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16. Abstract

This study was undertaken to determine the magnitude of ground vibrations produced by traffic and/or construction blasting. Such information could provide a tool in defense of legal claims concerning physical damage to nearby properties. An engineering seismograph was used to collect vibration data at highway traffic model sites, at elevated structure sites, heavy construction traffic sites, and traffic complaint sites.

The most pronounced earth borne vibrations were found to be from heavy vehicles traveling on rough pavements at highway speeds within ten feet of the vibration source. Vibration was lowest on smooth pavements regardless of the speed and distance from the vibration source. Only 1.6 percent of the traffic model vector sum means exceeded the 0.2 in./sec. limiting velocity recommended in AASHTO R8-81. None of the elevated structure sites or construction site haul traffic gave earth borne vibration levels above AASHTO recommended guidelines. At the complaint sites, only one close measurement distance (31 feet) gave levels above 0.2 in./sec.

It was recommended that the Department make routine investigation of vibration levels due to construction-oriented sources at construction sites in urban areas within 50 feet of residential and/or business structures. This routine data gathering will provide base line data that will protect the Department from possible future litigation due to vibration induced damages.

17. Key Words

Earth borne vibrations, ground vibrations, peak particle velocity, seismographs, traffic vibrations

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INVESTIGATION OF EARTH BORNE VIBRATIONS DUE TO HIGHWAY TRAFFIC AND/OR CONSTRUCTION BLASTING

FINAL REPORT

By

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SPECIAL STUDIES RESEARCH GEOLOGIST

Research Report No. 178

Research Project No. 82-1S

Conducted by
LOUISIANA TRANSPORTATION RESEARCH CENTER
In Cooperation with
U. S. Department of Transportation
FEDERAL HIGHWAY ADMINISTRATION

JUNE 1986

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The author wishes to acknowledge the cooperation of the La. DOTD Weights and Standards Police Force in obtaining accurate weights for the vehicles used during the vibration measurements. The effort provided by vehicle drivers from the maintenance forces of Districts 02, 05 and 61 is also appreciated. The efforts put forth by District Maintenance Engineers, Mr. Robert Roth (02), Mr. R. K. McKneely (05), and Mr. Bill Landon (61), is greatly appreciated in supplying the loaded trucks and vehicle drivers. Thanks are in order to Mr. Walter Carpenter, Data Analysis Engineer-in-Training, for his efforts in preparing tables, bar charts, and appendix listings.

ABSTRACT

This study was undertaken to determine the magnitude of ground vibrations produced by traffic and/or construction blasting. Such information could provide a tool in defense of legal claims concerning physical damage to nearby properties. An engineering seismograph was used to collect vibration data at highway traffic model sites, at elevated structure sites, heavy construction traffic sites, and traffic complaint sites.

The most pronounced earth borne vibrations were found to be from heavy vehicles traveling on rough pavements at high speeds within ten feet of the vibration source. Vibration was lowest on smooth pavements regardless of the speed and distance from the vibration source. Only 1.6 percent of the traffic model vector sum means exceeded the 0.2 in./sec. limiting velocity recommended in AASHTO R8-81. None of the elevated structure sites or construction site haul traffic gave earth borne vibration levels above AASHTO recommended guidelines. At the complaint sites, only one close measurement distance (31 feet) gave levels above 0.2 in./sec.

It was recommended that the Department make routine investigation of vibration levels due to construction-oriented sources at construction sites in urban areas within 50 feet of residential and/or business structures. This routine data gathering will provide base line data that will protect the Department from possible future litigation due to vibration induced damages.

IMPLEMENTATION STATEMENT

his research was undertaken to provide a useful tool for the partment's Legal Section in earth borne vibration litigation. Many the earth borne vibrations measured in this research were above at is considered to be the threshold of human perception, 0.05 ches per second. When humans feel these vibrations, they usually sume these vibrations are doing physical damage to their homes and sinesses even though the earth borne vibrations are below the miting velocity of 0.2 inches per second recommended in AASHTO -81.

is recommended that the Department make routine investigations of bration levels due to construction-oriented sources at construction tes in urban areas within fifty feet of residential and/or business ructures. The findings of this research study will be reviewed by e Department's Soils and Geophysical Project Advisory Committee as the exact method of implementation either through the Department's gineering Directives and Standards Manual (EDSM) or a construction morandum. This routine data gathering should provide base line data at will protect the Department in future litigations due to earth rne vibration induced damages.

METRIC CONVERSION FACTORS*

To Convert from	To	Multiply by
	Length	
foot	meter (m)	0.3048
inch	millimeter (mm)	25.4
yard	meter (m)	0.9144
mile (statute)	kilometer (km)	1.609
	Area	
square foot	square meter (m^2)	0.0929
square inch	square centimeter (cm^2)	6.451
square yard	square meter (m^2)	0.8361
	Volume (Capacity)	
cubic foot	cubic meter (m^3)	0.02832
gallon (U.S. liquid)**	cubic meter (m^3)	0.003785
gallon (Can. liquid)**	cubic meter (m^3)	0.004546
ounce (U.S. liquid)	cubic centimeter (cm^3)	29.57
	Mass	
ounce-mass (avdp)	gram (g)	28.35
pound-mass (avdp)	kilogram (kg)	0.4536
ton (metric)	kilogram (kg)	1000
ton (short, 2000 lbs)	kilogram (kg)	907.2
	Mass per Volume	
pound-mass/cubic foot	kilogram/cubic meter (kg/m^3)	16.02
pound-mass/cubic yard	kilogram/cubic meter (kg/m^3)	0.5933
pound-mass/gallon (U.S.)**	kilogram/cubic meter (kg/m^3)	119.8
pound-mass/gallon (Can.)**	kilogram/cubic meter (kg/m^3)	99.78
	Temperature	
deg Celsius (C)	kelvin (K)	$t_K=(t_C+273.15)$
deg Fahrenheit (F)	kelvin (K)	$t_K=(t_F+459.67)/1.8$
deg Fahrenheit (F)	deg Celsius (C)	$t_C=(t_F-32)/1.8$

*The reference source for information on SI units and more exact conversion factors is "Metric Practice Guide" ASTM E 380.

**One U.S. gallon equals 0.8327 Canadian gallon.

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INTRODUCTION

Over the last several years, the Louisiana Department of Transportation and Development (La. DOTD) has become increasingly involved in litigations alleging damages to homes and businesses near heavily traveled roads and near highway construction sites. These damages allegedly are caused by ground vibrations created by traffic or other heavy construction practices. Demolition by blasting has also come to light as a source of vibrations in which litigations have been filed. Researchers with La. DOTD were aware of guidelines developed by other researchers in other states, as well as foreign countries, for limits on the allowable levels of vibrations to prevent damages to buildings, residences, or historical sites. Since there was a lack of vibration data for Louisiana sites, it was felt the research measurements proposed would provide a data base for defense of legal claims against the La. DOTD as well as contribute to the national data base.

In the past the Department has generally been able to substantiate that its construction practices were not to blame for alleged vibration damages to nearby homes, businesses, or other buildings. The Department has been using a limit of two inches per second peak particle velocity for preventing physical damages as propsed by early work by the United States Bureau of Mines. Several later authors presented evidence recommending much lower maximum limits. Work done by M. W. Jackson* suggests that the damage threshold should be placed at approximately 0.2 inches per second so that the fatigue effects from repeated cycles of application (as from traffic) and the effects of age and the elements on the building are also taken into account.

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*Jackson, M. W., "Thresholds of Damage due to Ground Motion," Proc, International Symposium on Wave Propagation, and Dynamic Properties of Earth Materials, New Mexico 961-9-1967.

In response the American Association of State Highway and Transportation Officials (AASHTO) adopted AASHTO Designation R8-81, Standard Recommended Practice for Evaluation of Transportation Related Earthborne Vibrations, providing guidance for the assessment of potential or alleged structural damage due to earthborne vibrations related to transportation facility construction, maintenance or operations. This is only a Recommended practice to provide guidance as to allowable limits and not a Standard practice which would be more legally binding. The recommended maximum vibration levels in R8-81 for preventing damage are as follows:

Type of Situation	Limiting Velocity (In./Sec.)
Historical sites or other critical locations	0.1
Residential buildings, plastered walls	0.2 to 0.3
Residential Buildings in good repair with gypsum board walls	0.4 to 0.5
Engineered structures, without plaster	1.0 to 1.5

With these much lower limiting values, based on replication and triggering effects, it was decided that the Department's 2"/sec. limiting criteria deserved further evaluation.

Again it must be stressed that the lower limits (0.2/sec. for residential buildings) proposed in AASHTO R8-81 are the basis under which this research was done and that these limits are set much lower than the U.S. Bureau of Mines limits because of the fatigue and triggering effects of transportation related vibration. Vibrations due to transportation activities are far more restricted in the dimensions of the area affected but may produce many mores cycles of application than blasting.

PURPOSE

The purpose of this study was to establish whether ground vibrations produced by traffic and/or construction blasting are of sufficient enough magnitude to cause physical damages to nearby homes, business, or other buildings. These vibrations would be measured in terms of particle velocity rather than particle displacement or acceleration. Peak particle velocity was chosen as the best means of measurement after the U.S. Bureau of Mines made a statistical analysis of many reports concerning vibrations to residential structures and came to the conclusion that "A given degree of damage to a structure is most closley related to the magnitude of the particle velocity of the wave motion passing through the earth at the structure location." This research study was undertaken to determine the magnitude of the vibration problem, if it does actually exist; and if a problem does in fact exist, to supply our Legal Section with data to protect La. DOTD from frivolous suits and to make just settlements in cases if the Department is found at fault.

SCOPE

In order to achieve the objectives set forth in the introduction, which included: (1) The establishment of a data base of vibration measurements taken in Louisiana, and (2) Providing the LADOTD Legal Section assistance in the defense of legal claims against the Department, this research project was set up to evaluate: (1) Factorial pavement traffic data (2) Elevated roadway data (3) Construction site data, and (4) Complaint site data. It was originally intended to include construction explosive blasting as a vibration source, but due to no blast data being available during the duration of this research project, the blasting evaluation was eliminated from the scope of the project.

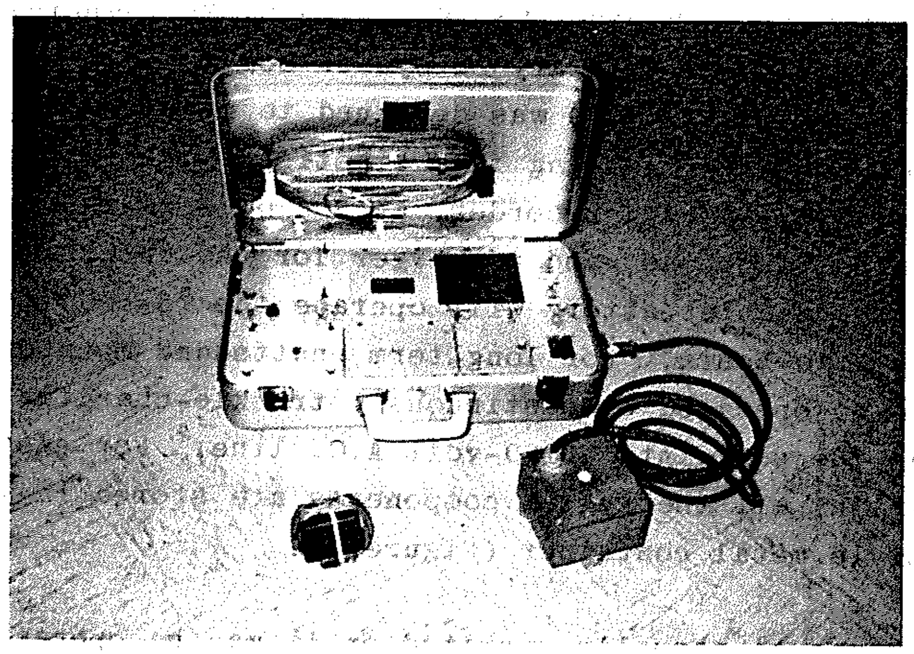
To provide a data base of vibration mesurements in Louisiana for legal assistance as well as contribute to the national data base, this research will measure vibration magnitudes produced in terms of peak particle velocity rather than particle displacement or acceleration. The device used to measure the vibrations will be an engineering seismograph model VS-1600 made by Sprengnether Instruments, Inc. which is designed to measure ground vibrations and air overpressure resulting from vibration-inducing phenomem. This research will concern itself with actual physical damage limits, as recommended in AASHT Designation R8-81, and not with any mental or emotional grievances arising from the vibration sources investigated.

METHOD OF PROCEDURE

Equipment Description

The equipment used to measure vibration for this project was an engineering seismograph Model VS-1600 made by Sprengnether Instruments, Inc., a subsidiary of Dyneer Corporation, St. Louis, Missouri. The Model VS-1600 was designed to measure ground vibrations and air overpressure resulting from blasting. It consists of a four-channel oscillograph recorder, an S-4500 triaxial geophone, a General Radio microphone, and a charger for the internal battery. The internal rechargeable battery will operate the VS-1600 for approximately 30 hours. For long-term unattended monitoring, the VS-1600 can be operated by continuously trickle-charging the batteries by plugging the unit into a 120-volt A.C. line. For easy transportation, all the system components are stored in the portable suitcase-style metal container (Figure 1).

The VS-1600 can be manually operated or it may be operated in the automatic mode. Under the manual peak operating mode, the seismic and air overpressure inputs are examined for the maximum values. These values are retained in the memory until they are manually reset to zero before vibrations are received from the next event. The manual peak operating mode was the position in which most of the vibration data for this research project was collected. In the automatic mode seismic and air overpressure inputs are examined and maximum values retained in memory. If any of the seismic channels exceed the trigger level selected by the operator, the oscillograph recorder is energized and a permanent record of the event is made. This mode was not used in recording vibration data except where a permanent record was to be made for the final report. In manual operation, the internal microprocessor scans the three geophone outputs to see if any one exceeds the trigger level, computes maximum particle velocities on all four input channels, routes the data through the delay line, keeps time on the



Model VS-1600 Engineering Seismograph
Made by Sprengnether Instruments

FIGURE 1

internal clock, and displays the information selected from the memory upon the liquid-crystal display. This was the mode in which most of the data contained in this report was obtained and recorded in the field book. If a permanent record of the vibration event was needed, the VS-1600 was put in the automatic mode. When any of the ground motion input components exceeded the preselected trigger level, the microprocessor initiated oscillographic recording of the signals from the delay line and continued to monitor the input components. At the end of the event, when the signals drop below the trigger threshold limit, the microprocessor will continue to record for five seconds, then initiate a seismometer calibration and annotation sequence. After recording the calibration pulses, the microprocessor will annotate the oscillograph record with the date, time, the sensitivity setting, the maximum inputs received on each channel, and an ID code for that particular unit. The recorder is turned off and the VS-1600 returns to the monitoring state. If another event exceeds the preselected trigger limit, the process starts all over again and another record is made. All the permanent oscillograph records are made on a direct-write photographic-type paper.

Date Acquisition Setup

The VS-1600 is transported to the work site as a complete unit contained in the suitcase-style enclosure. After arriving at the site, the VS-1600 is placed in a horizontal position and opened up. The seismometer pickup is removed from the case and the seismometer connecting cable is plugged into the right side of the case. If blasting measurements are to be taken, the microphone is removed from the lid, set up and plugged into the microphone connector on the case. The seismometer pickup is approximately 5x5x4 inches in size and should be leveled and firmly attached to the ground or surface of observation, particularly if either strong shaking is expected or the surface may allow the seismometer to slip readily, yielding incorrect readings. The manufacturer recommends burying the seismometer in order to reduce the horizontal slip and to maintain a more perfect contact with the ground or soil. This recommendation was followed for vibration measurements in soils near roads where the traffic vibrations were monitored. The seismometer was weighted down with a sandbag for any measurements taken inside a structure with a hard floor (as in the kitchen or bathroom of a home where complaints were received of vibration problems).

After the seismometer is firmly mounted, the power can be applied to the VS-1600 system by pulling the power switch over the locking cam and placing the switch in the ON position. The condition of the internal battery is displayed for a few seconds. if the battery voltage displayed is less than 11.5 volts, the batteries need to be recharged before measurements are taken. If the battery is charged, the internal clock is now set by selecting CLK MODE. The parameter to be set is then selected on the display select switch. This switch includes day, hour and minute settings. After setting the clock, the operator then selects the system operating mode. As approximately 95 percent of the readings taken on this project were taken in the PEAK MODE, this process is decribed. Once, the system sensitivity is selected so as to ensure that the anticipated seismic levels will not saturate the recording system (usually sensitivity setting was set on 1.0 in./in./sec., giving a maximum system signal level of 0.64 in./sec.), the MODE switch is placed in the PEAK position. The microprocessor unit initializes the system and initiates a one-second delay allowing the internal memory to fill. After the memory is filled, the system begins to monitor the four inputs (transverse, vertical, longitudinal waves, and air overpressure), then computes and stores the maximum values. There is a one-second delay between the receipt of a wave front by the seismometer geophone and the actual computation and display of the peak value. To read the stored memory parameters the operator places the DISPLAY SELECT switch to the parameter he wishes to look at. If the seismic channel parameter velocities (peak transverse V_T; peak vertical V_V; and peak longitudinal V_L) are selected, the display will read directly in inches/sec.

These values are recorded in the field book for each event monitored. The peak particle velocity V_P is manually computed later by taking the vector sum of the three individual component velocities.

$$V_P = \sqrt{V_T^2 + V_V^2 + V_L^2}$$

The peak particle velocity vector sum will be of a greater magnitude than any of the individual component velocities since the individual component wave velocities arrive at the seismometer pickup at slightly different times and would not arrive simultaneously. On the fourth channel display (air overpressure) the maximum is displayed in volts. It is necessary to use the instruction manual conversions and microphone calibration data sheet to convert the voltage into air overpressure. To examine the time at which the last maximum occurred, the MODE switch is left in the PEAK position and the DISPLAY SELECT switch is rotated to the time (day, hour, minute) parameter desired, and the display will show the time at which the last maximum occurred. The stored maximum values and peak times may be cleared by moving the PK RESET switch to the MAN position, and the VS-1600 is then ready to monitor a new set of vibrations.

Field Procedure

After becoming thoroughly familiar with the operation of the VS-1600 engineering seismometer, the researchers designed a model in order to observe the variables which might affect ground vibration. In this model the variables could be controlled to some degree to yield different traffic vibration situations which would be representative of Louisiana conditions. The variables investigated included:

1. Geologic Soil Aréa
   A. The loose alluvial, natural levee or marshy soils usual encountered around New Orleans and/or the South Louisia coast.

   B. The hard, firmer coastal plain soils found in North Central Louisiana.

2. Pavement Type
   A. Flexible - asphalt pavement
   B. Rigid - portland concrete pavement

3. Pavement Distress Factor
   A. Smooth - normal smooth pavement surfacing
   B. Rough - bumpy or pothole-type pavement surfacing

4. Speeds
   A. Low, 20 m.p.h.
   B. Medium, 40 m.p.h.
   C. High, 55 m.p.h.

5. Vehicle Weight Range
   A. Low, cars up to around 5,000 pounds
   B. Medium, light trucks up to 30,000 pounds
   C. High, heavy trucks up to 90,000 pounds

6. Distance from Vibration Source to Seismometer Pickup
   A. Ten feet
   B. Twenty feet
   C. Thirty feet
   D. Forty feet

7. Vehicle Repetitions for Each of the Above Variables
   A. First run
   B. Second run
   C. Third run

This factorial design is depicted in Table 1 and has a total of 864 separate test runs for traffic vibrations. Ninety of these 864 runs were deleted due to equipment breakdowns, time restraints and/or receiving very low levels of measured vibrations. Those 90 readings deleted included:

1. 27 runs - Car at 20, 30 and 40 feet on rough flexible pavement on firmer soils in North Central Louisiana.

2. 18 runs - Car at 30 and 40 feet on smooth flexible pavement on loose soils in South Louisiana.

3. 18 runs - Medium-weight dump truck at 30 and 40 feet on smooth flexible pavement on loose soils in South Louisiana.

4. 27 runs - Heavy-weight lowboy truck at 20, 30 and 40 feet on smooth flexible pavement on loose soils in South Louisiana.

The soil conditions were varied by selecting two of the state's different geological soils areas (Figure 2). The first soil area was in the loose alluvial, natural levee and marshy soils found in South Louisiana. There were actually two areas in South Louisiana but both areas are natural levee alluvial soils of the Mississippi River. This soil is a natural levee deposit of gray and brown silt, silty clay, and some very fine sand. In geologic time this soil is a member of the Holocene Epoch, Quaternary Period, and Cenozoic Era. The rigid concrete pavement (both rough and smooth; site 1c) sections mesured were on four-lane La. State Route 23 about five miles below the town of Belle Chase in Plaquemines Parish approximately twenty miles south of New Orleans. The northbound rough concrete section (Figure 3) was at a 2-1/2 to 2-3/4-inch bump where the concrete slab section adjoins an asphalt section and the road developed a fairly large bump. The smooth concrete section (Figure 4) was in the southbound lanes of La. 23. The flexible asphalt pavement (rough and smooth; site 1a) measured was on two-lane La. State Route 308 near the town of

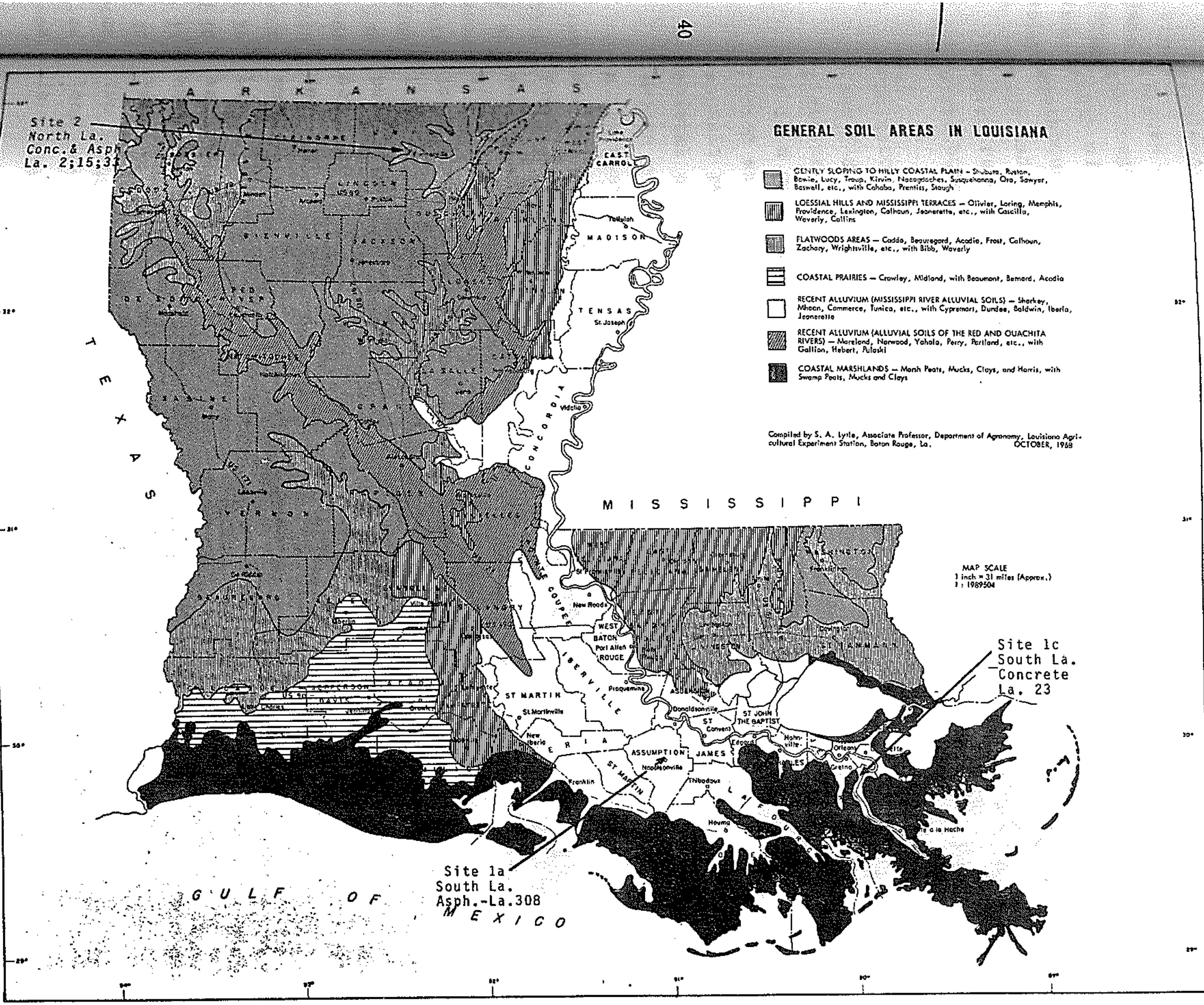
TABLE 1

FACTORIAL DESIGN OF TRAFFIC MODEL

CLASS	LEVELS	VALUES			
Soil Location	2	North	South		
Pavement Type	2	Asphalt	Concrete		
Pavement Distress	2	Rough	Smooth		
Speed	3	20	40	55	
Weight Class	3	Low	Medium	High	
Distance	4	10	20	30	4

Number of Replications - 3

Total Tests = 2 x 2 x 2 x 3 x 3 x 4 x 3 = 864

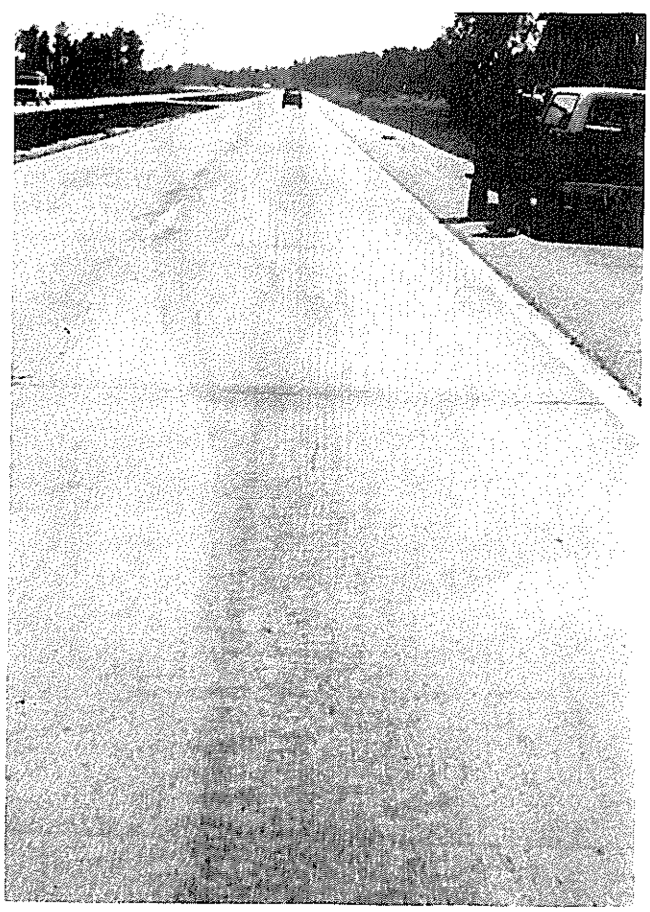


General Geologic Soil Areas in Louisiana

FIGURE 2

Rough Concrete Test Section on La. 23 in South Louisiana. 4200-Pound Sedan Making Test Run.

FIGURE 3

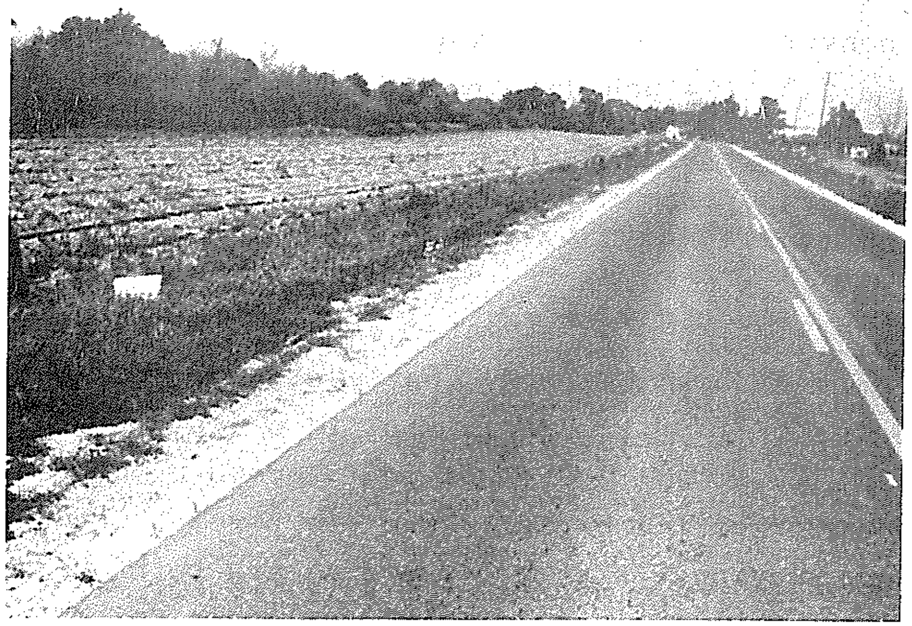


Smooth Concrete Test Section on La. 23 in South Louisiana

FIGURE 4

Napoleonville in Assumption Parish. The smooth asphalt section (Figure 5) was approximately two miles north of Napoleonville, while the rough asphalt section (Figure 6) was approximately four miles south of Napoleonville. The rough asphalt section on La. 308 southbound was a 2-2 1/2-inch deep pothole approximately five feet wide and fifteen feet long. Both asphalt sections were on La. 308 which runs along the natural levee of Bayou Lafourche, which is an old distributary of the Mississippi River.

The second soil area to be investigated was in North Central Louisiana (see Figure 2) and was in the firm, gently sloping to hilly coastal plain area. It is made up of brown lignitic clays, silts, and sands. It is a member of the Cockfield formation, Eocene Epoch, Tertiary Period and Cenozoic Era. The rigid concrete pavement and flexible asphalt pavement sections (site 2, Figure 2) are both located in this coastal plain area near the town of Farmerville in Union Parish. The smooth concrete pavement section (Figure 7) was located about five miles west of Farmerville on a two-lane section of westbound La. 2, while the rough concrete section (Figure 8) was located approximately fourteen miles west of Farmerville on westbound La. 2. The rough concrete section was actually a thin asphalt overlay over an old broken concrete slab which had been ground down at a faulted slab joint. The rough area was about 3/4-1 inch in height at the joint and 11 feet long and the width of the lane or 12 feet wide. No rough, pure concrete section in this soil area could be found which had not been patched or overlaid, so the thin asphalt concrete overlay described above was chosen as the rough rigid pavement test spot. The smooth asphalt section (Figure 9) was located on two-lane southbound La. 15 approximately seven miles north of Farmerville. The rough asphalt section (Figure 10) was located on two-lane northbound La. 33 near the junction of La. 348 about ten miles northeast of Farmerville. This rough spot consisted of two potholes approximately two inches deep. The first pothole was four feet wide by eleven feet long and was twelve feet away from the second pothole, which was three feet wide by five feet long.



Smooth Asphalt Test Section on
La. 308 in South Louisiana

FIGURE 5

Rough Asphalt Test Section on
La. 308 in South Louisiana

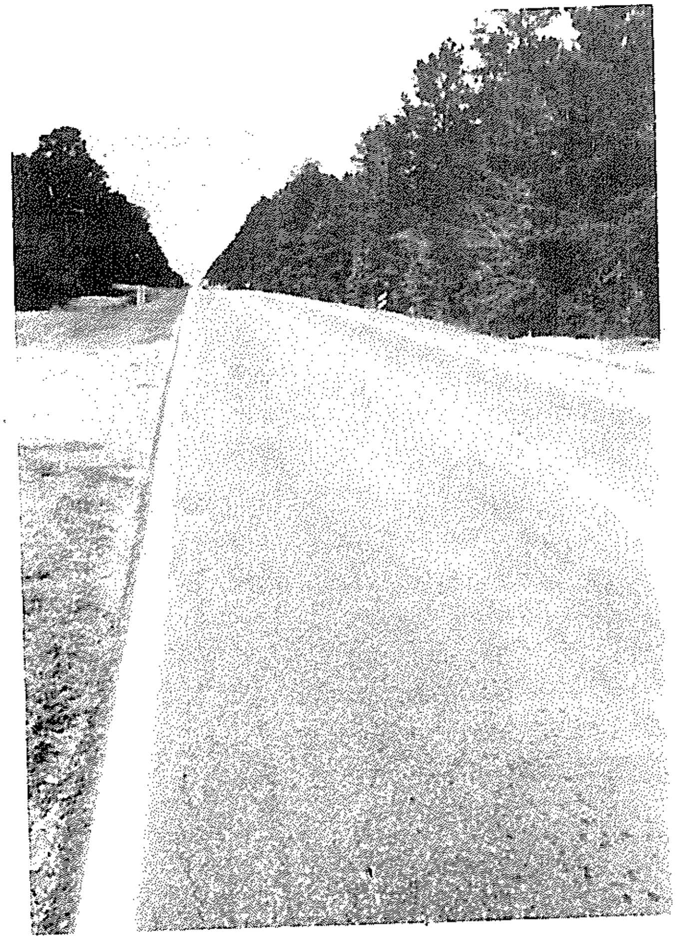
FIGURE 6

Smooth Concrete Test Section on La. 2 in North Louisiana. 72,900-Pound Lowboy Making Test Run.

FIGURE 7

Rough Concrete Test Section on La. 2 in North Louisiana. Actually a Thin Asphalt Overlay Covering an Old Concrete Slab.

FIGURE 8



Smooth Asphalt Test Section on La. 15 in North Louisiana

FIGURE 9

Rough Asphalt Test Section on La. 33 in North Louisiana

FIGURE 10

After the soil areas and road sites were selected, the low, medium and high-weight vehicles were weighed by DOTD Weights and Standards officers (Figure 11). These weights were recorded for the various vehicles used during the vibration measurements. Each of the test range vehicles would then make three repetitive test runs for each speed (20, 40 and 55 m.p.h.) at the four pickup distances (10, 20, 30 and 40 feet perpendicular to the roadway) and the vibration levels were recorded. Figure 12 shows the 23,000-pound dump truck making a test run on the rough asphalt of La. 33 in North Louisiana. Figure 3 shows the 4200-pound car making a test run on the rough concrete section of La. 23 in South Louisiana. Figure 7 shows the 72,900-pound lowboy heavy truck making a test run on the smooth concrete section of La. 2 in North Louisiana. Table 2 presents vehicle and weight data for the respective test sites.

The traffic vibration model data was recorded in the field book for the varying conditions described previously, and the vector sums of the vibrations received were calculated manually at a later date. The vector sums by groupings for the individual traffic model test runs can be found in the Appendix.

In addition to the traffic vibration model measurements, three elevated roadway structures were measured for vibrations produced by normal traffic vehicles traveling at high rates of speed. At these elevated sites the seismometer pickup was buried at different distances from one of the piers or columns that support the structure and vibrations were monitored in several-minute time intervals. The peak vibrations received during each time interval were recorded, then the seismometer was reset and another time interval monitored. Vibrations monitored were at the prevailing traffic conditions (speed, weight, type vehicle, etc.) for each site. The first elevated site monitored was in Baton Rouge, Louisiana, which is in a loessial hill and Mississippi terrace geologic soil area. The site was located at Interstate I-110 and U.S. 190 in North Baton Rouge (Figure 13). Vibrations were measured for several hours over three separate days.

Recording Truck Weights by DOTD Weights and Standards Police Officers

FIGURE 11

23,300-Pound Dump Truck Making a Test Run on the Rough Asphalt Section on La. 33 in North Louisiana

FIGURE 12

TABLE 2

TRAFFIC MODEL TEST DATA

South Louisiana Test Sites

Vehicle Type	Gross Weight (Pounds)	Pavement Type	Distress	Highway No.
1981 Plymouth Sedan	4,200	concrete slab	smooth & rough	La. 23
1982 Ford Dump Truck	23,000	concrete slab	smooth & rough	La. 23
1982 International Lowboy	74,600	concrete slab	smooth & rough	La. 23
1981 Plymouth Sedan	4,000	asphalt	smooth & rough	La. 308
1979 Ford Dump Truck	27,200	asphalt	smooth & rough	La. 308
1979 International Lowboy	91,100	asphalt	smooth & rough	La. 308

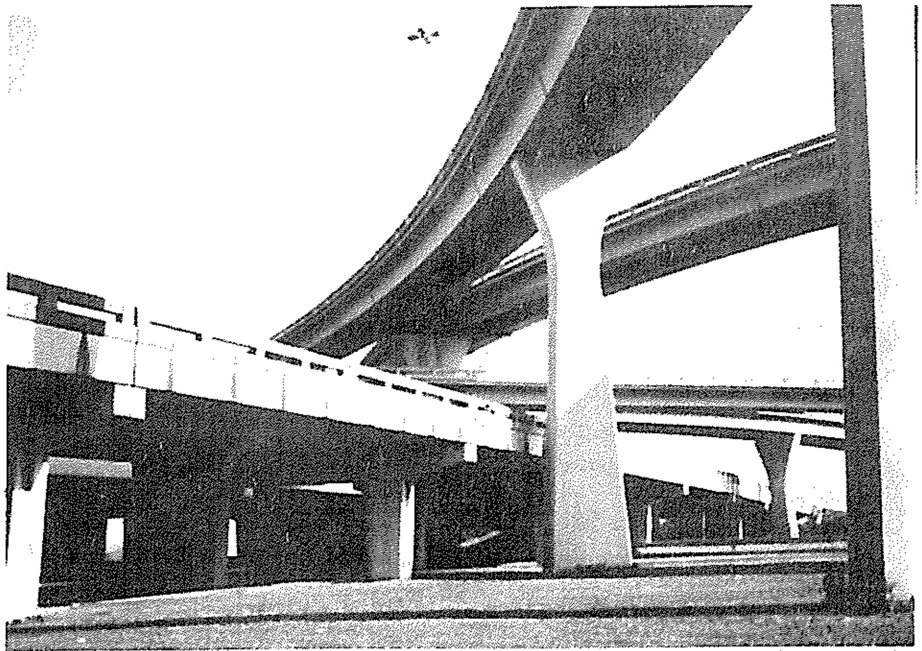
North Louisiana Test Sites

Vehicle Type	Gross Weight (Pounds)	Pavement Type	Distress	Highway No.
1978 Plymouth Sedan	3,900	concrete slab	smooth & rough	La. 2
1980 GMC Dump Truck	23,300	concrete slab	smooth & rough	La. 2
1980 International Lowboy	72,900	concrete slab	smooth & rough	La. 2
1978 Plymouth Sedan	3,900	asphalt	smooth	La. 15
1980 GMC Dump Truck	23,300	asphalt	smooth	La. 15
1980 International Lowboy	72,900	asphalt	smooth	La. 15
1978 Plymouth Sedan	3,900	asphalt	rough	La. 33
1980 GMC Dump Truck	23,300	asphalt	rough	La. 33
1980 International Lowboy	72,900	asphalt	rough	La. 33

The second elevated site was in New Orleans East, which would be in the coastal marshland soil area on the southern shore of Lake Pontchartrain. This site was located at Interstate I-10 and La. 47, Paris Road (Figure 14). Tests were conducted on this site over a two day period. The third elevated structure site was located near Ruston, which is in the gently sloping to hilly coastal plain soil of North Central Louisiana. This site was on Interstate I-20 and several overpasses (La. 33, La. 151 and La. 544) in the Ruston area. Readings were also taken over a two-day period.

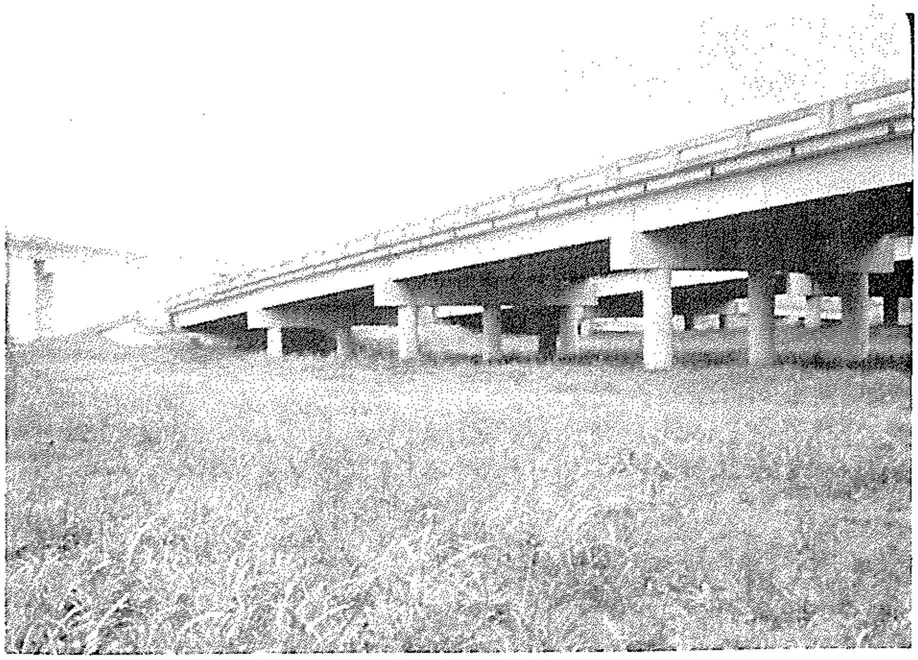
The highway construction sites were tested for vibrations produced by heavy construction traffic under the prevailing conditions at the sites. The first construction site was a heavy hauling site for Interstate I-49 about 20 miles south of Alexandria. This construction site is in the recent alluvial soils of the Red River near central Louisiana. Most of the vibrations at this site were produced by large dump trucks pulling six-axle hauling trailers (Figure 15). Measurements were taken at 20- and 40-foot distances of empty and fully loaded dumps and haul trailers traveling around 20-25 m.p.h. One hundred ninety-three truck passes were measured over a two-day period. The second construction site was a combination construction and/or complaint spot in New Orleans. This construction was associated with building the Greater New Orleans Bridge No. 2 in the Mississippi River alluvial soil area. Complaints were received of vibrations from construction activities, particularly from loaded and unloaded concrete haul trucks traveling through residential areas in order to reach the bridge site. Figures 16 and 17 show the concrete trucks approaching the site and the seismometer in the front yard of house adjacent to the bridge construction site. Vibration measurements were taken at thirty feet for forty-six passes of empty or loaded concrete trucks traveling 20-30 m.p.h. through the residential area in order to reach a massive concrete pier pour.

Letters were written to the different La. DOTD districts asking the administrators to report any sites where it was felt or reported that



Elevated Structure Test Site in Baton Rouge,
Interstate I-110 and U.S. 190, Airline Highway

FIGURE 13



Elevated Test Site in New Orleans,
Interstate I-10 and La. 47, Paris Road

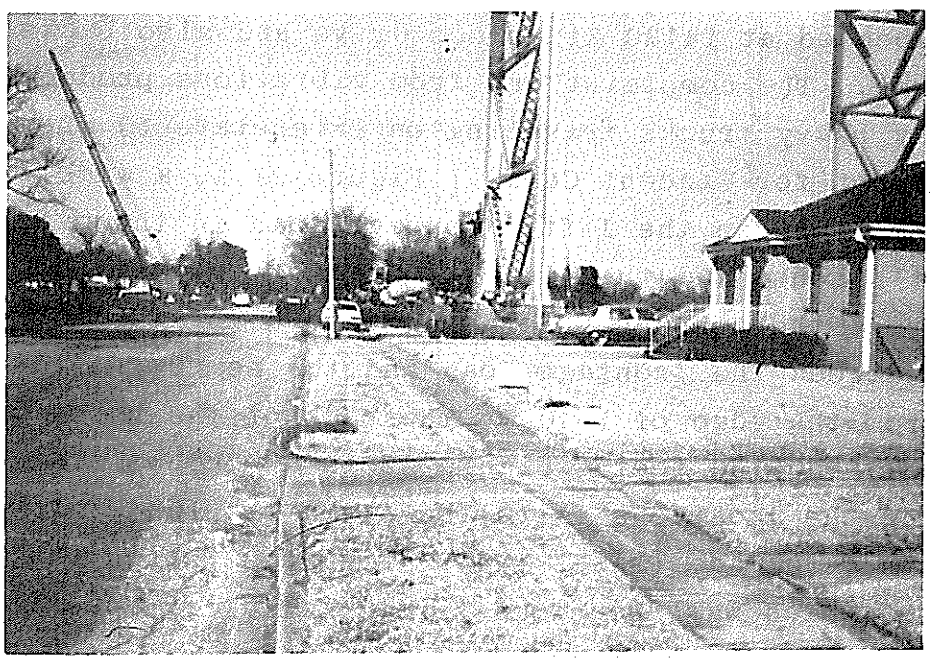
FIGURE 14

Large Four-axle Loaded Dump Truck Pulling a Six-axle Haul Trailer at the I-49 Construction Site

FIGURE 15

Concrete Trucks Traveling in a Residential Area Going to G.N.O. #2 Construction Site

FIGURE 16



Seismometer in Front Yard of House Adjacent To G.N.O. #2 Construction Site

FIGURE 17

traffic vibrations may be of concern. These field sites would be sites in which the researchers, project engineers, maintenance engineers, construction engineers, or District Administrators felt there was a need to measure traffic-induced vibrations or from which complaints had been received alleging damages. There were two complaint sites which were measured during the duration of this research project and both were in the New Orleans area. The first complaint site was a home on Socrates Street (frontage road) which parallels Interstate 10 westbound and the bridge structure over the Seventeenth Street Canal, which happens to be the parish line betwee Jefferson and Orleans Parishes. Figure 18 is a rough sketch of the site. Figures 19 and 20 are photographs showing two views of this same site. Vibration measurements were taken for several hours over two days. The results of the vibration measurements can be found in the Appendix.

The other complaint site was in New Orleans East very near the Paris Road and Interstate I-10 elevated interchange mentioned before. The house was located at 14180 Kingswood Drive and also backs up to Vincent Canal. The complaint was from vibrations produced by traffi particularly heavy trucks traveling on Interstate 10 where it crosse the box culvert for Vincent Canal. Figure 21 is a wide-angle view o the site with I-10 on the left, frontage road in the middle, and the complainant's house and the Vincent Canal box culvert on the far right. Notice the noise barrier wall erected by the subdivision developer between the frontage road and the nearby residences. The distance from the edge of I-10 to the back of the house is approximately 150-160 feet. Figure 22 is a rough sketch of the floo plan showing the locations where the April 27, 1984, vibration measurements were made (sites 1-4). Figure 23 shows the rear bathro of the home, which was the closest room to I-10. Note the sandbag holding the seismometer pickup in firm contact with the bathroom floor. Figure 24 shows the location of the buried pickup 2-1/2 feet from the wall of the master bedroom at the rear of the home. Vibration measurements were taken for several hours at this site on

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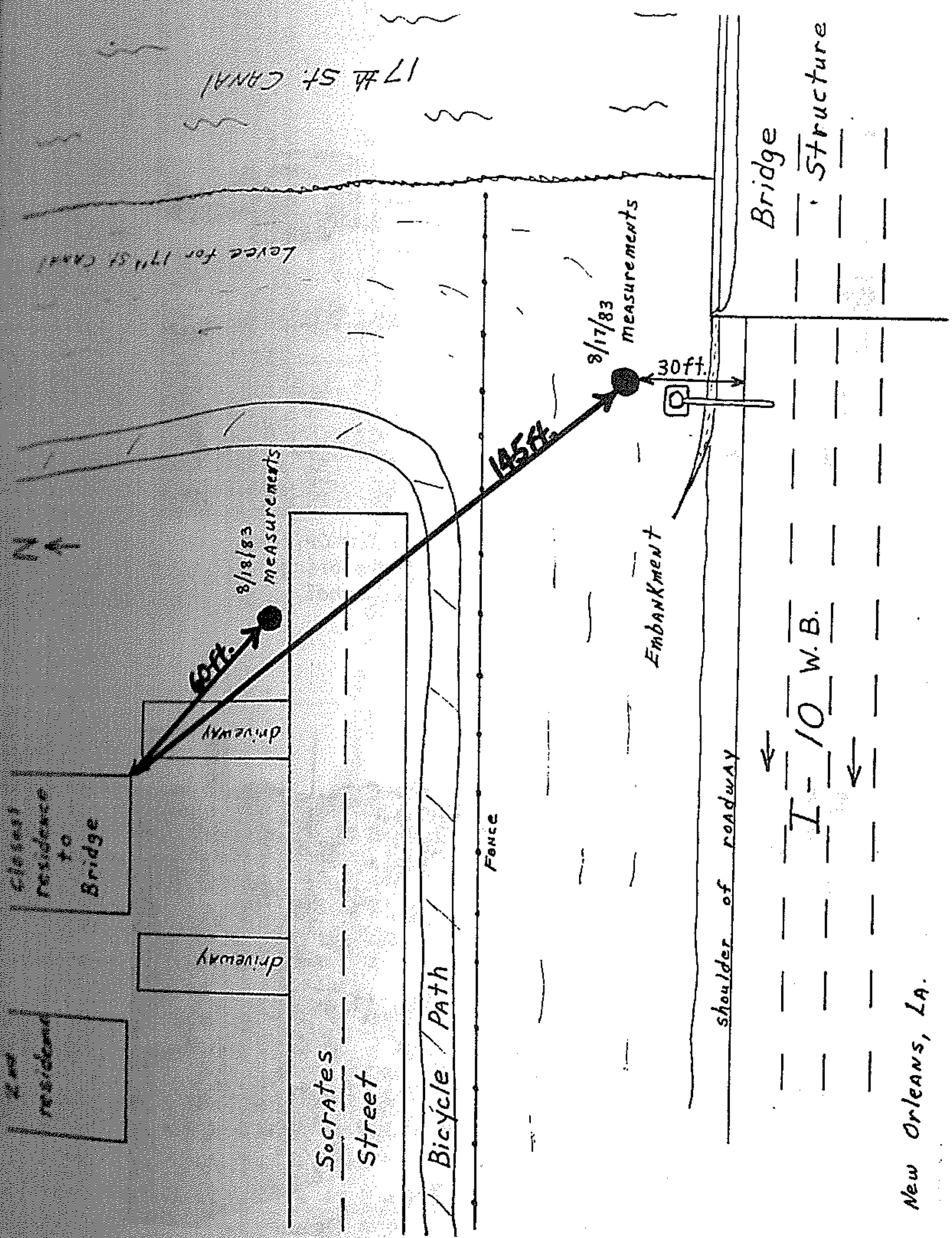
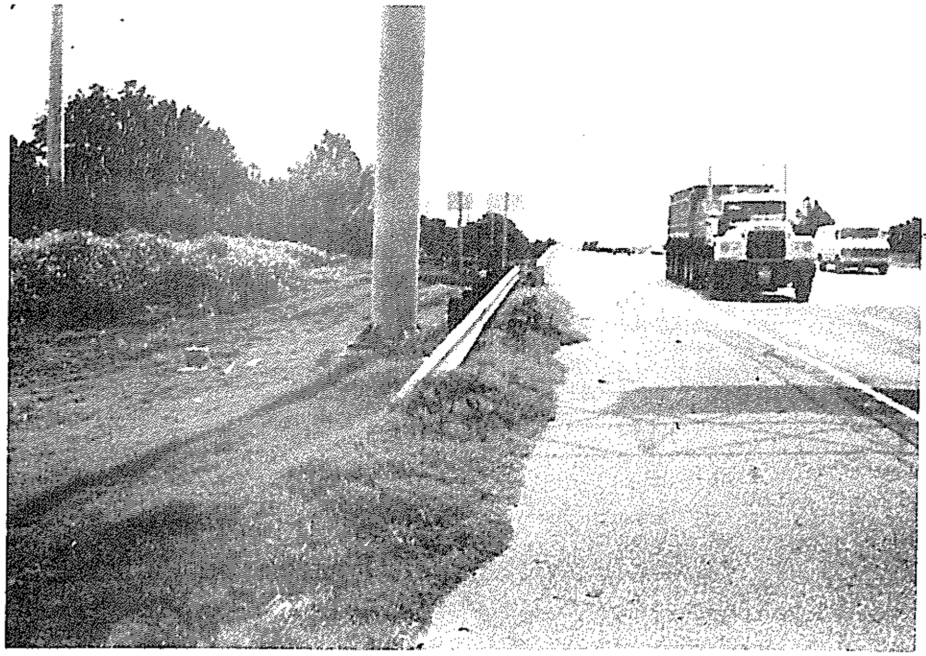


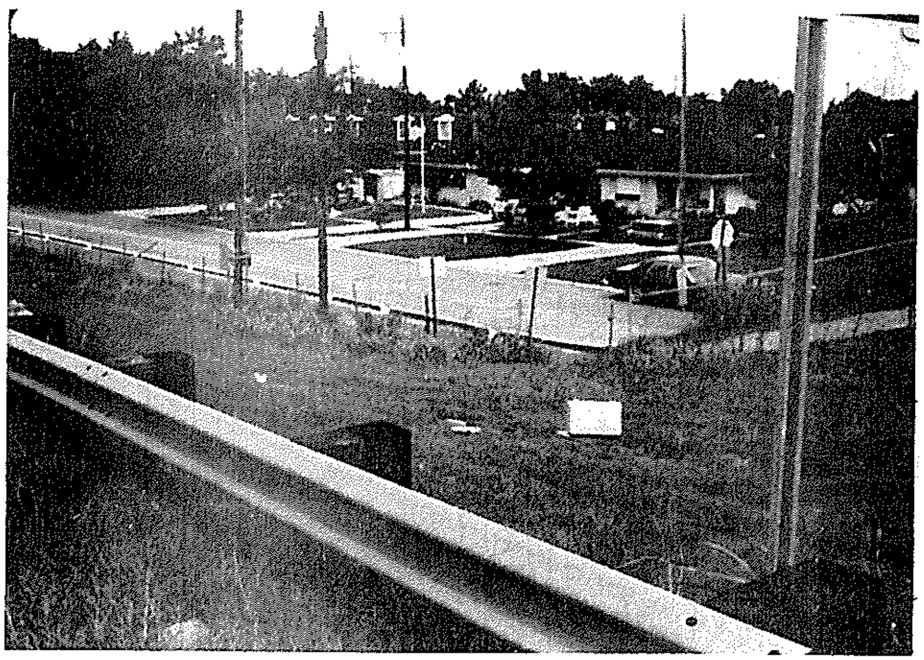
Rough Sketch of the Complaint Site in New Orleans, Interstate 10 and Seventeenth Street Canal

FIGURE 18



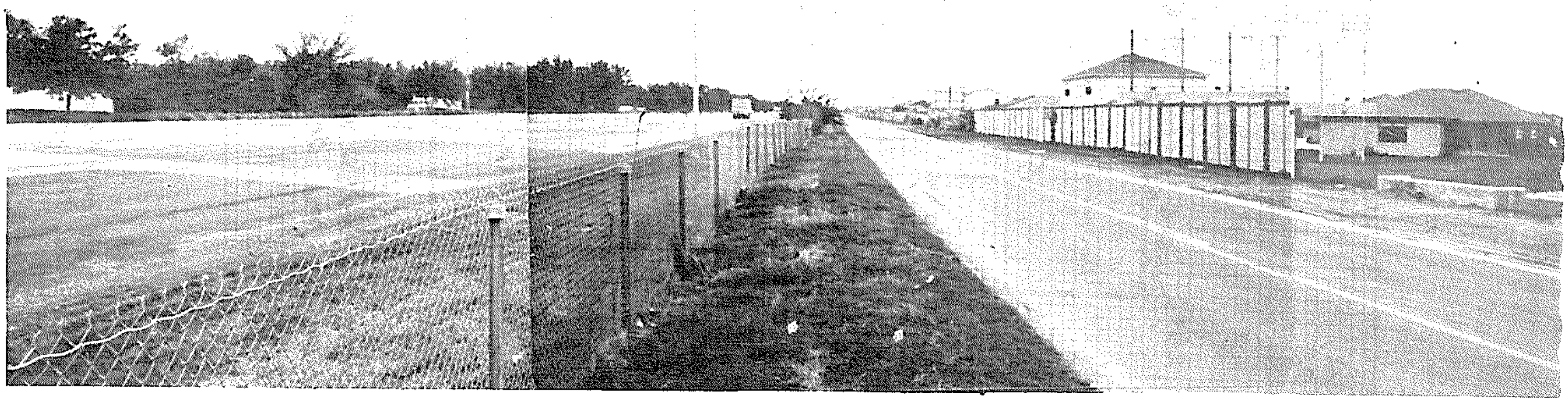
I-10 and 17th Street Canal in New Orleans Showing Traffic Coming Off the Bridge Structure for 17th Street Canal

FIGURE 19



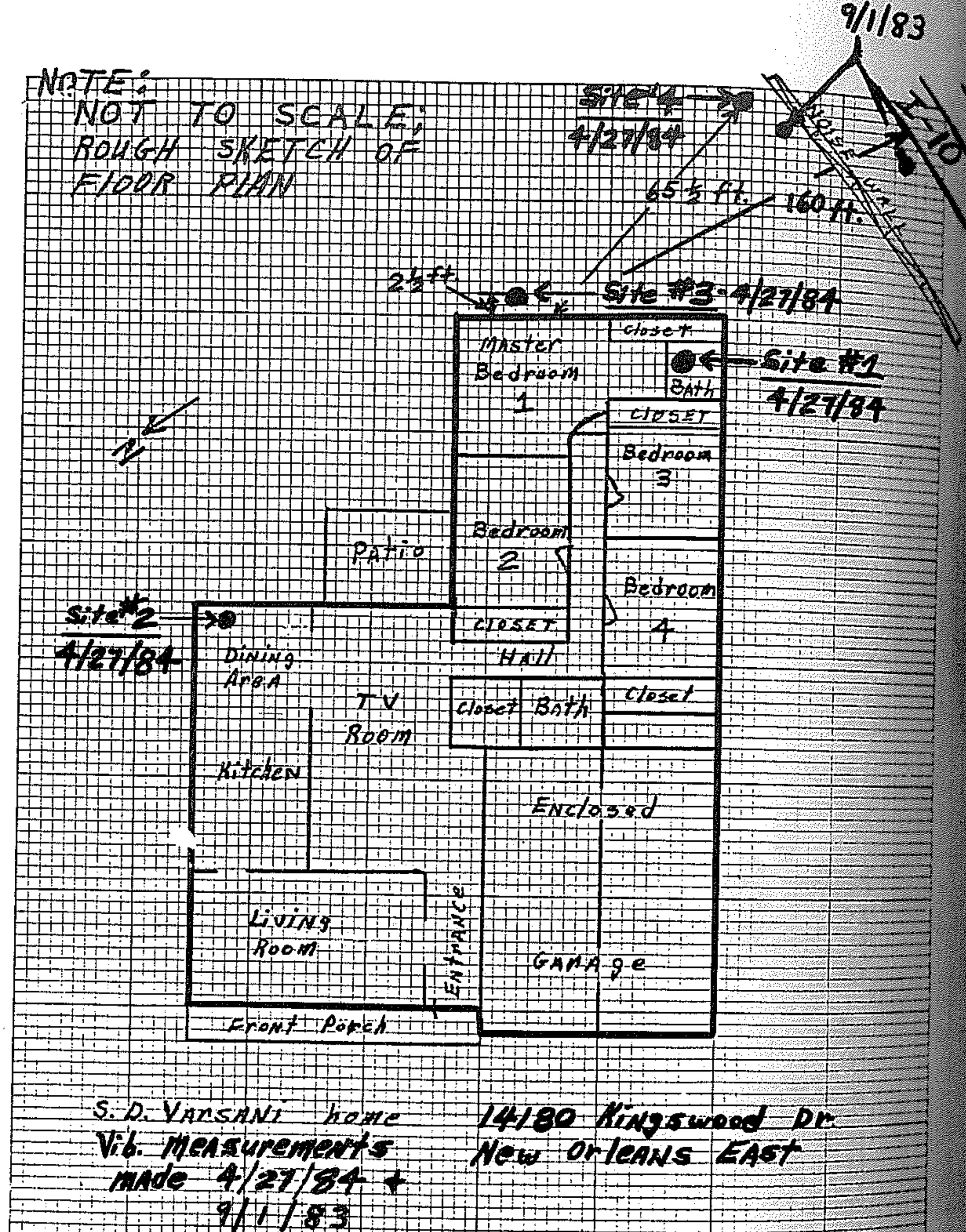
I-10 and 17th Street Canal in New Orleans Showing Complainant Residence. Note Seismometer in Foreground of Picture.

FIGURE 20



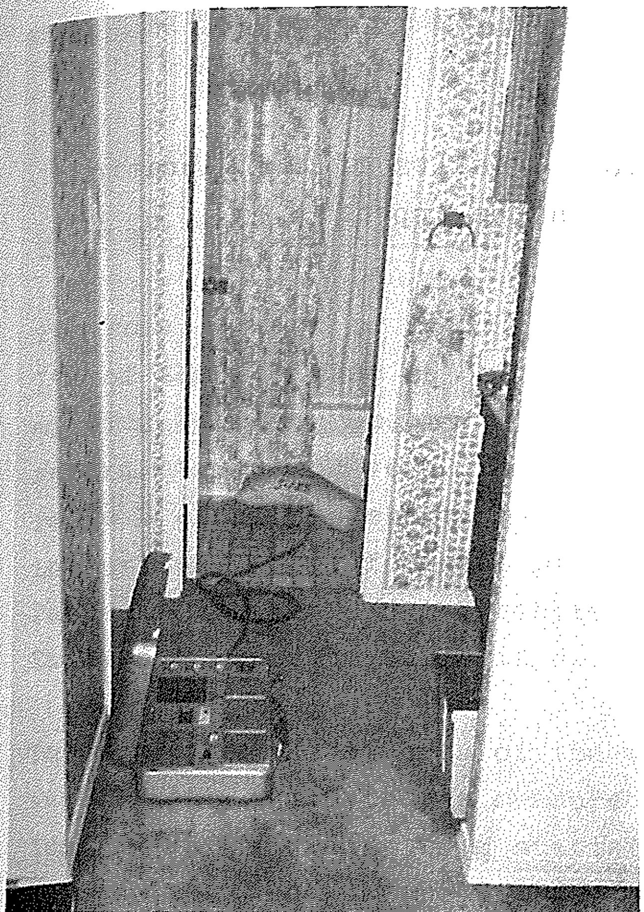
Wide-angle View of I-10 and Vincent Canal
Complaint Site in New Orleans East

FIGURE 21



Rough Sketch of the Floor Plan of Complainant's Home
At 14180 Kingswood Drive, I-10 and Vincent Canal,

FIGURE 22



Seismometer with Sandbag in Bathroom of Complainant's Home in New Orleans East at I-10 and Vincent Canal

FIGURE 23

Seismometer Pickup Buried $2\frac{1}{2}$ Feet From Rear Wall of Master Bedroom At Complainant's Home, I-10 and Vincent Canal, in New Orleans East

FIGURE 24

two different days several months apart. Results of the vibration measurements at this site can be found in the Appendix.

DISCUSSION OF RESULTS

Pavement Data Evaluation

The total number of traffic model ground vibration measurements was 774 of the designed 864 measurements identified in Table 1. The missing 90 measurements were due to equipment malfunction, time restraints and/or very low levels of vibrations measured. The data in Table 3 and 4 represent the raw means of the individual vector sums in inches per second for each of the various factors defined in Table 1. Table 3 represents data gathered in South Louisiana locations while Table 4 represents those in North Louisiana.

To determine the effects of the various factors, Analysis of Variance was used to evaluate the measured data statistically. Basically, the Analysis of Variance is a statistical tool to determine whether or not certain factors (pavement type, pavement distress, etc.) introduced into the design of the experiment actually produce significantly different results in the variable tested (ground vibration vector sum). For example, does pavement type or pavement distress affect the measured variable: In other words, which of the factors introduced contributes most to the overall variation in the measured characteristic?

Table 5 shows Analysis of Variance results for the ground vibration data. The source of vibration are broken down into the main factors and the interaction of these main factors with each other or what is termed as the first order interaction of the main factors. The analysis indicates that by far the largest source of variation in results is between locations, pavement distress and vehicle weights. For the first order interaction terms, the vehicle weights and pavement distress are highly significant. In statistical terms, significance is defined as being real and effective. Thus, all the main factors and the interaction terms are significant, meaning that their effect is real and effective and could not have occurred by

TABLE 3

VIBRATION DATA TABLE

VECTOR SUM MEANS FOR SOUTH LOUISIANA

SITE LOCATION SOUTH

			WEIGHT CLASS											
			LOW				MEDIUM				HIGH			
			DISTANCE				DISTANCE				DISTANCE			
			10 VS MEAN	20 VS MEAN	30 VS MEAN	40 VS MEAN	10 VS MEAN	20 VS MEAN	30 VS MEAN	40 VS MEAN	10 VS MEAN	20 VS MEAN	30 VS MEAN	40 VS MEAN
TYPE OF PAVEMENT	TYPE OF DISTRESS	SPEED												
ASPHALT	ROUGH	20	0.032	0.024	0.026	0.024	0.063	0.040	0.036	0.024	0.071	0.056	0.049	0.043
		40	0.047	0.032	0.026	0.024	0.115	0.053	0.037	0.041	0.147	0.064	0.059	0.051
		55	0.044	0.035	0.024	0.024	0.149	0.065	0.046	0.044	0.163	0.079	0.066	0.059
	SMOOTH	20	0.017	0.015			0.019	0.017			0.037			
		40	0.017	0.018			0.028	0.017			0.049			
		55	0.017	0.016			0.036	0.019			0.054			
CONCRETE	ROUGH	20	0.030	0.032	0.028	0.021	0.079	0.050	0.052	0.035	0.136	0.146	0.116	0.082
		40	0.046	0.046	0.035	0.024	0.120	0.090	0.079	0.059	0.178	0.244	0.164	0.123
		55	0.068	0.059	0.051	0.035	0.117	0.100	0.077	0.052	0.245	0.292	0.237	0.156
	SMOOTH	20	0.024	0.019	0.017	0.017	0.030	0.024	0.017	0.019	0.052	0.054	0.044	0.038
		40	0.026	0.017	0.016	0.017	0.030	0.028	0.022	0.026	0.056	0.057	0.048	0.050
		55	0.023	0.022	0.019	0.017	0.037	0.030	0.026	0.032	0.055	0.057	0.049	0.056

TABLE 4

VIBRATION DATA TABLE

VECTOR SUM MEANS FOR NORTH LOUISIANA

SITE LOCATION NORTH

			WEIGHT CLASS											
			LOW				MEDIUM				HIGH			
			DISTANCE				DISTANCE				DISTANCE			
			10 VS MEAN	20 VS MEAN	30 VS MEAN	40 VS MEAN	10 VS MEAN	20 VS MEAN	30 VS MEAN	40 VS MEAN	10 VS MEAN	20 VS MEAN	30 VS MEAN	40 VS MEAN
TYPE OF PAVEMENT	TYPE OF DISTRESS	SPEED												
ASPHALT	ROUGH	20	0.017				0.030	0.024	0.024	0.024	0.035	0.032	0.026	0.024
		40	0.017				0.043	0.041	0.037	0.027	0.045	0.043	0.036	0.024
		55	0.017				0.083	0.050	0.036	0.027	0.056	0.049	0.038	0.028
	SMOOTH	20	0.017	0.011	0.024	0.013	0.024	0.014	0.024	0.022	0.024	0.014	0.024	0.022
		40	0.021	0.011	0.024	0.013	0.024	0.014	0.024	0.019	0.024	0.014	0.024	0.022
		55	0.014	0.011	0.023	0.011	0.024	0.014	0.024	0.017	0.024	0.017	0.023	0.024
CONCRETE	ROUGH	20	0.028	0.014	0.019	0.024	0.037	0.024	0.015	0.024	0.068	0.030	0.024	0.030
		40	0.030	0.022	0.014	0.024	0.089	0.035	0.028	0.030	0.095	0.037	0.030	0.027
		55	0.032	0.022	0.014	0.024	0.076	0.035	0.032	0.033	0.110	0.037	0.026	0.033
	SMOOTH	20	0.024	0.022	0.017	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
		40	0.024	0.023	0.017	0.024	0.035	0.024	0.024	0.024	0.030	0.024	0.024	0.024
		55	0.024	0.022	0.017	0.024	0.035	0.024	0.024	0.024	0.032	0.024	0.024	0.024

TABLE 5

ANALYSIS OF VARIANCE FOR TRAFFIC MODEL GROUND VIBRATION DATA

DEPENDENT VARIABLE: VS

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	34	0.83399413	0.02452924	42.14	0.0001	0.659727	57.5924
ERROR	739	0.43015676	0.00058208		ROOT MSE		VS MEAN
CORRECTED TOTAL	773	1.26415088			0.02412632		0.04189147

SOURCE	DF	TYPE I SS	F VALUE *	PR > F	DF	TYPE III SS	F VALUE	PR > F
SOIL	1	0.16504205	283.54	0.0001	1	0.15420256	264.92	0.0001
PVTTYPE	1	0.02284020	39.24	0.0001	1	0.03571086	61.35	0.0001
PVTDIST	1	0.16354941	280.97	0.0001	1	0.11274436	193.69	0.0001
SPEED	2	0.03472140	29.83	0.0001	2	0.02943286	25.28	0.0001
WEIGHTS	2	0.18006333	154.67	0.0001	2	0.15959332	137.09	0.0001
DISTANCE	3	0.05598797	32.06	0.0001	3	0.04730422	27.09	0.0001
PVTDIST*PVTTYPE	1	0.02345158	40.29	0.0001	1	0.02973941	51.09	0.0001
WEIGHTS*PVTTYPE	2	0.02392281	20.55	0.0001	2	0.02881929	24.76	0.0001
WEIGHTS*DISTANCE	6	0.01476537	4.23	0.0003	6	0.01370639	3.92	0.0007
WEIGHTS*SPEED	4	0.01027443	4.41	0.0016	4	0.00934813	4.01	0.0031
DISTANCE*PVTDIST	3	0.04381266	25.09	0.0001	3	0.04687729	26.84	0.0001
WEIGHTS*PVTDIST	2	0.07225405	62.07	0.0001	2	0.07225405	62.07	0.0001
SPEED*PVTDIST*PVTTYP	6	0.02330885	6.67	0.0001	6	0.02330885	6.67	0.0001

*All factors are significant at 0.05.

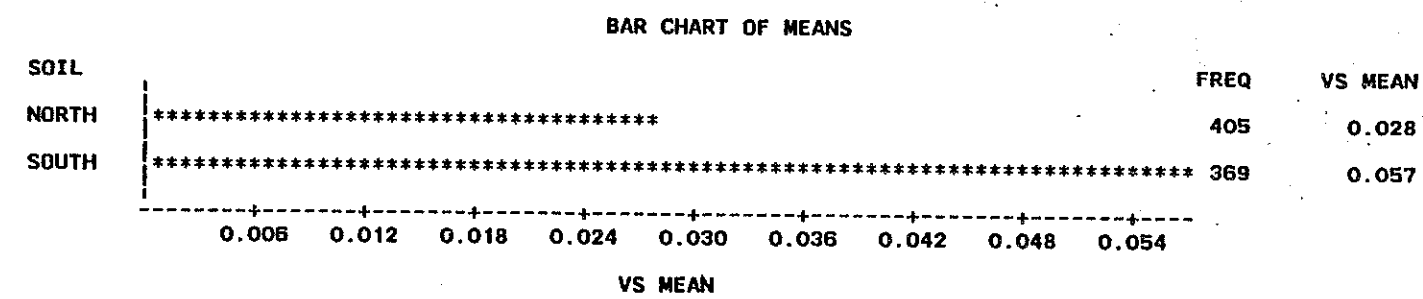
chance alone. Of the total variation, 75% of the variation is accounted for by the six main factors.

Bar charts 1 through 8 are charts of the vector sum means for all vibration measurements according to the main factors and the first order interactions. These charts were developed from the data identified in Tables 3 and 4. These charts and the data in Tables 3 and 4 warrant the following comments:

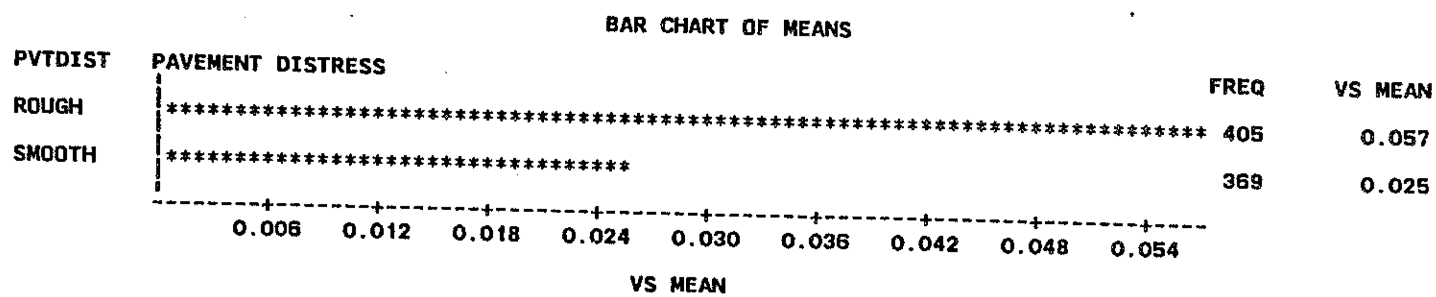
1. The most pronounced vibrations can be expected from a heavy vehicle traveling on rough pavement at highway speeds within ten feet of the location.

2. The magnitude of the vibration is the lowest on smooth pavements regardless of the speed.

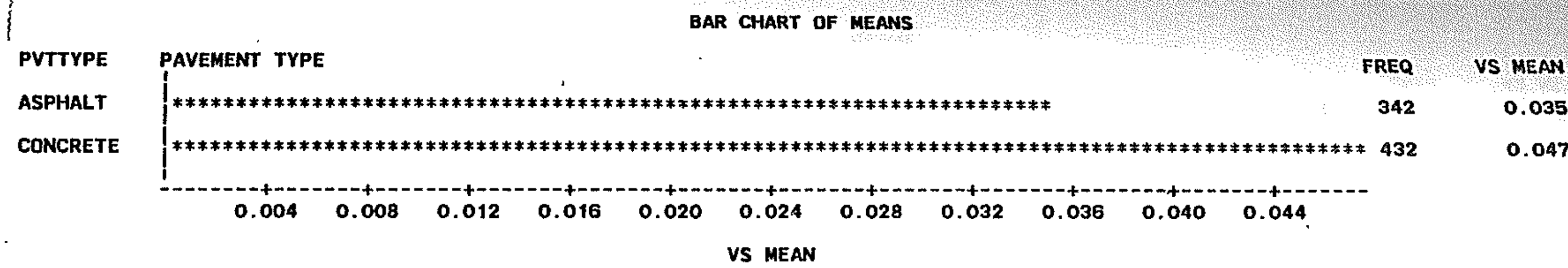
3. Using the 0.2 inches per second limiting velocity as recommended in AASHTO R8-81, only four vector sum mean groups, or 1.6% of the total vector sum mean groups, exceeded this limit. Furthermore, all four of these means were for the heavy-weight truck on rough concrete in south Louisiana.



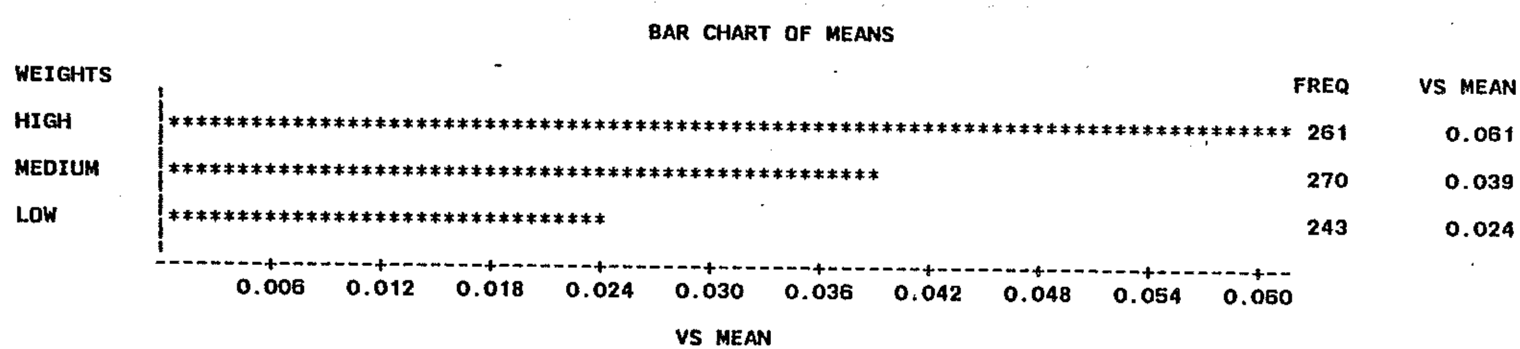
BAR CHART 1 VECTOR SUM MEANS BY SOIL LOCATION; NORTH LA. AND SOUTH LA.



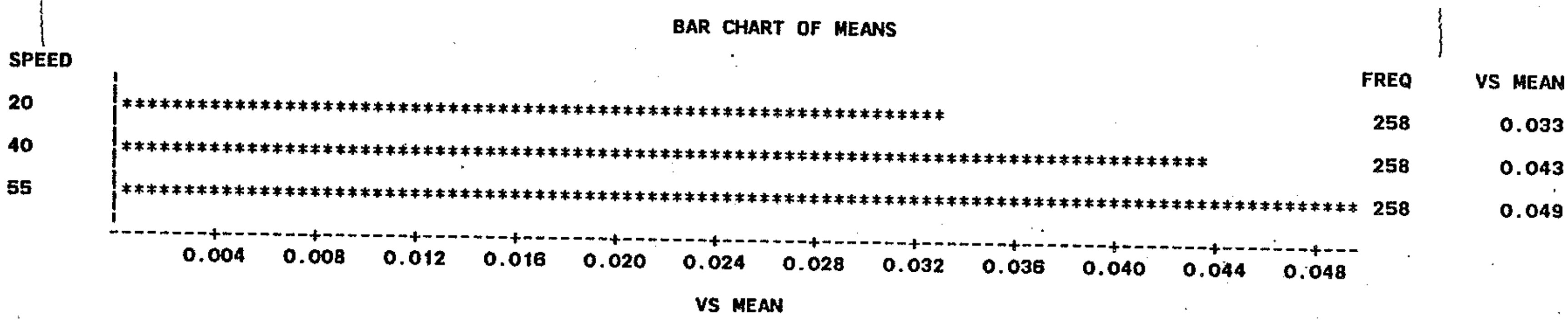
BAR CHART 2 VECTOR SUM MEANS BY PAVEMENT DISTRESS; ROUGH AND SMOOTH



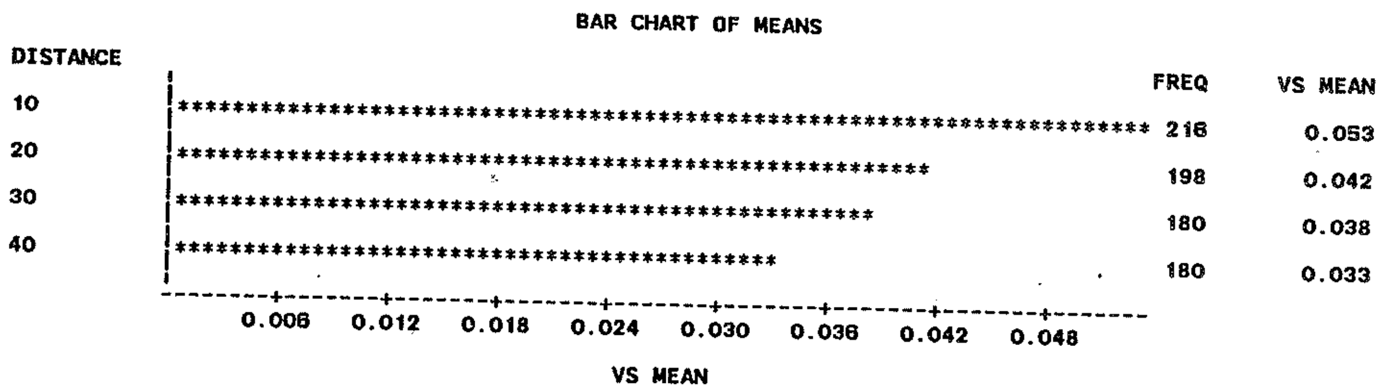
BAR CHART 3 VECTOR SUM MEANS BY PAVEMENT TYPE; ASPHALT AND CONCRETE



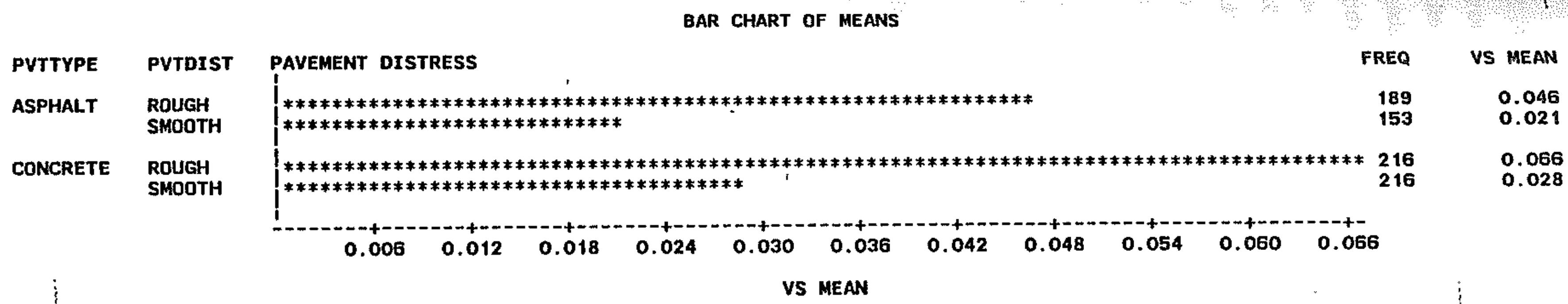
BAR CHART 4 VECTOR SUM MEANS BY WEIGHT CLASS; HIGH, MEDIUM AND LOW



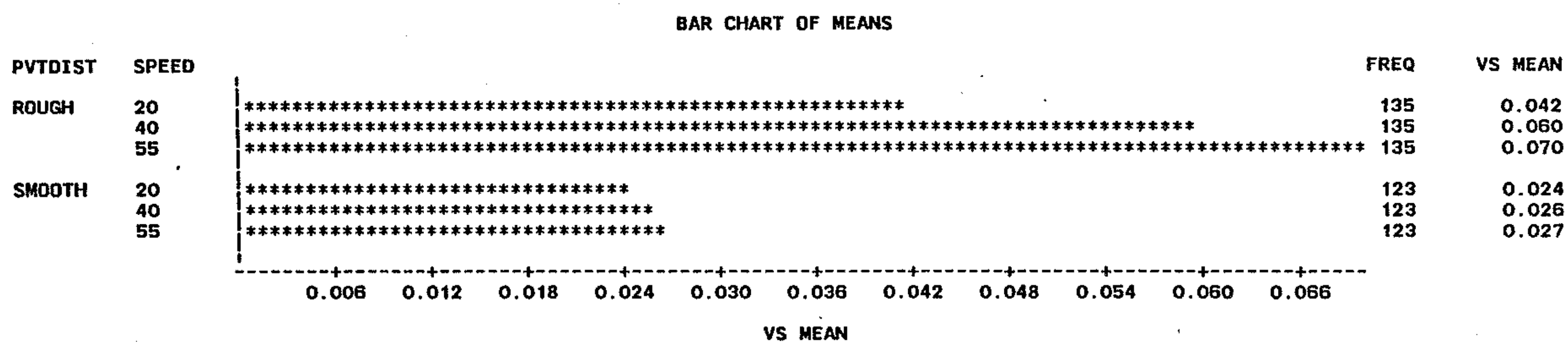
BAR CHART 5 VECTOR SUM MEANS BY SPEED; 20, 40 AND 55 M.P.H.



BAR CHART 6 VECTOR SUM MEANS BY DISTANCE; 10, 20, 30 AND 40 FEET



BAR CHART 7 VECTOR SUM MEANS BY PAVEMENT TYPE AND PAVEMENT DISTRESS



BAR CHART 8 VECTOR SUM MEANS BY PAVEMENT DISTRESS AND SPEED

Miscellaneous Vibration Data Evaluation

The data for the other vibration measurement sites, three elevated roadway structures, two highway construction sites, and two complaint sites, are contained in the Appendix. At the first elevated road site at I-110 and U.S. 190 in Baton Rouge, the maximum peak particle velocity vector sum recorded during three days of monitoring was 0.0[illegible] inches per second at distances of 10 and 15 feet from the supporting piling. At the second elevated roadway site in New Orleans East at I-10 and La. 47 (Paris Road), the maximum peak particle velocity vector sum recorded was 0.070 inches per second at 10 feet from a supporting pier. Measurements were taken over two days. The third elevated roadway site was in north Louisiana along I-20 at the overpasses for La. 33, La. 151 and La. 544. Measurements were monitored for two days and the maximum peak particle velocity vector sum recorded was 0.081 inches per second at distances of 20 and 30 feet from the overpass support column. None of the elevated structures measured gave vibration levels above the 0.2 inches per second limiting velocity recommended in AASHTO R8-81.

Two highway construction sites were monitored for haul traffic vibrations: I-49 near Alexandria and Greater New Orleans Bridge No. [illegible] in New Orleans. At the I-49 site, vibration measurements were taken over two days and 193 truck passes were monitored. A maximum peak particle velocity vector sum of 0.073 inches per second was recorded at a distance of 20 feet for an empty nine-axle dump truck and trail[er] combination. At the other construction site, Greater New Orleans Bridge No. 2, 46 concrete truck passes were measured and the maximum peak particle velocity vector sum recorded was 0.151 inches per second. This was recorded at a distance of 31 feet. The nearby hom[es] were 45-50 feet from the edge of the street the concrete trucks were traveling on. None of the construction site haul traffic measured gave vibration levels above the 0.2 inches per second limiting velocity recommended in AASHTO R8-81.

At the two complaint sites, only one measurement distance of 31 feet from the edge of I-10 and Vincent Canal gave vibration levels above the 0.2 inches per second recommended in AASHTO R8-81 (0.242 maximum). This spot was 31 feet from I-10 but still well over 120 feet from the complainant's home. None of the measurements taken in the complainant's house or at the edge of his yard measured above the 0.2 inches per second limit. The maximum level measured at the second complaint site was 0.162 inches per second peak particle valocity. This was measured at a distance of 30 feet and is still below the recommended AASHTO 0.2 inches per second limiting velocity. Except for the above noted case, none of the vibrations measured at either complaint site were above the 0.2 inches per second limiting velocity advocated in AASHTO R8-81.

At both of the complaint sites, except as noted above, the ground vibrations measured near the homes or in the home were very low, and it was felt by the researchers that the real complaint problem was the noise generated by the traffic as it "bounced" over the rough spot at the end of the bridge structure or the box culvert. This noise was rather loud and would be very annoying, particularly at night when the residents would be trying to sleep. All the ground vibrations measured at both complaint spots, except the one instance noted above at thirty-one feet, had peak particle velocity vector sums less than the 0.2 in./sec. limiting velocities recommended in AASHTO R8-81.

In many instances the vibrations measured during this research project were above what is considered to be the threshold of human preception, 0.05 inches per second. In order to keep complaints and/or legal suits from being filed, it would be advisable to try to keep vibration levels below this threshold even though no physical damage would occur to the nearby residences or business at levels up to 0.2"/sec. The human body is aware of vibrations at this level, but it cannot measure the magnitude of the vibrations. If humans feel the vibrations from transportation-related activities, they usually assume that these same vibrations are doing physical damage to their homes and business even though the vibrations are below the 0.2 inches per second limiting velocity put forth in AASHTO R8-81. This research did not investiga noise vibrations received at the homes or business under question, bu the researchers believe the high noise levels caused by high-speed traffic traveling over rough pavement spots was the underlying reason the complaints of ground vibration damage were filed. While the nois produced by traffic may be objectionable and a nuisance to persons living or working near the roadway, the ground vibrations produced by the traffic model exceeded the AASHTO R8-81 limit of 0.2 inches per second in only 1.6 percent of the total vector sum mean groups and exceeded the R8-81 limit at only one measurement distance in all of the other ground vibration measurement sites investigated in this research.

CONCLUSIONS

Based on the findings from this study, the following conclusions can be reached:

1. The most pronounced earth borne vibrations can be expected from a heavy vehicle traveling on rough pavement at highway speeds within ten feet of the source of vibration.

2. The magnitude of the vibration is lowest on smooth pavements regardless of the speed and distance from the vibration source.

3. Using the 0.2 inches per second limiting velocity as recommended in AASHTO R8-81, only four traffic model vector sum mean groups, or 1.6 percent of the total vector sum mean groups, exceeded this limit.

4. None of the elevated structures measured gave earth borne vibration levels above the 0.2 inches per second limiting velocity recommended in AASHTO R8-81.

5. None of the construction site haul traffic gave earth borne vibration levels above the AASHTO-recommended guidelines.

6. At the complaint sites, only one close measurement distance of 31 feet from the vibration source gave earth borne vibration levels above 0.2 inches per second. This spot was still well over 120 feet from the complainant's home. None of the other earth borne vibrations measured at complaint sites were above this limit.

RECOMMENDATIONS

It is recommended that at construction sites in urban areas within fifty feet of residential and/or business structures the Department make routine investigation of vibration levels due to construction-oriented sources (construction traffic, pile driving, heavy machinery, etc.). This routine data gathering effort will provide base line data that will protect the Department from possible future litigation due to vibration induced damages.

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VECTOR SUM GROUPINGS FOR
INDIVIDUAL TRAFFIC MODEL RUNS

Note Under Vehicle Type:

C is for car, low weight range.

D is for dump truck, medium weight range.

L is for lowboy truck, high weight range.

VECTOR SUM GROUPING=.01 - .02

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.010	0.000	0.000	0.010	20	20	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	20	20	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	20	40	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	40	20	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	40	20	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	40	40	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	55	20	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	55	20	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	55	40	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.000	0.010	55	40	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	40	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	20	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	40	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	40	D	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	10	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	10	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	20	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	20	40	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.010	0.014	20	40	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	20	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	40	40	C	ASPHALT	SMOOTH	LA15
0.010	0.000	0.010	0.014	40	40	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	10	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	10	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	10	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	20	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.000	0.014	55	40	C	ASPHALT	SMOOTH	LA15
0.000	0.010	0.010	0.014	20	30	C	CONCRETE	SMOOTH	LA15
0.000	0.010	0.010	0.014	20	30	C	CONCRETE	SMOOTH	LA23
0.000	0.010	0.010	0.014	40	30	C	CONCRETE	SMOOTH	LA23
0.010	0.000	0.010	0.014	20	30	D	CONCRETE	SMOOTH	LA23
0.010	0.000	0.010	0.014	20	30	D	CONCRETE	ROUGH	LA2
0.010	0.000	0.010	0.014	20	20	C	CONCRETE	ROUGH	LA2
0.010	0.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VECTOR SUM GROUPING=.01 - .02

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.010	0.000	0.010	0.014	40	30	C	CONCRETE	ROUGH	LA2
0.010	0.000	0.010	0.014	40	30	C	CONCRETE	ROUGH	LA2
0.010	0.000	0.010	0.014	55	30	C	CONCRETE	ROUGH	LA2
0.010	0.000	0.010	0.014	55	30	C	CONCRETE	ROUGH	LA2
0.010	0.000	0.010	0.014	55	30	C	CONCRETE	ROUGH	LA2
0.000	0.010	0.010	0.014	20	20	C	ASPHALT	SMOOTH	LA308
0.000	0.010	0.010	0.014	20	20	C	ASPHALT	SMOOTH	LA308
0.000	0.010	0.010	0.014	40	20	C	ASPHALT	SMOOTH	LA308
0.000	0.010	0.010	0.014	55	20	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	20	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	20	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	40	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	40	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	40	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	55	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	55	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	55	10	C	ASPHALT	ROUGH	LA33
0.010	0.010	0.010	0.017	55	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.010	0.017	55	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.010	0.017	55	20	L	ASPHALT	SMOOTH	LA15
0.010	0.010	0.010	0.017	40	10	C	ASPHALT	SMOOTH	LA15
0.010	0.010	0.010	0.017	20	30	D	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	30	D	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	30	D	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	40	D	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	40	D	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	30	D	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	20	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	20	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	20	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	20	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	20	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	30	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	30	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	40	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	55	20	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	55	30	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	55	30	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	55	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	55	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	55	40	C	CONCRETE	SMOOTH	LA23
0.010	0.010	0.010	0.017	20	40	C	CONCRETE	ROUGH	LA23
0.010	0.010	0.010	0.017	20	40	C	CONCRETE	ROUGH	LA23
0.010	0.010	0.010	0.017	20	30	D	CONCRETE	ROUGH	LA2
0.010	0.010	0.010	0.017	40	20	C	CONCRETE	ROUGH	LA2
0.010	0.010	0.010	0.017	55	20	C	CONCRETE	ROUGH	LA2

VECTOR SUM GROUPING=.01 - .02

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.010	0.010	0.010	0.017	20	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	20	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	20	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	40	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	40	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	40	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	55	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	55	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	55	30	C	CONCRETE	SMOOTH	LA2
0.010	0.010	0.010	0.017	20	10	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	10	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	55	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	55	20	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	55	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	55	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	55	10	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	20	20	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	20	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	40	20	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	55	20	C	ASPHALT	SMOOTH	LA308
0.010	0.010	0.010	0.017	55	20	C	ASPHALT	SMOOTH	LA308

VECTOR SUM GROUPING=.02 - .03

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.010	0.000	0.022	20	40	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	20	40	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	20	40	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	40	40	L	ASPHALT	SMOOTH	LA15
0.020	0.010	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

--- VECTOR SUM GROUPING=.02 - .03 ---

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.010	0.000	0.022	40	40	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	55	40	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	40	10	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	55	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	55	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.000	0.022	55	10	C	CONCRETE	SMOOTH	LA23
0.020	0.010	0.000	0.022	55	10	C	CONCRETE	SMOOTH	LA23
0.020	0.010	0.000	0.022	20	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.000	0.022	20	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.000	0.022	20	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.000	0.022	40	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.000	0.022	40	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.000	0.022	55	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.000	0.022	55	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.000	0.022	55	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	30	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	30	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	40	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	40	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	40	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	55	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	55	40	L	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	10	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	20	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	20	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	20	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	30	D	ASPHALT	ROUGH	LA33
0.02C	0.010	0.010	0.024	20	30	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	30	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	40	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	40	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	40	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	40	40	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	40	40	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	55	40	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	55	40	D	ASPHALT	ROUGH	LA33
0.020	0.010	0.010	0.024	20	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	10	L	ASPHALT	SMOOTH	LA15

---------- VECTOR SUM GROUPING=.02 - .03 ----------

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.010	0.010	0.024	55	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	10	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	30	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	40	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	40	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	40	L	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	10	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	30	D	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	10	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	10	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	40	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	55	30	C	ASPHALT	SMOOTH	LA15
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	SMOOTH	LA23
0.010	0.020	0.010	0.024	20	40	D	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	40	20	D	CONCRETE	SMOOTH	LA23
0.010	0.020	0.010	0.024	40	30	D	CONCRETE	SMOOTH	LA23
0.010	0.020	0.010	0.024	40	30	D	CONCRETE	SMOOTH	LA23
0.010	0.020	0.010	0.024	40	40	D	CONCRETE	SMOOTH	LA23
0.010	0.020	0.010	0.024	40	40	D	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	55	20	D	CONCRETE	SMOOTH	LA23
0.010	0.020	0.010	0.024	55	30	D	CONCRETE	SMOOTH	LA23

0.010	0.020	0.010	0.024	55	30	D	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	20	10	C	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	20	10	C	CONCRETE	SMOOTH	LA23

-- VECTOR SUM GROUPING=.02 - .03 --

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.010	0.010	0.024	40	10	C	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	55	10	C	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	55	20	C	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	55	20	C	CONCRETE	SMOOTH	LA23
0.010	0.020	0.010	0.024	55	30	C	CONCRETE	SMOOTH	LA23
0.020	0.010	0.010	0.024	20	30	C	CONCRETE	ROUGH	LA23
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	ROUGH	LA23
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	ROUGH	LA23
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	ROUGH	LA23
0.020	0.010	0.010	0.024	20	20	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	40	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	40	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	40	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	40	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	40	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	40	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	30	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	40	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	20	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	10	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	20	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	20	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	20	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	20	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	55	40	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.010	0.024	20	10	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	10	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	10	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	L	CONCRETE	SMOOTH	LA2

-- VECTOR SUM GROUPING=.02 - .03 --

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.010	0.010	0.024	20	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	20	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	30	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	40	L	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	10	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	10	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	10	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	20	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	30	D	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	30	D	CONCRETE	SMOOTH	[illegible]
0.020	0.010	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VECTOR SUM GROUPING=.02 - .03

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.010	0.010	0.024	20	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	10	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	10	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	10	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	20	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	40	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	10	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	10	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	10	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	55	40	C	CONCRETE	SMOOTH	LA2
0.020	0.010	0.010	0.024	20	40	D	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	40	D	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	40	D	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	20	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	20	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	20	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	30	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	30	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	20	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	40	30	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	40	30	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	40	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	40	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	40	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	55	30	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	55	30	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	55	30	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	55	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	55	40	C	ASPHALT	ROUGH	LA308
0.020	0.010	0.010	0.024	55	40	C	ASPHALT	ROUGH	LA308
0.010	0.020	0.010	0.024	20	10	D	ASPHALT	SMOOTH	LA308
0.010	0.020	0.010	0.024	40	10	D	ASPHALT	SMOOTH	LA308
0.010	0.010	0.020	0.024	55	20	D	ASPHALT	SMOOTH	LA308

VECTOR SUM GROUPING=.03 - .04

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.020	0.010	0.030	20	10	L	ASPHALT	ROUGH	LA33
0.020	0.020	0.010	0.030	20	20	L	ASPHALT	ROUGH	LA33
0.020	0.020	0.010	0.030	20	20	L	ASPHALT	ROUGH	LA33
0.020	0.020	0.010	0.030	20	30	L	ASPHALT	ROUGH	LA33
0.020	0.020	0.010	0.030	40	30	L	ASPHALT	ROUGH	LA33
0.020	0.020	0.010	0.030	20	10	D	ASPHALT	ROUGH	LA33
0.020	0.020	0.010	0.030	20	10	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	20	10	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	20	10	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	40	10	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	40	10	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	40	10	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	40	20	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	40	20	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	40	40	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	55	20	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	55	30	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	55	40	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	55	40	D	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	40	10	C	CONCRETE	SMOOTH	LA23
0.020	0.020	0.010	0.030	20	40	D	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	10	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	10	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	10	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	20	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	20	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	30	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	30	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	20	40	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	40	30	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	40	30	C	CONCRETE	ROUGH	LA23
0.020	0.020	0.010	0.030	55	40	C	CONCRETE	ROUGH	LA23
0.020	0.010	0.020	0.030	20	20	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	40	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	40	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	40	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	55	30	L	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	40	20	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	40	20	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	40	30	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	40	30	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	55	30	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	55	30	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	20	10	C	CONCRETE	ROUGH	LA2
0.020	0.010	0.020	0.030	20	10	C	[illegible]	ROUGH	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.020	0.010	0.030	40	10	L	CONCRETE	SMOOTH	LA2
0.020	0.020	0.010	0.030	40	10	L	CONCRETE	SMOOTH	LA2
0.020	0.020	0.010	0.030	55	10	L	CONCRETE	SMOOTH	LA2
0.020	0.020	0.010	0.030	55	10	L	CONCRETE	SMOOTH	LA2
0.020	0.020	0.010	0.030	40	10	D	CONCRETE	SMOOTH	LA2
0.020	0.020	0.010	0.030	55	10	D	CONCRETE	SMOOTH	LA2
0.020	0.020	0.010	0.030	20	20	D	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	20	30	D	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	20	30	D	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	40	30	D	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	20	10	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	20	10	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	20	30	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	40	20	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	40	20	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.010	0.030	40	30	C	ASPHALT	ROUGH	LA308
0.010	0.020	0.020	0.030	40	10	D	ASPHALT	SMOOTH	LA308
0.010	0.020	0.020	0.030	40	10	D	ASPHALT	SMOOTH	LA308
0.010	0.020	0.020	0.030	55	10	D	ASPHALT	SMOOTH	LA308
0.030	0.010	0.010	0.033	40	40	D	ASPHALT	ROUGH	LA33
0.030	0.010	0.010	0.033	55	30	D	ASPHALT	ROUGH	LA33
0.030	0.010	0.010	0.033	55	40	D	ASPHALT	ROUGH	LA33
0.030	0.010	0.010	0.033	20	40	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	20	40	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	40	40	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	55	40	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	55	40	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	55	40	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	40	40	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	40	40	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	55	40	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	55	40	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.010	0.033	55	40	D	CONCRETE	ROUGH	LA2
0.020	0.020	0.020	0.035	20	10	D	ASPHALT	ROUGH	LA33
0.020	0.020	0.020	0.035	20	10	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.020	0.035	40	20	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.020	0.035	55	20	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.020	0.035	55	20	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.020	0.035	55	20	C	ASPHALT	ROUGH	LA308
0.020	0.020	0.020	0.035	20	10	L	ASPHALT	SMOOTH	LA308
0.020	0.020	0.020	0.035	20	10	L	ASPHALT	SMOOTH	LA308
0.020	0.030	0.010	0.037	20	10	L	ASPHALT	ROUGH	LA33
0.020	0.030	0.010	0.037	20	10	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	20	20	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	40	30	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	55	30	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	55	30	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	55	40	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	40	30	D	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	40	30	D	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	40	30	D	ASPHALT	ROUGH	LA33
0.030	0.020	0.010	0.037	55	30	D	ASPHALT	ROUGH	LA33

VECTOR SUM GROUPING=.03 - .04

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.030	0.020	0.010	0.037	55	30	D	ASPHALT	ROUGH	LA33
0.020	0.030	0.010	0.037	20	40	L	CONCRETE	SMOOTH	LA23
0.020	0.030	0.010	0.037	20	40	L	CONCRETE	SMOOTH	LA23
0.020	0.030	0.010	0.037	55	10	D	CONCRETE	SMOOTH	LA23
0.020	0.030	0.010	0.037	55	10	D	CONCRETE	SMOOTH	LA23
0.020	0.030	0.010	0.037	55	10	D	CONCRETE	SMOOTH	LA23
0.020	0.030	0.010	0.037	55	20	D	CONCRETE	SMOOTH	LA23
0.020	0.030	0.010	0.037	55	40	D	CONCRETE	SMOOTH	LA23
0.020	0.030	0.010	0.037	20	30	D	CONCRETE	ROUGH	LA23
0.020	0.030	0.010	0.037	20	40	D	CONCRETE	ROUGH	LA23
0.020	0.030	0.010	0.037	20	40	D	CONCRETE	ROUGH	LA23
0.020	0.030	0.010	0.037	20	20	C	CONCRETE	ROUGH	LA23
0.020	0.030	0.010	0.037	40	10	C	CONCRETE	ROUGH	LA23
0.020	0.030	0.010	0.037	40	20	C	CONCRETE	ROUGH	LA23
0.020	0.030	0.010	0.037	55	40	C	CONCRETE	ROUGH	LA23
0.020	0.030	0.010	0.037	55	40	C	CONCRETE	ROUGH	LA23
0.030	0.010	0.020	0.037	20	20	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	40	20	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	40	20	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	40	20	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	55	20	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	55	20	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	55	20	L	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	20	10	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	20	10	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	20	10	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	55	20	D	CONCRETE	ROUGH	LA2
0.020	0.010	0.030	0.037	55	30	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.020	0.037	55	10	C	CONCRETE	ROUGH	LA2
0.020	0.030	0.010	0.037	55	10	L	CONCRETE	SMOOTH	LA2
0.020	0.030	0.010	0.037	40	10	D	CONCRETE	SMOOTH	LA2
0.020	0.030	0.010	0.037	40	10	D	CONCRETE	SMOOTH	LA2
0.020	0.030	0.010	0.037	55	10	D	CONCRETE	SMOOTH	LA2
0.020	0.030	0.010	0.037	55	10	D	CONCRETE	SMOOTH	LA2
0.020	0.030	0.010	0.037	40	30	D	ASPHALT	ROUGH	LA308
0.030	0.020	0.010	0.037	40	40	D	ASPHALT	ROUGH	LA308
0.020	0.030	0.010	0.037	55	30	D	ASPHALT	ROUGH	LA308
0.010	0.030	0.020	0.037	55	10	D	ASPHALT	SMOOTH	LA308

VECTOR SUM GROUPING=.04 - .05

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.030	0.020	0.041	40	10	L	ASPHALT	ROUGH	LA33
0.020	0.030	0.020	0.041	40	10	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	40	20	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	40	20	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	40	30	L	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	55	30	L	ASPHALT	ROUGH	LA33
0.020	0.030	0.020	0.041	40	10	D	ASPHALT	ROUGH	LA33
0.020	0.030	0.020	0.041	40	10	D	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	40	20	D	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	40	20	D	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	40	20	D	ASPHALT	ROUGH	LA33
0.030	0.020	0.020	0.041	55	20	D	ASPHALT	ROUGH	LA33
0.020	0.030	0.020	0.041	20	30	L	CONCRETE	SMOOTH	LA23
0.020	0.030	0.020	0.041	20	30	L	CONCRETE	SMOOTH	LA23
0.020	0.030	0.020	0.041	20	40	L	CONCRETE	SMOOTH	LA23
0.020	0.030	0.020	0.041	40	30	L	CONCRETE	SMOOTH	LA23
0.030	0.020	0.020	0.041	55	10	D	CONCRETE	ROUGH	LA2
0.030	0.020	0.020	0.041	20	40	L	ASPHALT	ROUGH	LA308
0.030	0.020	0.020	0.041	20	40	L	ASPHALT	ROUGH	LA308
0.030	0.020	0.020	0.041	40	40	D	ASPHALT	ROUGH	LA308
0.030	0.020	0.020	0.041	55	10	C	ASPHALT	ROUGH	LA308
0.030	0.020	0.020	0.041	55	10	C	ASPHALT	ROUGH	LA308
0.020	0.030	0.020	0.041	20	10	L	ASPHALT	SMOOTH	LA308
0.020	0.030	0.020	0.041	55	10	D	ASPHALT	SMOOTH	LA308
0.030	0.030	0.010	0.044	40	30	C	CONCRETE	ROUGH	LA23
0.030	0.010	0.030	0.044	40	20	D	CONCRETE	ROUGH	LA2
0.030	0.010	0.030	0.044	55	20	D	CONCRETE	ROUGH	LA2
0.030	0.030	0.010	0.044	20	20	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.010	0.044	40	30	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.010	0.044	40	40	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.010	0.044	55	40	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.010	0.044	55	40	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.010	0.044	55	40	D	ASPHALT	ROUGH	LA308
0.020	0.040	0.010	0.046	20	10	L	CONCRETE	SMOOTH	LA23
0.020	0.040	0.010	0.046	20	10	L	CONCRETE	SMOOTH	LA23
0.030	0.030	0.020	0.047	40	20	L	ASPHALT	ROUGH	LA33
0.030	0.030	0.020	0.047	55	20	L	ASPHALT	ROUGH	LA33
0.030	0.030	0.020	0.047	55	20	L	ASPHALT	ROUGH	LA33
0.020	0.030	0.030	0.047	40	10	D	ASPHALT	ROUGH	LA33
0.030	0.030	0.020	0.047	40	40	L	CONCRETE	SMOOTH	LA23
0.030	0.030	0.020	0.047	20	20	D	CONCRETE	ROUGH	LA23
0.030	0.030	0.020	0.047	20	30	L	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	20	30	L	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	20	40	L	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	40	40	L	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	40	40	L	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	20	20	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	20	30	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	40	10	C	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	40	10	C	ASPHALT	ROUGH	LA308
0.030	0.030	0.020	0.047	40	10	C	ASPHALT	ROUGH	LA308
0.020	0.030	0.030	0.047	40	10	L	ASPHALT	SMOOTH	LA308

VECTOR SUM GROUPING=.04 - .05

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.020	0.030	0.030	0.047	40	10	L	ASPHALT	SMOOTH	LA308
0.020	0.040	0.020	0.048	40	40	D	CONCRETE	ROUGH	LA23
0.020	0.040	0.020	0.049	55	10	L	ASPHALT	ROUGH	LA33
0.020	0.040	0.020	0.049	55	10	L	ASPHALT	ROUGH	LA33
0.020	0.040	0.020	0.049	20	30	L	CONCRETE	SMOOTH	LA23
0.020	0.040	0.020	0.049	40	30	L	CONCRETE	SMOOTH	LA23
0.020	0.040	0.020	0.049	40	40	L	CONCRETE	SMOOTH	LA23
0.020	0.040	0.020	0.049	55	30	L	CONCRETE	SMOOTH	LA23
0.020	0.040	0.020	0.049	55	30	L	CONCRETE	SMOOTH	LA23
0.020	0.040	0.020	0.049	55	30	L	CONCRETE	SMOOTH	LA23
0.020	0.040	0.020	0.049	55	40	D	CONCRETE	ROUGH	LA23
0.020	0.040	0.020	0.049	55	40	D	CONCRETE	ROUGH	LA23
0.040	0.020	0.020	0.049	55	10	C	ASPHALT	ROUGH	LA308
0.020	0.040	0.020	0.049	55	10	L	ASPHALT	SMOOTH	LA308

VECTOR SUM GROUPING=.05 - .08

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.030	0.040	0.010	0.051	20	20	L	CONCRETE	SMOOTH	LA23
0.030	0.040	0.010	0.051	20	20	L	CONCRETE	SMOOTH	LA23
0.030	0.040	0.010	0.051	55	10	L	CONCRETE	SMOOTH	LA23
0.030	0.040	0.010	0.051	20	20	D	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	20	20	D	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	20	30	D	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	40	10	C	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	40	10	C	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	40	20	C	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	40	20	C	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	55	20	C	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	55	30	C	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	55	30	C	CONCRETE	ROUGH	LA23
0.030	0.040	0.010	0.051	55	30	C	CONCRETE	ROUGH	LA23
0.040	0.030	0.010	0.051	55	30	D	ASPHALT	ROUGH	LA308
0.040	0.030	0.010	0.051	55	30	D	ASPHALT	ROUGH	LA308
0.030	0.030	0.030	0.052	55	20	L	ASPHALT	ROUGH	LA33
0.030	0.030	0.030	0.052	20	20	[illegible]	[illegible]	[illegible]	[illegible]
0.030	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.030	0.040	0.020	0.054	20	30	L	ASPHALT	ROUGH	LA308
0.030	0.040	0.020	0.054	40	30	L	ASPHALT	ROUGH	LA308
0.040	0.030	0.020	0.054	40	20	D	ASPHALT	ROUGH	LA308
0.040	0.030	0.020	0.054	40	20	D	ASPHALT	ROUGH	LA308
0.020	0.040	0.030	0.054	40	10	L	ASPHALT	SMOOTH	LA308
0.020	0.040	0.030	0.054	55	10	L	ASPHALT	SMOOTH	LA308
0.020	0.050	0.010	0.055	40	10	L	CONCRETE	SMOOTH	LA23
0.020	0.050	0.010	0.055	40	10	L	CONCRETE	SMOOTH	LA23
0.020	0.050	0.010	0.055	55	10	L	CONCRETE	SMOOTH	LA23
0.020	0.050	0.020	0.057	55	40	D	CONCRETE	ROUGH	LA23
0.030	0.040	0.030	0.058	20	20	L	ASPHALT	ROUGH	LA308
0.030	0.040	0.030	0.058	20	20	L	ASPHALT	ROUGH	LA308
0.030	0.040	0.030	0.058	40	20	L	ASPHALT	ROUGH	LA308
0.030	0.040	0.030	0.058	40	40	L	ASPHALT	ROUGH	LA308
0.030	0.040	0.030	0.058	55	40	L	ASPHALT	ROUGH	LA308
0.030	0.040	0.030	0.058	55	40	L	ASPHALT	ROUGH	LA308
0.030	0.040	0.030	0.058	20	10	D	ASPHALT	ROUGH	LA308
0.040	0.030	0.030	0.058	55	20	D	ASPHALT	ROUGH	LA308
0.030	0.040	0.030	0.058	55	10	L	ASPHALT	SMOOTH	LA308
0.030	0.050	0.010	0.059	40	10	L	CONCRETE	SMOOTH	LA23
0.030	0.050	0.010	0.059	55	10	L	CONCRETE	SMOOTH	LA23
0.030	0.050	0.010	0.059	55	20	C	CONCRETE	ROUGH	LA23

VECTOR SUM GROUPING=.06 - .07

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.040	0.040	0.020	0.060	20	20	L	CONCRETE	SMOOTH	LA23
0.040	0.040	0.020	0.060	55	40	L	CONCRETE	SMOOTH	LA23
0.040	0.020	0.040	0.060	20	10	L	CONCRETE	ROUGH	LA2
0.040	0.040	0.020	0.060	40	30	L	ASPHALT	ROUGH	LA308
0.030	0.050	0.020	0.062	40	20	L	CONCRETE	SMOOTH	LA23
0.030	0.050	0.020	0.062	55	20	L	CONCRETE	SMOOTH	LA23
0.030	0.050	0.020	0.062	40	40	D	CONCRETE	ROUGH	LA23
0.030	0.050	0.020	0.062	55	40	L	ASPHALT	ROUGH	LA308
0.020	0.060	0.010	0.064	20	10	L	CONCRETE	SMOOTH	LA23
0.040	0.040	0.030	0.064	20	10	L	ASPHALT	ROUGH	LA308
0.040	0.040	0.030	0.064	40	20	L	ASPHALT	ROUGH	LA308
0.040	0.040	0.030	0.064	40	30	L	ASPHALT	ROUGH	LA308
0.040	0.040	0.030	0.064	55	30	L	ASPHALT	ROUGH	LA308
0.040	0.040	0.030	0.064	20	10	D	ASPHALT	ROUGH	LA308
0.030	0.050	0.030	0.066	55	30	L	ASPHALT	ROUGH	LA308
0.030	0.050	0.030	0.066	20	10	D	ASPHALT	ROUGH	LA308
0.040	0.050	0.020	0.067	20	30	D	CONCRETE	ROUGH	LA23
0.050	0.020	0.040	0.067	20	10	L	CONCRETE	ROUGH	LA2
0.040	0.050	0.020	0.067	55	30	L	ASPHALT	ROUGH	LA308
0.040	0.050	0.020	0.087	55	20	D	ASPHALT	ROUGH	LA308
0.030	0.060	0.010	0.068	40	40	D	CONCRETE	ROUGH	LA23
0.030	0.060	0.010	0.068	55	10	C	CONCRETE	ROUGH	LA23

VECTOR SUM GROUPING=.06 - .07

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.030	0.060	0.010	0.068	55	10	C	CONCRETE	ROUGH	LA23
0.030	0.060	0.010	0.068	55	10	C	CONCRETE	ROUGH	LA23
0.030	0.060	0.010	0.068	55	20	C	CONCRETE	ROUGH	LA23
0.040	0.040	0.040	0.069	40	20	L	ASPHALT	ROUGH	LA308

VECTOR SUM GROUPING=.07 - .08

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.030	0.060	0.020	0.070	55	10	L	ASPHALT	ROUGH	LA33
0.030	0.060	0.020	0.070	55	30	D	CONCRETE	ROUGH	LA23
0.040	0.050	0.030	0.071	20	10	L	ASPHALT	ROUGH	LA308
0.040	0.050	0.030	0.071	55	20	D	ASPHALT	ROUGH	LA308
0.030	0.060	0.030	0.073	55	10	D	ASPHALT	ROUGH	LA33
0.030	0.060	0.030	0.073	20	10	D	CONCRETE	ROUGH	LA23
0.030	0.060	0.030	0.073	20	10	D	CONCRETE	ROUGH	LA23
0.060	0.020	0.040	0.075	40	10	D	CONCRETE	ROUGH	LA2
0.040	0.050	0.040	0.075	55	20	L	ASPHALT	ROUGH	LA308
0.040	0.050	0.040	0.075	55	20	L	ASPHALT	ROUGH	LA308
0.050	0.030	0.050	0.077	20	10	L	CONCRETE	ROUGH	LA2
0.050	0.030	0.050	0.077	40	10	L	CONCRETE	ROUGH	LA2
0.040	0.060	0.030	0.078	55	10	D	ASPHALT	ROUGH	LA33
0.040	0.060	0.030	0.078	20	40	L	CONCRETE	ROUGH	LA23
0.040	0.060	0.030	0.078	40	20	D	CONCRETE	ROUGH	LA23
0.040	0.060	0.030	0.078	55	30	D	CONCRETE	ROUGH	LA23
0.040	0.060	0.030	0.078	20	10	L	ASPHALT	ROUGH	LA308
0.030	0.070	0.020	0.079	40	30	D	CONCRETE	ROUGH	LA23
0.030	0.070	0.020	0.079	40	30	D	CONCRETE	ROUGH	LA23
0.030	0.070	0.020	0.079	40	30	D	CONCRETE	ROUGH	LA23

VECTOR SUM GROUPING=.08 - .09

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.050	0.060	0.030	0.084	20	40	L	CONCRETE	ROUGH	LA23
0.050	0.060	0.030	0.084	20	40	L	CONCRETE	ROUGH	LA23
0.030	0.060	0.050	0.084	55	30	D	CONCRETE	ROUGH	LA23
0.040	0.070	0.030	0.086	40	20	D	CONCRETE	ROUGH	LA23
0.050	0.050	0.050	0.087	55	20	L	ASPHALT	ROUGH	LA308

READING	READING	READING	SUM	SPEED	DISTANCE	TYPE	TYPE	DISTRESS	NUMBER
0.050	0.030	0.070	0.091	55	10	D	CONCRETE	ROUGH	LA2
0.040	0.080	0.020	0.092	20	10	D	CONCRETE	ROUGH	LA23
0.040	0.030	0.080	0.094	40	10	D	CONCRETE	ROUGH	LA2
0.070	0.030	0.060	0.097	55	10	D	CONCRETE	ROUGH	LA2
0.050	0.080	0.030	0.099	55	10	D	ASPHALT	ROUGH	LA33
0.050	0.080	0.030	0.099	55	20	D	CONCRETE	ROUGH	LA23
0.050	0.080	0.030	0.099	55	20	D	CONCRETE	ROUGH	LA23
0.030	0.030	0.090	0.099	40	10	D	CONCRETE	ROUGH	LA2
0.070	0.040	0.060	0.101	40	10	L	CONCRETE	ROUGH	LA2
0.070	0.040	0.060	0.101	55	10	L	CONCRETE	ROUGH	LA2
0.040	0.090	0.030	0.103	55	20	D	CONCRETE	ROUGH	LA23
0.040	0.090	0.040	0.106	55	10	D	CONCRETE	ROUGH	LA23
0.050	0.090	0.030	0.107	20	30	L	CONCRETE	ROUGH	LA23
0.050	0.090	0.030	0.107	40	20	D	CONCRETE	ROUGH	LA23
0.070	0.070	0.040	0.107	40	10	L	ASPHALT	ROUGH	LA308
0.080	0.040	0.060	0.108	40	10	L	CONCRETE	ROUGH	LA2
0.040	0.090	0.050	0.110	55	10	D	CONCRETE	ROUGH	LA23
0.080	0.050	0.060	0.112	55	10	L	CONCRETE	ROUGH	LA2
0.060	0.080	0.050	0.112	40	10	D	ASPHALT	ROUGH	LA308
0.050	0.090	0.050	0.114	40	10	D	CONCRETE	ROUGH	LA23
0.050	0.090	0.050	0.114	40	10	D	CONCRETE	ROUGH	LA23
0.060	0.090	0.040	0.115	20	30	L	CONCRETE	ROUGH	LA23
0.060	0.090	0.040	0.115	40	40	L	CONCRETE	ROUGH	LA23
0.080	0.060	0.060	0.117	55	10	L	CONCRETE	ROUGH	LA2
0.070	0.080	0.050	0.117	40	10	D	ASPHALT	ROUGH	LA308
0.070	0.080	0.050	0.117	40	10	D	ASPHALT	ROUGH	LA308
0.060	0.100	0.040	0.123	40	40	L	CONCRETE	ROUGH	LA23
0.040	0.110	0.050	0.127	20	10	L	CONCRETE	ROUGH	LA23
0.060	0.100	0.050	0.127	20	30	L	CONCRETE	ROUGH	LA23
0.060	0.110	0.040	0.131	40	40	L	CONCRETE	ROUGH	LA23
0.050	0.110	0.050	0.131	40	10	D	CONCRETE	ROUGH	LA23
0.070	0.090	0.070	0.134	55	10	L	ASPHALT	ROUGH	LA308
0.050	0.110	0.060	0.135	55	10	D	CONCRETE	ROUGH	LA23
0.040	0.120	0.050	0.136	20	10	L	CONCRETE	ROUGH	LA23
0.070	0.110	0.060	0.144	55	10	L	ASPHALT	ROUGH	LA308
0.040	0.130	0.050	0.145	20	10	L	CONCRETE	ROUGH	LA23
0.050	0.130	0.040	0.145	20	20	L	CONCRETE	ROUGH	LA23
0.050	0.130	0.040	0.145	20	20	L	CONCRETE	ROUGH	LA23
0.080	0.100	0.070	0.146	55	10	D	ASPHALT	ROUGH	LA308
0.070	0.110	0.070	0.148	55	10	D	ASPHALT	ROUGH	LA308
0.060	0.130	0.040	0.149	20	20	L	CONCRETE	ROUGH	LA23
0.070	0.120	0.060	0.151	55	40	L	CONCRETE	ROUGH	LA23
0.090	0.100	0.070	0.152	55	10	D	ASPHALT	ROUGH	LA308
0.070	0.120	0.070	0.155	40	30	L	CONCRETE	ROUGH	LA23
0.070	0.130	0.060	0.159	55	40	L	CONCRETE	ROUGH	LA23
0.070	0.130	0.060	0.159	55	40	L	CONCRETE	ROUGH	LA23
0.070	0.120	0.080	0.160	40	30	L	CONCRETE	ROUGH	LA23
0.050	0.140	0.070	0.164	40	10	L	ASPHALT	ROUGH	LA308
0.090	0.120	0.070	0.166	40	10	L	ASPHALT	ROUGH	LA308
0.080	0.130	0.070	0.168	40	10	L	CONCRETE	ROUGH	LA23
0.080	0.140	0.070	0.176	40	30	L	CONCRETE	ROUGH	LA23
0.060	0.160	0.060	0.181	40	10	L	CONCRETE	ROUGH	LA23

VECTOR SUM GROUPING=.09 & ABOVE

LONGITUDINAL READING	VERTICAL READING	TRANSVERSE READING	VECTOR SUM	SPEED	DISTANCE	VEHICLE TYPE	PAVEMENT TYPE	PAVEMENT DISTRESS	HIGHWAY NUMBER
0.050	0.170	0.070	0.190	40	10	L	CONCRETE	ROUGH	LA23
0.080	0.160	0.110	0.210	55	10	L	ASPHALT	ROUGH	LA308
0.090	0.190	0.090	0.229	55	30	L	CONCRETE	ROUGH	LA23
0.090	0.190	0.090	0.229	55	30	L	CONCRETE	ROUGH	LA23
0.070	0.210	0.070	0.232	55	10	L	CONCRETE	ROUGH	LA23
0.070	0.210	0.080	0.235	55	10	L	CONCRETE	ROUGH	LA23
0.090	0.210	0.080	0.242	40	20	L	CONCRETE	ROUGH	LA23
0.080	0.220	0.070	0.244	40	20	L	CONCRETE	ROUGH	LA23
0.080	0.220	0.080	0.247	40	20	L	CONCRETE	ROUGH	LA23
0.110	0.210	0.090	0.254	55	20	L	CONCRETE	ROUGH	LA23
0.100	0.220	0.080	0.254	55	30	L	CONCRETE	ROUGH	LA23
0.060	0.250	0.080	0.269	55	10	L	CONCRETE	ROUGH	LA23
0.130	0.220	0.100	0.274	55	20	L	CONCRETE	ROUGH	LA23
0.150	0.290	0.120	0.348	55	20	L	CONCRETE	ROUGH	LA23

ELEVATED SITES

----- SITE=ELEVATED LOCATION=I-110AT AIRLINE HWY. BATON ROU[illegible]

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	[illegible]
10	0.030	0.02	0.02	0.01	80583	1100AM	[illegible]
10	0.030	0.02	0.02	0.01	80883	200PM	[illegible]
10	0.037	0.02	0.03	0.01	80583	1030AM	[illegible]
10	0.037	0.03	0.02	0.01	80583	1045AM	[illegible]
10	0.037	0.02	0.03	0.01	80583	1115AM	[illegible]
10	0.037	0.03	0.02	0.01	80883	115PM	[illegible]
10	0.037	0.03	0.02	0.01	80883	130PM	[illegible]
10	0.037	0.02	0.03	0.01	81083	945AM	[illegible]
10	0.037	0.03	0.02	0.01	81083	1000AM	[illegible]
10	0.037	0.03	0.02	0.01	81083	1030AM	[illegible]
10	0.041	0.03	0.02	0.02	81083	1015AM	[illegible]
10	0.047	0.03	0.03	0.02	80883	145PM	[illegible]
15	0.030	0.02	0.02	0.01	80883	900AM	[illegible]
15	0.030	0.02	0.02	0.01	80883	1045AM	[illegible]
15	0.037	0.03	0.02	0.01	80883	845AM	[illegible]
15	0.041	0.02	0.03	0.02	80883	1000AM	[illegible]
15	0.041	0.02	0.03	0.02	80883	1015AM	[illegible]
15	0.041	0.02	0.03	0.02	80883	1030AM	[illegible]
15	0.047	0.03	0.03	0.02	80883	915AM	[illegible]
15	0.047	0.02	0.03	0.03	80883	930AM	[illegible]
20	0.017	0.01	0.01	0.01	81083	1130AM	[illegible]
20	0.024	0.02	0.01	0.01	81083	1100AM	[illegible]
20	0.024	0.02	0.01	0.01	81083	1115AM	[illegible]
20	0.030	0.02	0.02	0.01	80583	1145AM	[illegible]
20	0.030	0.02	0.02	0.01	80583	1200PM	[illegible]
20	0.030	0.02	0.02	0.01	80583	1215PM	[illegible]
20	0.030	0.02	0.02	0.01	80583	1230PM	[illegible]
20	0.030	0.02	0.02	0.01	81083	1045AM	85
20	0.035	0.02	0.02	0.02	80883	230PM	84
20	0.035	0.02	0.02	0.02	80883	300PM	84
20	0.037	0.02	0.03	0.01	80883	215PM	84
20	0.041	0.02	0.03	0.02	80883	245PM	84
30	0.024	0.01	0.02	0.01	81083	1230PM	85
30	0.030	0.02	0.02	0.01	80583	115PM	84
30	0.030	0.02	0.02	0.01	80583	130PM	84
30	0.030	0.02	0.02	0.01	81083	1245PM	85
30	0.030	0.02	0.02	0.01	81083	100PM	85
30	0.037	0.02	0.03	0.01	80583	100PM	84
30	0.037	0.03	0.02	0.01	80583	145PM	84
30	0.044	0.03	0.03	0.01	81083	115PM	85
40	0.037	0.03	0.02	0.01	81083	145PM	85
40	0.037	0.03	0.02	0.01	81083	200PM	85
40	0.044	0.03	0.03	0.01	81083	130PM	85
40	0.044	0.03	0.03	0.01	81083	215PM	85

-- SITE=ELEVATED LOCATION=I-10SHORT SUPPORT AT PARIS RD. OVERPASS --

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
10	0.041	0.02	0.03	0.02	122083	1245PM	68
10	0.047	0.03	0.03	0.02	122083	100PM	68
10	0.047	0.03	0.03	0.02	122083	130PM	68
10	0.052	0.03	0.03	0.03	122083	115PM	68
20	0.041	0.02	0.03	0.02	122183	1000AM	68
20	0.041	0.02	0.03	0.02	122183	1015AM	68
20	0.047	0.03	0.03	0.02	122183	945AM	68
20	0.047	0.03	0.03	0.02	122183	1030AM	68
40	0.030	0.02	0.02	0.01	122183	1100AM	68
40	0.030	0.02	0.02	0.01	122183	1115AM	68
40	0.030	0.02	0.02	0.01	122183	1130AM	68
40	0.037	0.03	0.02	0.01	122183	1045AM	68
80	0.024	0.02	0.01	0.01	122183	1200PM	68
80	0.030	0.02	0.02	0.01	122183	1145AM	68
80	0.030	0.02	0.02	0.01	122183	1215PM	68
80	0.030	0.02	0.02	0.01	122183	1230PM	68

-- SITE=ELEVATED LOCATION=I-10TALL SUPPORT AT PARIS RD. OVERPASS ---

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
10	0.049	0.04	0.02	0.02	122083	800AM	68
10	0.049	0.04	0.02	0.02	122083	815AM	68
10	0.049	0.04	0.02	0.02	122083	830AM	68
10	0.070	0.06	0.03	0.02	122083	845AM	68
20	0.041	0.03	0.02	0.02	122083	900AM	68
20	0.047	0.03	0.03	0.02	122083	915AM	68
20	0.047	0.03	0.03	0.02	122083	930AM	68
20	0.054	0.04	0.03	0.02	122083	945AM	68
40	0.047	0.03	0.03	0.02	122083	1015AM	68
40	0.047	0.03	0.03	0.02	122083	1030AM	68
40	0.052	0.03	0.03	0.03	122083	1000AM	68
40	0.052	0.03	0.03	0.03	122083	1045AM	68
80	0.058	0.04	0.03	0.03	122083	1100AM	68
80	0.058	0.04	0.03	0.03	122083	1115AM	68
80	0.058	0.04	0.03	0.03	122083	1130AM	68
80	0.058	0.04	0.03	0.03	122083	1145AM	68

------- SITE=ELEVATED LOCATION=I-20AT LA.33 OVERPASS RUSTON --

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
15	0.054	0.03	0.04	0.02	50184	945AM	[illegible]
15	0.059	0.03	0.05	0.01	50184	930AM	[illegible]
15	0.062	0.03	0.05	0.02	50184	915AM	[illegible]
15	0.068	0.03	0.06	0.01	50184	1000AM	[illegible]
20	0.030	0.02	0.02	0.01	50184	815AM	[illegible]
20	0.030	0.02	0.02	0.01	50184	830AM	[illegible]
20	0.030	0.02	0.02	0.01	50184	845AM	[illegible]
20	0.030	0.02	0.02	0.01	50184	900AM	[illegible]
30	0.030	0.02	0.02	0.01	50184	715AM	[illegible]
30	0.030	0.02	0.02	0.01	50184	745AM	[illegible]
30	0.030	0.02	0.02	0.01	50184	800AM	[illegible]
30	0.041	0.02	0.03	0.02	50184	730AM	[illegible]

------- SITE=ELEVATED LOCATION=I-20AT LA.544 OVERPASS RUSTON ----

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
10	0.054	0.03	0.04	0.02	50284	800AM	78
10	0.054	0.03	0.04	0.02	50284	815AM	78
10	0.054	0.03	0.04	0.02	50284	830AM	78
10	0.054	0.03	0.04	0.02	50284	845AM	78
10	0.070	0.04	0.05	0.03	50284	1045AM	78
10	0.080	0.05	0.06	0.02	50284	1030AM	78
20	0.060	0.04	0.04	0.02	50284	915AM	78
20	0.060	0.04	0.04	0.02	50284	930AM	78
20	0.060	0.04	0.04	0.02	50284	945AM	78
20	0.081	0.05	0.06	0.02	50284	900AM	78
30	0.067	0.04	0.05	0.02	50284	1015AM	78
30	0.071	0.04	0.05	0.03	50284	1000AM	78

------- SITE=ELEVATED LOCATION=I-20AT LA.151 OVERPASS RUSTON ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
10	0.017	0.01	0.01	0.01	50184	115PM	76
10	0.017	0.01	0.01	0.01	50184	130PM	76

CONSTRUCTION SITES

---- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE WATER TRUCK ---

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.037	0.03	0.02	0.01	32984		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 3AX EMPTY ---

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.054	0.04	0.03	0.02	32984		60
40	0.030	0.02	0.02	0.01	33084		60

------ SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 3AX TANK ---

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.03	0.02	0.02	0.01	33084		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 5AX EMPTY -----

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.037	0.03	0.02	0.01	32984		60
20	0.047	0.03	0.03	0.02	32984		60
40	0.037	0.03	0.02	0.01	32984		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 6AX EMPTY ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.030	0.02	0.02	0.01	33084		60
20	0.030	0.02	0.02	0.01	33084		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.035	0.02	0.02	0.02	33084		60
20	0.035	0.02	0.02	0.02	33084		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.044	0.03	0.03	0.01	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.054	0.04	0.03	0.02	32984		60
40	0.024	0.02	0.01	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	32984		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.041	0.03	0.02	0.02	32984		60

------ SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 6AX FULL ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.030	0.02	0.02	0.01	32984		60
20	0.030	0.02	0.02	0.01	32984		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	33084		60
20	0.047	0.03	0.03	0.02	33084		60
20	0.047	0.03	0.03	0.02	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	32984		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.02	0.03	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.02	0.03	0.01	33084		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	32984		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 7AX EMPTY ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.047	0.03	0.03	0.02	32984		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 8AX EMPTY ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.041	0.03	0.02	0.02	32984		60
40	0.030	0.02	0.02	0.01	33084		60

------ SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 8AX FULL ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
40	0.044	0.03	0.03	0.01	33084		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 9AX EMPTY ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.030	0.02	0.02	0.01	32984		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.037	0.02	0.03	0.01	32984		60
20	0.037	0.03	0.02	0.01	32984		60
20	0.037	0.02	0.03	0.01	32984		60
20	0.037	0.03	0.02	0.01	32984		60
20	0.037	0.02	0.03	0.01	32984		60
20	0.037	0.03	0.02	0.01	33084		60
20	0.037	0.03	0.02	0.01	33084		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE. 9AX EMPTY ---

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.02	0.03	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	33084		60
20	0.041	0.03	0.02	0.02	33084		60
20	0.044	0.03	0.03	0.01	32984		60
20	0.044	0.03	0.03	0.01	32984		60
20	0.044	0.03	0.03	0.01	32984		60
20	0.044	0.03	0.03	0.01	33084		60
20	0.046	0.02	0.04	0.01	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.051	0.03	0.04	0.01	32984		60
20	0.051	0.03	0.04	0.01	33084		60
20	0.052	0.03	0.03	0.03	32984		60
20	0.058	0.04	0.03	0.03	32984		60
20	0.060	0.04	0.04	0.02	32984		60
20	0.060	0.04	0.04	0.02	32984		60
20	0.062	0.03	0.05	0.02	32984		60
20	0.064	0.04	0.04	0.03	32984		60
20	0.067	0.05	0.04	0.02	32984		60
20	0.073	0.05	0.05	0.02	32984		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.033	0.03	0.01	0.01	33084		60
40	0.037	0.03	0.02	0.01	32984		60
40	0.037	0.03	0.02	0.01	32984		60
40	0.037	0.02	0.03	0.01	33084		60
40	0.037	0.02	0.03	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	33084		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 9AX EMPTY ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
40	0.047	0.03	0.03	0.02	32984		60
40	0.047	0.03	0.03	0.02	32984		60

------ SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 9AX FULL ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.035	0.02	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	32984		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.041	0.03	0.02	0.02	32984		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE WATER TRUCK -----

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.035	0.02	0.02	0.02	32984		60

----- SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 10AX EMPTY ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.035	0.02	0.02	0.02	32984		60
20	0.037	0.03	0.02	0.01	32984		60
20	0.037	0.03	0.02	0.01	32984		60
20	0.037	0.03	0.02	0.01	32984		60
20	0.037	0.03	0.02	0.01	32984		60
20	0.037	0.03	0.02	0.01	33084		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.047	0.03	0.03	0.02	32984		60
20	0.052	0.03	0.03	0.03	32984		60
20	0.060	0.04	0.04	0.02	32984		60
40	0.030	0.02	0.02	0.01	32984		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.044	0.03	0.03	0.01	32984		60
40	0.047	0.03	0.02	0.03	32984		60
40	0.052	0.03	0.03	0.03	32984		60

------ SITE=CONSTRUCTION LOCATION=I-49 HAULING SITE 10AX FULL ------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
20	0.030	0.02	0.01	0.02	32984		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.035	0.02	0.02	0.02	32984		60
20	0.037	0.02	0.03	0.01	32984		60
20	0.037	0.02	0.03	0.01	32984		60
20	0.037	0.02	0.03	0.01	32984		60
20	0.037	0.02	0.03	0.01	32984		60
20	0.037	0.03	0.02	0.01	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.041	0.03	0.02	0.02	32984		60
20	0.044	0.03	0.03	0.01	32984		60
20	0.044	0.03	0.03	0.01	33084		60
20	0.047	0.03	0.03	0.02	33084		60
20	0.047	0.03	0.03	0.02	33084		60
20	0.049	0.02	0.04	0.02	32984		60
20	0.049	0.02	0.04	0.02	33084		60
20	0.051	0.03	0.04	0.01	32984		60
20	0.051	0.03	0.04	0.01	32984		60
20	0.051	0.03	0.04	0.01	32984		60
20	0.051	0.03	0.04	0.01	32984		60
20	0.054	0.03	0.04	0.02	32984		60
20	0.054	0.03	0.04	0.02	33084		60
20	0.054	0.03	0.04	0.02	33084		60
20	0.062	0.03	0.05	0.02	33084		60
20	0.062	0.03	0.05	0.02	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.030	0.02	0.02	0.01	33084		60
40	0.033	0.03	0.01	0.01	33084		60
40	0.037	0.03	0.02	0.01	32984		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.02	0.03	0.01	33084		60
40	0.037	0.02	0.03	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.037	0.03	0.02	0.01	33084		60
40	0.041	0.03	0.02	0.02	32984		60
40	0.041	0.03	0.02	0.02	33084		60
40	0.041	0.02	0.03	0.02	33084		60

---- SITE=CONSTRUCTION   LOCATION=GNO BRIDGE #2 CONCRETE TRUCKS -----

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
31	0.037	0.03	0.02	0.01	21585		55
31	0.044	0.03	0.03	0.01	21585		55
31	0.051	0.04	0.03	0.01	21585		55
31	0.054	0.03	0.04	0.02	21585		55
31	0.059	0.03	0.05	0.01	21585		55
31	0.067	0.04	0.05	0.02	21585		55
31	0.067	0.04	0.05	0.02	21585		55
31	0.067	0.04	0.05	0.02	21585		55
31	0.067	0.04	0.05	0.02	21585		55
31	0.071	0.04	0.05	0.03	21585		55
31	0.071	0.05	0.05	0.01	21585		55
31	0.073	0.05	0.05	0.02	21585		55
31	0.081	0.05	0.06	0.02	21585		55
31	0.081	0.05	0.06	0.02	21585		55
31	0.081	0.05	0.06	0.02	21585		55
31	0.084	0.05	0.06	0.03	21585		55
31	0.086	0.04	0.07	0.03	21585		55
31	0.086	0.04	0.07	0.03	21585		55
31	0.090	0.04	0.07	0.04	21585		55
31	0.090	0.06	0.06	0.03	21585		55
31	0.091	0.05	0.07	0.03	21585		55
31	0.095	0.04	0.07	0.05	21585		55
31	0.097	0.07	0.06	0.03	21585		55
31	0.100	0.07	0.07	0.02	21585		55
31	0.104	0.06	0.08	0.03	21585		55
31	0.108	0.07	0.08	0.02	21585		55
31	0.110	0.07	0.08	0.03	21585		55
31	0.110	0.07	0.08	0.03	21585		55
31	0.114	0.07	0.08	0.04	21585		55
31	0.136	0.07	0.11	0.04	21585		55
31	0.151	0.11	0.09	0.05	21585		55
37	0.030	0.02	0.02	0.01	21384		50
37	0.030	0.02	0.02	0.01	21384		50
37	0.030	0.02	0.02	0.01	21384		50
37	0.030	0.02	0.02	0.01	21384		50
37	0.035	0.02	0.02	0.02	21384		50
37	0.037	0.02	0.03	0.01	21384		50
37	0.037	0.02	0.03	0.01	21384		50
37	0.037	0.02	0.03	0.01	21384		50
37	0.037	0.02	0.03	0.01	21384		50
37	0.044	0.03	0.03	0.01	21384		50
37	0.046	0.02	0.04	0.01	21384		50
37	0.046	0.02	0.04	0.01	21384		50
37	0.047	0.03	0.03	0.02	21384		50
37	0.051	0.03	0.04	0.01	21384		50
37	0.054	0.03	0.04	0.02	21384		50

COMPLAINT SITES

------- SITE=COMPLAINT LOCATION=I-10AT 17TH ST.CANAL BRIDGE -------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEM
30	0.090	0.04	0.07	0.04	81783	100PM	88
30	0.097	0.06	0.07	0.03	81783	1100AM	88
30	0.099	0.05	0.08	0.03	81783	1245PM	88
30	0.099	0.05	0.08	0.03	81783	115PM	88
30	0.107	0.05	0.09	0.03	81783	1030AM	88
30	0.107	0.05	0.09	0.03	81783	130PM	88
30	0.112	0.06	0.08	0.05	81783	1115AM	88
30	0.112	0.06	0.09	0.03	81783	145PM	88
30	0.119	0.05	0.10	0.04	81783	1145AM	88
30	0.120	0.06	0.10	0.03	81783	1200PM	88
30	0.128	0.07	0.10	0.04	81783	200PM	88
30	0.132	0.06	0.11	0.04	81783	215PM	88
30	0.140	0.06	0.12	0.04	81783	1045AM	88
30	0.162	0.07	0.14	0.04	81783	1130AM	88

------- SITE=COMPLAINT LOCATION=I-10AT 17TH ST.CANAL BRIDGE -------

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
90	0.030	0.02	0.02	0.01	81883	1100AM	88
90	0.030	0.02	0.02	0.01	81883	1215PM	88
90	0.030	0.02	0.02	0.01	81883	1230PM	88
90	0.030	0.01	0.02	0.02	81883	100PM	88
90	0.030	0.02	0.02	0.01	81883	215PM	88
90	0.035	0.02	0.02	0.02	81883	1030AM	88
90	0.035	0.02	0.02	0.02	81883	1145AM	88
90	0.035	0.02	0.02	0.02	81883	1245PM	88
90	0.035	0.02	0.02	0.02	81883	115PM	88
90	0.037	0.02	0.03	0.01	81883	1045AM	88
90	0.037	0.02	0.03	0.01	81883	1115AM	88
90	0.037	0.03	0.02	0.01	81883	130PM	88
90	0.041	0.03	0.02	0.02	81883	1015AM	88
90	0.041	0.03	0.02	0.02	81883	1200PM	88
90	0.041	0.03	0.02	0.02	81883	145PM	88
90	0.041	0.02	0.03	0.02	81883	200PM	88
90	0.044	0.03	0.03	0.01	81883	1130AM	88

SITE=COMPLAINT LOCATION=I-10@VINCENT CANAL SITE 1-BATHROOM OF HOME

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
99	0.030	0.02	0.02	0.01	42784	1100AM	M
99	0.037	0.02	0.03	0.01	42784	1105AM	M
99	0.037	0.02	0.03	0.01	42784	1110AM	M
99	0.037	0.02	0.03	0.01	42784	1115AM	M
99	0.037	0.02	0.03	0.01	42784	1120AM	M
99	0.037	0.02	0.03	0.01	42784	1125AM	M
99	0.037	0.02	0.03	0.01	42784	1140AM	M
99	0.037	0.02	0.03	0.01	42784	1150AM	M
99	0.046	0.02	0.04	0.01	42784	1135AM	M
99	0.046	0.02	0.04	0.01	42784	1145AM	M
99	0.046	0.02	0.04	0.01	42784	1155AM	M
99	0.064	0.02	0.06	0.01	42784	1130AM	M

SITE=COMPLAINT LOCATION=I-10@VINCENT CANAL SITE 2-DININGROOM OF HOME

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
99	0.030	0.02	0.02	0.01	42784	1220PM	M
99	0.030	0.02	0.02	0.01	42784	1230PM	M
99	0.037	0.02	0.03	0.01	42784	1205PM	M
99	0.037	0.02	0.03	0.01	42784	1225PM	M
99	0.037	0.02	0.03	0.01	42784	1235PM	M
99	0.037	0.02	0.03	0.01	42784	1240PM	M
99	0.044	0.03	0.03	0.01	42784	1210PM	M

SITE=COMPLAINT LOCATION=I-10@VINCENT CANAL SITE 3-2.5FT.OUTSIDE HOME

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
99	0.054	0.03	0.04	0.02	42784	135PM	M
99	0.062	0.03	0.05	0.02	42784	115PM	M
99	0.062	0.03	0.05	0.02	42784	145PM	M
99	0.062	0.03	0.05	0.02	42784	155PM	M
99	0.066	0.02	0.06	0.02	42784	140PM	M
99	0.070	0.03	0.06	0.02	42784	100PM	M
99	0.070	0.03	0.06	0.02	42784	105PM	M
99	0.070	0.03	0.06	0.02	42784	110PM	M
99	0.070	0.03	0.06	0.02	42784	120PM	M
99	0.070	0.03	0.06	0.02	42784	150PM	M
99	0.079	0.03	0.07	0.02	42784	125PM	M
99	0.079	0.03	0.07	0.02	42784	130PM	M

SITE=COMPLAINT LOCATION=I-10@VINCENT CANAL SITE 4-65.5FT.FROM HOME

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
50	0.086	0.04	0.07	0.03	42784	235PM	M
50	0.086	0.04	0.07	0.03	42784	240PM	M
50	0.096	0.05	0.08	0.02	42784	220PM	M
50	0.099	0.05	0.08	0.03	42784	225PM	M
50	0.099	0.05	0.08	0.03	42784	230PM	M
50	0.103	0.04	0.09	0.03	42784	245PM	M
50	0.129	0.06	0.11	0.03	42784	215PM	M

-- SITE=COMPLAINT LOCATION=I-10AT VINCENT CANAL 31FT FROM ROADWAY --

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
31	0.162	0.09	0.12	0.06	90183	1220PM	90
31	0.184	0.11	0.13	0.07	90183	1130AM	90
31	0.184	0.12	0.13	0.05	90183	1200PM	90
31	0.190	0.10	0.14	0.08	90183	1120AM	90
31	0.191	0.11	0.14	0.07	90183	1110AM	90
31	0.204	0.12	0.15	0.07	90183	1150AM	90
31	0.209	0.12	0.16	0.06	90183	1140AM	90
31	0.215	0.12	0.16	0.08	90183	1100AM	90
31	0.225	0.13	0.17	0.07	90183	1045AM	90
31	0.242	0.12	0.19	0.09	90183	1210PM	90

--- SITE=COMPLAINT LOCATION=I-10AT VINCENT CANAL 60FT FROM HOUSE ---

DISTANCE	VS	LONG	VERT	TRANS	DATE	TIME	TEMP
99	0.083	0.04	0.07	0.02	90183	140PM	90
99	0.083	0.04	0.07	0.02	90183	150PM	90
99	0.083	0.04	0.07	0.02	90183	200PM	90
99	0.088	0.05	0.07	0.02	90183	210PM	90
99	0.092	0.04	0.08	0.02	90183	130PM	90