0.9783	0.03764		4	0.3974	0.1489	0.9953	0.0268
21110511	1	0.6525	5276	0.9991	0.02384	21110535	1	0.6522	0.3795	0.9992	0.0206
	2	0.6095	7695	0.9990	0.02303		2	0.6077	0.0915	0.9991	0.0201
	3	0.5502	7644	0.9989	0.02204		3	0.5358	0.0600	0.9991	0.0183
	4	0.4286	6261	0.9967	0.02999		4	0.3804	0.1950	0.9955	0.0284
21110521	1	0.6507	5058	0.9992	0.02190	21110611	1	0.6530	2488	0.9993	0.0207
	2	0.5084	7546	0.9992	0.02111		2	0.6063	5593	0 . 9993	0.0200
	3	0.5472	7429	0.9992	0.01858		3	0.5339	5502	0.9992	0.0184
	4	0.4253	6055	0.9973	0.02692		•	0.3820	3704	0.9939	0.0361
21110531	1	0.6512	5215	0.9991	0.02304	21110621	1	0.6539	2253	0.9990	0.0254
	2	0.6101	7721	0.9991	0.02233		2	0.6073	5446	0.9989	0.0246
	3	0.5503	7647	0.9990	0.02061		3	0.5345	5391	0.9987	0.0233
	4	0.4313	6363	0.9965	0.03106		4	0.3812	3628	0.9919	0.0419
21110512	1	0.6537	1860	0.9992	0.02188	21110631	1	0.6521	2112	0.9990	0.0241
	2	0.6107	4357	0.9991	0.02143		2	0.6051	5308	0.9989	0.0241
	3	0.5497	4405	0.9992	0.01876		3	0.5317	5224	0.9987	0.0226
	•	0.4202	2950	0.9963	0.03024		4	0.3808	3539	0.9936	0.0363
21110522	1	0.6534	1732	0.9989	0.02605	21110612	1	0.6522	0.1415	0.9992	0.0226
	2	0.5106	4278	0.9988	0.02538		2	0.6045	1891	0.9991	0.0224
	3	0.5481	4294	0.9987	0.02425		3	0.5274	1918	0.9991	0.0189
	4	0.4142	2734	0.9954	0.03442		4	0.3601	0016	0.9917	0.0399

S,I - regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE = standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

AMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	SZ
21110622	1	0.6533	0.1552	0.9990	0.02481	21110712	1	0.6486	0.4863	0.9992	0.0209
	2	0.6057	1814	0.9989	0.02474		2	0.5969	0.0696	0.9990	0.0207
	3	0.5270	1809	0.9986	0.02414		3	0.5073	0.0565	0.9987	0.0200
	4	0.3588	0.0073	0.9886	0.04643		•	0.3157	0.2513	0.9877	0.0391
21110632	1	0.6517	0.1627	0.9991	0.02422	21110722	1	0.6490	0.4775	0.9992	0.0198
	2	0.6038	1729	0.9989	0.02384		2	0.5369	0.1458	0.9991	0.0185
	3	0.5255	1742	0.9988	0.02158		3	0.4580	0.1172	0.9985	0.0197
	•	0.3568	0.0156	0.9906	0.04206		4	0.2998	0.2433	0.9880	0.0371
21110615	1	0.6469	0.7033	0.9990	0.02181	21110732	1	0.6492	0.4772	0.9988	0.0247
	2	0.5980	0.3311	0.9988	0.02168		2	0.5456	0.1219	0.9984	0.0245
	3	0.5111	0.2857	0.9983	0.02197		3	0.4668	0.0913	0.9975	0.0260
	•	0.3223	0.4374	0.9891	0.03521		4	0.3041	0.2323	0.9850	0.0415
21110625	1	0.6508	0.6766	0.9989	0.02250	21110715	1	0.6444	1.0165	0.9983	0.0245
	2	0.6019	0.3084	0.9987	0.02240		2	0.5706	0.5225	0.9974	0.0275
	3	0.5158	0.2623	0.9984	0.02142		3	0.4772	0.4527	0.9969	0.0255
	•	0.3274	0.4162	0.9910	0.03280		4	0.2830	0.5734	0.9904	0.02660
21110635	1	0.6437	0.6906	0.9989	0.02184	21110725	1	0.6464	1.0149	0.9984	0.02443
	2	0.5951	0.3229	0.9987	0.02172		2	0.5933	0.5529	0.9961	0.02438
	. 3	0.5108	0.2732	0 . 9982	0.02211		3	0.4924	0.4878	0.9971	0.02481
	•	0.3298	0.4077	0.9890	0.03580		4	0.2759	0.6367	0.9802	0.03652
21110711	1	0.6524	0.0744	0.9991	0.02351	21110735	1	0.6449	1.0235	0.9987	0.02245
	2	0.6022	3179	0.9990	0.02275		2	0.6115	0.4275	0.9987	0.02203
	3	0.5151	3060	0.9990	0.01 <b>99</b> 7		3	0.5049	0.3905	0.9979	0.02279
	4	0.3266	0743	0.9873	0.04517		•	0.2729	0.6107	0.9759	0.04222
21110721	1	0.6507	0.0937	0.9992	0.02187	31110511	1	0.6467	5136	0.9991	0.02306
	2	0.5998	3000	0.9991	0.02177		2	0.5042	7587	0.9990	0.02251
	3	0.5138	2952	0.9990	0.01987		3	0.5463	7610	0.9991	0.01952
	4	0.3254	0678	0.9842	0.05002		•	0.4222	6128	0.9968	0.02848
21110731	1	0.6540	0.0882	0.9993	0.02135	31110521	1	0.6477	5200	0.9993	0.02143
	2	0.6033	3083	0.9992	0.02075		2	0.6069	7730	0.9992	0.02080
	3	0.5166	3021	0.9992	0.01813		3 (	0.5476	7686	0.9993	0.01781
	4	0.3278	0754	0.9858	0.04757		<b>A</b> (	0.4218	6124	0.9970	0.02791

S,I - regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE - standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

SAMPLE NUMBER	LVDI	s	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	SE
31110531	1	0.6485	5026	0.9994	0.01949	31110721	1	0.6485	0.1055	0.9990	0.02400
	2	0.6072	7577	0.9994	0.01800		2	0.5977	2926	0.9989	0.0235
	3	0.5474	7542	0.9993	0.01699		3	0.5088	2785	0.9987	0.0214
	4	0.2236	3304	0.9967	0.02018		4	0.3164	0395	0.9854	0.0451
31110512	1	0.6488	1531	0.9992	0.02195	31110731	1	0.6496	0.1083	0.9989	0.0249
	2	0.6050	4080	0.9991	0.02225		2	0.5979	2890	0.9987	0.0245
	3	0.5420	4105	0.9991	0.02021		3	0.5083	2737	0.9986	0.0213
	•	0.4089	2626	0.9951	0.03458		4	0.3135	0270	0.9859	0.0426
31110522	1	0.6479	1536	0.9993	0.02071	31110712	1	0.6427	0.4759	0.9987	0.0232
	2	0.6037	4055	0 . 9992	0.02081		2	0.5922	0.0596	0.9985	0.0228
	3	0.5419	4120	0.9992	0.01908		3	0.5072	0.0351	0.9981	0.0222
	4	0.4102	2677	0.9952	0.03427		4	0.3346	0.1777	0.9923	0.0293
31110532	1	0.6475	1585	0.9993	0.02094	31110722	1	0.6452	0.4557	0.9987	0.0252
	2	0.6043	4129	0.9992	0.02045		2	0.5939	0.0473	0.9985	0.0250
	3	0.5405	4100	0.9992	0.01847		3	0.5058	0.0342	0.9982	0.0232
	4	0.4092	2665	0.9959	0.03187		4	0.3229	0.2079	0.9907	0.0338
31110515	1	0.6458	0.3963	0.9991	0.02194	31110732	1	0.6482	0.4647	0.9990	0.0222
	2	0.6009	0.1104	0 . 9989	0.02181		2	0.5970	0.0508	0.9989	0.0217
	3	0.5293	0.0777	0 . 9988	0.02027		3	0.5076	0.0390	0.9986	0.0206
	4	0.2149	0.4144	0.9927	0.02629		4	0.3197	0.2252	0.9899	0.0354
31110525	1	0.6476	0.3583	0.9990	0.02371	31110715	1	0.6346	0.9849	0.9989	0.0195
	2	0.6032	0.0791	0.9989	0.02350		2	0.5824	0.5373	0.9987	0.0194
	3	0.5321	0.0501	0 . 9986	0.02255		3	0.4854	0.4705	0.9981	0.0191
	4	0.3748	0.1985	0.9930	0.03627		4	0.2810	0.5990	0.9889	0.0272
31110535	1	0.6493	0.3498	0.9991	0.02312	31110725	1	0.6406	0.9968	0.9981	0.0254
	2	0.6050	0.0717	0.9989	0.02292		2	0.3878	0.5425	0.9978	0.0253
	3	0.5337	0.0444	0.9987	0.02240		3	0.4894	0.4749	0.9969	0.0251
	4	0.3762	0.1939	0.9923	0.03866		4	0.2065	0.6680	0.9865	0.0279
31110711	1	0.6480	0.1026	0.9991	0.02331	31110735	1	0.6450	0.9943	0.9986	0.0199
	2	0.5970	- 2936	0.9990	0.02280		2	0.5922	0.5370	0.9984	0.01 <b>98</b>
	3	0.5098	2864	0.9990	0.02008		3	0.4940	0.4672	0.9979	0.0188
	4	0.1785	0.1149	0.9902	0.02797		4	0.2874	0.5940	0.9913	0.0223

S,I - regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE = standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

SAMPLE NUMBER	LVDI	• s	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	SE
21210611	1	0.6741	2008	0.9992	0.02256	21210635	1	0.6743	0.6692	0.9990	0.0215
	2	0.6271	5262	0.9991	0.02171		2	0.6255	0.2970	0.9989	0.0215
	3	0.5512	5186	0.9990	0.02074		3	0.5384	0.2463	0.9984	0.0216
	4	•	-	-	-		4	0.3419	0.3603	0.9884	0.0385
21210621	1	0.6731	1964	0.9993	0.02202	21310611	1	0.6895	2069	0.9994	0.0212
	2	0.6258	5210	0.9992	0.02136		2	0.6426	5354	0.9993	0.0204
	3	0.5503	5147	0.9991	0.01927		3	0.5675	5360	0.9992	0.0192
	4	0.3896	3252	0.9928	0.03976		4	0.4040	3426	0.9935	0.0395
21210631	1	0.6699	1666	0.9992	0.02193	21310621	1	0.6899	2191	0.9989	0.0270
	2	0.6221	4954	0.9991	0.02199		2	0.6425	5433	0.9987	0.0267
	3	0.5471	4944	0.9990	0.02028		3	0.5660	5361	0.9986	0.0246
	•	0.3854	3056	0.9921	0.04079		•	0.4001	3308	0.9938	0.0365
21210612	1	0.6733	0.1808	0.9992	0.02036	21310631	1	0.6904	2253	0.9992	0.022
	2	0.6252	1627	0.9991	0.02042		2	0.6426	5465	0.9992	0.021
	3	0.5490	1800	0.9969	0.01985		3	0.5695	5519	0.9992	0.0193
	4	0.3891	0278	0.9948	0.03012		4	0.4096	3684	0.9929	0.0406
21210622	1	0.6781	0.1671	0.9994	0.01787	21310612	1	0.6897	0.1339	0.9991	0.0210
	2	0.6302	1770	0.9994	0.01741		2	0.6426	2040	0.9990	0.0207
	3	0.5530	1913	0 . 9993	0.01609		3	0.5657	2167	0.9989	0.0194
	4	0.3891	0276	0.9948	0.03119		4	0.3749	02 <b>86</b>	0.9952	0.0273
21210632	1	0.6780	0.1454	0.9990	0.02432	21310622	1	0.6903	0.1418	0.9992	0.020
	2	0.6303	1941	0.9988	0.02404		2	0.6431	1988	0.9991	0.020
	3	0.5533	2063	0.9967	0.02213		3	0.5681	2202	0.9988	0.0202
	4	0.3909	0431	0.9949	0.03131		4	0.3646	0723	0.9974	0.0206
21210615	1	0.6679	0.6922	0.9989	0.02161	21310632	1	0.6896	0.1391	0.9991	0.0243
	2	0.6191	0.3176	0.9987	0.02161		2	0.6421	1993	0.9990	0.0238
	3	0.5338	0.2605	0.9982	0.02206		3	0.5635	2088	0.9989	0.0220
	•	0.3539	0.3766	0.9910	0.03278		4	0.3941	0289	0.9926	0.0398
21210625	1	0.6672	0.7017	0.9985	0.02450	21310615	1	0.6796	0.6930	0.9989	0.0213
	2	0.6184	0.3261	0.9983	0.02449		2	0.6308	0.3177	0.9988	0.0211
	3	0.5337	0.2663	0.9978	0.02382		3	0.5443	0.2606	0.9985	0.0205
	4	0.3554	0.3771	0.9924	0.02968		4	-	-	-	-

S.I • regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE = standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

AMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT	<b>S</b>	I	R <sup>2</sup>	S.E.
21310625	1	0.5825	0.7200	0.9988	0.02348	12110515	1	0.6337	0.3542	0.9991	0.02207
	2	0.6334	0.3351	0.9986	0.02342		2	0.5894	0.0750	0.9990	0.02187
	3	0.5455	0.2751	0.9980	0.02365		3	0.5184	0.0463	0.9988	0.0211
	4	0.3594	0.3937	0.9906	0.03425		4	0.3607	0.1967	0.9925	0.0362
21310635	1	0.6839	0.6954	0.9985	0.02457	12110525	1	0.6339	0.3779	0.9986	0.0251
	2	0.6350	0.3166	0.9983	0.02441		2	0.5889	0.0935	0.9984	0.0252
	3	0.5516	0.2479	0.9981	0.02241		3	0.5169	0.0638	0.9981	0.0239
	4	-	-	•	•		4	•	-	-	•
12110511	1	0.6340	5134	0.9990	0.02376	12110535	1	0.6318	0.3629	0.9988	0.0245
	2	0.5906	7567	0.9989	0.02355		2	0.5876	0.0839	0.9986	0.0243
	3	0.5324	7585	0.9990	0.02057		3	0.5174	0.0533	0.9984	0.0228
	4	0.4129	6315	0.9969	0.02783		4	0.1811	0.3874	1.0000	0.0000
12110521	1	0.6331	5283	0.9990	0.02439	12110611	1	0.6356	2075	0.9991	0.0227
	2	0.5891	7652	0.9988	0.02448		2	0.5882	5292	0.9990	0.0224
	3	0.5326	7714	0.9989	0.02158		3	0.5164	5306	0.9988	0.0218
	4	0.3177	4928	0.9969	0.02275		4	0.3607	3481	0.9916	0.0396
12110531	1	0.6342	5337	0.9991	0.02297	12110621	1	0.6326	2103	0.9991	0.0236
	2	0.5904	7698	0.9990	0.02256		2	0.5848	5255	0.9989	0.0238
	3	0.5335	7742	0.9991	0.01925		3	0.5132	5264	0.9988	0.0218
	4	0.3127	4775	0.9979	0.01834		4	0.3550	3323	0.9913	0.0408
12110512	1	0.6350	1764	0.9990	0.02382	12110631	1	0.6333	1739	0.9991	0.0232
	2	0.5932	4334	0.9989	0.02311		2	0.5862	5043	0.9989	0.0227
	3	0.5298	4292	0.9988	0.02193		3	0.5114	4969	0.9986	0.0214
	4	0.4013	2906	0.9956	0.03155		•	0.3566	3233	0.9934	0.0345
12110522	1	0.6362	1796	0.9992	0.02102	12110612	1	0.6334	0.1626	0.9990	0.0234
	2	0.5931	4314	0.9992	0.02005		2	0.5855	1730	0.9989	0.0230
	3	0.5304	4310	0.9991	0.01877		3	0.5066	1722	0.9987	0.0214
	4	0.3967	2741	0.9956	0.03051		•	•	-	•	•
12110532	1	0.6371	1844	0.9991	0.02281	12110622	1	0.6350	0.1226	0.9993	0.0200
	2	0.5951	4422	0.9990	0.02266		2	0.5874	2026	0.9992	0.0197
	3	0.5323	4417	0.9988	0.02170		3	0.5101	2012	0.9992	0.0181
	4	0.3423	1855	0.9948	0.02975		4	0.3428	0065	0.9888	0.0444

S,I - regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE - standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

AMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	S.E.	SAMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	S.E.
12110632	1	0.6364	0.1317	0.9993	0.02010	12110722	1	0.6308	0.4838	0.9991	0.01950
	2	0.5887	1983	0.9992	0.01991		2	0.5792	0.0660	0.9990	0.0195
	3	0.5120	2021	0.9993	0.01641		3	0.4869	0.0622	0.9983	0.0211
	4	0.3436	0072	0.9915	0.03853		•	0.2521	0.2662	0.9921	0.02496
12110615	1	0.6350	0.6641	0.9992	0.01909	12110732	1	0.6357	0.4873	0.9993	0.0207
	2	0.5859	0.2968	0.9990	0.01893		2	0.5840	0.0651	0.9991	0.02060
	3	0.4981	0.2571	0.9988	0.01763		3	0.4908	0.0606	0.9986	0.0220
	•	0.2253	0.5162	0.9909	0.02511		4	0.2886	0.2819	0.9794	0.0497
12110625	1	0.6319	0.6518	0.9991	0.02059	12110715	1	0.6260	1.0246	0.9988	0.0203
	2	0.5832	0.2922	0.9990	0.02040		2	0.5729	0.5611	0.9985	0.0202
	3	0.4980	0.2488	0.9986	0.02036		3	0.4735	0.4901	0.9981	0.0191
	4	0.3091	0.4113	0.9877	0.03741		4	•	-	-	-
12110635	1	0.6332	0.6889	0.9991	0.01898	12110725	1	0.5286	0.9861	0.9989	0.0191
	2	0.5843	0.3167	0.9969	0.01875		2	0.5759	0.5327	0.9987	0.0191
	3	0.4980	0.2691	0.9986	0.01688		3	0.4776	0.4646	0.9981	0.0192
	4	0.2986	0.4107	0.9929	0.02515		4	0.2708	0.5921	0.9658	0.0301
12110711	1	0.6327	0.1166	0.9990	0.02394	12110735	1	0.6234	1.0074	0.9976	0.0253
	2	0.5820	2856	0.9989	0.02307		2	0.5705	0.5513	0.9972	0.0253
	3	0.4939	2761	0.9987	0.02104		3	0.4722	0.4830	0.9960	0.0249
	•	0.3074	0609	0.9834	0.04739		4	0.2539	0.6183	0.9836	0.0284
12110721	1	0.6350	0.1041	0.9991	0.02217	11110715	1	0.6314	0.9973	0.9983	0.0234
	2	0.5841	2963	0.9990	0.02169		2	0.5785	0.5353	0.9981	0.0231
	3	0.4961	2869	0.9989	0.01949		3	0.4787	0.4679	0.9975	0.0216
	•	0.3031	0446	0.9827	0.04668		4	0.2659	0.6087	0.9891	0.0252
12110731	1	0.6329	0.1222	0.9992	0.02160	12210711	1	0.6573	0.1579	0.9992	0.0229
	2	0.5820	2805	0.9991	0.02116		2	0.6050	2575	0.9990	0.0228
	3	0.4943	2745	0.9989	0.02007		3	0.5133	2528	0.9988	0.0216
	•	0.3031	0429	0.9833	0.04743		4	0.3142	0207	0.9813	0.0522
12110712	1	0.6320	0.4676	0.9992	0.02000	12210721	1	0.6584	0.0805	0.9996	0.0167
	2	0.5807	0.0532	0.9992	0.01943		2	0.4995	0983	0.9993	0.0161
	3	0.4900	0.0452	0.9989	0.01832		3	0.5192	3142	0.9994	0.0154
	4	0.1838	0.3527	0.9927	0.02329		4	0.2428	0248	0.9954	0.0224

S<sub>2</sub>I = regression coefficients;
R = coefficient of determination; and

S.E. - standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

AMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	S.E.	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	S.E.
12210731	1	0.6555	0.1459	0.9992	0.02254	12310721	1	0.6695	0.1353	0.9993	0.0208
	2	0.6041	2684	0.9991	0.02189		2	0.6181	2797	0.9993	0.02017
	3	0.5120	2594	0.9988	0.02101		3	0.5262	2758	0 9991	0.0191
	•	0.1710	0.1632	0.9941	0.02053		4	0.3287	0517	0.9843	0.0495
12210712	1	0.6539	0.4833	0.9993	0.01943	12310731	1	0.6666	0.1388	0.9995	0.0180
	2	0.6024	0.0595	0.9992	0.01902		2	0.6149	2735	0.9995	0.0176
	3	0.5111	0.0423	0.9990	0.01784		3	0.5224	2674	0.9991	0.01898
	4	0.3182	0.2268	0.9901	0.03469		4	•	•	•	-
12210722	1	0.6561	0.4743	0.9989	0.02410	12310712	1	0.6692	0.4744	0.9990	0.0237
	2	0.6046	0.0519	0.9988	0.02366		2	0.6176	0.0476	0.9989	0.0233
	3	0.5181	0582	0.9986	0.02212		3	0.5249	0.0289	0.9986	0.0218
	4	0.2492	0.2596	0.9898	0.03140		4	0.3271	0.2193	0.9918	0.0334
12210732	1	0.6561	0.4435	0.9990	0.02373	12310722	1	0.6686	0.4838	0.9992	0.0209
	2	0.6044	0.0296	0.9989	0.02352		2	0.6167	0.0565	0.9990	0.0207
	3	0.5123	0.0190	0.9985	0.02339		3	0.5244	0.0355	0.9988	0.0200
	•	0.3131	0.2282	0.9846	0.04564		4	0.3273	0.2253	0.9885	0.0381
12210715	1	0.6577	0.9577	0.9990	0.01859	12310732	1	0.6673	0.4719	0.9995	0.0162
	2	0.6048	0.5009	0.9989	0.01841		2	0.6158	0.0488	0 . 9994	0.0160
	3	0.5049	0.4281	0.9985	0.01747		3	0.5239	0.0297	0 . 9993	0.0154
	4	•	•	-	•		4	0.3274	0.2210	0.9902	0.0357
12210725	1	0.6532	0.9587	0.9984	0.02378	12310715	1	0.6728	0.9849	0.9983	0.0217
	2	0.6008	0.5034	0.9982	0.02360		2	0.6195	0.5148	0.9960	0.0215
	3	0.5021	0.4295	0.9976	0.02271		3	0.4993	0.4286	0.9972	0.0207
	4	0.2928	0.5547	0.9885	0.02900		4	0.2259	0.5325	1.0000	0.0000
12210735	1	0.6497	1.0236	0.9982	0.02595	12310725	1	0.6705	0.9959	0.9979	0.0243
	2	0.5963	0.5531	0.9978	0.02582		2	0.6170	0.5238	0.9975	0.0241
	3	0.4948	0.4763	0.9969	0.02551		3	0.5160	0.4404	0.9968	0.0230
	4	0.2781	0.6070	0.9837	0.03319		4	0.2126	0.5713	1.0000	0.0000
12310711	1	0.6716	0.1410	0.9992	0.02253	12310735	1	0.6658	0.9919	0.9984	0.0211
	2	0.6193	2739	0.9991	0.02224		2	0.6160	0.4476	0.9982	0.0211
	3	0.5276	2738	0.9990	0.01988		3	0.5161	0.3756	0.9974	0.0214
	4	0.3243	0311	0.9834	0.05071		4	0.3066	0.5088	0.9877	0.0278

S<sub>1</sub>I = regression coefficients; R = coefficient of determinat - coefficient of determination; and

S.E. - standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

AMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	S.E.	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	S.E.
22110611	1	0.6515	2318	0.9991	0.02416	22110635	1	0.6522	0.6926	0.9991	0.02053
	2	0.6050	5461	0.9990	0.02338		2	0.6032	0.3185	0.9989	0.02040
	3	0.5330	5411	0.9989	0.02156		3	0.5164	0.2704	0.9986	0.02010
	4	0.3817	3694	0.9922	0.04083		4	0.3285	0.4155	0.9910	0.0319
22110621	1	0.6515	2284	0.9990	0.02509	32110611	1	0.6482	1628	0.9993	0.0205
	2	0.6042	5406	0.9989	0.02488		2	0.6013	4957	0.9993	0.0193
	3	0.5335	5422	0.9989	0.02162		3	0.5240	4819	0.9991	0.0190
	4	0.3246	2600	0.9955	0.02731		4	-	•	-	•
22110631	1	0.6515	2085	0.9992	0.02230	32110621	1	0.6484	1846	0.9991	0.0230
	2	0.6046	5283	0.9991	0.02173		2	0.6020	5139	0.9991	0.0221
	3	0.5323	5267	0.9991	0.01974		3	0.5284	5120	0.9987	0.0224
	4	0.3746	3353	0.9919	0.04082		4	0.3689	3207	0.9909	0.0422
22110612	1	0.6514	0.1489	0.9994	0.01940	32110631	1	0.6490	1672	0.9992	0.0221
	2	0.6041	1839	0.9993	0.01910		2	0.6014	4965	0.9991	0.0217
	3	0.5259	1832	0.9992	0.01830		3	0.5265	4918	0.9992	0.0184
	4	0.3575	0.0094	0.9901	0.04313		4	0.3665	3045	0.9927	0.0381
22110622	1	0.6510	0.1625	0.9992	0.02231	32110612	1	0.6460	0.1841	0.9993	0.0217
	2	0.6032	1716	0.9991	0.02196		2	0.5983	1557	0.9992	0.0210
	3	0.5250	1739	0.9989	0.02083		3	0.5179	1524	0.9991	0.0194
	•	0.3553	0.0200	0.9891	0.04485		4	0.3440	0.0491	0.9879	0.0468
22110632	1	0.6476	0.1811	0.9990	0.02361	32110622	1	0.6472	0.1551	0.9991	0.0234
	2	0.5994	1551	0.9988	0.02370		2	0.6003	1793	0.9990	0.0227
	3	0.5215	1599	0.9982	0.02562		3	0.5217	1775	0.9990	0.0200
	4	0.3522	0.0316	0.9840	0.05125		4	0.3083	0.0858	0.9929	0.0320
22110615	1	0.6479	0.6835	0.9991	0.01920	32110632	1	0.6493	0.1294	0.9993	0.0205
	2	0.5993	0.3146	0.9990	0.01890		2	0.6016	1964	0.9992	0.0205
	3	0.5141	0.2653	0.9987	0.01837		3	0.5259	2034	0.9991	0.0190
	4	0.3308	0.4025	0.9924	0.02902		4	0.3161	0.0514	0.9939	0.0300
22110625	1	0.6501	0.6951	0.9986	0.02470	32110615	1	0.6448	0.6888	0.9992	0.0180
	2	0.6010	0.3226	0.9984	0.02455		2	0.5961	0.3196	0.9991	0.0179
	3	0.5143	0.2745	0.9981	0.02329		3	0.5100	0.2725	0.9988	0.0179
	4	-	•	-	-		4		-	-	-

S<sub>2</sub>I = regression coefficients; R = coefficient of determination; and

S.E. - standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

AMPLE NUMBER	LVDT	s	I	R <sup>2</sup>	S.E.	SAMPLE NUMBER	LVDT #	s	I	R <sup>2</sup>	S.E.
32110625	1	0.6451	0.6871	0.9991	0.02025	22210615	1	0.7067	0.4029	0.9993	0.0179
	2	0.5962	0.3204	0.9990	0.02012		2	0.3265	0.8087	0.9999	0.0036
	3	0.5099	0.2742	0.9987	0.01923		3	0.1604	1.1409	0.9811	0.0215
	4	0.3222	0.4233	0.9921	0.03042		4	0.1470	0.1966	0.0645	0.5411
32110635	1	0.6462	0.6714	0.9989	0.02147	22210625	1	0.6796	0.6522	0.9993	0.0171
	2	0.5975	0.3057	0.9986	0.02119		2	0.3284	0.8204	0.9946	0.0227
	3	0.5121	0.2587	0.9993	0.01953		3	0.2531	0.7357	0.9941	0.0183
	4	0.3283	0.3993	0.9929	0.02818		4	-	•	•	-
22210611	1	0.6762	1236	0.9994	0.01669	22210635	1	0.6829	0.6057	0.9995	0.0147
	2	0.3082	0.1700	0.9996	0.00636		2	0.3362	0.8000	0.9960	0.0195
	3	0.1692	0.1698	0.9957	0.01091		3	0.2585	0.7223	0.9902	0.0236
	4	0.4374	-1.1701	1.0000	0.00000		•	-	-	-	-
22210621	1	0.6816	1743	0.9994	0.01920	11120511	1	0.2835	0.4965	0.9985	0.0153
	2	0.2485	0.4367	0.9913	0.02765		2	0.1149	1.2668	0.9870	0.0180
	3	0.1608	0.6325	0.9785	0.02832		3	0.1063	1.3542	0.9809	0.0203
	•	0114	0.9952	0.0274	0.07978		4	0.0984	1.3969	0.9724	0.0227
22210631	1	0.6846	1346	0.9999	0.00760	11120521	1	0.2860	0.4849	0.9970	0.0221
	2	0.2445	0.5108	0.9968	0.01629		2	0.1333	1.3471	0.9862	0.0206
	3	0.1992	0.5729	0.9963	0.00959		3	0.1138	1.3919	0.9909	0.0155
	•	0.0418	0.9923	0.2983	0.07541		4	0.0872	1.4499	0.9966	0.0072
22210612	1	0.6852	0.1500	0.9996	0.01526	11120531	1	0.2927	0.4881	0.9903	0.0130
	2	0.2729	0.2676	0.9807	0.04213		2	0.1876	1.0287	0.9937	0.0212
	3	0.1507	0.2206	0.9875	0.01865		3	0.1640	1.1181	0.9928	0.0199
	•	0.3872	-1.3177	0.9138	0.14327		4	0.1445	1.1743	0.9960	0.01309
22210622	1	0.6647	0.2631	0.9991	0.02161	11120512	1	0.2890	0.5650	0.9984	0.0160
	2	0.2744	0.2651	0.9796	0.04332		2	0.1240	1.2388	0.9891	0.01816
	3	0.1517	0.2185	0.9893	0.01726		3	0.1246	1.2171	0.9924	0.01525
	•	0.3861	-1.3103	0.8977	0.15612		•	0.1345	1.1090	0.9837	0.02418
22210632	1	0.6653	0.2042	0.9995	0.01737	11120522	1	0.2989	0.5322	0.9980	0.01961
	2	0.2537	0.2930	0.9752	0.04769		2	0.2675	0.6109	0.9909	0.03716
	3	0.1458	0.2339	0.9852	0.02032		3	0.1907	0.7940	0.9936	0.02222
	4	0.3741	-1.2816	0.9088	0.14739		4	1510	1.7258	0.5248	0.20834

S<sub>2</sub>I = regression coefficients; R = coefficient of determination; and

S.E. - standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

SAMPLE NUMBER	LVDT 6	s	r	R <sup>2</sup>	S.E.	SAMPLE NUMBER	LVDT #	s	ī	R <sup>2</sup>	S.E.
11120532	1	0.2938	0.5403	0.9979	0.01735	11320522	1	0.2993	0.6138	0.9981	0.01843
	2	0.1387	1.0080	0.9948	0.01298		2	0.1824	0.9637	0.9836	0.03396
	3	0.0812	1.2122	0.9934	0.00858		3	0.1420	1.0234	0.9772	0.0312
	4	0.0181	1.4111	0.2224	0.04394		4	0.0753	1.0598	0.9179	0.0324
11120515	1	0.2996	0.6438	0,9978	0.01842	11320532	1	0.2940	0.6244	0.9984	0.0172
	2	0.1481	1.1612	0.9946	0.01444		2	0.1837	0.9927	0.9876	0.03009
	3	0.0871	1.3571	0.9984	0.00459		3	0.1463	1.0366	0.9836	0.0276
	4	0.0155	1.4885	0.1277	0.05345		4	0.0862	1.0505	0.9806	0.0177
11120525	1	0.2926	0.6676	0.9976	0.01985	11320515	1	0.3058	0.5683	0.9980	0.01819
	2	0.2023	1.0545	0.9928	0.02370		2	0.1086	1.4316	0.9952	0.0100
	3	0.1891	1.0615	0.9774	0.03942		3	0.0596	1.5335	0.9937	0.0063
	•	0.1796	1.0114	0.9312	0.06688		4	0247	1.7195	0.6634	0.0234
11120535	1	0.2944	0.6800	0.9966	0.02357	11320525	1	0.3194	0.6069	0.9993	0.0115
	2	0.1026	1.3263	0.9909	0.01338		2	0.0916	1.5182	0.9951	0.0085
	3	0.0754	1.3909	0.9889	0.01087		3	0.0730	1.6504	0.9819	0.0132
	•	0.0388	1.5169	0.8973	0.01791		4	0.0408	1.7667	0.8284	0.0247
11320511	1	0.3058	0.4853	0.9981	0.01910	11320535	1	0.2961	0.7991	0.9978	0.0193
	2	0.0775	1.1688	0.9710	0.01897		2	0.1526	1.0441	0.9963	0.0130
	3	0.0588	1.5390	0.9787	0.01229		3	0.1358	1.0502	0.9989	0.0064
	4	0.0818	1.3719	0.9121	0.03598		4	0.1132	1.0757	0.9965	0.0093
11320521	1	0:3043	0.5098	0.9979	0.01895	22120611	1	0.3012	0.7479	0.9991	0.0128
	2	0.1508	0.5683	0.9950	0.01454		2	0.1400	0.8117	0.9904	0.0192
	3	0.1677	0.4342	0.9925	0.01994		3	0.1125	0.7015	0.9724	0.0264
	4	0.1674	0.4155	0.9829	0.03013		4	0.0282	0.6348	0.1428	0.0963
11320531	1	0.3061	0.4587	0.9982	0.01919	22120621	1	0.3003	0.7650	0.9989	0.0144
	2	0.0944	1.0623	0.9959	0.00898		2	0.2276	0.5183	0.9975	0.0166
	3	0.0989	0.9021	0.9872	0.01662		3	0.2081	0.3898	0.9977	0.0146
	4	0.0832	0.7219	0.9512	0.02788		4	0.2032	0.3175	0.9906	0.0289
11320512	1	0.3064	0.5853	0.9979	0.02061	22120631	1	0.2985	0.7970	0.9985	0.0165
	2	0.1376	0.8812	0.9890	0.02104		2	0.1878	0.5253	0.9807	0.0380
	3	0.1129	0.9303	0.9894	0.01695		3	0.1899	0.4894	0.9843	0.0345
	4	0.0667	0.9923	0.9292	0.02669		4	0.1882	0.4855	0.9780	0.0407

S<sub>2</sub>I = regression coefficients; R = coefficient of determination; and

S.E. = standard error.

Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

MPLE NUMBER	LVDT #	. s	I	R <sup>2</sup>	S.E.	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	S.E.
22120612	1	0.3030	0.8184	0.9982	0.01777	32120631	1	0.2926	0.8295	0.9973	0.0182
	2	0.1034	1.4257	0.8650	0.05614		2	0.6085	5201	0.9980	0.0330
	3	0.0941	1.4392	0.8657	0.05092		3	0.5305	5036	0.9983	0.0265
	4	0.0414	1.5576	0.8448	0.02438		4	•	-	-	•
22120622	1	0.2986	0.8325	0.9976	0.02115	32120612	1	0.2883	0.8292	0.9977	0.0168
	2	0.1527	0.8324	0.9685	0.03955		2	0.6016	5385	0.9918	0.0663
	3	0.1334	0.8512	0.9661	0.03583		3	0.5246	5206	0.9930	0.0534
	4	0.1307	0.7920	0.9503	0.04290		4	-	•	•	-
22120632	1	0.2948	0.8732	0.9980	0.01974	32120622	1	0.2931	0.9384	0.9971	0.0241
	2	0.1956	0.6548	0.9928	0.02474		2	0.1048	1.2190	0.9979	0.0074
	3	0.1311	0.7905	0.9880	0.02157		3	0.1002	1.1809	0.9952	0.0107
	4	0.0741	0.9801	0.9292	0.03046		4	0.1167	1.0350	0.9975	0.0089
22120615	1	0.2968	1.0042	0.9965	0.02332	32120632	1	0.3011	0.8554	0.9972	0.0213
	2	0.0762	1.3654	0.9956	0.00674		2	0.1342	0.9923	0.9946	0.0132
	3	0.0620	1.3796	0.9946	0.00611		3	0.0990	0.9724	0.9940	0.0103
	4	0.0206	1.4658	0.8861	0.00985		4	0.0387	1.0194	0.7051	0.0336
22120625	1	0.2985	0.9706	0.9969	0.02203	32120615	1	0.2933	0.8170	0.9957	0.02360
	2	0.0926	1.1390	0.9922	0.01082		2	0.5957	4870	0.9978	0.03423
	3	0.0575	1.2894	0.9671	0.01397		3	0.5192	4748	0.9982	0.02740
	4	0.0722	1.3393	0.9796	0.01374		4	•	-	• '.	-
22120635	1	0.2872	1.0416	0.9972	0.02141	32120635	1	0.2914	1.0470	0.9992	0.0122
	2	0.1661	0.9083	0.9949	0.01667		2	0.1648	1.0793	0.9893	0.0253
	3	0.1937	0.8317	0.9977	0.01309		3	0.1188	1.1518	0.9845	0.02202
	4	0.1977	0.8415	0.9973	0.01440		4	0.0247	1.3323	0.4971	0.0366
32120611	1	0.2946	0.8275	0.9988	0.01252	32120635	1	0.2968	1.0508	0.9959	0.02524
	2	0.5936	4858	0.9952	0.05049		2	0.0797	1.2466	0.9926	0.00818
	3	0.5175	4740	0.9958	0.04128		3	0.0721	1.2013	0.9912	0.00902
	•	•	•	•	-		4	0.0579	1.1741	0.9568	0.01636
32120621	1	0.2964	0.8115	0.9970	0.01947						
	2	0.6086	5184	0.9977	0.03486						
	3	0.5304	5021	0.9979	0.02904						

S<sub>2</sub>I = regression coefficients; R = coefficient of determination; and

S.E. - standard error.

# APPENDIX C

The values of the parameters of the deflection basin of all beam specimens are presented in this Appendix.

Table C. Parameters of the deflection basin of the beam specimens.

3D∲	AV	N	В	A	SD∳	AV	N	В	A
11110511	2.909	150	-0.545	0.488	-		5000	-0.625	0.716
		520	-0.579	0.506			10000	-0.632	0.743
		1000	-0.581	0.543			50000	-0.648	0.805
		5000	-0.604	0.603			100000	-0.654	0.832
		10000	-0.613	0.629	11110525	3.033	100	-0.577	0.564
		21940	-0.622	0.658			500	-0.595	0.630
		164925	-0.642	0.737			1000	-0.603	0.657
11110521	2.951	100	-0.533	0.487			5000	-0.623	0.716
		500	-0.570	0.524			10000	-0.630	0.742
		1000	-0.587	0.543			50000	-0.646	0.805
		5000	-0.605	0.604			100000	-0.652	0.832
		10000	-0.615	0.628	11110535	3.068	100	-0.583	0.511
		170420	-0.645	0.738			500	-0.598	0.630
11110531	3.001	100	-0.533	0.487			1000	-0.606	0.657
		500	-0.578	0.513			5027	-0.626	0.716
		1000	-0.586	0.548			10400	-0.633	0.745
		5010	-0.610	0.605			18000	-0.638	0.765
		10025	-0.618	0.629	11210511	3.172	100	-0.569	0.465
		164725	-0.647	0.738			500	-0.590	0.526
11110512	2.982	155	-0.561	0.508			1000	-0.604	0.552
		525	-0.579	0.549			5000	-0.624	0.612
		1000	-0.592	0.570			10000	-0.630	0.641
		5000	-0.612	0.630			30500	-0.643	0.682
		10000	-0.619	0.657			683000	-0.671	0.805
		26730	-0.630	0.694	11210521	3.016	100	-0.538	0.495
		169100	-0.648	0.766	+		500	-0.575	0.534
11110522	3.116	100	-0.568	0.472			1000	-0.597	0.543
		500	-0.591	0.544			5000	-0.611	0.612
		1000	-0.602	0.568			10000	-0.620	0.639
		5025	-0.621	0.632			30550	-0.633	0.681
		10000	-0.629	0.656			40000	-0.635	0.692
		158650	-0.656	0.765			352030	-0.656	0.777
11110532	3.015	100	-0.576	0.456	11210531	3.032	150	-0.573	0.470
		500	-0.587	0.540			. 550	-0.572	0.548
		1000	-0.593	0.571			1000	-0.598	0.546
		5000	-0.613	0.632			5000	-0.613	0.613
		10000	-0.621	0.658			10000	-0.619	0.642
		30000	-0.634	0.699			33100	-0.634	0.686
		163740	-0.650	0.765			145000	-0.649	0.742
11110515	3.061	100	-0.578	0.566	11210512	3.083	100	-0.574	0.477
	J. 001	500	-0.598	0.528	11010716	5.000	500	-0.592	0.550
		1000	-0.595	0.656			1000	-0.599	0.581
		1000	0.000	0.050			1000	v. Jes	J. 301

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD₽	AV	N	В	A	SD₽	AV	N	В	٨
		5000	-0.621	0.639			100900	-0.660	0.844
		10000	-0.627	0.667	11310511	3.000	100	-0.559	0.459
		20000	-0.635	0.694			500	-0.586	0.523
		34000	-0.640	0.714			1000	-0.589	0.561
		164600	-0.655	0.776			5000	-0.611	0.618
11210522	3.111	100	-0.565	0.496			10000	-0.619	0.646
		500	-0.594	0.552			32142	-0.632	0.690
		1000	-0.600	0.582			172900	-0.649	0.755
		5000	-0.623	0.639	11310521	2.994	100	-0.559	0.459
		10000	-0.629	0.668			500	-0.579	0.534
		44000	-0.645	0.724			1000	-0.592	0.556
		165000	-0.657	0.776			5000	-0.613	0.617
11210532	3.154	100	-0.578	0.490			10000	-0.618	0.646
		500	-0.598	0.549			21000	-0.627	0.674
		1000	-0.604	0.579			50535	-0.636	0.707
		5000	-0.625	0.639			154500	-0.648	0.750
		10000	-0.632	0.668	11310531	3.008	100	-0.559	0.459
		27100	-0.643	0.706			200	-0.584	0.46
		49800	-0.649	0.729			500	-0.583	0.533
		195000	-0.661	0.783			1000	-0.587	0.559
11210515	3.045	100	-0.576	0.581			5000	-0.611	0.61
		500	-0.598	0.639			10000	-0.620	0.646
		1000	-0.607	0.664			30000	-0.632	0.687
		5000	-0.625	0.726			164700	-0.649	0.753
		10000	-0.632	0.753	11310512	3.014	100	-0.573	0.487
		21000	-0.639	0.782			500	-0.582	0.566
		30400	-0.643	0.796			1000	-0.597	0.582
		122877	-0.655	0.851			5000	-0.615	0.646
11210525	3.074	100	-0.575	0.584			10000	-0.623	0.673
	• • • • • • • • • • • • • • • • • • • •	500	-0.600	0.640			30000	-0.635	0.714
		1000	-0.609	0.665			75200	-0.644	0.750
		5200		0.729	11310522	3.060	100	-0.560	
		10000	-0.627		11310322	3.000	. 500		0.503
			-0.634	0.753				-0.589	0.559
		20000	-0.641	0.780			1000	-0.599	0.584
	2 1/2	98850	-0.655	0.842			5000	-0.619	0.646
11210535	3.143	100	-0.584	0.580			10000	-0.625	0.674
		500	-0.606	0.639			30000	-0.638	0.715
		1000	-0.613	0.666			56700	-0.644	0.739
		5000	-0.631	0.727	11310532	3.081	120	-0.571	0.510
		10000	-0.639	0.754			500	-0.594	0.554
		20000	-0.645	0.780			1000	-0.601	0.584
		37500	-0.651	0.805			5000	-0.620	0.640

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD₩	AV	N	В	<b>A</b>	SD∳	ΑV	N	В	A
		10000	-0.628	0.672		<del></del>	30000	-0.694	0.67
		35340	-0.641	0.721			165000	-0.710	0.74
		41700	-0.643	0.727	11110612	2.752	100	-0.551	0.47
11310515	3.039	100	-0.577	0.584			500	-0.564	0.54
		500	-0.599	0.645			1000	-0.575	0.57
		1000	-0.607	0.671			5000	-0.594	0.63
		5000	-0.625	0.733			10000	-0.602	0.65
		10000	-0.632	0.759			42200	-0.619	0.71
11310525	3.220	100	-0.593	0.581			163500	-0.633	0.76
		500	-0.611	0.647			216000	-0.636	0.77
		1000	-0.620	0.671			337750	-0.640	0.79
		5000	-0.637	0.734			510000	-0.643	0.80
		10000	-0.644	0.761			855300	-0.647	0.82
		20300	-0.651	0.788	11110622	5.421	100	-0.740	0.47
11310535	2.932	100	-0.571	0.582			500	-0.757	0.54
		500	-0.590	0.647			1000	-0.766	0.56
		1000	-0.598	0.671			5000	-0.782	0.63
		5300	-0.618	0.734			10000	-0.788	0.66
		10000	-0.624	0.758			30000	-0.796	0.70
		30000	-0.635	0.801			166800	-0.807	0.78
		42100	-0.638	0.813	11110632	4.358	100	-0.657	0.48
11110611	4.141	100	-0.635	0.447			500	-0.682	0.54
		500	-0.653	0.524			1000	-0.691	0.56
		1000	-0.673	0.537			5000	-0.709	0.63
		2170	-0.683	0.568			10000	-0.715	0.66
		5870	-0.690	0.611			38000	-0.726	0.71
		10350	-0.698	0.632			161600	-0.738	0.77
		30000	-0.706	0.676	11110615	5.303	100	-0.748	0.56
		150000	-0.720	0.742			500	-0.764	0.63
11110621	4.035	100	-0.642	0.427			1000	-0.770	0.56
		500	-0.653	0.514			5000	-0.785	0.72
		1000	-0.668	0.533			10000	-0.790	0.75
		5000	-0.683	0.603			20000	-0.795	0.78
		10000	-0.689	0.632			40000	-0.799	0.81
		33000	-0.700	0.681			44200	-0.800	0.81
		181000	-0.715	0.748	11110625	2.676	100	-0.546	0.57
		351000	-0.720	0.776			500	-0.568	0.63
11110631	3.957	100	-0.642	0.427			1000	-0.579	0.65
		500	-0.651	0.505			5000	-0.597	0.71
		1170	-0.656	0.554			10000	-0.605	0.74
		5000	-0.676	0.605			26000	-0.615	0.77
		10000	-0.684	0.631			51000		0.80

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

	3.178 6.683	166770 100 600 1000 5050 10150 47000	-0.632 -0.586 -0.609 -0.615 -0.634 -0.640 -0.655	0.848 0.567 0.635 0.655 0.717	11110712	6.586	100 500 1000	-0.827 -0.846 -0.849	0.47
		600 1000 5050 10150 47000	-0.609 -0.615 -0.634 -0.640	0.635 0.655 0.717					
11110711	6.683	1000 5050 10150 47000	-0.615 -0.634 -0.640	0. <b>655</b> 0.717			1000	-0.849	
11110711	6.683	5050 10150 47000	-0.634 -0.640	0.717					0.56
11110711	6.683	10150 47000	-0.640				5000	-0.863	0.63
11110711	6.683	47000		0.744			18000	-0.872	0.69
11110711	6.683		-0.655				30000	-0.875	0.71
11110711	6.683	100		0.803			61232	-0.879	0.74
			-0.820	0.447	11110712	4.946	100	-0.702	0.47
		500	-0.845	0.509			500	-0.728	0.53
		1050	-0.850	0.541			1000	-0.732	0.56
		5000	-0.865	0.606			5000	-0.748	0.63
		10200	-0.871	0.636			10000	-0.755	0.66
		36700	-0.878	0.691			30000	-0.764	0.70
		159340	-0.886	0.756			173100	-0.776	0.78
11110711	3.704	100	-0.592	0.473	11110722	6.023	110	-0.786	0.47
		500	-0.633	0.507			500	-0.803	0.54
		1000	-0.640	0.539			1000	-0.808	0.56
		5000	-0.657	0.606			5000	-0.824	0.63
		10000	-0.666	0.631			10000	-0.829	0.66
		30000	-0.677	0.675			38000	-0.838	0.72
		152000	-0.693	0.739			164800	-0.846	0.78
11110721	5.191	100	-0.726	0.442	11110732	5.294	100	-0.732	0.47
		500	-0.729	0.522			500	-0.750	0.53
		1000	-0.745	0.538			1000	-0.757	0.569
		5400	-0.761	0.609			5000	-0.773	0.634
		10400	-0.768	0.636			10000	-0.779	0.66
		43000	-0.780	0.694			30000	-0.788	0.70
		169500	-0.790	0.752			33300	-0.788	0.713
11110731	4.088	100	-0.665	0.417			163200	-0.799	0.781
		500	-0.657	0.512	11110715	7.048	100	-0.880	0.566
		1000	-0.663	0.546			500	-0.894	0.633
		5000	-0.685	0.605			1000	-0.899	0.662
		10000	-0.693	0.631			5000	-0.909	0.730
		30000	-0.703	0.677			11200	-0.913	0.764
		159800	-0.718	0.744			12000	-0.914	0.767
11110712	5 802	100	-0.772	0.468			13100		
		500	-0.787	0.538	11110715	7 042	100	-0.914 -0.878	0.771
		1000	-0.792	0.570	/13	, . U 7 &		-0.878	0.566
		5000	-0.808	0.570			500	-0.894	0.632
		10600	-0.814	0.666			1000	-0.898	0.662
		33400	-0.823	0.715			5000	-0.909	0.730
		151100	-0.831	0.713			8000 10000	-0.911 -0.912	0.750 0.759

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD∳	AV	N	В	A	SD∲	AV	N	В	A
		12100	-0.913	0.768			500	-0.584	0.50
111107 <b>25</b>	5.924	100	-0.796	0.565			1100	-0.585	0.54
		500	-0.811	0.632			5000	-0.605	0.60
		1000	-0.816	0.660			10200	-0.615	0.63
		5000	-0.829	0.727			33500	-0.628	0.67
		10000	-0.834	0.756			159300	-0.645	0.73
		20000	-0.838	0.785	21110512	2.914	100	-0.553	0.49
		22544	-0.839	0.790			500	-0.578	0.54
11110725	7.005	100	-0.875	0.568			1000	-0.586	0.57
		500	-0.891	0.632			5000	-0.607	0.63
		1000	-0.896	0.662			10600	-0.615	0.66
		5000	-0.906	0.730			20900	-0.623	0.68
		10000	-0.910	0.759			158700	-0.643	0.76
		15000	-0.912	0.777	21110522	2.998	100	-0.568	0.47
		16000	-0.912	0.780			500	-0.581	0.54
11110735	5.899	100	-0.794	0.565			1000	-0.591	0.57
		500	-0.808	0.632			5000	-0.612	0.63
		1000	-0.815	0.660			10000	-0.621	0.65
		5000	-0.827	0.727			31300	-0.633	0.70
		10000	-0.832	0.756			176600	-0.650	0.76
		20200	-0.836	0.786	21110532	3.099	100	-0.574	0.47
11110735	6.980	100	-0.874	0.567			500	-0.593	0.53
		500	-0.888	0.633			1000	-0.600	0.57
		1000	-0.894	0.662			5000	-0.621	0.63
		5000	-0.904	0.730			10400	-0.628	0.66
		10000	-0.908	0.759			30000	-0.639	0.70
		20200	-0.911	0.790			166000	-0.656	0.76
21110511	2.952	100	-0.557	0.447	21110515	3.118	120	-0.585	0.57
		500	-0.565	0.532			500	-0.604	0.62
		1000	-0.590	0.536			1000	-0.610	0.65
		5020	-0.610	0.600			5000	-0.629	0.71
		10300	-0.614	0.634			10000	-0.636	0.74
		31220	-0.628	0.675			33200	-0.648	0.79
		176550	-0.645	0.741	21110525	2.975	100	-0.571	0.56
21110 <b>521</b>	3.031	100	-0.575	0.426		2,77	500	-0.592	0.63
		500	-0.584	0.510			1000	-0.600	0.65
		1050	-0.593	0.545			5000	-0.618	0.71
		5000	-0.614	0.601			10000	-0.626	0.74
		10000	-0.619	0.633			20600	-0.634	0.77
		3500 <b>0</b>	-0.635	0.678	21110535	3.171	100	-0.588	0.77
		150600	-0.649	0.735		V. 2/ 1	500	-0.606	0.53
21110531	0.050	100	-0.572	0.739			1000	-0.615	0.65

SD# = beam designation number;

AV - percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD∳	AV	N	В	A	SD∲	AV	N	В	A
		5000	-0.633	0.718	•		5000	-0.760	0.635
		10000	-0.640	0.745			10000	-0.765	0.665
		30000	-0.651	0.788			30000	-0.774	0.709
		66000	-0.6 <b>58</b>	0.818			164500	-0.786	0.781
21110611	4.737	100	-0.689	0.439	21110615	5.086	100	-0.734	0.565
		500	-0.702	0.513			500	-0.747	0.634
		1000	-0.715	0.540			1000	-0.754	0.662
		5000	-0.730	0.606			5000	-0.769	0.726
		10000	-0.736	0.636			10000	-0.775	0.754
		30300	-0.747	0.680			30700	-0.783	0.802
		160300	-0.760	0.749			31700	-0.783	0.801
21110621	4.912	100	-0.704	0.444	21110625	5.010	100	-0.724	0.570
		500	-0.712	0.518			500	-0.743	0.632
		1000	-0.725	0.539			1000	-0.749	0.661
		5400	-0.745	0.608			5000	-0.764	0.726
		10900	-0.749	0.639			10000	-0.769	0.754
		31050	-0.759	0.681			30800	-0.778	0.801
		168930	-0.772	0.752			35000	-0.778	0.806
21110631	4.955	100	-0.704	0.436	21110635	4.977	100	-0.723	0.568
		500	-0.726	0.504			500	-0.740	0.633
		1000	-0.729	0.541			1000	-0.747	0.660
		5000	-0.745	0.607			5000	-0.762	0.726
		10000	-0.752	0.635			10600	-0.768	0.756
		50000	-0.766	0.701			30300	-0.775	0.800
		100000	-0.771	0.730	21110711	6.778	100	-0.844	0.433
21110612	4.973	100	-0.704	0.480			500	-0.854	0.507
		500	-0.728	0.540			1000	-0.859	0.539
		1000	-0.734	0.571			5000	-0.873	0.607
		5000	-0.751	0.635			10000	-0.877	0.637
		10000	-0.757	0.664			31900	-0.885	0.687
		30000	-0.766	0.709			175800		
		169200	-0.778	0.782	21110721	6.867	100	-0.893	0.762
211106 <b>22</b>	5.090	100	-0.720	0.469	21110/21	0.007	- 500	-0.836	0.450
21110022	3.030						1000	-0.862	0.507
		500 1000	-0.737 -0.743	0.541 0.569				-0.864	0.540
		5000	-0.759				5300	-0.878	0.610
				0.635			10000	-0.883	0.637
		10000	-0.765 -0.774	0.664			31000	-0.890	0.586
		30000	-0.774	0.709	01110701		171000	-0.898	0.761
21110020	£ 00:	162310	-0.785	0.781	21110731	0.917	100	-0.844	0.447
21110632	5.094	100	-0.716	0.475			500	-0.864	0.507
		500	-0.735	0.542			1000	-0.870	0.538
		1000	-0.744	0.568			5000	-0.882	0.607

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD₽	AV	N	В	٨	SD∳	AV	Ħ	В	٨
		10000	-0.886	0.638			10000	-0.615	0.63
		30000	-0.893	0.684			30500	-0.629	0.674
		170000	-0.901	0.761			162050	-0.646	0.738
21110712	7.086	100	-0.864	0.473	31110521	2.978	100	-0.569	0.454
		500	-0.880	0.541			520	-0.591	0.49
		1000	-0.885	0.570			1000	-0.588	0.54
		5000	-0.898	0.638			5250	-0.610	0.60
		10000	-0.903	0.667			10400	-0.616	0.63
		30900	-0.909	0.716			30000	-0.629	0.67
		68500	-0.913	0.752			165600	-0.646	0.74
21110722	7.038	100	-0.865	0.468	31110531	3.063	100	-0.587	0.43
		500	-0.878	0.538			500	-0.575	0.53
		1000	-0.884	0.568			1000	-0.593	0.54
		5200	-0.895	0.639			5000	-0.615	0.60
		10000	-0.899	0.667			10000	-0.623	0.63
		30000	-0.906	0.715			30000	-0.636	0.67
21110732	7.038	100	-0.858	0.476			162900	-0.651	0.74
		500	-0.877	0.541	31110512	3.080	100	-0.560	0.49
		1000	-0.882	0.570			500	-0.593	0.54
		5000	-0.895	0.637			1000	-0.600	0.56
		10000	-0.899	0.667			5000	-0.619	0.63
		30000	-0.906	0.715			10000	-0.626	0.66
21110715	7.067	100	-0.882	0.567			30600	-0.638	0.70
		550	-0.896	0.638			167400	-0.655	0.76
		1000	-0.900	0.663	31110522	3.051	100	-0.552	0.50
		5000	-0.911	0.731			500	-0.587	0.54
		10000	-0.914	0.761			1000	-0.597	0.57
21110725	7.089	100	-0.884	0.567			5000	-0.616	0.634
		500	-0.897	0.634			10300	-0.624	0.66
		1000	-0.902	0.663			30000	-0.636	0.70
		5000	-0.912	0.731			164500	-0.653	0.76
		10000	-0.916	0.761	31110532	3.015	100	-0.569	0.469
		11432	-0.917	0.767		0.023	500	-0.587	0.539
21110735	7 124	100	-0.886	0.567			1000	-0.593	0.572
		500	-0.899	0.635			5000	-0.614	
		1000	-0.905	0.663			10000	-0.622	0.633
		5000	-0.915	0.732			30500		
		10000	-0.918	0.752				-0.634 -0.651	0.702
31110511	2 074	110		0.761	3111051#	2 155	168000	-0.651 -0.683	0.768
21110211	4.3/4		-0.556 -0.578		31110515	3.155	100	-0.582	0.573
		500	-0.578 -0.580	0.517			500	-0.606	0.631
		1000	-0.580 -0.50 <b>6</b>	0.556			1000	-0.614	0.658
		5000	-0.60 <b>6</b>	0.609			5000	-0.632	0.719

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD∳	AV	N	В	A	SD₽	AV	N	В	A
		10000	-0.639	0.746			10400	-0.896	0.670
		30000	-0.650	0.788			23500	-0.901	0.705
		63188	-0.656	0.818	31110722	6.878	100	-0.850	0.471
31110525	2.989	100	-0.572	0.572			500	-0.865	0.541
		500	-0.593	0.631			1000	-0.872	0.569
		1000	-0.601	0.658			5500	-0.884	0.643
		5200	-0.620	0.720			10400	-0.889	0.670
		10000	-0.627	0.745			27800	-0.895	0.712
		30200	-0.638	0.787			52500	-0.898	0.740
		98000	-0.649	0.833	31110732	6.983	100	-0.862	0.468
31110535	2.958	100	-0.570	0.570			500	-0.872	0.542
		500	-0.591	0.631			1000	-0.879	0.570
		1000	-0.600	0.657			5750	-0.892	0.645
		5000	-0.618	0.718			10900	-0.897	0.672
		10000	-0.625	0.744			25800	-0.902	0.711
		30000	-0.636	0.787			62100	-0.905	0.748
		112800	-0.648	0.838	31110715	6.750	110	-0.860	0.571
31110711	6.921	100	-0.846	0.441			500	-0.871	0.636
		500	-0.862	0.513			1000	-0.877	0.665
		1000	-0.869	0.541			5500	-0.889	0.736
		5000	-0.882	0.508			10100	-0.892	0.761
		10000	-0.887	0.637			12450	-0.893	0.770
		34800	-0.895	0.692	31110725	6.919	110	-0.871	0.572
		165700	-0.902	0.761			580	-0.885	0.642
31110721	6.946	135	-0.858	0.448			1000	-0.890	0.664
		500	-0.866	0.508			5500	-0.901	0.736
		1150	-0.870	0.548			10000	-0.904	0.762
		5000	-0.883	0.609			13800	-0.906	0.776
		· 10000	-0.889	0.638	31110735	6.976	110	-0.876	0.572
		32000	-0.896	0.688			530	-0.889	0.638
		162650	-0.903	0.761			1000	-0.894	0.664
31110731	7.007	160	-0.857	0.459			5400	-0.905	0.735
		500	-0.869	0.509			6820	-0.906	0.745
		1000	-0.875	0.540			8800	-0.907	0.756
		5100	-0.888	0.609			10800	-0.908	0.765
		11000	-0.893	0.642	21210611	4.991	130	-0.717	0.458
		20500	-0.897	0.669			500	-0.719	0.529
		169500	-0.907	0.763			1030	-0.732	0.553
31110712	6.985	100	-0.860	0.472			5000	-0.748	0.618
		500	-0.873	0.541			10000	-0.755	0.546
		1000	-0.880	0.569			24050	-0.764	0.681
		5200	-0.891	0.640			177800	-0.778	0.765

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD <b>#</b>	ΑV	N	В	A	SD₽	AV	N	В	A
21210621	4.994	110	-0.707	0.459			500	-0.748	0.643
		500	-0.724	0.522			1000	-0.754	0.672
		1020	-0.736	0.548			5000	-0.768	0.737
		5600	-0.750	0.622			10000	-0.773	0.765
		10600	-0.757	0.647			16500	-0.777	0.786
		24500	-0.764	0.682	21210635	4.983	100	-0.726	0.578
		177100	-0.778	0.765			500	-0.743	0.643
21210631	5.122	100	-0.707	0.465			1000	-0.748	0.672
		500	-0.738	0.517			5000	-0.763	0.736
		1000	-0.743	0.551			10000	-0.769	0.765
		5000	-0.759	0.616			27600	-0.776	0.807
		10620	-0.766	0.647			27850	-0.776	0.807
		23600	-0.772	0.681	21310611	4.986	100	-0.707	0.465
		154400	-0.786	0.760			500	-0.723	0.533
21210612	5.179	100	-0.721	0.490			1000	-0.736	0.554
		520	-0.744	0.553			5000	-0.749	0.623
		1000	-0.751	0.579			10700	-0.756	0.654
		5120	-0.767	0.647			29500	-0.765	0.695
		10700	-0.773	0.677			163900	-0.778	0.768
		23650	-0.779	0.710	21310621	4.930	150	-0.709	0.476
		51700	-0.785	0.743			550	-0.722	0.534
21210622	5.175	100	-0.723	0.489			1040	-0.729	0.558
		500	-0.742	0.552			5000	-0.746	0.622
		1000	-0.751	0.580			10000	-0.753	0.650
		5000	-0.767	0.645			32000	-0.762	0.699
		10000	-0.772	0.675			167500	-0.774	0.768
		30500	-0.781	0.721	21310631	4.906	100	-0.689	0.480
		67800	-0.787	0.754			500	-0.716	0.532
21210632	5.064	100	-0.717	0.485			1000	-0.727	0.557
		500	-0.735	0.552			5050	-0.744	0.622
		1000	-0.743	0.579			10500	-0.751	0.653
		5000	-0.758	0.646			18500	-0.756	0.675
		10000	-0.764	0.674			161600	-0.772	0.766
		30000	-0.773	0.720	21310612	4.935	150	-0.716	0.506
		71600	-0.779	0.756			500	-0.727	0.558
21210615	5.030	100	-0.729	0.578			1000	-0.735	0.586
		500	-0.746	0.643			5000	-0.750	0.652
		1000	-0.753	0.671			10200	-0.756	0.681
		5000	-0.767	0.737			28000	-0.765	0.722
		10000	-0.772	0.765			48000	-0.769	0.745
		19500	-0.777	0.793	21310622	4.990	100	-0.713	0.494
21210625	5.051	100	-0.730	0.580			500	-0.730	0.560

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD∲	AV	N	В	A	SD∉	AV	N	В	A
		1000	-0.738	0.587			166200	-0.643	0.736
		5000	-0.754	0.652	12110531	2.898	100	-0.533	0.487
		10000	-0.760	0.580			500	-0.564	0.528
		30000	-0.769	0.725			1000	-0.581	0.543
		33000	-0.770	0.729			5150	-0.604	0.607
21310632	4.971	100	-0.713	0.490			10000	-0.611	0.633
		500	-0.728	0.560			30000	-0.624	0.673
		1000	-0.737	0.586			189900	-0.642	0.744
		5000	-0.753	0.651	12110512	2.949	100	-0.576	0.456
		10000	-0.759	0.680			500	-0.586	0.538
		29000	-0.767	0.724			1000	-0.590	0.57
		123300	-0.777	0.785			5000	-0.608	0.634
21310615	4.984	120	-0.729	0.593			10000	-0.617	0.659
		500	-0.744	0.650			26600	-0.628	0.696
		1000	-0.750	0.678			144000	-0.645	0.76
		5000	-0.764	0.743	12110522	2.959	150	-0.568	0.496
		10100	-0.770	0.771			500	-0.575	0.554
		22000	-0.775	0.804			1100	-0.593	0.57
21310625	5.189	100	-0.743	0.583			5200	-0.610	0.634
		500	-0.759	0.650			10100	-0.619	0.65
		1000	-0.765	0.678			27400	-0.629	0.69
		5100	-0.779	0.744			175550	-0.647	0.769
		10000	-0.784	0.772	12110532	2.987	100	-0.573	0.470
		20756	-0.789	0.803			500	-0.588	0.540
21310635	5.063	100	-0.730	0.588			1400	-0.595	0.58
		500	-0.749	0.650			5000	-0.612	0.633
		1000	-0.756	0.678			12300	-0.622	0.667
		5000	-0.770	0.743			20100	-0.627	0.586
		9850	-0.775	0.771			167500	-0.649	0.767
12110511	3.017	100	-0.553	0.462	12110515	2.982	100	-0.571	0.572
		500	-0.575	0.529			500	-0.593	0.630
		1000	-0.585	0.553			1000	-0.601	0.657
		5000	-0.613	0.603			·5000	-0.619	0.718
		10000	-0.620	0.631			10000	-0.627	0.744
		30300	-0.631	0.675			30000	-0.637	0.787
		157000	-0.648	0.737			102631	-0.649	0.83
12110521	2.931	100	-0.533	0.487	12110525	3.129	150	-0.585	0.590
	2.531	500	-0.533 -0.570	0.524	1011/167	J. 143	500	-0.504	0.632
		1000	-0.579	0.552			1000		
								-0.612 -0.630	0.656
		5300	-0.60 <b>6</b>	0.605			5000	-0.630 -0.630	0.718
		10000 30000	-0.615 -0.626	0. <b>630</b> 0. <b>672</b>			11500 30000	-0.639 -0.648	0.751

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD₽	AV	N	В	A	SD#	AV	N	В	A
		65100	-0.655	0.818			191500	-0.771	0.787
12110535	2.977	100	-0.573	0.567	12110632	4.958	100	-0.702	0.483
		500	-0.592	0.632			500	-0.728	0.538
		1000	-0.601	0.656			1000	-0.732	0.571
		5300	-0.620	0.721			5100	-0.750	0.636
		10300	-0.627	0.746			10800	-0.757	0.667
		30000	-0.637	0.786			30000	-0.765	0.709
		62200	-0.644	0.815			166100	-0.777	0.78
12110611	5.025	100	-0.696	0.463	12110615	4.994	150	-0.727	0.58
		500	-0.722	0.519			500	-0.742	0.63
		1000	-0.738	0.536			1000	-0.749	0.66
		5000	-0.751	0.605			5400	-0.763	0.73
	÷	10000	-0.757	0.635			11100	-0.769	0.75
		30250	-0.766	0.682			30100	-0.776	0.800
		143700	-0.778	0.746			51000	-0.780	0.822
12110621	4.927	100	-0.680	0.470	12110625	4.818	100	-0.708	0.572
		500	-0.717	0.518			500	-0.728	0.63
		1000	-0.730	0.538			1000	-0.736	0.66
		5500	-0.744	0.611			5000	-0.750	0.72
		10700	-0.751	0.637			10000	-0.756	0.75
		30000	-0.760	0.680			30000	-0.764	0.79
		192000	-0.774	0.758			53800	-0.768	0.82
12110631	5.178	100	-0.726	0.435	12110635	5.087	125	-0.733	0.579
		500	-0.738	0.510			500	-0.749	0.633
		1000	-0.745	0.541			1000	-0.755	0.66
		5000	-0.762	0.606			5100	-0.769	0.728
		10000	-0.768	0.636			10200	-0.775	0.756
		50000	-0.781	0.702			21600	-0.781	0.787
		100000	-0.785	0.732			27700	-0.782	0.797
12110612	5.084	130	-0.719	0.488	12110711	7.026	100	-0.864	0.431
		500	-0.734	0.543			500	-0.867	0.513
		1000	-0.741	0.572			1000	-0.878	0.538
		6000	-0.760	0.643			<sup>-</sup> 5300	-0.890	0.610
		10100	-0.765	0.665			10000	-0.894	0.638
		30200	-0.774	0.710			25500	-0.900	0.678
		186800	-0.786	0.787			148700	-0.908	0.756
121106 <b>22</b>	4.846	100	-0.699	0.472	12110721	7.006	120	-0.856	0.451
		500	-0.717	0.543			510	-0.871	0.509
		1000	-0.726	0.571			1000	-0.876	0.538
		5000	-0.742	0.636			5420	-0.889	0.612
		10000	-0.748	0.665			11580	-0.893	0.644
		27900	-0.757	0.706			16800	-0.896	0.660

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD∳	AV	N	В	A	SD∌	AV	N	В	A
		167300	-0.907	0.761	12110735	6.965	145	-0.876	0.585
12110731	7.055	100	-0.856	0.443			500	-0.888	0.635
		500	-0.873	0.511			1000	-0.893	0.664
		1000	-0.882	0.536			5100	-0.904	0.732
		5000	-0.890	0.609			8700	-0.907	0.755
		11700	-0.896	0.645			9700	-0.907	0.760
		26800	-0.902	0.680	11110715	7.103	100	-0.885	0.565
		159000	-0.910	0.759			500	-0.897	0.633
2110712	7.006	100	-0.863	0.470			1000	-0.903	0.662
		500	-0.873	0.542			5000	-0.913	0.730
		1000	-0.881	0.569			11200	-0.917	0.765
		5600	-0.894	0.643			12000	-0.917	0.768
		10000	-0.897	0.668			13100	-0.918	0.771
		27000	-0.903	0.711	12210711	7.324	100	-0.877	0.450
		102200	-0.909	0.770			500	-0.894	0.521
2110722	7.099	130	-0.870	0.484			1000	-0.900	0.550
		500	-0.884	0.538			5000	-0.913	0.618
		1000	-0.887	0.570			10000	-0.917	0.648
		5250	-0.900	0.640			30000	-0.922	0.696
		7500	-0.902	0.656			159200	-0.929	0.771
		10300	-0.904	0.669	12210721	6.855	100	-0.848	0.450
		30000	-0.910	0.716			500	-0.860	0.521
		110500	-0.915	0.774			1000	-0.865	0.551
12110732	7.194	100	-0.878	0.467			5100	-0.878	0.620
		500	-0.889	0.540			10000	-0.884	0.648
		1000	-0.895	0.569			30000	-0.890	0.696
		5000	-0.906	0.638	12210731	7.216	120	-0.880	0.454
		10000	-0.910	0.668	10010,01	7.220	500	-0.885	0.522
		50000	-0.918	0.739			1000		
		100000	-0.921	0.770				-0.891 -0.005	0.552
2110715	7.123						5200	-0.905	0.620
12110/13	7.123	100	-0.886	0.568			10000	-0.909	0.648
		500	-0.900	0.635			30000	-0.915	0.696
		1000	-0.904	0.664	10010710		191300	-0.922	0.779
		5000	-0.915	0.732	12210712	7.099	100	-0.873	0.479
		10800	-0.919	0.765			500	-0.884	0.551
		11300	-0.919	0.767			1000	-0.889	0.581
12110725	6.938	100	-0.873	0.567			6400	-0.902	0.659
		500	-0.886	0.634			10000	-0.905	0.679
		1000	-0.891	0.664			28500	-0.911	0.724
		5000	-0.901	0.732			54000	-0.914	0.753
		10000	-0.905	0.761	12210722	7.071	100	-0.870	0.480

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD∉	ΑV	N	В	A	SD∉	ΑV	N	В	A
		1000	-0.887	0.581			30900	-0.913	0.704
		5500	-0.900	0.653			144300	-0.919	0.772
		10000	-0.903	0.679	12310731	7.133	100	-0.868	0.457
		70900	-0.913	0.764			500	-0.881	0.526
12210732	6.909	100	-0.855	0.481			1000	-0.889	0.554
		500	-0.870	0.551			5500	-0.900	0.629
		1000	-0.876	0.580			10600	-0.904	0.657
		5000	-0.887	0.649			30000	-0.910	0.702
		10000	-0.892	0.678			129200	-0.916	0.767
		50000	-0.901	0.748			130000	-0.916	0.768
		80000	-0.903	0.769	12310712	7.089	100	-0.873	0.487
12210715	6.861	100	-0.868	0.579			500	-0.885	0.556
		500	-0.881	0.647			1000	-0.891	0.586
		1030	-0.887	0.676			5700	-0.902	0.661
		5000	-0.898	0.742			22160	-0.910	0.720
		10000	-0.901	0.772			31570	-0.911	0.735
		12500	-0.903	0.782			52000	-0.914	0.757
		13000	-0.903	0.784	12310722	7.132	100	-0.873	0.489
12210725	6.801	100	-0.865	0.578			500	-0.887	0.557
		500	-0.878	0.646			1000	-0.892	0.588
		1000	-0.882	0.675			5200	-0.904	0.657
		5000	-0.893	0.742			10300	-0.909	0.686
		10000	-0.897	0.772			27000	-0.914	0.728
		12100	-0.898	0.780			55200	-0.917	0.760
12210735	7.153	100	-0.890	0.580	12310732	7.015	100	-0.865	0.488
		500	-0.903	0.646			500	-0.880	0.556
		1000	-0.909	0.675			1000	-0.885	0.586
		5000	-0.918	0.743			5500	-0.896	0.659
		10000	-0.922	0.773			10900	-0.901	0.689
		13000	-0.923	0.785			30000	-0.906	0.733
12310711	7.247	100	-0.869	0.463			57000	-0.909	0.761
		500	-0.889	0.528	12310715	7.078	100	-0.885	0.587
		1000	-0.895	0.557			500	-0.900	0.652
		5000	-0.907	0.625			1000	-0.904	0.682
		10000	-0.912	0.655			2000	-0.909	0.711
		28000	-0.918	0.699			5000	-0.914	0.750
		167440	-0.925	0.779			7000	-0.916	0.764
12310721	7.172	100	-0.877	0.450	12310725	7.125	100	-0.889	0.587
		500	-0.884	0.527			500	-0.902	0.653
		1000	-0.890	0.556			1000	-0.908	0.682
		5000	-0.902	0.626			2000	-0.912	0.711
		10300	-0.907	0.656			5000	-0.917	0.750

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD∳	AV	N	В	A	SD∳	AV	N	В	A
		8000	-0.920	0.770		**	169010	-0.783	0.78
		9000	-0.920	0.775	22110632	5.111	100	-0.713	0.48
12310735	6.991	100	-0.878	0.588			550	-0.738	0.54
		500	-0.892	0.653			1000	-0.746	0.57
		1000	-0.897	0.682			5600	-0.761	0.64
		5000	-0.908	0.750			10850	-0.767	0.66
		6000	-0.909	0.757			20250	-0.773	0.69
		7000	-0.910	0.764			36000	-0.777	0.7
22110611	4.775	100	-0.689	0.450			164600	-0.787	0.70
		500	-0.707	0.514	22110615	4.983	100	-0.725	0.5
		1000	-0.719	0.541			500	-0.740	0.6
		5000	-0.733	0.608			1000	-0.748	0.6
		10000	-0.740	0.637			5000	-0.762	0.7
		30000	-0.750	0.681			10000	-0.768	0.7
		163000	-0.763	0.752			20000	-0.773	0.7
22110621	4.802	100	-0.674	0.475			30000	-0.776	0.8
		500	-0.707	0.517	22110625	5.084	100	-0.731	0.5
		1000	-0.722	0.537			500	-0.748	0.6
		5500	-0.737	0.611			1000	-0.756	0.6
		10200	-0.741	0.638			5500	-0.770	0.7
		27800	-0.751	0.678			10300	-0.775	0.7
		189865	-0.765	0.758			27000	-0.782	0.79
22110631	4.929	100	-0.696	0.458			31000	-0.783	0.8
		500	-0.717	0.518	22110635	5.107	100	-0.734	0.50
		1000	-0.727	0.543			500	-0.750	0.6
		5000	-0.744	0.508			1000	-0.757	0.60
		10300	-0.751	0.638			5000	-0.771	0.7
		24100	-0.758	0.673			10000	-0.777	0.7
		180000	-0.773	0.757			23200	-0.783	0.7
22110612	4.961	100	-0.714	0.468			33000	-0.785	0.80
		500	-0.727	0.544	32110611	5.195	100	-0.737	0.42
		1000	-0.733	0.574			500	-0.734	0.5
		5000	-0.751	0.637			1000	-0.749	0.54
		10000	-0.756	0.666			5000	-0.762	0.61
		30000	-0.766	0.711			10000	-0.769	0.63
		167200	-0.777	0.783			27000	-0.777	0.67
221106 <b>22</b>	5.043	100	-0.713	0.476			184700	-0.791	0.76
		500	-0.730	0.546	32110621	5.078	100	-0.717	0.44
		1000	-0.739	0.573			500	-0.726	0.52
		5000	-0.756	0.637			1000	-0.740	0.54
		10000	-0.762	0.666			5000	-0.752	0.61
		26800	-0.770	0.706			10345	-0.761	0.63

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD₽	AV	N	В	A	SD₽	AV	N	В	A
		25000	-0.769	0.675			30300	-0.774	0.803
		162000	-0.782	0.754			32000	-0.774	0.805
32110631	5.182	100	-0.716	0.451	32110635	4.913	100	-0.719	0.570
		500	-0.738	0.513			500	-0.736	0.635
		1000	-0.747	0.543			1000	-0.743	0.664
		5000	-0.762	0.609			5000	-0.757	0.728
		10850	-0.768	0.642			10000	-0.763	0.757
		30000	-0.778	0.683			20000	-0.768	0.785
		164300	-0.789	0.755			35000	-0.772	0.809
32110612	5.127	100	-0.728	0.466	22210611	5.596	120	-0.800	-0.11
		500	-0.737	0.547			500	-1.182	0.128
		1000	-0.747	0.572			1000	-1.415	0.148
		5100	-0.761	0.640			5000	-1.924	0.178
		10000	-0.768	0.667			10000	-2.290	0.180
		28000	-0.776	0.710			30300	-2.576	0.209
		206700	-0.789	0.794			167400	-3.398	0.205
32110622	4.955	100	-0.718	0.466	22210621	5.938	100	-0.388	0.364
		500	-0.729	0.541			500	-1.148	0.128
		1000	-0.733	0.574			1500	-1.654	0.096
		5000	-0.749	0.639			5000	-2.084	0.131
		11300	-0.757	0.672			10050	-2.383	0.129
		26000	-0.764	0.706			21300	-2.579	0.159
		170200	-0.777	0.785			170500	-3.388	0.161
32110632	4.854	100	-0.691	0.489	22210631	5.723	100	-0.639	0.708
		500	-0.718	0.547			500	-1.054	0.600
		1000	-0.726	0.574			1000	-1.223	0.601
		5000	-0.742	0.639			6000	-1.663	0.585
		10000	-0.749	0.666			10100	-1.840	0.559
		24000	-0.756	0.702			20000	-2.071	0.538
		161500	-0.770	0.782	22210612	5.502	100	-1.198	0.481
32110615	4.987	100	-0.725	0.570			500	-1.743	0.433
		500	-0.742	0.635			1000	-1.856	0.459
		1000	-0.749	0.663			6000	-2.311	0.474
		5000	-0.763	0.729			10000	-2.451	0.465
		10000	-0.768	0.757			52000	-3.338	0.390
		25000	-0.775	0.795	22210622	5.776	100	-1.362	0.441
		30000	-0.776	0.803		0.,,0	500	-1.862	0.414
32110625	4.955	100	-0.721	0.571			1000	-1.905	0.451
		500	-0.739	0.636			5000	-1. <del>9</del> 05	0.451
		1000	-0.745	0.664			11100	-2.593	0.467
		5000	-0.760	0.729			49500	-2.393 -3.309	
		13900	-0.768		22210632	5.316	100	-1.226	0.393 0.474

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

A	В	N	AV	SD∳	A	В	N	AV	SD∳
0.10	0.575	500			0.440	-1.701	500		
0.14	0.412	1000			0.458	-1.867	1000		
0.08	0.292	5000			0.479	-2.278	5500		
-0.02	0.269	10000			0.459	-2.495	12000		
1.39	-0.029	352725			0.389	-3.349	63500		
-0.13	0.938	100	3.116	11120512	-0.085	-0.912	110	4.128	22210615
-0.17	0.562	510			0.293	-1.118	500		
-0.12	0.394	1020			0.319	-1.402	1000		
-0.23	0.195	5000			0.372	-1.822	5500		
-0.74	0.087	10000			0.376	-1.981	10400		
0.09	-0.203	31000			0.372	-2.181	20000		
0.14	-0.480	161500			0.441	-0.927	100	5.171	22210625
0.15	-0.401	327700			0.463	-1.331	500		
0.14	-0.523	501370			0.499	-1.396	1000		
-0.04	0.202	100	3.165	11120522	0.436	-1.915	5450		
0.75	-0.026	500			0.399	-2.098	10050		
0.47	-0.114	1000			0.358	-2.356	15000		
1.38	-0.047	5100			0.361	-2.458	18400		
1.29	-0.078	10400			0.474	-0.835	100	4.993	22210635
1.71	-0.047	20300			0.490	-1.225	500		
3.68	-0.003	176900			0.512	-1.341	1000		
1.93	-0.055	516800			0.440	-1.885	5450		
1.69	-0.087	691600			0.403	-2.066	10050		
0.42	0.246	130	3.125	11120532	0.385	-2.136	12000		
1.15	0.043	500			0.382	-2.271	17000		
1.920	0.010	1000			0.227	0.790	120	3.060	11120511
-0.15	-0.330	5000			0.274	0.545	560		
0.100	-0.343	10200			0.280	0.491	1000		
0.252	-0.343	20000			0.454	0.288	5000		
0.392	-0.629	177600			1.009	0.072	13600		
0.42	-0.657	341000			0.758	0.093	20000		
0.280	0.458	100	3.154	11120515	0.771	0.092	27900		
0.36	0.180	500	0.254		-0.919	-0.406	172800		
	0.145	1000			-0.437	-0.505	338300		
0.315		5600			-0.208	-0.637	715700		
0.291	-0.149				-0.187	-0.694	861900		
0.362	-0.206	10000					100	3 020	11120521
0.408	-0.259	19500			-0.002 -0.033	1.330 1.092	500	3.029	
0.547	-0.451	170900					1000		
0.667	-0.401	346100	2 127	11120525	-0.0 <b>53</b>	0.922			
-0.373	0.599	100	3.137	11120525		0.721	5000		
-0.514	0.342	500			-0.164	0.555	10500	2 100	11120621
-0.254	0.305	1100		•	0.159	0.725	100	3.166	11120531

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD₽	AV	N	В	A	SD₽	AV	N	В	A
		5400	0.281	-0.998			843950	-1.484	0.173
		10400	0.320	-1.465	11320522	3.297	100	0.363	-0.343
		23200	0.401	-1.791			500	0.621	-1.984
		123900	-0.085	0.889			5000	-0.005	2.858
		339200	-0.174	0.702			10000	-0.054	1.480
		470000	-0.255	0.595			27600	-0.071	1.400
11120535		500	0.286	-0.112			501150	-0.379	0.739
		1000	0.121	-0.258	11320532	3.202	100	0.386	-0.31
		5100	-0.163	0.436			5000	-0.006	2.79
		10500	-0.171	0.510			11100	-0.017	2.16
		27000	-0.350	0.366			31800	-0.025	2.00
		184100	-0.680	0.284			171600	-0.319	0.68
		510000	-0.843	0.279			349400	-0.397	0.64
		1061500	-0.990	0.263			627900	-0.416	0.68
11320511	3.182	100	0.166	1.471			720000	-0.429	0.68
		550	0.040	2.232	11320515	2.431	100	1.079	-0.00
		1000	0.001	4.900			500	0.792	-0.11
		30975	-3.722	-2.271			1000	0.732	-0.20
		327866	-2.641	-0.976			5000	1.014	-1.96
		511050	-2.395	-0.736			10150	3.089	-3.63
11320521	3.302	100	-0.368	0.549			35900	-0.008	2.69
		500	-0.665	0.305			157900	-0.167	1.02
		1000	-0.797	0.281			334600	-0.360	0.71
		5500	-1.127	0.156	11320525	2.961	100	1.275	-0.02
		10000	-1.109	0.157			500	0.983	-0.08
		30140	-1.278	0.117			1000	0.837	-0.09
		167820	-1.664	0.073			5000	0.474	-0.34
		497250	-1.753	0.092			10700	0.367	-0.56
11320531		1000	-0.040	1.835			191200	-0.328	0.44
		5000	-0.199	0.851			351450	-0.441	0.39
		11500	-0.335	0.677	11320535	3.642	100	-0.052	0.64
		36300	-0.619	0.444			500	-0.323	0.23
		362000	-1.124	0.287			1000	-0.296	0.32
		682000	-1.172	0.291			5300	-0.549	0.30
		699350	-1.195	0.293			10225	-0.646	0.30
11320512		500	-0.415	0.075			30000	-0.741	0.28
11000316		1000	-0.413	0.073			153100	-0.741	0.20
		5000		0.182					
			-0.552				325300	-1.090	0.19
		10200	-0.714	0.201	2212251	,	501200	-1.179	0.18
		21900	-0.867 -1.097	0.192	22120611	4.886	100	-0.309	0.81
		135600	-1.097	0.200			500	-0.599	0.57
		493400	-1.429	0.171			1000	-0.714	0.50

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the deflection basin of the beam specimens.

SD₽	AV	N	В	A	SD∯	ΑV	N	В	A
		7700	-0.916	0.449			328500	-1.745	0.13
		10500	-1.011	0.434			490000	-1.680	0.152
		134600	-1.311	0.407			687000	-1.823	0.149
		309300	-1.412	0.427	22120632	5.074	100	-0.790	0.098
		1011900	-1.611	0.423			500	-1.078	0.036
22120621	4.944	100	-0.545	0.626			1000	-1.210	0.102
		500	-0.789	0.464			5000	-1.176	0.199
		1000	-0.772	0.457			10800	-1.243	0.218
		5000	-0.885	0.445			147150	-1.302	0.35
		10000	-0.915	0.439			320100	-1.339	0.38
		30500	-0.986	0.441			505000	-1.364	0.39
		185800	-1.054	0.438	22120615	5.115	100	-0.062	0.498
		330538	-1.065	0.460			500	-0.527	0.12
		515900	-1.084	0.474			1000	-0.725	0.09
		676900	-1.119	0.459			5000	-0.936	0.12
		695700	-1.152	0.451			10000	-1.155	0.11
22120631	5.076	100	-0.946	0.092			36400	-1.375	0.12
		500	-1.193	0.115			158700	-1.683	0.10
		1240	-1.327	0.087			332900	-1.795	0.09
		5000	-1.708	0.017	22120625	4.914	100	-0.872	-0.57
		10000	-1.776	0.024			500	-1.088	-0.31
		49400	-1.734	0.056			1100	-1.126	-0.17
		171600	-1.843	0.044			5500	-1.409	0.00
		359000	-1.935	0.046			10900	-1.547	0.01
		511400	-1.997	0.044			22000	-1.653	0.03
		706000	-2.033	0.041			161700	-1.918	0.04
22120612	4.831	100	0.529	-0.055			353200	-2.251	0.03
		500	0.051	-0.495	22120635	5.155	100	-0.873	0.03
		1000	-0.023	0.895			500	-1.106	-0.00
		- 5000	-0.234	0.209			5500	-1.342	-0.01
		10000	-0.378	0.158			10000	-1.492	-0.08
		136200	-1.080	0.076			128000	-1.922	-0.14
		11111	-0.150	0.472			337900	-2.078	-0.14
		322900	-0.979	0.125	32120611	5.226	100	-1.302	0.28
		495600	-1.170	0.100			500	-0.879	0.45
22120622	4.808	100	-0.566	0.112			1000	-0.580	0.63
	, •	500	-0.910	0.085			5500	-0.240	1.12
		1000	-1.098	0.093			12000	-0.048	2.09
		5000	-1.044	0.170			37000	-0.009	3.27
		10000	-1.095	0.167	32120621	5.220	100	-1.332	0.27
		33500	-1.326	0.150		J. 22V	500	-0.810	0.48
		143000	-1.559	0.130			1000	-0.508	0.68

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

Table C. Parameters of the defl beam specimens.

SD <b>#</b>	VA	N	В	A	SD#
		5000	-0.231	1.139	
		10000	-0.020	2.655	
		29500	-0.000	5.903	
32120631	5.209	100	-1.283	0.284	
		500	-0.855	0.468	
		1000	-0.585	0.630	32120635
		5100	-0.247	1.106	
		10500	-0.029	2.418	
32120612	5.176	100	-1.329	0.277	
		500	-0.840	0.474	
		2000	-0.686	0.571	
		5100	-0.148	1.376	
		14200	-0.072	1.839	
3212062 <b>2</b>	5.414	100	-0.187	0.532	
		500	-0.487	0.260	
		1000	-0.466	0.285	
		5000	-0.860	0.154	
		10000	-0.929	0.160	
		153600	-1.404	0.130	
		322400	-1.650	0.118	
		471900	-1.638	0.119	
		698000	-1.831	0.105	
32120632	5.052	100	-0.322	0.557	
		500	-0.487	0.460	
		1000	-0.656	0.411	
		5000	-0.839	0.386	
		10000	-0.975	0.367	
		22700	-1.030	0.377	
		147950	-1.261	0.370	
		481600	-1.506	0.339	
		1025500	-1.523	0.345	
		1194900	-1.697	0.323	
32120615	5.136	100	-1.263	0.288	
		500	-0.801	0.489	
		1000	-0.575	0.636	
		5000	-0.213	1.181	
		12000	-0.049	2.080	
		32500	-0.002	4.358	
321206 <b>25</b>	5.234	100	-0.435	0.213	
		500	-0.681	0.175	
		1000	-0.754	0.205	
		5000	-0.814	0.275	

SD# = beam designation number;

AV = percent air voids;

N = number of load applications; and

A,B = regression coefficients.

## APPENDIX D

The calculated fatigue lives of the beam specimens based on a maximum allowable cumlative plastic deformation under the loaded area of 0.45-in. are presented in this Appendix.

Table D. Fatigue life of beam specimens based on a maximum allowable cumulative plastic deformation of 0.45 and 0.1-in for the 77 and 40 F tests, respectively.

SD#	AV	KV	ANG	CS	TT	CD2/CD1	N <sub>FL</sub>	CD1
11110511	2.909	270	4	50	77	0.300	3512081	4500.0
11110521	2.951	270	4	50	77	0.299	3431208	4500.0
11110531	3.001	270	4	50	77	0.297	3335606	4500.0
11110512	2.982	270	4	100	77	0.309	885929	4500.0
11110522	3.116	270	4	100	77	0.305	822165	4500.0
11110532	3.015	270	4	100	77	0.308	869683	4500.0
11110515	3.061	270	4	250	77	0.304	144914	4500.0
11110525	3.033	270	4	250	77	0.305	147197	4500.0
11110535	3.068	270	4	250	77	0.304	144341	4500.0
11210511	3.172	212	4	50	77	0.293	2407828	4500.0
11210521	3.016	212	4	50	77	0.298	2627008	4500.0
11210531	3.032	212	4	50	77	0.297	2603976	4500.0
11210512	3.083	212	4	100	77	0.306	665019	4500.0
11210522	3.111	212	4	100	77	0.306	654459	4500.0
11210532	3.154	212	4	100	77	0.304	639050	4500.0
11210515	3.045	212	4	250	77	0.306	116064	4500.0
11210525	3.074	212	4	250	77	0.305	114182	4500.0
11210535	3.143	212	4	250	77	0.303	109872	4500.0
11310511	3.000	159	4	50	77	0.299	2147055	4500.0
11310521	2.994	159	4	50	77	0.299	2153660	4500.0
11310531	3.008	159	4	50	77	0.298	2136748	4500.0
11310512	3.014	159	4	100	77	0.309	559781	4500.0
11310522	3.060	159	4	100	77	0.308	545320	4500.0
11310532	3.081	159	4	100	77	0.307	539053	4500.0
11310515	3.039	159	4	250	77	0.307	94294	4500.0
11310525	3.220	159	4	250	77	0.301	85270	4500.0
11310535	2.932	159	4	250	77	0.310	100145	4500.0
11110611	4.141	270	4	50	77	0.266	1765305	4500.0
11110621	4.035	270	4	50	77	0.268	1872924	4500.0
11110631	3.957	270	4	50	77	0.270	1956109	4500.0
11110612	2.752	270	4	100	77	0.316	1007701	4500.0

SD# = sample designation number;

AV = percent air voids (AV = 3 to 7);

KV = kinematic viscosity (centistokes);

ANG = angularity;

CS = cyclic stress (psi) = cyclic load/loaded area;

<sup>=</sup> test temperature (°F);

N<sub>FI</sub> = number of load applications to fatigue failure; CDI = cumulative plastic<sub>4</sub> deformation at the center of the loaded area (x 10<sup>-4</sup> in.); and

CD2 = cumulative plastic deformation at a radial distance of 2.25-in from the center of the loaded area (x 10 in.).

Table D. Fatigue life of beam specimens based on a maximum allowable cumulative plastic deformation of 0.45 and 0.1-in for the 77 and 40 F tests, respectively.

SD#	AV	KV	ANG	CS	TT	CD2/CD1	N <sub>FL</sub>	CD1
11110622	5.421	270	4	100	77	0.245	226967	4500.0
11110632	4.358	270	4	100	77	0.270	411053	4500.0
11110615	5.303	270	4	250	77	0.245	41437	4500.0
11110625	2.676	270	4	250	77	0.317	179669	4500.0
11110635	3.178	270	4	250	77	0.301	135760	4500.0
11110711	6.683	270	4	50	77	0.210	427105	4500.0
11110711	3.704	270	4	50	77	0.277	2253501	4500.0
11110721	5.191	270	4	50	77	0.240	982105	4500.0
11110731	4.088	270	4	50	77	0.267	1818846	4500.0
11110712	5.802	270	4	100	77	0.236	183495	4500.0
11110712	6.586	270	4	100	77	0.221	118498	4500.0
11110712	4.946	270	4	100	77	0.256	295935	4500.0
11110722	6.023	270	4	100	77	0.232	162222	4500.0
11110732	5.294	270	4	100	77	0.248	243682	4500.0
11110715	7.048	270	4	250	77	0.210	15647	4500.0
11110715	7.042	270	4	250	77	0.210	15700	4500.0
11110725	5.924	270	4	250	77	0.232	29293	4500.0
11110725	7.005	270	4	250	77	0.210	16024	4500.0
11110735	5.899	270	4	250	77	0.232	29708	4500.0
11110735	6.980	270	4	250	77	0.211	16250	4500.0
21110511	2.952	270	2	50	77	0.302	2673333	4500.0
21110521	3.031	270	2	50	77	0.300	2558497	4500.0
21110531	2.958	270	2	50	77	0.302	2664829	4500.0
21110512	2.914	270	2	100	77	0.314	717529	4500.0
21110522	2.998	270	2	100	77	0.312	684672	4500.0
21110532	3.099	270	2	100	77	0.309	647067	4500.0
21110515	3.118	270	2	250	77	0.306	109430	4500.0
21110525	2.975	270	2	250	77	0.311	118533	4500.0
21110535	3.171	270	<b>′</b> 2	250	77	0.305	106250	4500.0
21110611	4.737	270	2	50	77	0.254	986743	4500.0
21110621	4.912	270	2	50	77	0.250	894907	4500.0
21110631	4.955	270	2	50	77	0.249	873914	4500.0

SD# = sample designation number;

AV = percent air voids (AV = 3 to 7);

KV = kinematic viscosity (centistokes);

ANG = angularity;

CS = cyclic stress (psi) = cyclic load/loaded area; TT = test temperature ( F);

N<sub>FL</sub> = number of load applications to fatigue failure; CDT = cumulative plastic<sub>4</sub>deformation at the center of the loaded area (x 10<sup>-4</sup> in.); and

CD2 = cumulative plastic deformation at a radial distance of 2.25-in from the center of the loaded area (x 10 in.).

Table D. Fatigue life of beam specimens based on a maximum allowable cumulative plastic deformation of 0.45 and 0.1-in for the 77 and 40 F tests, respectively.

21110622       5.090       270       2       100       77       0.255       212982       4500         21110632       5.094       270       2       100       77       0.255       212524       4500         21110615       5.086       270       2       250       77       0.253       36477       4500         21110625       5.010       270       2       250       77       0.255       38765       4500         21110711       6.778       270       2       50       77       0.256       38765       4500         21110721       6.867       270       2       50       77       0.211       315720       4500         21110721       6.867       270       2       50       77       0.209       300400       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110722       7.038       270       2       100       77       0.215       71784       4500         21110732       7.089       270       2       250       77       0.212       12971       4500         21110735	SD#	AV	KV	ANG	CS	TT	CD2/CD1	N <sub>FL</sub>	CD1
21110632       5.094       270       2       100       77       0.255       212524       4500         21110615       5.086       270       2       250       77       0.253       36477       4500         21110625       5.010       270       2       250       77       0.255       38051       4500         21110711       6.778       270       2       50       77       0.256       38765       4500         21110721       6.867       270       2       50       77       0.209       300400       4500         21110731       6.917       270       2       50       77       0.208       292191       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110722       7.038       270       2       100       77       0.215       71754       4500         21110732       7.038       270       2       100       77       0.215       71784       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110735       7	21110612	4.973	270	2	100	77	0.258	227319	4500.0
21110615       5.086       270       2       250       77       0.253       36477       4500         21110625       5.010       270       2       250       77       0.255       38051       4500         21110711       6.778       270       2       250       77       0.256       38765       4500         21110711       6.778       270       2       50       77       0.211       315720       4500         21110721       6.867       270       2       50       77       0.209       300400       4500         21110731       6.917       270       2       50       77       0.208       292191       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110732       7.038       270       2       100       77       0.215       71754       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7	21110622	5.090	270	2	100	77	0.255	212982	4500.0
21110625       5.010       270       2       250       77       0.255       38051       4500         21110635       4.977       270       2       250       77       0.256       38765       4500         21110711       6.778       270       2       50       77       0.211       315720       4500         21110721       6.867       270       2       50       77       0.209       300400       4500         21110731       6.917       270       2       50       77       0.208       292191       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110732       7.038       270       2       100       77       0.215       71754       4500         21110732       7.038       270       2       100       77       0.215       71784       4500         21110715       7.067       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.212       11918       4500         31110511       2	21110632	5.094	270	2	100	77	0.255	212524	4500.0
21110635       4.977       270       2       250       77       0.256       38765       4500         21110711       6.778       270       2       50       77       0.211       315720       4500         21110721       6.867       270       2       50       77       0.209       300400       4500         21110731       6.917       270       2       50       77       0.208       292191       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110732       7.038       270       2       100       77       0.215       71754       4500         21110732       7.038       270       2       100       77       0.215       71784       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110735       7.124       270       2       250       77       0.212       11918       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521	21110615	5.086	270	2	250	77	0.253	36477	4500.0
21110711       6.778       270       2       50       77       0.211       315720       4500         21110721       6.867       270       2       50       77       0.209       300400       4500         21110731       6.917       270       2       50       77       0.208       292191       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110732       7.038       270       2       100       77       0.215       71754       4500         21110732       7.038       270       2       100       77       0.215       71784       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.211       11693       4500         31110521       2.978       270       3       50       77       0.300       2993184       4500         31110512	21110625	5.010	270	2	250	77	0.255	38051	4500.0
21110721       6.867       270       2       50       77       0.209       300400       4500         21110731       6.917       270       2       50       77       0.208       292191       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110722       7.038       270       2       100       77       0.215       71754       4500         21110732       7.067       270       2       250       77       0.212       12071       4500         21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.212       11918       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110512 <td< td=""><td>21110635</td><td>4.977</td><td>270</td><td>2</td><td>250</td><td>77</td><td>0.256</td><td>38765</td><td>4500.0</td></td<>	21110635	4.977	270	2	250	77	0.256	38765	4500.0
21110731       6.917       270       2       50       77       0.208       292191       4500         21110712       7.086       270       2       100       77       0.214       69868       4500         21110722       7.038       270       2       100       77       0.215       71754       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.211       11693       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110515       <	21110711	6.778	270		50	77	0.211	315720	4500.0
21110712       7.086       270       2       100       77       0.214       69868       4500         21110722       7.038       270       2       100       77       0.215       71754       4500         21110732       7.038       270       2       100       77       0.215       71784       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.211       11693       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110515       <	21110721	6.867	270	2	50	77	0.209	300400	4500.0
21110722       7.038       270       2       100       77       0.215       71754       4500         21110732       7.038       270       2       100       77       0.215       71784       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110735       7.124       270       2       250       77       0.212       11918       4500         31110511       2.974       270       2       250       77       0.211       11693       4500         31110521       2.978       270       3       50       77       0.300       2981184       4500         31110531       3.063       270       3       50       77       0.300       2983881       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110515       3.155       270       3       250       77       0.308       133153       4500         31110515	21110731	6.917	270	2	50	77	0.208	292191	4500.0
21110732       7.038       270       2       100       77       0.215       71784       4500         21110715       7.067       270       2       250       77       0.212       12071       4500         21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.211       11693       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110531       3.063       270       3       50       77       0.300       2983881       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110515       3.155       270       3       250       77       0.308       133153       4500         31110525	21110712	7.086	270	2	100	77	0.214	69868	4500.0
21110715       7.067       270       2       250       77       0.212       12071       4500         21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.211       11693       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110531       3.063       270       3       50       77       0.300       2983881       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.308       133153       4500         31110535	21110722	7.038	270		100	77		71754	4500.0
21110725       7.089       270       2       250       77       0.212       11918       4500         21110735       7.124       270       2       250       77       0.211       11693       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110531       3.063       270       3       50       77       0.297       2845763       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110731       6.946       270       3       50       77       0.207       330200       4500         31110731	21110732	7.038	270		100	77	0.215	71784	4500.0
21110735       7.124       270       2       250       77       0.211       11693       4500         31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110531       3.063       270       3       50       77       0.297       2845763       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.303       121377       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110711       6.921       270       3       50       77       0.207       330200       4500         31110721	21110715	7.067	270	2	250	77	0.212	12071	4500.0
31110511       2.974       270       3       50       77       0.300       2991184       4500         31110521       2.978       270       3       50       77       0.300       2983881       4500         31110531       3.063       270       3       50       77       0.297       2845763       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.303       121377       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110731       6.921       270       3       50       77       0.207       330200       4500         31110731       7.007       270       3       50       77       0.207       325631       4500         31110731	21110725	7.089	270	2	250	77	0.212	11918	4500.0
31110521       2.978       270       3       50       77       0.300       2983881       4500         31110531       3.063       270       3       50       77       0.297       2845763       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.308       133153       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110731       6.921       270       3       250       77       0.309       135515       4500         31110721       6.946       270       3       50       77       0.207       330200       4500         31110731       7.007       270       3       50       77       0.207       325631       4500	21110735	7.124	270	2	250	77	0.211	11693	4500.0
31110531       3.063       270       3       50       77       0.297       2845763       4500         31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.303       121377       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110731       6.921       270       3       250       77       0.309       135515       4500         31110721       6.946       270       3       50       77       0.207       330200       4500         31110731       7.007       270       3       50       77       0.207       325631       4500	31110511	2.974	270	3	50	77	0.300	2991184	4500.0
31110512       3.080       270       3       100       77       0.307       740589       4500         31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.303       121377       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110535       2.958       270       3       250       77       0.309       135515       4500         31110711       6.921       270       3       50       77       0.207       330200       4500         31110721       6.946       270       3       50       77       0.207       325631       4500         31110731       7.007       270       3       50       77       0.205       314629       4500	31110521		270		50	77		2983881	4500.0
31110522       3.051       270       3       100       77       0.308       752983       4500         31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.303       121377       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110535       2.958       270       3       250       77       0.309       135515       4500         31110711       6.921       270       3       50       77       0.207       330200       4500         31110721       6.946       270       3       50       77       0.207       325631       4500         31110731       7.007       270       3       50       77       0.205       314629       4500	31110531	3.063	270	3	50	77	0.297	2845763	4500.0
31110532       3.015       270       3       100       77       0.309       768081       4500         31110515       3.155       270       3       250       77       0.303       121377       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110535       2.958       270       3       250       77       0.309       135515       4500         31110711       6.921       270       3       50       77       0.207       330200       4500         31110721       6.946       270       3       50       77       0.207       325631       4500         31110731       7.007       270       3       50       77       0.205       314629       4500	31110512	3.080	270	3	100	77	0.307	740589	4500.0
31110515       3.155       270       3       250       77       0.303       121377       4500         31110525       2.989       270       3       250       77       0.308       133153       4500         31110535       2.958       270       3       250       77       0.309       135515       4500         31110711       6.921       270       3       50       77       0.207       330200       4500         31110721       6.946       270       3       50       77       0.207       325631       4500         31110731       7.007       270       3       50       77       0.205       314629       4500	31110522	3.051	270	3	100	77	0.308	752983	4500.0
31110525       2.989       270       3       250       77       0.308       133153       4500         31110535       2.958       270       3       250       77       0.309       135515       4500         31110711       6.921       270       3       50       77       0.207       330200       4500         31110721       6.946       270       3       50       77       0.207       325631       4500         31110731       7.007       270       3       50       77       0.205       314629       4500	31110532	3.015	270	3	100	77	0.309	768081	4500.0
31110535     2.958     270     3     250     77     0.309     135515     4500       31110711     6.921     270     3     50     77     0.207     330200     4500       31110721     6.946     270     3     50     77     0.207     325631     4500       31110731     7.007     270     3     50     77     0.205     314629     4500	31110515	3.155	270	3	250	77	0.303	121377	4500.0
31110711     6.921     270     3     50     77     0.207     330200     4500       31110721     6.946     270     3     50     77     0.207     325631     4500       31110731     7.007     270     3     50     77     0.205     314629     4500	31110525	2.989	270		250	77	0.308	133153	4500.0
31110721 6.946 270 3 50 77 0.207 325631 4500 31110731 7.007 270 3 50 77 0.205 314629 4500		2.958	270		250	77	0.309		4500.0
31110731 7.007 270 3 50 77 0.205 314629 4500	31110711	6.921	270	3	50	77	0.207	330200	4500.0
	31110721	6.946	270		50	77	0.207	325631	4500.0
21110712 6 005 270 2 100 77 0 214 02700 4500	31110731	7.007	270		50	77	0.205	314629	4500.0
	31110712	6.985	270	3	100	77	0.214	83709	4500.0
	31110722	6.878	270		100	77	0.216	88880	4500.0
31110732 6.983 270 3 100 77 0.214 83790 4500	31110732	6.983	270	3	100	77	0.214	83790	4500.0
31110715 6.750 270 3 250 77 0.217 16313 4500	31110715	6.750	270	3	250	77	0.217	16313	4500.0

SD# = sample designation number;

AV = percent air voids (AV = 3 to 7);

KV = kinematic viscosity (centistokes);

ANG = angularity;

CS = cyclic stress (psi) = cyclic load/loaded area; TT = test temperature ( F);

N<sub>FI</sub> = number of load applications to fatigue failure; CDT = cumulative plastic deformation at the center of the loaded area (x 10<sup>-4</sup> in.); and

CD2 = cumulative plastic deformation at a radial distance of 2.25-in from the center of the loaded area  $(x 10^{-4} in.)$ .

Table D. Fatigue life of beam specimens based on a maximum allowable cumulative plastic deformation of 0.45 and 0.1-in for the 77 and 40 F tests, respectively.

SD#	AV	KV	ANG	CS	TT	CD2/CD1	N <sub>FL</sub>	CD1
31110725	6.919	270	3	250	77	0.213	14841	4500.0
31110735	6.976	270	3	250	77	0.212	14381	4500.0
21210611	4.991	212	2	50	77	0.249	680131	4500.0
21210621	4.994	212	2	50	77	0.249	678850	4500.0
21210631	5.122	212	2	50	77	0.246	631863	4500.0
21210612	5.179	212	2	100	77	0.254	160903	4500.0
21210622	5.175	212	2	100	77	0.254	161222	4500.0
21210632	5.064	212	2	100	77	0.257	171545	4500.0
21210615	5.030	212	2	250	77	0.255	29874	4500.0
21210625	5.051	212	2	250	77	0.255	29527	4500.0
21210635	4.983	212	2	250	77	0.257	30676	4500.0
21310611	4.986	159	2	50	77	0.249	552183	4500.0
21310621	4.930	159	2	50	77	0.251	569681	4500.0
21310631	4.906	159	2	50	77	0.251	577318	4500.0
21310612	4.935	159	2	100	77	0.260	149285	4500.0
21310622	4.990	159	2	100	77	0.259	144789	4500.0
21310632	4.971	159	2	100	77	0.260	146318	4500.0
21310615	4.984	159	2	250	77	0.257	24821	4500.0
21310625	5.189	159	2	250	77	0.252	22148	4500.0
21310635	5.063	159	2	250	77	0.255	23755	4500.0
12110511	3.017	270	4	50	77	0.297	3307200	4500.0
12110521	2.931	270	4	50	77	0.299	3469943	4500.0
12110531	2.898	270	4	50	77	0.300	3534547	4500.0
12110512	2.949	270	4	100	77	0.310	902350	4500.0
12110522	2.959	270	4	100	77	0.309	897649	4500.0
12110532	2.987	270	4	100	77	0.308	883695	4500.0
12110515	2.982	270	4	250	77	0.307	151443	4500.0
12110535	2.977	270	4	250	77	0.307	151865	4500.0
12110611	5.025	270	4	50	77	0.244	1077415	4500.0
12110621	4.927	270	4	50	77	0.246	1138239	4500.0
12110631	5.178	270	4	50	77	0.241	989374	4500.0

SD# = sample designation number;

AV = percent air voids (AV = 3 to 7);

KV = kinematic viscosity (centistokes);

ANG = angularity;

CS = cyclic stress (psi) = cyclic load/loaded area; TT = test temperature (F);

NFI = number of load applications to fatigue failure;
CDI = cumulative plastic deformation at the center of the loaded area (x 10 in.); and
CD2 = cumulative plastic deformation at a radial distance of 2.25-in from the center of the loaded area (x 10 in.).

Table D. Fatigue life of beam specimens based on a maximum allowable cumulative plastic deformation of 0.45 and 0.1-in for the 77 and 40 F tests, respectively.

					•			
SD#	AV	KV	ANG	CS	TT	CD2/CD1	N <sub>FL</sub>	CD1
12110612	5.084	270	4	100	77	0.252	274055	4500.0
12110622	4.846	270	4	100	77	0.258	312932	4500.0
12110632	4.958	270	4	100	77	0.255	294032	4500.0
12110615	4.994	270	4	250	77	0.252	49255	4500.0
12110625	4.818	270	4	250	77	0.257	54325	4500.0
12110635	5.087	270	4	250	77	0.250	46743	4500.0
12110711	7.026	270	4	50	77	0.204	352629	4500.0
12110721	7.006	270	4	50	77	0.204	356506	4500.0
12110731	7.055	270	4	50	77	0.203	346984	4500.0
12110712	7.006	270	4	100	77	0.213	93689	4500.0
12110722	7.099	270	4	100	77	0.211	88960	4500.0
12110732	7.194	270	4	100	77	0.209	84369	4500.0
12110715	7.123	270	4	250	77	0.208	15002	4500.0
12110725	6.938	270	4	250	77	0.212	16638	4500.0
12110735	6.965	270	4	250	77	0.211	16382	4500.0
11110715	7.103	270	4	250	77	0.209	15174	4500.0
12210711	7.324	212	4	50	77	0.199	237040	4500.0
12210721	6.855	212	4	50	77	0.207	307938	4500.0
12210731	7.216	212	4	50	77	0.201	251850	4500.0
12210712	7.099	212	4	100	77	0.212	70638	4500.0
12210722	7.071	212	4	100	77	0.212	71751	4500.0
12210732	6.909	212	4	100	77	0.215	78557	4500.0
12210715	6.861	212	4	250	77	0.214	13786	4500.0
12210725	6.801	212	4	250	77	0.215	14259	4500.0
12210735	7.153	212	4	250	77	0.208	11714	4500.0
12310711	7.247	159	4	50	77	0.201	200381	4500.0
12310721	7.172	159	4	50	77	0.202	208996	4500.0
12310731	7.133	159	4	50	77	0.203	213616	4500.0
12310712	7.089	159	4	100	77	0.212	57520	4500.0
12310722	7.132	159	4	100	77	0.211	56163	4500.0
12310732	7.015	159	4	100	77	0.214	59951	4500.0

SD# = sample designation number;

AV = percent air voids (AV = 3 to 7);

KV = kinematic viscosity (centistokes);

ANG = angularity;

CS = cyclic stress (psi) = cyclic load/loaded area;

TT = test temperature (°F);

CD2 = cumulative plastic deformation at a radial distance of 2.25-in from the center of the loaded area (x 10<sup>-4</sup> in.).

Table D. Fatique life of beam specimens based on a maximum allowable cumulative plastic deformation of 0.45 and 0.1-in for the 77 and 40 F tests, respectively.

SD#	AV	KV	ANG	CS	TT	CD2/CD1	N <sub>FL</sub>	CD1
12310715	7.078	159	4	250	77	0.210	9890	4500.0
12310725	7.125	159	4	250	77	0.209	9635	4500.0
12310735	6.991	159	4	250	77	0.212	10387	4500.0
22110611	4.775	270	2	50	77	0.253	966062	4500.0
22110621	4.802	270	2	50	77	0.252	951783	4500.0
22110631	4.929	270	2	50	77	0.249	886445	4500.0
22110612	4.961	270	2	100	77	0.259	228840	4500.0
22110622	5.043	270	2	100	77	0.257	218606	4500.0
22110632	5.111	270	2	100	77	0.255	210497	4500.0
22110615	4.983	270	2	250	77	0.256	38631	4500.0
22110625	5.084	270	2	250	77	0.253	36508	4500.0
22110635	5.107	270	2	250	77	0.253	36048	4500.0
32110611	5.195	270	3	50	77	0.242	865322	4500.0
32110621	5.078	270	3	50	77	0.244	923905	4500.0
32110631	5.182	270	3	50	77	0.242	871810	4500.0
32110612	5.127	270	3	100	77	0.253	236227	4500.0
32110622	4.955	270	3	100	77	0.257	260055	4500.0
32110632	4.854	270	3	100	77	0.259	275119	4500.0
32110615	4.987	270	3	250	77	0.254	43656	4500.0
32110625	4.955	270	3	250	77	0.255	44443	4500.0
32110635	4.913	270	3	250	77	0.256	45482	4500.0
11120511	1.276	270	4	50	40	-	4178193000	1000.0
11120521	1.244	270	4	50	40	-	4353370000	1000.0
11120531	1.384	270	4	50	40	-	3631464000	1000.0
11120512	1.333	270	4	100	40	-	1992056000	1000.0
11120522	1.383	270	4	100	40	-	1867469000	1000.0
11120532	1.342	270	4	100	40	-	1969142000	1000.0
11120515	1.372	270	4	250	40	-	785514600	1000.0
11120525	1.355	270	4	250	40	-	802680100	1000.0
11120535	1.412	270	4	250	40	-	745664500	1000.0
11320511	4.932	159	4	50	40	-	22625860	1000.0

SD# = sample designation number;

AV = percent air voids (AV = 3 to 7);

KV = kinematic viscosity (centistokes);

ANG = angularity;

CS = cyclic stress (psi) = cyclic load/loaded area; TT = test temperature ( F);

N<sub>FL</sub> = number of load applications to fatigue failure;

CDT = cumulative plastic deformation at the center of the loaded area (x 10 in.); and CD2 = cumulative plastic deformation at a radial distance of

<sup>2.25-</sup>in from the center of the loaded area (x 10 in.).

Table D. Fatigue life of beam specimens based on a maximum allowable cumulative plastic deformation of 0.45 and 0.1-in for the 77 and 40 F tests, respectively.

SD#	AV	KV	ANG	CS	TT	CD2/CD1	N <sub>FL</sub>	CD1
11320521	5.050	159	4	50	40	_	19397270	1000.0
11320531	4.738	159	4	50	40	_	29087340	1000.0
11320512	5.026	159	4	100	40	-	10285220	1000.0
11320522	5.045	159	4	100	40	-	10029730	1000.0
11320532	4.952	159	4	100	40	-	11320480	1000.0
11320515	1.143	159	4	250	40	-	657489600	1000.0
11320525	4.715	159	4	250	40	-	6379867	1000.0
11320535	5.384	159	4	250	40	-	2677309	1000.0
22120611	4.125	270	2	50	40	-	89680980	1000.0
22120621	4.184	270	2	50	40	-	83142020	1000.0
22120631	4.317	270	2	50	40	-	69985780	1000.0
22120612	4.070	270	2	100	40	-	49512020	1000.0
22120622	4.046	270	2	100	40	-	51050680	1000.0
22120632	4.314	270	2	100	40	-	36041680	1000.0
22120615	4.356	270	2	250	40	-	14150430	1000.0
22120625	4.154	270	2	250	40	-	18403690	1000.0
22120635	4.396	270	2	250	40	-	13436780	1000.0
32120611	4.088	270	3	50	40	-	101133300	1000.0
32120621	4.083	270	3	50	40	-	101893400	1000.0
32120631	4.071	270	3	50	40	-	103420200	1000.0
32120612	4.038	270	3	100	40	-	107888500	1000.0
32120622	4.279	270	3	100	40	-	40563260	1000.0
32120632	3.913	270	3	100	40	-	65205160	1000.0
32120615	3.998	270	3	250	40	-	113692000	1000.0
32120625	4.096	270	3	250	40	-	21302600	1000.0
32120635	4.281	270	3	250	40	-	16774870	1000.0

SD# = sample designation number;

AV = percent air voids (AV = 3 to 7);

KV = kinematic viscosity (centistokes);

ANG = angularity;

CS = cyclic stress (psi) = cyclic load/loaded area; TT = test temperature ( F);

N<sub>FI</sub> = number of load applications to fatigue failure; CDI = cumulative plastic<sub>4</sub> deformation at the center of the loaded area (x 10 in.); and

CD2 = cumulative plastic deformation at a radial distance of 2.25-in from the center of the loaded area (x 10-4

## APPENDIX E

The values of the resilient and total moduli obtained using the FEM for all beam specimens are presented in this Appendix.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	AV	N	MIR	E	SAMPLE	ΑV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
11110511	2.909	150	526623	434498	<del></del>		500	585882	49863
		520	585823	478781			1000	622538	50950
		1000	620356	512222			5000	690695	56673
		500 <b>0</b>	688681	570415			10000	711694	5950
		10000	712213	599541			50000	739362	61733
		21940	734586	619087			100000	739362	6306
		164925	747578	619087	11110525	3.033	100	508940	4195
11110521	2.951	100	516390	443227			500	589177	4993
		50 <b>0</b>	603675	491784			1000	626355	5269
		1000	637107	527201			5000	694267	5779
		5000	712368	565757			10000	715683	5888
		10000	727912	610990			50000	744436	6379
		36235	754663	610990			100000	744436	6379
		170420	754663	628037	11110535	3.068	100	505049	4316
11110531	3.001	100	513427	432202			500	582662	4778
		500	592683	490732			1000	619913	5233
		1000	630174	522527			5027	6883 <b>23</b>	5649
		5010	703014	571225			10400	709430	5986
		10025	725495	603773			18000	725222	5986
		21200	740155	624105	11210511	3.172	100	516390	4377
		164725	750375	624105			500	598148	5071
11110512	2.982	155	513628	442037			1000	636750	5378
		525	574807	485282			5000	712346	5980
		1000	608803	513615			10000	727906	6101
		5000	677620	565900			30500	752299	6234
		10000	700210	585383			683000	682177	5833
		26730	721178	601921	11210521	3.016	100	536159	4350
		169100	721178	609380		0.010	500	621668	5296
11110522	3.116	100.		415461			1000	657 <b>557</b>	5590
11110722	3.110	500	578750	483305			5000		6203
		1000						731447	
			614378	517479			10000	748938	6279
		50 <b>25</b>	680535	570629			30550	777309	6648
		10000	700908	603953			40000	786925	6579
		158650	721827	611425	11210531	3.032	150	538911	4433
11110532	3.015	100	510630	418178			550	604997	5088
		500	592455	500622			1000	628211	5242
		1000	630277	511404			5000	706 <b>610</b>	5843
		5000	698772	586309			10000	724619	6031
		10000	720719	601193			33100	756014	6453
		30000	742628	636948			145000	756014	6453
		163740	742628	625004	11210512	3.083	100	530 <b>367</b>	4446
11110515	3.061	100	506713	421830			500	612907	4997

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	AV	N	MR	E	SAMPLE	AV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
		1000	650460	544374			1000	678782	55376
		5000	722005	615698			5000	751632	63415
		10000	742413	632965			10000	770757	65726
		20000	7636 <b>83</b>	632965			32142	798398	65726
		34000	774645	632965			172900	7983 <b>98</b>	67824
11210522	3.111	100	528400	434947	11310521	2.994	100	556132	46387
		500	6100 <b>26</b>	500888			500	640645	52640
		1000	6470 <b>45</b>	528025			1000	685825	56910
		5000	717363	587627			5000	752027	64281
		10000	737159	604456			10000	779956	64281
		44000	767 <b>487</b>	656721			21000	802465	65591
		165000	767 <b>487</b>	642818			50535	812023	70257
11210532	3.154	100	524680	430872	11310531	3.008	100	556132	45778
		500	604229	492521			200	592 <b>698</b>	49311
		1000	643470	529582			500	643208	52891
		5000	712612	581327			1000	678952	57456
		10000	732054	615805			5000	751642	62144
		27100	755480	638533			10000	779869	64075
		49800	768 <b>889</b>	638533			30000	808059	58801
11210515	3.045	100	535356	457794	11310512	3.014	100	554098	46380
		500	618305	512359			500	640617	52426
		1000	6572 <b>98</b>	556777			1000	682295	57156
		5000	727860	618662			5000	751830	63183
		10000	749732	637538			10000	775329	54553
		21000	769 <b>298</b>	645904			30000	801451	66790
		30400	778263	645904			75200	813305	67885
11210525	3.074	100	532273	441589	11310522	3.060	100	547975	45926
		500	614703	484010			500	634201	53038
		1000	653129	549470			1000	675079	57202
		5200	725629	613448			5000	746681	62465
		10000	745807	633647			10000	769785	63842
		20000	765441	616209			30000	794705	65411
		98850	77637 <b>6</b>	659920			56700	802703	66373
11210535	3.143	100	51690 <b>5</b>	438266	11310532	3.081	120	545332	45369
		500	601452	505629			500	618187	51912
		1000	639531	533914			1000	656 <b>960</b>	54449
		5000	7088 <b>66</b>	592613			5000	730198	60319
		10000	730 <b>315</b>	611052			10000	752823	63937
		20000	748734	626573			35340	781394	66440
		37500	761 <b>963</b>	648262			41700	781394	66440
11310511	3.000	100	552076	463876	11310515	3.039	100	549628	46502
		500	640344	526403			500	635485	53357

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	ΑV	N	MR	E	SAMPLE	AV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
		1000	67 <b>5821</b>	569641			500	358815	29825
		5000	747667	636847			1000	382314	30368
		10000	769924	636847			5000	426438	35937
		30000	794735	675425			10000	446640	36759
11310525	3.220	100	528436	447851			30000	459228	37449
		500	609 <b>983</b>	507347	11110632	4.358	100	389399	3243
		1000	647 <b>686</b>	539718			500	446795	3699
		5000	7182 <b>26</b>	590432			1000	476729	3812
		10000	739051	627803			5000	529956	44478
		20300	758681	635046			10000	548570	4581
11310535	2.932	100	56 <b>2887</b>	465656			36000	576220	4581
		500	650 <b>876</b>	541721	11110615	5.303	100	316330	2546
		1000	692142	569195			500	36881 <b>6</b>	2945
		5300	76 <b>8173</b>	654365			1000	391866	3217
		10000	789133	654365			5000	437738	3561
		30000	814515	690744			10000	457246	3750
		42100	823741	690744			20000	467380	3750
11110611	4.141	100	406044	333345	11110625	2.676	100	552076	4718
		500	4657 <b>61</b>	388259			500	638047	5333
		1000	498 <b>648</b>	399186			1000	677361	5624
		2170	530438	428469			5000	749649	6247
		5870	559490	458169			10000	772173	6416
		10350	574 <b>967</b>	487918			26000	7975 <b>47</b>	6758
11110621	4.035	100	416816	347398	11110635	3.178	100	500000	4201
		500	477808	385632			600	587064	4953
		1000	5082 <b>62</b>	417784			1000	610 <b>613</b>	5051
		5000	564276	463162			5050	682320	5767
		10000	584023	485852			10150	703835	5930
		33000	603245	511625			47000	731875	60329
11110631	3.957	100	422437	353719	11110711	6.683	100	252007	1971
		500	485970	394342			500	293696	23039
		1170	526187	420296			1050	313066	24640
		5000	577850	467798			5000	351599	2875
		10000	593 <b>238</b>	501931			10200	366640	2930
		30000	613 <b>398</b>	517215			36700	382962	31669
11110612	2.752	100	544019	454802	11110711	3.704	100	473037	3982
		500	6280 <b>39</b>	514980			500	545016	4545
		1000	667 <b>862</b>	560462			1000	581124	4854
		5000	736 <b>786</b>	620339			5000	643655	5226
		10000	758 <b>673</b>	630966			10000	659623	54160
		42200	788 <b>076</b>	668432			30000	683434	58212
11110622	5.421	100	307584		11110721	5.191	100	349551	27929

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	AV	N	MR	E	Sample	ΑV	N	MIR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi
		500	403554	323466			500	270189	2210
		1000	426112	345042			1000	288128	2369
		5400	477057	388745			5000	326911	2659
		10400	499774	398212			11200	341690	2809
		43000	517003	434579			12000	341690	2772
11110731	4.088	100	440459	369146	11110715	7.042	100	231785	1830
		500	503406	413175			500	270532	2132
		1000	537530	443939			1000	288176	2376
		500 <b>0</b>	598050	483824			5000	327459	2599
		1000 <b>0</b>	616115	508763			8000	334649	2663
		30000	633553	524244			10000	339439	2704
11110712	5.802	100	303140	241084	11110725	5.924	100	296092	2367
		500	353599	281212			500	345711	2738
		1000	37 <b>6295</b>	300474			1000	367470	2914
		5000	420051	345293			5000	410525	3304
		10600	439846	365424			10000	429088	3441
		33400	452566	369795			20000	438776	3589
11110712	6.586	100	256719	208496	11110725	7.005	100	233914	1868
		500	299662	231165			500	273009	2195
		1000	318846	262122			1000	291033	2300
		5000	358130	275002			5000	330382	2651
		18000	382290	318561			10000	340145	2803
		30000	388398	318561			15000	347268	2872
11110712	4.946	100	365799	302279	11110735	5.899	100	297445	2434
		500	422956	353560			500	347222	2815
		1000	448429	368362			1000	368690	3037
		5000	501346	415400			5000	412857	3472
		10000	517048	420542			10000	430981	3472
		30000	534649	447376			20200	441002	3553
11110722	6.023	110	289907	229761	11110735	6.980	100	234865	1861
		500	335245	266671			500	274085	2165
		100 <b>0</b>	356686	288435			1000	292262	2305
		500 <b>0</b>	399929	314010			5000	-331568	2704
		10000	417292	333032			10000	341444	2775
		38000	435561	354421			20200	351283	2892
11110732	5.294	100	340306		21110511	2.952	100	500000	4086
		500	394251	322428			500	581150	4733
		1000	417147	335754			1000	617510	5167
		5000	465282	378700			5020	684939	5831
		10000	481334	388392			10300	711083	5925
		3000 <b>0</b>	503818		21110521	3.031	100	500000	4141
11110715	7.048	100	231554	181347			500	571243	4775

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	VA	N	MR	E	Sample	AV	N	MIR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
		1050	613183	513989			10000	510256	42484
		5000	676832	570758	21110621	4.912	100	347398	27769
		10000	696125	591357			500	400496	32992
21110531	2.958	100	500000	414114			1000	425805	34582
		500	581150	481379			5400	477027	38883
		1100	622593	525092			10900	491913	40599
		5000	685534	577765	21110631	4.955	100	345362	28083
		10200	711937	597547			500	397354	3278
21110512	2.914	100	509243	436298			1000	422220	3376
		500	589759	498965			5000	472596	3931
		1000	627029	527872			10000	487515	4044
		5000	694365	584338	21110612	4.973	100	344351	2839
		10600	718712	605286			500	397376	3236
21110522	2.998	100	500000	415461			1000	422285	3510
		500	578750	475841			5000	470289	3789
		1000	617233	486208			10000	486769	3970
		5000	685331	565427	21110622	5.090	100	334352	2739
		10000	705764	599963			500	386832	3178
21110532	3.099	100	494220	406044			1000	410162	3329
		500	565813	469382			5000	458009	3767
		1000	601855	507542			10000	473291	3949
		5000	668159	558108	21110632	5.094	100	334352	2739
		10400	690866	571600			500	386832	3044
21110515	3.118	120	493576	406019			1000	410162	3380
		500	555677	450509			5000	458009	3789
		1000	591166	482813			10000	473291	3871
		5000	656097	526348	21110615	5.086	100	334940	2644
		10000	677442	568653			500	387149	3088
21110525	2.975	100	500000	418477			1000	410481	3372
		500	582241	480989			5000	458056	3682
		1000	619885	520877			10000	473690	3889
		5000	687168	577520	21110625	5.010	100	340099	2801
		10000	707792	597726			500	. 393689	3107
21110535	3.171	100	490062	403400			1000	417396	3361
		500	559682	465542			5000	465776	3674
		1000	595232	499508			10000	481457	3910
		5000	659790	555122	21110635	4.977	100	343747	2755
		10000	680351	561475	- · · · · <del>-</del>		500	397340	3267
21110611	4.737	100	360220	297110			1000	421596	3351
	3.707	500	416337	347167			5000	470682	3974
		1000	440755	353081			10600	486776	4053
		5000	493151	401007	21110711	6.778	100	239226	1871

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and to FEM program

SAMPLE	ΑV	N	MR	E	SAMPLE	AV
NUMBER			(psi)	(psi)	NUMBER	
		1000	314180	258453		
		5500	357595	291856		
		10900	368291	298426		
		30000	384803	313998		
		57000	384803	313998	22110612	4.96
12310715	7.078	100	250418	194726		
		500	292078	238855		
		1000	311108	244736		
		2000	329977	264552		
		5000	351407	282278		
		700 <b>0</b>	358138	288211		
		9000	363 <b>625</b>	295221	22110622	5.04
12310725	7.125	100	248074	194918		
		500	289350	231551		
		1000	308360	251865		
		2000	326851	264609		
		5000	348204	285966		
		8000	356678	285966		
		9000	360733	293032	22110632	5.11
12310735	6.991	100	253876	199256		
		500	296423	242264		
		1000	315740	248098		
		5000	354221	291347		
		6000	360279	294615		
		7000	364350	300659		
22110611	4.775	100	364693	302279	22110615	4.98
		500	422984	334943		
		1000	448432	368815		
		5000	498887	410005		
		10000	516341	418857		
		30000	542975	444628		
		163000	542975	444628		
22110621	4.802	100	364693	292072	22110625	5.08
		500	422984	349428		
		1000	448432	375766		
		5500	502171	412458		
		10200	516064			
		27800	531795	451095		
		189865	531795	451095		
22110631	4.929	100	355933	293711	22110635	5.10
		500	413060	344631		
		1000	437120	354066		

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	ΑV	N	MR	E	Sample	AV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
		5000	468740	380568	· · · · · · · · · · · · · · · · · · ·		5000	495999	40245
		10000	484734	401008			10000	511079	433381
		23200	500238	427302			24000	527626	433381
		33000	507015	417782			161500	527626	433381
32110611	5.195	100	339271	279291	32110615	4.987	100	352043	284615
		500	391336	327805			500	407315	328967
		1000	415323	345569			1000	431779	354377
		5000	462916	379938			5000	481809	38880
		10000	485831	399064			10000	497570	408325
		27000	499917	405838			25000	514394	419822
		184700	499917	415849			30000	520697	424547
32110621	5.078	100	345362	271669	32110625	4.955	100	353759	292414
		500	397354	323075			500	409233	340783
		1000	422220	342643			1000	433993	359756
		5000	472596	393380			5000	483914	390748
		10345	494553	386068			13900	511262	426373
		25000	507624	421172			30300	521166	437977
		162000	507624	421172			32000	521166	437977
32110631	5.182	100	339271	276190	32110635	4.913	100	355893	291745
		500	391336	321085			500	411795	343594
		1000	415323	340163			1000	436943	352219
		5000	462916	376030			5000	487041	391903
		10850	484898	401055			10000	503309	411785
		30000	497481	410905			20000	517255	422062
		164300	497481	416883			35000	526238	441010
32110612	5.127	100	343345	277734	11120511	3.060	120	1586414	1106042
		500	397337	321208			560	1660332	1163740
		1000	420564	336739			1000	1744691	1279887
		5100 ·	471096	381002			5000	2004423	1586665
		10000	484996	399119			13600	1887682	1313810
		28000	502117	410652			20000	1969677	1452254
		206700	502117	410652			27900	2110580	
32110622	4.955	100	353769	281595	11120521	3.029	100	1557572	
		500	409833	327921			500	1827537	1393265
		1000	433402	352811			1000	1770323	1268598
		5000	482909	385613			5000	2008279	1540365
		11300	507600	417290			10500	1915148	1348219
		26000	518553	427587			155600	2106109	1542132
		170200	518553	427587			187200	2073048	1473129
32110632	4.854	100	361357	292889	11120531	3.166	100	1557572	1075930
		500	418018	341028			500	1804090	1379284
		1000	444479	365624			1000	1728766	1221443

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	AV	N	MR	E	SAMPLE	AV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
	-	5000	1819515	1302571			5100	1559890	108301
		10000	1873856	1338586			10500	1845528	148280
		166500	2097324	1541928			27000	1845528	141696
		352725	2072195	1473104			184100	1845528	137060
11120512	3.116	100	1622894	1241783	11320511	3.182	100	1672388	116728
		510	1595263	1123573			550	1953756	152155
		1020	1624874	1147101			1000	1909700	142950
		5000	1864080	1432608			5000	2190744	178030
		10000	1935219	1508635			10200	2223903	178030
		31000	1935219	1435033			30975	2196498	165430
		161500	1966454	1418924			327866	2422467	190127
11120522	3.165	100	1662151	1304541	11320521	3.302	100	1713132	127269
		500	1760384	1393584			500	1927911	150722
		1000	1724571	1299740			1000	1907024	142776
		5100	1884285	1491186			5500	1907024	134400
		10400	1766289	1229172			10000	2126596	167271
		20300	1793275	1250142			30140	2246863	177239
		176900	2189290	1732055			167820	2198604	158476
11120532	3.125	130	1539036	1123250	11320531	2.984	160	1663424	117143
		500	1644047	1251033			500	1953622	15444
		1000	1822254	1488006			1000	1819010	12796
		5000	1793149	1335909			5000	2102360	16624
		10200	1854182	1408573			11500	2102360	163360
		20000	2004243	1635577			36300	2077756	15314
		177600	1957632	1416695			362000	2224096	159917
11120515	3.154	100	1579639	1265063	11320512	3.277	100	1585242	112519
		500	1579639	1221059			500	1675390	118856
		1000	1734320	1406167			1000	1927369	154770
		5600	1684770	1235751			5000	2054373	166132
		10000	1684770	1235751			10200	1978585	148985
		19500	1745771	1280647			21900	1935604	138764
		170900	1800820	1266033			135600	2223398	172440
11120525	3.137	100	1594421	1290330	11320522	3.297	100	1566701	110509
		500	1490203	1035320			500	1851697	146230
		1100	1602291	1210754			1000		12881
		5400	1672280	1232831			5000	1924448	
		10400	1748154				10000	1841297	
		23200	1959860				27600	2017991	153238
		123900	1959860				344800	2292853	18043
11120535	3.193	110	1533827		11320532	3.202	100	1566701	109050
		500	1457970				500	1655509	115470
		1000	1479042						

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

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Table E. Calculated resilient and total moduli using FEM program

SAMPLE	VA	N	MR	E	SAMPLE	ΑV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
· · · · · · · · · · · · · · · · · · ·		5000	1859015	1375283	<del></del>		5000	1490973	103294
		11100	1922812	1410661			10000	1490973	100684
		31800	2174536	1735628			49400	1655522	120072
		171600	2206978	1649504			171600	1789352	134150
11320515	2.431	100	1726380	1306044	22120612	4.831	100	1410274	110009
		500	1806835	1352966			500	1347322	92875
		1000	1907729	1485960			1000	1419396	103646
		5000	1865440	1320446			5000	1625519	126604
		10150	2177106	1763950			10000	160332 <b>6</b>	120092
		35900	2151127	1663126			136200	1677748	120092
		157900	2354756	1911962			322900	1853417	141925
11320525	2.961	100	1696626	1343729	22120622	4.808	100	1311243	95212
		500	1766813	1378208			500	1467570	113046
		1000	1807463	1405759			1000	1378638	95121
		5000	1775662	1271296			5000	1596340	122722
		10700	1908640	1461984			10000	1552515	112324
		20750	1831399	1282089			33500	1517082	102547
		191200	1996902	1446656			143000	1675404	120133
11320535	3.642	100	1440709	1030432	22120632	5.074	100	1338219	103048
		500	1499385	1057239			500	1405230	108063
		1000	1732970	1378516			1000	1352657	94621
		5300	1699072	1239810			5000	1624172	131337
		10225	1662999	1168603			10800	1473133	104674
		30000	1790578	1326965			147150	1726053	131030
		153100	2089451	1688184			320100	1829860	145957
22120611	4.886	100	1409797	1048327	22120615	5.115	100	1275099	100453
		500	1483301	1099758			500	1232428	87015
		1000	1537544	1151777			1000	1208493	81193
		7700	1696892	1313383			5000	1438869	110385
		10500	1579399	1096456			10000	1347640	92613
		134600	1782958	1298768			36400	1443531	105310
		30 <b>9300</b>	1890778	1428689			158700	1544612	114888
22120621	4.944	100	1366169	988184	22120625	4.914	100	1173795	83044
		500	1408937	1005992			500	1306258	96985
		1000	1615163	1283869			1100	1387499	108557
		5000	1615163	1186539			5500	1343335	93129
		10000	1615163	1156870			10900	1360908	93129
		30500	1615163	1101702			22000	1395663	96323
		185800	1852475	1380064			161700	1726975	138960
22120631	5.076	100	1272697	876578	22120635	5.155	100	1103029	75222
		500	1428105	1047690			500	1186246	8171
		1240	1579457	1248046			1000	1411256	11419

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	ΑV	N	MIR	E	SAMPLE	AV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
		5500	1351119	969408			1000	1429049	1053822
		10000	1351119	969408			5000	1538128	1185835
		128000	1637326	1292336			10000	1465620	1014638
		337900	1709560	1370465			22700	1543350	1122505
32120611	5.226	100	1338655	996040			147950	1717295	1287078
		500	1338655	926034			481600	1691634	1191765
		1000	1404886	1015432	32120615	5.136	100	1366169	1030209
		5500	1482591	1054720			500	1435679	1057393
		12000	1600795	1213656			1000	1393454	971627
		37000	1600795	1143635			5000	1466606	1009997
		164500	1783299	1366968			12000	1550833	1127386
32120621	5.220	100	1285598	911346			32500	1550833	1080982
		500	1459528	1094893			174350	1951825	1589339
		1000	1549836	1226444	32120625	5.234	100	1103029	752229
		5000	1474063	1015553			500	1194978	828742
		100 <b>00</b>	1655221	1259186			1000	1216451	840545
		29500	1590882	1133997			5000	1330863	953627
		154700	1804632	1395560			10000	1447721	110778
32120631	5.209	100	1366169	1030209			29800	1447721	107807
		500	1366169	979564			199500	1471764	1037143
		1000	1396742	990 <b>96</b> 1			490700	1659156	126482
		5100	1426570	972863	32120635	5.416	100	1064743	70944
		10500	1615503	1222520			500	1189553	836029
		28800	1615503	1180675			1000	1293887	970099
		154700	1852480	1456965			5000	1450051	1156540
32120612	5.176	100	1285598	890392			10000	1319834	92742
		500	1371918	981809			33300	1548994	123452
		2000	1578353	1234617			150400	1454452	1010850
		5100	1666000	1342329			353200	1478386	1025689
		14200	1608620	1176850 .					
		27150	1744123	1396726					
		194700	1821376	1396726					
32120622	5.414	100	1172822					. •	
		500	1230737						
		1000	1481881						
		5000	1425014						
		10000	1514583						
		153600	1769900						
		322400	1645053						
	_	471900	1817126						
32120632	5.052	100 500	1218042	834827 1228219					

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

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Table B. Parameters of the cumulative plastic deformation versus the number of load application curves.

SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	SE	SAMPLE NUMBER	LVDT #	S	I	R <sup>2</sup>	SZ
11110511	1	0.6343	5347	0.9991	0.02227	11110535	1	0.6278	0.3792	0.9988	0.02130
	2	0.5909	7728	0.9989	0.02260		2	0.5841	0.0945	0.9986	0.02115
	3	0.5325	7683	0.9990	0.01914		3	0.5164	0.0556	0.9982	0.02146
	4	0.4088	6165	0.9967	0.02668		4	0.3803	0.1407	0.9939	0.02886
11110521	1	0.6342	5300	0.9989	0.02555	11210511	1	0.6567	4973	0.9993	0.0234
	2	0.6034	9043	0.9991	0.02310		2	0.6127	7491	0 . 9993	0.0227
	3	0.5459	8977	0.9992	0.01960		3	0.5475	7350	0.9993	0.0202
	4	0.4183	7152	0.9965	0.03110		4	0.3990	5244	0.9915	0.0514
11110531	1	0.6372	5330	0.9987	0.02707	11210521	1	0.6516	5043	0.9993	0.0212
	2	0.6212	9425	0.9988	0.02605		2	0.6071	7458	0.9992	0.0210
	3	0.5612	9297	0.9989	0.02309		3	0.5468	7451	0.9987	0.0242
	4	0.4311	7454	0.9955	0.03503		4	0.4133	5752	0.9905	0.0504
11110512	1	0.6346	1755	0.9993	0.01996	11210531	1	0.6582	5240	0.9988	0.0266
	2	0.5909	4255	0.9992	0.01932		2	0.6153	7729	0.9987	0.0254
	3	0.5288	4272	0.9992	0.01680		3	0.5544	7692	0.9984	0.0251
	•	0.3944	2656	0.9963	0.02786		•	0.4252	6087	0.9965	0.0288
11110522	1	0.6267	1310	0.9991	0.02400	11210512	1	0.6520	1419	0.9993	0.0203
	2	0.5824	3851	0.9989	0.02425		2	0.6086	4012	0.9992	0.0203
	3	0.5183	3828	0.9983	0.02716		3	0.5440	4016	0.9989	0.0208
	•	0.3869	2435	0.9890	0.05110		•	-	-	-	•
11110532	1	0.6331	1667	0.9993	0.02098	11210522	1	0.6555	1489	0.9992	0.0230
	2	0.5904	4228	0 . 9992	0.02052		2	0.6115	4072	0 . 9991	0.0231
	3	0.5266	4180	0.9991	0.01872		3	0.5475	4123	0.9991	0.0205
	•	0.3968	2777	0.9961	0.03012		•	•	-	-	•
11110515	1	0.6341	0.3624	0.9991	0.02278	11210532	1	0.6523	1303	0.9992	0.0223
	2	0.5894	0.0811	0.9990	0.02253		2	0.6090	3939	0.9991	0.0223
	3	0.5171	0.0555	0.9989	0.02080		3	0.5442	3966	0.9987	0.0235
	•	0.3575	0.2085	0.9937	0.03399		•	0.4050	2420	0.9919	0.0438
11110525	1	0.6345	0.3555	0.9992	0.02130	11210515	1	0.6501	0.3777	0.9990	0.0223
	2	0.5898	0.0756	0.9991	0.02107		2	0.6054	0.0938	0.9989	0.0223
	3	0.5180	0.0501	0.9989	0.02048		3	0.5325	0.0634	0.9984	0.0234
	4	0.3592	0.2005	0.9926	0.03586		4	0.3694	0.2198	0.9890	0.0433

S.I = regression coefficients (slope and intercept of

equation 5.1);

R = coefficient of determination; and

SE = standard error.



Table E. Calculated resilient and FEM program

SAMPLE	ΑV	N	MIR	E	SAMPLE	
NUMBER			(psi)	(psi)	NUMBER	
		5000	468740	380568		_
		10000	484734	401008		
		23200	500238	427302		
		33000	507015	417782		
32110611	5.195	100	339271	279291	32110615	
		500	391336	327805		
		1000	415323	345569		
		5000	462916	379938		
		10000	485831	399064		
		27000	499917	405838		
		184700	499917	415849		
32110621	5.078	100	345362	271669	32110625	
		500	397354	323075		
		1000	422220	342643		
		5000	472596	393380		
		10345	494553	386068		
		25000	507624	421172		
		162000	507624	421172		
32110631	5.182	100	339271	276190	32110635	
		500	391336	321085		
		1000	415323	340163		
		5000	462916	376030		
		10850	484898	401055		
		30000	497481	410905		
		164300	497481	416883		
32110612	5.127	100	343345	277734	11120511	:
		500	397337	321208		
		1000	420664	336739		
		5100	471096	381002		
		10000	484996	399119		
		28000	502117	410652		
		206700	502117	410652		
32110622	4.955	100	353769	281595	11120521	3
		500	409833	327921		
		1000	433402	352811		
		5000	482909	385613		
		11300	507600	417290		
		26000	518553	427587		
		170200	518553	427587		
32110632	4.854	100	361357	292889	11120531	3
		500	418018	341028		
		1000	444479	365624		

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

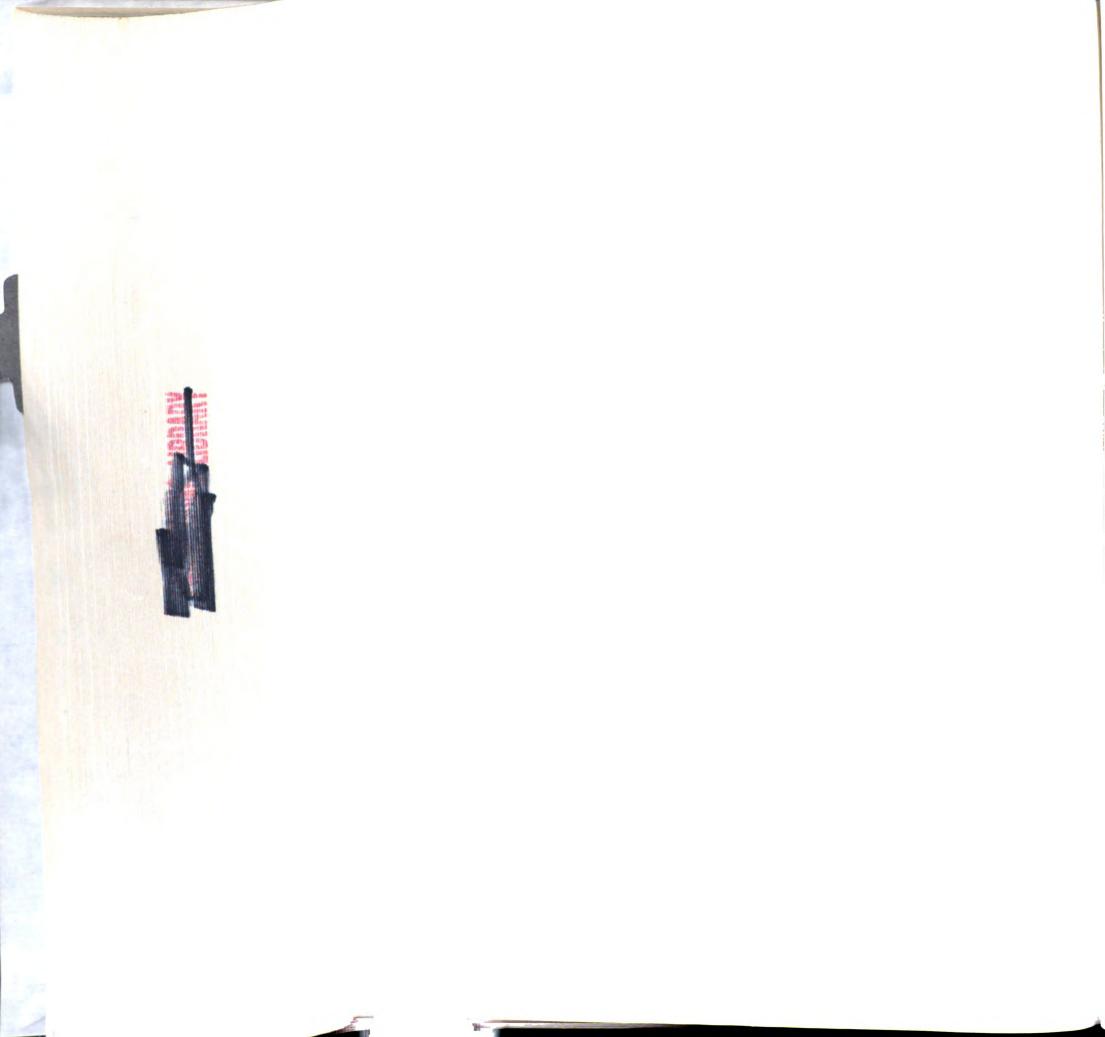


Table E. Calculated resilient and total moduli using FEM program

SAMPLE	AV	N	MR	E	SAMPLE	AV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
		5000	1819515	1302571			5100	1559890	108301
		10000	1873856	1338586			10500	1845528	148280
		166500	2097324	1541928			27000	1845528	141696
		352725	2072195	1473104			184100	1845528	137060
11120512	3.116	100	1622894	1241783	11320511	3.182	100	1672388	116728
		510	1595263	1123573			550	1953756	152155
		1020	1624874	1147101			1000	1909700	142950
		5000	1864080	1432608			5000	2190744	178030
		10000	1935219	1508635			10200	2223903	178030
		31000	1935219	1435033			30975	2196498	165430
		161500	1966454	1418924			327866	2422467	190127
11120522	3.165	100	1662151	1304541	11320521	3.302	100	1713132	127269
		500	1760384	1393584			500	1927911	150722
		1000	1724571	1299740			1000	1907024	142776
		5100	1884285	1491186			5500	1907024	134400
		10400	1766289	1229172			10000	2126596	167271
		20300	1793275	1250142			30140	2246863	177239
		176900	2189290	1732055			167820	2198604	158476
11120532	3.125	130	1539036	1123250	11320531	2.984	160	1663424	117143
		500	1644047	1251033			500	1953622	154448
		1000	1822254	1488006			1000	1819010	127966
		5000	1793149	1335909			5000	2102360	166243
		10200	1854182	1408573			11500	2102360	163360
		20000	2004243	1635577			36300	2077756	153141
		177600	1957632	1416695			362000	2224096	159917
11120515	3.154	100	1579639	1265063	11320512	3.277	100	1585242	112519
		500	1579639	1221059			500	1675390	118856
		1000	1734320	1406167			1000	1927369	154770
		5600	1684770	1235751			5000	2054373	166132
		10000	1684770	1235751			10200	1978585	148985
		19500	1745771	1280647			21900	1935604	138764
11120525	2 127	170900	1800820	1266033	11222522	2 227	135600	2223398	172440
11120525	3.137	100	1594421	1290330	11320522	3.297	100	1566701	110509
		500	1490203	1035320			500	1851697	146230
		1100	1602291	1210754			1000	1772886	128815
		5400	1672280	1232831			5000	1924448	147510
		10400	1748154	1309001			10000	1841297	127622
		23200	1959860	1602450			27600	2017991	153238
11120525	2	123900	1959860	1499815			344800	2292853	180438
11120535	3.193	110	1533827	1205987	11320532	3.202	100	1566701	109050
		500	1457970	1012811			500	1655509	115470
		1000	1479042	1026948			1000	1702798	118873

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.



Table E. Calculated resilient and to FEM program

1	SAMPLE	E	MR	N	AV	SAMPLE
	NUMBER	(psi)	(psi)			NUMBER
		1375283	1859015	5000		
		1410661	1922812	11100		
		1735628	2174536	31800		
		1649504	2206978	171600		
4	22120612	1306044	1726380	100	2.431	11320515
		1352966	1806835	500		
		1485960	1907729	1000		
		1320446	1865440	5000		
		1763950	2177106	10150		
		1663126	2151127	35900		
		1911962	2354756	157900		
4	22120622	1343729	1696626	100	2.961	11320525
		1378208	1766813	500		
		1405759	1807463	1000		
		1271296	1775662	5000		
		1461984	1908640	10700		
		1282089	1831399	20750		
		1446656	1996902	191200		
5	22120632	1030432	1440709	100	3.642	11320535
		1057239	1499385	500		
		1378516	1732970	1000		
		1239810	1699072	5300		
		1168603	1662999	10225		
		1326965	1790578	30000		
_		1688184	2089451	153100		
5	22120615	1048327	1409797	100	4.886	22120611
		1099758	1483301	500		
		1151777	1537544	1000		
		1313383	1696892	7700		
		1096456	1579399	10500		
		1298768	1782958	134600		
		1428689	1890778	309300		
4	22120625	988184	1366169	100	4.944	22120621
		1005992	1408937	500		
		1283869	1615163	1000		
		1186539	1615163	5000		
		1156870	1615163	10000		
		1101702	1615163	30500		
_	*****	1380064	1852475	185800		
5	22120635	876578	1272697	100	5.076	22120631
		1047690	1428105	500		
		1248046	1579457	1240		

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

Table E. Calculated resilient and total moduli using FEM program

SAMPLE	AV	N	MR	E	Sample	AV	N	MR	E
NUMBER			(psi)	(psi)	NUMBER			(psi)	(psi)
		5500	1351119	969408			1000	1429049	105382
		10000	1351119	969408			5000	1538128	118583
		128000	1637326	1292336			10000	1465620	101463
		337900	1709560	1370465			22700	1543350	112250
32120611	5.226	100	1338655	996040			147950	1717295	128707
		500	1338655	926034			481600	1691634	119176
		1000	1404886	1015432	32120615	5.136	100	1366169	103020
		5500	1482591	1054720			500	1435679	105739
		12000	1600795	1213656			1000	1393454	97162
		37000	1600795	1143635			5000	1466606	100999
		164500	1783299	1366968			12000	1550833	112738
32120621	5.220	100	1285598	911346			32500	1550833	108098
		500	1459528	1094893			174350	1951825	158933
		1000	1549836	1226444	32120625	5.234	100	1103029	75222
		5000	1474063	1015553			500	1194978	82874
		10000	1655221	1259186			1000	1216451	84054
		29500	1590882	1133997			5000	1330863	95362
		154700	1804632	1395560			10000	1447721	110778
32120631	5.209	100	1366169	1030209			29800	1447721	107807
		500	1366169	979564			199500	1471764	103714
		1000	1396742	990961			490700	1659156	126482
		5100	1426570	972863	32120635	5.416	100	1064743	70944
		10500	1615503	1222520			500	1189553	83602
		28800	1615503	1180675			1000	1293887	97009
		154700	1852480	1456965			5000	1450051	115654
32120612	5.176	100	1285598	890392			10000	1319834	92742
		500	1371918	981809			33300	1548994	123452
		2000	1578353	1234617			150400	1454452	101085
		5100	1666000	1342329			353200	1478386	102568
		14200	1608620	1176850 .					
		27150	1744123	1396726					
		194700	1821376	1396726					
32120622	5.414	100	1172822	807663					
		500	1230737	845126					
		1000	1481881	1194379					
		5000	1425014	1027211					
		10000	1514583	1169000					
		153600	1769900	1433206					
		322400	1645053	1183929					
		471900	1817126	1456555					
32120632	5.052	100	1218042	834827					
		500	1514354	1228219					

N = number of load applications;

AV = percent air voids;

MR = calculated resilient modulus using FEM program;

E = calculated total modulus using FEM program.

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; ;

