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Pres B. Bienkiewicz,<sup>†</sup> and D. W. Boggs<sup>††</sup>  
Aeroelastic Model  
Model Environment



**FLUID MECHANICS AND  
WIND ENGINEERING PROGRAM**

**COLLEGE OF ENGINEERING**

**COLORADO STATE UNIVERSITY  
FORT COLLINS, COLORADO**

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WIND-TUNNEL STUDY OF  
FOUR ALLEN CENTER, HOUSTON

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LIST OF SYMBOLS

| <u>Symbol</u>      | <u>Definition</u>   |
|--------------------|---|
| U                  | Local mean velocity   |
| D                  | Characteristic dimension (building height, width, etc.)   |
| $\nu, \rho$        | Kinematic viscosity and density of approach flow  |
| $\frac{UD}{\nu}$   | Reynolds number   |
| E                  | Mean voltage  |
| A, B, n            | Constants   |
| $U_{rms}$          | Root-mean-square of fluctuating velocity  |
| $E_{rms}$          | Root-mean-square of fluctuating voltage   |
| $U_{\infty}$       | Reference mean velocity outside the boundary layer  |
| X, Y               | Horizontal coordinates  |
| Z                  | Height above surface  |
| $\delta$           | Height of boundary layer  |
| $T_u$              | Turbulence intensity $\frac{U_{rms}}{U_{\infty}}$ or $\frac{U_{rms}}{U}$  |
| $C_{p_{mean}}$     | Mean pressure coefficient, $\frac{(p-p_{\infty})_{mean}}{0.5 \rho U_{\infty}^2}$                                      |
| $C_{p_{rms}}$      | Root-mean-square pressure coefficient, $\frac{((p-p_{\infty}) - (p-p_{\infty})_{mean})_{rms}}{0.5 \rho U_{\infty}^2}$ |
| $C_{p_{max}}$      | Peak maximum pressure coefficient, $\frac{(p-p_{\infty})_{max}}{0.5 \rho U_{\infty}^2}$                               |
| $C_{p_{min}}$      | Peak minimum pressure coefficient, $\frac{(p-p_{\infty})_{min}}{0.5 \rho U_{\infty}^2}$                               |
| ( ) <sub>min</sub> | Minimum value during data record  |
| ( ) <sub>max</sub> | Maximum value during data record  |
| p                  | Fluctuating pressure at a pressure tape on the structure  |

| <u>Symbol</u>      | <u>Definition</u>   |
|--------------------|---|
| $P_{\infty}$       | Static pressure in the wind tunnel above the model                      |
| $F_X, F_Y$         | Forces in X, Y direction  |
| $A_R$              | Reference Area  |
| $CF_X$             | Force coefficient, X direction, $\frac{F_X}{A_R 0.5 \rho U_{\infty}^2}$ |
| $CF_Y$             | Force coefficient, Y direction, $\frac{F_Y}{A_R 0.5 \rho U_{\infty}^2}$ |
| $A_X, A_Y$         | Principal axes of building  |
| H                  | Building height   |
| $I_X, I_Y, I_Z$    | Building mass moment of inertia   |
| $N_X, N_Y, N_Z$    | Natural frequency (Hz)  |
| $K_X, K_Y, K_Z$    | Stiffness   |
| $\lambda_L$        | Length scale  |
| $\lambda_{\rho}$   | Air density scale   |
| $\lambda_I$        | Mass moment of inertia scale  |
| $\lambda_K$        | Stiffness scale   |
| $\lambda_{\xi}$    | Damping scale   |
| $\lambda_N$        | Frequency scale   |
| $\lambda_V$        | Velocity scale  |
| $\lambda_{\theta}$ | Rotation scale  |
| $\lambda_M$        | Response moment scale   |
| $\lambda_D$        | Deflection scale  |
| $\lambda_A$        | Acceleration scale  |
| $U_P$              | Mean gradient wind speed for prototype building                         |



## 1. INTRODUCTION

### 1.1 General

A significant characteristic of modern building design is lighter cladding and more flexible frames. These features produce an increased vulnerability of glass and cladding to wind damage and result in larger deflections of the building frame. In addition, increased use of pedestrian plazas at the base of the buildings has brought about a need to consider the effects of wind and gustiness in the design of these areas.

The building geometry itself may increase or decrease wind loading on the structure. Wind forces may be modified by nearby structures which can produce beneficial shielding or adverse increases in loading. Overestimating loads results in uneconomical design; underestimating may result in cladding or window failures. Tall structures have historically produced unpleasant wind and turbulence conditions at their bases. The intensity and frequency of objectionable winds in pedestrian areas is influenced both by the structure shape and by the shape and position of adjacent structures.

Techniques have been developed for wind tunnel modeling of proposed structures which allow the prediction of wind pressures on cladding and windows, overall structural loading, and also wind velocities and gusts in pedestrian areas adjacent to the building. Information on sidewalk-level gustiness allows plaza areas to be protected by design changes before the structure is constructed. Accurate knowledge of the intensity and distribution of the pressures on the structure permits adequate but economical selection of cladding strength to meet selected maximum design winds and overall wind loads for the design of the frame for flexural control.

Modeling of the aerodynamic loading on a structure requires special consideration of flow conditions in order to guarantee similitude between model and prototype. A detailed discussion of the similarity requirements and their wind-tunnel implementation can be found in references (1), (2), and (3). In general, the requirements are that the model and prototype be geometrically similar, that the approach mean velocity at the building site have a vertical profile shape similar to the full-scale flow, that the turbulence characteristics of the flows be similar, and that the Reynolds number for the model and prototype be equal.

These criteria are satisfied by constructing a scale model of the structure and its surroundings and performing the wind tests in a wind tunnel specifically designed to model atmospheric boundary-layer flows. Reynolds number similarity requires that the quantity  $UD/\nu$  be similar for model and prototype. Since  $\nu$ , the kinematic viscosity of air, is identical for both, Reynolds numbers cannot be made precisely equal with reasonable wind velocities. To accomplish this the air velocity in the wind tunnel would have to be as large as the model scale factor times the prototype wind velocity, a velocity which would introduce unacceptable compressibility effects. However, for sufficiently high Reynolds numbers ( $>2 \times 10^4$ ) the pressure coefficient at any location on the structure will be essentially constant for a large range of Reynolds numbers. Typical values encountered are  $10^7$ - $10^8$  for the full-scale and  $10^5$ - $10^6$  for the wind-tunnel model. In this range acceptable flow similarity is achieved without precise Reynolds number equality.

Modeling of the building's dynamic response required that aeroelastic tests of the structure be performed. A three degrees-of-freedom model was assumed and scaled for the wind-tunnel conditions. Requirements for

similarity between model and full-scale building were discussed in references (3), (4) and (5). Generally, for the three degrees-of-freedom of interest, the ratio between the aerodynamic, inertia, damping and elastic forces should be the same for the model and the prototype. To simulate the building motion, a rigid model was elastically supported by springs at its base. The base permits rotation of the model around two orthogonal axes located in the horizontal plane, and about a vertical axis. The spring stiffnesses and mass moments of inertia of the model about these axes were selected to provide a ratio of the frequencies (for the assumed degrees-of-freedom) equivalent to the full scale while providing for a convenient range of wind-tunnel velocities to ensure equivalence of the reduced velocity between model and full scale. The model is provided with a damping mechanism to apply a range of damping to the model.

## 1.2 The Wind-Tunnel Test

The wind engineering study was performed on a building modeled at a scale of 1:400. The rigid building model for pressure data acquisition was constructed of clear plastic fastened together with screws. The structure was modeled in detail to provide accurate flow patterns in the wind passing over the building surfaces. To achieve similarity in wind effects the area surrounding the test building was also modeled. A flow visualization study was first made (smoke is used to make the air currents visible) to define overall flow patterns and identify regions where local flow features might cause difficulties in building curtain-wall design or produce pedestrian discomfort.

The test model, equipped with pressure or "piezometer" taps was exposed to an appropriately modeled atmospheric wind in the wind tunnel

and the fluctuating pressure at each tap measured electronically. The model, and the modeled area, were rotated 10 degrees and another set of data recorded for each pressure tap.

Data were recorded, analyzed and processed by an on-line computerized data-acquisition system. Pressure coefficients of several types were calculated by the computer for each reading on each piezometer tap and were printed in tabular form as computer readout. Using wind data applicable to the building site, representative wind velocities were selected for combination with measured pressures on the building model. Integration of test data with wind data results in prediction of peak local wind pressures for design of glass or cladding. Also included are overall mean forces and moments on the structure obtained by integrating the mean pressures over the building's surface. Pressure contours were drawn on the developed building surfaces showing the intensity and distribution of peak wind loads on the building. These results may be used to divide the building into zones where lighter or heavier cladding or glass may be desirable.

Based on the visualization (smoke) tests and on a knowledge of heavy pedestrian use areas, locations were chosen at the base of the building where wind velocities were measured to determine the relative comfort or discomfort of pedestrians in plaza areas, near building entrances, near building corners, or on sidewalks. Usually a reference pedestrian position is also tested to determine whether the wind environment in the building area is better or worse than the environment a block or so away in an undisturbed area.

The dynamic response of the building was evaluated using the aeroelastic model, which was instrumented to sense base moments and

accelerations at the top of the building. These measurements were made at one value of damping and approach wind velocity for each of 24 wind directions to determine building response sensitivity to different wind directions. Several wind sectors were then selected for a more detailed angular examination of response so that no large responses for narrow approach wind directions were missed. Four wind directions, where response was large, were selected for further study. Response measurements were made at these directions for a range of reduced velocities and damping values.

The following pages discuss in greater detail the procedures followed and the equipment and data collecting and processing methods used. In addition, the data presentation format is explained and the implications of the data are discussed.

## 2. EXPERIMENTAL CONFIGURATION

### 2.1 Wind Tunnel

Wind engineering studies are performed in the Fluid Dynamics and Diffusion Laboratory at Colorado State University (Figure 1). Three large wind tunnels are available for wind loading studies depending on the detailed requirements of the study. The wind tunnels used for this investigation are shown in Figures 2a and 2b. The industrial aerodynamics wind tunnel was used for pressure tests and pedestrian wind measurements while the environmental wind tunnel was used for the aeroelastic model tests. Both tunnels have a flexible roof adjustable in height to maintain a zero pressure gradient along the test section. The mean velocity can be adjusted continuously in each tunnel to the maximum velocity available.

### 2.2 Pressure Model

In order to obtain an accurate assessment of local pressures using piezometer taps, models are constructed to the largest scale that does not produce significant blockage in the wind-tunnel test section. The models are constructed of 1/2 in. thick acrylic plastic and fastened together with metal screws. Significant variations in the building surface, such as mullions, are machined into the plastic surface. Piezometer taps (1/16 in. diameter) are drilled normal to the exterior vertical surfaces in rows at several or more elevations between the bottom and top of the building. Similarly, taps are placed in the roof and on any sloping, protruding, or otherwise distinctive features of the building that might need investigation.

Pressure tap locations are chosen so that the entire surface of the building can be investigated for pressure loading and at the same

time permit critical examination of areas where experience has shown that maximum wind effects may be expected to occur. Locations of the pressure taps for this study are shown in Figure 3. Dimensions are given both for full-scale building (in ft) and for model (in in.). The pressure tap numbers are shown adjacent to the taps.

The pressure tests are sometimes made in two stages. In the first stage measurements are made on the initial distribution of pressure taps. If it becomes apparent from the data that the loading on the building is being influenced by some unsuspected geometry of the building or adjacent structures, additional pressure taps are installed in the critical areas. The locations of the taps are selected so that the maximum loading can be detected and the area over which this loading is acting can be defined. Any added taps are also shown in Figure 3.

### 2.3 Aeroelastic Model

The aeroelastic model was made from a thin ABS plastic sheet molded to the external shape of the structure and screwed to a light, rigid magnesium framework as shown in Figure 4. The model was mounted on an elastic, strain-gaged base system providing three degrees-of-freedom--two fundamental rectilinear modes in bending and a torsional mode. Details of the mounting are shown in Figure 5. The model was scaled according to the procedure outlined in reference (5). Initial (target) scales for the principal parameters, assumed in the study, were gathered in Table 8. These scales were used to compute target values of the parameters for the model, denoted here as "exact" model (see Table 9). The model was designed to provide the 3 moments of inertia, stiffnesses, and natural frequencies reasonably close to the target model values, based on the given prototype values for mass distribution and natural frequencies.

Final adjustments were made after completion of the model, by 1) adding or moving about small "tuning" weights inside the model, and 2) adjusting the length of springs in the base fixture. Values of the parameters for the target ("exact") and constructed ("actual") model are compared in Table 10. It should be noted that a large discrepancy for the Z-component (torsion) is a result of changes of the values for the prototype building which occurred after the model had been constructed. Final scaling assumed in the study is summarized in Table 11.

Four miniature accelerometers were installed at an elevation corresponding to the building's top floor to measure accelerations in each of two principal building axes and acceleration corresponding to the building response in torsion.

#### 2.4 Model Environment

A circular area of 1600 ft in radius surrounding the building was modeled in detail. Structures within the modeled region were made from styrofoam and cut to the individual building geometries. The model and its surroundings were mounted on a turntable (Figure 2) near the downwind end of the test section. Any significant buildings or terrain features which did not fit on the turntable were placed on removable pieces and placed upwind of the turntable for appropriate wind directions. A plan view of the building and its surroundings is shown in Figure 6. This environment was used for both the pressure model and the aeroelastic model.

The region upstream from the modeled area was covered with a randomized roughness constructed using various sized cubes placed on the floor of the wind tunnel. Spires were installed at the test-section entrance to provide a thicker boundary layer than would otherwise be



available. The thicker boundary layer permitted a somewhat larger scale model than would otherwise be possible. The spires were approximately triangularly-shaped pieces of 1/2 in. thick plywood 6 in. wide at the base and 1 in. wide at the top, extending from the floor to the top of the test section. They were placed so that the broad side intercepted the flow. A barrier approximately 8 in. high was placed on the test-section floor downstream of the spires to aid in development of the boundary-layer flow.

The distribution of the roughness cubes and the spires in the roughened area was designed to provide a boundary-layer thickness of approximately 4 ft, a velocity profile power-law exponent similar to that expected to occur in the region approaching the modeled area for each wind direction (a number of wind directions may have the same approach roughness). A photograph of the completed model in the wind tunnel is shown in Figure 7. The wind-tunnel ceiling is adjusted after placement of the model to obtain a zero pressure gradient along the test section.

### 3. INSTRUMENTATION AND DATA ACQUISITION

#### 3.1 Flow Visualization

Making the air flow visible in the vicinity of the model is helpful (a) in understanding and interpreting mean and fluctuating pressures, (b) in defining zones of separated flow and reattachment and zones of vortex formation where pressure coefficients may be expected to be high, and (c) in indicating areas where pedestrian discomfort may be a problem. Titanium tetrachloride smoke is released from sources on and near the model to make the flow lines visible to the eye and to make it possible to obtain motion picture records of the tests. Conclusions obtained from these smoke studies are discussed in Sections 4.1 and 5.1.

#### 3.2 Pressures

Mean and fluctuating pressures are measured at each of the pressure taps on the model structure. Data are obtained for 36 wind directions, rotating the entire model assembly in a complete circle. Seventy-six pieces of 1/16 in. I.D. plastic tubing are used to connect 76 pressure ports at a time to an 80 tap pressure switch mounted inside the model. The switch was designed and fabricated in the Fluid Dynamics and Diffusion Laboratory to minimize the attenuation of pressure fluctuations across the switch. Each of the 76 measurement ports is directed in turn by the switch to one of four pressure transducers mounted close to the switch. The four pressure input taps not used for transmitting building surface pressures are connected to a common tube leading outside the wind tunnel. This arrangement provides both a means of performing in-place calibration of the transducers and, by connecting this tube to a pitot tube mounted inside the wind tunnel, a means of automatically monitoring the tunnel speed. The switch is operated by means of a shaft projecting through

the floor of the wind tunnel. A computer-controlled stepping motor steps the switch into each of the 20 required positions. The computer keeps track of switch position but a digital readout of position is provided at the wind tunnel.

The pressure transducers used are Setra differential transducers (Model 237) with a 0.10 psid range. Reference pressures are obtained by connecting the reference sides of the four transducers, using plastic tubing, to the static side of a pitot-static tube mounted in the wind tunnel free stream above the model building. In this way the transducer measures the instantaneous difference between the local pressures on the surface of the building and the static pressure in the free stream above the model.

Output from the pressure transducers is fed to an on-line data acquisition system consisting of a Hewlett-Packard 21 MX computer, disk unit, card reader, printer, Digi-Data digital tape drive and a Preston Scientific analog-to-digital converter. The data are processed immediately into pressure coefficient form as described in Section 4.3 and stored for printout or further analysis.

All four transducers are recorded simultaneously for 16 seconds at a 250 sample per second rate. The results of an experiment to determine the length of record required to obtain stable mean and rms (root-mean-square) pressures and to determine the overall accuracy of the pressure data acquisition system is shown in Figure 8. A typical pressure port record was integrated for a number of different time periods to obtain the data shown. Examination of a large number of pressure taps showed that the overall accuracy for a 16 second period is, in pressure coefficient form, 0.03 for mean pressures, 0.1 for peak pressures, and 0.01 for rms pressures. Pressure coefficients are defined in Section 4.3.

### 3.3 Wind Velocity

Mean velocity and turbulence intensity profiles were measured upstream of the model, using a hot-film anemometer, to confirm that an approach boundary-layer flow appropriate to the site has been established. Tests were made at one wind velocity in the tunnel. This velocity is well above that required to satisfy Reynolds number similarity between the model and the prototype as discussed in Section 1.1.

In addition, mean velocity and turbulence intensity measurements were made 5 to 7 ft (prototype) above the surface at a dozen or more locations on and near the building for 16 wind directions. The measurement locations are shown on Figure 4. The surface measurements are indicative of the wind environment to which a pedestrian at the measurement location would be subjected. The locations were chosen to determine the degree of pedestrian comfort or discomfort at the building corners where relatively severe conditions frequently are found, near building entrances and on adjacent sidewalks where pedestrian traffic is heavy, and in open plaza areas. In most studies a reference pedestrian position, located about a block away, is also tested. These data are helpful in evaluating the degree of pedestrian comfort or discomfort in the proposed plaza area in terms of the undisturbed environment in the immediate vicinity.

These pedestrian-level measurements were made with a single hot-film anemometer mounted with its axis vertical. The instrumentation used is a Thermo Systems constant temperature anemometer (Model 1050) with a 0.001 in. diameter platinum film sensing element 0.020 in. long. Output is directed to the on-line data acquisition system for analysis.

Calibration of the hot-film anemometer is performed by comparing output with the pitot-static tube in the wind tunnel. The calibration data are fit to a variable exponent King's Law relationship of the form

$$E^2 = A + BU^n$$

where  $E$  is the hot-film output voltage,  $U$  the velocity and  $A$ ,  $B$ , and  $n$  are coefficients selected to fit the data. The above relationship was used to determine the mean velocity at measurement points using the measured mean voltage. The fluctuating velocity in the form  $U_{\text{rms}}$  (root-mean-square velocity) was obtained from

$$U_{\text{rms}} = \frac{2 E E_{\text{rms}}}{B n U^{n-1}}$$

where  $E_{\text{rms}}$  is the root-mean-square voltage output from the anemometer. For interpretation all turbulence measurements for pedestrian winds were divided by the mean velocity outside the boundary-layer  $U_{\infty}$ . Turbulence intensity in velocity profile measurements, however, used the local mean velocity as a reference.

### 3.4 Base Moments

The strain gages monitoring the state of stress in the springs at the base of the aeroelastic model were formed into three bridge networks-- one for each of the three degrees-of-freedom of the building motion. These bridges were conditioned and monitored by Honeywell Accudata 118 Gage Control/Amplifier units which provided excitation to the bridge and amplification of the bridge output. These signals were processed through the on-line data-acquisition system described earlier. The model spring stiffness was calibrated statically. A known static moment was applied to the model and its deflection was measured. Interactions between channels-- e.g., voltage in channel  $y$  due to load in direction  $x$ , were determined

to be negligible. The response of the force balance was therefore assumed uncoupled for each of the three degrees-of-freedom.

During test runs data were taken at a sample rate of 300 samples per second on each channel. The sample duration time was selected on the basis of repeatability of sampling runs made early in the testing phase, and corresponds to about 1 hour at full scale. The data were processed immediately to determine mean, rms and peak loads. The data were also stored on digital tape for further analysis.

### 3.5 Building Acceleration

The accelerometers used in the study were Vibra-Metrics Model 1001A, weighing 1.9 grams each. Prior to installation on the model, each accelerometer was calibrated on a shaker table with known frequency and amplitude. During each data run the outputs from the four accelerometers were directed to an analog processing circuit which provided three output signals corresponding to the three degrees-of-freedom of the model. These signals were continuously monitored by the data-acquisition system; mean, rms, and peak acceleration levels for each of the three components were determined by the on-line computer. Further details regarding the processing of acceleration data are given in Appendix B.

For all aeroelastic tests, the velocity in the wind tunnel was set to the value required by reduced velocity similarity using a pitot-static tube connected to a pressure transducer. Output from the transducer was directed to the on-wire data-acquisition system for immediate calculation of tunnel velocity.

## 4. RESULTS

### 4.1 Flow Visualization

A film is included as part of this report showing the characteristics of flow about the structure using smoke to make the flow visible. A listing of the contents of the film is shown in Table 1. Several features can be noted from the visualization. As with all large structures, wind approaching the building is deflected down to the plaza level, up over the structure and around the sides. A description of the smoke test results emphasizing flow patterns of concern relative to possible high-wind load areas and pedestrian comfort is given in Section 5.1.

### 4.2 Velocity

Velocity and turbulence profiles are shown in Figure 9. Profiles were taken upstream from the model which are characteristic of the boundary layer approaching the model and sometimes at the building site with building removed. The boundary-layer thickness,  $\delta$ , is shown in Figure 9. The corresponding prototype value of  $\delta$  for this study is also shown in the figure. This value was established as a reasonable height for this study. The mean velocity profile approaching the modeled area has the form

$$\frac{U}{U_{\infty}} = \left(\frac{z}{\delta}\right)^n .$$

The exponent  $n$  for the approach flow established for this study is shown in Figure 9.

Profiles of longitudinal turbulence intensity in the flow approaching the modeled area are shown in Figure 9. The turbulence intensities are appropriate for the approach mean velocity profile selected. For the velocity profiles, turbulence intensity is defined

as the root-mean-square about the mean of the longitudinal velocity fluctuations divided by the local mean velocity  $U$ ,

$$Tu = \frac{U_{rms}}{U} .$$

Velocity data obtained at each of the pedestrian measurement locations shown in Figure 6 are listed in Table 2 as mean velocity  $U/U_{\infty}$ , turbulence intensity  $U_{rms}/U_{\infty}$ , and largest effective gust

$$U_{pk} = \frac{U + 3U_{rms}}{U_{\infty}} .$$

These data are plotted in polar form in Figure 10. Measurements were taken 5 to 7 ft above the ground surface. A site map is superimposed on the polar plots to aid in visualization of the effects of the nearby structures on the velocity and turbulence magnitudes. An analysis of these wind data is given in Section 5.2.

To enable a quantitative assessment of the wind environment, the wind-tunnel data were combined with wind frequency and direction information obtained at the local airport. Table 3 shows wind frequency by direction and magnitude obtained from summaries published by the National Weather Service. These data, usually obtained at an elevation of about 30-40 ft, were converted to velocities at the reference velocity height for the wind-tunnel measurements and combined with the wind-tunnel data to obtain cumulative probability distributions (percent time a given velocity is exceeded) for wind velocity at each measuring location. The percentage times were summed by wind direction to obtain a percent time exceeded at each measuring position independent of wind direction (but accounting for the fact that the wind blows from different directions with varying frequency). These results are plotted in Figure 11.



Interpretation of Figure 11 is aided by a description of the effects of wind of various magnitudes on people. The earliest quantitative description of wind effects was established by Sir Francis Beaufort in 1806 for use at sea and is still in use today. Several recent investigators have added to the knowledge of wind effects on pedestrians. These investigations along with suggested criteria for acceptance have been summarized by Penwarden and Wise (6) and Melbourne (7). The Beaufort scale (from ref. 6), based on mean velocity only, is reproduced as Table 4 including qualitative descriptions of wind effects. Table 4 suggests that mean wind speeds below 12 mph are of minor concern and that mean speeds above 24 mph are definitely inconvenient. Quantitative criteria for acceptance from reference (7) are superimposed as dashed lines on Figure 11. The peak gust curves shown in Figure 11 are the percent of time during which a short gust of the stated magnitude could occur (say about one of these gusts per hour). Implications of the data plotted in Figure 11 are presented in Section 5.2.

Because some pedestrian wind measuring positions are purposely chosen at sites where the smoke tests showed large velocities of small spacial extent, the general wind environment about the structure may be less severe than one might infer from a strict analysis of Table 2 and Figure 11.

### 4.3 Pressures

For each of the pressure taps examined at each wind direction, the data record is analyzed to obtain four separate pressure coefficients.

The first is the mean pressure coefficient

$$C_{p_{\text{mean}}} = \frac{(p-p_{\infty})_{\text{mean}}}{0.5 \rho U_{\infty}^2}$$

where the symbols are as defined in the List of Symbols. It represents the mean of the instantaneous pressure difference between the building pressure tap and the static pressure in the wind tunnel above the building model, nondimensionalized by the dynamic pressure

$$0.5 \rho U_{\infty}^2$$

at the reference velocity position. This relationship produces a dimensionless coefficient which indicates that the mean pressure difference between building and ambient wind at a given point on the structure is some fraction less or some fraction greater than the undisturbed wind dynamic pressure near the upper edge of the boundary layer. Using the measured coefficient, prototype mean pressure values for any wind velocity may be calculated.

The magnitude of the fluctuating pressure is obtained by the rms pressure coefficient

$$C_{p_{\text{rms}}} = \frac{\left( (p-p_{\infty}) - (p-p_{\infty})_{\text{mean}} \right)_{\text{rms}}}{0.5 \rho U_{\infty}^2}$$

in which the numerator is the root-mean-square of the instantaneous pressure difference about the mean .

If the pressure fluctuations followed a Gaussian probability distribution, no additional data would be required to predict the

frequency with which any given pressure level would be observed.

However, the pressure fluctuations do not, in general, follow a Gaussian probability distribution so that additional information is required to show the extreme values of pressure expected. The peak maximum and peak minimum pressure coefficients are used to determine these values:

$$C_{P_{\max}} = \frac{(p-p_{\infty})_{\max}}{0.5 \rho U_{\infty}^2}$$

$$C_{P_{\min}} = \frac{(p-p_{\infty})_{\min}}{0.5 \rho U_{\infty}^2}$$

The values of  $p-p_{\infty}$  which were digitized at 250 samples per second for 16 seconds, representing about one hour of time in the full-scale, are examined individually by the computer to obtain the most positive and most negative values during the 16-second period. These are converted to  $C_{P_{\max}}$  and  $C_{P_{\min}}$  by nondimensionalizing with the free stream dynamic pressure.

The four pressure coefficients are calculated by the on-line data acquisition system computer and tabulated along with the approach wind azimuth in degrees from true north. The list of coefficients is included as Appendix A. The pressure tap code numbers used in the appendix are explained in Figure 3.

To determine the largest peak loads acting at any point on the structure for cladding design purposes, the pressure coefficients for all wind directions were searched to obtain, at each pressure tap, the largest absolute value of peak pressure coefficient. Table 6 provides these pressure coefficients and associated wind directions. Included in Section 5.3 is an analysis of the coefficients of Table 6 including the maximum values obtained and where they occurred on the building.

The pressure coefficients of Table 6 can be converted to full-scale loads by multiplication by a suitable reference pressure selected for the field site. This reference pressure is represented in the equations for pressure coefficients by the  $0.5 \rho U_{\infty}^2$  denominator. This value is the dynamic pressure associated with an hourly mean wind at the reference velocity measurement position at the edge of the boundary layer. In general, the method of arriving at a design reference pressure for a particular site involves selection of a design wind velocity, translation of the velocity to an hourly mean wind at the reference velocity location and conversion to a reference pressure. Selection of the design velocity can be made from statistical analysis of extreme wind data or selected from wind maps contained in the proposed wind loading code ANSI A58.1 of the American National Standards Institute (8). The calculation of reference pressure for this study is shown in Table 5. The factor used in Table 5 to reduce gust winds to hourly mean winds is given in reference (9).

The reference pressure associated with the design hourly mean velocity at the reference velocity location can be used directly with the peak-pressure coefficients to obtain peak local design wind loads for cladding design. Local, instantaneous peak loads on the full-scale building suitable for cladding design were computed by multiplying the reference pressure of Table 5 by the peak coefficients of Table 6 and are listed as peak pressures in that table. The maximum psf load given at each tap location is the absolute value of the maximum value found in the tests, irrespective of its algebraic sign. For ease in visualizing the loads on the structure, contours of equal peak pressures for cladding load shown in Table 6 have been plotted on developed elevation

views of the structure, Figure 12. For control of water infiltration from outside to inside, the largest positive (inward-acting) pressure at each tap location is tabulated in Table 6.

For glass design pressures, a glass load factor is used to account for the different duration between measured peak pressures and the one minute loading commonly used in glass design charts. The design pressure used for glass is normally less than the peak pressures used for cladding design because of the static fatigue property of glass which can withstand higher pressures for short duration loads than for long duration loads. Recent research (10) indicates that the period of application of the peak pressures reported herein is about 5-10 seconds or less. If a glass design is based on these peak-pressure values, then a glass strength associated with this duration load should be used. Because glass design charts are normally based on some alternate load duration--usually one minute--then some reduction in peak loads should be made. An estimate of a load reduction factor can be obtained from an empirical relation of glass strength as a function of load duration. Current glass selection charts showing glass strength as a function of load duration (11) and older references (12) indicate the following load reduction factors:

|                   | ref 9 | ref 10 |
|-------------------|-------|--------|
| annealed float    | 0.80  | 0.81   |
| heat strengthened | 0.94  |        |
| tempered          | 0.97  | 0.98   |

Loadings appropriate for glass design can be computed by multiplying the peak-pressure loads of Table 6 by these load factors.

#### 4.4 Forces and Moments

4.4.1 Method of Analysis. The peak value of any fluctuating quantity  $Q$  (which may be either a shear force or moment) may be expressed in two ways:

$$Q_p = \bar{Q} G \quad (2)$$

or

$$Q_p = \bar{Q} + k Q_{rms} \quad (1)$$

where  $Q_p$ ,  $\bar{Q}$ , and  $Q_{rms}$  are the peak, mean, and fluctuating root mean square of  $Q$ , respectively. These two equations may be interpreted as the defining relations for  $G$ , the "dynamic response factor," and  $k$ , the "peak factor." The forces and moments computed in this study make use of both of these equations, and are based on data obtained from both the aeroelastic model and the pressure model.

Equation (1) is directly applicable to the aeroelastic response measurements, which consist only of moments  $M_p$ ,  $\bar{M}$ , and  $M_{rms}$ , at the base of the building. Thus the peak factor  $k$  can be determined for each wind direction. These peak factors are then averaged, and the resulting single value of  $k$  is used to recompute the peak moments  $M_p$ . This smoothes out the variability inherent in the measurement of peak values.

Peak shear forces, and the distribution of peak shears and moments through the height of the building, are computed according to Equation (1). This becomes

$$V_p(Z, \alpha) = \bar{V}(Z, \alpha) G(\alpha)$$

$$M_p(Z, \alpha) = \bar{M}(Z, \alpha) G(\alpha)$$

The mean shear and moment as a function of height and wind direction,  $\bar{V}(Z,\alpha)$  and  $\bar{M}(Z,\alpha)$ , are obtained from the pressure data. The dynamic response factor  $G(\alpha)$  is obtained for each wind direction from the aeroelastic data. It is computed as the ratio of measured peak base moment to measured mean base moment.

The values  $V_p(Z,\alpha)$  and  $M_p(Z,\alpha)$  correspond to a given wind velocity. A comparison of these numbers for various wind directions is somewhat misleading, since the wind velocity of a given probability of exceedance, or return period, is different for different directions. The final step in this analysis, then, is to adjust the peak shears and moments to a common return period of 100 years, based on the directional qualities of available wind records.

4.4.2 Aeroelastic Response. Measured fluctuating moments  $MX$ ,  $MY$ , and  $MZ$  (see Figures 3 and 14) were scaled by the on-line data acquisition system to full-scale values. Mean, rms and peak values were calculated in a manner similar to that used for pressures.

Mean base moments corresponding to about 1 hour average are plotted in Figure 15 as a function of wind direction. They are compared to the mean base moments obtained from the interpreted pressure data. The agreement is good. Mean, rms, minimum and maximum base moments are plotted as a function of wind direction in Figure 16. In addition this figure shows corresponding deflection of the top floor computed from the moment data and stiffness of the prototype building, Table 9. Displacements  $DX$ ,  $DY$ ,  $DZ$  corresponding to the base moments,  $MY$ ,  $MX$ ,  $MZ$  are defined in Figure 14. Displacement  $DZ$  related to the torsional moment  $MZ$  was computed for the reference point  $\underline{P}$ , also shown in Figure 14. The moment data presented in Figure 16 was used to compute

a peak factor  $k$  for each component, which is shown in Figure 17. The continuous line in the figure indicates value of the mean value (of the peak factor) taken over all the wind directions considered. The peak moment  $M_Y$ , computed using the average peak factor from Figure 17b, and mean and rms from Figure 16b, is plotted in Figure 18 together with the mean and rms values. The data for the 128-mph (100-yr) wind (Figure 18) is reduced for a 108-mph (50-yr) wind in Figure 19.

In order to see the influence of velocity and damping on the building response, four wind directions were selected for the study. Building response was measured over a range of reduced velocities and building damping. Peak base moments and corresponding top floor deflections are shown on Figure 20. They are plotted as a function of the (full-scale) gradient wind velocity,  $U_p$ , and the corresponding reduced velocity,  $U_p/A_x N_i$ , where  $A_x = 108$  ft,  $N_i =$  natural frequency for the prototype building ( $i = x, y, z$ , Table 9). Reduced velocity is related to gradient wind velocity and approximate return period as indicated in Table 12.

4.4.3 Forces and Moments as a Function of Height. The mean shear and moment at each floor of the building are computed from the data of building surface pressure. The face coefficient method is used to integrate this data and scale the results to a given reference pressure, or wind velocity.

Force coefficients were computed for each floor for each wind direction using the equations shown below.

$$CF_X = \frac{F_X}{A_R 0.5 \rho U_\infty^2} \quad CF_Y = \frac{F_Y}{A_R 0.5 \rho U_\infty^2}$$

Terms and symbols used in the equations are defined in the List of Symbols and the axes are defined for the building in Figure 3. Force



coefficients  $CF_X$  and  $CF_Y$  were computed for the horizontal forces acting along the X and Y axes using the mean pressure coefficient at each pressure tap.  $A_R$  represents a constant reference area for nondimensionalization of the forces and moments.

The total forces acting on the full-scale building for each floor and wind direction were computed by multiplying the above coefficients by the appropriate full-scale reference area, by the reference pressure of Table 5, by a dynamic response factor corresponding to that wind direction, and by a wind directional load factor.

The dynamic response factor was obtained from the aeroelastic data shown graphically in Figure 16. For each wind direction, it is simply the ratio of peak response (the larger absolute value of maximum or minimum response) to the mean response.

For a 100-yr return period, the reference pressure from Table 5A corresponds to a fastest mile wind velocity of 90 mph at 30 ft. This is the 100-yr return wind when all data are considered, independent of direction. The actual 100-yr return wind as a function of wind direction is given in Table 5C. If 100-yr loads are to be based on a 90 mph wind, then 90 mph must be multiplied by the "gust factor" shown in the table. The square of the gust factor is also given, and is called a "load factor." Since aerodynamic forces vary as the square of velocity, calculated loads based on 90 mph velocity must be multiplied by this load factor to obtain a load corresponding to the actual 100-yr return velocity.

After applying these adjustment factors for dynamic response and wind direction, the forces obtained at each floor were used to obtain load, shear, and moment diagrams for the building for each wind direction. The shear diagram, in kips, was obtained by algebraic sum of all forces

in each coordinate direction acting above the floor of interest. The load diagram, in psf, was obtained by dividing the shear values by their contributing areas (listed in Table 7). The moment diagram, in 1000 ft-kips, was obtained by integration of the shear values so that the moment due to forces acting above the floor level of interest was calculated. The sign of the moment was established by the right-hand rule about an X', Y' axis through the floor of interest. Moments about the Z axis were calculated by considering the displacement of forces in the X and Y directions from the Z axis shown in Figure 3. Load, shear, and moment diagrams are shown in Figure 13 for several wind directions.

#### 4.5 Accelerations

Since the dominant frequency of vibration in each of the three degrees-of-freedom of building motion is essentially constant, the acceleration in each direction is essentially proportional to the displacement--and therefore to the moment--in that direction. This means that the results shown in Figure 16 can be used to estimate wind directions for which the total acceleration is significant. By this reasoning, 4 wind directions were selected from which to acquire acceleration data. For each wind direction, tests were conducted at 6 wind velocities, ranging from approximately 36 mph to 99 mph (fastest mile at an elevation of 30 ft). The results of these tests are shown in Table 13.

The number of events per year in this table corresponding to each wind velocity is taken from Table 5B, after first dividing the velocity by the directional gust factor in Table 5C. The rms accelerations  $x,y,z$  were calculated by the on-line computer directly from accelerometer signals,

as described in Section 3.4. The total rms acceleration is the square root of the sum of the squares of these three values; this relationship is derived in Appendix B.

## 5. DISCUSSION

### 5.1 Flow Visualization

Flow patterns identified with smoke showed that the largest pressures would probably be found on the cylindrical ends of the building due to flow separation from the surface. Because there are no sharp corners to fix the flow separation point, somewhat larger local peak pressures may be found on the cylindrical portion of the building than would be expected from a building with rectangular ends. A line of buildings to the northeast which are lower than the Four Allen Center tower cause higher velocity and turbulence in the approaching wind at elevations high on the building for northerly winds than would exist without those adjacent buildings. This condition may cause increased local cladding loads and higher dynamic response.

Winds in pedestrian areas about the base of the building did not appear to be of large magnitude. The highest winds appeared to be at the east and west ends of the building for limited ranges in approach wind direction.

### 5.2 Pedestrian Winds

Figure 6 shows the 18 locations selected for investigation of pedestrian wind comfort. Location 1 was selected as a reference location which should be reasonably undisturbed by presence of the Four Allen Center building. Table 2 and Figure 10 show that the largest values of mean velocity were measured at locations 3, 10 and 14 at the ends of the building with values ranging from 73 to 79 percent of the mean velocity,  $U_{\infty}$ , at the boundary layer height. These values compare to largest values of 69 percent measured at reference location 1 and about 45 percent one might expect in an open-country environment.

The largest value of fluctuating velocity,  $U_{rms}$ , was measured at location 7 with a value of 21 percent of  $U_{\infty}$ . This compares to a largest value of 17 percent measured at reference location 1 and to 10 to 12 percent expected in an open-country environment. The largest values of peak gust, represented by the mean plus three rms as discussed in Section 4.2, were measured at locations 3 and 10 and ranged from 114 to 133 percent of  $U_{\infty}$ . The largest value measured at location 1 was 99 percent of  $U_{\infty}$  while an open-country environment might expect a value of 80 to 85 percent.

Velocity data of Table 2 integrated with local wind data listed in Table 3 are shown in Figure 11. Based on the data of this figure, the windiest locations of those measured were 1, 3, 4, and 10 which are predicted to be unacceptably windy more than 20 percent of the time. Most other locations had more moderate wind environments. Location 18, inside the column line under the building overhang, was significantly improved over location 10 located nearby outside the column line. On windier days, it is likely that many pedestrians will want to walk inside the column line to avoid high wind conditions. The environment at locations 3 and 4 was probably influenced by a proposed 520-ft building to the southwest which was included in the model at the time the pedestrian wind measurements were made. Because the shape of that proposed building is still not certain, the wind environment near locations 3 and 4 could change due to the shape of that proposed building.

The results of the pedestrian wind study showed that pedestrian areas near locations 3, 4 and 10 to be unacceptably windy for a large percentage of time--as windy or windier than the reference location 1. Pedestrian paths exist near both locations where winds are more moderate;

pedestrians can be expected to seek these alternate routes frequently. Most other areas around the building will be comfortable for short or long-duration activities occasionally becoming uncomfortable for walking.

### 5.3 Pressures

Pressure data were obtained for all taps for two configurations of surroundings--Configuration A included four proposed buildings (marked with C in Figure 6), and Configuration C which excluded the four proposed buildings. Data were also obtained for Configurations B and D which were data obtained at selected taps at 2 degree azimuthal increments near azimuths where large pressure peaks were observed in Configurations A and C, respectively, to ensure that the largest peaks were obtained. Because the 520-ft building to the southwest was not close, as modeled, to the shape of the proposed building which was designed after wind-tunnel tests were complete and because the final shape of that structure was still in doubt, the data for Configurations A and B were discarded and do not appear in this report.

Table 6 shows the largest peak pressure coefficients and corresponding loads measured on the building for each pressure tap location. The largest peak pressure coefficients measured on the building were obtained at locations 424 and 434 on the curved surface at the west end of the building. Peak pressure coefficients of -2.28 and -2.22 were measured at these taps for a wind direction of 170 degrees. These largest peak coefficients represent, using the 100-yr recurrence wind reference pressure of Table 5, peak cladding pressures of 99 and 97 psf. Figure 12 shows that most areas of the building had peak cladding pressures in the 40 to 60 psf range.

#### 5.4 Forces and Moments

Base moments obtained from the aeroelastic model tests were presented in Figures 16, 18, and 19. The peak values in Figure 18 have been "smoothed" by removing the statistical variation inherent in the measurement of peak values (see Section 4.4). These data were obtained at a wind velocity corresponding to 128 mph at full scale for all wind directions, and represent the best possible estimate of peak moments corresponding to this velocity. Considering all wind directions taken together, the average return period corresponding to this data is 100 years. For any particular wind direction the actual return period is somewhat different, as is apparent from Table 5B.

To obtain the variation of moment and shear force with height, the integrated mean surface pressures were multiplied by dynamic response factors observed in the aeroelastic tests. This procedure was discussed in Section 4.4. The results were further modified to correspond to a true 100-yr return period at all wind directions, and are given in Table 7. It must be noted that at certain wind directions the total mean force is near zero, and at these directions a large relative discrepancy may exist between the mean moment obtained by integrating the pressure data and that measured in the aeroelastic model. When the former is multiplied by an aeroelastically-determined dynamic response factor to obtain an estimated peak response, the same relative error exists between this estimated peak and the aeroelastically-measured peak. Thus the estimated peak for these wind directions may be invalid and obviously misleading; such values have lined out in the summary page of Table 7.

All of the results discussed thus far have been based on a wind velocity of 128 mph, and a moderate damping ratio of 0.8 percent. The

influence of velocity and damping for selected wind directions is shown in Figure 20. The response is observed to vary roughly as the square of wind velocity. This provides the criteria for adjusting data to apply at various wind velocities, as was done in Figure 19, and for obtaining the wind directional load factors in Tables 5C and 7.

Some general observations regarding the directional dependency of the building's dynamic response are of interest. It is a common procedure in building codes to design a tall frame based on an equivalent static load, which is computed as the actual mean, or static, load multiplied by a gust response factor. The mean load is by definition in a direction parallel to the wind, and the gust response factor is identified as the ratio of peak to mean response; therefore, the "equivalent static load" is applicable only for the along-wind direction. It is widely recognized, however, that the along-wind loading may not be the governing condition; in fact, the cross-wind response of a tall building is often greater than the along-wind response. The insignificance of the along-wind response of this building is apparent from the aeroelastic data. From Figure 16a, for example, the mean response about the X-axis, i.e., in the direction of the long axis of the building, is large (although not maximum) when the wind is in the direction of the long axis (90 degrees and 270 degrees). The dynamic response at this wind direction is minimal, however, and in fact the rms response is a minimum at 270 degrees. As a result, the peak response is quite low. When the wind is perpendicular to this direction--i.e., at 0 degrees and 180 degrees--the mean response is negligible, but the rms response is very large. The peak values in this case are two to three times as great as the along-wind peak values.



The building's response about the Y-axis (in the direction of the building's short axis) is best seen in Figure 18. For this component, even the mean value of the response does not conform to intuition; it is maximum not in the along-wind direction, but when the wind is at about 45 degrees to either axis. The fluctuating response is also greatest at approximately the same wind directions, and as a result the peak values are much greater than when the wind is parallel to either axis. This phenomenon is probably due to the oval shape of the building, which has a tendency to behave somewhat like an airfoil; that is, a significant lift or cross-wind force can be developed when the angle of attack is between the axes of symmetry. A conventional loading analysis, whether static or dynamic, would not have identified this.

#### 5.5 Accelerations

It is generally agreed that acceleration provides the best measure of possible human discomfort due to motion in tall buildings; however, there is very little data available by which this issue can be judged quantitatively. The best guidelines currently available are due to two research studies. Reed et al. (15) measured the acceleration response of two buildings in two separate storms, and evaluated the corresponding human response through questionnaires and interviews with the building's occupants. Conclusions were drawn as to how often the measured levels of acceleration could occur with a given level of objection. In the second study, Chen and Robertson (16) simulated an office environment within a cubicle which could be moved horizontally. The intent of this program was to determine the minimum level of acceleration which could be sensed by humans. This "threshold of perception" was found to vary with many factors, including inherent variation from person to

person, whether the person had been previously conditioned to the type of motion, and the frequency of motion. A procedure was presented by which any desired threshold level--in terms of percentage of an average cross section of people responding--can be estimated, as a function of frequency.

To compare these results to the predicted motion levels of the Allen Center Four tower, the acceleration data of Table 13 has been plotted in Figure 21. These graphs show various levels of total rms acceleration on the top floor (as derived in Appendix B) plotted against the number of times per year that such a level is expected to occur, for four different wind directions. Two plots are given, one for a damping value of 0.005 and one for a value of 0.015. The exact damping which will be present in the completed building cannot be predicted, but will almost certainly be between these two extreme values.

The horizontal dashed lines in the lower right-hand corner represent acceleration levels, computed for the average natural frequency of the building, representing the lower limit of perception by 2 percent and 10 percent of the average population. The figures indicate that, even at the lowest value of damping, 2 percent of the top floor occupants will be able to perceive the motion no more than one or two times per year.

The solid data points so indicated represent suggested design criteria based on reference (16). They represent top-floor acceleration levels at which 2 or 10 percent of the occupants in the top one-third of the building would find "objectionable" (as opposed to perceivable) if it occurred at the frequency indicated. According to this criteria, the building's motion may be slightly excessive if

the wind direction is near 135 degrees. The stated criteria are far from rigid, however, and it is not felt that this deviation is significant.

At very low frequencies of occurrence (i.e., high acceleration levels) no data are available by which to judge the human response issue. It is generally agreed, however, that performance-type criteria such as occupant comfort should be based on events which occur relatively frequently, say at least once per year.

In conclusion, therefore, the building motion is expected to be generally acceptable, even at a very low value of damping. At a more probable value of damping, the motion level should be acceptable to more than 98 percent of the building's occupants. The motion should be perceivable, if at all, no more than once per year. Finally, it is cautioned that these conclusions are based on a very limited amount of research and field data, which nevertheless represent the best criteria available.

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FIGURES

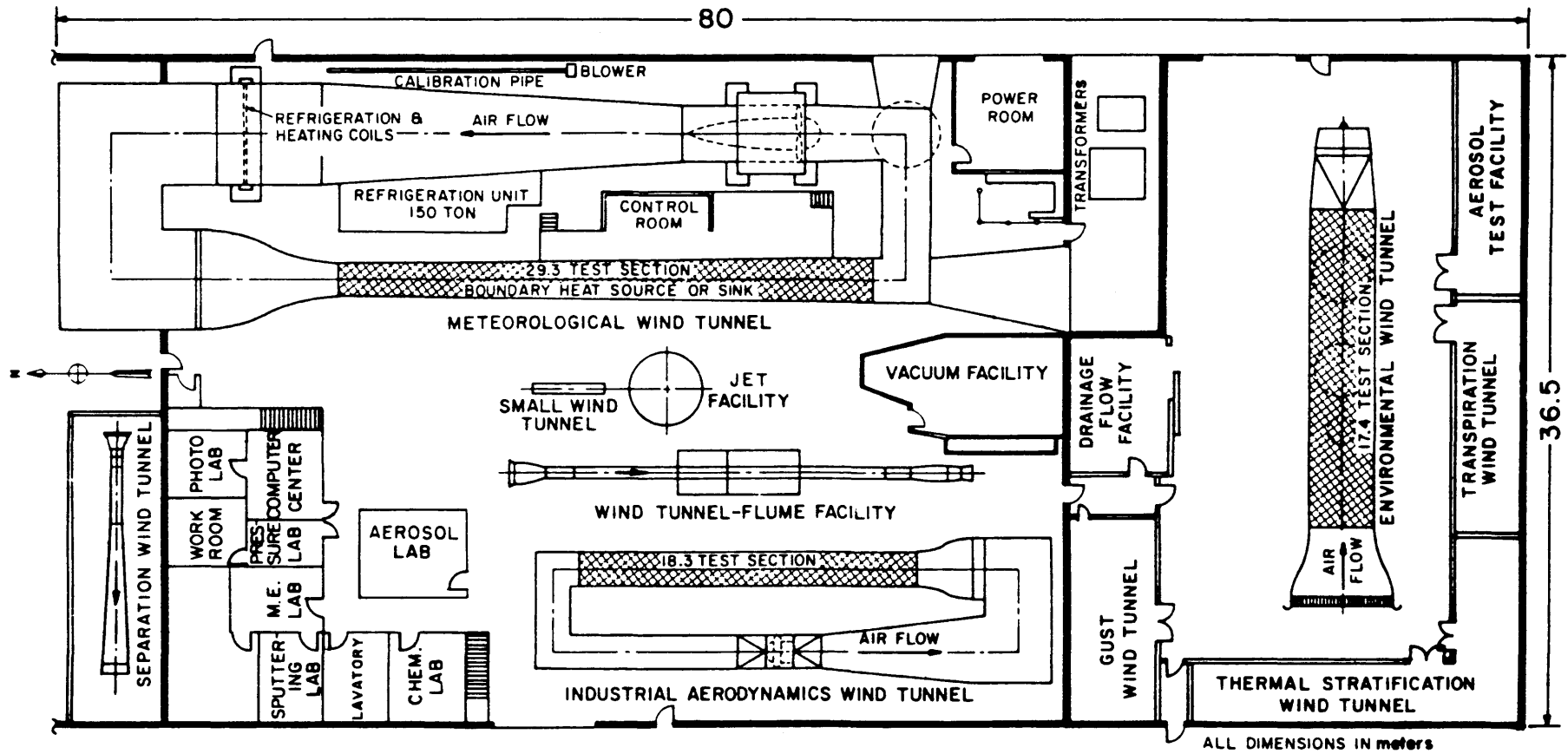
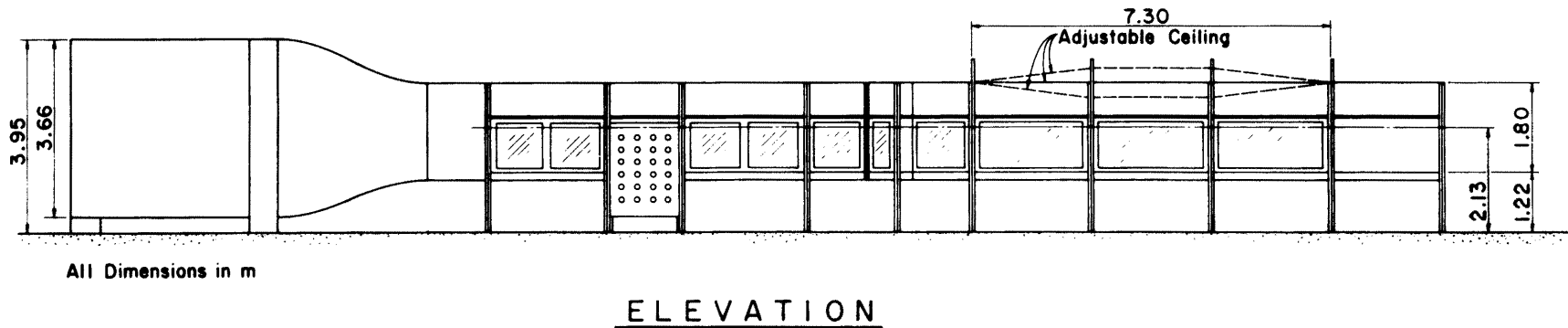
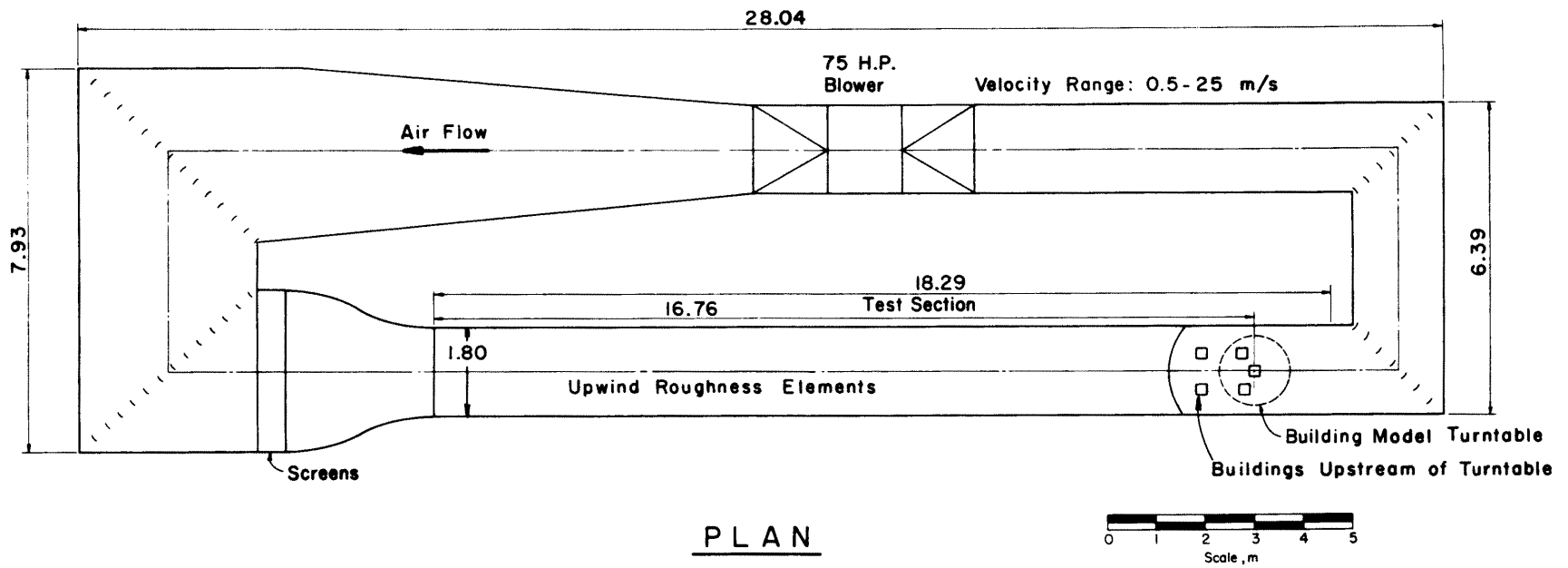


Figure 1. FLUID DYNAMICS AND DIFFUSION LABORATORY  
 COLORADO STATE UNIVERSITY

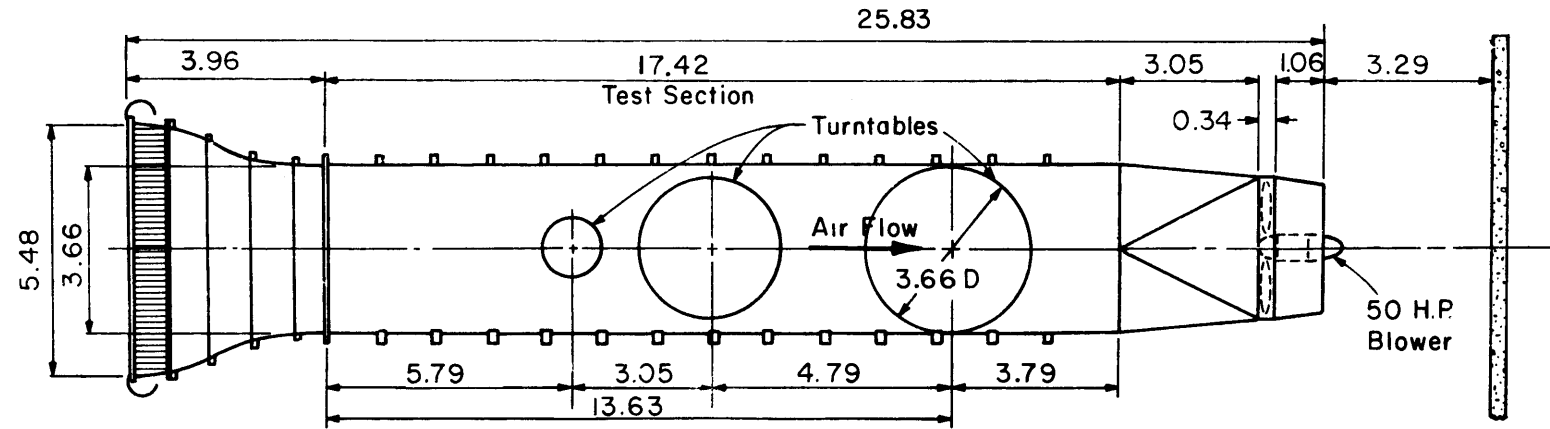


All Dimensions in m

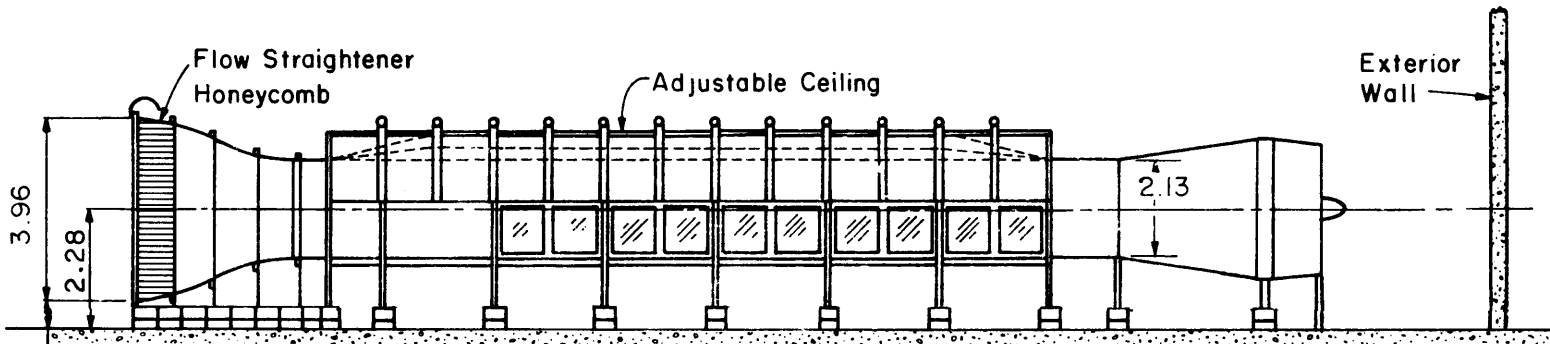
# INDUSTRIAL AERODYNAMICS WIND TUNNEL

Figure 2a. Wind-Tunnel Configuration





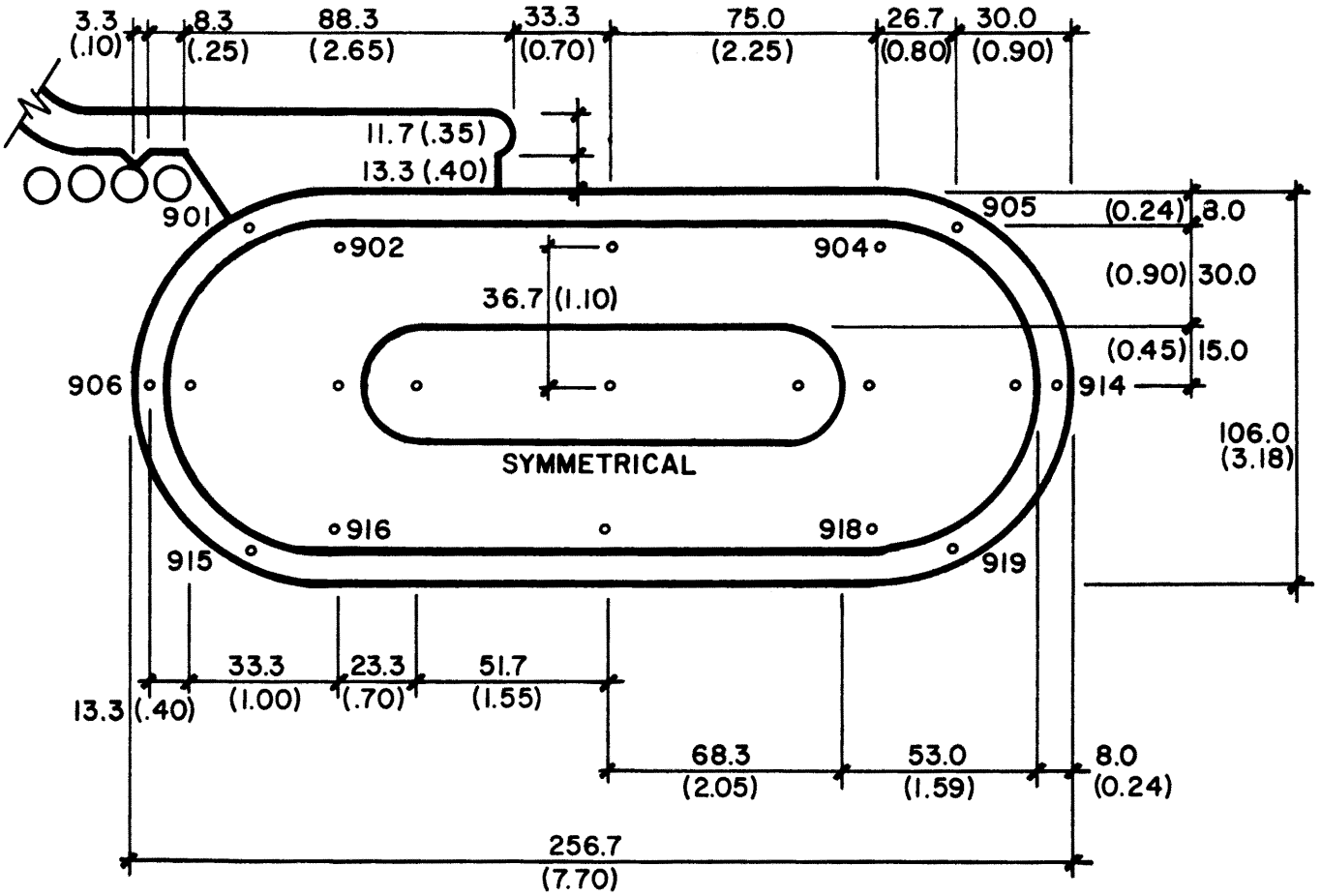
PLAN



ELEVATION

All Dimensions in m

Figure 2b. ENVIRONMENTAL WIND TUNNEL  
 FLUID DYNAMICS & DIFFUSION LABORATORY  
 COLORADO STATE UNIVERSITY



ROOF

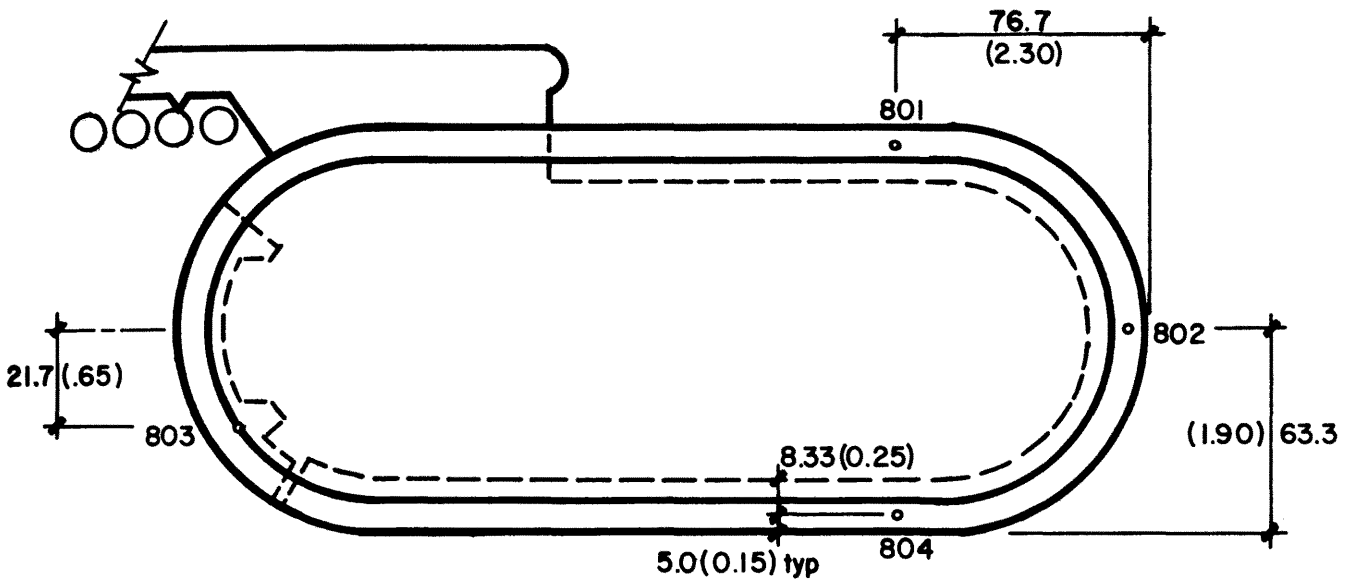


Model scale = 1/400

Total taps = 306

dimensions in full scale feet  
& model inches

Figure 3a. Pressure Tap Locations



### SOFFIT TAPS



Figure 3b. Pressure Tap Locations

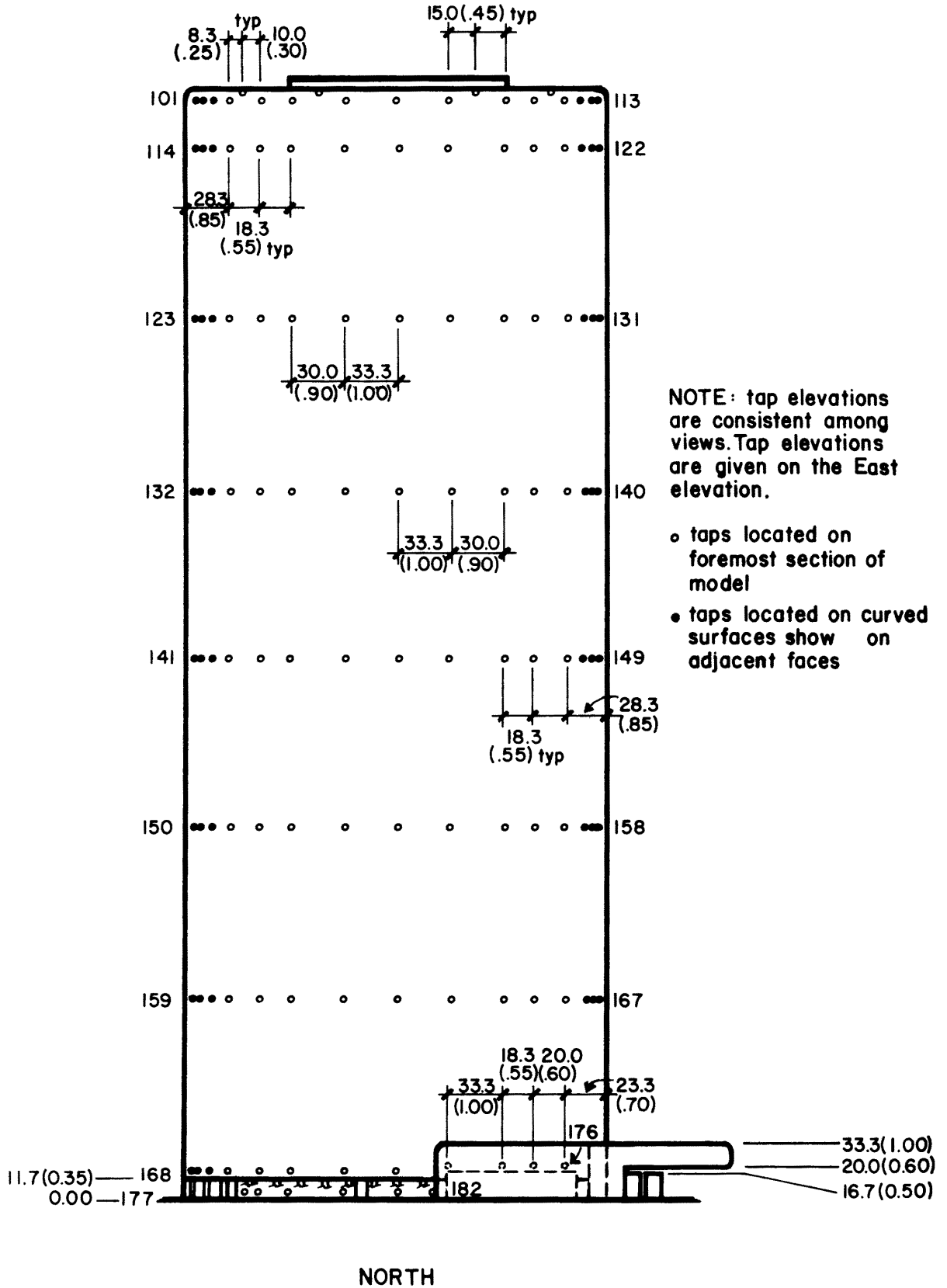


Figure 3c. Pressure Tap Locations

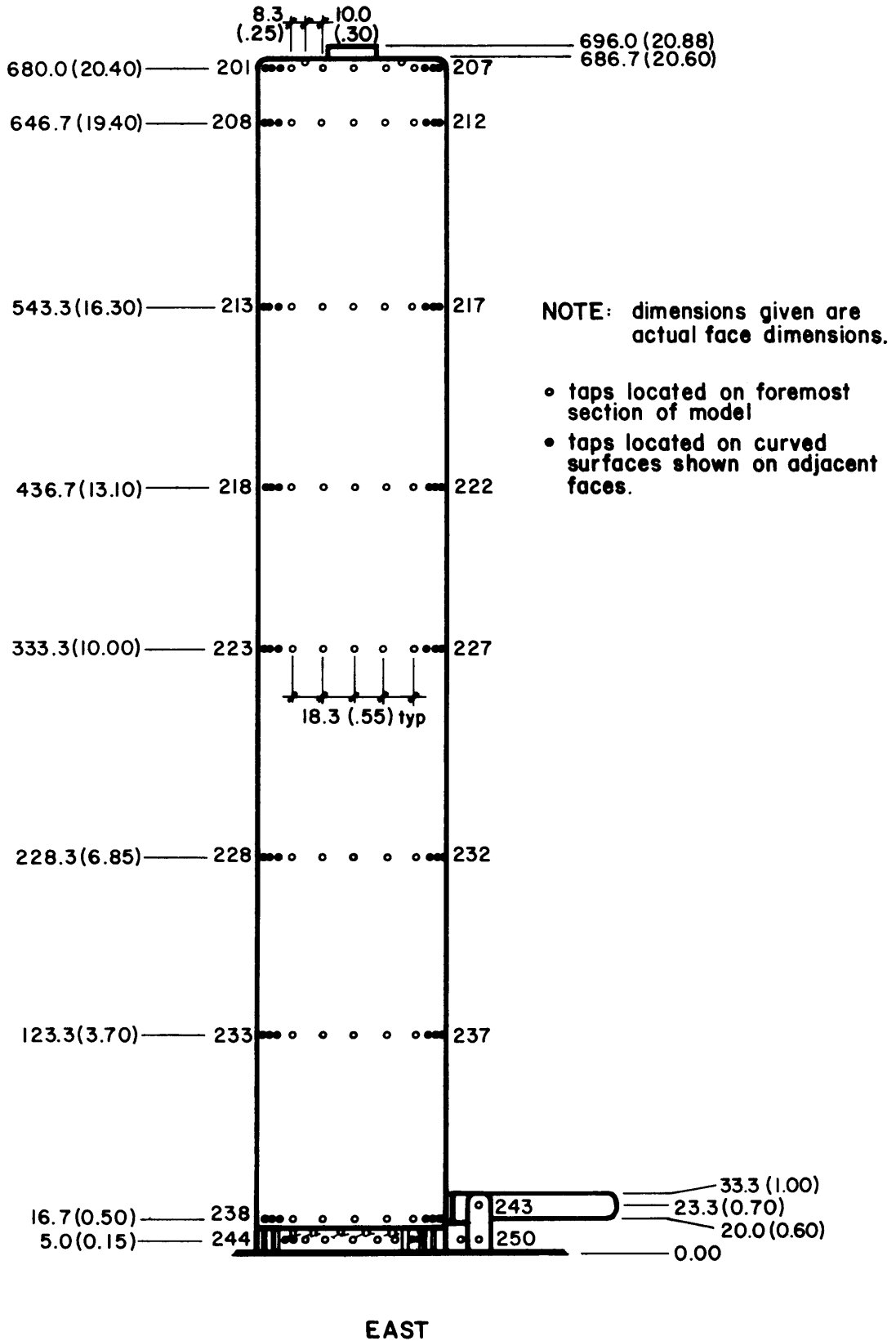
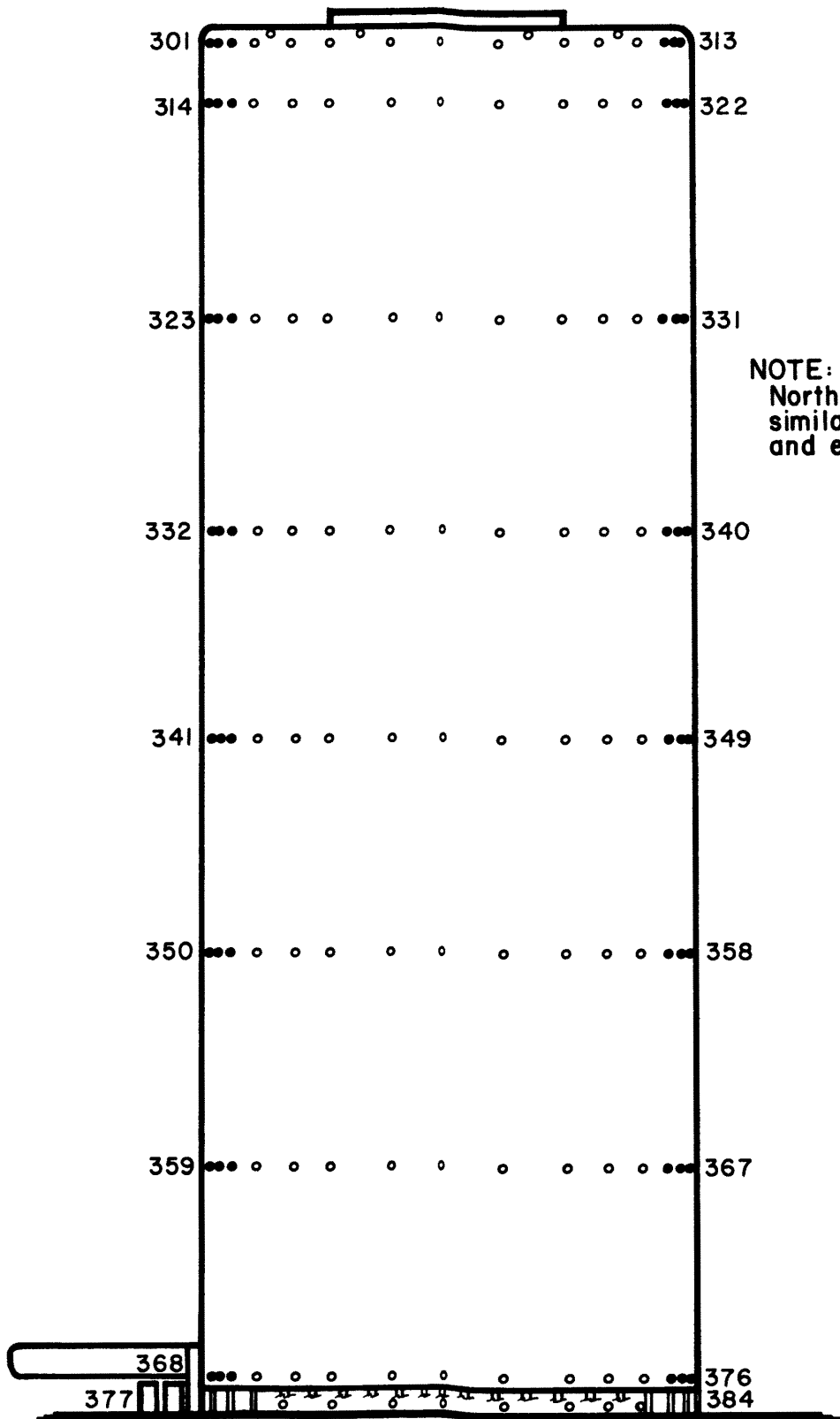


Figure 3d. Pressure Tap Locations



SOUTH

Figure 3e. Pressure Tap Locations

NOTE: refer to the East elevation for similar tap dimensions and elevations.

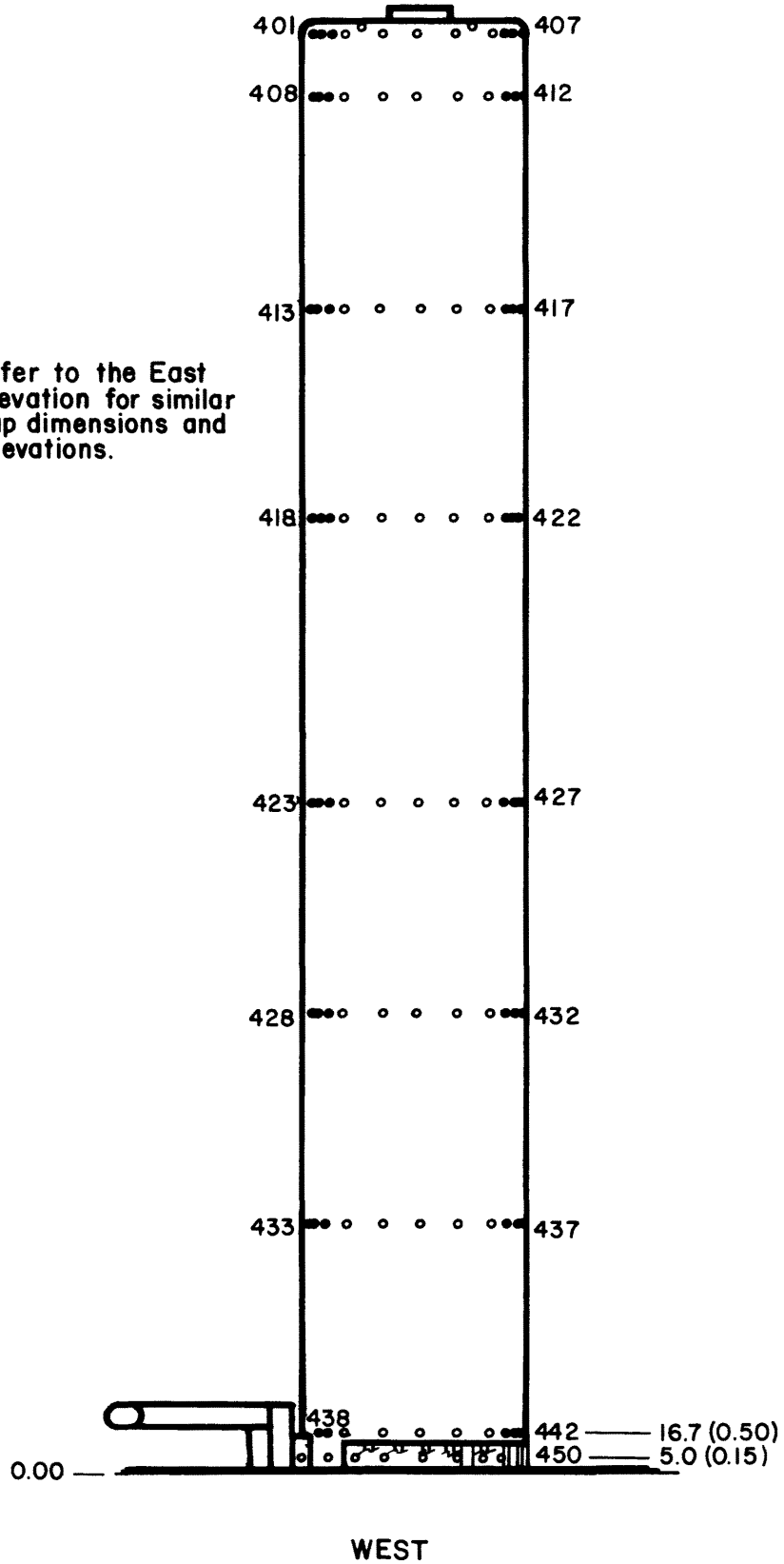
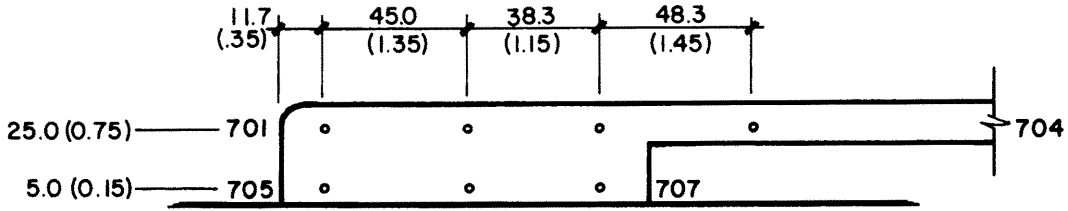
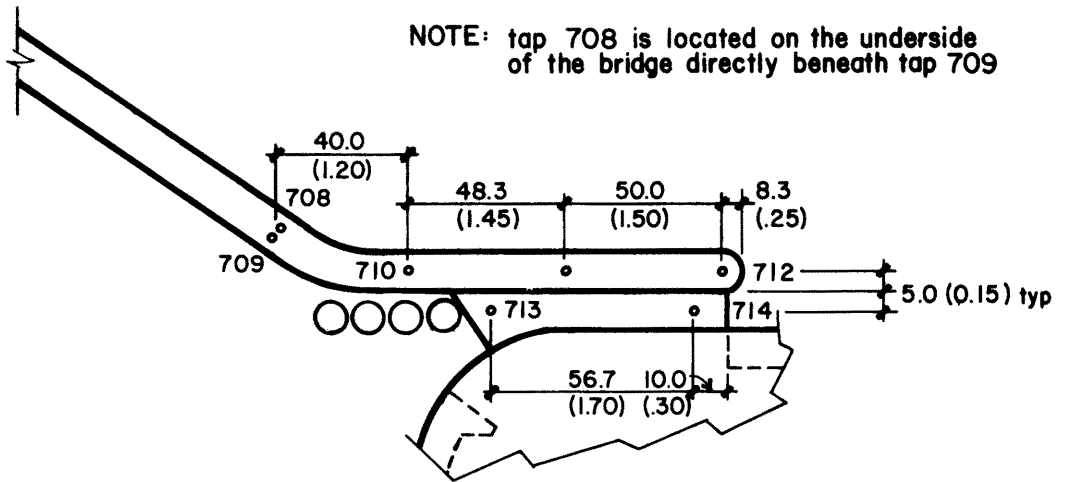


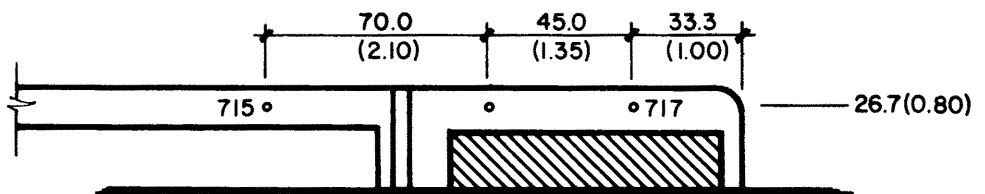
Figure 3f. Pressure Tap Locations



BRIDGE - North face



BRIDGE - Top view



BRIDGE - Inside face

NOTE: taps 704, 708, 709 & 715 are connected to the same brass tube

Figure 3g. Pressure Tap Locations



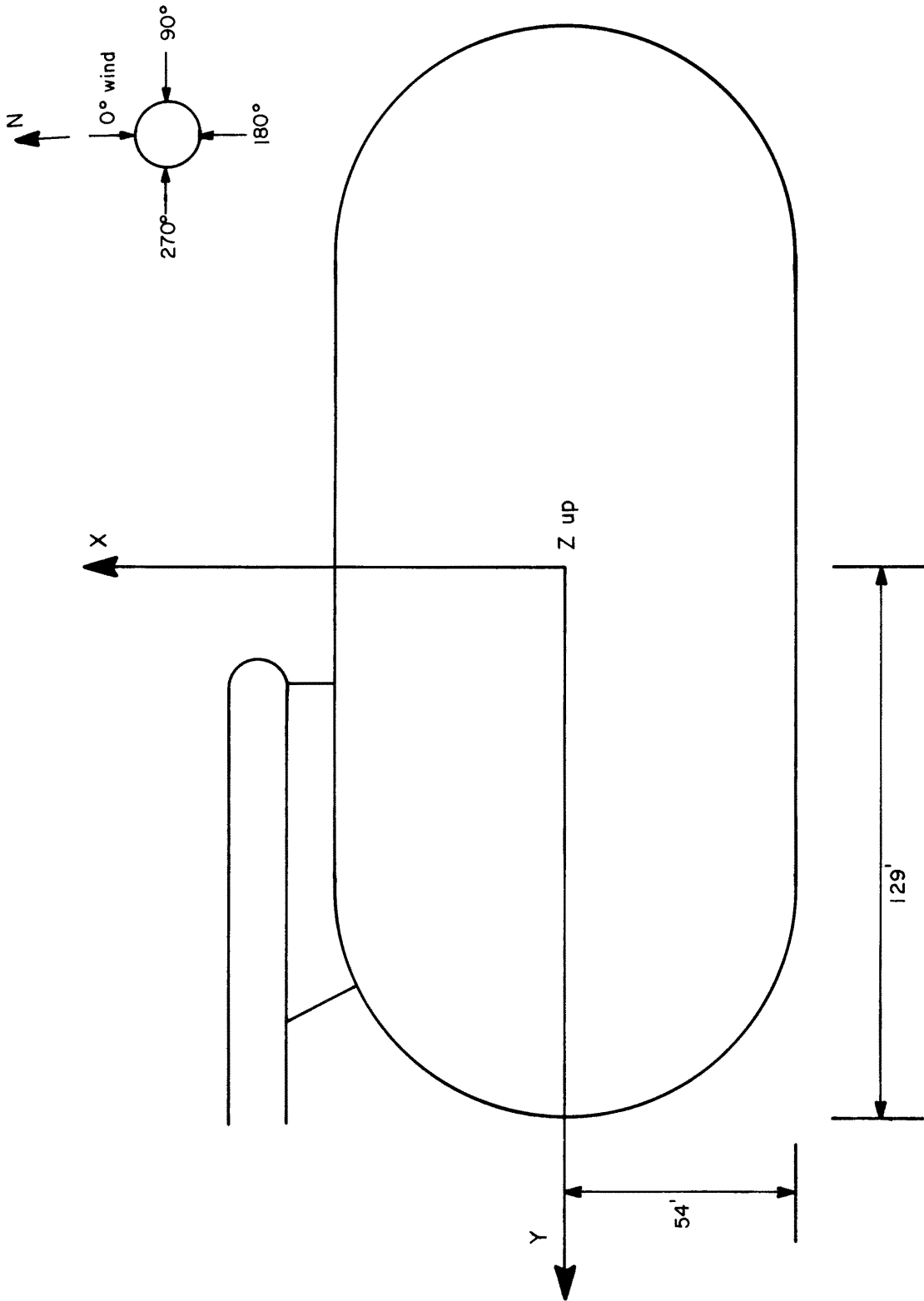


Figure 3h. Pressure Tap Locations

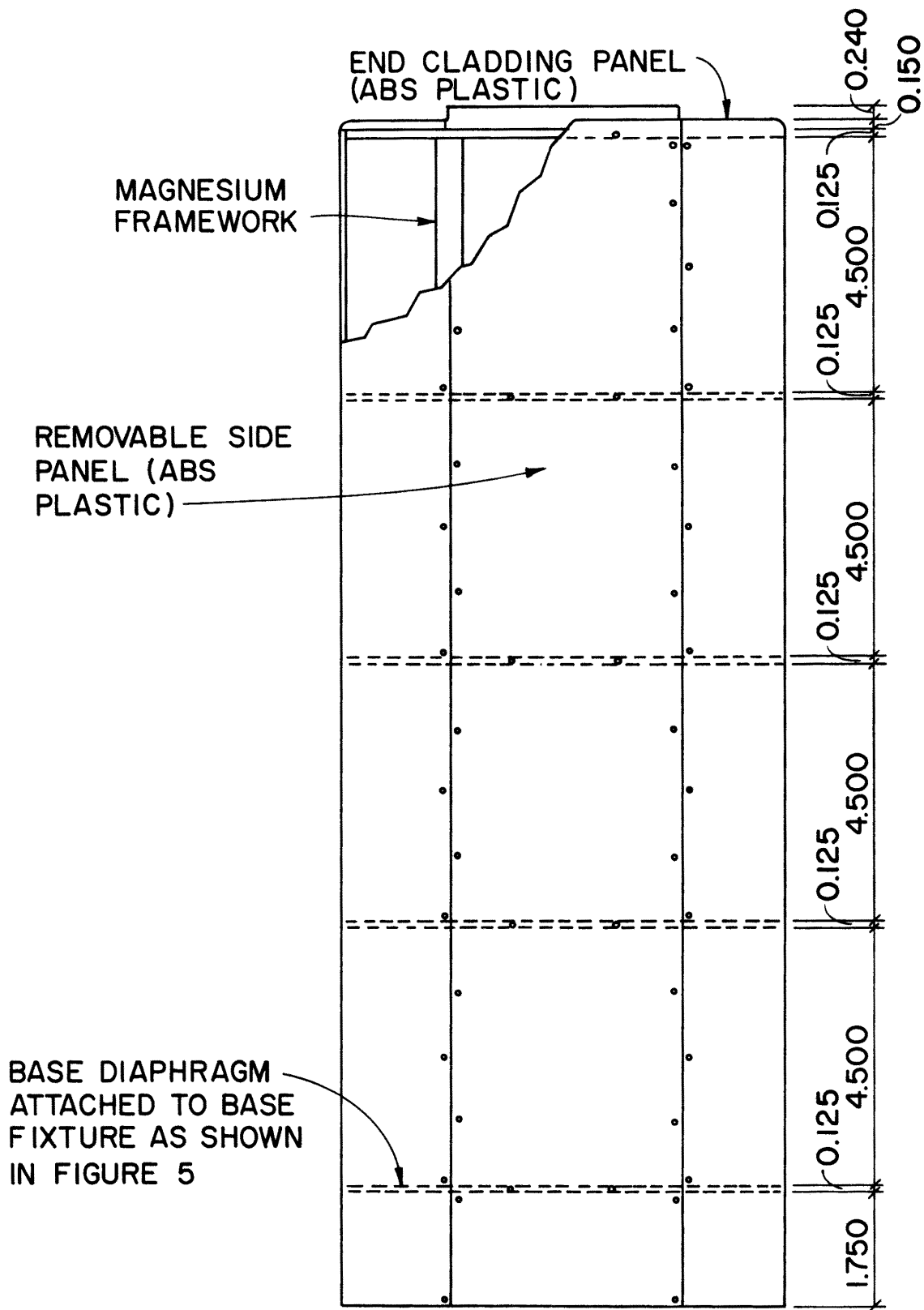


Figure 4. Aeroelastic Model

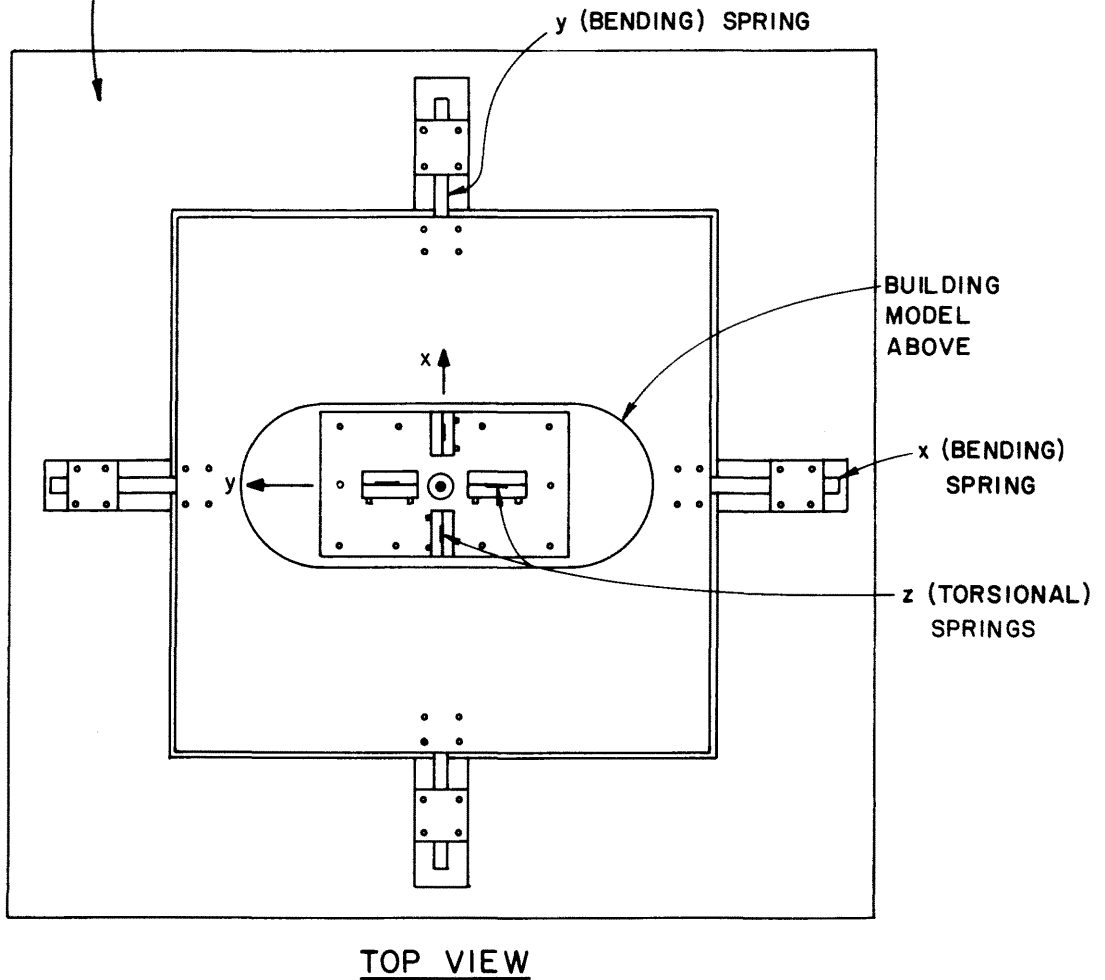
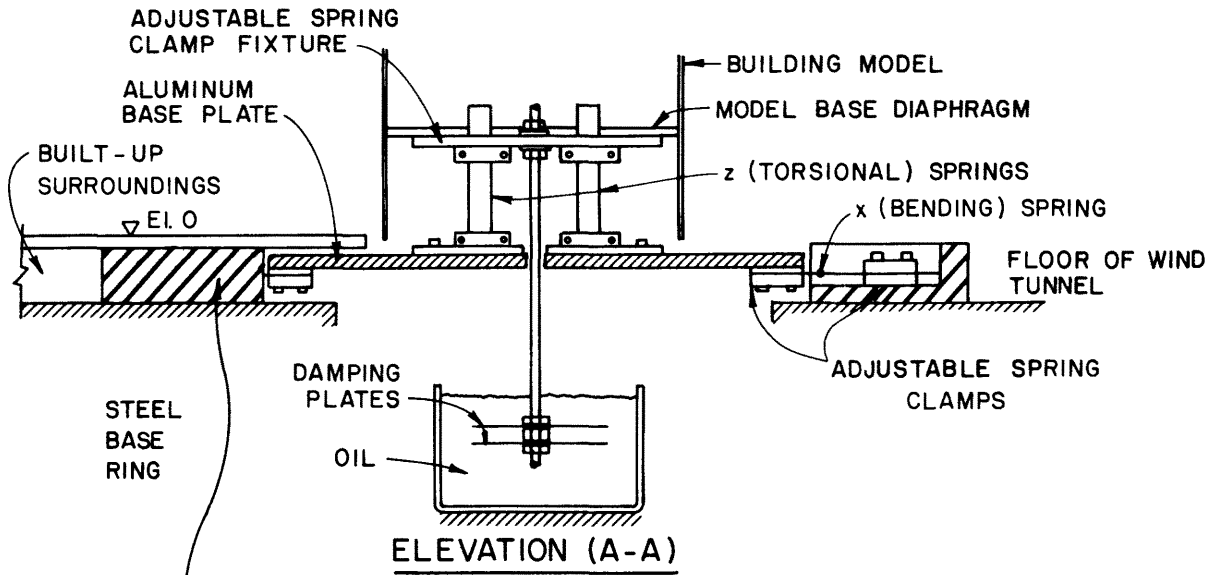


Figure 5. Base Fixture for Aeroelastic Model

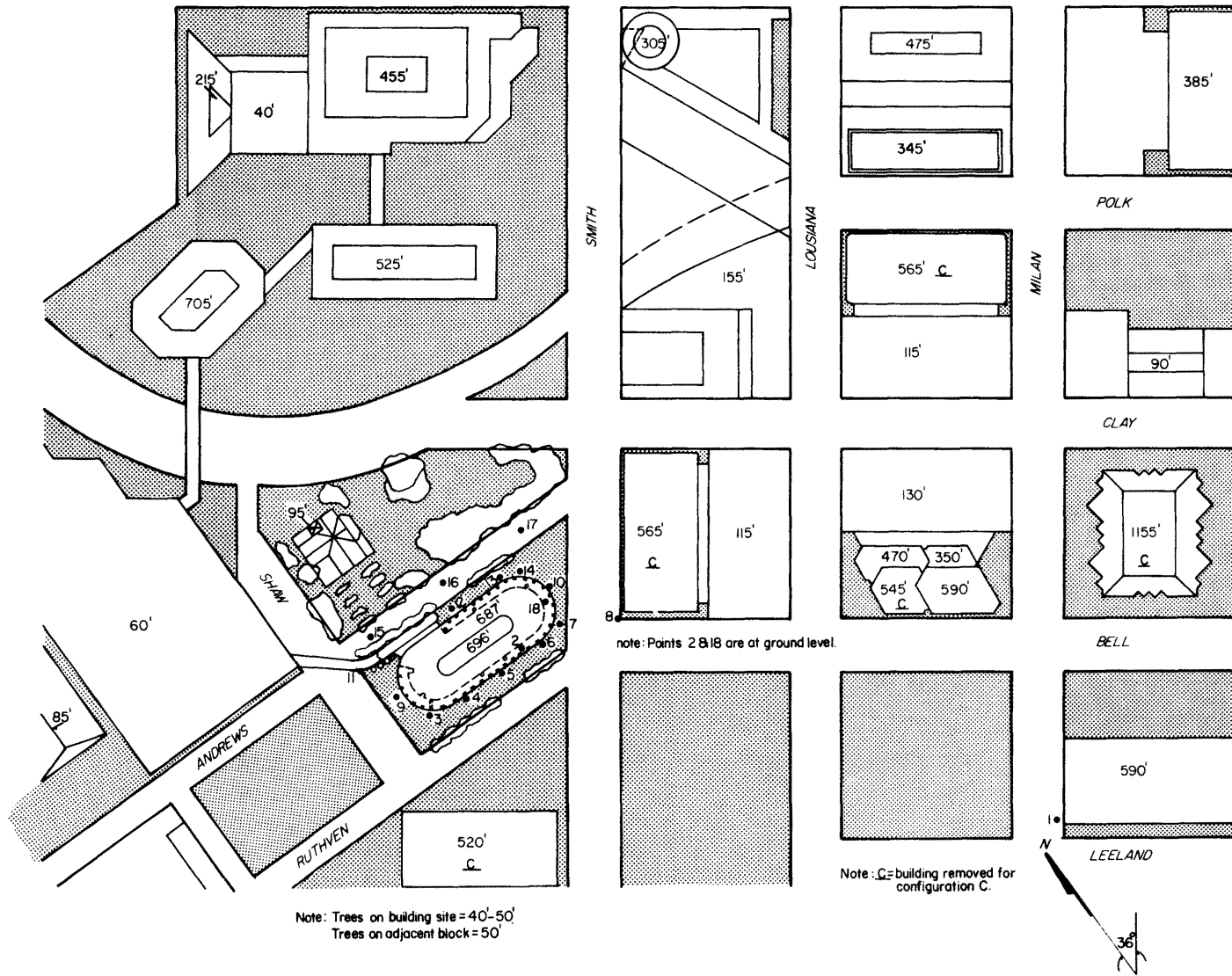


Figure 6. Building Location and Pedestrian Wind Velocity Measuring Positions

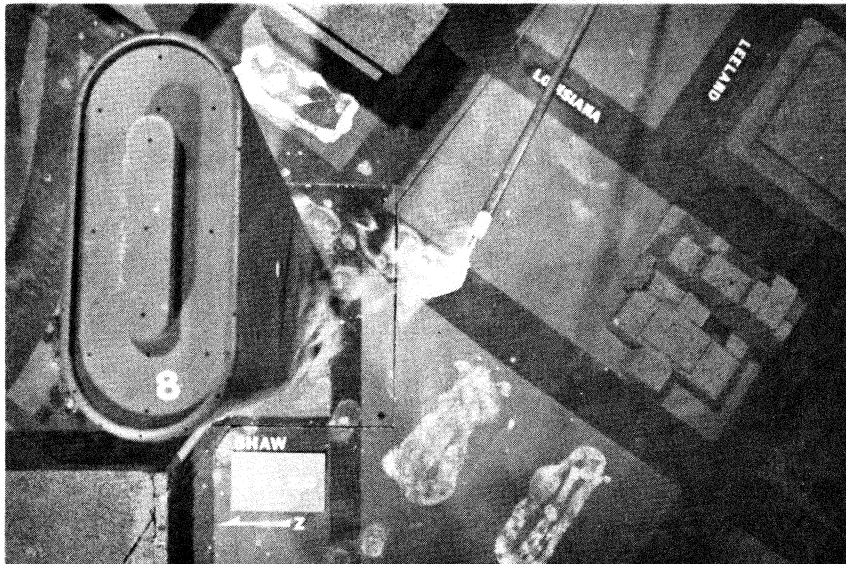
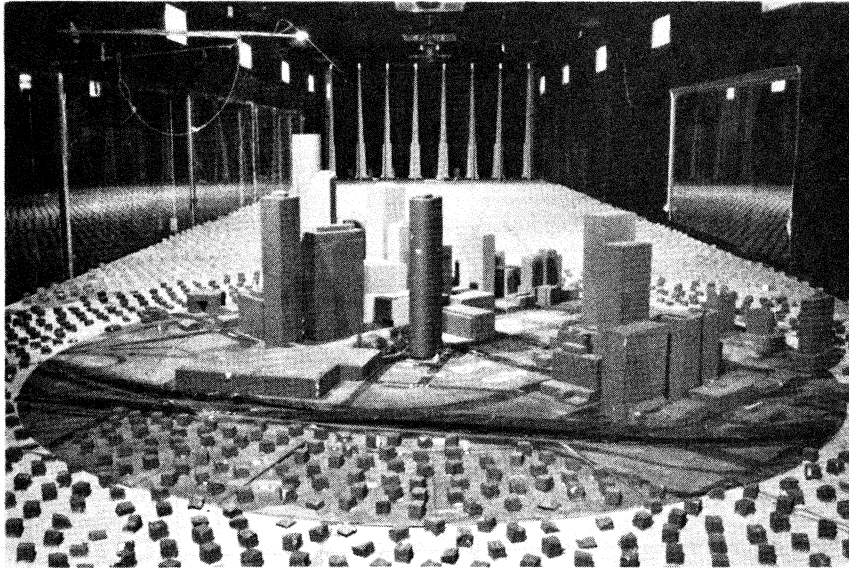


Figure 7. Completed Model in Wind Tunnel

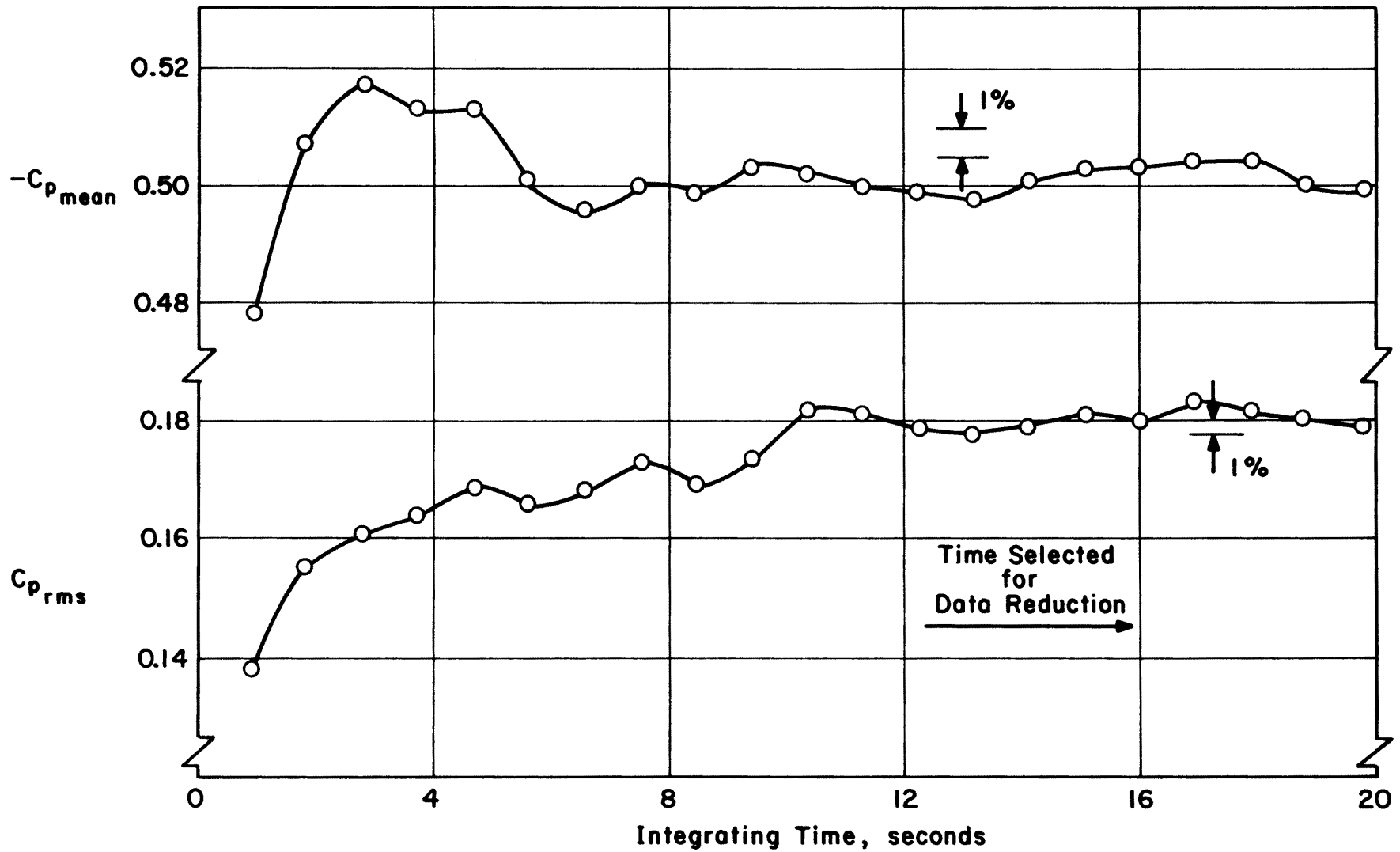


Figure 8. Data Sampling Time Verification

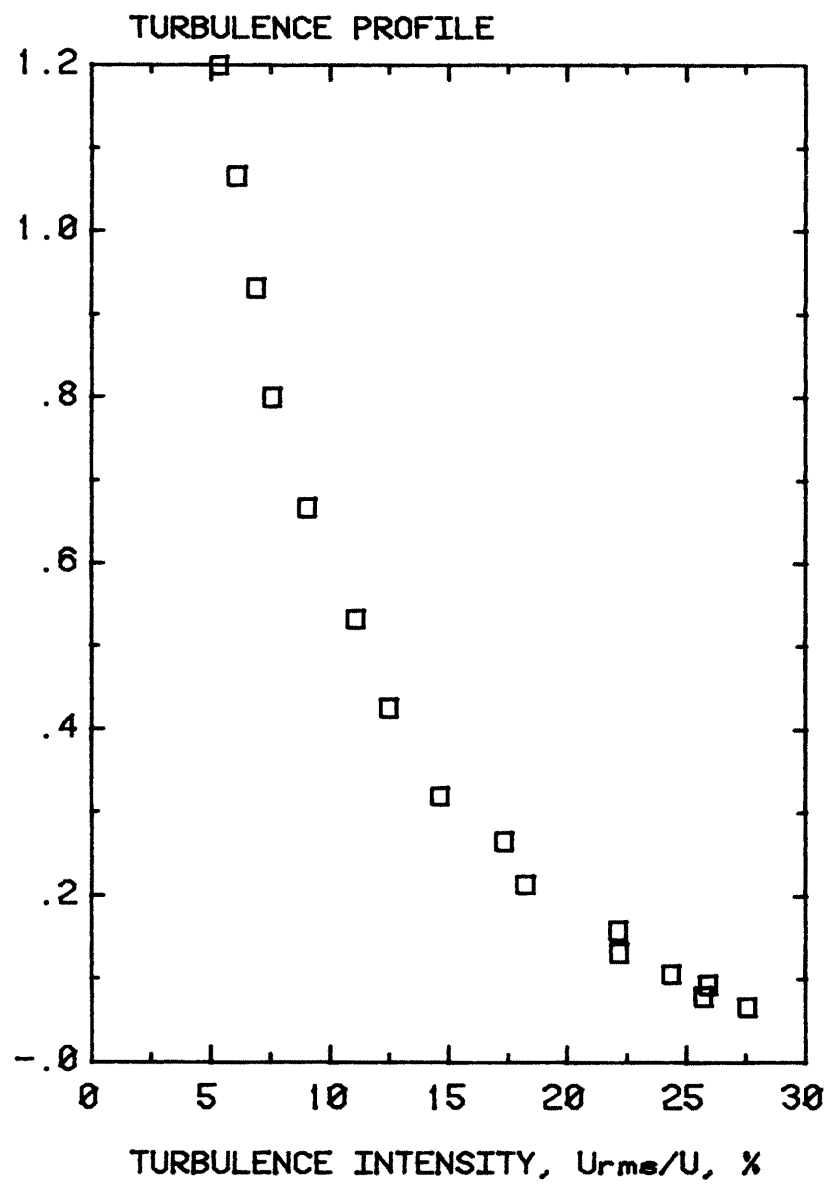
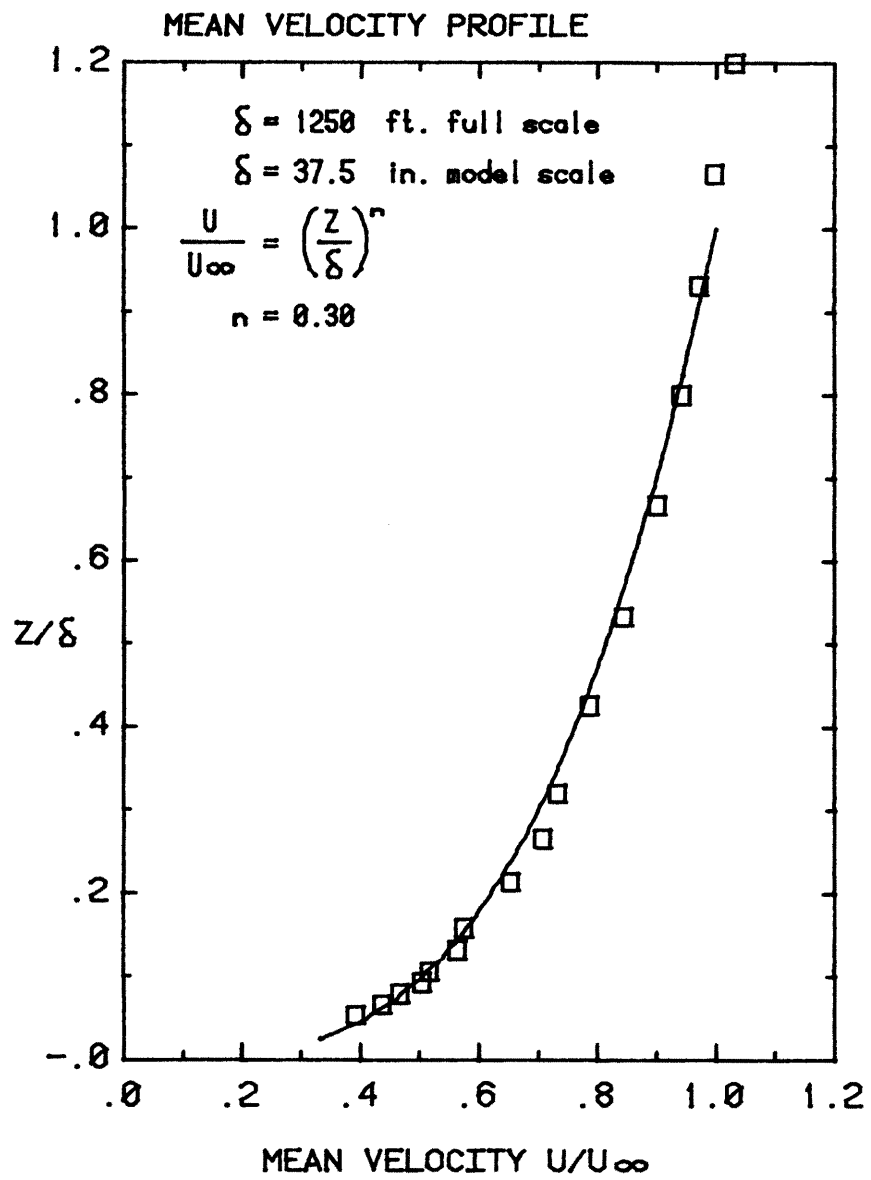


Figure 9. Mean Velocity and Turbulence Profiles Approaching the Model

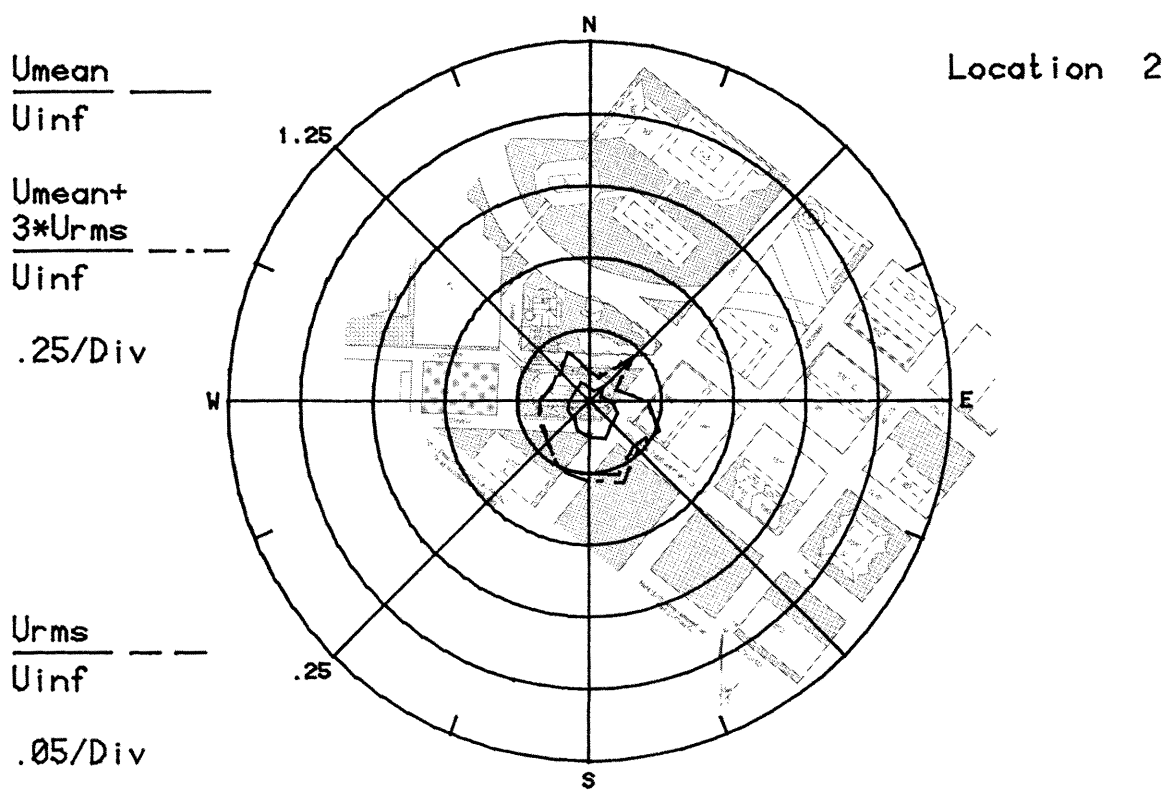
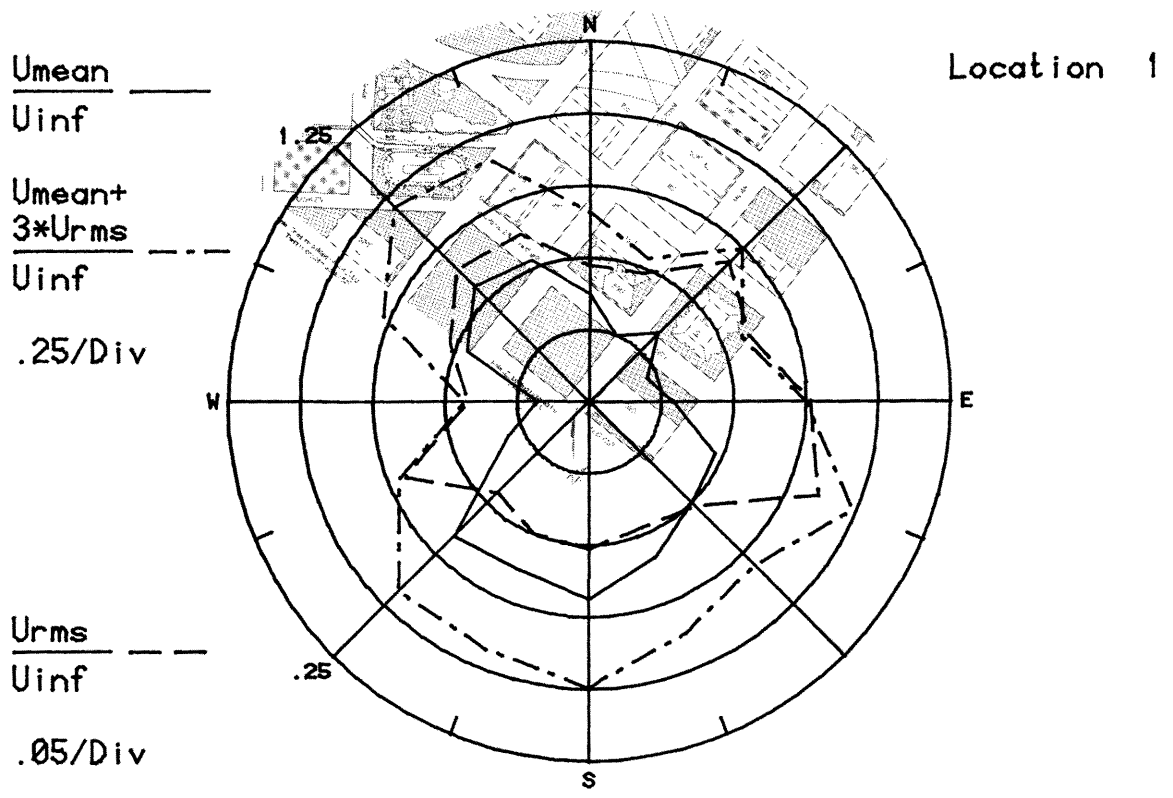


Figure 10a. Mean Velocities and Turbulence Intensities at Pedestrian Locations 1 and 2

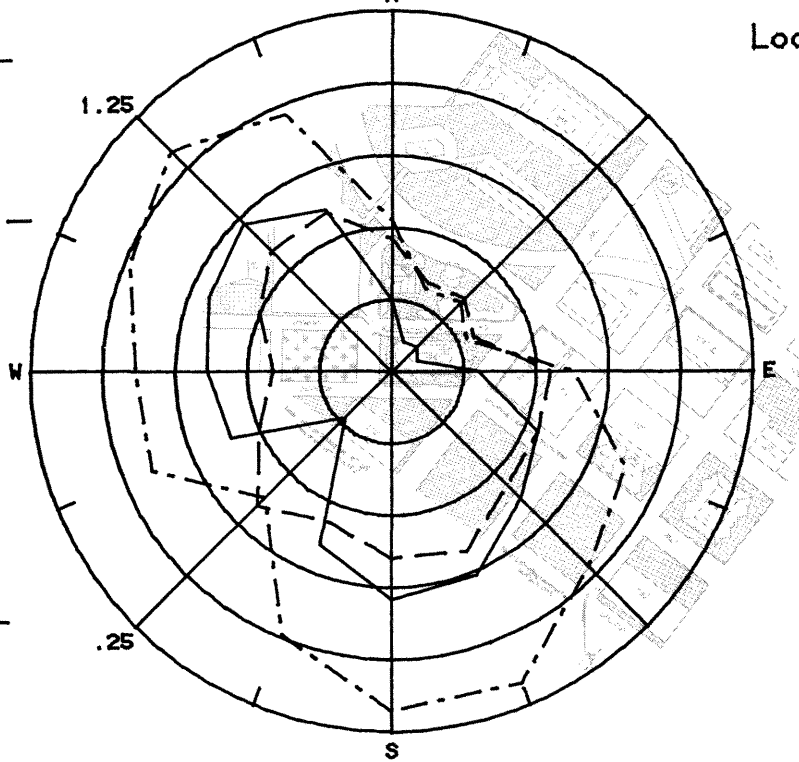


$\frac{U_{mean}}{U_{inf}}$  ———

Location 3

$\frac{U_{mean} + 3 \cdot U_{rms}}{U_{inf}}$  - - - -

.25/Div



$\frac{U_{rms}}{U_{inf}}$  - - - -

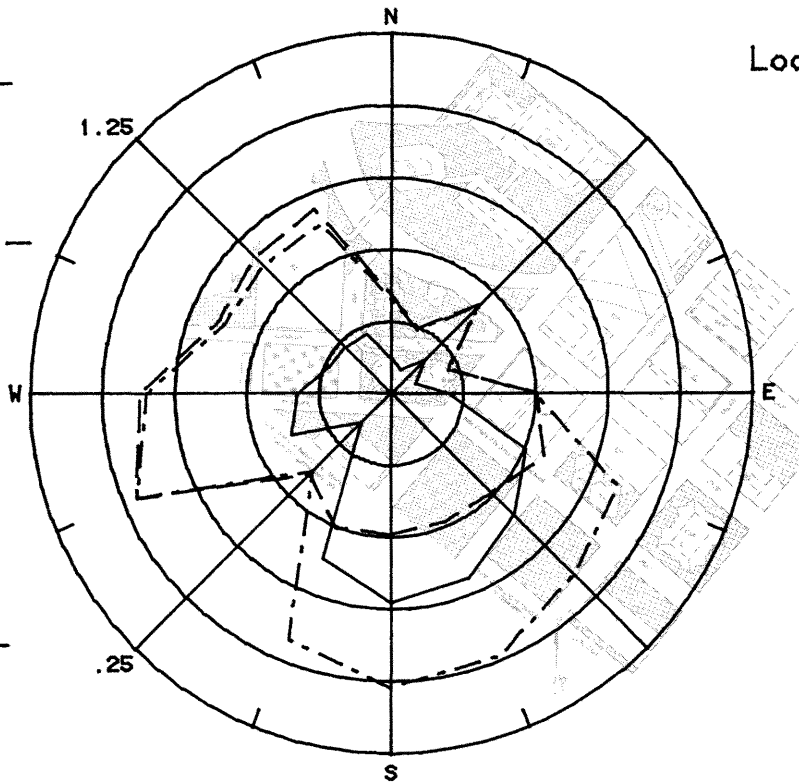
.05/Div

$\frac{U_{mean}}{U_{inf}}$  ———

Location 4

$\frac{U_{mean} + 3 \cdot U_{rms}}{U_{inf}}$  - - - -

.25/Div



$\frac{U_{rms}}{U_{inf}}$  - - - -

.05/Div

Figure 10b Mean Velocities and Turbulence Intensities at Pedestrian Locations 3 and 4

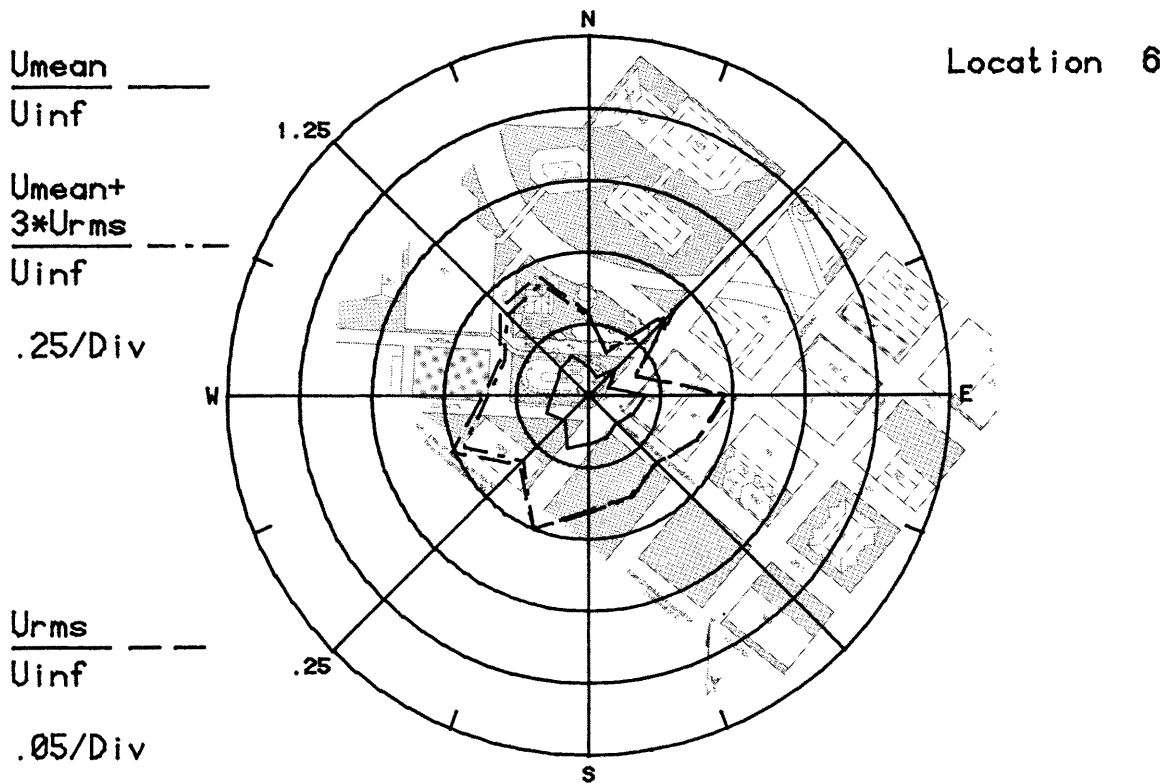
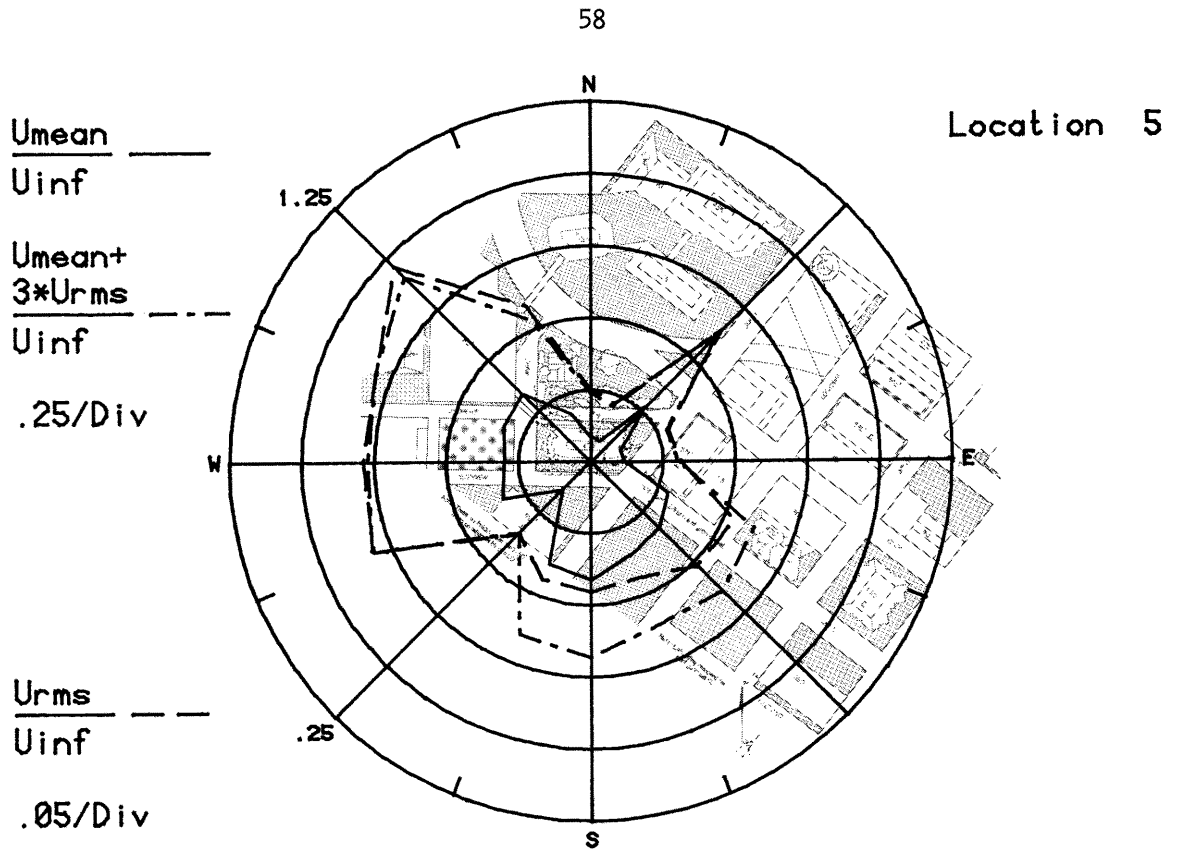


Figure 10c Mean Velocities and Turbulence Intensities at Pedestrian Locations 5 and 6

$\frac{U_{mean}}{U_{inf}}$  ———

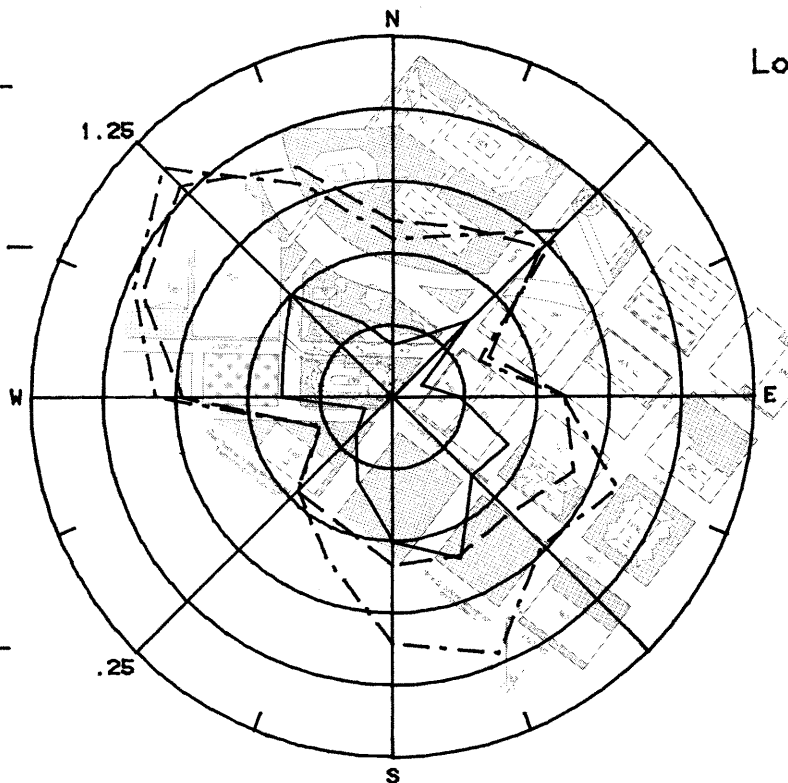
Location 7

$\frac{U_{mean} + 3*U_{rms}}{U_{inf}}$  - - - - -

.25/Div

$\frac{U_{rms}}{U_{inf}}$  - - - - -

.05/Div



$\frac{U_{mean}}{U_{inf}}$  ———

Location 8

$\frac{U_{mean} + 3*U_{rms}}{U_{inf}}$  - - - - -

.25/Div

$\frac{U_{rms}}{U_{inf}}$  - - - - -

.05/Div

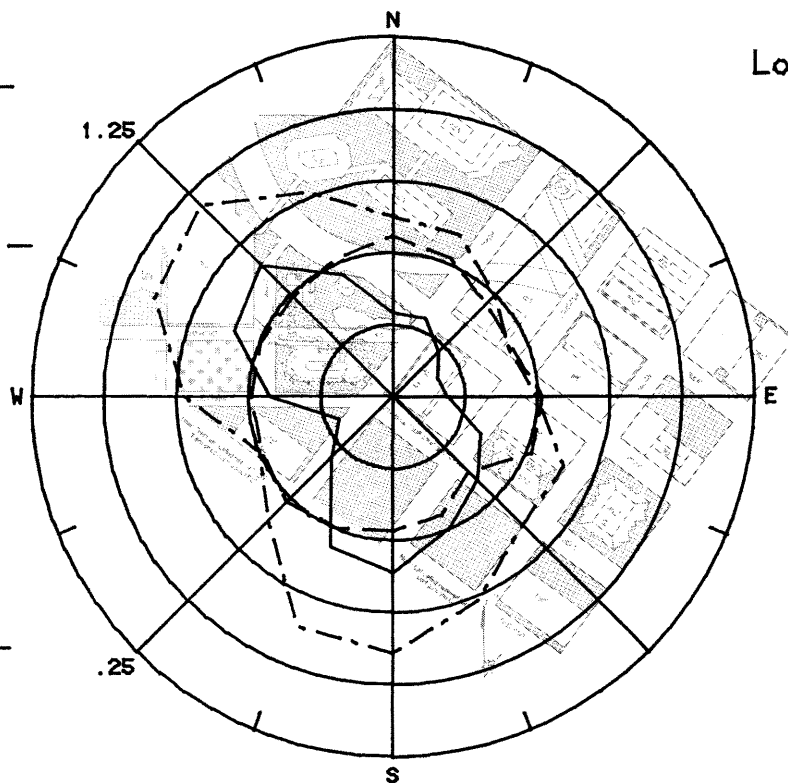


Figure 10d. Mean Velocities and Turbulence Intensities at Pedestrian Locations 7 and 8

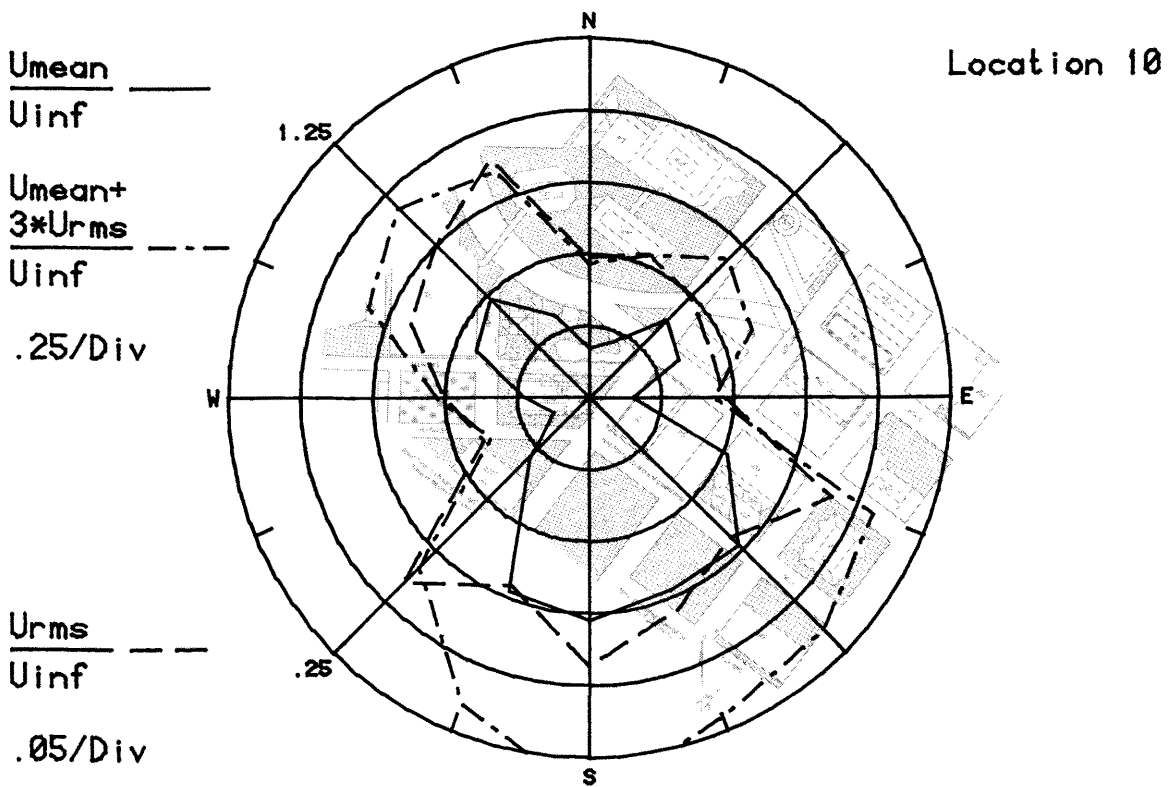
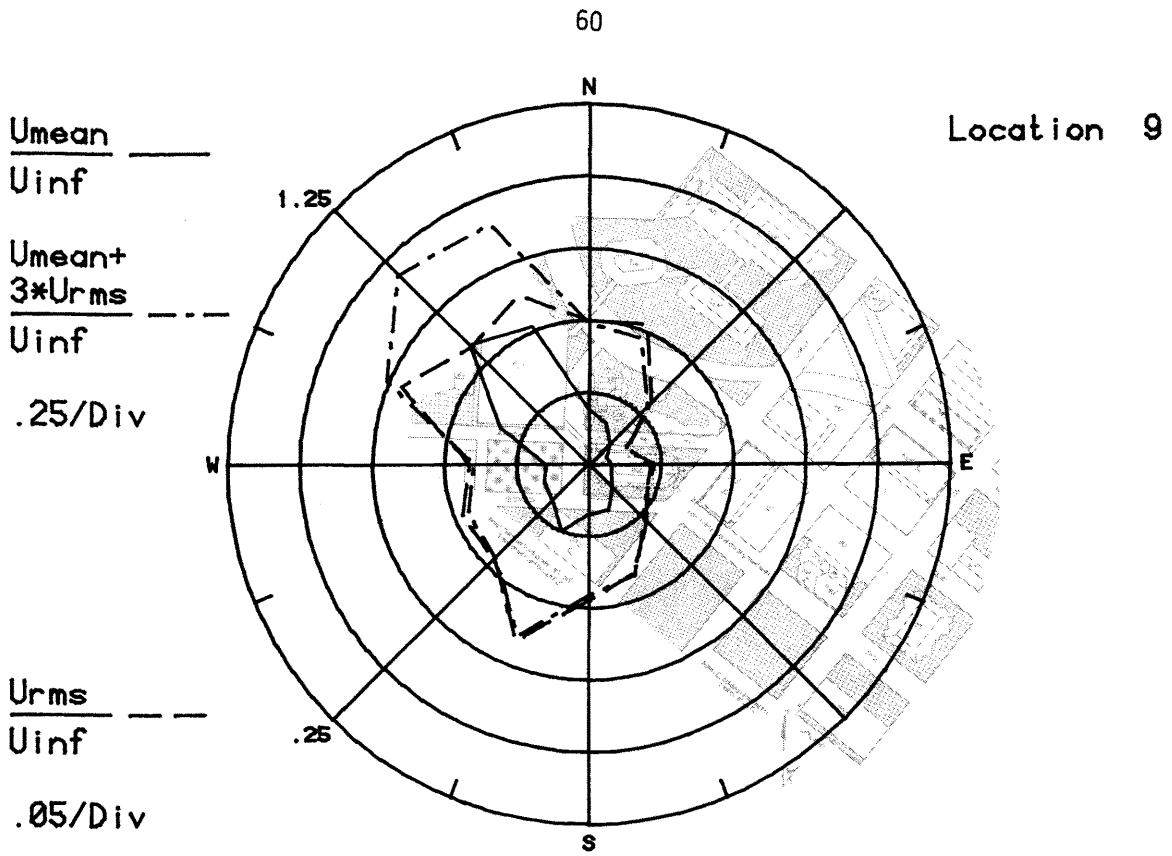


Figure 10e. Mean Velocities and Turbulence Intensities at Pedestrian Locations 9 and 10

61

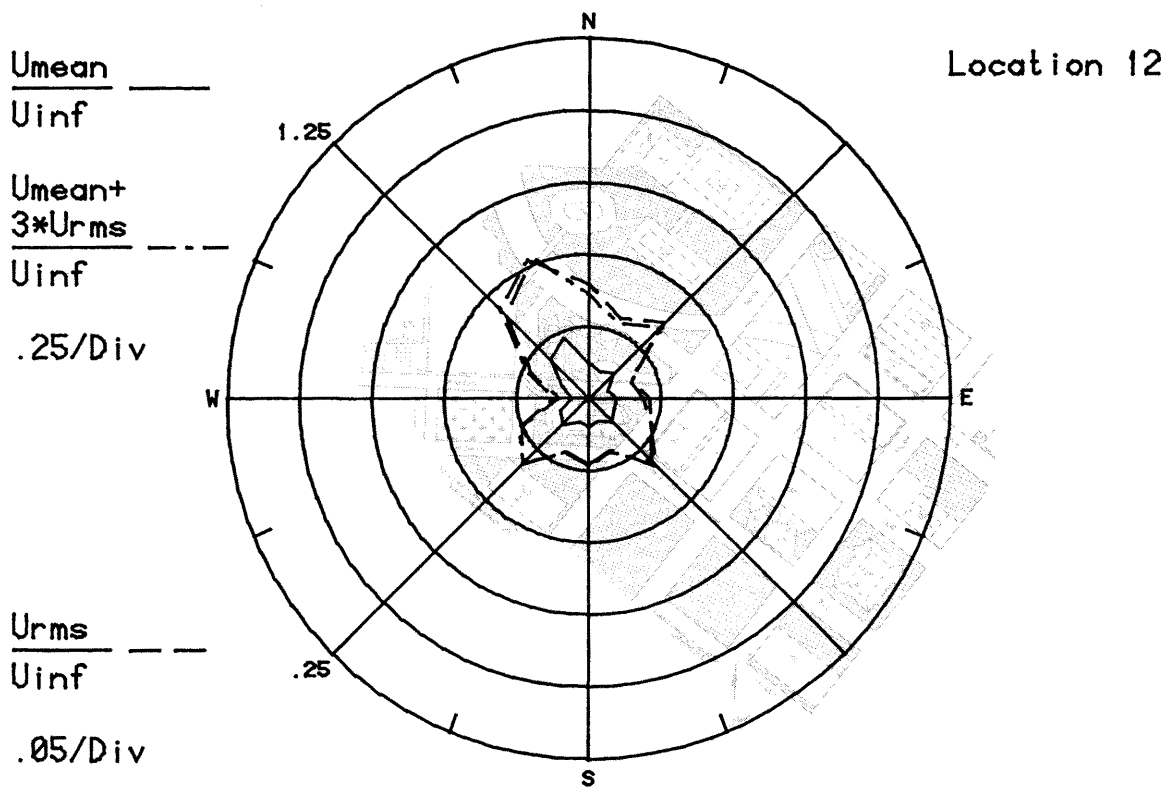
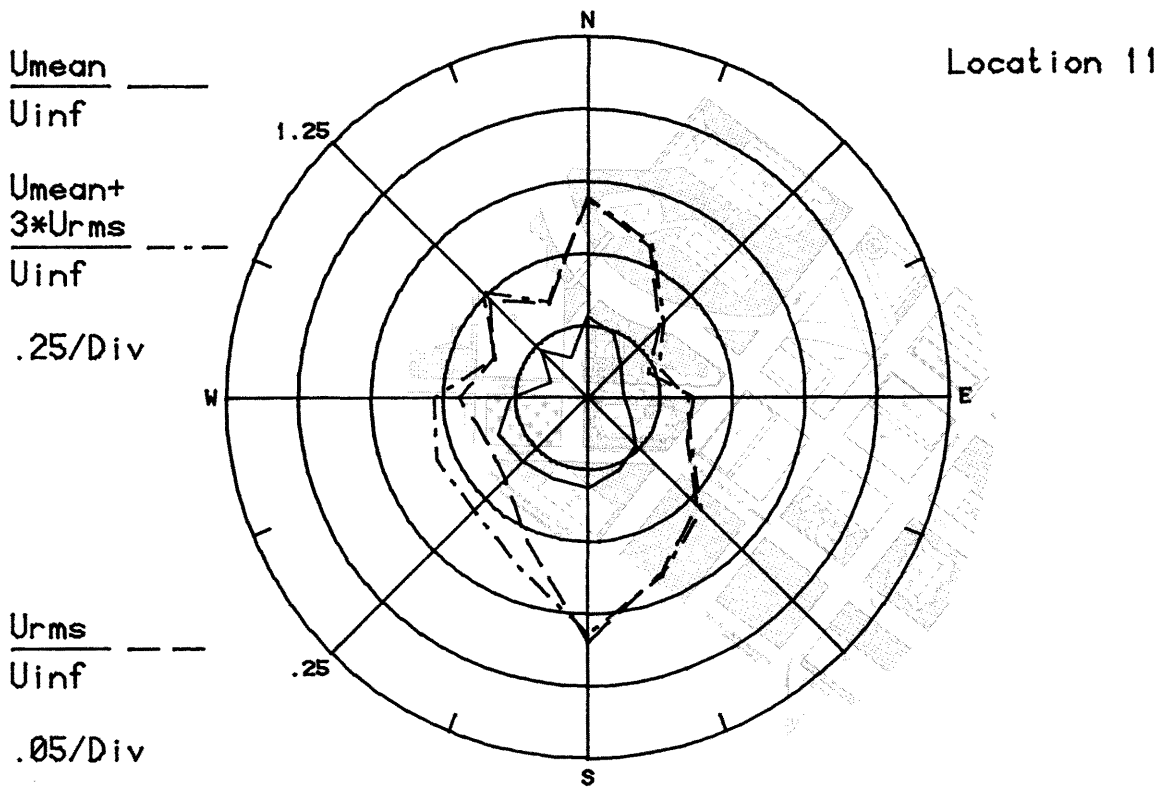


Figure 10f. Mean Velocities and Turbulence Intensities at Pedestrian Locations 11 and 12

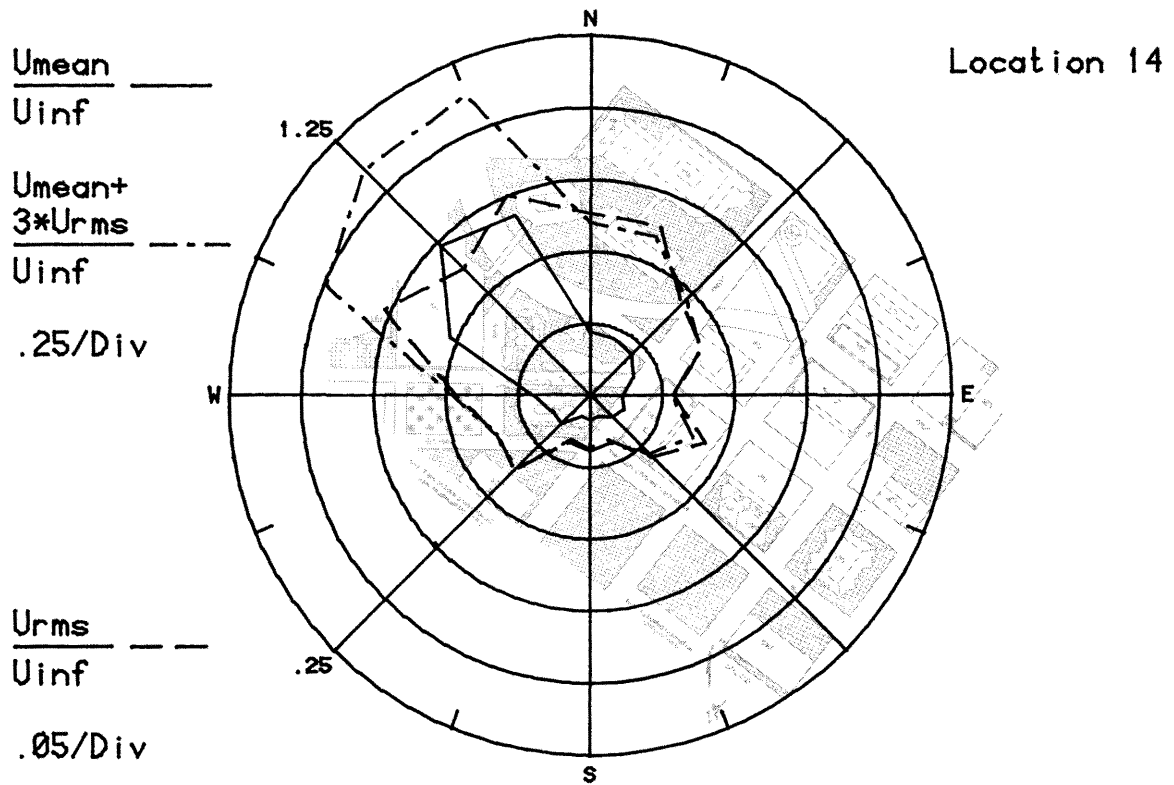
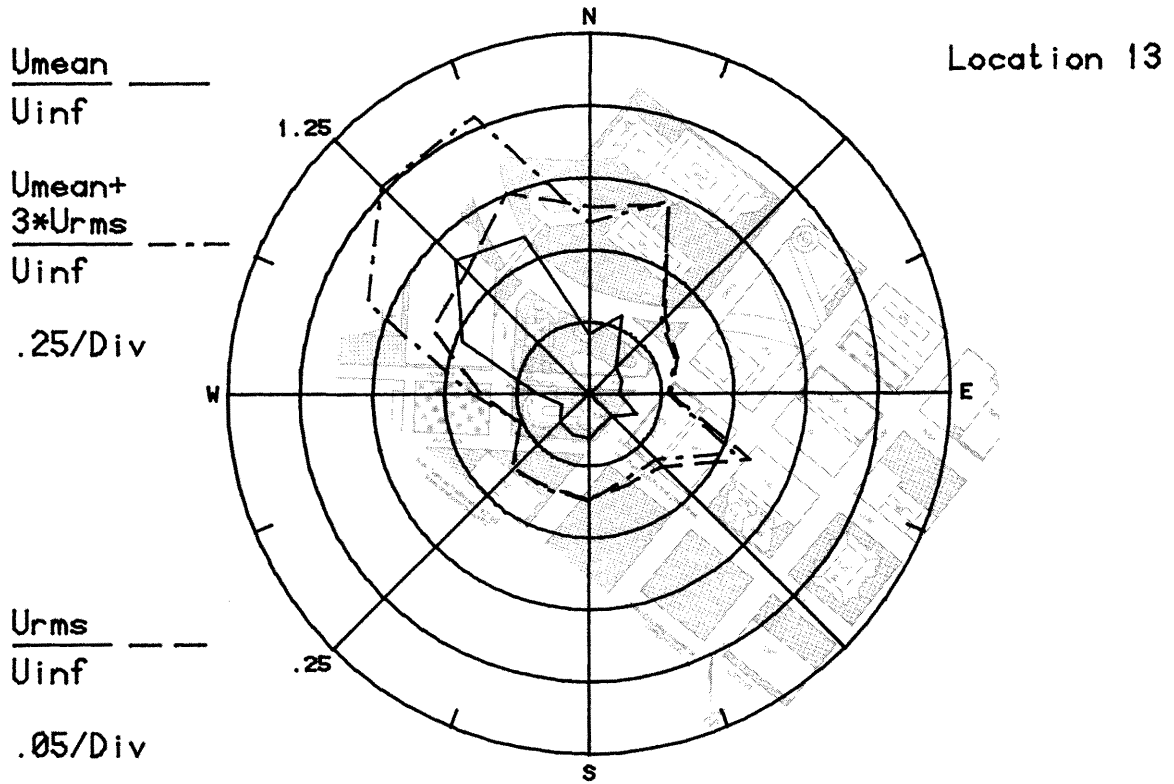


Figure 10g. Mean Velocities and Turbulence Intensities at Pedestrian Locations 13 and 14

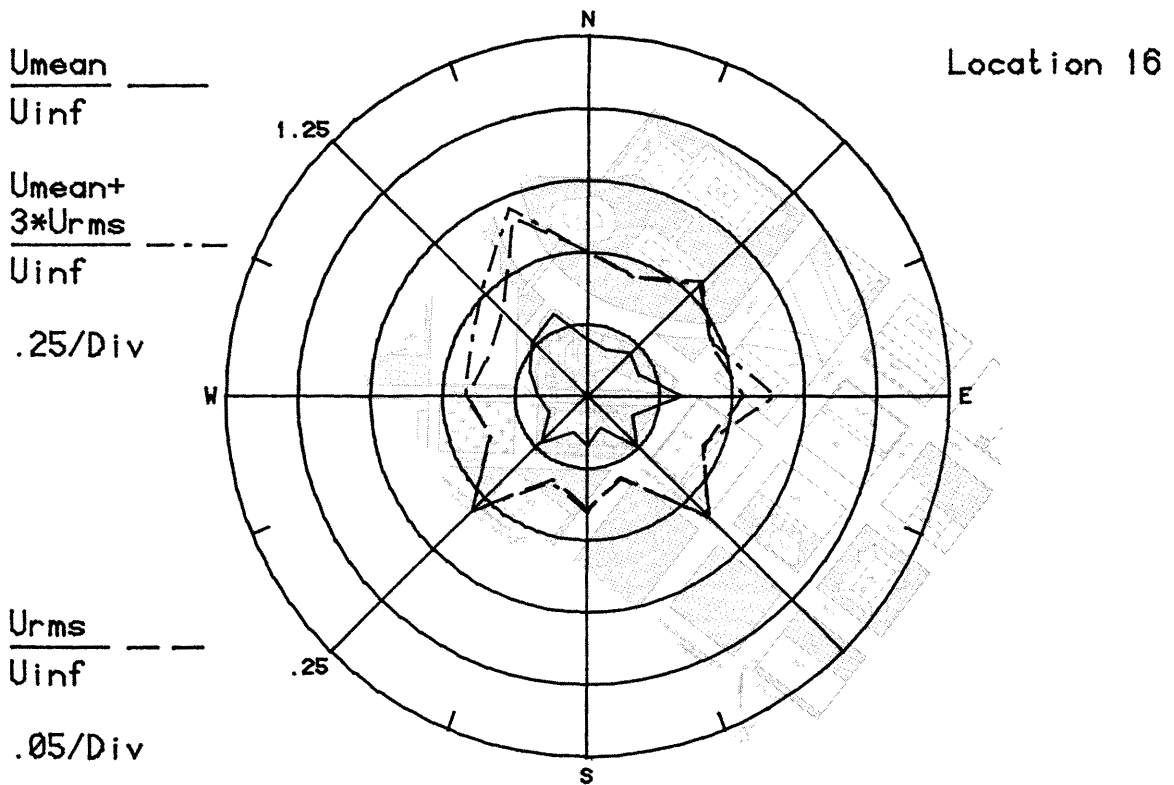
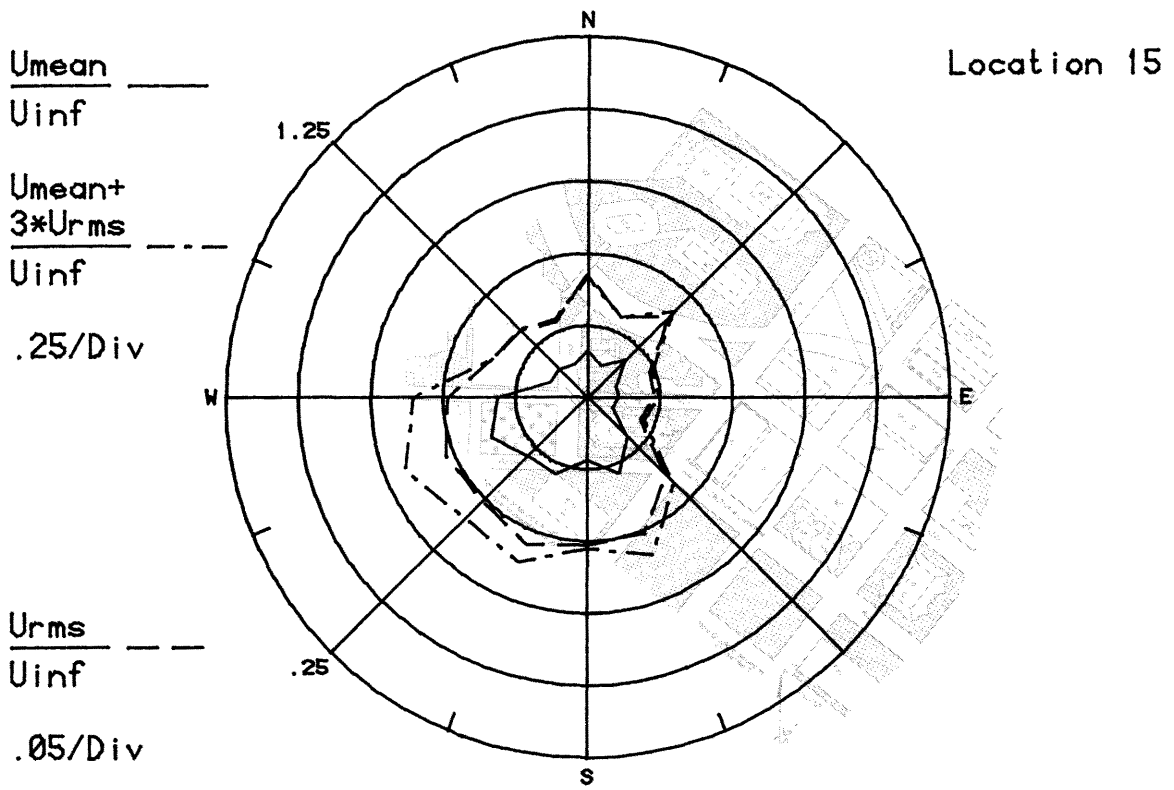


Figure 10h. Mean Velocities and Turbulence Intensities at Pedestrian Locations 15 and 16

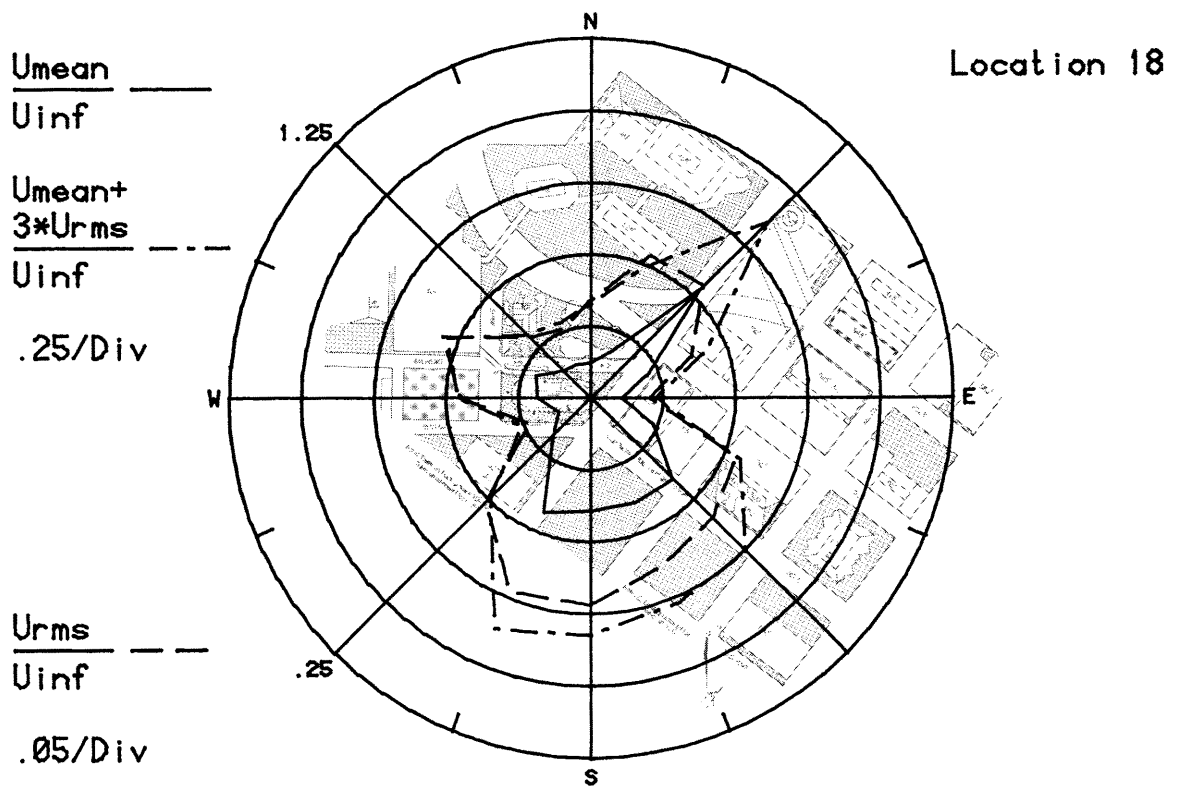
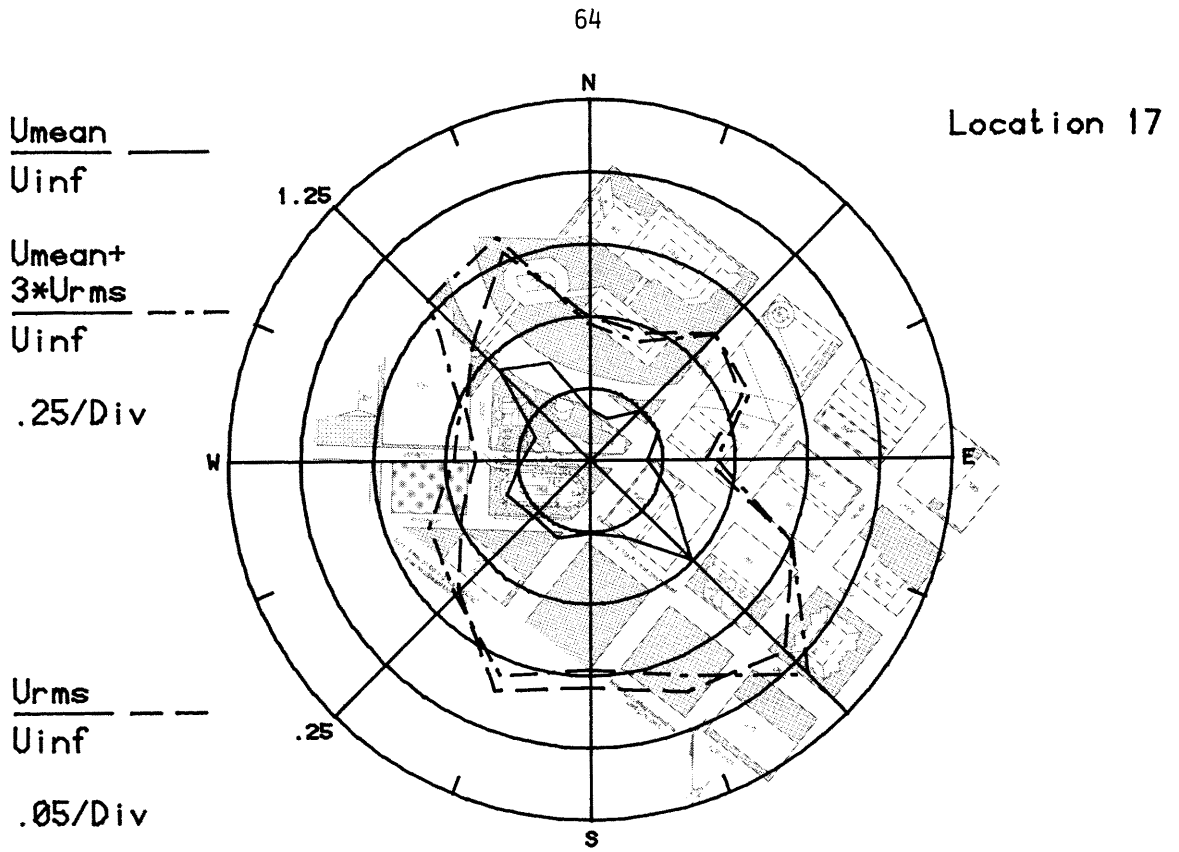


Figure 10i. Mean Velocities and Turbulence Intensities at Pedestrian Locations 17 and 18



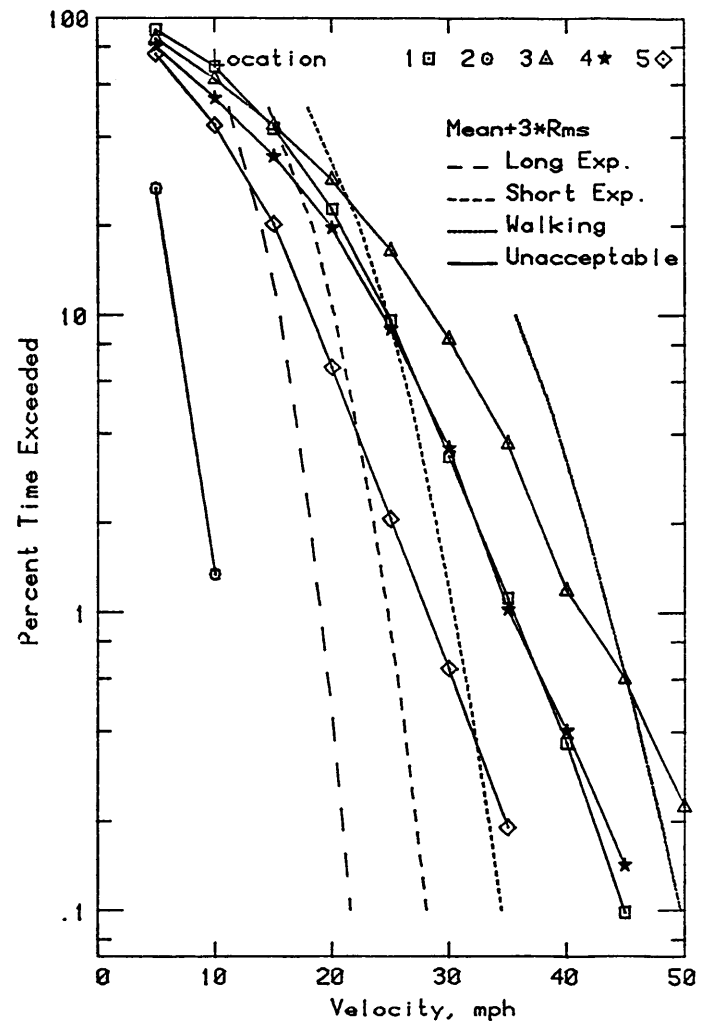
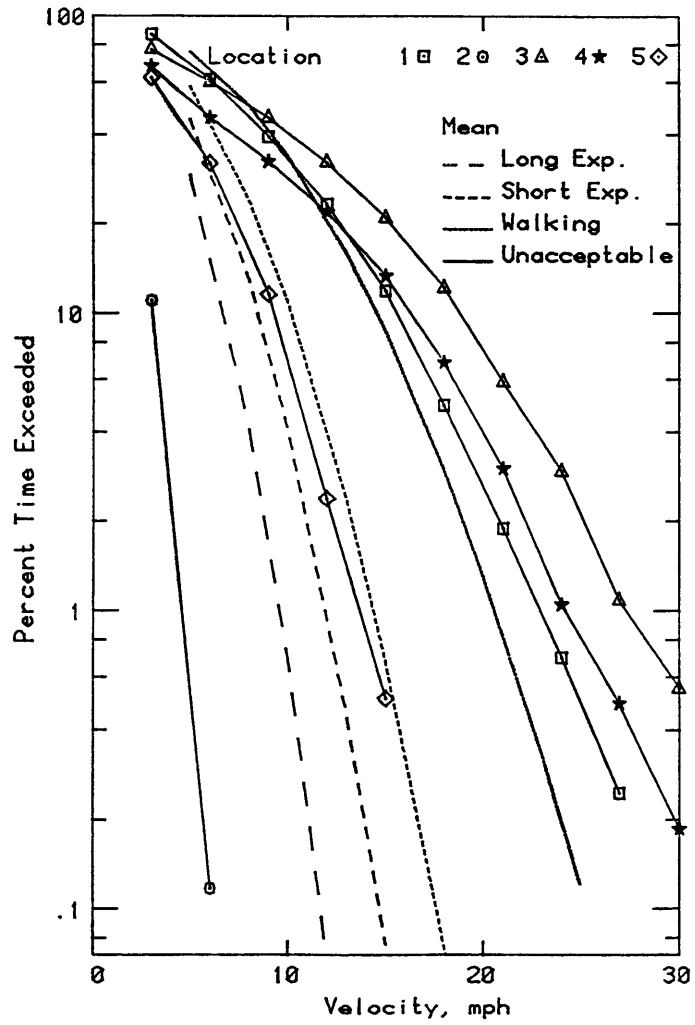


Figure 11a. Wind Velocity Probabilities for Pedestrian Locations

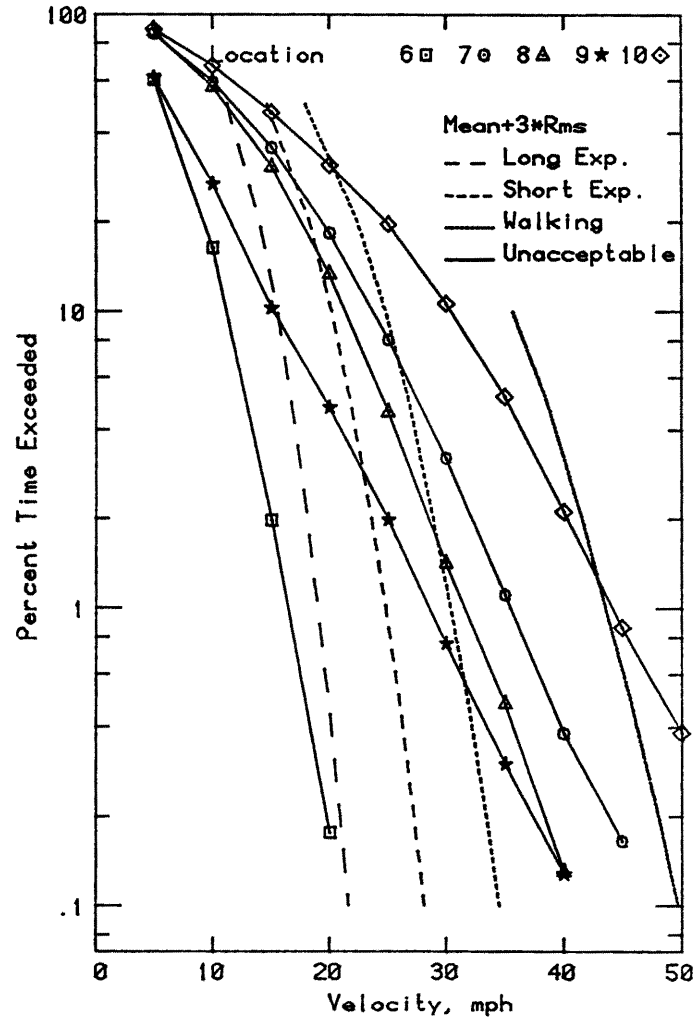
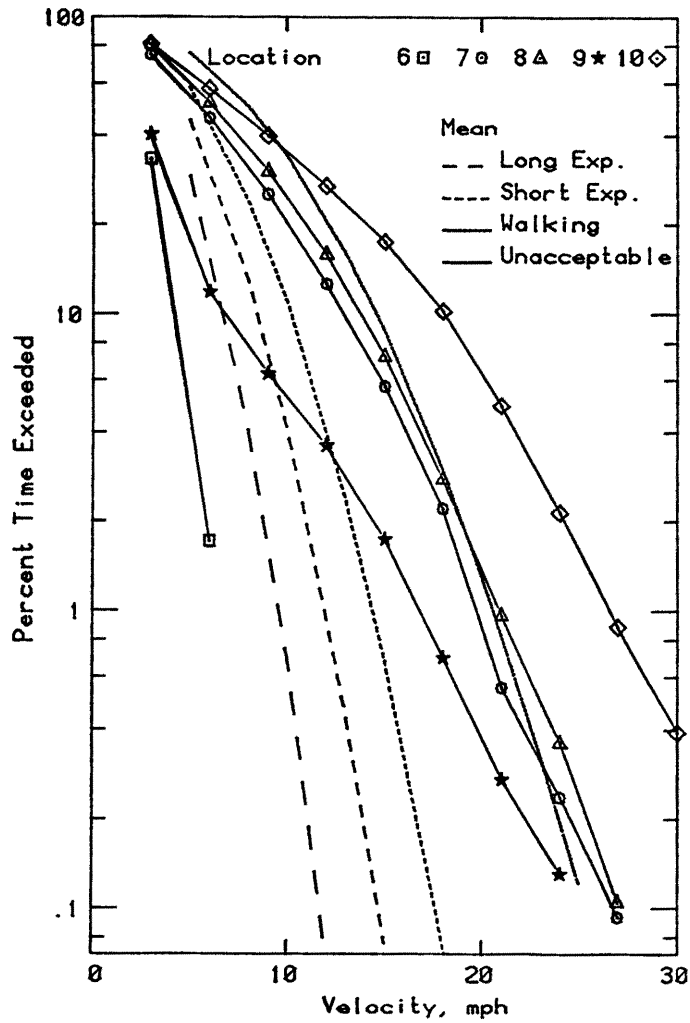


Figure 11b. Wind Velocity Probabilities for Pedestrian Locations

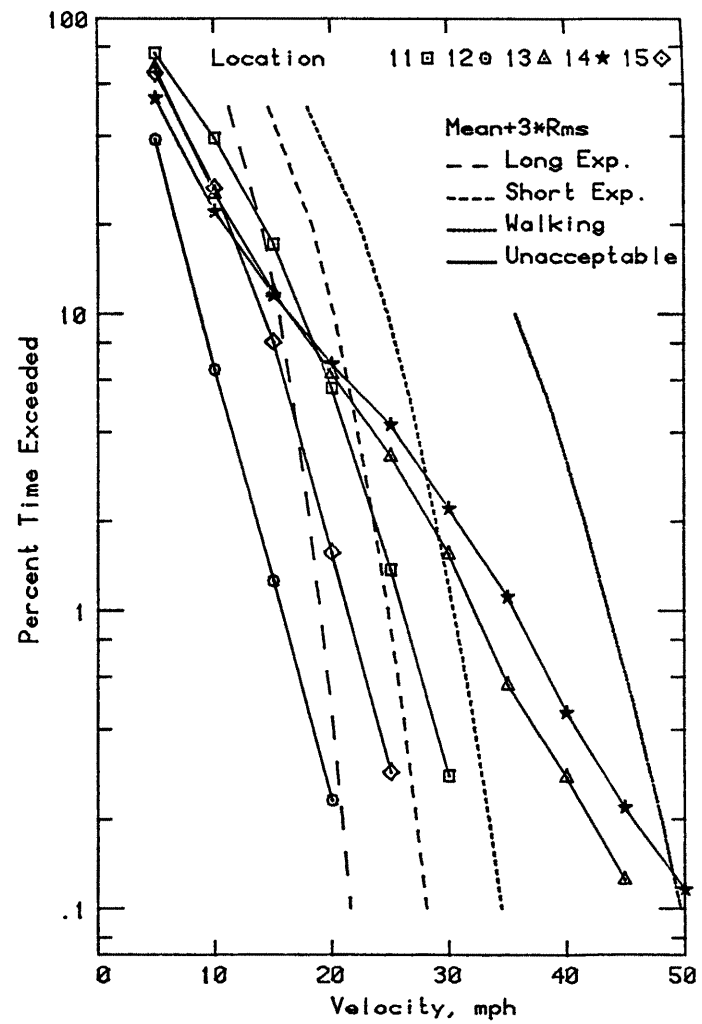
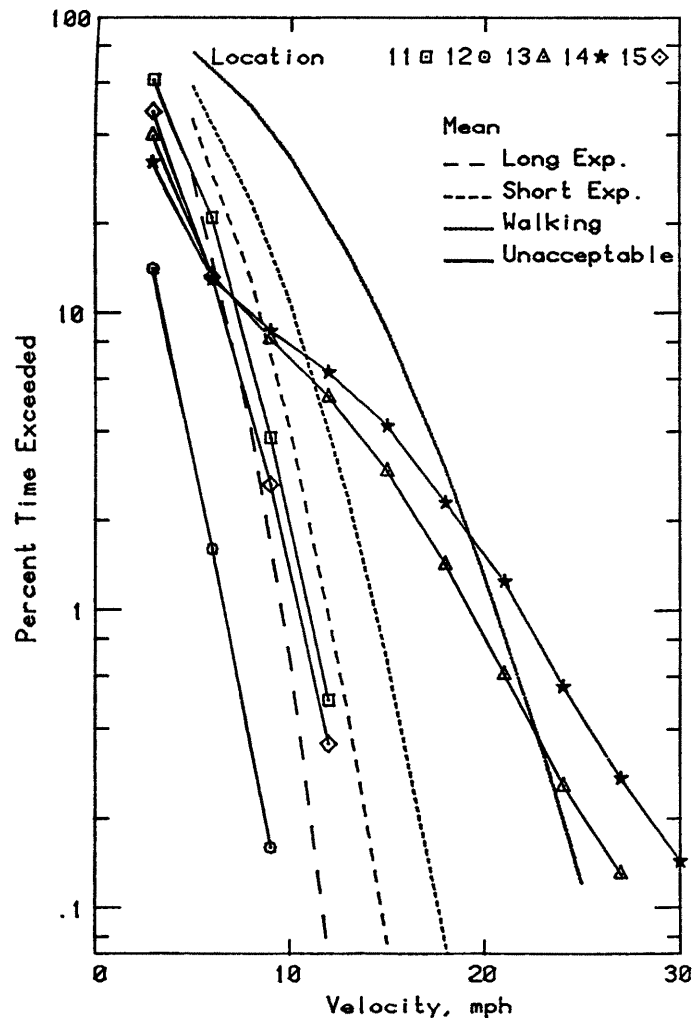


Figure 11c. Wind Velocity Probabilities for Pedestrian Locations

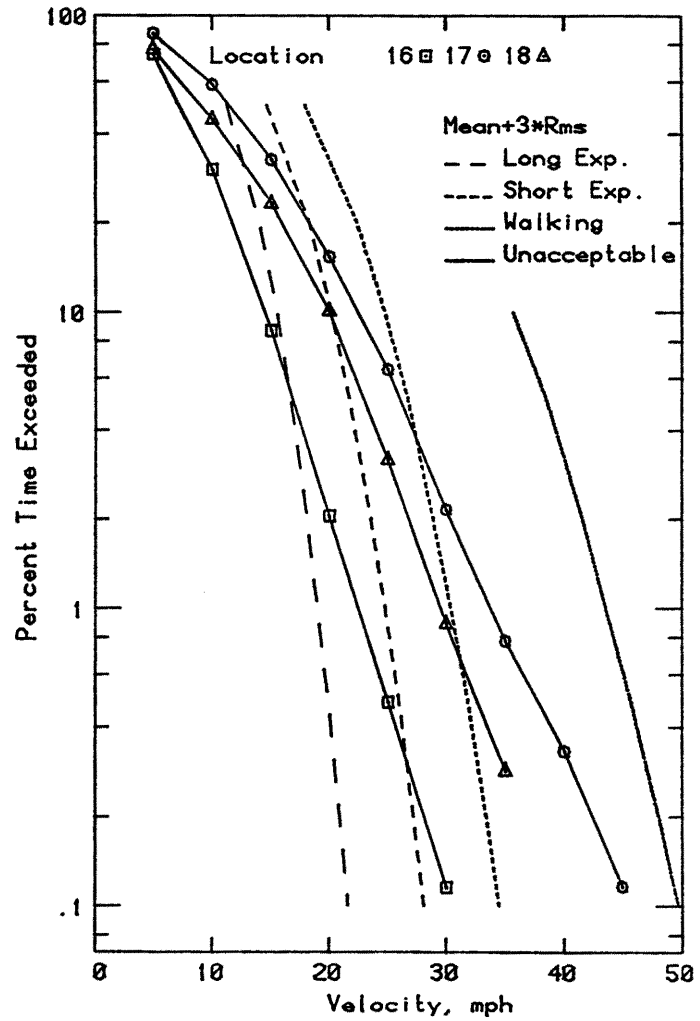
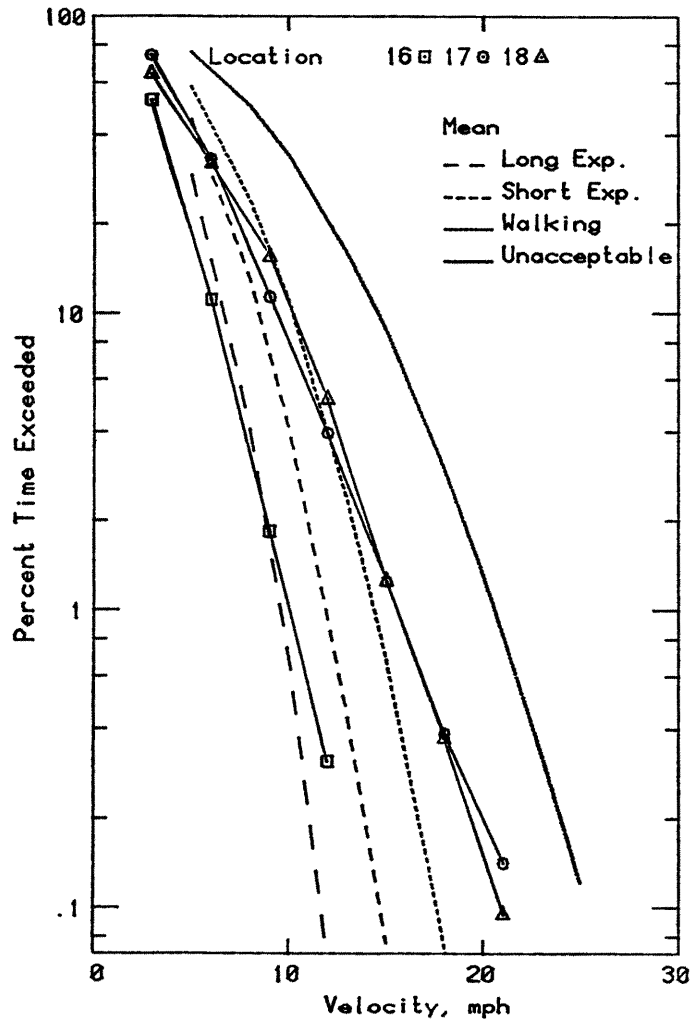


Figure 11d. Wind Velocity Probabilities for Pedestrian Locations

DEVELOPED VIEW  
 PEAK NEGATIVE CLADDING LOADS (PSF)  
 FOR CONFIGURATION C  
 FOR 100-YEAR RECURRENCE WIND  
 REFERENCE PRESSURE = 42 PSF

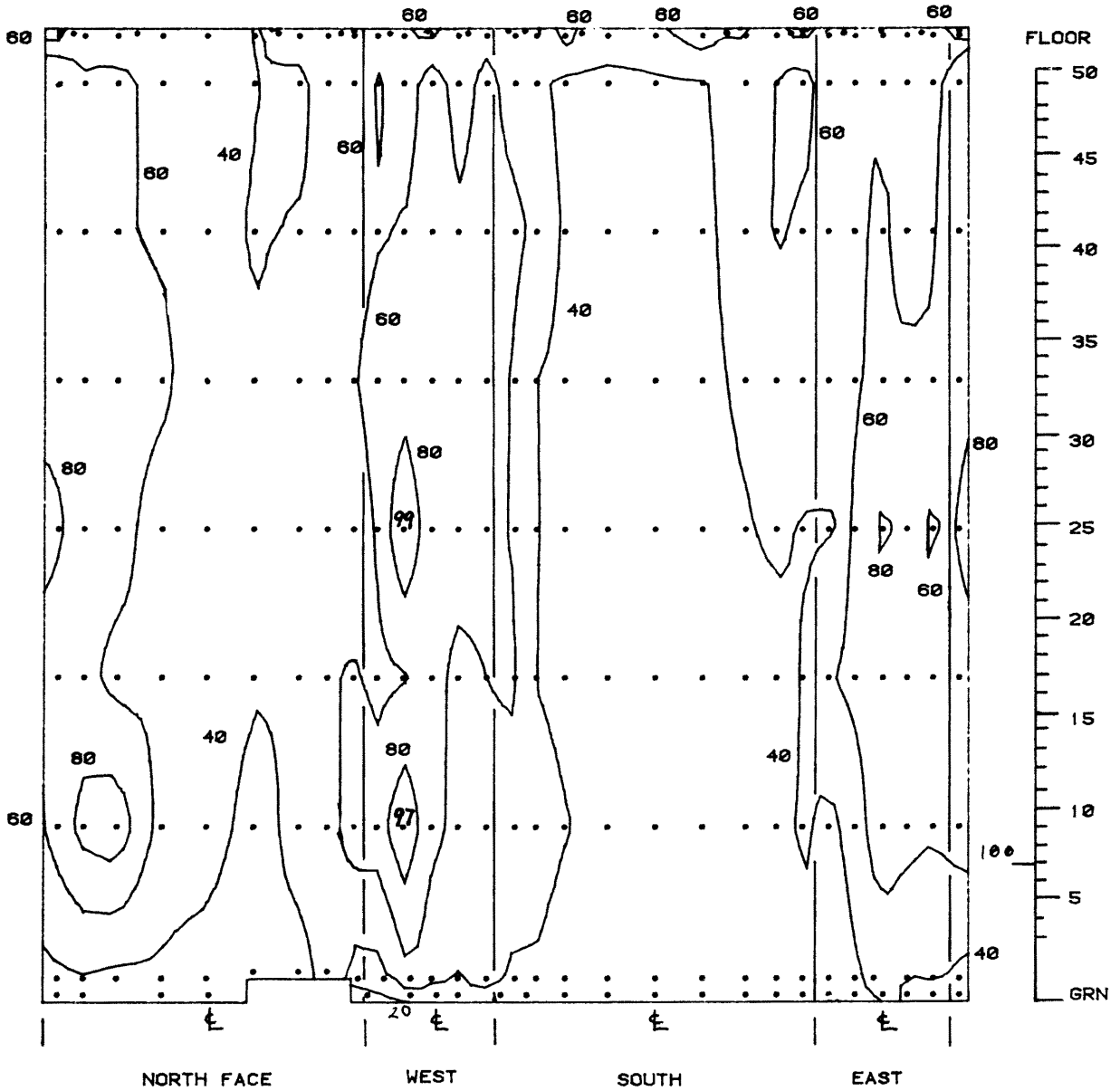


Figure 12a. Peak Pressure Contours on the Building for Cladding Loads

DEVELOPED VIEW  
PEAK POSITIVE CLADDING LOADS (PSF)  
FOR CONFIGURATION C  
FOR 100-YEAR RECURRENCE WIND  
REFERENCE PRESSURE = 42 PSF

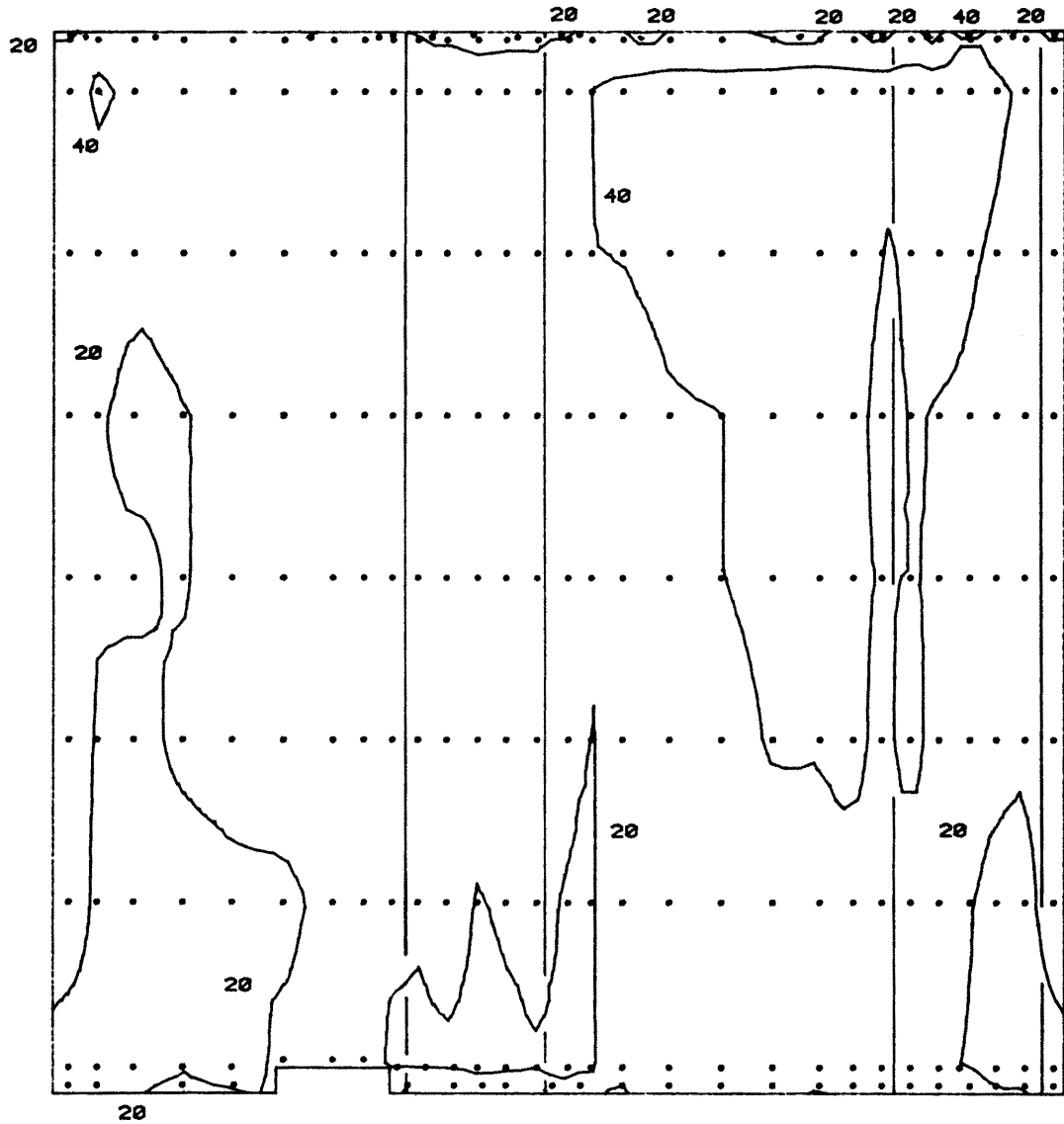
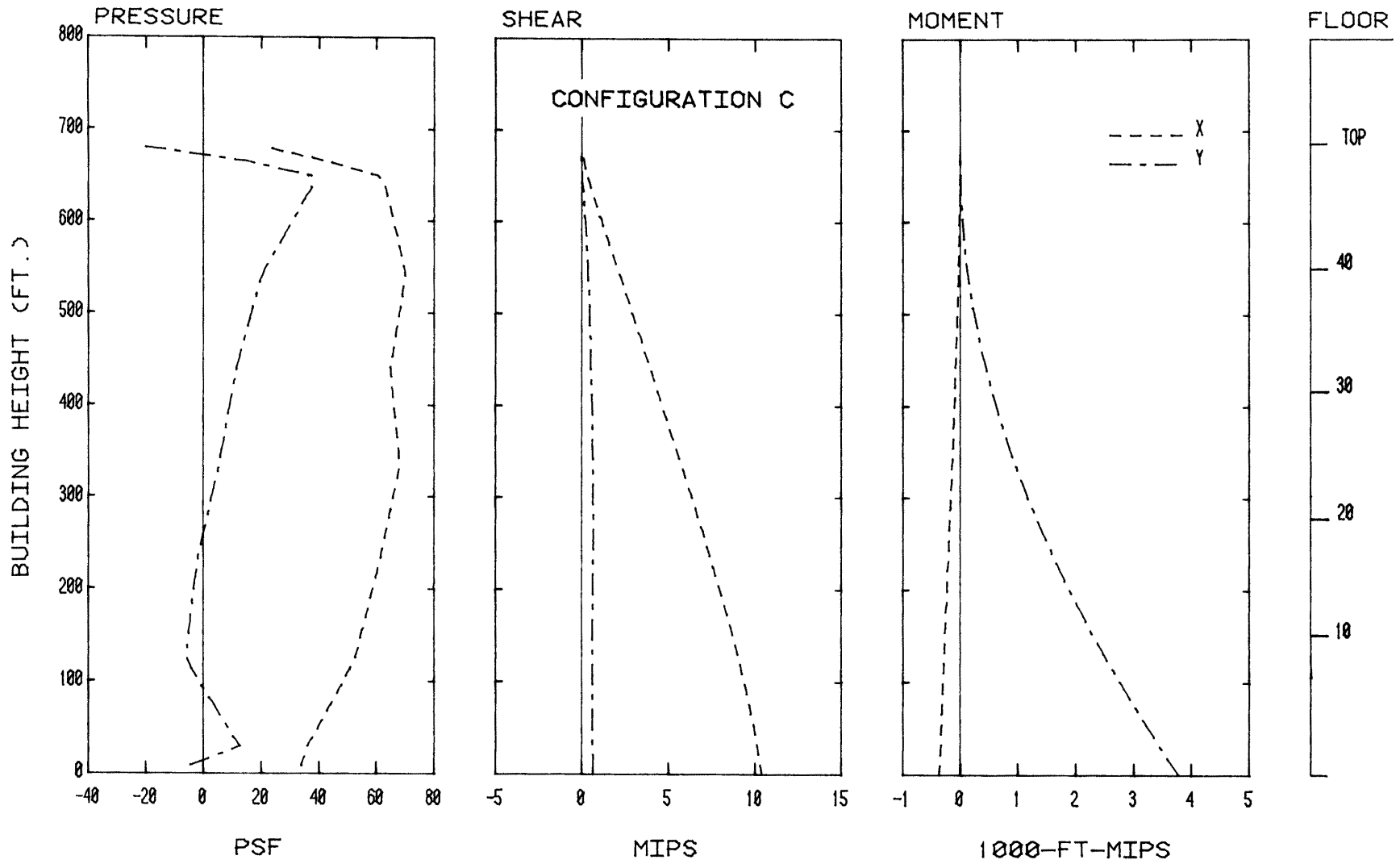


Figure 12b. Peak Pressure Contours on the Building for Cladding Loads



WIND DIRECTION 110

Figure 13a. Load, Shear, and Moment Diagrams for Selected Wind Directions

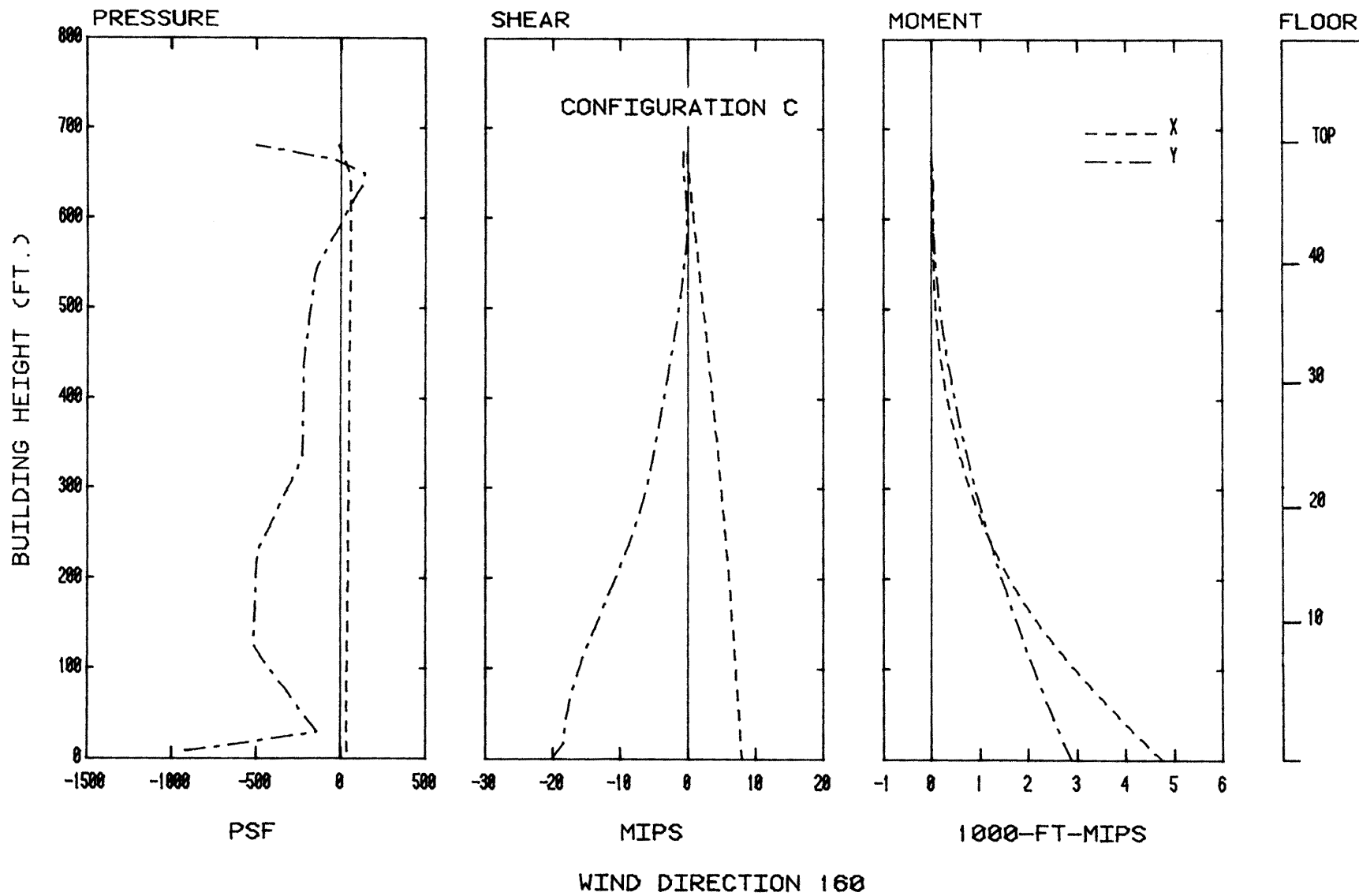


Figure 13b. Load, Shear, and Moment Diagrams for Selected Wind Directions



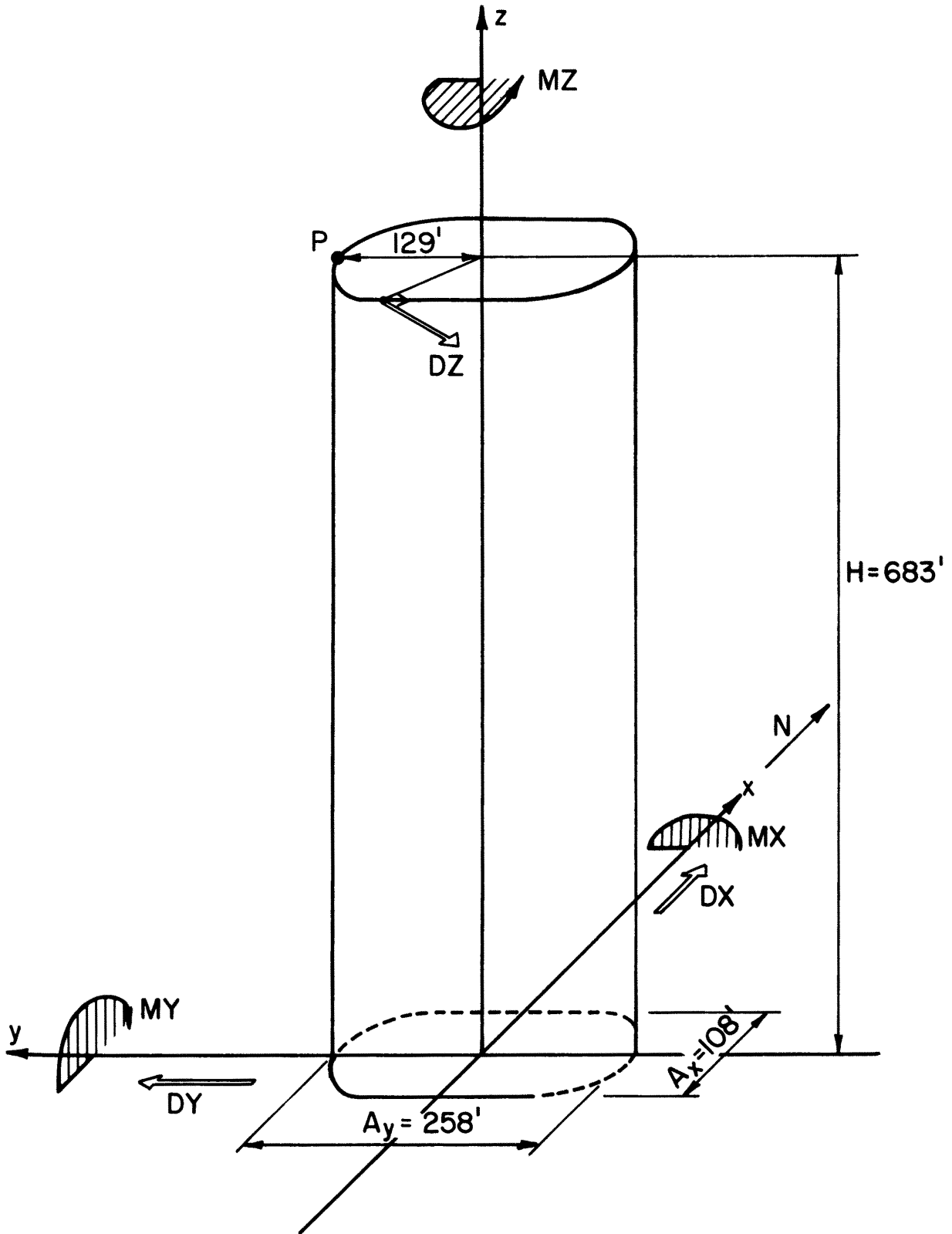


Figure 14. Sign Convention for Base Moments and Top Floor Deflection

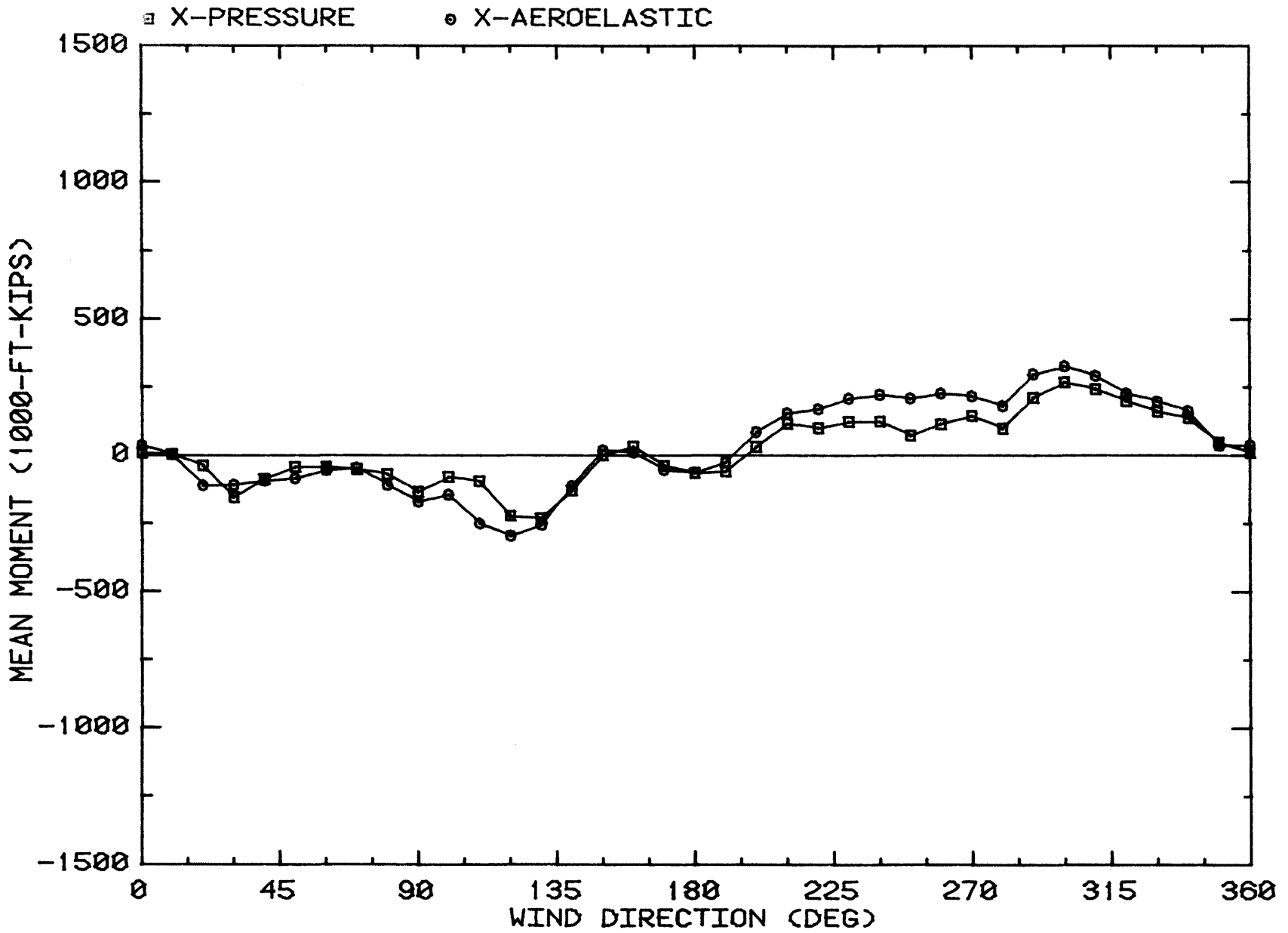


Figure 15a. COMPARISON OF PRESSURE-MODEL WITH AEROELASTIC-MODEL DATA  
 FULL-SCALE VALUES FOR A 128 MPH (100 YEAR) WIND

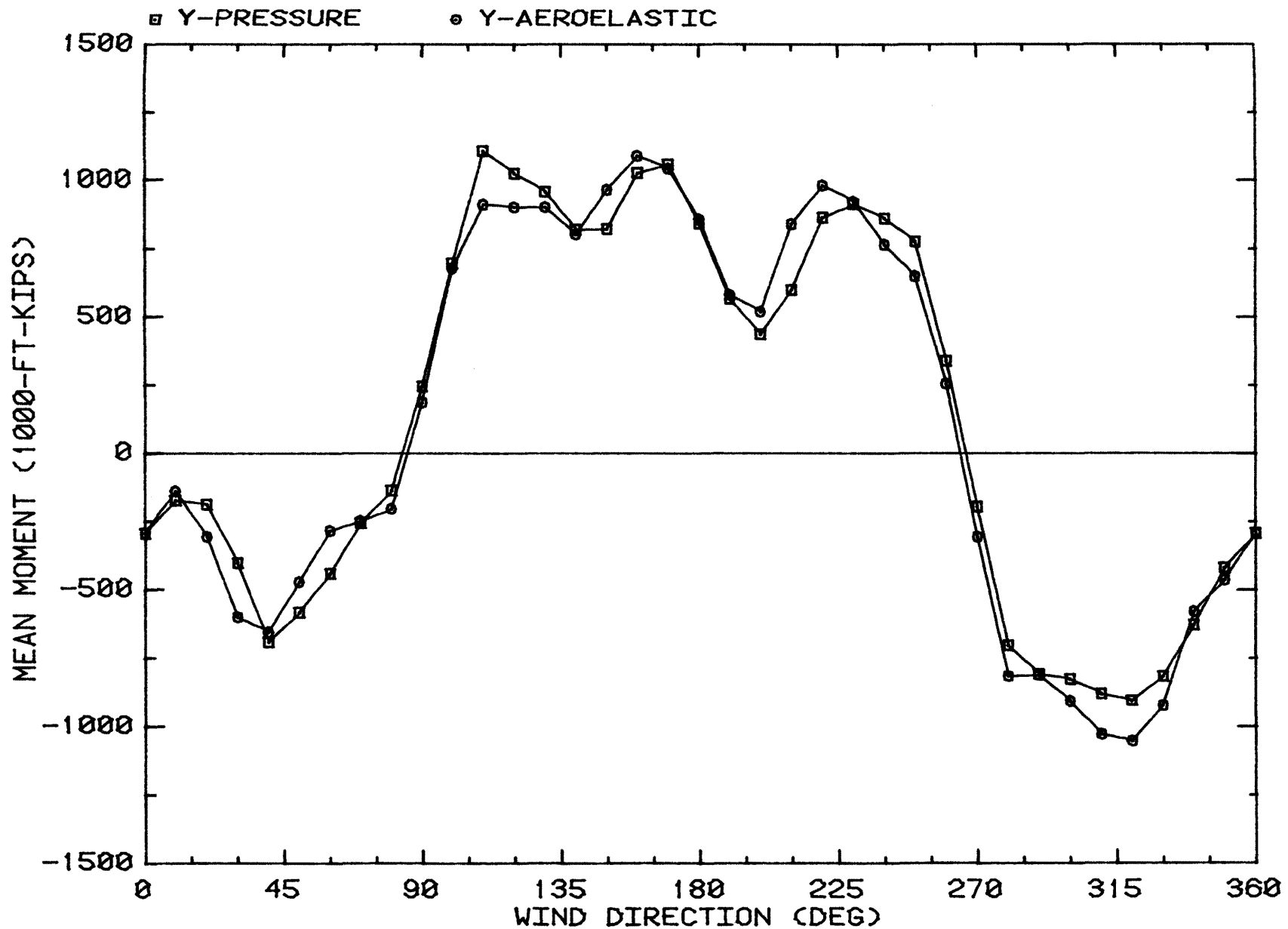


Figure 15b. COMPARISON OF PRESSURE-MODEL WITH AEROELASTIC-MODEL DATA  
 FULL-SCALE VALUES FOR A 128 MPH (100 YEAR) WIND

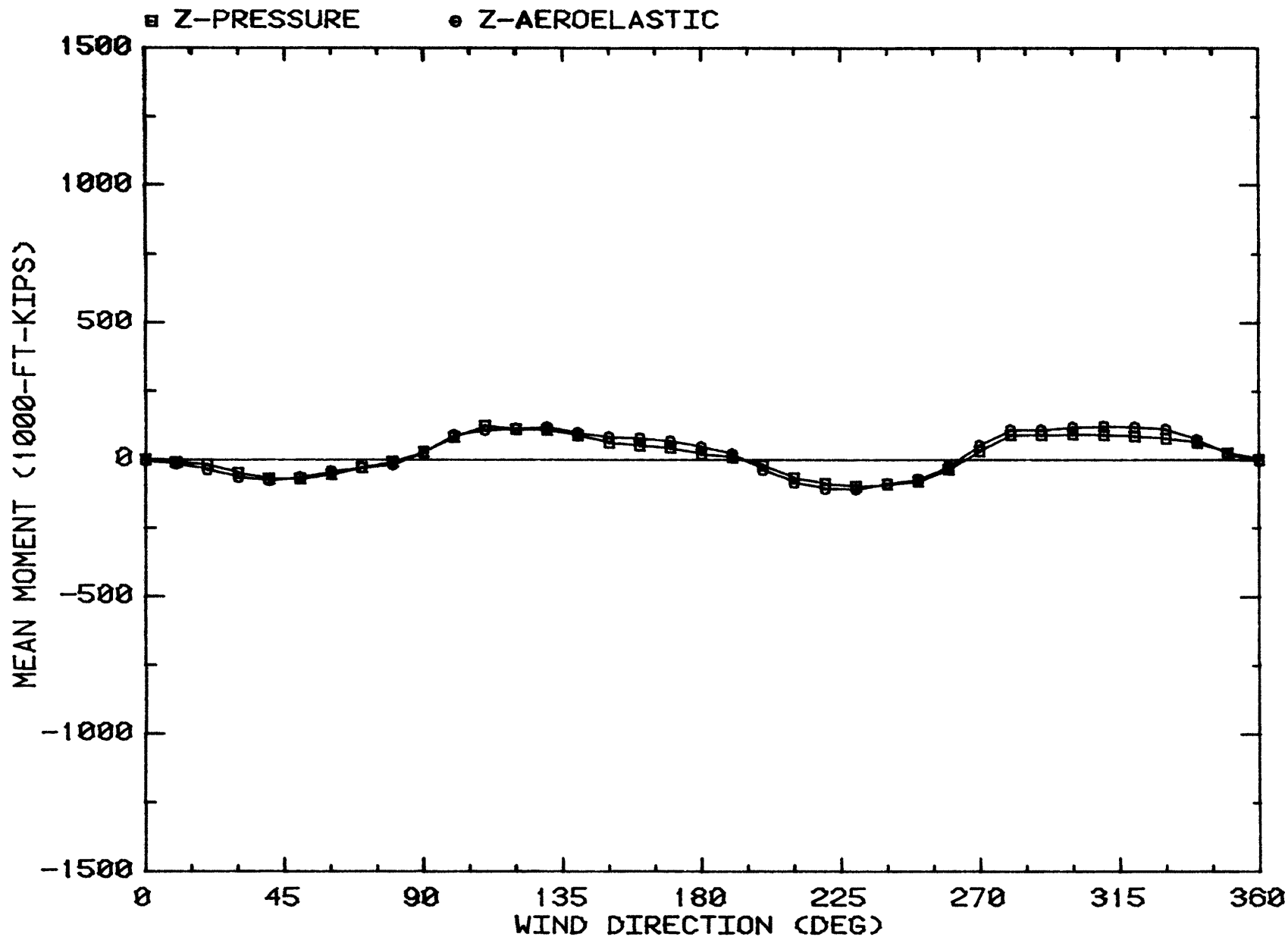


Figure 15c. COMPARISON OF PRESSURE-MODEL WITH AEROELASTIC-MODEL DATA  
 FULL SCALE VALUES FOR A 128 MPH (100 YEAR) WIND

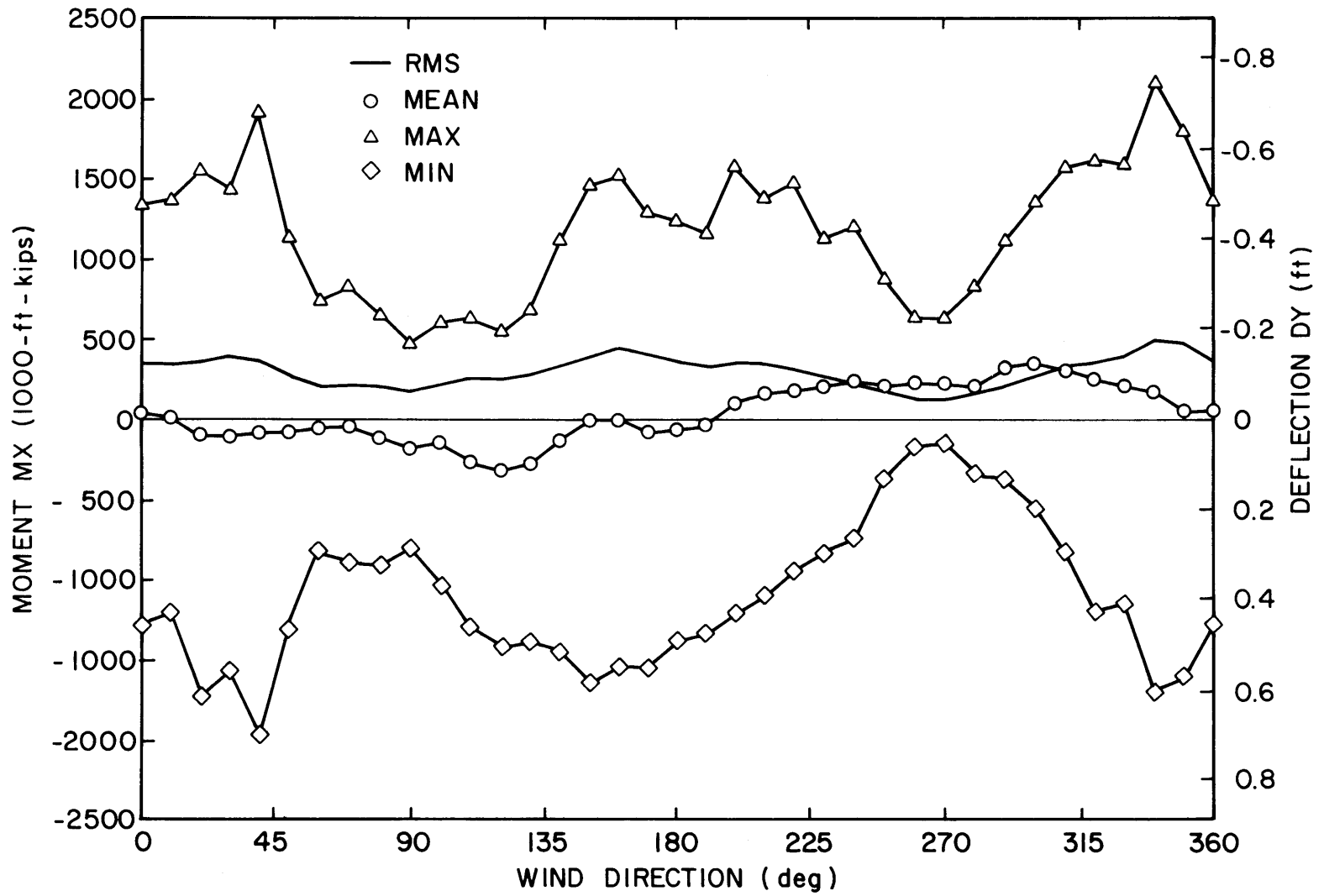


Figure 16a. Base Moment and Corresponding Top Floor Deflection, Wind 128 mph, Damping Ratio 0.8%

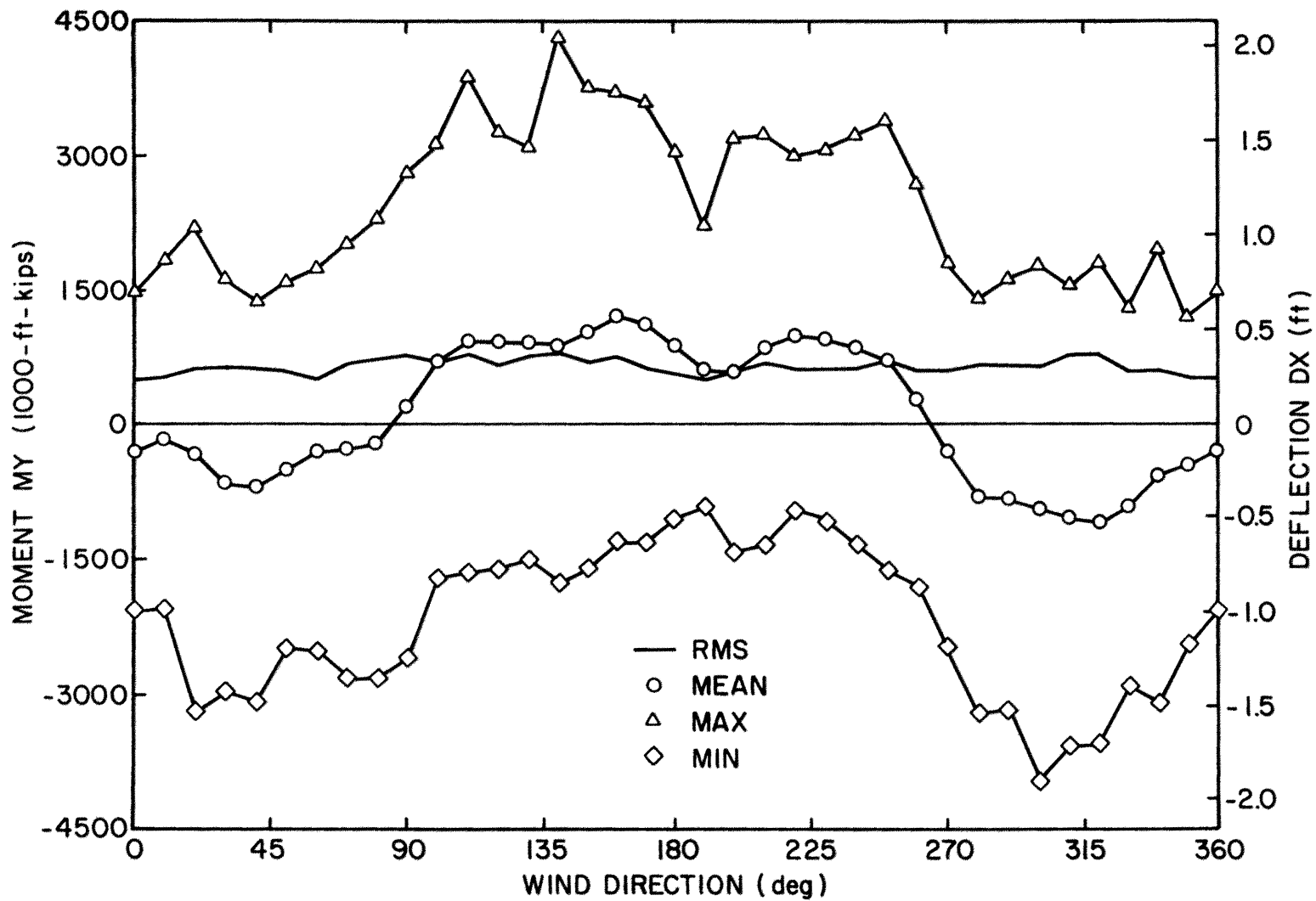


Figure 16b. Base Moment and Corresponding Top Floor Deflection, Wind 128 mph, Damping Ratio 0.8%

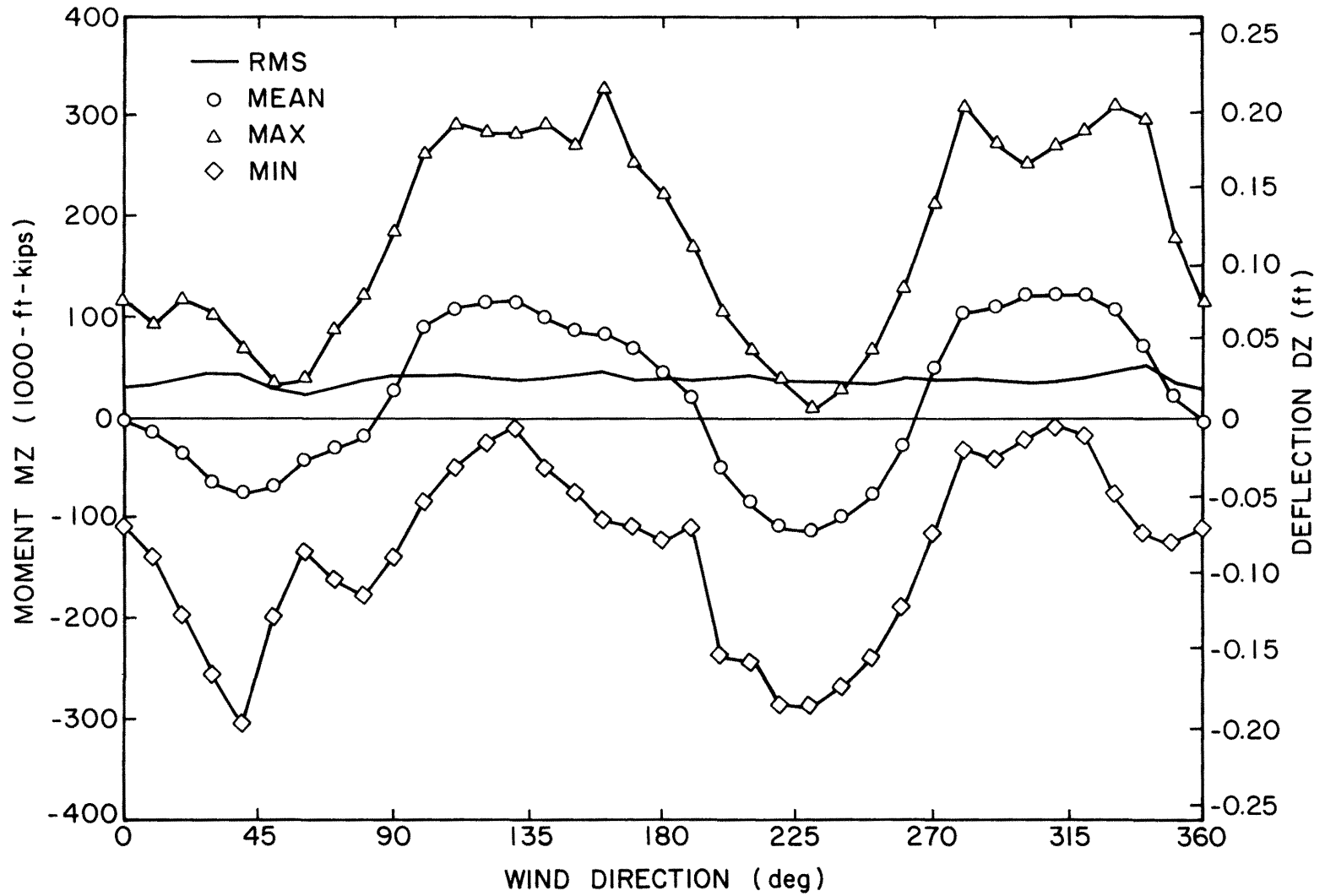


Figure 16c. Base Moment and Corresponding Top Floor Deflection, Wind 128 mph, Damping Ratio 0.8%

## BASE MOMENT MX

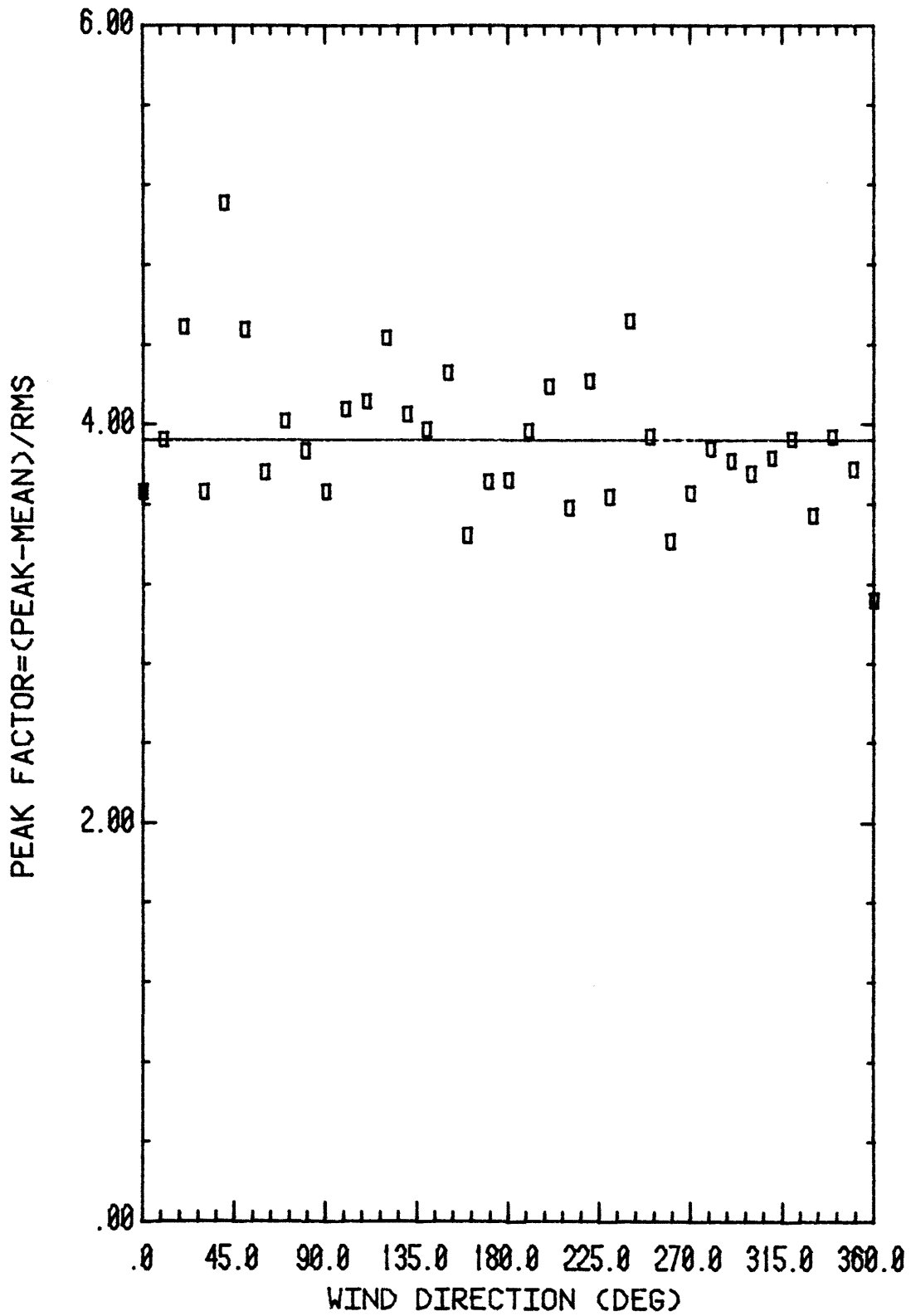


Figure 17a. Peak Factor for Base Moment



## BASE MOMENT MY

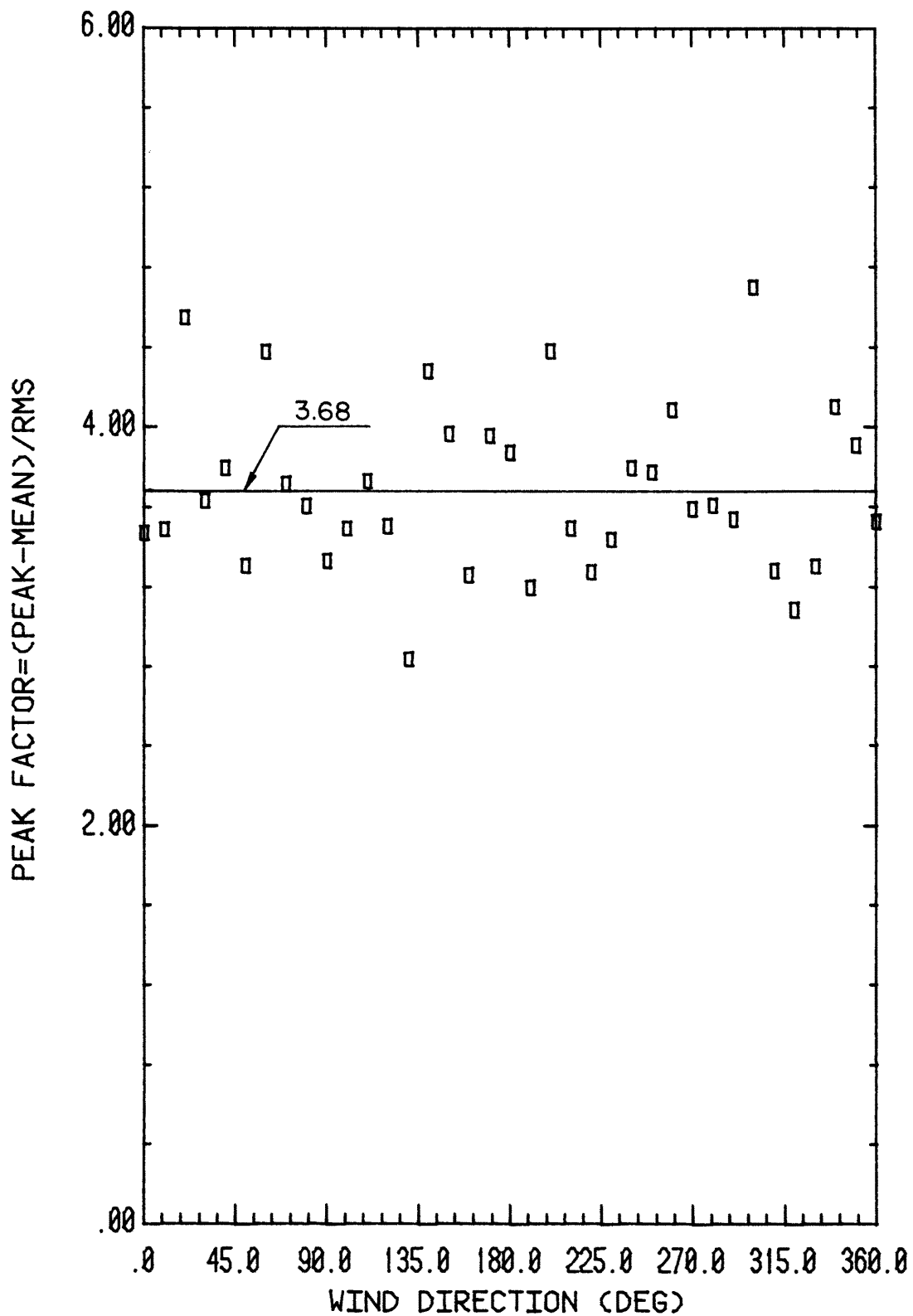


Figure 17b. Peak Factor for Base Moment

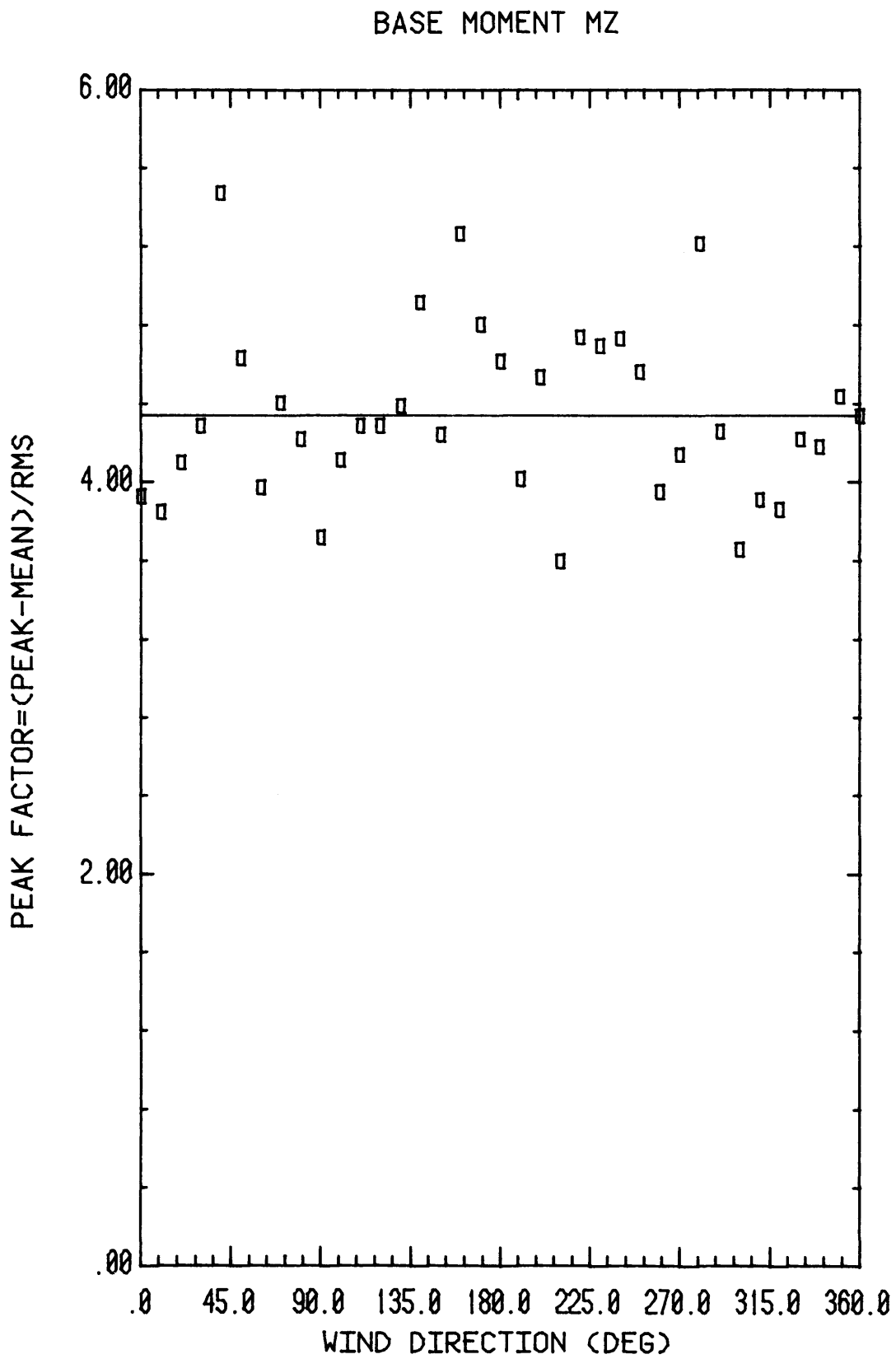


Figure 17c. Peak Factor for Base Moment

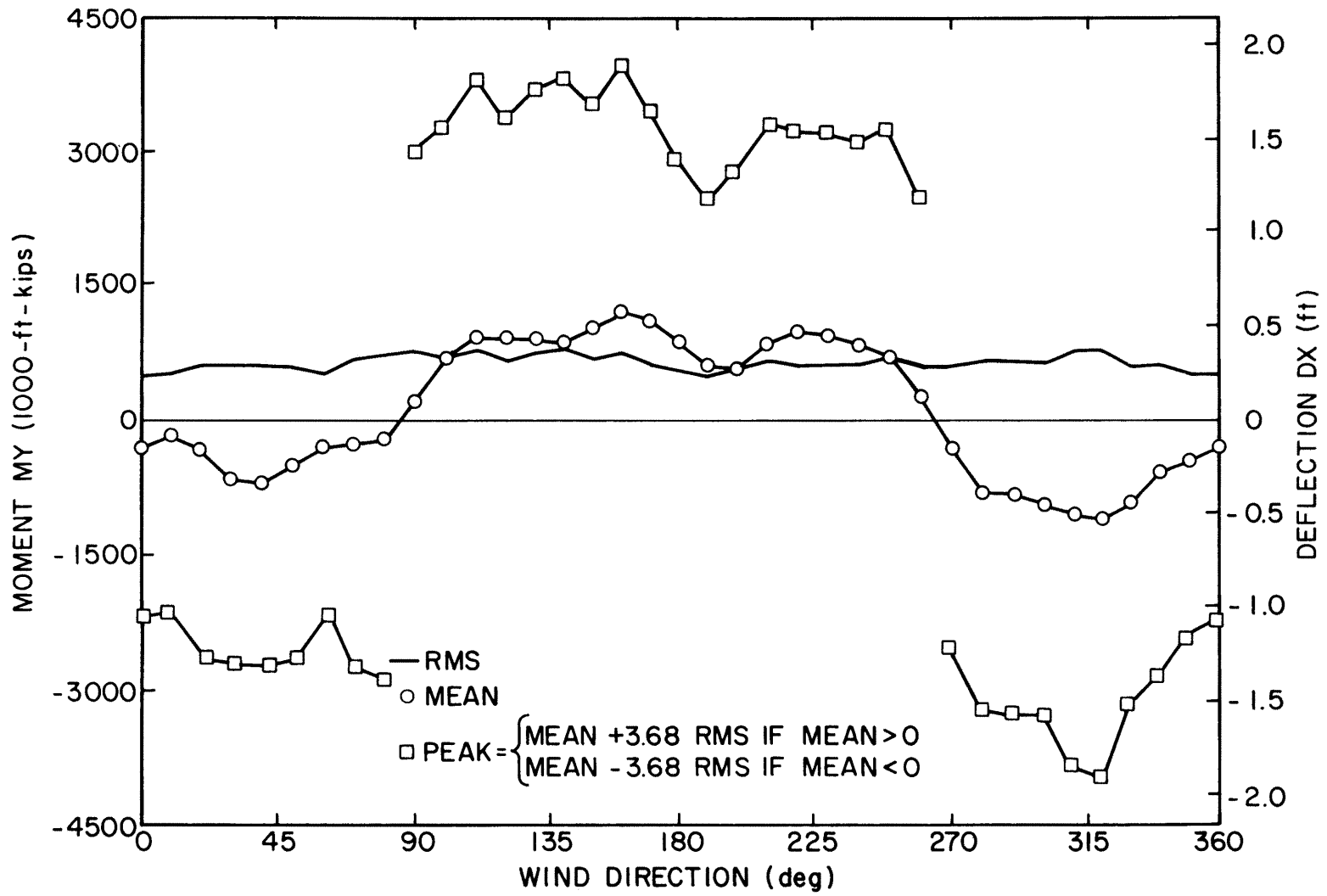


Figure 18. Corrected Base Moment and Corresponding Top Floor Deflection, Wind 128 mph, Damping Ratio 0.8%

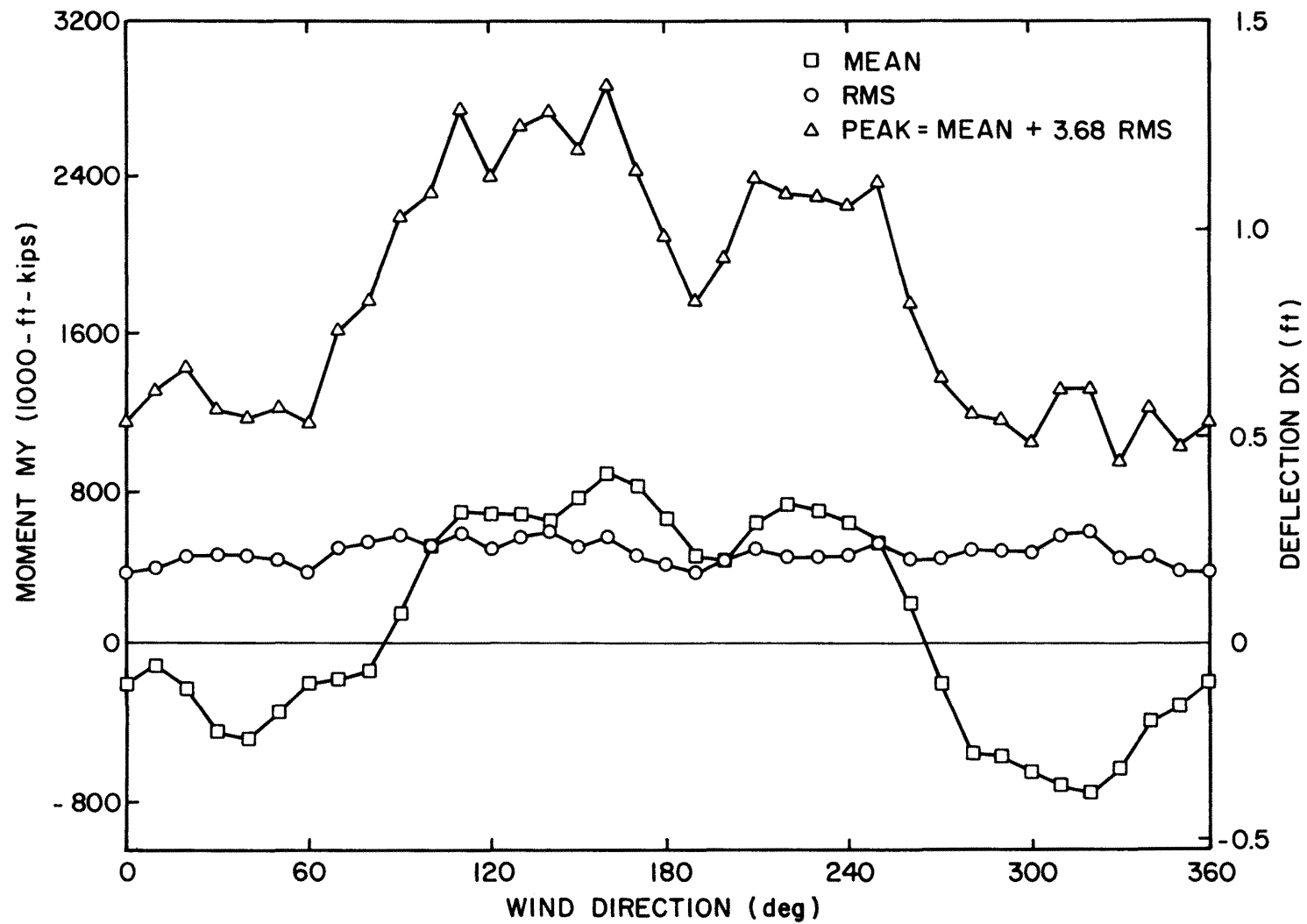
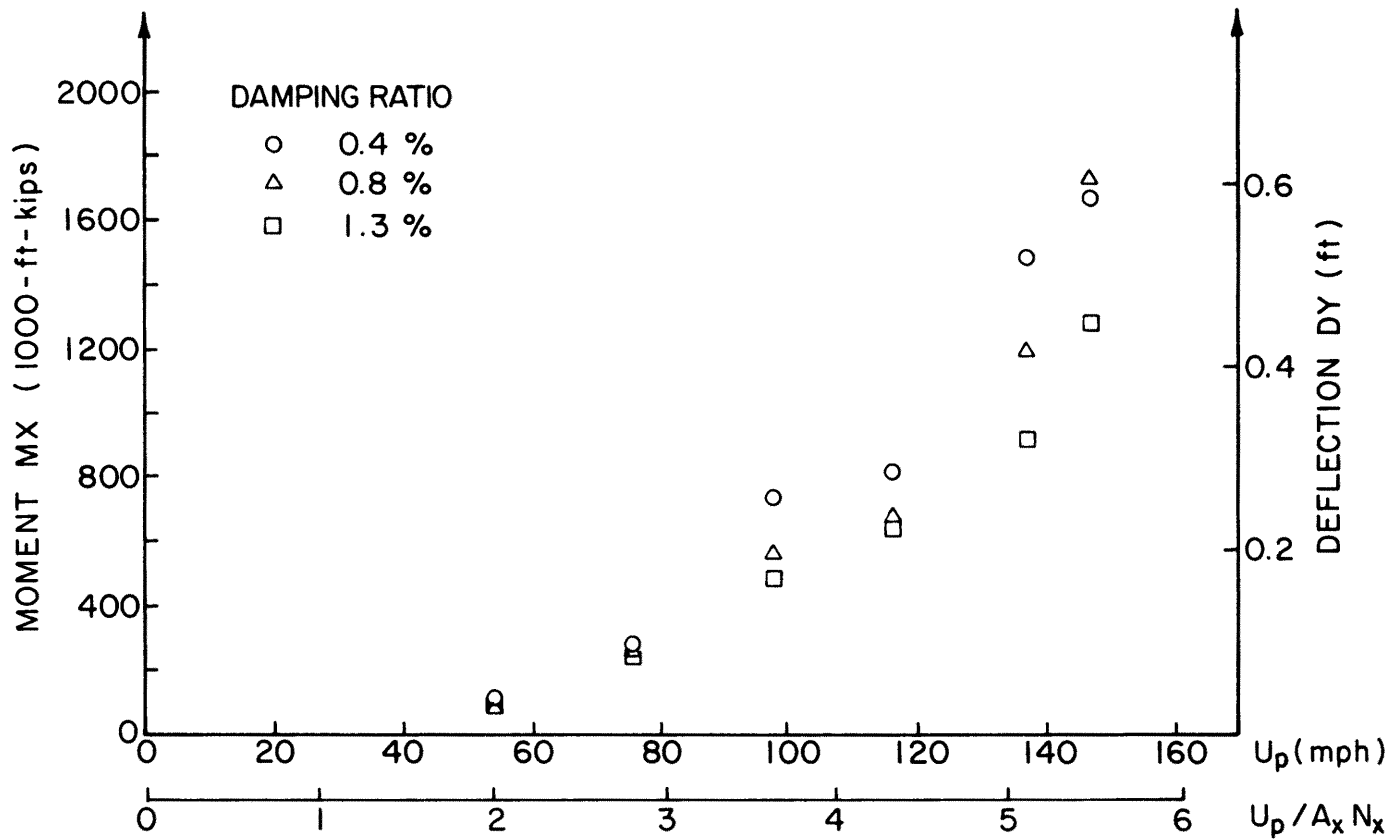
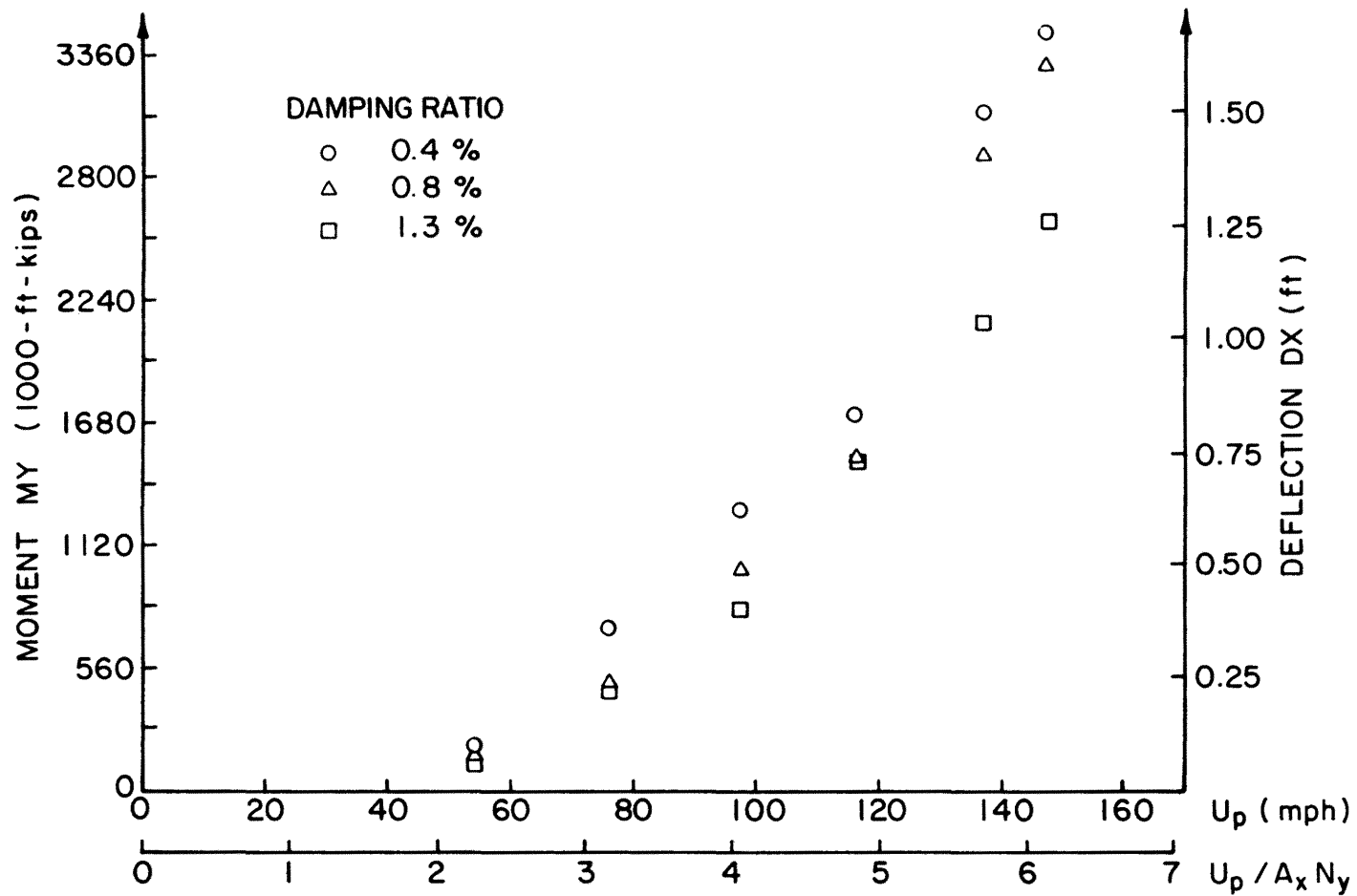


Figure 19. Reduced Base Moment and Corresponding Top Floor Deflection, 50-Year Wind 108 mph, Damping Ratio 0.8%



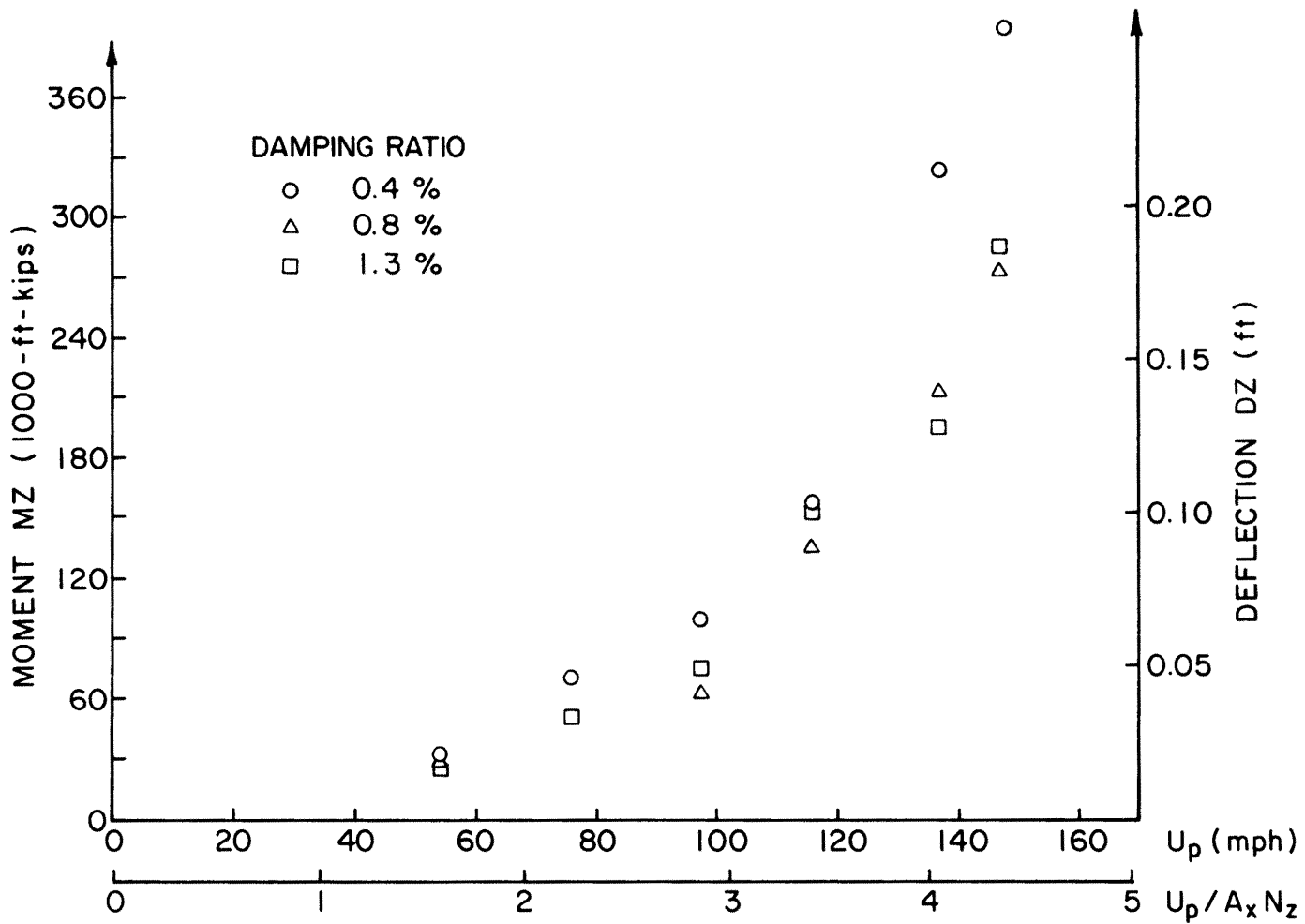
PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 45 DEGREES

Figure 20a. Influence of Reduced Velocity and Damping on Building Response



PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 45 DEGREES

Figure 20b. Influence of Reduced Velocity and Damping on Building Response



PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 45 DEGREES

Figure 20c. Influence of Reduced Velocity and Damping on Building Response

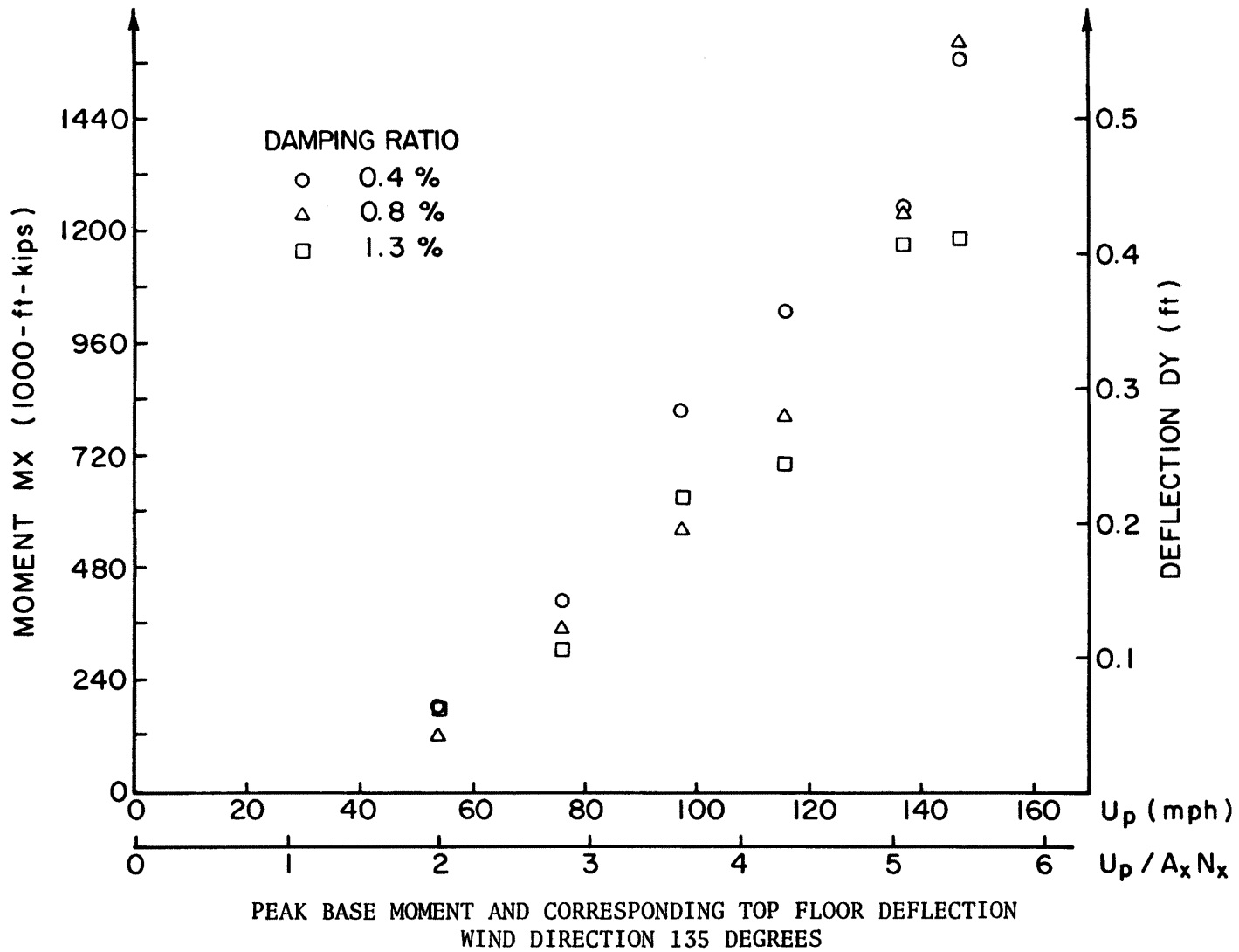
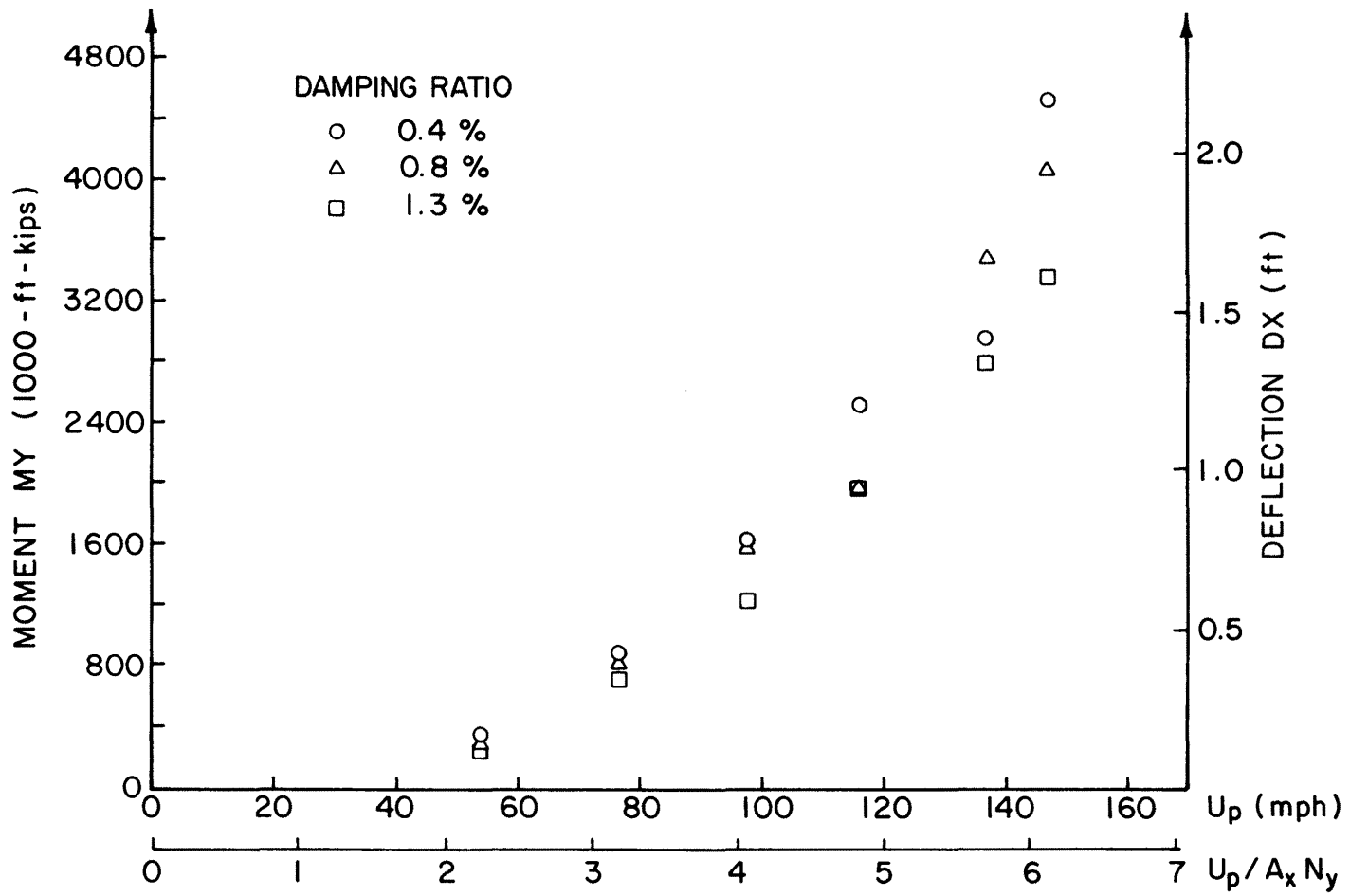


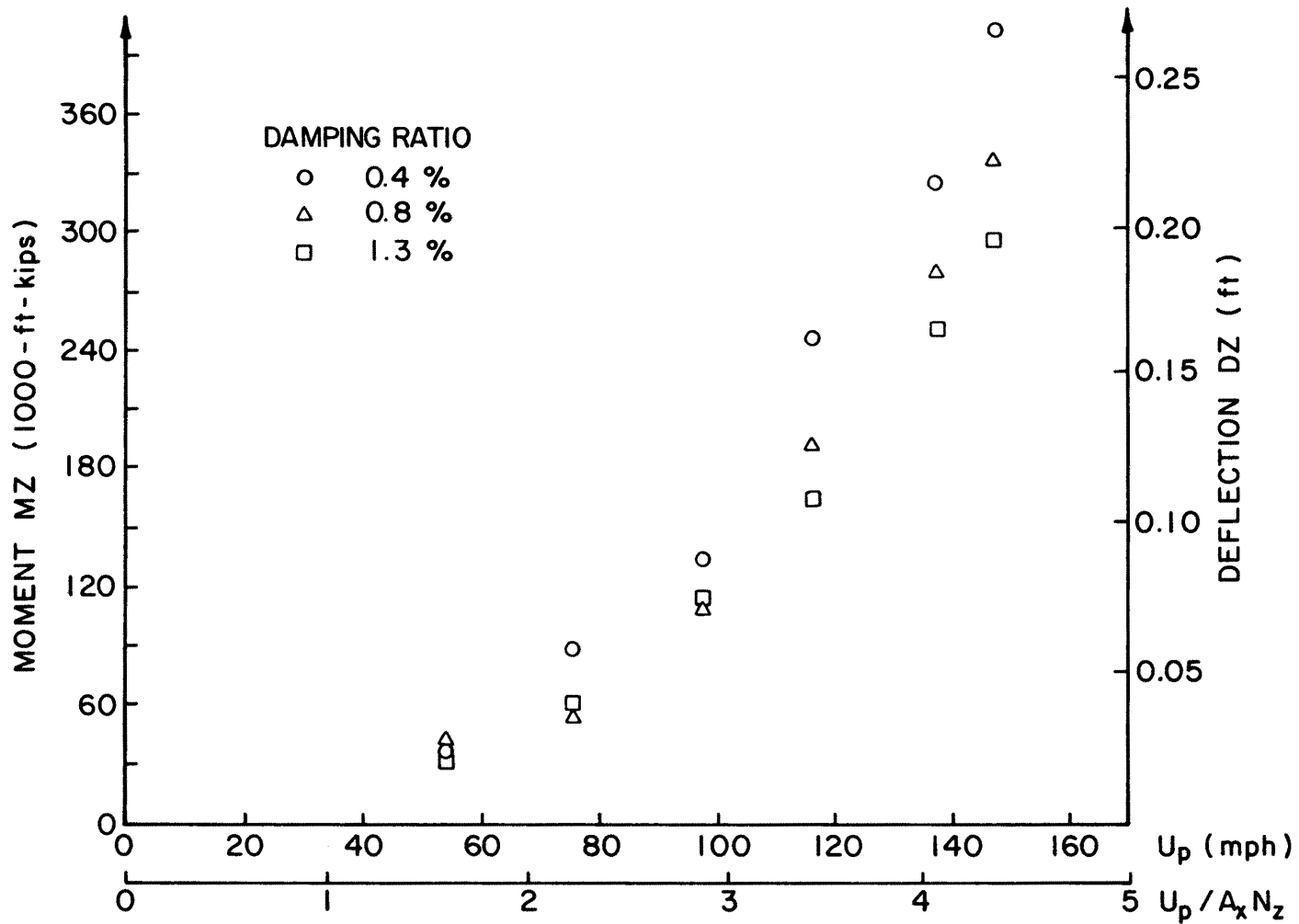
Figure 20d. Influence of Reduced Velocity and Damping on Building Response





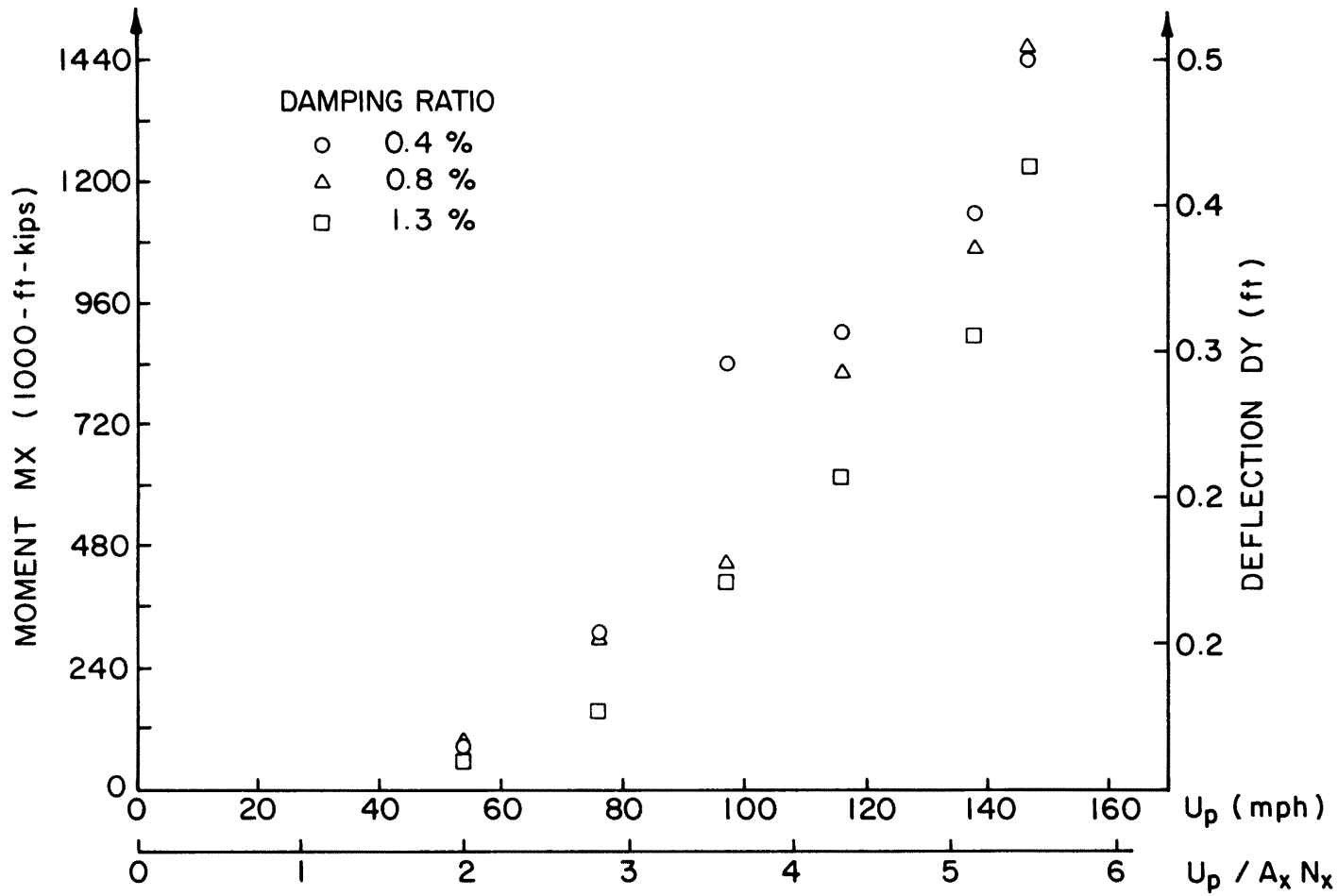
PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 135 DEGREES

Figure 20e. Influence of Reduced Velocity and Damping on Building Response



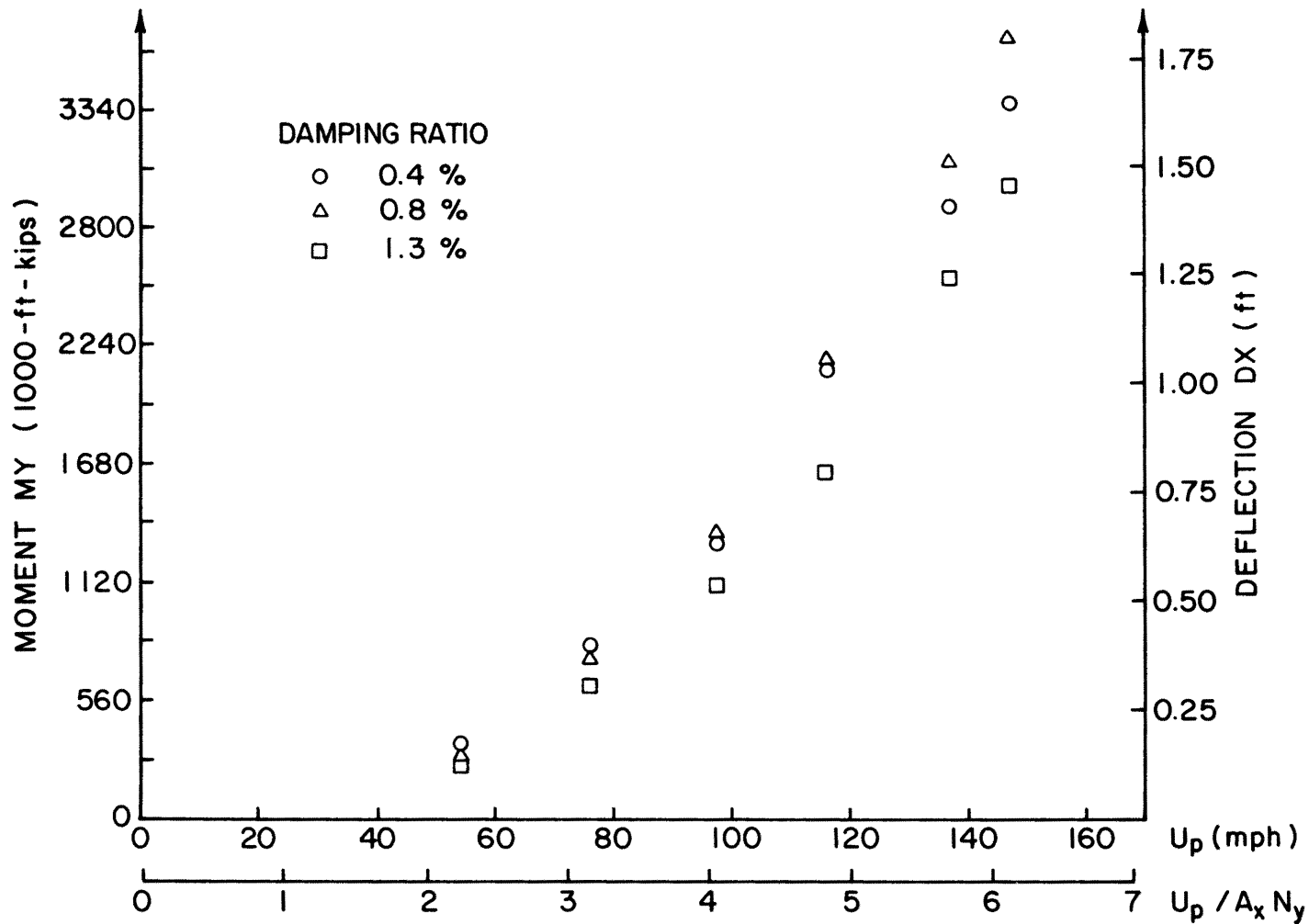
PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 135 DEGREES

Figure 20f. Influence of Reduced Velocity and Damping on Building Response



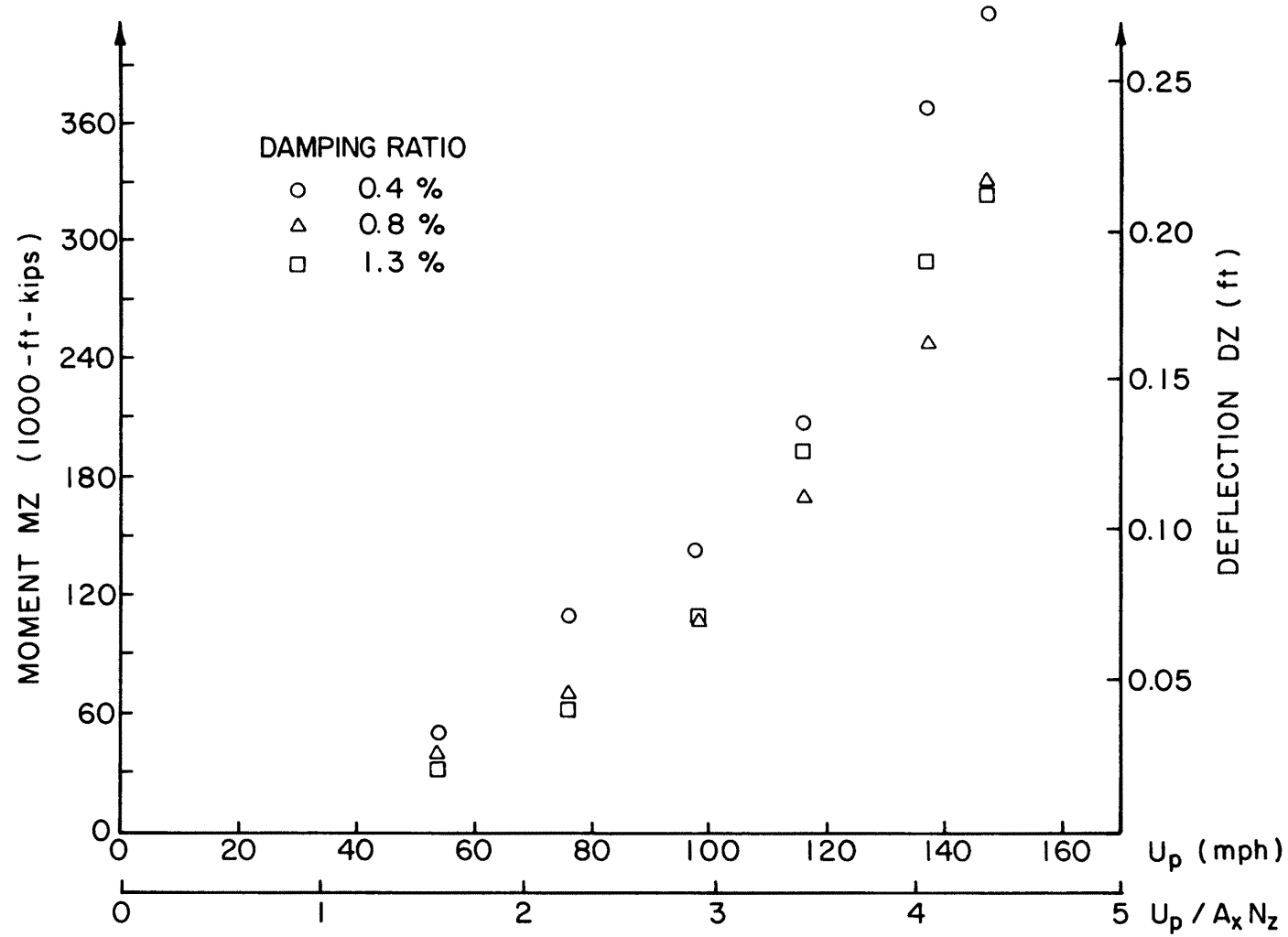
PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 225 DEGREES

Figure 20g. Influence of Reduced Velocity and Damping on Building Response



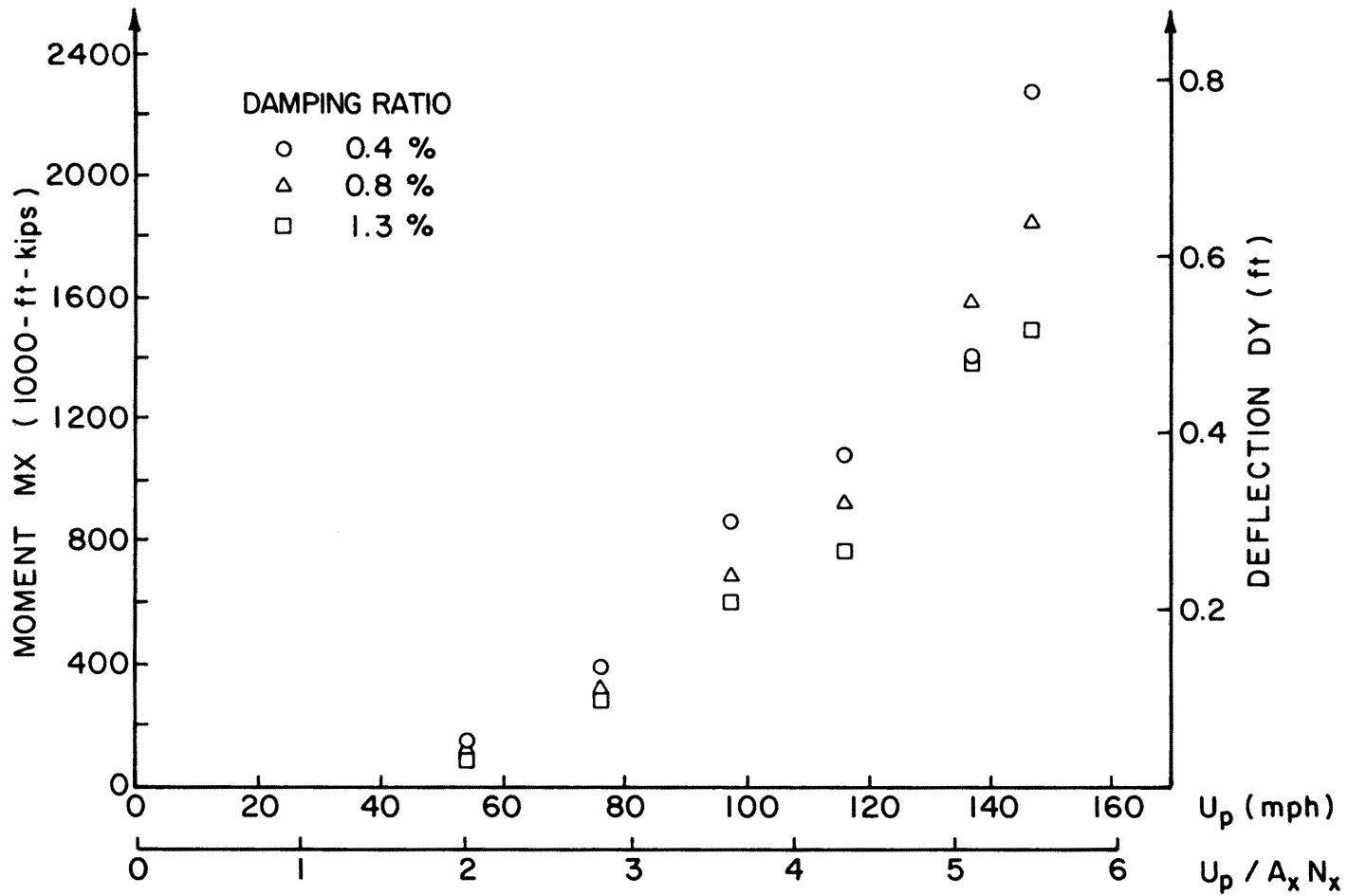
PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 225 DEGREES

Figure 20h. Influence of Reduced Velocity and Damping on Building Response



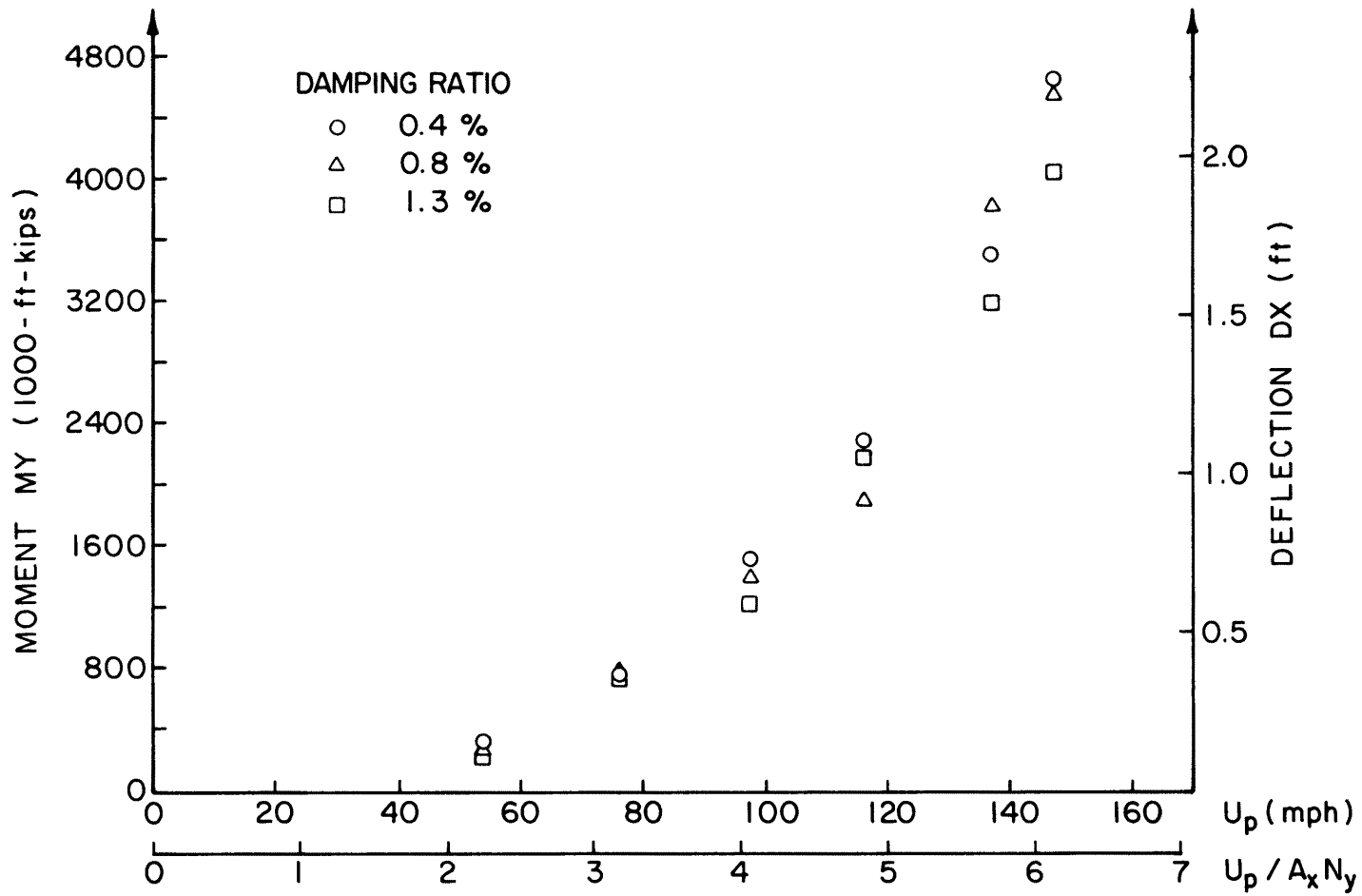
PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 225 DEGREES

Figure 20i. Influence of Reduced Velocity and Damping on Building Response



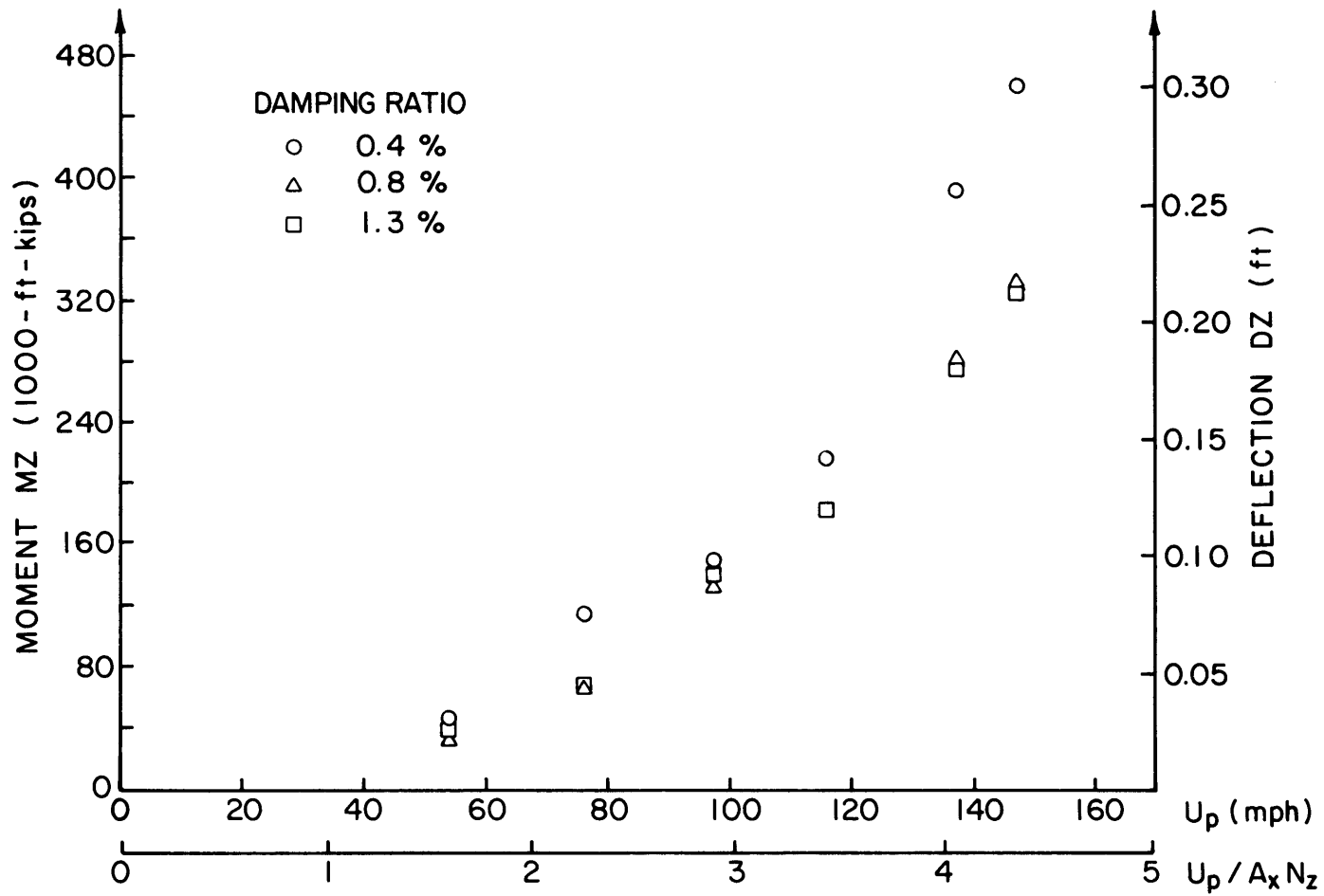
PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 315 DEGREES

Figure 20j. Influence of Reduced Velocity and Damping on Building Response



PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 315 DEGREES

Figure 20k. Influence of Reduced Velocity and Damping on Building Response



PEAK BASE MOMENT AND CORRESPONDING TOP FLOOR DEFLECTION  
WIND DIRECTION 315 DEGREES

Figure 201. Influence of Reduced Velocity and Damping on Building Response



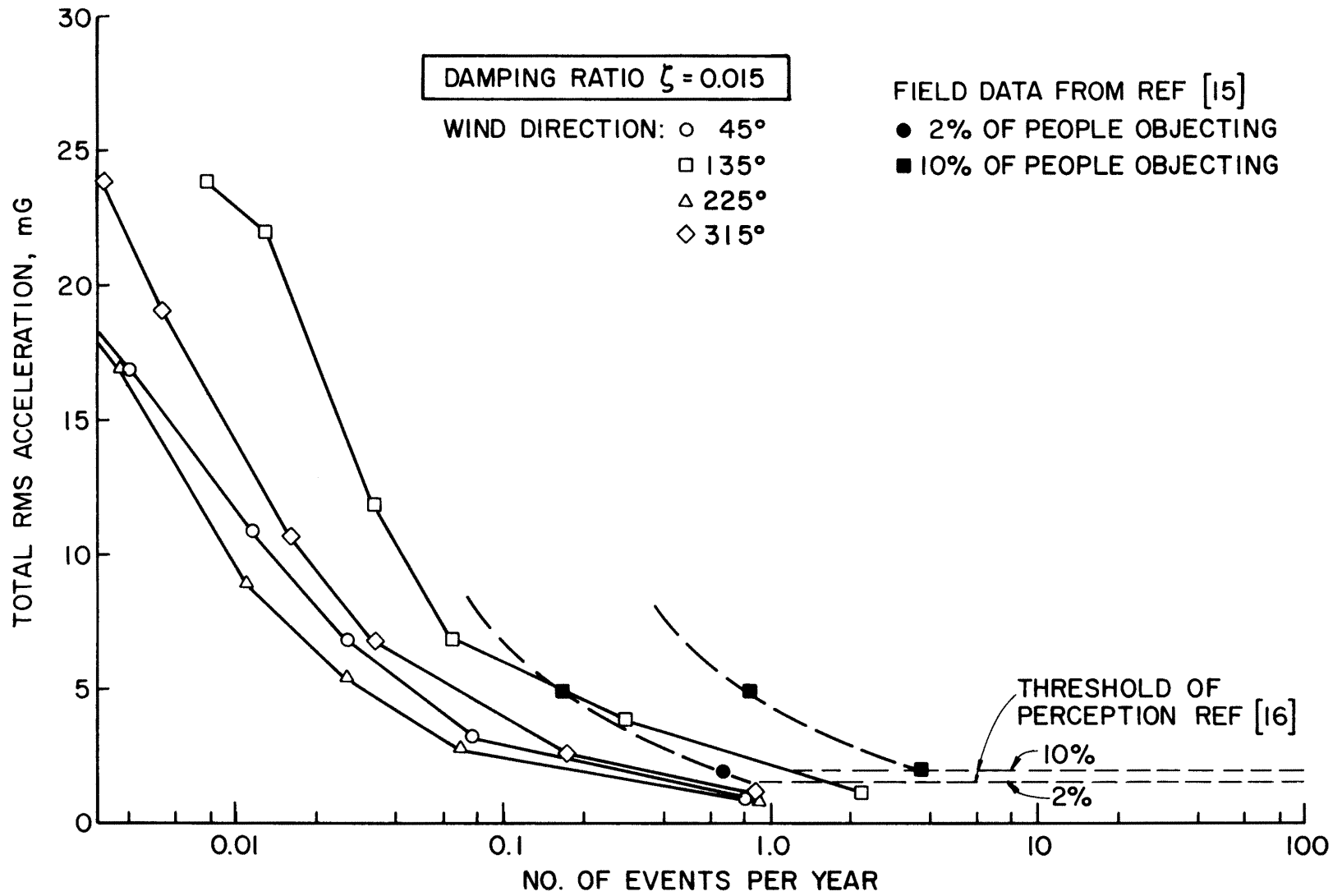


Figure 21a. Top Floor Acceleration According to Frequency of Occurrence

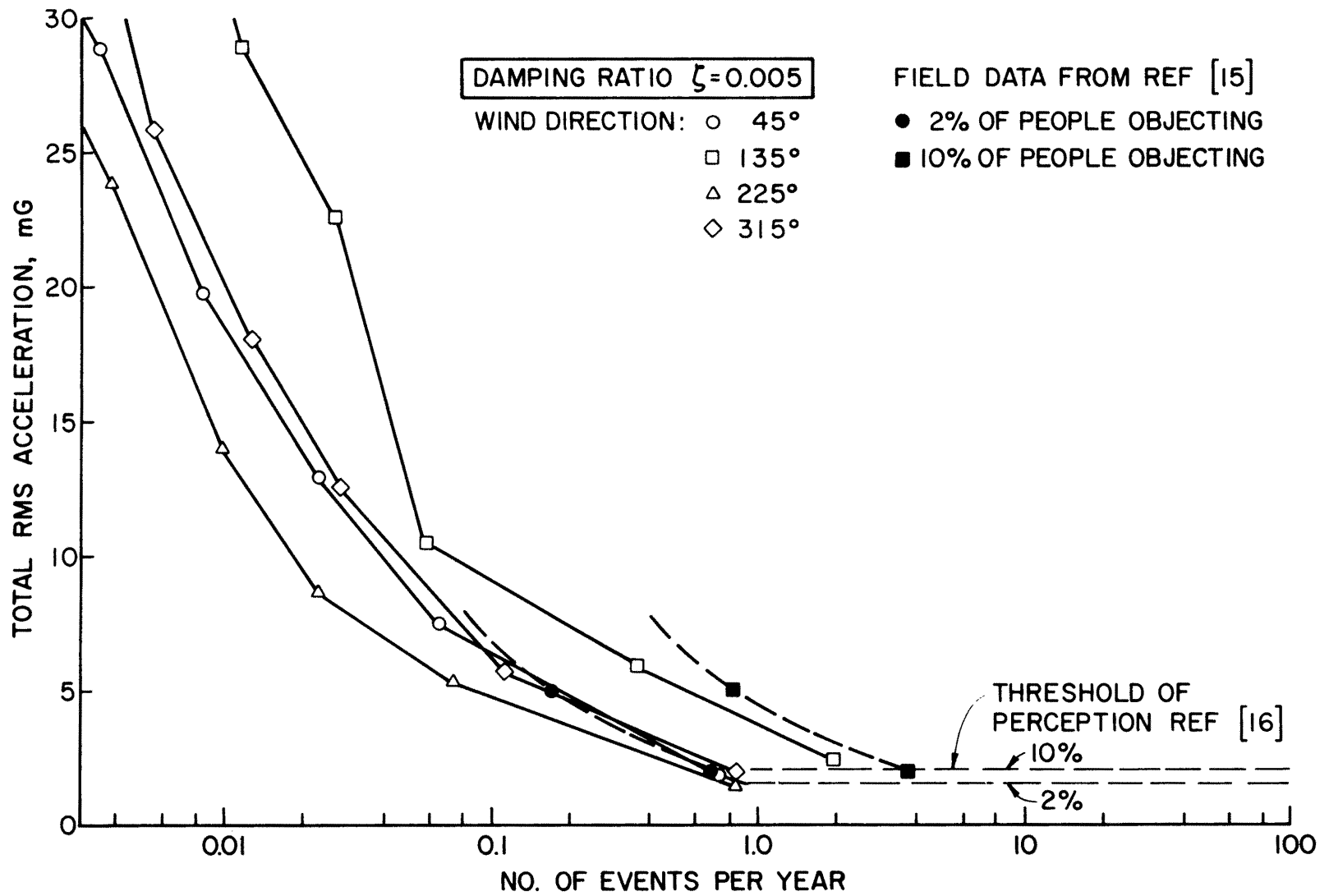


Figure 21b. Top Floor Acceleration According to Frequency of Occurrence

TABLES

TABLE 1

## MOTION PICTURE SCENE GUIDE

1. Introduction
2. Purposes for model testing
3. Procedures for conducting tests
4. Specific flow visualization scenes for

4 ALLEN CENTERHigh Pressure Areas

| <u>Run</u> | <u>Pressure Tap</u> | <u>Azimuth, °</u> |
|------------|---------------------|-------------------|
| 1          | 418                 | 30                |
| 2          | 417,418             | 190               |
| 3          | 419                 | 180               |

High Pedestrian Wind Velocities

| <u>Run</u> | <u>Pedestrian Location</u> | <u>Azimuth, °</u> |
|------------|----------------------------|-------------------|
| 4          | 3,10                       | 180               |
| 5          | 3                          | 157.5             |
| 6          | 14                         | 315               |

TABLE 2--PEDESTRIAN WIND VELOCITIES AND TURBULENCE INTENSITIES  
ALLEN CENTER FOUR, HOUSTON

| LOCATION 1   |                      |                     |                             | LOCATION 2   |                      |                     |                             |
|--------------|----------------------|---------------------|-----------------------------|--------------|----------------------|---------------------|-----------------------------|
| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) | WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
| 0.00         | 37.6                 | 9.4                 | 65.9                        | 0.00         | 4.6                  | 2.0                 | 10.7                        |
| 22.50        | 34.9                 |                     | 53.3                        | 22.50        | 3.9                  | 1.8                 | 9.3                         |
| 45.00        | 33.6                 | 13.9                | 74.4                        | 45.00        | 7.1                  | 4.4                 | 20.2                        |
| 67.50        | 29.4                 | 11.1                | 57.7                        | 67.50        | 4.1                  | 2.0                 | 10.0                        |
| 90.00        | 29.0                 | 11.0                | 57.4                        | 90.00        | 7.6                  | 4.1                 | 19.9                        |
| 112.50       | 47.2                 | 12.0                | 88.8                        | 112.50       | 10.7                 | 5.2                 | 26.3                        |
| 135.00       | 49.9                 | 10.0                | 80.0                        | 135.00       | 10.9                 | 4.4                 | 24.0                        |
| 157.50       | 58.7                 | 10.0                | 93.3                        | 157.50       | 14.0                 | 5.5                 | 30.6                        |
| 180.00       | 68.6                 | 10.0                | 99.9                        | 180.00       | 12.4                 | 5.0                 | 27.5                        |
| 202.50       | 63.2                 | 10.0                | 93.3                        | 202.50       | 10.8                 | 5.1                 | 26.0                        |
| 225.00       | 66.0                 | 9.9                 | 93.0                        | 225.00       | 7.7                  | 4.2                 | 20.1                        |
| 247.50       | 30.0                 | 13.0                | 71.3                        | 247.50       | 8.2                  | 3.3                 | 18.8                        |
| 270.00       | 17.8                 | 8.8                 | 42.9                        | 270.00       | 7.0                  | 3.3                 | 17.5                        |
| 292.50       | 46.0                 | 10.0                | 77.7                        | 292.50       | 6.0                  | 2.6                 | 14.0                        |
| 315.00       | 55.5                 | 10.0                | 95.4                        | 315.00       | 6.2                  | 2.8                 | 14.6                        |
| 337.50       | 31.0                 | 12.0                | 65.7                        | 337.50       | 7.1                  | 3.7                 | 18.2                        |

| LOCATION 3   |                      |                     |                             | LOCATION 4   |                      |                     |                             |
|--------------|----------------------|---------------------|-----------------------------|--------------|----------------------|---------------------|-----------------------------|
| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) | WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
| 0.00         | 25.2                 | 9.2                 | 39.2                        | 0.00         | 12.2                 | 6.9                 | 32.8                        |
| 22.50        | 11.0                 | 6.9                 | 30.2                        | 22.50        | 9.2                  | 4.9                 | 23.7                        |
| 45.00        | 12.3                 | 7.1                 | 33.3                        | 45.00        | 16.6                 | 8.7                 | 42.6                        |
| 67.50        | 9.7                  | 6.2                 | 28.0                        | 67.50        | 9.0                  | 4.2                 | 21.7                        |
| 90.00        | 29.9                 | 11.0                | 63.0                        | 90.00        | 19.4                 | 10.1                | 49.6                        |
| 112.50       | 54.6                 | 10.0                | 87.4                        | 112.50       | 5.3                  | 11.5                | 84.8                        |
| 135.00       | 62.5                 | 11.1                | 96.2                        | 135.00       | 6.0                  | 9.8                 | 89.3                        |
| 157.50       | 75.4                 | 10.0                | 117.0                       | 157.50       | 6.9                  | 9.7                 | 98.4                        |
| 180.00       | 88.8                 | 10.0                | 117.7                       | 180.00       | 5.5                  | 9.8                 | 102.0                       |
| 202.50       | 65.1                 | 9.9                 | 99.9                        | 202.50       | 10.1                 | 10.1                | 92.4                        |
| 225.00       | 22.4                 | 13.0                | 61.1                        | 225.00       | 7.9                  | 7.9                 | 38.0                        |
| 247.50       | 60.2                 | 9.9                 | 89.9                        | 247.50       | 19.1                 | 19.1                | 94.8                        |
| 270.00       | 64.0                 | 8.8                 | 88.6                        | 270.00       | 17.4                 | 17.4                | 84.6                        |
| 292.50       | 78.2                 | 9.9                 | 97.9                        | 292.50       | 12.9                 | 12.9                | 62.4                        |
| 315.00       | 72.4                 | 11.0                | 107.8                       | 315.00       | 13.3                 | 13.3                | 62.4                        |
| 337.50       | 60.7                 | 11.0                | 96.4                        | 337.50       | 8.8                  | 13.8                | 63.4                        |

TABLE 2--PEDESTRIAN WIND VELOCITIES AND TURBULENCE INTENSITIES  
ALLEN CENTER FOUR, HOUSTON

| LOCATION 5   |                      |                     |                             | LOCATION 6   |                      |                     |                             |
|--------------|----------------------|---------------------|-----------------------------|--------------|----------------------|---------------------|-----------------------------|
| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) | WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
| 0.00         | 8.8                  | 5.0                 | 23.0                        | 0.00         | 10.0                 | 5.7                 | 27.2                        |
| 22.50        | 7.8                  |                     | 20.0                        | 22.50        | 7.1                  | 3.3                 | 16.9                        |
| 45.00        | 26.7                 | 12.5                | 64.0                        | 45.00        | 13.3                 | 8.6                 | 39.0                        |
| 67.50        | 10.9                 | 5.8                 | 28.0                        | 67.50        | 7.0                  | 3.5                 | 17.4                        |
| 90.00        | 11.7                 | 6.2                 | 30.0                        | 90.00        | 20.0                 | 9.4                 | 48.3                        |
| 112.50       | 28.0                 | 10.7                | 60.0                        | 112.50       | 16.4                 | 8.1                 | 40.7                        |
| 135.00       | 33.0                 | 10.3                | 66.0                        | 135.00       | 13.5                 | 6.6                 | 33.3                        |
| 157.50       | 35.2                 | 8.0                 | 69.0                        | 157.50       | 15.8                 | 7.8                 | 38.6                        |
| 180.00       | 40.9                 | 9.1                 | 76.0                        | 180.00       | 16.8                 | 8.0                 | 40.8                        |
| 202.50       | 38.3                 | 8.0                 | 70.0                        | 202.50       | 19.8                 | 10.0                | 49.9                        |
| 225.00       | 13.5                 | 7.1                 | 33.0                        | 225.00       | 11.7                 | 6.0                 | 32.0                        |
| 247.50       | 33.0                 | 16.3                | 69.0                        | 247.50       | 15.7                 | 10.2                | 46.4                        |
| 270.00       | 29.8                 | 15.8                | 64.0                        | 270.00       | 12.6                 | 7.2                 | 34.4                        |
| 292.50       | 32.4                 | 16.0                | 68.0                        | 292.50       | 11.7                 | 6.6                 | 31.4                        |
| 315.00       | 33.4                 | 19.1                | 70.0                        | 315.00       | 13.7                 | 8.6                 | 39.6                        |
| 337.50       | 18.0                 | 11.7                | 33.0                        | 337.50       | 15.0                 | 9.0                 | 42.0                        |

| LOCATION 7   |                      |                     |                             | LOCATION 8   |                      |                     |                             |
|--------------|----------------------|---------------------|-----------------------------|--------------|----------------------|---------------------|-----------------------------|
| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) | WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
| 0.00         | 18.2                 | 12.2                | 54.0                        | 0.00         | 29.0                 | 11.1                | 62.4                        |
| 22.50        | 22.3                 | 12.7                | 58.0                        | 22.50        | 29.5                 | 10.4                | 60.7                        |
| 45.00        | 37.7                 | 14.6                | 80.0                        | 45.00        | 22.4                 | 9.1                 | 49.8                        |
| 67.50        | 19.0                 | 7.2                 | 30.0                        | 67.50        | 16.6                 | 8.9                 | 43.3                        |
| 90.00        | 23.1                 | 12.0                | 50.0                        | 90.00        | 18.8                 | 10.3                | 49.8                        |
| 112.50       | 43.4                 | 13.5                | 81.0                        | 112.50       | 32.2                 | 10.4                | 63.9                        |
| 135.00       | 38.6                 | 11.5                | 69.0                        | 135.00       | 41.1                 | 7.4                 | 63.3                        |
| 157.50       | 60.5                 | 12.0                | 89.0                        | 157.50       | 50.0                 | 8.9                 | 76.8                        |
| 180.00       | 50.3                 | 11.7                | 76.0                        | 180.00       | 61.0                 | 9.9                 | 89.0                        |
| 202.50       | 31.6                 | 9.6                 | 46.0                        | 202.50       | 56.4                 | 9.9                 | 86.2                        |
| 225.00       | 18.0                 | 9.3                 | 36.0                        | 225.00       | 29.9                 | 10.3                | 60.9                        |
| 247.50       | 10.1                 | 5.5                 | 20.0                        | 247.50       | 20.2                 | 9.9                 | 49.8                        |
| 270.00       | 38.3                 | 14.5                | 69.0                        | 270.00       | 42.7                 | 9.8                 | 72.1                        |
| 292.50       | 40.6                 | 18.7                | 76.0                        | 292.50       | 59.5                 | 9.9                 | 89.2                        |
| 315.00       | 49.0                 | 20.7                | 88.0                        | 315.00       | 64.4                 | 9.8                 | 93.7                        |
| 337.50       | 28.0                 | 17.2                | 70.0                        | 337.50       | 45.7                 | 10.3                | 76.6                        |

TABLE 2--PEDESTRIAN WIND VELOCITIES AND TURBULENCE INTENSITIES  
ALLEN CENTER FOUR, HOUSTON

| LOCATION 9   |   |  |   | LOCATION 10  |   |  |   |
|--------------|---|--|---|--------------|---|--|---|
| WIND AZIMUTH | U <sub>MEAN</sub> /U <sub>INF</sub> (PERCENT) | U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) | U <sub>MEAN</sub> +3*U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) | WIND AZIMUTH | U <sub>MEAN</sub> /U <sub>INF</sub> (PERCENT) | U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) | U <sub>MEAN</sub> +3*U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) |
| 0.00         | 19.1  | 9.9  | 48.9  | 0.00         | 17.3  | 9.7  | 46.6  |
| 22.50        | 15.5  | 10.5   | 47.0  | 22.50        | 21.0  | 10.8   | 53.4  |
| 45.00        | 10.4  | 6.1  | 26.8  | 45.00        | 38.0  | 9.9  | 67.8  |
| 67.50        | 6.2   | 2.8  | 14.5  | 67.50        | 33.7  | 9.0  | 69.8  |
| 90.00        | 8.0   | 4.0  | 21.6  | 90.00        | 15.0  | 9.3  | 43.0  |
| 112.50       | 8.4   | 4.4  | 21.6  | 112.50       | 51.7  | 18.1   | 106.1   |
| 135.00       | 11.4  | 5.5  | 28.0  | 135.00       | 73.0  | 13.8   | 114.4   |
| 157.50       | 17.0  | 8.2  | 41.5  | 157.50       | 72.3  | 16.0   | 120.1   |
| 180.00       | 17.3  | 9.5  | 45.7  | 180.00       | 77.1  | 18.6   | 133.0   |
| 202.50       | 24.8  | 13.3   | 64.6  | 202.50       | 72.7  | 14.1   | 115.2   |
| 225.00       | 18.1  | 9.3  | 45.8  | 225.00       | 28.9  | 18.2   | 83.4  |
| 247.50       | 16.7  | 9.5  | 45.1  | 247.50       | 13.2  | 7.9  | 36.8  |
| 270.00       | 14.8  | 8.0  | 39.9  | 270.00       | 22.6  | 10.0   | 52.7  |
| 292.50       | 33.4  | 14.1   | 75.5  | 292.50       | 42.6  | 13.4   | 82.7  |
| 315.00       | 58.7  | 11.5   | 93.2  | 315.00       | 48.2  | 15.6   | 93.8  |
| 337.50       | 51.9  | 12.7   | 90.0  | 337.50       | 31.1  | 17.9   | 84.8  |

| LOCATION 11  |   |  |   | LOCATION 12  |   |  |   |
|--------------|---|--|---|--------------|---|--|---|
| WIND AZIMUTH | U <sub>MEAN</sub> /U <sub>INF</sub> (PERCENT) | U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) | U <sub>MEAN</sub> +3*U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) | WIND AZIMUTH | U <sub>MEAN</sub> /U <sub>INF</sub> (PERCENT) | U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) | U <sub>MEAN</sub> +3*U <sub>RMS</sub> /U <sub>INF</sub> (PERCENT) |
| 0.00         | 28.1  | 13.7   | 69.2  | 0.00         | 12.5  | 7.9  | 36.3  |
| 22.50        | 24.2  | 11.3   | 58.0  | 22.50        | 10.2  | 6.0  | 28.0  |
| 45.00        | 16.2  | 7.0  | 37.2  | 45.00        | 12.4  | 7.4  | 34.8  |
| 67.50        | 13.0  | 4.5  | 26.6  | 67.50        | 6.8   | 3.1  | 16.3  |
| 90.00        | 12.7  | 4.3  | 26.4  | 90.00        | 9.7   | 3.8  | 21.1  |
| 112.50       | 16.2  | 7.7  | 39.9  | 112.50       | 9.5   | 4.7  | 23.4  |
| 135.00       | 23.6  | 10.7   | 58.3  | 135.00       | 11.2  | 6.6  | 31.0  |
| 157.50       | 27.4  | 13.2   | 69.6  | 157.50       | 8.4   | 3.9  | 23.0  |
| 180.00       | 31.2  | 17.0   | 80.0  | 180.00       | 9.6   | 4.5  | 23.7  |
| 202.50       | 30.4  | 16.9   | 79.1  | 202.50       | 8.7   | 4.0  | 20.7  |
| 225.00       | 31.4  | 18.1   | 80.6  | 225.00       | 12.9  | 6.4  | 32.1  |
| 247.50       | 33.6  | 20.7   | 86.3  | 247.50       | 10.9  | 5.0  | 26.0  |
| 270.00       | 26.5  | 13.3   | 65.8  | 270.00       | 5.7   | 2.0  | 11.8  |
| 292.50       | 13.6  | 7.3  | 33.9  | 292.50       | 9.9   | 4.3  | 22.9  |
| 315.00       | 23.0  | 9.9  | 51.6  | 315.00       | 19.0  | 8.1  | 43.4  |
| 337.50       | 14.7  | 7.8  | 35.6  | 337.50       | 22.7  | 10.3   | 53.4  |

TABLE 2--PEDESTRIAN WIND VELOCITIES AND TURBULENCE INTENSITIES  
ALLEN CENTER FOUR, HOUSTON

LOCATION 13

| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
|--------------|----------------------|---------------------|-----------------------------|
| 0.00         | 20.7                 | 12.9                | 59.6                        |
| 22.50        | 29.6                 | 14.2                | 72.0                        |
| 45.00        | 13.1                 | 7.4                 | 35.5                        |
| 67.50        | 12.3                 | 6.6                 | 32.5                        |
| 90.00        | 10.4                 | 5.6                 | 27.7                        |
| 112.50       | 17.99                | 12.0                | 54.0                        |
| 135.00       | 19.8                 | 12.2                | 55.0                        |
| 157.50       | 11.7                 | 6.9                 | 32.4                        |
| 180.00       | 15.1                 | 7.3                 | 37.7                        |
| 202.50       | 15.0                 | 7.1                 | 36.6                        |
| 225.00       | 14.4                 | 5.9                 | 30.6                        |
| 247.50       | 10.0                 | 5.3                 | 25.5                        |
| 270.00       | 17.9                 | 7.5                 | 40.0                        |
| 292.50       | 47.6                 | 11.7                | 82.0                        |
| 315.00       | 65.0                 | 12.0                | 101.7                       |
| 337.50       | 59.0                 | 15.0                | 104.7                       |

LOCATION 14

| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
|--------------|----------------------|---------------------|-----------------------------|
| 0.00         | 22.1                 | 12.7                | 60.1                        |
| 22.50        | 21.3                 | 12.7                | 59.4                        |
| 45.00        | 20.2                 | 9.0                 | 47.1                        |
| 67.50        | 16.4                 | 6.4                 | 41.5                        |
| 90.00        | 10.9                 | 5.0                 | 28.2                        |
| 112.50       | 12.7                 | 6.6                 | 35.5                        |
| 135.00       | 10.5                 | 6.1                 | 28.7                        |
| 157.50       | 7.8                  | 4.4                 | 17.9                        |
| 180.00       | 10.3                 | 7.7                 | 19.3                        |
| 202.50       | 7.4                  | 4.4                 | 13.7                        |
| 225.00       | 13.9                 | 7.4                 | 35.6                        |
| 247.50       | 14.5                 | 7.0                 | 35.5                        |
| 270.00       | 19.9                 | 9.3                 | 47.9                        |
| 292.50       | 52.6                 | 15.4                | 98.8                        |
| 315.00       | 73.4                 | 15.4                | 110.6                       |
| 337.50       | 67.6                 | 15.0                | 112.7                       |

LOCATION 15

| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
|--------------|----------------------|---------------------|-----------------------------|
| 0.00         | 16.0                 | 8.6                 | 41.7                        |
| 22.50        | 11.9                 | 6.0                 | 30.7                        |
| 45.00        | 18.0                 | 7.9                 | 42.2                        |
| 67.50        | 10.3                 | 4.6                 | 24.4                        |
| 90.00        | 10.9                 | 4.6                 | 24.4                        |
| 112.50       | 9.1                  | 3.9                 | 20.0                        |
| 135.00       | 19.2                 | 7.7                 | 42.2                        |
| 157.50       | 28.4                 | 10.2                | 59.1                        |
| 180.00       | 21.1                 | 10.3                | 52.6                        |
| 202.50       | 23.9                 | 11.1                | 59.9                        |
| 225.00       | 28.7                 | 10.2                | 61.9                        |
| 247.50       | 36.1                 | 10.6                | 67.0                        |
| 270.00       | 31.1                 | 7.7                 | 55.0                        |
| 292.50       | 14.0                 | 7.1                 | 35.0                        |
| 315.00       | 13.7                 | 5.9                 | 33.3                        |
| 337.50       | 12.3                 | 5.7                 | 29.9                        |

LOCATION 16

| WIND AZIMUTH | UMEAN/UINF (PERCENT) | URMS/UINF (PERCENT) | UMEAN+3*URMS/UINF (PERCENT) |
|--------------|----------------------|---------------------|-----------------------------|
| 0.00         | 19.8                 | 10.0                | 49.9                        |
| 22.50        | 17.4                 | 8.9                 | 44.0                        |
| 45.00        | 20.9                 | 11.2                | 54.5                        |
| 67.50        | 19.4                 | 9.0                 | 47.1                        |
| 90.00        | 32.7                 | 10.8                | 65.1                        |
| 112.50       | 17.0                 | 8.0                 | 43.3                        |
| 135.00       | 24.4                 | 11.0                | 59.9                        |
| 157.50       | 11.8                 | 6.2                 | 30.7                        |
| 180.00       | 16.6                 | 7.8                 | 40.0                        |
| 202.50       | 13.5                 | 6.2                 | 32.3                        |
| 225.00       | 22.5                 | 11.2                | 56.1                        |
| 247.50       | 14.3                 | 7.7                 | 36.0                        |
| 270.00       | 17.3                 | 8.0                 | 43.3                        |
| 292.50       | 21.7                 | 10.0                | 49.9                        |
| 315.00       | 36.9                 | 13.4                | 70.6                        |
| 337.50       | 30.5                 | 13.4                | 70.6                        |



TABLE 2--PEDESTRIAN WIND VELOCITIES AND TURBULENCE INTENSITIES  
ALLEN CENTER FOUR, HOUSTON

LOCATION 17

| WIND<br>AZIMUTH | UMEAN/UIHF<br>(PERCENT) | URMS/UIHF<br>(PERCENT) | UMEAN+3*URMS/UIHF<br>(PERCENT) |
|-----------------|-------------------------|------------------------|--------------------------------|
| 0.00            | 17.4                    | 9.9                    | 47.1                           |
| 22.50           | 15.7                    | 9.9                    | 44.2                           |
| 45.00           | 24.2                    | 12.3                   | 61.0                           |
| 67.50           | 25.5                    | 11.3                   | 59.6                           |
| 90.00           | 31.9                    | 15.0                   | 73.4                           |
| 112.50          | 40.2                    | 19.9                   | 106.0                          |
| 135.00          | 49.1                    | 17.4                   | 81.1                           |
| 157.50          | 28.7                    | 15.0                   | 72.8                           |
| 180.00          | 25.4                    | 17.3                   | 81.3                           |
| 202.50          | 27.5                    | 9.9                    | 66.0                           |
| 225.00          | 31.3                    | 7.6                    | 60.2                           |
| 247.50          | 23.5                    | 7.3                    | 47.1                           |
| 270.00          | 20.4                    | 9.3                    | 48.3                           |
| 292.50          | 44.7                    | 11.4                   | 78.9                           |
| 315.00          | 36.8                    | 15.6                   | 83.5                           |

LOCATION 18

| WIND<br>AZIMUTH | UMEAN/UIHF<br>(PERCENT) | URMS/UIHF<br>(PERCENT) | UMEAN+3*URMS/UIHF<br>(PERCENT) |
|-----------------|-------------------------|------------------------|--------------------------------|
| 0.00            | 12.4                    | 6.7                    | 32.5                           |
| 22.50           | 17.3                    | 10.7                   | 49.3                           |
| 45.00           | 53.2                    | 11.0                   | 86.1                           |
| 67.50           | 20.8                    | 7.5                    | 43.3                           |
| 90.00           | 10.4                    | 4.1                    | 22.6                           |
| 112.50          | 23.2                    | 10.8                   | 55.7                           |
| 135.00          | 39.9                    | 11.8                   | 75.5                           |
| 157.50          | 39.3                    | 12.7                   | 77.3                           |
| 180.00          | 39.3                    | 14.4                   | 82.4                           |
| 202.50          | 42.9                    | 14.6                   | 86.5                           |
| 225.00          | 18.2                    | 10.3                   | 49.0                           |
| 247.50          | 12.0                    | 4.6                    | 25.6                           |
| 270.00          | 18.7                    | 9.1                    | 45.9                           |
| 292.50          | 20.6                    | 11.1                   | 53.8                           |
| 315.00          | 13.3                    | 5.9                    | 31.0                           |
| 337.50          | 12.7                    | 5.1                    | 28.2                           |

TABLE 2--PEDESTRIAN WIND VELOCITIES AND TURBULENCE INTENSITIES  
 ALLEN CENTER FOUR, HOUSTON

\* \* GREATEST VALUES \* \*

| U <sub>MEAN</sub> /U <sub>INF</sub><br>(PERCENT) |       |      |      |        | U <sub>RMS</sub> /U <sub>INF</sub><br>(PERCENT) |       |      |      |        | U <sub>MEAN+3*RMS</sub> /U <sub>INF</sub><br>(PERCENT) |       |      |      |        |
|--|-------|------|------|--------|---|-------|------|------|--------|--|-------|------|------|--------|
| LGC  | AZ    | MEAN | RMS  | M+3RMS | LGC   | AZ    | MEAN | RMS  | M+3RMS | LGC  | AZ    | MEAN | RMS  | M+3RMS |
| 3  | 180.0 | 78.8 | 12.9 | 117.7  | 7   | 315.0 | 49.8 | 20.7 | 112.0  | 10   | 180.0 | 77.1 | 18.6 | 133.0  |
| 10   | 180.0 | 77.1 | 18.6 | 133.0  | 5   | 315.0 | 33.4 | 19.1 | 90.8   | 10   | 157.5 | 72.3 | 16.0 | 120.1  |
| 3  | 157.5 | 76.4 | 13.5 | 117.0  | 4   | 247.5 | 37.6 | 19.1 | 94.8   | 3  | 180.0 | 78.8 | 12.9 | 117.7  |
| 14   | 315.0 | 73.4 | 12.4 | 110.5  | 17  | 135.0 | 49.1 | 19.0 | 106.0  | 3  | 157.5 | 76.4 | 13.5 | 117.0  |
| 10   | 135.0 | 73.0 | 13.8 | 114.4  | 7   | 292.5 | 40.6 | 18.7 | 96.8   | 10   | 202.5 | 72.7 | 14.1 | 115.2  |
| 10   | 202.5 | 72.7 | 14.1 | 115.2  | 10  | 180.0 | 77.1 | 18.6 | 133.0  | 10   | 135.0 | 73.0 | 13.8 | 114.4  |
| 4  | 180.0 | 72.5 | 9.8  | 102.0  | 10  | 225.0 | 28.9 | 18.2 | 83.4   | 14   | 337.5 | 67.6 | 15.0 | 112.7  |
| 3  | 315.0 | 72.4 | 11.8 | 107.8  | 10  | 112.5 | 51.7 | 18.1 | 106.1  | 7  | 315.0 | 49.8 | 20.7 | 112.0  |
| 10   | 157.5 | 72.3 | 16.0 | 120.1  | 10  | 337.5 | 31.1 | 17.9 | 94.8   | 14   | 315.0 | 73.4 | 12.4 | 110.5  |
| 4  | 157.5 | 69.4 | 9.7  | 98.4   | 17  | 157.5 | 28.7 | 17.4 | 81.1   | 3  | 315.0 | 72.4 | 11.8 | 107.8  |

TABLE 3

## PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED

HOUSTON, TEXAS

INTERNATIONAL AIRPORT (1951-1960)

SEASON : ANNUAL

NO. OF OBS. = 87672

HT. OF MEAS. = 87. FT.

VELOCITY LEVELS IN MPH

| DIRECTION | 0- 3 | 4- 7  | 8-12  | 13-18 | 19-24 | 25-31 | 32-38 | 39-46 | 47 + | TOTAL  |
|-----------|------|-------|-------|-------|-------|-------|-------|-------|------|--------|
| N         | .06  | .03   | 1.87  | 1.75  | .61   | .13   | .01   | .02   | 0.00 | 5.46   |
| NNE       | .03  | .03   | 1.48  | 1.44  | .54   | .13   | .05   | 0.00  | 0.00 | 4.00   |
| NNE       | .03  | 1.05  | 2.08  | 1.44  | .36   | .11   | .04   | .01   | .01  | 5.38   |
| NNE       | .03  | 1.24  | 2.08  | 2.15  | .43   | .11   | .01   | 0.00  | 0.00 | 7.12   |
| NNE       | .03  | 1.18  | 2.08  | 2.03  | .32   | .11   | .01   | 0.00  | 0.00 | 5.47   |
| NNE       | .04  | 1.07  | 2.08  | 2.27  | .55   | .15   | .01   | 0.00  | 0.00 | 8.36   |
| SE        | .06  | 1.40  | 3.93  | 3.24  | 1.10  | .21   | .07   | .06   | 0.00 | 10.36  |
| SE        | .07  | 1.75  | 4.55  | 4.70  | 2.06  | .34   | .08   | .06   | 0.00 | 13.92  |
| SE        | .03  | 1.53  | 3.00  | 2.93  | .90   | .18   | .04   | 0.00  | 0.00 | 9.21   |
| SSW       | .01  | 1.12  | 2.23  | 1.65  | .52   | .14   | .03   | 0.00  | 0.00 | 5.99   |
| SSW       | .00  | .94   | 1.35  | .74   | .23   | .10   | .01   | 0.00  | 0.00 | 3.66   |
| SSW       | .00  | .90   | 1.23  | .65   | .23   | .07   | .03   | .01   | 0.00 | 3.40   |
| W         | .00  | .87   | .87   | .39   | .18   | .08   | .02   | .01   | 0.00 | 2.40   |
| WNN       | .00  | .78   | 1.17  | .81   | .39   | .11   | .03   | .01   | .01  | 3.56   |
| WNN       | .00  | .76   | 1.30  | .96   | .47   | .12   | .04   | .03   | .01  | 3.89   |
| WNN       | .00  | .79   | 1.70  | 1.89  | .78   | .20   | .04   | .05   | .04  | 5.70   |
| CALM      | 1.00 | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00 | 1.00   |
| TOT       | 5.97 | 17.73 | 35.25 | 28.26 | 9.67  | 2.29  | .50   | .26   | .07  | 100.00 |

TABLE 4

## SUMMARY OF WIND EFFECTS ON PEOPLE

|                 | <u>Beaufort<br/>number</u> | <u>Speed<br/>(mph)</u> | <u>Effects</u>   |
|-----------------|----------------------------|------------------------|--|
| Calm, light air | 0, 1                       | 0- 3                   | Calm, no noticeable wind   |
| Light breeze    | 2                          | 4- 7                   | Wind felt on face  |
| Gentle breeze   | 3                          | 8-12                   | Wind extends light flag<br>Hair is disturbed<br>Clothing flaps   |
| Moderate breeze | 4                          | 13-18                  | Raises dust, dry soil and<br>loose paper<br>Hair disarranged   |
| Fresh breeze    | 5                          | 19-24                  | Force of wind felt on body<br>Drifting snow becomes airborne<br>Limit of agreeable wind on land  |
| Strong breeze   | 6                          | 25-31                  | Umbrellas used with difficulty<br>Hair blown straight<br>Difficult to walk steadily<br>Wind noise on ears unpleasant<br>Windborne snow above head<br>height (blizzard) |
| Near gale       | 7                          | 32-38                  | Inconvenience felt when walking  |
| Gale            | 8                          | 39-46                  | Generally impedes progress<br>Great difficulty with balance<br>in gusts  |
| Strong gale     | 9                          | 47-54                  | People blown over by gusts   |

Note: Table from Reference 6, p. 40.

TABLE 5A

## CALCULATION OF REFERENCE PRESSURE

1. Basic wind speed from ANSI A58.1 (Ref. 6):

100-yr fastest mile at 30 ft = 90 mph

$$\text{Mean hourly wind speed} = \frac{90}{1.28} = 70.3 \text{ mph}$$

$$\text{Mean hourly gradient wind speed} = 70.3 \left(\frac{1000}{30}\right)^{.17} = 127.6 \text{ mph}$$

$$\begin{aligned} \text{Mean hourly wind at reference location} &= U_{\infty} = \text{gradient wind} = \\ &= 127.6 \text{ mph} \end{aligned}$$

$$\text{Reference Pressure} = 0.5 \rho U_{\infty}^2 = (.00256) (127.6)^2 = \underline{\underline{41.7}}$$

Use 42 psf

2. Loads for 50-yr recurrence wind:

50-yr fastest mile at 30 ft = 76 mph

$$\text{Multiply 50-yr loads by } \left(\frac{76}{90}\right)^2 = 0.71$$

TABLE 5A (continued)

HOUSTON

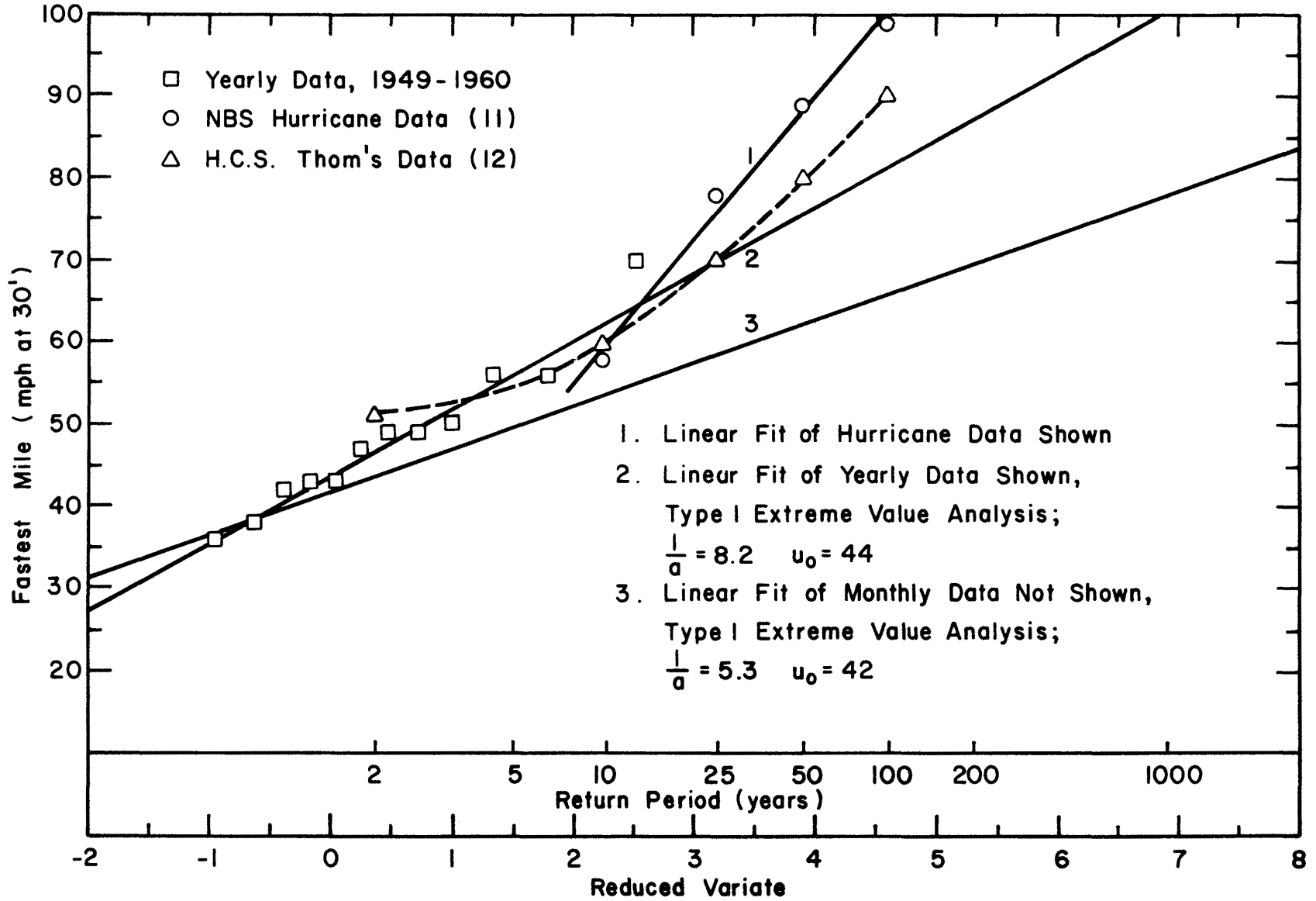


TABLE 5B  
 FREQUENCY OF OCCURRENCE OF WIND SPEEDS,  
 INDEPENDENT OF DIRECTION

## Fastest Mile vs. Return Period

| Return<br>Period | Number*<br>of Events<br>Per Year | Percent<br>Chance<br>Nonexceedance | Fastest Mile Wind Speed<br>(mph at 30 ft) |                   |                   |
|------------------|----------------------------------|------------------------------------|---|-------------------|-------------------|
|                  |                                  |                                    | Thom<br>Data                              | Hurricane<br>Data | Type I Dist.<br>U |
| 2 days           | 183                              | 0.5 /day                           |   |                   | 13                |
| 10 days          | 37                               | 0.9 /day                           |   |                   | 23                |
| 25 days          | 15                               | 0.96/day                           |   |                   | 28                |
| 50 days          | 7                                | 0.98/day                           |   |                   | 31                |
| 100 days         | 4                                | 0.99/day                           |   |                   | 35                |
| 2 years          | 0.7                              | 0.5 /year                          | 51  |                   | 47                |
| 5 years          | 0.2                              | 0.8 /year                          | --  |                   | 56                |
| 10 years         | 0.1                              | 0.9 /year                          | 60  | 58                | 62                |
| 25 years         | 0.04                             | 0.96/year                          | 70  | 78                | 70                |
| 50 years         | 0.02                             | 0.98/year                          | 80  | 89                | 76                |
| 100 years        | 0.01                             | 0.99/year                          | 90  | 99                | 82                |

\*Number of events per year = 365/(return period in days)

- Note: 1. Data for 1949-1960 taken at 190 ft at the Houston Federal Office Building.
2. Hurricane data, from NBS study [11], is from linear interpolation between supplied data for points 0 and 200 km inland, considering Houston to be 56 km inland.

TABLE 5C  
HOUSTON HURRICANE WINDS--DIRECTIONAL EFFECTS  
NBS STUDY\*

| Wind direction | mph<br>100-yr | Gust factor<br>based on 90 mph | Load factor<br>based on 90 mph |
|----------------|---------------|--------------------------------|--------------------------------|
| 0              | 75            | 0.83                           | 0.69                           |
| 22.5           | 72            | 0.80                           | 0.64                           |
| 45.0           | 71            | 0.79                           | 0.62                           |
| 67.5           | 80            | 0.89                           | 0.79                           |
| 90.0           | 89            | 0.99                           | 0.98                           |
| 112.5          | 82            | 0.91                           | 0.83                           |
| 135.0          | 86            | 0.96                           | 0.91                           |
| 157.5          | 83            | 0.92                           | 0.85                           |
| 180.0          | 92            | 1.02                           | 1.04                           |
| 202.5          | 70            | 0.78                           | 0.60                           |
| 225.0          | 70            | 0.78                           | 0.60                           |
| 247.5          | 70            | 0.78                           | 0.60                           |
| 270.0          | 70            | 0.78                           | 0.60                           |
| 292.5          | 74            | 0.82                           | 0.68                           |
| 315.0          | 75            | 0.83                           | 0.69                           |
| 337.5          | 77            | 0.86                           | 0.73                           |

\*Batts, M. E., M. R. Cordes, L. R. Russel, J. R. Shaver, E. Simiu, "Hurricane Wind Speeds in the United States," NBS Building Science Series 124, National Bureau of Standards, 1980.



TABLE 6A. PEAK LOADS FOR CONFIGURATION C :  
LARGEST VALUES OF CLADDING LOAD

ALLEN CENTER FOUR, HOUSTON  
REFERENCE PRESSURE = 42.0 PSF

| TAP | AZI-MUTH | PRESS COEFF | NEGATIVE PEAK | POSITIVE PEAK | TAP | AZI-MUTH | PRESS COEFF | NEGATIVE PEAK | POSITIVE PEAK | TAP | AZI-MUTH | PRESS COEFF | NEGATIVE PEAK | POSITIVE PEAK |
|-----|----------|-------------|---------------|---------------|-----|----------|-------------|---------------|---------------|-----|----------|-------------|---------------|---------------|
|     |          |             | PSF           | PSF           |     |          |             | PSF           | PSF           |     |          |             | PSF           | PSF           |
| 101 | 180      | -1.25       | -54.7         | 34.7          | 149 | 170      | -1.06       | -46.4         | 31.7          | 216 | 340      | -1.58       | -4.8          | 37.4          |
| 102 | 180      | -1.22       | -53.3         | 33.2          | 150 | 180      | -1.47       | -64.1         | 24.8          | 217 | 100      | -1.40       | -5.7          | 30.7          |
| 103 | 100      | -1.40       | -57.3         | 33.2          | 151 | 180      | -1.33       | -66.6         | 19.5          | 218 | 160      | -1.31       | -4.6          | 41.7          |
| 104 | 100      | -1.10       | -45.3         | 29.8          | 152 | 150      | -1.49       | -53.3         | 15.6          | 219 | 160      | -1.65       | -5.3          | 39.0          |
| 105 | 330      | -1.48       | -45.4         | 29.9          | 153 | 120      | -1.64       | -57.3         | 23.2          | 220 | 170      | -1.48       | -6.4          | 37.4          |
| 106 | 150      | -1.32       | -47.1         | 29.2          | 154 | 130      | -1.47       | -56.1         | 26.2          | 221 | 160      | -1.85       | -6.5          | 33.0          |
| 107 | 140      | -1.51       | -57.6         | 39.2          | 155 | 130      | -1.12       | -42.8         | 31.5          | 222 | 110      | -1.84       | -6.4          | 27.4          |
| 108 | 180      | -1.87       | -38.1         | 24.8          | 156 | 170      | -1.94       | -41.0         | 32.1          | 223 | 110      | -1.17       | -6.3          | 40.6          |
| 109 | 180      | -1.13       | -49.3         | 34.8          | 157 | 180      | -1.31       | -57.2         | 33.5          | 224 | 170      | -1.48       | -8.1          | 39.9          |
| 110 | 180      | -1.10       | -48.2         | 33.6          | 158 | 190      | -1.45       | -63.2         | 28.6          | 225 | 170      | -1.86       | -8.1          | 36.6          |
| 111 | 180      | -1.14       | -49.6         | 35.3          | 159 | 170      | -1.59       | -69.3         | 27.7          | 226 | 170      | -1.56       | -6.8          | 26.4          |
| 112 | 180      | -1.12       | -48.9         | 31.3          | 160 | 170      | -2.00       | -87.4         | 18.1          | 227 | 110      | -1.67       | -6.7          | 26.4          |
| 113 | 180      | -1.98       | -42.9         | 23.9          | 161 | 170      | -2.17       | -94.6         | 19.1          | 228 | 310      | -2.02       | -5.8          | 47.9          |
| 114 | 100      | -1.64       | -67.3         | 31.3          | 162 | 180      | -1.21       | -52.7         | 13.7          | 229 | 160      | -1.84       | -6.8          | 31.1          |
| 115 | 100      | -1.49       | -61.3         | 43.9          | 163 | 170      | -1.21       | -52.7         | 16.8          | 230 | 180      | -1.63       | -6.9          | 35.6          |
| 116 | 100      | -1.67       | -68.9         | 36.4          | 164 | 180      | -1.70       | -30.8         | 15.5          | 231 | 170      | -1.49       | -6.5          | 24.4          |
| 117 | 100      | -1.18       | -48.6         | 34.4          | 165 | 170      | -1.07       | -46.9         | 26.0          | 232 | 170      | -1.39       | -6.8          | 21.8          |
| 118 | 130      | -1.19       | -45.6         | 32.0          | 166 | 170      | -1.09       | -47.7         | 25.5          | 233 | 170      | -1.77       | -4.4          | 22.2          |
| 119 | 110      | -1.18       | -41.0         | 33.6          | 167 | 170      | -1.66       | -72.2         | 24.4          | 234 | 160      | -1.44       | -6.3          | 22.2          |
| 120 | 170      | -1.82       | -35.7         | 32.6          | 168 | 170      | -1.84       | -36.6         | 14.5          | 235 | 170      | -1.73       | -5.7          | 22.0          |
| 121 | 120      | -1.43       | -50.0         | 35.7          | 169 | 170      | -1.89       | -39.0         | 16.4          | 236 | 170      | -1.56       | -6.8          | 15.5          |
| 122 | 30       | -1.63       | -43.8         | 35.5          | 170 | 170      | -1.81       | -35.3         | 16.2          | 237 | 170      | -1.42       | -6.2          | 22.2          |
| 123 | 100      | -1.88       | -74.3         | 32.0          | 171 | 170      | -1.86       | -37.4         | 19.4          | 238 | 180      | -2.28       | -5.5          | 33.3          |
| 124 | 100      | -1.51       | -62.2         | 27.4          | 172 | 170      | -1.67       | -39.3         | 15.5          | 239 | 320      | -1.22       | -4.4          | 22.8          |
| 125 | 90       | -1.52       | -62.5         | 27.3          | 173 | 170      | -1.90       | -39.9         | 23.7          | 240 | 340      | -1.11       | -4.4          | 22.2          |
| 126 | 77       | -1.65       | -57.4         | 23.6          | 174 | 170      | -1.80       | -34.4         | 28.1          | 241 | 170      | -1.88       | -4.3          | 17.7          |
| 127 | 110      | -1.35       | -47.1         | 24.4          | 175 | 170      | -1.02       | -44.7         | 27.2          | 242 | 170      | -1.99       | -4.3          | 15.5          |
| 128 | 110      | -1.10       | -38.5         | 26.1          | 176 | 170      | -1.33       | -32.1         | 17.3          | 243 | 120      | -1.87       | -4.3          | 30.2          |
| 129 | 250      | -1.63       | -41.1         | 30.8          | 177 | 170      | -1.74       | -33.2         | 15.7          | 244 | 320      | -1.36       | -4.4          | 31.1          |
| 130 | 170      | -1.93       | -40.7         | 34.1          | 178 | 170      | -1.77       | -33.2         | 16.0          | 245 | 310      | -1.11       | -4.3          | 22.7          |
| 131 | 170      | -1.21       | -52.3         | 40.4          | 180 | 170      | -1.66       | -28.8         | 22.1          | 246 | 170      | -1.99       | -4.3          | 24.4          |
| 132 | 100      | -1.66       | -69.7         | 24.1          | 181 | 170      | -1.62       | -27.1         | 19.2          | 247 | 170      | -1.90       | -4.3          | 20.0          |
| 133 | 100      | -1.91       | -78.4         | 21.7          | 182 | 170      | -1.62       | -26.9         | 16.6          | 248 | 170      | -1.74       | -4.3          | 19.9          |
| 134 | 100      | -1.69       | -69.7         | 16.5          | 201 | 190      | -1.90       | -39.0         | 35.4          | 249 | 170      | -1.69       | -4.3          | 18.8          |
| 135 | 120      | -1.89       | -66.0         | 20.1          | 202 | 180      | -1.11       | -56.6         | 14.8          | 250 | 170      | -1.63       | -4.3          | 24.4          |
| 136 | 100      | -1.03       | -42.4         | 21.4          | 203 | 170      | -1.11       | -53.3         | 28.0          | 301 | 160      | -1.41       | -4.5          | 27.7          |
| 137 | 110      | -1.20       | -42.4         | 27.4          | 204 | 170      | -1.11       | -54.0         | 43.4          | 302 | 170      | -1.14       | -4.9          | 25.5          |
| 138 | 180      | -1.15       | -50.2         | 31.3          | 205 | 170      | -1.11       | -53.3         | 31.2          | 303 | 130      | -1.99       | -4.3          | 26.6          |
| 139 | 180      | -1.38       | -60.1         | 34.0          | 206 | 170      | -1.13       | -49.9         | 17.9          | 304 | 170      | -1.11       | -4.3          | 24.4          |
| 140 | 180      | -1.31       | -57.3         | 32.6          | 207 | 80       | -1.11       | -51.4         | 30.4          | 305 | 170      | -1.11       | -4.3          | 13.3          |
| 141 | 180      | -1.92       | -83.9         | 25.8          | 208 | 130      | -1.11       | -46.8         | 46.7          | 306 | 180      | -1.19       | -4.3          | 22.7          |
| 142 | 110      | -1.92       | -66.8         | 21.2          | 209 | 180      | -1.11       | -56.6         | 47.6          | 307 | 170      | -1.22       | -4.3          | 9.4           |
| 143 | 110      | -2.02       | -70.3         | 22.8          | 210 | 170      | -1.11       | -55.9         | 52.3          | 308 | 150      | -1.08       | -4.3          | 20.7          |
| 144 | 110      | -1.37       | -47.7         | 18.4          | 211 | 160      | -1.11       | -52.2         | 44.2          | 309 | 170      | -1.40       | -4.3          | 20.7          |
| 145 | 120      | -1.45       | -50.4         | 29.1          | 212 | 170      | -1.11       | -56.6         | 37.0          | 310 | 80       | -1.17       | -4.3          | 22.5          |
| 146 | 110      | -1.57       | -54.7         | 29.8          | 213 | 210      | -2.11       | -51.1         | 42.2          | 311 | 90       | -1.24       | -4.3          | 23.3          |
| 147 | 110      | -1.65       | -57.7         | 28.8          | 214 | 190      | -1.11       | -56.6         | 48.2          | 312 | 170      | -1.30       | -4.3          | 17.7          |
| 148 | 120      | -1.27       | -44.2         | 28.1          | 215 | 160      | -1.11       | -64.2         | 42.1          | 313 | 80       | -1.02       | -4.3          | 29.9          |

TABLE 6A. PEAK LOADS FOR CONFIGURATION C :  
LARGEST VALUES OF CLADDING LOAD

ALLEN CENTER FOUR, HOUSTON  
REFERENCE PRESSURE = 42.0 PSF

| TAP | AZI-MUTH | PRESS COEFF | NEGATIVE PEAK |      | POSITIVE PEAK |     | TAP   | AZI-MUTH | PRESS COEFF | NEGATIVE PEAK |     | POSITIVE PEAK |       | TAP  | AZI-MUTH | PRESS COEFF | NEGATIVE PEAK |  | POSITIVE PEAK |  |
|-----|----------|-------------|---------------|------|---------------|-----|-------|----------|-------------|---------------|-----|---------------|-------|------|----------|-------------|---------------|--|---------------|--|
|     |          |             | PSF           | PSF  | PSF           | PSF |       |          |             | PSF           | PSF | PSF           | PSF   |      |          |             |               |  |               |  |
| 314 | 140      | -1.28       | -48.9         | 32.5 | 362           | 320 | -1.20 | -34.8    | 29.0        | 426           | 170 | -1.62         | -70.7 | 29.8 |          |             |               |  |               |  |
| 315 | 190      | -1.03       | -45.5         | 40.7 | 363           | 320 | -1.27 | -36.7    | 31.2        | 427           | 190 | -1.54         | -67.1 | 27.1 |          |             |               |  |               |  |
| 316 | 190      | 1.06        | -34.4         | 46.4 | 364           | 170 | -1.78 | -39.8    | 34.0        | 428           | 190 | -1.27         | -55.6 | 28.0 |          |             |               |  |               |  |
| 317 | 170      | 1.13        | -32.2         | 49.9 | 365           | 170 | .77   | -31.4    | 33.7        | 429           | 180 | -1.34         | -58.5 | 30.0 |          |             |               |  |               |  |
| 318 | 190      | 1.09        | -37.7         | 47.7 | 366           | 180 | .76   | -28.8    | 33.3        | 430           | 170 | -1.56         | -68.8 | 26.5 |          |             |               |  |               |  |
| 319 | 180      | 1.24        | -33.8         | 54.2 | 367           | 320 | -1.55 | -45.1    | 30.1        | 431           | 170 | -1.25         | -54.6 | 25.3 |          |             |               |  |               |  |
| 320 | 150      | 1.51        | -30.0         | 50.0 | 368           | 180 | .99   | -37.9    | 18.8        | 432           | 170 | -1.38         | -60.0 | 27.7 |          |             |               |  |               |  |
| 321 | 90       | -1.46       | -60.2         | 50.6 | 369           | 330 | -1.24 | -38.1    | 19.5        | 433           | 180 | -1.60         | -70.0 | 21.9 |          |             |               |  |               |  |
| 322 | 80       | -1.72       | -70.8         | 46.3 | 370           | 330 | -1.03 | -37.7    | 32.6        | 434           | 170 | -2.22         | -97.1 | 26.8 |          |             |               |  |               |  |
| 323 | 190      | -1.51       | -66.8         | 29.9 | 371           | 180 | .75   | -24.4    | 32.3        | 435           | 170 | -1.53         | -66.6 | 19.5 |          |             |               |  |               |  |
| 324 | 130      | -1.43       | -54.4         | 39.9 | 372           | 170 | .77   | -24.4    | 33.8        | 436           | 170 | -1.25         | -44.7 | 21.6 |          |             |               |  |               |  |
| 325 | 180      | .94         | -37.7         | 41.1 | 373           | 170 | .89   | -20.3    | 33.0        | 437           | 170 | -1.24         | -44.4 | 21.1 |          |             |               |  |               |  |
| 326 | 170      | 1.09        | -37.7         | 47.6 | 374           | 170 | .67   | -20.0    | 32.9        | 438           | 170 | -1.78         | -54.4 | 17.6 |          |             |               |  |               |  |
| 327 | 170      | 1.24        | -44.4         | 54.4 | 375           | 170 | .81   | -34.4    | 35.5        | 439           | 170 | -1.36         | -45.9 | 18.8 |          |             |               |  |               |  |
| 328 | 180      | 1.36        | -44.4         | 59.2 | 376           | 330 | -1.13 | -34.4    | 35.0        | 440           | 170 | -1.04         | -45.5 | 17.5 |          |             |               |  |               |  |
| 329 | 90       | -1.29       | -50.0         | 50.0 | 377           | 330 | .97   | -29.6    | 21.6        | 441           | 170 | -1.90         | -33.5 | 17.7 |          |             |               |  |               |  |
| 330 | 80       | -1.52       | -50.4         | 50.4 | 378           | 330 | .94   | -29.9    | 20.6        | 442           | 170 | -1.02         | -44.4 | 19.9 |          |             |               |  |               |  |
| 331 | 90       | -1.40       | -67.7         | 38.6 | 379           | 170 | .72   | -31.2    | 20.5        | 443           | 170 | -1.65         | -37.7 | 33.3 |          |             |               |  |               |  |
| 332 | 170      | -1.30       | -66.9         | 30.0 | 380           | 190 | .85   | -25.1    | 32.7        | 444           | 180 | .72           | -13.3 | 31.7 |          |             |               |  |               |  |
| 333 | 130      | -1.06       | -46.7         | 25.4 | 381           | 170 | .78   | -21.1    | 33.3        | 445           | 190 | .75           | -14.4 | 32.0 |          |             |               |  |               |  |
| 334 | 280      | -1.41       | -35.5         | 28.9 | 382           | 170 | .88   | -20.7    | 38.5        | 446           | 170 | .62           | -10.7 | 24.4 |          |             |               |  |               |  |
| 335 | 180      | .87         | -33.8         | 38.1 | 383           | 170 | .79   | -24.4    | 34.4        | 447           | 180 | .73           | -33.1 | 26.6 |          |             |               |  |               |  |
| 336 | 170      | .91         | -33.3         | 39.8 | 384           | 180 | .70   | -32.4    | 30.7        | 448           | 180 | .73           | -33.1 | 26.6 |          |             |               |  |               |  |
| 337 | 160      | 1.23        | -32.8         | 44.0 | 401           | 140 | -1.35 | -51.1    | 21.3        | 449           | 170 | .88           | -33.8 | 25.5 |          |             |               |  |               |  |
| 338 | 170      | 1.17        | -46.6         | 50.9 | 402           | 170 | .14   | -49.9    | 21.1        | 450           | 180 | .82           | -33.5 | 21.2 |          |             |               |  |               |  |
| 339 | 90       | -1.16       | -44.6         | 45.6 | 403           | 180 | .97   | -42.2    | 18.2        | 701           | 170 | .54           | -33.3 | 15.3 |          |             |               |  |               |  |
| 340 | 90       | -1.42       | -54.4         | 35.1 | 404           | 180 | .98   | -42.2    | 14.8        | 702           | 170 | .67           | -32.9 | 15.7 |          |             |               |  |               |  |
| 341 | 180      | -1.33       | -58.8         | 21.9 | 405           | 180 | .00   | -43.3    | 16.7        | 703           | 170 | .72           | -31.1 | 15.7 |          |             |               |  |               |  |
| 342 | 170      | .94         | -41.1         | 22.2 | 406           | 150 | -1.46 | -52.0    | 14.0        | 705           | 170 | .63           | -27.3 | 14.8 |          |             |               |  |               |  |
| 343 | 280      | -1.30       | -32.8         | 24.0 | 407           | 170 | .26   | -35.5    | 17.1        | 706           | 170 | .60           | -26.1 | 18.1 |          |             |               |  |               |  |
| 344 | 170      | .88         | -32.8         | 38.2 | 408           | 170 | -1.44 | -64.1    | 38.1        | 707           | 170 | .72           | -31.1 | 19.9 |          |             |               |  |               |  |
| 345 | 170      | .92         | -32.8         | 40.0 | 409           | 170 | -1.14 | -49.6    | 38.6        | 708           | 170 | -1.05         | -45.8 | 18.0 |          |             |               |  |               |  |
| 346 | 170      | 1.02        | -32.8         | 44.6 | 410           | 190 | -1.82 | -70.7    | 33.5        | 710           | 180 | .83           | -33.6 | 19.2 |          |             |               |  |               |  |
| 347 | 170      | 1.10        | -34.3         | 47.9 | 411           | 180 | -1.18 | -51.1    | 33.3        | 711           | 170 | .66           | -22.8 | 22.2 |          |             |               |  |               |  |
| 348 | 90       | -1.10       | -44.8         | 43.3 | 412           | 190 | -1.54 | -67.2    | 31.4        | 712           | 170 | .81           | -23.3 | 22.0 |          |             |               |  |               |  |
| 349 | 170      | .90         | -34.4         | 39.9 | 413           | 190 | -1.34 | -58.4    | 33.9        | 713           | 180 | .77           | -33.3 | 20.0 |          |             |               |  |               |  |
| 350 | 170      | -1.47       | -64.3         | 22.7 | 414           | 180 | -1.41 | -61.8    | 33.6        | 714           | 170 | .82           | -33.5 | 20.8 |          |             |               |  |               |  |
| 351 | 170      | .90         | -33.9         | 18.9 | 415           | 190 | -1.61 | -70.8    | 28.4        | 716           | 170 | .67           | -29.9 | 19.9 |          |             |               |  |               |  |
| 352 | 330      | -1.14       | -33.5         | 27.6 | 416           | 180 | -1.47 | -64.4    | 30.4        | 717           | 170 | .73           | -30.0 | 31.1 |          |             |               |  |               |  |
| 353 | 340      | -1.13       | -32.4         | 33.0 | 417           | 180 | -1.54 | -67.7    | 29.9        | 801           | 170 | .94           | -41.1 | 28.8 |          |             |               |  |               |  |
| 354 | 190      | .76         | -32.2         | 33.3 | 418           | 180 | -1.63 | -71.3    | 30.5        | 802           | 170 | -1.07         | -48.6 | 25.5 |          |             |               |  |               |  |
| 355 | 190      | .96         | -22.9         | 41.9 | 419           | 180 | -1.59 | -69.6    | 26.2        | 803           | 170 | -1.09         | -47.4 | 25.3 |          |             |               |  |               |  |
| 356 | 170      | .95         | -30.6         | 41.4 | 420           | 140 | -1.71 | -65.6    | 27.6        | 804           | 170 | .92           | -24.4 | 40.4 |          |             |               |  |               |  |
| 357 | 170      | -1.07       | -30.8         | 48.9 | 421           | 190 | -1.54 | -67.4    | 25.9        | 901           | 90  | -1.25         | -51.3 | 20.0 |          |             |               |  |               |  |
| 358 | 330      | -1.33       | -40.6         | 33.8 | 422           | 180 | -1.69 | -74.0    | 27.3        | 902           | 170 | -1.15         | -50.0 | 29.4 |          |             |               |  |               |  |
| 359 | 180      | -1.11       | -40.8         | 19.9 | 423           | 170 | -1.42 | -62.2    | 29.5        | 903           | 170 | -1.01         | -44.0 | 13.4 |          |             |               |  |               |  |
| 360 | 340      | -1.62       | -49.7         | 18.7 | 424           | 170 | -2.28 | -99.4    | 30.0        | 904           | 100 | -1.22         | -50.1 | 20.4 |          |             |               |  |               |  |
| 361 | 340      | -1.36       | -41.6         | 29.8 | 425           | 170 | -1.53 | -66.6    | 25.5        | 905           | 170 | -1.63         | -71.3 | 12.4 |          |             |               |  |               |  |

TABLE 6A. PEAK LOADS FOR CONFIGURATION C .  
LARGEST VALUES OF CLADDING LOAD

ALLEN CENTER FOUR, HOUSTON  
REFERENCE PRESSURE = 42.0 PSF

| TAP | AZI-<br>MUTH | PRESS<br>COEFF | NEGATIVE POSITIVE |      | TAP | AZI-<br>MUTH | PRESS<br>COEFF | NEGATIVE POSITIVE |      | TAP | AZI-<br>MUTH | PRESS<br>COEFF | NEGATIVE POSITIVE |      |
|-----|--------------|----------------|-------------------|------|-----|--------------|----------------|-------------------|------|-----|--------------|----------------|-------------------|------|
|     |              |                | PEAK              | PSF  |     |              |                | PEAK              | PSF  |     |              |                | PEAK              | PSF  |
| 906 | 170          | -1.70          | -74.1             | 17.7 | 911 | 170          | -1.12          | -48.9             | 11.1 | 915 | 170          | -1.21          | -52.7             | 18.5 |
| 907 | 170          | -1.74          | -76.0             | 24.9 | 912 | 170          | -1.45          | -63.3             | 19.5 | 916 | 170          | -1.20          | -52.5             | 14.2 |
| 908 | 190          | -1.40          | -61.1             | 15.6 | 913 | 170          | -1.45          | -63.4             | 13.2 | 917 | 170          | -1.57          | -68.4             | 18.1 |
| 909 | 190          | -1.26          | -55.0             | 14.2 | 914 | 170          | -1.30          | -56.9             | 13.5 | 918 | 170          | -1.47          | -64.0             | 13.5 |
| 910 | 170          | -1.12          | -48.8             | 16.3 |     |              |                |                   |      |     |              |                |                   |      |

TABLE 6A PEAK LOADS FOR CONFIGURATION C :  
LARGEST VALUES OF CLADDING LOAD

ALLEN CENTER FOUR, HOUSTON  
REFERENCE PRESSURE = 42.0 PSF

\* \* 15 GREATEST PRESSURE MAGNITUDES \* \*

| TAP | AZI-<br>MUTH | PRESS<br>COEFF | NEGATIVE<br>PEAK<br>-----<br>PSF | POSITIVE<br>PEAK<br>----- |
|-----|--------------|----------------|----------------------------------|---------------------------|
| 424 | 170          | -2.28          | -99.4                            | 30.0                      |
| 434 | 170          | -2.22          | -97.1                            | 26.2                      |
| 161 | 170          | -2.17          | -94.6                            | 19.1                      |
| 160 | 170          | -2.00          | -87.4                            | 18.1                      |
| 141 | 180          | -1.92          | -83.9                            | 25.8                      |
| 225 | 170          | -1.86          | -81.1                            | 39.6                      |
| 133 | 100          | -1.91          | -79.4                            | 21.7                      |
| 907 | 170          | -1.74          | -76.0                            | 24.9                      |
| 235 | 170          | -1.73          | -75.7                            | 20.9                      |
| 123 | 100          | -1.80          | -74.2                            | 32.0                      |
| 906 | 170          | -1.70          | -74.1                            | 17.7                      |
| 422 | 180          | -1.69          | -74.0                            | 27.3                      |
| 167 | 170          | -1.66          | -72.3                            | 24.4                      |
| 418 | 180          | -1.63          | -71.3                            | 30.5                      |
| 905 | 170          | -1.63          | -71.3                            | 12.4                      |

TABLE 6A. PEAK LOADS FOR CONFIGURATION D :  
LARGEST VALUES OF CLADDING LOAD

ALLEN CENTER FOUR, HOUSTON  
REFERENCE PRESSURE = 42.0 PSF

| TAP | AZI-<br>MUTH | PRESS<br>COEFF | NEGATIVE<br>PEAK<br>-----<br>PSF | POSITIVE<br>PEAK<br>-----<br>PSF | TAP | AZI-<br>MUTH | PRESS<br>COEFF | NEGATIVE<br>PEAK<br>-----<br>PSF | POSITIVE<br>PEAK<br>-----<br>PSF | TAP | AZI-<br>MUTH | PRESS<br>COEFF | NEGATIVE<br>PEAK<br>-----<br>PSF | POSITIVE<br>PEAK<br>-----<br>PSF |
|-----|--------------|----------------|----------------------------------|----------------------------------|-----|--------------|----------------|----------------------------------|----------------------------------|-----|--------------|----------------|----------------------------------|----------------------------------|
| 141 | 166          | -3.11          | -111.2                           | 14.9                             | 161 | 176          | -2.00          | -87.6                            | 11.9                             | 424 | 172          | -2.54          | -111.1                           | 15.1                             |

TABLE 6A. PEAK LOADS FOR CONFIGURATION D : ALLEN CENTER FOUR, HOUSTON  
 LARGEST VALUES OF CLADDING LOAD REFERENCE PRESSURE = 42.0 PSF

| TAP | AZIMUTH | PRESS COEFF | NEGATIVE PEAK PRESS PSF | POSITIVE PEAK PRESS PSF |
|-----|---------|-------------|-------------------------|-------------------------|
| 141 | 166     | -3.11       | -111.2                  | 14.9                    |
| 424 | 172     | -2.54       | -111.1                  | 15.1                    |
| 161 | 176     | -2.00       | -87.6                   | 11.9                    |

TABLE 68. COMPARISON OF CONFIGURATIONS C AND D : ALLEN CENTER FOUR, HOUSTON  
TAPS WHERE NEGATIVE PEAK LOAD FOR CONFIG. D EXCEEDED THAT FOR CONFIG. C BY 5 PSF  
REF. PRESSURE = 42.0 PSF

| TAP | AZIMUTH | C CONFIG.<br>PSF LOAD | AZIMUTH | D CONFIG.<br>PSF LOAD |
|-----|---------|-----------------------|---------|-----------------------|
| 141 | 180     | -83.9                 | 166     | -111.2                |
| 424 | 170     | -99.4                 | 172     | -111.1                |

TABLE 7. BASE SHEAR AND MOMENT SUMMARY : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
 CONFIGURATION C REFERENCE PRESSURE 42.0  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| AZIMUTH | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |        | ECCEN (%) |     | DYNAMIC LOAD FACTOR |      |      | WIND DIRECTIONAL LOAD FACTOR |
|---------|--------------|---------|-----------------------|---------|--------|-----------|-----|---------------------|------|------|------------------------------|
|         | X            | Y       | X                     | Y       | Z      | X         | Y   | X                   | Y    | Z    |                              |
| 0       | -2664.6      | 248.7   | 177.2                 | -1507.9 | - .9   | 0         | 1   | 28.6                | 7.4  | 44.6 | .69                          |
| 10      | -2414.0      | 92.1    | 85.0                  | -1613.3 | -63.8  | 1         | 49  | 76.2                | 13.6 | 8.8  | .69                          |
| 20      | -1468.3      | 560.9   | -361.6                | -983.0  | -58.9  | -10       | 63  | 14.6                | 8.2  | 4.9  | .64                          |
| 30      | -2138.8      | 2709.3  | -1459.1               | -1185.6 | -109.4 | -19       | 36  | 14.7                | 4.6  | 3.5  | .64                          |
| 40      | -3766.5      | 1804.6  | -966.8                | -1854.4 | -129.6 | -10       | 52  | 17.7                | 4.3  | 3.0  | .62                          |
| 50      | -4560.6      | 651.6   | -372.3                | -1941.7 | -106.8 | -3        | 42  | 13.5                | 5.4  | 2.5  | .62                          |
| 60      | -6071.2      | 856.4   | -314.7                | -2563.6 | -128.5 | -2        | 38  | 14.8                | 7.4  | 3.0  | .79                          |
| 70      | -4937.9      | 1206.0  | -721.4                | -2119.1 | -99.7  | -4        | 35  | 18.4                | 10.3 | 4.6  | .79                          |
| 80      | -3980.7      | 860.1   | -500.5                | -1912.5 | -67.9  | -3        | 30  | 7.4                 | 14.2 | 8.3  | .98                          |
| 90      | -9564.1      | 1201.0  | -588.4                | -3483.4 | 194.5  | 2         | 37  | 4.4                 | 14.6 | 6.9  | .98                          |
| 100     | 8114.8       | 900.6   | -476.4                | 3185.1  | 219.5  | 2         | 49  | 6.1                 | 4.7  | 2.7  | .98                          |
| 110     | 10412.4      | 666.3   | -354.5                | 3777.5  | 250.4  | 1         | 44  | 4.5                 | 4.1  | 2.4  | .83                          |
| 120     | 8919.3       | 1612.8  | -702.4                | 3108.4  | 209.7  | 3         | 42  | 3.8                 | 3.7  | 2.3  | .83                          |
| 130     | 10140.8      | 2160.1  | -972.5                | 3520.5  | 218.9  | 3         | 38  | 4.6                 | 4.0  | 2.2  | .91                          |
| 140     | 9241.6       | 2159.1  | -1152.4               | 3256.3  | 194.6  | 4         | 37  | 9.9                 | 4.4  | 2.4  | .91                          |
| 150     | 6748.8       | 4469.6  | -164.7                | 2399.3  | 149.1  | -8        | 28  | 175.8               | 3.3  | 4.8  | .85                          |
| 160     | 7988.1       | 20032.9 | 4756.2                | 2883.0  | 132.7  | -4        | 4   | 186.0               | 3.3  | 3.0  | .85                          |
| 170     | 9472.8       | 1497.3  | -742.5                | 3359.3  | 134.9  | 2         | 26  | 18.5                | 3.1  | 3.0  | 1.04                         |
| 180     | 7769.9       | 3736.7  | -1263.4               | 2906.2  | 90.2   | 4         | 17  | 19.2                | 3.3  | 4.1  | 1.04                         |
| 190     | 6033.3       | 4047.7  | -1831.9               | 2333.6  | 71.9   | 5         | 13  | 29.6                | 4.0  | 7.8  | 1.04                         |
| 200     | 2953.5       | -605.3  | 280.2                 | 1240.7  | -51.3  | 3         | -31 | 14.4                | 4.7  | 4.1  | .60                          |
| 210     | 3295.5       | -1388.8 | 627.9                 | 1401.3  | -113.4 | 10        | -54 | 9.0                 | 3.9  | 2.8  | .60                          |
| 220     | 4209.2       | -1092.9 | 465.9                 | 1688.6  | -117.9 | 5         | -49 | 7.7                 | 3.3  | 2.3  | .60                          |
| 230     | 4796.9       | -953.7  | 426.5                 | 1863.2  | -130.4 | 4         | -48 | 5.7                 | 3.4  | 2.2  | .60                          |
| 240     | 4820.2       | -734.6  | 323.3                 | 1899.5  | -127.5 | 3         | -48 | 4.4                 | 3.7  | 2.7  | .60                          |
| 250     | 5210.9       | -514.5  | 181.5                 | 2146.3  | -129.0 | 2         | -45 | 4.1                 | 4.6  | 2.7  | .60                          |
| 260     | 4225.3       | -583.6  | 204.7                 | 1811.9  | -138.2 | 3         | -59 | 3.0                 | 8.9  | 6.6  | .60                          |
| 270     | 2698.1       | -699.2  | 252.2                 | 959.2   | 71.3   | -5        | -46 | 2.9                 | 8.8  | 2.2  | .60                          |
| 280     | -4422.0      | -683.3  | 235.7                 | -1703.7 | 128.6  | -3        | -53 | 4.0                 | 4.0  | 4.4  | .60                          |
| 290     | -6155.1      | -1129.5 | 497.9                 | -2172.8 | 136.2  | -3        | -40 | 3.4                 | 3.3  | 3.3  | .68                          |
| 300     | -6013.4      | -1660.6 | 706.5                 | -1986.6 | 128.9  | -4        | -37 | 3.8                 | 3.3  | 3.1  | .68                          |
| 310     | -6926.4      | -1996.7 | 830.1                 | -2275.8 | 133.0  | -4        | -33 | 5.0                 | 3.3  | 2.8  | .69                          |
| 320     | -6808.3      | -2148.5 | 868.3                 | -2297.2 | 134.0  | -4        | -33 | 6.3                 | 3.7  | 3.3  | .69                          |
| 330     | -5869.2      | -2338.3 | 959.5                 | -2040.9 | 151.2  | -7        | -41 | 8.2                 | 3.3  | 3.4  | .73                          |
| 340     | -6184.9      | -2800.7 | 1178.3                | -2272.0 | 167.9  | -8        | -42 | 11.8                | 5.0  | 3.7  | .73                          |
| 350     | -3405.0      | 3145.8  | 1304.7                | -1487.1 | 117.1  | -13       | -34 | 41.7                | 5.1  | 7.0  | .69                          |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 0 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |       | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |         |        |
|-------|--------|--------------|--------|--------------|------|----------------|-------|-----------|-------|--------------|--------|-----------------------|---------|--------|
|       |        | X            | Y      | X            | Y    | X              | Y     | X         | Y     | X            | Y      | Z                     |         |        |
| GRND  | 0.00   |              |        |              |      |                |       |           |       | -2664.6      | -248.7 | 177.2                 | -1507.9 | - .9   |
| GR-2  | 17.50  | -19.6        | -152.1 | 3599         | 1734 | -5.5           | -87.7 | -43       | -13   | -2645.0      | -96.7  | 174.2                 | -1461.4 | -9.5   |
| 2-3   | 41.54  | 19.1         | 82.3   | 6203         | 2597 | 3.1            | 31.7  | 69        | 38    | -2664.1      | -179.0 | 170.9                 | -1397.6 | -17.2  |
| 3-4   | 54.63  | 7.0          | 38.3   | 3375         | 1413 | 2.1            | 27.1  | 70        | 31    | -2671.1      | -217.3 | 168.3                 | -1362.7 | -20.8  |
| 4-5   | 67.71  | 4.7          | 33.7   | 3375         | 1413 | 1.4            | 23.8  | 71        | 23    | -2675.8      | -231.0 | 165.2                 | -1327.7 | -23.9  |
| 5-6   | 80.79  | 2.3          | 29.1   | 3375         | 1413 | .7             | 20.6  | 71        | 14    | -2678.1      | -280.1 | 161.7                 | -1292.7 | -26.6  |
| 6-7   | 93.87  | -.1          | 24.5   | 3375         | 1413 | -.0            | 17.3  | 72        | -0    | -2678.1      | -304.6 | 157.9                 | -1257.6 | -28.8  |
| 7-8   | 106.96 | -2.4         | 19.9   | 3375         | 1413 | -.7            | 14.1  | 70        | -20   | -2675.6      | -324.5 | 153.8                 | -1222.6 | -30.7  |
| 8-9   | 120.04 | -4.8         | 15.3   | 3375         | 1413 | -1.4           | 10.8  | 64        | -48   | -2670.9      | -339.9 | 149.4                 | -1187.6 | -32.1  |
| 9-10  | 133.12 | -6.7         | 11.6   | 3375         | 1413 | -2.0           | 8.2   | 59        | -82   | -2664.1      | -351.5 | 144.9                 | -1152.7 | -33.2  |
| 10-11 | 146.21 | -7.3         | 10.7   | 3375         | 1413 | -2.2           | 7.6   | 82        | -133  | -2656.9      | -362.2 | 140.3                 | -1117.9 | -34.9  |
| 11-12 | 159.29 | -7.8         | 9.7    | 3375         | 1413 | -2.3           | 6.9   | 102       | -197  | -2649.0      | -371.9 | 135.5                 | -1083.2 | -37.0  |
| 12-13 | 172.37 | -8.4         | 8.8    | 3375         | 1413 | -2.5           | 6.2   | 119       | -272  | -2640.6      | -380.7 | 130.5                 | -1048.6 | -39.6  |
| 13-14 | 185.46 | -9.0         | 7.9    | 3375         | 1413 | -2.7           | 5.6   | 131       | -357  | -2631.7      | -388.6 | 125.5                 | -1014.1 | -42.7  |
| 14-15 | 198.54 | -9.5         | 6.9    | 3375         | 1413 | -2.8           | 4.9   | 136       | -449  | -2622.1      | -395.5 | 120.4                 | -979.8  | -46.2  |
| 15-16 | 211.62 | -10.1        | 6.0    | 3375         | 1413 | -3.0           | 4.2   | 134       | -543  | -2612.0      | -401.5 | 115.2                 | -945.5  | -50.2  |
| 16-17 | 224.70 | -10.7        | 5.0    | 3375         | 1413 | -3.2           | 3.6   | 125       | -634  | -2601.4      | -406.5 | 109.9                 | -911.4  | -54.6  |
| 17-18 | 237.79 | -11.0        | 4.1    | 3375         | 1413 | -3.3           | 2.9   | 113       | -725  | -2590.3      | -410.6 | 104.5                 | -877.5  | -59.5  |
| 18-19 | 250.87 | -10.6        | 3.2    | 3375         | 1413 | -3.1           | 2.3   | 107       | -843  | -2579.8      | -413.8 | 99.1                  | -843.7  | -64.8  |
| 19-20 | 263.95 | -10.1        | 2.3    | 3375         | 1413 | -3.0           | 1.6   | 93        | -973  | -2569.7      | -416.1 | 93.7                  | -810.0  | -70.4  |
| 20-21 | 277.04 | -9.7         | 1.4    | 3375         | 1413 | -2.9           | 1.0   | 69        | -1113 | -2560.0      | -417.5 | 88.3                  | -776.4  | -76.3  |
| 21-22 | 290.12 | -9.2         | .5     | 3375         | 1413 | -2.7           | .4    | 31        | -1258 | -2550.8      | -418.1 | 82.8                  | -743.0  | -82.6  |
| 22-23 | 303.20 | -8.8         | -.3    | 3375         | 1413 | -2.6           | -.2   | -23       | -1397 | -2542.0      | -417.7 | 77.3                  | -709.7  | -89.2  |
| 23-24 | 316.29 | -8.3         | -1.2   | 3375         | 1413 | -2.5           | -.9   | -94       | -1518 | -2533.7      | -416.5 | 71.9                  | -676.5  | -96.2  |
| 24-25 | 329.37 | -7.9         | -2.1   | 3375         | 1413 | -2.3           | -1.5  | -181      | -1604 | -2525.8      | -414.4 | 66.4                  | -643.4  | -103.5 |
|       |        | -7.9         | -3.4   | 3375         | 1413 | -2.3           | -2.4  | -268      | -1493 |              |        |                       |         |        |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 0° CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |      | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|------|--------------|--------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y    | X            | Y      | Z                     |        |        |
| 25-26 | 342.45 | -10.0        | -6.3  | 3375         | 1413 | -3.0           | -4.4  | -258      | -987 | -2517.9      | -411.0 | 61.0                  | -610.4 | -111.1 |
| 26-27 | 355.53 | -12.1        | -9.2  | 3375         | 1413 | -3.6           | -6.5  | -224      | -711 | -2507.9      | -404.7 | 55.7                  | -577.5 | -118.5 |
| 27-28 | 368.62 | -14.3        | -12.0 | 3375         | 1413 | -4.2           | -8.5  | -193      | -545 | -2495.7      | -395.6 | 50.5                  | -544.8 | -125.8 |
| 28-29 | 381.70 | -16.4        | -14.9 | 3375         | 1413 | -4.8           | -10.6 | -167      | -437 | -2481.5      | -383.5 | 45.4                  | -512.2 | -133.0 |
| 29-30 | 394.78 | -18.5        | -17.8 | 3375         | 1413 | -5.5           | -12.6 | -146      | -361 | -2465.1      | -368.6 | 40.4                  | -479.8 | -140.1 |
| 30-31 | 407.87 | -20.6        | -20.7 | 3375         | 1413 | -6.1           | -14.6 | -128      | -305 | -2446.6      | -350.8 | 35.7                  | -447.7 | -147.0 |
| 31-32 | 420.95 | -22.7        | -23.6 | 3375         | 1413 | -6.7           | -16.7 | -114      | -263 | -2426.0      | -330.1 | 31.3                  | -415.8 | -153.9 |
| 32-33 | 434.03 | -26.0        | -26.0 | 3375         | 1413 | -7.7           | -18.4 | -93       | -224 | -2403.4      | -306.6 | 27.1                  | -384.2 | -160.6 |
| 33-34 | 447.12 | -35.3        | -26.1 | 3375         | 1413 | -10.4          | -18.5 | -46       | -148 | -2377.3      | -280.6 | 23.3                  | -353.0 | -166.8 |
| 34-35 | 460.20 | -44.5        | -26.2 | 3375         | 1413 | -13.2          | -18.6 | -19       | -75  | -2342.1      | -254.5 | 19.8                  | -322.1 | -171.2 |
| 35-36 | 473.28 | -53.7        | -26.3 | 3375         | 1413 | -15.9          | -18.6 | -3        | -15  | -2297.6      | -228.3 | 16.6                  | -291.8 | -173.6 |
| 36-37 | 486.36 | -63.0        | -26.5 | 3375         | 1413 | -18.7          | -18.7 | 6         | 35   | -2243.9      | -201.9 | 13.8                  | -262.0 | -174.1 |
| 37-38 | 499.45 | -72.2        | -26.6 | 3375         | 1413 | -21.4          | -18.8 | 12        | 75   | -2180.9      | -175.4 | 11.3                  | -233.1 | -172.8 |
| 38-39 | 512.53 | -81.4        | -26.7 | 3375         | 1413 | -24.1          | -18.9 | 15        | 107  | -2108.7      | -148.8 | 9.2                   | -205.0 | -169.4 |
| 39-40 | 525.61 | -90.7        | -26.9 | 3375         | 1413 | -26.9          | -19.0 | 17        | 134  | -2027.3      | -122.1 | 7.4                   | -178.0 | -164.2 |
| 40-41 | 538.70 | -101.4       | -26.1 | 3375         | 1413 | -30.0          | -18.5 | 17        | 155  | -1936.6      | -95.3  | 6.0                   | -152.1 | -157.1 |
| 41-42 | 551.78 | -121.1       | -20.5 | 3375         | 1413 | -35.9          | -14.5 | 12        | 163  | -1835.2      | -69.1  | 4.9                   | -127.4 | -148.0 |
| 42-43 | 564.86 | -140.8       | -14.9 | 3375         | 1413 | -41.7          | -10.6 | 7         | 168  | -1714.1      | -48.6  | 4.2                   | -104.2 | -137.0 |
| 43-44 | 577.95 | -160.5       | -9.3  | 3375         | 1413 | -47.5          | -6.6  | 4         | 170  | -1573.3      | -33.6  | 3.6                   | -82.7  | -124.1 |
| 44-45 | 591.03 | -180.2       | -3.7  | 3375         | 1413 | -53.4          | -2.6  | 1         | 172  | -1412.8      | -24.3  | 3.3                   | -63.1  | -109.3 |
| 45-46 | 604.11 | -199.9       | 1.9   | 3375         | 1413 | -59.2          | 1.3   | -1        | 173  | -1232.6      | -20.6  | 3.0                   | -45.8  | -92.6  |
| 46-47 | 617.19 | -219.5       | 7.5   | 3375         | 1413 | -65.0          | 5.3   | -2        | 173  | -1032.7      | -22.5  | 2.7                   | -31.0  | -73.9  |
| 47-48 | 630.28 | -239.2       | 13.1  | 3375         | 1413 | -70.9          | 9.3   | -4        | 174  | -813.2       | -30.0  | 2.3                   | -18.9  | -53.3  |
| 48-49 | 643.36 | -250.0       | 15.4  | 3375         | 1413 | -74.1          | 10.9  | -4        | 170  | -574.0       | -43.1  | 1.9                   | -9.9   | -30.8  |
| 49-50 | 656.44 | -260.2       | -15.8 | 4788         | 2004 | -54.4          | -7.9  | 3         | 110  | -324.0       | -58.5  | 1.2                   | -4.0   | -7.9   |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 0 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |      | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|------|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y    | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 |              |       |              |      |                |       |           |      | -63.8        | -42.7 | .3                    | -.4 | 7.6 |
| TOP    | 687.00 | -63.8        | -42.7 | 2973         | 1232 | -21.5          | -34.7 | -43       | -153 | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 10 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|--------|--------------|------|----------------|--------|-----------|-----|--------------|--------|-----------------------|---------|-------|
|       |        | X            | Y      | X            | Y    | X              | Y      | X         | Y   | X            | Y      | Z                     |         |       |
| GRND  | 0.00   |              |        |              |      |                |        |           |     | -2414.0      | -92.1  | 85.0                  | -1613.3 | -63.8 |
| GR-2  | 17.50  | -16.2        | -445.2 | 3599         | 1734 | -4.5           | -256.7 | -2        | -0  | -2397.8      | 353.1  | 87.3                  | -1571.2 | -64.9 |
| 2-3   | 41.54  | 35.3         | 152.1  | 6203         | 2597 | 5.7            | 58.6   | 3         | 2   | -2433.1      | 200.9  | 93.9                  | -1513.1 | -65.6 |
| 3-4   | 54.63  | 16.2         | 72.7   | 3375         | 1413 | 4.8            | 51.5   | 3         | 2   | -2449.3      | 128.2  | 96.1                  | -1481.2 | -65.9 |
| 4-5   | 67.71  | 14.1         | 65.6   | 3375         | 1413 | 4.2            | 46.5   | 2         | 1   | -2463.5      | 62.6   | 97.3                  | -1449.0 | -66.1 |
| 5-6   | 80.79  | 12.0         | 58.6   | 3375         | 1413 | 3.6            | 41.4   | 2         | 1   | -2475.5      | 4.0    | 97.8                  | -1416.7 | -66.2 |
| 6-7   | 93.87  | 9.9          | 51.5   | 3375         | 1413 | 2.9            | 36.4   | 1         | 0   | -2485.4      | -47.5  | 97.5                  | -1384.3 | -66.2 |
| 7-8   | 106.96 | 7.8          | 44.4   | 3375         | 1413 | 2.3            | 31.4   | -0        | -0  | -2493.2      | -91.8  | 96.6                  | -1351.7 | -66.2 |
| 8-9   | 120.04 | 5.7          | 37.3   | 3375         | 1413 | 1.7            | 26.4   | -2        | -1  | -2498.9      | -129.1 | 95.1                  | -1319.1 | -66.1 |
| 9-10  | 133.12 | 4.0          | 30.6   | 3375         | 1413 | 1.2            | 21.7   | -4        | -1  | -2502.9      | -159.7 | 93.2                  | -1286.3 | -66.0 |
| 10-11 | 146.21 | 3.4          | 25.3   | 3375         | 1413 | 1.0            | 17.9   | -5        | -2  | -2506.4      | -185.0 | 91.0                  | -1253.6 | -65.8 |
| 11-12 | 159.29 | 2.9          | 19.9   | 3375         | 1413 | .9             | 14.1   | -6        | -2  | -2509.2      | -204.9 | 88.4                  | -1220.8 | -65.7 |
| 12-13 | 172.37 | 2.3          | 14.5   | 3375         | 1413 | .7             | 10.3   | -8        | -3  | -2511.5      | -219.4 | 85.6                  | -1187.9 | -65.5 |
| 13-14 | 185.46 | 1.8          | 9.2    | 3375         | 1413 | .5             | 6.5    | -13       | -6  | -2513.3      | -228.6 | 82.7                  | -1155.1 | -65.4 |
| 14-15 | 198.54 | 1.2          | 3.8    | 3375         | 1413 | .4             | 2.7    | -28       | -21 | -2514.5      | -232.4 | 79.7                  | -1122.2 | -65.2 |
| 15-16 | 211.62 | .6           | -1.5   | 3375         | 1413 | .2             | -1.1   | 66        | -65 | -2515.1      | -230.9 | 76.7                  | -1089.3 | -65.0 |
| 16-17 | 224.70 | .1           | -6.9   | 3375         | 1413 | .0             | -4.9   | 17        | -0  | -2515.2      | -224.0 | 73.7                  | -1056.4 | -64.9 |
| 17-18 | 237.79 | .1           | -11.2  | 3375         | 1413 | .0             | -7.9   | 11        | -0  | -2515.3      | -212.8 | 70.8                  | -1023.4 | -64.7 |
| 18-19 | 250.87 | 2.2          | -11.5  | 3375         | 1413 | .7             | -8.2   | 10        | -5  | -2517.5      | -201.3 | 68.1                  | -990.5  | -64.6 |
| 19-20 | 263.95 | 4.4          | -11.9  | 3375         | 1413 | 1.3            | -8.4   | 10        | -8  | -2521.9      | -189.4 | 65.6                  | -957.6  | -64.4 |
| 20-21 | 277.04 | 6.5          | -12.3  | 3375         | 1413 | 1.9            | -8.7   | 9         | -11 | -2528.4      | -177.0 | 63.2                  | -924.5  | -64.2 |
| 21-22 | 290.12 | 8.6          | -12.7  | 3375         | 1413 | 2.6            | -9.0   | 8         | -12 | -2537.1      | -164.3 | 60.9                  | -891.4  | -64.1 |
| 22-23 | 303.20 | 10.8         | -13.1  | 3375         | 1413 | 3.2            | -9.3   | 7         | -13 | -2547.8      | -151.2 | 58.9                  | -858.1  | -63.9 |
| 23-24 | 316.29 | 12.9         | -13.5  | 3375         | 1413 | 3.8            | -9.5   | 6         | -13 | -2560.7      | -137.8 | 57.0                  | -824.7  | -63.7 |
| 24-25 | 329.37 | 15.0         | -13.9  | 3375         | 1413 | 4.5            | -9.8   | 5         | -13 | -2575.7      | -123.9 | 55.3                  | -791.1  | -63.5 |
|       |        | 17.4         | -12.9  | 3375         | 1413 | 5.2            | -9.1   | 4         | -12 |              |        |                       |         |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERODELASTIC DATA  
WIND DIRECTION 10 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |        |       |
| 25-26 | 342.45 | 20.7         | -6.4  | 3375         | 1413 | 6.1            | -4.5  | 0         | -2 | -2593.1      | -111.0 | 53.7                  | -757.3 | -63.3 |
| 26-27 | 355.53 | 24.1         | .1    | 3375         | 1413 | 7.1            | .1    | 0         | 10 | -2613.9      | -104.6 | 52.3                  | -723.2 | -63.3 |
| 27-28 | 368.62 | 27.4         | 6.6   | 3375         | 1413 | 8.1            | 4.7   | 2         | 18 | -2638.0      | -104.7 | 51.0                  | -688.9 | -63.4 |
| 28-29 | 381.70 | 30.8         | 13.2  | 3375         | 1413 | 9.1            | 9.3   | 4         | 22 | -2665.4      | -111.4 | 49.5                  | -654.2 | -63.7 |
| 29-30 | 394.78 | 34.1         | 19.7  | 3375         | 1413 | 10.1           | 13.9  | 6         | 23 | -2696.1      | -124.5 | 48.0                  | -619.1 | -64.1 |
| 30-31 | 407.87 | 37.4         | 26.2  | 3375         | 1413 | 11.1           | 18.5  | 7         | 24 | -2730.2      | -144.2 | 46.2                  | -583.6 | -64.7 |
| 31-32 | 420.95 | 40.8         | 32.7  | 3375         | 1413 | 12.1           | 23.1  | 8         | 24 | -2767.6      | -170.3 | 44.2                  | -547.7 | -65.4 |
| 32-33 | 434.03 | 40.7         | 36.1  | 3375         | 1413 | 12.1           | 25.5  | 9         | 24 | -2808.4      | -203.0 | 41.7                  | -511.2 | -66.3 |
| 33-34 | 447.12 | 24.3         | 24.4  | 3375         | 1413 | 7.2            | 17.3  | 8         | 19 | -2849.1      | -239.1 | 38.8                  | -474.2 | -67.2 |
| 34-35 | 460.20 | 7.9          | 12.7  | 3375         | 1413 | 2.3            | 9.0   | 2         | 3  | -2873.5      | -263.5 | 35.6                  | -436.7 | -67.7 |
| 35-36 | 473.28 | -8.5         | 1.0   | 3375         | 1413 | -2.5           | .7    | -4        | 83 | -2881.4      | -276.2 | 32.0                  | -399.1 | -67.7 |
| 36-37 | 486.36 | -24.9        | -10.7 | 3375         | 1413 | -7.4           | -7.6  | 9         | 52 | -2872.9      | -277.1 | 28.4                  | -361.4 | -67.4 |
| 37-38 | 499.45 | -41.3        | -22.4 | 3375         | 1413 | -12.2          | -15.9 | 10        | 44 | -2848.0      | -266.4 | 24.9                  | -324.0 | -66.5 |
| 38-39 | 512.53 | -57.7        | -34.1 | 3375         | 1413 | -17.1          | -24.2 | 10        | 40 | -2806.7      | -244.0 | 21.5                  | -287.0 | -65.3 |
| 39-40 | 525.61 | -74.1        | -45.8 | 3375         | 1413 | -21.9          | -32.4 | 10        | 39 | -2749.1      | -209.9 | 18.5                  | -250.7 | -63.6 |
| 40-41 | 538.70 | -94.0        | -53.6 | 3375         | 1413 | -27.8          | -37.9 | 9         | 39 | -2675.0      | -164.0 | 16.1                  | -215.2 | -61.4 |
| 41-42 | 551.78 | -134.5       | -38.1 | 3375         | 1413 | -39.9          | -27.0 | 5         | 44 | -2581.0      | -110.4 | 14.3                  | -180.8 | -58.8 |
| 42-43 | 564.86 | -175.1       | -22.7 | 3375         | 1413 | -51.9          | -16.0 | 2         | 44 | -2446.5      | -72.3  | 13.1                  | -147.9 | -55.4 |
| 43-44 | 577.95 | -215.6       | -7.2  | 3375         | 1413 | -63.9          | -5.1  | 1         | 43 | -2271.4      | -49.6  | 12.3                  | -117.1 | -51.2 |
| 44-45 | 591.03 | -256.1       | 8.3   | 3375         | 1413 | -75.9          | 5.8   | -1        | 42 | -2055.8      | -42.4  | 11.7                  | -88.8  | -46.1 |
| 45-46 | 604.11 | -296.7       | 23.7  | 3375         | 1413 | -87.9          | 16.8  | -1        | 41 | -1799.6      | -50.7  | 11.1                  | -63.6  | -40.3 |
| 46-47 | 617.19 | -337.2       | 39.2  | 3375         | 1413 | -99.9          | 27.7  | -2        | 40 | -1503.0      | -74.4  | 10.3                  | -41.9  | -33.7 |
| 47-48 | 630.28 | -377.8       | 54.6  | 3375         | 1413 | -111.9         | 38.7  | -2        | 40 | -1165.7      | -113.6 | 9.1                   | -24.5  | -26.2 |
| 48-49 | 643.36 | -399.2       | 58.2  | 3375         | 1413 | -118.3         | 41.2  | -2        | 39 | -788.0       | -168.3 | 7.2                   | -11.7  | -18.0 |
| 49-50 | 656.44 | -362.3       | -61.2 | 4788         | 2004 | -75.7          | -30.5 | 3         | 41 | -388.8       | -226.5 | 4.6                   | -4.0   | -9.3  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 10 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |   | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|--------|--------------|------|----------------|--------|-----------|---|--------------|--------|-----------------------|-----|------|
|        |        | X            | Y      | X            | Y    | X              | Y      | X         | Y | X            | Y      | Z                     |     |      |
| 50-TOP | 675.00 |              |        |              |      |                |        |           |   | -26.5        | -165.3 | 1.0                   | -.2 | -1.1 |
| TOP    | 687.00 | -26.5        | -165.3 | 2973         | 1232 | -8.9           | -134.2 | 5         | 2 | 0.0          | 0.0    | 0.0                   | 0.0 | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 20 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|-------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y     | Z                     |        |       |
| GRND  | 0.00   | -8.0         | -82.3 | 3599         | 1734 | -2.2           | -47.5 | -3        | -1  | -1468.3      | 560.9 | -361.6                | -983.0 | -58.9 |
| GR-2  | 17.50  | 10.5         | 21.2  | 6203         | 2597 | 1.7            | 8.2   | 7         | 8   | -1460.3      | 643.3 | -351.1                | -957.4 | -59.2 |
| 2-3   | 41.54  | 6.7          | 10.5  | 3375         | 1413 | 2.0            | 7.4   | 5         | 8   | -1470.8      | 622.1 | -335.9                | -922.2 | -59.5 |
| 3-4   | 54.63  | 7.3          | 9.8   | 3375         | 1413 | 2.2            | 6.9   | 4         | 8   | -1477.4      | 611.6 | -327.8                | -902.9 | -59.6 |
| 4-5   | 67.71  | 8.0          | 9.1   | 3375         | 1413 | 2.4            | 6.4   | 3         | 7   | -1484.7      | 601.8 | -319.9                | -883.5 | -59.7 |
| 5-6   | 80.79  | 8.7          | 8.3   | 3375         | 1413 | 2.6            | 5.9   | 2         | 6   | -1492.7      | 592.7 | -312.1                | -864.0 | -59.7 |
| 6-7   | 93.87  | 9.3          | 7.6   | 3375         | 1413 | 2.8            | 5.4   | 1         | 4   | -1501.4      | 584.4 | -304.4                | -844.4 | -59.8 |
| 7-8   | 106.96 | 10.0         | 6.9   | 3375         | 1413 | 3.0            | 4.9   | 1         | 2   | -1510.8      | 576.8 | -296.8                | -824.7 | -59.8 |
| 8-9   | 120.04 | 10.2         | 5.9   | 3375         | 1413 | 3.0            | 4.2   | 0         | 0   | -1520.8      | 569.9 | -289.3                | -804.9 | -59.8 |
| 9-10  | 133.12 | 9.0          | 4.3   | 3375         | 1413 | 2.7            | 3.0   | -1        | -3  | -1531.0      | 564.0 | -281.9                | -784.9 | -59.8 |
| 10-11 | 146.21 | 7.8          | 2.6   | 3375         | 1413 | 2.3            | 1.9   | -1        | -7  | -1540.0      | 559.7 | -274.5                | -764.8 | -59.8 |
| 11-12 | 159.29 | 6.5          | 1.0   | 3375         | 1413 | 1.9            | .7    | -1        | -13 | -1547.7      | 557.1 | -267.2                | -744.7 | -59.8 |
| 12-13 | 172.37 | 5.3          | -.6   | 3375         | 1413 | 1.6            | -.5   | 1         | -21 | -1554.3      | 556.1 | -259.9                | -724.4 | -59.7 |
| 13-14 | 185.46 | 4.1          | -2.3  | 3375         | 1413 | 1.2            | -1.6  | 6         | -26 | -1559.6      | 556.7 | -252.6                | -704.0 | -59.7 |
| 14-15 | 198.54 | 2.9          | -3.9  | 3375         | 1413 | .9             | -2.8  | 12        | -21 | -1563.7      | 559.0 | -245.3                | -683.6 | -59.6 |
| 15-16 | 211.62 | 1.7          | -5.6  | 3375         | 1413 | .5             | -3.9  | 14        | -10 | -1566.6      | 562.9 | -238.0                | -663.1 | -59.5 |
| 16-17 | 224.70 | 1.2          | -6.6  | 3375         | 1413 | .4             | -4.7  | 13        | -6  | -1568.2      | 568.5 | -230.6                | -642.6 | -59.4 |
| 17-18 | 237.79 | 3.4          | -5.7  | 3375         | 1413 | 1.0            | -4.0  | 12        | -17 | -1569.4      | 575.1 | -223.1                | -622.0 | -59.3 |
| 18-19 | 250.87 | 5.6          | -4.7  | 3375         | 1413 | 1.7            | -3.3  | 8         | -22 | -1572.8      | 580.8 | -215.6                | -601.5 | -59.2 |
| 19-20 | 263.95 | 7.8          | -3.7  | 3375         | 1413 | 2.3            | -2.6  | 4         | -22 | -1578.5      | 585.5 | -207.9                | -580.9 | -59.1 |
| 20-21 | 277.04 | 10.0         | -2.8  | 3375         | 1413 | 3.0            | -2.0  | 2         | -19 | -1586.3      | 589.2 | -200.2                | -560.2 | -58.9 |
| 21-22 | 290.12 | 12.2         | -1.8  | 3375         | 1413 | 3.6            | -1.3  | 1         | -16 | -1596.2      | 592.0 | -192.5                | -539.4 | -58.8 |
| 22-23 | 303.20 | 14.4         | -.8   | 3375         | 1413 | 4.3            | -.6   | 0         | -14 | -1608.4      | 593.8 | -184.8                | -518.4 | -58.7 |
| 23-24 | 316.29 | 16.6         | .1    | 3375         | 1413 | 4.9            | .1    | -0        | -12 | -1622.8      | 594.6 | -177.0                | -497.3 | -58.6 |
| 24-25 | 329.37 | 18.2         | .8    | 3375         | 1413 | 5.4            | .5    | -0        | -12 | -1639.4      | 594.5 | -169.2                | -475.9 | -58.5 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERODELASTIC DATA  
WIND DIRECTION 20 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |      | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|------|--------------|-------|-----------------------|--------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y    | X            | Y     | X                     | Y      | Z     |
| 25-26 | 342.45 | 17.6         | -1.1 | 3375         | 1413 | 5.2            | -1.1 | 0         | -23  | -1657.7      | 593.7 | -161.4                | -454.3 | -58.4 |
| 26-27 | 355.53 | 17.0         | -1.0 | 3375         | 1413 | 5.0            | -1.7 | 1         | -34  | -1675.3      | 593.8 | -153.7                | -432.5 | -58.2 |
| 27-28 | 368.62 | 16.4         | -1.9 | 3375         | 1413 | 4.9            | -1.3 | 2         | -45  | -1692.4      | 594.8 | -145.9                | -410.5 | -57.9 |
| 28-29 | 381.70 | 15.8         | -2.8 | 3375         | 1413 | 4.7            | -2.0 | 4         | -57  | -1708.8      | 596.7 | -138.1                | -388.3 | -57.5 |
| 29-30 | 394.78 | 15.2         | -3.6 | 3375         | 1413 | 4.5            | -2.6 | 7         | -68  | -1724.6      | 599.5 | -130.3                | -365.8 | -57.0 |
| 30-31 | 407.87 | 14.6         | -4.5 | 3375         | 1413 | 4.3            | -3.2 | 10        | -79  | -1739.8      | 603.1 | -122.4                | -343.1 | -56.4 |
| 31-32 | 420.95 | 14.0         | -5.4 | 3375         | 1413 | 4.1            | -3.8 | 14        | -90  | -1754.4      | 607.6 | -114.5                | -320.3 | -55.7 |
| 32-33 | 434.03 | 11.6         | -5.5 | 3375         | 1413 | 3.4            | -3.9 | 23        | -117 | -1768.4      | 613.0 | -106.5                | -297.2 | -54.9 |
| 33-34 | 447.12 | .7           | -1.9 | 3375         | 1413 | .2             | -1.3 | 407       | -358 | -1780.0      | 618.5 | -98.4                 | -274.0 | -54.0 |
| 34-35 | 460.20 | -10.2        | 1.7  | 3375         | 1413 | -3.0           | 1.2  | -17       | 243  | -1780.7      | 620.5 | -90.3                 | -250.7 | -52.9 |
| 35-36 | 473.28 | -21.1        | 5.3  | 3375         | 1413 | -6.3           | 3.7  | -14       | 133  | -1770.5      | 618.8 | -82.2                 | -227.5 | -51.5 |
| 36-37 | 486.36 | -32.1        | 8.9  | 3375         | 1413 | -9.5           | 6.3  | -12       | 100  | -1749.4      | 613.5 | -74.2                 | -204.5 | -49.9 |
| 37-38 | 499.45 | -43.0        | 12.5 | 3375         | 1413 | -12.7          | 8.8  | -10       | 83   | -1717.3      | 604.6 | -66.2                 | -181.8 | -48.0 |
| 38-39 | 512.53 | -53.9        | 16.1 | 3375         | 1413 | -16.0          | 11.4 | -9        | 74   | -1674.3      | 592.1 | -58.4                 | -159.6 | -45.9 |
| 39-40 | 525.61 | -64.8        | 19.7 | 3375         | 1413 | -19.2          | 13.9 | -9        | 67   | -1620.4      | 576.0 | -50.7                 | -138.1 | -43.6 |
| 40-41 | 538.70 | -77.0        | 23.9 | 3375         | 1413 | -22.8          | 16.9 | -8        | 62   | -1555.6      | 556.3 | -43.3                 | -117.3 | -41.0 |
| 41-42 | 551.78 | -96.8        | 31.5 | 3375         | 1413 | -28.7          | 22.3 | -7        | 54   | -1478.5      | 532.4 | -36.2                 | -97.4  | -38.2 |
| 42-43 | 564.86 | -116.6       | 39.1 | 3375         | 1413 | -34.5          | 27.7 | -7        | 49   | -1381.7      | 500.9 | -29.5                 | -78.7  | -35.0 |
| 43-44 | 577.95 | -136.4       | 46.8 | 3375         | 1413 | -40.4          | 33.1 | -7        | 45   | -1265.1      | 461.7 | -23.2                 | -61.4  | -31.6 |
| 44-45 | 591.03 | -156.2       | 54.4 | 3375         | 1413 | -46.3          | 38.5 | -6        | 43   | -1128.7      | 415.0 | -17.4                 | -45.8  | -27.9 |
| 45-46 | 604.11 | -176.0       | 62.0 | 3375         | 1413 | -52.1          | 43.9 | -6        | 41   | -972.5       | 360.6 | -12.4                 | -32.0  | -23.9 |
| 46-47 | 617.19 | -195.7       | 69.6 | 3375         | 1413 | -58.0          | 49.3 | -6        | 39   | -796.6       | 298.5 | -8.0                  | -20.4  | -19.5 |
| 47-48 | 630.28 | -215.5       | 77.3 | 3375         | 1413 | -63.9          | 54.7 | -6        | 38   | -600.8       | 228.9 | -4.6                  | -11.3  | -14.9 |
| 48-49 | 643.36 | -223.2       | 80.9 | 3375         | 1413 | -66.1          | 57.3 | -6        | 37   | -385.3       | 151.6 | -2.1                  | -4.9   | -10.0 |
| 49-50 | 656.44 | -177.4       | 71.3 | 4788         | 2004 | -37.0          | 35.6 | -7        | 41   | -162.1       | 70.7  | -.6                   | -1.3   | -5.0  |



TABLE 7. SHEAR AND MOMENT DIAGRAM 1 ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 20 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |     | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|-----|--------------|------|-----------------------|-----|-----|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y   | X            | Y    | Z                     |     |     |
| 50-TOP | 675.00 |              |     |              |      |                |     |           |     | 15.3         | - .7 | .0                    | .1  | -.4 |
| TOP    | 687.00 | 15.3         | -.7 | 2973         | 1232 | 5.1            | -.5 | 1         | -53 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 30 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | EGCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |         |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|---------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | X                     | Y       | Z      |
| GRND  | 0.00   | -6.0         | -89.1 | 3599         | 1734 | -1.7           | -51.4 | 1         | 0   | -2138.8      | 2709.3 | -1459.1               | -1185.6 | -109.4 |
| GR-2  | 17.50  | -3.3         | 10.8  | 6203         | 2597 | -.5            | 4.2   | 3         | -2  | -2132.8      | 2798.4 | -1410.9               | -1148.2 | -109.3 |
| 2-3   | 41.54  | -.7          | 5.2   | 3375         | 1413 | -.2            | 3.7   | -2        | 1   | -2129.5      | 2787.6 | -1343.8               | -1096.9 | -109.3 |
| 3-4   | 54.63  | .0           | 4.7   | 3375         | 1413 | .0             | 3.4   | -8        | -0  | -2128.8      | 2782.4 | -1307.3               | -1069.1 | -109.3 |
| 4-5   | 67.71  | .8           | 4.3   | 3375         | 1413 | .2             | 3.0   | -14       | -6  | -2128.9      | 2777.6 | -1271.0               | -1041.2 | -109.3 |
| 5-6   | 80.79  | 1.5          | 3.8   | 3375         | 1413 | .5             | 2.7   | -20       | -19 | -2129.7      | 2773.3 | -1234.6               | -1013.4 | -109.2 |
| 6-7   | 93.87  | 2.3          | 3.4   | 3375         | 1413 | .7             | 2.4   | -23       | -37 | -2131.2      | 2769.5 | -1198.4               | -985.5  | -109.1 |
| 7-8   | 106.96 | 3.1          | 2.9   | 3375         | 1413 | .9             | 2.0   | -22       | -56 | -2133.5      | 2766.2 | -1162.2               | -957.6  | -108.9 |
| 8-9   | 120.04 | 3.5          | 2.9   | 3375         | 1413 | 1.0            | 2.1   | -23       | -67 | -2136.6      | 2763.3 | -1126.0               | -929.7  | -108.8 |
| 9-10  | 133.12 | 3.1          | 4.5   | 3375         | 1413 | .9             | 3.2   | -32       | -52 | -2140.1      | 2760.3 | -1089.9               | -901.7  | -108.5 |
| 10-11 | 146.21 | 2.6          | 6.0   | 3375         | 1413 | .8             | 4.3   | -35       | -36 | -2143.1      | 2755.9 | -1053.8               | -873.7  | -108.3 |
| 11-12 | 159.29 | 2.2          | 7.6   | 3375         | 1413 | .6             | 5.4   | -36       | -25 | -2145.8      | 2749.8 | -1017.8               | -845.6  | -107.9 |
| 12-13 | 172.37 | 1.7          | 9.2   | 3375         | 1413 | .5             | 6.5   | -36       | -16 | -2147.9      | 2742.2 | -981.8                | -817.5  | -107.6 |
| 13-14 | 185.46 | 1.3          | 10.7  | 3375         | 1413 | .4             | 7.6   | -35       | -10 | -2149.7      | 2733.0 | -946.0                | -789.4  | -107.1 |
| 14-15 | 198.54 | .8           | 12.3  | 3375         | 1413 | .2             | 8.7   | -35       | -6  | -2150.9      | 2722.3 | -910.3                | -761.3  | -106.6 |
| 15-16 | 211.62 | .4           | 13.9  | 3375         | 1413 | .1             | 9.8   | -34       | -2  | -2151.8      | 2710.0 | -874.8                | -733.1  | -106.1 |
| 16-17 | 224.70 | -.0          | 15.1  | 3375         | 1413 | -.0            | 10.7  | -35       | 0   | -2152.2      | 2696.2 | -839.4                | -705.0  | -105.5 |
| 17-18 | 237.79 | -.4          | 15.4  | 3375         | 1413 | -.1            | 10.9  | -41       | 3   | -2152.1      | 2681.0 | -804.3                | -676.8  | -104.8 |
| 18-19 | 250.87 | -.8          | 15.7  | 3375         | 1413 | -.2            | 11.1  | -46       | 6   | -2151.7      | 2665.6 | -769.3                | -648.7  | -104.0 |
| 19-20 | 263.95 | -1.2         | 15.9  | 3375         | 1413 | -.4            | 11.3  | -52       | 9   | -2150.9      | 2650.0 | -734.5                | -620.5  | -103.0 |
| 20-21 | 277.04 | -1.6         | 16.2  | 3375         | 1413 | -.5            | 11.5  | -57       | 13  | -2149.7      | 2634.0 | -700.0                | -592.4  | -102.0 |
| 21-22 | 290.12 | -2.0         | 16.5  | 3375         | 1413 | -.6            | 11.7  | -62       | 18  | -2148.0      | 2617.8 | -665.6                | -564.3  | -100.8 |
| 22-23 | 303.20 | -2.4         | 16.8  | 3375         | 1413 | -.7            | 11.9  | -66       | 23  | -2146.1      | 2601.3 | -631.5                | -536.2  | -99.4  |
| 23-24 | 316.29 | -2.8         | 17.0  | 3375         | 1413 | -.8            | 12.1  | -71       | 27  | -2143.7      | 2584.6 | -597.5                | -508.1  | -98.0  |
| 24-25 | 329.37 | -4.2         | 18.2  | 3375         | 1413 | -1.2           | 12.9  | -70       | 39  | -2140.9      | 2567.5 | -563.8                | -480.1  | -96.4  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 30 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |        |       |
| 25-26 | 342.45 | -9.8         | 23.0  | 3375         | 1413 | -2.9           | 16.3  | -55       | 56 | -2136.7      | 2549.4 | -530.4                | -452.1 | -94.7 |
| 26-27 | 355.53 | -13.5        | 27.8  | 3375         | 1413 | -4.6           | 19.6  | -45       | 59 | -2126.8      | 2526.4 | -497.2                | -424.2 | -92.7 |
| 27-28 | 368.62 | -21.1        | 32.5  | 3375         | 1413 | -6.3           | 23.0  | -38       | 59 | -2111.4      | 2498.6 | -464.3                | -396.5 | -90.6 |
| 28-29 | 381.70 | -26.8        | 37.3  | 3375         | 1413 | -7.9           | 26.4  | -34       | 58 | -2090.2      | 2466.1 | -431.8                | -369.0 | -88.4 |
| 29-30 | 394.78 | -32.4        | 42.1  | 3375         | 1413 | -9.6           | 29.8  | -31       | 56 | -2063.5      | 2428.8 | -399.8                | -341.9 | -85.9 |
| 30-31 | 407.87 | -38.1        | 46.9  | 3375         | 1413 | -11.3          | 33.2  | -28       | 55 | -2031.0      | 2386.6 | -368.3                | -315.1 | -83.3 |
| 31-32 | 420.95 | -43.7        | 51.7  | 3375         | 1413 | -12.9          | 36.6  | -26       | 53 | -1993.0      | 2339.7 | -337.4                | -288.8 | -80.4 |
| 32-33 | 434.03 | -49.8        | 57.5  | 3375         | 1413 | -14.7          | 40.7  | -25       | 51 | -1949.3      | 2288.1 | -307.1                | -263.0 | -77.4 |
| 33-34 | 447.12 | -57.8        | 68.4  | 3375         | 1413 | -17.1          | 48.4  | -22       | 45 | -1899.5      | 2230.5 | -277.5                | -237.8 | -74.3 |
| 34-35 | 460.20 | -65.8        | 79.2  | 3375         | 1413 | -19.5          | 56.1  | -20       | 40 | -1841.7      | 2162.2 | -248.8                | -213.3 | -70.9 |
| 35-36 | 473.28 | -73.8        | 90.1  | 3375         | 1413 | -21.9          | 63.8  | -19       | 37 | -1775.9      | 2082.9 | -221.0                | -189.6 | -67.4 |
| 36-37 | 486.36 | -81.9        | 101.0 | 3375         | 1413 | -24.2          | 71.5  | -18       | 34 | -1702.1      | 1992.8 | -194.4                | -166.9 | -63.8 |
| 37-38 | 499.45 | -89.9        | 111.8 | 3375         | 1413 | -26.6          | 79.2  | -17       | 32 | -1620.3      | 1891.8 | -169.0                | -145.2 | -60.0 |
| 38-39 | 512.53 | -97.9        | 122.7 | 3375         | 1413 | -29.0          | 86.8  | -16       | 30 | -1530.4      | 1780.0 | -144.9                | -124.6 | -56.0 |
| 39-40 | 525.61 | -105.9       | 133.6 | 3375         | 1413 | -31.4          | 94.5  | -15       | 29 | -1432.5      | 1657.3 | -122.5                | -105.2 | -51.9 |
| 40-41 | 538.70 | -113.8       | 143.2 | 3375         | 1413 | -33.7          | 101.4 | -15       | 28 | -1326.6      | 1523.7 | -101.7                | -87.1  | -47.6 |
| 41-42 | 551.78 | -120.5       | 145.8 | 3375         | 1413 | -35.7          | 103.2 | -14       | 28 | -1212.8      | 1380.4 | -82.7                 | -70.5  | -43.1 |
| 42-43 | 564.86 | -127.2       | 148.4 | 3375         | 1413 | -37.7          | 105.0 | -14       | 28 | -1092.3      | 1234.6 | -65.5                 | -55.4  | -38.6 |
| 43-44 | 577.95 | -134.0       | 151.0 | 3375         | 1413 | -39.7          | 106.8 | -13       | 28 | -965.1       | 1086.2 | -50.4                 | -42.0  | -34.0 |
| 44-45 | 591.03 | -140.7       | 153.5 | 3375         | 1413 | -41.7          | 108.7 | -13       | 29 | -831.1       | 935.3  | -37.1                 | -30.2  | -29.4 |
| 45-46 | 604.11 | -147.4       | 156.1 | 3375         | 1413 | -43.7          | 110.5 | -13       | 29 | -690.4       | 781.7  | -25.9                 | -20.3  | -24.6 |
| 46-47 | 617.19 | -154.2       | 158.7 | 3375         | 1413 | -45.7          | 112.3 | -12       | 29 | -543.0       | 625.6  | -16.7                 | -12.2  | -19.8 |
| 47-48 | 630.28 | -160.9       | 161.3 | 3375         | 1413 | -47.7          | 114.1 | -12       | 29 | -388.9       | 467.0  | -9.6                  | -6.1   | -14.9 |
| 48-49 | 643.36 | -158.4       | 157.5 | 3375         | 1413 | -46.9          | 111.5 | -12       | 29 | -228.0       | 305.7  | -4.5                  | -2.1   | -9.9  |
| 49-50 | 656.44 | -103.7       | 137.8 | 4788         | 2004 | -21.7          | 68.8  | -16       | 28 | -69.6        | 148.2  | -1.5                  | -.1    | -5.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 30 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |     | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|------|--------------|------|----------------|-----|-----------|-----|--------------|------|-----------------------|-----|------|
|        |        | X            | Y    | X            | Y    | X              | Y   | X         | Y   | X            | Y    | Z                     |     |      |
| 50-TOP | 675.00 |              |      |              |      |                |     |           |     | 34.1         | 10.4 | -1.1                  | .2  | -1.6 |
| TOP    | 687.00 | 34.1         | 10.4 | 2973         | 1232 | 11.5           | 8.4 | -4        | -29 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 40 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |         |        |
|-------|--------|--------------|--------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|---------|--------|
|       |        | X            | Y      | X            | Y    | X              | Y     | X         | Y   | X            | Y      | X                     | Y       | Z      |
| GRND  | 0.00   | -8.0         | -116.7 | 3599         | 1734 | -2.2           | -67.3 | 1         | 0   | -3766.5      | 1804.6 | -966.8                | -1854.4 | -129.6 |
| GR-2  | 17.50  | -13.7        | 18.1   | 6203         | 2597 | -2.2           | 7.0   | 0         | -0  | -3758.5      | 1921.3 | -934.2                | -1788.5 | -129.5 |
| 2-3   | 41.54  | -6.8         | 9.3    | 3375         | 1413 | -2.0           | 6.6   | -4        | 7   | -3744.8      | 1903.2 | -888.2                | -1698.4 | -129.5 |
| 3-4   | 54.63  | -6.3         | 9.0    | 3375         | 1413 | -1.9           | 6.3   | -7        | 12  | -3738.0      | 1893.8 | -863.4                | -1649.4 | -129.4 |
| 4-5   | 67.71  | -5.8         | 8.6    | 3375         | 1413 | -1.7           | 6.1   | -11       | 18  | -3731.7      | 1884.9 | -838.7                | -1600.5 | -129.3 |
| 5-6   | 80.79  | -5.4         | 8.2    | 3375         | 1413 | -1.6           | 5.8   | -16       | 24  | -3725.9      | 1876.3 | -814.1                | -1551.8 | -129.1 |
| 6-7   | 93.87  | -4.9         | 7.9    | 3375         | 1413 | -1.4           | 5.6   | -21       | 31  | -3720.6      | 1868.0 | -789.6                | -1503.0 | -128.9 |
| 7-8   | 106.96 | -4.4         | 7.5    | 3375         | 1413 | -1.3           | 5.3   | -27       | 37  | -3715.7      | 1860.2 | -765.2                | -1454.4 | -128.6 |
| 8-9   | 120.04 | -4.4         | 7.3    | 3375         | 1413 | -1.3           | 5.1   | -32       | 47  | -3711.3      | 1852.7 | -740.9                | -1405.8 | -128.2 |
| 9-10  | 133.12 | -5.7         | 7.3    | 3375         | 1413 | -1.7           | 5.2   | -33       | 62  | -3706.9      | 1845.4 | -716.7                | -1357.3 | -127.8 |
| 10-11 | 146.21 | -7.1         | 7.4    | 3375         | 1413 | -2.1           | 5.2   | -33       | 75  | -3701.2      | 1838.1 | -692.6                | -1308.8 | -127.3 |
| 11-12 | 159.29 | -8.5         | 7.5    | 3375         | 1413 | -2.5           | 5.3   | -31       | 85  | -3694.1      | 1830.7 | -668.6                | -1260.5 | -126.7 |
| 12-13 | 172.37 | -9.8         | 7.6    | 3375         | 1413 | -2.9           | 5.4   | -30       | 93  | -3685.6      | 1823.2 | -644.7                | -1212.2 | -126.0 |
| 13-14 | 185.46 | -11.2        | 7.6    | 3375         | 1413 | -3.3           | 5.4   | -28       | 99  | -3675.8      | 1815.6 | -620.9                | -1164.0 | -125.2 |
| 14-15 | 198.54 | -12.6        | 7.7    | 3375         | 1413 | -3.7           | 5.5   | -27       | 104 | -3664.6      | 1808.0 | -597.2                | -1116.0 | -124.4 |
| 15-16 | 211.62 | -13.9        | 7.8    | 3375         | 1413 | -4.1           | 5.5   | -25       | 107 | -3652.0      | 1800.3 | -573.6                | -1068.1 | -123.4 |
| 16-17 | 224.70 | -16.2        | 7.6    | 3375         | 1413 | -4.8           | 5.4   | -22       | 110 | -3638.1      | 1792.5 | -550.1                | -1020.5 | -122.3 |
| 17-18 | 237.79 | -21.6        | 6.7    | 3375         | 1413 | -6.4           | 4.7   | -14       | 108 | -3621.9      | 1784.8 | -526.7                | -973.0  | -121.2 |
| 18-19 | 250.87 | -26.9        | 5.7    | 3375         | 1413 | -8.0           | 4.0   | -9        | 104 | -3600.4      | 1778.2 | -503.4                | -925.7  | -119.8 |
| 19-20 | 263.95 | -32.3        | 4.7    | 3375         | 1413 | -9.6           | 3.4   | -6        | 100 | -3573.4      | 1772.5 | -480.2                | -878.8  | -118.2 |
| 20-21 | 277.04 | -37.7        | 3.8    | 3375         | 1413 | -11.2          | 2.7   | -4        | 96  | -3541.1      | 1767.7 | -457.0                | -832.3  | -116.4 |
| 21-22 | 290.12 | -43.1        | 2.8    | 3375         | 1413 | -12.8          | 2.0   | -3        | 93  | -3503.4      | 1763.9 | -433.9                | -786.2  | -114.5 |
| 22-23 | 303.20 | -48.5        | 1.8    | 3375         | 1413 | -14.4          | 1.3   | -1        | 91  | -3460.3      | 1761.1 | -410.9                | -740.6  | -112.3 |
| 23-24 | 316.29 | -53.9        | .9     | 3375         | 1413 | -16.0          | .6    | -1        | 88  | -3411.8      | 1759.3 | -387.8                | -695.7  | -109.9 |
| 24-25 | 329.37 | -59.6        | 1.3    | 3375         | 1413 | -17.7          | .9    | -1        | 86  | -3358.0      | 1758.4 | -364.8                | -651.4  | -107.3 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 40 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y    | X         | Y  | X            | Y      | Z                     |        |        |
| 25-26 | 342.45 | -66.9        | 7.4   | 3375         | 1413 | -19.8          | 5.3  | -4        | 80 | -3298.3      | 1757.1 | -341.8                | -607.8 | -104.6 |
| 26-27 | 355.53 | -74.1        | 13.6  | 3375         | 1413 | -22.0          | 9.6  | -6        | 75 | -3231.5      | 1749.6 | -318.9                | -565.1 | -101.6 |
| 27-28 | 368.62 | -81.4        | 19.7  | 3375         | 1413 | -24.1          | 13.9 | -7        | 70 | -3157.4      | 1736.1 | -296.1                | -523.3 | -98.5  |
| 28-29 | 381.70 | -88.6        | 25.8  | 3375         | 1413 | -26.3          | 18.3 | -8        | 66 | -3076.0      | 1716.4 | -273.5                | -482.6 | -95.3  |
| 29-30 | 394.78 | -95.9        | 31.9  | 3375         | 1413 | -28.4          | 22.6 | -9        | 62 | -2987.4      | 1690.6 | -251.2                | -442.9 | -91.9  |
| 30-31 | 407.87 | -103.1       | 38.0  | 3375         | 1413 | -30.5          | 26.9 | -9        | 59 | -2891.5      | 1658.7 | -229.3                | -404.4 | -88.3  |
| 31-32 | 420.95 | -110.4       | 44.2  | 3375         | 1413 | -32.7          | 31.3 | -9        | 57 | -2788.4      | 1620.7 | -207.8                | -367.3 | -84.5  |
| 32-33 | 434.03 | -117.2       | 50.7  | 3375         | 1413 | -34.7          | 35.9 | -10       | 54 | -2678.1      | 1576.5 | -186.9                | -331.5 | -80.6  |
| 33-34 | 447.12 | -121.8       | 59.2  | 3375         | 1413 | -36.1          | 41.9 | -10       | 50 | -2560.9      | 1525.8 | -166.6                | -297.3 | -76.6  |
| 34-35 | 460.20 | -126.5       | 67.6  | 3375         | 1413 | -37.5          | 47.9 | -11       | 47 | -2439.1      | 1466.6 | -147.1                | -264.5 | -72.5  |
| 35-36 | 473.28 | -131.2       | 76.1  | 3375         | 1413 | -38.9          | 53.9 | -11       | 44 | -2312.5      | 1399.0 | -128.3                | -233.5 | -68.3  |
| 36-37 | 486.36 | -135.9       | 84.6  | 3375         | 1413 | -40.3          | 59.9 | -11       | 42 | -2181.3      | 1322.9 | -110.5                | -204.1 | -64.1  |
| 37-38 | 499.45 | -140.6       | 93.1  | 3375         | 1413 | -41.6          | 65.9 | -11       | 39 | -2045.5      | 1238.3 | -93.8                 | -176.4 | -59.9  |
| 38-39 | 512.53 | -145.2       | 101.5 | 3375         | 1413 | -43.0          | 71.9 | -11       | 37 | -1904.9      | 1145.2 | -78.2                 | -150.6 | -55.6  |
| 39-40 | 525.61 | -149.9       | 110.0 | 3375         | 1413 | -44.4          | 77.9 | -11       | 35 | -1759.7      | 1043.7 | -63.9                 | -126.6 | -51.2  |
| 40-41 | 538.70 | -154.4       | 116.9 | 3375         | 1413 | -45.7          | 82.7 | -11       | 34 | -1609.8      | 933.7  | -50.9                 | -104.6 | -46.8  |
| 41-42 | 551.78 | -157.5       | 114.0 | 3375         | 1413 | -46.7          | 80.7 | -11       | 35 | -1455.4      | 816.8  | -39.5                 | -84.5  | -42.3  |
| 42-43 | 564.86 | -160.6       | 111.2 | 3375         | 1413 | -47.6          | 78.7 | -10       | 35 | -1297.9      | 702.8  | -29.5                 | -66.5  | -37.8  |
| 43-44 | 577.95 | -163.7       | 108.4 | 3375         | 1413 | -48.5          | 76.7 | -10       | 36 | -1137.3      | 591.5  | -21.1                 | -50.6  | -33.3  |
| 44-45 | 591.03 | -166.8       | 105.6 | 3375         | 1413 | -49.4          | 74.7 | -10       | 37 | -973.6       | 483.1  | -14.0                 | -36.8  | -28.7  |
| 45-46 | 604.11 | -170.0       | 102.8 | 3375         | 1413 | -50.4          | 72.7 | -9        | 37 | -806.7       | 377.5  | -8.4                  | -25.1  | -24.1  |
| 46-47 | 617.19 | -173.1       | 100.0 | 3375         | 1413 | -51.3          | 70.8 | -9        | 38 | -636.8       | 274.7  | -4.1                  | -15.7  | -19.4  |
| 47-48 | 630.28 | -176.2       | 97.2  | 3375         | 1413 | -52.2          | 68.8 | -9        | 38 | -463.7       | 174.8  | -1.2                  | -8.5   | -14.7  |
| 48-49 | 643.36 | -170.9       | 88.7  | 3375         | 1413 | -50.6          | 62.8 | -9        | 40 | -287.5       | 77.6   | .5                    | -3.6   | -10.0  |
| 49-50 | 656.44 | -127.4       | 40.5  | 4788         | 2004 | -26.6          | 20.2 | -8        | 59 | -116.6       | -11.1  | .9                    | -.9    | -5.3   |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 40° CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|-----|------|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |     |      |
| 50-TOP | 675.00 |              |       |              |      |                |       |           |    | 10.8         | -51.6 | .3                    | .1  | -1.9 |
| TOP    | 687.00 | 10.8         | -51.6 | 2973         | 1232 | 3.6            | -41.9 | 12        | -6 | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 50 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (X) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |         |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|---------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |         |        |
| GRND  | 0.00   |              |       |              |      |                |       |           |    | -4560.6      | 651.6 | -372.3                | -1941.7 | -106.8 |
| GR-2  | 17.50  | -35.0        | -91.9 | 3599         | 1734 | -9.7           | -53.0 | 4         | 4  | -4525.6      | 743.5 | -360.1                | -1862.2 | -106.2 |
| 2-3   | 41.54  | -44.1        | 4.4   | 6203         | 2597 | -7.1           | 1.7   | -1        | 21 | -4481.5      | 739.1 | -342.3                | -1753.9 | -105.7 |
| 3-4   | 54.63  | -23.8        | 1.7   | 3375         | 1413 | -7.1           | 1.2   | -1        | 32 | -4457.7      | 737.3 | -332.6                | -1695.4 | -105.2 |
| 4-5   | 67.71  | -23.7        | 1.2   | 3375         | 1413 | -7.0           | .9    | -1        | 40 | -4434.0      | 736.1 | -323.0                | -1637.3 | -104.7 |
| 5-6   | 80.79  | -23.5        | .8    | 3375         | 1413 | -7.0           | .5    | -1        | 48 | -4410.4      | 735.3 | -313.4                | -1579.4 | -104.1 |
| 6-7   | 93.87  | -23.4        | .3    | 3375         | 1413 | -6.9           | .2    | -0        | 56 | -4387.0      | 735.0 | -303.8                | -1521.9 | -103.4 |
| 7-8   | 106.96 | -23.3        | -.2   | 3375         | 1413 | -6.9           | -.1   | 0         | 64 | -4363.8      | 735.2 | -294.1                | -1464.6 | -102.6 |
| 8-9   | 120.04 | -23.1        | -.7   | 3375         | 1413 | -6.9           | -.5   | 1         | 72 | -4340.6      | 735.9 | -284.5                | -1407.7 | -101.7 |
| 9-10  | 133.12 | -24.3        | -.8   | 3375         | 1413 | -7.2           | -.6   | 1         | 76 | -4316.3      | 736.7 | -274.9                | -1351.0 | -100.7 |
| 10-11 | 146.21 | -29.4        | .2    | 3375         | 1413 | -8.7           | .2    | -0        | 71 | -4286.9      | 736.5 | -265.2                | -1294.8 | -99.6  |
| 11-12 | 159.29 | -34.6        | 1.3   | 3375         | 1413 | -10.2          | .9    | -1        | 67 | -4252.3      | 735.2 | -255.6                | -1238.9 | -98.4  |
| 12-13 | 172.37 | -39.7        | 2.3   | 3375         | 1413 | -11.8          | 1.6   | -2        | 64 | -4212.6      | 732.9 | -246.0                | -1183.5 | -97.0  |
| 13-14 | 185.46 | -44.8        | 3.3   | 3375         | 1413 | -13.3          | 2.4   | -2        | 62 | -4167.8      | 729.6 | -236.5                | -1128.7 | -95.5  |
| 14-15 | 198.54 | -49.9        | 4.4   | 3375         | 1413 | -14.8          | 3.1   | -2        | 60 | -4117.9      | 725.2 | -226.9                | -1074.5 | -93.9  |
| 15-16 | 211.62 | -55.0        | 5.4   | 3375         | 1413 | -16.3          | 3.8   | -2        | 58 | -4062.9      | 719.8 | -217.5                | -1021.0 | -92.1  |
| 16-17 | 224.70 | -60.2        | 6.5   | 3375         | 1413 | -17.8          | 4.6   | -3        | 57 | -4002.7      | 713.3 | -208.1                | -968.2  | -90.3  |
| 17-18 | 237.79 | -65.5        | 7.1   | 3375         | 1413 | -19.4          | 5.0   | -3        | 55 | -3937.2      | 706.2 | -198.8                | -916.3  | -88.3  |
| 18-19 | 250.87 | -71.7        | 6.3   | 3375         | 1413 | -21.2          | 4.4   | -2        | 52 | -3865.5      | 700.0 | -189.6                | -865.3  | -86.2  |
| 19-20 | 263.95 | -77.8        | 5.4   | 3375         | 1413 | -23.1          | 3.9   | -1        | 50 | -3787.7      | 694.5 | -180.5                | -815.2  | -84.1  |
| 20-21 | 277.04 | -84.0        | 4.6   | 3375         | 1413 | -24.9          | 3.3   | -1        | 48 | -3703.7      | 689.9 | -171.4                | -766.2  | -82.0  |
| 21-22 | 290.12 | -90.1        | 3.8   | 3375         | 1413 | -26.7          | 2.7   | -1        | 46 | -3613.6      | 686.1 | -162.4                | -718.3  | -79.7  |
| 22-23 | 303.20 | -96.3        | 3.0   | 3375         | 1413 | -28.5          | 2.1   | -1        | 44 | -3517.3      | 683.1 | -153.5                | -671.7  | -77.4  |
| 23-24 | 316.29 | -102.5       | 2.2   | 3375         | 1413 | -30.4          | 1.5   | -0        | 43 | -3414.8      | 680.9 | -144.6                | -626.3  | -75.1  |
| 24-25 | 329.37 | -108.6       | 1.4   | 3375         | 1413 | -32.2          | 1.0   | -0        | 41 | -3306.2      | 679.5 | -135.7                | -582.4  | -72.7  |
|       |        | -113.6       | 1.2   | 3375         | 1413 | -33.7          | .8    | -0        | 40 |              |       |                       |         |        |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 50 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|--------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |        |       |
| 25-26 | 342.45 |              |      |              |      |                |      |           |    | -3192.6      | 678.3 | -126.8                | -539.8 | -70.2 |
| 26-27 | 355.53 | -113.9       | 3.6  | 3375         | 1413 | -33.7          | 2.5  | -1        | 41 | -3078.7      | 674.8 | -117.9                | -498.8 | -67.7 |
| 27-28 | 368.62 | -114.2       | 5.9  | 3375         | 1413 | -33.8          | 4.2  | -1        | 41 | -2964.5      | 668.8 | -109.1                | -459.3 | -65.1 |
| 28-29 | 381.70 | -114.5       | 8.3  | 3375         | 1413 | -33.9          | 5.9  | -1        | 41 | -2850.0      | 660.5 | -100.4                | -421.3 | -62.5 |
| 29-30 | 394.78 | -114.8       | 10.7 | 3375         | 1413 | -34.0          | 7.6  | -2        | 42 | -2735.2      | 649.8 | -91.9                 | -384.7 | -59.9 |
| 30-31 | 407.87 | -115.1       | 13.1 | 3375         | 1413 | -34.1          | 9.3  | -2        | 42 | -2620.2      | 636.7 | -83.5                 | -349.7 | -57.3 |
| 31-32 | 420.95 | -115.4       | 15.4 | 3375         | 1413 | -34.2          | 10.9 | -2        | 42 | -2504.8      | 621.3 | -75.2                 | -316.2 | -54.6 |
| 32-33 | 434.03 | -115.7       | 17.8 | 3375         | 1413 | -34.3          | 12.6 | -3        | 42 | -2389.1      | 603.5 | -67.2                 | -284.2 | -51.9 |
| 33-34 | 447.12 | -116.4       | 20.4 | 3375         | 1413 | -34.5          | 14.4 | -3        | 42 | -2272.7      | 583.1 | -59.5                 | -253.7 | -49.2 |
| 34-35 | 460.20 | -119.6       | 23.8 | 3375         | 1413 | -35.4          | 16.9 | -3        | 41 | -2153.1      | 559.2 | -52.0                 | -224.7 | -46.4 |
| 35-36 | 473.28 | -122.8       | 27.3 | 3375         | 1413 | -36.4          | 19.3 | -4        | 40 | -2030.3      | 531.9 | -44.8                 | -197.3 | -43.6 |
| 36-37 | 486.36 | -125.9       | 30.7 | 3375         | 1413 | -37.3          | 21.8 | -4        | 39 | -1904.4      | 501.2 | -38.1                 | -171.6 | -40.8 |
| 37-38 | 499.45 | -129.1       | 34.2 | 3375         | 1413 | -38.2          | 24.2 | -4        | 39 | -1775.4      | 467.0 | -31.8                 | -147.5 | -37.9 |
| 38-39 | 512.53 | -132.2       | 37.7 | 3375         | 1413 | -39.2          | 26.6 | -5        | 38 | -1643.2      | 429.3 | -25.9                 | -125.2 | -35.0 |
| 39-40 | 525.61 | -135.4       | 41.1 | 3375         | 1413 | -40.1          | 29.1 | -5        | 37 | -1507.8      | 388.2 | -20.5                 | -104.6 | -32.0 |
| 40-41 | 538.70 | -138.5       | 44.6 | 3375         | 1413 | -41.0          | 31.5 | -5        | 36 | -1369.3      | 343.7 | -15.8                 | -85.7  | -29.0 |
| 41-42 | 551.78 | -141.3       | 47.4 | 3375         | 1413 | -41.9          | 33.5 | -5        | 36 | -1228.0      | 296.3 | -11.6                 | -68.7  | -26.0 |
| 42-43 | 564.86 | -142.1       | 46.3 | 3375         | 1413 | -42.1          | 32.8 | -5        | 35 | -1085.8      | 250.0 | -8.0                  | -53.6  | -23.0 |
| 43-44 | 577.95 | -142.9       | 45.3 | 3375         | 1413 | -42.3          | 32.0 | -5        | 35 | -942.9       | 204.8 | -5.0                  | -40.3  | -20.0 |
| 44-45 | 591.03 | -143.8       | 44.2 | 3375         | 1413 | -42.6          | 31.3 | -4        | 35 | -799.1       | 160.6 | -2.6                  | -28.9  | -17.1 |
| 45-46 | 604.11 | -144.6       | 43.1 | 3375         | 1413 | -42.8          | 30.5 | -4        | 34 | -654.6       | 117.4 | -.8                   | -19.4  | -14.1 |
| 46-47 | 617.19 | -145.4       | 42.1 | 3375         | 1413 | -43.1          | 29.8 | -4        | 34 | -509.2       | 75.3  | .4                    | -11.8  | -11.2 |
| 47-48 | 630.28 | -146.2       | 41.0 | 3375         | 1413 | -43.3          | 29.0 | -4        | 34 | -363.0       | 34.3  | 1.2                   | -6.1   | -8.3  |
| 48-49 | 643.36 | -147.0       | 40.0 | 3375         | 1413 | -43.6          | 28.3 | -4        | 34 | -215.9       | -5.7  | 1.4                   | -2.3   | -5.5  |
| 49-50 | 656.44 | -140.4       | 35.7 | 3375         | 1413 | -41.6          | 25.2 | -4        | 34 | -75.6        | -41.4 | 1.0                   | -.4    | -2.7  |
|       |        | -93.9        | 1.8  | 4788         | 2004 | -19.6          | .9   | -0        | 47 |              |       |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 50 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 |              |       |              |      |                |       |           |    | 18.3         | -43.2 | .3                    | .1  | -.3 |
| TOP    | 687.00 | 18.3         | -43.2 | 2973         | 1232 | 6.2            | -35.1 | 5         | -5 | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERELASTIC DATA  
 WIND DIRECTION 60 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |         |        |
|-------|--------|--------------|--------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|---------|--------|
|       |        | X            | Y      | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |         |        |
| GRND  | 0.00   |              |        |              |      |                |       |           |    | -6071.2      | 856.4  | -514.7                | -2563.6 | -128.5 |
| GR-2  | 17.50  | -55.1        | -128.0 | 3599         | 1734 | -15.3          | -73.8 | 5         | 5  | -6016.1      | 984.4  | -498.6                | -2457.9 | -127.6 |
| 2-3   | 41.54  | -64.8        | -6.0   | 6203         | 2597 | -10.5          | -2.3  | 1         | 32 | -5951.2      | 990.4  | -474.9                | -2314.0 | -126.5 |
| 3-4   | 54.63  | -38.7        | -3.7   | 3375         | 1413 | -11.5          | -2.6  | 2         | 42 | -5912.5      | 994.1  | -461.9                | -2236.4 | -125.6 |
| 4-5   | 67.71  | -41.2        | -4.0   | 3375         | 1413 | -12.2          | -2.8  | 2         | 48 | -5871.3      | 998.1  | -448.9                | -2159.3 | -124.5 |
| 5-6   | 80.79  | -43.6        | -4.2   | 3375         | 1413 | -12.9          | -3.0  | 2         | 53 | -5827.8      | 1002.3 | -435.8                | -2082.8 | -123.3 |
| 6-7   | 93.87  | -46.0        | -4.5   | 3375         | 1413 | -13.6          | -3.2  | 2         | 57 | -5781.7      | 1006.8 | -422.6                | -2006.8 | -121.8 |
| 7-8   | 106.96 | -48.4        | -4.8   | 3375         | 1413 | -14.3          | -3.4  | 3         | 62 | -5733.3      | 1011.7 | -409.4                | -1931.5 | -120.2 |
| 8-9   | 120.04 | -50.9        | -5.1   | 3375         | 1413 | -15.1          | -3.6  | 3         | 65 | -5682.5      | 1016.7 | -396.2                | -1856.8 | -118.4 |
| 9-10  | 133.12 | -54.0        | -4.5   | 3375         | 1413 | -16.0          | -3.2  | 2         | 67 | -5628.5      | 1021.3 | -382.8                | -1782.9 | -116.4 |
| 10-11 | 146.21 | -59.1        | -1.4   | 3375         | 1413 | -17.5          | -1.0  | 1         | 63 | -5569.4      | 1022.7 | -369.5                | -1709.6 | -114.4 |
| 11-12 | 159.29 | -64.3        | 1.7    | 3375         | 1413 | -19.0          | 1.2   | -1        | 59 | -5505.1      | 1021.0 | -356.1                | -1637.2 | -112.3 |
| 12-13 | 172.37 | -69.4        | 4.8    | 3375         | 1413 | -20.6          | 3.4   | -2        | 56 | -5435.7      | 1016.2 | -342.8                | -1565.6 | -110.2 |
| 13-14 | 185.46 | -74.6        | 7.9    | 3375         | 1413 | -22.1          | 5.6   | -2        | 53 | -5361.2      | 1008.3 | -329.5                | -1495.0 | -108.1 |
| 14-15 | 198.54 | -79.7        | 11.0   | 3375         | 1413 | -23.6          | 7.8   | -3        | 50 | -5281.5      | 997.3  | -316.4                | -1425.3 | -105.8 |
| 15-16 | 211.62 | -84.8        | 14.1   | 3375         | 1413 | -25.1          | 10.0  | -3        | 48 | -5196.6      | 983.2  | -303.5                | -1356.8 | -103.6 |
| 16-17 | 224.70 | -90.0        | 17.2   | 3375         | 1413 | -26.7          | 12.2  | -4        | 46 | -5106.6      | 965.9  | -290.7                | -1289.4 | -101.3 |
| 17-18 | 237.79 | -94.9        | 19.4   | 3375         | 1413 | -28.1          | 13.7  | -4        | 44 | -5011.8      | 946.6  | -278.2                | -1223.2 | -98.9  |
| 18-19 | 250.87 | -98.9        | 18.2   | 3375         | 1413 | -29.3          | 12.9  | -3        | 43 | -4912.9      | 928.3  | -265.9                | -1158.3 | -96.5  |
| 19-20 | 263.95 | -102.9       | 17.0   | 3375         | 1413 | -30.5          | 12.1  | -3        | 42 | -4810.0      | 911.3  | -253.9                | -1094.7 | -94.2  |
| 20-21 | 277.04 | -106.8       | 15.9   | 3375         | 1413 | -31.7          | 11.2  | -3        | 40 | -4703.2      | 895.4  | -242.1                | -1032.5 | -91.8  |
| 21-22 | 290.12 | -110.8       | 14.7   | 3375         | 1413 | -32.8          | 10.4  | -2        | 39 | -4592.4      | 880.8  | -230.5                | -971.7  | -89.4  |
| 22-23 | 290.12 | -114.8       | 13.5   | 3375         | 1413 | -34.0          | 9.6   | -2        | 38 | -4477.5      | 867.3  | -219.0                | -912.3  | -87.0  |
| 23-24 | 303.20 | -118.8       | 12.3   | 3375         | 1413 | -35.2          | 8.7   | -2        | 37 | -4358.7      | 854.9  | -207.8                | -854.5  | -84.6  |
| 24-25 | 316.29 | -122.8       | 11.2   | 3375         | 1413 | -36.4          | 7.9   | -1        | 36 | -4235.9      | 843.8  | -196.6                | -798.3  | -82.1  |
|       | 329.37 | -126.3       | 10.3   | 3375         | 1413 | -37.4          | 7.3   | -1        | 36 |              |        |                       |         |        |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 60 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|--------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |        |       |
| 25-26 | 342.45 |              |      |              |      |                |      |           |    | -4109.6      | 833.4 | -185.7                | -743.7 | -79.7 |
| 26-27 | 355.53 | -127.8       | 11.0 | 3375         | 1413 | -37.8          | 7.8  | -1        | 36 | -3981.9      | 822.5 | -174.8                | -690.8 | -77.2 |
| 27-28 | 368.62 | -129.2       | 11.6 | 3375         | 1413 | -38.3          | 8.2  | -1        | 36 | -3852.7      | 810.9 | -164.2                | -639.5 | -74.7 |
| 28-29 | 381.70 | -130.7       | 12.2 | 3375         | 1413 | -38.7          | 8.6  | -1        | 35 | -3722.0      | 798.7 | -153.6                | -590.0 | -72.2 |
| 29-30 | 394.78 | -132.1       | 12.9 | 3375         | 1413 | -39.1          | 9.1  | -1        | 35 | -3589.8      | 785.8 | -143.3                | -542.1 | -69.6 |
| 30-31 | 407.87 | -133.6       | 13.5 | 3375         | 1413 | -39.6          | 9.5  | -1        | 35 | -3456.2      | 772.3 | -133.1                | -496.1 | -67.0 |
| 31-32 | 420.95 | -135.1       | 14.1 | 3375         | 1413 | -40.0          | 10.0 | -2        | 35 | -3321.2      | 758.2 | -123.1                | -451.7 | -64.4 |
| 32-33 | 434.03 | -136.5       | 14.7 | 3375         | 1413 | -40.4          | 10.4 | -2        | 35 | -3184.6      | 743.5 | -113.2                | -409.2 | -61.8 |
| 33-34 | 447.12 | -138.5       | 15.5 | 3375         | 1413 | -41.0          | 11.0 | -2        | 35 | -3046.1      | 728.0 | -103.6                | -368.4 | -59.1 |
| 34-35 | 460.20 | -142.9       | 17.0 | 3375         | 1413 | -42.3          | 12.1 | -2        | 35 | -2903.2      | 710.9 | -94.2                 | -329.5 | -56.4 |
| 35-36 | 473.28 | -147.3       | 18.6 | 3375         | 1413 | -43.6          | 13.1 | -2        | 36 | -2755.9      | 692.4 | -85.0                 | -292.5 | -53.5 |
| 36-37 | 486.36 | -151.7       | 20.1 | 3375         | 1413 | -44.9          | 14.2 | -2        | 36 | -2604.2      | 672.3 | -76.1                 | -257.4 | -50.5 |
| 37-38 | 499.45 | -156.1       | 21.6 | 3375         | 1413 | -46.2          | 15.3 | -2        | 36 | -2448.2      | 650.7 | -67.4                 | -224.3 | -47.4 |
| 38-39 | 512.53 | -160.5       | 23.1 | 3375         | 1413 | -47.5          | 16.4 | -2        | 36 | -2287.7      | 627.5 | -59.1                 | -193.4 | -44.2 |
| 39-40 | 525.61 | -164.9       | 24.7 | 3375         | 1413 | -48.8          | 17.4 | -2        | 36 | -2122.8      | 602.9 | -51.0                 | -164.5 | -40.9 |
| 40-41 | 538.70 | -169.3       | 26.2 | 3375         | 1413 | -50.1          | 18.5 | -2        | 37 | -1953.5      | 576.7 | -43.3                 | -137.9 | -37.4 |
| 41-42 | 551.78 | -173.5       | 28.6 | 3375         | 1413 | -51.4          | 20.2 | -3        | 37 | -1780.1      | 548.1 | -35.9                 | -113.4 | -33.9 |
| 42-43 | 564.86 | -176.6       | 35.9 | 3375         | 1413 | -52.3          | 25.4 | -3        | 36 | -1603.5      | 512.2 | -29.0                 | -91.3  | -30.4 |
| 43-44 | 577.95 | -179.6       | 43.3 | 3375         | 1413 | -53.2          | 30.7 | -4        | 35 | -1423.9      | 468.9 | -22.6                 | -71.5  | -26.8 |
| 44-45 | 591.03 | -182.7       | 50.7 | 3375         | 1413 | -54.1          | 35.9 | -4        | 34 | -1241.1      | 418.2 | -16.8                 | -54.1  | -23.2 |
| 45-46 | 604.11 | -185.8       | 58.1 | 3375         | 1413 | -55.0          | 41.1 | -4        | 33 | -1055.4      | 360.1 | -11.7                 | -39.0  | -19.6 |
| 46-47 | 617.19 | -188.9       | 65.5 | 3375         | 1413 | -56.0          | 46.3 | -5        | 32 | -866.5       | 294.6 | -7.4                  | -26.5  | -16.0 |
| 47-48 | 630.28 | -191.9       | 72.9 | 3375         | 1413 | -56.9          | 51.6 | -5        | 31 | -674.5       | 221.7 | -4.0                  | -16.4  | -12.4 |
| 48-49 | 643.36 | -195.0       | 80.3 | 3375         | 1413 | -57.8          | 56.8 | -5        | 30 | -479.5       | 141.4 | -1.7                  | -8.8   | -8.7  |
| 49-50 | 656.44 | -193.2       | 83.4 | 3375         | 1413 | -57.2          | 59.0 | -5        | 29 | -286.3       | 58.1  | -1.4                  | -3.8   | -5.1  |
|       |        | -209.7       | 69.7 | 4788         | 2004 | -43.8          | 34.8 | -4        | 30 |              |       |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 60 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|-------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|-----|------|
|        |        | X            | Y     | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |     |      |
| 50-TOP | 675.00 | -76.6        | -11.6 | 2973         | 1232 | -25.8          | -9.4 | 2         | 33 | -76.6        | -11.6 | .1                    | -.5 | -1.4 |
| TOP    | 687.00 |              |       |              |      |                |      |           |    | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 70 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|--------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|---------|-------|
|       |        | X            | Y      | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |         |       |
| GRND  | 0.00   | -65.1        | -144.0 | 3599         | 1734 | -18.1          | -83.0 | 5         | 6  | -4937.9      | 1206.0 | -721.4                | -2119.1 | -99.7 |
| GR-2  | 17.50  | -75.7        | 17.4   | 6203         | 2597 | -12.2          | 6.7   | -2        | 26 | -4872.8      | 1350.0 | -699.1                | -2033.3 | -98.5 |
| 2-3   | 41.54  | -44.4        | 7.2    | 3375         | 1413 | -13.2          | 5.1   | -2        | 28 | -4797.2      | 1332.5 | -666.8                | -1917.1 | -97.4 |
| 3-4   | 54.63  | -46.7        | 5.6    | 3375         | 1413 | -13.8          | 4.0   | -1        | 30 | -4752.8      | 1325.3 | -649.4                | -1854.6 | -96.7 |
| 4-5   | 67.71  | -49.0        | 4.0    | 3375         | 1413 | -14.5          | 2.8   | -1        | 31 | -4706.0      | 1319.8 | -632.1                | -1792.7 | -96.0 |
| 5-6   | 80.79  | -51.3        | 2.4    | 3375         | 1413 | -15.2          | 1.7   | -1        | 32 | -4657.0      | 1315.8 | -614.9                | -1731.5 | -95.1 |
| 6-7   | 93.87  | -53.6        | .8     | 3375         | 1413 | -15.9          | .5    | -0        | 33 | -4605.8      | 1313.4 | -597.7                | -1670.9 | -94.2 |
| 7-8   | 106.96 | -55.9        | -.9    | 3375         | 1413 | -16.5          | -.6   | 0         | 34 | -4552.2      | 1312.7 | -580.5                | -1611.0 | -93.3 |
| 8-9   | 120.04 | -58.1        | -1.6   | 3375         | 1413 | -17.2          | -1.1  | 0         | 35 | -4496.3      | 1313.5 | -563.3                | -1551.8 | -92.3 |
| 9-10  | 133.12 | -60.4        | .4     | 3375         | 1413 | -17.9          | .3    | -0        | 35 | -4438.2      | 1315.1 | -546.1                | -1493.3 | -91.2 |
| 10-11 | 146.21 | -62.7        | 2.4    | 3375         | 1413 | -18.6          | 1.7   | -1        | 36 | -4377.8      | 1314.7 | -528.9                | -1435.7 | -90.0 |
| 11-12 | 159.29 | -65.0        | 4.4    | 3375         | 1413 | -19.3          | 3.1   | -1        | 36 | -4315.0      | 1312.2 | -511.8                | -1378.8 | -88.8 |
| 12-13 | 172.37 | -67.3        | 6.4    | 3375         | 1413 | -20.0          | 4.5   | -1        | 36 | -4250.0      | 1307.8 | -494.6                | -1322.8 | -87.5 |
| 13-14 | 185.46 | -69.6        | 8.4    | 3375         | 1413 | -20.6          | 6.0   | -2        | 37 | -4182.6      | 1301.4 | -477.5                | -1267.6 | -86.2 |
| 14-15 | 198.54 | -71.9        | 10.4   | 3375         | 1413 | -21.3          | 7.4   | -2        | 37 | -4113.0      | 1293.0 | -460.6                | -1213.3 | -84.8 |
| 15-16 | 211.62 | -74.2        | 12.4   | 3375         | 1413 | -22.0          | 8.8   | -3        | 37 | -4041.0      | 1282.6 | -443.7                | -1160.0 | -83.3 |
| 16-17 | 224.70 | -75.9        | 13.8   | 3375         | 1413 | -22.5          | 9.8   | -3        | 37 | -3966.8      | 1270.1 | -427.0                | -1107.6 | -81.8 |
| 17-18 | 237.79 | -75.2        | 13.2   | 3375         | 1413 | -22.3          | 9.3   | -3        | 38 | -3890.9      | 1256.3 | -410.5                | -1056.2 | -80.3 |
| 18-19 | 250.87 | -74.6        | 12.5   | 3375         | 1413 | -22.1          | 8.9   | -3        | 38 | -3815.6      | 1243.1 | -394.2                | -1005.8 | -78.7 |
| 19-20 | 263.95 | -74.0        | 11.9   | 3375         | 1413 | -21.9          | 8.4   | -3        | 39 | -3741.0      | 1230.6 | -378.0                | -956.4  | -77.1 |
| 20-21 | 277.04 | -73.3        | 11.2   | 3375         | 1413 | -21.7          | 8.0   | -3        | 39 | -3667.1      | 1218.7 | -361.9                | -907.9  | -75.5 |
| 21-22 | 290.12 | -72.7        | 10.6   | 3375         | 1413 | -21.5          | 7.5   | -2        | 40 | -3593.7      | 1207.4 | -346.1                | -860.4  | -73.9 |
| 22-23 | 303.20 | -72.0        | 10.0   | 3375         | 1413 | -21.3          | 7.0   | -2        | 41 | -3521.1      | 1196.8 | -330.3                | -813.9  | -72.3 |
| 23-24 | 316.29 | -71.4        | 9.3    | 3375         | 1413 | -21.1          | 6.6   | -2        | 41 | -3449.0      | 1186.9 | -314.8                | -768.3  | -70.7 |
| 24-25 | 329.37 | -71.0        | 8.9    | 3375         | 1413 | -21.0          | 6.3   | -2        | 42 | -3377.6      | 1177.6 | -299.3                | -723.6  | -69.1 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 70 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y    | X         | Y  | X            | Y      | X                     | Y      | Z     |
| 25-26 | 342.45 | -71.9        | 9.4   | 3375         | 1413 | -21.3          | 6.7  | -2        | 42 | -3306.6      | 1168.7 | -283.9                | -679.9 | -67.4 |
| 26-27 | 355.53 | -72.8        | 9.9   | 3375         | 1413 | -21.6          | 7.0  | -2        | 43 | -3234.7      | 1159.3 | -268.7                | -637.1 | -65.8 |
| 27-28 | 368.62 | -73.7        | 10.4  | 3375         | 1413 | -21.8          | 7.4  | -3        | 43 | -3161.8      | 1149.4 | -253.6                | -595.3 | -64.0 |
| 28-29 | 381.70 | -74.6        | 10.9  | 3375         | 1413 | -22.1          | 7.7  | -3        | 44 | -3088.1      | 1139.0 | -238.6                | -554.4 | -62.3 |
| 29-30 | 394.78 | -75.5        | 11.4  | 3375         | 1413 | -22.4          | 8.1  | -3        | 44 | -3013.5      | 1128.0 | -223.8                | -514.5 | -60.5 |
| 30-31 | 407.87 | -76.4        | 11.9  | 3375         | 1413 | -22.6          | 8.5  | -3        | 45 | -2938.1      | 1116.6 | -209.1                | -475.5 | -58.6 |
| 31-32 | 420.95 | -77.3        | 12.5  | 3375         | 1413 | -22.9          | 8.8  | -3        | 45 | -2861.7      | 1104.7 | -194.6                | -437.6 | -56.7 |
| 32-33 | 434.03 | -79.3        | 13.4  | 3375         | 1413 | -23.5          | 9.5  | -3        | 45 | -2784.4      | 1092.2 | -180.2                | -400.7 | -54.8 |
| 33-34 | 447.12 | -87.2        | 16.2  | 3375         | 1413 | -25.8          | 11.4 | -3        | 44 | -2705.1      | 1078.8 | -166.0                | -364.7 | -52.8 |
| 34-35 | 460.20 | -95.1        | 18.9  | 3375         | 1413 | -28.2          | 13.4 | -4        | 43 | -2617.9      | 1062.7 | -152.0                | -329.9 | -50.7 |
| 35-36 | 473.28 | -103.0       | 21.7  | 3375         | 1413 | -30.5          | 15.4 | -4        | 41 | -2522.8      | 1043.7 | -138.2                | -296.3 | -48.4 |
| 36-37 | 486.36 | -110.8       | 24.5  | 3375         | 1413 | -32.8          | 17.4 | -4        | 40 | -2419.8      | 1022.0 | -124.7                | -264.0 | -46.0 |
| 37-38 | 499.45 | -118.7       | 27.3  | 3375         | 1413 | -35.2          | 19.3 | -4        | 40 | -2309.0      | 997.5  | -111.5                | -233.0 | -43.4 |
| 38-39 | 512.53 | -126.6       | 30.1  | 3375         | 1413 | -37.5          | 21.3 | -4        | 39 | -2190.3      | 970.1  | -98.6                 | -203.6 | -40.8 |
| 39-40 | 525.61 | -134.4       | 32.9  | 3375         | 1413 | -39.8          | 23.3 | -4        | 38 | -2063.7      | 940.0  | -86.1                 | -175.8 | -38.0 |
| 40-41 | 538.70 | -142.1       | 37.0  | 3375         | 1413 | -42.1          | 26.2 | -4        | 37 | -1929.3      | 907.1  | -74.1                 | -149.6 | -35.0 |
| 41-42 | 551.78 | -148.5       | 48.3  | 3375         | 1413 | -44.0          | 34.2 | -5        | 35 | -1787.2      | 870.1  | -62.4                 | -125.3 | -31.9 |
| 42-43 | 564.86 | -154.9       | 59.6  | 3375         | 1413 | -45.9          | 42.2 | -5        | 33 | -1638.7      | 821.8  | -51.4                 | -102.9 | -28.8 |
| 43-44 | 577.95 | -161.3       | 71.0  | 3375         | 1413 | -47.8          | 50.2 | -6        | 31 | -1483.8      | 762.2  | -41.0                 | -82.5  | -25.6 |
| 44-45 | 591.03 | -167.7       | 82.3  | 3375         | 1413 | -49.7          | 58.2 | -6        | 29 | -1322.5      | 691.2  | -31.5                 | -64.1  | -22.4 |
| 45-46 | 604.11 | -174.1       | 93.6  | 3375         | 1413 | -51.6          | 66.3 | -6        | 28 | -1154.8      | 608.9  | -23.0                 | -47.9  | -19.1 |
| 46-47 | 617.19 | -180.5       | 105.0 | 3375         | 1413 | -53.5          | 74.3 | -6        | 26 | -980.7       | 515.3  | -15.6                 | -34.0  | -15.8 |
| 47-48 | 630.28 | -186.9       | 116.3 | 3375         | 1413 | -55.4          | 82.3 | -6        | 25 | -800.3       | 410.3  | -9.6                  | -22.3  | -12.4 |
| 48-49 | 643.36 | -192.0       | 124.2 | 3375         | 1413 | -56.9          | 87.9 | -6        | 23 | -613.4       | 294.0  | -5.0                  | -13.1  | -8.9  |
| 49-50 | 656.44 | -264.9       | 145.8 | 4788         | 2004 | -55.3          | 72.7 | -5        | 21 | -421.4       | 169.9  | -1.9                  | -6.3   | -5.5  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
MIND DIRECTION 70 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|------|-----------------------|-----|------|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y    | Z                     |     |      |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |    |              |      |                       |     |      |
|        |        | -156.5       | 24.1 | 2973         | 1232 | -52.6          | 19.6 | -1        | 19 | -156.5       | 24.1 | -.1                   | -.9 | -1.7 |
| TOP    | 687.00 |              |      |              |      |                |      |           |    | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0  |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 80 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|-------|-----------------------|---------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y     | Z                     |         |       |
| GRND  | 0.00   |              |       |              |      |                |       |           |     |              |       |                       |         |       |
| GR-2  | 17.50  | -33.1        | -79.3 | 3599         | 1734 | -9.2           | -45.7 | 9         | 9   | -3980.7      | 860.1 | -500.5                | -1912.5 | -67.9 |
| 2-3   | 41.54  | -14.4        | 7.5   | 6203         | 2597 | -2.3           | 2.9   | -6        | 28  | -3947.5      | 939.3 | -484.8                | -1843.1 | -66.8 |
| 3-4   | 54.63  | -10.5        | 3.2   | 3375         | 1413 | -3.1           | 2.3   | -5        | 41  | -3933.1      | 931.8 | -462.3                | -1748.4 | -66.5 |
| 4-5   | 67.71  | -12.4        | 2.6   | 3375         | 1413 | -3.7           | 1.8   | -4        | 47  | -3922.6      | 928.6 | -450.1                | -1697.0 | -66.2 |
| 5-6   | 80.79  | -14.2        | 2.0   | 3375         | 1413 | -4.2           | 1.4   | -3        | 51  | -3910.2      | 926.0 | -438.0                | -1645.8 | -65.9 |
| 6-7   | 93.87  | -16.1        | 1.4   | 3375         | 1413 | -4.8           | 1.0   | -2        | 54  | -3896.0      | 924.0 | -425.9                | -1594.7 | -65.5 |
| 7-8   | 106.96 | -18.0        | .8    | 3375         | 1413 | -5.3           | .5    | -1        | 56  | -3879.9      | 922.6 | -413.8                | -1543.8 | -65.0 |
| 8-9   | 120.04 | -19.8        | .1    | 3375         | 1413 | -5.9           | .1    | 0         | 58  | -3861.9      | 921.9 | -401.8                | -1493.2 | -64.5 |
| 9-10  | 133.12 | -21.8        | -.2   | 3375         | 1413 | -6.5           | -.1   | 0         | 54  | -3842.1      | 921.7 | -389.7                | -1442.8 | -63.9 |
| 10-11 | 146.21 | -24.0        | .3    | 3375         | 1413 | -7.1           | .2    | 0         | 39  | -3820.4      | 921.9 | -377.6                | -1392.7 | -63.2 |
| 11-12 | 159.29 | -26.2        | .7    | 3375         | 1413 | -7.8           | .5    | 0         | 25  | -3796.4      | 921.7 | -365.6                | -1342.8 | -62.7 |
| 12-13 | 172.37 | -28.4        | 1.2   | 3375         | 1413 | -8.4           | .9    | 0         | 14  | -3770.2      | 920.9 | -353.5                | -1293.3 | -62.4 |
| 13-14 | 185.46 | -30.6        | 1.7   | 3375         | 1413 | -9.1           | 1.2   | 0         | 5   | -3741.7      | 919.7 | -341.5                | -1244.2 | -62.1 |
| 14-15 | 198.54 | -32.8        | 2.2   | 3375         | 1413 | -9.7           | 1.5   | 0         | -3  | -3711.1      | 918.0 | -329.5                | -1195.5 | -62.1 |
| 15-16 | 211.62 | -35.1        | 2.6   | 3375         | 1413 | -10.4          | 1.9   | 0         | -10 | -3678.3      | 915.8 | -317.5                | -1147.1 | -62.1 |
| 16-17 | 224.70 | -37.3        | 3.1   | 3375         | 1413 | -11.0          | 2.2   | 1         | -17 | -3643.2      | 913.2 | -305.5                | -1099.2 | -62.3 |
| 17-18 | 237.79 | -39.4        | 3.6   | 3375         | 1413 | -11.7          | 2.5   | 1         | -20 | -3605.9      | 910.0 | -293.6                | -1051.8 | -62.7 |
| 18-19 | 250.87 | -41.2        | 4.0   | 3375         | 1413 | -12.2          | 2.8   | 1         | -15 | -3566.5      | 906.5 | -281.7                | -1004.9 | -63.1 |
| 19-20 | 263.95 | -43.1        | 4.5   | 3375         | 1413 | -12.8          | 3.2   | 0         | -11 | -3525.3      | 902.4 | -269.9                | -958.5  | -63.4 |
| 20-21 | 277.04 | -44.9        | 4.9   | 3375         | 1413 | -13.3          | 3.5   | 0         | -8  | -3482.2      | 898.0 | -258.1                | -912.7  | -63.7 |
| 21-22 | 290.12 | -46.8        | 5.3   | 3375         | 1413 | -13.9          | 3.8   | 0         | -4  | -3437.2      | 893.1 | -246.4                | -867.4  | -63.9 |
| 22-23 | 303.20 | -48.6        | 5.8   | 3375         | 1413 | -14.4          | 4.1   | 0         | -1  | -3390.5      | 887.7 | -234.7                | -822.7  | -64.0 |
| 23-24 | 316.29 | -50.4        | 6.2   | 3375         | 1413 | -14.9          | 4.4   | 0         | 2   | -3341.9      | 882.0 | -223.1                | -778.7  | -64.0 |
| 24-25 | 329.37 | -52.3        | 6.6   | 3375         | 1413 | -15.5          | 4.7   | 0         | 5   | -3291.4      | 875.7 | -211.6                | -735.3  | -64.0 |
|       |        | -54.4        | 7.2   | 3375         | 1413 | -16.1          | 5.1   | 0         | 7   | -3239.2      | 869.1 | -200.2                | -692.6  | -63.8 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 80 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|--------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |        |       |
| 25-26 | 342.45 | -57.8        | 8.4  | 3375         | 1413 | -17.1          | 5.9  | -1        | 10 | -3184.8      | 861.9 | -188.9                | -650.6 | -63.6 |
| 26-27 | 355.53 | -61.1        | 9.5  | 3375         | 1413 | -18.1          | 6.7  | -1        | 12 | -3127.0      | 853.5 | -177.7                | -609.3 | -63.3 |
| 27-28 | 368.62 | -64.5        | 10.6 | 3375         | 1413 | -19.1          | 7.5  | -1        | 13 | -3065.9      | 844.0 | -166.6                | -568.8 | -62.9 |
| 28-29 | 381.70 | -67.8        | 11.8 | 3375         | 1413 | -20.1          | 8.3  | -1        | 15 | -3001.4      | 833.4 | -155.6                | -529.1 | -62.4 |
| 29-30 | 394.78 | -71.2        | 12.9 | 3375         | 1413 | -21.1          | 9.1  | -1        | 16 | -2933.6      | 821.6 | -144.8                | -490.2 | -61.9 |
| 30-31 | 407.87 | -74.5        | 14.0 | 3375         | 1413 | -22.1          | 9.9  | -1        | 17 | -2862.4      | 808.7 | -134.1                | -452.3 | -61.2 |
| 31-32 | 420.95 | -77.9        | 15.2 | 3375         | 1413 | -23.1          | 10.7 | -2        | 19 | -2787.8      | 794.7 | -123.6                | -415.4 | -60.5 |
| 32-33 | 434.03 | -82.0        | 16.6 | 3375         | 1413 | -24.3          | 11.7 | -2        | 21 | -2709.9      | 779.5 | -113.3                | -379.4 | -59.7 |
| 33-34 | 447.12 | -89.8        | 19.2 | 3375         | 1413 | -26.6          | 13.6 | -2        | 27 | -2627.9      | 762.9 | -103.2                | -344.5 | -58.7 |
| 34-35 | 460.20 | -97.6        | 21.8 | 3375         | 1413 | -28.9          | 15.5 | -3        | 33 | -2538.1      | 743.7 | -93.4                 | -310.7 | -57.4 |
| 35-36 | 473.28 | -105.4       | 24.5 | 3375         | 1413 | -31.2          | 17.3 | -4        | 37 | -2440.5      | 721.9 | -83.8                 | -278.1 | -55.6 |
| 36-37 | 486.36 | -113.2       | 27.1 | 3375         | 1413 | -33.5          | 19.2 | -4        | 41 | -2335.1      | 697.4 | -74.5                 | -246.9 | -53.3 |
| 37-38 | 499.45 | -121.0       | 29.7 | 3375         | 1413 | -35.8          | 21.0 | -5        | 44 | -2221.9      | 670.3 | -65.6                 | -217.1 | -50.7 |
| 38-39 | 512.53 | -128.8       | 32.4 | 3375         | 1413 | -38.2          | 22.9 | -5        | 47 | -2100.9      | 640.6 | -57.0                 | -188.8 | -47.6 |
| 39-40 | 525.61 | -136.6       | 35.0 | 3375         | 1413 | -40.5          | 24.8 | -5        | 50 | -1972.1      | 608.2 | -48.8                 | -162.2 | -44.1 |
| 40-41 | 538.70 | -144.1       | 38.0 | 3375         | 1413 | -42.7          | 26.9 | -6        | 52 | -1835.6      | 573.2 | -41.1                 | -137.2 | -40.1 |
| 41-42 | 551.78 | -149.7       | 43.0 | 3375         | 1413 | -44.3          | 30.4 | -6        | 48 | -1691.5      | 535.3 | -33.8                 | -114.2 | -35.9 |
| 42-43 | 564.86 | -155.3       | 47.9 | 3375         | 1413 | -46.0          | 33.9 | -6        | 45 | -1541.8      | 492.3 | -27.1                 | -93.0  | -31.6 |
| 43-44 | 577.95 | -161.0       | 52.9 | 3375         | 1413 | -47.7          | 37.5 | -6        | 42 | -1386.5      | 444.4 | -21.0                 | -73.9  | -27.5 |
| 44-45 | 591.03 | -166.6       | 57.9 | 3375         | 1413 | -49.4          | 41.0 | -6        | 40 | -1225.5      | 391.4 | -15.5                 | -56.8  | -23.4 |
| 45-46 | 604.11 | -172.2       | 62.9 | 3375         | 1413 | -51.0          | 44.5 | -6        | 37 | -1058.9      | 333.5 | -10.8                 | -41.8  | -19.4 |
| 46-47 | 617.19 | -177.9       | 67.9 | 3375         | 1413 | -52.7          | 48.1 | -6        | 35 | -886.7       | 270.6 | -6.8                  | -29.1  | -15.5 |
| 47-48 | 630.28 | -183.5       | 72.9 | 3375         | 1413 | -54.4          | 51.6 | -6        | 33 | -708.8       | 202.7 | -3.7                  | -18.7  | -11.6 |
| 48-49 | 643.36 | -185.6       | 74.5 | 3375         | 1413 | -55.0          | 52.7 | -5        | 31 | -525.3       | 129.8 | -1.6                  | -10.6  | -7.8  |
| 49-50 | 656.44 | -222.3       | 66.3 | 4788         | 2004 | -46.4          | 33.1 | -3        | 23 | -339.7       | 55.3  | -.3                   | -4.9   | -4.2  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 80 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|-------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|-----|------|
|        |        | X            | Y     | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |     |      |
| 50-TOP | 675.00 |              |       |              |      |                |      |           |    | -117.3       | -11.0 | .1                    | -.7 | -1.1 |
| TOP    | 687.00 | -117.3       | -11.0 | 2973         | 1232 | -39.5          | -9.0 | 1         | 18 | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 90 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | EGGEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |        |       |
| GRND  | 0.00   |              |       |              |      |                |       |           |    | 9564.1       | 1201.0 | -380.4                | 3483.4 | 194.5 |
| GR-2  | 17.50  | 143.5        | -31.5 | 3599         | 1734 | 39.9           | -18.2 | -1        | 6  | 9420.5       | 1232.6 | -559.1                | 3317.3 | 194.1 |
| 2-3   | 41.54  | 258.9        | 19.3  | 6203         | 2597 | 41.7           | 7.4   | 0         | 13 | 9161.6       | 1213.3 | -529.7                | 3093.9 | 192.2 |
| 3-4   | 54.63  | 143.2        | 9.4   | 3375         | 1413 | 42.4           | 6.6   | 1         | 20 | 9018.4       | 1203.9 | -513.8                | 2975.0 | 190.6 |
| 4-5   | 67.71  | 144.8        | 8.6   | 3375         | 1413 | 42.9           | 6.1   | 1         | 24 | 8873.6       | 1195.3 | -498.2                | 2857.9 | 188.7 |
| 5-6   | 80.79  | 146.5        | 7.8   | 3375         | 1413 | 43.4           | 5.5   | 1         | 29 | 8727.1       | 1187.4 | -482.6                | 2742.8 | 186.5 |
| 6-7   | 93.87  | 148.1        | 7.1   | 3375         | 1413 | 43.9           | 5.0   | 1         | 33 | 8579.1       | 1180.4 | -467.1                | 2629.6 | 183.9 |
| 7-8   | 106.96 | 149.7        | 6.3   | 3375         | 1413 | 44.4           | 4.4   | 1         | 37 | 8429.3       | 1174.1 | -451.7                | 2518.3 | 180.9 |
| 8-9   | 120.04 | 151.4        | 5.5   | 3375         | 1413 | 44.8           | 3.9   | 1         | 41 | 8278.0       | 1168.6 | -436.4                | 2409.1 | 177.5 |
| 9-10  | 133.12 | 153.7        | 5.0   | 3375         | 1413 | 45.5           | 3.6   | 1         | 44 | 8124.3       | 1163.6 | -421.1                | 2301.8 | 173.8 |
| 10-11 | 146.21 | 158.0        | 5.5   | 3375         | 1413 | 46.8           | 3.9   | 1         | 44 | 7966.4       | 1158.1 | -405.9                | 2196.5 | 170.1 |
| 11-12 | 159.29 | 162.3        | 6.0   | 3375         | 1413 | 48.1           | 4.2   | 1         | 44 | 7804.1       | 1152.1 | -390.8                | 2093.3 | 166.3 |
| 12-13 | 172.37 | 166.6        | 6.5   | 3375         | 1413 | 49.3           | 4.6   | 1         | 44 | 7637.5       | 1145.6 | -375.8                | 1992.3 | 162.3 |
| 13-14 | 185.46 | 170.9        | 6.9   | 3375         | 1413 | 50.6           | 4.9   | 1         | 43 | 7466.7       | 1138.7 | -360.8                | 1893.5 | 158.3 |
| 14-15 | 198.54 | 175.2        | 7.4   | 3375         | 1413 | 51.9           | 5.3   | 1         | 43 | 7291.5       | 1131.2 | -346.0                | 1797.0 | 154.2 |
| 15-16 | 211.62 | 179.5        | 7.9   | 3375         | 1413 | 53.2           | 5.6   | 1         | 43 | 7112.0       | 1123.3 | -331.2                | 1702.8 | 150.0 |
| 16-17 | 224.70 | 183.8        | 8.4   | 3375         | 1413 | 54.4           | 5.9   | 1         | 43 | 6928.2       | 1115.0 | -316.6                | 1610.9 | 145.7 |
| 17-18 | 237.79 | 187.3        | 9.0   | 3375         | 1413 | 55.5           | 6.4   | 1         | 43 | 6740.9       | 1106.0 | -302.1                | 1521.5 | 141.4 |
| 18-19 | 250.87 | 187.8        | 10.1  | 3375         | 1413 | 55.6           | 7.2   | 1         | 42 | 6553.1       | 1095.9 | -287.7                | 1434.5 | 137.1 |
| 19-20 | 263.95 | 188.4        | 11.2  | 3375         | 1413 | 55.8           | 8.0   | 1         | 42 | 6364.7       | 1084.6 | -273.4                | 1350.0 | 132.8 |
| 20-21 | 277.04 | 189.0        | 12.4  | 3375         | 1413 | 56.0           | 8.8   | 1         | 41 | 6175.7       | 1072.2 | -259.3                | 1268.0 | 128.6 |
| 21-22 | 290.12 | 189.6        | 13.5  | 3375         | 1413 | 56.2           | 9.5   | 1         | 41 | 5986.2       | 1058.8 | -245.3                | 1188.4 | 124.4 |
| 22-23 | 303.20 | 190.1        | 14.6  | 3375         | 1413 | 56.3           | 10.3  | 1         | 40 | 5796.0       | 1044.1 | -231.6                | 1111.4 | 120.3 |
| 23-24 | 316.29 | 190.7        | 15.7  | 3375         | 1413 | 56.5           | 11.1  | 1         | 40 | 5605.3       | 1028.4 | -218.0                | 1036.8 | 116.2 |
| 24-25 | 329.37 | 191.3        | 16.9  | 3375         | 1413 | 56.7           | 11.9  | 1         | 39 | 5414.0       | 1011.6 | -204.7                | 964.7  | 112.1 |
|       |        | 192.0        | 18.1  | 3375         | 1413 | 56.9           | 12.8  | 2         | 39 |              |        |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 90 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|-------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |       |       |
| 25-26 | 342.45 | 193.1        | 20.0 | 3375         | 1413 | 57.2           | 14.1 | 2         | 39 | 5222.1       | 993.4 | -191.6                | 895.1 | 108.0 |
| 26-27 | 355.53 | 194.2        | 21.9 | 3375         | 1413 | 57.5           | 15.5 | 2         | 40 | 5029.0       | 973.4 | -178.7                | 828.1 | 103.9 |
| 27-28 | 368.62 | 195.3        | 23.7 | 3375         | 1413 | 57.9           | 16.8 | 2         | 41 | 4834.8       | 951.6 | -166.1                | 763.6 | 99.6  |
| 28-29 | 381.70 | 196.4        | 25.6 | 3375         | 1413 | 58.2           | 18.1 | 2         | 42 | 4639.5       | 927.9 | -153.8                | 701.6 | 95.2  |
| 29-30 | 394.78 | 197.6        | 27.5 | 3375         | 1413 | 58.5           | 19.4 | 2         | 42 | 4443.0       | 902.3 | -141.8                | 642.2 | 90.8  |
| 30-31 | 407.87 | 198.7        | 29.3 | 3375         | 1413 | 58.9           | 20.8 | 3         | 43 | 4245.5       | 874.8 | -130.2                | 585.3 | 86.2  |
| 31-32 | 420.95 | 199.8        | 31.2 | 3375         | 1413 | 59.2           | 22.1 | 3         | 43 | 4046.8       | 845.5 | -119.0                | 531.1 | 81.5  |
| 32-33 | 434.03 | 200.7        | 32.8 | 3375         | 1413 | 59.5           | 23.2 | 3         | 44 | 3847.0       | 814.3 | -108.1                | 479.4 | 76.7  |
| 33-34 | 447.12 | 200.7        | 33.5 | 3375         | 1413 | 59.5           | 23.7 | 3         | 43 | 3646.2       | 781.5 | -97.7                 | 430.4 | 71.8  |
| 34-35 | 460.20 | 200.6        | 34.1 | 3375         | 1413 | 59.4           | 24.2 | 3         | 43 | 3445.5       | 748.0 | -87.7                 | 384.0 | 66.9  |
| 35-36 | 473.28 | 200.6        | 34.8 | 3375         | 1413 | 59.4           | 24.6 | 3         | 42 | 3244.9       | 713.8 | -78.1                 | 340.3 | 62.2  |
| 36-37 | 486.36 | 200.6        | 35.4 | 3375         | 1413 | 59.4           | 25.1 | 3         | 42 | 3044.3       | 679.1 | -69.0                 | 299.1 | 57.5  |
| 37-38 | 499.45 | 200.5        | 36.1 | 3375         | 1413 | 59.4           | 25.5 | 3         | 41 | 2843.7       | 643.7 | -60.3                 | 260.6 | 52.8  |
| 38-39 | 512.53 | 200.5        | 36.7 | 3375         | 1413 | 59.4           | 26.0 | 3         | 41 | 2643.2       | 607.6 | -52.2                 | 224.7 | 48.2  |
| 39-40 | 525.61 | 200.4        | 37.3 | 3375         | 1413 | 59.4           | 26.4 | 3         | 40 | 2442.8       | 570.9 | -44.4                 | 191.5 | 43.6  |
| 40-41 | 538.70 | 200.6        | 38.5 | 3375         | 1413 | 59.4           | 27.2 | 3         | 39 | 2242.3       | 533.6 | -37.2                 | 160.8 | 39.1  |
| 41-42 | 551.78 | 202.3        | 42.6 | 3375         | 1413 | 59.9           | 30.1 | 3         | 38 | 2041.7       | 495.1 | -30.5                 | 132.8 | 34.7  |
| 42-43 | 564.86 | 204.0        | 46.7 | 3375         | 1413 | 60.4           | 33.1 | 3         | 36 | 1839.4       | 452.5 | -24.3                 | 107.4 | 30.4  |
| 43-44 | 577.95 | 205.6        | 50.8 | 3375         | 1413 | 60.9           | 36.0 | 4         | 34 | 1635.5       | 405.8 | -18.7                 | 84.7  | 26.3  |
| 44-45 | 591.03 | 207.3        | 54.9 | 3375         | 1413 | 61.4           | 38.9 | 4         | 32 | 1429.8       | 355.0 | -13.7                 | 64.6  | 22.3  |
| 45-46 | 604.11 | 209.0        | 59.0 | 3375         | 1413 | 61.9           | 41.8 | 4         | 31 | 1222.5       | 300.1 | -9.4                  | 47.3  | 18.4  |
| 46-47 | 617.19 | 210.6        | 63.1 | 3375         | 1413 | 62.4           | 44.7 | 4         | 29 | 1013.6       | 241.0 | -5.9                  | 32.6  | 14.7  |
| 47-48 | 630.28 | 212.3        | 67.2 | 3375         | 1413 | 62.9           | 47.6 | 4         | 27 | 802.9        | 177.9 | -3.1                  | 20.7  | 11.1  |
| 48-49 | 643.36 | 211.3        | 67.8 | 3375         | 1413 | 62.6           | 48.0 | 3         | 26 | 590.7        | 110.7 | -1.2                  | 11.6  | 7.6   |
| 49-50 | 656.44 | 263.9        | 53.1 | 4788         | 2004 | 55.1           | 26.5 | 2         | 26 | 379.4        | 42.8  | -.2                   | 5.3   | 4.3   |

TABLE 7. SHEAR AND MOMENT DIAGRAM 1 ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 90 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |   | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|------|-----------|---|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y    | X         | Y | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 | 115.5        | -10.2 | 2973         | 1232 | 38.8           | -8.3 | -0        | 9 | 115.5        | -10.2 | .1                    | .7  | .5  |
| TOP    | 687.00 |              |       |              |      |                |      |           |   | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON BERGELASTIC DATA  
WIND DIRECTION 100 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |        |       |
| GRND  | 0.00   |              |       |              |      |                |       |           |    | 8114.8       | 900.6 | -476.4                | 3185.1 | 219.5 |
| GR-2  | 17.50  | 96.2         | -41.7 | 3599         | 1734 | 26.7           | -24.1 | -3        | 16 | 8018.6       | 942.3 | -460.3                | 3044.0 | 218.5 |
| 2-3   | 41.54  | 155.2        | 25.9  | 6203         | 2597 | 25.0           | 10.0  | 2         | 29 | 7863.4       | 916.4 | -438.0                | 2853.1 | 216.0 |
| 3-4   | 54.63  | 89.9         | 11.4  | 3375         | 1413 | 26.6           | 8.1   | 2         | 35 | 7773.5       | 905.0 | -426.0                | 2750.8 | 214.3 |
| 4-5   | 67.71  | 93.7         | 9.5   | 3375         | 1413 | 27.8           | 6.7   | 2         | 38 | 7679.8       | 895.6 | -414.3                | 2649.7 | 212.3 |
| 5-6   | 80.79  | 97.5         | 7.6   | 3375         | 1413 | 28.9           | 5.4   | 1         | 41 | 7582.2       | 888.0 | -402.6                | 2549.8 | 210.2 |
| 6-7   | 93.87  | 101.4        | 5.7   | 3375         | 1413 | 30.0           | 4.0   | 1         | 44 | 7480.9       | 882.3 | -391.0                | 2451.3 | 207.7 |
| 7-8   | 106.96 | 105.2        | 3.8   | 3375         | 1413 | 31.2           | 2.7   | 1         | 47 | 7375.7       | 878.5 | -379.5                | 2354.1 | 205.0 |
| 8-9   | 120.04 | 109.0        | 1.9   | 3375         | 1413 | 32.3           | 1.3   | 0         | 50 | 7266.7       | 876.6 | -368.0                | 2258.3 | 202.1 |
| 9-10  | 133.12 | 112.5        | .6    | 3375         | 1413 | 33.3           | .4    | 0         | 52 | 7154.2       | 876.0 | -356.6                | 2164.0 | 198.9 |
| 10-11 | 146.21 | 114.9        | 1.3   | 3375         | 1413 | 34.1           | .9    | 0         | 52 | 7039.2       | 874.8 | -345.1                | 2071.2 | 195.7 |
| 11-12 | 159.29 | 117.4        | 2.0   | 3375         | 1413 | 34.8           | 1.4   | 0         | 53 | 6921.8       | 872.8 | -333.7                | 1979.8 | 192.4 |
| 12-13 | 172.37 | 119.8        | 2.6   | 3375         | 1413 | 35.5           | 1.9   | 0         | 53 | 6802.0       | 870.2 | -322.3                | 1890.1 | 188.9 |
| 13-14 | 185.46 | 122.3        | 3.3   | 3375         | 1413 | 36.2           | 2.3   | 1         | 54 | 6679.7       | 866.8 | -310.9                | 1801.9 | 185.4 |
| 14-15 | 198.54 | 124.7        | 4.0   | 3375         | 1413 | 37.0           | 2.8   | 1         | 54 | 6555.0       | 862.8 | -299.6                | 1715.3 | 181.7 |
| 15-16 | 211.62 | 127.2        | 4.7   | 3375         | 1413 | 37.7           | 3.3   | 1         | 54 | 6427.8       | 858.2 | -288.3                | 1630.4 | 178.0 |
| 16-17 | 224.70 | 129.6        | 5.4   | 3375         | 1413 | 38.4           | 3.8   | 1         | 55 | 6298.2       | 852.8 | -277.1                | 1547.1 | 174.2 |
| 17-18 | 237.79 | 132.0        | 5.9   | 3375         | 1413 | 39.1           | 4.2   | 1         | 55 | 6166.2       | 846.9 | -266.0                | 1465.6 | 170.2 |
| 18-19 | 250.87 | 133.9        | 6.0   | 3375         | 1413 | 39.7           | 4.3   | 1         | 55 | 6032.2       | 840.9 | -255.0                | 1385.8 | 166.2 |
| 19-20 | 263.95 | 135.9        | 6.1   | 3375         | 1413 | 40.3           | 4.3   | 1         | 55 | 5896.3       | 834.8 | -244.0                | 1307.8 | 162.2 |
| 20-21 | 277.04 | 137.9        | 6.2   | 3375         | 1413 | 40.9           | 4.4   | 1         | 55 | 5758.4       | 828.6 | -233.1                | 1231.5 | 158.1 |
| 21-22 | 290.12 | 139.9        | 6.3   | 3375         | 1413 | 41.4           | 4.5   | 1         | 55 | 5618.5       | 822.2 | -222.3                | 1157.1 | 154.0 |
| 22-23 | 303.20 | 141.8        | 6.4   | 3375         | 1413 | 42.0           | 4.6   | 1         | 55 | 5476.7       | 815.8 | -211.6                | 1084.5 | 149.7 |
| 23-24 | 316.29 | 143.8        | 6.5   | 3375         | 1413 | 42.6           | 4.6   | 1         | 55 | 5332.9       | 809.2 | -201.0                | 1013.8 | 145.5 |
| 24-25 | 329.37 | 145.8        | 6.7   | 3375         | 1413 | 43.2           | 4.7   | 1         | 55 | 5187.1       | 802.6 | -190.5                | 945.0  | 141.2 |
|       |        | 148.6        | 6.8   | 3375         | 1413 | 44.0           | 4.8   | 1         | 55 |              |       |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 100 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|-------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |       |       |
| 25-26 | 342.45 | 154.5        | 7.0  | 3375         | 1413 | 45.8           | 5.0  | 1         | 55 | 5038.5       | 795.8 | -180.0                | 878.1 | 136.8 |
| 26-27 | 355.53 | 160.4        | 7.3  | 3375         | 1413 | 47.5           | 5.2  | 1         | 55 | 4884.0       | 788.7 | -169.6                | 813.2 | 132.2 |
| 27-28 | 368.62 | 166.3        | 7.5  | 3375         | 1413 | 49.3           | 5.3  | 1         | 55 | 4723.6       | 781.5 | -159.4                | 750.3 | 127.4 |
| 28-29 | 381.70 | 172.2        | 7.8  | 3375         | 1413 | 51.0           | 5.5  | 1         | 55 | 4557.3       | 773.9 | -149.2                | 689.6 | 122.4 |
| 29-30 | 394.78 | 178.1        | 8.0  | 3375         | 1413 | 52.8           | 5.7  | 1         | 55 | 4385.1       | 766.1 | -139.1                | 631.1 | 117.3 |
| 30-31 | 407.87 | 184.1        | 8.3  | 3375         | 1413 | 54.5           | 5.9  | 1         | 55 | 4207.0       | 758.1 | -129.1                | 574.9 | 112.0 |
| 31-32 | 420.95 | 190.0        | 8.5  | 3375         | 1413 | 56.3           | 6.0  | 1         | 55 | 4022.9       | 749.8 | -119.3                | 521.1 | 106.4 |
| 32-33 | 434.03 | 195.3        | 9.3  | 3375         | 1413 | 57.9           | 6.6  | 1         | 55 | 3832.9       | 741.2 | -109.5                | 469.7 | 100.8 |
| 33-34 | 447.12 | 197.5        | 12.8 | 3375         | 1413 | 58.5           | 9.0  | 1         | 55 | 3637.6       | 731.9 | -99.9                 | 420.8 | 94.9  |
| 34-35 | 460.20 | 199.7        | 16.2 | 3375         | 1413 | 59.2           | 11.5 | 2         | 54 | 3440.1       | 719.1 | -90.4                 | 374.5 | 89.1  |
| 35-36 | 473.28 | 201.9        | 19.6 | 3375         | 1413 | 59.8           | 13.9 | 2         | 53 | 3240.4       | 702.9 | -81.1                 | 330.8 | 83.2  |
| 36-37 | 486.36 | 204.2        | 23.1 | 3375         | 1413 | 60.5           | 16.3 | 2         | 52 | 3038.5       | 683.3 | -72.0                 | 289.8 | 77.4  |
| 37-38 | 499.45 | 206.4        | 26.5 | 3375         | 1413 | 61.1           | 18.8 | 3         | 51 | 2834.3       | 660.2 | -63.2                 | 251.3 | 71.6  |
| 38-39 | 512.53 | 208.6        | 29.9 | 3375         | 1413 | 61.8           | 21.2 | 3         | 51 | 2628.0       | 633.7 | -54.8                 | 215.6 | 65.7  |
| 39-40 | 525.61 | 210.8        | 33.4 | 3375         | 1413 | 62.5           | 23.6 | 3         | 50 | 2419.4       | 603.8 | -46.7                 | 182.6 | 59.9  |
| 40-41 | 538.70 | 212.6        | 37.2 | 3375         | 1413 | 63.0           | 26.3 | 4         | 49 | 2208.6       | 570.4 | -39.0                 | 152.3 | 54.1  |
| 41-42 | 551.78 | 212.2        | 43.3 | 3375         | 1413 | 62.9           | 30.7 | 4         | 48 | 1995.9       | 533.2 | -31.8                 | 124.8 | 48.3  |
| 42-43 | 564.86 | 211.7        | 49.5 | 3375         | 1413 | 62.7           | 35.0 | 5         | 46 | 1783.7       | 489.9 | -25.1                 | 100.1 | 42.6  |
| 43-44 | 577.95 | 211.3        | 55.6 | 3375         | 1413 | 62.6           | 39.4 | 5         | 45 | 1572.0       | 440.4 | -19.0                 | 78.1  | 37.0  |
| 44-45 | 591.03 | 210.8        | 61.7 | 3375         | 1413 | 62.5           | 43.7 | 5         | 44 | 1360.7       | 384.8 | -13.6                 | 59.0  | 31.5  |
| 45-46 | 604.11 | 210.3        | 67.9 | 3375         | 1413 | 62.3           | 48.0 | 6         | 42 | 1149.9       | 323.0 | -9.0                  | 42.5  | 26.1  |
| 46-47 | 617.19 | 209.9        | 74.0 | 3375         | 1413 | 62.2           | 52.4 | 6         | 41 | 939.6        | 255.1 | -5.2                  | 28.9  | 20.8  |
| 47-48 | 630.28 | 209.4        | 80.2 | 3375         | 1413 | 62.0           | 56.7 | 6         | 39 | 729.7        | 181.1 | -2.3                  | 17.9  | 15.6  |
| 48-49 | 643.36 | 204.5        | 81.1 | 3375         | 1413 | 60.6           | 57.4 | 6         | 38 | 520.3        | 101.0 | -.5                   | 9.8   | 10.5  |
| 49-50 | 656.44 | 226.1        | 51.5 | 4788         | 2004 | 47.2           | 25.7 | 4         | 37 | 315.8        | 19.9  | .3                    | 4.3   | 5.7   |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 100 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 | 89.7         | -31.7 | 2973         | 1232 | 30.2           | -25.7 | -2        | 16 | 89.7         | -31.7 | .2                    | .5  | .9  |
| TOP    | 687.00 |              |       |              |      |                |       |           |    | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 110 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|--------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |        |       |
| GRND  | 0.00   |              |      |              |      |                |      |           |    | 10412.4      | 666.3 | -354.5                | 3777.5 | 250.4 |
| GR-2  | 17.50  | 122.1        | -8.2 | 3599         | 1734 | 33.9           | -4.7 | -1        | 33 | 10290.3      | 674.4 | -342.8                | 3596.3 | 248.2 |
| 2-3   | 41.54  | 223.8        | 32.2 | 6203         | 2597 | 36.1           | 12.4 | 2         | 35 | 10066.4      | 642.2 | -327.0                | 3351.6 | 243.9 |
| 3-4   | 54.63  | 132.7        | 12.4 | 3375         | 1413 | 39.3           | 8.8  | 2         | 39 | 9933.7       | 629.8 | -318.7                | 3220.8 | 241.1 |
| 4-5   | 67.71  | 140.4        | 8.8  | 3375         | 1413 | 41.6           | 6.2  | 1         | 42 | 9793.3       | 621.0 | -310.5                | 3091.7 | 237.9 |
| 5-6   | 80.79  | 148.1        | 5.1  | 3375         | 1413 | 43.9           | 3.6  | 1         | 44 | 9643.2       | 615.9 | -302.4                | 2964.6 | 234.4 |
| 6-7   | 93.87  | 155.8        | 1.5  | 3375         | 1413 | 46.2           | 1.1  | 0         | 45 | 9489.3       | 614.4 | -294.3                | 2839.4 | 230.6 |
| 7-8   | 106.96 | 163.5        | -2.1 | 3375         | 1413 | 48.4           | -1.5 | -0        | 47 | 9325.8       | 616.5 | -286.3                | 2716.3 | 226.4 |
| 8-9   | 120.04 | 171.2        | -5.8 | 3375         | 1413 | 50.7           | -4.1 | -1        | 48 | 9154.6       | 622.3 | -278.2                | 2595.4 | 221.9 |
| 9-10  | 133.12 | 177.9        | -8.3 | 3375         | 1413 | 52.7           | -5.9 | -1        | 49 | 8976.7       | 630.6 | -270.0                | 2476.8 | 217.2 |
| 10-11 | 146.21 | 181.5        | -7.7 | 3375         | 1413 | 53.8           | -5.4 | -1        | 49 | 8795.2       | 638.3 | -261.7                | 2360.6 | 212.3 |
| 11-12 | 159.29 | 185.2        | -7.0 | 3375         | 1413 | 54.9           | -4.9 | -1        | 49 | 8610.0       | 645.3 | -253.3                | 2246.7 | 207.4 |
| 12-13 | 172.37 | 188.8        | -6.3 | 3375         | 1413 | 55.9           | -4.5 | -1        | 49 | 8421.2       | 651.6 | -244.8                | 2135.3 | 202.4 |
| 13-14 | 185.46 | 192.4        | -5.7 | 3375         | 1413 | 57.0           | -4.0 | -1        | 49 | 8228.8       | 657.2 | -236.2                | 2026.4 | 197.4 |
| 14-15 | 198.54 | 196.1        | -5.0 | 3375         | 1413 | 58.1           | -3.5 | -1        | 49 | 8032.7       | 662.2 | -227.6                | 1920.0 | 192.2 |
| 15-16 | 211.62 | 199.7        | -4.3 | 3375         | 1413 | 59.2           | -3.1 | -0        | 49 | 7833.0       | 666.5 | -218.9                | 1816.2 | 187.0 |
| 16-17 | 224.70 | 203.3        | -3.7 | 3375         | 1413 | 60.2           | -2.6 | -0        | 48 | 7629.7       | 670.2 | -210.2                | 1715.1 | 181.7 |
| 17-18 | 237.79 | 206.8        | -2.8 | 3375         | 1413 | 61.3           | -2.0 | -0        | 48 | 7422.9       | 673.0 | -201.4                | 1616.6 | 176.3 |
| 18-19 | 250.87 | 209.8        | -1.5 | 3375         | 1413 | 62.2           | -1.1 | -0        | 48 | 7213.1       | 674.5 | -192.6                | 1520.9 | 170.9 |
| 19-20 | 263.95 | 212.8        | -1.1 | 3375         | 1413 | 63.1           | -1.1 | -0        | 47 | 7000.2       | 674.7 | -183.7                | 1427.9 | 165.5 |
| 20-21 | 277.04 | 215.8        | 1.2  | 3375         | 1413 | 63.9           | .8   | 0         | 46 | 6784.4       | 673.5 | -174.9                | 1337.7 | 160.1 |
| 21-22 | 290.12 | 218.9        | 2.5  | 3375         | 1413 | 64.8           | 1.8  | 0         | 46 | 6565.5       | 670.9 | -166.1                | 1250.4 | 154.7 |
| 22-23 | 303.20 | 221.9        | 3.9  | 3375         | 1413 | 65.7           | 2.8  | 0         | 45 | 6343.7       | 667.0 | -157.4                | 1165.9 | 149.3 |
| 23-24 | 316.29 | 224.9        | 5.2  | 3375         | 1413 | 66.6           | 3.7  | 0         | 45 | 6118.8       | 661.8 | -148.7                | 1084.4 | 143.8 |
| 24-25 | 329.37 | 227.9        | 6.6  | 3375         | 1413 | 67.5           | 4.7  | 1         | 44 | 5890.9       | 655.2 | -140.1                | 1005.9 | 138.4 |
|       |        | 230.0        | 7.9  | 3375         | 1413 | 68.1           | 5.6  | 1         | 44 |              |       |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 110 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|-------|-----------------------|-------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y     | Z                     |       |       |
| 25-26 | 342.45 |              |      |              |      |                |      |           |    | 5660.9       | 647.4 | -131.5                | 930.3 | 132.9 |
|       |        | 228.6        | 8.9  | 3375         | 1413 | 67.7           | 6.3  | 1         | 44 | 5432.3       | 638.5 | -123.1                | 857.7 | 127.5 |
| 26-27 | 355.53 | 227.2        | 10.0 | 3375         | 1413 | 67.3           | 7.0  | 1         | 44 | 5205.1       | 628.5 | -114.8                | 788.1 | 122.2 |
| 27-28 | 368.62 | 225.8        | 11.0 | 3375         | 1413 | 66.9           | 7.8  | 1         | 44 | 4979.3       | 617.5 | -106.7                | 721.5 | 116.8 |
| 28-29 | 381.70 | 224.4        | 12.0 | 3375         | 1413 | 66.5           | 8.5  | 1         | 44 | 4754.9       | 605.5 | -98.7                 | 657.8 | 111.5 |
| 29-30 | 394.78 | 223.0        | 13.1 | 3375         | 1413 | 66.1           | 9.3  | 1         | 44 | 4532.0       | 592.4 | -90.9                 | 597.1 | 106.2 |
| 30-31 | 407.87 | 221.5        | 14.1 | 3375         | 1413 | 65.6           | 10.0 | 1         | 44 | 4310.4       | 578.3 | -83.2                 | 539.3 | 101.0 |
| 31-32 | 420.95 | 220.1        | 15.2 | 3375         | 1413 | 65.2           | 10.7 | 1         | 44 | 4090.3       | 563.1 | -75.7                 | 484.3 | 95.8  |
| 32-33 | 434.03 | 219.3        | 16.3 | 3375         | 1413 | 65.0           | 11.6 | 1         | 44 | 3871.0       | 546.8 | -68.5                 | 432.2 | 90.5  |
| 33-34 | 447.12 | 221.6        | 17.9 | 3375         | 1413 | 65.7           | 12.7 | 1         | 44 | 3649.4       | 528.8 | -61.4                 | 383.0 | 85.3  |
| 34-35 | 460.20 | 223.9        | 19.6 | 3375         | 1413 | 66.3           | 13.8 | 2         | 44 | 3425.5       | 509.3 | -54.7                 | 336.7 | 80.0  |
| 35-36 | 473.28 | 226.1        | 21.2 | 3375         | 1413 | 67.0           | 15.0 | 2         | 44 | 3199.4       | 488.1 | -48.1                 | 293.4 | 74.6  |
| 36-37 | 486.36 | 228.4        | 22.8 | 3375         | 1413 | 67.7           | 16.1 | 2         | 44 | 2971.1       | 465.3 | -41.9                 | 253.0 | 69.1  |
| 37-38 | 499.45 | 230.6        | 24.4 | 3375         | 1413 | 68.3           | 17.3 | 2         | 44 | 2740.4       | 440.9 | -36.0                 | 215.7 | 63.6  |
| 38-39 | 512.53 | 232.9        | 26.0 | 3375         | 1413 | 69.0           | 18.4 | 2         | 44 | 2507.5       | 414.9 | -30.4                 | 181.4 | 58.0  |
| 39-40 | 525.61 | 235.1        | 27.6 | 3375         | 1413 | 69.7           | 19.6 | 2         | 44 | 2272.4       | 387.3 | -25.1                 | 150.1 | 52.4  |
| 40-41 | 538.70 | 236.6        | 29.5 | 3375         | 1413 | 70.1           | 20.9 | 2         | 44 | 2035.8       | 357.8 | -20.2                 | 121.9 | 46.7  |
| 41-42 | 551.78 | 233.3        | 32.9 | 3375         | 1413 | 69.1           | 23.3 | 3         | 43 | 1802.5       | 324.9 | -15.8                 | 96.8  | 41.2  |
| 42-43 | 564.86 | 230.0        | 36.3 | 3375         | 1413 | 68.1           | 25.7 | 3         | 43 | 1572.6       | 288.6 | -11.8                 | 74.7  | 35.7  |
| 43-44 | 577.95 | 226.7        | 39.6 | 3375         | 1413 | 67.2           | 28.1 | 3         | 42 | 1345.9       | 249.0 | -8.2                  | 55.6  | 30.4  |
| 44-45 | 591.03 | 223.4        | 43.0 | 3375         | 1413 | 66.2           | 30.4 | 3         | 42 | 1122.5       | 205.9 | -5.3                  | 39.5  | 25.1  |
| 45-46 | 604.11 | 220.1        | 46.4 | 3375         | 1413 | 65.2           | 32.8 | 4         | 41 | 902.4        | 159.5 | -2.9                  | 26.2  | 20.0  |
| 46-47 | 617.19 | 216.8        | 49.8 | 3375         | 1413 | 64.2           | 35.2 | 4         | 41 | 685.6        | 109.8 | -1.1                  | 15.8  | 15.0  |
| 47-48 | 630.28 | 213.5        | 53.2 | 3375         | 1413 | 63.2           | 37.6 | 4         | 40 | 472.1        | 56.6  | -0.0                  | 8.3   | 10.1  |
| 48-49 | 643.36 | 204.6        | 53.0 | 3375         | 1413 | 60.6           | 37.5 | 4         | 40 | 267.5        | 3.7   | .4                    | 3.4   | 5.4   |
| 49-50 | 656.44 | 205.1        | 29.7 | 4788         | 2004 | 42.8           | 14.8 | 2         | 41 |              |       |                       |       |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 110 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 |              |       |              |      |                |       |           |    | 62.4         | -26.0 | .2                    | .4  | .8  |
| TOP    | 687.00 | 62.4         | -26.0 | 2973         | 1232 | 21.0           | -21.1 | -4        | 21 | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 120 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y      | X                     | Y      | Z     |
| GRND  | 0.00   | 112.2        | -6.2 | 3599         | 1734 | 31.2           | -3.5 | -1        | 35 | 8919.3       | 1612.8 | -702.4                | 3108.4 | 209.7 |
| GR-2  | 17.50  | 199.4        | 29.3 | 6203         | 2597 | 32.2           | 11.3 | 2         | 34 | 8807.1       | 1618.9 | -674.1                | 2953.3 | 207.6 |
| 2-3   | 41.54  | 119.3        | 13.0 | 3375         | 1413 | 35.3           | 9.2  | 2         | 38 | 8607.7       | 1589.6 | -635.5                | 2744.0 | 203.9 |
| 3-4   | 54.63  | 126.9        | 11.0 | 3375         | 1413 | 37.6           | 7.8  | 1         | 41 | 8488.3       | 1576.6 | -614.8                | 2632.1 | 201.4 |
| 4-5   | 67.71  | 134.5        | 8.9  | 3375         | 1413 | 39.9           | 6.3  | 1         | 43 | 8361.4       | 1563.6 | -594.3                | 2521.9 | 198.6 |
| 5-6   | 80.79  | 142.1        | 6.9  | 3375         | 1413 | 42.1           | 4.9  | 1         | 45 | 8226.9       | 1556.7 | -573.9                | 2413.4 | 195.5 |
| 6-7   | 93.87  | 149.7        | 4.8  | 3375         | 1413 | 44.4           | 3.4  | 1         | 47 | 8084.8       | 1549.8 | -553.5                | 2306.7 | 192.0 |
| 7-8   | 106.96 | 157.3        | 2.8  | 3375         | 1413 | 46.6           | 2.0  | 0         | 48 | 7935.0       | 1545.0 | -533.3                | 2201.9 | 188.2 |
| 8-9   | 120.04 | 164.3        | 1.8  | 3375         | 1413 | 48.7           | 1.3  | 0         | 49 | 7777.7       | 1542.2 | -513.1                | 2099.1 | 184.1 |
| 9-10  | 133.12 | 169.2        | 4.3  | 3375         | 1413 | 50.1           | 3.0  | 1         | 48 | 7613.4       | 1540.3 | -492.9                | 1998.4 | 179.8 |
| 10-11 | 146.21 | 174.2        | 6.7  | 3375         | 1413 | 51.6           | 4.7  | 1         | 48 | 7444.2       | 1536.1 | -472.8                | 1899.9 | 175.4 |
| 11-12 | 159.29 | 179.1        | 9.1  | 3375         | 1413 | 53.1           | 6.4  | 1         | 47 | 7270.0       | 1529.4 | -452.8                | 1803.7 | 170.9 |
| 12-13 | 172.37 | 184.1        | 11.5 | 3375         | 1413 | 54.5           | 8.1  | 1         | 46 | 7090.8       | 1520.3 | -432.8                | 1709.7 | 166.3 |
| 13-14 | 185.46 | 189.0        | 13.9 | 3375         | 1413 | 56.0           | 9.9  | 1         | 45 | 6906.8       | 1508.8 | -413.0                | 1618.2 | 161.7 |
| 14-15 | 198.54 | 194.0        | 16.3 | 3375         | 1413 | 57.5           | 11.6 | 2         | 45 | 6717.7       | 1494.9 | -393.3                | 1529.0 | 157.1 |
| 15-16 | 211.62 | 198.9        | 18.8 | 3375         | 1413 | 58.9           | 13.3 | 2         | 44 | 6523.8       | 1478.6 | -373.9                | 1442.4 | 152.4 |
| 16-17 | 224.70 | 202.8        | 21.1 | 3375         | 1413 | 60.1           | 14.9 | 2         | 44 | 6324.8       | 1459.8 | -354.7                | 1358.4 | 147.6 |
| 17-18 | 237.79 | 202.7        | 23.0 | 3375         | 1413 | 60.0           | 16.3 | 2         | 43 | 6122.1       | 1438.8 | -335.7                | 1277.0 | 142.7 |
| 18-19 | 250.87 | 202.6        | 24.9 | 3375         | 1413 | 60.0           | 17.6 | 2         | 43 | 5919.4       | 1415.8 | -317.0                | 1198.2 | 137.9 |
| 19-20 | 263.95 | 202.5        | 26.8 | 3375         | 1413 | 60.0           | 19.0 | 2         | 43 | 5716.8       | 1390.9 | -298.7                | 1122.1 | 133.1 |
| 20-21 | 277.04 | 202.4        | 28.8 | 3375         | 1413 | 60.0           | 20.4 | 3         | 43 | 5514.4       | 1364.1 | -280.7                | 1048.6 | 128.4 |
| 21-22 | 290.12 | 202.3        | 30.7 | 3375         | 1413 | 59.9           | 21.7 | 3         | 42 | 5312.0       | 1335.3 | -263.0                | 977.8  | 123.6 |
| 22-23 | 303.20 | 202.2        | 32.6 | 3375         | 1413 | 59.9           | 23.1 | 3         | 42 | 5109.7       | 1304.6 | -245.7                | 909.6  | 118.9 |
| 23-24 | 316.29 | 202.1        | 34.5 | 3375         | 1413 | 59.9           | 24.4 | 3         | 42 | 4907.5       | 1272.0 | -228.9                | 844.1  | 114.1 |
| 24-25 | 329.37 | 201.5        | 36.4 | 3375         | 1413 | 59.7           | 25.8 | 3         | 42 | 4705.4       | 1237.5 | -212.5                | 781.2  | 109.4 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 120 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 | 198.6        | 38.1 | 3375         | 1413 | 58.8           | 27.0 | 3         | 41 | 4503.9       | 1201.1 | -196.5                | 721.0 | 104.8 |
| 26-27 | 355.53 | 195.8        | 39.9 | 3375         | 1413 | 58.0           | 28.2 | 3         | 41 | 4305.3       | 1162.9 | -181.0                | 663.3 | 100.2 |
| 27-28 | 368.62 | 192.9        | 41.6 | 3375         | 1413 | 57.2           | 29.4 | 4         | 40 | 4109.6       | 1123.1 | -166.1                | 608.3 | 95.7  |
| 28-29 | 381.70 | 190.1        | 43.3 | 3375         | 1413 | 56.3           | 30.7 | 4         | 39 | 3916.6       | 1081.5 | -151.7                | 555.8 | 91.4  |
| 29-30 | 394.78 | 187.2        | 45.0 | 3375         | 1413 | 55.5           | 31.9 | 4         | 39 | 3726.5       | 1038.2 | -137.8                | 505.8 | 87.1  |
| 30-31 | 407.87 | 184.4        | 46.8 | 3375         | 1413 | 54.6           | 33.1 | 4         | 38 | 3539.3       | 993.1  | -124.5                | 458.3 | 82.9  |
| 31-32 | 420.95 | 181.6        | 48.5 | 3375         | 1413 | 53.8           | 34.3 | 4         | 38 | 3354.9       | 946.4  | -111.8                | 413.2 | 78.9  |
| 32-33 | 434.03 | 179.2        | 50.0 | 3375         | 1413 | 53.1           | 35.4 | 4         | 37 | 3173.4       | 897.9  | -99.8                 | 370.4 | 74.9  |
| 33-34 | 447.12 | 179.1        | 50.8 | 3375         | 1413 | 53.0           | 35.9 | 4         | 37 | 2994.2       | 847.8  | -88.3                 | 330.1 | 71.0  |
| 34-35 | 460.20 | 178.9        | 51.5 | 3375         | 1413 | 53.0           | 36.4 | 4         | 37 | 2815.1       | 797.1  | -77.6                 | 292.1 | 67.2  |
| 35-36 | 473.28 | 178.8        | 52.2 | 3375         | 1413 | 53.0           | 37.0 | 5         | 37 | 2636.2       | 745.6  | -67.5                 | 256.4 | 63.3  |
| 36-37 | 486.36 | 178.7        | 52.9 | 3375         | 1413 | 52.9           | 37.5 | 5         | 37 | 2457.3       | 693.4  | -58.1                 | 223.1 | 59.3  |
| 37-38 | 499.45 | 178.6        | 53.7 | 3375         | 1413 | 52.9           | 38.0 | 5         | 37 | 2278.6       | 640.4  | -49.3                 | 192.1 | 55.4  |
| 38-39 | 512.53 | 178.5        | 54.4 | 3375         | 1413 | 52.9           | 38.5 | 5         | 37 | 2100.0       | 586.8  | -41.3                 | 163.5 | 51.5  |
| 39-40 | 525.61 | 178.4        | 55.1 | 3375         | 1413 | 52.8           | 39.0 | 5         | 37 | 1921.5       | 532.4  | -34.0                 | 137.2 | 47.6  |
| 40-41 | 538.70 | 178.2        | 55.6 | 3375         | 1413 | 52.8           | 39.4 | 5         | 38 | 1743.1       | 477.3  | -27.4                 | 113.2 | 43.6  |
| 41-42 | 551.78 | 177.8        | 54.9 | 3375         | 1413 | 52.7           | 38.9 | 5         | 38 | 1564.9       | 421.7  | -21.5                 | 91.6  | 39.7  |
| 42-43 | 564.86 | 177.4        | 54.2 | 3375         | 1413 | 52.5           | 38.4 | 5         | 39 | 1387.1       | 366.8  | -16.4                 | 72.3  | 35.6  |
| 43-44 | 577.95 | 176.9        | 53.5 | 3375         | 1413 | 52.4           | 37.9 | 5         | 40 | 1209.8       | 312.6  | -11.9                 | 55.3  | 31.5  |
| 44-45 | 591.03 | 176.5        | 52.8 | 3375         | 1413 | 52.3           | 37.4 | 5         | 41 | 1032.8       | 259.0  | -8.2                  | 40.6  | 27.3  |
| 45-46 | 604.11 | 176.1        | 52.1 | 3375         | 1413 | 52.2           | 36.9 | 5         | 42 | 856.3        | 206.2  | -5.1                  | 28.3  | 23.1  |
| 46-47 | 617.19 | 175.6        | 51.4 | 3375         | 1413 | 52.0           | 36.4 | 5         | 43 | 680.3        | 154.1  | -2.8                  | 18.2  | 18.8  |
| 47-48 | 630.28 | 175.2        | 50.7 | 3375         | 1413 | 51.9           | 35.9 | 5         | 43 | 504.7        | 102.6  | -1.1                  | 10.5  | 14.4  |
| 48-49 | 643.36 | 168.1        | 47.3 | 3375         | 1413 | 49.8           | 33.5 | 5         | 45 | 329.5        | 51.9   | -1.1                  | 5.0   | 10.0  |
| 49-50 | 656.44 | 142.7        | 26.3 | 4788         | 2004 | 29.8           | 13.1 | 4         | 56 | 161.4        | 4.6    | .3                    | 1.8   | 5.6   |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 120 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 |              |       |              |      |                |       |           |    | 18.7         | -21.7 | .1                    | .1  | 1.1 |
| TOP    | 687.00 | 18.7         | -21.7 | 2973         | 1232 | 6.3            | -17.6 | -23       | 46 | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 130 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |        |       |
| GRND  | 0.00   | 142.0        | -21.8 | 3599         | 1734 | 39.5           | -12.5 | -2        | 29 | 10140.8      | 2160.1 | -972.5                | 3520.5 | 218.9 |
| GR-2  | 17.50  | 248.3        | 19.5  | 6203         | 2597 | 40.0           | 7.5   | 1         | 30 | 9998.8       | 2181.8 | -934.5                | 3344.2 | 216.6 |
| 2-3   | 41.54  | 147.6        | 8.1   | 3375         | 1413 | 43.7           | 5.7   | 1         | 33 | 9750.5       | 2162.4 | -882.3                | 3106.8 | 212.6 |
| 3-4   | 54.63  | 156.4        | 6.3   | 3375         | 1413 | 46.3           | 4.5   | 1         | 35 | 9602.9       | 2154.3 | -854.0                | 2980.2 | 209.9 |
| 4-5   | 67.71  | 165.2        | 4.6   | 3375         | 1413 | 48.9           | 3.2   | 0         | 37 | 9446.5       | 2147.9 | -825.9                | 2855.6 | 206.9 |
| 5-6   | 80.79  | 174.0        | 2.8   | 3375         | 1413 | 51.6           | 2.0   | 0         | 39 | 9281.3       | 2143.3 | -797.8                | 2733.1 | 203.6 |
| 6-7   | 93.87  | 182.8        | 1.1   | 3375         | 1413 | 54.2           | .8    | 0         | 41 | 9107.2       | 2140.5 | -769.8                | 2612.8 | 199.9 |
| 7-8   | 106.96 | 191.6        | -.7   | 3375         | 1413 | 56.8           | -.5   | -0        | 42 | 8924.4       | 2139.4 | -741.8                | 2494.9 | 195.9 |
| 8-9   | 120.04 | 198.8        | -1.0  | 3375         | 1413 | 58.9           | -.7   | -0        | 43 | 8732.8       | 2140.1 | -713.8                | 2379.4 | 191.5 |
| 9-10  | 133.12 | 200.9        | 3.0   | 3375         | 1413 | 59.5           | 2.1   | 0         | 42 | 8534.0       | 2141.1 | -685.8                | 2266.4 | 186.9 |
| 10-11 | 146.21 | 202.9        | 6.9   | 3375         | 1413 | 60.1           | 4.9   | 1         | 42 | 8333.1       | 2138.2 | -657.8                | 2156.1 | 182.3 |
| 11-12 | 159.29 | 205.0        | 10.9  | 3375         | 1413 | 60.7           | 7.7   | 1         | 42 | 8130.2       | 2131.2 | -629.9                | 2048.4 | 177.7 |
| 12-13 | 172.37 | 207.1        | 14.8  | 3375         | 1413 | 61.4           | 10.5  | 1         | 41 | 7925.1       | 2120.4 | -602.1                | 1943.4 | 173.1 |
| 13-14 | 185.46 | 209.2        | 18.8  | 3375         | 1413 | 62.0           | 13.3  | 2         | 40 | 7718.0       | 2105.6 | -574.4                | 1841.0 | 168.5 |
| 14-15 | 198.54 | 211.3        | 22.7  | 3375         | 1413 | 62.6           | 16.1  | 2         | 40 | 7508.8       | 2086.8 | -547.0                | 1741.4 | 163.9 |
| 15-16 | 211.62 | 213.4        | 26.7  | 3375         | 1413 | 63.2           | 18.9  | 2         | 39 | 7297.5       | 2064.0 | -519.8                | 1644.6 | 159.3 |
| 16-17 | 224.70 | 215.0        | 30.5  | 3375         | 1413 | 63.7           | 21.6  | 2         | 39 | 7084.2       | 2037.3 | -493.0                | 1550.5 | 154.7 |
| 17-18 | 237.79 | 215.1        | 33.6  | 3375         | 1413 | 63.7           | 23.8  | 3         | 39 | 6869.2       | 2006.9 | -466.6                | 1459.2 | 150.0 |
| 18-19 | 250.87 | 215.1        | 36.7  | 3375         | 1413 | 63.7           | 26.0  | 3         | 39 | 6654.1       | 1973.3 | -440.5                | 1370.7 | 145.4 |
| 19-20 | 263.95 | 215.2        | 39.9  | 3375         | 1413 | 63.7           | 28.2  | 3         | 38 | 6439.0       | 1936.5 | -414.9                | 1285.1 | 140.8 |
| 20-21 | 277.04 | 215.2        | 43.0  | 3375         | 1413 | 63.8           | 30.4  | 3         | 38 | 6223.8       | 1896.7 | -389.9                | 1202.3 | 136.2 |
| 21-22 | 290.12 | 215.3        | 46.1  | 3375         | 1413 | 63.8           | 32.6  | 3         | 38 | 6008.6       | 1853.7 | -365.3                | 1122.2 | 131.6 |
| 22-23 | 303.20 | 215.3        | 49.2  | 3375         | 1413 | 63.8           | 34.9  | 4         | 38 | 5793.3       | 1807.6 | -341.4                | 1045.0 | 127.0 |
| 23-24 | 316.29 | 215.4        | 52.4  | 3375         | 1413 | 63.8           | 37.1  | 4         | 38 | 5578.0       | 1758.3 | -318.1                | 970.7  | 122.3 |
| 24-25 | 329.37 | 215.1        | 55.1  | 3375         | 1413 | 63.7           | 39.0  | 4         | 37 | 5362.6       | 1705.9 | -295.4                | 899.1  | 117.7 |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 130 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 |              |      |              |      |                |      |           |    | 5147.5       | 1650.8 | -273.4                | 830.3 | 113.1 |
| 26-27 | 355.53 | 213.5        | 56.3 | 3375         | 1413 | 63.3           | 39.8 | 4         | 37 | 4933.9       | 1594.5 | -252.2                | 764.4 | 108.5 |
| 27-28 | 368.62 | 211.9        | 57.5 | 3375         | 1413 | 62.8           | 40.7 | 4         | 37 | 4722.1       | 1537.1 | -231.7                | 701.2 | 104.0 |
| 28-29 | 381.70 | 210.3        | 58.6 | 3375         | 1413 | 62.3           | 41.5 | 4         | 37 | 4511.8       | 1478.4 | -212.0                | 640.8 | 99.5  |
| 29-30 | 394.78 | 208.6        | 59.8 | 3375         | 1413 | 61.8           | 42.3 | 4         | 37 | 4303.2       | 1418.6 | -193.0                | 583.2 | 95.0  |
| 30-31 | 407.87 | 207.0        | 61.0 | 3375         | 1413 | 61.3           | 43.1 | 4         | 36 | 4096.1       | 1357.7 | -174.9                | 528.2 | 90.6  |
| 31-32 | 420.95 | 205.4        | 62.1 | 3375         | 1413 | 60.9           | 44.0 | 5         | 36 | 3890.7       | 1295.5 | -157.5                | 476.0 | 86.2  |
| 32-33 | 434.03 | 203.8        | 63.3 | 3375         | 1413 | 60.4           | 44.8 | 5         | 36 | 3687.0       | 1232.2 | -141.0                | 426.4 | 81.9  |
| 33-34 | 447.12 | 202.7        | 64.5 | 3375         | 1413 | 60.0           | 45.7 | 5         | 36 | 3484.3       | 1167.7 | -125.3                | 379.5 | 77.6  |
| 34-35 | 460.20 | 204.1        | 65.9 | 3375         | 1413 | 60.5           | 46.7 | 5         | 36 | 3280.1       | 1101.8 | -110.4                | 335.2 | 73.2  |
| 35-36 | 473.28 | 205.6        | 67.4 | 3375         | 1413 | 60.9           | 47.7 | 5         | 35 | 3074.6       | 1034.4 | -96.5                 | 293.7 | 68.9  |
| 36-37 | 486.36 | 207.0        | 68.8 | 3375         | 1413 | 61.3           | 48.7 | 5         | 35 | 2867.5       | 965.6  | -83.4                 | 254.8 | 64.5  |
| 37-38 | 499.45 | 208.5        | 70.2 | 3375         | 1413 | 61.8           | 49.7 | 5         | 35 | 2659.1       | 895.4  | -71.2                 | 218.6 | 60.1  |
| 38-39 | 512.53 | 209.9        | 71.6 | 3375         | 1413 | 62.2           | 50.7 | 5         | 35 | 2449.1       | 823.8  | -60.0                 | 185.2 | 55.6  |
| 39-40 | 525.61 | 211.4        | 73.1 | 3375         | 1413 | 62.6           | 51.7 | 5         | 35 | 2237.8       | 750.7  | -49.7                 | 154.6 | 51.2  |
| 40-41 | 538.70 | 212.8        | 74.5 | 3375         | 1413 | 63.0           | 52.7 | 5         | 35 | 2025.0       | 676.3  | -40.3                 | 126.7 | 46.7  |
| 41-42 | 551.78 | 214.0        | 75.6 | 3375         | 1413 | 63.4           | 53.5 | 5         | 35 | 1811.0       | 600.7  | -32.0                 | 101.6 | 42.2  |
| 42-43 | 564.86 | 213.5        | 74.9 | 3375         | 1413 | 63.3           | 53.0 | 5         | 35 | 1597.5       | 525.7  | -24.6                 | 79.3  | 37.7  |
| 43-44 | 577.95 | 213.0        | 74.3 | 3375         | 1413 | 63.1           | 52.6 | 5         | 35 | 1384.5       | 451.4  | -18.2                 | 59.8  | 33.2  |
| 44-45 | 591.03 | 212.5        | 73.7 | 3375         | 1413 | 63.0           | 52.1 | 5         | 35 | 1172.0       | 377.8  | -12.8                 | 43.1  | 28.6  |
| 45-46 | 604.11 | 212.0        | 73.0 | 3375         | 1413 | 62.8           | 51.7 | 5         | 36 | 959.9        | 304.8  | -8.3                  | 29.1  | 24.1  |
| 46-47 | 617.19 | 211.5        | 72.4 | 3375         | 1413 | 62.7           | 51.2 | 5         | 36 | 748.4        | 232.4  | -4.8                  | 17.9  | 19.5  |
| 47-48 | 630.28 | 211.0        | 71.7 | 3375         | 1413 | 62.5           | 50.8 | 5         | 36 | 537.3        | 160.7  | -2.2                  | 9.5   | 14.9  |
| 48-49 | 643.36 | 210.6        | 71.1 | 3375         | 1413 | 62.4           | 50.3 | 5         | 36 | 326.8        | 89.6   | -.6                   | 3.9   | 10.3  |
| 49-50 | 656.44 | 200.3        | 67.0 | 3375         | 1413 | 59.3           | 47.4 | 5         | 37 | 126.5        | 22.6   | .1                    | .9    | 5.8   |
|       |        | 143.1        | 44.7 | 4788         | 2004 | 29.9           | 22.3 | 7         | 54 |              |        |                       |       |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 130 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 | -16.6        | -22.0 | 2973         | 1232 | -5.6           | -17.9 | -27       | -49 | -16.6        | -22.0 | 1                     | -1  | 1.2 |
| TOP    | 687.00 |              |       |              |      |                |       |           |     | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 140 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |        |       |
| GRND  | 0.00   |              |       |              |      |                |       |           |    | 9241.6       | 2159.1 | -1152.4               | 3256.3 | 194.6 |
| GR-2  | 17.50  | 132.4        | -60.2 | 3599         | 1734 | 36.8           | -34.7 | -4        | 23 | 9109.2       | 2219.3 | -1114.1               | 3095.7 | 192.7 |
| 2-3   | 41.54  | 231.5        | 7.6   | 6203         | 2597 | 37.3           | 2.9   | 0         | 28 | 8877.7       | 2211.7 | -1060.9               | 2879.5 | 189.2 |
| 3-4   | 54.63  | 135.9        | -1.4  | 3375         | 1413 | 40.3           | -1.0  | -0        | 32 | 8741.7       | 2213.1 | -1031.9               | 2764.2 | 186.9 |
| 4-5   | 67.71  | 143.0        | -5.2  | 3375         | 1413 | 42.4           | -3.7  | -1        | 34 | 8598.8       | 2218.4 | -1002.9               | 2650.8 | 184.2 |
| 5-6   | 80.79  | 150.0        | -9.1  | 3375         | 1413 | 44.4           | -6.4  | -1        | 36 | 8448.7       | 2227.5 | -973.8                | 2539.3 | 181.3 |
| 6-7   | 93.87  | 157.1        | -13.0 | 3375         | 1413 | 46.5           | -9.2  | -1        | 37 | 8291.7       | 2240.4 | -944.6                | 2429.8 | 178.2 |
| 7-8   | 106.96 | 164.1        | -16.8 | 3375         | 1413 | 48.6           | -11.9 | -2        | 39 | 8127.6       | 2257.3 | -915.2                | 2322.4 | 174.7 |
| 8-9   | 120.04 | 171.1        | -20.7 | 3375         | 1413 | 50.7           | -14.7 | -2        | 40 | 7956.4       | 2278.0 | -885.5                | 2217.2 | 170.9 |
| 9-10  | 133.12 | 177.0        | -22.6 | 3375         | 1413 | 52.4           | -16.0 | -2        | 41 | 7779.4       | 2300.6 | -855.6                | 2114.2 | 166.9 |
| 10-11 | 146.21 | 179.3        | -18.4 | 3375         | 1413 | 53.1           | -13.1 | -2        | 41 | 7600.1       | 2319.0 | -825.4                | 2013.6 | 162.9 |
| 11-12 | 159.29 | 181.7        | -14.3 | 3375         | 1413 | 53.8           | -10.1 | -1        | 40 | 7418.4       | 2333.3 | -794.9                | 1915.4 | 159.0 |
| 12-13 | 172.37 | 184.0        | -10.1 | 3375         | 1413 | 54.5           | -7.2  | -1        | 40 | 7234.4       | 2343.5 | -764.3                | 1819.5 | 155.0 |
| 13-14 | 185.46 | 186.3        | -6.0  | 3375         | 1413 | 55.2           | -4.2  | -1        | 39 | 7048.1       | 2349.4 | -733.6                | 1726.1 | 151.1 |
| 14-15 | 198.54 | 188.7        | -1.8  | 3375         | 1413 | 55.9           | -1.3  | -0        | 38 | 6859.5       | 2351.3 | -702.9                | 1635.1 | 147.2 |
| 15-16 | 211.62 | 191.0        | 2.3   | 3375         | 1413 | 56.6           | 1.6   | 0         | 38 | 6668.5       | 2349.0 | -672.1                | 1546.6 | 143.3 |
| 16-17 | 224.70 | 193.3        | 6.5   | 3375         | 1413 | 57.3           | 4.6   | 1         | 37 | 6475.2       | 2342.5 | -641.4                | 1460.6 | 139.5 |
| 17-18 | 237.79 | 194.7        | 10.8  | 3375         | 1413 | 57.7           | 7.6   | 1         | 37 | 6280.5       | 2331.7 | -610.9                | 1377.2 | 135.6 |
| 18-19 | 250.87 | 192.8        | 15.6  | 3375         | 1413 | 57.1           | 11.0  | 1         | 37 | 6087.7       | 2316.1 | -580.5                | 1296.3 | 131.8 |
| 19-20 | 263.95 | 190.8        | 20.4  | 3375         | 1413 | 56.5           | 14.5  | 2         | 37 | 5896.9       | 2295.7 | -550.3                | 1217.9 | 127.9 |
| 20-21 | 277.04 | 188.9        | 25.3  | 3375         | 1413 | 56.0           | 17.9  | 2         | 37 | 5708.0       | 2270.5 | -520.4                | 1142.0 | 124.1 |
| 21-22 | 290.12 | 187.0        | 30.1  | 3375         | 1413 | 55.4           | 21.3  | 3         | 37 | 5521.0       | 2240.4 | -490.9                | 1068.5 | 120.2 |
| 22-23 | 303.20 | 185.0        | 34.9  | 3375         | 1413 | 54.8           | 24.7  | 3         | 37 | 5335.9       | 2205.5 | -461.8                | 997.5  | 116.4 |
| 23-24 | 316.29 | 183.1        | 39.7  | 3375         | 1413 | 54.2           | 28.1  | 3         | 37 | 5152.8       | 2165.7 | -433.2                | 928.9  | 112.5 |
| 24-25 | 329.37 | 181.2        | 44.6  | 3375         | 1413 | 53.7           | 31.5  | 4         | 37 | 4971.6       | 2121.2 | -405.2                | 862.7  | 108.7 |
|       |        | 179.7        | 49.0  | 3375         | 1413 | 53.2           | 34.7  | 4         | 37 |              |        |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 140 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y    | X         | Y  | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 | 180.2        | 51.9  | 3375         | 1413 | 53.4           | 36.7 | 4         | 36 | 4791.9       | 2072.1 | -377.8                | 798.8 | 104.9 |
| 26-27 | 355.53 | 180.6        | 54.7  | 3375         | 1413 | 53.5           | 38.7 | 5         | 36 | 4611.8       | 2020.3 | -351.0                | 737.3 | 101.0 |
| 27-28 | 368.62 | 181.0        | 57.5  | 3375         | 1413 | 53.6           | 40.7 | 5         | 36 | 4431.2       | 1965.6 | -324.9                | 678.1 | 97.2  |
| 28-29 | 381.70 | 181.5        | 60.4  | 3375         | 1413 | 53.8           | 42.7 | 5         | 35 | 4250.2       | 1908.0 | -299.6                | 621.3 | 93.3  |
| 29-30 | 394.78 | 181.9        | 63.2  | 3375         | 1413 | 53.9           | 44.8 | 5         | 35 | 4068.7       | 1847.6 | -275.0                | 566.9 | 89.5  |
| 30-31 | 407.87 | 182.3        | 66.1  | 3375         | 1413 | 54.0           | 46.8 | 5         | 35 | 3886.8       | 1784.4 | -251.3                | 514.9 | 85.6  |
| 31-32 | 420.95 | 182.8        | 68.9  | 3375         | 1413 | 54.1           | 48.8 | 5         | 34 | 3704.5       | 1718.3 | -228.3                | 465.2 | 81.8  |
| 32-33 | 434.03 | 183.4        | 71.7  | 3375         | 1413 | 54.3           | 50.8 | 6         | 34 | 3521.7       | 1649.4 | -206.3                | 418.0 | 77.9  |
| 33-34 | 447.12 | 185.3        | 74.3  | 3375         | 1413 | 54.9           | 52.6 | 6         | 34 | 3338.3       | 1577.6 | -185.2                | 373.1 | 74.1  |
| 34-35 | 460.20 | 187.3        | 76.8  | 3375         | 1413 | 55.5           | 54.4 | 6         | 33 | 3153.0       | 1503.4 | -165.1                | 330.6 | 70.2  |
| 35-36 | 473.28 | 189.2        | 79.4  | 3375         | 1413 | 56.0           | 56.2 | 6         | 33 | 2965.7       | 1426.5 | -145.9                | 290.6 | 66.2  |
| 36-37 | 486.36 | 191.1        | 81.9  | 3375         | 1413 | 56.6           | 58.0 | 6         | 33 | 2776.5       | 1347.2 | -127.7                | 253.0 | 62.3  |
| 37-38 | 499.45 | 193.0        | 84.5  | 3375         | 1413 | 57.2           | 59.8 | 6         | 33 | 2585.5       | 1265.2 | -110.7                | 218.0 | 58.3  |
| 38-39 | 512.53 | 194.9        | 87.0  | 3375         | 1413 | 57.7           | 61.6 | 6         | 32 | 2392.5       | 1180.8 | -94.7                 | 185.4 | 54.2  |
| 39-40 | 525.61 | 196.8        | 89.6  | 3375         | 1413 | 58.3           | 63.4 | 6         | 32 | 2197.6       | 1093.7 | -79.8                 | 155.4 | 50.1  |
| 40-41 | 538.70 | 198.8        | 92.2  | 3375         | 1413 | 58.9           | 65.2 | 6         | 32 | 2000.9       | 1004.1 | -66.0                 | 127.9 | 46.0  |
| 41-42 | 551.78 | 201.3        | 95.0  | 3375         | 1413 | 59.6           | 67.3 | 6         | 32 | 1802.1       | 912.0  | -53.5                 | 103.0 | 41.9  |
| 42-43 | 564.86 | 203.8        | 97.9  | 3375         | 1413 | 60.4           | 69.3 | 6         | 32 | 1600.8       | 816.9  | -42.2                 | 80.8  | 37.6  |
| 43-44 | 577.95 | 206.4        | 100.8 | 3375         | 1413 | 61.1           | 71.3 | 6         | 32 | 1396.9       | 719.0  | -32.2                 | 61.2  | 33.4  |
| 44-45 | 591.03 | 208.9        | 103.6 | 3375         | 1413 | 61.9           | 73.3 | 7         | 31 | 1190.5       | 618.3  | -23.4                 | 44.2  | 29.0  |
| 45-46 | 604.11 | 211.4        | 106.5 | 3375         | 1413 | 62.6           | 75.4 | 7         | 31 | 981.6        | 514.7  | -16.0                 | 30.0  | 24.6  |
| 46-47 | 617.19 | 214.0        | 109.3 | 3375         | 1413 | 63.4           | 77.4 | 7         | 31 | 770.2        | 408.2  | -10.0                 | 18.6  | 20.1  |
| 47-48 | 630.28 | 216.5        | 112.2 | 3375         | 1413 | 64.1           | 79.4 | 7         | 31 | 556.3        | 298.8  | -5.3                  | 9.9   | 15.6  |
| 48-49 | 643.36 | 208.5        | 110.3 | 3375         | 1413 | 61.8           | 78.1 | 7         | 32 | 339.8        | 186.6  | -2.2                  | 4.0   | 10.9  |
| 49-50 | 656.44 | 149.2        | 93.8  | 4788         | 2004 | 31.2           | 46.8 | 11        | 43 | 131.3        | 76.3   | -.4                   | .9    | 6.4   |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 140 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 | -17.9        | -17.5 | 2973         | 1232 | -6.0           | -14.2 | -32       | -80 | -17.9        | -17.5 | .1                    | -.1 | 1.5 |
| TOP    | 687.00 |              |       |              |      |                |       |           |     | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 150 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |         | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |    | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|---------|--------------|------|----------------|--------|-----------|----|--------------|---------|-----------------------|--------|-------|
|       |        | X            | Y       | X            | Y    | X              | Y      | X         | Y  | X            | Y       | Z                     |        |       |
| GRND  | 0.00   | 105.6        | -1307.8 | 3599         | 1734 | 29.3           | -754.2 | -1        | 0  | 6748.8       | -4469.6 | -164.7                | 2399.3 | 149.1 |
| GR-2  | 17.50  | 175.5        | -143.5  | 6203         | 2597 | 28.3           | -55.2  | -8        | 22 | 6643.2       | -3161.9 | -231.5                | 2282.1 | 147.3 |
| 2-3   | 41.54  | 101.4        | -192.8  | 3375         | 1413 | 30.0           | -136.4 | -7        | 9  | 6467.7       | -3018.4 | -305.8                | 2124.5 | 143.8 |
| 3-4   | 54.63  | 105.6        | -273.7  | 3375         | 1413 | 31.3           | -193.7 | -6        | 5  | 6366.3       | -2825.6 | -344.0                | 2040.6 | 141.6 |
| 4-5   | 67.71  | 109.7        | -354.5  | 3375         | 1413 | 32.5           | -250.9 | -5        | 4  | 6260.7       | -2552.0 | -379.2                | 1958.0 | 139.2 |
| 5-6   | 80.79  | 113.9        | -435.4  | 3375         | 1413 | 33.7           | -308.1 | -5        | 3  | 6151.0       | -2197.4 | -410.2                | 1876.8 | 136.6 |
| 6-7   | 93.87  | 118.1        | -516.3  | 3375         | 1413 | 35.0           | -365.4 | -4        | 2  | 6037.1       | -1762.1 | -436.1                | 1797.0 | 133.9 |
| 7-8   | 106.96 | 122.2        | -597.1  | 3375         | 1413 | 36.2           | -422.6 | -4        | 2  | 5919.0       | -1245.8 | -455.8                | 1718.8 | 130.9 |
| 8-9   | 120.04 | 125.4        | -640.7  | 3375         | 1413 | 37.2           | -453.4 | -4        | 2  | 5796.8       | -648.7  | -468.2                | 1642.2 | 127.7 |
| 9-10  | 133.12 | 125.8        | -571.4  | 3375         | 1413 | 37.3           | -404.4 | -4        | 2  | 5671.4       | -8.0    | -472.5                | 1567.2 | 124.4 |
| 10-11 | 146.21 | 126.2        | -502.1  | 3375         | 1413 | 37.4           | -355.4 | -5        | 3  | 5545.5       | 563.4   | -468.9                | 1493.8 | 121.0 |
| 11-12 | 159.29 | 126.6        | -432.8  | 3375         | 1413 | 37.5           | -306.3 | -6        | 4  | 5419.3       | 1065.5  | -458.2                | 1422.1 | 117.6 |
| 12-13 | 172.37 | 127.0        | -363.5  | 3375         | 1413 | 37.6           | -257.3 | -6        | 5  | 5292.7       | 1498.4  | -441.4                | 1352.0 | 114.3 |
| 13-14 | 185.46 | 127.4        | -294.2  | 3375         | 1413 | 37.8           | -208.2 | -8        | 8  | 5165.6       | 1861.9  | -419.5                | 1283.6 | 110.9 |
| 14-15 | 198.54 | 127.8        | -224.9  | 3375         | 1413 | 37.9           | -159.2 | -9        | 12 | 5038.2       | 2156.1  | -393.2                | 1216.8 | 107.5 |
| 15-16 | 211.62 | 128.2        | -155.7  | 3375         | 1413 | 38.0           | -110.2 | -10       | 20 | 4910.3       | 2381.1  | -363.5                | 1151.8 | 104.0 |
| 16-17 | 224.70 | 128.7        | -89.2   | 3375         | 1413 | 38.1           | -63.1  | -10       | 33 | 4782.1       | 2536.7  | -331.3                | 1088.4 | 100.6 |
| 17-18 | 237.79 | 129.2        | -32.5   | 3375         | 1413 | 38.3           | -23.0  | -5        | 45 | 4653.4       | 2625.9  | -297.5                | 1026.6 | 97.2  |
| 18-19 | 250.87 | 129.6        | 24.1    | 3375         | 1413 | 38.4           | 17.1   | 4         | 45 | 4524.3       | 2658.5  | -263.0                | 966.6  | 93.8  |
| 19-20 | 263.95 | 130.1        | 80.8    | 3375         | 1413 | 38.6           | 57.2   | 9         | 33 | 4394.6       | 2634.3  | -228.4                | 908.3  | 90.5  |
| 20-21 | 277.04 | 130.6        | 137.4   | 3375         | 1413 | 38.7           | 97.2   | 9         | 21 | 4264.5       | 2553.6  | -194.4                | 851.6  | 87.3  |
| 21-22 | 290.12 | 131.1        | 194.0   | 3375         | 1413 | 38.8           | 137.3  | 8         | 14 | 4133.9       | 2416.2  | -161.9                | 796.7  | 84.2  |
| 22-23 | 303.20 | 131.6        | 250.7   | 3375         | 1413 | 39.0           | 177.4  | 7         | 9  | 4002.8       | 2222.1  | -131.6                | 743.4  | 81.1  |
| 23-24 | 316.29 | 132.1        | 307.3   | 3375         | 1413 | 39.1           | 217.5  | 6         | 6  | 3871.1       | 1971.5  | -104.1                | 691.9  | 78.1  |
| 24-25 | 329.37 | 132.6        | 344.1   | 3375         | 1413 | 39.3           | 243.5  | 6         | 5  | 3739.0       | 1664.1  | -80.4                 | 642.2  | 75.1  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS 1 ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROGELASTIC DATA  
WIND DIRECTION 150 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|-------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |       |      |
| 25-26 | 342.45 | 133.1        | 299.5 | 3375         | 1413 | 39.4           | 212.0 | 6         | 7  | 3606.4       | 1320.1 | -60.8                 | 594.1 | 72.2 |
| 26-27 | 355.53 | 133.7        | 255.0 | 3375         | 1413 | 39.6           | 180.5 | 7         | 8  | 3473.3       | 1020.6 | -45.5                 | 547.8 | 69.4 |
| 27-28 | 368.62 | 134.2        | 210.4 | 3375         | 1413 | 39.8           | 148.9 | 7         | 11 | 3339.6       | 765.6  | -33.8                 | 503.2 | 66.6 |
| 28-29 | 381.70 | 134.7        | 165.9 | 3375         | 1413 | 39.9           | 117.4 | 8         | 15 | 3205.4       | 555.2  | -25.2                 | 460.4 | 63.8 |
| 29-30 | 394.78 | 135.3        | 121.3 | 3375         | 1413 | 40.1           | 85.9  | 8         | 21 | 3070.7       | 389.3  | -19.0                 | 419.4 | 61.0 |
| 30-31 | 407.87 | 135.8        | 76.8  | 3375         | 1413 | 40.2           | 54.4  | 7         | 28 | 2935.4       | 267.9  | -14.7                 | 380.1 | 58.3 |
| 31-32 | 420.95 | 136.3        | 32.3  | 3375         | 1413 | 40.4           | 22.8  | 3         | 34 | 2799.6       | 191.1  | -11.7                 | 342.6 | 55.7 |
| 32-33 | 434.03 | 137.3        | -5.1  | 3375         | 1413 | 40.7           | -3.6  | -1        | 35 | 2663.3       | 158.9  | -9.4                  | 306.8 | 53.0 |
| 33-34 | 447.12 | 140.2        | -7.6  | 3375         | 1413 | 41.5           | -5.4  | -1        | 35 | 2526.0       | 163.9  | -7.3                  | 272.9 | 50.4 |
| 34-35 | 460.20 | 143.1        | -10.1 | 3375         | 1413 | 42.4           | -7.1  | -1        | 34 | 2385.8       | 171.5  | -5.1                  | 240.7 | 47.8 |
| 35-36 | 473.28 | 146.0        | -12.6 | 3375         | 1413 | 43.2           | -8.9  | -1        | 34 | 2242.7       | 181.6  | -2.8                  | 210.5 | 45.1 |
| 36-37 | 486.36 | 148.9        | -15.1 | 3375         | 1413 | 44.1           | -10.7 | -1        | 34 | 2096.8       | 194.2  | -1.4                  | 182.1 | 42.4 |
| 37-38 | 499.45 | 151.8        | -17.6 | 3375         | 1413 | 45.0           | -12.5 | -2        | 33 | 1947.9       | 209.4  | 2.3                   | 155.6 | 39.7 |
| 38-39 | 512.53 | 154.7        | -20.1 | 3375         | 1413 | 45.8           | -14.2 | -2        | 33 | 1796.1       | 227.0  | 5.1                   | 131.1 | 36.9 |
| 39-40 | 525.61 | 157.6        | -22.6 | 3375         | 1413 | 46.7           | -16.0 | -2        | 32 | 1641.5       | 247.1  | 8.2                   | 108.6 | 34.1 |
| 40-41 | 538.70 | 160.2        | -20.5 | 3375         | 1413 | 47.4           | -14.5 | -2        | 32 | 1483.9       | 269.8  | 11.6                  | 88.2  | 31.3 |
| 41-42 | 551.78 | 161.0        | 9.0   | 3375         | 1413 | 47.7           | 6.4   | 1         | 33 | 1323.7       | 290.3  | 15.3                  | 69.8  | 28.5 |
| 42-43 | 564.86 | 161.8        | 38.5  | 3375         | 1413 | 47.9           | 27.2  | 3         | 32 | 1162.7       | 281.3  | 19.0                  | 53.6  | 25.6 |
| 43-44 | 577.95 | 162.7        | 68.0  | 3375         | 1413 | 48.2           | 48.1  | 5         | 29 | 1000.9       | 242.8  | 22.5                  | 39.4  | 22.6 |
| 44-45 | 591.03 | 163.5        | 97.5  | 3375         | 1413 | 48.4           | 69.0  | 6         | 25 | 838.2        | 174.8  | 25.2                  | 27.4  | 19.6 |
| 45-46 | 604.11 | 164.4        | 126.9 | 3375         | 1413 | 48.7           | 89.8  | 7         | 22 | 674.7        | 77.4   | 26.8                  | 17.5  | 16.6 |
| 46-47 | 617.19 | 165.2        | 156.4 | 3375         | 1413 | 48.9           | 110.7 | 7         | 18 | 510.3        | -49.6  | 27.0                  | 9.7   | 13.5 |
| 47-48 | 630.28 | 166.0        | 185.9 | 3375         | 1413 | 49.2           | 131.6 | 7         | 16 | 345.2        | -206.0 | 25.3                  | 4.1   | 10.4 |
| 48-49 | 643.36 | 156.6        | 195.3 | 3375         | 1413 | 46.4           | 138.2 | 8         | 14 | 179.1        | -391.9 | 21.4                  | .7    | 7.2  |
| 49-50 | 656.44 | 76.7         | 40.1  | 4798         | 2004 | 16.0           | 20.0  | 13        | 60 | 22.5         | -587.2 | 15.0                  | -1.6  | 4.1  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 150 CONFIGURATION C REFERENCE PRESSURE +2.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|--------|--------------|------|----------------|--------|-----------|----|--------------|--------|-----------------------|-----|-----|
|        |        | X            | Y      | X            | Y    | X              | Y      | X         | Y  | X            | Y      | Z                     |     |     |
| 50-TOP | 675.00 | -54.1        | -627.3 | 2973         | 1232 | -18.2          | -509.3 | -1        | -0 | -54.1        | -627.3 | 3.8                   | -.3 | .9  |
| TOP    | 687.00 |              |        |              |      |                |        |           |    | 0.0          | 0.0    | 0.0                   | 0.0 | 0.0 |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 160 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |         | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (X) |   | SHEAR (KIPS) |          | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|---------|--------------|------|----------------|--------|-----------|---|--------------|----------|-----------------------|--------|-------|
|       |        | X            | Y       | X            | Y    | X              | Y      | X         | Y | X            | Y        | X                     | Y      | Z     |
| GRND  | 0.00   |              |         |              |      |                |        |           |   | 7988.1       | -20032.0 | 4756.2                | 2883.0 | 132.7 |
| GR-2  | 17.50  | 132.5        | -1589.6 | 3599         | 1734 | 36.8           | -916.7 | -1        | 0 | 7855.6       | -18442.4 | 4419.5                | 2744.4 | 130.0 |
| 2-3   | 41.54  | 210.7        | -371.4  | 6203         | 2597 | 34.0           | -143.0 | -6        | 9 | 7644.9       | -18071.0 | 3980.6                | 2558.0 | 125.9 |
| 3-4   | 54.63  | 117.4        | -306.3  | 3375         | 1413 | 34.8           | -216.8 | -5        | 5 | 7527.5       | -17764.6 | 3746.2                | 2458.8 | 123.5 |
| 4-5   | 67.71  | 119.3        | -379.8  | 3375         | 1413 | 35.3           | -268.8 | -5        | 4 | 7408.3       | -17384.9 | 3516.2                | 2361.1 | 120.9 |
| 5-6   | 80.79  | 121.2        | -453.2  | 3375         | 1413 | 35.9           | -320.8 | -4        | 3 | 7287.1       | -16931.6 | 3291.8                | 2264.9 | 118.2 |
| 6-7   | 93.87  | 123.1        | -526.7  | 3375         | 1413 | 36.5           | -372.8 | -4        | 2 | 7164.0       | -16404.9 | 3073.7                | 2170.4 | 115.3 |
| 7-8   | 106.96 | 125.0        | -600.1  | 3375         | 1413 | 37.0           | -424.7 | -4        | 2 | 7039.0       | -15804.8 | 2863.0                | 2077.5 | 112.2 |
| 8-9   | 120.04 | 126.9        | -673.6  | 3375         | 1413 | 37.6           | -476.7 | -4        | 2 | 6912.1       | -15131.2 | 2660.6                | 1986.2 | 109.0 |
| 9-10  | 133.12 | 128.9        | -727.9  | 3375         | 1413 | 38.2           | -515.1 | -3        | 1 | 6783.1       | -14403.4 | 2467.4                | 1896.7 | 105.7 |
| 10-11 | 146.21 | 131.3        | -724.0  | 3375         | 1413 | 38.9           | -512.4 | -3        | 1 | 6651.8       | -13679.3 | 2283.7                | 1808.8 | 102.5 |
| 11-12 | 159.29 | 133.7        | -720.2  | 3375         | 1413 | 39.6           | -509.7 | -3        | 1 | 6518.1       | -12959.1 | 2109.5                | 1722.6 | 99.3  |
| 12-13 | 172.37 | 136.1        | -716.4  | 3375         | 1413 | 40.3           | -507.0 | -3        | 1 | 6382.0       | -12242.8 | 1944.6                | 1638.2 | 96.3  |
| 13-14 | 185.46 | 138.5        | -712.5  | 3375         | 1413 | 41.0           | -504.3 | -3        | 1 | 6243.5       | -11530.2 | 1789.1                | 1555.7 | 93.3  |
| 14-15 | 198.54 | 140.9        | -708.7  | 3375         | 1413 | 41.7           | -501.6 | -3        | 1 | 6102.6       | -10821.5 | 1642.9                | 1474.9 | 90.5  |
| 15-16 | 211.62 | 143.3        | -704.9  | 3375         | 1413 | 42.5           | -498.9 | -3        | 1 | 5959.3       | -10116.6 | 1505.9                | 1396.0 | 87.7  |
| 16-17 | 224.70 | 145.7        | -701.0  | 3375         | 1413 | 43.2           | -496.2 | -3        | 1 | 5813.6       | -9415.6  | 1378.1                | 1319.0 | 85.0  |
| 17-18 | 237.79 | 148.0        | -697.6  | 3375         | 1413 | 43.8           | -486.6 | -3        | 1 | 5665.6       | -8728.0  | 1259.5                | 1243.9 | 82.4  |
| 18-19 | 250.87 | 149.9        | -640.3  | 3375         | 1413 | 44.4           | -453.2 | -3        | 2 | 5515.7       | -8087.8  | 1149.5                | 1170.7 | 79.8  |
| 19-20 | 263.95 | 151.8        | -593.0  | 3375         | 1413 | 45.0           | -419.7 | -3        | 2 | 5363.9       | -7494.7  | 1047.5                | 1099.6 | 77.2  |
| 20-21 | 277.04 | 153.7        | -545.8  | 3375         | 1413 | 45.5           | -386.2 | -3        | 2 | 5210.3       | -6949.0  | 953.0                 | 1030.4 | 74.6  |
| 21-22 | 290.12 | 155.6        | -498.5  | 3375         | 1413 | 46.1           | -352.8 | -4        | 3 | 5054.7       | -6450.5  | 865.4                 | 963.3  | 72.0  |
| 22-23 | 303.20 | 157.5        | -451.2  | 3375         | 1413 | 46.7           | -319.3 | -4        | 3 | 4897.2       | -5999.3  | 784.0                 | 898.2  | 69.4  |
| 23-24 | 316.29 | 159.4        | -404.0  | 3375         | 1413 | 47.2           | -285.9 | -4        | 4 | 4737.8       | -5595.3  | 708.1                 | 835.1  | 66.9  |
| 24-25 | 329.37 | 161.3        | -356.7  | 3375         | 1413 | 47.8           | -252.4 | -5        | 5 | 4576.5       | -5238.6  | 637.2                 | 774.2  | 64.4  |
|       |        | 163.2        | -318.5  | 3375         | 1413 | 48.4           | -225.4 | -5        | 6 |              |          |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 160 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |    | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |       |      |
|-------|--------|--------------|--------|--------------|------|----------------|--------|-----------|----|--------------|---------|-----------------------|-------|------|
|       |        | X            | Y      | X            | Y    | X              | Y      | X         | Y  | X            | Y       | Z                     |       |      |
| 25-26 | 342.45 | 165.1        | -317.2 | 3375         | 1413 | 48.9           | -224.5 | -5        | 6  | 4413.3       | -4920.1 | 570.8                 | 715.4 | 61.9 |
| 26-27 | 355.53 | 167.1        | -315.9 | 3375         | 1413 | 49.5           | -223.6 | -5        | 6  | 4248.1       | -4602.9 | 508.5                 | 658.7 | 59.3 |
| 27-28 | 368.62 | 169.0        | -314.7 | 3375         | 1413 | 50.1           | -222.7 | -5        | 6  | 4081.1       | -4287.0 | 450.3                 | 604.2 | 56.8 |
| 28-29 | 381.70 | 170.9        | -313.4 | 3375         | 1413 | 50.6           | -221.8 | -5        | 6  | 3912.1       | -3972.3 | 396.3                 | 552.0 | 54.3 |
| 29-30 | 394.78 | 172.8        | -312.1 | 3375         | 1413 | 51.2           | -220.9 | -5        | 6  | 3741.2       | -3659.0 | 346.4                 | 501.9 | 51.7 |
| 30-31 | 407.87 | 174.7        | -310.8 | 3375         | 1413 | 51.8           | -220.0 | -5        | 6  | 3568.4       | -3346.8 | 300.6                 | 454.1 | 49.2 |
| 31-32 | 420.95 | 176.7        | -309.6 | 3375         | 1413 | 52.3           | -219.1 | -5        | 7  | 3393.7       | -3036.0 | 258.8                 | 408.5 | 46.7 |
| 32-33 | 434.03 | 178.5        | -306.4 | 3375         | 1413 | 52.9           | -216.9 | -5        | 7  | 3217.0       | -2726.4 | 221.1                 | 365.3 | 44.1 |
| 33-34 | 447.12 | 180.1        | -294.3 | 3375         | 1413 | 53.4           | -208.3 | -5        | 7  | 3038.5       | -2420.0 | 187.4                 | 324.4 | 41.6 |
| 34-35 | 460.20 | 181.7        | -282.1 | 3375         | 1413 | 53.8           | -199.6 | -5        | 8  | 2858.4       | -2125.8 | 157.7                 | 285.8 | 39.0 |
| 35-36 | 473.28 | 183.3        | -269.9 | 3375         | 1413 | 54.3           | -191.0 | -5        | 8  | 2676.6       | -1843.7 | 131.7                 | 249.6 | 36.5 |
| 36-37 | 486.36 | 184.9        | -257.7 | 3375         | 1413 | 54.8           | -182.4 | -5        | 9  | 2493.3       | -1573.8 | 109.4                 | 215.8 | 34.0 |
| 37-38 | 499.45 | 186.5        | -245.6 | 3375         | 1413 | 55.3           | -173.8 | -5        | 9  | 2308.4       | -1316.0 | 90.5                  | 184.4 | 31.5 |
| 38-39 | 512.53 | 188.1        | -233.4 | 3375         | 1413 | 55.7           | -165.2 | -5        | 10 | 2121.9       | -1070.5 | 74.9                  | 155.4 | 29.0 |
| 39-40 | 525.61 | 189.7        | -221.2 | 3375         | 1413 | 56.2           | -156.6 | -5        | 10 | 1933.9       | -837.1  | 62.4                  | 128.8 | 26.5 |
| 40-41 | 538.70 | 191.0        | -202.9 | 3375         | 1413 | 56.6           | -143.6 | -5        | 11 | 1744.2       | -615.9  | 52.9                  | 104.8 | 24.1 |
| 41-42 | 551.78 | 190.5        | -148.9 | 3375         | 1413 | 56.4           | -105.4 | -5        | 15 | 1553.2       | -413.0  | 46.2                  | 83.2  | 21.6 |
| 42-43 | 564.86 | 190.0        | -94.9  | 3375         | 1413 | 56.3           | -67.2  | -4        | 19 | 1362.7       | -264.1  | 41.7                  | 64.1  | 19.2 |
| 43-44 | 577.95 | 189.5        | -40.9  | 3375         | 1413 | 56.1           | -28.9  | -2        | 23 | 1172.8       | -169.2  | 38.9                  | 47.6  | 16.7 |
| 44-45 | 591.03 | 189.0        | 13.2   | 3375         | 1413 | 56.0           | 9.3    | 1         | 24 | 983.3        | -128.3  | 36.9                  | 33.5  | 14.3 |
| 45-46 | 604.11 | 188.5        | 67.2   | 3375         | 1413 | 55.8           | 47.6   | 3         | 21 | 794.4        | -141.5  | 35.2                  | 21.8  | 11.9 |
| 46-47 | 617.19 | 187.9        | 121.2  | 3375         | 1413 | 55.7           | 85.8   | 4         | 17 | 605.9        | -208.7  | 32.9                  | 12.7  | 9.5  |
| 47-48 | 630.28 | 187.4        | 175.3  | 3375         | 1413 | 55.5           | 124.0  | 5         | 13 | 417.9        | -329.9  | 29.4                  | 6.0   | 7.1  |
| 48-49 | 643.36 | 176.2        | 197.5  | 3375         | 1413 | 52.2           | 139.8  | 5         | 11 | 230.5        | -505.2  | 23.9                  | 1.7   | 4.7  |
| 49-50 | 656.44 | 96.1         | -81.9  | 4788         | 2004 | 20.1           | -40.9  | -9        | 24 | 54.3         | -702.7  | 16.0                  | -1.1  | 2.4  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 160 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |      |     |
|--------|--------|--------------|--------|--------------|------|----------------|--------|-----------|----|--------------|--------|-----------------------|------|-----|
|        |        | X            | Y      | X            | Y    | X              | Y      | X         | Y  | X            | Y      | Z                     |      |     |
| 50-TOP | 675.00 |              |        |              |      |                |        |           |    | -41.9        | -620.8 | 3.7                   | -1.3 | .3  |
| TOP    | 687.00 | -41.9        | -620.8 | 2973         | 1232 | -14.1          | -504.0 | -0        | -0 | 0.0          | 0.0    | 0.0                   | 0.0  | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 170 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|--------|--------------|------|----------------|-------|-----------|----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y      | X            | Y    | X              | Y     | X         | Y  | X            | Y      | Z                     |        |       |
| GRND  | 0.00   |              |        |              |      |                |       |           |    | 9472.8       | 1497.3 | -742.5                | 3359.3 | 134.9 |
| GR-2  | 17.50  | 165.8        | -138.8 | 3599         | 1734 | 46.1           | -80.1 | -7        | 21 | 9307.0       | 1636.1 | -715.1                | 3195.0 | 131.8 |
| 2-3   | 41.54  | 284.5        | 65.3   | 6203         | 2597 | 45.9           | 25.1  | 3         | 27 | 9022.5       | 1570.8 | -676.6                | 2974.7 | 127.4 |
| 3-4   | 54.63  | 155.8        | 32.2   | 3375         | 1413 | 46.2           | 22.8  | 3         | 30 | 8866.7       | 1538.6 | -656.2                | 2857.6 | 124.8 |
| 4-5   | 67.71  | 156.5        | 29.8   | 3375         | 1413 | 46.4           | 21.1  | 3         | 32 | 8710.2       | 1508.8 | -636.3                | 2742.7 | 122.0 |
| 5-6   | 80.79  | 157.2        | 27.5   | 3375         | 1413 | 46.6           | 19.5  | 2         | 34 | 8553.0       | 1481.3 | -616.7                | 2629.7 | 119.0 |
| 6-7   | 93.87  | 157.9        | 25.1   | 3375         | 1413 | 46.8           | 17.8  | 2         | 36 | 8395.2       | 1456.1 | -597.5                | 2518.9 | 115.9 |
| 7-8   | 106.96 | 158.6        | 22.8   | 3375         | 1413 | 47.0           | 16.1  | 2         | 38 | 8236.6       | 1433.4 | -578.6                | 2410.1 | 112.6 |
| 8-9   | 120.04 | 159.2        | 20.4   | 3375         | 1413 | 47.2           | 14.5  | 2         | 40 | 8077.4       | 1412.9 | -560.0                | 2303.4 | 109.1 |
| 9-10  | 133.12 | 160.4        | 17.0   | 3375         | 1413 | 47.5           | 12.1  | 2         | 41 | 7917.0       | 1395.9 | -541.6                | 2198.7 | 105.5 |
| 10-11 | 146.21 | 162.8        | 10.6   | 3375         | 1413 | 48.2           | 7.5   | 1         | 41 | 7754.2       | 1385.3 | -523.4                | 2096.2 | 101.9 |
| 11-12 | 159.29 | 165.3        | 4.1    | 3375         | 1413 | 49.0           | 2.9   | 0         | 40 | 7588.8       | 1381.3 | -505.3                | 1995.8 | 98.4  |
| 12-13 | 172.37 | 167.8        | -2.4   | 3375         | 1413 | 49.7           | -1.7  | -0        | 39 | 7421.0       | 1383.7 | -487.2                | 1897.7 | 94.8  |
| 13-14 | 185.46 | 170.3        | -8.9   | 3375         | 1413 | 50.4           | -6.3  | -1        | 38 | 7250.8       | 1392.6 | -469.1                | 1801.7 | 91.3  |
| 14-15 | 198.54 | 172.7        | -15.4  | 3375         | 1413 | 51.2           | -10.9 | -1        | 37 | 7078.0       | 1408.0 | -450.8                | 1708.0 | 87.8  |
| 15-16 | 211.62 | 175.2        | -21.9  | 3375         | 1413 | 51.9           | -15.5 | -2        | 36 | 6902.8       | 1429.9 | -432.2                | 1616.5 | 84.3  |
| 16-17 | 224.70 | 177.7        | -28.4  | 3375         | 1413 | 52.6           | -20.1 | -2        | 35 | 6725.1       | 1458.3 | -413.3                | 1527.3 | 80.9  |
| 17-18 | 237.79 | 179.8        | -31.4  | 3375         | 1413 | 53.3           | -22.2 | -3        | 34 | 6545.3       | 1489.7 | -394.0                | 1440.5 | 77.4  |
| 18-19 | 250.87 | 180.8        | -22.4  | 3375         | 1413 | 53.6           | -15.8 | -2        | 34 | 6364.5       | 1512.0 | -374.4                | 1356.1 | 74.1  |
| 19-20 | 263.95 | 181.7        | -13.3  | 3375         | 1413 | 53.8           | -9.4  | -1        | 33 | 6182.8       | 1525.3 | -354.5                | 1274.0 | 70.8  |
| 20-21 | 277.04 | 182.7        | -4.2   | 3375         | 1413 | 54.1           | -3.0  | -0        | 33 | 6000.1       | 1529.5 | -334.5                | 1194.3 | 67.6  |
| 21-22 | 290.12 | 183.6        | 4.8    | 3375         | 1413 | 54.4           | 3.4   | 0         | 32 | 5816.5       | 1524.7 | -314.6                | 1117.0 | 64.4  |
| 22-23 | 303.20 | 184.5        | 13.9   | 3375         | 1413 | 54.7           | 9.8   | 1         | 31 | 5632.0       | 1510.8 | -294.7                | 1042.1 | 61.4  |
| 23-24 | 316.29 | 185.5        | 23.0   | 3375         | 1413 | 55.0           | 16.3  | 2         | 29 | 5446.5       | 1487.9 | -275.1                | 969.7  | 58.4  |
| 24-25 | 329.37 | 186.4        | 32.0   | 3375         | 1413 | 55.2           | 22.7  | 2         | 28 | 5260.1       | 1455.8 | -255.8                | 899.6  | 55.5  |
|       |        | 187.5        | 39.6   | 3375         | 1413 | 55.5           | 28.1  | 2         | 27 |              |        |                       |        |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 170 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |      |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|-------|------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y      | X                     | Y     | Z    |
| 25-26 | 342.45 | 188.9        | 41.3 | 3375         | 1413 | 56.0           | 29.3 | 2         | 26 | 5072.6       | 1416.2 | -237.0                | 832.0 | 52.6 |
| 26-27 | 355.53 | 190.3        | 43.0 | 3375         | 1413 | 56.4           | 30.5 | 2         | 26 | 4883.8       | 1374.9 | -218.8                | 766.9 | 49.8 |
| 27-28 | 368.62 | 191.7        | 44.7 | 3375         | 1413 | 56.8           | 31.7 | 2         | 25 | 4693.5       | 1331.8 | -201.1                | 704.2 | 47.0 |
| 28-29 | 381.70 | 193.1        | 46.4 | 3375         | 1413 | 57.2           | 32.9 | 2         | 25 | 4501.8       | 1287.1 | -183.9                | 644.1 | 44.3 |
| 29-30 | 394.78 | 194.5        | 48.1 | 3375         | 1413 | 57.6           | 34.1 | 3         | 24 | 4308.7       | 1240.6 | -167.4                | 586.5 | 41.5 |
| 30-31 | 407.87 | 195.9        | 49.8 | 3375         | 1413 | 58.0           | 35.3 | 3         | 24 | 4114.2       | 1192.5 | -151.5                | 531.4 | 38.8 |
| 31-32 | 420.95 | 197.3        | 51.5 | 3375         | 1413 | 58.5           | 36.5 | 3         | 23 | 3918.3       | 1142.7 | -136.2                | 478.8 | 36.2 |
| 32-33 | 434.03 | 198.9        | 53.4 | 3375         | 1413 | 58.9           | 37.8 | 3         | 23 | 3721.0       | 1091.1 | -121.6                | 428.8 | 33.5 |
| 33-34 | 447.12 | 201.7        | 56.2 | 3375         | 1413 | 59.8           | 39.8 | 2         | 21 | 3522.1       | 1037.7 | -107.7                | 381.5 | 30.9 |
| 34-35 | 460.20 | 204.4        | 58.9 | 3375         | 1413 | 60.6           | 41.7 | 2         | 20 | 3320.4       | 981.6  | -94.5                 | 336.7 | 28.4 |
| 35-36 | 473.28 | 207.2        | 61.7 | 3375         | 1413 | 61.4           | 43.7 | 2         | 19 | 3115.9       | 922.6  | -82.0                 | 294.6 | 26.1 |
| 36-37 | 486.36 | 210.0        | 64.5 | 3375         | 1413 | 62.2           | 45.6 | 2         | 18 | 2908.7       | 860.9  | -70.3                 | 255.2 | 23.8 |
| 37-38 | 499.45 | 212.7        | 67.2 | 3375         | 1413 | 63.0           | 47.6 | 2         | 17 | 2698.8       | 796.5  | -59.5                 | 218.5 | 21.6 |
| 38-39 | 512.53 | 215.5        | 70.0 | 3375         | 1413 | 63.8           | 49.5 | 2         | 15 | 2486.1       | 729.3  | -49.5                 | 184.6 | 19.5 |
| 39-40 | 525.61 | 218.2        | 72.7 | 3375         | 1413 | 64.6           | 51.5 | 2         | 14 | 2270.6       | 659.3  | -40.4                 | 153.5 | 17.5 |
| 40-41 | 538.70 | 220.6        | 74.7 | 3375         | 1413 | 65.3           | 52.9 | 2         | 13 | 2052.4       | 586.6  | -32.3                 | 125.2 | 15.6 |
| 41-42 | 551.78 | 220.5        | 72.3 | 3375         | 1413 | 65.3           | 51.2 | 2         | 13 | 1831.8       | 511.8  | -25.1                 | 99.8  | 13.8 |
| 42-43 | 564.86 | 220.4        | 69.9 | 3375         | 1413 | 65.3           | 49.5 | 2         | 13 | 1611.4       | 439.5  | -18.9                 | 77.3  | 12.1 |
| 43-44 | 577.95 | 220.3        | 67.5 | 3375         | 1413 | 65.3           | 47.8 | 2         | 13 | 1391.0       | 369.5  | -13.6                 | 57.6  | 10.4 |
| 44-45 | 591.03 | 220.2        | 65.1 | 3375         | 1413 | 65.2           | 46.1 | 2         | 12 | 1170.7       | 302.0  | -9.2                  | 40.9  | 8.7  |
| 45-46 | 604.11 | 220.1        | 62.7 | 3375         | 1413 | 65.2           | 44.4 | 1         | 12 | 950.5        | 236.9  | -5.7                  | 27.0  | 7.1  |
| 46-47 | 617.19 | 220.0        | 60.4 | 3375         | 1413 | 65.2           | 42.7 | 1         | 12 | 730.4        | 174.1  | -3.0                  | 16.0  | 5.5  |
| 47-48 | 630.28 | 219.9        | 58.0 | 3375         | 1413 | 65.2           | 41.0 | 1         | 12 | 510.4        | 113.8  | -1.1                  | 7.9   | 4.0  |
| 48-49 | 643.36 | 207.7        | 52.8 | 3375         | 1413 | 61.5           | 37.3 | 1         | 12 | 290.5        | 55.8   | .0                    | 2.6   | 2.6  |
| 49-50 | 656.44 | 120.1        | 30.9 | 4788         | 2004 | 25.1           | 15.4 | 2         | 17 | 82.8         | 3.0    | .4                    | .2    | 1.2  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 170 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |    | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y  | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 | -37.3        | -27.8 | 2973         | 1232 | -12.5          | -22.6 | -0        | -1 | -37.3        | -27.8 | .2                    | -.2 | .0  |
| TOP    | 687.00 |              |       |              |      |                |       |           |    | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 180 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |      |  |
|-------|--------|--------------|-------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|--------|------|--|
|       |        | X            | Y     | X            | Y    | X              | Y    | X         | Y  | X            | Y      | X                     | Y      | Z    |  |
| GRND  | 0.00   |              |       |              |      |                |      |           |    |              |        |                       |        |      |  |
|       |        | 110.4        | 7.1   | 3599         | 1734 | 30.7           | 4.1  | 1         | 47 | 7769.9       | 3736.7 | -1263.4               | 2906.2 | 90.2 |  |
| GR-2  | 17.50  | 197.8        | 192.9 | 6203         | 2597 | 31.9           | 74.3 | 8         | 20 | 7659.5       | 3729.7 | -1198.0               | 2771.2 | 87.4 |  |
| 2-3   | 41.54  | 111.0        | 101.6 | 3375         | 1413 | 32.9           | 71.9 | 8         | 20 | 7461.6       | 3536.7 | -1110.7               | 2589.4 | 83.3 |  |
| 3-4   | 54.63  | 113.3        | 99.3  | 3375         | 1413 | 33.6           | 70.3 | 7         | 20 | 7350.7       | 3435.1 | -1065.1               | 2492.5 | 81.1 |  |
| 4-5   | 67.71  | 115.6        | 96.9  | 3375         | 1413 | 34.3           | 68.6 | 7         | 21 | 7237.4       | 3335.8 | -1020.8               | 2397.1 | 78.9 |  |
| 5-6   | 80.79  | 118.0        | 94.6  | 3375         | 1413 | 35.0           | 66.9 | 7         | 21 | 7121.7       | 3238.9 | -977.8                | 2303.1 | 76.7 |  |
| 6-7   | 93.87  | 120.3        | 92.2  | 3375         | 1413 | 35.6           | 65.3 | 7         | 21 | 7003.7       | 3144.4 | -936.0                | 2210.7 | 74.5 |  |
| 7-8   | 106.96 | 122.7        | 89.8  | 3375         | 1413 | 36.3           | 63.6 | 6         | 21 | 6883.4       | 3052.2 | -895.5                | 2119.9 | 72.4 |  |
| 8-9   | 120.04 | 124.5        | 86.8  | 3375         | 1413 | 36.9           | 61.4 | 6         | 21 | 6760.7       | 2962.3 | -856.1                | 2030.6 | 70.2 |  |
| 9-10  | 133.12 | 124.8        | 81.6  | 3375         | 1413 | 37.0           | 57.7 | 6         | 21 | 6636.2       | 2875.5 | -818.0                | 1943.0 | 68.1 |  |
| 10-11 | 146.21 | 125.1        | 76.3  | 3375         | 1413 | 37.1           | 54.0 | 6         | 22 | 6511.4       | 2794.0 | -780.9                | 1857.0 | 66.0 |  |
| 11-12 | 159.29 | 125.4        | 71.1  | 3375         | 1413 | 37.2           | 50.3 | 5         | 22 | 6386.3       | 2717.6 | -744.8                | 1772.6 | 64.0 |  |
| 12-13 | 172.37 | 125.7        | 65.9  | 3375         | 1413 | 37.3           | 46.6 | 5         | 22 | 6260.9       | 2646.5 | -709.7                | 1689.9 | 62.1 |  |
| 13-14 | 185.46 | 126.1        | 60.7  | 3375         | 1413 | 37.3           | 42.9 | 4         | 22 | 6135.1       | 2580.6 | -675.5                | 1608.8 | 60.2 |  |
| 14-15 | 198.54 | 126.4        | 55.5  | 3375         | 1413 | 37.4           | 39.2 | 4         | 22 | 6009.1       | 2520.0 | -642.2                | 1529.4 | 58.4 |  |
| 15-16 | 211.62 | 126.7        | 50.2  | 3375         | 1413 | 37.5           | 35.5 | 4         | 21 | 5882.7       | 2464.5 | -609.6                | 1451.6 | 56.6 |  |
| 16-17 | 224.70 | 127.4        | 46.4  | 3375         | 1413 | 37.7           | 32.9 | 3         | 21 | 5756.0       | 2414.3 | -577.6                | 1375.4 | 54.9 |  |
| 17-18 | 237.79 | 129.4        | 47.7  | 3375         | 1413 | 38.3           | 33.7 | 3         | 22 | 5628.6       | 2367.8 | -546.4                | 1301.0 | 53.3 |  |
| 18-19 | 250.87 | 131.5        | 48.9  | 3375         | 1413 | 38.9           | 34.6 | 4         | 23 | 5499.2       | 2320.2 | -515.7                | 1228.2 | 51.5 |  |
| 19-20 | 263.95 | 133.5        | 50.1  | 3375         | 1413 | 39.5           | 35.5 | 4         | 24 | 5367.7       | 2271.3 | -485.7                | 1157.1 | 49.6 |  |
| 20-21 | 277.04 | 135.5        | 51.4  | 3375         | 1413 | 40.2           | 36.4 | 4         | 25 | 5234.2       | 2221.1 | -456.3                | 1087.7 | 47.7 |  |
| 21-22 | 290.12 | 137.6        | 52.6  | 3375         | 1413 | 40.8           | 37.2 | 4         | 25 | 5098.7       | 2169.8 | -427.6                | 1020.1 | 45.6 |  |
| 22-23 | 303.20 | 139.6        | 53.8  | 3375         | 1413 | 41.4           | 38.1 | 4         | 26 | 4961.1       | 2117.2 | -399.5                | 954.3  | 43.4 |  |
| 23-24 | 316.29 | 141.6        | 55.1  | 3375         | 1413 | 42.0           | 39.0 | 4         | 27 | 4821.5       | 2063.3 | -372.2                | 890.3  | 41.2 |  |
| 24-25 | 329.37 | 144.0        | 56.9  | 3375         | 1413 | 42.7           | 40.3 | 4         | 27 | 4679.9       | 2008.3 | -345.5                | 828.2  | 38.8 |  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 180 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |      |
|-------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|--------|-----------------------|-------|------|
|       |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y      | X                     | Y     | Z    |
| 25-26 | 342.45 | 147.7        | 61.4 | 3375         | 1413 | 43.8           | 43.5 | 4         | 25 | 4535.9       | 1951.4 | -319.6                | 767.9 | 36.4 |
| 26-27 | 355.53 | 151.4        | 65.9 | 3375         | 1413 | 44.9           | 46.7 | 4         | 24 | 4388.2       | 1889.9 | -294.5                | 709.5 | 34.0 |
| 27-28 | 368.62 | 155.1        | 70.5 | 3375         | 1413 | 46.0           | 49.9 | 4         | 22 | 4236.8       | 1824.0 | -270.2                | 653.1 | 31.7 |
| 28-29 | 381.70 | 158.8        | 75.0 | 3375         | 1413 | 47.1           | 53.1 | 4         | 21 | 4081.7       | 1753.5 | -246.8                | 598.7 | 29.5 |
| 29-30 | 394.78 | 162.5        | 79.5 | 3375         | 1413 | 48.2           | 56.2 | 4         | 19 | 3922.8       | 1678.6 | -224.3                | 546.3 | 27.3 |
| 30-31 | 407.87 | 166.2        | 84.0 | 3375         | 1413 | 49.2           | 59.4 | 4         | 18 | 3760.3       | 1599.1 | -202.9                | 496.1 | 25.2 |
| 31-32 | 420.95 | 169.9        | 88.5 | 3375         | 1413 | 50.3           | 62.6 | 4         | 17 | 3594.1       | 1515.1 | -182.5                | 448.0 | 23.1 |
| 32-33 | 434.03 | 173.6        | 91.8 | 3375         | 1413 | 51.4           | 65.0 | 4         | 16 | 3424.2       | 1426.6 | -163.3                | 402.0 | 21.1 |
| 33-34 | 447.12 | 177.2        | 89.2 | 3375         | 1413 | 52.5           | 63.1 | 3         | 16 | 3250.5       | 1334.9 | -145.2                | 358.4 | 19.2 |
| 34-35 | 460.20 | 180.8        | 86.6 | 3375         | 1413 | 53.6           | 61.3 | 3         | 16 | 3073.3       | 1245.7 | -128.3                | 317.0 | 17.3 |
| 35-36 | 473.28 | 184.3        | 84.0 | 3375         | 1413 | 54.6           | 59.5 | 3         | 16 | 2892.6       | 1159.1 | -112.6                | 278.0 | 15.3 |
| 36-37 | 486.36 | 187.9        | 81.4 | 3375         | 1413 | 55.7           | 57.6 | 3         | 16 | 2708.3       | 1075.0 | -98.0                 | 241.3 | 13.4 |
| 37-38 | 499.45 | 191.5        | 78.9 | 3375         | 1413 | 56.7           | 55.8 | 3         | 15 | 2520.4       | 993.6  | -84.5                 | 207.1 | 11.6 |
| 38-39 | 512.53 | 195.0        | 76.3 | 3375         | 1413 | 57.8           | 54.0 | 3         | 15 | 2328.9       | 914.7  | -72.0                 | 175.4 | 9.7  |
| 39-40 | 525.61 | 198.6        | 73.7 | 3375         | 1413 | 58.8           | 52.2 | 2         | 15 | 2133.9       | 838.4  | -60.5                 | 146.2 | 7.8  |
| 40-41 | 538.70 | 201.8        | 71.8 | 3375         | 1413 | 59.8           | 50.8 | 2         | 15 | 1935.3       | 764.7  | -50.0                 | 119.6 | 6.0  |
| 41-42 | 551.78 | 203.1        | 73.6 | 3375         | 1413 | 60.2           | 52.1 | 2         | 12 | 1733.4       | 693.0  | -40.5                 | 95.6  | 4.2  |
| 42-43 | 564.86 | 204.3        | 75.4 | 3375         | 1413 | 60.5           | 53.4 | 2         | 10 | 1530.4       | 619.4  | -31.9                 | 74.3  | 2.7  |
| 43-44 | 577.95 | 205.6        | 77.3 | 3375         | 1413 | 60.9           | 54.7 | 1         | 8  | 1326.1       | 543.9  | -24.3                 | 55.6  | 1.4  |
| 44-45 | 591.03 | 206.8        | 79.1 | 3375         | 1413 | 61.3           | 56.0 | 1         | 6  | 1120.5       | 466.7  | -17.7                 | 39.6  | .4   |
| 45-46 | 604.11 | 208.0        | 80.9 | 3375         | 1413 | 61.6           | 57.3 | 1         | 3  | 913.7        | 387.6  | -12.1                 | 26.3  | -.3  |
| 46-47 | 617.19 | 209.3        | 82.8 | 3375         | 1413 | 62.0           | 58.6 | 0         | 1  | 705.7        | 306.7  | -7.6                  | 15.7  | -.7  |
| 47-48 | 630.28 | 210.5        | 84.6 | 3375         | 1413 | 62.4           | 59.9 | -0        | -1 | 496.4        | 223.9  | -4.1                  | 7.8   | -.9  |
| 48-49 | 643.36 | 200.2        | 82.4 | 3375         | 1413 | 59.3           | 58.3 | -0        | -3 | 285.9        | 139.3  | -1.7                  | 2.7   | -.8  |
| 49-50 | 656.44 | 120.5        | 63.1 | 4788         | 2004 | 25.2           | 31.5 | -1        | -5 | 85.7         | 56.9   | -.4                   | .3    | -.5  |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 180 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |   | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|---|--------------|------|-----------------------|-----|-----|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y | X            | Y    | Z                     |     |     |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |   | -34.8        | -6.3 | .0                    | -.2 | -.1 |
| TOP    | 687.00 | -34.8        | -6.3 | 2973         | 1232 | -11.7          | -5.1 | 0         | 3 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 190 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |    | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|--------|--------------|------|----------------|--------|-----------|----|--------------|--------|-----------------------|--------|------|
|       |        | X            | Y      | X            | Y    | X              | Y      | X         | Y  | X            | Y      | Z                     |        |      |
| GRND  | 0.00   | 97.5         | -233.9 | 3599         | 1734 | 27.1           | -134.9 | -3        | 3  | 6033.3       | 4847.7 | -1831.9               | 2333.6 | 71.9 |
| GR-2  | 17.50  | 148.5        | 194.2  | 6203         | 2597 | 23.9           | 74.8   | 12        | 21 | 5935.8       | 5081.6 | -1745.0               | 2228.8 | 70.8 |
| 2-3   | 41.54  | 78.9         | 102.8  | 3375         | 1413 | 23.4           | 72.8   | 13        | 23 | 5787.3       | 4887.4 | -1625.2               | 2087.9 | 66.2 |
| 3-4   | 54.63  | 77.6         | 100.8  | 3375         | 1413 | 23.0           | 71.4   | 14        | 25 | 5708.3       | 4784.6 | -1561.9               | 2012.7 | 63.5 |
| 4-5   | 67.71  | 76.3         | 98.8   | 3375         | 1413 | 22.6           | 69.9   | 14        | 27 | 5630.7       | 4683.8 | -1500.0               | 1938.5 | 60.7 |
| 5-6   | 80.79  | 75.0         | 96.8   | 3375         | 1413 | 22.2           | 68.5   | 15        | 28 | 5554.4       | 4584.9 | -1439.3               | 1865.4 | 57.8 |
| 6-7   | 93.87  | 73.7         | 94.8   | 3375         | 1413 | 21.8           | 67.1   | 16        | 30 | 5479.4       | 4488.2 | -1380.0               | 1793.2 | 54.7 |
| 7-8   | 106.96 | 72.4         | 92.8   | 3375         | 1413 | 21.4           | 65.6   | 17        | 32 | 5405.7       | 4393.4 | -1321.9               | 1722.0 | 51.5 |
| 8-9   | 120.04 | 72.5         | 90.8   | 3375         | 1413 | 21.5           | 64.3   | 18        | 34 | 5333.3       | 4300.6 | -1265.0               | 1651.7 | 48.2 |
| 9-10  | 133.12 | 76.9         | 89.2   | 3375         | 1413 | 22.8           | 63.2   | 16        | 34 | 5260.9       | 4209.8 | -1209.3               | 1582.4 | 44.8 |
| 10-11 | 146.21 | 81.4         | 87.6   | 3375         | 1413 | 24.1           | 62.0   | 15        | 34 | 5183.9       | 4120.6 | -1154.8               | 1514.1 | 41.5 |
| 11-12 | 159.29 | 85.9         | 86.0   | 3375         | 1413 | 25.4           | 60.9   | 14        | 33 | 5102.5       | 4032.9 | -1101.5               | 1446.8 | 38.3 |
| 12-13 | 172.37 | 90.3         | 84.4   | 3375         | 1413 | 26.8           | 59.7   | 13        | 33 | 5016.6       | 3946.9 | -1049.3               | 1380.6 | 35.2 |
| 13-14 | 185.46 | 94.8         | 82.8   | 3375         | 1413 | 28.1           | 58.6   | 12        | 32 | 4926.3       | 3862.5 | -998.2                | 1315.6 | 32.2 |
| 14-15 | 198.54 | 99.3         | 81.2   | 3375         | 1413 | 29.4           | 57.5   | 11        | 31 | 4831.5       | 3779.6 | -948.2                | 1251.8 | 29.3 |
| 15-16 | 211.62 | 103.7        | 79.6   | 3375         | 1413 | 30.7           | 56.3   | 10        | 30 | 4732.2       | 3698.4 | -899.3                | 1189.2 | 26.6 |
| 16-17 | 224.70 | 107.4        | 78.5   | 3375         | 1413 | 31.8           | 55.6   | 9         | 29 | 4628.5       | 3618.8 | -851.5                | 1128.0 | 23.9 |
| 17-18 | 237.79 | 108.4        | 79.1   | 3375         | 1413 | 32.1           | 56.0   | 9         | 29 | 4521.1       | 3540.3 | -804.6                | 1068.1 | 21.3 |
| 18-19 | 250.87 | 109.4        | 79.8   | 3375         | 1413 | 32.4           | 56.4   | 9         | 28 | 4412.7       | 3461.2 | -758.8                | 1009.7 | 18.8 |
| 19-20 | 263.95 | 110.5        | 80.4   | 3375         | 1413 | 32.7           | 56.9   | 8         | 28 | 4303.2       | 3381.5 | -714.1                | 952.6  | 16.2 |
| 20-21 | 277.04 | 111.5        | 81.0   | 3375         | 1413 | 33.0           | 57.3   | 8         | 27 | 4192.8       | 3301.1 | -670.3                | 897.1  | 13.7 |
| 21-22 | 290.12 | 112.5        | 81.6   | 3375         | 1413 | 33.3           | 57.8   | 8         | 27 | 4081.3       | 3220.1 | -627.7                | 842.9  | 11.1 |
| 22-23 | 303.20 | 113.5        | 82.3   | 3375         | 1413 | 33.6           | 58.2   | 8         | 27 | 3968.8       | 3138.4 | -586.1                | 790.3  | 8.6  |
| 23-24 | 316.29 | 114.5        | 82.9   | 3375         | 1413 | 33.9           | 58.7   | 8         | 26 | 3855.3       | 3056.2 | -545.6                | 739.1  | 6.1  |
| 24-25 | 329.37 | 115.5        | 84.6   | 3375         | 1413 | 34.2           | 59.9   | 8         | 26 | 3740.7       | 2973.3 | -506.1                | 689.4  | 3.6  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 190 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|------|-----------|-----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y    | X         | Y   | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 |              |       |              |      |                |      |           |     | 3625.2       | 2888.7 | -467.8                | 641.2 | 1.2   |
| 26-27 | 355.53 | 116.1        | 90.7  | 3375         | 1413 | 34.4           | 64.2 | 8         | 24  | 3509.1       | 2798.1 | -430.6                | 594.6 | -1.2  |
| 27-28 | 368.62 | 116.8        | 96.8  | 3375         | 1413 | 34.6           | 68.5 | 7         | 22  | 3392.4       | 2701.3 | -394.6                | 549.4 | -3.5  |
| 28-29 | 381.70 | 117.4        | 102.9 | 3375         | 1413 | 34.8           | 72.8 | 7         | 20  | 3275.0       | 2598.4 | -359.9                | 505.8 | -5.7  |
| 29-30 | 394.78 | 118.0        | 108.9 | 3375         | 1413 | 35.0           | 77.1 | 7         | 18  | 3156.9       | 2489.5 | -326.7                | 463.7 | -7.8  |
| 30-31 | 407.87 | 118.7        | 115.0 | 3375         | 1413 | 35.2           | 81.4 | 7         | 16  | 3038.3       | 2374.5 | -294.8                | 423.2 | -9.8  |
| 31-32 | 420.95 | 119.3        | 121.1 | 3375         | 1413 | 35.3           | 85.7 | 6         | 15  | 2918.9       | 2253.3 | -264.6                | 384.2 | -11.8 |
| 32-33 | 434.03 | 120.0        | 127.2 | 3375         | 1413 | 35.5           | 90.0 | 6         | 14  | 2799.0       | 2126.1 | -235.9                | 346.8 | -13.6 |
| 33-34 | 447.12 | 121.3        | 132.1 | 3375         | 1413 | 35.9           | 93.5 | 6         | 12  | 2677.7       | 1994.0 | -209.0                | 311.0 | -15.4 |
| 34-35 | 460.20 | 126.0        | 131.2 | 3375         | 1413 | 37.3           | 92.8 | 5         | 11  | 2551.7       | 1862.8 | -183.7                | 276.8 | -16.9 |
| 35-36 | 473.28 | 130.7        | 130.2 | 3375         | 1413 | 38.7           | 92.2 | 4         | 9   | 2421.0       | 1732.6 | -160.2                | 244.3 | -18.2 |
| 36-37 | 486.36 | 135.4        | 129.3 | 3375         | 1413 | 40.1           | 91.5 | 3         | 7   | 2285.6       | 1603.4 | -138.4                | 213.5 | -19.2 |
| 37-38 | 499.45 | 140.1        | 128.3 | 3375         | 1413 | 41.5           | 90.8 | 2         | 6   | 2145.5       | 1475.1 | -118.3                | 184.5 | -20.0 |
| 38-39 | 512.53 | 144.8        | 127.4 | 3375         | 1413 | 42.9           | 90.1 | 2         | 4   | 2000.7       | 1347.7 | -99.8                 | 157.4 | -20.6 |
| 39-40 | 525.61 | 149.5        | 126.4 | 3375         | 1413 | 44.3           | 89.5 | 1         | 2   | 1851.2       | 1221.3 | -83.0                 | 132.2 | -20.9 |
| 40-41 | 538.70 | 154.2        | 125.5 | 3375         | 1413 | 45.7           | 88.8 | 0         | 1   | 1697.0       | 1095.8 | -67.8                 | 109.0 | -21.0 |
| 41-42 | 551.78 | 159.0        | 124.3 | 3375         | 1413 | 47.1           | 87.9 | 0         | -1  | 1538.1       | 971.6  | -54.3                 | 87.8  | -20.9 |
| 42-43 | 564.86 | 164.2        | 121.4 | 3375         | 1413 | 48.7           | 85.9 | -1        | -3  | 1373.8       | 850.1  | -42.4                 | 68.7  | -20.4 |
| 43-44 | 577.95 | 169.5        | 118.6 | 3375         | 1413 | 50.2           | 84.0 | -2        | -6  | 1204.3       | 731.5  | -32.0                 | 51.9  | -19.6 |
| 44-45 | 591.03 | 174.7        | 115.8 | 3375         | 1413 | 51.8           | 82.0 | -2        | -8  | 1029.6       | 615.7  | -23.2                 | 37.3  | -18.5 |
| 45-46 | 604.11 | 180.0        | 113.0 | 3375         | 1413 | 53.3           | 80.0 | -3        | -11 | 849.6        | 502.7  | -15.9                 | 25.0  | -17.0 |
| 46-47 | 617.19 | 185.2        | 110.2 | 3375         | 1413 | 54.9           | 78.0 | -3        | -13 | 664.4        | 392.5  | -10.1                 | 15.1  | -15.3 |
| 47-48 | 630.28 | 190.5        | 107.4 | 3375         | 1413 | 56.4           | 76.0 | -4        | -15 | 473.9        | 285.1  | -5.6                  | 7.6   | -13.2 |
| 48-49 | 643.36 | 195.7        | 104.6 | 3375         | 1413 | 58.0           | 74.0 | -4        | -18 | 278.2        | 180.5  | -2.6                  | 2.7   | -10.8 |
| 49-50 | 656.44 | 190.0        | 97.8  | 3375         | 1413 | 56.3           | 69.2 | -5        | -21 | 88.2         | 82.8   | -.9                   | .3    | -8.0  |
|       |        | 121.7        | 76.7  | 4788         | 2004 | 25.4           | 38.3 | -14       | -55 |              |        |                       |       |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 190 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |     | SHEAR (KIPS) |     | MOMENT (1000-FT-KIPS) |      |      |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|-----|--------------|-----|-----------------------|------|------|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y   | X            | Y   | Z                     |      |      |
| 50-TOP | 675.00 | -33.5        | 6.0 | 2973         | 1232 | -11.3          | 4.9 | -12       | 158 | -33.5        | 6.0 | -1.0                  | -1.2 | -2.9 |
| TOP    | 687.00 |              |     |              |      |                |     |           |     | 0.0          | 0.0 | 0.0                   | 0.0  | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS ; ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 200 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |       |
| GRND  | 0.00   | 40.7         | -92.4 | 3599         | 1734 | 11.3           | -53.3 | 5         | -5  | 2953.5       | -605.3 | 280.2                 | 1240.7 | -51.3 |
| GR-2  | 17.50  | 48.5         | 18.0  | 6203         | 2597 | 7.8            | 6.9   | 3         | 20  | 2912.8       | -512.9 | 270.5                 | 1189.4 | -50.6 |
| 2-3   | 41.54  | 25.0         | 5.6   | 3375         | 1413 | 7.4            | 4.0   | 2         | 26  | 2864.3       | -530.9 | 257.9                 | 1119.9 | -51.2 |
| 3-4   | 54.63  | 24.0         | 2.7   | 3375         | 1413 | 7.1            | 1.9   | 1         | 30  | 2839.3       | -536.5 | 250.9                 | 1082.6 | -51.6 |
| 4-5   | 67.71  | 23.0         | -.2   | 3375         | 1413 | 6.8            | -.2   | -0        | 34  | 2815.3       | -539.2 | 243.9                 | 1045.6 | -52.0 |
| 5-6   | 80.79  | 22.0         | -3.2  | 3375         | 1413 | 6.5            | -2.3  | -2        | 37  | 2792.4       | -538.9 | 236.8                 | 1008.9 | -52.4 |
| 6-7   | 93.87  | 21.0         | -6.1  | 3375         | 1413 | 6.2            | -4.3  | -5        | 39  | 2770.4       | -535.7 | 229.8                 | 972.6  | -52.8 |
| 7-8   | 106.96 | 20.0         | -9.0  | 3375         | 1413 | 5.9            | -6.4  | -7        | 39  | 2749.4       | -529.6 | 222.8                 | 936.4  | -53.3 |
| 8-9   | 120.04 | 19.7         | -11.1 | 3375         | 1413 | 5.8            | -7.8  | -8        | 35  | 2729.4       | -520.6 | 216.0                 | 900.6  | -53.8 |
| 9-10  | 133.12 | 21.6         | -10.3 | 3375         | 1413 | 6.4            | -7.3  | -5        | 26  | 2709.8       | -509.5 | 209.2                 | 865.0  | -54.3 |
| 10-11 | 146.21 | 23.5         | -9.5  | 3375         | 1413 | 7.0            | -6.8  | -3        | 18  | 2688.2       | -499.2 | 202.6                 | 829.7  | -54.7 |
| 11-12 | 159.29 | 25.4         | -8.8  | 3375         | 1413 | 7.5            | -6.2  | -1        | 9   | 2664.7       | -489.7 | 196.2                 | 794.7  | -54.9 |
| 12-13 | 172.37 | 27.3         | -8.0  | 3375         | 1413 | 8.1            | -5.7  | -0        | 2   | 2639.3       | -480.9 | 189.8                 | 760.0  | -55.1 |
| 13-14 | 185.46 | 29.2         | -7.3  | 3375         | 1413 | 8.6            | -5.2  | 1         | -6  | 2612.0       | -472.8 | 183.6                 | 725.7  | -55.1 |
| 14-15 | 198.54 | 31.1         | -6.5  | 3375         | 1413 | 9.2            | -4.6  | 1         | -12 | 2582.9       | -465.6 | 177.4                 | 691.7  | -55.0 |
| 15-16 | 211.62 | 33.0         | -5.8  | 3375         | 1413 | 9.8            | -4.1  | 1         | -18 | 2551.8       | -459.0 | 171.4                 | 658.1  | -54.8 |
| 16-17 | 224.70 | 35.4         | -4.9  | 3375         | 1413 | 10.5           | -3.5  | 1         | -23 | 2518.8       | -453.3 | 165.4                 | 624.9  | -54.5 |
| 17-18 | 237.79 | 39.4         | -3.8  | 3375         | 1413 | 11.7           | -2.7  | 1         | -26 | 2483.4       | -448.3 | 159.5                 | 592.2  | -54.0 |
| 18-19 | 250.87 | 43.5         | -2.8  | 3375         | 1413 | 12.9           | -2.0  | 1         | -28 | 2444.0       | -444.5 | 153.7                 | 560.0  | -53.5 |
| 19-20 | 263.95 | 47.6         | -1.7  | 3375         | 1413 | 14.1           | -1.2  | 0         | -30 | 2400.5       | -441.7 | 147.9                 | 528.3  | -52.8 |
| 20-21 | 277.04 | 51.6         | -.6   | 3375         | 1413 | 15.3           | -.4   | 0         | -31 | 2353.0       | -440.1 | 142.1                 | 497.2  | -52.1 |
| 21-22 | 290.12 | 55.7         | .5    | 3375         | 1413 | 16.5           | .4    | -0        | -32 | 2301.3       | -439.5 | 136.4                 | 466.7  | -51.2 |
| 22-23 | 303.20 | 59.8         | 1.6   | 3375         | 1413 | 17.7           | 1.1   | -0        | -33 | 2245.6       | -440.0 | 130.6                 | 437.0  | -50.2 |
| 23-24 | 316.29 | 63.9         | 2.7   | 3375         | 1413 | 18.9           | 1.9   | -1        | -34 | 2185.8       | -441.6 | 124.8                 | 408.0  | -49.2 |
| 24-25 | 329.37 | 67.4         | 3.5   | 3375         | 1413 | 20.0           | 2.5   | -1        | -35 | 2121.9       | -444.3 | 119.1                 | 379.8  | -48.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 200 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 |              |       |              |      |                |       |           |     | 2054.5       | -447.7 | 113.2                 | 352.5 | -46.7 |
|       |        | 69.0         | 3.1   | 3375         | 1413 | 20.4           | 2.2   | -1        | -36 | 1985.5       | -450.8 | 107.3                 | 326.1 | -45.4 |
| 26-27 | 355.53 | 70.6         | 2.7   | 3375         | 1413 | 20.9           | 1.9   | -1        | -36 | 1914.9       | -453.5 | 101.4                 | 300.6 | -44.0 |
| 27-28 | 368.62 | 72.2         | 2.3   | 3375         | 1413 | 21.4           | 1.6   | -0        | -37 | 1842.7       | -455.9 | 95.5                  | 276.0 | -42.5 |
| 28-29 | 381.70 | 73.8         | 1.9   | 3375         | 1413 | 21.9           | 1.4   | -0        | -37 | 1768.9       | -457.8 | 89.5                  | 252.4 | -41.1 |
| 29-30 | 394.78 | 75.3         | 1.5   | 3375         | 1413 | 22.3           | 1.1   | -0        | -37 | 1693.6       | -459.3 | 83.5                  | 229.7 | -39.6 |
| 30-31 | 407.87 | 76.9         | 1.2   | 3375         | 1413 | 22.8           | .8    | -0        | -38 | 1616.6       | -460.5 | 77.5                  | 208.0 | -38.0 |
| 31-32 | 420.95 | 78.5         | .8    | 3375         | 1413 | 23.3           | .5    | -0        | -38 | 1538.1       | -461.3 | 71.5                  | 187.4 | -36.4 |
| 32-33 | 434.03 | 79.8         | -.1   | 3375         | 1413 | 23.6           | -.1   | 0         | -38 | 1458.3       | -461.1 | 65.4                  | 167.8 | -34.7 |
| 33-34 | 447.12 | 79.8         | -3.6  | 3375         | 1413 | 23.6           | -2.5  | 1         | -39 | 1378.5       | -457.5 | 59.4                  | 149.3 | -33.0 |
| 34-35 | 460.20 | 79.8         | -7.1  | 3375         | 1413 | 23.6           | -5.0  | 1         | -40 | 1298.7       | -450.5 | 53.5                  | 131.7 | -31.3 |
| 35-36 | 473.28 | 79.8         | -10.5 | 3375         | 1413 | 23.6           | -7.4  | 2         | -40 | 1219.0       | -440.0 | 47.6                  | 115.3 | -29.5 |
| 36-37 | 486.36 | 79.8         | -14.0 | 3375         | 1413 | 23.6           | -9.9  | 3         | -40 | 1139.2       | -426.0 | 42.0                  | 99.8  | -27.7 |
| 37-38 | 499.45 | 79.7         | -17.4 | 3375         | 1413 | 23.6           | -12.3 | 4         | -41 | 1059.5       | -408.5 | 36.5                  | 85.5  | -25.9 |
| 38-39 | 512.53 | 79.7         | -20.9 | 3375         | 1413 | 23.6           | -14.8 | 4         | -40 | 979.8        | -387.6 | 31.3                  | 72.1  | -24.1 |
| 39-40 | 525.61 | 79.7         | -24.4 | 3375         | 1413 | 23.6           | -17.2 | 5         | -40 | 900.1        | -363.3 | 26.4                  | 59.8  | -22.2 |
| 40-41 | 538.70 | 80.2         | -27.6 | 3375         | 1413 | 23.7           | -19.5 | 6         | -40 | 819.9        | -335.7 | 21.8                  | 48.6  | -20.2 |
| 41-42 | 551.78 | 83.4         | -29.4 | 3375         | 1413 | 24.7           | -20.8 | 6         | -39 | 736.5        | -306.3 | 17.6                  | 38.4  | -18.3 |
| 42-43 | 564.86 | 86.6         | -31.2 | 3375         | 1413 | 25.6           | -22.1 | 6         | -38 | 650.0        | -275.2 | 13.8                  | 29.3  | -16.3 |
| 43-44 | 577.95 | 89.8         | -33.0 | 3375         | 1413 | 26.6           | -23.3 | 6         | -37 | 560.2        | -242.2 | 10.4                  | 21.4  | -14.3 |
| 44-45 | 591.03 | 93.0         | -34.8 | 3375         | 1413 | 27.5           | -24.6 | 6         | -36 | 467.3        | -207.4 | 7.5                   | 14.7  | -12.2 |
| 45-46 | 604.11 | 96.2         | -36.6 | 3375         | 1413 | 28.5           | -25.9 | 6         | -35 | 371.1        | -170.8 | 5.0                   | 9.2   | -10.1 |
| 46-47 | 617.19 | 99.4         | -38.4 | 3375         | 1413 | 29.4           | -27.2 | 6         | -34 | 271.7        | -132.5 | 3.0                   | 5.0   | -8.0  |
| 47-48 | 630.28 | 102.6        | -40.2 | 3375         | 1413 | 30.4           | -28.4 | 5         | -33 | 169.2        | -92.3  | 1.6                   | 2.1   | -5.9  |
| 48-49 | 643.36 | 100.6        | -40.7 | 3375         | 1413 | 29.8           | -28.8 | 6         | -34 | 68.6         | -51.6  | .6                    | .6    | -3.8  |
| 49-50 | 656.44 | 74.0         | -41.9 | 4788         | 2004 | 15.5           | -20.9 | 12        | -50 |              |        |                       |       |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROGELASTIC DATA  
 WIND DIRECTION 200 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |      |      |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|------|-----------------------|------|------|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y    | Z                     |      |      |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |    | -5.4         | -9.7 | .1                    | -1.0 | -1.1 |
| TOP    | 687.00 | -5.4         | -9.7 | 2973         | 1232 | -1.8           | -7.9 | 68        | 90 | 0.0          | 0.0  | 0.0                   | 0.0  | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROGELASTIC DATA  
WIND DIRECTION 210 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |        |        |
| GRND  | 0.00   | 37.8         | -75.0 | 3599         | 1734 | 10.5           | -43.3 | 7         | -9  | 3295.5       | -1388.8 | 627.9                 | 1401.3 | -113.4 |
| GR-2  | 17.50  | 41.9         | -16.6 | 6203         | 2597 | 6.8            | -6.4  | 3         | -15 | 3257.8       | -1313.8 | 604.2                 | 1343.9 | -112.5 |
| 2-3   | 41.54  | 20.2         | -10.5 | 3375         | 1413 | 6.0            | -7.4  | 4         | -20 | 3215.9       | -1297.1 | 572.8                 | 1266.1 | -112.1 |
| 3-4   | 54.63  | 18.3         | -11.4 | 3375         | 1413 | 5.4            | -8.1  | 6         | -23 | 3195.7       | -1286.7 | 555.9                 | 1224.2 | -111.8 |
| 4-5   | 67.71  | 16.5         | -12.4 | 3375         | 1413 | 4.9            | -8.8  | 8         | -26 | 3177.4       | -1275.3 | 539.2                 | 1182.5 | -111.5 |
| 5-6   | 80.79  | 14.6         | -13.4 | 3375         | 1413 | 4.3            | -9.5  | 11        | -28 | 3161.0       | -1262.8 | 522.6                 | 1141.0 | -111.1 |
| 6-7   | 93.87  | 12.8         | -14.4 | 3375         | 1413 | 3.8            | -10.2 | 14        | -29 | 3146.3       | -1249.4 | 506.1                 | 1099.7 | -110.7 |
| 7-8   | 106.96 | 10.9         | -15.4 | 3375         | 1413 | 3.2            | -10.9 | 16        | -28 | 3122.7       | -1219.5 | 473.8                 | 1017.7 | -109.8 |
| 8-9   | 120.04 | 10.5         | -15.6 | 3375         | 1413 | 3.1            | -11.1 | 19        | -31 | 3112.2       | -1203.9 | 458.0                 | 977.0  | -109.2 |
| 9-10  | 133.12 | 14.6         | -13.3 | 3375         | 1413 | 4.3            | -9.4  | 20        | -52 | 3097.6       | -1190.5 | 442.3                 | 936.3  | -108.5 |
| 10-11 | 146.21 | 18.6         | -11.1 | 3375         | 1413 | 5.5            | -7.8  | 17        | -68 | 3079.0       | -1179.5 | 426.8                 | 895.9  | -107.6 |
| 11-12 | 159.29 | 22.7         | -8.8  | 3375         | 1413 | 6.7            | -6.2  | 13        | -78 | 3056.3       | -1170.7 | 411.4                 | 855.8  | -106.4 |
| 12-13 | 172.37 | 26.7         | -6.5  | 3375         | 1413 | 7.9            | -4.6  | 9         | -84 | 3029.6       | -1164.2 | 396.2                 | 816.0  | -105.2 |
| 13-14 | 185.46 | 30.8         | -4.2  | 3375         | 1413 | 9.1            | -3.0  | 5         | -86 | 2998.9       | -1159.9 | 381.0                 | 776.6  | -103.7 |
| 14-15 | 198.54 | 34.8         | -2.0  | 3375         | 1413 | 10.3           | -1.4  | 2         | -87 | 2964.1       | -1158.0 | 365.8                 | 737.5  | -102.1 |
| 15-16 | 211.62 | 38.8         | .3    | 3375         | 1413 | 11.5           | .2    | -0        | -87 | 2925.2       | -1158.3 | 350.6                 | 699.0  | -100.2 |
| 16-17 | 224.70 | 43.1         | 1.7   | 3375         | 1413 | 12.8           | 1.2   | -1        | -85 | 2882.1       | -1160.0 | 335.5                 | 661.0  | -98.3  |
| 17-18 | 237.79 | 48.2         | .2    | 3375         | 1413 | 14.3           | .1    | -0        | -82 | 2833.9       | -1160.2 | 320.3                 | 623.6  | -96.1  |
| 18-19 | 250.87 | 53.3         | -1.4  | 3375         | 1413 | 15.8           | -1.0  | 1         | -79 | 2780.6       | -1158.8 | 305.1                 | 586.9  | -93.8  |
| 19-20 | 263.95 | 58.3         | -2.9  | 3375         | 1413 | 17.3           | -2.1  | 2         | -77 | 2722.3       | -1155.9 | 290.0                 | 550.9  | -91.4  |
| 20-21 | 277.04 | 63.4         | -4.5  | 3375         | 1413 | 18.8           | -3.2  | 2         | -75 | 2658.9       | -1151.5 | 274.9                 | 515.7  | -88.8  |
| 21-22 | 290.12 | 68.5         | -6.0  | 3375         | 1413 | 20.3           | -4.3  | 3         | -73 | 2590.4       | -1145.5 | 259.9                 | 481.4  | -86.1  |
| 22-23 | 303.20 | 73.6         | -7.6  | 3375         | 1413 | 21.8           | -5.3  | 3         | -72 | 2516.9       | -1137.9 | 244.9                 | 448.0  | -83.2  |
| 23-24 | 316.29 | 78.6         | -9.1  | 3375         | 1413 | 23.3           | -6.4  | 3         | -70 | 2438.2       | -1128.8 | 230.1                 | 415.6  | -80.2  |
| 24-25 | 329.37 | 83.1         | -10.9 | 3375         | 1413 | 24.6           | -7.7  | 4         | -69 |              |         |                       |        |        |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 210 CONFIGURATION C REFERENCE PRESSURE 42 0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |       |       |
| 25-26 | 342.45 | 84.9         | -14.0 | 3375         | 1413 | 25.1           | -9.9  | 5         | -67 | 2355.2       | -1117.8 | 215.4                 | 384.2 | -77.0 |
| 26-27 | 355.53 | 86.7         | -17.0 | 3375         | 1413 | 25.7           | -12.0 | 5         | -64 | 2270.3       | -1103.9 | 200.9                 | 353.9 | -73.9 |
| 27-28 | 368.62 | 88.5         | -20.0 | 3375         | 1413 | 26.2           | -14.1 | 6         | -62 | 2183.6       | -1086.9 | 186.5                 | 324.8 | -70.8 |
| 28-29 | 381.70 | 90.4         | -23.0 | 3375         | 1413 | 26.8           | -16.3 | 6         | -59 | 2095.1       | -1067.0 | 172.4                 | 296.8 | -67.7 |
| 29-30 | 394.78 | 92.2         | -26.0 | 3375         | 1413 | 27.3           | -18.4 | 7         | -57 | 2004.7       | -1044.0 | 158.6                 | 270.0 | -64.6 |
| 30-31 | 407.87 | 94.0         | -29.0 | 3375         | 1413 | 27.9           | -20.5 | 7         | -55 | 1912.5       | -1018.0 | 145.1                 | 244.4 | -61.5 |
| 31-32 | 420.95 | 95.8         | -32.0 | 3375         | 1413 | 28.4           | -22.6 | 7         | -53 | 1818.5       | -989.0  | 132.0                 | 220.0 | -58.5 |
| 32-33 | 434.03 | 97.4         | -35.1 | 3375         | 1413 | 28.9           | -24.8 | 8         | -51 | 1722.6       | -957.0  | 119.3                 | 196.8 | -55.4 |
| 33-34 | 447.12 | 97.6         | -38.3 | 3375         | 1413 | 28.9           | -27.1 | 8         | -50 | 1625.2       | -922.0  | 107.0                 | 174.9 | -52.4 |
| 34-35 | 460.20 | 97.8         | -41.6 | 3375         | 1413 | 29.0           | -29.5 | 9         | -49 | 1527.7       | -883.6  | 95.2                  | 154.3 | -49.3 |
| 35-36 | 473.28 | 97.9         | -44.9 | 3375         | 1413 | 29.0           | -31.8 | 9         | -48 | 1429.9       | -842.0  | 83.9                  | 134.9 | -46.3 |
| 36-37 | 486.36 | 98.1         | -48.2 | 3375         | 1413 | 29.1           | -34.1 | 10        | -46 | 1332.0       | -797.0  | 73.2                  | 116.9 | -43.3 |
| 37-38 | 499.45 | 98.3         | -51.5 | 3375         | 1413 | 29.1           | -36.5 | 10        | -45 | 1233.8       | -748.8  | 63.1                  | 100.1 | -40.2 |
| 38-39 | 512.53 | 98.5         | -54.8 | 3375         | 1413 | 29.2           | -38.8 | 10        | -44 | 1135.6       | -697.3  | 53.6                  | 84.6  | -37.1 |
| 39-40 | 525.61 | 98.7         | -58.1 | 3375         | 1413 | 29.2           | -41.2 | 11        | -43 | 1037.1       | -642.4  | 44.8                  | 70.4  | -34.1 |
| 40-41 | 538.70 | 98.9         | -61.0 | 3375         | 1413 | 29.3           | -43.1 | 11        | -42 | 938.4        | -584.3  | 36.8                  | 57.4  | -31.0 |
| 41-42 | 551.78 | 99.4         | -61.0 | 3375         | 1413 | 29.4           | -43.1 | 11        | -41 | 839.5        | -523.3  | 29.6                  | 45.8  | -27.9 |
| 42-43 | 564.86 | 99.9         | -60.9 | 3375         | 1413 | 29.6           | -43.1 | 11        | -41 | 740.1        | -462.3  | 23.1                  | 35.5  | -24.9 |
| 43-44 | 577.95 | 100.4        | -60.9 | 3375         | 1413 | 29.8           | -43.1 | 10        | -41 | 640.2        | -401.4  | 17.5                  | 26.5  | -21.8 |
| 44-45 | 591.03 | 100.9        | -60.9 | 3375         | 1413 | 29.9           | -43.1 | 10        | -41 | 539.8        | -340.5  | 12.6                  | 18.7  | -18.8 |
| 45-46 | 604.11 | 101.5        | -60.9 | 3375         | 1413 | 30.1           | -43.1 | 10        | -41 | 438.8        | -279.6  | 8.6                   | 12.3  | -15.7 |
| 46-47 | 617.19 | 102.0        | -60.9 | 3375         | 1413 | 30.2           | -43.1 | 10        | -40 | 337.4        | -218.7  | 5.3                   | 7.3   | -12.7 |
| 47-48 | 630.28 | 102.5        | -60.9 | 3375         | 1413 | 30.4           | -43.1 | 10        | -40 | 235.4        | -157.8  | 2.8                   | 3.5   | -9.7  |
| 48-49 | 643.36 | 97.3         | -58.1 | 3375         | 1413 | 28.8           | -41.1 | 10        | -41 | 132.9        | -96.9   | 1.2                   | 1.1   | -6.6  |
| 49-50 | 656.44 | 57.7         | -43.5 | 4788         | 2004 | 12.1           | -21.7 | 19        | -60 | 35.6         | -38.8   | .3                    | -.0   | -3.7  |

TABLE 7. SHEAR AND MOMENT DIAGRAM 1 ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 210 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 34 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |    | SHEAR (KIPS) |     | MOMENT (1000-FT-KIPS) |      |      |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|----|--------------|-----|-----------------------|------|------|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y  | X            | Y   | Z                     |      |      |
| 50-TOP | 675.00 | -22.1        | 4.7 | 2973         | 1232 | -7.4           | 3.8 | -6        | 63 | -22.1        | 4.7 | - .0                  | - .1 | - .8 |
| TOP    | 687.00 |              |     |              |      |                |     |           |    | 0.0          | 0.0 | 0.0                   | 0.0  | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 220 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |        |        |
| GRND  | 0.00   | 34.6         | -80.4 | 3599         | 1734 | 9.6            | -46.4 | 10        | -10 | 4209.2       | -1092.9 | 465.9                 | 1688.6 | -117.9 |
| GR-2  | 17.50  | 40.5         | -41.3 | 6203         | 2597 | 6.5            | -15.9 | 12        | -27 | 4174.5       | -1012.6 | 447.5                 | 1615.2 | -116.7 |
| 2-3   | 41.54  | 23.1         | -20.3 | 3375         | 1413 | 6.8            | -14.4 | 14        | -37 | 4134.0       | -971.3  | 423.6                 | 1515.3 | -115.5 |
| 3-4   | 54.63  | 23.8         | -18.8 | 3375         | 1413 | 7.1            | -13.3 | 15        | -44 | 4110.9       | -951.0  | 411.0                 | 1461.4 | -114.6 |
| 4-5   | 67.71  | 24.6         | -17.2 | 3375         | 1413 | 7.3            | -12.2 | 15        | -52 | 4087.1       | -932.2  | 398.7                 | 1407.8 | -113.7 |
| 5-6   | 80.79  | 25.3         | -15.7 | 3375         | 1413 | 7.5            | -11.1 | 16        | -60 | 4062.5       | -914.9  | 386.6                 | 1354.4 | -112.7 |
| 6-7   | 93.87  | 26.0         | -14.2 | 3375         | 1413 | 7.7            | -10.0 | 16        | -69 | 4037.2       | -899.2  | 374.8                 | 1301.5 | -111.5 |
| 7-8   | 106.96 | 26.8         | -12.6 | 3375         | 1413 | 7.9            | -8.9  | 15        | -77 | 4011.2       | -885.0  | 363.1                 | 1248.8 | -110.3 |
| 8-9   | 120.04 | 28.9         | -10.9 | 3375         | 1413 | 8.6            | -7.7  | 13        | -83 | 3984.4       | -872.4  | 351.6                 | 1196.5 | -108.9 |
| 9-10  | 133.12 | 35.5         | -8.6  | 3375         | 1413 | 10.5           | -6.1  | 8         | -80 | 3955.5       | -861.5  | 340.3                 | 1144.6 | -107.4 |
| 10-11 | 146.21 | 42.0         | -6.2  | 3375         | 1413 | 12.4           | -4.4  | 5         | -75 | 3920.0       | -852.9  | 329.0                 | 1093.1 | -105.8 |
| 11-12 | 159.29 | 48.5         | -3.9  | 3375         | 1413 | 14.4           | -2.7  | 2         | -71 | 3878.0       | -846.7  | 317.9                 | 1042.0 | -104.1 |
| 12-13 | 172.37 | 55.0         | -1.5  | 3375         | 1413 | 16.3           | -1.1  | 1         | -68 | 3829.5       | -842.8  | 306.9                 | 991.6  | -102.2 |
| 13-14 | 185.46 | 61.6         | .8    | 3375         | 1413 | 18.2           | .6    | -0        | -65 | 3774.5       | -841.3  | 295.9                 | 941.9  | -100.2 |
| 14-15 | 198.54 | 68.1         | 3.1   | 3375         | 1413 | 20.2           | 2.2   | -1        | -62 | 3713.0       | -842.1  | 284.8                 | 892.9  | -98.0  |
| 15-16 | 211.62 | 74.6         | 5.5   | 3375         | 1413 | 22.1           | 3.9   | -2        | -60 | 3644.9       | -845.2  | 273.8                 | 844.8  | -95.7  |
| 16-17 | 224.70 | 80.5         | 7.1   | 3375         | 1413 | 23.8           | 5.0   | -2        | -58 | 3570.3       | -850.7  | 262.7                 | 797.6  | -93.3  |
| 17-18 | 237.79 | 84.0         | 5.9   | 3375         | 1413 | 24.9           | 4.2   | -2        | -57 | 3489.8       | -857.8  | 251.5                 | 751.4  | -90.8  |
| 18-19 | 250.87 | 87.6         | 4.8   | 3375         | 1413 | 25.9           | 3.4   | -1        | -56 | 3405.8       | -863.7  | 240.3                 | 706.3  | -88.2  |
| 19-20 | 263.95 | 91.1         | 3.6   | 3375         | 1413 | 27.0           | 2.6   | -1        | -55 | 3318.2       | -868.4  | 228.9                 | 662.3  | -85.5  |
| 20-21 | 277.04 | 94.7         | 2.5   | 3375         | 1413 | 28.1           | 1.7   | -1        | -54 | 3227.1       | -872.1  | 217.6                 | 619.5  | -82.8  |
| 21-22 | 290.12 | 98.3         | 1.3   | 3375         | 1413 | 29.1           | .9    | -0        | -53 | 3132.4       | -874.5  | 206.1                 | 577.9  | -80.0  |
| 22-23 | 303.20 | 101.8        | .2    | 3375         | 1413 | 30.2           | .1    | -0        | -53 | 3034.1       | -875.8  | 194.7                 | 537.5  | -77.2  |
| 23-24 | 316.29 | 105.4        | -1.0  | 3375         | 1413 | 31.2           | -.7   | 0         | -52 | 2932.3       | -876.0  | 183.2                 | 498.5  | -74.3  |
| 24-25 | 329.37 | 108.5        | -2.8  | 3375         | 1413 | 32.1           | -2.0  | 1         | -51 | 2826.9       | -875.0  | 171.8                 | 460.8  | -71.3  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 220 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | X                     | Y     | Z     |
| 25-26 | 342.45 |              |       |              |      |                |       |           |     | 2718.5       | -872.2 | 160.3                 | 424.6 | -68.3 |
| 26-27 | 355.53 | 109.7        | -7.0  | 3375         | 1413 | 32.5           | -5.0  | 1         | -50 | 2608.8       | -865.1 | 149.0                 | 389.7 | -65.3 |
| 27-28 | 368.62 | 110.9        | -11.3 | 3375         | 1413 | 32.9           | -8.0  | 2         | -50 | 2497.9       | -853.8 | 137.7                 | 356.3 | -62.3 |
| 28-29 | 381.70 | 112.1        | -15.6 | 3375         | 1413 | 33.2           | -11.0 | 3         | -49 | 2385.8       | -838.2 | 126.7                 | 324.4 | -59.3 |
| 29-30 | 394.78 | 113.3        | -19.9 | 3375         | 1413 | 33.6           | -14.1 | 3         | -48 | 2272.5       | -818.4 | 115.8                 | 293.9 | -56.3 |
| 30-31 | 407.87 | 114.5        | -24.1 | 3375         | 1413 | 33.9           | -17.1 | 4         | -47 | 2158.0       | -794.2 | 105.3                 | 264.9 | -53.3 |
| 31-32 | 420.95 | 115.7        | -28.4 | 3375         | 1413 | 34.3           | -20.1 | 5         | -45 | 2042.2       | -765.8 | 95.1                  | 237.4 | -50.3 |
| 32-33 | 434.03 | 117.0        | -32.7 | 3375         | 1413 | 34.6           | -23.1 | 5         | -44 | 1925.3       | -733.1 | 85.3                  | 211.5 | -47.3 |
| 33-34 | 447.12 | 117.9        | -36.4 | 3375         | 1413 | 34.9           | -25.8 | 6         | -43 | 1807.4       | -696.7 | 75.9                  | 187.1 | -44.3 |
| 34-35 | 460.20 | 117.4        | -37.4 | 3375         | 1413 | 34.8           | -26.5 | 6         | -42 | 1690.0       | -659.3 | 67.0                  | 164.2 | -41.3 |
| 35-36 | 473.28 | 117.0        | -38.4 | 3375         | 1413 | 34.7           | -27.2 | 6         | -42 | 1573.0       | -620.9 | 58.7                  | 142.8 | -38.4 |
| 36-37 | 486.36 | 116.5        | -39.4 | 3375         | 1413 | 34.5           | -27.9 | 6         | -41 | 1456.5       | -581.5 | 50.8                  | 123.0 | -35.5 |
| 37-38 | 499.45 | 116.0        | -40.4 | 3375         | 1413 | 34.4           | -28.6 | 6         | -40 | 1340.5       | -541.1 | 43.5                  | 104.7 | -32.7 |
| 38-39 | 512.53 | 115.6        | -41.4 | 3375         | 1413 | 34.2           | -29.3 | 6         | -39 | 1224.9       | -499.8 | 36.7                  | 87.9  | -29.9 |
| 39-40 | 525.61 | 115.1        | -42.3 | 3375         | 1413 | 34.1           | -30.0 | 6         | -39 | 1109.8       | -457.4 | 30.4                  | 72.7  | -27.2 |
| 40-41 | 538.70 | 114.7        | -43.3 | 3375         | 1413 | 34.0           | -30.7 | 6         | -38 | 995.1        | -414.1 | 24.7                  | 58.9  | -24.5 |
| 41-42 | 551.78 | 114.0        | -44.2 | 3375         | 1413 | 33.8           | -31.3 | 6         | -37 | 881.1        | -369.8 | 19.6                  | 46.6  | -21.9 |
| 42-43 | 564.86 | 112.4        | -44.6 | 3375         | 1413 | 33.3           | -31.5 | 6         | -37 | 768.7        | -325.3 | 15.0                  | 35.8  | -19.3 |
| 43-44 | 577.95 | 110.8        | -44.9 | 3375         | 1413 | 32.8           | -31.8 | 6         | -37 | 657.9        | -280.4 | 11.1                  | 26.5  | -16.7 |
| 44-45 | 591.03 | 109.2        | -45.2 | 3375         | 1413 | 32.4           | -32.0 | 6         | -36 | 548.7        | -235.1 | 7.7                   | 18.6  | -14.2 |
| 45-46 | 604.11 | 107.6        | -45.6 | 3375         | 1413 | 31.9           | -32.3 | 6         | -36 | 441.1        | -189.5 | 4.9                   | 12.1  | -11.7 |
| 46-47 | 617.19 | 106.0        | -45.9 | 3375         | 1413 | 31.4           | -32.5 | 6         | -36 | 335.1        | -143.6 | 2.7                   | 7.1   | -9.3  |
| 47-48 | 630.28 | 104.4        | -46.3 | 3375         | 1413 | 30.9           | -32.7 | 7         | -35 | 230.7        | -97.4  | 1.1                   | 3.4   | -7.0  |
| 48-49 | 643.36 | 102.8        | -46.6 | 3375         | 1413 | 30.4           | -33.0 | 7         | -35 | 128.0        | -50.8  | .2                    | 1.0   | -4.6  |
| 49-50 | 656.44 | 95.6         | -44.2 | 3375         | 1413 | 28.3           | -31.3 | 7         | -35 | 32.3         | -6.6   | -.2                   | -.0   | -2.4  |
|       |        | 53.9         | -23.6 | 4788         | 2004 | 11.3           | -11.8 | 11        | -59 |              |        |                       |       |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 220 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |      |      |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|------|-----------------------|------|------|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y    | Z                     |      |      |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |    | -21.6        | 17.0 | -1.1                  | -1.1 | -1.4 |
| TOP    | 687.00 | -21.6        | 17.0 | 2973         | 1232 | -7.3           | 13.8 | -6        | 19 | 0.0          | 0.0  | 0.0                   | 0.0  | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 230 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |        |
| GRND  | 0.00   | 33.9         | -63.1 | 3599         | 1734 | 9.4            | -36.4 | 14        | -18 | 4796.9       | -953.7 | 426.5                 | 1863.2 | -130.4 |
| GR-2  | 17.50  | 47.3         | -31.9 | 6203         | 2597 | 7.6            | -12.3 | 13        | -47 | 4763.1       | -890.6 | 410.3                 | 1779.5 | -128.9 |
| 2-3   | 41.54  | 30.0         | -14.2 | 3375         | 1413 | 8.9            | -10.1 | 11        | -57 | 4715.7       | -858.7 | 389.3                 | 1665.6 | -127.2 |
| 3-4   | 54.63  | 33.0         | -12.0 | 3375         | 1413 | 9.8            | -8.5  | 10        | -63 | 4685.7       | -844.4 | 378.2                 | 1604.1 | -126.0 |
| 4-5   | 67.71  | 36.0         | -9.8  | 3375         | 1413 | 10.7           | -7.0  | 8         | -68 | 4652.7       | -832.4 | 367.2                 | 1543.0 | -124.7 |
| 5-6   | 80.79  | 39.0         | -7.6  | 3375         | 1413 | 11.5           | -5.4  | 6         | -71 | 4616.8       | -822.5 | 356.4                 | 1482.4 | -123.3 |
| 6-7   | 93.87  | 42.0         | -5.4  | 3375         | 1413 | 12.4           | -3.9  | 4         | -73 | 4577.8       | -814.9 | 345.7                 | 1422.2 | -121.8 |
| 7-8   | 106.96 | 44.9         | -3.2  | 3375         | 1413 | 13.3           | -2.3  | 2         | -75 | 4535.8       | -809.5 | 335.0                 | 1362.6 | -120.1 |
| 8-9   | 120.04 | 48.7         | -1.3  | 3375         | 1413 | 14.4           | -.9   | 1         | -75 | 4490.9       | -806.2 | 324.5                 | 1303.6 | -118.3 |
| 9-10  | 133.12 | 54.5         | -.1   | 3375         | 1413 | 16.2           | -.1   | 0         | -73 | 4442.2       | -804.9 | 313.9                 | 1245.1 | -116.3 |
| 10-11 | 146.21 | 60.4         | 1.0   | 3375         | 1413 | 17.9           | .7    | -1        | -71 | 4387.7       | -804.8 | 303.4                 | 1187.4 | -114.1 |
| 11-12 | 159.29 | 66.3         | 2.2   | 3375         | 1413 | 19.6           | 1.6   | -1        | -69 | 4327.3       | -805.8 | 292.9                 | 1130.4 | -111.8 |
| 12-13 | 172.37 | 72.2         | 3.4   | 3375         | 1413 | 21.4           | 2.4   | -1        | -67 | 4261.0       | -808.0 | 282.3                 | 1074.2 | -109.4 |
| 13-14 | 185.46 | 78.0         | 4.6   | 3375         | 1413 | 23.1           | 3.2   | -2        | -66 | 4188.9       | -811.4 | 271.7                 | 1018.9 | -106.7 |
| 14-15 | 198.54 | 83.9         | 5.7   | 3375         | 1413 | 24.9           | 4.1   | -2        | -65 | 4110.8       | -816.0 | 261.1                 | 964.6  | -104.0 |
| 15-16 | 211.62 | 89.8         | 6.9   | 3375         | 1413 | 26.6           | 4.9   | -2        | -64 | 4026.9       | -821.7 | 250.3                 | 911.4  | -101.0 |
| 16-17 | 224.70 | 95.3         | 7.2   | 3375         | 1413 | 28.2           | 5.1   | -2        | -63 | 3937.1       | -828.6 | 239.6                 | 859.3  | -97.9  |
| 17-18 | 237.79 | 99.4         | 4.6   | 3375         | 1413 | 29.5           | 3.2   | -1        | -60 | 3841.9       | -835.9 | 228.7                 | 808.4  | -94.6  |
| 18-19 | 250.87 | 103.5        | 1.9   | 3375         | 1413 | 30.7           | 1.4   | -0        | -57 | 3742.4       | -840.4 | 217.7                 | 758.8  | -91.4  |
| 19-20 | 263.95 | 107.7        | -.7   | 3375         | 1413 | 31.9           | -.5   | 0         | -54 | 3638.9       | -842.4 | 206.7                 | 710.5  | -88.2  |
| 20-21 | 277.04 | 111.8        | -3.4  | 3375         | 1413 | 33.1           | -2.4  | 1         | -52 | 3531.2       | -841.6 | 195.7                 | 663.6  | -85.1  |
| 21-22 | 290.12 | 115.9        | -6.1  | 3375         | 1413 | 34.3           | -4.3  | 1         | -50 | 3419.4       | -838.2 | 184.7                 | 618.1  | -81.9  |
| 22-23 | 303.20 | 120.1        | -8.7  | 3375         | 1413 | 35.6           | -6.2  | 1         | -47 | 3303.5       | -832.2 | 173.8                 | 574.2  | -78.8  |
| 23-24 | 316.29 | 124.2        | -11.4 | 3375         | 1413 | 36.8           | -8.0  | 2         | -45 | 3183.4       | -823.5 | 162.9                 | 531.7  | -75.7  |
| 24-25 | 329.37 | 127.6        | -13.9 | 3375         | 1413 | 37.8           | -9.8  | 2         | -44 | 3059.2       | -812.1 | 152.2                 | 490.9  | -72.7  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 230 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 | 127.7        | -15.9 | 3375         | 1413 | 37.8           | -11.2 | 2         | -43 | 2931.6       | -798.2 | 141.7                 | 451.7 | -69.6 |
| 26-27 | 355.53 | 127.9        | -17.8 | 3375         | 1413 | 37.9           | -12.6 | 3         | -43 | 2803.9       | -782.3 | 131.4                 | 414.2 | -66.6 |
| 27-28 | 368.62 | 128.0        | -19.8 | 3375         | 1413 | 37.9           | -14.0 | 3         | -43 | 2676.0       | -764.5 | 121.2                 | 378.3 | -63.6 |
| 28-29 | 381.70 | 128.2        | -21.7 | 3375         | 1413 | 38.0           | -15.4 | 3         | -43 | 2547.9       | -744.7 | 111.4                 | 344.2 | -60.5 |
| 29-30 | 394.78 | 128.4        | -23.7 | 3375         | 1413 | 38.0           | -16.8 | 3         | -43 | 2419.7       | -723.0 | 101.8                 | 311.7 | -57.4 |
| 30-31 | 407.87 | 128.5        | -25.7 | 3375         | 1413 | 38.1           | -18.2 | 4         | -43 | 2291.4       | -699.3 | 92.5                  | 280.8 | -54.4 |
| 31-32 | 420.95 | 128.7        | -27.6 | 3375         | 1413 | 38.1           | -19.6 | 4         | -42 | 2162.8       | -673.6 | 83.5                  | 251.7 | -51.3 |
| 32-33 | 434.03 | 128.6        | -29.5 | 3375         | 1413 | 38.1           | -20.9 | 4         | -42 | 2034.1       | -646.0 | 74.8                  | 224.2 | -48.2 |
| 33-34 | 447.12 | 127.1        | -31.0 | 3375         | 1413 | 37.7           | -22.0 | 4         | -42 | 1905.6       | -616.5 | 66.6                  | 198.5 | -45.1 |
| 34-35 | 460.20 | 125.6        | -32.5 | 3375         | 1413 | 37.2           | -23.0 | 4         | -41 | 1778.5       | -585.5 | 58.7                  | 174.4 | -42.1 |
| 35-36 | 473.28 | 124.1        | -34.0 | 3375         | 1413 | 36.8           | -24.1 | 5         | -40 | 1652.9       | -553.0 | 51.3                  | 151.9 | -39.1 |
| 36-37 | 486.36 | 122.6        | -35.6 | 3375         | 1413 | 36.3           | -25.2 | 5         | -40 | 1528.8       | -518.9 | 44.3                  | 131.1 | -36.2 |
| 37-38 | 499.45 | 121.1        | -37.1 | 3375         | 1413 | 35.9           | -26.2 | 5         | -39 | 1406.1       | -483.4 | 37.7                  | 111.9 | -33.4 |
| 38-39 | 512.53 | 119.6        | -38.6 | 3375         | 1413 | 35.4           | -27.3 | 5         | -38 | 1285.0       | -446.3 | 31.6                  | 94.3  | -30.6 |
| 39-40 | 525.61 | 118.2        | -40.1 | 3375         | 1413 | 35.0           | -28.4 | 5         | -38 | 1165.3       | -407.7 | 26.0                  | 78.3  | -27.8 |
| 40-41 | 538.70 | 116.7        | -41.4 | 3375         | 1413 | 34.6           | -29.3 | 5         | -37 | 1047.2       | -367.6 | 21.0                  | 63.8  | -25.2 |
| 41-42 | 551.78 | 115.2        | -41.4 | 3375         | 1413 | 34.1           | -29.3 | 6         | -37 | 930.5        | -326.3 | 16.4                  | 50.9  | -22.6 |
| 42-43 | 564.86 | 113.7        | -41.5 | 3375         | 1413 | 33.7           | -29.4 | 6         | -37 | 815.3        | -284.8 | 12.4                  | 39.5  | -20.0 |
| 43-44 | 577.95 | 112.3        | -41.5 | 3375         | 1413 | 33.3           | -29.4 | 6         | -37 | 701.6        | -243.4 | 9.0                   | 29.5  | -17.4 |
| 44-45 | 591.03 | 110.8        | -41.6 | 3375         | 1413 | 32.8           | -29.4 | 6         | -37 | 589.3        | -201.8 | 6.1                   | 21.1  | -14.9 |
| 45-46 | 604.11 | 109.4        | -41.6 | 3375         | 1413 | 32.4           | -29.5 | 6         | -37 | 478.5        | -160.3 | 3.7                   | 14.1  | -12.4 |
| 46-47 | 617.19 | 107.9        | -41.7 | 3375         | 1413 | 32.0           | -29.5 | 6         | -36 | 369.1        | -118.6 | 1.9                   | 8.6   | -9.9  |
| 47-48 | 630.28 | 106.4        | -41.7 | 3375         | 1413 | 31.5           | -29.5 | 6         | -36 | 261.2        | -77.0  | .6                    | 4.4   | -7.5  |
| 48-49 | 643.36 | 99.8         | -39.0 | 3375         | 1413 | 29.6           | -27.6 | 6         | -37 | 154.8        | -35.2  | -.1                   | 1.7   | -5.0  |
| 49-50 | 656.44 | 65.8         | -16.5 | 4788         | 2004 | 13.7           | -8.2  | 6         | -59 | 55.0         | 3.8    | -.3                   | .3    | -2.7  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 230 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |    | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|----|--------------|------|-----------------------|-----|-----|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y  | X            | Y    | Z                     |     |     |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |    | -10.8        | 20.3 | -.1                   | -.1 | -.5 |
| TOP    | 687.00 | -10.8        | 20.3 | 2973         | 1232 | -3.6           | 16.5 | -15       | 19 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0 |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 240 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |        |
| GRND  | 0.00   | 32.9         | -49.7 | 3599         | 1734 | 9.1            | -28.7 | 15        | -24 | 4820.2       | -734.6 | 323.9                 | 1899.5 | -127.5 |
| GR-2  | 17.50  | 44.2         | -23.4 | 6203         | 2597 | 7.1            | -9.0  | 11        | -50 | 4787.3       | -684.9 | 311.5                 | 1815.4 | -126.1 |
| 2-3   | 41.54  | 29.4         | -10.1 | 3375         | 1413 | 8.7            | -7.1  | 9         | -59 | 4743.1       | -661.4 | 295.3                 | 1700.8 | -124.6 |
| 3-4   | 54.63  | 33.1         | -8.2  | 3375         | 1413 | 9.8            | -5.8  | 7         | -64 | 4713.8       | -651.3 | 286.8                 | 1639.0 | -123.5 |
| 4-5   | 67.71  | 36.9         | -6.3  | 3375         | 1413 | 10.9           | -4.5  | 5         | -67 | 4680.7       | -643.1 | 278.3                 | 1577.5 | -122.3 |
| 5-6   | 80.79  | 40.6         | -4.5  | 3375         | 1413 | 12.0           | -3.2  | 3         | -69 | 4643.8       | -636.8 | 269.9                 | 1516.5 | -120.9 |
| 6-7   | 93.87  | 44.4         | -2.6  | 3375         | 1413 | 13.1           | -1.8  | 2         | -70 | 4603.2       | -632.3 | 261.6                 | 1456.0 | -119.4 |
| 7-8   | 106.96 | 48.1         | -.7   | 3375         | 1413 | 14.3           | -.5   | 0         | -71 | 4558.8       | -629.7 | 253.4                 | 1396.1 | -117.7 |
| 8-9   | 120.04 | 52.2         | .7    | 3375         | 1413 | 15.5           | .5    | -0        | -71 | 4510.7       | -629.0 | 245.1                 | 1336.8 | -115.9 |
| 9-10  | 133.12 | 57.2         | .5    | 3375         | 1413 | 17.0           | .4    | -0        | -69 | 4458.5       | -629.6 | 236.9                 | 1278.1 | -113.9 |
| 10-11 | 146.21 | 62.3         | .4    | 3375         | 1413 | 18.4           | .3    | -0        | -67 | 4401.2       | -630.2 | 228.6                 | 1220.1 | -111.7 |
| 11-12 | 159.29 | 67.3         | .3    | 3375         | 1413 | 19.9           | .2    | -0        | -65 | 4339.0       | -630.6 | 220.4                 | 1163.0 | -109.5 |
| 12-13 | 172.37 | 72.3         | .2    | 3375         | 1413 | 21.4           | .2    | -0        | -64 | 4271.6       | -631.0 | 212.1                 | 1106.6 | -107.1 |
| 13-14 | 185.46 | 77.4         | .1    | 3375         | 1413 | 22.9           | .1    | -0        | -63 | 4199.3       | -631.2 | 203.9                 | 1051.2 | -104.6 |
| 14-15 | 198.54 | 82.4         | .0    | 3375         | 1413 | 24.4           | .0    | -0        | -62 | 4121.9       | -631.3 | 195.6                 | 996.8  | -102.0 |
| 15-16 | 211.62 | 87.4         | -.1   | 3375         | 1413 | 25.9           | -.1   | 0         | -61 | 4039.5       | -631.3 | 187.4                 | 943.4  | -99.2  |
| 16-17 | 224.70 | 92.2         | -.4   | 3375         | 1413 | 27.3           | -.3   | 0         | -60 | 3952.1       | -631.2 | 179.1                 | 891.1  | -96.4  |
| 17-18 | 237.79 | 95.9         | -1.2  | 3375         | 1413 | 28.4           | -.9   | 0         | -58 | 3859.9       | -630.9 | 170.9                 | 840.0  | -93.4  |
| 18-19 | 250.87 | 99.6         | -2.1  | 3375         | 1413 | 29.5           | -1.5  | 0         | -56 | 3764.0       | -629.6 | 162.6                 | 790.2  | -90.4  |
| 19-20 | 263.95 | 103.3        | -2.9  | 3375         | 1413 | 30.6           | -2.1  | 1         | -54 | 3664.4       | -627.6 | 154.4                 | 741.6  | -87.4  |
| 20-21 | 277.04 | 107.0        | -3.8  | 3375         | 1413 | 31.7           | -2.7  | 1         | -52 | 3561.1       | -624.6 | 146.2                 | 694.3  | -84.4  |
| 21-22 | 290.12 | 110.7        | -4.6  | 3375         | 1413 | 32.8           | -3.3  | 1         | -51 | 3454.1       | -620.9 | 138.0                 | 648.4  | -81.4  |
| 22-23 | 303.20 | 114.4        | -5.5  | 3375         | 1413 | 33.9           | -3.9  | 1         | -49 | 3343.4       | -616.2 | 130.0                 | 603.9  | -78.4  |
| 23-24 | 316.29 | 118.1        | -6.3  | 3375         | 1413 | 35.0           | -4.5  | 1         | -48 | 3229.0       | -610.8 | 121.9                 | 560.9  | -75.3  |
| 24-25 | 329.37 | 121.2        | -7.4  | 3375         | 1413 | 35.9           | -5.2  | 1         | -47 | 3110.9       | -604.4 | 114.0                 | 519.5  | -72.3  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 240 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 | 121.8        | -9.2  | 3375         | 1413 | 36.1           | -6.5  | 1         | -46 | 2989.7       | -597.1 | 106.1                 | 479.6 | -69.2 |
| 26-27 | 355.53 | 122.3        | -11.1 | 3375         | 1413 | 36.2           | -7.8  | 2         | -46 | 2867.9       | -587.8 | 98.4                  | 441.2 | -66.2 |
| 27-28 | 368.62 | 122.9        | -12.9 | 3375         | 1413 | 36.4           | -9.1  | 2         | -45 | 2745.6       | -576.7 | 90.7                  | 404.5 | -63.1 |
| 28-29 | 381.70 | 123.4        | -14.8 | 3375         | 1413 | 36.6           | -10.5 | 2         | -45 | 2622.7       | -563.8 | 83.3                  | 369.4 | -60.1 |
| 29-30 | 394.78 | 124.0        | -16.6 | 3375         | 1413 | 36.7           | -11.8 | 2         | -44 | 2499.3       | -549.1 | 76.0                  | 335.9 | -57.1 |
| 30-31 | 407.87 | 124.5        | -18.5 | 3375         | 1413 | 36.9           | -13.1 | 3         | -44 | 2375.3       | -532.4 | 68.9                  | 304.0 | -54.1 |
| 31-32 | 420.95 | 125.1        | -20.3 | 3375         | 1413 | 37.1           | -14.4 | 3         | -43 | 2250.8       | -514.0 | 62.1                  | 273.8 | -51.1 |
| 32-33 | 434.03 | 125.4        | -22.1 | 3375         | 1413 | 37.1           | -15.6 | 3         | -43 | 2125.7       | -493.7 | 55.5                  | 245.1 | -48.1 |
| 33-34 | 447.12 | 124.4        | -23.6 | 3375         | 1413 | 36.9           | -16.7 | 3         | -42 | 2000.3       | -471.6 | 49.2                  | 218.1 | -45.1 |
| 34-35 | 460.20 | 123.5        | -25.1 | 3375         | 1413 | 36.6           | -17.7 | 4         | -42 | 1875.9       | -448.0 | 43.2                  | 192.8 | -42.1 |
| 35-36 | 473.28 | 122.5        | -26.6 | 3375         | 1413 | 36.3           | -18.8 | 4         | -41 | 1752.4       | -422.9 | 37.5                  | 169.0 | -39.3 |
| 36-37 | 486.36 | 121.6        | -28.1 | 3375         | 1413 | 36.0           | -19.9 | 4         | -41 | 1629.9       | -396.3 | 32.1                  | 146.9 | -36.4 |
| 37-38 | 499.45 | 120.6        | -29.5 | 3375         | 1413 | 35.7           | -20.9 | 4         | -40 | 1508.3       | -368.3 | 27.1                  | 126.4 | -33.6 |
| 38-39 | 512.53 | 119.6        | -31.0 | 3375         | 1413 | 35.4           | -22.0 | 4         | -39 | 1387.7       | -338.7 | 22.5                  | 107.5 | -30.8 |
| 39-40 | 525.61 | 118.7        | -32.5 | 3375         | 1413 | 35.2           | -23.0 | 4         | -39 | 1268.0       | -307.7 | 18.3                  | 90.1  | -28.1 |
| 40-41 | 538.70 | 117.8        | -33.8 | 3375         | 1413 | 34.9           | -23.9 | 5         | -38 | 1149.3       | -275.1 | 14.4                  | 74.3  | -25.4 |
| 41-42 | 551.78 | 117.6        | -33.5 | 3375         | 1413 | 34.9           | -23.7 | 5         | -38 | 1031.5       | -241.4 | 11.1                  | 60.0  | -22.8 |
| 42-43 | 564.86 | 117.5        | -33.1 | 3375         | 1413 | 34.8           | -23.5 | 4         | -38 | 913.9        | -207.9 | 8.1                   | 47.3  | -20.2 |
| 43-44 | 577.95 | 117.3        | -32.8 | 3375         | 1413 | 34.7           | -23.2 | 4         | -37 | 796.4        | -174.8 | 5.6                   | 36.1  | -17.6 |
| 44-45 | 591.03 | 117.1        | -32.5 | 3375         | 1413 | 34.7           | -23.0 | 4         | -37 | 679.1        | -141.9 | 3.6                   | 26.4  | -15.1 |
| 45-46 | 604.11 | 116.9        | -32.2 | 3375         | 1413 | 34.6           | -22.8 | 4         | -37 | 562.1        | -109.4 | 1.9                   | 18.3  | -12.5 |
| 46-47 | 617.19 | 116.7        | -31.9 | 3375         | 1413 | 34.6           | -22.6 | 4         | -37 | 445.2        | -77.2  | .7                    | 11.7  | -10.0 |
| 47-48 | 630.28 | 116.5        | -31.6 | 3375         | 1413 | 34.5           | -22.4 | 4         | -36 | 328.5        | -45.2  | -.1                   | 6.7   | -7.6  |
| 48-49 | 643.36 | 111.6        | -29.0 | 3375         | 1413 | 33.1           | -20.5 | 4         | -36 | 212.1        | -13.6  | -.5                   | 3.1   | -5.1  |
| 49-50 | 656.44 | 90.7         | -7.0  | 4788         | 2004 | 18.9           | -3.5  | 1         | -45 | 100.5        | 15.4   | -.5                   | 1.1   | -2.8  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 240 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |     | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|-----|--------------|------|-----------------------|-----|------|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y   | X            | Y    | Z                     |     |      |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |     | 9.8          | 22.4 | - .1                  | .1  | - .6 |
| TOP    | 687.00 | 9.8          | 22.4 | 2973         | 1232 | 3.3            | 18.2 | -16       | -17 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 250 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |        |
| GRND  | 0.00   |              |       |              |      |                |       |           |     | 5210.9       | -514.5 | 181.5                 | 2146.3 | -129.0 |
| GR-2  | 17.50  | 33.8         | -47.5 | 3599         | 1734 | 9.4            | -27.4 | 12        | -21 | 5177.1       | -467.0 | 172.9                 | 2055.4 | -127.9 |
| 2-3   | 41.54  | 29.0         | -23.8 | 6203         | 2597 | 4.7            | -9.2  | 10        | -29 | 5148.1       | -443.2 | 162.0                 | 1931.3 | -127.1 |
| 3-4   | 54.63  | 21.4         | -11.6 | 3375         | 1413 | 6.3            | -8.2  | 10        | -42 | 5126.7       | -431.6 | 156.3                 | 1864.1 | -126.5 |
| 4-5   | 67.71  | 25.4         | -10.6 | 3375         | 1413 | 7.5            | -7.5  | 9         | -49 | 5101.3       | -421.1 | 150.7                 | 1797.2 | -125.7 |
| 5-6   | 80.79  | 29.4         | -9.6  | 3375         | 1413 | 8.7            | -6.8  | 7         | -54 | 5071.9       | -411.5 | 145.2                 | 1730.6 | -124.7 |
| 6-7   | 93.87  | 33.4         | -8.6  | 3375         | 1413 | 9.9            | -6.1  | 6         | -57 | 5038.5       | -402.9 | 139.9                 | 1664.5 | -123.6 |
| 7-8   | 106.96 | 37.4         | -7.6  | 3375         | 1413 | 11.1           | -5.4  | 5         | -60 | 5001.1       | -395.2 | 134.7                 | 1598.8 | -122.4 |
| 8-9   | 120.04 | 41.4         | -6.6  | 3375         | 1413 | 12.3           | -4.7  | 4         | -62 | 4959.7       | -388.6 | 129.6                 | 1533.7 | -121.0 |
| 9-10  | 133.12 | 45.8         | -5.8  | 3375         | 1413 | 13.6           | -4.1  | 3         | -62 | 4914.0       | -382.8 | 124.5                 | 1469.1 | -119.4 |
| 10-11 | 146.21 | 51.4         | -5.6  | 3375         | 1413 | 15.2           | -3.9  | 3         | -60 | 4862.6       | -377.2 | 119.5                 | 1405.1 | -117.7 |
| 11-12 | 159.29 | 57.0         | -5.3  | 3375         | 1413 | 16.9           | -3.8  | 2         | -58 | 4805.5       | -371.9 | 114.6                 | 1341.9 | -115.9 |
| 12-13 | 172.37 | 62.7         | -5.1  | 3375         | 1413 | 18.6           | -3.6  | 2         | -57 | 4742.9       | -366.8 | 109.8                 | 1279.4 | -114.0 |
| 13-14 | 185.46 | 68.3         | -4.8  | 3375         | 1413 | 20.2           | -3.4  | 2         | -56 | 4674.6       | -362.0 | 105.0                 | 1217.8 | -111.9 |
| 14-15 | 198.54 | 73.9         | -4.5  | 3375         | 1413 | 21.9           | -3.2  | 1         | -54 | 4600.7       | -357.5 | 100.3                 | 1157.1 | -109.7 |
| 15-16 | 211.62 | 79.5         | -4.3  | 3375         | 1413 | 23.6           | -3.0  | 1         | -54 | 4521.2       | -353.2 | 95.7                  | 1097.5 | -107.4 |
| 16-17 | 224.70 | 85.2         | -4.0  | 3375         | 1413 | 25.2           | -2.9  | 1         | -53 | 4436.0       | -349.1 | 91.1                  | 1038.9 | -105.0 |
| 17-18 | 237.79 | 90.4         | -3.9  | 3375         | 1413 | 26.8           | -2.8  | 1         | -52 | 4345.6       | -345.2 | 86.5                  | 981.4  | -102.5 |
| 18-19 | 250.87 | 94.3         | -4.4  | 3375         | 1413 | 27.9           | -3.1  | 1         | -51 | 4251.3       | -340.8 | 82.1                  | 925.2  | -99.9  |
| 19-20 | 263.95 | 98.2         | -4.9  | 3375         | 1413 | 29.1           | -3.5  | 1         | -50 | 4153.1       | -335.8 | 77.6                  | 870.2  | -97.2  |
| 20-21 | 277.04 | 102.1        | -5.4  | 3375         | 1413 | 30.2           | -3.9  | 1         | -49 | 4051.1       | -330.4 | 73.3                  | 816.6  | -94.5  |
| 21-22 | 290.12 | 106.0        | -5.9  | 3375         | 1413 | 31.4           | -4.2  | 1         | -48 | 3945.1       | -324.4 | 69.0                  | 764.2  | -91.7  |
| 22-23 | 303.20 | 109.9        | -6.4  | 3375         | 1413 | 32.5           | -4.6  | 1         | -48 | 3835.2       | -318.0 | 64.8                  | 713.4  | -88.9  |
| 23-24 | 316.29 | 113.8        | -6.9  | 3375         | 1413 | 33.7           | -4.9  | 1         | -47 | 3721.5       | -311.0 | 60.7                  | 663.9  | -86.0  |
| 24-25 | 329.37 | 117.6        | -7.4  | 3375         | 1413 | 34.9           | -5.3  | 1         | -46 | 3603.8       | -303.6 | 56.7                  | 616.0  | -83.0  |
|       |        | 121.5        | -7.8  | 3375         | 1413 | 36.0           | -5.6  | 1         | -46 |              |        |                       |        |        |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
 WIND DIRECTION 250 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 | 124.9        | -7.9  | 3375         | 1413 | 37.0           | -5.6  | 1         | -45 | 3482.4       | -295.8 | 52.7                  | 569.6 | -80.0 |
| 26-27 | 355.53 | 128.4        | -7.9  | 3375         | 1413 | 38.0           | -5.6  | 1         | -44 | 3357.5       | -287.9 | 48.9                  | 524.9 | -77.0 |
| 27-28 | 368.62 | 131.8        | -7.9  | 3375         | 1413 | 39.0           | -5.6  | 1         | -43 | 3229.1       | -280.0 | 45.2                  | 481.8 | -73.9 |
| 28-29 | 381.70 | 135.3        | -7.9  | 3375         | 1413 | 40.1           | -5.6  | 1         | -43 | 3097.3       | -272.2 | 41.6                  | 440.4 | -70.8 |
| 29-30 | 394.78 | 138.7        | -7.9  | 3375         | 1413 | 41.1           | -5.6  | 1         | -42 | 2962.1       | -264.3 | 38.1                  | 400.8 | -67.7 |
| 30-31 | 407.87 | 142.2        | -7.9  | 3375         | 1413 | 42.1           | -5.6  | 1         | -41 | 2823.4       | -256.4 | 34.7                  | 363.0 | -64.5 |
| 31-32 | 420.95 | 145.6        | -7.9  | 3375         | 1413 | 43.1           | -5.6  | 1         | -41 | 2681.2       | -248.5 | 31.4                  | 326.9 | -61.3 |
| 32-33 | 434.03 | 148.4        | -8.1  | 3375         | 1413 | 44.0           | -5.7  | 1         | -40 | 2535.6       | -240.6 | 28.2                  | 292.8 | -58.1 |
| 33-34 | 447.12 | 147.9        | -9.1  | 3375         | 1413 | 43.8           | -6.4  | 1         | -40 | 2387.2       | -232.5 | 25.1                  | 260.6 | -54.9 |
| 34-35 | 460.20 | 147.4        | -10.1 | 3375         | 1413 | 43.7           | -7.1  | 1         | -41 | 2239.3       | -223.4 | 22.1                  | 230.4 | -51.6 |
| 35-36 | 473.28 | 147.0        | -11.1 | 3375         | 1413 | 43.5           | -7.8  | 1         | -41 | 2091.9       | -213.4 | 19.2                  | 202.0 | -48.4 |
| 36-37 | 486.36 | 146.5        | -12.1 | 3375         | 1413 | 43.4           | -8.5  | 1         | -41 | 1944.9       | -202.3 | 16.5                  | 175.6 | -45.1 |
| 37-38 | 499.45 | 146.0        | -13.1 | 3375         | 1413 | 43.3           | -9.2  | 2         | -41 | 1798.4       | -190.2 | 13.9                  | 151.1 | -41.9 |
| 38-39 | 512.53 | 145.5        | -14.1 | 3375         | 1413 | 43.1           | -9.9  | 2         | -41 | 1652.4       | -177.2 | 11.5                  | 128.6 | -38.6 |
| 39-40 | 525.61 | 145.1        | -15.0 | 3375         | 1413 | 43.0           | -10.6 | 2         | -42 | 1506.9       | -163.1 | 9.3                   | 107.9 | -35.3 |
| 40-41 | 538.70 | 144.3        | -16.0 | 3375         | 1413 | 42.8           | -11.3 | 2         | -42 | 1361.8       | -148.1 | 7.3                   | 89.1  | -32.0 |
| 41-42 | 551.78 | 141.9        | -16.8 | 3375         | 1413 | 42.0           | -11.9 | 2         | -42 | 1217.5       | -132.1 | 5.5                   | 72.2  | -28.7 |
| 42-43 | 564.86 | 139.5        | -17.7 | 3375         | 1413 | 41.3           | -12.5 | 2         | -42 | 1075.6       | -115.2 | 3.8                   | 57.2  | -25.4 |
| 43-44 | 577.95 | 137.0        | -18.5 | 3375         | 1413 | 40.6           | -13.1 | 2         | -43 | 936.2        | -97.6  | 2.4                   | 44.1  | -22.2 |
| 44-45 | 591.03 | 134.6        | -19.3 | 3375         | 1413 | 39.9           | -13.7 | 3         | -43 | 799.1        | -79.1  | 1.3                   | 32.7  | -19.0 |
| 45-46 | 604.11 | 132.2        | -20.1 | 3375         | 1413 | 39.2           | -14.3 | 3         | -43 | 664.5        | -59.8  | .4                    | 23.2  | -15.8 |
| 46-47 | 617.19 | 129.8        | -21.0 | 3375         | 1413 | 38.4           | -14.8 | 3         | -43 | 532.3        | -39.6  | -.3                   | 15.3  | -12.7 |
| 47-48 | 630.28 | 127.4        | -21.8 | 3375         | 1413 | 37.7           | -15.4 | 3         | -43 | 402.5        | -18.7  | -.7                   | 9.2   | -9.6  |
| 48-49 | 643.36 | 121.4        | -20.5 | 3375         | 1413 | 36.0           | -14.5 | 3         | -44 | 275.2        | 3.1    | -.8                   | 4.8   | -6.5  |
| 49-50 | 656.44 | 117.8        | -.1   | 4788         | 2004 | 24.6           | -.0   | 0         | -45 | 153.7        | 23.6   | -.6                   | 2.0   | -3.6  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 250 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |     | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|-----|--------------|------|-----------------------|-----|-----|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y   | X            | Y    | Z                     |     |     |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |     | 36.0         | 23.7 | - .1                  | .2  | -.7 |
| TOP    | 687.00 | 36.0         | 23.7 | 2973         | 1232 | 12.1           | 19.3 | -7        | -25 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 260 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |        |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|--------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |        |
| GRND  | 0.00   | 7.7          | -31.6 | 3599         | 1734 | 2.1            | -18.2 | 38        | -22 | 4225.3       | -583.0 | 204.7                 | 1811.5 | -138.2 |
| GR-2  | 17.50  | -15.3        | -16.0 | 6203         | 2597 | -2.5           | -6.2  | -22       | -51 | 4217.6       | -551.4 | 194.8                 | 1737.6 | -136.5 |
| 2-3   | 41.54  | -1.1         | -8.5  | 3375         | 1413 | -3             | -6.0  | -18       | -5  | 4233.0       | -535.4 | 181.7                 | 1636.0 | -137.4 |
| 3-4   | 54.63  | 4.1          | -8.3  | 3375         | 1413 | 1.2            | -5.9  | 0         | -0  | 4234.0       | -527.0 | 174.8                 | 1580.6 | -137.6 |
| 4-5   | 67.71  | 9.2          | -8.1  | 3375         | 1413 | 2.7            | -5.7  | 8         | -23 | 4230.0       | -518.7 | 167.9                 | 1525.3 | -137.6 |
| 5-6   | 80.79  | 14.3         | -7.9  | 3375         | 1413 | 4.2            | -5.6  | 9         | -39 | 4220.8       | -510.6 | 161.2                 | 1470.0 | -137.4 |
| 6-7   | 93.87  | 19.5         | -7.8  | 3375         | 1413 | 5.8            | -5.5  | 8         | -49 | 4206.5       | -502.6 | 154.6                 | 1414.9 | -137.0 |
| 7-8   | 106.96 | 24.6         | -7.6  | 3375         | 1413 | 7.3            | -5.4  | 7         | -55 | 4187.0       | -494.9 | 148.1                 | 1360.0 | -136.4 |
| 8-9   | 120.04 | 29.7         | -7.5  | 3375         | 1413 | 8.8            | -5.3  | 6         | -57 | 4162.4       | -487.3 | 141.6                 | 1305.3 | -135.6 |
| 9-10  | 133.12 | 34.9         | -7.9  | 3375         | 1413 | 10.3           | -5.6  | 5         | -57 | 4132.7       | -479.7 | 135.3                 | 1251.1 | -134.6 |
| 10-11 | 146.21 | 40.0         | -8.2  | 3375         | 1413 | 11.8           | -5.8  | 5         | -57 | 4097.9       | -471.9 | 129.1                 | 1197.2 | -133.5 |
| 11-12 | 159.29 | 45.1         | -8.5  | 3375         | 1413 | 13.4           | -6.0  | 4         | -56 | 4057.9       | -463.7 | 123.0                 | 1143.9 | -132.2 |
| 12-13 | 172.37 | 50.3         | -8.8  | 3375         | 1413 | 14.9           | -6.2  | 4         | -56 | 4012.7       | -455.2 | 116.9                 | 1091.1 | -130.8 |
| 13-14 | 185.46 | 55.4         | -9.1  | 3375         | 1413 | 16.4           | -6.5  | 4         | -56 | 3962.5       | -446.4 | 111.0                 | 1038.9 | -129.2 |
| 14-15 | 198.54 | 60.6         | -9.4  | 3375         | 1413 | 17.9           | -6.7  | 4         | -56 | 3907.0       | -437.3 | 105.3                 | 987.4  | -127.5 |
| 15-16 | 211.62 | 65.7         | -9.7  | 3375         | 1413 | 19.5           | -6.9  | 3         | -56 | 3846.5       | -427.9 | 99.6                  | 936.7  | -125.6 |
| 16-17 | 224.70 | 70.5         | -10.0 | 3375         | 1413 | 20.9           | -7.1  | 3         | -56 | 3780.8       | -418.1 | 94.1                  | 886.8  | -123.6 |
| 17-18 | 237.79 | 74.4         | -10.2 | 3375         | 1413 | 22.0           | -7.2  | 3         | -56 | 3710.2       | -408.1 | 88.7                  | 837.8  | -121.5 |
| 18-19 | 250.87 | 78.2         | -10.4 | 3375         | 1413 | 23.2           | -7.4  | 3         | -56 | 3635.9       | -397.9 | 83.4                  | 789.8  | -119.2 |
| 19-20 | 263.95 | 82.0         | -10.6 | 3375         | 1413 | 24.3           | -7.5  | 3         | -57 | 3557.7       | -387.5 | 78.3                  | 742.7  | -116.7 |
| 20-21 | 277.04 | 85.8         | -10.8 | 3375         | 1413 | 25.4           | -7.6  | 3         | -57 | 3475.7       | -376.9 | 73.3                  | 696.7  | -114.2 |
| 21-22 | 290.12 | 89.7         | -10.9 | 3375         | 1413 | 26.6           | -7.7  | 3         | -57 | 3389.8       | -366.1 | 68.4                  | 651.8  | -111.5 |
| 22-23 | 303.20 | 93.5         | -11.1 | 3375         | 1413 | 27.7           | -7.9  | 3         | -57 | 3300.2       | -355.2 | 63.7                  | 608.0  | -108.7 |
| 23-24 | 316.29 | 97.3         | -11.3 | 3375         | 1413 | 28.8           | -8.0  | 3         | -58 | 3206.7       | -344.1 | 59.1                  | 565.5  | -105.8 |
| 24-25 | 329.37 | 101.0        | -11.5 | 3375         | 1413 | 29.9           | -8.1  | 3         | -58 | 3109.4       | -332.8 | 54.7                  | 524.1  | -102.7 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 260 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 34 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |       |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|-------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |       |       |
| 25-26 | 342.45 | 104.4        | -11.8 | 3375         | 1413 | 30.9           | -8.4  | 3         | -57 | 3008.4       | -321.3 | 50.4                  | 484.1 | -99.5 |
| 26-27 | 355.53 | 107.7        | -12.1 | 3375         | 1413 | 31.9           | -8.6  | 3         | -56 | 2904.0       | -309.4 | 46.3                  | 445.5 | -96.3 |
| 27-28 | 368.62 | 111.1        | -12.4 | 3375         | 1413 | 32.9           | -8.8  | 3         | -55 | 2796.3       | -297.3 | 42.3                  | 408.2 | -93.0 |
| 28-29 | 381.70 | 114.5        | -12.7 | 3375         | 1413 | 33.9           | -9.0  | 3         | -55 | 2685.2       | -284.9 | 38.5                  | 372.3 | -89.6 |
| 29-30 | 394.78 | 117.8        | -13.0 | 3375         | 1413 | 34.9           | -9.2  | 3         | -54 | 2570.7       | -272.1 | 34.8                  | 337.9 | -86.2 |
| 30-31 | 407.87 | 121.2        | -13.4 | 3375         | 1413 | 35.9           | -9.4  | 2         | -54 | 2452.9       | -259.1 | 31.4                  | 305.1 | -82.7 |
| 31-32 | 420.95 | 124.5        | -13.7 | 3375         | 1413 | 36.9           | -9.7  | 2         | -53 | 2331.7       | -245.7 | 28.1                  | 273.8 | -79.1 |
| 32-33 | 434.03 | 127.7        | -13.9 | 3375         | 1413 | 37.8           | -9.8  | 2         | -53 | 2207.2       | -232.1 | 24.9                  | 244.1 | -75.5 |
| 33-34 | 447.12 | 129.8        | -13.9 | 3375         | 1413 | 38.4           | -9.8  | 2         | -54 | 2079.6       | -218.2 | 22.0                  | 216.0 | -71.9 |
| 34-35 | 460.20 | 131.9        | -13.8 | 3375         | 1413 | 39.1           | -9.8  | 2         | -55 | 1949.8       | -204.3 | 19.2                  | 189.7 | -68.0 |
| 35-36 | 473.28 | 134.0        | -13.8 | 3375         | 1413 | 39.7           | -9.8  | 2         | -56 | 1817.9       | -190.5 | 16.7                  | 165.0 | -64.1 |
| 36-37 | 486.36 | 136.1        | -13.7 | 3375         | 1413 | 40.3           | -9.7  | 2         | -57 | 1683.9       | -176.7 | 14.3                  | 142.1 | -60.0 |
| 37-38 | 499.45 | 138.2        | -13.7 | 3375         | 1413 | 40.9           | -9.7  | 2         | -58 | 1547.8       | -163.0 | 12.0                  | 121.0 | -55.8 |
| 38-39 | 512.53 | 140.3        | -13.7 | 3375         | 1413 | 41.6           | -9.7  | 2         | -58 | 1409.6       | -149.3 | 10.0                  | 101.6 | -51.5 |
| 39-40 | 525.61 | 142.4        | -13.6 | 3375         | 1413 | 42.2           | -9.6  | 2         | -59 | 1269.3       | -135.6 | 8.1                   | 84.1  | -47.0 |
| 40-41 | 538.70 | 143.1        | -13.6 | 3375         | 1413 | 42.4           | -9.6  | 2         | -60 | 1126.9       | -122.0 | 6.4                   | 68.4  | -42.4 |
| 41-42 | 551.78 | 135.6        | -13.9 | 3375         | 1413 | 40.2           | -9.9  | 3         | -62 | 983.8        | -108.3 | 4.9                   | 54.6  | -37.7 |
| 42-43 | 564.86 | 128.0        | -14.2 | 3375         | 1413 | 37.9           | -10.1 | 3         | -64 | 848.2        | -94.4  | 3.6                   | 42.6  | -33.1 |
| 43-44 | 577.95 | 120.5        | -14.5 | 3375         | 1413 | 35.7           | -10.3 | 3         | -66 | 720.2        | -80.2  | 2.5                   | 32.4  | -28.7 |
| 44-45 | 591.03 | 112.9        | -14.8 | 3375         | 1413 | 33.5           | -10.5 | 4         | -68 | 599.8        | -65.6  | 1.5                   | 23.7  | -24.4 |
| 45-46 | 604.11 | 105.4        | -15.2 | 3375         | 1413 | 31.2           | -10.7 | 4         | -70 | 486.8        | -50.8  | .7                    | 16.6  | -20.2 |
| 46-47 | 617.19 | 97.8         | -15.5 | 3375         | 1413 | 29.0           | -10.9 | 5         | -73 | 381.5        | -35.6  | .2                    | 11.0  | -16.1 |
| 47-48 | 630.28 | 90.3         | -15.8 | 3375         | 1413 | 26.7           | -11.2 | 6         | -76 | 283.6        | -20.2  | -.2                   | 6.6   | -12.1 |
| 48-49 | 643.36 | 81.3         | -14.8 | 3375         | 1413 | 24.1           | -10.5 | 6         | -80 | 193.4        | -4.4   | -.3                   | 3.5   | -8.3  |
| 49-50 | 656.44 | 82.5         | -3.2  | 4788         | 2004 | 17.2           | -1.6  | 1         | -80 | 112.0        | 10.4   | -.3                   | 1.5   | -4.7  |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 260 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |     | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |      |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|-----|--------------|------|-----------------------|-----|------|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y   | X            | Y    | Z                     |     |      |
| 50-TOP | 675.00 | 29.5         | 13.5 | 2973         | 1232 | 9.9            | 11.0 | -11       | -59 | 29.5         | 13.5 | -1.1                  | .2  | -1.1 |
| TOP    | 687.00 |              |      |              |      |                |      |           |     | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 270 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 34 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |      |
| GRND  | 0.00   |              |       |              |      |                |       |           |     | -2698.1      | -699.2 | 252.2                 | -959.2 | 71.3 |
| GR-2  | 17.50  | -32.5        | -29.2 | 3599         | 1734 | -9.0           | -16.8 | 3         | 9   | -2665.6      | -670.0 | 240.3                 | -912.3 | 71.6 |
| 2-3   | 41.54  | -93.8        | -13.2 | 6203         | 2597 | -15.1          | -5.1  | -2        | -40 | -2571.8      | -656.9 | 224.3                 | -849.3 | 69.6 |
| 3-4   | 54.63  | -48.7        | -7.6  | 3375         | 1413 | -14.4          | -5.4  | -3        | -43 | -2523.0      | -649.2 | 215.8                 | -816.0 | 68.4 |
| 4-5   | 67.71  | -47.1        | -8.0  | 3375         | 1413 | -13.9          | -5.7  | -3        | -45 | -2476.0      | -641.3 | 207.3                 | -783.3 | 67.2 |
| 5-6   | 80.79  | -45.4        | -8.3  | 3375         | 1413 | -13.5          | -5.9  | -4        | -48 | -2430.6      | -632.9 | 199.0                 | -751.2 | 66.0 |
| 6-7   | 93.87  | -43.8        | -8.7  | 3375         | 1413 | -13.0          | -6.1  | -4        | -51 | -2386.8      | -624.2 | 190.8                 | -719.7 | 64.7 |
| 7-8   | 106.96 | -42.1        | -9.0  | 3375         | 1413 | -12.5          | -6.4  | -5        | -54 | -2344.7      | -615.2 | 182.7                 | -688.8 | 63.5 |
| 8-9   | 120.04 | -40.5        | -9.4  | 3375         | 1413 | -12.0          | -6.6  | -6        | -57 | -2304.2      | -605.8 | 174.7                 | -658.3 | 62.1 |
| 9-10  | 133.12 | -39.6        | -9.7  | 3375         | 1413 | -11.7          | -6.9  | -6        | -59 | -2264.6      | -596.1 | 166.8                 | -628.5 | 60.8 |
| 10-11 | 146.21 | -41.1        | -10.2 | 3375         | 1413 | -12.2          | -7.2  | -6        | -56 | -2223.5      | -585.9 | 159.1                 | -599.1 | 59.5 |
| 11-12 | 159.29 | -42.7        | -10.6 | 3375         | 1413 | -12.6          | -7.5  | -6        | -53 | -2180.8      | -575.3 | 151.5                 | -570.3 | 58.2 |
| 12-13 | 172.37 | -44.2        | -11.0 | 3375         | 1413 | -13.1          | -7.8  | -5        | -51 | -2136.6      | -564.3 | 144.0                 | -542.1 | 56.9 |
| 13-14 | 185.46 | -45.8        | -11.4 | 3375         | 1413 | -13.6          | -8.1  | -5        | -48 | -2090.8      | -552.8 | 136.7                 | -514.4 | 55.6 |
| 14-15 | 198.54 | -47.3        | -11.9 | 3375         | 1413 | -14.0          | -8.4  | -5        | -46 | -2043.5      | -541.0 | 129.6                 | -487.4 | 54.4 |
| 15-16 | 211.62 | -48.8        | -12.3 | 3375         | 1413 | -14.5          | -8.7  | -5        | -44 | -1994.7      | -528.7 | 122.6                 | -460.9 | 53.1 |
| 16-17 | 224.70 | -50.4        | -12.7 | 3375         | 1413 | -14.9          | -9.0  | -4        | -42 | -1944.3      | -515.9 | 115.7                 | -435.2 | 51.9 |
| 17-18 | 237.79 | -51.6        | -13.1 | 3375         | 1413 | -15.3          | -9.3  | -4        | -41 | -1892.8      | -502.8 | 109.1                 | -410.1 | 50.7 |
| 18-19 | 250.87 | -51.7        | -13.3 | 3375         | 1413 | -15.3          | -9.4  | -5        | -42 | -1841.0      | -489.5 | 102.6                 | -385.6 | 49.4 |
| 19-20 | 263.95 | -51.9        | -13.6 | 3375         | 1413 | -15.4          | -9.6  | -5        | -43 | -1789.2      | -475.9 | 96.3                  | -361.9 | 48.1 |
| 20-21 | 277.04 | -52.0        | -13.8 | 3375         | 1413 | -15.4          | -9.8  | -5        | -44 | -1737.2      | -462.1 | 90.1                  | -338.8 | 46.8 |
| 21-22 | 290.12 | -52.1        | -14.1 | 3375         | 1413 | -15.4          | -9.9  | -5        | -45 | -1685.0      | -448.0 | 84.2                  | -316.4 | 45.4 |
| 22-23 | 290.12 | -52.3        | -14.3 | 3375         | 1413 | -15.5          | -10.1 | -5        | -46 | -1632.7      | -433.7 | 78.4                  | -294.7 | 44.0 |
| 23-24 | 303.20 | -52.4        | -14.5 | 3375         | 1413 | -15.5          | -10.3 | -6        | -47 | -1580.3      | -419.2 | 72.8                  | -273.7 | 42.6 |
| 24-25 | 316.29 | -52.6        | -14.8 | 3375         | 1413 | -15.6          | -10.4 | -6        | -48 | -1527.7      | -404.4 | 67.4                  | -253.4 | 41.1 |
| 24-25 | 329.37 | -53.1        | -15.0 | 3375         | 1413 | -15.7          | -10.6 | -6        | -49 |              |        |                       |        |      |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 270 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | X                     | Y      | Z    |
| 25-26 | 342.45 | -55.3        | -15.1 | 3375         | 1413 | -16.4          | -10.7 | -6        | -50 | -1474.6      | -389.5 | 62.2                  | -233.8 | 39.6 |
| 26-27 | 355.53 | -57.4        | -15.2 | 3375         | 1413 | -17.0          | -10.7 | -6        | -50 | -1419.4      | -374.4 | 57.2                  | -214.8 | 38.0 |
| 27-28 | 368.62 | -59.6        | -15.2 | 3375         | 1413 | -17.7          | -10.8 | -5        | -50 | -1361.9      | -359.2 | 52.5                  | -196.6 | 36.3 |
| 28-29 | 381.70 | -61.7        | -15.3 | 3375         | 1413 | -18.3          | -10.9 | -5        | -51 | -1302.3      | -344.0 | 47.9                  | -179.2 | 34.6 |
| 29-30 | 394.78 | -63.9        | -15.4 | 3375         | 1413 | -18.9          | -10.9 | -5        | -51 | -1240.6      | -328.7 | 43.4                  | -162.6 | 32.8 |
| 30-31 | 407.87 | -66.1        | -15.5 | 3375         | 1413 | -19.6          | -11.0 | -5        | -51 | -1176.7      | -313.2 | 39.3                  | -146.8 | 30.9 |
| 31-32 | 420.95 | -68.2        | -15.6 | 3375         | 1413 | -20.2          | -11.0 | -5        | -51 | -1110.6      | -297.7 | 35.3                  | -131.8 | 29.0 |
| 32-33 | 434.03 | -69.7        | -15.7 | 3375         | 1413 | -20.6          | -11.1 | -5        | -51 | -1042.4      | -282.1 | 31.5                  | -117.7 | 27.0 |
| 33-34 | 447.12 | -67.7        | -15.9 | 3375         | 1413 | -20.0          | -11.2 | -5        | -51 | -972.8       | -266.4 | 27.9                  | -104.5 | 25.0 |
| 34-35 | 460.20 | -65.6        | -16.0 | 3375         | 1413 | -19.4          | -11.3 | -5        | -51 | -905.1       | -250.5 | 24.5                  | -92.2  | 23.0 |
| 35-36 | 473.28 | -63.6        | -16.2 | 3375         | 1413 | -18.9          | -11.4 | -5        | -52 | -839.5       | -234.5 | 21.3                  | -80.8  | 21.1 |
| 36-37 | 486.36 | -61.6        | -16.3 | 3375         | 1413 | -18.3          | -11.5 | -6        | -52 | -775.8       | -218.4 | 18.4                  | -70.3  | 19.2 |
| 37-38 | 499.45 | -59.6        | -16.5 | 3375         | 1413 | -17.7          | -11.7 | -6        | -52 | -714.2       | -202.0 | 15.6                  | -60.5  | 17.4 |
| 38-39 | 512.53 | -57.6        | -16.6 | 3375         | 1413 | -17.1          | -11.8 | -6        | -52 | -654.6       | -185.6 | 13.1                  | -51.6  | 15.6 |
| 39-40 | 525.61 | -55.6        | -16.8 | 3375         | 1413 | -16.5          | -11.9 | -7        | -52 | -596.9       | -169.0 | 10.8                  | -43.4  | 13.8 |
| 40-41 | 538.70 | -53.9        | -16.9 | 3375         | 1413 | -16.0          | -12.0 | -7        | -51 | -541.3       | -152.2 | 8.7                   | -35.9  | 12.2 |
| 41-42 | 551.78 | -53.9        | -17.0 | 3375         | 1413 | -16.0          | -12.0 | -6        | -48 | -487.4       | -135.3 | 6.8                   | -29.2  | 10.5 |
| 42-43 | 564.86 | -53.8        | -17.1 | 3375         | 1413 | -16.0          | -12.1 | -6        | -45 | -433.6       | -118.3 | 5.1                   | -23.2  | 9.0  |
| 43-44 | 577.95 | -53.8        | -17.2 | 3375         | 1413 | -15.9          | -12.2 | -6        | -42 | -379.7       | -101.1 | 3.7                   | -17.9  | 7.5  |
| 44-45 | 591.03 | -53.8        | -17.3 | 3375         | 1413 | -15.9          | -12.3 | -5        | -39 | -325.9       | -83.9  | 2.5                   | -13.2  | 6.2  |
| 45-46 | 604.11 | -53.8        | -17.4 | 3375         | 1413 | -15.9          | -12.3 | -5        | -36 | -272.1       | -66.6  | 1.5                   | -9.3   | 4.9  |
| 46-47 | 617.19 | -53.8        | -17.5 | 3375         | 1413 | -15.9          | -12.4 | -5        | -33 | -218.3       | -49.1  | .7                    | -6.1   | 3.7  |
| 47-48 | 630.28 | -53.7        | -17.6 | 3375         | 1413 | -15.9          | -12.5 | -4        | -30 | -164.6       | -31.6  | .2                    | -3.6   | 2.7  |
| 48-49 | 643.36 | -52.0        | -16.6 | 3375         | 1413 | -15.4          | -11.7 | -4        | -28 | -110.9       | -14.0  | -.1                   | -1.8   | 1.7  |
| 49-50 | 656.44 | -48.8        | -7.3  | 4788         | 2004 | -10.2          | -3.6  | -2        | -31 | -58.9        | 2.6    | -.2                   | -.7    | .8   |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 270 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (X) |   | SHEAR (KIPS) |     | MOMENT (1000-FT-KIPS) |      |      |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|---|--------------|-----|-----------------------|------|------|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y | X            | Y   | Z                     |      |      |
| 50-TOP | 675.00 | -10.1        | 9.9 | 2973         | 1232 | -3.4           | 8.0 | -0        | 1 | -10.1        | 9.9 | -1.1                  | -1.1 | -1.0 |
| TOP    | 687.00 |              |     |              |      |                |     |           |   | 0.0          | 0.0 | 0.0                   | 0.0  | 0.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 280 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|---------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | X                     | Y       | Z     |
| GRND  | 0.00   | -30.4        | -41.7 | 3599         | 1734 | -8.5           | -24.1 | -1        | -3  | -4422.0      | -603.2 | 235.7                 | -1703.7 | 128.6 |
| GR-2  | 17.50  | -74.6        | -20.2 | 6203         | 2597 | -12.0          | -7.8  | -6        | -51 | -4391.6      | -641.4 | 224.1                 | -1626.6 | 128.5 |
| 2-3   | 41.54  | -43.0        | -11.4 | 3375         | 1413 | -12.8          | -8.1  | -6        | -53 | -4317.0      | -621.3 | 208.9                 | -1521.9 | 126.3 |
| 3-4   | 54.63  | -44.8        | -11.7 | 3375         | 1413 | -13.3          | -8.3  | -6        | -55 | -4274.0      | -609.9 | 200.9                 | -1465.7 | 125.0 |
| 4-5   | 67.71  | -46.5        | -12.0 | 3375         | 1413 | -13.8          | -8.5  | -6        | -57 | -4229.2      | -598.2 | 193.0                 | -1410.1 | 123.6 |
| 5-6   | 80.79  | -48.3        | -12.3 | 3375         | 1413 | -14.3          | -8.7  | -6        | -58 | -4182.6      | -586.2 | 185.2                 | -1355.1 | 122.0 |
| 6-7   | 93.87  | -50.0        | -12.6 | 3375         | 1413 | -14.8          | -8.9  | -6        | -60 | -4134.4      | -573.9 | 177.6                 | -1300.7 | 120.4 |
| 7-8   | 106.96 | -51.8        | -12.9 | 3375         | 1413 | -15.3          | -9.1  | -6        | -61 | -4084.3      | -561.4 | 170.2                 | -1246.9 | 118.7 |
| 8-9   | 120.04 | -54.1        | -13.1 | 3375         | 1413 | -16.0          | -9.2  | -6        | -61 | -4032.6      | -548.5 | 162.9                 | -1193.8 | 116.9 |
| 9-10  | 133.12 | -58.2        | -12.9 | 3375         | 1413 | -17.3          | -9.1  | -5        | -59 | -3978.5      | -535.4 | 155.8                 | -1141.4 | 115.0 |
| 10-11 | 146.21 | -62.4        | -12.8 | 3375         | 1413 | -18.5          | -9.0  | -5        | -57 | -3920.2      | -522.5 | 148.9                 | -1089.8 | 113.1 |
| 11-12 | 159.29 | -66.5        | -12.6 | 3375         | 1413 | -19.7          | -8.9  | -4        | -55 | -3857.9      | -509.7 | 142.2                 | -1038.9 | 111.1 |
| 12-13 | 172.37 | -70.6        | -12.5 | 3375         | 1413 | -20.9          | -8.9  | -4        | -53 | -3791.4      | -497.1 | 135.6                 | -988.8  | 109.1 |
| 13-14 | 185.46 | -74.7        | -12.4 | 3375         | 1413 | -22.1          | -8.8  | -4        | -51 | -3720.8      | -484.6 | 129.2                 | -939.7  | 107.0 |
| 14-15 | 198.54 | -78.8        | -12.2 | 3375         | 1413 | -23.4          | -8.7  | -3        | -50 | -3646.1      | -472.2 | 122.9                 | -891.5  | 104.9 |
| 15-16 | 211.62 | -83.0        | -12.1 | 3375         | 1413 | -24.6          | -8.6  | -3        | -49 | -3567.2      | -460.0 | 116.8                 | -844.3  | 102.7 |
| 16-17 | 224.70 | -86.4        | -11.9 | 3375         | 1413 | -25.6          | -8.4  | -3        | -48 | -3484.3      | -447.9 | 110.9                 | -798.2  | 100.5 |
| 17-18 | 237.79 | -87.4        | -11.5 | 3375         | 1413 | -25.9          | -8.2  | -3        | -49 | -3397.9      | -436.0 | 105.1                 | -753.2  | 98.2  |
| 18-19 | 250.87 | -88.3        | -11.2 | 3375         | 1413 | -26.2          | -7.9  | -3        | -51 | -3310.5      | -424.4 | 99.5                  | -709.3  | 95.8  |
| 19-20 | 263.95 | -89.3        | -10.8 | 3375         | 1413 | -26.5          | -7.6  | -3        | -52 | -3222.2      | -413.3 | 94.0                  | -666.6  | 93.3  |
| 20-21 | 277.04 | -90.3        | -10.4 | 3375         | 1413 | -26.7          | -7.4  | -3        | -53 | -3132.9      | -402.5 | 88.6                  | -625.0  | 90.8  |
| 21-22 | 290.12 | -91.2        | -10.1 | 3375         | 1413 | -27.0          | -7.1  | -3        | -55 | -3042.6      | -392.1 | 83.4                  | -584.6  | 88.1  |
| 22-23 | 303.20 | -92.2        | -9.7  | 3375         | 1413 | -27.3          | -6.9  | -2        | -56 | -2951.4      | -382.0 | 78.4                  | -545.4  | 85.4  |
| 23-24 | 316.29 | -93.2        | -9.3  | 3375         | 1413 | -27.6          | -6.6  | -2        | -57 | -2859.2      | -372.3 | 73.4                  | -507.4  | 82.6  |
| 24-25 | 329.37 | -94.5        | -9.1  | 3375         | 1413 | -28.0          | -6.4  | -2        | -58 | -2766.0      | -363.0 | 68.6                  | -470.6  | 79.7  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
 WIND DIRECTION 280 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |      |
| 25-26 | 342.45 | -97.0        | -9.5  | 3375         | 1413 | -28.7          | -6.7  | -2        | -57 | -2671.5      | -353.9 | 63.9                  | -435.0 | 76.7 |
| 26-27 | 355.53 | -99.5        | -9.9  | 3375         | 1413 | -29.5          | -7.0  | -2        | -56 | -2574.5      | -344.4 | 59.4                  | -400.7 | 73.7 |
| 27-28 | 368.62 | -102.1       | -10.3 | 3375         | 1413 | -30.2          | -7.3  | -2        | -56 | -2475.0      | -334.6 | 54.9                  | -367.7 | 70.7 |
| 28-29 | 381.70 | -104.6       | -10.7 | 3375         | 1413 | -31.0          | -7.5  | -2        | -55 | -2372.9      | -324.3 | 50.6                  | -335.9 | 67.5 |
| 29-30 | 394.78 | -107.1       | -11.1 | 3375         | 1413 | -31.7          | -7.8  | -2        | -55 | -2268.3      | -313.6 | 46.4                  | -305.6 | 64.4 |
| 30-31 | 407.87 | -109.7       | -11.4 | 3375         | 1413 | -32.5          | -8.1  | -2        | -54 | -2161.2      | -302.6 | 42.4                  | -276.6 | 61.2 |
| 31-32 | 420.95 | -112.2       | -11.8 | 3375         | 1413 | -33.2          | -8.4  | -2        | -54 | -2051.5      | -291.1 | 38.5                  | -249.0 | 57.9 |
| 32-33 | 434.03 | -114.2       | -12.2 | 3375         | 1413 | -33.8          | -8.6  | -2        | -53 | -1939.3      | -279.3 | 34.8                  | -222.9 | 54.7 |
| 33-34 | 447.12 | -113.9       | -12.4 | 3375         | 1413 | -33.7          | -8.8  | -2        | -53 | -1825.1      | -267.1 | 31.2                  | -198.3 | 51.3 |
| 34-35 | 460.20 | -113.5       | -12.7 | 3375         | 1413 | -33.6          | -9.0  | -2        | -53 | -1711.2      | -254.7 | 27.8                  | -175.2 | 48.0 |
| 35-36 | 473.28 | -113.1       | -12.9 | 3375         | 1413 | -33.5          | -9.1  | -2        | -52 | -1597.7      | -242.0 | 24.6                  | -153.5 | 44.8 |
| 36-37 | 486.36 | -112.7       | -13.1 | 3375         | 1413 | -33.4          | -9.3  | -3        | -52 | -1484.6      | -229.1 | 21.5                  | -133.4 | 41.6 |
| 37-38 | 499.45 | -112.3       | -13.3 | 3375         | 1413 | -33.3          | -9.4  | -3        | -51 | -1371.9      | -216.0 | 18.6                  | -114.7 | 38.4 |
| 38-39 | 512.53 | -112.0       | -13.5 | 3375         | 1413 | -33.2          | -9.6  | -3        | -51 | -1259.6      | -202.7 | 15.8                  | -97.5  | 35.2 |
| 39-40 | 525.61 | -111.6       | -13.8 | 3375         | 1413 | -33.1          | -9.7  | -3        | -51 | -1147.6      | -189.2 | 13.3                  | -81.7  | 32.1 |
| 40-41 | 538.70 | -110.9       | -14.2 | 3375         | 1413 | -32.9          | -10.0 | -3        | -50 | -1036.1      | -175.4 | 10.9                  | -67.4  | 29.0 |
| 41-42 | 551.78 | -108.9       | -15.7 | 3375         | 1413 | -32.3          | -11.1 | -3        | -50 | -925.1       | -161.2 | 8.7                   | -54.6  | 25.9 |
| 42-43 | 564.86 | -106.8       | -17.2 | 3375         | 1413 | -31.6          | -12.2 | -3        | -50 | -816.2       | -145.5 | 6.7                   | -43.2  | 22.9 |
| 43-44 | 577.95 | -104.7       | -18.7 | 3375         | 1413 | -31.0          | -13.2 | -4        | -50 | -709.4       | -128.4 | 4.9                   | -33.2  | 19.9 |
| 44-45 | 591.03 | -102.7       | -20.2 | 3375         | 1413 | -30.4          | -14.3 | -4        | -50 | -604.7       | -109.7 | 3.3                   | -24.6  | 17.0 |
| 45-46 | 604.11 | -100.6       | -21.7 | 3375         | 1413 | -29.8          | -15.3 | -4        | -50 | -502.0       | -89.5  | 2.0                   | -17.4  | 14.1 |
| 46-47 | 617.19 | -98.5        | -23.2 | 3375         | 1413 | -29.2          | -16.4 | -5        | -49 | -401.4       | -67.9  | 1.0                   | -11.5  | 11.3 |
| 47-48 | 630.28 | -96.5        | -24.7 | 3375         | 1413 | -28.6          | -17.5 | -5        | -49 | -302.8       | -44.7  | .3                    | -6.9   | 8.5  |
| 48-49 | 643.36 | -91.8        | -24.3 | 3375         | 1413 | -27.2          | -17.2 | -5        | -49 | -206.3       | -20.0  | -.2                   | -3.6   | 5.8  |
| 49-50 | 656.44 | -88.5        | -10.6 | 4788         | 2004 | -18.5          | -5.3  | -3        | -53 | -114.6       | -4.3   | -.3                   | -1.5   | 3.1  |

TABLE 7. SHEAR AND MOMENT DIAGRAM : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 280 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |      | ECCEN (%) |     | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|------|--------------|------|----------------|------|-----------|-----|--------------|------|-----------------------|-----|-----|
|        |        | X            | Y    | X            | Y    | X              | Y    | X         | Y   | X            | Y    | Z                     |     |     |
| 50-TOP | 675.00 |              |      |              |      |                |      |           |     | -26.1        | 14.9 | -.1                   | -.2 | .6  |
| TOP    | 687.00 | -26.1        | 14.9 | 2973         | 1232 | -8.8           | 12.1 | 8         | -32 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
 WIND DIRECTION 290 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|---------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | X                     | Y       | Z     |
| GRND  | 0.00   | -65.2        | -33.8 | 3599         | 1734 | -18.1          | -19.5 | -3        | -12 | -6155.1      | -1129.5 | 497.9                 | -2172.8 | 136.2 |
| GR-2  | 17.50  | -142.6       | .7    | 6203         | 2597 | -23.0          | .3    | 0         | -42 | -6089.9      | -1095.8 | 478.4                 | -2065.7 | 135.6 |
| 2-3   | 41.54  | -81.5        | -.6   | 3375         | 1413 | -24.1          | -.4   | -0        | -45 | -5947.3      | -1096.5 | 452.0                 | -1921.0 | 132.4 |
| 3-4   | 54.63  | -84.2        | -1.3  | 3375         | 1413 | -25.0          | -.9   | -0        | -47 | -5865.8      | -1095.9 | 437.7                 | -1843.7 | 130.4 |
| 4-5   | 67.71  | -87.0        | -2.0  | 3375         | 1413 | -25.8          | -1.4  | -0        | -49 | -5781.6      | -1094.6 | 423.4                 | -1767.5 | 128.2 |
| 5-6   | 80.79  | -89.7        | -2.7  | 3375         | 1413 | -26.6          | -1.9  | -1        | -50 | -5694.7      | -1092.6 | 409.1                 | -1692.4 | 126.0 |
| 6-7   | 93.87  | -92.4        | -3.4  | 3375         | 1413 | -27.4          | -2.4  | -1        | -52 | -5605.0      | -1090.0 | 394.8                 | -1618.5 | 123.5 |
| 7-8   | 106.96 | -95.2        | -4.1  | 3375         | 1413 | -28.2          | -2.9  | -1        | -53 | -5512.5      | -1086.6 | 380.5                 | -1545.8 | 120.9 |
| 8-9   | 120.04 | -98.4        | -4.9  | 3375         | 1413 | -29.2          | -3.5  | -1        | -54 | -5417.3      | -1082.5 | 366.4                 | -1474.3 | 118.2 |
| 9-10  | 133.12 | -103.2       | -6.1  | 3375         | 1413 | -30.6          | -4.3  | -1        | -51 | -5318.9      | -1077.6 | 352.2                 | -1404.1 | 115.3 |
| 10-11 | 146.21 | -108.0       | -7.4  | 3375         | 1413 | -32.0          | -5.2  | -1        | -49 | -5215.7      | -1071.5 | 338.2                 | -1335.2 | 112.5 |
| 11-12 | 159.29 | -112.8       | -8.6  | 3375         | 1413 | -33.4          | -6.1  | -1        | -47 | -5107.6      | -1064.1 | 324.2                 | -1267.6 | 109.6 |
| 12-13 | 172.37 | -117.6       | -9.8  | 3375         | 1413 | -34.9          | -7.0  | -2        | -45 | -4994.8      | -1055.5 | 310.3                 | -1201.5 | 106.7 |
| 13-14 | 185.46 | -122.4       | -11.1 | 3375         | 1413 | -36.3          | -7.8  | -2        | -43 | -4877.1      | -1045.7 | 296.6                 | -1137.0 | 103.9 |
| 14-15 | 198.54 | -127.2       | -12.3 | 3375         | 1413 | -37.7          | -8.7  | -2        | -41 | -4754.7      | -1034.6 | 283.0                 | -1074.0 | 101.0 |
| 15-16 | 211.62 | -132.0       | -13.5 | 3375         | 1413 | -39.1          | -9.6  | -2        | -40 | -4627.4      | -1022.3 | 269.5                 | -1012.6 | 98.2  |
| 16-17 | 224.70 | -136.2       | -14.7 | 3375         | 1413 | -40.3          | -10.4 | -2        | -38 | -4495.4      | -1008.8 | 256.2                 | -952.9  | 95.3  |
| 17-18 | 237.79 | -138.0       | -15.7 | 3375         | 1413 | -40.9          | -11.1 | -2        | -38 | -4359.2      | -994.0  | 243.1                 | -895.0  | 92.4  |
| 18-19 | 250.87 | -139.9       | -16.7 | 3375         | 1413 | -41.4          | -11.9 | -2        | -37 | -4221.2      | -978.3  | 230.2                 | -838.9  | 89.6  |
| 19-20 | 263.95 | -141.7       | -17.8 | 3375         | 1413 | -42.0          | -12.6 | -2        | -37 | -4081.3      | -961.6  | 217.5                 | -784.6  | 86.7  |
| 20-21 | 277.04 | -143.5       | -18.8 | 3375         | 1413 | -42.5          | -13.3 | -2        | -36 | -3939.6      | -943.8  | 205.1                 | -732.1  | 83.9  |
| 21-22 | 290.12 | -145.4       | -19.8 | 3375         | 1413 | -43.1          | -14.0 | -2        | -36 | -3796.1      | -925.0  | 192.8                 | -681.5  | 81.0  |
| 22-23 | 303.20 | -147.2       | -20.8 | 3375         | 1413 | -43.6          | -14.7 | -2        | -35 | -3650.7      | -905.3  | 180.9                 | -632.8  | 78.2  |
| 23-24 | 316.29 | -149.0       | -21.8 | 3375         | 1413 | -44.2          | -15.4 | -2        | -35 | -3503.5      | -884.5  | 169.2                 | -586.0  | 75.3  |
| 24-25 | 329.37 | -150.1       | -22.8 | 3375         | 1413 | -44.5          | -16.1 | -2        | -34 | -3354.5      | -862.7  | 157.7                 | -541.1  | 72.4  |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 290 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |        | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|--------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y      | Z                     |        |      |
| 25-26 | 342.45 | -147.8       | -23.7 | 3375         | 1413 | -43.8          | -16.8 | -2        | -34 | -3204.4      | -839.9 | 146.6                 | -498.2 | 69.6 |
| 26-27 | 355.53 | -145.6       | -24.6 | 3375         | 1413 | -43.1          | -17.4 | -2        | -35 | -3056.6      | -816.2 | 135.8                 | -457.2 | 66.8 |
| 27-28 | 368.62 | -143.4       | -25.5 | 3375         | 1413 | -42.5          | -18.1 | -3        | -35 | -2911.0      | -791.5 | 125.3                 | -418.2 | 64.0 |
| 28-29 | 381.70 | -141.1       | -26.5 | 3375         | 1413 | -41.8          | -18.7 | -3        | -35 | -2767.6      | -766.0 | 115.1                 | -381.1 | 61.2 |
| 29-30 | 394.78 | -138.9       | -27.4 | 3375         | 1413 | -41.1          | -19.4 | -3        | -35 | -2626.5      | -739.5 | 105.2                 | -345.8 | 58.4 |
| 30-31 | 407.87 | -136.6       | -28.3 | 3375         | 1413 | -40.5          | -20.0 | -3        | -35 | -2487.7      | -712.1 | 95.7                  | -312.3 | 55.7 |
| 31-32 | 420.95 | -134.4       | -29.2 | 3375         | 1413 | -39.8          | -20.7 | -3        | -35 | -2351.0      | -683.8 | 86.6                  | -280.7 | 53.0 |
| 32-33 | 434.03 | -132.5       | -30.2 | 3375         | 1413 | -39.2          | -21.4 | -3        | -35 | -2216.6      | -654.6 | 77.8                  | -250.8 | 50.3 |
| 33-34 | 447.12 | -132.0       | -31.4 | 3375         | 1413 | -39.1          | -22.2 | -4        | -35 | -2084.2      | -624.4 | 69.5                  | -222.7 | 47.6 |
| 34-35 | 460.20 | -131.5       | -32.7 | 3375         | 1413 | -39.0          | -23.1 | -4        | -35 | -1952.2      | -593.0 | 61.5                  | -196.2 | 45.0 |
| 35-36 | 473.28 | -131.0       | -33.9 | 3375         | 1413 | -38.8          | -24.0 | -4        | -35 | -1820.7      | -560.3 | 54.0                  | -171.6 | 42.3 |
| 36-37 | 486.36 | -130.6       | -35.2 | 3375         | 1413 | -38.7          | -24.9 | -4        | -35 | -1689.6      | -526.4 | 46.8                  | -148.6 | 39.7 |
| 37-38 | 499.45 | -130.1       | -36.4 | 3375         | 1413 | -38.5          | -25.8 | -4        | -35 | -1559.1      | -491.2 | 40.2                  | -127.4 | 37.0 |
| 38-39 | 512.53 | -129.6       | -37.6 | 3375         | 1413 | -38.4          | -26.6 | -4        | -35 | -1429.0      | -454.8 | 34.0                  | -107.8 | 34.4 |
| 39-40 | 525.61 | -129.1       | -38.9 | 3375         | 1413 | -38.3          | -27.5 | -4        | -35 | -1299.4      | -417.2 | 28.3                  | -90.0  | 31.7 |
| 40-41 | 538.70 | -128.4       | -40.0 | 3375         | 1413 | -38.0          | -28.3 | -5        | -35 | -1170.3      | -378.3 | 23.1                  | -73.8  | 29.1 |
| 41-42 | 551.78 | -126.2       | -40.2 | 3375         | 1413 | -37.4          | -28.4 | -5        | -36 | -1041.9      | -338.4 | 18.4                  | -59.3  | 26.5 |
| 42-43 | 564.86 | -124.0       | -40.3 | 3375         | 1413 | -36.7          | -28.5 | -5        | -37 | -915.7       | -298.2 | 14.2                  | -46.5  | 23.8 |
| 43-44 | 577.95 | -121.8       | -40.5 | 3375         | 1413 | -36.1          | -28.7 | -5        | -38 | -791.7       | -257.9 | 10.6                  | -35.4  | 21.0 |
| 44-45 | 591.03 | -119.5       | -40.7 | 3375         | 1413 | -35.4          | -28.8 | -6        | -39 | -670.0       | -217.3 | 7.5                   | -25.8  | 18.2 |
| 45-46 | 604.11 | -117.3       | -40.9 | 3375         | 1413 | -34.8          | -28.9 | -6        | -41 | -550.4       | -176.6 | 4.9                   | -17.8  | 15.4 |
| 46-47 | 617.19 | -115.1       | -41.1 | 3375         | 1413 | -34.1          | -29.1 | -6        | -42 | -433.1       | -135.7 | 2.9                   | -11.4  | 12.5 |
| 47-48 | 630.28 | -112.9       | -41.3 | 3375         | 1413 | -33.4          | -29.2 | -7        | -43 | -318.0       | -94.7  | 1.4                   | -6.5   | 9.6  |
| 48-49 | 643.36 | -106.6       | -39.3 | 3375         | 1413 | -31.6          | -27.8 | -7        | -45 | -205.1       | -53.4  | .4                    | -3.0   | 6.6  |
| 49-50 | 656.44 | -89.0        | -25.5 | 4788         | 2004 | -18.6          | -12.7 | -7        | -56 | -98.5        | -14.1  | -.0                   | -1.1   | 3.6  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 290 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |     | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|------|--------------|------|----------------|-----|-----------|-----|--------------|------|-----------------------|-----|-----|
|        |        | X            | Y    | X            | Y    | X              | Y   | X         | Y   | X            | Y    | Z                     |     |     |
| 50-TOP | 675.00 |              |      |              |      |                |     |           |     | -9.6         | 11.4 | -1                    | -1  | .7  |
| TOP    | 687.00 | -9.6         | 11.4 | 2973         | 1232 | -3.2           | 9.3 | 28        | -57 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 300 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |       |  |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|---------|-------|--|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | X                     | Y       | Z     |  |
| GRND  | 0.00   |              |       |              |      |                |       |           |     |              |         |                       |         |       |  |
| GR-2  | 17.50  | -98.9        | -33.4 | 3599         | 1734 | -27.5          | -19.3 | -2        | -17 | -6013.4      | -1660.6 | 706.5                 | -1986.6 | 128.9 |  |
| 2-3   | 41.54  | -193.4       | 9.5   | 6203         | 2597 | -31.2          | 3.7   | 1         | -35 | -5914.6      | -1627.2 | 677.8                 | -1882.2 | 127.9 |  |
| 3-4   | 54.63  | -108.8       | 2.4   | 3375         | 1413 | -32.2          | 1.7   | 0         | -36 | -5721.2      | -1636.7 | 638.5                 | -1742.3 | 124.3 |  |
| 4-5   | 67.71  | -111.3       | .5    | 3375         | 1413 | -33.0          | .4    | 0         | -37 | -5612.4      | -1639.1 | 617.1                 | -1668.2 | 122.2 |  |
| 5-6   | 80.79  | -113.8       | -1.4  | 3375         | 1413 | -33.7          | -1.0  | -0        | -37 | -5501.1      | -1639.6 | 595.7                 | -1595.5 | 120.0 |  |
| 6-7   | 93.87  | -116.3       | -3.4  | 3375         | 1413 | -34.5          | -2.4  | -0        | -38 | -5387.3      | -1638.2 | 574.2                 | -1524.3 | 117.7 |  |
| 7-8   | 106.96 | -118.8       | -5.3  | 3375         | 1413 | -35.2          | -3.8  | -1        | -38 | -5271.0      | -1634.8 | 552.8                 | -1454.5 | 115.3 |  |
| 8-9   | 120.04 | -121.3       | -7.2  | 3375         | 1413 | -35.9          | -5.1  | -1        | -38 | -5152.2      | -1629.5 | 531.4                 | -1386.3 | 112.9 |  |
| 9-10  | 133.12 | -123.5       | -9.5  | 3375         | 1413 | -36.6          | -6.7  | -1        | -38 | -5030.8      | -1622.3 | 510.2                 | -1319.7 | 110.4 |  |
| 10-11 | 146.21 | -124.4       | -12.5 | 3375         | 1413 | -36.9          | -8.9  | -2        | -38 | -4907.4      | -1612.8 | 489.0                 | -1254.7 | 107.8 |  |
| 11-12 | 159.29 | -125.4       | -15.6 | 3375         | 1413 | -37.1          | -11.0 | -2        | -37 | -4783.0      | -1600.3 | 468.0                 | -1191.3 | 105.2 |  |
| 12-13 | 172.37 | -126.3       | -18.7 | 3375         | 1413 | -37.4          | -13.2 | -2        | -36 | -4657.6      | -1584.7 | 447.2                 | -1129.6 | 102.7 |  |
| 13-14 | 185.46 | -127.3       | -21.7 | 3375         | 1413 | -37.7          | -15.4 | -3        | -35 | -4531.3      | -1566.0 | 426.5                 | -1069.5 | 100.2 |  |
| 14-15 | 198.54 | -128.2       | -24.8 | 3375         | 1413 | -38.0          | -17.5 | -3        | -34 | -4404.0      | -1544.3 | 406.2                 | -1011.0 | 97.7  |  |
| 15-16 | 211.62 | -129.2       | -27.9 | 3375         | 1413 | -38.3          | -19.7 | -3        | -33 | -4275.8      | -1519.5 | 386.2                 | -954.2  | 95.3  |  |
| 16-17 | 224.70 | -130.1       | -30.9 | 3375         | 1413 | -38.5          | -21.9 | -3        | -32 | -4146.6      | -1491.7 | 366.5                 | -899.1  | 92.9  |  |
| 17-18 | 237.79 | -130.7       | -33.4 | 3375         | 1413 | -38.7          | -23.7 | -3        | -32 | -4016.5      | -1460.7 | 347.1                 | -845.7  | 90.5  |  |
| 18-19 | 250.87 | -129.9       | -34.0 | 3375         | 1413 | -38.5          | -24.0 | -3        | -32 | -3885.8      | -1427.3 | 328.3                 | -794.1  | 88.1  |  |
| 19-20 | 263.95 | -129.2       | -34.5 | 3375         | 1413 | -38.3          | -24.4 | -4        | -32 | -3755.9      | -1393.3 | 309.8                 | -744.1  | 85.7  |  |
| 20-21 | 277.04 | -128.4       | -35.0 | 3375         | 1413 | -38.0          | -24.8 | -4        | -33 | -3626.7      | -1358.8 | 291.8                 | -695.8  | 83.3  |  |
| 21-22 | 290.12 | -127.7       | -35.6 | 3375         | 1413 | -37.8          | -25.2 | -4        | -33 | -3498.3      | -1323.8 | 274.3                 | -649.2  | 80.8  |  |
| 22-23 | 303.20 | -126.9       | -36.1 | 3375         | 1413 | -37.6          | -25.5 | -4        | -33 | -3370.6      | -1288.2 | 257.2                 | -604.2  | 78.4  |  |
| 23-24 | 316.29 | -126.2       | -36.6 | 3375         | 1413 | -37.4          | -25.9 | -4        | -33 | -3243.7      | -1252.1 | 240.5                 | -561.0  | 76.0  |  |
| 24-25 | 329.37 | -125.4       | -37.1 | 3375         | 1413 | -37.2          | -26.3 | -4        | -34 | -3117.5      | -1215.5 | 224.4                 | -519.4  | 73.5  |  |
|       |        | -124.7       | -37.7 | 3375         | 1413 | -36.9          | -26.7 | -4        | -34 | -2992.1      | -1178.4 | 208.7                 | -479.4  | 71.0  |  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 300 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (X) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |        |      |
| 25-26 | 342.45 | -124.2       | -38.5 | 3375         | 1413 | -36.8          | -27.2 | -4        | -34 | -2867.4      | -1140.7 | 193.6                 | -441.1 | 68.5 |
| 26-27 | 355.53 | -123.7       | -39.2 | 3375         | 1413 | -36.6          | -27.8 | -5        | -34 | -2743.2      | -1102.2 | 178.9                 | -404.4 | 66.0 |
| 27-28 | 368.62 | -123.2       | -40.0 | 3375         | 1413 | -36.5          | -28.3 | -5        | -35 | -2619.5      | -1063.0 | 164.7                 | -369.3 | 63.5 |
| 28-29 | 381.70 | -122.7       | -40.7 | 3375         | 1413 | -36.3          | -28.8 | -5        | -35 | -2496.3      | -1023.0 | 151.1                 | -335.8 | 60.9 |
| 29-30 | 394.78 | -122.2       | -41.5 | 3375         | 1413 | -36.2          | -29.4 | -5        | -35 | -2373.7      | -982.2  | 138.0                 | -304.0 | 58.4 |
| 30-31 | 407.87 | -121.7       | -42.2 | 3375         | 1413 | -36.1          | -29.9 | -5        | -35 | -2251.5      | -940.8  | 125.4                 | -273.7 | 55.8 |
| 31-32 | 420.95 | -121.2       | -43.0 | 3375         | 1413 | -35.9          | -30.4 | -5        | -35 | -2129.8      | -898.5  | 113.4                 | -245.0 | 53.2 |
| 32-33 | 434.03 | -120.9       | -43.7 | 3375         | 1413 | -35.8          | -30.9 | -5        | -36 | -2008.6      | -855.5  | 101.9                 | -218.0 | 50.6 |
| 33-34 | 447.12 | -121.4       | -44.4 | 3375         | 1413 | -36.0          | -31.4 | -5        | -35 | -1887.7      | -811.8  | 91.0                  | -192.5 | 47.9 |
| 34-35 | 460.20 | -122.0       | -45.0 | 3375         | 1413 | -36.1          | -31.8 | -5        | -35 | -1766.3      | -767.4  | 80.7                  | -168.6 | 45.3 |
| 35-36 | 473.28 | -122.5       | -45.6 | 3375         | 1413 | -36.3          | -32.3 | -5        | -35 | -1644.3      | -722.5  | 70.9                  | -146.3 | 42.7 |
| 36-37 | 486.36 | -123.1       | -46.3 | 3375         | 1413 | -36.5          | -32.7 | -5        | -35 | -1521.8      | -676.8  | 61.8                  | -125.6 | 40.1 |
| 37-38 | 499.45 | -123.7       | -46.9 | 3375         | 1413 | -36.6          | -33.2 | -5        | -34 | -1398.7      | -630.6  | 53.2                  | -106.4 | 37.5 |
| 38-39 | 512.53 | -124.2       | -47.5 | 3375         | 1413 | -36.8          | -33.6 | -5        | -34 | -1275.0      | -583.7  | 45.3                  | -89.0  | 34.8 |
| 39-40 | 525.61 | -124.8       | -48.2 | 3375         | 1413 | -37.0          | -34.1 | -5        | -34 | -1150.8      | -536.2  | 37.9                  | -73.1  | 32.2 |
| 40-41 | 538.70 | -124.8       | -48.8 | 3375         | 1413 | -37.0          | -34.5 | -6        | -34 | -1026.0      | -488.0  | 31.2                  | -58.9  | 29.6 |
| 41-42 | 551.78 | -121.5       | -49.2 | 3375         | 1413 | -36.0          | -34.9 | -6        | -35 | -901.3       | -439.2  | 25.2                  | -46.2  | 27.0 |
| 42-43 | 564.86 | -118.3       | -49.7 | 3375         | 1413 | -35.1          | -35.2 | -6        | -37 | -779.7       | -390.0  | 19.7                  | -35.2  | 24.3 |
| 43-44 | 577.95 | -115.1       | -50.2 | 3375         | 1413 | -34.1          | -35.5 | -7        | -38 | -661.4       | -340.3  | 15.0                  | -25.8  | 21.5 |
| 44-45 | 591.03 | -111.9       | -50.7 | 3375         | 1413 | -33.1          | -35.9 | -7        | -39 | -546.3       | -290.1  | 10.8                  | -17.9  | 18.7 |
| 45-46 | 604.11 | -108.7       | -51.1 | 3375         | 1413 | -32.2          | -36.2 | -8        | -41 | -434.4       | -239.4  | 7.4                   | -11.5  | 15.9 |
| 46-47 | 617.19 | -105.4       | -51.6 | 3375         | 1413 | -31.2          | -36.5 | -9        | -42 | -325.8       | -188.2  | 4.6                   | -6.5   | 12.9 |
| 47-48 | 630.28 | -102.2       | -52.1 | 3375         | 1413 | -30.3          | -36.9 | -9        | -44 | -220.3       | -136.6  | 2.5                   | -3.0   | 10.0 |
| 48-49 | 643.36 | -93.7        | -50.3 | 3375         | 1413 | -27.8          | -35.6 | -10       | -46 | -118.1       | -84.5   | 1.0                   | -.7    | 6.9  |
| 49-50 | 656.44 | -51.5        | -39.3 | 4788         | 2004 | -10.8          | -19.6 | -22       | -70 | -24.4        | -34.2   | .2                    | .2     | 3.9  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 300 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |    | SHEAR (KIPS) |     | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|----|--------------|-----|-----------------------|-----|-----|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y  | X            | Y   | Z                     |     |     |
| 50-TOP | 675.00 |              |     |              |      |                |     |           |    | 27.1         | 5.0 | - .0                  | .2  | .8  |
| TOP    | 687.00 | 27.1         | 5.0 | 2973         | 1232 | 9.1            | 4.1 | 4         | 54 | 0.0          | 0.0 | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 310 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|---------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |         |       |
| GRND  | 0.00   | -138.7       | -45.1 | 3599         | 1734 | -38.5          | -26.0 | -2        | -14 | -6926.4      | -1996.7 | 830.1                 | -2275.8 | 133.0 |
| GR-2  | 17.50  | -239.8       | 10.1  | 6203         | 2597 | -38.7          | 3.9   | 1         | -29 | -6787.7      | -1951.6 | 795.6                 | -2155.8 | 131.8 |
| 2-3   | 41.54  | -132.9       | .8    | 3375         | 1413 | -39.4          | .5    | 0         | -29 | -6548.0      | -1961.8 | 748.5                 | -1995.5 | 128.1 |
| 3-4   | 54.63  | -134.6       | -2.6  | 3375         | 1413 | -39.9          | -1.8  | -0        | -30 | -6415.1      | -1962.5 | 722.9                 | -1910.7 | 126.0 |
| 4-5   | 67.71  | -136.3       | -6.0  | 3375         | 1413 | -40.4          | -4.2  | -1        | -30 | -6280.5      | -1959.9 | 697.2                 | -1827.6 | 123.9 |
| 5-6   | 80.79  | -137.9       | -9.3  | 3375         | 1413 | -40.9          | -6.6  | -1        | -30 | -6144.3      | -1953.9 | 671.6                 | -1746.4 | 121.7 |
| 6-7   | 93.87  | -139.6       | -12.7 | 3375         | 1413 | -41.4          | -9.0  | -1        | -30 | -6006.3      | -1944.6 | 646.1                 | -1666.9 | 119.4 |
| 7-8   | 106.96 | -141.3       | -16.0 | 3375         | 1413 | -41.9          | -11.4 | -1        | -31 | -5866.7      | -1931.9 | 620.7                 | -1589.2 | 117.1 |
| 8-9   | 120.04 | -142.6       | -19.2 | 3375         | 1413 | -42.2          | -13.6 | -2        | -31 | -5725.4      | -1915.9 | 595.6                 | -1513.4 | 114.8 |
| 9-10  | 133.12 | -142.4       | -21.7 | 3375         | 1413 | -42.2          | -15.4 | -2        | -30 | -5582.8      | -1896.7 | 570.6                 | -1439.4 | 112.4 |
| 10-11 | 146.21 | -142.3       | -24.2 | 3375         | 1413 | -42.2          | -17.1 | -2        | -30 | -5440.4      | -1875.0 | 545.9                 | -1367.3 | 110.0 |
| 11-12 | 159.29 | -142.2       | -26.7 | 3375         | 1413 | -42.1          | -18.9 | -2        | -30 | -5298.0      | -1850.7 | 521.6                 | -1297.1 | 107.6 |
| 12-13 | 172.37 | -142.1       | -29.2 | 3375         | 1413 | -42.1          | -20.7 | -3        | -30 | -5155.8      | -1824.0 | 497.5                 | -1228.7 | 105.2 |
| 13-14 | 185.46 | -142.0       | -31.7 | 3375         | 1413 | -42.1          | -22.5 | -3        | -30 | -5013.7      | -1794.8 | 473.9                 | -1162.1 | 102.8 |
| 14-15 | 198.54 | -141.9       | -34.3 | 3375         | 1413 | -42.0          | -24.2 | -3        | -30 | -4871.7      | -1763.0 | 450.6                 | -1097.5 | 100.4 |
| 15-16 | 211.62 | -141.8       | -36.8 | 3375         | 1413 | -42.0          | -26.0 | -3        | -29 | -4729.9      | -1728.8 | 427.8                 | -1034.7 | 98.0  |
| 16-17 | 224.70 | -141.6       | -38.9 | 3375         | 1413 | -42.0          | -27.5 | -3        | -29 | -4588.1      | -1692.0 | 405.4                 | -973.7  | 95.6  |
| 17-18 | 237.79 | -141.4       | -39.7 | 3375         | 1413 | -41.9          | -28.1 | -3        | -30 | -4446.5      | -1653.1 | 383.5                 | -914.6  | 93.2  |
| 18-19 | 250.87 | -141.2       | -40.6 | 3375         | 1413 | -41.8          | -28.7 | -4        | -30 | -4305.0      | -1613.4 | 362.1                 | -857.4  | 90.8  |
| 19-20 | 263.95 | -141.1       | -41.4 | 3375         | 1413 | -41.8          | -29.3 | -4        | -30 | -4163.8      | -1572.8 | 341.3                 | -802.0  | 88.3  |
| 20-21 | 277.04 | -140.9       | -42.3 | 3375         | 1413 | -41.7          | -29.9 | -4        | -30 | -4022.7      | -1531.4 | 321.0                 | -748.4  | 85.8  |
| 21-22 | 290.12 | -140.7       | -43.1 | 3375         | 1413 | -41.7          | -30.5 | -4        | -31 | -3881.9      | -1489.1 | 301.2                 | -696.7  | 83.3  |
| 22-23 | 303.20 | -140.5       | -44.0 | 3375         | 1413 | -41.6          | -31.1 | -4        | -31 | -3741.2      | -1446.0 | 282.0                 | -646.8  | 80.7  |
| 23-24 | 316.29 | -140.3       | -44.8 | 3375         | 1413 | -41.6          | -31.7 | -4        | -31 | -3600.7      | -1402.1 | 263.4                 | -598.8  | 78.1  |
| 24-25 | 329.37 | -140.2       | -45.5 | 3375         | 1413 | -41.5          | -32.2 | -4        | -32 | -3460.4      | -1357.3 | 245.3                 | -552.6  | 75.5  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 310 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |        |      |
| 25-26 | 342.45 | -140.5       | -45.5 | 3375         | 1413 | -41.6          | -32.2 | -4        | -32 | -3320.2      | -1311.8 | 227.9                 | -508.3 | 72.9 |
| 26-27 | 355.53 | -140.9       | -45.5 | 3375         | 1413 | -41.7          | -32.2 | -4        | -32 | -3179.7      | -1266.3 | 211.0                 | -465.8 | 70.2 |
| 27-28 | 368.62 | -141.2       | -45.5 | 3375         | 1413 | -41.8          | -32.2 | -4        | -32 | -3038.8      | -1220.9 | 194.7                 | -425.1 | 67.6 |
| 28-29 | 381.70 | -141.6       | -45.5 | 3375         | 1413 | -41.9          | -32.2 | -4        | -32 | -2897.6      | -1175.4 | 179.1                 | -386.2 | 64.9 |
| 29-30 | 394.78 | -141.9       | -45.5 | 3375         | 1413 | -42.0          | -32.2 | -4        | -32 | -2756.0      | -1129.9 | 164.0                 | -349.3 | 62.2 |
| 30-31 | 407.87 | -142.3       | -45.5 | 3375         | 1413 | -42.1          | -32.2 | -4        | -32 | -2614.1      | -1084.5 | 149.5                 | -314.1 | 59.5 |
| 31-32 | 420.95 | -142.6       | -45.5 | 3375         | 1413 | -42.2          | -32.2 | -4        | -32 | -2471.8      | -1039.0 | 135.6                 | -280.9 | 56.8 |
| 32-33 | 434.03 | -142.9       | -45.7 | 3375         | 1413 | -42.3          | -32.3 | -4        | -32 | -2329.2      | -993.6  | 122.3                 | -249.5 | 54.1 |
| 33-34 | 447.12 | -143.3       | -46.9 | 3375         | 1413 | -42.4          | -33.2 | -4        | -32 | -2186.3      | -947.9  | 109.6                 | -219.9 | 51.4 |
| 34-35 | 460.20 | -143.6       | -48.2 | 3375         | 1413 | -42.5          | -34.1 | -4        | -32 | -2043.0      | -901.0  | 97.5                  | -192.3 | 48.6 |
| 35-36 | 473.28 | -143.9       | -49.5 | 3375         | 1413 | -42.6          | -35.0 | -5        | -32 | -1899.4      | -852.8  | 86.0                  | -166.5 | 45.9 |
| 36-37 | 486.36 | -144.2       | -50.7 | 3375         | 1413 | -42.7          | -35.9 | -5        | -32 | -1755.6      | -803.3  | 75.2                  | -142.6 | 43.2 |
| 37-38 | 499.45 | -144.5       | -52.0 | 3375         | 1413 | -42.8          | -36.8 | -5        | -31 | -1611.4      | -752.6  | 65.0                  | -120.5 | 40.4 |
| 38-39 | 512.53 | -144.8       | -53.2 | 3375         | 1413 | -42.9          | -37.7 | -5        | -31 | -1466.9      | -700.6  | 55.5                  | -100.4 | 37.6 |
| 39-40 | 525.61 | -145.1       | -54.5 | 3375         | 1413 | -43.0          | -38.6 | -5        | -31 | -1322.1      | -647.4  | 46.7                  | -82.1  | 34.8 |
| 40-41 | 538.70 | -144.9       | -55.8 | 3375         | 1413 | -42.9          | -39.5 | -5        | -31 | -1177.0      | -592.9  | 38.6                  | -65.8  | 32.0 |
| 41-42 | 551.78 | -141.4       | -57.2 | 3375         | 1413 | -41.9          | -40.5 | -6        | -33 | -1032.1      | -537.1  | 31.2                  | -51.4  | 29.2 |
| 42-43 | 564.86 | -138.0       | -58.7 | 3375         | 1413 | -40.9          | -41.5 | -6        | -34 | -890.7       | -479.8  | 24.6                  | -38.8  | 26.3 |
| 43-44 | 577.95 | -134.5       | -60.2 | 3375         | 1413 | -39.9          | -42.6 | -7        | -35 | -752.7       | -421.1  | 18.7                  | -28.0  | 23.4 |
| 44-45 | 591.03 | -131.1       | -61.6 | 3375         | 1413 | -38.8          | -43.6 | -7        | -36 | -618.1       | -361.0  | 13.5                  | -19.1  | 20.3 |
| 45-46 | 604.11 | -127.7       | -63.1 | 3375         | 1413 | -37.8          | -44.6 | -8        | -37 | -487.0       | -299.4  | 9.2                   | -11.8  | 17.2 |
| 46-47 | 617.19 | -124.2       | -64.5 | 3375         | 1413 | -36.8          | -45.7 | -8        | -39 | -359.4       | -236.3  | 5.7                   | -6.3   | 14.0 |
| 47-48 | 630.28 | -120.8       | -66.0 | 3375         | 1413 | -35.8          | -46.7 | -9        | -40 | -235.1       | -171.7  | 3.1                   | -2.4   | 10.7 |
| 48-49 | 643.36 | -110.3       | -64.3 | 3375         | 1413 | -32.7          | -45.5 | -10       | -42 | -114.4       | -105.8  | 1.2                   | -.1    | 7.3  |
| 49-50 | 656.44 | -49.9        | -48.7 | 4788         | 2004 | -10.4          | -24.3 | -25       | -61 | -4.0         | -41.5   | .3                    | .7     | 4.0  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDYNAMIC DATA  
WIND DIRECTION 310 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 34 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (X) |    | SHEAR (KIPS) |     | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|----|--------------|-----|-----------------------|-----|-----|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y  | X            | Y   | Z                     |     |     |
| 50-TOP | 675.00 | 45.8         | 7.2 | 2973         | 1232 | 15.4           | 5.9 | 2         | 31 | 45.8         | 7.2 | - .0                  | .3  | .8  |
| TOP    | 687.00 |              |     |              |      |                |     |           |    | 0.0          | 0.0 | 0.0                   | 0.0 | 0.0 |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 320 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|---------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |         |       |
| GRND  | 0.00   | -145.7       | -49.4 | 3599         | 1734 | -40.5          | -28.5 | -2        | -13 | -6808.3      | -2148.5 | 868.3                 | -2297.2 | 134.0 |
| GR-2  | 17.50  | -239.7       | 21.3  | 6203         | 2597 | -38.6          | 8.2   | 1         | -28 | -6662.6      | -2099.1 | 831.1                 | -2179.3 | 132.9 |
| 2-3   | 41.54  | -129.7       | 3.1   | 3375         | 1413 | -38.4          | 2.2   | 0         | -30 | -6422.9      | -2120.3 | 780.4                 | -2022.0 | 129.2 |
| 3-4   | 54.63  | -129.3       | -2.8  | 3375         | 1413 | -38.3          | -2.0  | -0        | -31 | -6293.1      | -2123.5 | 752.7                 | -1938.8 | 127.2 |
| 4-5   | 67.71  | -128.8       | -8.8  | 3375         | 1413 | -38.1          | -6.2  | -1        | -32 | -6163.9      | -2120.6 | 724.9                 | -1857.3 | 125.0 |
| 5-6   | 80.79  | -128.3       | -14.8 | 3375         | 1413 | -38.0          | -10.4 | -2        | -32 | -6035.1      | -2111.8 | 697.2                 | -1777.5 | 122.8 |
| 6-7   | 93.87  | -128.3       | -20.7 | 3375         | 1413 | -37.9          | -14.7 | -2        | -33 | -5906.9      | -2097.0 | 669.7                 | -1699.4 | 120.5 |
| 7-8   | 106.96 | -127.8       | -26.7 | 3375         | 1413 | -37.7          | -18.9 | -3        | -33 | -5779.1      | -2076.3 | 642.4                 | -1623.0 | 118.2 |
| 8-9   | 120.04 | -127.1       | -31.5 | 3375         | 1413 | -37.7          | -22.3 | -3        | -34 | -5651.8      | -2049.6 | 615.4                 | -1548.2 | 115.8 |
| 9-10  | 133.12 | -127.8       | -33.0 | 3375         | 1413 | -37.9          | -23.4 | -4        | -33 | -5524.6      | -2018.1 | 588.8                 | -1475.1 | 113.4 |
| 10-11 | 146.21 | -128.5       | -34.6 | 3375         | 1413 | -38.1          | -24.5 | -4        | -32 | -5396.8      | -1985.1 | 562.6                 | -1403.7 | 111.0 |
| 11-12 | 159.29 | -129.2       | -36.1 | 3375         | 1413 | -38.3          | -25.5 | -4        | -32 | -5268.3      | -1950.5 | 536.8                 | -1333.9 | 108.6 |
| 12-13 | 172.37 | -129.9       | -37.6 | 3375         | 1413 | -38.5          | -26.6 | -4        | -31 | -5139.1      | -1914.4 | 511.6                 | -1265.8 | 106.2 |
| 13-14 | 185.46 | -130.6       | -39.1 | 3375         | 1413 | -38.7          | -27.7 | -4        | -30 | -5009.1      | -1876.9 | 486.8                 | -1199.4 | 103.8 |
| 14-15 | 198.54 | -131.3       | -40.6 | 3375         | 1413 | -38.9          | -28.7 | -4        | -30 | -4878.5      | -1837.8 | 462.5                 | -1134.7 | 101.5 |
| 15-16 | 211.62 | -132.0       | -42.1 | 3375         | 1413 | -39.1          | -29.8 | -4        | -29 | -4747.2      | -1797.2 | 438.7                 | -1071.8 | 99.2  |
| 16-17 | 224.70 | -132.7       | -43.4 | 3375         | 1413 | -39.3          | -30.7 | -4        | -29 | -4615.1      | -1755.1 | 415.4                 | -1010.5 | 96.9  |
| 17-18 | 237.79 | -133.1       | -44.1 | 3375         | 1413 | -39.4          | -31.2 | -4        | -29 | -4482.4      | -1711.7 | 392.8                 | -951.0  | 94.7  |
| 18-19 | 250.87 | -133.6       | -44.7 | 3375         | 1413 | -39.6          | -31.7 | -4        | -29 | -4349.3      | -1667.6 | 370.7                 | -893.3  | 92.4  |
| 19-20 | 263.95 | -134.0       | -45.4 | 3375         | 1413 | -39.7          | -32.1 | -4        | -30 | -4215.7      | -1622.9 | 349.1                 | -837.2  | 90.0  |
| 20-21 | 277.04 | -134.5       | -46.1 | 3375         | 1413 | -39.8          | -32.6 | -4        | -30 | -4081.7      | -1577.5 | 328.2                 | -782.9  | 87.6  |
| 21-22 | 290.12 | -134.9       | -46.7 | 3375         | 1413 | -40.0          | -33.1 | -4        | -31 | -3947.2      | -1531.4 | 307.9                 | -730.4  | 85.1  |
| 22-23 | 303.20 | -135.4       | -47.4 | 3375         | 1413 | -40.1          | -33.5 | -5        | -31 | -3812.2      | -1484.7 | 288.1                 | -679.7  | 82.6  |
| 23-24 | 316.29 | -135.8       | -48.1 | 3375         | 1413 | -40.2          | -34.0 | -5        | -32 | -3676.8      | -1437.3 | 269.0                 | -630.7  | 80.1  |
| 24-25 | 329.37 | -136.2       | -48.5 | 3375         | 1413 | -40.4          | -34.3 | -5        | -32 | -3541.0      | -1389.3 | 250.5                 | -583.5  | 77.5  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 320 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | X                     | Y      | Z    |
| 25-26 | 342.45 | -136.2       | -48.0 | 3375         | 1413 | -40.4          | -34.0 | -5        | -32 | -3404.8      | -1340.8 | 232.7                 | -538.0 | 74.8 |
| 26-27 | 355.53 | -136.3       | -47.6 | 3375         | 1413 | -40.4          | -33.7 | -5        | -33 | -3268.6      | -1292.7 | 215.4                 | -494.4 | 72.1 |
| 27-28 | 368.62 | -136.3       | -47.1 | 3375         | 1413 | -40.4          | -33.4 | -5        | -33 | -3132.3      | -1245.1 | 198.8                 | -452.5 | 69.4 |
| 28-29 | 381.70 | -136.3       | -46.7 | 3375         | 1413 | -40.4          | -33.0 | -5        | -34 | -2996.0      | -1198.0 | 182.9                 | -412.4 | 66.7 |
| 29-30 | 394.78 | -136.3       | -46.2 | 3375         | 1413 | -40.4          | -32.7 | -5        | -34 | -2859.7      | -1151.3 | 167.5                 | -374.1 | 63.9 |
| 30-31 | 407.87 | -136.4       | -45.8 | 3375         | 1413 | -40.4          | -32.4 | -5        | -35 | -2723.4      | -1105.1 | 152.7                 | -337.6 | 61.0 |
| 31-32 | 420.95 | -136.4       | -45.3 | 3375         | 1413 | -40.4          | -32.1 | -5        | -35 | -2587.0      | -1059.4 | 138.6                 | -302.8 | 58.2 |
| 32-33 | 434.03 | -136.8       | -45.2 | 3375         | 1413 | -40.5          | -32.0 | -5        | -36 | -2450.7      | -1014.1 | 125.0                 | -269.9 | 55.3 |
| 33-34 | 447.12 | -139.1       | -46.8 | 3375         | 1413 | -41.2          | -33.1 | -5        | -35 | -2313.9      | -968.9  | 112.0                 | -238.7 | 52.3 |
| 34-35 | 460.20 | -141.4       | -48.4 | 3375         | 1413 | -41.9          | -34.2 | -5        | -35 | -2174.8      | -922.1  | 99.7                  | -209.4 | 49.4 |
| 35-36 | 473.28 | -143.8       | -49.9 | 3375         | 1413 | -42.6          | -35.4 | -5        | -34 | -2033.3      | -873.7  | 87.9                  | -181.8 | 46.4 |
| 36-37 | 486.36 | -146.1       | -51.5 | 3375         | 1413 | -43.3          | -36.5 | -5        | -34 | -1889.6      | -823.7  | 76.8                  | -156.2 | 43.4 |
| 37-38 | 499.45 | -148.4       | -53.1 | 3375         | 1413 | -44.0          | -37.6 | -5        | -33 | -1743.5      | -772.2  | 66.4                  | -132.4 | 40.4 |
| 38-39 | 512.53 | -150.7       | -54.7 | 3375         | 1413 | -44.6          | -38.7 | -5        | -33 | -1595.1      | -719.1  | 56.6                  | -110.6 | 37.4 |
| 39-40 | 525.61 | -153.0       | -56.3 | 3375         | 1413 | -45.3          | -39.8 | -5        | -33 | -1444.4      | -664.4  | 47.6                  | -90.7  | 34.3 |
| 40-41 | 538.70 | -154.6       | -57.8 | 3375         | 1413 | -45.8          | -40.9 | -5        | -32 | -1291.4      | -608.1  | 39.2                  | -72.8  | 31.3 |
| 41-42 | 551.78 | -152.1       | -59.3 | 3375         | 1413 | -45.1          | -42.0 | -5        | -33 | -1136.7      | -550.3  | 31.7                  | -56.9  | 28.2 |
| 42-43 | 564.86 | -149.5       | -60.8 | 3375         | 1413 | -44.3          | -43.0 | -6        | -33 | -984.7       | -491.0  | 24.9                  | -43.0  | 25.1 |
| 43-44 | 577.95 | -146.9       | -62.2 | 3375         | 1413 | -43.5          | -44.0 | -6        | -33 | -835.2       | -430.2  | 18.8                  | -31.1  | 22.0 |
| 44-45 | 591.03 | -144.4       | -63.7 | 3375         | 1413 | -42.8          | -45.1 | -6        | -33 | -688.2       | -368.0  | 13.6                  | -21.2  | 19.0 |
| 45-46 | 604.11 | -141.8       | -65.1 | 3375         | 1413 | -42.0          | -46.1 | -6        | -33 | -543.9       | -304.4  | 9.2                   | -13.1  | 15.9 |
| 46-47 | 617.19 | -139.2       | -66.6 | 3375         | 1413 | -41.2          | -47.1 | -7        | -33 | -402.1       | -239.2  | 5.7                   | -6.9   | 12.8 |
| 47-48 | 630.28 | -136.6       | -68.0 | 3375         | 1413 | -40.5          | -48.1 | -7        | -33 | -262.9       | -172.7  | 3.0                   | -2.6   | 9.8  |
| 48-49 | 643.36 | -125.7       | -66.1 | 3375         | 1413 | -37.2          | -46.8 | -8        | -34 | -126.3       | -104.7  | 1.1                   | -.0    | 6.7  |
| 49-50 | 656.44 | -54.2        | -48.3 | 4788         | 2004 | -11.3          | -24.1 | -21       | -57 | -.5          | -38.5   | .2                    | .8     | 3.8  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
 WIND DIRECTION 320 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |    | SHEAR (KIPS) |     | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|----|--------------|-----|-----------------------|-----|-----|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y  | X            | Y   | Z                     |     |     |
| 50-TOP | 675.00 |              |     |              |      |                |     |           |    | 53.6         | 9.8 | - .1                  | .3  | .8  |
| TOP    | 687.00 | 53.7         | 9.8 | 2973         | 1232 | 18.0           | 8.0 | 2         | 26 | 0.0          | 0.0 | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 330 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|---------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |         |       |
| GRND  | 0.00   | -116.0       | -55.1 | 3599         | 1734 | -32.2          | -31.8 | -5        | -23 | -5869.2      | -2338.3 | 959.5                 | -2040.9 | 151.2 |
| GR-2  | 17.50  | -186.5       | 37.6  | 6203         | 2597 | -30.1          | 14.5  | 3         | -40 | -5753.2      | -2283.3 | 919.1                 | -1939.2 | 149.5 |
| 2-3   | 41.54  | -102.1       | 11.1  | 3375         | 1413 | -30.2          | 7.9   | 2         | -43 | -5566.7      | -2320.8 | 863.7                 | -1803.1 | 145.3 |
| 3-4   | 54.63  | -102.4       | 4.5   | 3375         | 1413 | -30.3          | 3.2   | 1         | -44 | -5464.7      | -2331.9 | 833.3                 | -1730.9 | 142.9 |
| 4-5   | 67.71  | -102.8       | -2.1  | 3375         | 1413 | -30.5          | -1.5  | -0        | -45 | -5362.2      | -2336.5 | 802.8                 | -1660.1 | 140.5 |
| 5-6   | 80.79  | -103.2       | -8.7  | 3375         | 1413 | -30.6          | -6.1  | -2        | -46 | -5259.4      | -2334.4 | 772.2                 | -1590.6 | 138.0 |
| 6-7   | 93.87  | -103.6       | -15.3 | 3375         | 1413 | -30.7          | -10.8 | -3        | -47 | -5156.2      | -2325.7 | 741.7                 | -1522.5 | 135.4 |
| 7-8   | 106.96 | -104.0       | -21.8 | 3375         | 1413 | -30.8          | -15.5 | -4        | -47 | -5052.6      | -2310.5 | 711.4                 | -1455.7 | 132.7 |
| 8-9   | 120.04 | -104.5       | -27.7 | 3375         | 1413 | -31.0          | -19.6 | -5        | -46 | -4948.6      | -2288.6 | 681.3                 | -1390.3 | 130.0 |
| 9-10  | 133.12 | -104.5       | -27.7 | 3375         | 1413 | -31.0          | -19.6 | -5        | -46 | -4844.0      | -2260.9 | 651.5                 | -1326.2 | 127.2 |
| 10-11 | 146.21 | -105.4       | -31.4 | 3375         | 1413 | -31.2          | -22.2 | -6        | -45 | -4738.6      | -2229.5 | 622.2                 | -1263.5 | 124.4 |
| 11-12 | 159.29 | -106.3       | -35.0 | 3375         | 1413 | -31.5          | -24.8 | -6        | -44 | -4632.3      | -2194.5 | 593.2                 | -1202.2 | 121.6 |
| 12-13 | 172.37 | -107.2       | -38.7 | 3375         | 1413 | -31.8          | -27.4 | -7        | -43 | -4525.1      | -2155.9 | 564.8                 | -1142.3 | 118.8 |
| 13-14 | 185.46 | -108.1       | -42.3 | 3375         | 1413 | -32.0          | -30.0 | -7        | -42 | -4417.0      | -2113.5 | 536.8                 | -1083.8 | 115.9 |
| 14-15 | 198.54 | -109.0       | -46.0 | 3375         | 1413 | -32.3          | -32.5 | -7        | -41 | -4308.0      | -2067.5 | 509.5                 | -1026.8 | 113.1 |
| 15-16 | 211.62 | -109.9       | -49.6 | 3375         | 1413 | -32.6          | -35.1 | -8        | -40 | -4198.2      | -2017.9 | 482.8                 | -971.1  | 110.2 |
| 16-17 | 224.70 | -110.8       | -53.3 | 3375         | 1413 | -32.8          | -37.7 | -8        | -39 | -4087.4      | -1964.6 | 456.7                 | -916.9  | 107.4 |
| 17-18 | 237.79 | -111.5       | -56.1 | 3375         | 1413 | -33.0          | -39.7 | -8        | -38 | -3975.9      | -1908.5 | 431.4                 | -864.2  | 104.5 |
| 18-19 | 250.87 | -111.6       | -55.8 | 3375         | 1413 | -33.1          | -39.5 | -8        | -38 | -3864.2      | -1852.7 | 406.8                 | -812.9  | 101.7 |
| 19-20 | 263.95 | -111.8       | -55.6 | 3375         | 1413 | -33.1          | -39.3 | -8        | -38 | -3752.5      | -1797.1 | 382.9                 | -763.1  | 98.8  |
| 20-21 | 277.04 | -111.9       | -55.3 | 3375         | 1413 | -33.1          | -39.1 | -8        | -38 | -3640.6      | -1741.8 | 359.7                 | -714.7  | 96.0  |
| 21-22 | 290.12 | -112.0       | -55.0 | 3375         | 1413 | -33.2          | -38.9 | -8        | -38 | -3528.6      | -1686.8 | 337.3                 | -667.8  | 93.1  |
| 22-23 | 303.20 | -112.1       | -54.8 | 3375         | 1413 | -33.2          | -38.8 | -8        | -38 | -3416.5      | -1632.0 | 315.6                 | -622.4  | 90.3  |
| 23-24 | 316.29 | -112.3       | -54.5 | 3375         | 1413 | -33.3          | -38.6 | -8        | -38 | -3304.2      | -1577.5 | 294.6                 | -578.4  | 87.5  |
| 24-25 | 329.37 | -112.4       | -54.2 | 3375         | 1413 | -33.3          | -38.4 | -8        | -37 | -3191.8      | -1523.3 | 274.3                 | -535.9  | 84.7  |
|       |        | -112.8       | -54.0 | 3375         | 1413 | -33.4          | -38.2 | -8        | -38 |              |         |                       |         |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 330 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |        |      |
| 25-26 | 342.45 |              |       |              |      |                |       |           |     | -3079.0      | -1469.3 | 254.8                 | -494.9 | 81.9 |
| 26-27 | 355.53 | -114.7       | -53.6 | 3375         | 1413 | -34.0          | -37.9 | -7        | -38 | -2964.3      | -1415.8 | 235.9                 | -455.4 | 79.0 |
| 27-28 | 368.62 | -116.5       | -53.2 | 3375         | 1413 | -34.5          | -37.6 | -7        | -38 | -2847.9      | -1362.6 | 217.7                 | -417.3 | 76.1 |
| 28-29 | 381.70 | -118.3       | -52.8 | 3375         | 1413 | -35.1          | -37.3 | -7        | -39 | -2729.5      | -1309.9 | 200.2                 | -380.9 | 73.2 |
| 29-30 | 394.78 | -120.1       | -52.4 | 3375         | 1413 | -35.6          | -37.1 | -7        | -39 | -2609.4      | -1257.5 | 183.4                 | -345.9 | 70.2 |
| 30-31 | 407.87 | -122.0       | -52.0 | 3375         | 1413 | -36.1          | -36.8 | -7        | -39 | -2487.4      | -1205.6 | 167.3                 | -312.6 | 67.1 |
| 31-32 | 420.95 | -123.8       | -51.6 | 3375         | 1413 | -36.7          | -36.5 | -7        | -39 | -2363.6      | -1154.0 | 151.9                 | -280.9 | 64.0 |
| 32-33 | 434.03 | -125.6       | -51.2 | 3375         | 1413 | -37.2          | -36.2 | -7        | -40 | -2238.0      | -1102.8 | 137.1                 | -250.8 | 60.9 |
| 33-34 | 447.12 | -127.3       | -51.0 | 3375         | 1413 | -37.7          | -36.1 | -7        | -40 | -2110.7      | -1051.8 | 123.0                 | -222.3 | 57.7 |
| 34-35 | 460.20 | -127.9       | -52.0 | 3375         | 1413 | -37.9          | -36.8 | -7        | -40 | -1982.8      | -999.8  | 109.6                 | -195.5 | 54.5 |
| 35-36 | 473.28 | -128.5       | -53.1 | 3375         | 1413 | -38.1          | -37.6 | -7        | -40 | -1854.3      | -946.7  | 96.9                  | -170.4 | 51.2 |
| 36-37 | 486.36 | -129.2       | -54.1 | 3375         | 1413 | -38.3          | -38.3 | -7        | -40 | -1725.1      | -892.7  | 84.8                  | -147.0 | 47.9 |
| 37-38 | 499.45 | -129.8       | -55.1 | 3375         | 1413 | -38.5          | -39.0 | -7        | -40 | -1595.2      | -837.5  | 73.5                  | -125.3 | 44.6 |
| 38-39 | 512.53 | -130.5       | -56.1 | 3375         | 1413 | -38.7          | -39.7 | -7        | -40 | -1464.7      | -781.4  | 62.9                  | -105.3 | 41.2 |
| 39-40 | 525.61 | -131.1       | -57.2 | 3375         | 1413 | -38.9          | -40.4 | -7        | -41 | -1333.6      | -724.3  | 53.1                  | -87.0  | 37.8 |
| 40-41 | 538.70 | -131.8       | -58.2 | 3375         | 1413 | -39.0          | -41.2 | -7        | -41 | -1201.8      | -666.1  | 44.0                  | -70.4  | 34.3 |
| 41-42 | 551.78 | -132.4       | -59.4 | 3375         | 1413 | -39.2          | -42.0 | -8        | -41 | -1069.4      | -606.7  | 35.7                  | -55.5  | 30.8 |
| 42-43 | 564.86 | -132.7       | -61.9 | 3375         | 1413 | -39.3          | -43.8 | -8        | -40 | -936.8       | -544.8  | 28.1                  | -42.4  | 27.4 |
| 43-44 | 577.95 | -132.9       | -64.3 | 3375         | 1413 | -39.4          | -45.5 | -8        | -39 | -803.9       | -480.5  | 21.4                  | -31.0  | 24.0 |
| 44-45 | 591.03 | -133.2       | -66.8 | 3375         | 1413 | -39.5          | -47.2 | -8        | -38 | -670.7       | -413.8  | 15.6                  | -21.4  | 20.6 |
| 45-46 | 604.11 | -133.5       | -69.2 | 3375         | 1413 | -39.5          | -49.0 | -8        | -37 | -537.2       | -344.6  | 10.6                  | -13.5  | 17.2 |
| 46-47 | 617.19 | -133.7       | -71.6 | 3375         | 1413 | -39.6          | -50.7 | -8        | -36 | -403.5       | -272.9  | 6.6                   | -7.3   | 13.9 |
| 47-48 | 630.28 | -134.0       | -74.1 | 3375         | 1413 | -39.7          | -52.4 | -8        | -35 | -269.5       | -198.8  | 3.5                   | -2.9   | 10.6 |
| 48-49 | 643.36 | -134.3       | -76.5 | 3375         | 1413 | -39.8          | -54.2 | -8        | -34 | -135.2       | -122.3  | 1.4                   | -.3    | 7.4  |
| 49-50 | 656.44 | -126.1       | -75.3 | 3375         | 1413 | -37.4          | -53.3 | -9        | -34 | -9.1         | -47.0   | .3                    | .7     | 4.2  |
|       |        | -59.2        | -57.7 | 4788         | 2004 | -12.4          | -28.8 | -21       | -51 |              |         |                       |        |      |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
 WIND DIRECTION 330 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
 ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 34 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |      | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |    | SHEAR (KIPS) |      | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|------|--------------|------|----------------|-----|-----------|----|--------------|------|-----------------------|-----|-----|
|        |        | X            | Y    | X            | Y    | X              | Y   | X         | Y  | X            | Y    | Z                     |     |     |
| 50-TOP | 675.00 |              |      |              |      |                |     |           |    | 50.1         | 10.7 | -.1                   | .3  | 1.0 |
| TOP    | 687.00 | 50.1         | 10.7 | 2973         | 1232 | 16.8           | 8.7 | 3         | 36 | 0.0          | 0.0  | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 340 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|---------|-------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | X                     | Y       | Z     |
| GRND  | 0.00   |              |       |              |      |                |       |           |     | -6184.9      | -2800.7 | 1178.3                | -2272.0 | 167.9 |
| GR-2  | 17.50  | -114.4       | -81.8 | 3599         | 1734 | -31.8          | -47.2 | -6        | -22 | -6070.5      | -2718.9 | 1130.0                | -2164.7 | 165.9 |
| 2-3   | 41.54  | -175.4       | 40.9  | 6203         | 2597 | -28.3          | 15.8  | 5         | -49 | -5895.1      | -2759.8 | 1064.1                | -2020.9 | 161.1 |
| 3-4   | 54.63  | -97.7        | 14.3  | 3375         | 1413 | -28.9          | 10.1  | 3         | -50 | -5797.4      | -2774.2 | 1027.9                | -1944.4 | 158.4 |
| 4-5   | 67.71  | -99.2        | 8.8   | 3375         | 1413 | -29.4          | 6.2   | 2         | -50 | -5698.2      | -2782.9 | 991.5                 | -1869.2 | 155.7 |
| 5-6   | 80.79  | -100.8       | 3.2   | 3375         | 1413 | -29.9          | 2.2   | 1         | -50 | -5597.4      | -2786.1 | 955.1                 | -1795.3 | 152.9 |
| 6-7   | 93.87  | -102.3       | -2.4  | 3375         | 1413 | -30.3          | -1.7  | -0        | -50 | -5495.1      | -2783.7 | 918.7                 | -1722.8 | 150.1 |
| 7-8   | 106.96 | -103.9       | -8.0  | 3375         | 1413 | -30.8          | -5.7  | -2        | -50 | -5391.2      | -2775.7 | 882.3                 | -1651.5 | 147.3 |
| 8-9   | 120.04 | -105.5       | -13.6 | 3375         | 1413 | -31.2          | -9.6  | -3        | -49 | -5285.7      | -2762.1 | 846.1                 | -1581.7 | 144.5 |
| 9-10  | 133.12 | -106.6       | -19.4 | 3375         | 1413 | -31.6          | -13.7 | -4        | -48 | -5179.1      | -2742.7 | 810.1                 | -1513.2 | 141.6 |
| 10-11 | 146.21 | -106.5       | -26.0 | 3375         | 1413 | -31.6          | -18.4 | -5        | -47 | -5072.6      | -2716.7 | 774.4                 | -1446.2 | 138.7 |
| 11-12 | 159.29 | -106.5       | -32.6 | 3375         | 1413 | -31.5          | -23.0 | -6        | -46 | -4966.1      | -2684.1 | 739.0                 | -1380.5 | 135.9 |
| 12-13 | 172.37 | -106.4       | -39.1 | 3375         | 1413 | -31.5          | -27.7 | -7        | -45 | -4859.7      | -2645.0 | 704.2                 | -1316.2 | 133.0 |
| 13-14 | 185.46 | -106.3       | -45.7 | 3375         | 1413 | -31.5          | -32.3 | -8        | -43 | -4753.4      | -2599.3 | 669.9                 | -1253.4 | 130.0 |
| 14-15 | 198.54 | -106.3       | -52.3 | 3375         | 1413 | -31.5          | -37.0 | -8        | -41 | -4647.1      | -2547.0 | 636.2                 | -1191.9 | 127.1 |
| 15-16 | 211.62 | -106.2       | -58.9 | 3375         | 1413 | -31.5          | -41.7 | -9        | -39 | -4540.9      | -2488.1 | 603.3                 | -1131.8 | 124.2 |
| 16-17 | 224.70 | -106.1       | -65.4 | 3375         | 1413 | -31.4          | -46.3 | -10       | -37 | -4434.8      | -2422.7 | 571.1                 | -1073.0 | 121.2 |
| 17-18 | 237.79 | -106.3       | -70.3 | 3375         | 1413 | -31.5          | -49.8 | -10       | -36 | -4328.5      | -2352.4 | 539.9                 | -1015.7 | 118.2 |
| 18-19 | 250.87 | -107.2       | -69.4 | 3375         | 1413 | -31.8          | -49.1 | -10       | -37 | -4221.3      | -2283.0 | 509.6                 | -959.8  | 115.2 |
| 19-20 | 263.95 | -108.2       | -68.4 | 3375         | 1413 | -32.0          | -48.4 | -10       | -38 | -4113.2      | -2214.6 | 480.2                 | -905.3  | 112.1 |
| 20-21 | 277.04 | -109.1       | -67.4 | 3375         | 1413 | -32.3          | -47.7 | -10       | -39 | -4004.1      | -2147.2 | 451.6                 | -852.2  | 109.0 |
| 21-22 | 290.12 | -110.0       | -66.5 | 3375         | 1413 | -32.6          | -47.1 | -10       | -39 | -3894.0      | -2080.7 | 424.0                 | -800.5  | 105.8 |
| 22-23 | 303.20 | -111.0       | -65.5 | 3375         | 1413 | -32.9          | -46.4 | -10       | -40 | -3783.1      | -2015.2 | 397.2                 | -750.3  | 102.5 |
| 23-24 | 316.29 | -111.9       | -64.6 | 3375         | 1413 | -33.2          | -45.7 | -10       | -41 | -3671.1      | -1950.6 | 371.2                 | -701.5  | 99.2  |
| 24-25 | 329.37 | -112.9       | -63.6 | 3375         | 1413 | -33.4          | -45.0 | -10       | -42 | -3558.3      | -1887.0 | 346.1                 | -654.2  | 95.9  |
|       |        | -113.8       | -62.8 | 3375         | 1413 | -33.7          | -44.5 | -10       | -42 |              |         |                       |         |       |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
WIND DIRECTION 340 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|------|
|       |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |        |      |
| 25-26 | 342.45 |              |       |              |      |                |       |           |     | -3444.5      | -1824.2 | 321.9                 | -608.4 | 92.5 |
| 26-27 | 355.53 | -114.8       | -62.8 | 3375         | 1413 | -34.0          | -44.4 | -10       | -43 | -3329.7      | -1761.4 | 298.4                 | -564.1 | 89.1 |
| 27-28 | 368.62 | -115.7       | -62.7 | 3375         | 1413 | -34.3          | -44.4 | -10       | -43 | -3214.0      | -1698.7 | 275.8                 | -521.3 | 85.6 |
| 28-29 | 381.70 | -116.7       | -62.6 | 3375         | 1413 | -34.6          | -44.3 | -10       | -43 | -3097.3      | -1636.1 | 254.0                 | -480.0 | 82.1 |
| 29-30 | 394.78 | -117.6       | -62.5 | 3375         | 1413 | -34.9          | -44.3 | -10       | -44 | -2979.6      | -1573.6 | 233.0                 | -440.3 | 78.5 |
| 30-31 | 407.87 | -118.6       | -62.5 | 3375         | 1413 | -35.1          | -44.2 | -10       | -44 | -2861.0      | -1511.1 | 212.8                 | -402.1 | 74.9 |
| 31-32 | 420.95 | -119.6       | -62.4 | 3375         | 1413 | -35.4          | -44.2 | -10       | -44 | -2741.5      | -1448.7 | 193.4                 | -365.4 | 71.3 |
| 32-33 | 434.03 | -120.5       | -62.3 | 3375         | 1413 | -35.7          | -44.1 | -10       | -45 | -2620.9      | -1386.3 | 174.9                 | -330.3 | 67.6 |
| 33-34 | 447.12 | -121.6       | -62.5 | 3375         | 1413 | -36.0          | -44.2 | -10       | -45 | -2499.3      | -1323.8 | 157.1                 | -296.8 | 63.9 |
| 34-35 | 460.20 | -123.4       | -63.7 | 3375         | 1413 | -36.6          | -45.1 | -10       | -45 | -2375.9      | -1260.1 | 140.2                 | -264.9 | 60.1 |
| 35-36 | 473.28 | -125.1       | -65.0 | 3375         | 1413 | -37.1          | -46.0 | -10       | -44 | -2250.8      | -1195.1 | 124.2                 | -234.7 | 56.3 |
| 36-37 | 486.36 | -126.9       | -66.2 | 3375         | 1413 | -37.6          | -46.9 | -10       | -44 | -2123.9      | -1128.9 | 109.0                 | -206.1 | 52.5 |
| 37-38 | 499.45 | -128.6       | -67.5 | 3375         | 1413 | -38.1          | -47.7 | -10       | -44 | -1995.3      | -1061.4 | 94.6                  | -179.1 | 48.6 |
| 38-39 | 512.53 | -130.4       | -68.7 | 3375         | 1413 | -38.6          | -48.6 | -10       | -44 | -1864.9      | -992.7  | 81.2                  | -153.9 | 44.6 |
| 39-40 | 525.61 | -132.1       | -69.9 | 3375         | 1413 | -39.1          | -49.5 | -10       | -44 | -1732.8      | -922.8  | 68.7                  | -130.3 | 40.6 |
| 40-41 | 538.70 | -133.9       | -71.2 | 3375         | 1413 | -39.7          | -50.4 | -10       | -44 | -1598.9      | -851.6  | 57.1                  | -108.5 | 36.6 |
| 41-42 | 551.78 | -136.3       | -72.8 | 3375         | 1413 | -40.4          | -51.5 | -10       | -43 | -1462.6      | -778.8  | 46.4                  | -88.5  | 32.5 |
| 42-43 | 564.86 | -142.9       | -76.6 | 3375         | 1413 | -42.3          | -54.2 | -9        | -40 | -1319.7      | -702.1  | 36.7                  | -70.3  | 28.6 |
| 43-44 | 577.95 | -149.6       | -80.5 | 3375         | 1413 | -44.3          | -57.0 | -8        | -37 | -1170.1      | -621.7  | 28.1                  | -54.0  | 24.7 |
| 44-45 | 591.03 | -156.2       | -84.3 | 3375         | 1413 | -46.3          | -59.7 | -8        | -35 | -1013.9      | -537.4  | 20.5                  | -39.7  | 20.9 |
| 45-46 | 604.11 | -162.8       | -88.1 | 3375         | 1413 | -48.2          | -62.4 | -7        | -32 | -851.2       | -449.2  | 14.0                  | -27.5  | 17.2 |
| 46-47 | 617.19 | -169.4       | -92.0 | 3375         | 1413 | -50.2          | -65.1 | -7        | -30 | -681.8       | -357.3  | 8.7                   | -17.5  | 13.6 |
| 47-48 | 630.28 | -176.0       | -95.8 | 3375         | 1413 | -52.1          | -67.8 | -6        | -28 | -505.8       | -261.5  | 4.7                   | -9.7   | 10.1 |
| 48-49 | 643.36 | -182.6       | -99.6 | 3375         | 1413 | -54.1          | -70.5 | -6        | -27 | -323.2       | -161.8  | 1.9                   | -4.3   | 6.7  |
| 49-50 | 656.44 | -180.7       | -98.3 | 3375         | 1413 | -53.5          | -69.6 | -6        | -25 | -142.5       | -63.5   | .5                    | -1.3   | 3.5  |
|       |        | -145.8       | -72.1 | 4788         | 2004 | -30.5          | -36.0 | -6        | -29 |              |         |                       |        |      |



TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 340 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |     | AREA (SQ FT) |      | PRESSURE (PSF) |     | ECCEN (%) |    | SHEAR (KIPS) |     | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-----|--------------|------|----------------|-----|-----------|----|--------------|-----|-----------------------|-----|-----|
|        |        | X            | Y   | X            | Y    | X              | Y   | X         | Y  | X            | Y   | Z                     |     |     |
| 50-TOP | 675.00 |              |     |              |      |                |     |           |    | 3.4          | 8.6 | -.1                   | .0  | .7  |
| TOP    | 687.00 | 3.4          | 8.6 | 2973         | 1232 | 1.1            | 7.0 | 51        | 48 | 0.0          | 0.0 | 0.0                   | 0.0 | 0.0 |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 350 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |        | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |         |       |
|-------|--------|--------------|--------|--------------|------|----------------|--------|-----------|-----|--------------|---------|-----------------------|---------|-------|
|       |        | X            | Y      | X            | Y    | X              | Y      | X         | Y   | X            | Y       | Z                     |         |       |
| GRND  | 0.00   | -40.8        | -253.8 | 3599         | 1734 | -11.3          | -146.3 | -7        | -3  | -3405.0      | -3145.8 | 1304.7                | -1487.1 | 117.1 |
| GR-2  | 17.50  | -63.1        | 132.3  | 6203         | 2597 | -10.2          | 51.0   | 20        | -23 | -3364.2      | -2892.0 | 1251.9                | -1427.8 | 114.7 |
| 2-3   | 41.54  | -35.9        | 57.3   | 3375         | 1413 | -10.6          | 40.5   | 22        | -33 | -3301.2      | -3024.3 | 1180.7                | -1347.7 | 110.5 |
| 3-4   | 54.63  | -36.9        | 46.9   | 3375         | 1413 | -10.9          | 33.2   | 23        | -43 | -3265.3      | -3081.6 | 1140.8                | -1304.7 | 108.2 |
| 4-5   | 67.71  | -38.0        | 36.5   | 3375         | 1413 | -11.3          | 25.8   | 23        | -57 | -3228.3      | -3128.5 | 1100.2                | -1262.3 | 106.0 |
| 5-6   | 80.79  | -39.1        | 26.1   | 3375         | 1413 | -11.6          | 18.5   | 20        | -73 | -3190.3      | -3164.9 | 1059.0                | -1220.3 | 103.7 |
| 6-7   | 93.87  | -40.2        | 15.7   | 3375         | 1413 | -11.9          | 11.1   | 14        | -89 | -3151.2      | -3191.0 | 1017.4                | -1178.8 | 101.5 |
| 7-8   | 106.96 | -41.3        | 5.3    | 3375         | 1413 | -12.2          | 3.8    | 5         | -97 | -3111.0      | -3206.7 | 975.6                 | -1137.8 | 99.3  |
| 8-9   | 120.04 | -42.2        | -4.5   | 3375         | 1413 | -12.5          | -3.2   | -4        | -96 | -3069.7      | -3212.0 | 933.6                 | -1097.4 | 97.1  |
| 9-10  | 133.12 | -42.5        | -12.4  | 3375         | 1413 | -12.6          | -8.8   | -11       | -91 | -3027.6      | -3207.5 | 891.6                 | -1057.5 | 94.9  |
| 10-11 | 146.21 | -42.7        | -20.3  | 3375         | 1413 | -12.7          | -14.4  | -16       | -81 | -2985.1      | -3195.1 | 849.7                 | -1018.2 | 92.6  |
| 11-12 | 159.29 | -43.0        | -28.3  | 3375         | 1413 | -12.7          | -20.0  | -19       | -71 | -2942.4      | -3174.8 | 808.0                 | -979.4  | 90.3  |
| 12-13 | 172.37 | -43.3        | -36.2  | 3375         | 1413 | -12.8          | -25.6  | -21       | -60 | -2899.4      | -3146.5 | 766.7                 | -941.2  | 88.0  |
| 13-14 | 185.46 | -43.6        | -44.1  | 3375         | 1413 | -12.9          | -31.2  | -22       | -51 | -2856.1      | -3110.4 | 725.8                 | -903.5  | 85.6  |
| 14-15 | 198.54 | -43.9        | -52.0  | 3375         | 1413 | -13.0          | -36.8  | -22       | -44 | -2812.5      | -3066.3 | 685.4                 | -866.5  | 83.1  |
| 15-16 | 211.62 | -44.2        | -60.0  | 3375         | 1413 | -13.1          | -42.4  | -21       | -37 | -2768.6      | -3014.2 | 645.6                 | -830.0  | 80.6  |
| 16-17 | 224.70 | -44.4        | -67.1  | 3375         | 1413 | -13.1          | -47.5  | -21       | -33 | -2724.4      | -2954.3 | 606.5                 | -794.0  | 78.1  |
| 17-18 | 237.79 | -44.4        | -71.6  | 3375         | 1413 | -13.2          | -50.7  | -20       | -30 | -2680.1      | -2887.2 | 568.3                 | -758.7  | 75.5  |
| 18-19 | 250.87 | -44.4        | -76.1  | 3375         | 1413 | -13.2          | -53.9  | -20       | -28 | -2635.7      | -2815.5 | 531.0                 | -723.9  | 72.9  |
| 19-20 | 263.95 | -44.4        | -80.7  | 3375         | 1413 | -13.2          | -57.1  | -19       | -26 | -2591.2      | -2739.4 | 494.7                 | -689.7  | 70.3  |
| 20-21 | 277.04 | -44.4        | -85.2  | 3375         | 1413 | -13.2          | -60.3  | -19       | -24 | -2546.8      | -2658.7 | 459.4                 | -656.1  | 67.7  |
| 21-22 | 290.12 | -44.4        | -89.7  | 3375         | 1413 | -13.2          | -63.5  | -19       | -22 | -2502.4      | -2573.5 | 425.1                 | -623.1  | 65.0  |
| 22-23 | 303.20 | -44.5        | -94.2  | 3375         | 1413 | -13.2          | -66.7  | -18       | -21 | -2458.0      | -2483.8 | 392.1                 | -590.6  | 62.3  |
| 23-24 | 316.29 | -44.5        | -98.7  | 3375         | 1413 | -13.2          | -69.9  | -18       | -19 | -2413.5      | -2389.6 | 360.2                 | -558.8  | 59.6  |
| 24-25 | 329.37 | -44.6        | -102.9 | 3375         | 1413 | -13.2          | -72.8  | -18       | -18 | -2369.0      | -2290.9 | 329.6                 | -527.5  | 56.9  |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERELASTIC DATA  
WIND DIRECTION 350 CONFIGURATION C REFERENCE PRESSURE 42.0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR | HEIGHT | FORCE (KIPS) |        | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |         | MOMENT (1000-FT-KIPS) |        |      |
|-------|--------|--------------|--------|--------------|------|----------------|-------|-----------|-----|--------------|---------|-----------------------|--------|------|
|       |        | X            | Y      | X            | Y    | X              | Y     | X         | Y   | X            | Y       | Z                     |        |      |
| 25-26 | 342.45 |              |        |              |      |                |       |           |     | -2324.5      | -2188.0 | 300.3                 | -496.8 | 54.1 |
| 26-27 | 355.53 | -45.2        | -105.8 | 3375         | 1413 | -13.4          | -74.9 | -18       | -18 | -2279.3      | -2082.2 | 272.3                 | -466.7 | 51.3 |
| 27-28 | 368.62 | -45.7        | -108.6 | 3375         | 1413 | -13.6          | -76.9 | -18       | -18 | -2233.5      | -1973.6 | 245.8                 | -437.1 | 48.3 |
| 28-29 | 381.70 | -46.3        | -111.5 | 3375         | 1413 | -13.7          | -78.9 | -18       | -18 | -2187.2      | -1862.1 | 220.7                 | -408.2 | 45.3 |
| 29-30 | 394.78 | -46.9        | -114.3 | 3375         | 1413 | -13.9          | -80.9 | -18       | -18 | -2140.3      | -1747.8 | 197.1                 | -379.9 | 42.2 |
| 30-31 | 407.87 | -47.5        | -117.1 | 3375         | 1413 | -14.1          | -82.9 | -18       | -18 | -2092.9      | -1630.7 | 175.0                 | -352.2 | 38.9 |
| 31-32 | 420.95 | -48.0        | -120.0 | 3375         | 1413 | -14.2          | -84.9 | -18       | -18 | -2044.8      | -1510.7 | 154.4                 | -325.1 | 35.6 |
| 32-33 | 434.03 | -48.6        | -122.8 | 3375         | 1413 | -14.4          | -86.9 | -18       | -17 | -1996.2      | -1387.9 | 135.5                 | -298.7 | 32.3 |
| 33-34 | 447.12 | -49.9        | -124.1 | 3375         | 1413 | -14.8          | -87.8 | -18       | -18 | -1946.3      | -1263.8 | 118.1                 | -272.9 | 28.8 |
| 34-35 | 460.20 | -54.4        | -117.8 | 3375         | 1413 | -16.1          | -83.4 | -18       | -19 | -1891.9      | -1146.0 | 102.4                 | -247.8 | 25.6 |
| 35-36 | 473.28 | -58.9        | -111.5 | 3375         | 1413 | -17.5          | -78.9 | -17       | -21 | -1833.0      | -1034.5 | 88.1                  | -223.4 | 22.5 |
| 36-37 | 486.36 | -63.5        | -105.2 | 3375         | 1413 | -18.8          | -74.4 | -16       | -23 | -1769.5      | -929.3  | 75.3                  | -199.9 | 19.6 |
| 37-38 | 499.45 | -68.0        | -98.9  | 3375         | 1413 | -20.1          | -70.0 | -15       | -24 | -1701.5      | -830.4  | 63.8                  | -177.2 | 16.9 |
| 38-39 | 512.53 | -72.5        | -92.6  | 3375         | 1413 | -21.5          | -65.5 | -13       | -25 | -1629.0      | -737.8  | 53.5                  | -155.4 | 14.3 |
| 39-40 | 525.61 | -77.1        | -86.3  | 3375         | 1413 | -22.8          | -61.1 | -12       | -25 | -1551.9      | -651.6  | 44.4                  | -134.6 | 11.9 |
| 40-41 | 538.70 | -81.6        | -80.0  | 3375         | 1413 | -24.2          | -56.6 | -10       | -25 | -1470.3      | -571.6  | 36.4                  | -114.8 | 9.7  |
| 41-42 | 551.78 | -87.2        | -73.8  | 3375         | 1413 | -25.8          | -52.2 | -9        | -25 | -1383.2      | -497.8  | 29.4                  | -96.1  | 7.7  |
| 42-43 | 564.86 | -98.9        | -68.7  | 3375         | 1413 | -29.3          | -48.6 | -6        | -22 | -1284.3      | -429.1  | 23.3                  | -78.7  | 6.0  |
| 43-44 | 577.95 | -110.7       | -63.5  | 3375         | 1413 | -32.8          | -44.9 | -4        | -18 | -1173.6      | -365.6  | 18.1                  | -62.6  | 4.6  |
| 44-45 | 591.03 | -122.4       | -58.3  | 3375         | 1413 | -36.3          | -41.3 | -3        | -14 | -1051.1      | -307.3  | 13.7                  | -48.1  | 3.5  |
| 45-46 | 604.11 | -134.2       | -53.1  | 3375         | 1413 | -39.8          | -37.6 | -2        | -10 | -916.9       | -254.2  | 10.1                  | -35.2  | 2.6  |
| 46-47 | 617.19 | -146.0       | -48.0  | 3375         | 1413 | -43.2          | -34.0 | -1        | -6  | -771.0       | -206.2  | 7.1                   | -24.1  | 2.1  |
| 47-48 | 630.28 | -157.7       | -42.8  | 3375         | 1413 | -46.7          | -30.3 | 0         | -3  | -613.3       | -163.4  | 4.6                   | -15.1  | 1.8  |
| 48-49 | 643.36 | -169.5       | -37.6  | 3375         | 1413 | -50.2          | -26.6 | 0         | 0   | -443.8       | -125.8  | 2.8                   | -8.2   | 1.8  |
| 49-50 | 656.44 | -176.3       | -34.0  | 3375         | 1413 | -52.2          | -24.0 | 0         | 2   | -267.5       | -91.8   | 1.3                   | -3.5   | 2.0  |
|       |        | -199.2       | -60.6  | 4788         | 2004 | -41.6          | -30.2 | -1        | -5  |              |         |                       |        |      |

TABLE 7. SHEAR AND MOMENT DIAGRAMS : ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AERDELASTIC DATA  
WIND DIRECTION 350 CONFIGURATION C REFERENCE PRESSURE 42 0 PSF  
ECCENTRICITIES BASED ON 129 FT IN THE X DIRECTION AND 54 FT IN THE Y DIRECTION

| FLOOR  | HEIGHT | FORCE (KIPS) |       | AREA (SQ FT) |      | PRESSURE (PSF) |       | ECCEN (%) |     | SHEAR (KIPS) |       | MOMENT (1000-FT-KIPS) |     |     |
|--------|--------|--------------|-------|--------------|------|----------------|-------|-----------|-----|--------------|-------|-----------------------|-----|-----|
|        |        | X            | Y     | X            | Y    | X              | Y     | X         | Y   | X            | Y     | Z                     |     |     |
| 50-TOP | 675.00 |              |       |              |      |                |       |           |     |              |       |                       |     |     |
|        |        | -68.3        | -31.2 | 2973         | 1232 | -23.0          | -25.4 | -6        | -31 | -68.3        | -31.2 | .2                    | -.4 | 1.4 |
| TOP    | 687.00 |              |       |              |      |                |       |           |     | 0.0          | 0.0   | 0.0                   | 0.0 | 0.0 |

TABLE 7. ALLEN CENTER FOUR, HOUSTON \*\* BASED ON AEROELASTIC DATA  
 PROJECT 7840 CONFIGURATION C  
 SCALE = 400 REF. PRESSURE = 42.0  
 STANDARD FLOOR HEIGHT = 13.08  
 NUMBER OF SIDES = 4 NO. OF FLOORS = 51

| SIDE | ANGLE | Z-AXIS |
|------|-------|--------|
| 1    | 0.0   | 3.870  |
| 2    | 90.0  | 1.620  |
| 3    | 180.0 | 3.870  |
| 4    | 270.0 | 1.620  |

| FLOOR # | LABEL | HEIGHT-FT |
|---------|-------|-----------|
| 1       | GRND  | 17.50     |
| 2       | GR-2  | 24.04     |
| 3       | 2-3   | 13.08     |
| 4       | 3-4   | 13.08     |
| 5       | 4-5   | 13.08     |
| 6       | 5-6   | 13.08     |
| 7       | 6-7   | 13.08     |
| 8       | 7-8   | 13.08     |
| 9       | 8-9   | 13.08     |
| 10      | 9-10  | 13.08     |
| 11      | 10-11 | 13.08     |
| 12      | 11-12 | 13.08     |
| 13      | 12-13 | 13.08     |
| 14      | 13-14 | 13.08     |
| 15      | 14-15 | 13.08     |
| 16      | 15-16 | 13.08     |
| 17      | 16-17 | 13.08     |
| 18      | 17-18 | 13.08     |
| 19      | 18-19 | 13.08     |
| 20      | 19-20 | 13.08     |
| 21      | 20-21 | 13.08     |
| 22      | 21-22 | 13.08     |
| 23      | 22-23 | 13.08     |
| 24      | 23-24 | 13.08     |
| 25      | 24-25 | 13.08     |
| 26      | 25-26 | 13.08     |
| 27      | 26-27 | 13.08     |
| 28      | 27-28 | 13.08     |
| 29      | 28-29 | 13.08     |
| 30      | 29-30 | 13.08     |
| 31      | 30-31 | 13.08     |
| 32      | 31-32 | 13.08     |
| 33      | 32-33 | 13.08     |
| 34      | 33-34 | 13.08     |
| 35      | 34-35 | 13.08     |
| 36      | 35-36 | 13.08     |
| 37      | 36-37 | 13.08     |
| 38      | 37-38 | 13.08     |
| 39      | 38-39 | 13.08     |
| 40      | 39-40 | 13.08     |
| 41      | 40-41 | 13.08     |
| 42      | 41-42 | 13.08     |
| 43      | 42-43 | 13.08     |
| 44      | 43-44 | 13.08     |
| 45      | 44-45 | 13.08     |
| 46      | 45-46 | 13.08     |
| 47      | 46-47 | 13.08     |
| 48      | 47-48 | 13.08     |
| 49      | 48-49 | 13.08     |
| 50      | 49-50 | 18.56     |
| 51      | TOP   | 12.00     |

TABLE 8  
TARGET SCALES FOR AEROELASTIC TEST

|                  | Scale *)                   | Symbol & Relation   | Value                      |
|------------------|----------------------------|---|----------------------------|
| Assumed Scales   | Length                     | $\lambda_L$   | 1:400                      |
|                  | Air Density                | $\lambda_\rho$  | 1:1.16                     |
|                  | Frequency                  | $\lambda_N$   | 54:1                       |
|                  | Rotation                   | $\lambda_\theta$  | 1:1                        |
|                  | Damping                    | $\lambda_\xi$   | 1:1                        |
| Resulting Scales | Time                       | $\lambda_T = \lambda_N^{-1}$  | 1:54                       |
|                  | Deflection                 | $\lambda_D = \lambda_L$   | 1:400                      |
|                  | Velocity                   | $\lambda_V = \lambda_N \lambda_L$   | 1:7.40                     |
|                  | Acceleration               | $\lambda_A = \lambda_L \lambda_N^2$   | 7.29:1                     |
|                  | Mass Moment of Inertia     | $\lambda_I = \lambda_\rho \lambda_L^5$  | 1:(1.19*10 <sup>13</sup> ) |
|                  | Bending (Torsional) Moment | $\lambda_M = \begin{cases} \lambda_\rho \lambda_L^5 \lambda_N^2 \\ \lambda_I \lambda_N^2 \end{cases}$ | 1:(4.07*10 <sup>9</sup> )  |
|                  | Stiffness                  | $\lambda_K = \lambda_\rho \lambda_L^5 \lambda_N^2$  | 1:(4.07*10 <sup>9</sup> )  |

\*) Scale =  $\frac{(\quad) \text{ model}}{(\quad) \text{ prototype}}$

TABLE 9. VALUES OF MAIN PARAMETERS FOR PROTOTYPE BUILDING AND "EXACT" MODEL

| Property                                 | Symbol        | Units                   | Prototype                  | "Exact" Model 1:400 |
|--|---------------|-------------------------|----------------------------|---------------------|
| Height of Building                       | H             | ft                      | 683                        | 1.7075              |
| Principal Axes of Building Cross Section | $A_X$         | ft                      | 108                        | 0.2700              |
|  | $A_Y$         | ft                      | 258                        | 0.6400              |
| Mass Moment of Inertia                   | $I_X$         | slug-ft <sup>2</sup>    | $7.98 \times 10^{11}$ (2)  | 0.06706             |
|  | $I_Y$         | slug-ft <sup>2</sup>    | $7.25 \times 10^{11}$ (2)  | 0.06092             |
|  | $I_Z$         | slug-ft <sup>2</sup>    | $5.13 \times 10^{10}$ (2)  | 0.00432             |
| Natural Frequencies                      | $N_X$         | Hz                      | 0.248 (1)                  | 13.39               |
|  | $N_Y$         | Hz                      | 0.224 (1)                  | 12.10               |
|  | $N_Z$         | Hz                      | 0.315 (1)                  | 17.01               |
|  | $N_X:N_Y:N_Z$ |                         | 1:0.903:1.270              | 1:0.903:1.270       |
| Stiffness                                | $K_X$         | lb-ft-rad <sup>-1</sup> | $19.37 \times 10^{11}$ (1) | 475.9               |
|  | $K_Y$         | lb-ft-rad <sup>-1</sup> | $14.37 \times 10^{11}$ (1) | 353.1               |
|  | $K_Z$         | lb-ft-rad <sup>-1</sup> | $20.1 \times 10^{10}$ (1)  | 49.5                |
| Air Density                              | $\rho$        | slug-ft <sup>-3</sup>   | 0.00238                    | 0.00205             |

(1) Supplied by J. Notch - telephone conversation on 26 January 1982

(2) Computed  $J = (2\pi N)^{-2} * K$

TABLE 10. VALUES OF MAIN PARAMETERS FOR "EXACT" AND "ACTUAL" MODEL

| Property                                       | Units                   | "Exact" Model | "Actual" Model | Error*  |
|--|-------------------------|---------------|----------------|---------|
| H  | ft                      | 1.7075        | 1.7075         | 0       |
| A <sub>X</sub>                                 | ft                      | 0.2700        | 0.2700         | 0       |
| A <sub>Y</sub>                                 | ft                      | 0.6400        | 0.6400         | 0       |
| J <sub>X</sub>                                 | slug-ft <sup>2</sup>    | 0.06706       | 0.06670        | -1.     |
| J <sub>Y</sub>                                 | slug-ft <sup>2</sup>    | 0.06092       | 0.06547        | 7       |
| J <sub>Z</sub>                                 | slug-ft <sup>2</sup>    | 0.00432       | 0.00259        | 67      |
| N <sub>X</sub>                                 | Hz                      | 13.39         | 12.93          | -3.     |
| N <sub>Y</sub>                                 | Hz                      | 12.10         | 10.87          | -10.    |
| N <sub>Z</sub>                                 | Hz                      | 17.01         | 23.60          | 39.     |
| N <sub>X</sub> :N <sub>Y</sub> :N <sub>Z</sub> | [%]: [%]: [%]           | 1:0.903:1.270 | 1:0.841:2.159  | 0:-7:70 |
| K <sub>X</sub>                                 | lb-ft-rad <sup>-1</sup> | 475.9         | 440.3          | -8.     |
| K <sub>Y</sub>                                 | lb-ft-rad <sup>-1</sup> | 353.1         | 305.4          | -14.    |
| K <sub>Z</sub>                                 | lb-ft-rad <sup>-1</sup> | 49.5          | 56.97          | 15.     |
| ρ  | slug-ft <sup>-3</sup>   | 0.00205       | 0.00205        | 0       |

$$* \text{ Error} = \frac{(\quad) \text{ actual} - (\quad) \text{ exact}}{(\quad) \text{ exact}} \quad [\%]$$



TABLE 11  
FINAL SCALING FOR AEROELASTIC TEST

|                  | Scale                  | Symbol & Relation  | Value                      |
|------------------|------------------------|--|----------------------------|
| Assumed Scales   | Length                 | $\lambda_L$  | 1:400                      |
|                  | Air Density            | $\lambda_\rho$   | 1:1.16                     |
|                  | Mass Moment of Inertia | $\lambda_I$  | 1:(1.01*10 <sup>13</sup> ) |
|                  | Stiffness              | $\lambda_K$  | 1:(3.47*10 <sup>9</sup> )  |
|                  | Damping                | $\lambda_\xi$  | 1:1                        |
| Resulting Scales | Frequency              | $\lambda_N = \lambda_K^{1/2} \lambda_I^{-1/2}$             | 54:1                       |
|                  | Velocity               | $\lambda_V = \lambda_N \lambda_L$                          | 1:7.41                     |
|                  | Rotation               | $\lambda_\theta = \lambda_\rho \lambda_L^5 \lambda_I^{-1}$ | 1:1.18                     |
|                  | Response Moment        | $\lambda_M = \lambda_K \lambda_\theta$                     | 1:(4.09*10 <sup>9</sup> )  |
|                  | Deflection             | $\lambda_D = \lambda_\theta \lambda_L$                     | 1:472                      |
|                  | Acceleration           | $\lambda_A = \lambda_L \lambda_N^2$                        | 7.29:1                     |

TABLE 12

RELATION BETWEEN MEAN GRADIENT WIND SPEED,  
REDUCED VELOCITY, AND APPROXIMATE RETURN PERIOD

| Mean Gradient Wind<br>Speed<br>$U_P$ (MPH) | Reduced Velocity      |                       |                       | Approximate<br>Return<br>Period<br>(years) |
|--|-----------------------|-----------------------|-----------------------|--|
|  | $\frac{U_P}{A_X N_X}$ | $\frac{U_P}{A_X N_Y}$ | $\frac{U_P}{A_X N_Z}$ |  |
| 57   | 2.16                  | 2.40                  | 1.70                  | 2  |
| 95   | 3.61                  | 4.00                  | 2.84                  | 25   |
| 108  | 4.10                  | 4.55                  | 3.23                  | 50   |
| 128  | 4.87                  | 5.39                  | 3.83                  | 100  |

$$A_X = 106 \text{ ft}$$

$$N_X = 0.248 \text{ Hz}$$

$$N_Y = 0.224 \text{ Hz}$$

$$N_Z = 0.315 \text{ Hz}$$

TABLE 13. TOP FLOOR ACCELERATION AND FREQUENCY OF OCCURRENCE

Damping ratio = 0.005

| WIND DIRECTION | WIND VELOCITY*<br>(MPH) | NO. EVENTS<br>PER YEAR | RMS ACCELERATIONS(MG) |       |      | TOTAL RMS ACCELERATION<br>(MG) |
|----------------|-------------------------|------------------------|-----------------------|-------|------|--------------------------------|
|                |                         |                        | X                     | Y     | Z    |                                |
| 45             | 36.80                   | .729E+00               | 1.29                  | 1.14  | .47  | 1.78                           |
|                | 52.54                   | .652E-01               | 5.87                  | 4.36  | 1.51 | 7.46                           |
|                | 67.07                   | .227E-01               | 10.52                 | 7.03  | 2.34 | 12.87                          |
|                | 80.62                   | .846E-02               | 17.25                 | 8.82  | 3.64 | 19.71                          |
|                | 92.65                   | .352E-02               | 24.78                 | 13.57 | 5.81 | 28.84                          |
|                | 98.76                   | .226E-02               | 25.89                 | 19.14 | 6.39 | 32.83                          |
| 135            | 36.99                   | .195E+01               | 2.11                  | 1.02  | .50  | 2.39                           |
|                | 50.82                   | .336E+00               | 4.81                  | 3.28  | 1.10 | 5.93                           |
|                | 65.94                   | .575E-01               | 8.18                  | 6.28  | 1.82 | 10.47                          |
|                | 78.45                   | .272E-01               | 21.02                 | 7.30  | 4.26 | 22.66                          |
|                | 91.59                   | .124E-01               | 25.90                 | 11.39 | 5.87 | 28.90                          |
|                | 97.68                   | .860E-02               | 31.00                 | 13.98 | 7.63 | 34.85                          |
| 225            | 35.45                   | .838E+00               | 1.12                  | .66   | .40  | 1.35                           |
|                | 50.94                   | .744E-01               | 4.41                  | 2.54  | 1.19 | 5.23                           |
|                | 65.97                   | .231E-01               | 7.26                  | 4.43  | 1.63 | 8.66                           |
|                | 76.79                   | .104E-01               | 12.16                 | 6.37  | 2.80 | 14.01                          |
|                | 90.16                   | .388E-02               | 21.84                 | 10.60 | 5.10 | 24.81                          |
|                | 98.83                   | .205E-02               | 25.48                 | 13.42 | 5.97 | 29.41                          |
| 315            | 37.64                   | .848E+00               | 1.54                  | 1.11  | .49  | 1.96                           |
|                | 51.18                   | .116E+00               | 4.39                  | 3.28  | 1.32 | 5.63                           |
|                | 67.25                   | .283E-01               | 10.55                 | 6.15  | 2.41 | 12.45                          |
|                | 78.67                   | .128E-01               | 15.95                 | 7.70  | 3.66 | 18.09                          |
|                | 90.57                   | .563E-02               | 22.29                 | 11.86 | 5.19 | 25.78                          |
|                | 98.83                   | .318E-02               | 32.36                 | 16.98 | 7.71 | 37.35                          |

\* FASTEST MILE AT 30'

TABLE 13 (continued).

Damping ratio = 0.015

| WIND DIRECTION | WIND VELOCITY*<br>(MPH) | NO. EVENTS<br>PER YEAR | RMS ACCELERATIONS(MG) |       |      | TOTAL RMS ACCELERATION<br>(MG) |
|----------------|-------------------------|------------------------|-----------------------|-------|------|--------------------------------|
|                |                         |                        | X                     | Y     | Z    |                                |
| 45             | 36.11                   | .812E+00               | .73                   | .54   | .23  | .94                            |
|                | 51.32                   | .773E+01               | 2.63                  | 1.81  | .58  | 3.24                           |
|                | 64.91                   | .265E+01               | 5.66                  | 3.66  | 1.17 | 6.84                           |
|                | 76.44                   | .115E+01               | 9.75                  | 4.52  | 1.98 | 10.93                          |
|                | 90.74                   | .405E+02               | 14.68                 | 7.54  | 3.08 | 16.79                          |
|                | 97.06                   | .256E+02               | 16.54                 | 8.81  | 3.57 | 19.08                          |
| 135            | 36.31                   | .220E+01               | .95                   | .63   | .27  | 1.17                           |
|                | 52.06                   | .287E+00               | 3.19                  | 2.05  | .66  | 3.85                           |
|                | 63.76                   | .655E+01               | 5.48                  | 3.98  | 1.13 | 6.87                           |
|                | 75.21                   | .330E+01               | 10.82                 | 4.28  | 2.17 | 11.83                          |
|                | 91.34                   | .126E+01               | 20.28                 | 7.73  | 4.14 | 22.10                          |
|                | 99.18                   | .786E+02               | 21.52                 | 9.03  | 4.53 | 23.78                          |
| 225            | 34.89                   | .915E+00               | .67                   | .48   | .24  | .86                            |
|                | 51.44                   | .688E+01               | 2.41                  | 1.26  | .53  | 2.77                           |
|                | 64.58                   | .256E+01               | 4.71                  | 2.47  | .96  | 5.41                           |
|                | 75.62                   | .113E+01               | 8.20                  | 3.11  | 1.69 | 8.93                           |
|                | 90.80                   | .371E+02               | 15.23                 | 6.62  | 3.14 | 16.90                          |
|                | 98.13                   | .216E+02               | 18.27                 | 7.54  | 3.79 | 20.12                          |
| 315            | 37.38                   | .881E+00               | .89                   | .65   | .27  | 1.14                           |
|                | 48.49                   | .172E+00               | 2.21                  | 1.35  | .50  | 2.64                           |
|                | 65.23                   | .326E+01               | 5.87                  | 2.99  | 1.22 | 6.71                           |
|                | 75.49                   | .160E+01               | 9.15                  | 4.40  | 1.86 | 10.32                          |
|                | 91.42                   | .531E+02               | 17.37                 | 7.22  | 3.56 | 19.14                          |
|                | 97.68                   | .344E+02               | 21.04                 | 10.25 | 4.34 | 23.80                          |

\* FASTEST MILE AT 30'

APPENDIX A  
PRESSURE DATA

Note: Pressure coefficients are defined in Section 4.3.  
Pressure tap designation is explained in Figure 3.



APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|
| 0  | 320 | 130    | 130   | 144   | 99    | 0  | 330 | 126    | 99    | 225   | 429   | 0  | 436 | 157    | 134   | 305   | 585   |
| 0  | 321 | 152    | 152   | 164   | 99    | 0  | 331 | 126    | 99    | 176   | 477   | 0  | 437 | 154    | 99    | 152   | 588   |
| 0  | 322 | 164    | 164   | 179   | 99    | 0  | 332 | 118    | 99    | 219   | 422   | 0  | 438 | 140    | 112   | 215   | 487   |
| 0  | 323 | 156    | 156   | 187   | 99    | 0  | 333 | 114    | 99    | 218   | 426   | 0  | 439 | 117    | 107   | 191   | 487   |
| 0  | 324 | 129    | 129   | 177   | 99    | 0  | 334 | 100    | 113   | 259   | 389   | 0  | 440 | 141    | 114   | 256   | 487   |
| 0  | 325 | 120    | 120   | 187   | 99    | 0  | 335 | 120    | 99    | 160   | 419   | 0  | 441 | 197    | 113   | 240   | 487   |
| 0  | 326 | 116    | 116   | 187   | 99    | 0  | 336 | 135    | 101   | 182   | 487   | 0  | 442 | 171    | 112   | 257   | 487   |
| 0  | 327 | 144    | 144   | 187   | 99    | 0  | 337 | 143    | 109   | 218   | 510   | 0  | 443 | 249    | 99    | 564   | 487   |
| 0  | 328 | 134    | 134   | 187   | 99    | 0  | 338 | 147    | 99    | 176   | 474   | 0  | 444 | 123    | 106   | 509   | 487   |
| 0  | 329 | 137    | 137   | 187   | 99    | 0  | 339 | 134    | 102   | 164   | 481   | 0  | 445 | 669    | 109   | 423   | 487   |
| 0  | 330 | 176    | 176   | 187   | 99    | 0  | 340 | 103    | 106   | 268   | 437   | 0  | 446 | 119    | 102   | 508   | 487   |
| 0  | 331 | 179    | 179   | 187   | 99    | 0  | 341 | 99     | 99    | 280   | 381   | 0  | 447 | 113    | 99    | 501   | 487   |
| 0  | 332 | 194    | 194   | 187   | 99    | 0  | 342 | 129    | 99    | 202   | 419   | 0  | 448 | 100    | 99    | 458   | 487   |
| 0  | 333 | 124    | 124   | 187   | 99    | 0  | 343 | 119    | 99    | 209   | 468   | 0  | 449 | 111    | 107   | 458   | 487   |
| 0  | 334 | 141    | 141   | 187   | 99    | 0  | 344 | 127    | 99    | 169   | 450   | 0  | 450 | 99     | 99    | 397   | 487   |
| 0  | 335 | 134    | 134   | 187   | 99    | 0  | 345 | 189    | 194   | 460   | 896   | 0  | 701 | 163    | 116   | 227   | 487   |
| 0  | 336 | 162    | 162   | 187   | 99    | 0  | 346 | 334    | 147   | 176   | 988   | 0  | 702 | 171    | 125   | 252   | 487   |
| 0  | 337 | 104    | 104   | 187   | 99    | 0  | 347 | 367    | 167   | 220   | 101   | 0  | 703 | 155    | 123   | 265   | 487   |
| 0  | 338 | 124    | 124   | 187   | 99    | 0  | 348 | 442    | 179   | 077   | 200   | 0  | 705 | 165    | 119   | 214   | 487   |
| 0  | 339 | 126    | 126   | 187   | 99    | 0  | 349 | 297    | 166   | 218   | 045   | 0  | 706 | 171    | 120   | 211   | 487   |
| 0  | 340 | 125    | 125   | 187   | 99    | 0  | 350 | 274    | 162   | 243   | 872   | 0  | 707 | 160    | 118   | 227   | 487   |
| 0  | 341 | 111    | 111   | 187   | 99    | 0  | 351 | 142    | 142   | 179   | 827   | 0  | 708 | 191    | 133   | 294   | 487   |
| 0  | 342 | 102    | 102   | 187   | 99    | 0  | 352 | 250    | 162   | 218   | 357   | 0  | 710 | 189    | 128   | 322   | 487   |
| 0  | 343 | 109    | 109   | 187   | 99    | 0  | 353 | 446    | 212   | 175   | 154   | 0  | 711 | 162    | 116   | 186   | 487   |
| 0  | 344 | 99     | 99    | 187   | 99    | 0  | 354 | 423    | 194   | 182   | 272   | 0  | 712 | 162    | 121   | 216   | 487   |
| 0  | 345 | 99     | 99    | 187   | 99    | 0  | 355 | 321    | 187   | 253   | 255   | 0  | 713 | 129    | 116   | 224   | 487   |
| 0  | 346 | 99     | 99    | 187   | 99    | 0  | 356 | 321    | 170   | 287   | 854   | 0  | 714 | 129    | 120   | 231   | 487   |
| 0  | 347 | 99     | 99    | 187   | 99    | 0  | 357 | 228    | 204   | 395   | 112   | 0  | 716 | 163    | 106   | 180   | 487   |
| 0  | 348 | 99     | 99    | 187   | 99    | 0  | 358 | 362    | 196   | 153   | 383   | 0  | 717 | 148    | 115   | 207   | 487   |
| 0  | 349 | 126    | 126   | 187   | 99    | 0  | 359 | 374    | 196   | 212   | 043   | 0  | 801 | 127    | 112   | 486   | 487   |
| 0  | 350 | 143    | 143   | 187   | 99    | 0  | 360 | 294    | 187   | 289   | 284   | 0  | 802 | 150    | 120   | 220   | 487   |
| 0  | 351 | 101    | 101   | 187   | 99    | 0  | 361 | 229    | 173   | 218   | 307   | 0  | 803 | 175    | 101   | 146   | 487   |
| 0  | 352 | 96     | 96    | 187   | 99    | 0  | 362 | 153    | 146   | 460   | 650   | 0  | 804 | 144    | 122   | 247   | 487   |
| 0  | 353 | 102    | 102   | 187   | 99    | 0  | 363 | 254    | 142   | 257   | 111   | 0  | 901 | 276    | 173   | 485   | 487   |
| 0  | 354 | 99     | 99    | 187   | 99    | 0  | 364 | 265    | 169   | 198   | 967   | 0  | 902 | 425    | 178   | 993   | 487   |
| 0  | 355 | 99     | 99    | 187   | 99    | 0  | 365 | 240    | 132   | 225   | 725   | 0  | 903 | 417    | 175   | 046   | 487   |
| 0  | 356 | 100    | 100   | 187   | 99    | 0  | 366 | 186    | 136   | 143   | 775   | 0  | 904 | 438    | 168   | 178   | 487   |
| 0  | 357 | 96     | 96    | 187   | 99    | 0  | 367 | 160    | 124   | 414   | 549   | 0  | 905 | 435    | 175   | 134   | 487   |
| 0  | 358 | 118    | 118   | 187   | 99    | 0  | 368 | 196    | 139   | 274   | 756   | 0  | 906 | 396    | 167   | 207   | 487   |
| 0  | 359 | 101    | 101   | 187   | 99    | 0  | 369 | 214    | 135   | 223   | 918   | 0  | 907 | 113    | 144   | 361   | 487   |
| 0  | 360 | 99     | 99    | 187   | 99    | 0  | 370 | 186    | 130   | 223   | 635   | 0  | 908 | 231    | 153   | 168   | 487   |
| 0  | 361 | 99     | 99    | 187   | 99    | 0  | 371 | 166    | 123   | 253   | 647   | 0  | 909 | 270    | 142   | 168   | 487   |
| 0  | 362 | 100    | 100   | 187   | 99    | 0  | 372 | 165    | 129   | 351   | 530   | 0  | 910 | 260    | 142   | 227   | 487   |
| 0  | 363 | 95     | 95    | 187   | 99    | 0  | 373 | 470    | 130   | 284   | 593   | 0  | 911 | 276    | 131   | 103   | 487   |
| 0  | 364 | 108    | 108   | 187   | 99    | 0  | 374 | 207    | 132   | 182   | 696   | 0  | 912 | 310    | 175   | 322   | 487   |
| 0  | 365 | 106    | 106   | 187   | 99    | 0  | 375 | 182    | 118   | 171   | 671   | 0  | 913 | 353    | 195   | 236   | 487   |
| 0  | 366 | 98     | 98    | 187   | 99    | 0  | 376 | 144    | 113   | 257   | 491   | 0  | 914 | 410    | 152   | 145   | 487   |
| 0  | 367 | 107    | 107   | 187   | 99    | 0  | 377 | 119    | 122   | 411   | 576   | 0  | 915 | 212    | 164   | 293   | 487   |
| 0  | 368 | 114    | 114   | 187   | 99    | 0  | 378 | 158    | 128   | 321   | 592   | 0  | 916 | 937    | 131   | 384   | 487   |
| 0  | 369 | 99     | 99    | 187   | 99    | 0  | 379 | 185    | 121   | 260   | 710   | 0  | 917 | 207    | 150   | 362   | 487   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CP RMS | CP MAX | CP MIN | WD | TAP | CPMEAN | CP RMS | CP MAX | CP MIN | WD | TAP | CPMEAN | CP RMS | CP MAX | CP MIN |
|----|-----|--------|--------|--------|--------|----|-----|--------|--------|--------|--------|----|-----|--------|--------|--------|--------|
| 10 | 918 | 154    | 141    | 387    | 599    | 10 | 149 | 106    | 135    | 528    | 628    | 10 | 218 | 157    | 116    | 149    | 631    |
| 10 | 919 | 247    | 176    | 281    | 488    | 10 | 150 | 124    | 124    | 296    | 539    | 10 | 219 | 135    | 128    | 239    | 700    |
| 10 | 101 | 101    | 199    | 600    | 790    | 10 | 151 | 125    | 125    | 294    | 904    | 10 | 220 | 156    | 127    | 241    | 982    |
| 10 | 102 | 347    | 208    | 407    | 662    | 10 | 152 | 118    | 108    | 228    | 551    | 10 | 221 | 149    | 120    | 352    | 747    |
| 10 | 103 | 539    | 211    | 909    | 653    | 10 | 153 | 103    | 117    | 251    | 514    | 10 | 222 | 170    | 129    | 396    | 996    |
| 10 | 104 | 145    | 178    | 745    | 713    | 10 | 154 | 103    | 123    | 266    | 613    | 10 | 223 | 120    | 103    | 193    | 440    |
| 10 | 105 | 503    | 258    | 533    | 399    | 10 | 155 | 102    | 119    | 261    | 598    | 10 | 224 | 130    | 102    | 153    | 455    |
| 10 | 106 | 102    | 203    | 800    | 904    | 10 | 156 | 102    | 103    | 228    | 520    | 10 | 225 | 132    | 106    | 207    | 484    |
| 10 | 107 | 069    | 211    | 822    | 903    | 10 | 157 | 112    | 128    | 321    | 717    | 10 | 226 | 129    | 114    | 345    | 886    |
| 10 | 108 | 048    | 170    | 689    | 735    | 10 | 158 | 103    | 129    | 357    | 568    | 10 | 227 | 120    | 100    | 172    | 529    |
| 10 | 109 | 304    | 203    | 371    | 666    | 10 | 159 | 136    | 132    | 300    | 657    | 10 | 228 | 137    | 106    | 195    | 36     |
| 10 | 110 | 012    | 210    | 781    | 666    | 10 | 160 | 159    | 115    | 172    | 650    | 10 | 229 | 116    | 124    | 296    | 461    |
| 10 | 111 | 035    | 208    | 776    | 723    | 10 | 161 | 121    | 133    | 208    | 574    | 10 | 230 | 131    | 110    | 211    | 25     |
| 10 | 112 | 217    | 156    | 288    | 874    | 10 | 162 | 107    | 105    | 282    | 551    | 10 | 231 | 107    | 111    | 274    | 480    |
| 10 | 113 | 210    | 199    | 649    | 882    | 10 | 163 | 160    | 120    | 282    | 551    | 10 | 232 | 120    | 121    | 275    | 23     |
| 10 | 114 | 183    | 244    | 966    | 795    | 10 | 164 | 098    | 120    | 282    | 551    | 10 | 233 | 131    | 109    | 288    | 47     |
| 10 | 115 | 358    | 222    | 237    | 334    | 10 | 165 | 124    | 120    | 282    | 551    | 10 | 234 | 123    | 110    | 288    | 63     |
| 10 | 116 | 381    | 244    | 331    | 331    | 10 | 166 | 125    | 131    | 282    | 551    | 10 | 235 | 098    | 111    | 277    | 27     |
| 10 | 117 | 255    | 222    | 104    | 255    | 10 | 167 | 104    | 103    | 244    | 557    | 10 | 236 | 095    | 112    | 250    | 30     |
| 10 | 118 | 211    | 214    | 1084   | 410    | 10 | 168 | 128    | 103    | 244    | 496    | 10 | 237 | 095    | 125    | 252    | 84     |
| 10 | 119 | 211    | 214    | 1084   | 410    | 10 | 169 | 142    | 108    | 189    | 526    | 10 | 238 | 123    | 099    | 233    | 93     |
| 10 | 120 | 211    | 214    | 1084   | 410    | 10 | 170 | 135    | 109    | 188    | 483    | 10 | 239 | 104    | 102    | 250    | 72     |
| 10 | 121 | 047    | 198    | 766    | 722    | 10 | 171 | 133    | 114    | 191    | 466    | 10 | 240 | 064    | 104    | 249    | 9      |
| 10 | 122 | 228    | 247    | 034    | 840    | 10 | 172 | 130    | 096    | 133    | 402    | 10 | 241 | 072    | 134    | 240    | 54     |
| 10 | 123 | 112    | 186    | 564    | 840    | 10 | 173 | 117    | 105    | 291    | 463    | 10 | 242 | 093    | 111    | 269    | 52     |
| 10 | 124 | 093    | 154    | 487    | 635    | 10 | 174 | 109    | 104    | 321    | 469    | 10 | 243 | 125    | 100    | 187    | 6      |
| 10 | 125 | 093    | 150    | 489    | 560    | 10 | 175 | 115    | 111    | 311    | 485    | 10 | 244 | 103    | 108    | 199    | 9      |
| 10 | 126 | 085    | 144    | 436    | 643    | 10 | 176 | 142    | 094    | 205    | 422    | 10 | 245 | 088    | 109    | 248    | 466    |
| 10 | 127 | 080    | 143    | 467    | 592    | 10 | 177 | 121    | 122    | 205    | 538    | 10 | 246 | 067    | 122    | 214    | 468    |
| 10 | 128 | 079    | 120    | 331    | 438    | 10 | 178 | 118    | 120    | 205    | 531    | 10 | 247 | 064    | 123    | 211    | 433    |
| 10 | 129 | 078    | 146    | 457    | 648    | 10 | 180 | 108    | 113    | 245    | 489    | 10 | 248 | 072    | 133    | 222    | 68     |
| 10 | 130 | 144    | 188    | 426    | 995    | 10 | 181 | 122    | 110    | 223    | 502    | 10 | 249 | 128    | 105    | 228    | 8      |
| 10 | 131 | 200    | 225    | 566    | 316    | 10 | 182 | 124    | 109    | 223    | 505    | 10 | 250 | 123    | 096    | 181    | 33     |
| 10 | 132 | 176    | 124    | 206    | 773    | 10 | 201 | 335    | 190    | 261    | 117    | 10 | 301 | 165    | 142    | 276    | 97     |
| 10 | 133 | 203    | 127    | 202    | 621    | 10 | 202 | 322    | 183    | 222    | 077    | 10 | 302 | 170    | 131    | 283    | 87     |
| 10 | 134 | 190    | 124    | 181    | 635    | 10 | 203 | 387    | 189    | 213    | 129    | 10 | 303 | 149    | 137    | 256    | 7      |
| 10 | 135 | 178    | 131    | 211    | 690    | 10 | 204 | 410    | 194    | 094    | 045    | 10 | 304 | 143    | 121    | 289    | 47     |
| 10 | 136 | 163    | 115    | 179    | 529    | 10 | 205 | 341    | 172    | 246    | 959    | 10 | 305 | 144    | 135    | 289    | 56     |
| 10 | 137 | 147    | 142    | 416    | 708    | 10 | 206 | 369    | 172    | 154    | 109    | 10 | 306 | 129    | 119    | 319    | 58     |
| 10 | 138 | 132    | 140    | 270    | 682    | 10 | 207 | 213    | 193    | 444    | 888    | 10 | 307 | 139    | 109    | 242    | 58     |
| 10 | 139 | 137    | 154    | 392    | 815    | 10 | 208 | 285    | 187    | 235    | 154    | 10 | 308 | 159    | 126    | 335    | 20     |
| 10 | 140 | 139    | 131    | 252    | 781    | 10 | 209 | 355    | 236    | 249    | 332    | 10 | 309 | 178    | 163    | 266    | 96     |
| 10 | 141 | 135    | 125    | 242    | 389    | 10 | 210 | 426    | 246    | 243    | 474    | 10 | 310 | 179    | 148    | 279    | 53     |
| 10 | 142 | 140    | 122    | 204    | 339    | 10 | 211 | 348    | 216    | 334    | 323    | 10 | 311 | 224    | 158    | 251    | 43     |
| 10 | 143 | 133    | 130    | 267    | 795    | 10 | 212 | 134    | 203    | 526    | 020    | 10 | 312 | 246    | 172    | 263    | 7      |
| 10 | 144 | 132    | 114    | 261    | 491    | 10 | 213 | 288    | 215    | 283    | 330    | 10 | 313 | 247    | 165    | 279    | 50     |
| 10 | 145 | 140    | 129    | 328    | 554    | 10 | 214 | 286    | 195    | 203    | 556    | 10 | 314 | 180    | 132    | 205    | 33     |
| 10 | 146 | 135    | 125    | 292    | 551    | 10 | 215 | 291    | 200    | 215    | 412    | 10 | 315 | 136    | 132    | 205    | 33     |
| 10 | 147 | 128    | 129    | 325    | 579    | 10 | 216 | 261    | 206    | 499    | 660    | 10 | 316 | 130    | 118    | 225    | 9      |
| 10 | 148 | 128    | 117    | 312    | 535    | 10 | 217 | 204    | 185    | 367    | 660    | 10 | 317 | 134    | 111    | 225    | 9      |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|
| 10 | 318 | 136    | 126   | 133   | 135   | 10 | 434 | 133    | 117   | 248   | 117   | 10 | 434 | 133    | 117   | 248   | 117   |
| 10 | 319 | 140    | 140   | 141   | 141   | 10 | 435 | 128    | 110   | 234   | 110   | 10 | 435 | 128    | 110   | 234   | 110   |
| 10 | 320 | 141    | 141   | 141   | 141   | 10 | 436 | 131    | 115   | 281   | 115   | 10 | 436 | 131    | 115   | 281   | 115   |
| 10 | 321 | 153    | 153   | 153   | 153   | 10 | 437 | 107    | 103   | 231   | 103   | 10 | 437 | 107    | 103   | 231   | 103   |
| 10 | 322 | 184    | 184   | 184   | 184   | 10 | 438 | 103    | 100   | 219   | 100   | 10 | 438 | 103    | 100   | 219   | 100   |
| 10 | 323 | 167    | 143   | 167   | 143   | 10 | 439 | 105    | 101   | 296   | 101   | 10 | 439 | 105    | 101   | 296   | 101   |
| 10 | 324 | 139    | 139   | 139   | 139   | 10 | 440 | 108    | 109   | 251   | 109   | 10 | 440 | 108    | 109   | 251   | 109   |
| 10 | 325 | 134    | 134   | 134   | 134   | 10 | 441 | 150    | 104   | 242   | 104   | 10 | 441 | 150    | 104   | 242   | 104   |
| 10 | 326 | 157    | 115   | 157   | 115   | 10 | 442 | 134    | 100   | 206   | 100   | 10 | 442 | 134    | 100   | 206   | 100   |
| 10 | 327 | 148    | 114   | 148   | 114   | 10 | 443 | 267    | 083   | 540   | 083   | 10 | 443 | 267    | 083   | 540   | 083   |
| 10 | 328 | 181    | 138   | 181   | 138   | 10 | 444 | 143    | 102   | 514   | 102   | 10 | 444 | 143    | 102   | 514   | 102   |
| 10 | 329 | 189    | 142   | 189   | 142   | 10 | 445 | 093    | 133   | 572   | 133   | 10 | 445 | 093    | 133   | 572   | 133   |
| 10 | 330 | 181    | 177   | 181   | 177   | 10 | 446 | 120    | 092   | 395   | 092   | 10 | 446 | 120    | 092   | 395   | 092   |
| 10 | 331 | 181    | 177   | 181   | 177   | 10 | 447 | 108    | 084   | 401   | 084   | 10 | 447 | 108    | 084   | 401   | 084   |
| 10 | 332 | 181    | 177   | 181   | 177   | 10 | 448 | 144    | 091   | 487   | 091   | 10 | 448 | 144    | 091   | 487   | 091   |
| 10 | 333 | 181    | 177   | 181   | 177   | 10 | 449 | 139    | 098   | 452   | 098   | 10 | 449 | 139    | 098   | 452   | 098   |
| 10 | 334 | 181    | 177   | 181   | 177   | 10 | 450 | 054    | 106   | 407   | 106   | 10 | 450 | 054    | 106   | 407   | 106   |
| 10 | 335 | 181    | 177   | 181   | 177   | 10 | 701 | 132    | 102   | 194   | 102   | 10 | 701 | 132    | 102   | 194   | 102   |
| 10 | 336 | 181    | 177   | 181   | 177   | 10 | 702 | 147    | 105   | 245   | 105   | 10 | 702 | 147    | 105   | 245   | 105   |
| 10 | 337 | 181    | 177   | 181   | 177   | 10 | 703 | 144    | 106   | 251   | 106   | 10 | 703 | 144    | 106   | 251   | 106   |
| 10 | 338 | 181    | 177   | 181   | 177   | 10 | 705 | 147    | 096   | 191   | 096   | 10 | 705 | 147    | 096   | 191   | 096   |
| 10 | 339 | 181    | 177   | 181   | 177   | 10 | 706 | 130    | 125   | 317   | 125   | 10 | 706 | 130    | 125   | 317   | 125   |
| 10 | 340 | 181    | 177   | 181   | 177   | 10 | 707 | 125    | 129   | 276   | 129   | 10 | 707 | 125    | 129   | 276   | 129   |
| 10 | 341 | 181    | 177   | 181   | 177   | 10 | 708 | 181    | 119   | 285   | 119   | 10 | 708 | 181    | 119   | 285   | 119   |
| 10 | 342 | 181    | 177   | 181   | 177   | 10 | 710 | 141    | 130   | 308   | 130   | 10 | 710 | 141    | 130   | 308   | 130   |
| 10 | 343 | 181    | 177   | 181   | 177   | 10 | 711 | 123    | 115   | 322   | 115   | 10 | 711 | 123    | 115   | 322   | 115   |
| 10 | 344 | 181    | 177   | 181   | 177   | 10 | 712 | 107    | 124   | 294   | 124   | 10 | 712 | 107    | 124   | 294   | 124   |
| 10 | 345 | 181    | 177   | 181   | 177   | 10 | 713 | 101    | 118   | 370   | 118   | 10 | 713 | 101    | 118   | 370   | 118   |
| 10 | 346 | 181    | 177   | 181   | 177   | 10 | 714 | 093    | 123   | 338   | 123   | 10 | 714 | 093    | 123   | 338   | 123   |
| 10 | 347 | 181    | 177   | 181   | 177   | 10 | 716 | 110    | 110   | 258   | 110   | 10 | 716 | 110    | 110   | 258   | 110   |
| 10 | 348 | 181    | 177   | 181   | 177   | 10 | 717 | 119    | 103   | 226   | 103   | 10 | 717 | 119    | 103   | 226   | 103   |
| 10 | 349 | 181    | 177   | 181   | 177   | 10 | 801 | 128    | 096   | 204   | 096   | 10 | 801 | 128    | 096   | 204   | 096   |
| 10 | 350 | 181    | 177   | 181   | 177   | 10 | 802 | 118    | 105   | 322   | 105   | 10 | 802 | 118    | 105   | 322   | 105   |
| 10 | 351 | 181    | 177   | 181   | 177   | 10 | 803 | 136    | 085   | 132   | 085   | 10 | 803 | 136    | 085   | 132   | 085   |
| 10 | 352 | 181    | 177   | 181   | 177   | 10 | 804 | 105    | 114   | 281   | 114   | 10 | 804 | 105    | 114   | 281   | 114   |
| 10 | 353 | 181    | 177   | 181   | 177   | 10 | 901 | 266    | 172   | 233   | 172   | 10 | 901 | 266    | 172   | 233   | 172   |
| 10 | 354 | 181    | 177   | 181   | 177   | 10 | 902 | 371    | 188   | 219   | 188   | 10 | 902 | 371    | 188   | 219   | 188   |
| 10 | 355 | 181    | 177   | 181   | 177   | 10 | 903 | 418    | 182   | 111   | 182   | 10 | 903 | 418    | 182   | 111   | 182   |
| 10 | 356 | 181    | 177   | 181   | 177   | 10 | 904 | 522    | 209   | 174   | 209   | 10 | 904 | 522    | 209   | 174   | 209   |
| 10 | 357 | 181    | 177   | 181   | 177   | 10 | 905 | 532    | 219   | 188   | 219   | 10 | 905 | 532    | 219   | 188   | 219   |
| 10 | 358 | 181    | 177   | 181   | 177   | 10 | 906 | 318    | 185   | 345   | 185   | 10 | 906 | 318    | 185   | 345   | 185   |
| 10 | 359 | 181    | 177   | 181   | 177   | 10 | 907 | 198    | 157   | 366   | 157   | 10 | 907 | 198    | 157   | 366   | 157   |
| 10 | 360 | 181    | 177   | 181   | 177   | 10 | 908 | 244    | 181   | 258   | 181   | 10 | 908 | 244    | 181   | 258   | 181   |
| 10 | 361 | 181    | 177   | 181   | 177   | 10 | 909 | 235    | 151   | 184   | 151   | 10 | 909 | 235    | 151   | 184   | 151   |
| 10 | 362 | 181    | 177   | 181   | 177   | 10 | 910 | 236    | 137   | 238   | 137   | 10 | 910 | 236    | 137   | 238   | 137   |
| 10 | 363 | 181    | 177   | 181   | 177   | 10 | 911 | 271    | 137   | 162   | 137   | 10 | 911 | 271    | 137   | 162   | 137   |
| 10 | 364 | 181    | 177   | 181   | 177   | 10 | 912 | 322    | 177   | 389   | 177   | 10 | 912 | 322    | 177   | 389   | 177   |
| 10 | 365 | 181    | 177   | 181   | 177   | 10 | 913 | 400    | 204   | 378   | 204   | 10 | 913 | 400    | 204   | 378   | 204   |
| 10 | 366 | 181    | 177   | 181   | 177   | 10 | 914 | 418    | 163   | 078   | 163   | 10 | 914 | 418    | 163   | 078   | 163   |
| 10 | 367 | 181    | 177   | 181   | 177   | 10 | 915 | 218    | 162   | 261   | 162   | 10 | 915 | 218    | 162   | 261   | 162   |

APPENDIX A -- PRESSURE DATA. CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|--------|----|-----|--------|-------|-------|--------|
| 10 | 916 | 132    | 133   | 332   | 545   | 20 | 216 | 244    | 197   | 420   | -1.063 | 20 | 216 | 244    | 197   | 420   | -1.063 |
| 10 | 917 | 184    | 133   | 333   | 895   | 20 | 217 | 137    | 193   | 552   | -1.034 | 20 | 217 | 137    | 193   | 552   | -1.034 |
| 10 | 918 | 142    | 133   | 333   | 895   | 20 | 218 | 198    | 146   | 216   | -1.874 | 20 | 218 | 198    | 146   | 216   | -1.874 |
| 10 | 919 | 237    | 133   | 333   | -1    | 20 | 219 | 203    | 151   | 231   | -1.115 | 20 | 219 | 203    | 151   | 231   | -1.115 |
| 20 | 101 | 68     | 199   | 306   | 996   | 20 | 220 | 150    | 140   | 326   | -1.835 | 20 | 220 | 150    | 140   | 326   | -1.835 |
| 20 | 102 | 39     | 199   | 331   | 996   | 20 | 221 | 121    | 154   | 440   | -1.731 | 20 | 221 | 121    | 154   | 440   | -1.731 |
| 20 | 103 | 66     | 199   | 866   | 666   | 20 | 222 | 146    | 142   | 496   | -1.613 | 20 | 222 | 146    | 142   | 496   | -1.613 |
| 20 | 104 | 66     | 199   | 316   | 996   | 20 | 223 | 114    | 117   | 317   | -1.612 | 20 | 223 | 114    | 117   | 317   | -1.612 |
| 20 | 105 | 54     | 222   | 421   | 302   | 20 | 224 | 96     | 122   | 263   | -1.586 | 20 | 224 | 96     | 122   | 263   | -1.586 |
| 20 | 106 | 16     | 182   | 693   | 931   | 20 | 225 | 105    | 111   | 328   | -1.456 | 20 | 225 | 105    | 111   | 328   | -1.456 |
| 20 | 107 | 12     | 193   | 855   | 754   | 20 | 226 | 120    | 108   | 228   | -1.499 | 20 | 226 | 120    | 108   | 228   | -1.499 |
| 20 | 108 | 11     | 193   | 855   | 684   | 20 | 227 | 109    | 109   | 298   | -1.567 | 20 | 227 | 109    | 109   | 298   | -1.567 |
| 20 | 109 | 35     | 202   | 405   | 309   | 20 | 228 | 106    | 106   | 266   | -1.455 | 20 | 228 | 106    | 106   | 266   | -1.455 |
| 20 | 110 | 60     | 202   | 600   | 600   | 20 | 229 | 135    | 111   | 223   | -1.522 | 20 | 229 | 135    | 111   | 223   | -1.522 |
| 20 | 111 | 12     | 193   | 600   | 333   | 20 | 230 | 118    | 112   | 242   | -1.488 | 20 | 230 | 118    | 112   | 242   | -1.488 |
| 20 | 111 | 12     | 193   | 600   | 333   | 20 | 231 | 88     | 119   | 321   | -1.460 | 20 | 231 | 88     | 119   | 321   | -1.460 |
| 20 | 111 | 28     | 202   | 421   | 333   | 20 | 232 | 89     | 104   | 311   | -1.390 | 20 | 232 | 89     | 104   | 311   | -1.390 |
| 20 | 114 | 29     | 202   | 421   | 333   | 20 | 233 | 89     | 104   | 311   | -1.390 | 20 | 233 | 89     | 104   | 311   | -1.390 |
| 20 | 114 | 29     | 202   | 421   | 333   | 20 | 234 | 89     | 104   | 311   | -1.390 | 20 | 234 | 89     | 104   | 311   | -1.390 |
| 20 | 115 | 4      | 202   | 421   | 333   | 20 | 235 | 89     | 104   | 311   | -1.390 | 20 | 235 | 89     | 104   | 311   | -1.390 |
| 20 | 116 | 4      | 202   | 421   | 333   | 20 | 236 | 89     | 104   | 311   | -1.390 | 20 | 236 | 89     | 104   | 311   | -1.390 |
| 20 | 117 | 4      | 202   | 421   | 333   | 20 | 237 | 89     | 104   | 311   | -1.390 | 20 | 237 | 89     | 104   | 311   | -1.390 |
| 20 | 118 | 4      | 202   | 421   | 333   | 20 | 238 | 89     | 104   | 311   | -1.390 | 20 | 238 | 89     | 104   | 311   | -1.390 |
| 20 | 119 | 4      | 202   | 421   | 333   | 20 | 239 | 89     | 104   | 311   | -1.390 | 20 | 239 | 89     | 104   | 311   | -1.390 |
| 20 | 120 | 4      | 202   | 421   | 333   | 20 | 240 | 89     | 104   | 311   | -1.390 | 20 | 240 | 89     | 104   | 311   | -1.390 |
| 20 | 121 | 16     | 182   | 693   | 931   | 20 | 241 | 89     | 104   | 311   | -1.390 | 20 | 241 | 89     | 104   | 311   | -1.390 |
| 20 | 122 | 36     | 182   | 693   | 931   | 20 | 242 | 89     | 104   | 311   | -1.390 | 20 | 242 | 89     | 104   | 311   | -1.390 |
| 20 | 123 | 36     | 182   | 693   | 931   | 20 | 243 | 89     | 104   | 311   | -1.390 | 20 | 243 | 89     | 104   | 311   | -1.390 |
| 20 | 124 | 64     | 182   | 693   | 931   | 20 | 244 | 89     | 104   | 311   | -1.390 | 20 | 244 | 89     | 104   | 311   | -1.390 |
| 20 | 125 | 64     | 182   | 693   | 931   | 20 | 245 | 89     | 104   | 311   | -1.390 | 20 | 245 | 89     | 104   | 311   | -1.390 |
| 20 | 126 | 64     | 182   | 693   | 931   | 20 | 246 | 89     | 104   | 311   | -1.390 | 20 | 246 | 89     | 104   | 311   | -1.390 |
| 20 | 127 | 64     | 182   | 693   | 931   | 20 | 247 | 89     | 104   | 311   | -1.390 | 20 | 247 | 89     | 104   | 311   | -1.390 |
| 20 | 128 | 64     | 182   | 693   | 931   | 20 | 248 | 89     | 104   | 311   | -1.390 | 20 | 248 | 89     | 104   | 311   | -1.390 |
| 20 | 129 | 64     | 182   | 693   | 931   | 20 | 249 | 89     | 104   | 311   | -1.390 | 20 | 249 | 89     | 104   | 311   | -1.390 |
| 20 | 130 | 64     | 182   | 693   | 931   | 20 | 250 | 89     | 104   | 311   | -1.390 | 20 | 250 | 89     | 104   | 311   | -1.390 |
| 20 | 131 | 64     | 182   | 693   | 931   | 20 | 251 | 89     | 104   | 311   | -1.390 | 20 | 251 | 89     | 104   | 311   | -1.390 |
| 20 | 132 | 64     | 182   | 693   | 931   | 20 | 252 | 89     | 104   | 311   | -1.390 | 20 | 252 | 89     | 104   | 311   | -1.390 |
| 20 | 133 | 64     | 182   | 693   | 931   | 20 | 253 | 89     | 104   | 311   | -1.390 | 20 | 253 | 89     | 104   | 311   | -1.390 |
| 20 | 134 | 64     | 182   | 693   | 931   | 20 | 254 | 89     | 104   | 311   | -1.390 | 20 | 254 | 89     | 104   | 311   | -1.390 |
| 20 | 135 | 64     | 182   | 693   | 931   | 20 | 255 | 89     | 104   | 311   | -1.390 | 20 | 255 | 89     | 104   | 311   | -1.390 |
| 20 | 136 | 64     | 182   | 693   | 931   | 20 | 256 | 89     | 104   | 311   | -1.390 | 20 | 256 | 89     | 104   | 311   | -1.390 |
| 20 | 137 | 64     | 182   | 693   | 931   | 20 | 257 | 89     | 104   | 311   | -1.390 | 20 | 257 | 89     | 104   | 311   | -1.390 |
| 20 | 138 | 64     | 182   | 693   | 931   | 20 | 258 | 89     | 104   | 311   | -1.390 | 20 | 258 | 89     | 104   | 311   | -1.390 |
| 20 | 139 | 64     | 182   | 693   | 931   | 20 | 259 | 89     | 104   | 311   | -1.390 | 20 | 259 | 89     | 104   | 311   | -1.390 |
| 20 | 140 | 64     | 182   | 693   | 931   | 20 | 260 | 89     | 104   | 311   | -1.390 | 20 | 260 | 89     | 104   | 311   | -1.390 |
| 20 | 141 | 64     | 182   | 693   | 931   | 20 | 261 | 89     | 104   | 311   | -1.390 | 20 | 261 | 89     | 104   | 311   | -1.390 |
| 20 | 142 | 64     | 182   | 693   | 931   | 20 | 262 | 89     | 104   | 311   | -1.390 | 20 | 262 | 89     | 104   | 311   | -1.390 |
| 20 | 143 | 64     | 182   | 693   | 931   | 20 | 263 | 89     | 104   | 311   | -1.390 | 20 | 263 | 89     | 104   | 311   | -1.390 |
| 20 | 144 | 64     | 182   | 693   | 931   | 20 | 264 | 89     | 104   | 311   | -1.390 | 20 | 264 | 89     | 104   | 311   | -1.390 |
| 20 | 145 | 64     | 182   | 693   | 931   | 20 | 265 | 89     | 104   | 311   | -1.390 | 20 | 265 | 89     | 104   | 311   | -1.390 |
| 20 | 146 | 64     | 182   | 693   | 931   | 20 | 266 | 89     | 104   | 311   | -1.390 | 20 | 266 | 89     | 104   | 311   | -1.390 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |     |
|-----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|
| 200 | 316 | 172    | 134   | 356   | 117   | 20 | 366 | 077    | 110   | 264   | 411   | 20  | 432 | 091    | 110   | 237   | 490   |     |
| 200 | 317 | 148    | 129   | 267   | 566   | 20 | 367 | 095    | 101   | 299   | 391   | 20  | 433 | 117    | 114   | 271   | 551   |     |
| 200 | 318 | 158    | 131   | 182   | 320   | 20 | 368 | 121    | 104   | 195   | 445   | 20  | 434 | 109    | 117   | 254   | 525   |     |
| 200 | 319 | 137    | 128   | 312   | 568   | 20 | 369 | 097    | 092   | 194   | 407   | 20  | 435 | 107    | 111   | 270   | 450   |     |
| 200 | 320 | 143    | 141   | 303   | 770   | 20 | 370 | 084    | 097   | 240   | 386   | 20  | 436 | 103    | 094   | 195   | 437   |     |
| 200 | 321 | 171    | 140   | 273   | 749   | 20 | 371 | 100    | 098   | 244   | 419   | 20  | 437 | 074    | 115   | 425   | 525   |     |
| 200 | 322 | 210    | 166   | 286   | 903   | 20 | 372 | 089    | 101   | 257   | 365   | 20  | 438 | 109    | 109   | 298   | 512   |     |
| 200 | 323 | 183    | 147   | 226   | 875   | 20 | 373 | 085    | 099   | 260   | 424   | 20  | 439 | 080    | 116   | 329   | 460   |     |
| 200 | 324 | 156    | 130   | 214   | 787   | 20 | 374 | 085    | 086   | 223   | 365   | 20  | 440 | 099    | 118   | 332   | 504   |     |
| 200 | 325 | 170    | 120   | 260   | 769   | 20 | 375 | 061    | 108   | 315   | 409   | 20  | 441 | 097    | 107   | 268   | 440   |     |
| 200 | 326 | 151    | 119   | 249   | 610   | 20 | 376 | 101    | 096   | 213   | 404   | 20  | 442 | 099    | 113   | 266   | 535   |     |
| 200 | 327 | 151    | 131   | 269   | 626   | 20 | 377 | 094    | 111   | 247   | 450   | 20  | 443 | 273    | 098   | 651   | 077   |     |
| 200 | 328 | 171    | 137   | 242   | 726   | 20 | 378 | 091    | 099   | 244   | 369   | 20  | 444 | 158    | 095   | 521   | 152   |     |
| 200 | 329 | 173    | 162   | 243   | 912   | 20 | 379 | 091    | 086   | 194   | 399   | 20  | 445 | 133    | 124   | 570   | 275   |     |
| 200 | 330 | 250    | 178   | 220   | 121   | 20 | 380 | 073    | 110   | 315   | 407   | 20  | 446 | 142    | 107   | 485   | 162   |     |
| 200 | 331 | 259    | 193   | 249   | 185   | 20 | 381 | 072    | 103   | 267   | 409   | 20  | 447 | 140    | 103   | 552   | 150   |     |
| 200 | 332 | 119    | 109   | 229   | 462   | 20 | 382 | 074    | 093   | 236   | 366   | 20  | 448 | 135    | 095   | 448   | 192   |     |
| 200 | 333 | 099    | 102   | 234   | 452   | 20 | 383 | 086    | 100   | 251   | 404   | 20  | 449 | 099    | 099   | 444   | 194   |     |
| 200 | 334 | 094    | 113   | 305   | 425   | 20 | 384 | 081    | 109   | 379   | 382   | 20  | 450 | 050    | 103   | 429   | 688   |     |
| 200 | 335 | 099    | 116   | 307   | 531   | 20 | 401 | 071    | 202   | 379   | 1     | 701 | 1   | 104    | 104   | 444   | 255   |     |
| 200 | 336 | 121    | 102   | 223   | 428   | 20 | 402 | 389    | 186   | 147   | 062   | 702 | 099 | 111    | 111   | 444   | 400   |     |
| 200 | 337 | 112    | 117   | 246   | 620   | 20 | 403 | 356    | 189   | 106   | 079   | 703 | 091 | 113    | 113   | 475   | 399   |     |
| 200 | 338 | 141    | 143   | 282   | 885   | 20 | 404 | 317    | 188   | 268   | 208   | 705 | 101 | 103    | 103   | 419   | 588   |     |
| 200 | 339 | 154    | 137   | 248   | 853   | 20 | 405 | 261    | 169   | 191   | 037   | 706 | 101 | 103    | 103   | 458   | 399   |     |
| 200 | 340 | 173    | 140   | 241   | 730   | 20 | 406 | 254    | 173   | 226   | 122   | 707 | 089 | 103    | 103   | 455   | 588   |     |
| 200 | 341 | 088    | 105   | 292   | 358   | 20 | 407 | 226    | 166   | 237   | 917   | 708 | 133 | 128    | 128   | 587   | 399   |     |
| 200 | 342 | 107    | 102   | 188   | 444   | 20 | 408 | 450    | 263   | 314   | 378   | 710 | 107 | 107    | 107   | 480   | 399   |     |
| 200 | 343 | 083    | 095   | 178   | 442   | 20 | 409 | 426    | 218   | 236   | 288   | 711 | 099 | 091    | 091   | 399   | 399   |     |
| 200 | 344 | 101    | 103   | 218   | 425   | 20 | 410 | 332    | 207   | 236   | 392   | 712 | 114 | 118    | 118   | 258   | 481   |     |
| 200 | 345 | 101    | 096   | 225   | 504   | 20 | 411 | 254    | 184   | 224   | 162   | 713 | 108 | 109    | 109   | 233   | 431   |     |
| 200 | 346 | 100    | 098   | 230   | 405   | 20 | 412 | 231    | 163   | 352   | 45    | 714 | 102 | 116    | 116   | 234   | 459   |     |
| 200 | 347 | 100    | 115   | 175   | 557   | 20 | 413 | 306    | 218   | 338   | 341   | 716 | 117 | 117    | 117   | 333   | 399   |     |
| 200 | 348 | 110    | 106   | 231   | 504   | 20 | 414 | 286    | 205   | 338   | 341   | 717 | 087 | 123    | 123   | 333   | 399   |     |
| 200 | 349 | 107    | 098   | 223   | 431   | 20 | 415 | 263    | 202   | 338   | 269   | 801 | 101 | 121    | 121   | 333   | 444   |     |
| 200 | 350 | 084    | 096   | 280   | 422   | 20 | 416 | 275    | 178   | 256   | 399   | 802 | 090 | 135    | 135   | 444   | 444   |     |
| 200 | 351 | 104    | 096   | 244   | 399   | 20 | 417 | 212    | 152   | 232   | 034   | 803 | 112 | 110    | 110   | 525   | 399   |     |
| 200 | 352 | 083    | 094   | 236   | 388   | 20 | 418 | 155    | 133   | 211   | 53    | 804 | 102 | 124    | 124   | 666   | 478   |     |
| 200 | 353 | 082    | 110   | 270   | 385   | 20 | 419 | 167    | 124   | 204   | 741   | 901 | 312 | 184    | 184   | 622   | 399   |     |
| 200 | 354 | 109    | 092   | 234   | 395   | 20 | 420 | 162    | 129   | 365   | 026   | 902 | 388 | 204    | 204   | 193   | 193   |     |
| 200 | 355 | 098    | 097   | 215   | 431   | 20 | 421 | 129    | 125   | 251   | 731   | 903 | 463 | 195    | 116   | 116   | 165   | 399 |
| 200 | 356 | 084    | 094   | 192   | 408   | 20 | 422 | 151    | 127   | 289   | 852   | 904 | 495 | 175    | 044   | 044   | 266   | 266 |
| 200 | 357 | 100    | 087   | 155   | 460   | 20 | 423 | 141    | 112   | 232   | 586   | 905 | 526 | 181    | 110   | 110   | 288   | 288 |
| 200 | 358 | 119    | 096   | 246   | 430   | 20 | 424 | 124    | 124   | 225   | 634   | 906 | 387 | 204    | 317   | 317   | 301   | 301 |
| 200 | 359 | 081    | 106   | 284   | 407   | 20 | 425 | 104    | 111   | 267   | 500   | 907 | 207 | 160    | 335   | 335   | 399   | 399 |
| 200 | 360 | 104    | 099   | 230   | 407   | 20 | 426 | 116    | 118   | 296   | 617   | 908 | 311 | 180    | 228   | 228   | 399   | 399 |
| 200 | 361 | 109    | 095   | 228   | 385   | 20 | 427 | 092    | 113   | 280   | 526   | 909 | 280 | 143    | 143   | 333   | 333   | 399 |
| 200 | 362 | 094    | 104   | 335   | 428   | 20 | 428 | 089    | 119   | 271   | 526   | 910 | 280 | 146    | 146   | 333   | 333   | 399 |
| 200 | 363 | 083    | 103   | 238   | 465   | 20 | 429 | 104    | 112   | 341   | 441   | 911 | 341 | 125    | 125   | 333   | 333   | 399 |
| 200 | 364 | 098    | 104   | 257   | 510   | 20 | 430 | 108    | 106   | 251   | 503   | 912 | 341 | 171    | 171   | 333   | 333   | 399 |
| 200 | 365 | 082    | 104   | 228   | 399   | 20 | 431 | 099    | 101   | 239   | 421   | 913 | 421 | 189    | 189   | 333   | 333   | 399 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| MD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | MD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | MD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 300 | 914 | 444    | 174   | 922   | 100   | 300 | 145 | 119    | 131   | 306   | 559   | 300 | 214 | 375    | 200   | 193   | 172   |
| 300 | 915 | 218    | 158   | 306   | 891   | 300 | 146 | 132    | 126   | 263   | 569   | 300 | 215 | 336    | 195   | 237   | 999   |
| 300 | 916 | 154    | 124   | 277   | 577   | 300 | 147 | 159    | 137   | 270   | 646   | 300 | 216 | 995    | 208   | 518   | 200   |
| 300 | 917 | 167    | 148   | 286   | 714   | 300 | 148 | 227    | 151   | 165   | 842   | 300 | 217 | 148    | 192   | 728   | 639   |
| 300 | 918 | 074    | 138   | 297   | 922   | 300 | 149 | 234    | 186   | 302   | 968   | 300 | 218 | 342    | 206   | 248   | 266   |
| 300 | 919 | 167    | 166   | 306   | 761   | 300 | 150 | 339    | 125   | 339   | 593   | 300 | 219 | 380    | 199   | 175   | 244   |
| 300 | 101 | 129    | 192   | 444   | 860   | 300 | 151 | 063    | 123   | 339   | 529   | 300 | 220 | 228    | 171   | 403   | 909   |
| 300 | 102 | 494    | 186   | 201   | 855   | 300 | 152 | 069    | 102   | 339   | 518   | 300 | 221 | 028    | 168   | 557   | 659   |
| 300 | 103 | 006    | 173   | 739   | 822   | 300 | 153 | 078    | 118   | 339   | 518   | 300 | 222 | 066    | 182   | 745   | 532   |
| 300 | 104 | 332    | 155   | 215   | 851   | 300 | 154 | 080    | 120   | 339   | 496   | 300 | 223 | 258    | 165   | 261   | 106   |
| 300 | 105 | 895    | 201   | 001   | 550   | 300 | 155 | 087    | 114   | 339   | 98    | 300 | 224 | 188    | 144   | 313   | 779   |
| 300 | 106 | 298    | 173   | 350   | 913   | 300 | 156 | 103    | 096   | 190   | 493   | 300 | 225 | 117    | 142   | 478   | 663   |
| 300 | 107 | 320    | 180   | 389   | 961   | 300 | 157 | 130    | 125   | 276   | 533   | 300 | 226 | 047    | 132   | 412   | 498   |
| 300 | 108 | 265    | 149   | 238   | 655   | 300 | 158 | 125    | 129   | 276   | 551   | 300 | 227 | 021    | 132   | 560   | 452   |
| 300 | 109 | 345    | 207   | 087   | 217   | 300 | 159 | 062    | 118   | 418   | 418   | 300 | 228 | 116    | 113   | 291   | 468   |
| 300 | 110 | 164    | 168   | 437   | 774   | 300 | 160 | 109    | 099   | 227   | 432   | 300 | 229 | 116    | 118   | 312   | 603   |
| 300 | 111 | 279    | 168   | 357   | 786   | 300 | 161 | 097    | 115   | 285   | 577   | 300 | 230 | 068    | 114   | 316   | 433   |
| 300 | 112 | 412    | 149   | 008   | 946   | 300 | 162 | 084    | 110   | 255   | 648   | 300 | 231 | 045    | 111   | 539   | 451   |
| 300 | 113 | 300    | 177   | 169   | 017   | 300 | 163 | 079    | 114   | 279   | 699   | 300 | 232 | 031    | 107   | 328   | 389   |
| 300 | 114 | 430    | 198   | 159   | 59    | 300 | 164 | 078    | 081   | 189   | 321   | 300 | 233 | 093    | 112   | 319   | 496   |
| 300 | 115 | 204    | 204   | 198   | 614   | 300 | 165 | 086    | 130   | 470   | 700   | 300 | 234 | 127    | 104   | 221   | 490   |
| 300 | 116 | 480    | 168   | 007   | 214   | 300 | 166 | 069    | 124   | 441   | 511   | 300 | 235 | 064    | 117   | 290   | 538   |
| 300 | 117 | 424    | 177   | 995   | 152   | 300 | 167 | 085    | 130   | 471   | 327   | 300 | 236 | 004    | 113   | 227   | 436   |
| 300 | 118 | 376    | 177   | 991   | 175   | 300 | 168 | 087    | 105   | 345   | 385   | 300 | 237 | 018    | 133   | 368   | 451   |
| 300 | 119 | 305    | 180   | 946   | 241   | 300 | 169 | 067    | 106   | 219   | 438   | 300 | 238 | 073    | 99    | 210   | 390   |
| 300 | 120 | 139    | 148   | 653   | 348   | 300 | 170 | 059    | 106   | 333   | 421   | 300 | 239 | 073    | 106   | 288   | 390   |
| 300 | 121 | 264    | 183   | 355   | 004   | 300 | 171 | 056    | 111   | 269   | 460   | 300 | 240 | 031    | 106   | 385   | 396   |
| 300 | 122 | 559    | 250   | 130   | 629   | 300 | 172 | 062    | 096   | 199   | 390   | 300 | 241 | 022    | 133   | 414   | 389   |
| 300 | 123 | 257    | 206   | 105   | 494   | 300 | 173 | 079    | 118   | 382   | 446   | 300 | 242 | 034    | 107   | 374   | 374   |
| 300 | 124 | 259    | 166   | 901   | 211   | 300 | 174 | 061    | 116   | 465   | 396   | 300 | 243 | 074    | 117   | 365   | 372   |
| 300 | 125 | 240    | 187   | 860   | 371   | 300 | 175 | 059    | 125   | 606   | 448   | 300 | 244 | 080    | 104   | 266   | 493   |
| 300 | 126 | 208    | 184   | 878   | 438   | 300 | 176 | 085    | 114   | 323   | 387   | 300 | 245 | 052    | 100   | 287   | 354   |
| 300 | 127 | 164    | 183   | 848   | 399   | 300 | 177 | 066    | 117   | 362   | 436   | 300 | 246 | 020    | 119   | 366   | 372   |
| 300 | 128 | 087    | 149   | 610   | 663   | 300 | 178 | 062    | 115   | 349   | 433   | 300 | 247 | 014    | 123   | 510   | 430   |
| 300 | 129 | 049    | 170   | 539   | 155   | 300 | 180 | 059    | 100   | 349   | 421   | 300 | 248 | 004    | 114   | 404   | 386   |
| 300 | 130 | 357    | 233   | 291   | 194   | 300 | 181 | 072    | 101   | 247   | 458   | 300 | 249 | 085    | 114   | 347   | 489   |
| 300 | 131 | 328    | 300   | 303   | 344   | 300 | 182 | 073    | 102   | 339   | 483   | 300 | 250 | 072    | 100   | 351   | 424   |
| 300 | 132 | 044    | 192   | 659   | 464   | 300 | 201 | 293    | 162   | 399   | 950   | 300 | 301 | 262    | 150   | 269   | 924   |
| 300 | 133 | 025    | 145   | 589   | 573   | 300 | 202 | 331    | 150   | 131   | 861   | 300 | 302 | 237    | 154   | 271   | 003   |
| 300 | 134 | 051    | 136   | 309   | 301   | 300 | 203 | 364    | 147   | 072   | 958   | 300 | 303 | 234    | 142   | 187   | 726   |
| 300 | 135 | 067    | 137   | 431   | 340   | 300 | 204 | 464    | 161   | 141   | 954   | 300 | 304 | 194    | 135   | 217   | 737   |
| 300 | 136 | 083    | 118   | 360   | 309   | 300 | 205 | 373    | 158   | 390   | 856   | 300 | 305 | 217    | 142   | 266   | 778   |
| 300 | 137 | 100    | 146   | 515   | 365   | 300 | 206 | 512    | 173   | 663   | 147   | 300 | 306 | 198    | 149   | 261   | 872   |
| 300 | 138 | 151    | 157   | 459   | 716   | 300 | 207 | 189    | 187   | 527   | 826   | 300 | 307 | 197    | 139   | 264   | 782   |
| 300 | 139 | 297    | 406   | 229   | 252   | 300 | 208 | 260    | 166   | 241   | 269   | 300 | 308 | 209    | 182   | 289   | 337   |
| 300 | 140 | 354    | 226   | 226   | 291   | 300 | 209 | 308    | 175   | 336   | 920   | 300 | 309 | 237    | 166   | 272   | 113   |
| 300 | 141 | 044    | 147   | 326   | 488   | 300 | 210 | 376    | 204   | 255   | 328   | 300 | 310 | 231    | 181   | 290   | 069   |
| 300 | 142 | 083    | 131   | 376   | 516   | 300 | 211 | 139    | 193   | 324   | 654   | 300 | 311 | 234    | 174   | 337   | 268   |
| 300 | 143 | 088    | 135   | 394   | 668   | 300 | 212 | 203    | 195   | 332   | 418   | 300 | 312 | 254    | 182   | 340   | 212   |
| 300 | 144 | 088    | 116   | 287   | 32    | 300 | 213 | 334    | 180   | 50    | 131   | 300 | 313 | 227    | 168   | 349   | 31    |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|
| 3300 | 314 | 242    | 169   | 272   | -1    | 3300 | 364 | 952    | 95    | 3301  | 378   | 3300 | 430 | 107    | 117   | 328   | -1    |
| 3300 | 315 | 229    | 135   | 203   | -1    | 3300 | 365 | 969    | 107   | 3301  | 392   | 3300 | 431 | 993    | 109   | 262   | -1    |
| 3300 | 316 | 220    | 137   | 185   | -1    | 3300 | 366 | 963    | 97    | 3301  | 403   | 3300 | 432 | 986    | 113   | 251   | -1    |
| 3300 | 317 | 198    | 120   | 194   | -1    | 3300 | 367 | 101    | 107   | 3301  | 414   | 3300 | 433 | 974    | 113   | 331   | -1    |
| 3300 | 318 | 173    | 127   | 313   | -1    | 3300 | 368 | 991    | 104   | 3301  | 424   | 3300 | 434 | 964    | 116   | 313   | -1    |
| 3300 | 319 | 206    | 147   | 256   | -1    | 3300 | 369 | 986    | 96    | 3301  | 434   | 3300 | 435 | 984    | 96    | 197   | -1    |
| 3300 | 320 | 201    | 140   | 318   | -1    | 3300 | 370 | 971    | 100   | 3301  | 444   | 3300 | 436 | 980    | 100   | 260   | -1    |
| 3300 | 321 | 230    | 154   | 324   | -1    | 3300 | 371 | 964    | 97    | 3301  | 454   | 3300 | 437 | 963    | 105   | 299   | -1    |
| 3300 | 322 | 257    | 176   | 240   | -1    | 3300 | 372 | 950    | 98    | 3301  | 464   | 3300 | 438 | 970    | 995   | 273   | -1    |
| 3300 | 323 | 276    | 184   | 262   | -1    | 3300 | 373 | 962    | 98    | 3301  | 474   | 3300 | 439 | 940    | 114   | 352   | -1    |
| 3300 | 324 | 250    | 160   | 230   | -1    | 3300 | 374 | 965    | 98    | 3301  | 484   | 3300 | 440 | 949    | 105   | 280   | -1    |
| 3300 | 325 | 213    | 145   | 255   | -1    | 3300 | 375 | 951    | 99    | 3301  | 494   | 3300 | 441 | 986    | 109   | 312   | -1    |
| 3300 | 326 | 193    | 134   | 217   | -1    | 3300 | 376 | 984    | 95    | 3301  | 504   | 3300 | 442 | 972    | 992   | 198   | -1    |
| 3300 | 327 | 233    | 132   | 147   | -1    | 3300 | 377 | 973    | 96    | 3301  | 514   | 3300 | 443 | 926    | 995   | 699   | -1    |
| 3300 | 328 | 237    | 150   | 258   | -1    | 3300 | 378 | 989    | 98    | 3301  | 524   | 3300 | 444 | 933    | 100   | 552   | -1    |
| 3300 | 329 | 247    | 182   | 304   | -1    | 3300 | 379 | 964    | 96    | 3301  | 534   | 3300 | 445 | 933    | 130   | 650   | -1    |
| 3300 | 330 | 274    | 190   | 262   | -1    | 3300 | 380 | 958    | 98    | 3301  | 544   | 3300 | 446 | 933    | 991   | 454   | -1    |
| 3300 | 331 | 297    | 189   | 209   | -1    | 3300 | 381 | 966    | 94    | 3301  | 554   | 3300 | 447 | 933    | 999   | 480   | -1    |
| 3300 | 332 | 166    | 146   | 200   | -1    | 3300 | 382 | 969    | 99    | 3301  | 564   | 3300 | 448 | 962    | 986   | 430   | -1    |
| 3300 | 333 | 177    | 135   | 310   | -1    | 3300 | 383 | 949    | 90    | 3301  | 574   | 3300 | 449 | 962    | 990   | 538   | -1    |
| 3300 | 334 | 139    | 117   | 223   | -1    | 3300 | 384 | 955    | 95    | 3301  | 584   | 3300 | 450 | 936    | 103   | 412   | -1    |
| 3300 | 335 | 170    | 136   | 242   | -1    | 3300 | 385 | 961    | 96    | 3301  | 594   | 3300 | 701 | 978    | 994   | 203   | -1    |
| 3300 | 336 | 208    | 145   | 287   | -1    | 3300 | 386 | 954    | 96    | 3301  | 604   | 3300 | 702 | 960    | 112   | 464   | -1    |
| 3300 | 337 | 265    | 162   | 169   | -1    | 3300 | 387 | 930    | 93    | 3301  | 614   | 3300 | 703 | 940    | 112   | 531   | -1    |
| 3300 | 338 | 295    | 181   | 173   | -1    | 3300 | 388 | 935    | 99    | 3301  | 624   | 3300 | 704 | 977    | 103   | 342   | -1    |
| 3300 | 339 | 300    | 167   | 136   | -1    | 3300 | 389 | 928    | 99    | 3301  | 634   | 3300 | 705 | 977    | 117   | 370   | -1    |
| 3300 | 340 | 350    | 172   | 210   | -1    | 3300 | 390 | 928    | 99    | 3301  | 644   | 3300 | 706 | 938    | 117   | 490   | -1    |
| 3300 | 341 | 168    | 116   | 285   | -1    | 3300 | 391 | 971    | 99    | 3301  | 654   | 3300 | 707 | 907    | 120   | 447   | -1    |
| 3300 | 342 | 109    | 997   | 170   | -1    | 3300 | 392 | 975    | 99    | 3301  | 664   | 3300 | 708 | 975    | 137   | 490   | -1    |
| 3300 | 343 | 979    | 991   | 270   | -1    | 3300 | 393 | 993    | 99    | 3301  | 674   | 3300 | 709 | 941    | 132   | 501   | -1    |
| 3300 | 344 | 987    | 116   | 223   | -1    | 3300 | 394 | 993    | 99    | 3301  | 684   | 3300 | 710 | 940    | 110   | 459   | -1    |
| 3300 | 345 | 105    | 104   | 312   | -1    | 3300 | 395 | 966    | 96    | 3301  | 694   | 3300 | 711 | 970    | 117   | 477   | -1    |
| 3300 | 346 | 114    | 102   | 216   | -1    | 3300 | 396 | 961    | 99    | 3301  | 704   | 3300 | 712 | 970    | 117   | 494   | -1    |
| 3300 | 347 | 155    | 126   | 260   | -1    | 3300 | 397 | 961    | 99    | 3301  | 714   | 3300 | 713 | 953    | 107   | 386   | -1    |
| 3300 | 348 | 195    | 132   | 234   | -1    | 3300 | 398 | 944    | 99    | 3301  | 724   | 3300 | 714 | 960    | 115   | 422   | -1    |
| 3300 | 349 | 267    | 153   | 234   | -1    | 3300 | 399 | 935    | 99    | 3301  | 734   | 3300 | 715 | 965    | 107   | 404   | -1    |
| 3300 | 350 | 971    | 993   | 165   | -1    | 3300 | 400 | 935    | 99    | 3301  | 744   | 3300 | 716 | 965    | 101   | 405   | -1    |
| 3300 | 351 | 975    | 999   | 223   | -1    | 3300 | 401 | 935    | 99    | 3301  | 754   | 3300 | 717 | 956    | 125   | 353   | -1    |
| 3300 | 352 | 967    | 108   | 223   | -1    | 3300 | 402 | 943    | 99    | 3301  | 764   | 3300 | 801 | 970    | 123   | 290   | -1    |
| 3300 | 353 | 982    | 104   | 257   | -1    | 3300 | 403 | 933    | 99    | 3301  | 774   | 3300 | 802 | 953    | 138   | 489   | -1    |
| 3300 | 354 | 970    | 995   | 312   | -1    | 3300 | 404 | 933    | 99    | 3301  | 784   | 3300 | 803 | 973    | 113   | 248   | -1    |
| 3300 | 355 | 986    | 102   | 249   | -1    | 3300 | 405 | 933    | 99    | 3301  | 794   | 3300 | 804 | 979    | 993   | 225   | -1    |
| 3300 | 356 | 986    | 112   | 249   | -1    | 3300 | 406 | 933    | 99    | 3301  | 804   | 3300 | 901 | 932    | 155   | 946   | -1    |
| 3300 | 357 | 989    | 111   | 230   | -1    | 3300 | 407 | 933    | 99    | 3301  | 814   | 3300 | 902 | 936    | 173   | 947   | -1    |
| 3300 | 358 | 114    | 117   | 347   | -1    | 3300 | 408 | 933    | 99    | 3301  | 824   | 3300 | 903 | 936    | 156   | 933   | -1    |
| 3300 | 359 | 952    | 993   | 332   | -1    | 3300 | 409 | 933    | 99    | 3301  | 834   | 3300 | 904 | 936    | 179   | 916   | -1    |
| 3300 | 360 | 963    | 100   | 295   | -1    | 3300 | 410 | 933    | 99    | 3301  | 844   | 3300 | 905 | 936    | 179   | 916   | -1    |
| 3300 | 361 | 967    | 986   | 205   | -1    | 3300 | 411 | 933    | 99    | 3301  | 854   | 3300 | 906 | 936    | 188   | 924   | -1    |
| 3300 | 362 | 970    | 998   | 205   | -1    | 3300 | 412 | 933    | 99    | 3301  | 864   | 3300 | 907 | 936    | 225   | 272   | -1    |
| 3300 | 363 | 961    | 989   | 210   | -1    | 3300 | 413 | 933    | 99    | 3301  | 874   | 3300 | 908 | 936    | 187   | 256   | -1    |
|      |     |        |       |       |       | 3300 | 414 | 933    | 99    | 3301  | 884   | 3300 | 909 | 936    | 162   | 326   | -1    |
|      |     |        |       |       |       | 3300 | 415 | 933    | 99    | 3301  | 894   | 3300 | 910 | 936    | 164   | 219   | -1    |
|      |     |        |       |       |       | 3300 | 416 | 933    | 99    | 3301  | 904   | 3300 | 911 | 936    | 137   | 964   | -1    |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C / ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|----|-----|--------|-------|-------|--------|----|-----|--------|-------|-------|--------|----|-----|--------|-------|-------|--------|
| 40 | 912 | .404   | .182  | .243  | -1.157 | 40 | 143 | -.029  | .127  | .396  | -.483  | 40 | 212 | -.328  | .164  | .965  | -.278  |
| 40 | 913 | .615   | .186  | .164  | -1.266 | 40 | 144 | -.043  | .100  | .287  | -.410  | 40 | 213 | -.405  | .175  | .101  | -1.324 |
| 40 | 914 | .535   | .172  | .124  | -1.025 | 40 | 145 | -.065  | .121  | .301  | -.501  | 40 | 214 | -.465  | .206  | .080  | -1.220 |
| 40 | 915 | .304   | .168  | .189  | -1.274 | 40 | 146 | -.091  | .114  | .256  | -.516  | 40 | 215 | -.374  | .178  | .151  | -1.283 |
| 40 | 916 | .247   | .128  | .159  | -.765  | 40 | 147 | -.142  | .124  | .245  | -.617  | 40 | 216 | -.029  | .157  | .553  | -.626  |
| 40 | 917 | .145   | .164  | .252  | -.865  | 40 | 148 | -.243  | .150  | .154  | -.909  | 40 | 217 | -.332  | .181  | .929  | -.457  |
| 40 | 918 | .095   | .149  | .343  | -.715  | 40 | 149 | -.222  | .184  | .287  | -1.080 | 40 | 218 | -.490  | .214  | .007  | -1.339 |
| 40 | 919 | .222   | .186  | .276  | -1.150 | 40 | 150 | -.021  | .163  | .735  | -.646  | 40 | 219 | -.550  | .207  | .002  | -1.390 |
| 40 | 101 | .145   | .222  | .619  | -1.102 | 40 | 151 | -.076  | .142  | .445  | -.708  | 40 | 220 | -.292  | .165  | .273  | -.959  |
| 40 | 102 | .522   | .239  | .444  | -1.471 | 40 | 152 | -.084  | .117  | .291  | -.762  | 40 | 221 | -.070  | .168  | .741  | -.440  |
| 40 | 103 | .022   | .189  | .654  | -.717  | 40 | 153 | -.061  | .117  | .388  | -.443  | 40 | 222 | -.284  | .192  | .052  | -1.351 |
| 40 | 104 | .354   | .190  | .345  | -1.098 | 40 | 154 | -.069  | .119  | .373  | -.469  | 40 | 223 | -.432  | .231  | .109  | -1.285 |
| 40 | 105 | .633   | .223  | .107  | -1.420 | 40 | 155 | -.079  | .113  | .283  | -.471  | 40 | 224 | -.374  | .215  | .122  | -1.150 |
| 40 | 106 | .299   | .185  | .309  | -.964  | 40 | 156 | -.111  | .102  | .290  | -.455  | 40 | 225 | -.169  | .149  | .304  | -.871  |
| 40 | 107 | .277   | .186  | .513  | -.946  | 40 | 157 | -.170  | .149  | .290  | -.606  | 40 | 226 | -.032  | .150  | .642  | -.414  |
| 40 | 108 | .264   | .145  | .270  | -.733  | 40 | 158 | -.153  | .151  | .333  | -.775  | 40 | 227 | -.143  | .173  | .783  | -.349  |
| 40 | 109 | .451   | .189  | .124  | -1.131 | 40 | 159 | -.024  | .134  | .533  | -.483  | 40 | 228 | -.229  | .173  | .311  | -.778  |
| 40 | 110 | .157   | .149  | .404  | -.661  | 40 | 160 | -.089  | .111  | .248  | -.467  | 40 | 229 | -.211  | .168  | .013  | -1.013 |
| 40 | 111 | .293   | .144  | .157  | -.786  | 40 | 161 | -.096  | .130  | .431  | -.540  | 40 | 230 | -.104  | .138  | .385  | -.868  |
| 40 | 112 | .368   | .132  | -.020 | -.906  | 40 | 162 | -.094  | .122  | .372  | -.484  | 40 | 231 | -.002  | .131  | .589  | -.468  |
| 40 | 113 | .359   | .159  | .135  | -.973  | 40 | 163 | -.079  | .126  | .362  | -.516  | 40 | 232 | -.011  | .137  | .246  | -.478  |
| 40 | 114 | .579   | .193  | 1.162 | -.002  | 40 | 164 | -.080  | .098  | .233  | -.384  | 40 | 233 | -.136  | .138  | .341  | -.717  |
| 40 | 115 | .554   | .194  | 1.280 | -.062  | 40 | 165 | -.076  | .114  | .332  | -.470  | 40 | 234 | -.133  | .120  | .253  | -.566  |
| 40 | 116 | .485   | .158  | 1.031 | -.044  | 40 | 166 | -.109  | .126  | .284  | -.841  | 40 | 235 | -.063  | .115  | .478  | -.453  |
| 40 | 117 | .391   | .161  | 1.994 | -.172  | 40 | 167 | -.101  | .131  | .378  | -.770  | 40 | 236 | -.004  | .124  | .501  | -.384  |
| 40 | 118 | .336   | .157  | .957  | -.279  | 40 | 168 | -.061  | .095  | .293  | -.398  | 40 | 237 | -.014  | .121  | .523  | -.398  |
| 40 | 119 | .267   | .158  | .904  | -.347  | 40 | 169 | -.070  | .119  | .313  | -.430  | 40 | 238 | -.097  | .104  | .374  | -.411  |
| 40 | 120 | .106   | .129  | .654  | -.362  | 40 | 170 | -.064  | .119  | .296  | -.440  | 40 | 239 | -.074  | .106  | .305  | -.428  |
| 40 | 121 | .267   | .151  | .174  | -.820  | 40 | 171 | -.060  | .125  | .323  | -.474  | 40 | 240 | -.022  | .127  | .429  | -.433  |
| 40 | 122 | .352   | .195  | .199  | -1.109 | 40 | 172 | -.063  | .109  | .266  | -.377  | 40 | 241 | -.011  | .118  | .683  | -.444  |
| 40 | 123 | .483   | .214  | 1.230 | -.252  | 40 | 173 | -.045  | .122  | .471  | -.470  | 40 | 242 | -.023  | .122  | .334  | -.442  |
| 40 | 124 | .402   | .163  | 1.051 | -.210  | 40 | 174 | -.050  | .112  | .346  | -.455  | 40 | 243 | -.024  | .121  | .334  | -.442  |
| 40 | 125 | .306   | .167  | .849  | -.235  | 40 | 175 | -.062  | .119  | .368  | -.534  | 40 | 244 | -.063  | .105  | .370  | -.471  |
| 40 | 126 | .255   | .154  | .827  | -.187  | 40 | 176 | -.080  | .104  | .308  | -.487  | 40 | 245 | -.074  | .096  | .322  | -.432  |
| 40 | 127 | .203   | .155  | .798  | -.235  | 40 | 177 | -.080  | .098  | .269  | -.437  | 40 | 246 | -.025  | .103  | .356  | -.434  |
| 40 | 128 | .130   | .135  | .661  | -.207  | 40 | 178 | -.082  | .095  | .212  | -.425  | 40 | 247 | -.025  | .117  | .333  | -.411  |
| 40 | 129 | .007   | .156  | .681  | -.545  | 40 | 180 | -.078  | .087  | .211  | -.372  | 40 | 248 | -.000  | .118  | .416  | -.407  |
| 40 | 130 | .353   | .205  | .376  | -.379  | 40 | 181 | -.058  | .110  | .293  | -.444  | 40 | 249 | -.060  | .105  | .364  | -.435  |
| 40 | 131 | .400   | .252  | .219  | -1.468 | 40 | 182 | -.054  | .113  | .325  | -.420  | 40 | 250 | -.031  | .115  | .392  | -.468  |
| 40 | 132 | .320   | .189  | .926  | -.169  | 40 | 201 | -.379  | .189  | .123  | -1.108 | 40 | 301 | -.209  | .146  | .395  | -.422  |
| 40 | 133 | .159   | .159  | .804  | -.411  | 40 | 202 | -.401  | .187  | .153  | -1.062 | 40 | 302 | -.213  | .154  | .255  | -.555  |
| 40 | 134 | .086   | .139  | .622  | -.468  | 40 | 203 | -.441  | .188  | .109  | -1.117 | 40 | 303 | -.201  | .146  | .362  | -.432  |
| 40 | 135 | .053   | .136  | .535  | -.480  | 40 | 204 | -.449  | .201  | .376  | -1.131 | 40 | 304 | -.171  | .140  | .247  | -.491  |
| 40 | 136 | .013   | .117  | .431  | -.377  | 40 | 205 | -.225  | .188  | .502  | -.935  | 40 | 305 | -.211  | .150  | .229  | -.215  |
| 40 | 137 | .023   | .125  | .414  | -.444  | 40 | 206 | -.503  | .206  | .164  | -1.126 | 40 | 306 | -.264  | .137  | .263  | -.303  |
| 40 | 138 | .113   | .132  | .388  | -.564  | 40 | 207 | -.180  | .219  | .571  | -1.232 | 40 | 307 | -.274  | .183  | .222  | -.333  |
| 40 | 139 | .287   | .203  | .341  | -1.150 | 40 | 208 | -.319  | .180  | .246  | -.960  | 40 | 308 | -.337  | .213  | .220  | -.329  |
| 40 | 140 | .274   | .190  | .282  | -1.004 | 40 | 209 | -.429  | .229  | .129  | -1.696 | 40 | 309 | -.329  | .195  | .316  | -.342  |
| 40 | 141 | .097   | .181  | .860  | -.380  | 40 | 210 | -.373  | .202  | .332  | -1.055 | 40 | 310 | -.298  | .193  | .354  | -.412  |
| 40 | 142 | .003   | .135  | .471  | -.408  | 40 | 211 | -.030  | .178  | .755  | -.688  | 40 | 311 | -.319  | .202  | .272  | -.213  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|
| 40 | 428 | 129    | 141   | 235   | 943   | 40 | 428 | 141    | 139   | 235   | 943   | 40 | 428 | 141    | 139   | 235   | 943   |
| 40 | 429 | 132    | 148   | 230   | 894   | 40 | 429 | 132    | 148   | 230   | 894   | 40 | 429 | 132    | 148   | 230   | 894   |
| 40 | 430 | 126    | 139   | 238   | 983   | 40 | 430 | 126    | 139   | 238   | 983   | 40 | 430 | 126    | 139   | 238   | 983   |
| 40 | 431 | 126    | 124   | 222   | 937   | 40 | 431 | 126    | 124   | 222   | 937   | 40 | 431 | 126    | 124   | 222   | 937   |
| 40 | 432 | 106    | 109   | 166   | 455   | 40 | 432 | 106    | 109   | 166   | 455   | 40 | 432 | 106    | 109   | 166   | 455   |
| 40 | 433 | 075    | 120   | 155   | 397   | 40 | 433 | 075    | 120   | 155   | 397   | 40 | 433 | 075    | 120   | 155   | 397   |
| 40 | 434 | 084    | 138   | 188   | 466   | 40 | 434 | 084    | 138   | 188   | 466   | 40 | 434 | 084    | 138   | 188   | 466   |
| 40 | 435 | 091    | 138   | 207   | 509   | 40 | 435 | 091    | 138   | 207   | 509   | 40 | 435 | 091    | 138   | 207   | 509   |
| 40 | 436 | 092    | 113   | 177   | 433   | 40 | 436 | 092    | 113   | 177   | 433   | 40 | 436 | 092    | 113   | 177   | 433   |
| 40 | 437 | 066    | 103   | 144   | 344   | 40 | 437 | 066    | 103   | 144   | 344   | 40 | 437 | 066    | 103   | 144   | 344   |
| 40 | 438 | 072    | 103   | 166   | 427   | 40 | 438 | 072    | 103   | 166   | 427   | 40 | 438 | 072    | 103   | 166   | 427   |
| 40 | 439 | 061    | 109   | 165   | 422   | 40 | 439 | 061    | 109   | 165   | 422   | 40 | 439 | 061    | 109   | 165   | 422   |
| 40 | 440 | 080    | 118   | 166   | 416   | 40 | 440 | 080    | 118   | 166   | 416   | 40 | 440 | 080    | 118   | 166   | 416   |
| 40 | 441 | 061    | 109   | 166   | 422   | 40 | 441 | 061    | 109   | 166   | 422   | 40 | 441 | 061    | 109   | 166   | 422   |
| 40 | 442 | 090    | 106   | 138   | 338   | 40 | 442 | 090    | 106   | 138   | 338   | 40 | 442 | 090    | 106   | 138   | 338   |
| 40 | 443 | 071    | 112   | 155   | 397   | 40 | 443 | 071    | 112   | 155   | 397   | 40 | 443 | 071    | 112   | 155   | 397   |
| 40 | 444 | 074    | 094   | 126   | 339   | 40 | 444 | 074    | 094   | 126   | 339   | 40 | 444 | 074    | 094   | 126   | 339   |
| 40 | 445 | 068    | 111   | 155   | 397   | 40 | 445 | 068    | 111   | 155   | 397   | 40 | 445 | 068    | 111   | 155   | 397   |
| 40 | 446 | 068    | 099   | 122   | 313   | 40 | 446 | 068    | 099   | 122   | 313   | 40 | 446 | 068    | 099   | 122   | 313   |
| 40 | 447 | 074    | 096   | 133   | 342   | 40 | 447 | 074    | 096   | 133   | 342   | 40 | 447 | 074    | 096   | 133   | 342   |
| 40 | 448 | 064    | 100   | 122   | 304   | 40 | 448 | 064    | 100   | 122   | 304   | 40 | 448 | 064    | 100   | 122   | 304   |
| 40 | 449 | 062    | 106   | 133   | 342   | 40 | 449 | 062    | 106   | 133   | 342   | 40 | 449 | 062    | 106   | 133   | 342   |
| 40 | 450 | 067    | 103   | 137   | 367   | 40 | 450 | 067    | 103   | 137   | 367   | 40 | 450 | 067    | 103   | 137   | 367   |
| 40 | 701 | 018    | 018   | 018   | 018   | 40 | 701 | 018    | 018   | 018   | 018   | 40 | 701 | 018    | 018   | 018   | 018   |
| 40 | 702 | 042    | 104   | 133   | 313   | 40 | 702 | 042    | 104   | 133   | 313   | 40 | 702 | 042    | 104   | 133   | 313   |
| 40 | 703 | 054    | 103   | 141   | 313   | 40 | 703 | 054    | 103   | 141   | 313   | 40 | 703 | 054    | 103   | 141   | 313   |
| 40 | 705 | 054    | 096   | 126   | 304   | 40 | 705 | 054    | 096   | 126   | 304   | 40 | 705 | 054    | 096   | 126   | 304   |
| 40 | 706 | 043    | 109   | 166   | 422   | 40 | 706 | 043    | 109   | 166   | 422   | 40 | 706 | 043    | 109   | 166   | 422   |
| 40 | 707 | 025    | 108   | 168   | 408   | 40 | 707 | 025    | 108   | 168   | 408   | 40 | 707 | 025    | 108   | 168   | 408   |
| 40 | 708 | 033    | 124   | 155   | 397   | 40 | 708 | 033    | 124   | 155   | 397   | 40 | 708 | 033    | 124   | 155   | 397   |
| 40 | 710 | 036    | 124   | 155   | 397   | 40 | 710 | 036    | 124   | 155   | 397   | 40 | 710 | 036    | 124   | 155   | 397   |
| 40 | 711 | 042    | 101   | 133   | 313   | 40 | 711 | 042    | 101   | 133   | 313   | 40 | 711 | 042    | 101   | 133   | 313   |
| 40 | 712 | 058    | 117   | 155   | 397   | 40 | 712 | 058    | 117   | 155   | 397   | 40 | 712 | 058    | 117   | 155   | 397   |
| 40 | 713 | 057    | 113   | 155   | 397   | 40 | 713 | 057    | 113   | 155   | 397   | 40 | 713 | 057    | 113   | 155   | 397   |
| 40 | 714 | 048    | 116   | 155   | 397   | 40 | 714 | 048    | 116   | 155   | 397   | 40 | 714 | 048    | 116   | 155   | 397   |
| 40 | 716 | 062    | 105   | 133   | 313   | 40 | 716 | 062    | 105   | 133   | 313   | 40 | 716 | 062    | 105   | 133   | 313   |
| 40 | 717 | 038    | 107   | 155   | 397   | 40 | 717 | 038    | 107   | 155   | 397   | 40 | 717 | 038    | 107   | 155   | 397   |
| 40 | 801 | 050    | 102   | 133   | 313   | 40 | 801 | 050    | 102   | 133   | 313   | 40 | 801 | 050    | 102   | 133   | 313   |
| 40 | 802 | 040    | 116   | 155   | 397   | 40 | 802 | 040    | 116   | 155   | 397   | 40 | 802 | 040    | 116   | 155   | 397   |
| 40 | 803 | 067    | 097   | 126   | 304   | 40 | 803 | 067    | 097   | 126   | 304   | 40 | 803 | 067    | 097   | 126   | 304   |
| 40 | 804 | 073    | 114   | 155   | 397   | 40 | 804 | 073    | 114   | 155   | 397   | 40 | 804 | 073    | 114   | 155   | 397   |
| 40 | 901 | 038    | 126   | 155   | 397   | 40 | 901 | 038    | 126   | 155   | 397   | 40 | 901 | 038    | 126   | 155   | 397   |
| 40 | 902 | 051    | 102   | 133   | 313   | 40 | 902 | 051    | 102   | 133   | 313   | 40 | 902 | 051    | 102   | 133   | 313   |
| 40 | 903 | 023    | 117   | 155   | 397   | 40 | 903 | 023    | 117   | 155   | 397   | 40 | 903 | 023    | 117   | 155   | 397   |
| 40 | 904 | 043    | 120   | 155   | 397   | 40 | 904 | 043    | 120   | 155   | 397   | 40 | 904 | 043    | 120   | 155   | 397   |
| 40 | 905 | 020    | 122   | 155   | 397   | 40 | 905 | 020    | 122   | 155   | 397   | 40 | 905 | 020    | 122   | 155   | 397   |
| 40 | 906 | 051    | 126   | 155   | 397   | 40 | 906 | 051    | 126   | 155   | 397   | 40 | 906 | 051    | 126   | 155   | 397   |
| 40 | 907 | 067    | 168   | 284   | 687   | 40 | 907 | 067    | 168   | 284   | 687   | 40 | 907 | 067    | 168   | 284   | 687   |
| 40 | 908 | 015    | 184   | 282   | 682   | 40 | 908 | 015    | 184   | 282   | 682   | 40 | 908 | 015    | 184   | 282   | 682   |
| 40 | 909 | 088    | 158   | 282   | 682   | 40 | 909 | 088    | 158   | 282   | 682   | 40 | 909 | 088    | 158   | 282   | 682   |

APPENDIX A -- PRESSURE DATA CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CP | MEAN | CP | RMS | CP | MAX | CP | MIN | WD | TAP | CP | MEAN | CP | RMS | CP | MAX | CP | MIN | WD | TAP | CP | MEAN | CP | RMS | CP | MAX | CP | MIN  | WD | TAP | CP | MEAN | CP | RMS | CP | MAX | CP | MIN |
|----|-----|----|------|----|-----|----|-----|----|-----|----|-----|----|------|----|-----|----|-----|----|-----|----|-----|----|------|----|-----|----|-----|----|------|----|-----|----|------|----|-----|----|-----|----|-----|
| 40 | 910 | 1  | 317  | 1  | 172 | 1  | 202 | 1  | 922 | 50 | 141 | 1  | 266  | 1  | 194 | 1  | 390 | 1  | 220 | 50 | 210 | 1  | 279  | 1  | 228 | 1  | 447 | 1  | 121  | 50 | 210 | 1  | 279  | 1  | 228 | 1  | 447 |    |     |
| 40 | 911 | 1  | 334  | 1  | 153 | 1  | 109 | 1  | 914 | 50 | 142 | 1  | 134  | 1  | 149 | 1  | 672 | 1  | 78  | 50 | 211 | 1  | 011  | 1  | 182 | 1  | 710 | 1  | 796  | 50 | 211 | 1  | 011  | 1  | 182 | 1  | 710 |    |     |
| 40 | 912 | 1  | 350  | 1  | 229 | 1  | 335 | 1  | 114 | 50 | 143 | 1  | 068  | 1  | 330 | 1  | 573 | 1  | 93  | 50 | 212 | 1  | 247  | 1  | 159 | 1  | 856 | 1  | 343  | 50 | 212 | 1  | 247  | 1  | 159 | 1  | 856 |    |     |
| 40 | 913 | 1  | 361  | 1  | 215 | 1  | 139 | 1  | 319 | 50 | 144 | 1  | 031  | 1  | 104 | 1  | 429 | 1  | 37  | 50 | 213 | 1  | 344  | 1  | 165 | 1  | 192 | 1  | 1020 | 50 | 213 | 1  | 344  | 1  | 165 | 1  | 192 |    |     |
| 40 | 914 | 1  | 332  | 1  | 188 | 1  | 039 | 1  | 259 | 50 | 145 | 1  | 017  | 1  | 331 | 1  | 431 | 1  | 29  | 50 | 214 | 1  | 411  | 1  | 194 | 1  | 187 | 1  | 189  | 50 | 214 | 1  | 411  | 1  | 194 | 1  | 189 |    |     |
| 40 | 915 | 1  | 350  | 1  | 153 | 1  | 230 | 1  | 323 | 50 | 146 | 1  | 051  | 1  | 227 | 1  | 427 | 1  | 48  | 50 | 215 | 1  | 299  | 1  | 189 | 1  | 241 | 1  | 1084 | 50 | 215 | 1  | 299  | 1  | 189 | 1  | 241 |    |     |
| 40 | 916 | 1  | 350  | 1  | 122 | 1  | 269 | 1  | 606 | 50 | 147 | 1  | 105  | 1  | 134 | 1  | 227 | 1  | 16  | 50 | 216 | 1  | 032  | 1  | 144 | 1  | 667 | 1  | 461  | 50 | 216 | 1  | 032  | 1  | 144 | 1  | 667 |    |     |
| 40 | 917 | 1  | 350  | 1  | 153 | 1  | 200 | 1  | 968 | 50 | 148 | 1  | 189  | 1  | 140 | 1  | 202 | 1  | 96  | 50 | 217 | 1  | 280  | 1  | 156 | 1  | 890 | 1  | 290  | 50 | 217 | 1  | 280  | 1  | 156 | 1  | 890 |    |     |
| 40 | 918 | 1  | 350  | 1  | 144 | 1  | 482 | 1  | 731 | 50 | 149 | 1  | 111  | 1  | 129 | 1  | 256 | 1  | 66  | 50 | 218 | 1  | 377  | 1  | 171 | 1  | 118 | 1  | 148  | 50 | 218 | 1  | 377  | 1  | 171 | 1  | 118 |    |     |
| 40 | 919 | 1  | 350  | 1  | 191 | 1  | 241 | 1  | 472 | 50 | 150 | 1  | 134  | 1  | 155 | 1  | 283 | 1  | 18  | 50 | 219 | 1  | 470  | 1  | 129 | 1  | 119 | 1  | 512  | 50 | 219 | 1  | 470  | 1  | 129 | 1  | 119 |    |     |
| 50 | 101 | 1  | 424  | 1  | 227 | 1  | 639 | 1  | 54  | 50 | 151 | 1  | 053  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 220 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 220 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 102 | 1  | 444  | 1  | 231 | 1  | 659 | 1  | 91  | 50 | 152 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 221 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 221 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 103 | 1  | 422  | 1  | 193 | 1  | 259 | 1  | 88  | 50 | 153 | 1  | 018  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 222 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 222 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 104 | 1  | 424  | 1  | 191 | 1  | 259 | 1  | 88  | 50 | 154 | 1  | 036  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 223 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 223 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 105 | 1  | 466  | 1  | 237 | 1  | 423 | 1  | 934 | 50 | 155 | 1  | 056  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 224 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 224 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 106 | 1  | 478  | 1  | 202 | 1  | 372 | 1  | 984 | 50 | 156 | 1  | 097  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 225 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 225 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 107 | 1  | 451  | 1  | 202 | 1  | 306 | 1  | 964 | 50 | 157 | 1  | 169  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 226 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 226 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 108 | 1  | 422  | 1  | 159 | 1  | 398 | 1  | 764 | 50 | 158 | 1  | 162  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 227 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 227 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 109 | 1  | 422  | 1  | 199 | 1  | 331 | 1  | 218 | 50 | 159 | 1  | 042  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 228 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 228 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 110 | 1  | 422  | 1  | 165 | 1  | 333 | 1  | 676 | 50 | 160 | 1  | 020  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 229 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 229 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 111 | 1  | 424  | 1  | 161 | 1  | 306 | 1  | 55  | 50 | 161 | 1  | 044  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 230 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 230 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 112 | 1  | 422  | 1  | 149 | 1  | 194 | 1  | 313 | 50 | 162 | 1  | 047  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 231 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 231 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 113 | 1  | 422  | 1  | 147 | 1  | 178 | 1  | 206 | 50 | 163 | 1  | 053  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 232 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 232 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 114 | 1  | 424  | 1  | 182 | 1  | 097 | 1  | 244 | 50 | 164 | 1  | 068  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 233 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 233 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 115 | 1  | 431  | 1  | 191 | 1  | 032 | 1  | 270 | 50 | 165 | 1  | 083  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 234 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 234 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 116 | 1  | 422  | 1  | 181 | 1  | 081 | 1  | 388 | 50 | 166 | 1  | 156  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 235 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 235 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 117 | 1  | 422  | 1  | 187 | 1  | 029 | 1  | 321 | 50 | 167 | 1  | 146  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 236 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 236 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 118 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 168 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 237 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 237 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 119 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 169 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 238 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 238 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 120 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 170 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 239 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 239 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 121 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 171 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 240 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 240 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 122 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 172 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 241 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 241 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 123 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 173 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 242 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 242 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 124 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 174 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 243 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 243 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 125 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 175 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 244 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 244 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 126 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 176 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 245 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 245 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 127 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 177 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 246 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 246 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 128 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 178 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 247 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 247 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 129 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 179 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 248 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 248 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 130 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 180 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 249 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 249 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 131 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 181 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 250 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 250 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 132 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 182 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 251 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 251 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 133 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 183 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 252 | 1  | 248  | 1  | 112 | 1  | 902 | 1  | 902  | 50 | 252 | 1  | 248  | 1  | 112 | 1  | 902 |    |     |
| 50 | 134 | 1  | 422  | 1  | 182 | 1  | 000 | 1  | 300 | 50 | 184 | 1  | 016  | 1  | 333 | 1  | 506 | 1  | 52  | 50 | 253 | 1  | 248  | 1  | 112 | 1  | 902 | 1  |      |    |     |    |      |    |     |    |     |    |     |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 50 | 426 | 111    | 117   | 174   | 50    | 426 | 111 | 117    | 174   | 50    | 426   | 111 | 117 | 174    | 50    | 426   | 111   |
| 50 | 427 | 146    | 113   | 227   | 50    | 427 | 146 | 113    | 227   | 50    | 427   | 146 | 113 | 227    | 50    | 427   | 146   |
| 50 | 428 | 156    | 132   | 239   | 50    | 428 | 156 | 132    | 239   | 50    | 428   | 156 | 132 | 239    | 50    | 428   | 156   |
| 50 | 429 | 170    | 149   | 244   | 50    | 429 | 170 | 149    | 244   | 50    | 429   | 170 | 149 | 244    | 50    | 429   | 170   |
| 50 | 430 | 160    | 149   | 269   | 50    | 430 | 160 | 149    | 269   | 50    | 430   | 160 | 149 | 269    | 50    | 430   | 160   |
| 50 | 431 | 112    | 118   | 281   | 50    | 431 | 112 | 118    | 281   | 50    | 431   | 112 | 118 | 281    | 50    | 431   | 112   |
| 50 | 432 | 112    | 112   | 281   | 50    | 432 | 112 | 112    | 281   | 50    | 432   | 112 | 112 | 281    | 50    | 432   | 112   |
| 50 | 433 | 160    | 109   | 282   | 50    | 433 | 160 | 109    | 282   | 50    | 433   | 160 | 109 | 282    | 50    | 433   | 160   |
| 50 | 434 | 160    | 109   | 282   | 50    | 434 | 160 | 109    | 282   | 50    | 434   | 160 | 109 | 282    | 50    | 434   | 160   |
| 50 | 435 | 160    | 109   | 282   | 50    | 435 | 160 | 109    | 282   | 50    | 435   | 160 | 109 | 282    | 50    | 435   | 160   |
| 50 | 436 | 160    | 109   | 282   | 50    | 436 | 160 | 109    | 282   | 50    | 436   | 160 | 109 | 282    | 50    | 436   | 160   |
| 50 | 437 | 160    | 109   | 282   | 50    | 437 | 160 | 109    | 282   | 50    | 437   | 160 | 109 | 282    | 50    | 437   | 160   |
| 50 | 438 | 160    | 109   | 282   | 50    | 438 | 160 | 109    | 282   | 50    | 438   | 160 | 109 | 282    | 50    | 438   | 160   |
| 50 | 439 | 160    | 109   | 282   | 50    | 439 | 160 | 109    | 282   | 50    | 439   | 160 | 109 | 282    | 50    | 439   | 160   |
| 50 | 440 | 160    | 109   | 282   | 50    | 440 | 160 | 109    | 282   | 50    | 440   | 160 | 109 | 282    | 50    | 440   | 160   |
| 50 | 441 | 160    | 109   | 282   | 50    | 441 | 160 | 109    | 282   | 50    | 441   | 160 | 109 | 282    | 50    | 441   | 160   |
| 50 | 442 | 160    | 109   | 282   | 50    | 442 | 160 | 109    | 282   | 50    | 442   | 160 | 109 | 282    | 50    | 442   | 160   |
| 50 | 443 | 160    | 109   | 282   | 50    | 443 | 160 | 109    | 282   | 50    | 443   | 160 | 109 | 282    | 50    | 443   | 160   |
| 50 | 444 | 160    | 109   | 282   | 50    | 444 | 160 | 109    | 282   | 50    | 444   | 160 | 109 | 282    | 50    | 444   | 160   |
| 50 | 445 | 160    | 109   | 282   | 50    | 445 | 160 | 109    | 282   | 50    | 445   | 160 | 109 | 282    | 50    | 445   | 160   |
| 50 | 446 | 160    | 109   | 282   | 50    | 446 | 160 | 109    | 282   | 50    | 446   | 160 | 109 | 282    | 50    | 446   | 160   |
| 50 | 447 | 160    | 109   | 282   | 50    | 447 | 160 | 109    | 282   | 50    | 447   | 160 | 109 | 282    | 50    | 447   | 160   |
| 50 | 448 | 160    | 109   | 282   | 50    | 448 | 160 | 109    | 282   | 50    | 448   | 160 | 109 | 282    | 50    | 448   | 160   |
| 50 | 449 | 160    | 109   | 282   | 50    | 449 | 160 | 109    | 282   | 50    | 449   | 160 | 109 | 282    | 50    | 449   | 160   |
| 50 | 450 | 160    | 109   | 282   | 50    | 450 | 160 | 109    | 282   | 50    | 450   | 160 | 109 | 282    | 50    | 450   | 160   |
| 50 | 701 | 111    | 110   | 282   | 50    | 701 | 111 | 110    | 282   | 50    | 701   | 111 | 110 | 282    | 50    | 701   | 111   |
| 50 | 702 | 111    | 110   | 282   | 50    | 702 | 111 | 110    | 282   | 50    | 702   | 111 | 110 | 282    | 50    | 702   | 111   |
| 50 | 703 | 111    | 110   | 282   | 50    | 703 | 111 | 110    | 282   | 50    | 703   | 111 | 110 | 282    | 50    | 703   | 111   |
| 50 | 705 | 111    | 110   | 282   | 50    | 705 | 111 | 110    | 282   | 50    | 705   | 111 | 110 | 282    | 50    | 705   | 111   |
| 50 | 706 | 111    | 110   | 282   | 50    | 706 | 111 | 110    | 282   | 50    | 706   | 111 | 110 | 282    | 50    | 706   | 111   |
| 50 | 707 | 111    | 110   | 282   | 50    | 707 | 111 | 110    | 282   | 50    | 707   | 111 | 110 | 282    | 50    | 707   | 111   |
| 50 | 708 | 111    | 110   | 282   | 50    | 708 | 111 | 110    | 282   | 50    | 708   | 111 | 110 | 282    | 50    | 708   | 111   |
| 50 | 710 | 111    | 110   | 282   | 50    | 710 | 111 | 110    | 282   | 50    | 710   | 111 | 110 | 282    | 50    | 710   | 111   |
| 50 | 711 | 111    | 110   | 282   | 50    | 711 | 111 | 110    | 282   | 50    | 711   | 111 | 110 | 282    | 50    | 711   | 111   |
| 50 | 712 | 111    | 110   | 282   | 50    | 712 | 111 | 110    | 282   | 50    | 712   | 111 | 110 | 282    | 50    | 712   | 111   |
| 50 | 713 | 111    | 110   | 282   | 50    | 713 | 111 | 110    | 282   | 50    | 713   | 111 | 110 | 282    | 50    | 713   | 111   |
| 50 | 714 | 111    | 110   | 282   | 50    | 714 | 111 | 110    | 282   | 50    | 714   | 111 | 110 | 282    | 50    | 714   | 111   |
| 50 | 716 | 111    | 110   | 282   | 50    | 716 | 111 | 110    | 282   | 50    | 716   | 111 | 110 | 282    | 50    | 716   | 111   |
| 50 | 717 | 111    | 110   | 282   | 50    | 717 | 111 | 110    | 282   | 50    | 717   | 111 | 110 | 282    | 50    | 717   | 111   |
| 50 | 801 | 111    | 110   | 282   | 50    | 801 | 111 | 110    | 282   | 50    | 801   | 111 | 110 | 282    | 50    | 801   | 111   |
| 50 | 802 | 111    | 110   | 282   | 50    | 802 | 111 | 110    | 282   | 50    | 802   | 111 | 110 | 282    | 50    | 802   | 111   |
| 50 | 803 | 111    | 110   | 282   | 50    | 803 | 111 | 110    | 282   | 50    | 803   | 111 | 110 | 282    | 50    | 803   | 111   |
| 50 | 804 | 111    | 110   | 282   | 50    | 804 | 111 | 110    | 282   | 50    | 804   | 111 | 110 | 282    | 50    | 804   | 111   |
| 50 | 901 | 111    | 110   | 282   | 50    | 901 | 111 | 110    | 282   | 50    | 901   | 111 | 110 | 282    | 50    | 901   | 111   |
| 50 | 902 | 111    | 110   | 282   | 50    | 902 | 111 | 110    | 282   | 50    | 902   | 111 | 110 | 282    | 50    | 902   | 111   |
| 50 | 903 | 111    | 110   | 282   | 50    | 903 | 111 | 110    | 282   | 50    | 903   | 111 | 110 | 282    | 50    | 903   | 111   |
| 50 | 904 | 111    | 110   | 282   | 50    | 904 | 111 | 110    | 282   | 50    | 904   | 111 | 110 | 282    | 50    | 904   | 111   |
| 50 | 905 | 111    | 110   | 282   | 50    | 905 | 111 | 110    | 282   | 50    | 905   | 111 | 110 | 282    | 50    | 905   | 111   |
| 50 | 906 | 111    | 110   | 282   | 50    | 906 | 111 | 110    | 282   | 50    | 906   | 111 | 110 | 282    | 50    | 906   | 111   |
| 50 | 907 | 111    | 110   | 282   | 50    | 907 | 111 | 110    | 282   | 50    | 907   | 111 | 110 | 282    | 50    | 907   | 111   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|----|-----|--------|-------|-------|--------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|--------|
| 50 | 908 | -.232  | .158  | .316  | -.862  | 60 | 139 | -.163  | .128  | .260  | -.742 | 60 | 208 | -.461  | .188  | .101  | -1.105 |
| 50 | 909 | -.225  | .140  | .249  | -.830  | 60 | 140 | -.129  | .108  | .186  | -.563 | 60 | 209 | -.208  | .206  | .489  | -.979  |
| 50 | 910 | -.244  | .154  | .214  | -.828  | 60 | 141 | -.184  | .159  | .774  | -.322 | 60 | 210 | -.056  | .237  | .871  | -.794  |
| 50 | 911 | -.249  | .134  | .183  | -.909  | 60 | 142 | -.090  | .125  | .490  | -.354 | 60 | 211 | -.239  | .212  | .147  | -.397  |
| 50 | 912 | -.262  | .192  | .298  | -1.107 | 60 | 143 | -.040  | .117  | .408  | -.440 | 60 | 212 | -.249  | .174  | .931  | -.310  |
| 50 | 913 | -.487  | .193  | .128  | -1.315 | 60 | 144 | -.004  | .095  | .311  | -.369 | 60 | 213 | -.411  | .191  | .093  | -1.116 |
| 50 | 914 | -.416  | .197  | .204  | -1.451 | 60 | 145 | -.020  | .109  | .337  | -.385 | 60 | 214 | -.278  | .197  | .414  | -.234  |
| 50 | 915 | -.203  | .134  | .231  | -.792  | 60 | 146 | -.048  | .102  | .296  | -.374 | 60 | 215 | -.074  | .171  | .614  | -.628  |
| 50 | 916 | -.157  | .110  | .243  | -.626  | 60 | 147 | -.090  | .106  | .288  | -.440 | 60 | 216 | -.126  | .161  | .959  | -.450  |
| 50 | 917 | -.207  | .154  | .292  | -.759  | 60 | 148 | -.154  | .105  | .216  | -.516 | 60 | 217 | -.192  | .131  | .709  | -.239  |
| 50 | 918 | -.117  | .138  | .393  | -.658  | 60 | 149 | -.128  | .117  | .236  | -.595 | 60 | 218 | -.342  | .150  | .119  | -.895  |
| 50 | 919 | -.289  | .178  | .272  | -1.084 | 60 | 150 | -.117  | .142  | .727  | -.347 | 60 | 219 | -.291  | .164  | .278  | -.969  |
| 60 | 101 | -.098  | .207  | .788  | -.800  | 60 | 151 | -.038  | .122  | .479  | -.485 | 60 | 220 | -.115  | .143  | .387  | -.525  |
| 60 | 102 | -.273  | .186  | .298  | -.971  | 60 | 152 | -.001  | .095  | .266  | -.437 | 60 | 221 | -.072  | .116  | .691  | -.239  |
| 60 | 103 | -.094  | .167  | .520  | -.690  | 60 | 153 | -.068  | .108  | .354  | -.405 | 60 | 222 | -.154  | .139  | .699  | -.294  |
| 60 | 104 | -.169  | .140  | .240  | -.819  | 60 | 154 | -.031  | .110  | .357  | -.431 | 60 | 223 | -.309  | .164  | .130  | -.978  |
| 60 | 105 | -.246  | .188  | .312  | -.940  | 60 | 155 | -.055  | .104  | .314  | -.476 | 60 | 224 | -.306  | .151  | .178  | -.987  |
| 60 | 106 | -.139  | .170  | .411  | -.776  | 60 | 156 | -.096  | .090  | .218  | -.453 | 60 | 225 | -.150  | .132  | .356  | -.678  |
| 60 | 107 | -.128  | .169  | .507  | -.877  | 60 | 157 | -.158  | .124  | .256  | -.681 | 60 | 226 | -.050  | .109  | .462  | -.333  |
| 60 | 108 | -.121  | .137  | .390  | -.614  | 60 | 158 | -.129  | .122  | .303  | -.646 | 60 | 227 | -.148  | .136  | .788  | -.877  |
| 60 | 109 | -.174  | .160  | .366  | -.902  | 60 | 159 | -.061  | .141  | .833  | -.327 | 60 | 228 | -.271  | .141  | .131  | -.698  |
| 60 | 110 | -.119  | .150  | .360  | -.707  | 60 | 160 | -.011  | .117  | .545  | -.307 | 60 | 229 | -.253  | .141  | .143  | -.643  |
| 60 | 111 | -.210  | .145  | .300  | -.763  | 60 | 161 | -.010  | .127  | .397  | -.500 | 60 | 230 | -.133  | .130  | .311  | -.622  |
| 60 | 112 | -.219  | .129  | .203  | -.670  | 60 | 162 | -.019  | .120  | .322  | -.481 | 60 | 231 | -.007  | .110  | .372  | -.222  |
| 60 | 113 | -.219  | .131  | .186  | -.718  | 60 | 163 | -.028  | .122  | .333  | -.472 | 60 | 232 | -.116  | .135  | .620  | -.160  |
| 60 | 114 | -.213  | .172  | .942  | -.355  | 60 | 164 | -.046  | .096  | .211  | -.374 | 60 | 233 | -.231  | .121  | .096  | -.733  |
| 60 | 115 | -.120  | .167  | .830  | -.414  | 60 | 165 | -.145  | .127  | .238  | -.564 | 60 | 234 | -.194  | .134  | .187  | -.694  |
| 60 | 116 | -.016  | .172  | .544  | -.563  | 60 | 166 | -.213  | .134  | .194  | -.656 | 60 | 235 | -.124  | .116  | .257  | -.599  |
| 60 | 117 | -.052  | .140  | .610  | -.375  | 60 | 167 | -.199  | .137  | .234  | -.655 | 60 | 236 | -.022  | .111  | .419  | -.338  |
| 60 | 118 | -.034  | .138  | .591  | -.424  | 60 | 168 | -.067  | .112  | .250  | -.412 | 60 | 237 | -.041  | .106  | .467  | -.300  |
| 60 | 119 | -.003  | .142  | .611  | -.475  | 60 | 169 | -.022  | .115  | .336  | -.397 | 60 | 238 | -.111  | .095  | .186  | -.407  |
| 60 | 120 | -.079  | .119  | .348  | -.490  | 60 | 170 | -.025  | .116  | .342  | -.398 | 60 | 239 | -.094  | .100  | .296  | -.456  |
| 60 | 121 | -.235  | .131  | .183  | -.705  | 60 | 171 | -.027  | .120  | .369  | -.420 | 60 | 240 | -.060  | .105  | .270  | -.333  |
| 60 | 122 | -.208  | .135  | .219  | -.718  | 60 | 172 | -.026  | .108  | .336  | -.376 | 60 | 241 | -.041  | .098  | .250  | -.322  |
| 60 | 123 | -.200  | .168  | .915  | -.604  | 60 | 173 | -.005  | .112  | .407  | -.390 | 60 | 242 | -.014  | .099  | .249  | -.321  |
| 60 | 124 | -.104  | .142  | .702  | -.518  | 60 | 174 | -.051  | .107  | .306  | -.407 | 60 | 243 | -.035  | .106  | .443  | -.344  |
| 60 | 125 | -.056  | .142  | .506  | -.449  | 60 | 175 | -.089  | .120  | .250  | -.534 | 60 | 244 | -.101  | .094  | .248  | -.341  |
| 60 | 126 | -.052  | .124  | .497  | -.411  | 60 | 176 | -.091  | .102  | .212  | -.410 | 60 | 245 | -.076  | .113  | .270  | -.373  |
| 60 | 127 | -.026  | .124  | .520  | -.434  | 60 | 177 | -.002  | .116  | .364  | -.391 | 60 | 246 | -.053  | .103  | .265  | -.341  |
| 60 | 128 | -.018  | .107  | .390  | -.382  | 60 | 178 | -.004  | .115  | .342  | -.402 | 60 | 247 | -.047  | .102  | .291  | -.332  |
| 60 | 129 | -.089  | .109  | .327  | -.522  | 60 | 180 | -.007  | .109  | .287  | -.395 | 60 | 248 | -.006  | .116  | .439  | -.321  |
| 60 | 130 | -.204  | .123  | .202  | -.849  | 60 | 181 | -.019  | .127  | .502  | -.369 | 60 | 249 | -.036  | .112  | .454  | -.344  |
| 60 | 131 | -.160  | .125  | .265  | -.772  | 60 | 182 | -.043  | .130  | .495  | -.334 | 60 | 250 | -.015  | .102  | .337  | -.319  |
| 60 | 132 | -.170  | .131  | .640  | -.215  | 60 | 201 | -.342  | .134  | .105  | -.920 | 60 | 301 | -.202  | .128  | .170  | -.799  |
| 60 | 133 | -.081  | .133  | .536  | -.418  | 60 | 202 | -.297  | .150  | .195  | -.833 | 60 | 302 | -.198  | .123  | .224  | -.838  |
| 60 | 134 | -.040  | .118  | .413  | -.455  | 60 | 203 | -.154  | .172  | .451  | -.841 | 60 | 303 | -.175  | .133  | .263  | -.655  |
| 60 | 135 | -.024  | .113  | .374  | -.373  | 60 | 204 | -.100  | .205  | .537  | -.836 | 60 | 304 | -.181  | .122  | .194  | -.634  |
| 60 | 136 | -.008  | .095  | .289  | -.312  | 60 | 205 | -.051  | .218  | .807  | -.879 | 60 | 305 | -.175  | .142  | .280  | -.744  |
| 60 | 137 | -.035  | .119  | .345  | -.424  | 60 | 206 | -.225  | .196  | .497  | -.914 | 60 | 306 | -.219  | .138  | .250  | -.829  |
| 60 | 138 | -.088  | .115  | .286  | -.512  | 60 | 207 | -.032  | .245  | .806  | -.975 | 60 | 307 | -.238  | .153  | .221  | -.814  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD | TAP   | CPMEAN | CPRMS | CPMAX | CPMIN  | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN   |
|----|-------|--------|-------|-------|--------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|---------|
| 60 | 33008 | .290   | .190  | .317  | -.948  | 60 | 358 | -.240  | .138  | .156  | -.831 | 60 | 424 | -.107  | .126  | .278  | -.541   |
| 60 | 33009 | .349   | .215  | .268  | -1.346 | 60 | 359 | -.076  | .098  | .214  | -.415 | 60 | 425 | -.097  | .095  | .260  | -.383   |
| 60 | 33010 | .343   | .209  | .202  | -1.121 | 60 | 360 | -.078  | .089  | .240  | -.360 | 60 | 426 | -.097  | .105  | .309  | -.485   |
| 60 | 33011 | .409   | .189  | .155  | -1.395 | 60 | 361 | -.080  | .114  | .251  | -.477 | 60 | 427 | -.106  | .103  | .344  | -.489   |
| 60 | 33012 | .362   | .178  | .199  | -1.603 | 60 | 362 | -.083  | .115  | .260  | -.423 | 60 | 428 | -.148  | .110  | .241  | -.673   |
| 60 | 33013 | .445   | .186  | .059  | -1.162 | 60 | 363 | -.100  | .091  | .203  | -.364 | 60 | 429 | -.160  | .132  | .311  | -.666   |
| 60 | 33014 | .188   | .124  | .185  | -.641  | 60 | 364 | -.109  | .100  | .280  | -.775 | 60 | 430 | -.122  | .114  | .260  | -.726   |
| 60 | 33015 | .170   | .141  | .306  | -.623  | 60 | 365 | -.133  | .106  | .183  | -.585 | 60 | 431 | -.096  | .107  | .272  | -.479   |
| 60 | 33016 | .176   | .140  | .261  | -.733  | 60 | 366 | -.170  | .104  | .198  | -.713 | 60 | 432 | -.097  | .104  | .240  | -.436   |
| 60 | 33017 | .172   | .122  | .198  | -.786  | 60 | 367 | -.203  | .129  | .197  | -.625 | 60 | 433 | -.056  | .115  | .414  | -.426   |
| 60 | 33018 | .176   | .121  | .211  | -.680  | 60 | 368 | -.079  | .094  | .222  | -.558 | 60 | 434 | -.060  | .112  | .323  | -.405   |
| 60 | 33019 | .203   | .130  | .195  | -.678  | 60 | 369 | -.068  | .096  | .253  | -.422 | 60 | 435 | -.078  | .100  | .248  | -.395   |
| 60 | 33020 | .322   | .168  | .152  | -1.029 | 60 | 370 | -.068  | .090  | .187  | -.379 | 60 | 436 | -.063  | .114  | .325  | -.385   |
| 60 | 33021 | .438   | .205  | .210  | -1.177 | 60 | 371 | -.061  | .103  | .289  | -.374 | 60 | 437 | -.086  | .086  | .193  | -.388   |
| 60 | 33022 | .477   | .222  | .132  | -1.424 | 60 | 372 | -.068  | .099  | .266  | -.383 | 60 | 438 | -.042  | .102  | .293  | -.353   |
| 60 | 33023 | .123   | .113  | .292  | -.807  | 60 | 373 | -.084  | .088  | .189  | -.374 | 60 | 439 | -.060  | .101  | .279  | -.444   |
| 60 | 33024 | .133   | .114  | .205  | -.681  | 60 | 374 | -.075  | .105  | .262  | -.418 | 60 | 440 | -.053  | .112  | .383  | -.404   |
| 60 | 33025 | .131   | .127  | .279  | -.571  | 60 | 375 | -.100  | .082  | .160  | -.389 | 60 | 441 | -.044  | .099  | .365  | -.352   |
| 60 | 33026 | .144   | .125  | .279  | -.582  | 60 | 376 | -.091  | .098  | .238  | -.493 | 60 | 442 | -.083  | .096  | .297  | -.384   |
| 60 | 33027 | .189   | .129  | .255  | -.778  | 60 | 377 | -.053  | .096  | .337  | -.338 | 60 | 443 | -.232  | .084  | .038  | -.638   |
| 60 | 33028 | .185   | .149  | .274  | -.726  | 60 | 378 | -.066  | .094  | .218  | -.361 | 60 | 444 | -.210  | .099  | .593  | -.092   |
| 60 | 33029 | .263   | .155  | .163  | -1.032 | 60 | 379 | -.060  | .100  | .256  | -.342 | 60 | 445 | -.283  | .111  | .680  | -.135   |
| 60 | 33030 | .332   | .203  | .224  | -1.085 | 60 | 380 | -.074  | .095  | .281  | -.386 | 60 | 446 | -.175  | .099  | .507  | -.124   |
| 60 | 33031 | .432   | .206  | .137  | -1.193 | 60 | 381 | -.082  | .089  | .211  | -.338 | 60 | 447 | -.160  | .091  | .471  | -.228   |
| 60 | 33032 | .124   | .114  | .299  | -.645  | 60 | 382 | -.071  | .095  | .242  | -.356 | 60 | 448 | -.153  | .080  | .434  | -.133   |
| 60 | 33033 | .127   | .105  | .240  | -.427  | 60 | 383 | -.089  | .110  | .295  | -.396 | 60 | 449 | -.161  | .103  | .469  | -.182   |
| 60 | 33034 | .144   | .105  | .209  | -.503  | 60 | 384 | -.093  | .098  | .245  | -.440 | 60 | 450 | -.093  | .091  | .372  | -.235   |
| 60 | 33035 | .156   | .109  | .209  | -.512  | 60 | 401 | -.187  | .122  | .237  | -.667 | 60 | 701 | -.027  | .118  | .352  | -.360   |
| 60 | 33036 | .141   | .123  | .281  | -.616  | 60 | 402 | -.209  | .119  | .159  | -.882 | 60 | 702 | -.060  | .125  | .452  | -.467   |
| 60 | 33037 | .172   | .122  | .237  | -.638  | 60 | 403 | -.163  | .130  | .232  | -.602 | 60 | 703 | -.069  | .124  | .453  | -.451   |
| 60 | 33038 | .183   | .135  | .295  | -.682  | 60 | 404 | -.137  | .109  | .188  | -.563 | 60 | 705 | -.048  | .117  | .428  | -.410   |
| 60 | 33039 | .233   | .124  | .088  | -.708  | 60 | 405 | -.159  | .104  | .153  | -.497 | 60 | 706 | -.033  | .105  | .368  | -.369   |
| 60 | 33040 | .297   | .155  | .157  | -1.031 | 60 | 406 | -.150  | .122  | .267  | -.524 | 60 | 707 | -.037  | .102  | .367  | -.368   |
| 60 | 33041 | .113   | .096  | .216  | -.427  | 60 | 407 | -.131  | .122  | .222  | -.534 | 60 | 708 | -.050  | .133  | .494  | -.562   |
| 60 | 33042 | .143   | .089  | .183  | -.451  | 60 | 408 | -.160  | .114  | .156  | -.604 | 60 | 710 | -.042  | .110  | .362  | -.426   |
| 60 | 33043 | .129   | .110  | .219  | -.549  | 60 | 409 | -.162  | .111  | .218  | -.556 | 60 | 711 | -.034  | .097  | .316  | -.379   |
| 60 | 33044 | .133   | .102  | .120  | -.549  | 60 | 410 | -.140  | .103  | .201  | -.542 | 60 | 712 | -.063  | .110  | .355  | -.387   |
| 60 | 33045 | .176   | .106  | .170  | -.581  | 60 | 411 | -.140  | .117  | .258  | -.675 | 60 | 713 | -.047  | .103  | .265  | -.363   |
| 60 | 33046 | .164   | .131  | .251  | -.775  | 60 | 412 | -.163  | .116  | .220  | -.856 | 60 | 714 | -.022  | .114  | .413  | -.339   |
| 60 | 33047 | .142   | .118  | .236  | -.593  | 60 | 413 | -.124  | .124  | .281  | -.545 | 60 | 716 | -.041  | .098  | .246  | -.363   |
| 60 | 33048 | .178   | .113  | .149  | -.574  | 60 | 414 | -.132  | .127  | .274  | -.621 | 60 | 717 | -.024  | .120  | .404  | -.408   |
| 60 | 33049 | .282   | .135  | .079  | -.956  | 60 | 415 | -.119  | .107  | .297  | -.490 | 60 | 801 | -.013  | .117  | .502  | -.347   |
| 60 | 33050 | .100   | .089  | .234  | -.437  | 60 | 416 | -.116  | .118  | .292  | -.492 | 60 | 802 | -.049  | .122  | .444  | -.459   |
| 60 | 33051 | .093   | .106  | .306  | -.376  | 60 | 417 | -.121  | .116  | .236  | -.541 | 60 | 803 | -.050  | .109  | .333  | -.388   |
| 60 | 33052 | .120   | .110  | .229  | -.456  | 60 | 418 | -.105  | .125  | .325  | -.471 | 60 | 804 | -.073  | .132  | .336  | -.518   |
| 60 | 33053 | .123   | .099  | .190  | -.482  | 60 | 419 | -.120  | .107  | .222  | -.523 | 60 | 901 | -.192  | .154  | .246  | -.929   |
| 60 | 33054 | .134   | .111  | .234  | -.552  | 60 | 420 | -.099  | .115  | .219  | -.527 | 60 | 902 | -.162  | .156  | .317  | -.742   |
| 60 | 33055 | .151   | .109  | .189  | -.497  | 60 | 421 | -.098  | .103  | .201  | -.758 | 60 | 903 | -.219  | .154  | .209  | -.749   |
| 60 | 33056 | .164   | .129  | .216  | -.730  | 60 | 422 | -.102  | .095  | .212  | -.406 | 60 | 904 | -.344  | .207  | .317  | -.1.341 |
| 60 | 33057 | .224   | .135  | .149  | -.776  | 60 | 423 | -.116  | .118  | .313  | -.511 | 60 | 905 | -.408  | .182  | .249  | -.1.336 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|
| 60 | 906 | .166   | .127  | .288  | .768  | 70 | 137 | .083   | .144  | .472  | .347  | 70 | 206 | .231   | .187  | .394  | .969  |
| 60 | 907 | .086   | .132  | .373  | .660  | 70 | 138 | .110   | .139  | .432  | .572  | 70 | 207 | .012   | .248  | .917  | .781  |
| 60 | 908 | .143   | .142  | .395  | .626  | 70 | 139 | .160   | .144  | .444  | .646  | 70 | 208 | .363   | .219  | .324  | .285  |
| 60 | 909 | .142   | .133  | .308  | .610  | 70 | 140 | .138   | .127  | .376  | .572  | 70 | 209 | .026   | .227  | .741  | .066  |
| 60 | 910 | .145   | .133  | .308  | .610  | 70 | 141 | .011   | .144  | .608  | .425  | 70 | 210 | .209   | .249  | .136  | .679  |
| 60 | 911 | .170   | .120  | .220  | .500  | 70 | 142 | .012   | .128  | .594  | .415  | 70 | 211 | .280   | .227  | .012  | .439  |
| 60 | 912 | .121   | .173  | .536  | .933  | 70 | 143 | .033   | .130  | .327  | .476  | 70 | 212 | .175   | .190  | .855  | .469  |
| 60 | 913 | .383   | .161  | .683  | .933  | 70 | 144 | .035   | .110  | .327  | .362  | 70 | 213 | .338   | .222  | .219  | .240  |
| 60 | 914 | .349   | .140  | .683  | .933  | 70 | 145 | .041   | .135  | .503  | .427  | 70 | 214 | .194   | .193  | .651  | .805  |
| 60 | 915 | .199   | .149  | .272  | .500  | 70 | 146 | .030   | .130  | .486  | .387  | 70 | 215 | .046   | .183  | .702  | .487  |
| 60 | 916 | .068   | .126  | .386  | .699  | 70 | 147 | .071   | .133  | .488  | .448  | 70 | 216 | .075   | .153  | .736  | .395  |
| 60 | 917 | .113   | .141  | .327  | .699  | 70 | 148 | .106   | .124  | .397  | .498  | 70 | 217 | .072   | .153  | .655  | .515  |
| 60 | 918 | .192   | .136  | .239  | .704  | 70 | 149 | .093   | .125  | .446  | .446  | 70 | 218 | .221   | .171  | .289  | .760  |
| 60 | 919 | .346   | .162  | .150  | .255  | 70 | 150 | .043   | .144  | .749  | .377  | 70 | 219 | .134   | .170  | .543  | .998  |
| 70 | 101 | .117   | .216  | .773  | .918  | 70 | 151 | .007   | .131  | .581  | .442  | 70 | 220 | .059   | .133  | .553  | .520  |
| 70 | 102 | .249   | .185  | .366  | .939  | 70 | 152 | .014   | .111  | .441  | .382  | 70 | 221 | .003   | .131  | .529  | .489  |
| 70 | 103 | .161   | .181  | .657  | .939  | 70 | 153 | .013   | .120  | .395  | .407  | 70 | 222 | .066   | .134  | .637  | .584  |
| 70 | 104 | .135   | .134  | .432  | .753  | 70 | 154 | .021   | .122  | .410  | .412  | 70 | 223 | .142   | .142  | .440  | .611  |
| 70 | 105 | .126   | .137  | .336  | .753  | 70 | 155 | .031   | .117  | .369  | .388  | 70 | 224 | .147   | .130  | .245  | .555  |
| 70 | 106 | .078   | .130  | .336  | .622  | 70 | 156 | .030   | .103  | .275  | .359  | 70 | 225 | .093   | .122  | .581  | .478  |
| 70 | 107 | .070   | .134  | .441  | .622  | 70 | 157 | .120   | .137  | .288  | .652  | 70 | 226 | .047   | .109  | .361  | .381  |
| 70 | 108 | .070   | .111  | .334  | .500  | 70 | 158 | .114   | .133  | .286  | .672  | 70 | 227 | .084   | .108  | .342  | .361  |
| 70 | 109 | .083   | .138  | .361  | .500  | 70 | 159 | .005   | .136  | .305  | .364  | 70 | 228 | .134   | .113  | .268  | .588  |
| 70 | 110 | .083   | .141  | .361  | .500  | 70 | 160 | .023   | .120  | .343  | .353  | 70 | 229 | .157   | .122  | .289  | .637  |
| 70 | 111 | .191   | .149  | .296  | .627  | 70 | 161 | .020   | .126  | .475  | .407  | 70 | 230 | .092   | .119  | .317  | .459  |
| 70 | 112 | .192   | .131  | .256  | .697  | 70 | 162 | .027   | .119  | .413  | .394  | 70 | 231 | .061   | .103  | .343  | .395  |
| 70 | 113 | .211   | .147  | .388  | .714  | 70 | 163 | .036   | .121  | .418  | .440  | 70 | 232 | .068   | .108  | .383  | .328  |
| 70 | 114 | .015   | .193  | .746  | .679  | 70 | 164 | .047   | .097  | .223  | .341  | 70 | 233 | .132   | .107  | .245  | .481  |
| 70 | 115 | .073   | .178  | .611  | .766  | 70 | 165 | .063   | .135  | .318  | .474  | 70 | 234 | .132   | .112  | .259  | .514  |
| 70 | 116 | .216   | .210  | .468  | .887  | 70 | 166 | .100   | .134  | .258  | .511  | 70 | 235 | .118   | .095  | .259  | .496  |
| 70 | 117 | .048   | .139  | .385  | .547  | 70 | 167 | .099   | .137  | .306  | .548  | 70 | 236 | .034   | .098  | .294  | .361  |
| 70 | 118 | .041   | .125  | .385  | .445  | 70 | 168 | .014   | .123  | .325  | .350  | 70 | 237 | .006   | .111  | .395  | .429  |
| 70 | 119 | .039   | .129  | .385  | .511  | 70 | 169 | .025   | .109  | .364  | .398  | 70 | 238 | .095   | .097  | .200  | .450  |
| 70 | 120 | .121   | .113  | .323  | .696  | 70 | 170 | .027   | .110  | .367  | .387  | 70 | 239 | .072   | .113  | .350  | .418  |
| 70 | 121 | .235   | .146  | .280  | .696  | 70 | 171 | .034   | .114  | .372  | .421  | 70 | 240 | .051   | .119  | .330  | .439  |
| 70 | 122 | .187   | .141  | .293  | .714  | 70 | 172 | .032   | .098  | .295  | .416  | 70 | 241 | .070   | .101  | .257  | .448  |
| 70 | 123 | .029   | .183  | .492  | .600  | 70 | 173 | .018   | .117  | .416  | .346  | 70 | 242 | .022   | .089  | .278  | .334  |
| 70 | 124 | .106   | .152  | .422  | .600  | 70 | 174 | .049   | .114  | .351  | .381  | 70 | 243 | .082   | .117  | .384  | .360  |
| 70 | 125 | .135   | .179  | .323  | .626  | 70 | 175 | .079   | .122  | .344  | .451  | 70 | 244 | .055   | .114  | .327  | .390  |
| 70 | 126 | .055   | .126  | .329  | .500  | 70 | 176 | .090   | .109  | .286  | .427  | 70 | 245 | .077   | .108  | .270  | .481  |
| 70 | 127 | .056   | .123  | .333  | .500  | 70 | 177 | .003   | .119  | .417  | .364  | 70 | 246 | .068   | .114  | .306  | .438  |
| 70 | 128 | .075   | .164  | .218  | .412  | 70 | 178 | .006   | .119  | .424  | .369  | 70 | 247 | .050   | .101  | .288  | .406  |
| 70 | 129 | .115   | .136  | .262  | .515  | 70 | 180 | .012   | .112  | .348  | .356  | 70 | 248 | .013   | .113  | .326  | .333  |
| 70 | 130 | .183   | .148  | .334  | .333  | 70 | 181 | .009   | .118  | .347  | .361  | 70 | 249 | .028   | .103  | .319  | .437  |
| 70 | 131 | .147   | .148  | .334  | .333  | 70 | 182 | .002   | .117  | .340  | .349  | 70 | 250 | .022   | .101  | .259  | .361  |
| 70 | 132 | .020   | .158  | .433  | .444  | 70 | 201 | .295   | .144  | .141  | .894  | 70 | 301 | .219   | .151  | .324  | .788  |
| 70 | 133 | .039   | .134  | .433  | .444  | 70 | 202 | .293   | .161  | .261  | .859  | 70 | 302 | .335   | .149  | .224  | .862  |
| 70 | 134 | .061   | .124  | .434  | .444  | 70 | 203 | .076   | .166  | .332  | .889  | 70 | 303 | .232   | .130  | .154  | .685  |
| 70 | 135 | .050   | .117  | .434  | .444  | 70 | 204 | .032   | .196  | .610  | .492  | 70 | 304 | .191   | .137  | .218  | .670  |
| 70 | 136 | .057   | .101  | .434  | .444  | 70 | 205 | .146   | .220  | .903  | .492  | 70 | 305 | .228   | .146  | .185  | .823  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|
| 70 | 306 | .209   | .146  | .313  | -.721 | 70 | 334 | -.092  | .098  | .197  | -.383 | 70 | 422 | -.121  | .109  | .240  | -.542 |
| 70 | 307 | .234   | .167  | .310  | -.848 | 70 | 335 | -.101  | .099  | .215  | -.442 | 70 | 423 | -.105  | .096  | .264  | -.424 |
| 70 | 308 | .305   | .188  | .211  | -.111 | 70 | 336 | -.134  | .095  | .141  | -.500 | 70 | 424 | -.186  | .104  | .265  | -.471 |
| 70 | 309 | .376   | .213  | .171  | -.111 | 70 | 337 | -.070  | .102  | .200  | -.460 | 70 | 425 | -.083  | .111  | .280  | -.524 |
| 70 | 310 | .449   | .178  | .114  | -.111 | 70 | 338 | -.092  | .106  | .256  | -.443 | 70 | 426 | -.089  | .117  | .258  | -.442 |
| 70 | 311 | .447   | .179  | .157  | -.188 | 70 | 339 | -.081  | .086  | .225  | -.388 | 70 | 427 | -.083  | .124  | .409  | -.515 |
| 70 | 312 | .388   | .157  | .188  | -.090 | 70 | 340 | -.090  | .094  | .211  | -.423 | 70 | 428 | -.109  | .108  | .292  | -.452 |
| 70 | 313 | .431   | .157  | .188  | -.090 | 70 | 341 | -.075  | .105  | .277  | -.453 | 70 | 429 | -.099  | .105  | .270  | -.494 |
| 70 | 314 | .466   | .183  | .168  | -.111 | 70 | 342 | -.088  | .108  | .239  | -.437 | 70 | 430 | -.090  | .106  | .222  | -.402 |
| 70 | 315 | .244   | .143  | .168  | -.111 | 70 | 343 | -.068  | .117  | .361  | -.432 | 70 | 431 | -.081  | .104  | .204  | -.395 |
| 70 | 316 | .192   | .125  | .150  | -.090 | 70 | 344 | -.110  | .096  | .209  | -.399 | 70 | 432 | -.076  | .103  | .262  | -.525 |
| 70 | 317 | .147   | .133  | .153  | -.090 | 70 | 345 | -.121  | .101  | .233  | -.397 | 70 | 433 | -.066  | .106  | .275  | -.424 |
| 70 | 318 | .153   | .127  | .154  | -.090 | 70 | 346 | -.088  | .098  | .190  | -.384 | 70 | 434 | -.057  | .114  | .292  | -.432 |
| 70 | 319 | .183   | .138  | .182  | -.090 | 70 | 347 | -.075  | .095  | .216  | -.401 | 70 | 435 | -.084  | .104  | .265  | -.432 |
| 70 | 320 | .417   | .206  | .158  | -.111 | 70 | 348 | -.065  | .092  | .246  | -.422 | 70 | 436 | -.068  | .105  | .264  | -.391 |
| 70 | 321 | .540   | .225  | .074  | -.111 | 70 | 349 | -.070  | .098  | .272  | -.381 | 70 | 437 | -.084  | .103  | .265  | -.408 |
| 70 | 322 | .564   | .232  | .132  | -.111 | 70 | 350 | -.057  | .101  | .278  | -.360 | 70 | 438 | -.058  | .102  | .272  | -.360 |
| 70 | 323 | .336   | .223  | .098  | -.090 | 70 | 351 | -.084  | .095  | .215  | -.397 | 70 | 439 | -.071  | .088  | .227  | -.394 |
| 70 | 324 | .364   | .231  | .100  | -.090 | 70 | 352 | -.074  | .097  | .243  | -.353 | 70 | 440 | -.052  | .098  | .290  | -.395 |
| 70 | 325 | .399   | .239  | .117  | -.090 | 70 | 353 | -.086  | .096  | .237  | -.353 | 70 | 441 | -.059  | .111  | .298  | -.455 |
| 70 | 326 | .364   | .228  | .111  | -.090 | 70 | 354 | -.077  | .095  | .288  | -.376 | 70 | 442 | -.081  | .101  | .260  | -.489 |
| 70 | 327 | .377   | .237  | .113  | -.090 | 70 | 355 | -.047  | .089  | .267  | -.365 | 70 | 443 | -.295  | .091  | .623  | -.004 |
| 70 | 328 | .352   | .229  | .113  | -.090 | 70 | 356 | -.044  | .088  | .222  | -.408 | 70 | 444 | -.208  | .111  | .539  | -.161 |
| 70 | 329 | .352   | .229  | .113  | -.090 | 70 | 357 | -.088  | .099  | .228  | -.412 | 70 | 445 | -.236  | .114  | .632  | -.217 |
| 70 | 330 | .352   | .229  | .113  | -.090 | 70 | 358 | -.088  | .099  | .228  | -.412 | 70 | 446 | -.165  | .087  | .501  | -.121 |
| 70 | 331 | .444   | .192  | .132  | -.111 | 70 | 359 | -.061  | .093  | .361  | -.412 | 70 | 447 | -.136  | .098  | .431  | -.139 |
| 70 | 332 | .479   | .231  | .091  | -.111 | 70 | 360 | -.061  | .093  | .222  | -.428 | 70 | 448 | -.171  | .096  | .495  | -.139 |
| 70 | 333 | .104   | .098  | .222  | -.090 | 70 | 361 | -.088  | .106  | .288  | -.398 | 70 | 449 | -.161  | .096  | .488  | -.190 |
| 70 | 334 | .134   | .124  | .222  | -.090 | 70 | 362 | -.073  | .090  | .215  | -.383 | 70 | 450 | -.095  | .100  | .406  | -.254 |
| 70 | 335 | .122   | .107  | .222  | -.090 | 70 | 363 | -.088  | .082  | .186  | -.418 | 70 | 701 | -.037  | .107  | .262  | -.365 |
| 70 | 336 | .096   | .119  | .222  | -.090 | 70 | 400 | -.204  | .156  | .254  | -.765 | 70 | 702 | -.044  | .116  | .395  | -.414 |
| 70 | 337 | .091   | .126  | .303  | -.090 | 70 | 401 | -.177  | .142  | .240  | -.806 | 70 | 703 | -.050  | .115  | .376  | -.407 |
| 70 | 338 | .149   | .113  | .222  | -.090 | 70 | 402 | -.158  | .116  | .195  | -.750 | 70 | 704 | -.036  | .109  | .385  | -.379 |
| 70 | 339 | .148   | .112  | .192  | -.090 | 70 | 403 | -.153  | .121  | .188  | -.662 | 70 | 705 | -.051  | .116  | .343  | -.445 |
| 70 | 340 | .251   | .137  | .179  | -.090 | 70 | 404 | -.164  | .108  | .196  | -.558 | 70 | 706 | -.057  | .113  | .322  | -.436 |
| 70 | 341 | .268   | .142  | .179  | -.090 | 70 | 405 | -.155  | .129  | .292  | -.569 | 70 | 707 | -.060  | .128  | .423  | -.488 |
| 70 | 342 | .268   | .142  | .179  | -.090 | 70 | 406 | -.155  | .129  | .292  | -.569 | 70 | 708 | -.063  | .118  | .329  | -.476 |
| 70 | 343 | .268   | .142  | .179  | -.090 | 70 | 407 | -.155  | .129  | .292  | -.569 | 70 | 709 | -.063  | .118  | .329  | -.476 |
| 70 | 344 | .268   | .142  | .179  | -.090 | 70 | 408 | -.155  | .129  | .292  | -.569 | 70 | 710 | -.063  | .118  | .329  | -.476 |
| 70 | 345 | .268   | .142  | .179  | -.090 | 70 | 409 | -.155  | .129  | .292  | -.569 | 70 | 711 | -.063  | .118  | .329  | -.476 |
| 70 | 346 | .268   | .142  | .179  | -.090 | 70 | 410 | -.155  | .129  | .292  | -.569 | 70 | 712 | -.063  | .118  | .329  | -.476 |
| 70 | 347 | .268   | .142  | .179  | -.090 | 70 | 411 | -.155  | .129  | .292  | -.569 | 70 | 713 | -.063  | .118  | .329  | -.476 |
| 70 | 348 | .268   | .142  | .179  | -.090 | 70 | 412 | -.155  | .129  | .292  | -.569 | 70 | 714 | -.063  | .118  | .329  | -.476 |
| 70 | 349 | .268   | .142  | .179  | -.090 | 70 | 413 | -.155  | .129  | .292  | -.569 | 70 | 715 | -.063  | .118  | .329  | -.476 |
| 70 | 350 | .268   | .142  | .179  | -.090 | 70 | 414 | -.155  | .129  | .292  | -.569 | 70 | 716 | -.063  | .118  | .329  | -.476 |
| 70 | 351 | .268   | .142  | .179  | -.090 | 70 | 415 | -.155  | .129  | .292  | -.569 | 70 | 717 | -.063  | .118  | .329  | -.476 |
| 70 | 352 | .268   | .142  | .179  | -.090 | 70 | 416 | -.155  | .129  | .292  | -.569 | 70 | 801 | -.014  | .122  | .484  | -.381 |
| 70 | 353 | .268   | .142  | .179  | -.090 | 70 | 417 | -.155  | .129  | .292  | -.569 | 70 | 802 | -.076  | .127  | .457  | -.482 |
| 70 | 354 | .268   | .142  | .179  | -.090 | 70 | 418 | -.155  | .129  | .292  | -.569 | 70 | 803 | -.075  | .110  | .399  | -.439 |
| 70 | 355 | .268   | .142  | .179  | -.090 | 70 | 419 | -.155  | .129  | .292  | -.569 | 70 | 804 | -.102  | .127  | .329  | -.475 |
| 70 | 356 | .268   | .142  | .179  | -.090 | 70 | 420 | -.155  | .129  | .292  | -.569 | 70 | 901 | -.306  | .200  | .224  | -.220 |
| 70 | 357 | .268   | .142  | .179  | -.090 | 70 | 421 | -.155  | .129  | .292  | -.569 | 70 | 902 | -.134  | .145  | .335  | -.617 |
| 70 | 358 | .268   | .142  | .179  | -.090 | 70 | 422 | -.155  | .129  | .292  | -.569 | 70 | 903 | -.151  | .130  | .257  | -.561 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN  | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|----|-----|--------|-------|-------|--------|----|------|--------|-------|-------|--------|----|-----|--------|-------|-------|--------|
| 70 | 904 | -.219  | .209  | .540  | -1.036 | 80 | 1335 | -.103  | .133  | .273  | -.666  | 80 | 204 | -.007  | .189  | 1.054 | -.698  |
| 70 | 905 | -.352  | .195  | .231  | -1.034 | 80 | 1336 | -.097  | .115  | .236  | -.450  | 80 | 205 | -.371  | .215  | .757  | -.817  |
| 70 | 906 | -.171  | .154  | .290  | -.726  | 80 | 1337 | -.086  | .122  | .302  | -.480  | 80 | 206 | -.182  | .175  | .271  | -.922  |
| 70 | 907 | -.021  | .140  | .503  | -.463  | 80 | 1338 | -.113  | .122  | .297  | -.473  | 80 | 207 | -.182  | .219  | .707  | -1.248 |
| 70 | 908 | -.090  | .139  | .330  | -.567  | 80 | 1339 | -.165  | .136  | .139  | -.674  | 80 | 208 | -.257  | .198  | .384  | -.920  |
| 70 | 909 | -.084  | .132  | .280  | -.559  | 80 | 140  | -.142  | .114  | .255  | -.479  | 80 | 209 | -.140  | .235  | .812  | -.842  |
| 70 | 910 | -.105  | .138  | .353  | -.652  | 80 | 141  | -.132  | .170  | .357  | -1.049 | 80 | 210 | -.382  | .269  | 1.269 | -.657  |
| 70 | 911 | -.149  | .128  | .244  | -.699  | 80 | 142  | -.128  | .150  | .304  | -.941  | 80 | 211 | -.311  | .219  | .983  | -.369  |
| 70 | 912 | -.157  | .190  | .588  | -.848  | 80 | 143  | -.126  | .145  | .318  | -.770  | 80 | 212 | -.108  | .203  | .898  | -.714  |
| 70 | 913 | -.404  | .164  | .123  | -.958  | 80 | 144  | -.093  | .116  | .253  | -.535  | 80 | 213 | -.238  | .214  | .404  | -1.244 |
| 70 | 914 | -.412  | .147  | .027  | -.993  | 80 | 145  | -.074  | .120  | .314  | -.580  | 80 | 214 | -.029  | .259  | .946  | -.921  |
| 70 | 915 | -.336  | .192  | .154  | -1.097 | 80 | 146  | -.077  | .116  | .332  | -.489  | 80 | 215 | -.185  | .213  | .927  | -.400  |
| 70 | 916 | -.037  | .116  | .288  | -.456  | 80 | 147  | -.089  | .119  | .352  | -.536  | 80 | 216 | -.155  | .196  | .842  | -.387  |
| 70 | 917 | -.070  | .147  | .460  | -.686  | 80 | 148  | -.118  | .111  | .273  | -.505  | 80 | 217 | -.020  | .172  | .746  | -.712  |
| 70 | 918 | -.265  | .168  | .214  | -.802  | 80 | 149  | -.126  | .124  | .342  | -.634  | 80 | 218 | -.161  | .198  | .489  | -.932  |
| 70 | 919 | -.352  | .174  | .166  | -1.091 | 80 | 150  | -.119  | .139  | .371  | -.754  | 80 | 219 | -.017  | .217  | .674  | -.791  |
| 80 | 101 | -.300  | .195  | .501  | -1.145 | 80 | 151  | -.115  | .130  | .333  | -.625  | 80 | 220 | -.041  | .183  | .560  | -.710  |
| 80 | 102 | -.403  | .170  | .208  | -1.037 | 80 | 152  | -.107  | .107  | .374  | -.448  | 80 | 221 | -.006  | .148  | .688  | -.614  |
| 80 | 103 | -.325  | .174  | .306  | -.932  | 80 | 153  | -.065  | .140  | .563  | -.528  | 80 | 222 | -.091  | .161  | .481  | -.788  |
| 80 | 104 | -.285  | .138  | .218  | -.788  | 80 | 154  | -.062  | .141  | .581  | -.512  | 80 | 223 | -.107  | .157  | .371  | -.736  |
| 80 | 105 | -.213  | .135  | .209  | -.688  | 80 | 155  | -.061  | .138  | .582  | -.479  | 80 | 224 | -.041  | .164  | .636  | -.533  |
| 80 | 106 | -.154  | .126  | .247  | -.579  | 80 | 156  | -.065  | .126  | .495  | -.444  | 80 | 225 | -.039  | .147  | .582  | -.538  |
| 80 | 107 | -.125  | .128  | .299  | -.561  | 80 | 157  | -.073  | .137  | .372  | -.506  | 80 | 226 | -.066  | .129  | .374  | -.528  |
| 80 | 108 | -.122  | .108  | .226  | -.450  | 80 | 158  | -.071  | .138  | .380  | -.480  | 80 | 227 | -.101  | .140  | .330  | -.802  |
| 80 | 109 | -.110  | .129  | .259  | -.565  | 80 | 159  | -.074  | .138  | .355  | -.539  | 80 | 228 | -.089  | .133  | .423  | -.566  |
| 80 | 110 | -.126  | .134  | .299  | -.579  | 80 | 160  | -.078  | .125  | .336  | -.442  | 80 | 229 | -.065  | .119  | .367  | -.460  |
| 80 | 111 | -.217  | .142  | .195  | -.738  | 80 | 161  | -.072  | .127  | .357  | -.591  | 80 | 230 | -.061  | .122  | .336  | -.561  |
| 80 | 112 | -.217  | .128  | .136  | -.795  | 80 | 162  | -.066  | .120  | .322  | -.460  | 80 | 231 | -.062  | .120  | .280  | -.509  |
| 80 | 113 | -.237  | .139  | .154  | -.829  | 80 | 163  | -.064  | .124  | .343  | -.447  | 80 | 232 | -.096  | .131  | .311  | -.787  |
| 80 | 114 | -.195  | .203  | .544  | -.829  | 80 | 164  | -.064  | .099  | .223  | -.351  | 80 | 233 | -.083  | .114  | .263  | -.434  |
| 80 | 115 | -.254  | .180  | .331  | -.846  | 80 | 165  | -.083  | .109  | .251  | -.445  | 80 | 234 | -.076  | .120  | .411  | -.447  |
| 80 | 116 | -.456  | .218  | .168  | -1.129 | 80 | 166  | -.090  | .104  | .215  | -.450  | 80 | 235 | -.078  | .116  | .382  | -.469  |
| 80 | 117 | -.137  | .144  | .295  | -.674  | 80 | 167  | -.089  | .110  | .233  | -.517  | 80 | 236 | -.066  | .098  | .282  | -.487  |
| 80 | 118 | -.095  | .121  | .362  | -.615  | 80 | 168  | -.078  | .097  | .227  | -.413  | 80 | 237 | -.088  | .114  | .327  | -.490  |
| 80 | 119 | -.102  | .125  | .320  | -.566  | 80 | 169  | -.066  | .125  | .399  | -.470  | 80 | 238 | -.082  | .108  | .284  | -.421  |
| 80 | 120 | -.154  | .111  | .189  | -.557  | 80 | 170  | -.068  | .126  | .392  | -.467  | 80 | 239 | -.071  | .104  | .247  | -.409  |
| 80 | 121 | -.241  | .132  | .100  | -.694  | 80 | 171  | -.068  | .129  | .406  | -.514  | 80 | 240 | -.057  | .097  | .249  | -.456  |
| 80 | 122 | -.188  | .123  | .126  | -.605  | 80 | 172  | -.068  | .115  | .353  | -.438  | 80 | 241 | -.055  | .116  | .338  | -.424  |
| 80 | 123 | -.195  | .242  | .666  | -1.159 | 80 | 173  | -.063  | .121  | .326  | -.468  | 80 | 242 | -.061  | .095  | .243  | -.348  |
| 80 | 124 | -.254  | .192  | .324  | -.892  | 80 | 174  | -.072  | .119  | .294  | -.452  | 80 | 243 | -.059  | .106  | .325  | -.377  |
| 80 | 125 | -.257  | .226  | .324  | -1.000 | 80 | 175  | -.076  | .124  | .320  | -.495  | 80 | 244 | -.087  | .101  | .381  | -.409  |
| 80 | 126 | -.122  | .151  | .332  | -.834  | 80 | 176  | -.089  | .112  | .249  | -.442  | 80 | 245 | -.076  | .110  | .354  | -.416  |
| 80 | 127 | -.105  | .138  | .347  | -.588  | 80 | 177  | -.060  | .125  | .353  | -.468  | 80 | 246 | -.060  | .102  | .339  | -.461  |
| 80 | 128 | -.114  | .118  | .265  | -.458  | 80 | 178  | -.063  | .125  | .354  | -.462  | 80 | 247 | -.062  | .106  | .333  | -.420  |
| 80 | 129 | -.170  | .130  | .260  | -.607  | 80 | 180  | -.064  | .118  | .343  | -.430  | 80 | 248 | -.062  | .113  | .283  | -.433  |
| 80 | 130 | -.253  | .150  | .282  | -.795  | 80 | 181  | -.062  | .114  | .357  | -.551  | 80 | 249 | -.057  | .107  | .299  | -.381  |
| 80 | 131 | -.201  | .147  | .327  | -.736  | 80 | 182  | -.068  | .113  | .345  | -.542  | 80 | 250 | -.071  | .106  | .322  | -.445  |
| 80 | 132 | -.177  | .183  | .283  | -.860  | 80 | 201  | -.276  | .151  | .229  | -.916  | 80 | 251 | -.258  | .144  | .252  | -.799  |
| 80 | 133 | -.212  | .197  | .348  | -1.069 | 80 | 202  | -.398  | .180  | .233  | -1.058 | 80 | 252 | -.280  | .147  | .198  | -.822  |
| 80 | 134 | -.177  | .172  | .237  | -.990  | 80 | 203  | -.014  | .165  | .681  | -.728  | 80 | 253 | -.242  | .133  | .149  | -.822  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|----|--------|-------|-------|-------|----|-----|----|--------|-------|-------|-------|----|-----|----|--------|-------|-------|-------|
| 80 | 304 | -  | 197    | 127   | 200   | 187   | 80 | 420 | -  | 122    | 108   | 292   | 587   |    |     |    |        |       |       |       |
| 80 | 305 | -  | 164    | 135   | 200   | 187   | 80 | 421 | -  | 118    | 115   | 292   | 589   |    |     |    |        |       |       |       |
| 80 | 306 | -  | 186    | 129   | 228   | 188   | 80 | 422 | -  | 135    | 121   | 306   | 714   |    |     |    |        |       |       |       |
| 80 | 307 | -  | 176    | 129   | 228   | 188   | 80 | 423 | -  | 110    | 112   | 248   | 518   |    |     |    |        |       |       |       |
| 80 | 308 | -  | 233    | 134   | 137   | 113   | 80 | 424 | -  | 098    | 107   | 235   | 442   |    |     |    |        |       |       |       |
| 80 | 309 | -  | 292    | 148   | 129   | 111   | 80 | 425 | -  | 110    | 111   | 290   | 460   |    |     |    |        |       |       |       |
| 80 | 310 | -  | 393    | 171   | 246   | 111   | 80 | 426 | -  | 107    | 107   | 259   | 478   |    |     |    |        |       |       |       |
| 80 | 311 | -  | 465    | 182   | 121   | 111   | 80 | 427 | -  | 109    | 109   | 228   | 516   |    |     |    |        |       |       |       |
| 80 | 312 | -  | 478    | 165   | 063   | 111   | 80 | 428 | -  | 090    | 115   | 350   | 418   |    |     |    |        |       |       |       |
| 80 | 313 | -  | 430    | 181   | 234   | 111   | 80 | 429 | -  | 099    | 117   | 283   | 512   |    |     |    |        |       |       |       |
| 80 | 314 | -  | 202    | 131   | 199   | 111   | 80 | 430 | -  | 090    | 111   | 298   | 433   |    |     |    |        |       |       |       |
| 80 | 315 | -  | 252    | 139   | 164   | 111   | 80 | 431 | -  | 090    | 107   | 273   | 508   |    |     |    |        |       |       |       |
| 80 | 316 | -  | 185    | 117   | 164   | 111   | 80 | 432 | -  | 096    | 111   | 289   | 557   |    |     |    |        |       |       |       |
| 80 | 317 | -  | 162    | 120   | 202   | 111   | 80 | 433 | -  | 078    | 100   | 313   | 568   |    |     |    |        |       |       |       |
| 80 | 318 | -  | 173    | 113   | 181   | 111   | 80 | 434 | -  | 084    | 118   | 302   | 506   |    |     |    |        |       |       |       |
| 80 | 319 | -  | 214    | 115   | 174   | 111   | 80 | 435 | -  | 065    | 115   | 295   | 436   |    |     |    |        |       |       |       |
| 80 | 320 | -  | 498    | 203   | 649   | 111   | 80 | 436 | -  | 084    | 108   | 260   | 443   |    |     |    |        |       |       |       |
| 80 | 321 | -  | 618    | 224   | 620   | 111   | 80 | 437 | -  | 083    | 103   | 239   | 398   |    |     |    |        |       |       |       |
| 80 | 322 | -  | 636    | 237   | 102   | 111   | 80 | 438 | -  | 080    | 106   | 248   | 416   |    |     |    |        |       |       |       |
| 80 | 323 | -  | 854    | 128   | 252   | 111   | 80 | 439 | -  | 082    | 112   | 263   | 413   |    |     |    |        |       |       |       |
| 80 | 324 | -  | 805    | 143   | 252   | 111   | 80 | 440 | -  | 059    | 099   | 246   | 493   |    |     |    |        |       |       |       |
| 80 | 325 | -  | 175    | 112   | 231   | 111   | 80 | 441 | -  | 070    | 106   | 273   | 375   |    |     |    |        |       |       |       |
| 80 | 326 | -  | 156    | 129   | 214   | 111   | 80 | 442 | -  | 087    | 109   | 298   | 446   |    |     |    |        |       |       |       |
| 80 | 327 | -  | 149    | 128   | 244   | 111   | 80 | 443 | -  | 088    | 109   | 288   | 002   |    |     |    |        |       |       |       |
| 80 | 328 | -  | 210    | 128   | 206   | 111   | 80 | 444 | -  | 288    | 087   | 589   | 002   |    |     |    |        |       |       |       |
| 80 | 329 | -  | 381    | 186   | 193   | 111   | 80 | 445 | -  | 194    | 119   | 326   | 161   |    |     |    |        |       |       |       |
| 80 | 330 | -  | 537    | 222   | 055   | 111   | 80 | 446 | -  | 259    | 119   | 689   | 183   |    |     |    |        |       |       |       |
| 80 | 331 | -  | 501    | 237   | 097   | 111   | 80 | 447 | -  | 158    | 094   | 450   | 139   |    |     |    |        |       |       |       |
| 80 | 332 | -  | 139    | 110   | 203   | 111   | 80 | 448 | -  | 151    | 089   | 445   | 124   |    |     |    |        |       |       |       |
| 80 | 333 | -  | 171    | 130   | 185   | 111   | 80 | 449 | -  | 150    | 082   | 485   | 112   |    |     |    |        |       |       |       |
| 80 | 334 | -  | 146    | 109   | 199   | 111   | 80 | 450 | -  | 157    | 102   | 537   | 171   |    |     |    |        |       |       |       |
| 80 | 335 | -  | 133    | 112   | 244   | 111   | 80 | 701 | -  | 091    | 091   | 381   | 238   |    |     |    |        |       |       |       |
| 80 | 336 | -  | 146    | 111   | 244   | 111   | 80 | 702 | -  | 069    | 107   | 328   | 525   |    |     |    |        |       |       |       |
| 80 | 337 | -  | 146    | 111   | 276   | 111   | 80 | 703 | -  | 047    | 115   | 329   | 439   |    |     |    |        |       |       |       |
| 80 | 338 | -  | 228    | 135   | 158   | 111   | 80 | 704 | -  | 053    | 114   | 314   | 429   |    |     |    |        |       |       |       |
| 80 | 339 | -  | 356    | 169   | 097   | 111   | 80 | 705 | -  | 049    | 107   | 292   | 395   |    |     |    |        |       |       |       |
| 80 | 340 | -  | 302    | 185   | 153   | 111   | 80 | 706 | -  | 061    | 109   | 300   | 491   |    |     |    |        |       |       |       |
| 80 | 341 | -  | 106    | 104   | 225   | 111   | 80 | 707 | -  | 065    | 107   | 288   | 486   |    |     |    |        |       |       |       |
| 80 | 342 | -  | 146    | 096   | 222   | 111   | 80 | 708 | -  | 080    | 125   | 353   | 484   |    |     |    |        |       |       |       |
| 80 | 343 | -  | 121    | 110   | 310   | 111   | 80 | 710 | -  | 062    | 113   | 321   | 498   |    |     |    |        |       |       |       |
| 80 | 344 | -  | 107    | 094   | 310   | 111   | 80 | 711 | -  | 063    | 099   | 264   | 438   |    |     |    |        |       |       |       |
| 80 | 345 | -  | 110    | 100   | 184   | 111   | 80 | 712 | -  | 059    | 127   | 375   | 445   |    |     |    |        |       |       |       |
| 80 | 346 | -  | 124    | 113   | 278   | 111   | 80 | 713 | -  | 067    | 124   | 361   | 417   |    |     |    |        |       |       |       |
| 80 | 347 | -  | 155    | 118   | 247   | 111   | 80 | 714 | -  | 062    | 127   | 374   | 434   |    |     |    |        |       |       |       |
| 80 | 348 | -  | 220    | 124   | 237   | 111   | 80 | 716 | -  | 066    | 118   | 337   | 407   |    |     |    |        |       |       |       |
| 80 | 349 | -  | 194    | 135   | 228   | 111   | 80 | 717 | -  | 065    | 120   | 320   | 462   |    |     |    |        |       |       |       |
| 80 | 350 | -  | 109    | 096   | 202   | 111   | 80 | 801 | -  | 070    | 117   | 305   | 480   |    |     |    |        |       |       |       |
| 80 | 351 | -  | 093    | 094   | 202   | 111   | 80 | 802 | -  | 088    | 128   | 321   | 525   |    |     |    |        |       |       |       |
| 80 | 352 | -  | 161    | 106   | 251   | 111   | 80 | 803 | -  | 079    | 114   | 289   | 459   |    |     |    |        |       |       |       |
| 80 | 353 | -  | 090    | 103   | 161   | 111   | 80 | 804 | -  | 072    | 119   | 376   | 416   |    |     |    |        |       |       |       |
| 80 | 353 | -  | 090    | 103   | 161   | 111   | 80 | 901 | -  | 299    | 169   | 164   | 924   |    |     |    |        |       |       |       |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|----|-----|--------|-------|-------|--------|
| 80 | 902 | -.083  | .126  | .321  | -.552  |
| 80 | 903 | -.129  | .115  | .171  | -.478  |
| 80 | 904 | -.371  | .213  | .363  | -1.128 |
| 80 | 905 | -.498  | .194  | .247  | -1.254 |
| 80 | 906 | -.166  | .144  | .431  | -.742  |
| 80 | 907 | -.050  | .137  | .605  | -.407  |
| 80 | 908 | -.103  | .136  | .378  | -.594  |
| 80 | 909 | -.096  | .128  | .324  | -.460  |
| 80 | 910 | -.113  | .132  | .347  | -.563  |
| 80 | 911 | -.181  | .128  | .270  | -.664  |
| 80 | 912 | -.337  | .201  | .424  | -.933  |
| 80 | 913 | -.472  | .165  | .112  | -1.045 |
| 80 | 914 | -.471  | .145  | .027  | -.995  |
| 80 | 915 | -.372  | .182  | .207  | -1.090 |
| 80 | 916 | -.017  | .119  | .346  | -.397  |
| 80 | 917 | -.087  | .139  | .387  | -.589  |
| 80 | 918 | -.401  | .193  | .106  | -1.173 |
| 80 | 919 | -.460  | .196  | .068  | -1.370 |
| 90 | 101 | -.521  | .185  | .084  | -1.181 |
| 90 | 102 | -.572  | .168  | .016  | -1.244 |
| 90 | 103 | -.546  | .182  | .096  | -1.247 |
| 90 | 104 | -.494  | .155  | .040  | -1.016 |
| 90 | 105 | -.304  | .148  | .236  | -1.057 |
| 90 | 106 | -.230  | .135  | .261  | -.767  |
| 90 | 107 | -.181  | .134  | .288  | -.701  |
| 90 | 108 | -.178  | .115  | .203  | -.578  |
| 90 | 109 | -.209  | .134  | .121  | -.978  |
| 90 | 110 | -.237  | .139  | .146  | -1.011 |
| 90 | 111 | -.353  | .154  | .050  | -1.037 |
| 90 | 112 | -.396  | .159  | .014  | -1.011 |
| 90 | 113 | -.350  | .152  | .156  | -.942  |
| 90 | 114 | -.487  | .219  | .278  | -1.349 |
| 90 | 115 | -.487  | .187  | .142  | -1.196 |
| 90 | 116 | -.763  | .205  | .001  | -1.480 |
| 90 | 117 | -.350  | .179  | .162  | -.979  |
| 90 | 118 | -.189  | .124  | .199  | -.630  |
| 90 | 119 | -.180  | .123  | .285  | -.653  |
| 90 | 120 | -.251  | .116  | .103  | -.696  |
| 90 | 121 | -.391  | .156  | .053  | -.929  |
| 90 | 122 | -.309  | .146  | .159  | -.900  |
| 90 | 123 | -.601  | .292  | .286  | -1.639 |
| 90 | 124 | -.626  | .212  | .002  | -1.350 |
| 90 | 125 | -.634  | .254  | .219  | -1.519 |
| 90 | 126 | -.308  | .217  | .367  | -1.171 |
| 90 | 127 | -.207  | .171  | .411  | -.877  |
| 90 | 128 | -.189  | .137  | .228  | -.697  |
| 90 | 129 | -.236  | .122  | .202  | -.612  |
| 90 | 130 | -.308  | .138  | .099  | -.847  |
| 90 | 131 | -.226  | .136  | .210  | -.785  |
| 90 | 132 | -.530  | .253  | .189  | -1.350 |

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|----|-----|--------|-------|-------|--------|
| 90 | 133 | -.603  | .248  | .051  | -1.543 |
| 90 | 134 | -.508  | .237  | .170  | -1.474 |
| 90 | 135 | -.229  | .159  | .214  | -1.053 |
| 90 | 136 | -.191  | .121  | .154  | -.616  |
| 90 | 137 | -.169  | .132  | .255  | -.626  |
| 90 | 138 | -.203  | .128  | .207  | -.644  |
| 90 | 139 | -.274  | .151  | .191  | -.876  |
| 90 | 140 | -.214  | .115  | .123  | -.614  |
| 90 | 141 | -.438  | .260  | .342  | -1.447 |
| 90 | 142 | -.420  | .219  | .142  | -1.261 |
| 90 | 143 | -.364  | .214  | .194  | -1.287 |
| 90 | 144 | -.199  | .135  | .193  | -.752  |
| 90 | 145 | -.160  | .138  | .308  | -.586  |
| 90 | 146 | -.154  | .130  | -.    | -.586  |
| 90 | 147 | -.173  | .135  | .289  | -.570  |
| 90 | 148 | -.233  | .129  | .190  | -.678  |
| 90 | 149 | -.173  | .146  | .267  | -.662  |
| 90 | 150 | -.366  | .228  | .242  | -1.480 |
| 90 | 151 | -.337  | .205  | .221  | -1.363 |
| 90 | 152 | -.269  | .157  | .165  | -.950  |
| 90 | 153 | -.156  | .138  | .280  | -.618  |
| 90 | 154 | -.126  | .134  | .261  | -.546  |
| 90 | 155 | -.115  | .128  | .309  | -.544  |
| 90 | 156 | -.127  | .114  | .216  | -.480  |
| 90 | 157 | -.150  | .117  | .225  | -.662  |
| 90 | 158 | -.129  | .115  | .247  | -.570  |
| 90 | 159 | -.257  | .162  | .156  | -.889  |
| 90 | 160 | -.242  | .132  | .163  | -.736  |
| 90 | 161 | -.169  | .140  | .382  | -.736  |
| 90 | 162 | -.104  | .120  | .286  | -.461  |
| 90 | 163 | -.086  | .120  | .347  | -.469  |
| 90 | 164 | -.086  | .092  | .225  | -.350  |
| 90 | 165 | -.102  | .120  | .271  | -.463  |
| 90 | 166 | -.120  | .115  | .230  | -.477  |
| 90 | 167 | -.105  | .119  | .266  | -.474  |
| 90 | 168 | -.077  | .108  | .274  | -.395  |
| 90 | 169 | -.074  | .123  | .349  | -.538  |
| 90 | 170 | -.069  | .122  | .350  | -.507  |
| 90 | 171 | -.058  | .126  | .390  | -.500  |
| 90 | 172 | -.054  | .110  | .296  | -.418  |
| 90 | 173 | -.071  | .126  | .379  | -.477  |
| 90 | 174 | -.081  | .121  | .340  | -.478  |
| 90 | 175 | -.092  | .115  | .340  | -.496  |
| 90 | 176 | -.100  | .112  | .340  | -.453  |
| 90 | 177 | -.066  | .115  | .312  | -.423  |
| 90 | 178 | -.063  | .114  | .313  | -.413  |
| 90 | 180 | -.054  | .103  | .280  | -.360  |
| 90 | 181 | -.043  | .124  | .343  | -.470  |
| 90 | 182 | -.040  | .125  | .337  | -.450  |
| 90 | 201 | -.181  | .147  | .317  | -.711  |

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|----|-----|--------|-------|-------|--------|
| 90 | 202 | -.539  | .154  | .052  | -1.073 |
| 90 | 203 | -.033  | .156  | .54   | -.674  |
| 90 | 204 | -.035  | .163  | .565  | -.678  |
| 90 | 205 | -.012  | .178  | .544  | -.633  |
| 90 | 206 | -.501  | .159  | .130  | -1.122 |
| 90 | 207 | -.383  | .161  | .263  | -1.120 |
| 90 | 208 | -.034  | .187  | .592  | -.673  |
| 90 | 209 | .398   | .198  | 1.099 | -.599  |
| 90 | 210 | .570   | .205  | 1.221 | -.235  |
| 90 | 211 | .365   | .211  | 1.073 | -.332  |
| 90 | 212 | -.057  | .203  | .796  | -.897  |
| 90 | 213 | -.033  | .202  | .460  | -.852  |
| 90 | 214 | -.334  | .188  | .953  | -.66   |
| 90 | 215 | .436   | .189  | .997  | -.69   |
| 90 | 216 | -.218  | .199  | .999  | -.68   |
| 90 | 217 | -.185  | .232  | .601  | -1.027 |
| 90 | 218 | .008   | .194  | .706  | -.72   |
| 90 | 219 | .201   | .167  | .901  | -.445  |
| 90 | 220 | .376   | .194  | .999  | -.433  |
| 90 | 221 | .007   | .183  | .801  | -.333  |
| 90 | 222 | .261   | .237  | .467  | -.933  |
| 90 | 223 | .027   | .166  | .551  | -.620  |
| 90 | 224 | .157   | .171  | .829  | -.581  |
| 90 | 225 | .164   | .180  | .961  | -.400  |
| 90 | 226 | .017   | .162  | .641  | -.544  |
| 90 | 227 | .241   | .207  | .333  | -1.055 |
| 90 | 228 | .025   | .139  | .547  | -.476  |
| 90 | 229 | .026   | .151  | .671  | -.390  |
| 90 | 230 | .022   | .148  | .670  | -.355  |
| 90 | 231 | .033   | .157  | .596  | -.370  |
| 90 | 232 | .245   | .181  | .388  | -1.101 |
| 90 | 233 | .035   | .130  | .548  | -.453  |
| 90 | 234 | .036   | .146  | .639  | -.500  |
| 90 | 235 | .012   | .137  | .501  | -.568  |
| 90 | 236 | -.088  | .135  | .382  | -.569  |
| 90 | 237 | .175   | .141  | .250  | -.772  |
| 90 | 238 | .020   | .108  | .473  | -.280  |
| 90 | 239 | .020   | .113  | .372  | -.354  |
| 90 | 240 | .008   | .130  | .491  | -.474  |
| 90 | 241 | .051   | .103  | .263  | -.420  |
| 90 | 242 | .042   | .116  | .336  | -.410  |
| 90 | 243 | .033   | .120  | .401  | -.381  |
| 90 | 244 | .033   | .134  | .518  | -.371  |
| 90 | 245 | .031   | .132  | .621  | -.311  |
| 90 | 246 | .010   | .138  | .586  | -.386  |
| 90 | 247 | .004   | .117  | .467  | -.386  |
| 90 | 248 | .011   | .113  | .477  | -.378  |
| 90 | 249 | .033   | .113  | .418  | -.379  |
| 90 | 250 | .011   | .111  | .357  | -.376  |
| 90 | 301 | .255   | .137  | .281  | -.752  |



APPENDIX A -- PRESSURE DATA CONFIGURATION C ALLEN CENTER FOUR, HOUSTON

| WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|----|-----|--------|-------|-------|-------|
| 90 | 302 | 280    | 146   | 188   | 738   | 90 | 352 | 104    | 097   | 182   | 450   | 90 | 418 | 153    | 124   | 227   | 601   |
| 90 | 303 | 231    | 134   | 207   | 744   | 90 | 353 | 068    | 107   | 300   | 381   | 90 | 419 | 168    | 109   | 228   | 571   |
| 90 | 304 | 186    | 107   | 153   | 584   | 90 | 354 | 063    | 103   | 225   | 411   | 90 | 420 | 168    | 115   | 229   | 544   |
| 90 | 305 | 147    | 104   | 110   | 528   | 90 | 355 | 071    | 103   | 277   | 385   | 90 | 421 | 150    | 123   | 230   | 642   |
| 90 | 306 | 142    | 106   | 193   | 592   | 90 | 356 | 110    | 123   | 291   | 509   | 90 | 422 | 163    | 119   | 231   | 563   |
| 90 | 307 | 177    | 108   | 193   | 592   | 90 | 357 | 183    | 133   | 171   | 728   | 90 | 423 | 129    | 106   | 232   | 517   |
| 90 | 308 | 142    | 121   | 281   | 592   | 90 | 358 | 132    | 151   | 304   | 831   | 90 | 424 | 140    | 120   | 233   | 444   |
| 90 | 309 | 179    | 121   | 181   | 869   | 90 | 359 | 107    | 109   | 250   | 490   | 90 | 425 | 129    | 114   | 234   | 444   |
| 90 | 310 | 143    | 132   | 141   | 944   | 90 | 360 | 138    | 107   | 204   | 490   | 90 | 426 | 139    | 112   | 235   | 444   |
| 90 | 311 | 163    | 160   | -     | 243   | 90 | 361 | 054    | 090   | 267   | 347   | 90 | 427 | 115    | 121   | 236   | 577   |
| 90 | 312 | 163    | 163   | -     | 064   | 90 | 362 | 042    | 101   | 369   | 400   | 90 | 428 | 127    | 130   | 237   | 600   |
| 90 | 313 | 175    | 161   | -     | 005   | 90 | 363 | 040    | 098   | 333   | 400   | 90 | 429 | 117    | 117   | 238   | 500   |
| 90 | 314 | 202    | 119   | -     | 609   | 90 | 364 | 030    | 094   | 376   | 355   | 90 | 430 | 107    | 124   | 239   | 505   |
| 90 | 315 | 143    | 119   | -     | 621   | 90 | 365 | 034    | 115   | 334   | 450   | 90 | 431 | 093    | 120   | 240   | 599   |
| 90 | 316 | 141    | 118   | -     | 621   | 90 | 366 | 088    | 129   | 356   | 579   | 90 | 432 | 103    | 117   | 241   | 681   |
| 90 | 317 | 141    | 114   | -     | 621   | 90 | 367 | 046    | 141   | 460   | 554   | 90 | 433 | 093    | 109   | 242   | 493   |
| 90 | 318 | 162    | 102   | -     | 44    | 90 | 368 | 042    | 110   | 308   | 415   | 90 | 434 | 068    | 124   | 243   | 493   |
| 90 | 319 | 131    | 109   | -     | 508   | 90 | 369 | 004    | 105   | 381   | 372   | 90 | 435 | 098    | 119   | 244   | 493   |
| 90 | 320 | 160    | 108   | -     | 195   | 90 | 370 | 003    | 093   | 305   | 304   | 90 | 436 | 097    | 108   | 245   | 493   |
| 90 | 321 | 166    | 110   | -     | 468   | 90 | 371 | 014    | 101   | 426   | 331   | 90 | 437 | 092    | 108   | 246   | 493   |
| 90 | 322 | 166    | 111   | -     | 248   | 90 | 372 | 012    | 112   | 401   | 375   | 90 | 438 | 069    | 114   | 247   | 493   |
| 90 | 323 | 160    | 130   | -     | 658   | 90 | 373 | 001    | 108   | 465   | 312   | 90 | 439 | 061    | 108   | 248   | 493   |
| 90 | 324 | 188    | 135   | -     | 725   | 90 | 374 | 014    | 096   | 324   | 403   | 90 | 440 | 049    | 113   | 249   | 493   |
| 90 | 325 | 191    | 133   | -     | 578   | 90 | 375 | 031    | 103   | 412   | 272   | 90 | 441 | 047    | 092   | 250   | 493   |
| 90 | 326 | 141    | 127   | -     | 555   | 90 | 376 | 024    | 120   | 426   | 387   | 90 | 442 | 041    | 099   | 251   | 493   |
| 90 | 327 | 170    | 120   | -     | 599   | 90 | 377 | 005    | 107   | 291   | 338   | 90 | 443 | 294    | 083   | 252   | 493   |
| 90 | 328 | 170    | 120   | -     | 599   | 90 | 378 | 026    | 089   | 284   | 335   | 90 | 444 | 197    | 108   | 253   | 493   |
| 90 | 329 | 171    | 120   | -     | 599   | 90 | 379 | 004    | 111   | 369   | 375   | 90 | 445 | 251    | 111   | 254   | 493   |
| 90 | 330 | 141    | 119   | -     | 287   | 90 | 380 | 016    | 096   | 343   | 368   | 90 | 446 | 168    | 103   | 255   | 493   |
| 90 | 331 | 160    | 222   | -     | 431   | 90 | 381 | 015    | 096   | 379   | 382   | 90 | 447 | 168    | 096   | 256   | 493   |
| 90 | 332 | 163    | 222   | -     | 397   | 90 | 382 | 044    | 094   | 400   | 316   | 90 | 448 | 177    | 101   | 257   | 493   |
| 90 | 333 | 163    | 113   | -     | 578   | 90 | 383 | 045    | 108   | 412   | 332   | 90 | 449 | 167    | 101   | 258   | 493   |
| 90 | 334 | 177    | 101   | -     | 489   | 90 | 384 | 034    | 113   | 424   | 337   | 90 | 450 | 082    | 107   | 259   | 493   |
| 90 | 335 | 116    | 103   | -     | 446   | 90 | 401 | 251    | 147   | 239   | 771   | 90 | 701 | 062    | 113   | 401   | 493   |
| 90 | 336 | 133    | 120   | -     | 525   | 90 | 402 | 217    | 128   | 226   | 657   | 90 | 702 | 065    | 128   | 402   | 493   |
| 90 | 337 | 171    | 114   | -     | 576   | 90 | 403 | 166    | 123   | 205   | 688   | 90 | 703 | 069    | 127   | 403   | 493   |
| 90 | 338 | 182    | 182   | -     | 120   | 90 | 404 | 196    | 122   | 274   | 543   | 90 | 704 | 057    | 118   | 404   | 493   |
| 90 | 339 | 144    | 171   | -     | 156   | 90 | 405 | 189    | 115   | 182   | 591   | 90 | 705 | 066    | 118   | 405   | 493   |
| 90 | 340 | 144    | 171   | -     | 156   | 90 | 406 | 221    | 113   | 226   | 736   | 90 | 706 | 070    | 115   | 406   | 493   |
| 90 | 341 | 180    | 120   | -     | 620   | 90 | 407 | 224    | 131   | 196   | 660   | 90 | 707 | 067    | 138   | 407   | 493   |
| 90 | 342 | 120    | 120   | -     | 540   | 90 | 408 | 184    | 110   | 160   | 571   | 90 | 708 | 067    | 138   | 408   | 493   |
| 90 | 343 | 167    | 107   | -     | 597   | 90 | 409 | 191    | 110   | 204   | 537   | 90 | 709 | 067    | 107   | 409   | 493   |
| 90 | 344 | 109    | 109   | -     | 430   | 90 | 410 | 186    | 125   | 218   | 625   | 90 | 710 | 068    | 139   | 410   | 493   |
| 90 | 345 | 101    | 100   | -     | 481   | 90 | 411 | 178    | 126   | 258   | 606   | 90 | 711 | 067    | 137   | 411   | 493   |
| 90 | 346 | 119    | 100   | -     | 507   | 90 | 412 | 184    | 113   | 166   | 606   | 90 | 712 | 067    | 137   | 412   | 493   |
| 90 | 347 | 146    | 146   | -     | 752   | 90 | 413 | 151    | 115   | 264   | 553   | 90 | 713 | 067    | 137   | 413   | 493   |
| 90 | 348 | 182    | 182   | -     | 100   | 90 | 414 | 154    | 118   | 221   | 600   | 90 | 714 | 057    | 120   | 414   | 493   |
| 90 | 349 | 180    | 180   | -     | 924   | 90 | 415 | 137    | 117   | 255   | 499   | 90 | 715 | 063    | 121   | 415   | 493   |
| 90 | 350 | 166    | 166   | -     | 428   | 90 | 416 | 141    | 118   | 252   | 552   | 90 | 716 | 063    | 121   | 416   | 493   |
| 90 | 351 | 101    | 101   | -     | 446   | 90 | 417 | 159    | 119   | 274   | 631   | 90 | 717 | 063    | 135   | 417   | 493   |
| 90 | 352 | 101    | 101   | -     | 446   | 90 | 418 | 159    | 119   | 274   | 631   | 90 | 718 | 063    | 135   | 418   | 493   |
| 90 | 353 | 101    | 101   | -     | 446   | 90 | 419 | 159    | 119   | 274   | 631   | 90 | 719 | 063    | 135   | 419   | 493   |
| 90 | 354 | 101    | 101   | -     | 446   | 90 | 420 | 159    | 119   | 274   | 631   | 90 | 720 | 063    | 135   | 420   | 493   |
| 90 | 355 | 101    | 101   | -     | 446   | 90 | 421 | 159    | 119   | 274   | 631   | 90 | 721 | 063    | 135   | 421   | 493   |
| 90 | 356 | 101    | 101   | -     | 446   | 90 | 422 | 159    | 119   | 274   | 631   | 90 | 722 | 063    | 135   | 422   | 493   |
| 90 | 357 | 101    | 101   | -     | 446   | 90 | 423 | 159    | 119   | 274   | 631   | 90 | 723 | 063    | 135   | 423   | 493   |
| 90 | 358 | 101    | 101   | -     | 446   | 90 | 424 | 159    | 119   | 274   | 631   | 90 | 724 | 063    | 135   | 424   | 493   |
| 90 | 359 | 101    | 101   | -     | 446   | 90 | 425 | 159    | 119   | 274   | 631   | 90 | 725 | 063    | 135   | 425   | 493   |
| 90 | 360 | 101    | 101   | -     | 446   | 90 | 426 | 159    | 119   | 274   | 631   | 90 | 726 | 063    | 135   | 426   | 493   |
| 90 | 361 | 101    | 101   | -     | 446   | 90 | 427 | 159    | 119   | 274   | 631   | 90 | 727 | 063    | 135   | 427   | 493   |
| 90 | 362 | 101    | 101   | -     | 446   | 90 | 428 | 159    | 119   | 274   | 631   | 90 | 728 | 063    | 135   | 428   | 493   |
| 90 | 363 | 101    | 101   | -     | 446   | 90 | 429 | 159    | 119   | 274   | 631   | 90 | 729 | 063    | 135   | 429   | 493   |
| 90 | 364 | 101    | 101   | -     | 446   | 90 | 430 | 159    | 119   | 274   | 631   | 90 | 730 | 063    | 135   | 430   | 493   |
| 90 | 365 | 101    | 101   | -     | 446   | 90 | 431 | 159    | 119   | 274   | 631   | 90 | 731 | 063    | 135   | 431   | 493   |
| 90 | 366 | 101    | 101   | -     | 446   | 90 | 432 | 159    | 119   | 274   | 631   | 90 | 732 | 063    | 135   | 432   | 493   |
| 90 | 367 | 101    | 101   | -     | 446   | 90 | 433 | 159    | 119   | 274   | 631   | 90 | 733 | 063    | 135   | 433   | 493   |
| 90 | 368 | 101    | 101   | -     | 446   | 90 | 434 | 159    | 119   | 274   | 631   | 90 | 734 | 063    | 135   | 434   | 493   |
| 90 | 369 | 101    | 101   | -     | 446   | 90 | 435 | 159    | 119   | 274   | 631   | 90 | 735 | 063    | 135   | 435   | 493   |
| 90 | 370 | 101    | 101   | -     | 446   | 90 | 436 | 159    | 119   | 274   | 631   | 90 | 736 | 063    | 135   | 436   | 493   |
| 90 | 371 | 101    | 101   | -     | 446   | 90 | 437 | 159    | 119   | 274   | 631   | 90 | 737 | 063    | 135   | 437   | 493   |
| 90 | 372 | 101    | 101   | -     | 446   | 90 | 438 | 159    | 119   | 274   | 631   | 90 | 738 | 063    | 135   | 438   | 493   |
| 90 | 373 | 101    | 101   | -     | 446   | 90 | 439 | 159    | 119   | 274   | 631   | 90 | 739 | 063    | 135   | 439   | 493   |
| 90 | 374 | 101    | 101   | -     | 446   | 90 | 440 | 159    | 119   | 274   | 631   | 90 | 740 | 063    | 135   | 440   | 493   |
| 90 | 375 | 101    | 101   | -     | 446   | 90 | 441 | 159    | 119   | 274   | 631   | 90 | 741 | 063    | 135   | 441   | 493   |
| 90 | 376 | 101    | 101   | -     | 446   | 90 | 442 | 159    | 119   | 274   | 631   | 90 | 742 | 063    | 135   | 442   | 493   |
| 90 | 377 | 101    | 101   | -     | 446   | 90 | 443 | 159    | 119   | 274   | 631   | 90 | 743 | 063    | 135   | 443   | 493   |
| 90 | 378 | 101    | 101   | -     | 446   | 90 | 444 | 159    | 119   | 274   | 631   | 90 | 744 | 063    | 135   | 444   | 493   |
| 90 | 379 | 101    | 101   | -     | 446   | 90 | 445 | 159    | 119   | 274   | 631   | 90 | 745 | 063    | 135   | 445   | 493   |
| 90 | 380 | 101    | 101   | -     | 446   | 90 | 446 | 159    | 119   | 274   | 631   | 90 | 746 | 063    | 135   | 446   | 493   |
| 90 | 381 | 101    | 101   | -     | 446   | 90 | 447 | 159    | 119   | 274   | 631   | 90 | 747 | 063    | 135   | 447   | 493   |
| 90 | 382 | 101    | 101   | -     | 446   | 90 | 448 | 159    | 119   | 274   | 631   | 90 | 748 | 063    | 135   | 448   | 493   |
| 90 | 383 | 101    | 101   | -     | 446   | 90 | 449 | 159    | 119   | 274   | 631   | 90 | 749 | 063    | 135   | 449   | 493   |
| 90 | 384 | 101    | 101   | -     | 446   | 90 | 450 | 159    | 119   | 274   | 631   | 90 | 750 | 063    | 135   | 450   | 493   |
| 90 | 385 | 101    | 101   | -     | 446   | 90 | 401 | 159    | 119   | 274   | 631   | 90 | 701 | 063    | 135   | 401   | 493   |
| 90 | 386 | 101    | 101   | -     | 446   | 90 | 402 | 159    | 119   | 274   | 631   |    |     |        |       |       |       |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 90  | 804 | 062    | 125   | 400   | -1.492 | 100 | 131 | 187    | 126   | 216   | -1.818 | 100 | 182 | 065    | 113   | 263   | -1.474 |
| 90  | 901 | 472    | 192   | 078   | -1.246 | 100 | 132 | 843    | 231   | 231   | -1.684 | 100 | 201 | 056    | 153   | 590   | -1.603 |
| 90  | 902 | 060    | 122   | 308   | -1.432 | 100 | 133 | 825    | 263   | 113   | -1.965 | 100 | 202 | 555    | 167   | 176   | -1.094 |
| 90  | 903 | 119    | 113   | 229   | -1.507 | 100 | 134 | 700    | 254   | 023   | -1.693 | 100 | 203 | 071    | 169   | 334   | -1.449 |
| 90  | 904 | 509    | 197   | 141   | -1.196 | 100 | 135 | 389    | 205   | 214   | -1.228 | 100 | 204 | 066    | 169   | 516   | -1.800 |
| 90  | 905 | 580    | 165   | 046   | -1.233 | 100 | 136 | 284    | 149   | 215   | -1.029 | 100 | 205 | 033    | 175   | 377   | -1.789 |
| 90  | 906 | 233    | 136   | 234   | -1.746 | 100 | 137 | 221    | 136   | 391   | -1.792 | 100 | 206 | 554    | 159   | 099   | -1.108 |
| 90  | 907 | 046    | 107   | 436   | -1.261 | 100 | 138 | 204    | 132   | 444   | -1.625 | 100 | 207 | 557    | 177   | 101   | -1.158 |
| 90  | 908 | 129    | 121   | 336   | -1.553 | 100 | 139 | 212    | 146   | 355   | -1.744 | 100 | 208 | 033    | 183   | 831   | -1.448 |
| 90  | 909 | 109    | 113   | 344   | -1.454 | 100 | 140 | 169    | 116   | 244   | -1.570 | 100 | 209 | 541    | 191   | 155   | -1.142 |
| 90  | 910 | 117    | 118   | 396   | -1.516 | 100 | 141 | 668    | 224   | 112   | -1.753 | 100 | 210 | 533    | 191   | 244   | -1.122 |
| 90  | 911 | 231    | 117   | 180   | -1.690 | 100 | 142 | 564    | 191   | 067   | -1.612 | 100 | 211 | 199    | 203   | 869   | -1.575 |
| 90  | 912 | 513    | 200   | 125   | -1.232 | 100 | 143 | 492    | 183   | 643   | -1.407 | 100 | 212 | 408    | 206   | 349   | -1.163 |
| 90  | 913 | 552    | 169   | 041   | -1.100 | 100 | 144 | 305    | 129   | 888   | -1.949 | 100 | 213 | 238    | 185   | 839   | -1.655 |
| 90  | 914 | 459    | 136   | 119   | -1.084 | 100 | 145 | 208    | 135   | 278   | -1.818 | 100 | 214 | 449    | 212   | 349   | -1.224 |
| 90  | 915 | 459    | 195   | 148   | -1.200 | 100 | 146 | 170    | 125   | 322   | -1.707 | 100 | 215 | 356    | 209   | 023   | -1.429 |
| 90  | 916 | 055    | 117   | 301   | -1.441 | 100 | 147 | 150    | 127   | 333   | -1.678 | 100 | 216 | 018    | 224   | 726   | -1.897 |
| 90  | 917 | 126    | 134   | 314   | -1.594 | 100 | 148 | 156    | 114   | 341   | -1.557 | 100 | 217 | 544    | 250   | 382   | -1.404 |
| 90  | 918 | 525    | 186   | 182   | -1.414 | 100 | 149 | 131    | 184   | 333   | -1.400 | 100 | 218 | 191    | 182   | 671   | -1.451 |
| 90  | 919 | 547    | 173   | 169   | -1.492 | 100 | 150 | 266    | 125   | 333   | -1.330 | 100 | 219 | 283    | 189   | 903   | -1.271 |
| 100 | 101 | 647    | 184   | 011   | -1.315 | 100 | 151 | 475    | 162   | 646   | -1.203 | 100 | 220 | 666    | 200   | 888   | -1.482 |
| 100 | 102 | 638    | 171   | 045   | -1.275 | 100 | 152 | 384    | 123   | 643   | -1.010 | 100 | 221 | 111    | 222   | 783   | -1.930 |
| 100 | 103 | 668    | 189   | 106   | -1.397 | 100 | 153 | 228    | 136   | 192   | -1.908 | 100 | 222 | 554    | 222   | 622   | -1.528 |
| 100 | 104 | 605    | 154   | 137   | -1.099 | 100 | 154 | 177    | 128   | 236   | -1.785 | 100 | 223 | 126    | 155   | 111   | -1.504 |
| 100 | 105 | 416    | 165   | 102   | -1.966 | 100 | 155 | 147    | 116   | 266   | -1.625 | 100 | 224 | 146    | 169   | 869   | -1.270 |
| 100 | 106 | 364    | 156   | 108   | -1.904 | 100 | 156 | 143    | 100   | 191   | -1.473 | 100 | 225 | 066    | 169   | 828   | -1.630 |
| 100 | 107 | 316    | 161   | 215   | -1.905 | 100 | 157 | 132    | 117   | 284   | -1.580 | 100 | 226 | 176    | 189   | 665   | -1.992 |
| 100 | 108 | 294    | 132   | 154   | -1.697 | 100 | 158 | 115    | 116   | 273   | -1.554 | 100 | 227 | 396    | 215   | 471   | -1.081 |
| 100 | 109 | 345    | 164   | 169   | -1.945 | 100 | 159 | 384    | 165   | 101   | -1.033 | 100 | 228 | 168    | 143   | 630   | -1.323 |
| 100 | 110 | 326    | 153   | 199   | -1.862 | 100 | 160 | 338    | 130   | 066   | -1.889 | 100 | 229 | 129    | 137   | 571   | -1.331 |
| 100 | 111 | 356    | 149   | 295   | -1.871 | 100 | 161 | 244    | 147   | 295   | -1.769 | 100 | 230 | 010    | 141   | 503   | -1.488 |
| 100 | 112 | 408    | 140   | 058   | -1.896 | 100 | 162 | 160    | 130   | 257   | -1.642 | 100 | 231 | 010    | 187   | 156   | -1.944 |
| 100 | 113 | 358    | 141   | 070   | -1.820 | 100 | 163 | 126    | 126   | 332   | -1.588 | 100 | 232 | 010    | 206   | 269   | -1.258 |
| 100 | 114 | 813    | 227   | 079   | -1.636 | 100 | 164 | 118    | 093   | 194   | -1.520 | 100 | 233 | 099    | 133   | 598   | -1.368 |
| 100 | 115 | 705    | 204   | 024   | -1.489 | 100 | 165 | 105    | 119   | 316   | -1.520 | 100 | 234 | 099    | 144   | 603   | -1.563 |
| 100 | 116 | 921    | 222   | 186   | -1.673 | 100 | 166 | 118    | 118   | 220   | -1.535 | 100 | 235 | 099    | 163   | 366   | -1.353 |
| 100 | 117 | 542    | 189   | 062   | -1.182 | 100 | 167 | 104    | 121   | 333   | -1.535 | 100 | 236 | 099    | 174   | 344   | -1.985 |
| 100 | 118 | 295    | 148   | 126   | -1.831 | 100 | 168 | 120    | 113   | 351   | -1.500 | 100 | 237 | 099    | 184   | 444   | -1.358 |
| 100 | 119 | 239    | 145   | 228   | -1.824 | 100 | 169 | 132    | 129   | 339   | -1.488 | 100 | 238 | 099    | 127   | 490   | -1.358 |
| 100 | 120 | 275    | 133   | 093   | -1.740 | 100 | 170 | 116    | 127   | 366   | -1.473 | 100 | 239 | 099    | 120   | 476   | -1.311 |
| 100 | 121 | 390    | 159   | 074   | -1.086 | 100 | 171 | 078    | 126   | 446   | -1.666 | 100 | 240 | 099    | 127   | 386   | -1.448 |
| 100 | 122 | 330    | 153   | 110   | -1.915 | 100 | 172 | 071    | 108   | 326   | -1.371 | 100 | 241 | 099    | 115   | 329   | -1.471 |
| 100 | 123 | 881    | 245   | 086   | -1.803 | 100 | 173 | 071    | 115   | 336   | -1.432 | 100 | 242 | 099    | 114   | 356   | -1.444 |
| 100 | 124 | 780    | 188   | 213   | -1.512 | 100 | 174 | 074    | 111   | 339   | -1.420 | 100 | 243 | 099    | 115   | 439   | -1.395 |
| 100 | 125 | 553    | 217   | 098   | -1.417 | 100 | 175 | 078    | 116   | 339   | -1.437 | 100 | 244 | 099    | 130   | 697   | -1.273 |
| 100 | 126 | 553    | 223   | 211   | -1.315 | 100 | 176 | 086    | 102   | 271   | -1.427 | 100 | 245 | 099    | 140   | 533   | -1.382 |
| 100 | 127 | 370    | 195   | 313   | -1.094 | 100 | 177 | 101    | 118   | 266   | -1.439 | 100 | 246 | 099    | 140   | 445   | -1.543 |
| 100 | 128 | 270    | 140   | 247   | -1.762 | 100 | 178 | 100    | 118   | 250   | -1.447 | 100 | 247 | 099    | 122   | 377   | -1.407 |
| 100 | 129 | 241    | 122   | 243   | -1.824 | 100 | 180 | 063    | 101   | 244   | -1.468 | 100 | 248 | 099    | 118   | 364   | -1.470 |
| 100 | 130 | 246    | 124   | 217   | -1.721 | 100 | 181 | 066    | 112   | 249   | -1.462 | 100 | 249 | 099    | 117   | 442   | -1.390 |

APPENDIX, A -- PRESSURE DATA: CONFIGURATION C; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|------|--------|-------|-------|-------|-----|------|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 100 | 3250 | .041   | .119  | .429  | .417  | 100 | 3550 | .147   | .104  | .211  | .534  | 100 | 416 | .147   | .121  | .343  | .550  |
| 100 | 3301 | .190   | .144  | .260  | .639  | 100 | 3551 | .161   | .113  | .252  | .618  | 100 | 417 | .146   | .142  | .235  | .740  |
| 100 | 3302 | .209   | .133  | .212  | .650  | 100 | 3552 | .101   | .093  | .214  | .401  | 100 | 418 | .153   | .112  | .289  | .561  |
| 100 | 3303 | .208   | .123  | .167  | .659  | 100 | 3553 | .042   | .103  | .277  | .489  | 100 | 419 | .128   | .108  | .176  | .541  |
| 100 | 3304 | .186   | .111  | .195  | .594  | 100 | 3554 | .016   | .104  | .362  | .358  | 100 | 420 | .128   | .110  | .261  | .480  |
| 100 | 3305 | .186   | .121  | .253  | .677  | 100 | 3555 | .006   | .125  | .401  | .401  | 100 | 421 | .145   | .131  | .269  | .676  |
| 100 | 3306 | .175   | .110  | .224  | .496  | 100 | 3556 | .021   | .112  | .359  | .387  | 100 | 422 | .131   | .120  | .252  | .536  |
| 100 | 3307 | .188   | .127  | .282  | .706  | 100 | 3557 | .012   | .125  | .362  | .499  | 100 | 423 | .147   | .124  | .283  | .888  |
| 100 | 3308 | .240   | .145  | .380  | .888  | 100 | 3558 | .052   | .131  | .522  | .502  | 100 | 424 | .147   | .124  | .283  | .888  |
| 100 | 3309 | .312   | .179  | .269  | .907  | 100 | 3559 | .145   | .128  | .283  | .545  | 100 | 425 | .135   | .111  | .283  | .600  |
| 100 | 3310 | .369   | .146  | .173  | .050  | 100 | 3560 | .143   | .112  | .195  | .470  | 100 | 426 | .141   | .126  | .283  | .600  |
| 100 | 3311 | .490   | .152  | .013  | .115  | 100 | 3561 | .063   | .108  | .270  | .416  | 100 | 427 | .137   | .123  | .283  | .673  |
| 100 | 3312 | .559   | .029  | .029  | .223  | 100 | 3562 | .013   | .114  | .350  | .394  | 100 | 428 | .133   | .113  | .283  | .489  |
| 100 | 3313 | .337   | .179  | .179  | .919  | 100 | 3563 | .032   | .112  | .405  | .284  | 100 | 429 | .112   | .107  | .283  | .495  |
| 100 | 3314 | .160   | .118  | .212  | .515  | 100 | 3564 | .038   | .113  | .441  | .365  | 100 | 430 | .126   | .103  | .283  | .484  |
| 100 | 3315 | .236   | .130  | .256  | .645  | 100 | 3565 | .055   | .112  | .419  | .322  | 100 | 431 | .105   | .128  | .283  | .500  |
| 100 | 3316 | .186   | .123  | .259  | .792  | 100 | 3566 | .037   | .129  | .547  | .419  | 100 | 432 | .133   | .118  | .283  | .599  |
| 100 | 3317 | .101   | .111  | .259  | .454  | 100 | 3567 | .101   | .143  | .617  | .374  | 100 | 433 | .082   | .122  | .283  | .463  |
| 100 | 3318 | .095   | .116  | .259  | .464  | 100 | 3568 | .040   | .096  | .265  | .360  | 100 | 434 | .112   | .104  | .283  | .435  |
| 100 | 3319 | .088   | .112  | .278  | .515  | 100 | 3569 | .009   | .118  | .347  | .378  | 100 | 435 | .099   | .112  | .283  | .399  |
| 100 | 3320 | .090   | .163  | .368  | .004  | 100 | 3570 | .004   | .099  | .405  | .282  | 100 | 436 | .111   | .120  | .283  | .444  |
| 100 | 3321 | .159   | .191  | .202  | .137  | 100 | 3571 | .057   | .109  | .419  | .279  | 100 | 437 | .111   | .110  | .283  | .444  |
| 100 | 3322 | .159   | .182  | .418  | .336  | 100 | 3572 | .055   | .098  | .391  | .273  | 100 | 438 | .065   | .109  | .283  | .444  |
| 100 | 3323 | .150   | .130  | .343  | .668  | 100 | 3573 | .079   | .107  | .416  | .322  | 100 | 439 | .063   | .105  | .283  | .444  |
| 100 | 3324 | .243   | .132  | .250  | .726  | 100 | 3574 | .088   | .116  | .584  | .306  | 100 | 440 | .073   | .109  | .283  | .444  |
| 100 | 3325 | .139   | .129  | .251  | .570  | 100 | 3575 | .093   | .108  | .509  | .226  | 100 | 441 | .088   | .097  | .283  | .444  |
| 100 | 3326 | .115   | .100  | .195  | .445  | 100 | 3576 | .105   | .123  | .534  | .227  | 100 | 442 | .088   | .114  | .283  | .444  |
| 100 | 3327 | .077   | .117  | .291  | .521  | 100 | 3577 | .026   | .100  | .400  | .293  | 100 | 443 | .285   | .090  | .283  | .666  |
| 100 | 3328 | .091   | .123  | .310  | .551  | 100 | 3578 | .001   | .095  | .362  | .301  | 100 | 444 | .226   | .105  | .283  | .666  |
| 100 | 3329 | .191   | .165  | .337  | .742  | 100 | 3579 | .063   | .106  | .397  | .302  | 100 | 445 | .266   | .119  | .283  | .666  |
| 100 | 3330 | .309   | .203  | .335  | .968  | 100 | 3580 | .074   | .113  | .439  | .245  | 100 | 446 | .191   | .101  | .283  | .666  |
| 100 | 3331 | .107   | .107  | .511  | .815  | 100 | 3581 | .098   | .117  | .498  | .279  | 100 | 447 | .153   | .095  | .283  | .666  |
| 100 | 3332 | .160   | .107  | .187  | .495  | 100 | 3582 | .113   | .114  | .600  | .182  | 100 | 448 | .153   | .087  | .283  | .666  |
| 100 | 3333 | .225   | .116  | .171  | .715  | 100 | 3583 | .145   | .129  | .575  | .175  | 100 | 449 | .152   | .110  | .283  | .666  |
| 100 | 3334 | .144   | .119  | .263  | .579  | 100 | 3584 | .109   | .129  | .720  | .232  | 100 | 450 | .040   | .118  | .283  | .666  |
| 100 | 3335 | .087   | .112  | .313  | .522  | 100 | 4001 | .261   | .126  | .209  | .676  | 100 | 701 | .076   | .101  | .283  | .666  |
| 100 | 3336 | .048   | .115  | .284  | .448  | 100 | 4002 | .231   | .116  | .117  | .686  | 100 | 702 | .090   | .116  | .283  | .666  |
| 100 | 3337 | .064   | .117  | .336  | .499  | 100 | 4003 | .194   | .123  | .257  | .538  | 100 | 703 | .032   | .114  | .283  | .666  |
| 100 | 3338 | .100   | .144  | .359  | .637  | 100 | 4004 | .189   | .127  | .224  | .706  | 100 | 705 | .033   | .108  | .283  | .666  |
| 100 | 3339 | .193   | .191  | .294  | .885  | 100 | 4005 | .178   | .108  | .167  | .499  | 100 | 706 | .066   | .105  | .283  | .666  |
| 100 | 3340 | .036   | .185  | .581  | .793  | 100 | 4006 | .182   | .108  | .188  | .569  | 100 | 707 | .068   | .101  | .283  | .666  |
| 100 | 3341 | .150   | .161  | .196  | .492  | 100 | 4007 | .161   | .120  | .306  | .594  | 100 | 708 | .077   | .126  | .283  | .666  |
| 100 | 3342 | .130   | .104  | .148  | .518  | 100 | 4008 | .219   | .127  | .205  | .768  | 100 | 710 | .082   | .107  | .283  | .666  |
| 100 | 3343 | .105   | .112  | .265  | .435  | 100 | 4009 | .210   | .143  | .251  | .831  | 100 | 711 | .091   | .093  | .283  | .666  |
| 100 | 3344 | .072   | .110  | .296  | .372  | 100 | 4010 | .180   | .128  | .307  | .584  | 100 | 712 | .093   | .129  | .283  | .666  |
| 100 | 3345 | .039   | .102  | .366  | .344  | 100 | 4111 | .181   | .123  | .185  | .622  | 100 | 713 | .093   | .129  | .283  | .666  |
| 100 | 3346 | .033   | .097  | .271  | .363  | 100 | 4112 | .201   | .119  | .188  | .625  | 100 | 714 | .093   | .128  | .283  | .666  |
| 100 | 3347 | .024   | .119  | .394  | .467  | 100 | 4113 | .155   | .124  | .270  | .703  | 100 | 716 | .084   | .114  | .283  | .666  |
| 100 | 3348 | .086   | .135  | .359  | .670  | 100 | 4114 | .165   | .110  | .176  | .538  | 100 | 717 | .074   | .109  | .283  | .666  |
| 100 | 3349 | .001   | .178  | .511  | .819  | 100 | 4115 | .146   | .115  | .188  | .566  | 100 | 801 | .088   | .111  | .283  | .666  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 100 | 802 | -.067  | .132  | .388  | -.361  | 110 | 129 | -.316  | .166  | .206  | -1.128 | 110 | 180 | -.091  | .109  | .293  | -.420  |
| 100 | 803 | -.088  | .101  | .174  | -.387  | 110 | 130 | -.288  | .156  | .202  | -1.130 | 110 | 181 | -.067  | .120  | .320  | -.488  |
| 100 | 804 | -.104  | .143  | .592  | -.349  | 110 | 131 | -.254  | .150  | .225  | -.985  | 110 | 182 | -.060  | .127  | .397  | -.489  |
| 100 | 901 | -.492  | .202  | .058  | -1.195 | 110 | 132 | -.776  | .272  | -.031 | -1.744 | 110 | 201 | -.014  | .149  | .649  | -.510  |
| 100 | 902 | -.666  | .404  | -.476 | -.476  | 110 | 133 | -.677  | .304  | .135  | -1.630 | 110 | 202 | -.668  | .183  | -.119 | -1.358 |
| 100 | 903 | -.112  | .123  | .326  | -.494  | 110 | 134 | -.599  | .271  | .166  | -1.642 | 110 | 203 | -.022  | .170  | .630  | -.462  |
| 100 | 904 | -.503  | .177  | -.119 | -1.218 | 110 | 135 | -.499  | .244  | .302  | -1.623 | 110 | 204 | -.227  | .158  | .316  | -.773  |
| 100 | 905 | -.603  | .161  | -.119 | -1.150 | 110 | 136 | -.419  | .185  | .185  | -1.128 | 110 | 205 | -.366  | .148  | .118  | -.938  |
| 100 | 906 | -.223  | .128  | .154  | -.696  | 110 | 137 | -.352  | .199  | .379  | -1.205 | 110 | 206 | -.676  | .157  | -.174 | -1.225 |
| 100 | 907 | -.022  | .115  | .426  | -.467  | 110 | 138 | -.291  | .174  | .337  | -1.143 | 110 | 207 | -.721  | .176  | .107  | -1.363 |
| 100 | 908 | -.165  | .140  | .304  | -.734  | 110 | 139 | -.275  | .175  | .379  | -1.134 | 110 | 208 | -.439  | .174  | 1.150 | -.124  |
| 100 | 909 | -.140  | .128  | .280  | -.559  | 110 | 140 | -.240  | .133  | .312  | -2.015 | 110 | 209 | .521   | .187  | 1.148 | -.006  |
| 100 | 910 | -.152  | .132  | .305  | -.579  | 110 | 141 | -.867  | .290  | -.089 | -2.161 | 110 | 210 | -.309  | .211  | 1.170 | -.283  |
| 100 | 911 | -.241  | .121  | .119  | -.697  | 110 | 142 | -.747  | .259  | -.036 | -1.917 | 110 | 211 | -.187  | .205  | .477  | -.908  |
| 100 | 912 | -.529  | .170  | .147  | -1.168 | 110 | 143 | -.647  | .256  | .123  | -2.015 | 110 | 212 | -.674  | .223  | .060  | -1.416 |
| 100 | 913 | -.559  | .142  | .104  | -1.040 | 110 | 144 | -.533  | .205  | .039  | -1.368 | 110 | 213 | .509   | .178  | 1.062 | -.066  |
| 100 | 914 | -.388  | .139  | .073  | -1.208 | 110 | 145 | -.413  | .220  | .208  | -1.376 | 110 | 214 | .523   | .179  | 1.089 | -.129  |
| 100 | 915 | -.388  | .133  | .090  | -1.077 | 110 | 146 | -.335  | .195  | .229  | -1.570 | 110 | 215 | .215   | .206  | .807  | -.627  |
| 100 | 916 | -.133  | .104  | .171  | -.438  | 110 | 147 | -.287  | .187  | .264  | -1.649 | 110 | 216 | .301   | .214  | .470  | -.994  |
| 100 | 917 | -.233  | .145  | .228  | -.515  | 110 | 148 | -.284  | .157  | .164  | -1.129 | 110 | 217 | -.798  | .239  | -.002 | -1.615 |
| 100 | 918 | -.606  | .184  | .055  | -1.348 | 110 | 149 | -.221  | .165  | -.086 | -1.887 | 110 | 218 | -.410  | .168  | .993  | -.218  |
| 100 | 919 | -.574  | .169  | .073  | -1.248 | 110 | 150 | -.827  | .272  | -.055 | -1.671 | 110 | 219 | -.434  | .186  | 1.044 | -.172  |
| 110 | 101 | -.707  | .174  | .146  | -1.345 | 110 | 151 | -.709  | .256  | .191  | -1.601 | 110 | 220 | -.107  | .168  | .762  | -.584  |
| 110 | 102 | -.666  | .164  | .103  | -1.214 | 110 | 152 | -.395  | .206  | -.012 | -1.375 | 110 | 221 | -.360  | .230  | .275  | -1.339 |
| 110 | 103 | -.672  | .190  | -.115 | -1.367 | 110 | 153 | -.449  | .238  | .204  | -1.394 | 110 | 222 | -.851  | .281  | -.033 | -1.839 |
| 110 | 104 | -.597  | .157  | .131  | -1.139 | 110 | 154 | -.341  | .217  | .344  | -1.243 | 110 | 223 | -.412  | .181  | 1.166 | -.203  |
| 110 | 105 | -.476  | .185  | .041  | -1.146 | 110 | 155 | -.264  | .181  | .377  | -1.159 | 110 | 224 | .360   | .201  | 1.128 | -.172  |
| 110 | 106 | -.473  | .190  | .083  | -1.197 | 110 | 156 | -.223  | .144  | .272  | -1.090 | 110 | 225 | -.019  | .174  | .758  | -.669  |
| 110 | 107 | -.446  | .214  | .182  | -1.413 | 110 | 157 | -.204  | .144  | .221  | -.982  | 110 | 226 | -.402  | .198  | .305  | -1.452 |
| 110 | 108 | -.387  | .161  | .099  | -.935  | 110 | 158 | -.174  | .137  | .261  | -.792  | 110 | 227 | -.750  | .254  | -.028 | -1.671 |
| 110 | 109 | -.443  | .192  | .147  | -1.158 | 110 | 159 | -.709  | .241  | .102  | -1.760 | 110 | 228 | .374   | .171  | .891  | -.110  |
| 110 | 110 | -.172  | .172  | .203  | -1.097 | 110 | 160 | -.520  | .206  | .107  | -1.550 | 110 | 229 | -.251  | .168  | .847  | -.203  |
| 110 | 111 | -.334  | .158  | .218  | -1.002 | 110 | 161 | -.490  | .219  | .118  | -1.570 | 110 | 230 | -.053  | .174  | .653  | -.610  |
| 110 | 112 | -.334  | .138  | .095  | -1.853 | 110 | 162 | -.333  | .178  | .139  | -1.225 | 110 | 231 | -.447  | .212  | .219  | -1.308 |
| 110 | 113 | -.333  | .159  | .167  | -1.002 | 110 | 163 | -.242  | .156  | .206  | -.991  | 110 | 232 | -.714  | .232  | .057  | -1.452 |
| 110 | 114 | -.814  | .230  | -.077 | -1.645 | 110 | 164 | -.195  | .182  | .061  | -.585  | 110 | 233 | -.272  | .160  | .833  | -.237  |
| 110 | 115 | -.694  | .214  | .644  | -1.520 | 110 | 165 | -.176  | .134  | .256  | -1.747 | 110 | 234 | -.148  | .157  | .660  | -.396  |
| 110 | 116 | -.694  | .227  | .022  | -1.449 | 110 | 166 | -.204  | .137  | .191  | -.699  | 110 | 235 | -.108  | .159  | .490  | -.614  |
| 110 | 117 | -.594  | .203  | .634  | -1.342 | 110 | 167 | -.175  | .139  | .220  | -.811  | 110 | 236 | -.456  | .176  | .066  | -1.212 |
| 110 | 118 | -.420  | .182  | .102  | -1.175 | 110 | 168 | -.206  | .116  | .197  | -.628  | 110 | 237 | -.633  | .253  | .033  | -1.434 |
| 110 | 119 | -.303  | .165  | .168  | -1.177 | 110 | 169 | -.235  | .123  | .161  | -.696  | 110 | 238 | -.164  | .131  | .881  | -.257  |
| 110 | 120 | -.289  | .137  | .105  | -.874  | 110 | 170 | -.227  | .122  | .148  | -.665  | 110 | 239 | -.089  | .139  | .610  | -.288  |
| 110 | 121 | -.426  | .191  | .186  | -1.079 | 110 | 171 | -.131  | .120  | .328  | -.661  | 110 | 240 | -.015  | .133  | .482  | -.492  |
| 110 | 122 | -.406  | .188  | .195  | -1.068 | 110 | 172 | -.098  | .095  | .280  | -.420  | 110 | 241 | -.118  | .127  | .308  | -.595  |
| 110 | 123 | -.888  | .290  | .010  | -1.608 | 110 | 173 | -.138  | .113  | .226  | -.724  | 110 | 242 | -.160  | .117  | .282  | -.605  |
| 110 | 124 | -.740  | .299  | .043  | -1.522 | 110 | 174 | -.135  | .105  | .195  | -.536  | 110 | 243 | -.053  | .127  | .475  | -.411  |
| 110 | 125 | -.666  | .233  | .071  | -1.447 | 110 | 175 | -.144  | .114  | .203  | -.620  | 110 | 244 | -.180  | .170  | .843  | -.317  |
| 110 | 126 | -.617  | .239  | .158  | -1.448 | 110 | 176 | -.141  | .094  | .168  | -.457  | 110 | 245 | -.143  | .164  | .793  | -.352  |
| 110 | 127 | -.512  | .230  | .307  | -1.350 | 110 | 177 | -.173  | .125  | .218  | -.615  | 110 | 246 | -.064  | .147  | .530  | -.463  |
| 110 | 128 | -.402  | .168  | .284  | -1.104 | 110 | 178 | -.167  | .125  | .226  | -.608  | 110 | 247 | -.091  | .142  | .425  | -.663  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|
| 110 | 248 | -.074  | .131  | .436  | -.487  | 110 | 348 | .033   | .131  | .451  | -.426 | 110 | 414 | -.187  | .129  | .216  | -1.257 |
| 110 | 249 | -.045  | .131  | .471  | -.471  | 110 | 349 | -.247  | .143  | .781  | -.260 | 110 | 415 | -.196  | .125  | .256  | -.589  |
| 110 | 250 | -.030  | .124  | .524  | -.396  | 110 | 350 | -.147  | .104  | .152  | -.588 | 110 | 416 | -.186  | .123  | .211  | -.639  |
| 110 | 301 | -.247  | .122  | .230  | -.725  | 110 | 351 | -.219  | .118  | .129  | -.624 | 110 | 417 | -.207  | .125  | .270  | -.599  |
| 110 | 302 | -.264  | .117  | .153  | -.687  | 110 | 352 | -.085  | .104  | .287  | -.421 | 110 | 418 | -.211  | .118  | .177  | -.748  |
| 110 | 303 | -.283  | .126  | .115  | -.849  | 110 | 353 | -.012  | .105  | .390  | -.338 | 110 | 419 | -.180  | .111  | .167  | -.548  |
| 110 | 304 | -.235  | .124  | .157  | -.834  | 110 | 354 | -.054  | .103  | .376  | -.324 | 110 | 420 | -.146  | .107  | .254  | -.641  |
| 110 | 305 | -.276  | .139  | .254  | -.841  | 110 | 355 | -.087  | .113  | .516  | -.239 | 110 | 421 | -.167  | .122  | .263  | -.598  |
| 110 | 306 | -.254  | .136  | .224  | -.723  | 110 | 356 | -.073  | .104  | .404  | -.280 | 110 | 422 | -.170  | .110  | .211  | -.598  |
| 110 | 307 | -.297  | .133  | .220  | -.739  | 110 | 357 | -.081  | .132  | .529  | -.273 | 110 | 423 | -.206  | .133  | .214  | -.731  |
| 110 | 308 | -.370  | .156  | .189  | -1.104 | 110 | 358 | -.243  | .138  | .762  | -.197 | 110 | 424 | -.180  | .127  | .231  | -.724  |
| 110 | 309 | -.547  | .177  | .140  | -1.171 | 110 | 359 | -.160  | .120  | .244  | -.637 | 110 | 425 | -.140  | .116  | .231  | -.629  |
| 110 | 310 | -.477  | .155  | .021  | -1.101 | 110 | 360 | -.197  | .111  | .192  | -.588 | 110 | 426 | -.163  | .118  | .263  | -.615  |
| 110 | 311 | -.499  | .158  | .063  | -1.377 | 110 | 361 | -.070  | .103  | .256  | -.357 | 110 | 427 | -.175  | .123  | .293  | -.659  |
| 110 | 312 | -.630  | .181  | .026  | -1.169 | 110 | 362 | -.022  | .100  | .360  | -.255 | 110 | 428 | -.194  | .133  | .233  | -.864  |
| 110 | 313 | -.260  | .161  | .367  | -.894  | 110 | 363 | -.068  | .101  | .398  | -.231 | 110 | 429 | -.156  | .131  | .250  | -.706  |
| 110 | 314 | -.238  | .121  | .208  | -.641  | 110 | 364 | -.108  | .099  | .463  | -.221 | 110 | 430 | -.138  | .113  | .266  | -.701  |
| 110 | 315 | -.327  | .143  | .084  | -.847  | 110 | 365 | -.122  | .112  | .478  | -.272 | 110 | 431 | -.156  | .118  | .224  | -.598  |
| 110 | 316 | -.173  | .117  | .203  | -.576  | 110 | 366 | -.140  | .120  | .568  | -.301 | 110 | 432 | -.166  | .119  | .199  | -.632  |
| 110 | 317 | -.050  | .114  | .343  | -.394  | 110 | 367 | -.234  | .132  | .673  | -.242 | 110 | 433 | -.148  | .113  | .270  | -.512  |
| 110 | 318 | -.029  | .113  | .451  | -.385  | 110 | 368 | -.062  | .104  | .331  | -.551 | 110 | 434 | -.127  | .112  | .249  | -.552  |
| 110 | 319 | -.025  | .119  | .420  | -.389  | 110 | 369 | -.076  | .103  | .241  | -.468 | 110 | 435 | -.139  | .123  | .271  | -.483  |
| 110 | 320 | -.078  | .138  | .355  | -.564  | 110 | 370 | -.003  | .094  | .286  | -.326 | 110 | 436 | -.136  | .112  | .206  | -.752  |
| 110 | 321 | -.130  | .177  | .490  | -.754  | 110 | 371 | -.077  | .097  | .384  | -.192 | 110 | 437 | -.165  | .118  | .189  | -.638  |
| 110 | 322 | -.146  | .160  | .723  | -.380  | 110 | 372 | -.138  | .100  | .470  | -.249 | 110 | 438 | -.069  | .091  | .306  | -.426  |
| 110 | 323 | -.194  | .120  | .182  | -.653  | 110 | 373 | -.149  | .112  | .567  | -.190 | 110 | 439 | -.102  | .113  | .264  | -.449  |
| 110 | 324 | -.258  | .127  | .145  | -.791  | 110 | 374 | -.190  | .115  | .662  | -.161 | 110 | 440 | -.129  | .108  | .227  | -.525  |
| 110 | 325 | -.138  | .106  | .367  | -.511  | 110 | 375 | -.226  | .134  | .623  | -.239 | 110 | 441 | -.094  | .114  | .267  | -.456  |
| 110 | 326 | -.036  | .105  | .282  | -.431  | 110 | 376 | -.232  | .125  | .752  | -.133 | 110 | 442 | -.124  | .117  | .203  | -.548  |
| 110 | 327 | -.005  | .123  | .468  | -.401  | 110 | 377 | -.001  | .095  | .350  | -.338 | 110 | 443 | -.273  | .091  | .577  | -.029  |
| 110 | 328 | -.028  | .116  | .420  | -.382  | 110 | 378 | -.009  | .090  | .325  | -.312 | 110 | 444 | -.204  | .095  | .606  | -.122  |
| 110 | 329 | -.010  | .144  | .514  | -.607  | 110 | 379 | -.087  | .094  | .388  | -.217 | 110 | 445 | -.268  | .112  | .609  | -.175  |
| 110 | 330 | -.060  | .176  | .577  | -.625  | 110 | 380 | -.137  | .109  | .515  | -.216 | 110 | 446 | -.125  | .098  | .490  | -.263  |
| 110 | 331 | -.181  | .165  | .653  | -.366  | 110 | 381 | -.183  | .107  | .537  | -.164 | 110 | 447 | -.114  | .089  | .412  | -.220  |
| 110 | 332 | -.175  | .106  | .185  | -.728  | 110 | 382 | -.222  | .124  | .568  | -.140 | 110 | 448 | -.124  | .091  | .386  | -.159  |
| 110 | 333 | -.214  | .119  | .136  | -.653  | 110 | 383 | -.254  | .139  | .814  | -.096 | 110 | 449 | -.111  | .100  | .459  | -.266  |
| 110 | 334 | -.123  | .107  | .223  | -.536  | 110 | 384 | -.248  | .130  | .703  | -.084 | 110 | 450 | -.058  | .111  | .263  | -.425  |
| 110 | 335 | -.028  | .111  | .346  | -.385  | 110 | 401 | -.335  | .144  | .147  | -.947 | 110 | 701 | -.088  | .103  | .270  | -.437  |
| 110 | 336 | -.021  | .106  | .413  | -.331  | 110 | 402 | -.312  | .140  | .130  | -.917 | 110 | 702 | -.099  | .110  | .275  | -.461  |
| 110 | 337 | -.040  | .108  | .383  | -.382  | 110 | 403 | -.260  | .120  | .141  | -.661 | 110 | 703 | -.099  | .107  | .306  | -.463  |
| 110 | 338 | -.031  | .126  | .450  | -.371  | 110 | 404 | -.220  | .119  | .160  | -.625 | 110 | 705 | -.071  | .104  | .296  | -.409  |
| 110 | 339 | -.009  | .143  | .416  | -.449  | 110 | 405 | -.259  | .119  | .141  | -.758 | 110 | 706 | -.095  | .108  | .269  | -.542  |
| 110 | 340 | -.226  | .153  | .669  | -.328  | 110 | 406 | -.251  | .133  | .237  | -.980 | 110 | 707 | -.098  | .105  | .229  | -.476  |
| 110 | 341 | -.169  | .097  | .138  | -.460  | 110 | 407 | -.239  | .116  | .146  | -.605 | 110 | 708 | -.076  | .124  | .386  | -.561  |
| 110 | 342 | -.216  | .107  | .119  | -.610  | 110 | 408 | -.303  | .137  | .111  | -.877 | 110 | 710 | -.128  | .117  | .246  | -.695  |
| 110 | 343 | -.087  | .090  | .195  | -.411  | 110 | 409 | -.307  | .135  | .201  | -.957 | 110 | 711 | -.143  | .102  | .186  | -.533  |
| 110 | 344 | -.011  | .097  | .273  | -.362  | 110 | 410 | -.254  | .121  | .144  | -.661 | 110 | 712 | -.141  | .133  | .338  | -.590  |
| 110 | 345 | -.018  | .105  | .392  | -.324  | 110 | 411 | -.256  | .125  | .167  | -.858 | 110 | 713 | -.122  | .119  | .252  | -.545  |
| 110 | 346 | -.054  | .103  | .463  | -.315  | 110 | 412 | -.217  | .121  | .169  | -.648 | 110 | 714 | -.128  | .131  | .372  | -.606  |
| 110 | 347 | -.069  | .111  | .523  | -.326  | 110 | 413 | -.216  | .134  | .199  | -.728 | 110 | 716 | -.125  | .112  | .232  | -.514  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX  | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX  | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX  | CPMIN  |
|-----|-----|--------|-------|--------|--------|-----|-----|--------|-------|--------|--------|-----|-----|--------|-------|--------|--------|
| 110 | 717 | - .118 | .114  | .289   | - .494 | 120 | 127 | - .381 | .193  | .311   | -1.242 | 120 | 177 | - .213 | .125  | .206   | - .616 |
| 110 | 801 | - .163 | .119  | .228   | - .562 | 120 | 128 | - .363 | .160  | .147   | - .956 | 120 | 178 | - .207 | .125  | .218   | - .596 |
| 110 | 802 | - .070 | .150  | .416   | - .547 | 120 | 129 | - .352 | .157  | .180   | -1.059 | 120 | 180 | - .137 | .108  | .220   | - .480 |
| 110 | 803 | - .124 | .103  | .230   | - .467 | 120 | 130 | - .345 | .159  | .119   | - .960 | 120 | 181 | - .095 | .121  | .374   | - .482 |
| 110 | 804 | - .196 | .135  | .714   | - .184 | 120 | 131 | - .308 | .153  | .134   | - .891 | 120 | 182 | - .088 | .128  | .380   | - .469 |
| 110 | 901 | - .439 | .187  | .070   | -1.253 | 120 | 132 | - .488 | .216  | .015   | -1.399 | 120 | 201 | - .038 | .156  | .744   | - .411 |
| 110 | 902 | - .153 | .135  | .317   | - .641 | 120 | 133 | - .438 | .229  | .251   | -1.424 | 120 | 202 | - .653 | .177  | .190   | -1.204 |
| 110 | 903 | - .153 | .106  | .161   | - .519 | 120 | 134 | - .424 | .218  | .275   | -1.511 | 120 | 203 | - .016 | .167  | .593   | - .605 |
| 110 | 904 | - .538 | .182  | .128   | -1.185 | 120 | 135 | - .427 | .217  | .305   | -1.894 | 120 | 204 | - .289 | .170  | .297   | - .873 |
| 110 | 905 | - .695 | .166  | -1.117 | -1.272 | 120 | 136 | - .416 | .167  | .193   | - .992 | 120 | 205 | - .427 | .155  | .095   | -1.003 |
| 110 | 906 | - .290 | .136  | .167   | - .823 | 120 | 137 | - .376 | .177  | .169   | -1.170 | 120 | 206 | - .648 | .158  | -1.066 | -1.276 |
| 110 | 907 | - .115 | .144  | .461   | - .561 | 120 | 138 | - .356 | .159  | .159   | - .961 | 120 | 207 | - .734 | .180  | -1.127 | -1.426 |
| 110 | 908 | - .278 | .150  | .303   | - .860 | 120 | 139 | - .347 | .161  | .135   | - .962 | 120 | 208 | - .502 | .179  | 1.113  | - .029 |
| 110 | 909 | - .235 | .132  | .195   | - .736 | 120 | 140 | - .308 | .126  | .062   | - .864 | 120 | 209 | - .538 | .189  | 1.108  | - .127 |
| 110 | 910 | - .231 | .127  | .160   | - .685 | 120 | 141 | - .721 | .306  | .062   | -1.688 | 120 | 210 | - .170 | .200  | .862   | - .586 |
| 110 | 911 | - .284 | .113  | .079   | - .764 | 120 | 142 | - .626 | .272  | .106   | -1.491 | 120 | 211 | - .275 | .182  | - .253 | - .882 |
| 110 | 912 | - .560 | .185  | .161   | -1.329 | 120 | 143 | - .582 | .274  | .138   | -1.490 | 120 | 212 | - .549 | .176  | -1.112 | -1.237 |
| 110 | 913 | - .685 | .169  | - .094 | -1.273 | 120 | 144 | - .498 | .200  | .131   | -1.264 | 120 | 213 | - .555 | .169  | -1.145 | - .022 |
| 110 | 914 | - .636 | .137  | .233   | -1.077 | 120 | 145 | - .436 | .208  | .225   | -1.445 | 120 | 214 | - .495 | .193  | 1.098  | - .140 |
| 110 | 915 | - .399 | .166  | -1.118 | -1.083 | 120 | 146 | - .404 | .194  | .291   | -1.246 | 120 | 215 | - .144 | .181  | .656   | - .442 |
| 110 | 916 | - .261 | .132  | .189   | - .811 | 120 | 147 | - .376 | .195  | .358   | -1.463 | 120 | 216 | - .265 | .173  | .261   | - .941 |
| 110 | 917 | - .451 | .176  | .142   | -1.027 | 120 | 148 | - .365 | .158  | .148   | -1.269 | 120 | 217 | - .473 | .166  | .011   | -1.040 |
| 110 | 918 | - .766 | .199  | - .062 | -1.381 | 120 | 149 | - .320 | .160  | .204   | -1.043 | 120 | 218 | - .526 | .164  | 1.024  | - .060 |
| 110 | 919 | - .721 | .181  | - .132 | -1.306 | 120 | 150 | - .748 | .232  | - .001 | -1.609 | 120 | 219 | - .399 | .166  | .965   | - .069 |
| 120 | 101 | - .692 | .197  | -1.149 | -1.425 | 120 | 151 | - .647 | .221  | .049   | -1.467 | 120 | 220 | - .077 | .183  | .657   | - .720 |
| 120 | 102 | - .634 | .185  | -1.112 | -1.300 | 120 | 152 | - .593 | .176  | - .023 | -1.233 | 120 | 221 | - .333 | .172  | .262   | - .930 |
| 120 | 103 | - .596 | .209  | - .057 | -1.426 | 120 | 153 | - .509 | .221  | .151   | -1.643 | 120 | 222 | - .498 | .185  | .079   | -1.420 |
| 120 | 104 | - .463 | .173  | .013   | -1.093 | 120 | 154 | - .434 | .200  | .246   | -1.208 | 120 | 223 | - .452 | .172  | 1.004  | - .029 |
| 120 | 105 | - .393 | .204  | .315   | -1.244 | 120 | 155 | - .360 | .177  | .270   | -1.052 | 120 | 224 | - .326 | .181  | .973   | - .160 |
| 120 | 106 | - .389 | .215  | .379   | -1.270 | 120 | 156 | - .307 | .141  | .109   | - .788 | 120 | 225 | - .014 | .192  | .833   | - .601 |
| 120 | 107 | - .371 | .226  | .425   | -1.187 | 120 | 157 | - .314 | .169  | .147   | -1.156 | 120 | 226 | - .412 | .198  | - .225 | -1.117 |
| 120 | 108 | - .334 | .176  | .192   | -1.050 | 120 | 158 | - .283 | .162  | .249   | -1.034 | 120 | 227 | - .615 | .209  | - .087 | -1.456 |
| 120 | 109 | - .358 | .184  | .235   | -1.230 | 120 | 159 | - .711 | .232  | - .096 | -1.572 | 120 | 228 | - .368 | .164  | .945   | - .036 |
| 120 | 110 | - .321 | .177  | .256   | -1.053 | 120 | 160 | - .634 | .201  | - .092 | -1.373 | 120 | 229 | - .259 | .166  | .893   | - .281 |
| 120 | 111 | - .308 | .166  | .263   | -1.124 | 120 | 161 | - .517 | .213  | .103   | -1.408 | 120 | 230 | - .056 | .195  | .577   | - .682 |
| 120 | 112 | - .331 | .145  | .147   | -1.003 | 120 | 162 | - .379 | .176  | .143   | -1.237 | 120 | 231 | - .458 | .178  | .108   | -1.058 |
| 120 | 113 | - .318 | .145  | .153   | - .935 | 120 | 163 | - .288 | .163  | .212   | -1.181 | 120 | 232 | - .681 | .191  | -1.112 | -1.510 |
| 120 | 114 | - .690 | .200  | - .066 | -1.418 | 120 | 164 | - .233 | .106  | .089   | - .606 | 120 | 233 | - .211 | .134  | .695   | - .233 |
| 120 | 115 | - .600 | .193  | .011   | -1.348 | 120 | 165 | - .212 | .150  | .278   | - .911 | 120 | 234 | - .114 | .156  | .782   | - .378 |
| 120 | 116 | - .475 | .151  | .022   | - .991 | 120 | 166 | - .221 | .153  | .215   | - .993 | 120 | 235 | - .136 | .180  | .600   | - .720 |
| 120 | 117 | - .408 | .172  | .099   | -1.251 | 120 | 167 | - .198 | .152  | .251   | - .846 | 120 | 236 | - .426 | .195  | .136   | -1.146 |
| 120 | 118 | - .356 | .169  | .139   | -1.094 | 120 | 168 | - .239 | .124  | .159   | - .719 | 120 | 237 | - .617 | .189  | -1.330 | -1.455 |
| 120 | 119 | - .326 | .171  | .208   | -1.167 | 120 | 169 | - .230 | .144  | .287   | - .731 | 120 | 238 | - .154 | .130  | .678   | - .260 |
| 120 | 120 | - .316 | .134  | .109   | - .843 | 120 | 170 | - .217 | .143  | .302   | - .749 | 120 | 239 | - .077 | .137  | .807   | - .354 |
| 120 | 121 | - .315 | .159  | .211   | -1.434 | 120 | 171 | - .134 | .141  | .359   | - .671 | 120 | 240 | - .045 | .142  | .501   | - .431 |
| 120 | 122 | - .306 | .153  | .204   | -1.189 | 120 | 172 | - .111 | .123  | .334   | - .561 | 120 | 241 | - .128 | .136  | .406   | - .608 |
| 120 | 123 | - .544 | .258  | .156   | -1.611 | 120 | 173 | - .152 | .119  | .221   | - .614 | 120 | 242 | - .177 | .139  | .246   | - .650 |
| 120 | 124 | - .476 | .221  | .071   | -1.328 | 120 | 174 | - .145 | .110  | .204   | - .557 | 120 | 243 | - .050 | .142  | .866   | - .447 |
| 120 | 125 | - .403 | .201  | .191   | -1.216 | 120 | 175 | - .153 | .115  | .208   | - .570 | 120 | 244 | - .228 | .169  | .892   | - .284 |
| 120 | 126 | - .400 | .200  | .301   | -1.319 | 120 | 176 | - .161 | .101  | .157   | - .514 | 120 | 245 | - .074 | .158  | .697   | - .396 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C / ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 120 | 246 | -033   | 142   | 516   | -546  | 120 | 346 | 080    | 110   | 503   | -368  | 120 | 412 | -257   | 127   | 228   | -854  |
| 120 | 247 | -086   | 141   | 556   | -529  | 120 | 347 | 119    | 109   | 441   | -274  | 120 | 413 | -261   | 128   | 150   | -677  |
| 120 | 248 | -086   | 134   | 463   | -525  | 120 | 348 | 113    | 142   | 549   | -412  | 120 | 414 | -254   | 129   | 224   | -706  |
| 120 | 249 | -066   | 124   | 387   | -433  | 120 | 349 | 317    | 168   | 922   | -241  | 120 | 415 | -284   | 124   | 153   | -703  |
| 120 | 250 | -034   | 130   | 697   | -453  | 120 | 350 | -254   | 129   | 130   | -825  | 120 | 416 | -279   | 129   | 149   | -868  |
| 120 | 301 | -270   | 142   | 221   | -827  | 120 | 351 | -311   | 131   | 083   | -764  | 120 | 417 | -236   | 129   | 182   | -756  |
| 120 | 302 | -312   | 137   | 146   | -910  | 120 | 352 | -124   | 107   | 206   | -438  | 120 | 418 | -277   | 126   | 099   | -714  |
| 120 | 303 | -367   | 143   | 166   | -863  | 120 | 353 | -020   | 102   | 337   | -318  | 120 | 419 | -261   | 131   | 244   | -704  |
| 120 | 304 | -325   | 142   | 110   | -880  | 120 | 354 | 057    | 108   | 439   | -280  | 120 | 420 | -269   | 129   | 165   | -842  |
| 120 | 305 | -318   | 152   | 116   | -868  | 120 | 355 | 121    | 101   | 446   | -237  | 120 | 421 | -277   | 134   | 091   | -980  |
| 120 | 306 | -312   | 148   | 119   | -870  | 120 | 356 | 126    | 116   | 555   | -308  | 120 | 422 | -269   | 132   | 176   | -717  |
| 120 | 307 | -376   | 146   | 133   | -860  | 120 | 357 | 124    | 140   | 670   | -386  | 120 | 423 | -289   | 139   | 108   | -1003 |
| 120 | 308 | -480   | 167   | 130   | -145  | 120 | 358 | 297    | 141   | 839   | -210  | 120 | 424 | -285   | 138   | 194   | -1170 |
| 120 | 309 | -574   | 171   | 015   | -1265 | 120 | 359 | -220   | 123   | 170   | -694  | 120 | 425 | -280   | 136   | 120   | -1248 |
| 120 | 310 | -475   | 160   | 089   | -1194 | 120 | 360 | -256   | 128   | 152   | -882  | 120 | 426 | -309   | 157   | 108   | -1951 |
| 120 | 311 | -449   | 169   | 147   | -1162 | 120 | 361 | -064   | 095   | 203   | -396  | 120 | 427 | -289   | 151   | 176   | -862  |
| 120 | 312 | -671   | 187   | 056   | -1458 | 120 | 362 | 019    | 092   | 327   | -261  | 120 | 428 | -281   | 142   | 227   | -906  |
| 120 | 313 | -172   | 165   | 632   | -684  | 120 | 363 | 061    | 093   | 335   | -295  | 120 | 429 | -260   | 149   | 198   | -825  |
| 120 | 314 | -259   | 129   | 150   | -753  | 120 | 364 | 099    | 111   | 485   | -214  | 120 | 430 | -256   | 142   | 188   | -914  |
| 120 | 315 | -313   | 130   | 098   | -965  | 120 | 365 | 134    | 116   | 512   | -295  | 120 | 431 | -253   | 148   | 147   | -962  |
| 120 | 316 | -147   | 107   | 289   | -478  | 120 | 366 | 136    | 136   | 646   | -248  | 120 | 432 | -259   | 143   | 176   | -1287 |
| 120 | 317 | -030   | 116   | 441   | -430  | 120 | 367 | 229    | 133   | 693   | -211  | 120 | 433 | -189   | 128   | 227   | -693  |
| 120 | 318 | 014    | 126   | 461   | -372  | 120 | 368 | -083   | 103   | 241   | -438  | 120 | 434 | -202   | 136   | 281   | -717  |
| 120 | 319 | 048    | 125   | 527   | -409  | 120 | 369 | 077    | 101   | 241   | -395  | 120 | 435 | -198   | 132   | 233   | -724  |
| 120 | 320 | 049    | 144   | 597   | -362  | 120 | 370 | -009   | 083   | 246   | -301  | 120 | 436 | -217   | 133   | 220   | -765  |
| 120 | 321 | 032    | 172   | 656   | -539  | 120 | 371 | 080    | 098   | 394   | -244  | 120 | 437 | -231   | 121   | 173   | -756  |
| 120 | 322 | 310    | 181   | 876   | -344  | 120 | 372 | 116    | 123   | 468   | -278  | 120 | 438 | -108   | 113   | 224   | -478  |
| 120 | 323 | -247   | 122   | 150   | -765  | 120 | 373 | 155    | 113   | 540   | -159  | 120 | 439 | -132   | 110   | 249   | -539  |
| 120 | 324 | -321   | 120   | 045   | -714  | 120 | 374 | 178    | 126   | 725   | -161  | 120 | 440 | -141   | 114   | 237   | -604  |
| 120 | 325 | -135   | 116   | 245   | -484  | 120 | 375 | 161    | 109   | 643   | -136  | 120 | 441 | -110   | 109   | 236   | -518  |
| 120 | 326 | -025   | 126   | 360   | -467  | 120 | 376 | 199    | 124   | 715   | -181  | 120 | 442 | -133   | 115   | 272   | -546  |
| 120 | 327 | 053    | 121   | 476   | -325  | 120 | 377 | -005   | 101   | 347   | -341  | 120 | 443 | -299   | 086   | 587   | -067  |
| 120 | 328 | 087    | 127   | 645   | -312  | 120 | 378 | 001    | 101   | 343   | -307  | 120 | 444 | 158    | 095   | 452   | -131  |
| 120 | 329 | 112    | 131   | 592   | -466  | 120 | 379 | 085    | 095   | 442   | -203  | 120 | 445 | 223    | 129   | 659   | -282  |
| 120 | 330 | 092    | 161   | 604   | -585  | 120 | 380 | 132    | 098   | 529   | -166  | 120 | 446 | 096    | 107   | 437   | -353  |
| 120 | 331 | 322    | 163   | 902   | -247  | 120 | 381 | 180    | 114   | 556   | -198  | 120 | 447 | 096    | 089   | 369   | -227  |
| 120 | 332 | -246   | 125   | 127   | -680  | 120 | 382 | 222    | 117   | 661   | -196  | 120 | 448 | 105    | 103   | 420   | -227  |
| 120 | 333 | 327    | 130   | 080   | -739  | 120 | 383 | 244    | 129   | 730   | -110  | 120 | 449 | 079    | 116   | 494   | -335  |
| 120 | 334 | -156   | 113   | 208   | -528  | 120 | 384 | 212    | 131   | 666   | -224  | 120 | 450 | -085   | 116   | 295   | -453  |
| 120 | 335 | 018    | 103   | 367   | -335  | 120 | 401 | -267   | 128   | 157   | -768  | 120 | 701 | -108   | 107   | 289   | -426  |
| 120 | 336 | 047    | 105   | 424   | -287  | 120 | 402 | -283   | 143   | 123   | -926  | 120 | 702 | -123   | 112   | 231   | -517  |
| 120 | 337 | 085    | 121   | 531   | -355  | 120 | 403 | -242   | 133   | 143   | -650  | 120 | 703 | -118   | 111   | 270   | -480  |
| 120 | 338 | 131    | 126   | 517   | -399  | 120 | 404 | -254   | 124   | 098   | -714  | 120 | 705 | -094   | 103   | 206   | -462  |
| 120 | 339 | 113    | 131   | 552   | -385  | 120 | 405 | -266   | 114   | 112   | -627  | 120 | 706 | -078   | 124   | 294   | -504  |
| 120 | 340 | 322    | 154   | 784   | -243  | 120 | 406 | -278   | 133   | 152   | -784  | 120 | 707 | -083   | 121   | 260   | -484  |
| 120 | 341 | -268   | 122   | 118   | -735  | 120 | 407 | -290   | 129   | 147   | -849  | 120 | 708 | -136   | 134   | 389   | -584  |
| 120 | 342 | 366    | 147   | 059   | -939  | 120 | 408 | -257   | 132   | 127   | -769  | 120 | 710 | -136   | 132   | 254   | -556  |
| 120 | 343 | -155   | 121   | 240   | -533  | 120 | 409 | -251   | 128   | 178   | -958  | 120 | 711 | -142   | 117   | 206   | -486  |
| 120 | 344 | 029    | 098   | 283   | -351  | 120 | 410 | -248   | 121   | 152   | -727  | 120 | 712 | -171   | 126   | 247   | -576  |
| 120 | 345 | 034    | 104   | 456   | -322  | 120 | 411 | -286   | 133   | 108   | -813  | 120 | 713 | -153   | 111   | 234   | -488  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 120 | 714 | -161   | 122   | 248   | -550   | 130 | 125 | -342   | 163   | 069   | -1.123 | 130 | 175 | -144   | 132   | 255   | -635   |
| 120 | 716 | -163   | 105   | 211   | -479   | 130 | 126 | -347   | 161   | 103   | -1.115 | 130 | 176 | -157   | 116   | 212   | -598   |
| 120 | 717 | -148   | 109   | 186   | -489   | 130 | 127 | -343   | 152   | 105   | -924   | 130 | 177 | -234   | 112   | 114   | -628   |
| 120 | 801 | -201   | 118   | 175   | -597   | 130 | 128 | -338   | 129   | 063   | -815   | 130 | 178 | -236   | 112   | 106   | -644   |
| 120 | 802 | -134   | 150   | 390   | -604   | 130 | 129 | -304   | 146   | 144   | -846   | 130 | 180 | -155   | 101   | 162   | -523   |
| 120 | 803 | -171   | 105   | 151   | -500   | 130 | 130 | -296   | 149   | 178   | -840   | 130 | 181 | -110   | 121   | 297   | -521   |
| 120 | 804 | -187   | 118   | 610   | -204   | 130 | 131 | -264   | 151   | 209   | -816   | 130 | 182 | -119   | 124   | 358   | -502   |
| 120 | 901 | -314   | 159   | 162   | -1.155 | 130 | 132 | -413   | 177   | 108   | -1.233 | 130 | 201 | -109   | 177   | 694   | -467   |
| 120 | 902 | -182   | 134   | 277   | -610   | 130 | 133 | -365   | 162   | 153   | -966   | 130 | 202 | -616   | 182   | 093   | -1.301 |
| 120 | 903 | -196   | 129   | 162   | -715   | 130 | 134 | -355   | 163   | 153   | -1.381 | 130 | 203 | -044   | 161   | 537   | -567   |
| 120 | 904 | -412   | 184   | 157   | -1.172 | 130 | 135 | -361   | 169   | 103   | -1.254 | 130 | 204 | -366   | 147   | 158   | -826   |
| 120 | 905 | -623   | 173   | -155  | -1.360 | 130 | 136 | -360   | 140   | 016   | -954   | 130 | 205 | -521   | 137   | 058   | -995   |
| 120 | 906 | -287   | 138   | 178   | -799   | 130 | 137 | -309   | 163   | 178   | -902   | 130 | 206 | -589   | 163   | 147   | -1.145 |
| 120 | 907 | -233   | 126   | 259   | -652   | 130 | 138 | -289   | 152   | 174   | -1.060 | 130 | 207 | -653   | 183   | 094   | -1.333 |
| 120 | 908 | -342   | 151   | 120   | -892   | 130 | 139 | -277   | 151   | 175   | -794   | 130 | 208 | -570   | 202   | 1.221 | -614   |
| 120 | 909 | -326   | 146   | 100   | -874   | 130 | 140 | -257   | 127   | 108   | -781   | 130 | 209 | -376   | 183   | 055   | -350   |
| 120 | 910 | -277   | 127   | 109   | -872   | 130 | 141 | -556   | 258   | 093   | -1.456 | 130 | 210 | -017   | 177   | 658   | -630   |
| 120 | 911 | -321   | 114   | 037   | -712   | 130 | 142 | -469   | 225   | 233   | -1.446 | 130 | 211 | -397   | 165   | 115   | -944   |
| 120 | 912 | -541   | 191   | 124   | -1.186 | 130 | 143 | -437   | 222   | 203   | -1.447 | 130 | 212 | -415   | 150   | 001   | -986   |
| 120 | 913 | -674   | 172   | -158  | -1.259 | 130 | 144 | -408   | 172   | 115   | -1.165 | 130 | 213 | -551   | 188   | 1.105 | -091   |
| 120 | 914 | -564   | 148   | 081   | -1.067 | 130 | 145 | -361   | 180   | 198   | -1.149 | 130 | 214 | -419   | 200   | 989   | -419   |
| 120 | 915 | -404   | 151   | 125   | -1.079 | 130 | 146 | -341   | 163   | 129   | -1.035 | 130 | 215 | -018   | 161   | 688   | -507   |
| 120 | 916 | -350   | 136   | 089   | -788   | 130 | 147 | -315   | 154   | 175   | -1.165 | 130 | 216 | -372   | 166   | 111   | -1.114 |
| 120 | 917 | -463   | 172   | 130   | -1.102 | 130 | 148 | -310   | 130   | 218   | -906   | 130 | 217 | -413   | 161   | 126   | -1.109 |
| 120 | 918 | -685   | 186   | -127  | -1.459 | 130 | 149 | -293   | 153   | 156   | -940   | 130 | 218 | -563   | 182   | 1.090 | -074   |
| 120 | 919 | -686   | 182   | -106  | -1.359 | 130 | 150 | -602   | 241   | -003  | -1.580 | 130 | 219 | -339   | 181   | 1.020 | -238   |
| 130 | 101 | -567   | 167   | 039   | -1.372 | 130 | 151 | -507   | 217   | 139   | -1.592 | 130 | 220 | -073   | 170   | 520   | -646   |
| 130 | 102 | -490   | 163   | 039   | -1.169 | 130 | 152 | -472   | 178   | 009   | -1.199 | 130 | 221 | -415   | 163   | 055   | -1.056 |
| 130 | 103 | -414   | 173   | 195   | -1.217 | 130 | 153 | -401   | 183   | 115   | -1.433 | 130 | 222 | -457   | 177   | 066   | -1.147 |
| 130 | 104 | -330   | 141   | 154   | -971   | 130 | 154 | -358   | 178   | 230   | -1.468 | 130 | 223 | -392   | 167   | 973   | -138   |
| 130 | 105 | -322   | 179   | 172   | -1.080 | 130 | 155 | -315   | 164   | 157   | -1.120 | 130 | 224 | -311   | 214   | 912   | -341   |
| 130 | 106 | -317   | 178   | 170   | -999   | 130 | 156 | -272   | 134   | 155   | -878   | 130 | 225 | -128   | 173   | 427   | -806   |
| 130 | 107 | -311   | 188   | 319   | -1.150 | 130 | 157 | -303   | 161   | 178   | -1.085 | 130 | 226 | -445   | 172   | 136   | -1.042 |
| 130 | 108 | -284   | 137   | 158   | -821   | 130 | 158 | -277   | 153   | 196   | -896   | 130 | 227 | -506   | 195   | 114   | -1.232 |
| 130 | 109 | -294   | 144   | 214   | -920   | 130 | 159 | -672   | 225   | -042  | -1.637 | 130 | 228 | -325   | 179   | 1.253 | -068   |
| 130 | 110 | -269   | 147   | 241   | -914   | 130 | 160 | -581   | 195   | -018  | -1.312 | 130 | 229 | -201   | 169   | 750   | -336   |
| 130 | 111 | -267   | 145   | 172   | -1.018 | 130 | 161 | -474   | 202   | 355   | -1.664 | 130 | 230 | -177   | 186   | 442   | -836   |
| 130 | 112 | -280   | 122   | 088   | -841   | 130 | 162 | -380   | 177   | 267   | -1.102 | 130 | 231 | -475   | 201   | 072   | -1.122 |
| 130 | 113 | -273   | 144   | 213   | -918   | 130 | 163 | -303   | 166   | 191   | -1.003 | 130 | 232 | -627   | 191   | 041   | -1.293 |
| 130 | 114 | -496   | 197   | 063   | -1.285 | 130 | 164 | -247   | 119   | 062   | -697   | 130 | 233 | -240   | 162   | 833   | -266   |
| 130 | 115 | -407   | 177   | 144   | -1.190 | 130 | 165 | -210   | 149   | 208   | -944   | 130 | 234 | -042   | 158   | 688   | -584   |
| 130 | 116 | -316   | 146   | 078   | -914   | 130 | 166 | -206   | 143   | 184   | -833   | 130 | 235 | -211   | 170   | 307   | -893   |
| 130 | 117 | -303   | 158   | 117   | -1.069 | 130 | 167 | -183   | 148   | 239   | -870   | 130 | 236 | -514   | 196   | 119   | -1.268 |
| 130 | 118 | -299   | 163   | 139   | -1.194 | 130 | 168 | -235   | 127   | 145   | -722   | 130 | 237 | -605   | 196   | 075   | -1.390 |
| 130 | 119 | -283   | 164   | 184   | -1.047 | 130 | 169 | -259   | 127   | 120   | -747   | 130 | 238 | -107   | 126   | 620   | -306   |
| 130 | 120 | -268   | 135   | 115   | -888   | 130 | 170 | -242   | 116   | 143   | -720   | 130 | 239 | -018   | 127   | 470   | -357   |
| 130 | 121 | -261   | 146   | 189   | -998   | 130 | 171 | -152   | 123   | 225   | -598   | 130 | 240 | -083   | 148   | 448   | -529   |
| 130 | 122 | -252   | 141   | 182   | -697   | 130 | 172 | -125   | 100   | 152   | -472   | 130 | 241 | -180   | 137   | 294   | -627   |
| 130 | 123 | -367   | 177   | 149   | -1.072 | 130 | 173 | -146   | 131   | 242   | -671   | 130 | 242 | -210   | 142   | 299   | -730   |
| 130 | 124 | -312   | 136   | 095   | -891   | 130 | 174 | -142   | 126   | 233   | -555   | 130 | 243 | -101   | 141   | 583   | -630   |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 130 | 244 | .121   | .141  | .678  | -.346  | 130 | 344 | -.004  | .107  | .293  | -.316  | 130 | 410 | -.286  | .126  | .092  | -.806  |
| 130 | 245 | .010   | .150  | .493  | -.437  | 130 | 345 | .075   | .104  | .433  | -.270  | 130 | 411 | -.275  | .149  | .198  | -1.061 |
| 130 | 246 | -.082  | .153  | .537  | -.542  | 130 | 346 | .136   | .101  | .550  | -.168  | 130 | 412 | -.280  | .153  | .200  | -1.044 |
| 130 | 247 | -.131  | .124  | .471  | -.581  | 130 | 347 | .173   | .125  | .603  | -.207  | 130 | 413 | -.265  | .138  | .192  | -.776  |
| 130 | 248 | -.120  | .123  | .333  | -.611  | 130 | 348 | .189   | .133  | .720  | -.199  | 130 | 414 | -.257  | .142  | .102  | -1.213 |
| 130 | 249 | -.089  | .138  | .464  | -.502  | 130 | 349 | -.352  | .158  | .962  | -.086  | 130 | 415 | -.289  | .143  | .108  | -.943  |
| 130 | 250 | -.092  | .125  | .356  | -.464  | 130 | 350 | -.264  | .139  | .135  | -1.016 | 130 | 416 | -.285  | .151  | .191  | -.962  |
| 130 | 301 | -.361  | .153  | .132  | -.995  | 130 | 351 | -.331  | .147  | .119  | -.791  | 130 | 417 | -.289  | .152  | .220  | -1.082 |
| 130 | 302 | -.410  | .135  | .008  | -.957  | 130 | 352 | -.111  | .110  | .246  | -.582  | 130 | 418 | -.273  | .134  | .298  | -.788  |
| 130 | 303 | -.391  | .148  | .119  | -.991  | 130 | 353 | -.003  | .102  | .309  | -.362  | 130 | 419 | -.298  | .147  | .102  | -1.019 |
| 130 | 304 | -.347  | .155  | .149  | -.922  | 130 | 354 | .061   | .097  | .393  | -.277  | 130 | 420 | -.271  | .148  | .173  | -.904  |
| 130 | 305 | -.457  | .177  | .077  | -1.054 | 130 | 355 | .115   | .098  | .463  | -.187  | 130 | 421 | -.297  | .158  | .179  | -1.537 |
| 130 | 306 | -.361  | .166  | .268  | -.985  | 130 | 356 | .172   | .112  | .689  | -.214  | 130 | 422 | -.295  | .150  | .149  | -.941  |
| 130 | 307 | -.399  | .169  | .112  | -1.013 | 130 | 357 | .292   | .119  | .636  | -.187  | 130 | 423 | -.296  | .142  | .208  | -.859  |
| 130 | 308 | -.483  | .172  | .113  | -1.017 | 130 | 358 | .319   | .142  | .886  | -.076  | 130 | 424 | -.329  | .158  | .199  | -1.271 |
| 130 | 309 | -.683  | .184  | .106  | -1.347 | 130 | 359 | -.259  | .138  | .153  | -.827  | 130 | 425 | -.311  | .158  | .167  | -1.258 |
| 130 | 310 | -.479  | .183  | .088  | -1.187 | 130 | 360 | -.275  | .135  | .116  | -.711  | 130 | 426 | -.318  | .179  | .232  | -1.133 |
| 130 | 311 | -.374  | .186  | .357  | -1.001 | 130 | 361 | .056   | .106  | .340  | -.390  | 130 | 427 | -.319  | .162  | .170  | -1.221 |
| 130 | 312 | -.622  | .189  | .009  | -1.270 | 130 | 362 | .015   | .108  | .383  | -.319  | 130 | 428 | -.294  | .146  | .161  | -.853  |
| 130 | 313 | -.064  | .190  | .596  | -.814  | 130 | 363 | .089   | .104  | .431  | -.256  | 130 | 429 | -.279  | .153  | .186  | -1.439 |
| 130 | 314 | -.317  | .170  | .223  | -1.011 | 130 | 364 | .132   | .120  | .592  | -.183  | 130 | 430 | -.282  | .153  | .167  | -1.130 |
| 130 | 315 | -.362  | .154  | .194  | -.972  | 130 | 365 | .137   | .106  | .563  | -.268  | 130 | 431 | -.258  | .178  | .268  | -1.155 |
| 130 | 316 | -.105  | .138  | .392  | -.546  | 130 | 366 | .206   | .158  | .789  | -.228  | 130 | 432 | -.318  | .169  | .238  | -1.210 |
| 130 | 317 | .072   | .137  | .552  | -.365  | 130 | 367 | .256   | .141  | .718  | -.189  | 130 | 433 | -.181  | .120  | .198  | -.686  |
| 130 | 318 | .144   | .145  | .650  | -.263  | 130 | 368 | -.064  | .109  | .273  | -.422  | 130 | 434 | -.219  | .129  | .194  | -.673  |
| 130 | 319 | .151   | .131  | .698  | -.257  | 130 | 369 | .057   | .127  | .355  | -.444  | 130 | 435 | -.198  | .168  | .353  | -.816  |
| 130 | 320 | .211   | .170  | .844  | -.415  | 130 | 370 | -.025  | .107  | .419  | -.346  | 130 | 436 | -.213  | .141  | .271  | -1.083 |
| 130 | 321 | .260   | .183  | .960  | -.372  | 130 | 371 | .095   | .095  | .399  | -.237  | 130 | 437 | -.245  | .140  | .235  | -.886  |
| 130 | 322 | .512   | .190  | 1.096 | -.251  | 130 | 372 | .118   | .111  | .502  | -.268  | 130 | 438 | -.181  | .122  | .271  | -.510  |
| 130 | 323 | -.292  | .180  | .239  | -1.086 | 130 | 373 | .155   | .124  | .597  | -.195  | 130 | 439 | -.129  | .121  | .288  | -.583  |
| 130 | 324 | -.395  | .173  | .191  | -1.431 | 130 | 374 | .188   | .124  | .676  | -.149  | 130 | 440 | -.132  | .117  | .268  | -.516  |
| 130 | 325 | -.101  | .116  | .343  | -.612  | 130 | 375 | .193   | .132  | .689  | -.218  | 130 | 441 | -.106  | .119  | .223  | -.481  |
| 130 | 326 | .018   | .119  | .455  | -.483  | 130 | 376 | .165   | .127  | .632  | -.262  | 130 | 442 | -.115  | .122  | .267  | -.574  |
| 130 | 327 | .125   | .143  | .635  | -.318  | 130 | 377 | .001   | .113  | .395  | -.357  | 130 | 443 | -.342  | .089  | .694  | -.044  |
| 130 | 328 | .186   | .136  | .714  | -.216  | 130 | 378 | .012   | .100  | .349  | -.309  | 130 | 444 | .159   | .117  | .573  | -.198  |
| 130 | 329 | .238   | .155  | .797  | -.274  | 130 | 379 | .092   | .114  | .427  | -.305  | 130 | 445 | .179   | .131  | .615  | -.268  |
| 130 | 330 | .267   | .167  | .868  | -.318  | 130 | 380 | .147   | .105  | .522  | -.211  | 130 | 446 | .113   | .118  | .515  | -.305  |
| 130 | 331 | .467   | .151  | .966  | -.166  | 130 | 381 | .163   | .124  | .657  | -.189  | 130 | 447 | .111   | .113  | .477  | -.253  |
| 130 | 332 | -.300  | .150  | .113  | -.944  | 130 | 382 | .206   | .124  | .607  | -.132  | 130 | 448 | .133   | .100  | .425  | -.223  |
| 130 | 333 | -.358  | .160  | .115  | -1.055 | 130 | 383 | .233   | .118  | .636  | -.123  | 130 | 449 | .060   | .131  | .448  | -.630  |
| 130 | 334 | -.139  | .123  | .302  | -.612  | 130 | 384 | .206   | .127  | .592  | -.274  | 130 | 450 | -.049  | .135  | .368  | -.599  |
| 130 | 335 | .015   | .113  | .461  | -.320  | 130 | 401 | -.261  | .145  | .246  | -.912  | 130 | 701 | -.110  | .112  | .231  | -.569  |
| 130 | 336 | .094   | .120  | .477  | -.284  | 130 | 402 | -.252  | .123  | .116  | -.801  | 130 | 702 | -.106  | .117  | .242  | -.500  |
| 130 | 337 | .151   | .122  | .553  | -.277  | 130 | 403 | -.284  | .136  | .114  | -.814  | 130 | 703 | -.098  | .116  | .274  | -.493  |
| 130 | 338 | .189   | .127  | .615  | -.165  | 130 | 404 | -.261  | .138  | .203  | -.759  | 130 | 705 | -.080  | .107  | .252  | -.432  |
| 130 | 339 | .194   | .135  | .695  | -.211  | 130 | 405 | -.280  | .148  | .144  | -.886  | 130 | 706 | -.088  | .110  | .259  | -.456  |
| 130 | 340 | .397   | .158  | .918  | -.072  | 130 | 406 | -.313  | .158  | .147  | -1.067 | 130 | 707 | -.100  | .108  | .233  | -.433  |
| 130 | 341 | -.324  | .149  | .144  | -.961  | 130 | 407 | -.325  | .163  | .180  | -1.061 | 130 | 708 | -.141  | .134  | .341  | -.620  |
| 130 | 342 | -.364  | .138  | .037  | -1.068 | 130 | 408 | -.284  | .132  | .120  | -.789  | 130 | 710 | -.162  | .116  | .218  | -.605  |
| 130 | 343 | -.168  | .104  | .208  | -.542  | 130 | 409 | -.268  | .122  | .091  | -.943  | 130 | 711 | -.158  | .100  | .199  | -.463  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX  | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|------|-----|--------|-------|--------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 1300 | 712 | -1.149 | .125  | .249   | -.565  | 140 | 123 | -.369  | .192  | .298  | -1.412 | 140 | 173 | -.121  | .124  | .295  | -.543  |
| 1300 | 713 | -1.134 | .117  | .220   | -.472  | 140 | 124 | -.296  | .141  | .211  | -.914  | 140 | 174 | -.117  | .121  | .285  | -.520  |
| 1300 | 714 | -1.139 | .123  | .293   | -.564  | 140 | 125 | -.279  | .172  | .193  | -1.113 | 140 | 175 | -.114  | .126  | .313  | -.543  |
| 1300 | 716 | -1.144 | .112  | .198   | -.449  | 140 | 126 | -.278  | .168  | .201  | -1.087 | 140 | 176 | -.126  | .111  | .229  | -.499  |
| 1300 | 717 | -1.124 | .116  | .263   | -.476  | 140 | 127 | -.277  | .157  | .167  | -.929  | 140 | 177 | -.200  | .116  | .198  | -.539  |
| 1300 | 801 | -1.173 | .118  | .252   | -.527  | 140 | 128 | -.265  | .129  | .094  | -.787  | 140 | 178 | -.202  | .116  | .191  | -.559  |
| 1300 | 802 | -1.163 | .142  | .358   | -.597  | 140 | 129 | -.248  | .130  | .112  | -.789  | 140 | 180 | -.129  | .103  | .235  | -.417  |
| 1300 | 803 | -1.166 | .111  | .237   | -.565  | 140 | 130 | -.241  | .129  | .125  | -.776  | 140 | 181 | -.096  | .116  | .275  | -.464  |
| 1300 | 804 | -1.182 | .138  | .625   | -.279  | 140 | 131 | -.227  | .129  | .175  | -.689  | 140 | 182 | -.104  | .116  | .292  | -.469  |
| 1300 | 901 | -1.314 | .170  | .198   | -1.148 | 140 | 132 | -.403  | .169  | .133  | -.983  | 140 | 201 | -.119  | .206  | .925  | -.708  |
| 1300 | 902 | -1.237 | .153  | .286   | -.779  | 140 | 133 | -.336  | .177  | .213  | -1.145 | 140 | 202 | -.493  | .196  | .183  | -1.101 |
| 1300 | 903 | -1.302 | .156  | .321   | -.741  | 140 | 134 | -.304  | .172  | .184  | -1.142 | 140 | 203 | -.068  | .187  | .548  | -.953  |
| 1300 | 904 | -1.290 | .197  | .368   | -.930  | 140 | 135 | -.299  | .180  | .200  | -1.175 | 140 | 204 | -.348  | .157  | .287  | -.894  |
| 1300 | 905 | -1.564 | .185  | .153   | -1.296 | 140 | 136 | -.298  | .141  | .167  | -.828  | 140 | 205 | -.499  | .150  | -.062 | -1.071 |
| 1300 | 906 | -1.298 | .163  | .256   | -.921  | 140 | 137 | -.281  | .142  | .177  | -.778  | 140 | 206 | -.483  | .147  | -.064 | -.923  |
| 1300 | 907 | -1.274 | .141  | .207   | -.794  | 140 | 138 | -.268  | .132  | .119  | -.729  | 140 | 207 | -.546  | .181  | .058  | -1.238 |
| 1300 | 908 | -1.343 | .154  | .128   | -.832  | 140 | 139 | -.258  | .131  | .207  | -.740  | 140 | 208 | -.418  | .231  | 1.056 | -1.325 |
| 1300 | 909 | -1.333 | .147  | .033   | -.862  | 140 | 140 | -.255  | .107  | .055  | -.652  | 140 | 209 | -.173  | .236  | .860  | -.708  |
| 1300 | 910 | -1.333 | .141  | .033   | -.966  | 140 | 141 | -.462  | .188  | .097  | -1.282 | 140 | 210 | -.247  | .232  | .586  | -1.094 |
| 1300 | 911 | -1.352 | .120  | .033   | -.743  | 140 | 142 | -.353  | .154  | .127  | -1.158 | 140 | 211 | -.453  | .193  | .138  | -1.256 |
| 1300 | 912 | -1.501 | .206  | .207   | -1.318 | 140 | 143 | -.310  | .163  | .182  | -1.397 | 140 | 212 | -.419  | .177  | .094  | -1.157 |
| 1300 | 913 | -1.677 | .175  | -1.174 | -1.321 | 140 | 144 | -.311  | .137  | .137  | -1.041 | 140 | 213 | -.323  | .223  | .996  | -.346  |
| 1300 | 914 | -1.621 | .153  | -.051  | -1.062 | 140 | 145 | -.280  | .149  | .146  | -.946  | 140 | 214 | -.107  | .231  | .637  | -.612  |
| 1300 | 915 | -1.434 | .163  | .138   | -1.155 | 140 | 146 | -.269  | .133  | .227  | -.825  | 140 | 215 | -.232  | .209  | .412  | -1.360 |
| 1300 | 916 | -1.430 | .146  | .051   | -.940  | 140 | 147 | -.247  | .127  | .119  | -.780  | 140 | 216 | -.483  | .207  | .226  | -1.192 |
| 1300 | 917 | -1.529 | .194  | .138   | -1.213 | 140 | 148 | -.242  | .111  | .068  | -.710  | 140 | 217 | -.440  | .189  | .062  | -1.140 |
| 1300 | 918 | -1.711 | .204  | -.106  | -1.562 | 140 | 149 | -.236  | .127  | .191  | -.791  | 140 | 218 | -.242  | .192  | .818  | -.562  |
| 1300 | 919 | -1.743 | .207  | -.106  | -1.545 | 140 | 150 | -.206  | .180  | .099  | -1.313 | 140 | 219 | -.068  | .221  | .828  | -.672  |
| 1400 | 101 | -1.446 | .187  | .210   | -1.181 | 140 | 151 | -.388  | .161  | .248  | -1.092 | 140 | 220 | -.227  | .202  | .370  | -1.052 |
| 1400 | 102 | -1.374 | .171  | .196   | -1.044 | 140 | 152 | -.351  | .128  | .107  | -.892  | 140 | 221 | -.451  | .184  | .138  | -1.040 |
| 1400 | 103 | -1.316 | .173  | .232   | -.967  | 140 | 153 | -.338  | .155  | .130  | -1.001 | 140 | 222 | -.467  | .188  | .082  | -1.302 |
| 1400 | 104 | -1.263 | .144  | .215   | -.759  | 140 | 154 | -.318  | .151  | .140  | -1.007 | 140 | 223 | -.214  | .160  | .781  | -.399  |
| 1400 | 105 | -1.263 | .166  | .229   | -1.042 | 140 | 155 | -.291  | .139  | .165  | -.838  | 140 | 224 | -.076  | .207  | .757  | -.665  |
| 1400 | 106 | -1.249 | .163  | .233   | -1.016 | 140 | 156 | -.265  | .115  | .091  | -.775  | 140 | 225 | -.230  | .209  | .384  | -1.459 |
| 1400 | 107 | -1.268 | .187  | .278   | -1.508 | 140 | 157 | -.241  | .134  | .181  | -.757  | 140 | 226 | -.444  | .189  | .146  | -1.151 |
| 1400 | 108 | -1.241 | .134  | .183   | -.867  | 140 | 158 | -.215  | .131  | .199  | -.728  | 140 | 227 | -.533  | .210  | .138  | -1.416 |
| 1400 | 109 | -1.265 | .138  | .128   | -.838  | 140 | 159 | -.519  | .191  | .002  | -1.248 | 140 | 228 | -.215  | .171  | .809  | -.263  |
| 1400 | 110 | -1.257 | .144  | .163   | -.794  | 140 | 160 | -.425  | .152  | .011  | -.914  | 140 | 229 | -.061  | .195  | .748  | -.912  |
| 1400 | 111 | -1.262 | .144  | .161   | -1.067 | 140 | 161 | -.365  | .175  | .166  | -1.053 | 140 | 230 | -.215  | .192  | .374  | -1.224 |
| 1400 | 112 | -1.274 | .126  | .069   | -.774  | 140 | 162 | -.309  | .159  | .170  | -.974  | 140 | 231 | -.469  | .173  | -.004 | -1.169 |
| 1400 | 113 | -1.247 | .146  | .163   | -.820  | 140 | 163 | -.254  | .154  | .261  | -.837  | 140 | 232 | -.601  | .163  | -.188 | -1.214 |
| 1400 | 114 | -1.399 | .170  | .164   | -1.135 | 140 | 164 | -.215  | .119  | .125  | -.609  | 140 | 233 | -.170  | .154  | .870  | -.270  |
| 1400 | 115 | -1.313 | .163  | .197   | -.979  | 140 | 165 | -.198  | .135  | .412  | -.658  | 140 | 234 | -.012  | .155  | .523  | -.514  |
| 1400 | 116 | -1.242 | .128  | .182   | -.752  | 140 | 166 | -.182  | .126  | .370  | -.603  | 140 | 235 | -.213  | .167  | .397  | -.808  |
| 1400 | 117 | -1.258 | .171  | .099   | -.858  | 140 | 167 | -.156  | .132  | .450  | -.604  | 140 | 236 | -.466  | .168  | .081  | -1.029 |
| 1400 | 118 | -1.282 | .128  | .116   | -.808  | 140 | 168 | -.225  | .119  | .273  | -.655  | 140 | 237 | -.539  | .179  | -.062 | -1.239 |
| 1400 | 119 | -1.251 | .129  | .167   | -.762  | 140 | 169 | -.233  | .129  | .193  | -.671  | 140 | 238 | -.092  | .133  | .491  | -.338  |
| 1400 | 120 | -1.250 | .107  | .107   | -.632  | 140 | 170 | -.212  | .126  | .240  | -.624  | 140 | 239 | -.011  | .131  | .427  | -.433  |
| 1400 | 121 | -1.237 | .130  | .149   | -.665  | 140 | 171 | -.141  | .122  | .264  | -.538  | 140 | 240 | -.092  | .129  | .359  | -.453  |
| 1400 | 122 | -1.236 | .130  | .139   | -.717  | 140 | 172 | -.114  | .105  | .238  | -.416  | 140 | 241 | -.155  | .122  | .227  | -.684  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 140 | 242 | 179    | 111   | 240   | 356   | 140 | 342 | 222    | 145   | 154   | 828   | 140 | 408 | 236    | 131   | 225   | 797   |
| 140 | 243 | 100    | 129   | 308   | 527   | 140 | 343 | 082    | 121   | 488   | 488   | 140 | 409 | 237    | 134   | 171   | 917   |
| 140 | 244 | 128    | 150   | 682   | 356   | 140 | 344 | 024    | 124   | 682   | 341   | 140 | 410 | 238    | 132   | 172   | 922   |
| 140 | 245 | 007    | 145   | 473   | 495   | 140 | 345 | 094    | 120   | 594   | 271   | 140 | 411 | 239    | 172   | 219   | 069   |
| 140 | 246 | 101    | 127   | 384   | 486   | 140 | 346 | 131    | 113   | 594   | 232   | 140 | 412 | 240    | 161   | 192   | 218   |
| 140 | 247 | 140    | 129   | 340   | 693   | 140 | 347 | 170    | 120   | 783   | 330   | 140 | 413 | 241    | 142   | 195   | 974   |
| 140 | 248 | 108    | 118   | 297   | 547   | 140 | 348 | 149    | 118   | 683   | 178   | 140 | 414 | 242    | 171   | 260   | 175   |
| 140 | 249 | 084    | 115   | 303   | 465   | 140 | 349 | 218    | 126   | 771   | 132   | 140 | 415 | 243    | 171   | 255   | 104   |
| 140 | 250 | 091    | 112   | 319   | 447   | 140 | 350 | 272    | 137   | 125   | 822   | 140 | 416 | 244    | 196   | 324   | 454   |
| 140 | 301 | 385    | 164   | 089   | 171   | 140 | 351 | 259    | 137   | 137   | 796   | 140 | 417 | 245    | 198   | 338   | 273   |
| 140 | 302 | 397    | 155   | 147   | 946   | 140 | 352 | 084    | 108   | 283   | 420   | 140 | 418 | 246    | 144   | 158   | 266   |
| 140 | 303 | 337    | 156   | 265   | 913   | 140 | 353 | 025    | 108   | 459   | 299   | 140 | 419 | 247    | 155   | 208   | 907   |
| 140 | 304 | 330    | 175   | 305   | 081   | 140 | 354 | 080    | 110   | 463   | 281   | 140 | 420 | 248    | 176   | 204   | 712   |
| 140 | 305 | 490    | 210   | 186   | 194   | 140 | 355 | 116    | 112   | 550   | 200   | 140 | 421 | 249    | 170   | 177   | 316   |
| 140 | 306 | 357    | 204   | 409   | 193   | 140 | 356 | 136    | 112   | 488   | 196   | 140 | 422 | 250    | 175   | 096   | 179   |
| 140 | 307 | 330    | 207   | 528   | 175   | 140 | 357 | 169    | 113   | 554   | 234   | 140 | 423 | 251    | 127   | 335   | 744   |
| 140 | 308 | 427    | 242   | 541   | 389   | 140 | 358 | 226    | 121   | 488   | 171   | 140 | 424 | 252    | 137   | 266   | 835   |
| 140 | 309 | 604    | 240   | 265   | 599   | 140 | 359 | 191    | 120   | 168   | 719   | 140 | 425 | 253    | 160   | 194   | 260   |
| 140 | 310 | 345    | 221   | 639   | 190   | 140 | 360 | 224    | 113   | 111   | 609   | 140 | 426 | 254    | 163   | 221   | 264   |
| 140 | 311 | 196    | 216   | 553   | 013   | 140 | 361 | 050    | 105   | 333   | 353   | 140 | 427 | 255    | 174   | 178   | 178   |
| 140 | 312 | 490    | 232   | 340   | 319   | 140 | 362 | 024    | 096   | 378   | 303   | 140 | 428 | 256    | 119   | 304   | 657   |
| 140 | 313 | 082    | 220   | 777   | 842   | 140 | 363 | 087    | 111   | 438   | 238   | 140 | 429 | 257    | 131   | 182   | 832   |
| 140 | 314 | 449    | 201   | 076   | 281   | 140 | 364 | 102    | 105   | 499   | 249   | 140 | 430 | 258    | 146   | 255   | 754   |
| 140 | 315 | 319    | 181   | 207   | 957   | 140 | 365 | 129    | 100   | 457   | 269   | 140 | 431 | 259    | 149   | 236   | 913   |
| 140 | 316 | 020    | 150   | 604   | 456   | 140 | 366 | 177    | 107   | 646   | 182   | 140 | 432 | 260    | 152   | 249   | 997   |
| 140 | 317 | 150    | 184   | 859   | 478   | 140 | 367 | 212    | 135   | 649   | 269   | 140 | 433 | 261    | 115   | 249   | 579   |
| 140 | 318 | 175    | 177   | 734   | 374   | 140 | 368 | 021    | 113   | 371   | 534   | 140 | 434 | 262    | 121   | 300   | 505   |
| 140 | 319 | 244    | 176   | 830   | 263   | 140 | 369 | 039    | 098   | 332   | 327   | 140 | 435 | 263    | 112   | 242   | 553   |
| 140 | 320 | 324    | 201   | 087   | 592   | 140 | 370 | 019    | 104   | 442   | 252   | 140 | 436 | 264    | 123   | 192   | 672   |
| 140 | 321 | 372    | 222   | 075   | 332   | 140 | 371 | 080    | 096   | 440   | 260   | 140 | 437 | 265    | 121   | 192   | 696   |
| 140 | 322 | 488    | 254   | 211   | 475   | 140 | 372 | 115    | 100   | 440   | 264   | 140 | 438 | 266    | 109   | 360   | 409   |
| 140 | 323 | 405    | 211   | 403   | 517   | 140 | 373 | 126    | 095   | 440   | 268   | 140 | 439 | 267    | 113   | 236   | 444   |
| 140 | 324 | 345    | 187   | 334   | 411   | 140 | 374 | 137    | 106   | 534   | 214   | 140 | 440 | 268    | 108   | 223   | 478   |
| 140 | 325 | 061    | 152   | 439   | 536   | 140 | 375 | 152    | 106   | 521   | 228   | 140 | 441 | 269    | 101   | 260   | 414   |
| 140 | 326 | 093    | 156   | 627   | 433   | 140 | 376 | 132    | 112   | 559   | 214   | 140 | 442 | 270    | 125   | 297   | 536   |
| 140 | 327 | 172    | 149   | 815   | 213   | 140 | 377 | 015    | 092   | 326   | 269   | 140 | 443 | 271    | 086   | 632   | 052   |
| 140 | 328 | 197    | 162   | 846   | 249   | 140 | 378 | 022    | 102   | 326   | 323   | 140 | 444 | 272    | 111   | 561   | 162   |
| 140 | 329 | 239    | 176   | 036   | 302   | 140 | 379 | 078    | 107   | 477   | 220   | 140 | 445 | 273    | 120   | 608   | 261   |
| 140 | 330 | 276    | 191   | 143   | 500   | 140 | 380 | 101    | 110   | 495   | 246   | 140 | 446 | 274    | 095   | 457   | 178   |
| 140 | 331 | 379    | 197   | 011   | 246   | 140 | 381 | 151    | 113   | 500   | 245   | 140 | 447 | 275    | 105   | 447   | 192   |
| 140 | 332 | 385    | 180   | 001   | 121   | 140 | 382 | 174    | 106   | 670   | 141   | 140 | 448 | 276    | 109   | 485   | 236   |
| 140 | 333 | 341    | 155   | 115   | 026   | 140 | 383 | 183    | 123   | 624   | 149   | 140 | 449 | 277    | 111   | 464   | 313   |
| 140 | 334 | 093    | 144   | 421   | 582   | 140 | 384 | 193    | 145   | 710   | 182   | 140 | 450 | 278    | 114   | 443   | 420   |
| 140 | 335 | 033    | 140   | 652   | 392   | 140 | 401 | 238    | 155   | 242   | 140   | 140 | 701 | 034    | 105   | 251   | 408   |
| 140 | 336 | 114    | 141   | 761   | 275   | 140 | 402 | 249    | 136   | 240   | 140   | 140 | 702 | 035    | 120   | 314   | 491   |
| 140 | 337 | 150    | 144   | 714   | 278   | 140 | 403 | 238    | 143   | 131   | 140   | 140 | 703 | 036    | 120   | 337   | 468   |
| 140 | 338 | 195    | 143   | 737   | 220   | 140 | 404 | 263    | 157   | 209   | 140   | 140 | 704 | 037    | 113   | 286   | 427   |
| 140 | 339 | 184    | 139   | 703   | 224   | 140 | 405 | 334    | 173   | 120   | 140   | 140 | 705 | 038    | 108   | 238   | 521   |
| 140 | 340 | 253    | 152   | 798   | 191   | 140 | 406 | 352    | 163   | 222   | 140   | 140 | 706 | 039    | 105   | 226   | 486   |
| 140 | 341 | 354    | 169   | 133   | 923   | 140 | 407 | 344    | 150   | 080   | 140   | 140 | 707 | 040    | 130   | 320   | 626   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 140 | 710 | - .139 | .111  | .214  | -.591  | 150 | 121 | -.215  | .126  | .158  | -.676  | 150 | 171 | -.157  | .135  | .239  | -.616  |
| 140 | 711 | - .133 | .095  | .157  | -.514  | 150 | 122 | -.211  | .126  | .179  | -.693  | 150 | 172 | -.100  | .107  | .207  | -.428  |
| 140 | 712 | - .142 | .117  | .242  | -.517  | 150 | 123 | -.317  | .186  | .236  | -1.184 | 150 | 173 | -.119  | .127  | .280  | -.564  |
| 140 | 713 | - .124 | .107  | .209  | -.455  | 150 | 124 | -.287  | .151  | .139  | -1.033 | 150 | 174 | -.116  | .125  | .250  | -.540  |
| 140 | 714 | - .131 | .115  | .235  | -.508  | 150 | 125 | -.239  | .159  | .241  | -1.035 | 150 | 175 | -.111  | .128  | .276  | -.550  |
| 140 | 716 | - .133 | .101  | .193  | -.446  | 150 | 126 | -.238  | .154  | .243  | -.686  | 150 | 176 | -.125  | .115  | .236  | -.478  |
| 140 | 717 | - .126 | .126  | .215  | -.546  | 150 | 127 | -.230  | .148  | .204  | -.686  | 150 | 177 | -.208  | .114  | .154  | -.726  |
| 140 | 801 | - .180 | .125  | .142  | -.608  | 150 | 128 | -.226  | .127  | .147  | -.597  | 150 | 178 | -.210  | .116  | .157  | -.714  |
| 140 | 802 | - .166 | .149  | .343  | -.662  | 150 | 129 | -.224  | .123  | .157  | -.605  | 150 | 180 | -.153  | .100  | .120  | -.497  |
| 140 | 803 | - .164 | .122  | .193  | -.628  | 150 | 130 | -.220  | .123  | .152  | -.584  | 150 | 181 | -.106  | .121  | .276  | -.493  |
| 140 | 804 | - .156 | .134  | .680  | -.318  | 150 | 131 | -.214  | .130  | .192  | -.631  | 150 | 182 | -.113  | .121  | .269  | -.498  |
| 140 | 901 | - .246 | .150  | .182  | -1.024 | 150 | 132 | -.326  | .157  | .196  | -.906  | 150 | 201 | -.035  | .227  | .731  | -.911  |
| 140 | 902 | - .198 | .149  | .294  | -.758  | 150 | 133 | -.252  | .162  | .276  | -1.082 | 150 | 202 | -.545  | .233  | .247  | -1.523 |
| 140 | 903 | - .281 | .143  | .199  | -.870  | 150 | 134 | -.231  | .155  | .271  | -1.024 | 150 | 203 | -.303  | .204  | .501  | -1.140 |
| 140 | 904 | - .175 | .177  | .411  | -.905  | 150 | 135 | -.222  | .150  | .313  | -.852  | 150 | 204 | -.471  | .193  | .133  | -1.142 |
| 140 | 905 | - .432 | .177  | .157  | -1.389 | 150 | 136 | -.222  | .124  | .161  | -.708  | 150 | 205 | -.486  | .173  | .065  | -1.174 |
| 140 | 906 | - .308 | .172  | .174  | -1.312 | 150 | 137 | -.239  | .137  | .247  | -.758  | 150 | 206 | -.420  | .158  | .211  | -1.082 |
| 140 | 907 | - .281 | .152  | .214  | -.811  | 150 | 138 | -.230  | .127  | .229  | -.746  | 150 | 207 | -.473  | .185  | .090  | -1.215 |
| 140 | 908 | - .303 | .165  | .225  | -1.015 | 150 | 139 | -.228  | .130  | .234  | -.783  | 150 | 208 | -.102  | .241  | .766  | -1.105 |
| 140 | 909 | - .319 | .152  | .209  | -.976  | 150 | 140 | -.247  | .119  | .140  | -.683  | 150 | 209 | -.233  | .243  | .745  | -1.474 |
| 140 | 910 | - .338 | .155  | .115  | -1.006 | 150 | 141 | -.344  | .182  | .189  | -1.153 | 150 | 210 | -.483  | .240  | .420  | -1.286 |
| 140 | 911 | - .342 | .129  | .043  | -.898  | 150 | 142 | -.277  | .158  | .226  | -1.000 | 150 | 211 | -.438  | .220  | .146  | -1.413 |
| 140 | 912 | - .369 | .204  | .256  | -1.282 | 150 | 143 | -.244  | .159  | .248  | -.996  | 150 | 212 | -.442  | .197  | .137  | -1.286 |
| 140 | 913 | - .648 | .204  | .017  | -1.444 | 150 | 144 | -.252  | .134  | .154  | -.811  | 150 | 213 | -.649  | .205  | .700  | -1.113 |
| 140 | 914 | - .546 | .166  | .063  | -1.199 | 150 | 145 | -.250  | .142  | .250  | -.902  | 150 | 214 | -.307  | .238  | .508  | -1.106 |
| 140 | 915 | - .426 | .178  | .104  | -1.222 | 150 | 146 | -.247  | .130  | .177  | -.817  | 150 | 215 | -.456  | .236  | .201  | -1.524 |
| 140 | 916 | - .433 | .166  | .144  | -1.126 | 150 | 147 | -.235  | .128  | .238  | -.834  | 150 | 216 | -.478  | .210  | .122  | -1.340 |
| 140 | 917 | - .549 | .205  | .273  | -1.498 | 150 | 148 | -.238  | .114  | .117  | -.638  | 150 | 217 | -.414  | .184  | .125  | -1.264 |
| 140 | 918 | - .679 | .195  | .071  | -1.311 | 150 | 149 | -.231  | .159  | .369  | -.985  | 150 | 218 | -.060  | .201  | .598  | -1.010 |
| 140 | 919 | - .753 | .218  | .094  | -1.428 | 150 | 150 | -.395  | .193  | .196  | -1.733 | 150 | 219 | -.371  | .277  | .498  | -1.548 |
| 150 | 101 | - .320 | .170  | .167  | -1.102 | 150 | 151 | -.308  | .175  | .195  | -1.765 | 150 | 220 | -.461  | .261  | .205  | -1.648 |
| 150 | 102 | - .301 | .160  | .127  | -.900  | 150 | 152 | -.281  | .145  | .163  | -1.494 | 150 | 221 | -.543  | .240  | .154  | -1.467 |
| 150 | 103 | - .260 | .158  | .209  | -.983  | 150 | 153 | -.261  | .140  | .289  | -.709  | 150 | 222 | -.433  | .211  | .140  | -1.333 |
| 150 | 104 | - .220 | .126  | .140  | -.810  | 150 | 154 | -.257  | .135  | .190  | -.701  | 150 | 223 | -.014  | .193  | .686  | -.911  |
| 150 | 105 | - .248 | .148  | .258  | -.780  | 150 | 155 | -.246  | .124  | .175  | -.798  | 150 | 224 | -.185  | .261  | .678  | -1.159 |
| 150 | 106 | - .241 | .157  | .251  | -1.320 | 150 | 156 | -.229  | .103  | .121  | -.561  | 150 | 225 | -.394  | .261  | .237  | -1.480 |
| 150 | 107 | - .221 | .144  | .218  | -.967  | 150 | 157 | -.217  | .135  | .251  | -.687  | 150 | 226 | -.500  | .217  | .134  | -1.533 |
| 150 | 108 | - .222 | .115  | .087  | -.670  | 150 | 158 | -.183  | .132  | .262  | -.755  | 150 | 227 | -.468  | .186  | .024  | -1.272 |
| 150 | 109 | - .229 | .136  | .232  | -.726  | 150 | 159 | -.411  | .188  | .183  | -1.222 | 150 | 228 | -.042  | .185  | .725  | -.639  |
| 150 | 110 | - .221 | .140  | .264  | -.778  | 150 | 160 | -.330  | .153  | .151  | -.974  | 150 | 229 | -.089  | .232  | .657  | -1.213 |
| 150 | 111 | - .230 | .143  | .232  | -.935  | 150 | 161 | -.288  | .149  | .173  | -1.008 | 150 | 230 | -.306  | .236  | .348  | -1.406 |
| 150 | 112 | - .230 | .123  | .163  | -.748  | 150 | 162 | -.272  | .140  | .168  | -.906  | 150 | 231 | -.511  | .220  | .134  | -1.763 |
| 150 | 113 | - .213 | .142  | .192  | -.837  | 150 | 163 | -.271  | .148  | .187  | -.909  | 150 | 232 | -.529  | .196  | .152  | -1.519 |
| 150 | 114 | - .322 | .165  | .130  | -1.070 | 150 | 164 | -.250  | .113  | .071  | -.704  | 150 | 233 | -.307  | .166  | .678  | -.826  |
| 150 | 115 | - .274 | .168  | .178  | -1.041 | 150 | 165 | -.193  | .133  | .488  | -.744  | 150 | 234 | -.158  | .212  | .413  | -1.208 |
| 150 | 116 | - .208 | .120  | .124  | -.644  | 150 | 166 | -.160  | .120  | .272  | -.630  | 150 | 235 | -.307  | .201  | .263  | -1.116 |
| 150 | 117 | - .205 | .141  | .189  | -.706  | 150 | 167 | -.134  | .121  | .265  | -.569  | 150 | 236 | -.471  | .203  | .125  | -1.492 |
| 150 | 118 | - .201 | .138  | .184  | -.629  | 150 | 168 | -.255  | .119  | .116  | -.721  | 150 | 237 | -.520  | .177  | .065  | -1.364 |
| 150 | 119 | - .196 | .140  | .207  | -.620  | 150 | 169 | -.228  | .135  | .176  | -.623  | 150 | 238 | -.003  | .133  | .469  | -.451  |
| 150 | 120 | - .198 | .123  | .166  | -.625  | 150 | 170 | -.198  | .128  | .216  | -.650  | 150 | 239 | -.077  | .146  | .336  | -.641  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C / ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CP  | PHEAN | CP  | RMS | CP  | MAX | CP  | MIN | WD  | TAP | CP  | PHEAN | CP  | RMS | CP  | MAX | CP  | MIN | WD  | TAP | CP  | PHEAN | CP  | RMS | CP  | MAX | CP  | MIN |     |
|------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|
| 1500 | 240 | 188 | 157   | 388 | 363 | 150 | 440 | 144 | 174 | 150 | 406 | 169 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 406 | 169 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 241 | 192 | 144   | 257 | 721 | 150 | 344 | 423 | 190 | 150 | 407 | 169 | 164   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 408 | 170 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 242 | 203 | 114   | 226 | 631 | 150 | 442 | 232 | 151 | 150 | 408 | 170 | 140   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 409 | 171 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 243 | 147 | 118   | 260 | 599 | 150 | 443 | 92  | 142 | 150 | 409 | 172 | 146   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 410 | 173 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 244 | 031 | 158   | 646 | 483 | 150 | 444 | 131 | 138 | 150 | 411 | 174 | 151   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 412 | 175 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 245 | 127 | 173   | 746 | 692 | 150 | 445 | 205 | 162 | 150 | 413 | 176 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 414 | 177 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 246 | 191 | 143   | 289 | 755 | 150 | 446 | 252 | 158 | 150 | 415 | 178 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 416 | 179 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 247 | 172 | 134   | 286 | 635 | 150 | 447 | 258 | 157 | 150 | 417 | 179 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 418 | 180 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 248 | 154 | 125   | 273 | 576 | 150 | 448 | 227 | 156 | 150 | 419 | 181 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 420 | 182 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 249 | 119 | 117   | 247 | 507 | 150 | 449 | 158 | 144 | 150 | 421 | 183 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 422 | 184 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 250 | 418 | 122   | 180 | 507 | 150 | 450 | 184 | 176 | 150 | 423 | 185 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 424 | 186 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 251 | 418 | 122   | 180 | 507 | 150 | 451 | 184 | 176 | 150 | 425 | 187 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 426 | 188 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 252 | 424 | 178   | 360 | 944 | 150 | 452 | 167 | 141 | 150 | 427 | 189 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 428 | 190 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 253 | 319 | 168   | 370 | 944 | 150 | 453 | 66  | 136 | 150 | 429 | 191 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 430 | 192 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 254 | 386 | 192   | 254 | 335 | 150 | 454 | 66  | 144 | 150 | 431 | 193 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 432 | 194 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 255 | 571 | 234   | 093 | 755 | 150 | 455 | 172 | 162 | 150 | 433 | 195 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 434 | 196 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 256 | 432 | 212   | 391 | 155 | 150 | 456 | 200 | 123 | 150 | 435 | 197 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 436 | 198 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 257 | 479 | 234   | 719 | 363 | 150 | 457 | 201 | 126 | 150 | 437 | 199 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 438 | 200 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 258 | 562 | 232   | 474 | 979 | 150 | 458 | 153 | 144 | 150 | 439 | 201 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 440 | 202 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 259 | 671 | 235   | 303 | 621 | 150 | 459 | 146 | 131 | 150 | 441 | 203 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 442 | 204 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 260 | 410 | 232   | 549 | 303 | 150 | 460 | 209 | 135 | 150 | 443 | 205 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 444 | 206 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 261 | 181 | 237   | 712 | 568 | 150 | 461 | 099 | 113 | 150 | 445 | 207 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 446 | 208 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 262 | 545 | 242   | 379 | 114 | 150 | 462 | 094 | 121 | 150 | 447 | 209 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 448 | 210 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 263 | 381 | 246   | 270 | 501 | 150 | 463 | 146 | 132 | 150 | 449 | 211 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 450 | 212 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 264 | 190 | 163   | 410 | 884 | 150 | 464 | 183 | 155 | 150 | 451 | 213 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 452 | 214 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 265 | 147 | 156   | 413 | 404 | 150 | 465 | 189 | 146 | 150 | 453 | 215 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 454 | 216 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 266 | 279 | 181   | 918 | 324 | 150 | 466 | 147 | 141 | 150 | 455 | 217 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 456 | 218 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 267 | 343 | 191   | 984 | 449 | 150 | 467 | 099 | 119 | 150 | 457 | 219 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 458 | 220 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 268 | 373 | 199   | 042 | 280 | 150 | 468 | 037 | 102 | 150 | 459 | 221 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 460 | 222 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 269 | 430 | 229   | 513 | 661 | 150 | 469 | 015 | 109 | 150 | 461 | 223 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 462 | 224 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 270 | 432 | 264   | 362 | 451 | 150 | 470 | 129 | 124 | 150 | 463 | 225 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 464 | 226 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 271 | 346 | 258   | 164 | 631 | 150 | 471 | 161 | 119 | 150 | 465 | 227 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 466 | 228 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 272 | 386 | 189   | 099 | 144 | 150 | 472 | 165 | 127 | 150 | 467 | 229 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 468 | 230 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 273 | 254 | 166   | 306 | 894 | 150 | 473 | 165 | 122 | 150 | 469 | 231 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 470 | 232 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 274 | 114 | 161   | 759 | 436 | 150 | 474 | 168 | 121 | 150 | 471 | 233 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 472 | 234 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 275 | 266 | 185   | 840 | 293 | 150 | 475 | 188 | 109 | 150 | 473 | 235 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 474 | 236 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 276 | 352 | 196   | 106 | 660 | 150 | 476 | 033 | 98  | 150 | 475 | 237 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 476 | 238 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 277 | 352 | 196   | 106 | 660 | 150 | 477 | 033 | 98  | 150 | 477 | 239 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 478 | 240 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 278 | 399 | 214   | 054 | 280 | 150 | 478 | 059 | 114 | 150 | 479 | 241 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 480 | 242 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 279 | 399 | 214   | 054 | 280 | 150 | 479 | 059 | 114 | 150 | 481 | 243 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 482 | 244 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 280 | 369 | 241   | 442 | 77  | 150 | 480 | 189 | 131 | 150 | 483 | 245 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 484 | 246 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 281 | 188 | 195   | 119 | 288 | 150 | 481 | 180 | 131 | 150 | 485 | 247 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 486 | 248 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 282 | 430 | 215   | 112 | 383 | 150 | 482 | 181 | 112 | 150 | 487 | 249 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 488 | 250 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 283 | 289 | 153   | 306 | 355 | 150 | 483 | 198 | 129 | 150 | 489 | 251 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 490 | 252 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 284 | 050 | 149   | 603 | 416 | 150 | 484 | 096 | 86  | 150 | 491 | 253 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 492 | 254 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 285 | 225 | 175   | 807 | 440 | 150 | 485 | 245 | 151 | 150 | 493 | 255 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 494 | 256 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 286 | 256 | 182   | 927 | 337 | 150 | 486 | 221 | 158 | 150 | 495 | 257 | 161   | 169 | 150 | 169 | 150 | 169 | 150 | 150 | 496 | 258 | 173   | 169 | 150 | 169 | 150 | 169 | 150 | 169 |
| 1500 | 287 | 312 | 185   | 938 | 467 | 150 | 487 | 221 | 158 | 150 | 497 | 259 | 161   | 169 | 15  |     |     |     |     |     |     |     |       |     |     |     |     |     |     |     |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 150 | 707 | -.067  | .113  | .308  | -.444  | 160 | 119 | -.239  | .147  | .221  | -.843  | 160 | 169 | -.270  | .154  | .256  | -1.014 |
| 150 | 708 | -.145  | .125  | .229  | -.722  | 160 | 120 | -.237  | .129  | .163  | -.773  | 160 | 170 | -.253  | .150  | .258  | -.832  |
| 150 | 710 | -.121  | .123  | .241  | -.348  | 160 | 121 | -.228  | .131  | .282  | -.807  | 160 | 171 | -.226  | .151  | .294  | -.796  |
| 150 | 711 | -.127  | .107  | .180  | -.495  | 160 | 122 | -.231  | .139  | .255  | -1.011 | 160 | 172 | -.121  | .117  | .234  | -.612  |
| 150 | 712 | -.128  | .120  | .254  | -.547  | 160 | 123 | -.295  | .178  | .327  | -1.075 | 160 | 173 | -.155  | .136  | .317  | -.631  |
| 150 | 713 | -.105  | .112  | .276  | -.475  | 160 | 124 | -.301  | .153  | .179  | -1.000 | 160 | 174 | -.148  | .132  | .323  | -.621  |
| 150 | 714 | -.110  | .118  | .251  | -.532  | 160 | 125 | -.277  | .154  | .144  | -1.247 | 160 | 175 | -.152  | .140  | .338  | -.642  |
| 150 | 716 | -.121  | .107  | .224  | -.488  | 160 | 126 | -.277  | .147  | .139  | -.829  | 160 | 176 | -.125  | .130  | .273  | -.529  |
| 150 | 717 | -.109  | .110  | .280  | -.452  | 160 | 127 | -.269  | .141  | .152  | -.718  | 160 | 177 | -.278  | .140  | .168  | -.774  |
| 150 | 801 | -.175  | .117  | .175  | -.733  | 160 | 128 | -.257  | .116  | .062  | -.622  | 160 | 178 | -.281  | .143  | .167  | -.793  |
| 150 | 802 | -.211  | .142  | .175  | -.769  | 160 | 129 | -.223  | .133  | .263  | -.584  | 160 | 180 | -.215  | .121  | .178  | -.610  |
| 150 | 803 | -.171  | .113  | .193  | -.571  | 160 | 130 | -.224  | .136  | .248  | -.745  | 160 | 181 | -.152  | .128  | .254  | -.640  |
| 150 | 804 | -.203  | .153  | .825  | -.249  | 160 | 131 | -.231  | .152  | .251  | -.969  | 160 | 182 | -.165  | .125  | .208  | -.626  |
| 150 | 901 | -.237  | .149  | .221  | -.995  | 160 | 132 | -.316  | .170  | .165  | -1.026 | 160 | 201 | -.199  | .183  | .445  | -.957  |
| 150 | 902 | -.229  | .169  | .307  | -1.018 | 160 | 133 | -.305  | .203  | .244  | -1.296 | 160 | 202 | -.571  | .224  | .216  | -1.477 |
| 150 | 903 | -.255  | .133  | .151  | -.705  | 160 | 134 | -.283  | .190  | .231  | -1.027 | 160 | 203 | -.422  | .175  | .191  | -1.291 |
| 150 | 904 | -.137  | .167  | .474  | -.755  | 160 | 135 | -.276  | .183  | .254  | -1.152 | 160 | 204 | -.547  | .184  | .005  | -1.172 |
| 150 | 905 | -.358  | .182  | .133  | -1.131 | 160 | 136 | -.270  | .150  | .188  | -.973  | 160 | 205 | -.442  | .178  | .135  | -1.088 |
| 150 | 906 | -.305  | .185  | .302  | -1.014 | 160 | 137 | -.284  | .143  | .310  | -.806  | 160 | 206 | -.423  | .185  | .181  | -1.344 |
| 150 | 907 | -.333  | .171  | .123  | -1.046 | 160 | 138 | -.266  | .132  | .272  | -.718  | 160 | 207 | -.412  | .192  | .258  | -1.168 |
| 150 | 908 | -.374  | .187  | .234  | -.983  | 160 | 139 | -.261  | .138  | .301  | -.771  | 160 | 208 | -.044  | .180  | .566  | -.653  |
| 150 | 909 | -.358  | .170  | .196  | -1.184 | 160 | 140 | -.270  | .132  | .173  | -.873  | 160 | 209 | -.365  | .185  | .343  | -1.282 |
| 150 | 910 | -.380  | .180  | .358  | -1.163 | 160 | 141 | -.344  | .203  | .279  | -1.474 | 160 | 210 | -.428  | .221  | .222  | -1.372 |
| 150 | 911 | -.417  | .158  | .033  | -1.112 | 160 | 142 | -.318  | .188  | .255  | -1.307 | 160 | 211 | -.401  | .197  | .161  | -1.470 |
| 150 | 912 | -.422  | .213  | .244  | -1.151 | 160 | 143 | -.288  | .180  | .278  | -1.637 | 160 | 212 | -.343  | .199  | .192  | -1.292 |
| 150 | 913 | -.576  | .224  | .201  | -1.387 | 160 | 144 | -.290  | .146  | .179  | -.906  | 160 | 213 | -.156  | .205  | .573  | -1.063 |
| 150 | 914 | -.563  | .213  | .042  | -1.357 | 160 | 145 | -.294  | .162  | .131  | -.957  | 160 | 214 | -.433  | .213  | .415  | -1.310 |
| 150 | 915 | -.437  | .183  | .112  | -1.139 | 160 | 146 | -.282  | .146  | .104  | -.869  | 160 | 215 | -.428  | .237  | .125  | -1.799 |
| 150 | 916 | -.432  | .175  | .074  | -.986  | 160 | 147 | -.262  | .144  | .161  | -1.019 | 160 | 216 | -.440  | .213  | .149  | -1.322 |
| 150 | 917 | -.597  | .227  | .150  | -1.698 | 160 | 148 | -.257  | .127  | .087  | -1.125 | 160 | 217 | -.356  | .190  | .142  | -1.179 |
| 150 | 918 | -.666  | .216  | .051  | -1.310 | 160 | 149 | -.230  | .137  | .246  | -.914  | 160 | 218 | -.176  | .232  | .564  | -1.308 |
| 150 | 919 | -.733  | .243  | .174  | -1.754 | 160 | 150 | -.347  | .182  | .269  | -1.345 | 160 | 219 | -.450  | .261  | .352  | -1.646 |
| 160 | 101 | -.324  | .179  | .197  | -1.040 | 160 | 151 | -.301  | .181  | .275  | -1.271 | 160 | 220 | -.509  | .267  | .147  | -1.660 |
| 160 | 102 | -.320  | .170  | .201  | -.971  | 160 | 152 | -.289  | .151  | .123  | -.945  | 160 | 221 | -.483  | .268  | .164  | -1.846 |
| 160 | 103 | -.301  | .179  | .250  | -1.028 | 160 | 153 | -.293  | .188  | .244  | -1.316 | 160 | 222 | -.397  | .233  | .266  | -1.305 |
| 160 | 104 | -.272  | .139  | .133  | -.838  | 160 | 154 | -.295  | .179  | .208  | -1.450 | 160 | 223 | -.150  | .238  | .633  | -1.035 |
| 160 | 105 | -.281  | .170  | .288  | -.969  | 160 | 155 | -.279  | .156  | .163  | -.950  | 160 | 224 | -.393  | .268  | .371  | -1.284 |
| 160 | 106 | -.269  | .162  | .297  | -.881  | 160 | 156 | -.252  | .124  | .124  | -.668  | 160 | 225 | -.539  | .282  | .180  | -1.849 |
| 160 | 107 | -.276  | .168  | .271  | -.955  | 160 | 157 | -.231  | .136  | .219  | -.900  | 160 | 226 | -.501  | .246  | .149  | -1.439 |
| 160 | 108 | -.278  | .147  | .228  | -.953  | 160 | 158 | -.217  | .144  | .224  | -1.168 | 160 | 227 | -.426  | .221  | .220  | -1.438 |
| 160 | 109 | -.314  | .160  | .144  | -1.146 | 160 | 159 | -.375  | .187  | .242  | -1.233 | 160 | 228 | -.109  | .205  | .480  | -1.061 |
| 160 | 110 | -.300  | .164  | .195  | -1.176 | 160 | 160 | -.325  | .163  | .162  | -1.204 | 160 | 229 | -.393  | .281  | .440  | -1.841 |
| 160 | 111 | -.3290 | .164  | .205  | -1.217 | 160 | 161 | -.306  | .182  | .177  | -2.032 | 160 | 230 | -.554  | .286  | .182  | -1.587 |
| 160 | 112 | -.306  | .140  | .058  | -1.934 | 160 | 162 | -.319  | .169  | .150  | -1.084 | 160 | 231 | -.555  | .252  | .191  | -1.723 |
| 160 | 113 | -.274  | .167  | .165  | -1.016 | 160 | 163 | -.325  | .174  | .202  | -.927  | 160 | 232 | -.473  | .212  | .153  | -1.341 |
| 160 | 114 | -.318  | .167  | .151  | -1.116 | 160 | 164 | -.270  | .120  | .049  | -.721  | 160 | 233 | -.098  | .188  | .504  | -.873  |
| 160 | 115 | -.323  | .187  | .195  | -1.168 | 160 | 165 | -.171  | .143  | .285  | -.681  | 160 | 234 | -.344  | .242  | .367  | -1.362 |
| 160 | 116 | -.242  | .130  | .105  | -.763  | 160 | 166 | -.160  | .135  | .247  | -.644  | 160 | 235 | -.524  | .265  | .094  | -1.404 |
| 160 | 117 | -.237  | .147  | .219  | -.823  | 160 | 167 | -.177  | .158  | .251  | -1.181 | 160 | 236 | -.547  | .265  | .150  | -1.680 |
| 160 | 118 | -.242  | .145  | .205  | -.825  | 160 | 168 | -.251  | .136  | .166  | -.700  | 160 | 237 | -.475  | .212  | .096  | -1.469 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD  | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|------|--------|-------|-------|-------|-----|------|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 160 | 3338 | 053    | 147   | 454   | -654  | 160 | 3338 | 514    | 192   | 1113  | -189  | 160 | 404 | 294    | 179   | 271   | -1044 |
| 160 | 3339 | 197    | 156   | 254   | -794  | 160 | 3339 | 411    | 188   | 978   | -343  | 160 | 405 | 322    | 167   | 154   | -1087 |
| 160 | 3340 | 325    | 168   | 187   | -987  | 160 | 3340 | 170    | 194   | 851   | -528  | 160 | 406 | 387    | 185   | 112   | -1088 |
| 160 | 3341 | 331    | 132   | 117   | -919  | 160 | 3341 | 398    | 175   | 041   | -1201 | 160 | 407 | 376    | 162   | 093   | -1073 |
| 160 | 3342 | 296    | 140   | 098   | -896  | 160 | 3342 | 206    | 134   | 235   | -718  | 160 | 408 | 242    | 144   | 301   | -818  |
| 160 | 3343 | 204    | 120   | 167   | -711  | 160 | 3343 | 093    | 122   | 428   | -314  | 160 | 409 | 276    | 138   | 178   | -1165 |
| 160 | 3344 | 262    | 147   | 410   | -611  | 160 | 3344 | 266    | 148   | 719   | -213  | 160 | 410 | 256    | 151   | 197   | -874  |
| 160 | 3345 | 248    | 160   | 233   | -856  | 160 | 3345 | 379    | 164   | 824   | -114  | 160 | 411 | 278    | 168   | 266   | -1213 |
| 160 | 3346 | 302    | 185   | 238   | -1013 | 160 | 3346 | 387    | 173   | 901   | -210  | 160 | 412 | 290    | 182   | 182   | -981  |
| 160 | 3347 | 261    | 159   | 220   | -866  | 160 | 3347 | 327    | 188   | 965   | -291  | 160 | 413 | 226    | 153   | 241   | -1041 |
| 160 | 3348 | 251    | 141   | 254   | -773  | 160 | 3348 | 151    | 191   | 092   | -247  | 160 | 414 | 254    | 152   | 204   | -827  |
| 160 | 3349 | 179    | 121   | 198   | -564  | 160 | 3349 | 387    | 179   | 779   | -736  | 160 | 415 | 258    | 153   | 219   | -877  |
| 160 | 3350 | 178    | 131   | 290   | -654  | 160 | 3350 | 202    | 144   | 096   | -1398 | 160 | 416 | 254    | 154   | 244   | -884  |
| 160 | 3351 | 483    | 185   | 628   | -1405 | 160 | 3351 | 048    | 131   | 192   | -880  | 160 | 417 | 293    | 150   | 209   | -1000 |
| 160 | 3352 | 436    | 188   | 688   | -1142 | 160 | 3352 | 198    | 141   | 467   | -311  | 160 | 418 | 244    | 160   | 211   | -1095 |
| 160 | 3353 | 306    | 174   | 284   | -1040 | 160 | 3353 | 281    | 151   | 644   | -278  | 160 | 419 | 238    | 169   | 289   | -1112 |
| 160 | 3354 | 388    | 186   | 350   | -1116 | 160 | 3354 | 281    | 151   | 618   | -125  | 160 | 420 | 287    | 168   | 150   | -1045 |
| 160 | 3355 | 302    | 227   | 160   | -1111 | 160 | 3355 | 296    | 154   | 778   | -128  | 160 | 421 | 308    | 182   | 290   | -1063 |
| 160 | 3356 | 431    | 241   | 241   | -1331 | 160 | 3356 | 336    | 167   | 834   | -194  | 160 | 422 | 322    | 173   | 122   | -1117 |
| 160 | 3357 | 568    | 197   | 98    | -1111 | 160 | 3357 | 281    | 168   | 832   | -366  | 160 | 423 | 260    | 165   | 211   | -1121 |
| 160 | 3358 | 560    | 239   | 241   | -1331 | 160 | 3358 | 123    | 158   | 689   | -399  | 160 | 424 | 287    | 198   | 181   | -1706 |
| 160 | 3359 | 672    | 251   | 44    | -1111 | 160 | 3359 | 362    | 172   | 194   | -1115 | 160 | 425 | 285    | 194   | 318   | -1093 |
| 160 | 3360 | 433    | 209   | 55    | -1322 | 160 | 3360 | 242    | 146   | 272   | -850  | 160 | 426 | 334    | 204   | 317   | -1166 |
| 160 | 3361 | 111    | 223   | 47    | -1322 | 160 | 3361 | 609    | 167   | 472   | -336  | 160 | 427 | 334    | 204   | 313   | -1206 |
| 160 | 3362 | 112    | 228   | 64    | -1342 | 160 | 3362 | 119    | 114   | 487   | -280  | 160 | 428 | 338    | 174   | 244   | -1242 |
| 160 | 3363 | 378    | 197   | 56    | -963  | 160 | 3363 | 212    | 142   | 766   | -190  | 160 | 429 | 254    | 189   | 217   | -1355 |
| 160 | 3364 | 349    | 112   | 112   | -1116 | 160 | 3364 | 216    | 129   | 788   | -141  | 160 | 430 | 248    | 192   | 231   | -1248 |
| 160 | 3365 | 15     | 164   | 544   | -601  | 160 | 3365 | 272    | 159   | 836   | -177  | 160 | 431 | 266    | 187   | 299   | -1178 |
| 160 | 3366 | 235    | 159   | 97    | -214  | 160 | 3366 | 222    | 141   | 809   | -260  | 160 | 432 | 318    | 199   | 257   | -1202 |
| 160 | 3367 | 367    | 176   | 976   | -214  | 160 | 3367 | 123    | 143   | 644   | -352  | 160 | 433 | 225    | 157   | 219   | -1071 |
| 160 | 3368 | 391    | 157   | 60    | -206  | 160 | 3368 | 186    | 141   | 239   | -770  | 160 | 434 | 221    | 175   | 329   | -1136 |
| 160 | 3369 | 474    | 187   | 60    | -222  | 160 | 3369 | 076    | 117   | 341   | -509  | 160 | 435 | 262    | 192   | 245   | -1181 |
| 160 | 3370 | 482    | 193   | 60    | -222  | 160 | 3370 | 049    | 117   | 493   | -267  | 160 | 436 | 259    | 170   | 226   | -1174 |
| 160 | 3371 | 289    | 205   | 76    | -491  | 160 | 3371 | 161    | 112   | 566   | -182  | 160 | 437 | 320    | 190   | 171   | -1128 |
| 160 | 3372 | 354    | 202   | 76    | -491  | 160 | 3372 | 259    | 132   | 816   | -132  | 160 | 438 | 333    | 151   | 295   | -1731 |
| 160 | 3373 | 170    | 162   | 172   | -1113 | 160 | 3373 | 244    | 137   | 712   | -181  | 160 | 439 | 339    | 158   | 290   | -886  |
| 160 | 3374 | 204    | 163   | 385   | -68   | 160 | 3374 | 224    | 121   | 629   | -213  | 160 | 440 | 276    | 148   | 255   | -1366 |
| 160 | 3375 | 415    | 36    | 637   | -195  | 160 | 3375 | 218    | 131   | 680   | -172  | 160 | 441 | 165    | 156   | 312   | -934  |
| 160 | 3376 | 479    | 166   | 950   | -092  | 160 | 3376 | 124    | 136   | 679   | -399  | 160 | 442 | 218    | 152   | 277   | -1344 |
| 160 | 3377 | 485    | 187   | 608   | -058  | 160 | 3377 | 054    | 111   | 480   | -268  | 160 | 443 | 360    | 159   | 723   | -1266 |
| 160 | 3378 | 557    | 196   | 978   | -051  | 160 | 3378 | 074    | 105   | 435   | -251  | 160 | 444 | 090    | 115   | 488   | -1777 |
| 160 | 3379 | 449    | 198   | 608   | -052  | 160 | 3379 | 150    | 114   | 650   | -197  | 160 | 445 | 184    | 128   | 732   | -1333 |
| 160 | 3380 | 209    | 200   | 733   | -052  | 160 | 3380 | 223    | 128   | 762   | -220  | 160 | 446 | 061    | 125   | 427   | -1244 |
| 160 | 3381 | 483    | 200   | 800   | -052  | 160 | 3381 | 301    | 137   | 706   | -112  | 160 | 447 | 041    | 120   | 409   | -1399 |
| 160 | 3382 | 188    | 188   | 222   | -1111 | 160 | 3382 | 285    | 139   | 792   | -165  | 160 | 448 | 072    | 112   | 389   | -1399 |
| 160 | 3383 | 188    | 147   | 222   | -1111 | 160 | 3383 | 224    | 149   | 715   | -202  | 160 | 449 | 058    | 157   | 366   | -1398 |
| 160 | 3384 | 169    | 139   | 222   | -1111 | 160 | 3384 | 088    | 126   | 566   | -373  | 160 | 450 | 156    | 155   | 282   | -1742 |
| 160 | 3385 | 312    | 156   | 167   | -1111 | 160 | 3385 | 259    | 161   | 261   | -994  | 160 | 451 | 146    | 115   | 218   | -1706 |
| 160 | 3386 | 363    | 152   | 111   | -1111 | 160 | 3386 | 289    | 168   | 171   | -023  | 160 | 702 | 121    | 111   | 232   | -1244 |
| 160 | 3387 | 484    | 187   | 1     | -1111 | 160 | 3387 | 286    | 155   | 181   | -1153 | 160 | 703 | 125    | 115   | 213   | -1244 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 160 | 705 | -.094  | .103  | .295  | -.383  | 170 | 117 | -.221  | .134  | .219  | -.738  | 170 | 167 | -.319  | .202  | .217  | -1.655 |
| 160 | 706 | -.106  | .123  | .206  | -.510  | 170 | 118 | -.225  | .135  | .202  | -.813  | 170 | 168 | -.277  | .153  | .203  | -.838  |
| 160 | 707 | -.112  | .127  | .361  | -.599  | 170 | 119 | -.224  | .142  | .223  | -.895  | 170 | 169 | -.299  | .163  | .217  | -.894  |
| 160 | 708 | -.222  | .154  | .287  | -1.115 | 170 | 120 | -.228  | .127  | .158  | -.818  | 170 | 170 | -.205  | .163  | .225  | -.809  |
| 160 | 710 | -.171  | .140  | .194  | -.883  | 170 | 121 | -.225  | .144  | .184  | -.840  | 170 | 171 | -.247  | .165  | .220  | -.855  |
| 160 | 711 | -.166  | .112  | .104  | -.616  | 170 | 122 | -.231  | .153  | .207  | -.840  | 170 | 172 | -.165  | .141  | .220  | -.670  |
| 160 | 712 | -.210  | .126  | .235  | -.741  | 170 | 123 | -.251  | .164  | .250  | -.951  | 170 | 173 | -.221  | .153  | .284  | -.895  |
| 160 | 713 | -.194  | .129  | .240  | -.730  | 170 | 124 | -.270  | .141  | .144  | -.873  | 170 | 174 | -.205  | .152  | .235  | -.796  |
| 160 | 714 | -.192  | .124  | .258  | -.727  | 170 | 125 | -.212  | .150  | .279  | -.911  | 170 | 175 | -.217  | .162  | .223  | -1.024 |
| 160 | 716 | -.198  | .118  | .208  | -.717  | 170 | 126 | -.214  | .145  | .268  | -.863  | 170 | 176 | -.146  | .148  | .334  | -.735  |
| 160 | 717 | -.175  | .116  | .188  | -.598  | 170 | 127 | -.207  | .143  | .273  | -.844  | 170 | 177 | -.240  | .162  | .294  | -.743  |
| 160 | 801 | -.252  | .138  | .139  | -.926  | 170 | 128 | -.204  | .124  | .199  | -.746  | 170 | 178 | -.244  | .164  | .299  | -.774  |
| 160 | 802 | -.328  | .156  | .139  | -1.021 | 170 | 129 | -.251  | .153  | .196  | -.838  | 170 | 180 | -.194  | .144  | .327  | -.660  |
| 160 | 803 | -.271  | .131  | .094  | -.786  | 170 | 130 | -.265  | .164  | .281  | -.932  | 170 | 181 | -.165  | .141  | .287  | -.619  |
| 160 | 804 | -.298  | .167  | .889  | -.211  | 170 | 131 | -.283  | .186  | .273  | -1.206 | 170 | 182 | -.182  | .142  | .289  | -.616  |
| 160 | 901 | -.307  | .170  | .271  | -.893  | 170 | 132 | -.317  | .167  | .200  | -.908  | 170 | 201 | -.251  | .149  | .202  | -.833  |
| 160 | 902 | -.336  | .202  | .414  | -.957  | 170 | 133 | -.297  | .178  | .411  | -.978  | 170 | 202 | -.479  | .205  | .138  | -1.216 |
| 160 | 903 | -.335  | .149  | .208  | -.814  | 170 | 134 | -.266  | .165  | .265  | -1.089 | 170 | 203 | -.423  | .180  | .052  | -1.220 |
| 160 | 904 | -.326  | .191  | .328  | -1.032 | 170 | 135 | -.258  | .160  | .207  | -1.071 | 170 | 204 | -.455  | .178  | .117  | -1.237 |
| 160 | 905 | -.351  | .182  | .158  | -1.150 | 170 | 136 | -.249  | .131  | .135  | -.761  | 170 | 205 | -.388  | .162  | .159  | -1.227 |
| 160 | 906 | -.384  | .209  | .310  | -1.273 | 170 | 137 | -.249  | .150  | .322  | -.751  | 170 | 206 | -.388  | .167  | .224  | -1.128 |
| 160 | 907 | -.410  | .196  | .110  | -1.489 | 170 | 138 | -.223  | .146  | .264  | -.764  | 170 | 207 | -.387  | .179  | .310  | -1.139 |
| 160 | 908 | -.367  | .199  | .238  | -1.202 | 170 | 139 | -.228  | .155  | .260  | -1.102 | 170 | 208 | -.386  | .168  | .479  | -.614  |
| 160 | 909 | -.354  | .190  | .299  | -1.089 | 170 | 140 | -.243  | .149  | .187  | -1.066 | 170 | 209 | -.382  | .175  | .185  | -1.065 |
| 160 | 910 | -.365  | .204  | .324  | -1.290 | 170 | 141 | -.293  | .193  | .510  | -1.035 | 170 | 210 | -.361  | .170  | .222  | -1.352 |
| 160 | 911 | -.400  | .178  | .097  | -1.057 | 170 | 142 | -.297  | .181  | .485  | -.964  | 170 | 211 | -.282  | .177  | .247  | -1.048 |
| 160 | 912 | -.485  | .230  | .335  | -1.447 | 170 | 143 | -.262  | .175  | .522  | -.867  | 170 | 212 | -.267  | .144  | .167  | -1.289 |
| 160 | 913 | -.524  | .248  | .175  | -1.566 | 170 | 144 | -.289  | .151  | .422  | -.782  | 170 | 213 | -.166  | .184  | .549  | -.842  |
| 160 | 914 | -.550  | .211  | .166  | -1.299 | 170 | 145 | -.262  | .152  | .228  | -.878  | 170 | 214 | -.360  | .174  | .231  | -1.002 |
| 160 | 915 | -.447  | .204  | .176  | -1.234 | 170 | 146 | -.244  | .139  | .195  | -.749  | 170 | 215 | -.361  | .173  | .238  | -1.120 |
| 160 | 916 | -.417  | .191  | .172  | -1.154 | 170 | 147 | -.238  | .136  | .224  | -.663  | 170 | 216 | -.295  | .158  | .142  | -1.079 |
| 160 | 917 | -.526  | .225  | .125  | -1.357 | 170 | 148 | -.230  | .122  | .167  | -.618  | 170 | 217 | -.266  | .151  | .216  | -1.075 |
| 160 | 918 | -.547  | .220  | .112  | -1.442 | 170 | 149 | -.276  | .164  | .171  | -1.062 | 170 | 218 | -.158  | .191  | .472  | -.933  |
| 160 | 919 | -.587  | .243  | .128  | -1.625 | 170 | 150 | -.357  | .218  | .246  | -1.273 | 170 | 219 | -.398  | .191  | .201  | -1.184 |
| 170 | 101 | -.284  | .171  | .225  | -1.025 | 170 | 151 | -.345  | .214  | .257  | -1.443 | 170 | 220 | -.345  | .186  | .096  | -1.478 |
| 170 | 102 | -.288  | .159  | .208  | -.979  | 170 | 152 | -.333  | .175  | .174  | -.952  | 170 | 221 | -.315  | .188  | .209  | -1.313 |
| 170 | 103 | -.278  | .168  | .214  | -1.196 | 170 | 153 | -.303  | .186  | .276  | -1.253 | 170 | 222 | -.267  | .181  | .254  | -1.384 |
| 170 | 104 | -.258  | .129  | .184  | -.821  | 170 | 154 | -.293  | .174  | .250  | -.989  | 170 | 223 | -.156  | .205  | .521  | -.862  |
| 170 | 105 | -.235  | .162  | .199  | -.837  | 170 | 155 | -.266  | .160  | .264  | -.956  | 170 | 224 | -.466  | .221  | .236  | -1.475 |
| 170 | 106 | -.259  | .139  | .187  | -.853  | 170 | 156 | -.249  | .178  | .148  | -.939  | 170 | 225 | -.467  | .218  | .212  | -1.857 |
| 170 | 107 | -.251  | .167  | .219  | -.914  | 170 | 157 | -.248  | .204  | .307  | -.951  | 170 | 226 | -.378  | .202  | .138  | -1.562 |
| 170 | 108 | -.250  | .142  | .160  | -.804  | 170 | 158 | -.244  | .216  | .338  | -1.419 | 170 | 227 | -.352  | .181  | .201  | -1.258 |
| 170 | 109 | -.294  | .166  | .307  | -1.015 | 170 | 159 | -.268  | .257  | .268  | -1.587 | 170 | 228 | -.456  | .186  | .451  | -.746  |
| 170 | 110 | -.278  | .169  | .409  | -1.044 | 170 | 160 | -.344  | .240  | .209  | -2.001 | 170 | 229 | -.456  | .214  | .496  | -1.190 |
| 170 | 111 | -.267  | .169  | .358  | -1.055 | 170 | 161 | -.373  | .211  | .437  | -2.166 | 170 | 230 | -.522  | .224  | .167  | -1.486 |
| 170 | 112 | -.280  | .146  | .232  | -.965  | 170 | 162 | -.347  | .191  | .271  | -1.199 | 170 | 231 | -.469  | .212  | .121  | -1.488 |
| 170 | 113 | -.265  | .163  | .308  | -.865  | 170 | 163 | -.312  | .185  | .293  | -1.207 | 170 | 232 | -.412  | .207  | .173  | -1.391 |
| 170 | 114 | -.275  | .145  | .207  | -.844  | 170 | 164 | -.299  | .131  | .121  | -.693  | 170 | 233 | -.094  | .162  | .440  | -.767  |
| 170 | 115 | -.301  | .165  | .246  | -1.029 | 170 | 165 | -.225  | .171  | .317  | -1.075 | 170 | 234 | -.375  | .183  | .205  | -1.027 |
| 170 | 116 | -.228  | .114  | .164  | -.654  | 170 | 166 | -.262  | .177  | .204  | -1.089 | 170 | 235 | -.544  | .225  | .004  | -1.734 |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 170 | 236 | .520   | .239  | .096  | -1.559 | 170 | 336 | .465   | .153  | .911  | -.037  | 170 | 402 | -.274  | .176  | .245  | -1.142 |
| 170 | 237 | -.463  | .212  | .173  | -1.423 | 170 | 337 | .460   | .154  | .997  | -.041  | 170 | 403 | -.282  | .175  | .222  | -1.142 |
| 170 | 238 | -.032  | .129  | .493  | -.415  | 170 | 338 | .489   | .161  | 1.166 | -.069  | 170 | 404 | -.299  | .173  | .199  | -1.142 |
| 170 | 239 | -.199  | .163  | .325  | -.772  | 170 | 339 | .420   | .174  | 1.044 | -.115  | 170 | 405 | -.324  | .161  | .150  | -1.142 |
| 170 | 240 | -.327  | .148  | .143  | -.870  | 170 | 340 | .177   | .168  | .775  | -.447  | 170 | 406 | -.366  | .163  | .086  | -1.039 |
| 170 | 241 | -.331  | .149  | .135  | -.884  | 170 | 341 | -.383  | .181  | .112  | -.986  | 170 | 407 | -.403  | .179  | .168  | -1.260 |
| 170 | 242 | -.326  | .149  | .086  | -.989  | 170 | 342 | -.204  | .148  | .257  | -.945  | 170 | 408 | -.244  | .160  | .310  | -1.445 |
| 170 | 243 | -.203  | .128  | .159  | -.672  | 170 | 343 | .123   | .120  | .532  | -.217  | 170 | 409 | -.265  | .174  | .197  | -1.136 |
| 170 | 244 | -.042  | .153  | .647  | -.636  | 170 | 344 | .297   | .132  | .875  | -.135  | 170 | 410 | -.256  | .165  | .225  | -1.190 |
| 170 | 245 | -.209  | .152  | .239  | -.742  | 170 | 345 | .400   | .161  | .921  | -.023  | 170 | 411 | -.265  | .165  | .237  | -1.943 |
| 170 | 246 | -.331  | .155  | .142  | -.988  | 170 | 346 | .411   | .148  | 1.022 | -.045  | 170 | 412 | -.331  | .199  | .197  | -1.152 |
| 170 | 247 | -.306  | .159  | .146  | -.895  | 170 | 347 | .450   | .157  | 1.098 | -.034  | 170 | 413 | -.287  | .173  | .234  | -1.078 |
| 170 | 248 | -.258  | .139  | .203  | -.742  | 170 | 348 | .390   | .176  | .964  | -.174  | 170 | 414 | -.267  | .172  | .308  | -1.066 |
| 170 | 249 | -.205  | .126  | .288  | -.686  | 170 | 349 | .176   | .172  | .895  | -.365  | 170 | 415 | -.258  | .176  | .294  | -1.181 |
| 170 | 250 | -.209  | .131  | .319  | -.629  | 170 | 350 | -.405  | .199  | 1.02  | -1.471 | 170 | 416 | -.360  | .180  | .285  | -1.278 |
| 170 | 301 | -.390  | .196  | .193  | -1.088 | 170 | 351 | -.239  | .149  | .208  | -.903  | 170 | 417 | -.289  | .179  | .181  | -1.421 |
| 170 | 302 | -.370  | .186  | .243  | -1.141 | 170 | 352 | -.089  | .124  | .513  | -.279  | 170 | 418 | -.253  | .176  | .256  | -1.214 |
| 170 | 303 | -.199  | .172  | .409  | -.779  | 170 | 353 | -.235  | .138  | .666  | -.226  | 170 | 419 | -.266  | .180  | .259  | -1.195 |
| 170 | 304 | -.344  | .198  | .266  | -1.541 | 170 | 354 | .291   | .131  | .746  | -.669  | 170 | 420 | -.282  | .169  | .247  | -1.132 |
| 170 | 305 | -.566  | .239  | .117  | -1.385 | 170 | 355 | .355   | .152  | .890  | -.112  | 170 | 421 | -.297  | .182  | .235  | -1.186 |
| 170 | 306 | -.382  | .200  | .301  | -1.106 | 170 | 355 | .372   | .147  | .947  | -.114  | 170 | 422 | -.318  | .195  | .187  | -1.282 |
| 170 | 307 | -.413  | .210  | .136  | -1.222 | 170 | 356 | .350   | .166  | 1.073 | -.158  | 170 | 423 | -.272  | .200  | .216  | -1.424 |
| 170 | 308 | -.505  | .216  | .378  | -1.459 | 170 | 358 | -.162  | .161  | .640  | -.395  | 170 | 424 | -.296  | .155  | .232  | -2.276 |
| 170 | 309 | -.541  | .234  | .100  | -1.401 | 170 | 359 | -.406  | .181  | 1.06  | -1.664 | 170 | 425 | -.292  | .208  | .194  | -1.125 |
| 170 | 310 | -.369  | .199  | .276  | -1.045 | 170 | 360 | -.253  | .150  | .228  | -.848  | 170 | 426 | -.330  | .215  | .253  | -1.619 |
| 170 | 311 | -.213  | .174  | .430  | -.834  | 170 | 361 | -.029  | .110  | .458  | -.376  | 170 | 427 | -.333  | .199  | .131  | -1.133 |
| 170 | 312 | -.519  | .219  | .063  | -1.302 | 170 | 362 | .127   | .118  | .513  | -.320  | 170 | 428 | -.251  | .178  | .264  | -1.260 |
| 170 | 313 | -.119  | .171  | .501  | -.653  | 170 | 363 | .210   | .124  | .703  | -.148  | 170 | 429 | -.272  | .199  | .263  | -1.131 |
| 170 | 314 | -.282  | .179  | .230  | -1.015 | 170 | 364 | .240   | .141  | .778  | -.148  | 170 | 430 | -.284  | .206  | .213  | -1.560 |
| 170 | 315 | -.047  | .186  | .667  | -.696  | 170 | 365 | .266   | .143  | .772  | -.221  | 170 | 431 | -.308  | .203  | .245  | -1.260 |
| 170 | 316 | -.327  | .169  | .984  | -.211  | 170 | 366 | .284   | .144  | .755  | -.246  | 170 | 432 | -.317  | .208  | .343  | -1.376 |
| 170 | 317 | .460   | .173  | 1.125 | -.106  | 170 | 367 | .147   | .158  | .640  | -.388  | 170 | 433 | -.297  | .205  | .307  | -1.131 |
| 170 | 318 | .481   | .186  | 1.047 | -.112  | 170 | 368 | -.199  | .147  | .234  | -.815  | 170 | 434 | -.338  | .244  | .345  | -2.233 |
| 170 | 319 | .493   | .178  | 1.080 | -.086  | 170 | 369 | -.070  | .142  | .447  | -.527  | 170 | 435 | -.339  | .207  | .244  | -1.511 |
| 170 | 320 | .513   | .194  | 1.176 | -.093  | 170 | 370 | .080   | .141  | .539  | -.361  | 170 | 436 | -.366  | .212  | .207  | -1.111 |
| 170 | 321 | .457   | .194  | 1.158 | -.128  | 170 | 371 | .201   | .135  | .716  | -.154  | 170 | 437 | -.392  | .209  | .207  | -1.177 |
| 170 | 322 | .214   | .188  | .928  | -.546  | 170 | 372 | .263   | .135  | .775  | -.124  | 170 | 438 | -.299  | .146  | .207  | -1.146 |
| 170 | 323 | -.372  | .184  | .286  | -1.100 | 170 | 373 | .277   | .137  | .692  | -.128  | 170 | 439 | -.337  | .185  | .143  | -1.064 |
| 170 | 324 | -.064  | .170  | .633  | -.712  | 170 | 374 | .272   | .121  | .667  | -.076  | 170 | 440 | -.272  | .165  | .297  | -1.038 |
| 170 | 325 | .285   | .151  | .879  | -.339  | 170 | 375 | .216   | .134  | .812  | -.201  | 170 | 441 | -.232  | .179  | .300  | -1.090 |
| 170 | 326 | .461   | .176  | 1.090 | -.142  | 170 | 376 | .137   | .133  | .641  | -.293  | 170 | 442 | -.235  | .161  | .251  | -1.125 |
| 170 | 327 | .529   | .185  | 1.244 | -.112  | 170 | 377 | .025   | .128  | .493  | -.419  | 170 | 443 | -.238  | .244  | .763  | -1.046 |
| 170 | 328 | .593   | .178  | 1.246 | -.020  | 170 | 378 | .084   | .115  | .440  | -.270  | 170 | 444 | -.119  | .119  | .639  | -1.111 |
| 170 | 329 | .549   | .192  | 1.118 | -.010  | 170 | 379 | .223   | .137  | .720  | -.157  | 170 | 445 | -.223  | .133  | .671  | -1.319 |
| 170 | 330 | .468   | .193  | 1.154 | -.073  | 170 | 380 | .276   | .141  | .749  | -.104  | 170 | 446 | -.061  | .136  | .468  | -1.119 |
| 170 | 331 | .159   | .196  | .746  | -.411  | 170 | 381 | .299   | .135  | .776  | -.112  | 170 | 447 | -.023  | .131  | .422  | -1.546 |
| 170 | 332 | -.402  | .195  | .102  | -1.302 | 170 | 382 | .296   | .147  | .881  | -.098  | 170 | 448 | -.022  | .125  | .418  | -1.111 |
| 170 | 333 | -.156  | .169  | .321  | -.723  | 170 | 383 | .274   | .146  | .793  | -.197  | 170 | 449 | -.120  | .167  | .357  | -1.083 |
| 170 | 334 | .197   | .151  | .661  | -.308  | 170 | 384 | .110   | .135  | .614  | -.457  | 170 | 450 | -.223  | .151  | .314  | -1.711 |
| 170 | 335 | .367   | .155  | .836  | -.133  | 170 | 401 | -.226  | .170  | .275  | -.956  | 170 | 701 | -.168  | .125  | .214  | -1.446 |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 180 | 234 | -280   | 188   | 336   | -1.016 | 180 | 334 | 150    | 129   | 622   | -199   | 180 | 384 | -168   | 138   | 703   | -409   |
| 180 | 235 | -391   | 189   | 660   | -1.260 | 180 | 335 | 271    | 162   | 872   | -212   | 180 | 401 | -216   | 180   | 371   | -916   |
| 180 | 236 | -338   | 214   | 235   | -1.163 | 180 | 336 | 356    | 163   | 860   | -203   | 180 | 402 | -238   | 174   | 220   | -940   |
| 180 | 237 | -308   | 191   | 298   | -1.319 | 180 | 337 | 396    | 172   | 975   | -025   | 180 | 403 | -244   | 179   | 334   | -968   |
| 180 | 238 | -013   | 147   | 809   | -567   | 180 | 338 | 368    | 152   | 893   | -059   | 180 | 404 | -303   | 187   | 217   | -977   |
| 180 | 239 | -114   | 155   | 379   | -782   | 180 | 339 | 318    | 179   | 947   | -230   | 180 | 405 | -338   | 175   | 122   | -999   |
| 180 | 240 | -216   | 128   | 142   | -715   | 180 | 340 | 042    | 178   | 556   | -636   | 180 | 406 | -364   | 162   | 131   | -902   |
| 180 | 241 | -224   | 131   | 180   | -730   | 180 | 341 | -392   | 189   | 202   | -1.331 | 180 | 407 | -356   | 153   | 266   | -1.011 |
| 180 | 242 | -189   | 114   | 143   | -685   | 180 | 342 | -175   | 143   | 239   | -1.670 | 180 | 408 | -224   | 165   | 228   | -1.067 |
| 180 | 243 | -160   | 111   | 197   | -548   | 180 | 343 | 090    | 121   | 550   | -345   | 180 | 409 | -223   | 167   | 270   | -869   |
| 180 | 244 | -038   | 148   | 504   | -577   | 180 | 344 | 220    | 136   | 714   | -218   | 180 | 410 | -291   | 188   | 266   | -1.335 |
| 180 | 245 | -137   | 141   | 366   | -602   | 180 | 345 | 275    | 160   | 822   | -189   | 180 | 411 | -317   | 213   | 327   | -1.184 |
| 180 | 246 | -218   | 155   | 306   | -757   | 180 | 346 | 336    | 157   | 858   | -145   | 180 | 412 | -354   | 212   | 369   | -1.153 |
| 180 | 247 | -213   | 125   | 188   | -627   | 180 | 347 | 323    | 141   | 795   | -097   | 180 | 413 | -213   | 177   | 287   | -1.175 |
| 180 | 248 | -191   | 120   | 161   | -642   | 180 | 348 | 241    | 159   | 1.005 | -435   | 180 | 414 | -258   | 213   | 308   | -1.414 |
| 180 | 249 | -152   | 103   | 237   | -487   | 180 | 349 | 071    | 180   | 683   | -551   | 180 | 415 | -257   | 195   | 345   | -1.334 |
| 180 | 250 | -140   | 106   | 224   | -504   | 180 | 350 | -350   | 187   | 209   | -925   | 180 | 416 | -312   | 237   | 291   | -1.474 |
| 180 | 301 | -219   | 176   | 493   | -981   | 180 | 351 | -179   | 129   | 221   | -712   | 180 | 417 | -347   | 237   | 381   | -1.538 |
| 180 | 302 | -292   | 168   | 307   | -861   | 180 | 352 | 051    | 123   | 565   | -321   | 180 | 418 | -259   | 200   | 240   | -1.632 |
| 180 | 303 | -066   | 178   | 518   | -657   | 180 | 353 | 175    | 132   | 732   | -174   | 180 | 419 | -281   | 215   | 241   | -1.592 |
| 180 | 304 | -242   | 175   | 337   | -822   | 180 | 354 | 227    | 143   | 702   | -231   | 180 | 420 | -284   | 233   | 251   | -1.451 |
| 180 | 305 | -514   | 208   | 675   | -1.246 | 180 | 355 | 264    | 136   | 727   | -136   | 180 | 421 | -317   | 206   | 157   | -1.292 |
| 180 | 306 | -294   | 180   | 328   | -1.188 | 180 | 356 | 286    | 128   | 695   | -118   | 180 | 422 | -372   | 234   | 188   | -1.695 |
| 180 | 307 | -304   | 169   | 337   | -1.954 | 180 | 357 | 204    | 150   | 805   | -227   | 180 | 423 | -210   | 181   | 223   | -1.174 |
| 180 | 308 | -389   | 194   | 449   | -1.619 | 180 | 358 | 092    | 169   | 717   | -472   | 180 | 424 | -236   | 213   | 307   | -1.434 |
| 180 | 309 | -487   | 203   | 233   | -1.292 | 180 | 359 | 354    | 173   | 202   | -1.114 | 180 | 425 | -278   | 211   | 255   | -1.248 |
| 180 | 310 | -290   | 187   | 356   | -945   | 180 | 360 | 179    | 146   | 332   | -778   | 180 | 426 | -309   | 213   | 249   | -1.413 |
| 180 | 311 | -165   | 161   | 482   | -754   | 180 | 361 | 024    | 122   | 683   | -352   | 180 | 427 | -362   | 233   | 297   | -1.334 |
| 180 | 312 | -391   | 189   | 409   | -1.172 | 180 | 362 | 114    | 134   | 664   | -290   | 180 | 428 | -208   | 182   | 283   | -1.246 |
| 180 | 313 | -112   | 154   | 481   | -652   | 180 | 363 | 183    | 124   | 714   | -163   | 180 | 429 | -214   | 193   | 320   | -1.340 |
| 180 | 314 | -129   | 201   | 489   | -977   | 180 | 364 | 181    | 132   | 590   | -308   | 180 | 430 | -235   | 200   | 328   | -1.500 |
| 180 | 315 | -191   | 178   | 827   | -436   | 180 | 365 | 213    | 135   | 766   | -201   | 180 | 431 | -270   | 207   | 349   | -1.087 |
| 180 | 316 | -402   | 175   | 990   | -1.178 | 180 | 366 | 200    | 157   | 762   | -227   | 180 | 432 | -399   | 203   | 088   | -1.220 |
| 180 | 317 | -498   | 189   | 1.063 | -1.138 | 180 | 367 | 103    | 166   | 688   | -588   | 180 | 433 | -281   | 204   | 388   | -1.604 |
| 180 | 318 | -466   | 192   | 1.059 | -1.154 | 180 | 368 | 210    | 138   | 221   | -766   | 180 | 434 | -281   | 221   | 228   | -1.636 |
| 180 | 319 | -496   | 201   | 1.242 | -1.666 | 180 | 369 | 090    | 147   | 352   | -576   | 180 | 435 | -255   | 183   | 294   | -982   |
| 180 | 320 | -485   | 188   | 1.061 | -1.119 | 180 | 370 | 030    | 120   | 460   | -350   | 180 | 436 | -301   | 186   | 242   | -993   |
| 180 | 321 | -390   | 197   | 994   | -381   | 180 | 371 | 161    | 142   | 751   | -326   | 180 | 437 | -348   | 175   | 245   | -1.114 |
| 180 | 322 | -104   | 181   | 695   | -936   | 180 | 372 | 199    | 127   | 624   | -166   | 180 | 438 | -141   | 146   | 349   | -649   |
| 180 | 323 | -276   | 226   | 591   | -1.350 | 180 | 373 | 220    | 114   | 657   | -099   | 180 | 439 | -251   | 140   | 144   | -756   |
| 180 | 324 | -016   | 191   | 663   | -721   | 180 | 374 | 194    | 126   | 656   | -233   | 180 | 440 | -207   | 197   | 338   | -999   |
| 180 | 325 | -295   | 171   | 943   | -235   | 180 | 375 | 170    | 136   | 613   | -224   | 180 | 441 | -253   | 152   | 227   | -753   |
| 180 | 326 | -417   | 178   | 1.025 | -1.130 | 180 | 376 | 129    | 134   | 598   | -263   | 180 | 442 | -266   | 148   | 115   | -869   |
| 180 | 327 | -472   | 178   | 1.117 | -1.647 | 180 | 377 | 013    | 109   | 421   | -372   | 180 | 443 | -225   | 239   | 749   | -687   |
| 180 | 328 | -474   | 199   | 1.355 | -1.67  | 180 | 378 | 064    | 122   | 459   | -279   | 180 | 444 | -392   | 104   | 717   | -015   |
| 180 | 329 | -446   | 186   | 1.145 | -1.181 | 180 | 379 | 140    | 129   | 597   | -238   | 180 | 445 | -321   | 105   | 694   | -026   |
| 180 | 330 | -341   | 190   | 1.090 | -2.270 | 180 | 380 | 188    | 147   | 671   | -297   | 180 | 446 | -125   | 120   | 558   | -347   |
| 180 | 331 | -058   | 169   | 714   | -356   | 180 | 381 | 227    | 120   | 684   | -172   | 180 | 447 | -172   | 135   | 258   | -730   |
| 180 | 332 | -327   | 227   | 294   | -1.283 | 180 | 382 | 196    | 123   | 649   | -196   | 180 | 448 | -181   | 138   | 208   | -728   |
| 180 | 333 | -123   | 142   | 409   | -563   | 180 | 383 | 185    | 158   | 665   | -347   | 180 | 449 | -223   | 155   | 280   | -790   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 180 | 450 | -.268  | .167  | .254  | -.822 | 190 | 113 | -.134  | .147  | .409  | -.788  | 190 | 163 | -.064  | .121  | .304  | -.620  |
| 180 | 701 | -.102  | .111  | .272  | -.471 | 190 | 114 | -.128  | .128  | .340  | -.578  | 190 | 164 | -.074  | .098  | .222  | -.387  |
| 180 | 702 | -.122  | .118  | .265  | -.488 | 190 | 115 | -.154  | .144  | .338  | -.700  | 190 | 165 | -.100  | .136  | .298  | -.576  |
| 180 | 703 | -.131  | .118  | .269  | -.542 | 190 | 116 | -.107  | .108  | .267  | -.415  | 190 | 166 | -.119  | .133  | .242  | -.666  |
| 180 | 705 | -.109  | .110  | .264  | -.451 | 190 | 117 | -.097  | .124  | .278  | -.478  | 190 | 167 | -.130  | .145  | .269  | -.827  |
| 180 | 706 | -.092  | .115  | .303  | -.446 | 190 | 118 | -.098  | .125  | .302  | -.498  | 190 | 168 | -.076  | .115  | .250  | -.471  |
| 180 | 707 | -.107  | .116  | .285  | -.520 | 190 | 119 | -.100  | .132  | .352  | -.572  | 190 | 169 | -.077  | .112  | .264  | -.427  |
| 180 | 708 | -.133  | .136  | .356  | -.748 | 190 | 120 | -.107  | .119  | .309  | -.537  | 190 | 170 | -.072  | .111  | .276  | -.404  |
| 180 | 710 | -.172  | .137  | .250  | -.827 | 190 | 121 | -.129  | .130  | .229  | -.862  | 190 | 171 | -.062  | .113  | .288  | -.428  |
| 180 | 711 | -.139  | .108  | .263  | -.550 | 190 | 122 | -.135  | .136  | .242  | -1.000 | 190 | 172 | -.050  | .097  | .236  | -.393  |
| 180 | 712 | -.145  | .134  | .339  | -.633 | 190 | 123 | -.157  | .148  | .292  | -.977  | 190 | 173 | -.072  | .114  | .304  | -.417  |
| 180 | 713 | -.180  | .151  | .331  | -.769 | 190 | 124 | -.173  | .158  | .284  | -.723  | 190 | 174 | -.073  | .112  | .287  | -.400  |
| 180 | 714 | -.137  | .132  | .397  | -.648 | 190 | 125 | -.115  | .118  | .309  | -.539  | 190 | 175 | -.078  | .119  | .333  | -.437  |
| 180 | 716 | -.106  | .120  | .439  | -.555 | 190 | 126 | -.108  | .115  | .384  | -.533  | 190 | 176 | -.069  | .105  | .266  | -.381  |
| 180 | 717 | -.109  | .121  | .292  | -.605 | 190 | 127 | -.112  | .120  | .279  | -.536  | 190 | 177 | -.056  | .118  | .360  | -.532  |
| 180 | 801 | -.114  | .121  | .257  | -.551 | 190 | 128 | -.125  | .114  | .218  | -.521  | 190 | 178 | -.057  | .118  | .366  | -.569  |
| 180 | 802 | -.153  | .132  | .259  | -.868 | 190 | 129 | -.154  | .148  | .296  | -.716  | 190 | 180 | -.042  | .109  | .363  | -.467  |
| 180 | 803 | -.198  | .142  | .160  | -.838 | 190 | 130 | -.170  | .165  | .298  | -.894  | 190 | 181 | -.051  | .123  | .328  | -.425  |
| 180 | 804 | -.228  | .130  | .731  | -.200 | 190 | 131 | -.179  | .182  | .320  | -1.080 | 190 | 182 | -.061  | .121  | .320  | -.426  |
| 180 | 901 | -.181  | .163  | .405  | -.984 | 190 | 132 | -.157  | .149  | .320  | -.964  | 190 | 201 | -.275  | .147  | .160  | -.899  |
| 180 | 902 | -.172  | .182  | .673  | -.905 | 190 | 133 | -.131  | .147  | .294  | -.879  | 190 | 202 | -.338  | .166  | .127  | -.983  |
| 180 | 903 | -.200  | .145  | .274  | -.786 | 190 | 134 | -.106  | .130  | .283  | -.708  | 190 | 203 | -.292  | .164  | .163  | -.865  |
| 180 | 904 | -.190  | .156  | .468  | -.843 | 190 | 135 | -.095  | .124  | .271  | -.514  | 190 | 204 | -.238  | .155  | .330  | -.871  |
| 180 | 905 | -.203  | .148  | .284  | -.772 | 190 | 136 | -.100  | .108  | .227  | -.474  | 190 | 205 | -.187  | .172  | .336  | -.810  |
| 180 | 906 | -.409  | .213  | .196  | -.490 | 190 | 137 | -.114  | .122  | .278  | -.585  | 190 | 206 | -.172  | .165  | .409  | -.918  |
| 180 | 907 | -.341  | .176  | .208  | -.200 | 190 | 138 | -.130  | .130  | .295  | -.639  | 190 | 207 | -.164  | .166  | .461  | -.841  |
| 180 | 908 | -.311  | .175  | .219  | -.147 | 190 | 139 | -.148  | .151  | .432  | -.748  | 190 | 208 | -.276  | .179  | .462  | -.057  |
| 180 | 909 | -.278  | .159  | .225  | -.983 | 190 | 140 | -.161  | .135  | .190  | -.749  | 190 | 209 | -.288  | .194  | .261  | -.1046 |
| 180 | 910 | -.272  | .168  | .372  | -.040 | 190 | 141 | -.130  | .143  | .356  | -.056  | 190 | 210 | -.188  | .164  | .337  | -.933  |
| 180 | 911 | -.298  | .140  | .171  | -.807 | 190 | 142 | -.138  | .139  | .351  | -.258  | 190 | 211 | -.165  | .169  | .372  | -.1115 |
| 180 | 912 | -.349  | .191  | .214  | -.139 | 190 | 143 | -.114  | .129  | .336  | -.841  | 190 | 212 | -.127  | .135  | .297  | -.596  |
| 180 | 913 | -.347  | .198  | .168  | -.044 | 190 | 144 | -.113  | .104  | .281  | -.641  | 190 | 213 | -.261  | .168  | .210  | -.918  |
| 180 | 914 | -.389  | .182  | .211  | -.112 | 190 | 145 | -.115  | .125  | .286  | -.558  | 190 | 214 | -.296  | .204  | .270  | -.1300 |
| 180 | 915 | -.311  | .185  | .339  | -.958 | 190 | 146 | -.134  | .130  | .298  | -.578  | 190 | 215 | -.252  | .172  | .242  | -.985  |
| 180 | 916 | -.377  | .174  | .151  | -.023 | 190 | 147 | -.156  | .147  | .332  | -.656  | 190 | 216 | -.159  | .175  | .293  | -.959  |
| 180 | 917 | -.417  | .200  | .155  | -.324 | 190 | 148 | -.179  | .144  | .345  | -.759  | 190 | 217 | -.152  | .169  | .358  | -.895  |
| 180 | 918 | -.373  | .197  | .264  | -.119 | 190 | 149 | -.192  | .162  | .365  | -.841  | 190 | 218 | -.239  | .185  | .381  | -.1045 |
| 180 | 919 | -.395  | .216  | .242  | -.237 | 190 | 150 | -.138  | .154  | .355  | -.989  | 190 | 219 | -.309  | .203  | .265  | -.1162 |
| 190 | 101 | -.133  | .158  | .469  | -.111 | 190 | 151 | -.134  | .132  | .323  | -.171  | 190 | 220 | -.289  | .173  | .226  | -.1029 |
| 190 | 102 | -.136  | .142  | .345  | -.723 | 190 | 152 | -.122  | .121  | .283  | -.799  | 190 | 221 | -.196  | .159  | .164  | -.958  |
| 190 | 103 | -.126  | .145  | .322  | -.723 | 190 | 153 | -.105  | .123  | .268  | -.531  | 190 | 222 | -.147  | .193  | .353  | -.1022 |
| 190 | 104 | -.107  | .116  | .291  | -.554 | 190 | 154 | -.112  | .127  | .275  | -.615  | 190 | 223 | -.162  | .161  | .313  | -.709  |
| 190 | 105 | -.112  | .140  | .274  | -.623 | 190 | 155 | -.131  | .130  | .246  | -.732  | 190 | 224 | -.290  | .181  | .232  | -.1079 |
| 190 | 106 | -.101  | .136  | .275  | -.700 | 190 | 156 | -.162  | .126  | .193  | -.619  | 190 | 225 | -.262  | .178  | .216  | -.987  |
| 190 | 107 | -.097  | .139  | .347  | -.654 | 190 | 157 | -.188  | .180  | .262  | -.1247 | 190 | 226 | -.213  | .183  | .329  | -.1248 |
| 190 | 108 | -.097  | .117  | .248  | -.605 | 190 | 158 | -.199  | .185  | .264  | -.1453 | 190 | 227 | -.154  | .156  | .273  | -.865  |
| 190 | 109 | -.133  | .147  | .355  | -.109 | 190 | 159 | -.102  | .148  | .318  | -.930  | 190 | 228 | -.132  | .160  | .370  | -.644  |
| 190 | 110 | -.123  | .148  | .336  | -.906 | 190 | 160 | -.095  | .129  | .286  | -.742  | 190 | 229 | -.274  | .164  | .233  | -.1014 |
| 190 | 111 | -.124  | .143  | .379  | -.878 | 190 | 161 | -.078  | .132  | .359  | -.656  | 190 | 230 | -.269  | .194  | .185  | -.1266 |
| 190 | 112 | -.146  | .127  | .272  | -.563 | 190 | 162 | -.076  | .124  | .309  | -.718  | 190 | 231 | -.197  | .172  | .429  | -.998  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 190 | 232 | -.159  | .149  | .338  | -.843  | 190 | 332 | -.264  | .233  | .400  | -1.232 | 190 | 382 | .157   | .115  | .505  | -.292  |
| 190 | 233 | -.055  | .139  | .346  | -.553  | 190 | 333 | -.103  | .171  | .500  | -.847  | 190 | 383 | .131   | .129  | .505  | -.269  |
| 190 | 234 | -.193  | .166  | .266  | -1.071 | 190 | 334 | -.091  | .140  | .586  | -.379  | 190 | 384 | .100   | .120  | .551  | -.303  |
| 190 | 235 | -.216  | .164  | .226  | -.906  | 190 | 335 | -.202  | .145  | .729  | -.302  | 190 | 401 | -.151  | .171  | .308  | -.812  |
| 190 | 236 | -.202  | .170  | .344  | -.871  | 190 | 336 | -.269  | .162  | .807  | -.191  | 190 | 402 | -.197  | .154  | .277  | -.873  |
| 190 | 237 | -.149  | .150  | .236  | -.826  | 190 | 337 | -.275  | .162  | .987  | -.170  | 190 | 403 | -.274  | .172  | .260  | -.929  |
| 190 | 238 | -.042  | .136  | .568  | -.484  | 190 | 338 | -.264  | .174  | .972  | -.262  | 190 | 404 | -.318  | .171  | .208  | -.973  |
| 190 | 239 | -.038  | .137  | .470  | -.514  | 190 | 339 | -.206  | .137  | .948  | -.392  | 190 | 405 | -.272  | .171  | .354  | -.978  |
| 190 | 240 | -.083  | .137  | .328  | -.550  | 190 | 340 | -.007  | .171  | .610  | -.758  | 190 | 406 | -.283  | .157  | .295  | -1.137 |
| 190 | 241 | -.116  | .119  | .346  | -.489  | 190 | 341 | -.260  | .195  | .289  | -1.084 | 190 | 407 | -.191  | .181  | .351  | -1.000 |
| 190 | 242 | -.092  | .118  | .337  | -.500  | 190 | 342 | -.116  | .157  | .395  | -.744  | 190 | 408 | -.184  | .173  | .230  | -1.096 |
| 190 | 243 | -.048  | .111  | .348  | -.389  | 190 | 343 | -.054  | .122  | .525  | -.366  | 190 | 409 | -.252  | .191  | .279  | -1.048 |
| 190 | 244 | -.048  | .118  | .572  | -.323  | 190 | 344 | -.155  | .124  | .609  | -.250  | 190 | 410 | -.381  | .238  | .287  | -1.619 |
| 190 | 245 | -.051  | .121  | .343  | -.471  | 190 | 345 | -.215  | .145  | .780  | -.247  | 190 | 411 | -.353  | .219  | .276  | -1.078 |
| 190 | 246 | -.084  | .113  | .287  | -.473  | 190 | 346 | -.232  | .137  | .736  | -.183  | 190 | 412 | -.277  | .266  | .515  | -1.539 |
| 190 | 247 | -.081  | .106  | .292  | -.414  | 190 | 347 | -.239  | .162  | .788  | -.227  | 190 | 413 | -.233  | .200  | .269  | -1.336 |
| 190 | 248 | -.061  | .103  | .292  | -.409  | 190 | 348 | -.092  | .175  | .807  | -.499  | 190 | 414 | -.241  | .211  | .444  | -1.372 |
| 190 | 249 | -.074  | .114  | .276  | -.485  | 190 | 349 | -.135  | .149  | .541  | -.600  | 190 | 415 | -.325  | .241  | .304  | -1.611 |
| 190 | 250 | -.053  | .109  | .300  | -.428  | 190 | 350 | -.274  | .187  | .235  | -1.030 | 190 | 416 | -.319  | .220  | .334  | -1.146 |
| 190 | 301 | -.059  | .198  | .636  | -.898  | 190 | 351 | -.152  | .152  | .297  | -.772  | 190 | 417 | -.331  | .272  | .563  | -1.404 |
| 190 | 302 | -.175  | .197  | .584  | -.906  | 190 | 352 | -.054  | .121  | .632  | -.338  | 190 | 418 | -.293  | .194  | .297  | -1.182 |
| 190 | 303 | -.075  | .207  | .724  | -.630  | 190 | 353 | -.140  | .138  | .673  | -.267  | 190 | 419 | -.284  | .197  | .309  | -1.219 |
| 190 | 304 | -.118  | .195  | .562  | -.959  | 190 | 354 | -.169  | .145  | .757  | -.313  | 190 | 420 | -.257  | .183  | .317  | -1.153 |
| 190 | 305 | -.492  | .255  | .310  | -1.355 | 190 | 355 | -.197  | .127  | .958  | -.251  | 190 | 421 | -.326  | .239  | .238  | -1.543 |
| 190 | 306 | -.147  | .210  | .639  | -.885  | 190 | 356 | -.213  | .137  | .708  | -.197  | 190 | 422 | -.357  | .251  | .416  | -1.319 |
| 190 | 307 | -.204  | .213  | .651  | -.917  | 190 | 357 | -.187  | .152  | .748  | -.292  | 190 | 423 | -.149  | .171  | .273  | -1.135 |
| 190 | 308 | -.242  | .204  | .452  | -.910  | 190 | 358 | -.048  | .140  | .587  | -.451  | 190 | 424 | -.183  | .157  | .272  | -.855  |
| 190 | 309 | -.441  | .215  | .283  | -1.378 | 190 | 359 | -.228  | .177  | .260  | -1.053 | 190 | 425 | -.282  | .161  | .258  | -.940  |
| 190 | 310 | -.193  | .203  | .587  | -.734  | 190 | 360 | -.137  | .151  | .427  | -.638  | 190 | 426 | -.283  | .225  | .279  | -1.412 |
| 190 | 311 | -.111  | .168  | .562  | -.817  | 190 | 361 | -.023  | .127  | .414  | -.338  | 190 | 427 | -.304  | .218  | .280  | -1.536 |
| 190 | 312 | -.298  | .184  | .373  | -.925  | 190 | 362 | -.078  | .114  | .444  | -.381  | 190 | 428 | -.135  | .160  | .394  | -1.272 |
| 190 | 313 | -.123  | .162  | .532  | -.724  | 190 | 363 | -.111  | .114  | .570  | -.213  | 190 | 429 | -.157  | .148  | .284  | -.930  |
| 190 | 314 | -.013  | .231  | .744  | -.852  | 190 | 364 | -.145  | .159  | .767  | -.412  | 190 | 430 | -.285  | .175  | .302  | -1.515 |
| 190 | 315 | -.222  | .250  | .933  | -1.034 | 190 | 365 | -.181  | .136  | .713  | -.194  | 190 | 431 | -.257  | .180  | .281  | -1.087 |
| 190 | 316 | -.342  | .208  | 1.062 | -.415  | 190 | 366 | -.136  | .146  | .715  | -.416  | 190 | 432 | -.255  | .191  | .280  | -1.058 |
| 190 | 317 | -.384  | .225  | 1.005 | -.308  | 190 | 367 | -.064  | .126  | .463  | -.312  | 190 | 433 | -.115  | .125  | .277  | -.666  |
| 190 | 318 | -.419  | .249  | 1.090 | -.377  | 190 | 368 | -.078  | .134  | .430  | -.558  | 190 | 434 | -.147  | .155  | .336  | -1.022 |
| 190 | 319 | -.446  | .237  | 1.101 | -.291  | 190 | 369 | -.017  | .113  | .345  | -.457  | 190 | 435 | -.167  | .155  | .422  | -.862  |
| 190 | 320 | -.384  | .231  | 1.203 | -.424  | 190 | 370 | -.060  | .111  | .421  | -.254  | 190 | 436 | -.216  | .149  | .302  | -.918  |
| 190 | 321 | -.259  | .203  | .897  | -.450  | 190 | 371 | -.101  | .105  | .480  | -.216  | 190 | 437 | -.254  | .155  | .249  | -.898  |
| 190 | 322 | -.037  | .183  | .602  | -.863  | 190 | 372 | -.127  | .116  | .544  | -.190  | 190 | 438 | -.057  | .119  | .284  | -.438  |
| 190 | 323 | -.184  | .263  | .679  | -1.513 | 190 | 373 | -.146  | .120  | .666  | -.235  | 190 | 439 | -.113  | .128  | .330  | -.561  |
| 190 | 324 | -.017  | .220  | .913  | -1.235 | 190 | 374 | -.132  | .112  | .610  | -.219  | 190 | 440 | -.170  | .140  | .298  | -.584  |
| 190 | 325 | -.166  | .161  | .720  | -.370  | 190 | 375 | -.145  | .110  | .518  | -.246  | 190 | 441 | -.101  | .131  | .272  | -.570  |
| 190 | 326 | -.280  | .181  | 1.027 | -.260  | 190 | 376 | -.090  | .126  | .617  | -.357  | 190 | 442 | -.112  | .130  | .262  | -.714  |
| 190 | 327 | -.334  | .203  | 1.028 | -.275  | 190 | 377 | -.038  | .110  | .394  | -.271  | 190 | 443 | -.112  | .109  | .650  | -.092  |
| 190 | 328 | -.332  | .214  | 1.129 | -.254  | 190 | 378 | -.049  | .106  | .433  | -.300  | 190 | 444 | -.245  | .109  | .565  | -.116  |
| 190 | 329 | -.331  | .207  | 1.072 | -.171  | 190 | 379 | -.131  | .126  | .660  | -.288  | 190 | 445 | -.309  | .118  | .750  | -.094  |
| 190 | 330 | -.192  | .200  | .836  | -.511  | 190 | 380 | -.147  | .121  | .851  | -.200  | 190 | 446 | -.197  | .104  | .552  | -.154  |
| 190 | 331 | -.036  | .178  | .569  | -.963  | 190 | 381 | -.155  | .119  | .551  | -.319  | 190 | 447 | -.245  | .111  | .614  | -.216  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 190 | 448 | .187   | .103  | .532  | -.225  | 200 | 111 | -.168  | .146  | .466  | -.783  | 200 | 161 | -.033  | .127  | .480  | -.401  |
| 190 | 449 | .118   | .139  | .574  | -.392  | 200 | 112 | -.127  | .123  | .289  | -.694  | 200 | 162 | -.032  | .126  | .454  | -.373  |
| 190 | 450 | -.053  | .132  | .345  | -.593  | 200 | 113 | -.123  | .139  | .342  | -.735  | 200 | 163 | -.022  | .122  | .503  | -.372  |
| 190 | 701 | -.058  | .114  | .291  | -.407  | 200 | 114 | -.114  | .127  | .319  | -.585  | 200 | 164 | -.022  | .097  | .380  | -.261  |
| 190 | 702 | -.037  | .121  | .363  | -.561  | 200 | 115 | -.131  | .139  | .316  | -.687  | 200 | 165 | -.064  | .108  | .311  | -.366  |
| 190 | 703 | -.042  | .120  | .350  | -.542  | 200 | 116 | -.101  | .105  | .276  | -.456  | 200 | 166 | -.063  | .103  | .285  | -.361  |
| 190 | 705 | -.027  | .114  | .333  | -.521  | 200 | 117 | -.097  | .109  | .255  | -.545  | 200 | 167 | -.068  | .111  | .322  | -.428  |
| 190 | 706 | -.036  | .129  | .415  | -.457  | 200 | 118 | -.100  | .111  | .261  | -.468  | 200 | 168 | -.013  | .095  | .302  | -.316  |
| 190 | 707 | -.042  | .127  | .389  | -.498  | 200 | 119 | -.104  | .120  | .299  | -.517  | 200 | 169 | -.030  | .115  | .336  | -.373  |
| 190 | 708 | -.074  | .134  | .308  | -.731  | 200 | 120 | -.109  | .105  | .238  | -.480  | 200 | 170 | -.025  | .114  | .332  | -.366  |
| 190 | 710 | -.076  | .142  | .384  | -.710  | 200 | 121 | -.094  | .134  | .335  | -.617  | 200 | 171 | -.019  | .117  | .361  | -.394  |
| 190 | 711 | -.058  | .121  | .342  | -.453  | 200 | 122 | -.099  | .136  | .322  | -.599  | 200 | 172 | -.015  | .100  | .293  | -.297  |
| 190 | 712 | -.070  | .116  | .318  | -.427  | 200 | 123 | -.122  | .144  | .367  | -.727  | 200 | 173 | -.066  | .105  | .367  | -.410  |
| 190 | 713 | -.078  | .112  | .272  | -.409  | 200 | 124 | -.116  | .115  | .279  | -.478  | 200 | 174 | -.007  | .101  | .327  | -.394  |
| 190 | 714 | -.066  | .113  | .252  | -.370  | 200 | 125 | -.098  | .115  | .242  | -.474  | 200 | 175 | -.068  | .109  | .370  | -.453  |
| 190 | 716 | -.061  | .103  | .320  | -.462  | 200 | 126 | -.166  | .126  | .259  | -.523  | 200 | 176 | -.011  | .095  | .287  | -.377  |
| 190 | 717 | -.047  | .120  | .306  | -.462  | 200 | 127 | -.120  | .117  | .234  | -.594  | 200 | 177 | -.016  | .102  | .344  | -.372  |
| 190 | 801 | -.051  | .124  | .306  | -.434  | 200 | 128 | -.139  | .133  | .224  | -.777  | 200 | 178 | -.066  | .109  | .338  | -.373  |
| 190 | 802 | -.078  | .135  | .336  | -.493  | 200 | 129 | -.151  | .143  | .242  | -.687  | 200 | 180 | -.022  | .093  | .382  | -.313  |
| 190 | 803 | -.089  | .127  | .259  | -.478  | 200 | 130 | -.136  | .155  | .242  | -.760  | 200 | 181 | -.022  | .116  | .382  | -.389  |
| 190 | 804 | -.146  | .128  | .657  | -.272  | 200 | 131 | -.156  | .155  | .371  | -.760  | 200 | 182 | -.029  | .115  | .370  | -.373  |
| 190 | 901 | -.157  | .152  | .457  | -1.025 | 200 | 132 | -.112  | .121  | .205  | -.655  | 200 | 201 | -.220  | .154  | .220  | -.945  |
| 190 | 902 | -.063  | .153  | .530  | -.654  | 200 | 133 | -.110  | .119  | .276  | -.651  | 200 | 202 | -.237  | .158  | .279  | -.961  |
| 190 | 903 | -.139  | .123  | .260  | -.598  | 200 | 134 | -.107  | .111  | .239  | -.477  | 200 | 203 | -.232  | .163  | .233  | -.850  |
| 190 | 904 | -.149  | .144  | .423  | -.833  | 200 | 135 | -.121  | .115  | .289  | -.569  | 200 | 204 | -.177  | .169  | .376  | -.897  |
| 190 | 905 | -.174  | .143  | .205  | -.813  | 200 | 136 | -.143  | .104  | .250  | -.533  | 200 | 205 | -.146  | .151  | .286  | -.845  |
| 190 | 906 | -.371  | .200  | .215  | -1.530 | 200 | 137 | -.155  | .129  | .201  | -.683  | 200 | 206 | -.138  | .131  | .329  | -.659  |
| 190 | 907 | -.343  | .177  | .235  | -1.168 | 200 | 138 | -.171  | .136  | .181  | -.764  | 200 | 207 | -.131  | .151  | .375  | -.829  |
| 190 | 908 | -.220  | .173  | .263  | -1.339 | 200 | 139 | -.181  | .150  | .226  | -.895  | 200 | 208 | -.273  | .185  | .224  | -1.128 |
| 190 | 909 | -.203  | .151  | .223  | -1.239 | 200 | 140 | -.189  | .126  | .112  | -.758  | 200 | 209 | -.212  | .169  | .287  | -.819  |
| 190 | 910 | -.202  | .156  | .303  | -.855  | 200 | 141 | -.070  | .141  | .427  | -1.060 | 200 | 210 | -.151  | .173  | .446  | -.892  |
| 190 | 911 | -.236  | .142  | .203  | -.723  | 200 | 142 | -.078  | .132  | .382  | -.705  | 200 | 211 | -.118  | .150  | .424  | -.666  |
| 190 | 912 | -.311  | .187  | .378  | -.956  | 200 | 143 | -.062  | .129  | .401  | -.586  | 200 | 212 | -.133  | .132  | .312  | -.617  |
| 190 | 913 | -.286  | .195  | .303  | -.1089 | 200 | 144 | -.073  | .114  | .335  | -.458  | 200 | 213 | -.244  | .173  | .226  | -1.119 |
| 190 | 914 | -.278  | .181  | .309  | -1.015 | 200 | 145 | -.108  | .125  | .345  | -.569  | 200 | 214 | -.269  | .183  | .238  | -1.044 |
| 190 | 915 | -.248  | .205  | .424  | -1.061 | 200 | 146 | -.139  | .135  | .299  | -.770  | 200 | 215 | -.202  | .160  | .266  | -.974  |
| 190 | 916 | -.432  | .176  | .151  | -1.109 | 200 | 147 | -.167  | .155  | .268  | -1.101 | 200 | 216 | -.146  | .148  | .291  | -.900  |
| 190 | 917 | -.368  | .214  | .415  | -1.117 | 200 | 148 | -.183  | .140  | .219  | -.830  | 200 | 217 | -.136  | .130  | .202  | -.827  |
| 190 | 918 | -.316  | .192  | .309  | -.962  | 200 | 149 | -.176  | .177  | .289  | -.980  | 200 | 218 | -.219  | .154  | .243  | -.898  |
| 190 | 919 | -.333  | .208  | .406  | -.1101 | 200 | 150 | -.061  | .137  | .363  | -.580  | 200 | 219 | -.243  | .176  | .307  | -.965  |
| 200 | 101 | -.101  | .146  | .414  | -.757  | 200 | 151 | -.057  | .134  | .373  | -.517  | 200 | 220 | -.190  | .172  | .238  | -1.174 |
| 200 | 102 | -.103  | .134  | .360  | -.775  | 200 | 152 | -.045  | .112  | .302  | -.368  | 200 | 221 | -.127  | .157  | .295  | -.765  |
| 200 | 103 | -.093  | .139  | .348  | -.884  | 200 | 153 | -.049  | .103  | .317  | -.384  | 200 | 222 | -.119  | .150  | .329  | -1.053 |
| 200 | 104 | -.085  | .112  | .318  | -.430  | 200 | 154 | -.051  | .106  | .306  | -.391  | 200 | 223 | -.121  | .149  | .259  | -.657  |
| 200 | 105 | -.086  | .140  | .357  | -.586  | 200 | 155 | -.062  | .107  | .288  | -.437  | 200 | 224 | -.211  | .142  | .191  | -.831  |
| 200 | 106 | -.078  | .146  | .381  | -.604  | 200 | 156 | -.076  | .094  | .224  | -.675  | 200 | 225 | -.185  | .152  | .281  | -.946  |
| 200 | 107 | -.077  | .152  | .354  | -.779  | 200 | 157 | -.091  | .123  | .361  | -.649  | 200 | 226 | -.139  | .134  | .329  | -.971  |
| 200 | 108 | -.085  | .133  | .309  | -.558  | 200 | 158 | -.107  | .128  | .319  | -.613  | 200 | 227 | -.130  | .149  | .259  | -1.531 |
| 200 | 109 | -.116  | .136  | .346  | -.677  | 200 | 159 | -.062  | .114  | .358  | -.486  | 200 | 228 | -.129  | .142  | .382  | -.685  |
| 200 | 110 | -.106  | .140  | .409  | -.756  | 200 | 160 | -.053  | .099  | .312  | -.403  | 200 | 229 | -.188  | .155  | .279  | -.934  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD   | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN  | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|------|------|--------|-------|-------|-------|------|------|--------|-------|-------|--------|------|-----|--------|-------|-------|-------|
| 2000 | 2330 | .175   | .147  | .261  | -.813 | 2000 | 3330 | .022   | .206  | .689  | -1.099 | 2000 | 380 | .086   | .100  | .433  | -.222 |
| 2000 | 2331 | .138   | .145  | .343  | -.834 | 2000 | 3331 | .182   | .198  | .353  | -.991  | 2000 | 381 | .073   | .109  | .448  | -.270 |
| 2000 | 2332 | .111   | .154  | .392  | -.704 | 2000 | 3332 | .015   | .202  | .657  | -.529  | 2000 | 382 | .087   | .108  | .478  | -.263 |
| 2000 | 2333 | .027   | .118  | .343  | -.754 | 2000 | 3333 | .103   | .167  | .739  | -.355  | 2000 | 383 | .055   | .121  | .592  | -.273 |
| 2000 | 2334 | .075   | .132  | .379  | -.755 | 2000 | 3334 | .101   | .138  | .696  | -.307  | 2000 | 384 | .061   | .119  | .464  | -.264 |
| 2000 | 2335 | .107   | .124  | .329  | -.755 | 2000 | 3335 | .132   | .108  | .610  | -.190  | 2000 | 401 | -.147  | .171  | .364  | -.392 |
| 2000 | 2336 | .097   | .120  | .294  | -.755 | 2000 | 3336 | .137   | .141  | .775  | -.310  | 2000 | 402 | .171   | .147  | .366  | -.551 |
| 2000 | 2337 | .066   | .123  | .294  | -.755 | 2000 | 3337 | .163   | .141  | .799  | -.249  | 2000 | 403 | .221   | .149  | .217  | -.589 |
| 2000 | 2338 | .066   | .101  | .412  | -.339 | 2000 | 3338 | .107   | .145  | .645  | -.430  | 2000 | 404 | .153   | .142  | .166  | -.559 |
| 2000 | 2339 | .044   | .101  | .402  | -.339 | 2000 | 3339 | .006   | .196  | .624  | -.743  | 2000 | 405 | .153   | .147  | .336  | -.949 |
| 2000 | 2340 | .022   | .120  | .337  | -.272 | 2000 | 3340 | .102   | .186  | .481  | -.987  | 2000 | 406 | .193   | .149  | .297  | -.980 |
| 2000 | 2341 | .094   | .103  | .366  | -.339 | 2000 | 3341 | .007   | .173  | .632  | -.796  | 2000 | 407 | .084   | .182  | .677  | -.694 |
| 2000 | 2342 | .024   | .110  | .305  | -.437 | 2000 | 3342 | .053   | .143  | .610  | -.306  | 2000 | 408 | .132   | .144  | .297  | -.690 |
| 2000 | 2343 | .008   | .112  | .353  | -.437 | 2000 | 3343 | .094   | .115  | .515  | -.297  | 2000 | 409 | .100   | .176  | .302  | -.968 |
| 2000 | 2344 | .049   | .106  | .472  | -.339 | 2000 | 3344 | .103   | .124  | .595  | -.256  | 2000 | 410 | .201   | .168  | .229  | -.946 |
| 2000 | 2345 | .011   | .119  | .412  | -.339 | 2000 | 3345 | .116   | .134  | .672  | -.322  | 2000 | 411 | .151   | .172  | .424  | -.964 |
| 2000 | 2346 | .007   | .106  | .333  | -.444 | 2000 | 3346 | .126   | .131  | .639  | -.306  | 2000 | 412 | .053   | .227  | .724  | -.680 |
| 2000 | 2347 | .003   | .107  | .333  | -.444 | 2000 | 3347 | .132   | .139  | .785  | -.225  | 2000 | 413 | .152   | .158  | .391  | -.189 |
| 2000 | 2348 | .003   | .107  | .333  | -.444 | 2000 | 3348 | .055   | .173  | .770  | -.747  | 2000 | 414 | .186   | .163  | .397  | -.885 |
| 2000 | 2349 | .003   | .100  | .333  | -.444 | 2000 | 3349 | .043   | .191  | .614  | -.915  | 2000 | 415 | .243   | .177  | .387  | -.955 |
| 2000 | 2350 | .011   | .106  | .333  | -.444 | 2000 | 3350 | .039   | .152  | .519  | -.871  | 2000 | 416 | .201   | .178  | .555  | -.882 |
| 2000 | 2351 | .018   | .106  | .333  | -.444 | 2000 | 3351 | .001   | .121  | .481  | -.871  | 2000 | 417 | .003   | .233  | .631  | -.800 |
| 2000 | 2352 | .122   | .184  | .757  | -.938 | 2000 | 3352 | .062   | .111  | .456  | -.261  | 2000 | 418 | .006   | .162  | .366  | -.106 |
| 2000 | 2353 | .199   | .199  | .821  | -.608 | 2000 | 3353 | .064   | .113  | .536  | -.293  | 2000 | 419 | .003   | .173  | .386  | -.927 |
| 2000 | 2354 | .087   | .216  | .487  | -.118 | 2000 | 3354 | .047   | .117  | .503  | -.304  | 2000 | 420 | .003   | .151  | .191  | -.333 |
| 2000 | 2355 | .070   | .220  | .487  | -.118 | 2000 | 3355 | .088   | .117  | .588  | -.289  | 2000 | 421 | .003   | .187  | .359  | -.103 |
| 2000 | 2356 | .190   | .211  | .696  | -.943 | 2000 | 3356 | .078   | .134  | .588  | -.256  | 2000 | 422 | .061   | .211  | .619  | -.740 |
| 2000 | 2357 | .166   | .206  | .663  | -.943 | 2000 | 3357 | .052   | .132  | .598  | -.612  | 2000 | 423 | .156   | .159  | .349  | -.740 |
| 2000 | 2358 | .280   | .207  | .452  | -.100 | 2000 | 3358 | .027   | .133  | .655  | -.648  | 2000 | 424 | .203   | .169  | .246  | -.059 |
| 2000 | 2359 | .166   | .199  | .770  | -.933 | 2000 | 3359 | .050   | .108  | .622  | -.648  | 2000 | 425 | .197   | .166  | .359  | -.355 |
| 2000 | 2360 | .106   | .189  | .770  | -.933 | 2000 | 3360 | .010   | .099  | .633  | -.379  | 2000 | 426 | .155   | .165  | .393  | -.818 |
| 2000 | 2361 | .099   | .184  | .561  | -.933 | 2000 | 3361 | .013   | .115  | .346  | -.377  | 2000 | 427 | .097   | .188  | .527  | -.325 |
| 2000 | 2362 | .212   | .169  | .664  | -.747 | 2000 | 3362 | .042   | .102  | .394  | -.306  | 2000 | 428 | .095   | .118  | .386  | -.552 |
| 2000 | 2363 | .242   | .161  | .333  | -.933 | 2000 | 3363 | .049   | .118  | .399  | -.306  | 2000 | 429 | .102   | .141  | .268  | -.831 |
| 2000 | 2364 | .281   | .225  | .003  | -.933 | 2000 | 3364 | .059   | .105  | .408  | -.272  | 2000 | 430 | .144   | .141  | .316  | -.749 |
| 2000 | 2365 | .277   | .220  | .003  | -.933 | 2000 | 3365 | .057   | .108  | .424  | -.272  | 2000 | 431 | .144   | .155  | .390  | -.777 |
| 2000 | 2366 | .239   | .233  | .003  | -.933 | 2000 | 3366 | .051   | .110  | .448  | -.255  | 2000 | 432 | .144   | .162  | .398  | -.732 |
| 2000 | 2367 | .259   | .233  | .899  | -.333 | 2000 | 3367 | .018   | .117  | .404  | -.400  | 2000 | 433 | .003   | .119  | .466  | -.444 |
| 2000 | 2368 | .244   | .220  | .959  | -.333 | 2000 | 3368 | .017   | .105  | .440  | -.375  | 2000 | 434 | .003   | .119  | .489  | -.797 |
| 2000 | 2369 | .244   | .201  | .844  | -.333 | 2000 | 3369 | .026   | .107  | .374  | -.354  | 2000 | 435 | .003   | .120  | .390  | -.489 |
| 2000 | 2370 | .201   | .202  | .953  | -.333 | 2000 | 3370 | .053   | .112  | .423  | -.244  | 2000 | 436 | .003   | .137  | .347  | -.445 |
| 2000 | 2371 | .175   | .212  | .763  | -.333 | 2000 | 3371 | .085   | .111  | .561  | -.221  | 2000 | 437 | .003   | .113  | .333  | -.655 |
| 2000 | 2372 | .199   | .202  | .562  | -.333 | 2000 | 3372 | .081   | .109  | .461  | -.231  | 2000 | 438 | .003   | .110  | .313  | -.999 |
| 2000 | 2373 | .177   | .206  | .799  | -.333 | 2000 | 3373 | .081   | .101  | .449  | -.232  | 2000 | 439 | .003   | .113  | .371  | -.418 |
| 2000 | 2374 | .198   | .206  | .900  | -.333 | 2000 | 3374 | .089   | .112  | .485  | -.200  | 2000 | 440 | .003   | .125  | .423  | -.438 |
| 2000 | 2375 | .169   | .206  | .806  | -.333 | 2000 | 3375 | .065   | .102  | .532  | -.306  | 2000 | 441 | .003   | .117  | .340  | -.448 |
| 2000 | 2376 | .159   | .206  | .666  | -.333 | 2000 | 3376 | .062   | .124  | .515  | -.358  | 2000 | 442 | .003   | .116  | .395  | -.442 |
| 2000 | 2377 | .160   | .206  | .791  | -.333 | 2000 | 3377 | .057   | .102  | .440  | -.284  | 2000 | 443 | .003   | .093  | .370  | -.104 |
| 2000 | 2378 | .155   | .206  | .825  | -.333 | 2000 | 3378 | .066   | .099  | .424  | -.206  | 2000 | 444 | .003   | .104  | .554  | -.067 |
| 2000 | 2379 | .175   | .206  | .839  | -.333 | 2000 | 3379 | .078   | .112  | .444  | -.250  | 2000 | 445 | .003   | .109  | .366  | -.488 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 200 | 446 | .245   | .095  | .592  | -.072  | 210 | 109 | -.137  | .160  | .350  | -.822  | 210 | 159 | -.048  | .120  | .394  | -.755  |
| 200 | 447 | .257   | .099  | .577  | -.053  | 210 | 110 | -.138  | .178  | .383  | -1.079 | 210 | 160 | -.041  | .098  | .330  | -.435  |
| 200 | 448 | .268   | .095  | .661  | -.054  | 210 | 111 | -.140  | .179  | .399  | -1.026 | 210 | 161 | -.014  | .112  | .342  | -.390  |
| 200 | 449 | .233   | .107  | .652  | -.247  | 210 | 112 | -.157  | .144  | .305  | -.665  | 210 | 162 | -.004  | .106  | .342  | -.356  |
| 200 | 450 | .115   | .112  | .508  | -.283  | 210 | 113 | -.190  | .139  | .367  | -.666  | 210 | 163 | .001   | .111  | .364  | -.408  |
| 200 | 701 | -.026  | .109  | .354  | -.356  | 210 | 114 | -.145  | .132  | .277  | -.823  | 210 | 164 | -.000  | .085  | .295  | -.275  |
| 200 | 702 | -.024  | .103  | .427  | -.388  | 210 | 115 | -.156  | .138  | .258  | -.882  | 210 | 165 | -.018  | .120  | .384  | -.466  |
| 200 | 703 | -.029  | .101  | .406  | -.378  | 210 | 116 | -.169  | .119  | .244  | -.749  | 210 | 166 | -.034  | .116  | .384  | -.385  |
| 200 | 705 | -.018  | .096  | .376  | -.348  | 210 | 117 | -.126  | .112  | .241  | -.537  | 210 | 167 | -.044  | .126  | .379  | -.461  |
| 200 | 706 | -.020  | .103  | .342  | -.432  | 210 | 118 | -.131  | .114  | .244  | -.538  | 210 | 168 | -.008  | .105  | .312  | -.364  |
| 200 | 707 | -.022  | .101  | .327  | -.412  | 210 | 119 | -.137  | .123  | .252  | -.631  | 210 | 169 | .001   | .098  | .344  | -.332  |
| 200 | 708 | -.066  | .114  | .456  | -.490  | 210 | 120 | -.144  | .109  | .224  | -.533  | 210 | 170 | .003   | .097  | .342  | -.326  |
| 200 | 710 | -.029  | .108  | .357  | -.453  | 210 | 121 | -.132  | .138  | .360  | -.562  | 210 | 171 | .008   | .103  | .371  | -.339  |
| 200 | 711 | -.023  | .092  | .301  | -.368  | 210 | 122 | -.131  | .134  | .374  | -.553  | 210 | 172 | .010   | .085  | .298  | -.278  |
| 200 | 712 | .002   | .117  | .367  | -.420  | 210 | 123 | -.166  | .145  | .313  | -.789  | 210 | 173 | .008   | .104  | .334  | -.371  |
| 200 | 713 | .001   | .110  | .363  | -.344  | 210 | 124 | -.155  | .113  | .193  | -.653  | 210 | 174 | .007   | .102  | .302  | -.363  |
| 200 | 714 | .002   | .116  | .365  | -.412  | 210 | 125 | -.148  | .114  | .209  | -.517  | 210 | 175 | -.005  | .109  | .374  | -.434  |
| 200 | 716 | .004   | .105  | .345  | -.333  | 210 | 126 | -.154  | .120  | .205  | -.540  | 210 | 176 | -.003  | .097  | .297  | -.315  |
| 200 | 717 | -.000  | .103  | .315  | -.373  | 210 | 127 | -.163  | .129  | .271  | -.731  | 210 | 177 | .006   | .105  | .365  | -.359  |
| 200 | 801 | -.006  | .105  | .312  | -.381  | 210 | 128 | -.174  | .118  | .201  | -.740  | 210 | 178 | .006   | .104  | .363  | -.358  |
| 200 | 802 | -.022  | .117  | .318  | -.430  | 210 | 129 | -.175  | .141  | .331  | -.729  | 210 | 180 | .007   | .094  | .325  | -.317  |
| 200 | 803 | .010   | .098  | .298  | -.342  | 210 | 130 | -.179  | .147  | .313  | -1.081 | 210 | 181 | .023   | .098  | .384  | -.269  |
| 200 | 804 | -.062  | .122  | .498  | -.356  | 210 | 131 | -.176  | .152  | .300  | -.824  | 210 | 182 | .019   | .096  | .372  | -.275  |
| 200 | 901 | -.136  | .143  | .285  | -.642  | 210 | 132 | -.133  | .138  | .283  | -.652  | 210 | 201 | -.259  | .168  | .284  | -.881  |
| 200 | 902 | -.085  | .154  | .401  | -.684  | 210 | 133 | -.176  | .132  | .217  | -.853  | 210 | 202 | -.288  | .184  | .209  | -1.113 |
| 200 | 903 | -.120  | .117  | .327  | -.482  | 210 | 134 | -.181  | .127  | .210  | -.610  | 210 | 203 | -.228  | .188  | .339  | -1.063 |
| 200 | 904 | -.103  | .151  | .474  | -.717  | 210 | 135 | -.205  | .140  | .265  | -.791  | 210 | 204 | -.204  | .167  | .240  | -.961  |
| 200 | 905 | -.134  | .152  | .340  | -.936  | 210 | 136 | -.233  | .126  | .077  | -.984  | 210 | 205 | -.155  | .162  | .424  | -.727  |
| 200 | 906 | -.297  | .185  | .285  | -1.041 | 210 | 137 | -.215  | .168  | .285  | -1.276 | 210 | 206 | -.131  | .157  | .281  | -1.036 |
| 200 | 907 | -.321  | .177  | .245  | -1.055 | 210 | 138 | -.236  | .179  | .268  | -1.448 | 210 | 207 | -.121  | .150  | .348  | -.671  |
| 200 | 908 | -.230  | .176  | .368  | -.890  | 210 | 139 | -.266  | .210  | .326  | -1.474 | 210 | 208 | -.303  | .228  | .246  | -1.295 |
| 200 | 909 | -.185  | .142  | .329  | -.629  | 210 | 140 | -.286  | .180  | .157  | -1.135 | 210 | 209 | -.242  | .205  | .342  | -1.353 |
| 200 | 910 | -.166  | .147  | .432  | -.721  | 210 | 141 | -.123  | .153  | .373  | -.845  | 210 | 210 | -.153  | .193  | .505  | -1.206 |
| 200 | 911 | -.181  | .136  | .302  | -.606  | 210 | 142 | -.117  | .134  | .323  | -.576  | 210 | 211 | -.151  | .159  | .392  | -1.000 |
| 200 | 912 | -.203  | .172  | .370  | -1.011 | 210 | 143 | -.109  | .139  | .379  | -.600  | 210 | 212 | -.114  | .140  | .328  | -.753  |
| 200 | 913 | -.159  | .164  | .381  | -.898  | 210 | 144 | -.135  | .131  | .303  | -.707  | 210 | 213 | -.266  | .218  | .290  | -2.035 |
| 200 | 914 | -.188  | .164  | .264  | -1.200 | 210 | 145 | -.176  | .151  | .254  | -.773  | 210 | 214 | -.243  | .215  | .300  | -1.273 |
| 200 | 915 | -.179  | .203  | .594  | -.940  | 210 | 146 | -.330  | .169  | .233  | -.838  | 210 | 215 | -.213  | .180  | .254  | -1.013 |
| 200 | 916 | -.363  | .165  | .166  | -.962  | 210 | 147 | -.281  | .195  | .248  | -.961  | 210 | 216 | -.206  | .174  | .259  | -.991  |
| 200 | 917 | -.329  | .197  | .298  | -1.210 | 210 | 148 | -.310  | .178  | .176  | -1.181 | 210 | 217 | -.184  | .149  | .242  | -.838  |
| 200 | 918 | -.296  | .182  | .288  | -1.211 | 210 | 149 | -.346  | .198  | .244  | -1.239 | 210 | 218 | -.301  | .220  | .222  | -1.416 |
| 200 | 919 | -.307  | .206  | .293  | -1.446 | 210 | 150 | -.087  | .130  | .387  | -.650  | 210 | 219 | -.257  | .205  | .266  | -1.103 |
| 210 | 101 | -.103  | .143  | .407  | -.762  | 210 | 151 | -.074  | .119  | .391  | -.468  | 210 | 220 | -.218  | .199  | .291  | -1.298 |
| 210 | 102 | -.109  | .130  | .351  | -.803  | 210 | 152 | -.053  | .095  | .335  | -.381  | 210 | 221 | -.237  | .186  | .236  | -1.064 |
| 210 | 103 | -.104  | .139  | .391  | -.777  | 210 | 153 | -.047  | .122  | .347  | -.450  | 210 | 222 | -.183  | .185  | .254  | -.966  |
| 210 | 104 | -.112  | .114  | .275  | -.689  | 210 | 154 | -.059  | .138  | .359  | -.673  | 210 | 223 | -.276  | .222  | .349  | -1.321 |
| 210 | 105 | -.151  | .140  | .253  | -.784  | 210 | 155 | -.084  | .153  | .343  | -.880  | 210 | 224 | -.243  | .209  | .269  | -1.144 |
| 210 | 106 | -.141  | .133  | .279  | -.769  | 210 | 156 | -.125  | .155  | .284  | -1.038 | 210 | 225 | -.214  | .205  | .254  | -1.201 |
| 210 | 107 | -.134  | .138  | .381  | -.784  | 210 | 157 | -.172  | .178  | .303  | -1.162 | 210 | 226 | -.163  | .191  | .349  | -1.319 |
| 210 | 108 | -.142  | .120  | .224  | -.619  | 210 | 158 | -.221  | .194  | .284  | -1.140 | 210 | 227 | -.145  | .181  | .375  | -.976  |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD  | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|------|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 210 | 2228 | 181    | 193   | 277   | -1    | 210 | 329 | 153    | 149   | 770   | -292  | 210 | 378 | 186    | 103   | 441   | -245  |
| 210 | 2229 | 181    | 188   | 357   | -1    | 210 | 330 | 153    | 139   | 770   | -393  | 210 | 379 | 187    | 109   | 509   | -276  |
| 210 | 2330 | 094    | 158   | 389   | -1    | 210 | 331 | 201    | 234   | 437   | -1    | 210 | 380 | 122    | 103   | 453   | -225  |
| 210 | 2331 | 087    | 163   | 355   | -1    | 210 | 332 | 233    | 238   | 244   | -1    | 210 | 381 | 146    | 126   | 606   | -282  |
| 210 | 2332 | 083    | 139   | 300   | -1    | 210 | 333 | 233    | 233   | 944   | -1    | 210 | 382 | 085    | 109   | 456   | -232  |
| 210 | 2333 | 103    | 140   | 321   | -1    | 210 | 334 | 211    | 191   | 1     | -273  | 210 | 383 | 060    | 112   | 380   | -433  |
| 210 | 2334 | 069    | 116   | 309   | -1    | 210 | 335 | 229    | 166   | 756   | -205  | 210 | 384 | 021    | 115   | 449   | -339  |
| 210 | 2335 | 066    | 143   | 432   | -1    | 210 | 336 | 141    | 141   | 754   | -206  | 210 | 401 | 185    | 161   | 372   | -014  |
| 210 | 2336 | 034    | 130   | 439   | -1    | 210 | 337 | 155    | 124   | 554   | -284  | 210 | 402 | 250    | 145   | 264   | -793  |
| 210 | 2337 | 048    | 129   | 389   | -1    | 210 | 338 | 110    | 110   | 635   | -262  | 210 | 403 | 257    | 139   | 176   | -794  |
| 210 | 2338 | 029    | 121   | 434   | -1    | 210 | 339 | 019    | 113   | 515   | -396  | 210 | 404 | 320    | 158   | 188   | -914  |
| 210 | 2339 | 008    | 099   | 333   | -1    | 210 | 340 | 233    | 197   | 517   | -949  | 210 | 405 | 178    | 153   | 430   | -     |
| 210 | 2340 | 015    | 108   | 333   | -1    | 210 | 341 | 233    | 239   | 303   | -1    | 210 | 406 | 363    | 189   | 259   | -1    |
| 210 | 2341 | 008    | 103   | 329   | -1    | 210 | 342 | 218    | 180   | 836   | -296  | 210 | 407 | 076    | 173   | 524   | -573  |
| 210 | 2342 | 013    | 095   | 320   | -1    | 210 | 343 | 161    | 161   | 889   | -229  | 210 | 408 | 145    | 129   | 302   | -626  |
| 210 | 2343 | 013    | 105   | 333   | -1    | 210 | 344 | 173    | 134   | 623   | -284  | 210 | 409 | 187    | 137   | 267   | -925  |
| 210 | 2344 | 032    | 110   | 450   | -1    | 210 | 345 | 176    | 142   | 646   | -275  | 210 | 410 | 229    | 147   | 369   | -747  |
| 210 | 2345 | 001    | 107   | 333   | -1    | 210 | 346 | 130    | 128   | 558   | -284  | 210 | 411 | 042    | 168   | 531   | -618  |
| 210 | 2346 | 013    | 111   | 350   | -1    | 210 | 347 | 079    | 122   | 437   | -373  | 210 | 412 | 252    | 184   | 861   | -431  |
| 210 | 2347 | 010    | 114   | 410   | -1    | 210 | 348 | 020    | 129   | 498   | -414  | 210 | 413 | 156    | 143   | 264   | -713  |
| 210 | 2348 | 003    | 114   | 388   | -1    | 210 | 349 | 188    | 183   | 461   | -1    | 210 | 414 | 165    | 147   | 312   | -721  |
| 210 | 2349 | 014    | 113   | 333   | -1    | 210 | 350 | 312    | 223   | 207   | -1    | 210 | 415 | 251    | 161   | 204   | -870  |
| 210 | 2350 | 009    | 101   | 377   | -1    | 210 | 351 | 077    | 138   | 536   | -354  | 210 | 416 | 098    | 178   | 477   | -963  |
| 210 | 2351 | 019    | 172   | 398   | -1    | 210 | 352 | 123    | 133   | 749   | -377  | 210 | 417 | 236    | 189   | 605   | -378  |
| 210 | 2352 | 264    | 169   | 333   | -1    | 210 | 353 | 11     | 123   | 591   | -258  | 210 | 418 | 250    | 176   | 347   | -1    |
| 210 | 2353 | 082    | 164   | 79    | -1    | 210 | 354 | 078    | 119   | 554   | -313  | 210 | 419 | 290    | 172   | 166   | -1    |
| 210 | 2354 | 004    | 181   | 444   | -1    | 210 | 355 | 094    | 113   | 487   | -326  | 210 | 420 | 334    | 186   | 256   | -1    |
| 210 | 2355 | 499    | 189   | 364   | -1    | 210 | 356 | 062    | 126   | 536   | -335  | 210 | 421 | 136    | 168   | 429   | -676  |
| 210 | 2356 | 206    | 179   | 322   | -1    | 210 | 357 | 025    | 113   | 422   | -356  | 210 | 422 | 170    | 178   | 739   | -489  |
| 210 | 2357 | 257    | 183   | 400   | -1    | 210 | 358 | 130    | 160   | 339   | -686  | 210 | 423 | 319    | 182   | 190   | -1    |
| 210 | 2358 | 361    | 193   | 588   | -1    | 210 | 359 | 202    | 194   | 305   | -1    | 210 | 424 | 386    | 227   | 213   | -1    |
| 210 | 2359 | 161    | 192   | 122   | -1    | 210 | 360 | 112    | 038   | 399   | -338  | 210 | 425 | 348    | 189   | 146   | -1    |
| 210 | 2360 | 199    | 174   | 222   | -1    | 210 | 361 | 043    | 107   | 435   | -348  | 210 | 426 | 116    | 164   | 518   | -783  |
| 210 | 2361 | 224    | 162   | 341   | -1    | 210 | 362 | 106    | 106   | 449   | -344  | 210 | 427 | 113    | 171   | 694   | -523  |
| 210 | 2362 | 291    | 171   | 223   | -1    | 210 | 363 | 043    | 107   | 424   | -329  | 210 | 428 | 287    | 217   | 227   | -1    |
| 210 | 2363 | 280    | 186   | 441   | -1    | 210 | 364 | 104    | 104   | 318   | -378  | 210 | 429 | 297    | 224   | 286   | -1    |
| 210 | 2364 | 484    | 186   | 441   | -1    | 210 | 365 | 040    | 112   | 409   | -348  | 210 | 430 | 192    | 191   | 279   | -1    |
| 210 | 2365 | 420    | 202   | 333   | -1    | 210 | 366 | 011    | 111   | 386   | -431  | 210 | 431 | 061    | 165   | 572   | -790  |
| 210 | 2366 | 419    | 202   | 333   | -1    | 210 | 367 | 062    | 133   | 320   | -597  | 210 | 432 | 045    | 148   | 617   | -588  |
| 210 | 2367 | 338    | 189   | 94    | -1    | 210 | 368 | 110    | 152   | 324   | -801  | 210 | 433 | 069    | 136   | 338   | -599  |
| 210 | 2368 | 280    | 176   | 558   | -1    | 210 | 369 | 079    | 122   | 567   | -325  | 210 | 434 | 045    | 140   | 435   | -528  |
| 210 | 2369 | 232    | 171   | 955   | -1    | 210 | 370 | 094    | 116   | 559   | -262  | 210 | 435 | 027    | 138   | 464   | -674  |
| 210 | 2370 | 111    | 167   | 704   | -1    | 210 | 371 | 104    | 114   | 568   | -224  | 210 | 436 | 005    | 121   | 395   | -449  |
| 210 | 2371 | 200    | 213   | 525   | -1    | 210 | 372 | 102    | 113   | 468   | -278  | 210 | 437 | 036    | 118   | 419   | -361  |
| 210 | 2372 | 311    | 214   | 234   | -1    | 210 | 373 | 130    | 121   | 626   | -250  | 210 | 438 | 056    | 104   | 450   | -295  |
| 210 | 2373 | 431    | 219   | 092   | -1    | 210 | 374 | 127    | 116   | 609   | -189  | 210 | 439 | 021    | 111   | 388   | -347  |
| 210 | 2374 | 420    | 213   | 400   | -1    | 210 | 375 | 076    | 101   | 413   | -258  | 210 | 440 | 023    | 115   | 453   | -382  |
| 210 | 2375 | 374    | 187   | 101   | -1    | 210 | 376 | 047    | 107   | 382   | -308  | 210 | 441 | 013    | 113   | 418   | -323  |
| 210 | 2376 | 266    | 163   | 28    | -1    | 210 | 377 | 042    | 105   | 523   | -346  | 210 | 442 | 041    | 127   | 409   | -394  |
| 210 | 2377 | 257    | 159   | 738   | -1    | 210 | 378 | 11     | 106   | 491   | -191  | 210 | 443 | 364    | 092   | 686   | -035  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 210 | 444 | .281   | .093  | .625  | -.031  | 220 | 107 | -.192  | .157  | .358  | -.904  | 220 | 157 | -.358  | .199  | .273  | -1.350 |
| 210 | 445 | .339   | .107  | .745  | -.035  | 220 | 108 | -.221  | .138  | .235  | -.817  | 220 | 158 | -.457  | .208  | .173  | -1.311 |
| 210 | 446 | .267   | .087  | .535  | -.009  | 220 | 109 | -.213  | .157  | .280  | -.906  | 220 | 159 | -.018  | .135  | .426  | -1.530 |
| 210 | 447 | .295   | .095  | .591  | -.012  | 220 | 110 | -.207  | .179  | .323  | -.888  | 220 | 160 | -.009  | .115  | .378  | -1.381 |
| 210 | 448 | .295   | .095  | .636  | -.026  | 220 | 111 | -.192  | .170  | .342  | -1.099 | 220 | 161 | -.009  | .111  | .370  | -1.373 |
| 210 | 449 | .264   | .100  | .574  | -.075  | 220 | 112 | -.210  | .127  | .168  | -.730  | 220 | 162 | .014   | .104  | .410  | -1.336 |
| 210 | 450 | .191   | .107  | .587  | -.188  | 220 | 113 | -.261  | .141  | .158  | -.799  | 220 | 163 | .008   | .113  | .505  | -1.412 |
| 210 | 701 | .022   | .091  | .367  | -.235  | 220 | 114 | -.163  | .124  | .292  | -.700  | 220 | 164 | -.012  | .082  | .247  | -1.286 |
| 210 | 702 | .007   | .106  | .347  | -.390  | 220 | 115 | -.170  | .132  | .254  | -.673  | 220 | 165 | -.086  | .139  | .444  | -1.703 |
| 210 | 703 | .006   | .104  | .312  | -.390  | 220 | 116 | -.213  | .122  | .146  | -.663  | 220 | 166 | -.140  | .147  | .294  | -1.731 |
| 210 | 705 | .022   | .097  | .351  | -.346  | 220 | 117 | -.161  | .128  | .339  | -.625  | 220 | 167 | -.206  | .172  | .254  | -1.942 |
| 210 | 706 | .011   | .116  | .433  | -.364  | 220 | 118 | -.170  | .132  | .268  | -.718  | 220 | 168 | .011   | .110  | .351  | -1.475 |
| 210 | 707 | -.002  | .113  | .395  | -.348  | 220 | 119 | -.167  | .142  | .302  | -.692  | 220 | 169 | .042   | .110  | .382  | -1.381 |
| 210 | 708 | -.048  | .117  | .310  | -.346  | 220 | 120 | -.194  | .130  | .257  | -.708  | 220 | 170 | .041   | .108  | .405  | -1.380 |
| 210 | 710 | -.010  | .120  | .413  | -.354  | 220 | 121 | -.157  | .140  | .274  | -.599  | 220 | 171 | .042   | .114  | .429  | -1.355 |
| 210 | 711 | -.009  | .106  | .368  | -.324  | 220 | 122 | -.155  | .139  | .305  | -.616  | 220 | 172 | .048   | .097  | .360  | -1.238 |
| 210 | 712 | -.006  | .116  | .367  | -.359  | 220 | 123 | -.189  | .150  | .248  | -.661  | 220 | 173 | .018   | .112  | .350  | -1.346 |
| 210 | 713 | -.005  | .110  | .344  | -.342  | 220 | 124 | -.180  | .124  | .172  | -.542  | 220 | 174 | -.001  | .108  | .301  | -1.380 |
| 210 | 714 | .001   | .115  | .367  | -.356  | 220 | 125 | -.222  | .122  | .149  | -.706  | 220 | 175 | .014   | .116  | .315  | -1.415 |
| 210 | 716 | .002   | .107  | .334  | -.349  | 220 | 126 | -.227  | .127  | .173  | -.693  | 220 | 176 | -.000  | .100  | .295  | -1.375 |
| 210 | 717 | .021   | .102  | .410  | -.319  | 220 | 127 | -.237  | .134  | .195  | -.884  | 220 | 177 | .032   | .112  | .378  | -1.377 |
| 210 | 801 | .025   | .103  | .403  | -.289  | 220 | 128 | -.244  | .119  | .133  | -.648  | 220 | 178 | .037   | .112  | .390  | -1.370 |
| 210 | 802 | .014   | .113  | .389  | -.309  | 220 | 129 | -.221  | .130  | .271  | -.653  | 220 | 180 | .033   | .094  | .327  | -1.277 |
| 210 | 803 | .036   | .099  | .478  | -.339  | 220 | 130 | -.219  | .132  | .275  | -.742  | 220 | 181 | .025   | .118  | .375  | -1.356 |
| 210 | 804 | .060   | .125  | .439  | -.365  | 220 | 131 | -.220  | .137  | .225  | -.781  | 220 | 182 | .024   | .116  | .363  | -1.340 |
| 210 | 901 | -.210  | .149  | .257  | -.921  | 220 | 132 | -.192  | .114  | .225  | -.587  | 220 | 201 | -.211  | .151  | .258  | -1.787 |
| 210 | 902 | -.154  | .186  | .542  | -.817  | 220 | 133 | -.211  | .135  | .392  | -.703  | 220 | 202 | -.242  | .167  | .324  | -1.627 |
| 210 | 903 | -.180  | .123  | .200  | -.565  | 220 | 134 | -.226  | .138  | .349  | -.909  | 220 | 203 | -.162  | .152  | .286  | -1.911 |
| 210 | 904 | -.127  | .152  | .536  | -.959  | 220 | 135 | -.249  | .154  | .407  | -1.007 | 220 | 204 | -.154  | .144  | .309  | -1.805 |
| 210 | 905 | -.127  | .150  | .311  | -.893  | 220 | 136 | -.267  | .140  | .255  | -1.077 | 220 | 205 | -.148  | .145  | .301  | -1.794 |
| 210 | 906 | -.389  | .170  | .155  | -1.058 | 220 | 137 | -.293  | .159  | .251  | -1.105 | 220 | 206 | -.154  | .141  | .338  | -1.863 |
| 210 | 907 | -.433  | .165  | .011  | -1.094 | 220 | 138 | -.351  | .186  | .199  | -1.032 | 220 | 207 | -.157  | .161  | .372  | -1.828 |
| 210 | 908 | -.407  | .183  | .204  | -1.004 | 220 | 139 | -.405  | .223  | .235  | -1.292 | 220 | 208 | -.176  | .136  | .233  | -1.745 |
| 210 | 909 | -.261  | .141  | .236  | -.762  | 220 | 140 | -.436  | .200  | .060  | -1.059 | 220 | 209 | -.143  | .136  | .257  | -1.763 |
| 210 | 910 | -.209  | .151  | .370  | -.804  | 220 | 141 | -.142  | .141  | .280  | -.761  | 220 | 210 | -.146  | .137  | .288  | -1.933 |
| 210 | 911 | -.214  | .138  | .207  | -.749  | 220 | 142 | -.164  | .133  | .280  | -.708  | 220 | 211 | -.148  | .134  | .330  | -1.770 |
| 210 | 912 | -.280  | .193  | .428  | -1.238 | 220 | 143 | -.187  | .142  | .267  | -.807  | 220 | 212 | -.132  | .126  | .234  | -1.605 |
| 210 | 913 | -.194  | .169  | .394  | -.940  | 220 | 144 | -.244  | .134  | .194  | -.771  | 220 | 213 | -.136  | .164  | .412  | -1.235 |
| 210 | 914 | -.197  | .179  | .361  | -1.220 | 220 | 145 | -.279  | .161  | .342  | -.953  | 220 | 214 | -.178  | .127  | .258  | -1.648 |
| 210 | 915 | -.328  | .196  | .501  | -1.059 | 220 | 146 | -.326  | .188  | .251  | -1.110 | 220 | 215 | -.170  | .142  | .205  | -1.985 |
| 210 | 916 | -.496  | .176  | .090  | -1.167 | 220 | 147 | -.367  | .207  | .203  | -1.245 | 220 | 216 | -.168  | .158  | .233  | -1.027 |
| 210 | 917 | -.418  | .222  | .240  | -1.359 | 220 | 148 | -.394  | .183  | .119  | -1.063 | 220 | 217 | -.177  | .130  | .183  | -1.835 |
| 210 | 918 | -.326  | .204  | .377  | -1.340 | 220 | 149 | -.473  | .211  | .082  | -1.248 | 220 | 218 | -.212  | .157  | .203  | -1.136 |
| 210 | 919 | -.326  | .223  | .409  | -1.711 | 220 | 150 | -.097  | .139  | .299  | -.720  | 220 | 219 | -.218  | .166  | .265  | -1.237 |
| 220 | 101 | -.143  | .152  | .361  | -.838  | 220 | 151 | -.103  | .143  | .325  | -.718  | 220 | 220 | -.223  | .181  | .158  | -1.237 |
| 220 | 102 | -.153  | .142  | .314  | -.751  | 220 | 152 | -.100  | .120  | .228  | -.640  | 220 | 221 | -.221  | .161  | .120  | -1.095 |
| 220 | 103 | -.150  | .147  | .351  | -.783  | 220 | 153 | -.112  | .147  | .338  | -.823  | 220 | 222 | -.217  | .144  | .149  | -1.147 |
| 220 | 104 | -.162  | .123  | .255  | -.711  | 220 | 154 | -.151  | .170  | .332  | -.974  | 220 | 223 | -.207  | .193  | .358  | -1.380 |
| 220 | 105 | -.195  | .144  | .344  | -.798  | 220 | 155 | -.230  | .194  | .291  | -1.223 | 220 | 224 | -.180  | .192  | .468  | -1.488 |
| 220 | 106 | -.189  | .144  | .400  | -.810  | 220 | 156 | -.316  | .185  | .159  | -1.072 | 220 | 225 | -.177  | .169  | .276  | -1.456 |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|------|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 2200 | 442 | .125   | .130  | .338  | -.286 | 230 | 105 | -.210  | .152  | .306  | -.792  | 230 | 155 | -.291  | .199  | .304  | -1.304 |
| 2200 | 443 | .400   | .114  | .735  | -.123 | 230 | 106 | -.227  | .157  | .237  | -.991  | 230 | 156 | -.405  | .197  | .115  | -1.381 |
| 2200 | 444 | .314   | .091  | .606  | -.023 | 230 | 107 | -.257  | .176  | .336  | -1.120 | 230 | 157 | -.487  | .224  | .078  | -1.760 |
| 2200 | 445 | .374   | .108  | .783  | -.054 | 230 | 108 | -.263  | .159  | .214  | -.944  | 230 | 158 | -.581  | .228  | .079  | -1.389 |
| 2200 | 446 | .286   | .095  | .661  | -.003 | 230 | 109 | -.259  | .174  | .239  | -1.096 | 230 | 159 | -.003  | .128  | .457  | -.398  |
| 2200 | 447 | .316   | .093  | .653  | -.020 | 230 | 110 | -.251  | .187  | .313  | -1.044 | 230 | 160 | -.009  | .114  | .375  | -.386  |
| 2200 | 448 | .321   | .096  | .638  | -.069 | 230 | 111 | -.243  | .160  | .293  | -.876  | 230 | 161 | -.002  | .125  | .504  | -.431  |
| 2200 | 449 | .333   | .122  | .722  | -.101 | 230 | 112 | -.288  | .124  | .127  | -.788  | 230 | 162 | -.001  | .119  | .419  | -.438  |
| 2200 | 450 | .229   | .096  | .591  | -.129 | 230 | 113 | -.314  | .159  | .170  | -.924  | 230 | 163 | -.006  | .127  | .387  | -.466  |
| 2200 | 701 | -.003  | .110  | .350  | -.334 | 230 | 114 | -.130  | .133  | .282  | -.557  | 230 | 164 | -.033  | .097  | .224  | -.359  |
| 2200 | 702 | -.003  | .111  | .437  | -.333 | 230 | 115 | -.139  | .142  | .339  | -.622  | 230 | 165 | -.033  | .154  | .907  | -.807  |
| 2200 | 703 | -.025  | .109  | .410  | -.343 | 230 | 116 | -.210  | .142  | .242  | -.631  | 230 | 166 | -.000  | .159  | .222  | -.901  |
| 2200 | 705 | -.028  | .102  | .450  | -.272 | 230 | 117 | -.229  | .137  | .211  | -.814  | 230 | 167 | -.000  | .181  | .174  | -1.143 |
| 2200 | 706 | -.018  | .126  | .354  | -.449 | 230 | 118 | -.257  | .143  | .167  | -.937  | 230 | 168 | -.023  | .113  | .411  | -.343  |
| 2200 | 707 | -.032  | .123  | .347  | -.456 | 230 | 119 | -.257  | .155  | .203  | -1.139 | 230 | 169 | -.037  | .108  | .367  | -.281  |
| 2200 | 708 | -.053  | .131  | .403  | -.539 | 230 | 120 | -.244  | .130  | .172  | -.932  | 230 | 170 | -.029  | .107  | .355  | -.323  |
| 2200 | 710 | -.053  | .122  | .421  | -.533 | 230 | 121 | -.209  | .148  | .314  | -.769  | 230 | 171 | -.029  | .115  | .354  | -.355  |
| 2200 | 711 | -.039  | .118  | .309  | -.391 | 230 | 122 | -.221  | .148  | .313  | -.773  | 230 | 172 | -.033  | .103  | .363  | -.287  |
| 2200 | 712 | -.063  | .109  | .358  | -.364 | 230 | 123 | -.185  | .142  | .394  | -.647  | 230 | 173 | -.027  | .116  | .395  | -.381  |
| 2200 | 713 | -.024  | .121  | .329  | -.604 | 230 | 124 | -.200  | .124  | .182  | -.627  | 230 | 174 | -.013  | .116  | .349  | -.451  |
| 2200 | 714 | -.014  | .109  | .417  | -.333 | 230 | 125 | -.224  | .127  | .174  | -.700  | 230 | 175 | -.027  | .127  | .461  | -.558  |
| 2200 | 716 | -.032  | .102  | .349  | -.322 | 230 | 126 | -.240  | .134  | .147  | -.683  | 230 | 176 | -.007  | .107  | .341  | -.383  |
| 2200 | 717 | -.003  | .120  | .531  | -.362 | 230 | 127 | -.250  | .141  | .164  | -.848  | 230 | 177 | -.042  | .111  | .396  | -.300  |
| 2200 | 801 | -.025  | .115  | .502  | -.345 | 230 | 128 | -.254  | .125  | .124  | -.679  | 230 | 178 | -.046  | .112  | .380  | -.293  |
| 2200 | 802 | -.009  | .127  | .468  | -.455 | 230 | 129 | -.281  | .156  | .220  | -.913  | 230 | 180 | -.028  | .162  | .374  | -.290  |
| 2200 | 803 | -.101  | .108  | .560  | -.270 | 230 | 130 | -.271  | .155  | .274  | -.827  | 230 | 181 | -.026  | .115  | .398  | -.389  |
| 2200 | 804 | -.097  | .129  | .571  | -.313 | 230 | 131 | -.278  | .166  | .240  | -.978  | 230 | 182 | -.024  | .114  | .402  | -.370  |
| 2200 | 901 | -.242  | .147  | .222  | -.792 | 230 | 132 | -.217  | .123  | .163  | -.794  | 230 | 201 | -.159  | .134  | .284  | -.717  |
| 2200 | 902 | -.163  | .179  | .463  | -.897 | 230 | 133 | -.222  | .142  | .192  | -.709  | 230 | 202 | -.174  | .149  | .341  | -.730  |
| 2200 | 903 | -.211  | .130  | .212  | -.657 | 230 | 134 | -.239  | .145  | .162  | -.683  | 230 | 203 | -.147  | .137  | .351  | -.687  |
| 2200 | 904 | -.199  | .156  | .366  | -.841 | 230 | 135 | -.261  | .157  | .222  | -.793  | 230 | 204 | -.120  | .128  | .295  | -.796  |
| 2200 | 905 | -.172  | .138  | .280  | -.704 | 230 | 136 | -.282  | .138  | .188  | -.862  | 230 | 205 | -.113  | .125  | .329  | -.581  |
| 2200 | 906 | -.497  | .164  | .610  | -.126 | 230 | 137 | -.347  | .175  | .151  | -1.161 | 230 | 206 | -.120  | .134  | .321  | -.600  |
| 2200 | 907 | -.552  | .152  | .117  | -.158 | 230 | 138 | -.406  | .197  | .147  | -1.246 | 230 | 207 | -.146  | .149  | .381  | -.687  |
| 2200 | 908 | -.495  | .168  | .014  | -.117 | 230 | 139 | -.424  | .215  | .275  | -1.292 | 230 | 208 | -.142  | .126  | .304  | -.513  |
| 2200 | 909 | -.312  | .134  | .149  | -.826 | 230 | 140 | -.467  | .200  | .028  | -1.213 | 230 | 209 | -.127  | .121  | .251  | -.781  |
| 2200 | 910 | -.265  | .141  | .291  | -.728 | 230 | 141 | -.168  | .146  | .299  | -.734  | 230 | 210 | -.109  | .124  | .352  | -.477  |
| 2200 | 911 | -.265  | .124  | .156  | -.685 | 230 | 142 | -.195  | .143  | .250  | -.709  | 230 | 211 | -.109  | .120  | .299  | -.509  |
| 2200 | 912 | -.301  | .162  | .197  | -.999 | 230 | 143 | -.221  | .158  | .317  | -.842  | 230 | 212 | -.137  | .117  | .299  | -.573  |
| 2200 | 913 | -.219  | .150  | .272  | -.823 | 230 | 144 | -.291  | .151  | .202  | -.950  | 230 | 213 | -.152  | .116  | .202  | -.604  |
| 2200 | 914 | -.191  | .160  | .374  | -.782 | 230 | 145 | -.333  | .190  | .249  | -1.202 | 230 | 214 | -.147  | .120  | .287  | -.512  |
| 2200 | 915 | -.394  | .167  | .177  | -.076 | 230 | 146 | -.394  | .188  | .113  | -1.118 | 230 | 215 | -.153  | .114  | .219  | -.622  |
| 2200 | 916 | -.538  | .153  | .052  | -.108 | 230 | 147 | -.451  | .205  | .133  | -1.443 | 230 | 216 | -.167  | .117  | .160  | -.523  |
| 2200 | 917 | -.485  | .175  | .125  | -.211 | 230 | 148 | -.463  | .173  | .039  | -1.207 | 230 | 217 | -.173  | .105  | .220  | -.538  |
| 2200 | 918 | -.355  | .188  | .188  | -.047 | 230 | 149 | -.486  | .200  | .163  | -1.251 | 230 | 218 | -.170  | .144  | .234  | -.708  |
| 2200 | 919 | -.364  | .203  | .225  | -.381 | 230 | 150 | -.080  | .123  | .294  | -.594  | 230 | 219 | -.154  | .118  | .215  | -.723  |
| 2300 | 101 | -.120  | .145  | .455  | -.662 | 230 | 151 | -.086  | .129  | .299  | -.606  | 230 | 220 | -.165  | .119  | .176  | -.848  |
| 2300 | 102 | -.140  | .140  | .332  | -.704 | 230 | 152 | -.074  | .105  | .212  | -.456  | 230 | 221 | -.147  | .118  | .255  | -.592  |
| 2300 | 103 | -.132  | .149  | .332  | -.693 | 230 | 153 | -.086  | .152  | .420  | -.779  | 230 | 222 | -.166  | .116  | .198  | -.516  |
| 2300 | 104 | -.163  | .124  | .269  | -.618 | 230 | 154 | -.156  | .171  | .405  | -.830  | 230 | 223 | -.133  | .141  | .289  | -.736  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|------|-----|--------|-------|-------|--------|------|-----|--------|-------|-------|--------|------|-----|--------|-------|-------|-------|
| 2330 | 224 | .151   | .140  | .234  | -1.861 | 2330 | 324 | .379   | .164  | .928  | -1.155 | 2330 | 374 | .022   | .100  | .117  | -     |
| 2330 | 225 | .146   | .142  | .254  | -1.819 | 2330 | 325 | .331   | .144  | .949  | -1.094 | 2330 | 375 | .017   | .103  | .113  | -     |
| 2330 | 226 | .144   | .120  | .251  | -1.751 | 2330 | 326 | .299   | .134  | .799  | -1.082 | 2330 | 376 | .017   | .103  | .118  | -     |
| 2330 | 227 | .134   | .125  | .364  | -1.770 | 2330 | 327 | .240   | .124  | .647  | -1.201 | 2330 | 377 | .177   | .118  | .611  | -     |
| 2330 | 228 | .130   | .138  | .240  | -1.853 | 2330 | 328 | .145   | .135  | .576  | -1.365 | 2330 | 378 | .177   | .114  | .663  | -     |
| 2330 | 229 | .103   | .142  | .352  | -1.513 | 2330 | 329 | .034   | .119  | .434  | -1.375 | 2330 | 379 | .145   | .093  | .463  | -     |
| 2330 | 230 | .077   | .129  | .277  | -1.881 | 2330 | 330 | -.226  | .129  | .183  | -1.709 | 2330 | 380 | .150   | .101  | .447  | -     |
| 2330 | 231 | .087   | .126  | .300  | -1.033 | 2330 | 331 | .161   | .118  | .231  | -1.555 | 2330 | 381 | .120   | .119  | .532  | -     |
| 2330 | 232 | .095   | .126  | .236  | -1.527 | 2330 | 332 | .432   | .164  | 1.189 | -1.016 | 2330 | 382 | .032   | .090  | .323  | -     |
| 2330 | 233 | .049   | .129  | .420  | -1.681 | 2330 | 333 | .375   | .145  | .896  | -1.009 | 2330 | 383 | .004   | .110  | .318  | -     |
| 2330 | 234 | .040   | .123  | .357  | -1.739 | 2330 | 334 | .328   | .156  | .847  | -1.180 | 2330 | 384 | .005   | .111  | .383  | -     |
| 2330 | 235 | .059   | .120  | .391  | -1.588 | 2330 | 335 | .281   | .123  | .744  | -1.122 | 2330 | 401 | .286   | .133  | .268  | -     |
| 2330 | 236 | .049   | .118  | .326  | -1.574 | 2330 | 336 | .187   | .107  | .552  | -1.158 | 2330 | 402 | .481   | .151  | .048  | -     |
| 2330 | 237 | .062   | .104  | .269  | -1.449 | 2330 | 337 | .123   | .115  | .560  | -1.187 | 2330 | 403 | .386   | .151  | .065  | -     |
| 2330 | 238 | .010   | .122  | .376  | -1.457 | 2330 | 338 | .011   | .114  | .429  | -1.382 | 2330 | 404 | .293   | .158  | .221  | -     |
| 2330 | 239 | .004   | .109  | .293  | -1.444 | 2330 | 339 | -.232  | .123  | .251  | -1.602 | 2330 | 405 | .066   | .152  | .430  | -     |
| 2330 | 240 | .015   | .106  | .395  | -1.428 | 2330 | 340 | .160   | .127  | .212  | -1.581 | 2330 | 406 | .482   | .163  | .170  | -     |
| 2330 | 241 | .001   | .112  | .404  | -1.361 | 2330 | 341 | .375   | .151  | .869  | -1.084 | 2330 | 407 | .088   | .166  | .488  | -     |
| 2330 | 242 | .003   | .121  | .412  | -1.387 | 2330 | 342 | .300   | .131  | .675  | -1.166 | 2330 | 408 | .185   | .126  | .243  | -     |
| 2330 | 243 | .037   | .103  | .304  | -1.422 | 2330 | 343 | .255   | .138  | .688  | -1.102 | 2330 | 409 | .261   | .136  | .170  | -     |
| 2330 | 244 | .015   | .127  | .388  | -1.381 | 2330 | 344 | .200   | .115  | .574  | -1.161 | 2330 | 410 | .053   | .165  | .510  | -     |
| 2330 | 245 | .002   | .123  | .405  | -1.441 | 2330 | 345 | .180   | .110  | .585  | -1.134 | 2330 | 411 | .284   | .184  | 1.025 | -     |
| 2330 | 246 | .009   | .112  | .402  | -1.364 | 2330 | 346 | .091   | .103  | .406  | -1.211 | 2330 | 412 | .521   | .198  | 1.245 | -     |
| 2330 | 247 | .016   | .114  | .438  | -1.436 | 2330 | 347 | .004   | .113  | .376  | -1.385 | 2330 | 413 | .293   | .134  | .181  | -     |
| 2330 | 248 | .000   | .120  | .376  | -1.377 | 2330 | 348 | .182   | .134  | .246  | -1.792 | 2330 | 414 | .293   | .155  | .160  | -     |
| 2330 | 249 | .026   | .119  | .349  | -1.425 | 2330 | 349 | .129   | .135  | .272  | -1.943 | 2330 | 415 | .090   | .165  | .416  | -     |
| 2330 | 250 | .002   | .115  | .391  | -1.422 | 2330 | 350 | .303   | .158  | .902  | -1.130 | 2330 | 416 | .196   | .174  | .887  | -     |
| 2330 | 301 | .107   | .164  | .484  | -1.620 | 2330 | 351 | .224   | .130  | .656  | -1.179 | 2330 | 417 | .485   | .167  | 1.024 | -     |
| 2330 | 302 | .361   | .169  | .181  | -1.926 | 2330 | 352 | .196   | .116  | .525  | -1.190 | 2330 | 418 | .393   | .151  | .201  | -     |
| 2330 | 303 | .082   | .154  | .472  | -1.589 | 2330 | 353 | .172   | .118  | .546  | -1.197 | 2330 | 419 | .359   | .154  | .096  | -     |
| 2330 | 304 | .368   | .166  | .215  | -1.901 | 2330 | 354 | .091   | .111  | .503  | -1.317 | 2330 | 420 | .146   | .162  | .350  | -     |
| 2330 | 305 | .548   | .191  | .039  | -1.393 | 2330 | 355 | .069   | .105  | .403  | -1.268 | 2330 | 421 | .221   | .156  | .687  | -     |
| 2330 | 306 | .336   | .175  | .253  | -1.863 | 2330 | 356 | .005   | .109  | .362  | -1.294 | 2330 | 422 | .447   | .173  | 1.082 | -     |
| 2330 | 307 | .329   | .165  | .228  | -1.907 | 2330 | 357 | .146   | .120  | .240  | -1.514 | 2330 | 423 | .402   | .164  | .028  | -     |
| 2330 | 308 | .370   | .172  | .212  | -1.226 | 2330 | 358 | .116   | .122  | .248  | -1.607 | 2330 | 424 | .442   | .178  | .088  | -     |
| 2330 | 309 | .356   | .162  | .203  | -1.945 | 2330 | 359 | .242   | .124  | .620  | -1.137 | 2330 | 425 | .153   | .173  | .376  | -     |
| 2330 | 310 | .268   | .151  | .256  | -1.870 | 2330 | 360 | .169   | .145  | .723  | -1.282 | 2330 | 426 | .176   | .164  | .717  | -     |
| 2330 | 311 | .261   | .148  | .217  | -1.765 | 2330 | 361 | .146   | .094  | .472  | -1.154 | 2330 | 427 | .371   | .149  | 1.021 | -     |
| 2330 | 312 | .253   | .151  | .219  | -1.030 | 2330 | 362 | .124   | .094  | .475  | -1.175 | 2330 | 428 | .580   | .200  | .083  | -     |
| 2330 | 313 | .204   | .141  | .301  | -1.728 | 2330 | 363 | .113   | .096  | .419  | -1.164 | 2330 | 429 | .451   | .217  | .245  | -     |
| 2330 | 314 | .492   | .191  | 1.146 | -1.007 | 2330 | 364 | .068   | .101  | .390  | -1.304 | 2330 | 430 | .166   | .161  | .335  | -     |
| 2330 | 315 | .322   | .156  | .839  | -1.168 | 2330 | 365 | .018   | .099  | .330  | -1.319 | 2330 | 431 | .153   | .148  | .713  | -     |
| 2330 | 316 | .274   | .139  | .717  | -1.154 | 2330 | 366 | .091   | .113  | .304  | -1.624 | 2330 | 432 | .352   | .159  | .920  | -     |
| 2330 | 317 | .253   | .129  | .708  | -1.162 | 2330 | 367 | .063   | .126  | .303  | -1.575 | 2330 | 433 | .356   | .190  | .233  | -     |
| 2330 | 318 | .195   | .131  | .622  | -1.260 | 2330 | 368 | .191   | .142  | .666  | -1.361 | 2330 | 434 | .261   | .179  | .309  | -     |
| 2330 | 319 | .146   | .122  | .601  | -1.264 | 2330 | 369 | .169   | .118  | .611  | -1.233 | 2330 | 435 | .051   | .142  | .399  | -     |
| 2330 | 320 | .038   | .109  | .450  | -1.343 | 2330 | 370 | .152   | .104  | .467  | -1.183 | 2330 | 436 | .122   | .150  | .734  | -     |
| 2330 | 321 | .198   | .132  | .242  | -1.606 | 2330 | 371 | .142   | .109  | .500  | -1.201 | 2330 | 437 | .293   | .146  | .913  | -     |
| 2330 | 322 | .139   | .124  | .248  | -1.616 | 2330 | 372 | .148   | .101  | .521  | -1.137 | 2330 | 438 | .044   | .109  | .382  | -     |
| 2330 | 323 | .521   | .168  | 1.050 | -1.098 | 2330 | 373 | .113   | .094  | .413  | -1.208 | 2330 | 439 | .019   | .128  | .414  | -     |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|------|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 2300 | 440 | .063   | .127  | .483  | -.577  | 240 | 103 | -.170  | .156  | .387  | -.811  | 240 | 133 | -.044  | .137  | .379  | -.547  |
| 2300 | 441 | .150   | .136  | .583  | -.272  | 240 | 104 | -.211  | .149  | .185  | -.830  | 240 | 134 | -.106  | .160  | .373  | -.693  |
| 2300 | 442 | .210   | .152  | .774  | -.249  | 240 | 105 | -.198  | .184  | .469  | -.860  | 240 | 135 | -.237  | .192  | .326  | -.1072 |
| 2300 | 443 | .340   | .182  | .738  | -.250  | 240 | 106 | -.212  | .188  | .436  | -.873  | 240 | 136 | -.380  | .198  | .192  | -.1138 |
| 2300 | 444 | .324   | .094  | .677  | -.005  | 240 | 107 | -.244  | .203  | .475  | -.953  | 240 | 137 | -.431  | .206  | .185  | -.1273 |
| 2300 | 445 | .410   | .115  | .887  | -.055  | 240 | 108 | -.275  | .175  | .284  | -.869  | 240 | 138 | -.507  | .212  | .411  | -.1299 |
| 2300 | 446 | .289   | .101  | .600  | -.110  | 240 | 109 | -.295  | .180  | .273  | -1.168 | 240 | 139 | -.009  | .123  | .411  | -.444  |
| 2300 | 447 | .283   | .093  | .623  | -.092  | 240 | 110 | -.317  | .185  | .273  | -1.099 | 240 | 140 | -.000  | .108  | .340  | -.4375 |
| 2300 | 448 | .341   | .107  | .672  | -.004  | 240 | 111 | -.375  | .193  | .158  | -1.033 | 240 | 141 | -.011  | .125  | .400  | -.437  |
| 2300 | 449 | .335   | .112  | .712  | -.032  | 240 | 112 | -.413  | .160  | .020  | -.945  | 240 | 142 | -.010  | .118  | .415  | -.343  |
| 2300 | 450 | .282   | .101  | .595  | -.105  | 240 | 113 | -.516  | .152  | -.044 | -1.148 | 240 | 143 | -.005  | .124  | .438  | -.405  |
| 2300 | 701 | -.005  | .106  | .338  | -.371  | 240 | 114 | -.173  | .131  | .246  | -.633  | 240 | 144 | -.027  | .092  | .234  | -.315  |
| 2300 | 702 | -.025  | .105  | .328  | -.360  | 240 | 115 | -.192  | .143  | .268  | -.844  | 240 | 145 | -.149  | .157  | .286  | -.683  |
| 2300 | 703 | -.047  | .102  | .281  | -.441  | 240 | 116 | -.203  | .136  | .215  | -.752  | 240 | 146 | -.249  | .170  | .272  | -.815  |
| 2300 | 705 | -.010  | .096  | .342  | -.326  | 240 | 117 | -.268  | .159  | .252  | -1.046 | 240 | 147 | -.325  | .200  | .240  | -.1009 |
| 2300 | 706 | -.012  | .125  | .563  | -.436  | 240 | 118 | -.309  | .172  | .314  | -.963  | 240 | 148 | -.019  | .101  | .383  | -.447  |
| 2300 | 707 | -.024  | .121  | .477  | -.431  | 240 | 119 | -.349  | .190  | .301  | -1.014 | 240 | 149 | -.042  | .109  | .478  | -.286  |
| 2300 | 708 | -.091  | .117  | .295  | -.558  | 240 | 120 | -.359  | .175  | .167  | -1.417 | 240 | 150 | -.031  | .108  | .412  | -.282  |
| 2300 | 710 | -.049  | .132  | .467  | -.481  | 240 | 121 | -.350  | .181  | .214  | -1.009 | 240 | 151 | -.036  | .100  | .475  | -.229  |
| 2300 | 711 | -.046  | .119  | .402  | -.419  | 240 | 122 | -.394  | .193  | .192  | -1.275 | 240 | 152 | -.050  | .100  | .472  | -.243  |
| 2300 | 712 | -.013  | .115  | .347  | -.491  | 240 | 123 | -.164  | .138  | .293  | -.671  | 240 | 153 | -.024  | .110  | .414  | -.588  |
| 2300 | 713 | -.071  | .135  | .317  | -.579  | 240 | 124 | -.186  | .120  | .162  | -.606  | 240 | 154 | -.021  | .109  | .361  | -.451  |
| 2300 | 714 | -.001  | .114  | .367  | -.460  | 240 | 125 | -.207  | .150  | .299  | -.761  | 240 | 155 | -.037  | .119  | .357  | -.508  |
| 2300 | 716 | -.049  | .110  | .417  | -.326  | 240 | 126 | -.253  | .162  | .324  | -.791  | 240 | 156 | -.067  | .100  | .320  | -.402  |
| 2300 | 717 | -.028  | .121  | .390  | -.454  | 240 | 127 | -.303  | .178  | .423  | -1.122 | 240 | 157 | -.046  | .120  | .516  | -.315  |
| 2300 | 801 | .036   | .114  | .413  | -.361  | 240 | 128 | -.339  | .157  | .185  | -.897  | 240 | 158 | -.048  | .121  | .548  | -.298  |
| 2300 | 802 | .019   | .123  | .408  | -.420  | 240 | 129 | -.340  | .178  | .168  | -1.018 | 240 | 159 | -.043  | .110  | .469  | -.276  |
| 2300 | 803 | .188   | .127  | .809  | -.163  | 240 | 130 | -.330  | .175  | .240  | -.923  | 240 | 160 | -.031  | .111  | .380  | -.416  |
| 2300 | 804 | .076   | .119  | .455  | -.328  | 240 | 131 | -.368  | .193  | .334  | -1.082 | 240 | 161 | -.031  | .110  | .374  | -.403  |
| 2300 | 901 | -.336  | .145  | .160  | -.934  | 240 | 132 | -.157  | .116  | .249  | -.591  | 240 | 162 | -.139  | .127  | .329  | -.666  |
| 2300 | 902 | -.223  | .183  | .385  | -.900  | 240 | 133 | -.190  | .148  | .275  | -.767  | 240 | 163 | -.129  | .140  | .365  | -.662  |
| 2300 | 903 | -.245  | .130  | .206  | -.718  | 240 | 134 | -.207  | .153  | .273  | -.803  | 240 | 164 | -.071  | .127  | .335  | -.502  |
| 2300 | 904 | -.163  | .148  | .425  | -.662  | 240 | 135 | -.248  | .170  | .283  | -.932  | 240 | 165 | -.103  | .113  | .325  | -.506  |
| 2300 | 905 | -.143  | .144  | .288  | -.616  | 240 | 136 | -.304  | .149  | .201  | -.858  | 240 | 166 | -.094  | .117  | .244  | -.493  |
| 2300 | 906 | -.469  | .177  | .044  | -1.038 | 240 | 137 | -.373  | .182  | .200  | -1.125 | 240 | 167 | -.106  | .111  | .259  | -.523  |
| 2300 | 907 | -.530  | .162  | .081  | -1.020 | 240 | 138 | -.413  | .192  | .131  | -1.234 | 240 | 168 | -.109  | .136  | .314  | -.671  |
| 2300 | 908 | -.572  | .182  | .136  | -1.182 | 240 | 139 | -.421  | .202  | .127  | -1.258 | 240 | 169 | -.099  | .111  | .375  | -.474  |
| 2300 | 909 | -.346  | .151  | .239  | -.980  | 240 | 140 | -.479  | .197  | .026  | -1.273 | 240 | 170 | -.083  | .125  | .312  | -.462  |
| 2300 | 910 | -.292  | .158  | .299  | -.958  | 240 | 141 | -.125  | .156  | .356  | -1.233 | 240 | 171 | -.097  | .125  | .278  | -.494  |
| 2300 | 911 | -.303  | .137  | .251  | -.760  | 240 | 142 | -.148  | .153  | .310  | -.782  | 240 | 172 | -.101  | .119  | .265  | -.544  |
| 2300 | 912 | -.266  | .170  | .387  | -.862  | 240 | 143 | -.143  | .164  | .377  | -.811  | 240 | 173 | -.101  | .125  | .317  | -.476  |
| 2300 | 913 | -.185  | .155  | .355  | -.753  | 240 | 144 | -.191  | .153  | .216  | -.875  | 240 | 174 | -.134  | .123  | .279  | -.554  |
| 2300 | 914 | -.127  | .136  | .325  | -.613  | 240 | 145 | -.263  | .199  | .250  | -1.037 | 240 | 175 | -.124  | .111  | .277  | -.472  |
| 2300 | 915 | -.446  | .199  | .333  | -1.109 | 240 | 146 | -.352  | .202  | .261  | -1.203 | 240 | 176 | -.149  | .114  | .282  | -.573  |
| 2300 | 916 | -.538  | .176  | .031  | -1.192 | 240 | 147 | -.426  | .204  | .128  | -1.322 | 240 | 177 | -.161  | .119  | .227  | -.696  |
| 2300 | 917 | -.476  | .191  | .112  | -1.199 | 240 | 148 | -.460  | .179  | .023  | -1.183 | 240 | 178 | -.185  | .121  | .194  | -.694  |
| 2300 | 918 | -.344  | .177  | .255  | -.908  | 240 | 149 | -.579  | .239  | .048  | -1.642 | 240 | 179 | -.104  | .118  | .308  | -.696  |
| 2300 | 919 | -.353  | .216  | .393  | -1.741 | 240 | 150 | -.052  | .127  | .352  | -.562  | 240 | 180 | -.131  | .126  | .252  | -.694  |
| 2400 | 101 | -.150  | .150  | .452  | -.735  | 240 | 151 | -.060  | .134  | .337  | -.494  | 240 | 181 | -.104  | .116  | .298  | -.544  |
| 2400 | 102 | -.168  | .146  | .400  | -.720  | 240 | 152 | -.044  | .109  | .296  | -.431  | 240 | 182 | -.127  | .113  | .248  | -.489  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|
| 240 | 222 | .147   | .122  | .235  | -.592 | 240 | 322 | -.093  | .112  | .273  | -.479 | 240 | 372 | .123   | .104  | .486  | -.158  |
| 240 | 223 | -.088  | .125  | .295  | -.574 | 240 | 323 | .394   | .185  | 1.048 | -.111 | 240 | 373 | .112   | .102  | .474  | -.249  |
| 240 | 224 | -.088  | .124  | .334  | -.619 | 240 | 324 | .208   | .168  | .772  | -.366 | 240 | 374 | .028   | .093  | .331  | -.338  |
| 240 | 225 | -.096  | .118  | .382  | -.432 | 240 | 325 | .203   | .160  | .739  | -.318 | 240 | 375 | -.006  | .114  | .337  | -.401  |
| 240 | 226 | -.077  | .116  | .398  | -.669 | 240 | 326 | .180   | .131  | .661  | -.184 | 240 | 376 | .004   | .138  | .544  | -.281  |
| 240 | 227 | .107   | .127  | .278  | -.623 | 240 | 327 | .146   | .126  | .577  | -.286 | 240 | 377 | .131   | .133  | .562  | -.242  |
| 240 | 228 | .107   | .115  | .330  | -.536 | 240 | 328 | .066   | .111  | .479  | -.300 | 240 | 378 | .150   | .115  | .554  | -.182  |
| 240 | 229 | .071   | .138  | .330  | -.673 | 240 | 329 | .031   | .118  | .402  | -.423 | 240 | 379 | .159   | .125  | .552  | -.254  |
| 240 | 230 | .071   | .117  | .348  | -.522 | 240 | 330 | .194   | .128  | .253  | -.630 | 240 | 380 | .000   | .109  | .484  | -.444  |
| 240 | 231 | -.032  | .103  | .312  | -.440 | 240 | 331 | .131   | .127  | .263  | -.546 | 240 | 381 | .000   | .109  | .333  | -.333  |
| 240 | 232 | -.059  | .101  | .244  | -.492 | 240 | 332 | .384   | .203  | 1.129 | -.210 | 240 | 382 | .000   | .096  | .386  | -.250  |
| 240 | 233 | -.024  | .122  | .354  | -.502 | 240 | 333 | .188   | .156  | .755  | -.277 | 240 | 383 | .000   | .133  | .493  | -.333  |
| 240 | 234 | -.023  | .121  | .355  | -.689 | 240 | 334 | .191   | .137  | .612  | -.255 | 240 | 384 | .000   | .402  | .402  | -.374  |
| 240 | 235 | -.024  | .122  | .346  | -.463 | 240 | 335 | .185   | .120  | .616  | -.232 | 240 | 401 | -.400  | .150  | .623  | -.988  |
| 240 | 236 | .011   | .140  | .505  | -.376 | 240 | 336 | .142   | .124  | .530  | -.261 | 240 | 402 | -.400  | .168  | .623  | -1.032 |
| 240 | 237 | -.025  | .102  | .361  | -.336 | 240 | 337 | .070   | .110  | .472  | -.337 | 240 | 403 | -.369  | .142  | .683  | -.826  |
| 240 | 238 | .013   | .109  | .366  | -.356 | 240 | 338 | .044   | .112  | .324  | -.422 | 240 | 404 | -.283  | .169  | .401  | -.785  |
| 240 | 239 | .013   | .114  | .333  | -.383 | 240 | 339 | .181   | .112  | .110  | -.636 | 240 | 405 | -.011  | .161  | .664  | -.658  |
| 240 | 240 | .024   | .110  | .333  | -.373 | 240 | 340 | .126   | .113  | .226  | -.494 | 240 | 406 | -.011  | .162  | .666  | -1.080 |
| 240 | 241 | .015   | .110  | .333  | -.373 | 240 | 341 | .342   | .158  | .863  | -.154 | 240 | 407 | .000   | .165  | .460  | -.555  |
| 240 | 242 | .003   | .108  | .333  | -.379 | 240 | 342 | .202   | .144  | .735  | -.307 | 240 | 408 | .000   | .168  | .460  | -.555  |
| 240 | 243 | .026   | .103  | .333  | -.433 | 240 | 343 | .200   | .117  | .674  | -.133 | 240 | 409 | .000   | .168  | .460  | -.555  |
| 240 | 244 | .029   | .117  | .333  | -.382 | 240 | 344 | .164   | .110  | .492  | -.224 | 240 | 410 | .000   | .172  | .460  | -.555  |
| 240 | 245 | .020   | .106  | .333  | -.370 | 240 | 345 | .107   | .111  | .570  | -.293 | 240 | 411 | .000   | .172  | .460  | -.555  |
| 240 | 246 | .022   | .110  | .333  | -.340 | 240 | 346 | .077   | .103  | .436  | -.259 | 240 | 412 | .000   | .183  | .460  | -.555  |
| 240 | 247 | .010   | .112  | .333  | -.444 | 240 | 347 | .019   | .103  | .344  | -.309 | 240 | 413 | -.300  | .176  | .460  | -1.117 |
| 240 | 248 | .033   | .117  | .412  | -.344 | 240 | 348 | .140   | .117  | .240  | -.580 | 240 | 414 | -.300  | .224  | .460  | -.861  |
| 240 | 249 | .005   | .118  | .333  | -.388 | 240 | 349 | .089   | .105  | .216  | -.436 | 240 | 415 | -.300  | .179  | .464  | -.661  |
| 240 | 250 | .013   | .115  | .342  | -.382 | 240 | 350 | .295   | .150  | .826  | -.120 | 240 | 416 | .300   | .178  | .464  | -.214  |
| 240 | 251 | .162   | .158  | .425  | -.787 | 240 | 351 | .166   | .146  | .702  | -.291 | 240 | 417 | .300   | .187  | .464  | -1.017 |
| 240 | 252 | .177   | .144  | .144  | -.016 | 240 | 352 | .158   | .114  | .573  | -.204 | 240 | 418 | .300   | .179  | .464  | -1.159 |
| 240 | 253 | .177   | .144  | .333  | -.633 | 240 | 353 | .150   | .104  | .495  | -.253 | 240 | 419 | .300   | .196  | .464  | -.995  |
| 240 | 254 | .346   | .151  | .295  | -.912 | 240 | 354 | .130   | .116  | .570  | -.179 | 240 | 420 | .300   | .175  | .464  | -.569  |
| 240 | 255 | .435   | .181  | .129  | -.988 | 240 | 355 | .088   | .109  | .451  | -.274 | 240 | 421 | .300   | .166  | .464  | -.577  |
| 240 | 256 | .311   | .162  | .175  | -.819 | 240 | 356 | .020   | .091  | .324  | -.227 | 240 | 422 | .300   | .166  | .464  | -.577  |
| 240 | 257 | .260   | .158  | .298  | -.741 | 240 | 357 | .099   | .111  | .268  | -.496 | 240 | 423 | .300   | .218  | .464  | -1.312 |
| 240 | 258 | .239   | .167  | .254  | -.949 | 240 | 358 | .060   | .112  | .302  | -.437 | 240 | 424 | .300   | .205  | .464  | -1.166 |
| 240 | 259 | .250   | .163  | .244  | -.865 | 240 | 359 | .201   | .130  | .765  | -.183 | 240 | 425 | .300   | .164  | .464  | -.536  |
| 240 | 260 | .202   | .143  | .209  | -.806 | 240 | 360 | .176   | .137  | .680  | -.339 | 240 | 426 | .300   | .169  | .467  | -.268  |
| 240 | 261 | .229   | .156  | .272  | -.778 | 240 | 361 | .123   | .119  | .532  | -.263 | 240 | 427 | .300   | .171  | .465  | -.083  |
| 240 | 262 | .209   | .149  | .241  | -.845 | 240 | 362 | .135   | .110  | .522  | -.182 | 240 | 428 | .300   | .185  | .465  | -1.454 |
| 240 | 263 | .165   | .131  | .237  | -.632 | 240 | 363 | .108   | .103  | .421  | -.204 | 240 | 429 | .300   | .205  | .465  | -1.101 |
| 240 | 264 | .140   | .126  | .237  | -.117 | 240 | 364 | .083   | .107  | .516  | -.252 | 240 | 430 | .300   | .221  | .465  | -.601  |
| 240 | 265 | .137   | .117  | .237  | -.467 | 240 | 365 | .026   | .109  | .388  | -.326 | 240 | 431 | .300   | .157  | .465  | -.265  |
| 240 | 266 | .150   | .133  | .237  | -.293 | 240 | 366 | .043   | .120  | .359  | -.452 | 240 | 432 | .300   | .160  | .465  | -1.217 |
| 240 | 267 | .144   | .129  | .237  | -.292 | 240 | 367 | .027   | .114  | .414  | -.411 | 240 | 433 | .300   | .196  | .465  | -.059  |
| 240 | 268 | .112   | .125  | .237  | -.264 | 240 | 368 | .182   | .123  | .613  | -.255 | 240 | 434 | .300   | .229  | .465  | -1.114 |
| 240 | 269 | .071   | .122  | .451  | -.300 | 240 | 369 | .139   | .121  | .515  | -.246 | 240 | 435 | .300   | .135  | .465  | -.364  |
| 240 | 270 | .016   | .122  | .445  | -.420 | 240 | 370 | .138   | .115  | .557  | -.338 | 240 | 436 | .300   | .150  | .465  | -.330  |
| 240 | 271 | .177   | .132  | .413  | -.686 | 240 | 371 | .119   | .119  | .448  | -.280 | 240 | 437 | .300   | .142  | .465  | -.148  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 240 | 438 | .057   | .110  | .434  | -.277 | 250 | 101 | -.171  | .149  | .336  | -.770  | 250 | 151 | -.066  | .128  | .436  | -.619  |
| 240 | 439 | .056   | .122  | .468  | -.341 | 250 | 102 | -.203  | .145  | .301  | -.829  | 250 | 152 | -.041  | .103  | .363  | -.379  |
| 240 | 440 | .136   | .159  | .671  | -.285 | 250 | 103 | -.196  | .150  | .317  | -.813  | 250 | 153 | -.045  | .123  | .327  | -.494  |
| 240 | 441 | .145   | .133  | .710  | -.339 | 250 | 104 | -.155  | .135  | .274  | -.657  | 250 | 154 | -.086  | .135  | .346  | -.592  |
| 240 | 442 | .167   | .129  | .586  | -.205 | 250 | 105 | -.187  | .149  | .211  | -.829  | 250 | 155 | -.179  | .154  | .251  | -.918  |
| 240 | 443 | .397   | .176  | .771  | -.192 | 250 | 106 | -.204  | .156  | .218  | -.890  | 250 | 156 | -.354  | .151  | .099  | -.908  |
| 240 | 444 | .389   | .164  | .692  | -.057 | 250 | 107 | -.247  | .179  | .227  | -1.059 | 250 | 157 | -.430  | .203  | .158  | -1.325 |
| 240 | 445 | .437   | .116  | .811  | -.057 | 250 | 108 | -.300  | .152  | .091  | -.979  | 250 | 158 | -.522  | .233  | .165  | -1.367 |
| 240 | 446 | .310   | .105  | .661  | -.080 | 250 | 109 | -.332  | .157  | .195  | -1.070 | 250 | 159 | .007   | .118  | .423  | -.361  |
| 240 | 447 | .334   | .086  | .651  | -.000 | 250 | 110 | -.444  | .161  | .034  | -1.039 | 250 | 160 | .000   | .105  | .356  | -.319  |
| 240 | 448 | .359   | .103  | .749  | -.022 | 250 | 111 | -.628  | .182  | .089  | -1.324 | 250 | 161 | .001   | .114  | .408  | -.439  |
| 240 | 449 | .366   | .102  | .741  | -.038 | 250 | 112 | -.550  | .142  | .129  | -1.240 | 250 | 162 | -.003  | .109  | .379  | -.420  |
| 240 | 450 | .301   | .097  | .606  | -.038 | 250 | 113 | -.610  | .171  | .065  | -1.155 | 250 | 163 | -.001  | .116  | .426  | -.483  |
| 240 | 701 | .001   | .103  | .305  | -.410 | 250 | 114 | -.169  | .134  | .239  | -.758  | 250 | 164 | -.028  | .090  | .225  | -.350  |
| 240 | 702 | .037   | .112  | .324  | -.408 | 250 | 115 | -.267  | .161  | .259  | -.832  | 250 | 165 | -.112  | .146  | .326  | -.598  |
| 240 | 703 | .051   | .109  | .317  | -.407 | 250 | 116 | -.080  | .109  | .234  | -.510  | 250 | 166 | -.203  | .159  | .288  | -.812  |
| 240 | 705 | .063   | .102  | .331  | -.331 | 250 | 117 | -.117  | .127  | .283  | -.707  | 250 | 167 | -.258  | .186  | .226  | -1.064 |
| 240 | 706 | .030   | .121  | .344  | -.111 | 250 | 118 | -.185  | .148  | .232  | -.909  | 250 | 168 | .050   | .094  | .328  | -.326  |
| 240 | 707 | .036   | .117  | .333  | -.111 | 250 | 119 | -.326  | .163  | .169  | -1.176 | 250 | 169 | .023   | .117  | .394  | -.320  |
| 240 | 708 | .022   | .126  | .337  | -.111 | 250 | 120 | -.556  | .163  | .148  | -1.302 | 250 | 170 | .024   | .117  | .409  | -.313  |
| 240 | 710 | .069   | .126  | .443  | -.242 | 250 | 121 | -.750  | .207  | .066  | -1.308 | 250 | 171 | .039   | .126  | .438  | -.355  |
| 240 | 711 | .055   | .114  | .443  | -.242 | 250 | 122 | -.750  | .226  | .174  | -.462  | 250 | 172 | .041   | .109  | .391  | -.260  |
| 240 | 712 | .011   | .109  | .344  | -.483 | 250 | 123 | -.103  | .134  | .308  | -.603  | 250 | 173 | .057   | .122  | .460  | -.329  |
| 240 | 713 | .063   | .133  | .333  | -.053 | 250 | 124 | -.140  | .121  | .240  | -.660  | 250 | 174 | .019   | .118  | .433  | -.337  |
| 240 | 714 | .000   | .109  | .357  | -.287 | 250 | 125 | -.145  | .134  | .317  | -.710  | 250 | 175 | .003   | .126  | .436  | -.413  |
| 240 | 716 | .052   | .109  | .388  | -.287 | 250 | 126 | -.210  | .168  | .305  | -.855  | 250 | 176 | .053   | .117  | .540  | -.267  |
| 240 | 717 | .005   | .113  | .330  | -.378 | 250 | 127 | -.313  | .205  | .310  | -1.100 | 250 | 177 | .013   | .111  | .378  | -.341  |
| 240 | 801 | .042   | .107  | .361  | -.301 | 250 | 128 | -.456  | .185  | .025  | -1.164 | 250 | 178 | .014   | .111  | .372  | -.335  |
| 240 | 802 | .037   | .115  | .429  | -.368 | 250 | 129 | -.532  | .207  | .211  | -1.655 | 250 | 180 | .022   | .106  | .354  | -.319  |
| 240 | 803 | .176   | .110  | .577  | -.163 | 250 | 130 | -.553  | .206  | .028  | -1.463 | 250 | 181 | .010   | .112  | .376  | -.320  |
| 240 | 804 | .083   | .110  | .486  | -.347 | 250 | 131 | -.646  | .230  | .052  | -1.662 | 250 | 182 | .009   | .110  | .349  | -.317  |
| 240 | 901 | .493   | .176  | .695  | -.111 | 250 | 132 | -.104  | .111  | .260  | -.652  | 250 | 201 | -.098  | .121  | .283  | -.521  |
| 240 | 902 | .352   | .181  | .641  | -.353 | 250 | 133 | -.150  | .138  | .268  | -.752  | 250 | 202 | -.083  | .113  | .249  | -.534  |
| 240 | 903 | .190   | .131  | .335  | -.821 | 250 | 134 | -.146  | .151  | .285  | -.809  | 250 | 203 | -.109  | .121  | .293  | -.704  |
| 240 | 904 | .158   | .147  | .303  | -.704 | 250 | 135 | -.191  | .185  | .407  | -.963  | 250 | 204 | -.063  | .143  | .344  | -.478  |
| 240 | 905 | .173   | .153  | .345  | -.877 | 250 | 136 | -.280  | .184  | .243  | -1.046 | 250 | 205 | -.099  | .122  | .338  | -.528  |
| 240 | 906 | .486   | .176  | .204  | -.109 | 250 | 137 | -.406  | .228  | .309  | -1.292 | 250 | 206 | -.131  | .138  | .316  | -.607  |
| 240 | 907 | .561   | .164  | .003  | -.079 | 250 | 138 | -.556  | .216  | .177  | -1.368 | 250 | 207 | -.166  | .133  | .302  | -.732  |
| 240 | 908 | .480   | .172  | .040  | -.119 | 250 | 139 | -.606  | .228  | .247  | -1.381 | 250 | 208 | -.079  | .123  | .323  | -.504  |
| 240 | 909 | .257   | .137  | .181  | -.723 | 250 | 140 | -.710  | .228  | .056  | -1.350 | 250 | 209 | -.099  | .118  | .273  | -.544  |
| 240 | 910 | .191   | .146  | .246  | -.723 | 250 | 141 | -.090  | .125  | .358  | -.518  | 250 | 210 | -.115  | .128  | .392  | -.676  |
| 240 | 911 | .226   | .136  | .225  | -.687 | 250 | 142 | -.124  | .124  | .305  | -.586  | 250 | 211 | -.133  | .150  | .323  | -.996  |
| 240 | 912 | .261   | .158  | .248  | -.603 | 250 | 143 | -.092  | .129  | .449  | -.608  | 250 | 212 | -.148  | .155  | .276  | -.854  |
| 240 | 913 | .170   | .146  | .498  | -.653 | 250 | 144 | -.121  | .121  | .334  | -.651  | 250 | 213 | -.067  | .114  | .254  | -.387  |
| 240 | 914 | .113   | .124  | .246  | -.613 | 250 | 145 | -.164  | .176  | .335  | -.985  | 250 | 214 | -.089  | .120  | .341  | -.469  |
| 240 | 915 | .550   | .196  | .021  | -.122 | 250 | 146 | -.276  | .209  | .275  | -1.029 | 250 | 215 | -.083  | .106  | .331  | -.380  |
| 240 | 916 | .600   | .164  | .132  | -.124 | 250 | 147 | -.466  | .227  | .180  | -1.379 | 250 | 216 | -.066  | .099  | .273  | -.352  |
| 240 | 917 | .417   | .177  | .106  | -.104 | 250 | 148 | -.361  | .206  | .078  | -1.436 | 250 | 217 | -.085  | .103  | .273  | -.521  |
| 240 | 918 | .282   | .161  | .173  | -.823 | 250 | 149 | -.618  | .235  | .042  | -1.426 | 250 | 218 | -.049  | .096  | .352  | -.361  |
| 240 | 919 | .305   | .193  | .259  | -.122 | 250 | 150 | -.051  | .123  | .412  | -.556  | 250 | 219 | -.041  | .118  | .347  | -.496  |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|
| 2550 | 220 | 051    | 116   | 345   | 430   | 2550 | 220 | 050    | 108   | 294   | 438   | 2550 | 370 | 036    | 108   | 408   | 278   |
| 2550 | 221 | 076    | 103   | 290   | 441   | 2550 | 332 | 143    | 133   | 299   | 590   | 2550 | 371 | 039    | 105   | 441   | 263   |
| 2550 | 222 | 084    | 121   | 324   | 523   | 2550 | 333 | 085    | 119   | 330   | 601   | 2550 | 372 | 110    | 113   | 421   | 287   |
| 2550 | 223 | 066    | 106   | 278   | 441   | 2550 | 334 | 224    | 177   | 794   | 348   | 2550 | 373 | 066    | 098   | 374   | 330   |
| 2550 | 224 | 052    | 107   | 272   | 451   | 2550 | 335 | 010    | 175   | 676   | 611   | 2550 | 374 | 033    | 108   | 485   | 268   |
| 2550 | 225 | 062    | 114   | 376   | 396   | 2550 | 336 | 052    | 145   | 584   | 398   | 2550 | 375 | 029    | 108   | 369   | 369   |
| 2550 | 226 | 058    | 115   | 330   | 569   | 2550 | 337 | 105    | 130   | 504   | 313   | 2550 | 376 | 003    | 114   | 352   | 433   |
| 2550 | 227 | 074    | 100   | 233   | 555   | 2550 | 338 | 047    | 115   | 481   | 420   | 2550 | 377 | 103    | 132   | 502   | 338   |
| 2550 | 228 | 016    | 108   | 341   | 331   | 2550 | 339 | 027    | 119   | 507   | 343   | 2550 | 378 | 088    | 103   | 397   | 235   |
| 2550 | 229 | 031    | 108   | 309   | 233   | 2550 | 340 | 027    | 111   | 336   | 427   | 2550 | 379 | 103    | 104   | 430   | 250   |
| 2550 | 230 | 010    | 126   | 348   | 502   | 2550 | 341 | 141    | 124   | 533   | 333   | 2550 | 380 | 155    | 094   | 362   | 198   |
| 2550 | 231 | 050    | 112   | 355   | 489   | 2550 | 342 | 070    | 103   | 533   | 333   | 2550 | 381 | 081    | 093   | 434   | 271   |
| 2550 | 232 | 034    | 113   | 428   | 368   | 2550 | 343 | 201    | 171   | 829   | 467   | 2550 | 382 | 033    | 106   | 352   | 287   |
| 2550 | 233 | 010    | 114   | 366   | 505   | 2550 | 344 | 008    | 155   | 389   | 353   | 2550 | 383 | 040    | 097   | 389   | 346   |
| 2550 | 234 | 033    | 117   | 333   | 506   | 2550 | 345 | 066    | 126   | 338   | 422   | 2550 | 384 | 044    | 096   | 356   | 264   |
| 2550 | 235 | 006    | 103   | 323   | 445   | 2550 | 346 | 093    | 107   | 401   | 222   | 2550 | 401 | 515    | 177   | 181   | 079   |
| 2550 | 236 | 005    | 104   | 382   | 277   | 2550 | 347 | 064    | 109   | 333   | 307   | 2550 | 402 | 459    | 141   | 084   | 953   |
| 2550 | 237 | 014    | 111   | 335   | 551   | 2550 | 348 | 037    | 109   | 533   | 300   | 2550 | 403 | 294    | 166   | 256   | 911   |
| 2550 | 238 | 030    | 101   | 336   | 622   | 2550 | 349 | 018    | 118   | 888   | 441   | 2550 | 404 | 129    | 148   | 522   | 744   |
| 2550 | 239 | 034    | 102   | 331   | 221   | 2550 | 350 | 088    | 109   | 288   | 548   | 2550 | 405 | 018    | 162   | 587   | 433   |
| 2550 | 240 | 014    | 102   | 330   | 16    | 2550 | 351 | 056    | 121   | 077   | 441   | 2550 | 406 | 480    | 164   | 120   | 057   |
| 2550 | 241 | 035    | 111   | 461   | 330   | 2550 | 352 | 215    | 164   | 706   | 293   | 2550 | 407 | 158    | 163   | 362   | 723   |
| 2550 | 242 | 027    | 115   | 409   | 669   | 2550 | 353 | 048    | 140   | 488   | 464   | 2550 | 408 | 590    | 234   | 077   | 364   |
| 2550 | 243 | 004    | 112   | 350   | 448   | 2550 | 354 | 071    | 125   | 505   | 333   | 2550 | 409 | 168    | 198   | 397   | 809   |
| 2550 | 244 | 032    | 109   | 351   | 448   | 2550 | 355 | 100    | 102   | 444   | 555   | 2550 | 410 | 333    | 184   | 908   | 368   |
| 2550 | 245 | 045    | 109   | 416   | 333   | 2550 | 356 | 061    | 104   | 444   | 222   | 2550 | 411 | 555    | 200   | 208   | 092   |
| 2550 | 246 | 041    | 105   | 468   | 333   | 2550 | 357 | 044    | 096   | 444   | 333   | 2550 | 412 | 444    | 179   | 208   | 083   |
| 2550 | 247 | 018    | 109   | 395   | 366   | 2550 | 358 | 028    | 103   | 333   | 222   | 2550 | 413 | 555    | 217   | 133   | 480   |
| 2550 | 248 | 035    | 106   | 367   | 319   | 2550 | 359 | 082    | 115   | 222   | 444   | 2550 | 414 | 225    | 205   | 512   | 042   |
| 2550 | 249 | 031    | 113   | 321   | 378   | 2550 | 360 | 025    | 136   | 344   | 451   | 2550 | 415 | 256    | 187   | 882   | 446   |
| 2550 | 250 | 000    | 113   | 370   | 352   | 2550 | 361 | 159    | 164   | 770   | 339   | 2550 | 416 | 534    | 179   | 140   | 048   |
| 2550 | 301 | 213    | 185   | 413   | 849   | 2550 | 362 | 051    | 134   | 551   | 451   | 2550 | 417 | 457    | 166   | 063   | 036   |
| 2550 | 302 | 395    | 159   | 145   | 907   | 2550 | 363 | 444    | 125   | 444   | 524   | 2550 | 418 | 607    | 232   | 074   | 448   |
| 2550 | 303 | 245    | 146   | 326   | 338   | 2550 | 364 | 089    | 114   | 485   | 267   | 2550 | 419 | 260    | 205   | 399   | 035   |
| 2550 | 304 | 329    | 161   | 253   | 897   | 2550 | 365 | 084    | 095   | 488   | 180   | 2550 | 420 | 182    | 172   | 888   | 428   |
| 2550 | 305 | 413    | 170   | 124   | 550   | 2550 | 366 | 047    | 105   | 333   | 284   | 2550 | 421 | 463    | 167   | 930   | 177   |
| 2550 | 306 | 265    | 152   | 252   | 880   | 2550 | 367 | 014    | 111   | 444   | 355   | 2550 | 422 | 449    | 164   | 033   | 021   |
| 2550 | 307 | 190    | 149   | 288   | 665   | 2550 | 368 | 069    | 107   | 444   | 333   | 2550 | 423 | 555    | 221   | 690   | 185   |
| 2550 | 308 | 166    | 137   | 288   | 665   | 2550 | 369 | 030    | 099   | 666   | 333   | 2550 | 424 | 222    | 203   | 350   | 992   |
| 2550 | 309 | 145    | 141   | 246   | 701   | 2550 | 370 | 130    | 136   | 600   | 400   | 2550 | 425 | 112    | 159   | 739   | 383   |
| 2550 | 310 | 162    | 147   | 380   | 815   | 2550 | 371 | 088    | 117   | 594   | 422   | 2550 | 426 | 339    | 164   | 065   | 157   |
| 2550 | 311 | 153    | 136   | 337   | 253   | 2550 | 372 | 078    | 123   | 442   | 333   | 2550 | 427 | 339    | 181   | 076   | 157   |
| 2550 | 312 | 108    | 127   | 263   | 338   | 2550 | 373 | 091    | 106   | 339   | 222   | 2550 | 428 | 339    | 207   | 240   | 240   |
| 2550 | 313 | 087    | 120   | 300   | 319   | 2550 | 374 | 069    | 103   | 444   | 222   | 2550 | 429 | 199    | 190   | 481   | 041   |
| 2550 | 314 | 195    | 171   | 689   | 407   | 2550 | 375 | 057    | 109   | 333   | 299   | 2550 | 430 | 145    | 158   | 722   | 449   |
| 2550 | 315 | 049    | 164   | 504   | 617   | 2550 | 376 | 007    | 097   | 333   | 277   | 2550 | 431 | 332    | 154   | 873   | 192   |
| 2550 | 316 | 009    | 138   | 530   | 521   | 2550 | 377 | 031    | 105   | 280   | 363   | 2550 | 432 | 305    | 164   | 842   | 198   |
| 2550 | 317 | 034    | 112   | 398   | 339   | 2550 | 378 | 012    | 114   | 446   | 359   | 2550 | 433 | 216    | 156   | 215   | 748   |
| 2550 | 318 | 041    | 117   | 415   | 443   | 2550 | 379 | 127    | 122   | 513   | 235   | 2550 | 434 | 063    | 180   | 452   | 979   |
| 2550 | 319 | 063    | 108   | 376   | 01    | 2550 | 380 | 093    | 105   | 426   | 293   | 2550 | 435 | 113    | 156   | 598   | 408   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD   | TAP   | CPHEAN | CPRMS | CPMAX  | CPMIN | WD  | TAP | CPHEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPHEAN | CPRMS | CPMAX | CPMIN  |
|------|-------|--------|-------|--------|-------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 2550 |       |        |       |        |       | 250 | 918 |        |       |       |        | 260 | 149 |        |       |       |        |
| 436  | .221  | .146   | .689  | -.190  |       | 250 | 918 | -.157  | .140  | .392  | -.618  | 260 | 149 | -.572  | .270  | .245  | -1.616 |
| 437  | .240  | .141   | .753  | -.212  |       | 250 | 919 | -.185  | .154  | .400  | -1.006 | 260 | 150 | -.079  | .127  | .343  | -.499  |
| 438  | .064  | .114   | .409  | -.368  |       | 260 | 101 | -.117  | .134  | .365  | -.616  | 260 | 151 | -.106  | .133  | .339  | -.555  |
| 439  | .124  | .122   | .521  | -.362  |       | 260 | 102 | -.143  | .135  | .308  | -.632  | 260 | 152 | -.052  | .102  | .277  | -.395  |
| 440  | .132  | .126   | .556  | -.499  |       | 260 | 103 | -.129  | .133  | .342  | -.638  | 260 | 153 | -.068  | .133  | .422  | -.487  |
| 441  | .172  | .137   | .629  | -.217  |       | 260 | 104 | -.045  | .108  | .321  | -.420  | 260 | 154 | -.015  | .137  | .435  | -.489  |
| 442  | .159  | .124   | .619  | -.205  |       | 260 | 105 | -.058  | .125  | .306  | -.565  | 260 | 155 | -.052  | .144  | .381  | -.556  |
| 443  | .458  | .148   | .791  | -.167  |       | 260 | 106 | -.069  | .125  | .282  | -.542  | 260 | 156 | -.036  | .169  | .248  | -.860  |
| 444  | .360  | .101   | .669  | -.005  |       | 260 | 107 | -.099  | .135  | .276  | -.637  | 260 | 157 | -.371  | .210  | .272  | -1.265 |
| 445  | .412  | .116   | .788  | -.043  |       | 260 | 108 | -.167  | .123  | .176  | -.637  | 260 | 158 | -.384  | .235  | .216  | -1.432 |
| 446  | .355  | .105   | .698  | -.018  |       | 260 | 109 | -.248  | .141  | .168  | -.731  | 260 | 159 | -.030  | .127  | .370  | -.449  |
| 447  | .355  | .104   | .707  | -.001  |       | 260 | 110 | -.372  | .155  | .074  | -1.016 | 260 | 160 | -.045  | .119  | .333  | -.421  |
| 448  | .362  | .106   | .659  | -.035  |       | 260 | 111 | -.559  | .177  | -.026 | -1.184 | 260 | 161 | .002   | .128  | .452  | -.337  |
| 449  | .405  | .101   | .793  | -.034  |       | 260 | 112 | -.463  | .131  | .063  | -.846  | 260 | 162 | .017   | .122  | .426  | -.332  |
| 450  | .312  | .101   | .841  | -.004  |       | 260 | 113 | -.469  | .170  | .078  | -.926  | 260 | 163 | .018   | .127  | .452  | -.358  |
| 701  | -.020 | .106   | .318  | .329   |       | 260 | 114 | -.077  | .128  | .363  | -.452  | 260 | 164 | .002   | .102  | .341  | -.243  |
| 702  | .004  | .117   | .367  | .386   |       | 260 | 115 | -.136  | .159  | .377  | -.678  | 260 | 165 | -.107  | .151  | .329  | -.646  |
| 703  | .012  | .116   | .358  | .383   |       | 260 | 116 | -.050  | .107  | .390  | -.268  | 260 | 166 | -.197  | .161  | .262  | -.724  |
| 705  | .018  | .108   | .423  | .341   |       | 260 | 117 | -.016  | .109  | .359  | -.362  | 260 | 167 | -.210  | .187  | .309  | -.706  |
| 706  | .000  | .126   | .442  | .399   |       | 260 | 118 | -.059  | .113  | .313  | -.602  | 260 | 168 | .046   | .106  | .339  | -.306  |
| 707  | -.002 | .126   | .435  | .384   |       | 260 | 119 | -.142  | .136  | .235  | -.972  | 260 | 169 | .027   | .106  | .383  | -.302  |
| 708  | .083  | .129   | .339  | .552   |       | 260 | 120 | -.518  | .168  | -.026 | -1.051 | 260 | 170 | .038   | .106  | .426  | -.292  |
| 710  | .024  | .132   | .436  | .441   |       | 260 | 121 | -.602  | .212  | .003  | -1.326 | 260 | 171 | .059   | .113  | .454  | -.313  |
| 711  | .023  | .119   | .397  | .360   |       | 260 | 122 | -.632  | .243  | .068  | -1.474 | 260 | 172 | .053   | .095  | .369  | -.262  |
| 712  | .013  | .122   | .419  | .393   |       | 260 | 123 | -.075  | .130  | .415  | -.547  | 260 | 173 | .053   | .113  | .461  | -.386  |
| 713  | .005  | .125   | .363  | .472   |       | 260 | 124 | -.154  | .120  | .287  | -.582  | 260 | 174 | .029   | .114  | .450  | -.383  |
| 714  | .032  | .120   | .464  | .335   |       | 260 | 125 | -.095  | .123  | .329  | -.497  | 260 | 175 | .021   | .125  | .512  | -.421  |
| 716  | .064  | .118   | .585  | .272   |       | 260 | 126 | -.093  | .127  | .376  | -.512  | 260 | 176 | .082   | .109  | .464  | -.275  |
| 717  | .001  | .105   | .369  | .357   |       | 260 | 127 | -.127  | .140  | .361  | -.707  | 260 | 177 | .051   | .106  | .402  | -.271  |
| 801  | .041  | .101   | .406  | .307   |       | 260 | 128 | -.227  | .154  | .222  | -.930  | 260 | 178 | .051   | .106  | .412  | -.271  |
| 802  | .031  | .107   | .448  | .348   |       | 260 | 129 | -.622  | .197  | -.088 | -1.383 | 260 | 180 | .070   | .100  | .415  | -.247  |
| 803  | .164  | .120   | .559  | .200   |       | 260 | 130 | -.701  | .191  | .202  | -1.389 | 260 | 181 | .059   | .114  | .413  | -.243  |
| 804  | .047  | .116   | .458  | .307   |       | 260 | 131 | -.753  | .238  | .095  | -1.502 | 260 | 182 | .056   | .111  | .393  | -.305  |
| 901  | -.498 | .159   | -.002 | -1.225 |       | 260 | 132 | -.139  | .111  | .235  | -.517  | 260 | 201 | -.063  | .101  | .269  | -.356  |
| 902  | .437  | .164   | .056  | -1.014 |       | 260 | 133 | -.161  | .126  | .260  | -.583  | 260 | 202 | -.055  | .118  | .376  | -.409  |
| 903  | .103  | .114   | .335  | -.498  |       | 260 | 134 | -.113  | .117  | .317  | -.495  | 260 | 203 | -.056  | .102  | .289  | -.414  |
| 904  | .079  | .130   | .299  | -.598  |       | 260 | 135 | -.099  | .126  | .350  | -.577  | 260 | 204 | -.063  | .118  | .290  | -.393  |
| 905  | .193  | .140   | .248  | -.758  |       | 260 | 136 | -.126  | .126  | .244  | -.619  | 260 | 205 | -.065  | .099  | .393  | -.390  |
| 906  | .452  | .170   | .122  | -1.061 |       | 260 | 137 | -.188  | .158  | .225  | -.942  | 260 | 206 | -.079  | .117  | .332  | -.467  |
| 907  | .347  | .153   | .101  | -1.034 |       | 260 | 138 | -.498  | .207  | .061  | -1.305 | 260 | 207 | -.087  | .131  | .331  | -.522  |
| 908  | .436  | .188   | .262  | -1.030 |       | 260 | 139 | -.591  | .214  | .041  | -1.315 | 260 | 208 | -.060  | .104  | .257  | -.332  |
| 909  | .209  | .143   | .309  | -.685  |       | 260 | 140 | -.630  | .235  | .047  | -1.461 | 260 | 209 | -.080  | .107  | .290  | -.427  |
| 910  | .099  | .141   | .390  | -.616  |       | 260 | 141 | -.076  | .127  | .401  | -.490  | 260 | 210 | -.052  | .103  | .349  | -.451  |
| 911  | .119  | .136   | .343  | -.548  |       | 260 | 142 | -.146  | .128  | .367  | -.598  | 260 | 211 | -.059  | .109  | .302  | -.476  |
| 912  | .148  | .134   | .294  | -.616  |       | 260 | 143 | -.081  | .123  | .350  | -.512  | 260 | 212 | -.041  | .106  | .295  | -.434  |
| 913  | .027  | .135   | .430  | -.431  |       | 260 | 144 | -.067  | .107  | .306  | -.433  | 260 | 213 | -.060  | .102  | .311  | -.421  |
| 914  | .091  | .127   | .297  | -.554  |       | 260 | 145 | -.055  | .122  | .353  | -.596  | 260 | 214 | -.083  | .102  | .265  | -.385  |
| 915  | .453  | .170   | .033  | -1.139 |       | 260 | 146 | -.106  | .132  | .318  | -.888  | 260 | 215 | -.064  | .095  | .232  | -.351  |
| 916  | .330  | .146   | .147  | -1.171 |       | 260 | 147 | -.373  | .197  | .153  | -1.089 | 260 | 216 | -.071  | .098  | .297  | -.358  |
| 917  | .313  | .172   | .308  | -1.022 |       | 260 | 148 | -.482  | .187  | -.035 | -1.131 | 260 | 217 | -.087  | .116  | .244  | -.501  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 260 | 218 | -.076  | .099  | .257  | -.425 | 260 | 318 | -.035  | .108  | .319  | -.422 | 260 | 368 | -.002  | .130  | .412  | -.336 |
| 260 | 219 | -.090  | .096  | .243  | -.417 | 260 | 319 | -.028  | .100  | .300  | -.337 | 260 | 369 | -.003  | .118  | .415  | -.403 |
| 260 | 220 | -.065  | .113  | .230  | -.470 | 260 | 320 | -.050  | .105  | .249  | -.393 | 260 | 370 | -.002  | .101  | .388  | -.326 |
| 260 | 221 | -.098  | .100  | .275  | -.410 | 260 | 321 | -.097  | .117  | .403  | -.499 | 260 | 371 | -.030  | .103  | .332  | -.300 |
| 260 | 222 | -.082  | .106  | .262  | -.404 | 260 | 322 | -.066  | .114  | .336  | -.454 | 260 | 372 | .053   | .102  | .386  | -.319 |
| 260 | 223 | -.066  | .109  | .275  | -.560 | 260 | 323 | -.142  | .203  | .478  | -.786 | 260 | 373 | .059   | .106  | .411  | -.280 |
| 260 | 224 | -.042  | .108  | .313  | -.529 | 260 | 324 | -.305  | .173  | .275  | -.830 | 260 | 374 | .043   | .101  | .345  | -.276 |
| 260 | 225 | -.069  | .108  | .380  | -.453 | 260 | 325 | -.192  | .169  | .290  | -.873 | 260 | 375 | .024   | .099  | .346  | -.377 |
| 260 | 226 | -.087  | .112  | .265  | -.453 | 260 | 326 | -.021  | .112  | .343  | -.386 | 260 | 376 | .029   | .111  | .421  | -.399 |
| 260 | 227 | -.090  | .115  | .355  | -.484 | 260 | 327 | -.013  | .115  | .387  | -.433 | 260 | 377 | -.010  | .126  | .429  | -.382 |
| 260 | 228 | -.031  | .109  | .363  | -.403 | 260 | 328 | -.034  | .112  | .293  | -.364 | 260 | 378 | -.022  | .120  | .345  | -.416 |
| 260 | 229 | -.031  | .114  | .323  | -.487 | 260 | 329 | -.072  | .108  | .323  | -.477 | 260 | 379 | -.048  | .113  | .395  | -.334 |
| 260 | 230 | -.029  | .112  | .352  | -.583 | 260 | 330 | -.117  | .121  | .326  | -.513 | 260 | 380 | .040   | .097  | .361  | -.277 |
| 260 | 231 | -.028  | .114  | .357  | -.410 | 260 | 331 | -.073  | .118  | .329  | -.429 | 260 | 381 | .064   | .095  | .362  | -.283 |
| 260 | 232 | .057   | .116  | .274  | -.434 | 260 | 332 | -.110  | .200  | .466  | -.779 | 260 | 382 | .022   | .098  | .336  | -.329 |
| 260 | 233 | .004   | .107  | .323  | -.502 | 260 | 333 | -.272  | .173  | .232  | -.780 | 260 | 383 | .045   | .105  | .374  | -.297 |
| 260 | 234 | .004   | .117  | .415  | -.410 | 260 | 334 | -.127  | .150  | .283  | -.689 | 260 | 384 | .032   | .112  | .339  | -.287 |
| 260 | 235 | .001   | .116  | .331  | -.357 | 260 | 335 | -.032  | .105  | .383  | -.324 | 260 | 401 | -.346  | .163  | .247  | -.924 |
| 260 | 236 | .011   | .112  | .367  | -.346 | 260 | 336 | -.015  | .118  | .356  | -.433 | 260 | 402 | -.432  | .137  | .061  | -.832 |
| 260 | 237 | -.016  | .101  | .318  | -.330 | 260 | 337 | -.045  | .116  | .312  | -.433 | 260 | 403 | -.125  | .151  | .466  | -.716 |
| 260 | 238 | .047   | .099  | .378  | -.368 | 260 | 338 | -.077  | .124  | .299  | -.399 | 260 | 404 | -.032  | .158  | .588  | -.522 |
| 260 | 239 | .023   | .104  | .355  | -.439 | 260 | 339 | -.114  | .095  | .223  | -.452 | 260 | 405 | -.062  | .145  | .569  | -.489 |
| 260 | 240 | .040   | .113  | .360  | -.370 | 260 | 340 | -.061  | .109  | .299  | -.412 | 260 | 406 | -.397  | .167  | .042  | -.040 |
| 260 | 241 | .017   | .112  | .316  | -.293 | 260 | 341 | -.072  | .173  | .505  | -.680 | 260 | 407 | .159   | .146  | .314  | -.651 |
| 260 | 242 | .024   | .117  | .380  | -.288 | 260 | 342 | -.185  | .143  | .273  | -.723 | 260 | 408 | -.134  | .209  | .238  | -.153 |
| 260 | 243 | .017   | .117  | .460  | -.410 | 260 | 343 | -.112  | .138  | .313  | -.670 | 260 | 409 | .118   | .187  | .690  | -.476 |
| 260 | 244 | .035   | .111  | .393  | -.309 | 260 | 344 | -.001  | .114  | .305  | -.373 | 260 | 410 | .509   | .162  | 1.223 | -.054 |
| 260 | 245 | .050   | .111  | .357  | -.440 | 260 | 345 | -.021  | .089  | .318  | -.288 | 260 | 411 | .544   | .181  | 1.312 | -.032 |
| 260 | 246 | .041   | .115  | .369  | -.372 | 260 | 346 | -.019  | .110  | .336  | -.400 | 260 | 412 | -.263  | .178  | .789  | -.366 |
| 260 | 247 | .029   | .099  | .337  | -.403 | 260 | 347 | -.053  | .094  | .263  | -.340 | 260 | 413 | -.301  | .241  | .298  | -.142 |
| 260 | 248 | .033   | .118  | .393  | -.340 | 260 | 348 | -.108  | .101  | .187  | -.605 | 260 | 414 | -.072  | .193  | .771  | -.674 |
| 260 | 249 | .010   | .102  | .330  | -.329 | 260 | 349 | -.073  | .113  | .319  | -.465 | 260 | 415 | .440   | .161  | 1.074 | -.095 |
| 260 | 250 | .019   | .100  | .337  | -.304 | 260 | 350 | -.050  | .144  | .401  | -.480 | 260 | 416 | .569   | .192  | 1.205 | -.012 |
| 260 | 301 | -.293  | .148  | .223  | -.023 | 260 | 351 | -.139  | .140  | .236  | -.533 | 260 | 417 | .291   | .172  | .800  | -.312 |
| 260 | 302 | -.374  | .137  | .154  | -.830 | 260 | 352 | -.078  | .125  | .292  | -.604 | 260 | 418 | -.392  | .222  | .196  | -.144 |
| 260 | 303 | -.313  | .138  | .106  | -.753 | 260 | 353 | -.068  | .100  | .329  | -.311 | 260 | 419 | -.074  | .177  | .566  | -.565 |
| 260 | 304 | -.292  | .128  | .136  | -.745 | 260 | 354 | -.031  | .098  | .345  | -.324 | 260 | 420 | .388   | .161  | .914  | -.054 |
| 260 | 305 | -.289  | .153  | .133  | -.992 | 260 | 355 | -.009  | .097  | .339  | -.291 | 260 | 421 | .444   | .178  | 1.026 | -.069 |
| 260 | 306 | -.157  | .124  | .249  | -.665 | 260 | 356 | -.040  | .098  | .298  | -.314 | 260 | 422 | -.260  | .175  | .835  | -.270 |
| 260 | 307 | -.125  | .120  | .199  | -.643 | 260 | 357 | -.057  | .099  | .256  | -.453 | 260 | 423 | -.379  | .228  | .382  | -.184 |
| 260 | 308 | -.073  | .113  | .315  | -.480 | 260 | 358 | -.035  | .099  | .374  | -.417 | 260 | 424 | .039   | .203  | .719  | -.773 |
| 260 | 309 | -.075  | .112  | .356  | -.509 | 260 | 359 | -.037  | .143  | .352  | -.621 | 260 | 425 | .338   | .173  | .857  | -.152 |
| 260 | 310 | -.095  | .109  | .319  | -.403 | 260 | 360 | -.048  | .117  | .396  | -.440 | 260 | 426 | .393   | .181  | 1.182 | -.137 |
| 260 | 311 | -.094  | .106  | .273  | -.457 | 260 | 361 | -.094  | .118  | .255  | -.469 | 260 | 427 | -.231  | .170  | .803  | -.280 |
| 260 | 312 | -.080  | .107  | .330  | -.383 | 260 | 362 | -.033  | .109  | .391  | -.340 | 260 | 428 | -.193  | .186  | .283  | -.835 |
| 260 | 313 | -.087  | .125  | .260  | -.625 | 260 | 363 | -.001  | .100  | .315  | -.339 | 260 | 429 | -.056  | .163  | .600  | -.562 |
| 260 | 314 | -.104  | .161  | .462  | -.604 | 260 | 364 | -.013  | .099  | .348  | -.293 | 260 | 430 | -.277  | .163  | .789  | -.298 |
| 260 | 315 | -.354  | .159  | .123  | -.859 | 260 | 365 | -.004  | .097  | .363  | -.291 | 260 | 431 | .319   | .171  | 1.004 | -.147 |
| 260 | 316 | -.199  | .144  | .223  | -.706 | 260 | 366 | -.003  | .105  | .289  | -.327 | 260 | 432 | -.197  | .174  | .817  | -.516 |
| 260 | 317 | -.068  | .109  | .293  | -.426 | 260 | 367 | -.004  | .103  | .363  | -.425 | 260 | 433 | -.077  | .168  | .422  | -.681 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|-------|
| 260 | 434 | .080   | .142  | .731  | -.378  | 260 | 916 | -.458  | .130  | -.010 | -1.045 | 270 | 147 | -.229  | .196  | .400  | -.926 |
| 260 | 435 | .200   | .137  | .759  | -.198  | 260 | 917 | -.158  | .152  | -.396 | -.794  | 270 | 148 | -.332  | .195  | .306  | -.941 |
| 260 | 436 | .243   | .154  | .857  | -.206  | 260 | 918 | -.061  | .109  | -.371 | -.391  | 270 | 149 | -.256  | .239  | .409  | -.988 |
| 260 | 437 | .153   | .145  | .915  | -.242  | 260 | 919 | -.165  | .133  | -.282 | -.802  | 270 | 150 | -.076  | .128  | .408  | -.539 |
| 260 | 438 | .127   | .117  | .489  | -.314  | 270 | 101 | -.199  | .125  | -.369 | -.620  | 270 | 151 | -.092  | .132  | .380  | -.567 |
| 260 | 439 | .138   | .123  | .639  | -.251  | 270 | 102 | -.124  | .119  | -.333 | -.596  | 270 | 152 | -.033  | .107  | .346  | -.592 |
| 260 | 440 | .179   | .141  | .693  | -.284  | 270 | 103 | -.142  | .126  | -.358 | -.606  | 270 | 153 | -.040  | .110  | .316  | -.582 |
| 260 | 441 | .127   | .135  | .530  | -.392  | 270 | 104 | -.054  | .099  | -.338 | -.423  | 270 | 154 | -.055  | .113  | .344  | -.406 |
| 260 | 442 | .124   | .128  | .521  | -.392  | 270 | 105 | -.052  | .118  | -.301 | -.452  | 270 | 155 | -.055  | .113  | .336  | -.765 |
| 260 | 443 | .480   | .099  | .782  | .018   | 270 | 106 | -.056  | .117  | -.366 | -.447  | 270 | 156 | -.111  | .157  | .233  | -.173 |
| 260 | 444 | .388   | .113  | .820  | .016   | 270 | 107 | -.075  | .124  | -.286 | -.505  | 270 | 157 | -.233  | .198  | .459  | -.112 |
| 260 | 445 | .381   | .122  | .782  | .018   | 270 | 108 | -.120  | .112  | -.228 | -.456  | 270 | 158 | -.183  | .219  | .525  | -.435 |
| 260 | 446 | .368   | .111  | .725  | .064   | 270 | 109 | -.242  | .127  | -.191 | -.743  | 270 | 159 | -.066  | .121  | .406  | -.421 |
| 260 | 447 | .370   | .106  | .708  | .061   | 270 | 110 | -.331  | .140  | -.207 | -.837  | 270 | 160 | -.036  | .112  | .322  | -.399 |
| 260 | 448 | .365   | .096  | .701  | .048   | 270 | 111 | -.478  | .162  | -.091 | -1.047 | 270 | 161 | -.048  | .114  | .344  | -.332 |
| 260 | 449 | .387   | .104  | .752  | .130   | 270 | 112 | -.443  | .129  | -.061 | -.887  | 270 | 162 | -.020  | .167  | .384  | -.423 |
| 260 | 450 | .262   | .112  | .577  | .115   | 270 | 113 | -.388  | .164  | -.192 | -.871  | 270 | 163 | -.033  | .112  | .423  | -.341 |
| 260 | 701 | .037   | .106  | .356  | -.311  | 270 | 114 | -.099  | .139  | -.346 | -.494  | 270 | 164 | -.026  | .067  | .482  | -.328 |
| 260 | 702 | .021   | .108  | .374  | -.335  | 270 | 115 | -.165  | .147  | -.455 | -.719  | 270 | 165 | -.060  | .172  | .436  | -.313 |
| 260 | 703 | .016   | .106  | .394  | -.342  | 270 | 116 | -.055  | .098  | -.402 | -.258  | 270 | 166 | -.022  | .190  | .436  | -.218 |
| 260 | 705 | .032   | .099  | .381  | -.281  | 270 | 117 | -.002  | .101  | -.350 | -.313  | 270 | 167 | -.034  | .166  | .557  | -.369 |
| 260 | 706 | .019   | .106  | .365  | -.349  | 270 | 118 | -.032  | .103  | -.316 | -.362  | 270 | 168 | -.055  | .111  | .422  | -.326 |
| 260 | 707 | .021   | .104  | .377  | -.335  | 270 | 119 | -.071  | .113  | -.290 | -.465  | 270 | 169 | -.034  | .113  | .377  | -.318 |
| 260 | 708 | -.083  | .133  | .377  | -.512  | 270 | 120 | -.362  | .161  | -.129 | -.951  | 270 | 170 | -.055  | .119  | .465  | -.414 |
| 260 | 710 | -.005  | .112  | .437  | -.407  | 270 | 121 | -.533  | .213  | -.034 | -1.264 | 270 | 171 | -.071  | .162  | .414  | -.328 |
| 260 | 711 | -.000  | .098  | .328  | -.365  | 270 | 122 | -.431  | .233  | -.187 | -.279  | 270 | 172 | -.071  | .109  | .326  | -.350 |
| 260 | 712 | .041   | .126  | .482  | -.361  | 270 | 123 | -.104  | .125  | -.271 | -.562  | 270 | 173 | -.058  | .115  | .474  | -.386 |
| 260 | 713 | .058   | .127  | .506  | -.373  | 270 | 124 | -.201  | .121  | -.162 | -.596  | 270 | 174 | -.047  | .128  | .467  | -.484 |
| 260 | 714 | .059   | .123  | .506  | -.350  | 270 | 125 | -.068  | .132  | -.334 | -.451  | 270 | 175 | -.053  | .110  | .551  | -.324 |
| 260 | 716 | .101   | .129  | .551  | -.343  | 270 | 126 | -.047  | .132  | -.344 | -.475  | 270 | 176 | -.037  | .099  | .617  | -.388 |
| 260 | 717 | .020   | .131  | .512  | -.325  | 270 | 127 | -.053  | .136  | -.354 | -.498  | 270 | 177 | -.033  | .098  | .388  | -.392 |
| 260 | 801 | .053   | .126  | .525  | -.279  | 270 | 128 | -.082  | .129  | -.346 | -.498  | 270 | 178 | -.033  | .098  | .492  | -.355 |
| 260 | 802 | .036   | .132  | .569  | -.369  | 270 | 129 | -.342  | .207  | -.211 | -1.032 | 270 | 180 | -.049  | .096  | .369  | -.364 |
| 260 | 803 | .160   | .130  | .594  | -.234  | 270 | 130 | -.460  | .251  | -.173 | -1.122 | 270 | 181 | -.049  | .096  | .358  | -.367 |
| 260 | 804 | .042   | .111  | .443  | -.317  | 270 | 131 | -.349  | .216  | -.322 | -1.180 | 270 | 182 | -.108  | .114  | .212  | -.338 |
| 260 | 901 | -.395  | .136  | .086  | -1.139 | 270 | 132 | -.118  | .168  | -.268 | -.440  | 270 | 201 | -.101  | .115  | .266  | -.392 |
| 260 | 902 | -.383  | .150  | .164  | -1.006 | 270 | 133 | -.135  | .129  | -.270 | -.574  | 270 | 202 | -.063  | .108  | .222  | -.442 |
| 260 | 903 | -.032  | .102  | .305  | -.370  | 270 | 134 | -.079  | .121  | -.369 | -.465  | 270 | 203 | -.080  | .109  | .222  | -.357 |
| 260 | 904 | -.020  | .125  | .447  | -.407  | 270 | 135 | -.046  | .123  | -.370 | -.440  | 270 | 204 | -.072  | .123  | .357  | -.482 |
| 260 | 905 | -.190  | .153  | .311  | -.724  | 270 | 136 | -.042  | .111  | -.379 | -.378  | 270 | 205 | -.113  | .113  | .315  | -.466 |
| 260 | 906 | -.388  | .177  | .267  | -.954  | 270 | 137 | -.064  | .126  | -.290 | -.537  | 270 | 206 | -.138  | .109  | .276  | -.519 |
| 260 | 907 | -.462  | .163  | .122  | -.699  | 270 | 138 | -.271  | .194  | -.231 | -1.048 | 270 | 207 | -.089  | .101  | .235  | -.451 |
| 260 | 908 | -.389  | .157  | .098  | -.865  | 270 | 139 | -.373  | .269  | -.234 | -1.142 | 270 | 209 | -.074  | .114  | .266  | -.406 |
| 260 | 909 | -.186  | .124  | .205  | -.578  | 270 | 140 | -.283  | .269  | -.233 | -1.031 | 270 | 210 | -.079  | .102  | .242  | -.469 |
| 260 | 910 | -.040  | .116  | .362  | -.398  | 270 | 141 | -.087  | .124  | -.310 | -.598  | 270 | 211 | -.088  | .117  | .310  | -.428 |
| 260 | 911 | -.028  | .101  | .278  | -.356  | 270 | 142 | -.168  | .128  | -.247 | -.689  | 270 | 212 | -.070  | .101  | .267  | -.385 |
| 260 | 912 | -.064  | .113  | .290  | -.481  | 270 | 143 | -.074  | .121  | -.303 | -.573  | 270 | 213 | -.066  | .103  | .282  | -.354 |
| 260 | 913 | -.067  | .114  | .486  | -.341  | 270 | 144 | -.039  | .165  | -.283 | -.462  | 270 | 214 | -.066  | .109  | .242  | -.393 |
| 260 | 914 | -.085  | .101  | .219  | -.501  | 270 | 145 | -.036  | .128  | -.421 | -.447  | 270 | 215 | -.060  | .109  | .242  | -.393 |
| 260 | 915 | -.353  | .145  | .176  | -1.029 | 270 | 146 | -.050  | .128  | -.397 | -.454  | 270 |     |        |       |       |       |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C) ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|-------|
| 270 | 216 | .067   | .103  | .306  | .379  | 270 | 316 | .459   | .171  | .017  | -1.166 | 270 | 366 | .035   | .122  | .343  | .321  |
| 270 | 217 | .073   | .106  | .337  | .455  | 270 | 317 | .125   | .110  | .256  | .497   | 270 | 367 | .034   | .125  | .363  | .309  |
| 270 | 218 | .088   | .102  | .291  | .424  | 270 | 318 | .113   | .102  | .232  | .459   | 270 | 368 | .039   | .137  | .330  | .320  |
| 270 | 219 | .091   | .113  | .373  | .381  | 270 | 319 | .068   | .100  | .269  | .389   | 270 | 369 | .031   | .120  | .244  | .490  |
| 270 | 220 | .081   | .098  | .221  | .417  | 270 | 320 | .113   | .122  | .273  | .516   | 270 | 370 | .030   | .109  | .234  | .400  |
| 270 | 221 | .090   | .105  | .226  | .501  | 270 | 321 | .174   | .143  | .286  | .603   | 270 | 371 | .023   | .104  | .358  | .364  |
| 270 | 222 | .116   | .106  | .215  | .480  | 270 | 322 | .102   | .131  | .279  | .593   | 270 | 372 | .031   | .103  | .357  | .418  |
| 270 | 223 | .072   | .102  | .266  | .440  | 270 | 323 | .539   | .234  | .145  | -1.298 | 270 | 373 | .033   | .090  | .285  | .447  |
| 270 | 224 | .082   | .116  | .295  | .428  | 270 | 324 | .548   | .178  | .093  | -1.121 | 270 | 374 | .033   | .101  | .308  | .458  |
| 270 | 225 | .093   | .123  | .333  | .571  | 270 | 325 | .480   | .178  | .050  | -1.045 | 270 | 375 | .022   | .120  | .364  | .458  |
| 270 | 226 | .093   | .136  | .284  | .616  | 270 | 326 | .159   | .131  | .296  | .609   | 270 | 376 | .033   | .093  | .333  | .315  |
| 270 | 227 | .071   | .122  | .263  | .549  | 270 | 327 | .127   | .104  | .236  | .529   | 270 | 377 | .034   | .119  | .341  | .366  |
| 270 | 228 | .066   | .122  | .309  | .567  | 270 | 328 | .107   | .118  | .222  | .519   | 270 | 378 | .035   | .106  | .300  | .421  |
| 270 | 229 | .074   | .118  | .322  | .465  | 270 | 329 | .124   | .134  | .351  | .519   | 270 | 379 | .035   | .105  | .273  | .328  |
| 270 | 230 | .070   | .122  | .347  | .486  | 270 | 330 | .150   | .113  | .260  | .529   | 270 | 380 | .038   | .115  | .438  | .351  |
| 270 | 231 | .081   | .109  | .243  | .424  | 270 | 331 | .103   | .110  | .328  | .450   | 270 | 381 | .038   | .104  | .323  | .328  |
| 270 | 232 | .070   | .125  | .3253 | .553  | 270 | 332 | .497   | .191  | .096  | -1.121 | 270 | 382 | .028   | .097  | .325  | .347  |
| 270 | 233 | .012   | .128  | .386  | .463  | 270 | 333 | .547   | .188  | .011  | -1.316 | 270 | 383 | .029   | .098  | .333  | .360  |
| 270 | 234 | .021   | .098  | .341  | .329  | 270 | 334 | .492   | .183  | .037  | -1.186 | 270 | 384 | .029   | .106  | .333  | .344  |
| 270 | 235 | .025   | .110  | .354  | .358  | 270 | 335 | .166   | .138  | .259  | .982   | 270 | 401 | .122   | .155  | .355  | .366  |
| 270 | 236 | .007   | .103  | .327  | .307  | 270 | 336 | .128   | .113  | .196  | .496   | 270 | 402 | .124   | .153  | .355  | .355  |
| 270 | 237 | .018   | .104  | .317  | .363  | 270 | 337 | .112   | .101  | .276  | .407   | 270 | 403 | .021   | .151  | .350  | .344  |
| 270 | 238 | .015   | .108  | .357  | .360  | 270 | 338 | .103   | .114  | .341  | .453   | 270 | 404 | .022   | .158  | .357  | .350  |
| 270 | 239 | .019   | .117  | .448  | .315  | 270 | 339 | .127   | .121  | .217  | .524   | 270 | 405 | .026   | .159  | .362  | .360  |
| 270 | 240 | .010   | .105  | .352  | .316  | 270 | 340 | .104   | .106  | .281  | .463   | 270 | 406 | .035   | .148  | .375  | .360  |
| 270 | 241 | .005   | .105  | .394  | .268  | 270 | 341 | .404   | .197  | .197  | -1.077 | 270 | 407 | .045   | .138  | .369  | .368  |
| 270 | 242 | .017   | .109  | .449  | .329  | 270 | 342 | .472   | .186  | .072  | -1.026 | 270 | 408 | .021   | .191  | .557  | .557  |
| 270 | 243 | .027   | .104  | .415  | .321  | 270 | 343 | .372   | .165  | .167  | -1.062 | 270 | 409 | .021   | .166  | .166  | .166  |
| 270 | 244 | .038   | .118  | .416  | .447  | 270 | 344 | .114   | .185  | .204  | .451   | 270 | 410 | .037   | .199  | .329  | .358  |
| 270 | 245 | .033   | .109  | .406  | .431  | 270 | 345 | .097   | .161  | .238  | .440   | 270 | 411 | .042   | .198  | .130  | .190  |
| 270 | 246 | .028   | .110  | .409  | .306  | 270 | 346 | .098   | .105  | .199  | .409   | 270 | 412 | .048   | .188  | .597  | .721  |
| 270 | 247 | .016   | .112  | .416  | .371  | 270 | 347 | .097   | .161  | .278  | .460   | 270 | 413 | .034   | .214  | .652  | .721  |
| 270 | 248 | .015   | .114  | .399  | .346  | 270 | 348 | .160   | .122  | .257  | .539   | 270 | 414 | .038   | .165  | .386  | .477  |
| 270 | 249 | .035   | .101  | .383  | .264  | 270 | 349 | .090   | .113  | .232  | .543   | 270 | 415 | .051   | .182  | .604  | .604  |
| 270 | 250 | .016   | .119  | .432  | .341  | 270 | 350 | .339   | .184  | .301  | -1.032 | 270 | 416 | .038   | .206  | .975  | .486  |
| 270 | 301 | .396   | .148  | .106  | .968  | 270 | 351 | .350   | .176  | .064  | .889   | 270 | 417 | .034   | .207  | .604  | .417  |
| 270 | 302 | .392   | .151  | .066  | .925  | 270 | 352 | .293   | .135  | .139  | .828   | 270 | 418 | .035   | .190  | .557  | .418  |
| 270 | 303 | .480   | .134  | .067  | .993  | 270 | 353 | .095   | .098  | .321  | .420   | 270 | 419 | .032   | .172  | .911  | .346  |
| 270 | 304 | .351   | .139  | .139  | .965  | 270 | 354 | .073   | .111  | .297  | .371   | 270 | 420 | .030   | .172  | .095  | .344  |
| 270 | 305 | .265   | .156  | .248  | .900  | 270 | 355 | .056   | .098  | .281  | .356   | 270 | 421 | .027   | .175  | .776  | .373  |
| 270 | 306 | .161   | .110  | .3253 | .684  | 270 | 356 | .076   | .097  | .234  | .358   | 270 | 422 | .027   | .199  | .569  | .368  |
| 270 | 307 | .091   | .106  | .363  | .327  | 270 | 357 | .108   | .125  | .228  | .510   | 270 | 423 | .034   | .171  | .733  | .499  |
| 270 | 308 | .087   | .120  | .315  | .470  | 270 | 358 | .077   | .108  | .298  | .491   | 270 | 424 | .022   | .158  | .011  | .210  |
| 270 | 309 | .076   | .108  | .315  | .417  | 270 | 359 | .203   | .142  | .308  | .722   | 270 | 425 | .031   | .175  | .011  | .255  |
| 270 | 310 | .094   | .112  | .273  | .481  | 270 | 360 | .209   | .135  | .198  | .758   | 270 | 426 | .034   | .184  | .324  | .266  |
| 270 | 311 | .153   | .131  | .255  | .606  | 270 | 361 | .214   | .145  | .297  | .699   | 270 | 427 | .033   | .183  | .604  | .366  |
| 270 | 312 | .155   | .126  | .233  | .616  | 270 | 362 | .053   | .100  | .237  | .370   | 270 | 428 | .033   | .183  | .604  | .366  |
| 270 | 313 | .132   | .131  | .353  | .620  | 270 | 363 | .022   | .099  | .285  | .386   | 270 | 429 | .033   | .164  | .915  | .011  |
| 270 | 314 | .106   | .196  | .213  | .122  | 270 | 364 | .031   | .096  | .275  | .284   | 270 | 430 | .035   | .164  | .915  | .355  |
| 270 | 315 | .572   | .174  | .070  | .183  | 270 | 365 | .004   | .093  | .295  | .297   | 270 | 431 | .020   | .179  | .848  | .340  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|-------|
| 270 | 432 | -.072  | .183  | .511  | -.847 | 270 | 914 | -.122  | .124  | .368  | -.535  | 280 | 145 | -.018  | .124  | .394  | -.353 |
| 270 | 433 | -.073  | .145  | .607  | -.450 | 270 | 915 | -.335  | .147  | .325  | -.884  | 280 | 146 | -.025  | .121  | .394  | -.357 |
| 270 | 434 | -.207  | .152  | .779  | -.344 | 270 | 916 | -.412  | .142  | .059  | -1.047 | 280 | 147 | -.052  | .166  | .415  | -.768 |
| 270 | 435 | -.229  | .142  | .775  | -.200 | 270 | 917 | -.051  | .133  | .372  | -.623  | 280 | 148 | -.129  | .178  | .348  | -.684 |
| 270 | 436 | -.174  | .158  | .782  | -.378 | 270 | 918 | -.007  | .117  | .357  | -.390  | 280 | 149 | -.021  | .209  | .627  | -.958 |
| 270 | 437 | -.037  | .174  | .514  | -.663 | 270 | 919 | -.301  | .181  | .255  | -1.001 | 280 | 150 | -.087  | .124  | .324  | -.588 |
| 270 | 438 | -.133  | .112  | .582  | -.222 | 280 | 101 | -.144  | .129  | .341  | -.629  | 280 | 151 | -.104  | .127  | .320  | -.640 |
| 270 | 439 | -.147  | .132  | .648  | -.251 | 280 | 102 | -.162  | .121  | .276  | -.615  | 280 | 152 | -.029  | .190  | .321  | -.370 |
| 270 | 440 | -.147  | .131  | .660  | -.261 | 280 | 103 | -.194  | .131  | .285  | -.629  | 280 | 153 | -.028  | .119  | .324  | -.326 |
| 270 | 441 | -.088  | .130  | .490  | -.299 | 280 | 104 | -.139  | .111  | .241  | -.507  | 280 | 154 | -.050  | .122  | .444  | -.449 |
| 270 | 442 | -.017  | .141  | .537  | -.444 | 280 | 105 | -.155  | .131  | .229  | -.694  | 280 | 155 | -.058  | .120  | .443  | -.334 |
| 270 | 443 | -.494  | .104  | .833  | .177  | 280 | 106 | -.146  | .127  | .258  | -.586  | 280 | 156 | -.058  | .127  | .332  | -.417 |
| 270 | 444 | -.381  | .107  | .725  | .069  | 280 | 107 | -.155  | .135  | .275  | -.665  | 280 | 157 | -.046  | .158  | .437  | -.565 |
| 270 | 445 | -.385  | .111  | .784  | .051  | 280 | 108 | -.186  | .120  | .175  | -.635  | 280 | 158 | -.075  | .162  | .585  | -.666 |
| 270 | 446 | -.357  | .100  | .787  | .028  | 280 | 109 | -.264  | .136  | .185  | -.846  | 280 | 159 | -.107  | .123  | .300  | -.643 |
| 270 | 447 | -.376  | .095  | .746  | .059  | 280 | 110 | -.267  | .135  | .219  | -.811  | 280 | 160 | -.133  | .114  | .181  | -.411 |
| 270 | 448 | -.331  | .100  | .725  | -.032 | 280 | 111 | -.354  | .152  | .228  | -.922  | 280 | 161 | -.032  | .119  | .399  | -.483 |
| 270 | 449 | -.331  | .105  | .653  | -.069 | 280 | 112 | -.436  | .130  | .103  | -.990  | 280 | 162 | -.028  | .110  | .418  | -.378 |
| 270 | 450 | -.198  | .104  | .544  | -.153 | 280 | 113 | -.347  | .150  | .214  | -.858  | 280 | 163 | -.050  | .115  | .463  | -.384 |
| 270 | 701 | -.042  | .088  | .347  | -.252 | 280 | 114 | -.158  | .125  | .339  | -.619  | 280 | 164 | -.050  | .091  | .351  | -.200 |
| 270 | 702 | -.057  | .122  | .504  | -.314 | 280 | 115 | -.278  | .172  | .333  | -1.006 | 280 | 165 | -.043  | .128  | .558  | -.410 |
| 270 | 703 | -.052  | .121  | .453  | -.301 | 280 | 116 | -.028  | .090  | .383  | -.323  | 280 | 166 | -.027  | .141  | .480  | -.480 |
| 270 | 705 | -.060  | .113  | .463  | -.279 | 280 | 117 | -.010  | .115  | .387  | -.325  | 280 | 167 | -.029  | .142  | .452  | -.454 |
| 270 | 706 | -.046  | .108  | .414  | -.276 | 280 | 118 | -.007  | .118  | .407  | -.323  | 280 | 168 | -.028  | .095  | .398  | -.343 |
| 270 | 707 | -.048  | .105  | .392  | -.281 | 280 | 119 | -.007  | .126  | .405  | -.367  | 280 | 169 | -.028  | .108  | .291  | -.333 |
| 270 | 708 | -.050  | .148  | .462  | -.585 | 280 | 120 | -.133  | .151  | .283  | -.603  | 280 | 170 | -.022  | .109  | .412  | -.342 |
| 270 | 710 | -.020  | .114  | .414  | -.344 | 280 | 121 | -.234  | .185  | .346  | -.795  | 280 | 171 | -.060  | .118  | .443  | -.337 |
| 270 | 711 | -.029  | .102  | .342  | -.302 | 280 | 122 | -.028  | .190  | .530  | -.682  | 280 | 172 | -.057  | .101  | .442  | -.237 |
| 270 | 712 | -.050  | .114  | .456  | -.350 | 280 | 123 | -.087  | .124  | .309  | -.537  | 280 | 173 | -.068  | .110  | .451  | -.265 |
| 270 | 713 | -.111  | .118  | .497  | -.274 | 280 | 124 | -.159  | .119  | .182  | -.497  | 280 | 174 | -.091  | .117  | .515  | -.314 |
| 270 | 714 | -.064  | .113  | .475  | -.332 | 280 | 125 | -.052  | .110  | .317  | -.429  | 280 | 175 | -.106  | .129  | .619  | -.360 |
| 270 | 716 | -.141  | .119  | .577  | -.317 | 280 | 126 | -.004  | .110  | .377  | -.387  | 280 | 176 | -.127  | .107  | .515  | -.187 |
| 270 | 717 | -.046  | .129  | .461  | -.375 | 280 | 128 | -.015  | .115  | .412  | -.364  | 280 | 177 | -.068  | .113  | .362  | -.462 |
| 270 | 801 | -.050  | .123  | .439  | -.338 | 280 | 129 | -.015  | .104  | .367  | -.321  | 280 | 178 | -.044  | .112  | .349  | -.451 |
| 270 | 802 | -.014  | .129  | .414  | -.417 | 280 | 129 | -.114  | .164  | .527  | -.886  | 280 | 180 | -.078  | .111  | .444  | -.361 |
| 270 | 803 | -.070  | .129  | .489  | -.318 | 280 | 130 | -.227  | .195  | .561  | -1.100 | 280 | 181 | -.071  | .114  | .444  | -.366 |
| 270 | 804 | -.027  | .123  | .414  | -.418 | 280 | 131 | -.001  | .202  | .777  | -.826  | 280 | 182 | -.067  | .112  | .444  | -.274 |
| 270 | 901 | -.399  | .152  | .097  | -.860 | 280 | 132 | -.123  | .105  | .280  | -.501  | 280 | 201 | -.122  | .116  | .119  | -.629 |
| 270 | 902 | -.431  | .170  | .143  | -.939 | 280 | 133 | -.118  | .119  | .331  | -.588  | 280 | 202 | -.127  | .124  | .285  | -.516 |
| 270 | 903 | -.092  | .119  | .312  | -.458 | 280 | 134 | -.054  | .114  | .387  | -.522  | 280 | 203 | -.127  | .124  | .285  | -.516 |
| 270 | 904 | -.051  | .120  | .357  | -.459 | 280 | 135 | -.005  | .118  | .448  | -.480  | 280 | 204 | -.110  | .118  | .355  | -.506 |
| 270 | 905 | -.177  | .136  | .249  | -.638 | 280 | 136 | -.015  | .105  | .416  | -.401  | 280 | 205 | -.131  | .114  | .292  | -.492 |
| 270 | 906 | -.373  | .150  | .154  | -.920 | 280 | 137 | -.041  | .116  | .454  | -.335  | 280 | 206 | -.160  | .115  | .229  | -.621 |
| 270 | 907 | -.438  | .130  | .022  | -.949 | 280 | 138 | -.037  | .147  | .419  | -.689  | 280 | 207 | -.136  | .130  | .336  | -.647 |
| 270 | 908 | -.382  | .144  | .078  | -.821 | 280 | 139 | -.119  | .176  | .431  | -.812  | 280 | 208 | -.131  | .143  | .322  | -.706 |
| 270 | 909 | -.196  | .120  | .155  | -.628 | 280 | 140 | -.046  | .156  | .531  | -.550  | 280 | 209 | -.125  | .119  | .302  | -.581 |
| 270 | 910 | -.052  | .111  | .279  | -.427 | 280 | 141 | -.114  | .119  | .299  | -.526  | 280 | 210 | -.114  | .126  | .346  | -.588 |
| 270 | 911 | -.041  | .096  | .261  | -.367 | 280 | 142 | -.177  | .122  | .251  | -.553  | 280 | 211 | -.117  | .120  | .353  | -.590 |
| 270 | 912 | -.050  | .127  | .414  | -.529 | 280 | 143 | -.063  | .118  | .388  | -.426  | 280 | 212 | -.122  | .113  | .283  | -.481 |
| 270 | 913 | -.068  | .122  | .520  | -.329 | 280 | 144 | -.014  | .102  | .373  | -.324  | 280 | 213 | -.109  | .114  | .269  | -.563 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|--------|------|-----|--------|-------|-------|--------|
| 2880 | 214 | -.082  | .111  | .365  | -.406 | 2880 | 314 | -.793  | .239  | -.097 | -1.589 | 2880 | 364 | -.036  | .116  | .384  | -.377  |
| 2880 | 215 | -.079  | .116  | .352  | -.435 | 2880 | 315 | -.697  | .198  | -.081 | -1.314 | 2880 | 365 | -.058  | .111  | .387  | -.364  |
| 2880 | 216 | -.090  | .106  | .291  | -.457 | 2880 | 316 | -.660  | .198  | -.077 | -1.368 | 2880 | 366 | -.067  | .104  | .278  | -.564  |
| 2880 | 217 | -.085  | .103  | .260  | -.420 | 2880 | 317 | -.227  | .137  | -.187 | -.830  | 2880 | 367 | -.067  | .109  | .256  | -.584  |
| 2880 | 218 | -.084  | .107  | .308  | -.478 | 2880 | 318 | -.160  | .126  | -.235 | -.617  | 2880 | 368 | -.168  | .124  | .195  | -.598  |
| 2880 | 219 | -.061  | .109  | .260  | -.491 | 2880 | 319 | -.153  | .115  | -.267 | -.507  | 2880 | 369 | -.162  | .114  | .221  | -.509  |
| 2880 | 220 | -.080  | .100  | .274  | -.398 | 2880 | 320 | -.163  | .106  | -.148 | -.502  | 2880 | 370 | -.129  | .110  | .236  | -.561  |
| 2880 | 221 | -.070  | .104  | .262  | -.488 | 2880 | 321 | -.257  | .133  | -.147 | -.762  | 2880 | 371 | -.050  | .094  | .242  | -.411  |
| 2880 | 222 | -.074  | .122  | .306  | -.506 | 2880 | 322 | -.174  | .144  | -.284 | -.644  | 2880 | 372 | -.019  | .099  | .371  | -.333  |
| 2880 | 223 | -.093  | .109  | .262  | -.446 | 2880 | 323 | -.789  | .210  | -.163 | -1.604 | 2880 | 373 | -.019  | .088  | .296  | -.260  |
| 2880 | 224 | -.088  | .097  | .198  | -.457 | 2880 | 324 | -.687  | .201  | -.022 | -1.323 | 2880 | 374 | -.008  | .098  | .312  | -.312  |
| 2880 | 225 | -.081  | .099  | .219  | -.467 | 2880 | 325 | -.711  | .212  | -.070 | -1.418 | 2880 | 375 | -.014  | .113  | .503  | -.380  |
| 2880 | 226 | -.067  | .119  | .288  | -.568 | 2880 | 326 | -.408  | .202  | -.161 | -1.199 | 2880 | 376 | -.029  | .098  | .302  | -.489  |
| 2880 | 227 | -.067  | .106  | .241  | -.424 | 2880 | 327 | -.279  | .159  | -.206 | -.1034 | 2880 | 377 | -.150  | .100  | .157  | -.469  |
| 2880 | 228 | -.089  | .116  | .299  | -.553 | 2880 | 328 | -.180  | .139  | -.233 | -.769  | 2880 | 378 | -.166  | .110  | .262  | -.530  |
| 2880 | 229 | -.092  | .106  | .198  | -.506 | 2880 | 329 | -.162  | .149  | -.413 | -.745  | 2880 | 379 | -.031  | .100  | .329  | -.333  |
| 2880 | 230 | -.057  | .106  | .315  | -.416 | 2880 | 330 | -.178  | .125  | -.235 | -.678  | 2880 | 380 | -.029  | .093  | .266  | -.390  |
| 2880 | 231 | -.080  | .104  | .272  | -.439 | 2880 | 331 | -.118  | .116  | -.282 | -.509  | 2880 | 381 | -.013  | .093  | .312  | -.326  |
| 2880 | 232 | -.066  | .113  | .299  | -.520 | 2880 | 332 | -.837  | .229  | -.107 | -1.781 | 2880 | 382 | -.001  | .104  | .369  | -.317  |
| 2880 | 233 | -.064  | .132  | .508  | -.623 | 2880 | 333 | -.709  | .199  | -.107 | -1.290 | 2880 | 383 | -.009  | .106  | .391  | -.358  |
| 2880 | 234 | -.076  | .111  | .292  | -.461 | 2880 | 334 | -.668  | .198  | -.109 | -1.408 | 2880 | 384 | -.015  | .106  | .288  | -.407  |
| 2880 | 235 | -.081  | .121  | .313  | -.628 | 2880 | 335 | -.373  | .192  | -.157 | -1.113 | 2880 | 401 | -.078  | .164  | .549  | -.619  |
| 2880 | 236 | -.079  | .121  | .323  | -.506 | 2880 | 336 | -.241  | .161  | -.206 | -.997  | 2880 | 402 | -.482  | .161  | .138  | -.997  |
| 2880 | 237 | -.072  | .113  | .260  | -.474 | 2880 | 337 | -.155  | .131  | -.243 | -.772  | 2880 | 403 | -.011  | .166  | .636  | -.546  |
| 2880 | 238 | -.030  | .107  | .331  | -.359 | 2880 | 338 | -.172  | .114  | -.185 | -.665  | 2880 | 404 | -.058  | .151  | .486  | -.628  |
| 2880 | 239 | -.045  | .104  | .274  | -.463 | 2880 | 339 | -.162  | .112  | -.194 | -.495  | 2880 | 405 | -.133  | .147  | .406  | -.635  |
| 2880 | 240 | -.048  | .112  | .285  | -.473 | 2880 | 340 | -.118  | .108  | -.300 | -.580  | 2880 | 406 | -.411  | .147  | .029  | -.907  |
| 2880 | 241 | -.016  | .112  | .316  | -.370 | 2880 | 341 | -.719  | .248  | -.006 | -1.619 | 2880 | 407 | -.384  | .156  | .112  | -.638  |
| 2880 | 242 | -.064  | .101  | .260  | -.435 | 2880 | 342 | -.660  | .199  | -.018 | -1.490 | 2880 | 408 | -.290  | .156  | .836  | -.217  |
| 2880 | 243 | -.063  | .117  | .586  | -.348 | 2880 | 343 | -.260  | .195  | -.035 | -1.298 | 2880 | 409 | -.512  | .190  | .158  | -.071  |
| 2880 | 244 | -.016  | .114  | .409  | -.475 | 2880 | 344 | -.276  | .161  | -.200 | -.958  | 2880 | 410 | -.470  | .206  | .042  | -.184  |
| 2880 | 245 | -.026  | .119  | .351  | -.507 | 2880 | 345 | -.195  | .130  | -.195 | -.936  | 2880 | 411 | -.101  | .195  | .730  | -.599  |
| 2880 | 246 | -.024  | .107  | .413  | -.423 | 2880 | 346 | -.130  | .122  | -.266 | -.561  | 2880 | 412 | -.401  | .213  | .403  | -.157  |
| 2880 | 247 | -.041  | .112  | .387  | -.409 | 2880 | 347 | -.132  | .122  | -.241 | -.571  | 2880 | 413 | -.291  | .163  | .864  | -.199  |
| 2880 | 248 | -.021  | .123  | .469  | -.385 | 2880 | 348 | -.142  | .120  | -.271 | -.577  | 2880 | 414 | -.487  | .173  | .003  | -.065  |
| 2880 | 249 | -.058  | .122  | .450  | -.341 | 2880 | 349 | -.100  | .116  | -.312 | -.628  | 2880 | 415 | -.383  | .221  | .096  | -.344  |
| 2880 | 250 | -.056  | .109  | .469  | -.249 | 2880 | 350 | -.543  | .205  | -.120 | -1.162 | 2880 | 416 | -.052  | .198  | .639  | -.603  |
| 2880 | 251 | -.538  | .158  | -.128 | -.066 | 2880 | 351 | -.542  | .187  | -.133 | -1.060 | 2880 | 417 | -.528  | .216  | .109  | -.318  |
| 2880 | 252 | -.534  | .152  | -.103 | -.034 | 2880 | 352 | -.448  | .186  | -.144 | -1.165 | 2880 | 418 | -.324  | .164  | .901  | -.293  |
| 2880 | 253 | -.620  | .163  | -.090 | -.185 | 2880 | 353 | -.205  | .144  | -.184 | -.799  | 2880 | 419 | -.457  | .175  | .039  | -.093  |
| 2880 | 254 | -.403  | .176  | -.146 | -.119 | 2880 | 354 | -.147  | .126  | -.191 | -.651  | 2880 | 420 | -.350  | .195  | .038  | -.194  |
| 2880 | 255 | -.332  | .178  | -.265 | -.918 | 2880 | 355 | -.129  | .117  | -.161 | -.640  | 2880 | 421 | -.019  | .203  | .703  | -.660  |
| 2880 | 256 | -.237  | .154  | -.314 | -.833 | 2880 | 356 | -.113  | .112  | -.356 | -.418  | 2880 | 422 | -.512  | .216  | .262  | -.1245 |
| 2880 | 257 | -.203  | .154  | -.225 | -.810 | 2880 | 357 | -.146  | .132  | -.288 | -.580  | 2880 | 423 | -.257  | .147  | .806  | -.229  |
| 2880 | 258 | -.189  | .140  | -.215 | -.746 | 2880 | 358 | -.120  | .114  | -.227 | -.522  | 2880 | 424 | -.381  | .167  | .929  | -.217  |
| 2880 | 259 | -.152  | .152  | -.200 | -.738 | 2880 | 359 | -.428  | .164  | -.110 | -.970  | 2880 | 425 | -.303  | .200  | .904  | -.333  |
| 2880 | 260 | -.193  | .138  | -.269 | -.713 | 2880 | 360 | -.325  | .153  | -.154 | -.884  | 2880 | 426 | -.026  | .189  | .642  | -.688  |
| 2880 | 261 | -.233  | .143  | -.228 | -.696 | 2880 | 361 | -.280  | .146  | -.181 | -.730  | 2880 | 427 | -.489  | .213  | .196  | -.131  |
| 2880 | 262 | -.251  | .137  | -.205 | -.772 | 2880 | 362 | -.132  | .120  | -.340 | -.573  | 2880 | 428 | -.199  | .144  | .720  | -.280  |
| 2880 | 263 | -.262  | .123  | -.229 | -.616 | 2880 | 363 | -.091  | .103  | -.265 | -.489  | 2880 | 429 | -.312  | .138  | .828  | -.100  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|-------|
| 290 | 430 | .218   | .177  | .832  | -.333 | 290 | 912 | -.172  | .140  | .308  | -.651  | 290 | 143 | -.029  | .119  | .342  | -.440 |
| 290 | 431 | -.094  | .192  | .591  | -.675 | 290 | 913 | -.016  | .145  | .503  | -.468  | 290 | 144 | -.050  | .105  | .341  | -.320 |
| 290 | 432 | -.348  | .190  | .468  | -.644 | 290 | 914 | -.134  | .120  | .287  | -.496  | 290 | 145 | -.100  | .124  | .371  | -.241 |
| 290 | 433 | -.185  | .127  | .661  | -.251 | 290 | 915 | -.491  | .155  | .039  | -.1078 | 290 | 146 | -.134  | .125  | .332  | -.182 |
| 290 | 434 | -.233  | .143  | .754  | -.207 | 290 | 916 | -.528  | .149  | -.048 | -.1664 | 290 | 147 | -.140  | .145  | .672  | -.333 |
| 290 | 435 | .192   | .146  | .745  | -.386 | 290 | 917 | -.066  | .111  | .296  | -.503  | 290 | 148 | -.122  | .154  | .639  | -.465 |
| 290 | 436 | .011   | .151  | .532  | -.496 | 290 | 918 | -.052  | .108  | .303  | -.431  | 290 | 149 | -.122  | .167  | .737  | -.329 |
| 290 | 437 | -.248  | .187  | .346  | -.833 | 290 | 919 | -.354  | .151  | .156  | -.878  | 290 | 150 | -.125  | .122  | .243  | -.611 |
| 290 | 438 | .131   | .115  | .512  | -.225 | 290 | 101 | -.289  | .161  | .194  | -.904  | 290 | 151 | -.148  | .126  | .232  | -.641 |
| 290 | 439 | .153   | .128  | .615  | -.338 | 290 | 102 | -.316  | .148  | .140  | -.853  | 290 | 152 | -.027  | .097  | .268  | -.325 |
| 290 | 440 | .108   | .139  | .630  | -.384 | 290 | 103 | -.328  | .152  | .182  | -.914  | 290 | 153 | -.015  | .104  | .407  | -.314 |
| 290 | 441 | .001   | .142  | .526  | -.430 | 290 | 104 | -.303  | .132  | .101  | -.791  | 290 | 154 | -.056  | .108  | .450  | -.264 |
| 290 | 442 | .168   | .121  | .265  | -.533 | 290 | 105 | -.322  | .160  | .197  | -.884  | 290 | 155 | -.084  | .107  | .469  | -.224 |
| 290 | 443 | .485   | .091  | .787  | -.188 | 290 | 106 | -.222  | .153  | .198  | -.820  | 290 | 156 | -.090  | .100  | .407  | -.229 |
| 290 | 444 | .384   | .102  | .838  | -.097 | 290 | 107 | -.296  | .153  | .219  | -.827  | 290 | 157 | -.111  | .151  | .650  | -.421 |
| 290 | 445 | .396   | .112  | .735  | -.033 | 290 | 108 | -.296  | .134  | .165  | -.741  | 290 | 158 | -.230  | .158  | .801  | -.302 |
| 290 | 446 | .351   | .095  | .662  | -.086 | 290 | 109 | -.414  | .161  | .232  | -.649  | 290 | 159 | -.138  | .124  | .368  | -.605 |
| 290 | 447 | .372   | .096  | .705  | -.088 | 290 | 110 | -.311  | .150  | .333  | -.421  | 290 | 160 | -.167  | .111  | .275  | -.600 |
| 290 | 448 | .332   | .094  | .676  | -.052 | 290 | 111 | -.302  | .157  | .324  | -.827  | 290 | 161 | -.048  | .108  | .283  | -.465 |
| 290 | 449 | .258   | .115  | .637  | -.187 | 290 | 112 | -.502  | .146  | .070  | -.928  | 290 | 162 | -.033  | .100  | .319  | -.374 |
| 290 | 450 | .121   | .099  | .508  | -.235 | 290 | 113 | -.316  | .182  | .309  | -.912  | 290 | 163 | -.054  | .104  | .358  | -.346 |
| 290 | 701 | .064   | .107  | .432  | -.259 | 290 | 114 | -.267  | .159  | .221  | -.961  | 290 | 164 | -.069  | .080  | .272  | -.266 |
| 290 | 702 | .079   | .096  | .410  | -.215 | 290 | 115 | -.566  | .249  | .154  | -.563  | 290 | 165 | -.110  | .125  | .622  | -.354 |
| 290 | 703 | .076   | .097  | .426  | -.207 | 290 | 116 | -.021  | .112  | .396  | -.364  | 290 | 166 | -.102  | .131  | .621  | -.418 |
| 290 | 705 | .070   | .088  | .394  | -.195 | 290 | 117 | -.014  | .105  | .396  | -.368  | 290 | 167 | -.122  | .146  | .763  | -.360 |
| 290 | 706 | .070   | .111  | .514  | -.313 | 290 | 118 | -.044  | .108  | .435  | -.394  | 290 | 168 | -.084  | .107  | .262  | -.493 |
| 290 | 707 | .067   | .109  | .512  | -.277 | 290 | 119 | -.029  | .116  | .479  | -.360  | 290 | 169 | -.063  | .103  | .301  | -.400 |
| 290 | 708 | .015   | .114  | .352  | -.400 | 290 | 120 | -.054  | .120  | .407  | -.348  | 290 | 170 | -.040  | .104  | .433  | -.278 |
| 290 | 710 | .043   | .114  | .526  | -.354 | 290 | 121 | -.054  | .163  | .546  | -.641  | 290 | 171 | -.107  | .113  | .482  | -.267 |
| 290 | 711 | .065   | .105  | .520  | -.292 | 290 | 122 | -.195  | .172  | .831  | -.418  | 290 | 172 | -.133  | .096  | .419  | -.188 |
| 290 | 712 | .079   | .128  | .486  | -.357 | 290 | 123 | -.191  | .130  | .205  | -.657  | 290 | 173 | -.117  | .126  | .593  | -.222 |
| 290 | 713 | .166   | .135  | .652  | -.405 | 290 | 124 | -.250  | .120  | .140  | -.706  | 290 | 174 | -.117  | .142  | .688  | -.186 |
| 290 | 714 | .101   | .128  | .515  | -.303 | 290 | 125 | -.062  | .104  | .315  | -.701  | 290 | 175 | -.186  | .153  | .783  | -.243 |
| 290 | 716 | .176   | .132  | .550  | -.280 | 290 | 126 | -.023  | .108  | .405  | -.319  | 290 | 176 | -.097  | .117  | .498  | -.282 |
| 290 | 717 | .087   | .120  | .425  | -.411 | 290 | 127 | -.072  | .115  | .518  | -.303  | 290 | 177 | -.046  | .110  | .290  | -.403 |
| 290 | 801 | .056   | .110  | .356  | -.373 | 290 | 128 | -.107  | .107  | .462  | -.231  | 290 | 178 | -.056  | .110  | .267  | -.403 |
| 290 | 802 | .034   | .117  | .328  | -.435 | 290 | 129 | -.070  | .138  | .556  | -.374  | 290 | 180 | -.034  | .110  | .429  | -.251 |
| 290 | 803 | .003   | .108  | .334  | -.434 | 290 | 130 | -.029  | .177  | .598  | -.587  | 290 | 181 | -.100  | .105  | .442  | -.192 |
| 290 | 804 | .021   | .114  | .390  | -.402 | 290 | 131 | -.266  | .175  | .621  | -.377  | 290 | 182 | -.091  | .103  | .429  | -.186 |
| 290 | 901 | .469   | .138  | .047  | -.933 | 290 | 132 | .176   | .192  | .192  | -.568  | 290 | 201 | -.215  | .180  | .236  | -.964 |
| 290 | 902 | .566   | .161  | -.104 | -.124 | 290 | 133 | .192   | .122  | .182  | -.628  | 290 | 202 | -.211  | .123  | .170  | -.704 |
| 290 | 903 | .269   | .130  | .104  | -.704 | 290 | 134 | .075   | .112  | .282  | -.484  | 290 | 203 | -.168  | .121  | .230  | -.585 |
| 290 | 904 | .150   | .133  | .299  | -.809 | 290 | 135 | .009   | .118  | .385  | -.387  | 290 | 204 | -.184  | .166  | .300  | -.322 |
| 290 | 905 | .181   | .137  | .255  | -.689 | 290 | 136 | .058   | .107  | .399  | -.391  | 290 | 205 | -.182  | .133  | .274  | -.634 |
| 290 | 906 | .431   | .153  | .023  | -.995 | 290 | 137 | .103   | .123  | .552  | -.301  | 290 | 206 | -.203  | .132  | .328  | -.673 |
| 290 | 907 | .507   | .141  | -.094 | -.102 | 290 | 138 | .100   | .137  | .607  | -.379  | 290 | 207 | -.243  | .146  | .275  | -.848 |
| 290 | 908 | .402   | .167  | .123  | -.966 | 290 | 139 | .071   | .169  | .876  | -.524  | 290 | 208 | -.197  | .143  | .208  | -.787 |
| 290 | 909 | .234   | .121  | .160  | -.833 | 290 | 140 | .255   | .146  | .708  | -.221  | 290 | 209 | -.170  | .139  | .318  | -.808 |
| 290 | 910 | .122   | .116  | .252  | -.833 | 290 | 141 | .137   | .123  | .226  | -.454  | 290 | 210 | -.204  | .134  | .195  | -.623 |
| 290 | 911 | .125   | .107  | .179  | -.837 | 290 | 142 | .184   | .123  | .172  | -.599  | 290 | 211 | -.208  | .141  | .269  | -.680 |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 290 | 212 | 213    | 144   | 158   | 769   | 290 | 312 | 244    | 153   | 302   | 783   | 290 | 362 | 231    | 146   | 227   | 775   |
| 290 | 213 | 161    | 120   | 179   | 660   | 290 | 313 | 241    | 139   | 255   | 673   | 290 | 363 | 191    | 129   | 251   | 618   |
| 290 | 214 | 188    | 114   | 183   | 361   | 290 | 314 | 435    | 225   | 184   | 282   | 290 | 364 | 122    | 128   | 355   | 520   |
| 290 | 215 | 182    | 119   | 134   | 580   | 290 | 315 | 418    | 199   | 067   | 180   | 290 | 365 | 111    | 128   | 338   | 541   |
| 290 | 216 | 184    | 124   | 208   | 667   | 290 | 317 | 333    | 215   | 237   | 180   | 290 | 366 | 109    | 123   | 223   | 682   |
| 290 | 217 | 200    | 127   | 235   | 745   | 290 | 318 | 356    | 173   | 230   | 146   | 290 | 367 | 111    | 122   | 331   | 575   |
| 290 | 218 | 190    | 157   | 205   | 715   | 290 | 319 | 324    | 167   | 144   | 297   | 290 | 368 | 111    | 120   | 213   | 165   |
| 290 | 219 | 172    | 136   | 255   | 690   | 290 | 320 | 277    | 163   | 252   | 52    | 290 | 369 | 220    | 120   | 137   | 644   |
| 290 | 220 | 152    | 129   | 279   | 939   | 290 | 321 | 218    | 152   | 260   | 90    | 290 | 370 | 200    | 191   | 298   | 936   |
| 290 | 221 | 180    | 125   | 282   | 839   | 290 | 322 | 232    | 143   | 218   | 699   | 290 | 371 | 088    | 110   | 228   | 437   |
| 290 | 222 | 196    | 156   | 269   | 001   | 290 | 323 | 264    | 219   | 261   | 578   | 290 | 372 | 110    | 104   | 298   | 492   |
| 290 | 223 | 194    | 135   | 268   | 667   | 290 | 324 | 351    | 190   | 227   | 348   | 290 | 373 | 085    | 103   | 301   | 378   |
| 290 | 224 | 156    | 132   | 229   | 779   | 290 | 325 | 386    | 239   | 235   | 248   | 290 | 374 | 085    | 105   | 268   | 455   |
| 290 | 225 | 171    | 133   | 267   | 718   | 290 | 326 | 313    | 193   | 366   | 299   | 290 | 375 | 058    | 104   | 227   | 545   |
| 290 | 226 | 229    | 202   | 322   | 054   | 290 | 327 | 362    | 189   | 176   | 205   | 290 | 376 | 050    | 106   | 304   | 387   |
| 290 | 227 | 192    | 155   | 237   | 881   | 290 | 328 | 341    | 180   | 336   | 266   | 290 | 377 | 196    | 105   | 177   | 600   |
| 290 | 228 | 140    | 191   | 361   | 843   | 290 | 329 | 283    | 186   | 282   | 99    | 290 | 378 | 080    | 106   | 099   | 567   |
| 290 | 229 | 130    | 127   | 264   | 769   | 290 | 330 | 283    | 155   | 283   | 266   | 290 | 379 | 080    | 110   | 294   | 472   |
| 290 | 230 | 175    | 139   | 225   | 757   | 290 | 331 | 208    | 176   | 176   | 100   | 290 | 380 | 080    | 102   | 203   | 489   |
| 290 | 231 | 131    | 125   | 236   | 831   | 290 | 332 | 339    | 138   | 138   | 354   | 290 | 381 | 080    | 101   | 240   | 375   |
| 290 | 232 | 138    | 150   | 321   | 730   | 290 | 333 | 397    | 207   | 137   | 455   | 290 | 382 | 080    | 100   | 228   | 445   |
| 290 | 233 | 082    | 114   | 223   | 476   | 290 | 334 | 400    | 185   | 126   | 133   | 290 | 383 | 080    | 104   | 291   | 364   |
| 290 | 234 | 092    | 114   | 294   | 587   | 290 | 335 | 363    | 192   | 215   | 170   | 290 | 384 | 080    | 111   | 340   | 398   |
| 290 | 235 | 094    | 113   | 271   | 531   | 290 | 336 | 353    | 176   | 156   | 982   | 290 | 401 | 080    | 163   | 550   | 677   |
| 290 | 236 | 091    | 123   | 296   | 553   | 290 | 337 | 306    | 187   | 262   | 103   | 290 | 402 | 552    | 157   | 032   | 093   |
| 290 | 237 | 129    | 118   | 223   | 672   | 290 | 338 | 307    | 166   | 265   | 120   | 290 | 403 | 026    | 160   | 553   | 568   |
| 290 | 238 | 058    | 113   | 251   | 454   | 290 | 339 | 263    | 147   | 218   | 797   | 290 | 404 | 138    | 170   | 430   | 673   |
| 290 | 239 | 072    | 112   | 236   | 642   | 290 | 340 | 244    | 140   | 178   | 794   | 290 | 405 | 288    | 182   | 201   | 1001  |
| 290 | 240 | 064    | 121   | 373   | 669   | 290 | 341 | 194    | 134   | 287   | 665   | 290 | 406 | 552    | 147   | 043   | 054   |
| 290 | 241 | 074    | 115   | 239   | 513   | 290 | 342 | 491    | 199   | 086   | 325   | 290 | 407 | 442    | 135   | 008   | 921   |
| 290 | 242 | 060    | 103   | 272   | 386   | 290 | 343 | 433    | 174   | 064   | 148   | 290 | 408 | 442    | 151   | 998   | 070   |
| 290 | 243 | 064    | 102   | 406   | 283   | 290 | 344 | 407    | 173   | 011   | 071   | 290 | 409 | 553    | 240   | 351   | 221   |
| 290 | 244 | 066    | 117   | 352   | 479   | 290 | 345 | 362    | 166   | 144   | 981   | 290 | 410 | 283    | 191   | 950   | 494   |
| 290 | 245 | 075    | 111   | 240   | 553   | 290 | 346 | 370    | 200   | 197   | 155   | 290 | 411 | 080    | 186   | 519   | 648   |
| 290 | 246 | 026    | 125   | 410   | 576   | 290 | 347 | 323    | 153   | 174   | 941   | 290 | 412 | 080    | 190   | 118   | 140   |
| 290 | 247 | 081    | 167   | 355   | 751   | 290 | 348 | 251    | 143   | 188   | 112   | 290 | 413 | 442    | 172   | 982   | 016   |
| 290 | 248 | 075    | 111   | 291   | 462   | 290 | 349 | 239    | 134   | 157   | 734   | 290 | 414 | 553    | 160   | 081   | 080   |
| 290 | 249 | 078    | 106   | 526   | 324   | 290 | 350 | 211    | 194   | 261   | 996   | 290 | 415 | 220    | 189   | 905   | 344   |
| 290 | 250 | 066    | 104   | 420   | 289   | 290 | 351 | 502    | 185   | 019   | 665   | 290 | 416 | 080    | 201   | 557   | 742   |
| 290 | 301 | 466    | 218   | 262   | 245   | 290 | 352 | 453    | 202   | 049   | 218   | 290 | 417 | 339    | 180   | 139   | 1257  |
| 290 | 302 | 411    | 155   | 074   | 013   | 290 | 353 | 474    | 161   | 059   | 103   | 290 | 418 | 421    | 170   | 991   | 085   |
| 290 | 303 | 376    | 173   | 241   | 027   | 290 | 354 | 375    | 181   | 210   | 115   | 290 | 419 | 485    | 181   | 896   | 098   |
| 290 | 304 | 359    | 174   | 227   | 999   | 290 | 355 | 305    | 171   | 240   | 996   | 290 | 420 | 188    | 198   | 835   | 472   |
| 290 | 305 | 351    | 190   | 251   | 282   | 290 | 356 | 231    | 143   | 233   | 999   | 290 | 421 | 188    | 169   | 481   | 862   |
| 290 | 306 | 348    | 171   | 230   | 119   | 290 | 357 | 334    | 132   | 414   | 880   | 290 | 422 | 411    | 213   | 077   | 209   |
| 290 | 307 | 351    | 190   | 188   | 089   | 290 | 358 | 201    | 129   | 174   | 744   | 290 | 423 | 411    | 150   | 893   | 088   |
| 290 | 308 | 306    | 183   | 267   | 965   | 290 | 359 | 182    | 124   | 194   | 677   | 290 | 424 | 333    | 183   | 967   | 195   |
| 290 | 309 | 248    | 168   | 285   | 047   | 290 | 360 | 530    | 178   | 114   | 280   | 290 | 425 | 333    | 195   | 746   | 446   |
| 290 | 310 | 265    | 153   | 295   | 951   | 290 | 361 | 432    | 182   | 013   | 62    | 290 | 426 | 333    | 194   | 465   | 961   |
| 290 | 311 | 231    | 145   | 190   | 780   | 290 |     | 412    | 173   | 090   | 213   | 290 | 427 | 333    | 206   | 055   | 1262  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|-------|
| 290 | 428 | .333   | .150  | .959  | -.141  | 290 | 910 | -.207  | .127  | .252  | -.778  | 300 | 141 | -.267  | .154  | .291  | -.911 |
| 290 | 429 | .296   | .171  | 1.049 | -.188  | 290 | 911 | -.247  | .123  | .147  | -.669  | 300 | 142 | -.318  | .157  | .227  | -.971 |
| 290 | 430 | .039   | .225  | .927  | -.725  | 290 | 912 | -.260  | .145  | .198  | -.852  | 300 | 143 | -.074  | .127  | .342  | -.477 |
| 290 | 431 | -.189  | .186  | .411  | -.779  | 290 | 913 | -.150  | .134  | .312  | -.669  | 300 | 144 | .049   | .110  | .409  | -.284 |
| 290 | 432 | -.495  | .217  | .240  | -.1    | 290 | 914 | -.153  | .123  | .175  | -.745  | 300 | 145 | .132   | .128  | .558  | -.260 |
| 290 | 433 | -.244  | .145  | .916  | -.383  | 290 | 915 | -.532  | .147  | -.035 | -.836  | 300 | 146 | .187   | .128  | .645  | -.199 |
| 290 | 434 | .192   | .162  | .637  | -.600  | 290 | 916 | -.495  | .153  | -.012 | -.962  | 300 | 147 | .229   | .141  | .735  | -.176 |
| 290 | 435 | .028   | .180  | .477  | -.805  | 290 | 917 | -.134  | .127  | .350  | -.618  | 300 | 148 | .251   | .139  | .769  | -.170 |
| 290 | 436 | -.187  | .179  | .477  | -.805  | 290 | 918 | -.143  | .128  | .239  | -.551  | 300 | 149 | .336   | .172  | 1.099 | -.333 |
| 290 | 437 | -.403  | .182  | .096  | -1.065 | 290 | 919 | -.310  | .184  | .222  | -1.160 | 300 | 150 | .243   | .137  | 1.164 | -.103 |
| 290 | 438 | .130   | .137  | .615  | -.319  | 300 | 101 | -.430  | .174  | .103  | -1.028 | 300 | 151 | -.280  | .142  | .160  | -.968 |
| 290 | 439 | .044   | .146  | .582  | -.515  | 300 | 102 | -.440  | .153  | .025  | -1.026 | 300 | 152 | .067   | .100  | .240  | -.335 |
| 290 | 440 | .024   | .153  | .452  | -.550  | 300 | 103 | -.425  | .144  | .067  | -.990  | 300 | 153 | .054   | .123  | .467  | -.368 |
| 290 | 441 | -.179  | .154  | .243  | -.697  | 300 | 104 | -.443  | .124  | -.047 | -.861  | 300 | 154 | .113   | .128  | .540  | -.255 |
| 290 | 442 | -.241  | .146  | .160  | -.757  | 300 | 105 | -.489  | .175  | -.084 | -1.159 | 300 | 155 | .158   | .127  | .605  | -.288 |
| 290 | 443 | .467   | .105  | .849  | -.043  | 300 | 106 | -.420  | .151  | .112  | -1.064 | 300 | 156 | .190   | .119  | .578  | -.169 |
| 290 | 444 | .335   | .110  | .708  | -.121  | 300 | 107 | -.410  | .159  | .146  | -1.100 | 300 | 157 | .216   | .148  | .843  | -.220 |
| 290 | 445 | .365   | .126  | .806  | -.185  | 300 | 108 | -.397  | .136  | .103  | -.883  | 300 | 158 | .315   | .154  | .935  | -.102 |
| 290 | 446 | .331   | .103  | .663  | -.021  | 300 | 109 | -.355  | .137  | .066  | -1.037 | 300 | 159 | .110   | .140  | .311  | -.761 |
| 290 | 447 | .334   | .093  | .632  | -.014  | 300 | 110 | -.355  | .149  | .184  | -.825  | 300 | 160 | .251   | .131  | .201  | -.764 |
| 290 | 448 | .271   | .100  | .619  | -.108  | 300 | 111 | -.244  | .153  | .400  | -.756  | 300 | 161 | .099   | .118  | .376  | -.366 |
| 290 | 449 | .157   | .102  | .494  | -.241  | 300 | 112 | -.550  | .136  | -.073 | -.977  | 300 | 162 | .080   | .111  | .437  | -.244 |
| 290 | 450 | .057   | .123  | .517  | -.334  | 300 | 113 | -.273  | .167  | .400  | -.916  | 300 | 163 | .113   | .116  | .516  | -.202 |
| 290 | 701 | .094   | .097  | .400  | -.170  | 300 | 114 | -.388  | .157  | .049  | -.946  | 300 | 164 | .149   | .091  | .443  | -.065 |
| 290 | 702 | .105   | .109  | .457  | -.254  | 300 | 115 | -.647  | .251  | .024  | -1.407 | 300 | 165 | .166   | .120  | .533  | -.236 |
| 290 | 703 | .114   | .109  | .506  | -.214  | 300 | 116 | -.068  | .101  | .269  | -.365  | 300 | 166 | .185   | .121  | .582  | -.189 |
| 290 | 705 | .088   | .101  | .384  | -.235  | 300 | 117 | .031   | .117  | .442  | -.349  | 300 | 167 | .215   | .130  | .653  | -.157 |
| 290 | 706 | .102   | .106  | .492  | -.196  | 300 | 118 | .083   | .120  | .578  | -.324  | 300 | 168 | .155   | .105  | .533  | -.117 |
| 290 | 707 | .109   | .105  | .517  | -.192  | 300 | 119 | .125   | .129  | .717  | -.337  | 300 | 169 | .110   | .124  | .288  | -.561 |
| 290 | 708 | .000   | .118  | .401  | -.371  | 300 | 120 | .144   | .122  | .662  | -.241  | 300 | 170 | .010   | .124  | .460  | -.369 |
| 290 | 710 | .071   | .118  | .485  | -.299  | 300 | 121 | .186   | .170  | .721  | -.317  | 300 | 171 | .110   | .132  | .598  | -.305 |
| 290 | 711 | .131   | .105  | .472  | -.175  | 300 | 122 | .393   | .183  | 1.015 | -.185  | 300 | 172 | .115   | .116  | .544  | -.263 |
| 290 | 712 | .110   | .113  | .502  | -.234  | 300 | 123 | -.233  | .142  | .266  | -.701  | 300 | 173 | .151   | .130  | .674  | -.068 |
| 290 | 713 | .195   | .127  | .707  | -.158  | 300 | 124 | -.278  | .134  | .181  | -.744  | 300 | 174 | .248   | .143  | .811  | -.248 |
| 290 | 714 | .147   | .117  | .615  | -.204  | 300 | 125 | -.065  | .126  | .405  | -.535  | 300 | 175 | .236   | .153  | .910  | -.276 |
| 290 | 716 | .154   | .111  | .554  | -.188  | 300 | 126 | .053   | .128  | .493  | -.448  | 300 | 176 | .033   | .124  | .604  | -.303 |
| 290 | 717 | .145   | .122  | .593  | -.208  | 300 | 127 | .127   | .134  | .533  | -.424  | 300 | 177 | .021   | .103  | .231  | -.452 |
| 290 | 801 | .062   | .102  | .436  | -.231  | 300 | 128 | .188   | .125  | .544  | -.309  | 300 | 178 | .110   | .103  | .238  | -.460 |
| 290 | 802 | -.105  | .118  | .332  | -.504  | 300 | 129 | .242   | .149  | .734  | -.241  | 300 | 180 | .114   | .105  | .537  | -.160 |
| 290 | 803 | -.116  | .121  | .244  | -.494  | 300 | 130 | .264   | .168  | .789  | -.295  | 300 | 181 | .181   | .099  | .422  | -.189 |
| 290 | 804 | -.094  | .113  | .288  | -.471  | 300 | 131 | .461   | .175  | 1.203 | -.124  | 300 | 182 | .039   | .096  | .388  | -.202 |
| 290 | 901 | -.533  | .137  | -.056 | -.961  | 300 | 132 | -.242  | .147  | .180  | -.826  | 300 | 201 | -.225  | .123  | .180  | -.621 |
| 290 | 902 | -.636  | .159  | -.079 | -1.162 | 300 | 133 | -.317  | .141  | .135  | -.889  | 300 | 202 | -.248  | .130  | .177  | -.339 |
| 290 | 903 | -.402  | .132  | -.021 | -.867  | 300 | 134 | -.089  | .113  | .301  | -.462  | 300 | 203 | -.210  | .129  | .171  | -.660 |
| 290 | 904 | -.300  | .149  | .172  | -.853  | 300 | 135 | .046   | .118  | .454  | -.351  | 300 | 204 | -.216  | .141  | .236  | -.888 |
| 290 | 905 | -.303  | .161  | .131  | -1.031 | 300 | 136 | .126   | .107  | .502  | -.193  | 300 | 205 | -.211  | .152  | .147  | -.733 |
| 290 | 906 | -.527  | .148  | .030  | -1.012 | 300 | 137 | .193   | .125  | .571  | -.207  | 300 | 206 | -.325  | .167  | .187  | -.999 |
| 290 | 907 | -.597  | .137  | -.088 | -1.045 | 300 | 138 | .238   | .132  | .669  | -.234  | 300 | 207 | -.342  | .165  | .187  | -.766 |
| 290 | 908 | -.417  | .165  | .345  | -.947  | 300 | 139 | .263   | .151  | .841  | -.365  | 300 | 208 | -.243  | .126  | .147  | -.737 |
| 290 | 909 | -.271  | .122  | .218  | -.698  | 300 | 140 | .409   | .135  | .846  | -.021  | 300 | 209 | -.225  | .129  | .214  | -.674 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C : ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 300 | 210 | -233   | 137   | 228   | -780   | 300 | 310 | -270   | 149   | 219   | -920   | 300 | 360 | -437   | 164   | 063   | -1.150 |
| 300 | 211 | -244   | 142   | 249   | -889   | 300 | 311 | -246   | 141   | 253   | -959   | 300 | 361 | -432   | 166   | 086   | -1.099 |
| 300 | 212 | -304   | 158   | 175   | -905   | 300 | 312 | -270   | 140   | 248   | -877   | 300 | 362 | -338   | 153   | 059   | -1.206 |
| 300 | 213 | -214   | 116   | 198   | -586   | 300 | 313 | -234   | 152   | 313   | -797   | 300 | 363 | -334   | 154   | 102   | -1.092 |
| 300 | 214 | -228   | 114   | 119   | -596   | 300 | 314 | -280   | 142   | 154   | -951   | 300 | 364 | -236   | 146   | 179   | -0.811 |
| 300 | 215 | -240   | 133   | 136   | -632   | 300 | 315 | -274   | 139   | 194   | -854   | 300 | 365 | -230   | 147   | 162   | -0.790 |
| 300 | 216 | -262   | 131   | 096   | -896   | 300 | 316 | -272   | 143   | 165   | -1.091 | 300 | 366 | -233   | 137   | 218   | -0.799 |
| 300 | 217 | -233   | 140   | 141   | -757   | 300 | 317 | -291   | 150   | 122   | -1.123 | 300 | 367 | -439   | 139   | 048   | -0.721 |
| 300 | 218 | -220   | 128   | 221   | -710   | 300 | 318 | -262   | 150   | 162   | -836   | 300 | 368 | -439   | 142   | 046   | -0.896 |
| 300 | 219 | -231   | 123   | 163   | -719   | 300 | 319 | -270   | 155   | 136   | -1.340 | 300 | 369 | -439   | 136   | 062   | -1.023 |
| 300 | 220 | -269   | 159   | 129   | -1.014 | 300 | 320 | -254   | 142   | 177   | -872   | 300 | 370 | -439   | 133   | 053   | -0.892 |
| 300 | 221 | -273   | 149   | 097   | -1.205 | 300 | 321 | -237   | 147   | 191   | -901   | 300 | 371 | -228   | 133   | 117   | -0.809 |
| 300 | 222 | -238   | 149   | 131   | -917   | 300 | 322 | -236   | 138   | 198   | -893   | 300 | 372 | -138   | 116   | 237   | -0.570 |
| 300 | 223 | -255   | 137   | 112   | -801   | 300 | 323 | -268   | 131   | 148   | -858   | 300 | 373 | -189   | 167   | 248   | -0.462 |
| 300 | 224 | -261   | 142   | 156   | -798   | 300 | 324 | -253   | 152   | 227   | -952   | 300 | 374 | -186   | 117   | 208   | -0.642 |
| 300 | 225 | -279   | 161   | 136   | -1.080 | 300 | 325 | -276   | 148   | 320   | -988   | 300 | 375 | -138   | 118   | 170   | -0.653 |
| 300 | 226 | -310   | 183   | 139   | -1.314 | 300 | 326 | -254   | 138   | 213   | -938   | 300 | 376 | -138   | 126   | 266   | -0.692 |
| 300 | 227 | -279   | 143   | 160   | -1.109 | 300 | 327 | -271   | 139   | 261   | -938   | 300 | 377 | -365   | 123   | 043   | -0.819 |
| 300 | 228 | -240   | 136   | 131   | -766   | 300 | 328 | -276   | 129   | 177   | -718   | 300 | 378 | -373   | 143   | 169   | -0.842 |
| 300 | 229 | -326   | 180   | 173   | -1.340 | 300 | 329 | -270   | 121   | 116   | -664   | 300 | 379 | -159   | 161   | 173   | -0.505 |
| 300 | 230 | -303   | 195   | 194   | -1.465 | 300 | 330 | -281   | 133   | 138   | -828   | 300 | 380 | -160   | 167   | 193   | -0.508 |
| 300 | 231 | -325   | 210   | 251   | -1.385 | 300 | 331 | -249   | 132   | 194   | -658   | 300 | 381 | -160   | 163   | 159   | -0.560 |
| 300 | 232 | -331   | 198   | 181   | -1.191 | 300 | 332 | -298   | 129   | 112   | -846   | 300 | 382 | -124   | 109   | 204   | -0.540 |
| 300 | 233 | -183   | 127   | 187   | -725   | 300 | 333 | -278   | 140   | 149   | -845   | 300 | 383 | -166   | 166   | 172   | -0.916 |
| 300 | 234 | -170   | 126   | 225   | -705   | 300 | 334 | -278   | 134   | 087   | -927   | 300 | 384 | -139   | 137   | 298   | -0.816 |
| 300 | 235 | -173   | 150   | 300   | -844   | 300 | 335 | -289   | 135   | 126   | -1.048 | 300 | 401 | -625   | 170   | 747   | -0.585 |
| 300 | 236 | -179   | 130   | 151   | -827   | 300 | 336 | -238   | 117   | 161   | -781   | 300 | 402 | -538   | 176   | 270   | -1.182 |
| 300 | 237 | -217   | 150   | 270   | -788   | 300 | 337 | -262   | 145   | 195   | -864   | 300 | 403 | -639   | 189   | 636   | -0.622 |
| 300 | 238 | -130   | 119   | 256   | -577   | 300 | 338 | -299   | 125   | 029   | -1.010 | 300 | 404 | -233   | 151   | 280   | -0.900 |
| 300 | 239 | -151   | 133   | 200   | -800   | 300 | 339 | -265   | 131   | 109   | -779   | 300 | 405 | -337   | 139   | 054   | -0.850 |
| 300 | 240 | -121   | 137   | 256   | -781   | 300 | 340 | -246   | 132   | 272   | -664   | 300 | 406 | -500   | 146   | 054   | -1.151 |
| 300 | 241 | -125   | 142   | 319   | -766   | 300 | 341 | -329   | 148   | 073   | -1.008 | 300 | 407 | -444   | 137   | 070   | -0.791 |
| 300 | 242 | -170   | 130   | 246   | -820   | 300 | 342 | -331   | 153   | 219   | -868   | 300 | 408 | -516   | 231   | 1.333 | -0.774 |
| 300 | 243 | -081   | 110   | 446   | -343   | 300 | 343 | -273   | 189   | 302   | -1.028 | 300 | 409 | -439   | 193   | 1.161 | -0.183 |
| 300 | 244 | -129   | 143   | 316   | -710   | 300 | 344 | -315   | 142   | 064   | -938   | 300 | 410 | -337   | 199   | 757   | -0.488 |
| 300 | 245 | -077   | 157   | 549   | -813   | 300 | 345 | -307   | 136   | 159   | -797   | 300 | 411 | -244   | 175   | 302   | -0.915 |
| 300 | 246 | -119   | 124   | 284   | -609   | 300 | 346 | -317   | 135   | 070   | -841   | 300 | 412 | -338   | 157   | 055   | -1.057 |
| 300 | 247 | -128   | 126   | 233   | -632   | 300 | 347 | -272   | 129   | 060   | -799   | 300 | 413 | -539   | 189   | 1.188 | -0.648 |
| 300 | 248 | -145   | 140   | 240   | -829   | 300 | 348 | -297   | 135   | 185   | -777   | 300 | 414 | -440   | 200   | 1.175 | -1.191 |
| 300 | 249 | -093   | 119   | 491   | -230   | 300 | 349 | -244   | 137   | 190   | -670   | 300 | 415 | -070   | 185   | 735   | -0.587 |
| 300 | 250 | -079   | 117   | 475   | -288   | 300 | 350 | -394   | 166   | 035   | -1.070 | 300 | 416 | -284   | 174   | 318   | -0.938 |
| 300 | 301 | -317   | 144   | 120   | -920   | 300 | 351 | -351   | 168   | 136   | -981   | 300 | 417 | -339   | 149   | 230   | -0.931 |
| 300 | 302 | -344   | 158   | 222   | -909   | 300 | 352 | -359   | 198   | 108   | -1.109 | 300 | 418 | -337   | 171   | 1.067 | -0.014 |
| 300 | 303 | -305   | 161   | 333   | -874   | 300 | 353 | -357   | 174   | 166   | -1.173 | 300 | 419 | -337   | 188   | 885   | -0.252 |
| 300 | 304 | -308   | 164   | 162   | -1.008 | 300 | 354 | -347   | 170   | 162   | -995   | 300 | 420 | -337   | 190   | 693   | -0.670 |
| 300 | 305 | -275   | 170   | 301   | -988   | 300 | 355 | -309   | 146   | 157   | -847   | 300 | 421 | -337   | 174   | 298   | -0.902 |
| 300 | 306 | -273   | 169   | 345   | -930   | 300 | 356 | -300   | 129   | 104   | -868   | 300 | 422 | -337   | 164   | 076   | -1.147 |
| 300 | 307 | -289   | 177   | 201   | -1.010 | 300 | 357 | -286   | 130   | 108   | -709   | 300 | 423 | -337   | 169   | 1.075 | -1.139 |
| 300 | 308 | -289   | 167   | 360   | -1.059 | 300 | 358 | -295   | 137   | 098   | -783   | 300 | 424 | -246   | 192   | 1.049 | -0.546 |
| 300 | 309 | -260   | 152   | 308   | -1.026 | 300 | 359 | -451   | 173   | 056   | -1.047 | 300 | 425 | -046   | 189   | 651   | -0.717 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CP | HEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CP | HEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CP | HEAN | CPRMS | CPMAX | CPMIN |     |     |
|-----|-----|----|------|-------|-------|--------|-----|-----|----|------|-------|-------|--------|-----|-----|----|------|-------|-------|-------|-----|-----|
| 300 | 426 | -  | 325  | 168   | 163   | 862    | 300 | 908 | -  | 451  | 175   | 194   | -1.031 | 310 | 139 | -  | 404  | 163   | 163   | 1036  | -   | 149 |
| 300 | 427 | -  | 393  | 185   | 870   | -1.219 | 300 | 909 | -  | 319  | 140   | 196   | -1.815 | 310 | 139 | -  | 404  | 163   | 163   | 1036  | -   | 149 |
| 300 | 428 | -  | 300  | 158   | 847   | -1.213 | 300 | 910 | -  | 316  | 156   | 250   | -1.923 | 310 | 140 | -  | 422  | 152   | 152   | 1083  | -   | 139 |
| 300 | 429 | -  | 197  | 182   | 803   | -1.370 | 300 | 911 | -  | 355  | 135   | 997   | -1.860 | 310 | 141 | -  | 455  | 174   | 174   | 1196  | -1. | 116 |
| 300 | 430 | -  | 111  | 186   | 438   | -1.953 | 300 | 912 | -  | 360  | 158   | 147   | -1.028 | 310 | 142 | -  | 454  | 175   | 175   | 1226  | -1. | 126 |
| 300 | 431 | -  | 381  | 178   | 191   | -1.082 | 300 | 913 | -  | 355  | 142   | 234   | -1.791 | 310 | 143 | -  | 655  | 186   | 186   | 1384  | -1. | 89  |
| 300 | 432 | -  | 414  | 197   | 117   | -1.032 | 300 | 914 | -  | 353  | 137   | 186   | -1.764 | 310 | 144 | -  | 655  | 186   | 186   | 1500  | -1. | 234 |
| 300 | 433 | -  | 247  | 157   | 713   | -1.271 | 300 | 915 | -  | 485  | 158   | 047   | -1.078 | 310 | 145 | -  | 187  | 187   | 187   | 1604  | -1. | 260 |
| 300 | 434 | -  | 100  | 164   | 708   | -1.461 | 300 | 916 | -  | 387  | 153   | 074   | -1.935 | 310 | 146 | -  | 257  | 140   | 140   | 1627  | -1. | 163 |
| 300 | 435 | -  | 124  | 174   | 515   | -1.785 | 300 | 917 | -  | 243  | 141   | 285   | -1.803 | 310 | 147 | -  | 360  | 156   | 156   | 1903  | -1. | 127 |
| 300 | 436 | -  | 379  | 168   | 187   | -1.159 | 300 | 918 | -  | 222  | 121   | 285   | -1.666 | 310 | 148 | -  | 361  | 151   | 151   | 1873  | -1. | 111 |
| 300 | 437 | -  | 477  | 172   | 933   | -1.111 | 300 | 919 | -  | 369  | 143   | 250   | -1.880 | 310 | 149 | -  | 409  | 164   | 164   | 1691  | -1. | 105 |
| 300 | 438 | -  | 100  | 138   | 588   | -1.312 | 310 | 101 | -  | 493  | 184   | 082   | -1.143 | 310 | 150 | -  | 409  | 164   | 164   | 1691  | -1. | 105 |
| 300 | 439 | -  | 045  | 153   | 591   | -1.202 | 310 | 102 | -  | 473  | 169   | 002   | -1.198 | 310 | 151 | -  | 373  | 171   | 171   | 115   | -1. | 688 |
| 300 | 440 | -  | 181  | 163   | 436   | -1.202 | 310 | 103 | -  | 439  | 154   | 649   | -1.026 | 310 | 152 | -  | 373  | 171   | 171   | 115   | -1. | 688 |
| 300 | 441 | -  | 327  | 152   | 194   | -1.893 | 310 | 104 | -  | 450  | 139   | 050   | -1.969 | 310 | 153 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 442 | -  | 409  | 149   | 027   | -1.076 | 310 | 105 | -  | 452  | 182   | 048   | -1.303 | 310 | 154 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 443 | -  | 474  | 103   | 869   | -1.157 | 310 | 106 | -  | 505  | 158   | 006   | -1.061 | 310 | 155 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 444 | -  | 317  | 095   | 627   | -1.017 | 310 | 107 | -  | 511  | 170   | 006   | -1.189 | 310 | 156 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 445 | -  | 365  | 134   | 871   | -1.061 | 310 | 108 | -  | 494  | 148   | 025   | -1.006 | 310 | 157 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 446 | -  | 225  | 100   | 531   | -1.131 | 310 | 109 | -  | 694  | 171   | 175   | -1.362 | 310 | 158 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 447 | -  | 286  | 108   | 646   | -1.122 | 310 | 110 | -  | 371  | 154   | 153   | -1.917 | 310 | 159 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 448 | -  | 215  | 116   | 594   | -1.163 | 310 | 111 | -  | 182  | 158   | 404   | -1.699 | 310 | 160 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 449 | -  | 120  | 152   | 697   | -1.314 | 310 | 112 | -  | 596  | 143   | 104   | -1.073 | 310 | 161 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 450 | -  | 073  | 114   | 323   | -1.535 | 310 | 113 | -  | 296  | 200   | 368   | -1.933 | 310 | 162 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 701 | -  | 090  | 090   | 395   | -1.833 | 310 | 114 | -  | 551  | 174   | 020   | -1.170 | 310 | 163 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 702 | -  | 140  | 109   | 533   | -1.235 | 310 | 115 | -  | 627  | 294   | 150   | -1.603 | 310 | 164 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 703 | -  | 157  | 113   | 550   | -1.235 | 310 | 116 | -  | 084  | 125   | 370   | -1.482 | 310 | 165 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 704 | -  | 109  | 098   | 480   | -1.235 | 310 | 117 | -  | 057  | 127   | 486   | -1.428 | 310 | 166 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 705 | -  | 132  | 120   | 511   | -1.235 | 310 | 118 | -  | 128  | 133   | 590   | -1.431 | 310 | 167 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 706 | -  | 152  | 121   | 530   | -1.235 | 310 | 119 | -  | 189  | 145   | 671   | -1.421 | 310 | 168 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 708 | -  | 030  | 127   | 506   | -1.467 | 310 | 120 | -  | 250  | 139   | 645   | -1.341 | 310 | 169 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 710 | -  | 119  | 139   | 560   | -1.368 | 310 | 121 | -  | 322  | 175   | 886   | -1.247 | 310 | 170 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 711 | -  | 184  | 123   | 613   | -1.212 | 310 | 122 | -  | 473  | 197   | 080   | -1.171 | 310 | 171 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 712 | -  | 112  | 124   | 712   | -1.244 | 310 | 123 | -  | 327  | 164   | 196   | -1.266 | 310 | 172 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 713 | -  | 239  | 136   | 659   | -1.158 | 310 | 124 | -  | 385  | 154   | 096   | -1.107 | 310 | 173 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 714 | -  | 168  | 130   | 806   | -1.225 | 310 | 125 | -  | 050  | 121   | 396   | -1.471 | 310 | 174 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 716 | -  | 146  | 118   | 545   | -1.187 | 310 | 126 | -  | 102  | 133   | 650   | -1.341 | 310 | 175 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 717 | -  | 205  | 135   | 660   | -1.201 | 310 | 127 | -  | 197  | 146   | 827   | -1.266 | 310 | 176 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 801 | -  | 070  | 117   | 441   | -1.276 | 310 | 128 | -  | 280  | 142   | 901   | -1.134 | 310 | 177 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 802 | -  | 163  | 130   | 260   | -1.076 | 310 | 129 | -  | 351  | 155   | 795   | -1.138 | 310 | 178 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 803 | -  | 291  | 122   | 097   | -1.265 | 310 | 130 | -  | 404  | 171   | 929   | -1.160 | 310 | 180 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 804 | -  | 201  | 123   | 242   | -1.265 | 310 | 131 | -  | 514  | 194   | 045   | -1.152 | 310 | 181 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 901 | -  | 557  | 145   | 062   | -1.089 | 310 | 132 | -  | 308  | 126   | 061   | -1.842 | 310 | 182 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 902 | -  | 640  | 161   | 075   | -1.188 | 310 | 133 | -  | 391  | 139   | 101   | -1.872 | 310 | 183 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 903 | -  | 546  | 140   | 049   | -1.943 | 310 | 134 | -  | 067  | 123   | 385   | -1.427 | 310 | 184 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 904 | -  | 419  | 159   | 096   | -1.946 | 310 | 135 | -  | 105  | 131   | 639   | -1.284 | 310 | 185 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 905 | -  | 430  | 190   | 050   | -1.254 | 310 | 136 | -  | 209  | 121   | 894   | -1.133 | 310 | 186 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 906 | -  | 507  | 162   | 067   | -1.011 | 310 | 137 | -  | 287  | 140   | 854   | -1.139 | 310 | 187 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |
| 300 | 907 | -  | 597  | 155   | 091   | -1.021 | 310 | 138 | -  | 353  | 148   | 933   | -1.086 | 310 | 207 | -  | 499  | 178   | 178   | 1271  | -1. | 422 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD   | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP  | CPMEAN | CPRMS | CPMAX | CPMIN |
|------|------|--------|-------|-------|-------|------|------|--------|-------|-------|-------|------|------|--------|-------|-------|-------|
| 3310 | 3308 | 117    | 117   | 117   | 117   | 3310 | 3358 | 148    | 148   | 148   | 148   | 3310 | 3358 | 148    | 148   | 148   | 148   |
| 3310 | 3309 | 143    | 143   | 143   | 143   | 3310 | 3359 | 148    | 148   | 148   | 148   | 3310 | 3359 | 148    | 148   | 148   | 148   |
| 3310 | 3310 | 146    | 146   | 146   | 146   | 3310 | 3360 | 148    | 148   | 148   | 148   | 3310 | 3360 | 148    | 148   | 148   | 148   |
| 3310 | 3311 | 154    | 154   | 154   | 154   | 3310 | 3361 | 155    | 155   | 155   | 155   | 3310 | 3361 | 155    | 155   | 155   | 155   |
| 3310 | 3312 | 168    | 168   | 168   | 168   | 3310 | 3362 | 168    | 168   | 168   | 168   | 3310 | 3362 | 168    | 168   | 168   | 168   |
| 3310 | 3313 | 120    | 120   | 120   | 120   | 3310 | 3363 | 147    | 147   | 147   | 147   | 3310 | 3363 | 147    | 147   | 147   | 147   |
| 3310 | 3314 | 152    | 152   | 152   | 152   | 3310 | 3364 | 141    | 141   | 141   | 141   | 3310 | 3364 | 141    | 141   | 141   | 141   |
| 3310 | 3315 | 164    | 164   | 164   | 164   | 3310 | 3365 | 133    | 133   | 133   | 133   | 3310 | 3365 | 133    | 133   | 133   | 133   |
| 3310 | 3316 | 174    | 174   | 174   | 174   | 3310 | 3366 | 101    | 101   | 101   | 101   | 3310 | 3366 | 101    | 101   | 101   | 101   |
| 3310 | 3317 | 132    | 132   | 132   | 132   | 3310 | 3367 | 135    | 135   | 135   | 135   | 3310 | 3367 | 135    | 135   | 135   | 135   |
| 3310 | 3318 | 136    | 136   | 136   | 136   | 3310 | 3368 | 136    | 136   | 136   | 136   | 3310 | 3368 | 136    | 136   | 136   | 136   |
| 3310 | 3319 | 134    | 134   | 134   | 134   | 3310 | 3369 | 136    | 136   | 136   | 136   | 3310 | 3369 | 136    | 136   | 136   | 136   |
| 3310 | 3320 | 138    | 138   | 138   | 138   | 3310 | 3370 | 117    | 117   | 117   | 117   | 3310 | 3370 | 117    | 117   | 117   | 117   |
| 3310 | 3321 | 154    | 154   | 154   | 154   | 3310 | 3371 | 110    | 110   | 110   | 110   | 3310 | 3371 | 110    | 110   | 110   | 110   |
| 3310 | 3322 | 147    | 147   | 147   | 147   | 3310 | 3372 | 144    | 144   | 144   | 144   | 3310 | 3372 | 144    | 144   | 144   | 144   |
| 3310 | 3323 | 138    | 138   | 138   | 138   | 3310 | 3373 | 144    | 144   | 144   | 144   | 3310 | 3373 | 144    | 144   | 144   | 144   |
| 3310 | 3324 | 139    | 139   | 139   | 139   | 3310 | 3374 | 177    | 177   | 177   | 177   | 3310 | 3374 | 177    | 177   | 177   | 177   |
| 3310 | 3325 | 175    | 175   | 175   | 175   | 3310 | 3375 | 133    | 133   | 133   | 133   | 3310 | 3375 | 133    | 133   | 133   | 133   |
| 3310 | 3326 | 174    | 174   | 174   | 174   | 3310 | 3376 | 134    | 134   | 134   | 134   | 3310 | 3376 | 134    | 134   | 134   | 134   |
| 3310 | 3327 | 171    | 171   | 171   | 171   | 3310 | 3377 | 151    | 151   | 151   | 151   | 3310 | 3377 | 151    | 151   | 151   | 151   |
| 3310 | 3328 | 174    | 174   | 174   | 174   | 3310 | 3378 | 150    | 150   | 150   | 150   | 3310 | 3378 | 150    | 150   | 150   | 150   |
| 3310 | 3329 | 171    | 171   | 171   | 171   | 3310 | 3379 | 130    | 130   | 130   | 130   | 3310 | 3379 | 130    | 130   | 130   | 130   |
| 3310 | 3330 | 192    | 192   | 192   | 192   | 3310 | 3380 | 145    | 145   | 145   | 145   | 3310 | 3380 | 145    | 145   | 145   | 145   |
| 3310 | 3331 | 166    | 166   | 166   | 166   | 3310 | 3381 | 149    | 149   | 149   | 149   | 3310 | 3381 | 149    | 149   | 149   | 149   |
| 3310 | 3332 | 148    | 148   | 148   | 148   | 3310 | 3382 | 147    | 147   | 147   | 147   | 3310 | 3382 | 147    | 147   | 147   | 147   |
| 3310 | 3333 | 163    | 163   | 163   | 163   | 3310 | 3383 | 147    | 147   | 147   | 147   | 3310 | 3383 | 147    | 147   | 147   | 147   |
| 3310 | 3334 | 147    | 147   | 147   | 147   | 3310 | 3384 | 141    | 141   | 141   | 141   | 3310 | 3384 | 141    | 141   | 141   | 141   |
| 3310 | 3335 | 168    | 168   | 168   | 168   | 3310 | 401  | 160    | 160   | 160   | 160   | 3310 | 401  | 160    | 160   | 160   | 160   |
| 3310 | 3336 | 145    | 145   | 145   | 145   | 3310 | 402  | 160    | 160   | 160   | 160   | 3310 | 402  | 160    | 160   | 160   | 160   |
| 3310 | 3337 | 159    | 159   | 159   | 159   | 3310 | 403  | 160    | 160   | 160   | 160   | 3310 | 403  | 160    | 160   | 160   | 160   |
| 3310 | 3338 | 145    | 145   | 145   | 145   | 3310 | 404  | 157    | 157   | 157   | 157   | 3310 | 404  | 157    | 157   | 157   | 157   |
| 3310 | 3339 | 166    | 166   | 166   | 166   | 3310 | 405  | 142    | 142   | 142   | 142   | 3310 | 405  | 142    | 142   | 142   | 142   |
| 3310 | 3340 | 158    | 158   | 158   | 158   | 3310 | 406  | 153    | 153   | 153   | 153   | 3310 | 406  | 153    | 153   | 153   | 153   |
| 3310 | 3341 | 145    | 145   | 145   | 145   | 3310 | 407  | 154    | 154   | 154   | 154   | 3310 | 407  | 154    | 154   | 154   | 154   |
| 3310 | 3342 | 166    | 166   | 166   | 166   | 3310 | 408  | 190    | 190   | 190   | 190   | 3310 | 408  | 190    | 190   | 190   | 190   |
| 3310 | 3343 | 119    | 119   | 119   | 119   | 3310 | 409  | 160    | 160   | 160   | 160   | 3310 | 409  | 160    | 160   | 160   | 160   |
| 3310 | 3344 | 161    | 161   | 161   | 161   | 3310 | 410  | 160    | 160   | 160   | 160   | 3310 | 410  | 160    | 160   | 160   | 160   |
| 3310 | 3345 | 164    | 164   | 164   | 164   | 3310 | 411  | 148    | 148   | 148   | 148   | 3310 | 411  | 148    | 148   | 148   | 148   |
| 3310 | 3346 | 159    | 159   | 159   | 159   | 3310 | 412  | 133    | 133   | 133   | 133   | 3310 | 412  | 133    | 133   | 133   | 133   |
| 3310 | 3347 | 161    | 161   | 161   | 161   | 3310 | 413  | 199    | 199   | 199   | 199   | 3310 | 413  | 199    | 199   | 199   | 199   |
| 3310 | 3348 | 146    | 146   | 146   | 146   | 3310 | 414  | 199    | 199   | 199   | 199   | 3310 | 414  | 199    | 199   | 199   | 199   |
| 3310 | 3349 | 126    | 126   | 126   | 126   | 3310 | 415  | 155    | 155   | 155   | 155   | 3310 | 415  | 155    | 155   | 155   | 155   |
| 3310 | 3350 | 144    | 144   | 144   | 144   | 3310 | 416  | 141    | 141   | 141   | 141   | 3310 | 416  | 141    | 141   | 141   | 141   |
| 3310 | 3351 | 164    | 164   | 164   | 164   | 3310 | 417  | 142    | 142   | 142   | 142   | 3310 | 417  | 142    | 142   | 142   | 142   |
| 3310 | 3352 | 141    | 141   | 141   | 141   | 3310 | 418  | 141    | 141   | 141   | 141   | 3310 | 418  | 141    | 141   | 141   | 141   |
| 3310 | 3353 | 167    | 167   | 167   | 167   | 3310 | 419  | 141    | 141   | 141   | 141   | 3310 | 419  | 141    | 141   | 141   | 141   |
| 3310 | 3354 | 164    | 164   | 164   | 164   | 3310 | 420  | 174    | 174   | 174   | 174   | 3310 | 420  | 174    | 174   | 174   | 174   |
| 3310 | 3355 | 160    | 160   | 160   | 160   | 3310 | 421  | 155    | 155   | 155   | 155   | 3310 | 421  | 155    | 155   | 155   | 155   |
| 3310 | 3356 | 160    | 160   | 160   | 160   | 3310 | 422  | 155    | 155   | 155   | 155   | 3310 | 422  | 155    | 155   | 155   | 155   |
| 3310 | 3357 | 160    | 160   | 160   | 160   | 3310 | 423  | 155    | 155   | 155   | 155   | 3310 | 423  | 155    | 155   | 155   | 155   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|
| 3310 | 424 | .094   | .208  | .699  | -.1   | 3320 | 906 | -.1    | 1.05  | -.1   | 1.72  | 3330 | 137 | 305    | .162  | CPMAX | CPMIN |
| 3310 | 425 | .249   | .166  | .231  | -.1   | 3320 | 907 | -.1    | .67   | -.1   | 1.36  | 3320 | 138 | 379    | .172  | 1.043 | -.1   |
| 3310 | 426 | .339   | .156  | .215  | -.1   | 3320 | 908 | -.1    | .82   | -.1   | 2.07  | 3320 | 139 | 429    | .184  | 1.130 | -.1   |
| 3310 | 427 | .330   | .154  | .123  | -.1   | 3320 | 909 | -.1    | .45   | -.1   | .89   | 3320 | 140 | 430    | .169  | 1.014 | -.1   |
| 3310 | 428 | .251   | .189  | .977  | -.1   | 3320 | 910 | -.1    | .47   | -.1   | 1.49  | 3320 | 141 | 387    | .184  | .937  | -.1   |
| 3310 | 429 | .021   | .192  | .821  | -.1   | 3320 | 911 | -.1    | .49   | -.1   | .55   | 3320 | 142 | -.1    | -.1   | .432  | -.1   |
| 3310 | 430 | .299   | .176  | .400  | -.1   | 3320 | 912 | -.1    | .42   | -.1   | .70   | 3320 | 143 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 431 | .396   | .160  | .190  | -.1   | 3320 | 913 | -.1    | .39   | -.1   | .35   | 3320 | 144 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 432 | .356   | .187  | .171  | -.1   | 3320 | 914 | -.1    | .32   | -.1   | .34   | 3320 | 145 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 433 | .149   | .152  | .693  | -.1   | 3320 | 915 | -.1    | .44   | -.1   | .26   | 3320 | 146 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 433 | .052   | .175  | .525  | -.1   | 3320 | 916 | -.1    | .25   | -.1   | .98   | 3320 | 147 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 433 | .38    | .177  | .014  | -.1   | 3320 | 917 | -.1    | .25   | -.1   | .28   | 3320 | 148 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 433 | .460   | .194  | .083  | -.1   | 3320 | 918 | -.1    | .23   | -.1   | .67   | 3320 | 149 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 438 | .041   | .138  | .492  | -.1   | 3320 | 919 | -.1    | .23   | -.1   | .84   | 3320 | 150 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 439 | .174   | .155  | .392  | -.1   | 3320 | 101 | -.1    | .22   | -.1   | .84   | 3320 | 151 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 440 | .263   | .180  | .337  | -.1   | 3320 | 102 | -.1    | .44   | -.1   | 1.42  | 3320 | 152 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 441 | .435   | .179  | .230  | -.1   | 3320 | 103 | -.1    | .55   | -.1   | 1.05  | 3320 | 153 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 442 | .494   | .150  | .029  | -.1   | 3320 | 104 | -.1    | .54   | -.1   | 1.70  | 3320 | 154 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 443 | .437   | .122  | .860  | -.1   | 3320 | 105 | -.1    | .54   | -.1   | .55   | 3320 | 155 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 444 | .271   | .108  | .676  | -.1   | 3320 | 106 | -.1    | .53   | -.1   | .21   | 3320 | 156 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 444 | .311   | .129  | .743  | -.1   | 3320 | 107 | -.1    | .52   | -.1   | 1.99  | 3320 | 157 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 444 | .173   | .111  | .609  | -.1   | 3320 | 108 | -.1    | .52   | -.1   | 1.09  | 3320 | 158 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 444 | .189   | .117  | .550  | -.1   | 3320 | 109 | -.1    | .54   | -.1   | .44   | 3320 | 159 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 444 | .153   | .115  | .480  | -.1   | 3320 | 110 | -.1    | .39   | -.1   | .92   | 3320 | 160 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 444 | .060   | .122  | .451  | -.1   | 3320 | 111 | -.1    | .39   | -.1   | .71   | 3320 | 161 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 449 | .135   | .122  | .291  | -.1   | 3320 | 112 | -.1    | .26   | -.1   | 1.98  | 3320 | 162 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 450 | .099   | .116  | .444  | -.1   | 3320 | 113 | -.1    | .26   | -.1   | 1.58  | 3320 | 163 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 701 | .107   | .115  | .476  | -.1   | 3320 | 114 | -.1    | .23   | -.1   | 1.34  | 3320 | 164 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 702 | .113   | .122  | .481  | -.1   | 3320 | 115 | -.1    | .23   | -.1   | .41   | 3320 | 165 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 703 | .095   | .105  | .440  | -.1   | 3320 | 116 | -.1    | .22   | -.1   | .25   | 3320 | 166 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 706 | .130   | .109  | .489  | -.1   | 3320 | 117 | -.1    | .23   | -.1   | .28   | 3320 | 167 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 707 | .140   | .117  | .605  | -.1   | 3320 | 118 | -.1    | .27   | -.1   | .44   | 3320 | 168 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 708 | .032   | .133  | .462  | -.1   | 3320 | 119 | -.1    | .27   | -.1   | .20   | 3320 | 169 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 710 | .128   | .124  | .560  | -.1   | 3320 | 120 | -.1    | .34   | -.1   | .75   | 3320 | 170 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 711 | .210   | .106  | .611  | -.1   | 3320 | 121 | -.1    | .33   | -.1   | .45   | 3320 | 171 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 712 | .146   | .121  | .577  | -.1   | 3320 | 122 | -.1    | .33   | -.1   | .08   | 3320 | 172 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 713 | .237   | .120  | .693  | -.1   | 3320 | 123 | -.1    | .33   | -.1   | .82   | 3320 | 173 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 714 | .199   | .128  | .776  | -.1   | 3320 | 124 | -.1    | .33   | -.1   | .96   | 3320 | 174 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 716 | .252   | .109  | .479  | -.1   | 3320 | 125 | -.1    | .33   | -.1   | .29   | 3320 | 175 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 717 | .227   | .134  | .870  | -.1   | 3320 | 126 | -.1    | .33   | -.1   | .75   | 3320 | 176 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 801 | .063   | .120  | .615  | -.1   | 3320 | 127 | -.1    | .33   | -.1   | .55   | 3320 | 177 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 802 | .228   | .142  | .309  | -.1   | 3320 | 128 | -.1    | .33   | -.1   | .66   | 3320 | 178 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 803 | .377   | .133  | .127  | -.1   | 3320 | 129 | -.1    | .33   | -.1   | .80   | 3320 | 180 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 804 | .261   | .130  | .196  | -.1   | 3320 | 130 | -.1    | .33   | -.1   | .44   | 3320 | 181 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 901 | .157   | -.1   | .622  | -.1   | 3320 | 131 | -.1    | .33   | -.1   | .67   | 3320 | 182 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 902 | .172   | -.1   | .654  | -.1   | 3320 | 132 | -.1    | .33   | -.1   | .97   | 3320 | 201 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 903 | .164   | -.1   | .657  | -.1   | 3320 | 133 | -.1    | .33   | -.1   | .22   | 3320 | 202 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 904 | .180   | -.1   | .622  | -.1   | 3320 | 134 | -.1    | .33   | -.1   | .43   | 3320 | 203 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 905 | .222   | -.1   | .622  | -.1   | 3320 | 135 | -.1    | .33   | -.1   | .22   | 3320 | 204 | -.1    | -.1   | -.1   | -.1   |
| 3310 | 905 | .215   | -.1   | .678  | -.1   | 3320 | 136 | -.1    | .33   | -.1   | .41   | 3320 | 205 | -.1    | -.1   | -.1   | -.1   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|
| 3220 | 206 | 442    | 181   | 996   | 306   | 3220 | 206 | 442    | 181   | 996   | 306   | 3220 | 206 | 442    | 181   | 996   | 306   |
| 3220 | 207 | 501    | 194   | 139   | 177   | 3220 | 207 | 501    | 194   | 139   | 177   | 3220 | 207 | 501    | 194   | 139   | 177   |
| 3220 | 208 | 321    | 196   | 154   | 111   | 3220 | 208 | 321    | 196   | 154   | 111   | 3220 | 208 | 321    | 196   | 154   | 111   |
| 3220 | 209 | 282    | 137   | 197   | 87    | 3220 | 209 | 282    | 137   | 197   | 87    | 3220 | 209 | 282    | 137   | 197   | 87    |
| 3220 | 210 | 286    | 162   | 217   | 110   | 3220 | 210 | 286    | 162   | 217   | 110   | 3220 | 210 | 286    | 162   | 217   | 110   |
| 3220 | 211 | 331    | 146   | 136   | 93    | 3220 | 211 | 331    | 146   | 136   | 93    | 3220 | 211 | 331    | 146   | 136   | 93    |
| 3220 | 212 | 383    | 168   | 135   | 111   | 3220 | 212 | 383    | 168   | 135   | 111   | 3220 | 212 | 383    | 168   | 135   | 111   |
| 3220 | 213 | 286    | 127   | 98    | 72    | 3220 | 213 | 286    | 127   | 98    | 72    | 3220 | 213 | 286    | 127   | 98    | 72    |
| 3220 | 214 | 383    | 132   | 158   | 88    | 3220 | 214 | 383    | 132   | 158   | 88    | 3220 | 214 | 383    | 132   | 158   | 88    |
| 3220 | 215 | 318    | 152   | 97    | 94    | 3220 | 215 | 318    | 152   | 97    | 94    | 3220 | 215 | 318    | 152   | 97    | 94    |
| 3220 | 216 | 308    | 171   | 176   | 111   | 3220 | 216 | 308    | 171   | 176   | 111   | 3220 | 216 | 308    | 171   | 176   | 111   |
| 3220 | 217 | 222    | 159   | 146   | 97    | 3220 | 217 | 222    | 159   | 146   | 97    | 3220 | 217 | 222    | 159   | 146   | 97    |
| 3220 | 218 | 444    | 166   | 99    | 144   | 3220 | 218 | 444    | 166   | 99    | 144   | 3220 | 218 | 444    | 166   | 99    | 144   |
| 3220 | 219 | 272    | 137   | 126   | 111   | 3220 | 219 | 272    | 137   | 126   | 111   | 3220 | 219 | 272    | 137   | 126   | 111   |
| 3220 | 220 | 306    | 150   | 104   | 88    | 3220 | 220 | 306    | 150   | 104   | 88    | 3220 | 220 | 306    | 150   | 104   | 88    |
| 3220 | 221 | 382    | 150   | 123   | 111   | 3220 | 221 | 382    | 150   | 123   | 111   | 3220 | 221 | 382    | 150   | 123   | 111   |
| 3220 | 222 | 340    | 151   | 264   | 99    | 3220 | 222 | 340    | 151   | 264   | 99    | 3220 | 222 | 340    | 151   | 264   | 99    |
| 3220 | 223 | 323    | 203   | 269   | 109   | 3220 | 223 | 323    | 203   | 269   | 109   | 3220 | 223 | 323    | 203   | 269   | 109   |
| 3220 | 224 | 328    | 147   | 125   | 111   | 3220 | 224 | 328    | 147   | 125   | 111   | 3220 | 224 | 328    | 147   | 125   | 111   |
| 3220 | 225 | 347    | 147   | 161   | 111   | 3220 | 225 | 347    | 147   | 161   | 111   | 3220 | 225 | 347    | 147   | 161   | 111   |
| 3220 | 226 | 337    | 171   | 144   | 111   | 3220 | 226 | 337    | 171   | 144   | 111   | 3220 | 226 | 337    | 171   | 144   | 111   |
| 3220 | 227 | 364    | 177   | 97    | 111   | 3220 | 227 | 364    | 177   | 97    | 111   | 3220 | 227 | 364    | 177   | 97    | 111   |
| 3220 | 228 | 393    | 169   | 62    | 111   | 3220 | 228 | 393    | 169   | 62    | 111   | 3220 | 228 | 393    | 169   | 62    | 111   |
| 3220 | 229 | 369    | 189   | 217   | 111   | 3220 | 229 | 369    | 189   | 217   | 111   | 3220 | 229 | 369    | 189   | 217   | 111   |
| 3220 | 230 | 393    | 192   | 267   | 111   | 3220 | 230 | 393    | 192   | 267   | 111   | 3220 | 230 | 393    | 192   | 267   | 111   |
| 3220 | 231 | 409    | 192   | 95    | 111   | 3220 | 231 | 409    | 192   | 95    | 111   | 3220 | 231 | 409    | 192   | 95    | 111   |
| 3220 | 232 | 410    | 196   | 266   | 111   | 3220 | 232 | 410    | 196   | 266   | 111   | 3220 | 232 | 410    | 196   | 266   | 111   |
| 3220 | 233 | 317    | 161   | 104   | 111   | 3220 | 233 | 317    | 161   | 104   | 111   | 3220 | 233 | 317    | 161   | 104   | 111   |
| 3220 | 234 | 353    | 170   | 99    | 111   | 3220 | 234 | 353    | 170   | 99    | 111   | 3220 | 234 | 353    | 170   | 99    | 111   |
| 3220 | 235 | 359    | 226   | 96    | 111   | 3220 | 235 | 359    | 226   | 96    | 111   | 3220 | 235 | 359    | 226   | 96    | 111   |
| 3220 | 236 | 389    | 195   | 139   | 111   | 3220 | 236 | 389    | 195   | 139   | 111   | 3220 | 236 | 389    | 195   | 139   | 111   |
| 3220 | 237 | 489    | 203   | 44    | 111   | 3220 | 237 | 489    | 203   | 44    | 111   | 3220 | 237 | 489    | 203   | 44    | 111   |
| 3220 | 238 | 297    | 153   | 110   | 111   | 3220 | 238 | 297    | 153   | 110   | 111   | 3220 | 238 | 297    | 153   | 110   | 111   |
| 3220 | 239 | 306    | 174   | 96    | 111   | 3220 | 239 | 306    | 174   | 96    | 111   | 3220 | 239 | 306    | 174   | 96    | 111   |
| 3220 | 240 | 290    | 266   | 37    | 111   | 3220 | 240 | 290    | 266   | 37    | 111   | 3220 | 240 | 290    | 266   | 37    | 111   |
| 3220 | 241 | 230    | 180   | 27    | 111   | 3220 | 241 | 230    | 180   | 27    | 111   | 3220 | 241 | 230    | 180   | 27    | 111   |
| 3220 | 242 | 294    | 166   | 199   | 111   | 3220 | 242 | 294    | 166   | 199   | 111   | 3220 | 242 | 294    | 166   | 199   | 111   |
| 3220 | 243 | 043    | 126   | 45    | 111   | 3220 | 243 | 043    | 126   | 45    | 111   | 3220 | 243 | 043    | 126   | 45    | 111   |
| 3220 | 244 | 294    | 173   | 139   | 111   | 3220 | 244 | 294    | 173   | 139   | 111   | 3220 | 244 | 294    | 173   | 139   | 111   |
| 3220 | 245 | 261    | 169   | 22    | 111   | 3220 | 245 | 261    | 169   | 22    | 111   | 3220 | 245 | 261    | 169   | 22    | 111   |
| 3220 | 246 | 294    | 174   | 98    | 111   | 3220 | 246 | 294    | 174   | 98    | 111   | 3220 | 246 | 294    | 174   | 98    | 111   |
| 3220 | 247 | 270    | 171   | 177   | 111   | 3220 | 247 | 270    | 171   | 177   | 111   | 3220 | 247 | 270    | 171   | 177   | 111   |
| 3220 | 248 | 291    | 171   | 92    | 110   | 3220 | 248 | 291    | 171   | 92    | 110   | 3220 | 248 | 291    | 171   | 92    | 110   |
| 3220 | 249 | 66     | 126   | 54    | 111   | 3220 | 249 | 66     | 126   | 54    | 111   | 3220 | 249 | 66     | 126   | 54    | 111   |
| 3220 | 250 | 44     | 159   | 46    | 111   | 3220 | 250 | 44     | 159   | 46    | 111   | 3220 | 250 | 44     | 159   | 46    | 111   |
| 3220 | 251 | 294    | 165   | 66    | 111   | 3220 | 251 | 294    | 165   | 66    | 111   | 3220 | 251 | 294    | 165   | 66    | 111   |
| 3220 | 252 | 87     | 153   | 88    | 111   | 3220 | 252 | 87     | 153   | 88    | 111   | 3220 | 252 | 87     | 153   | 88    | 111   |
| 3220 | 253 | 212    | 212   | 77    | 111   | 3220 | 253 | 212    | 212   | 77    | 111   | 3220 | 253 | 212    | 212   | 77    | 111   |
| 3220 | 254 | 171    | 171   | 171   | 111   | 3220 | 254 | 171    | 171   | 171   | 111   | 3220 | 254 | 171    | 171   | 171   | 111   |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ALLEN CENTER FOUR, HOUSTON

|     | TAP | CPMEAN | CPRMS | CPMAX  | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX  | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|--------|-------|-----|-----|--------|-------|--------|-------|-----|-----|--------|-------|-------|-------|
| 422 | 366 | 171    | 055   | -1.252 | 320   | 904 | 529 | 191    | 118   | -1.388 | 330   | 135 | 112 | 136    | 656   | -301  |       |
| 423 | 190 | 172    | 701   | -1.330 | 320   | 905 | 519 | 213    | 141   | -1.739 | 330   | 136 | 234 | 129    | 697   | -128  |       |
| 424 | 303 | 180    | 513   | -1.755 | 320   | 906 | 614 | 176    | 035   | -1.151 | 330   | 137 | 332 | 164    | 890   | -243  |       |
| 425 | 339 | 161    | 977   | -1.951 | 320   | 907 | 730 | 180    | 072   | -1.248 | 330   | 138 | 412 | 177    | 1.021 | -162  |       |
| 426 | 392 | 155    | 987   | -1.893 | 320   | 908 | 606 | 187    | 027   | -1.347 | 330   | 139 | 450 | 196    | 1.110 | -132  |       |
| 427 | 340 | 215    | 260   | -1.195 | 320   | 909 | 544 | 176    | 071   | -1.217 | 330   | 140 | 388 | 181    | 1.062 | -095  |       |
| 428 | 685 | 188    | 787   | -1.464 | 320   | 910 | 486 | 182    | 039   | -1.157 | 330   | 141 | 418 | 193    | 1.099 | -1459 |       |
| 429 | 186 | 180    | 468   | -1.762 | 320   | 911 | 410 | 149    | 038   | -1.940 | 330   | 142 | 463 | 180    | 060   | -1415 |       |
| 430 | 405 | 192    | 203   | -1.174 | 320   | 912 | 434 | 176    | 202   | -1.092 | 330   | 143 | 092 | 131    | 354   | -604  |       |
| 431 | 409 | 158    | 043   | -1.104 | 320   | 913 | 353 | 163    | 184   | -1.894 | 330   | 144 | 074 | 114    | 453   | -360  |       |
| 432 | 410 | 166    | 919   | -1.223 | 320   | 914 | 353 | 160    | 133   | -1.143 | 330   | 145 | 164 | 134    | 725   | -344  |       |
| 433 | 028 | 169    | 589   | -1.509 | 320   | 915 | 340 | 159    | 144   | -1.048 | 330   | 146 | 256 | 138    | 788   | -232  |       |
| 434 | 193 | 195    | 509   | -1.896 | 320   | 916 | 245 | 177    | 244   | -1.006 | 330   | 147 | 314 | 154    | 940   | -166  |       |
| 435 | 400 | 187    | 061   | -1.309 | 320   | 917 | 357 | 156    | 169   | -1.908 | 330   | 148 | 341 | 145    | 918   | -164  |       |
| 436 | 431 | 193    | 039   | -1.242 | 320   | 918 | 286 | 146    | 174   | -1.846 | 330   | 149 | 285 | 185    | 883   | -315  |       |
| 437 | 471 | 164    | 125   | -1.167 | 320   | 919 | 285 | 156    | 174   | -1.240 | 330   | 150 | 524 | 235    | 046   | -1718 |       |
| 438 | 282 | 138    | 627   | -1.531 | 330   | 101 | 327 | 201    | 152   | -1.419 | 330   | 151 | 592 | 208    | 135   | -1511 |       |
| 439 | 331 | 235    | 471   | -1.088 | 330   | 102 | 536 | 192    | 135   | -1.254 | 330   | 152 | 124 | 164    | 287   | -426  |       |
| 440 | 331 | 181    | 199   | -1.990 | 330   | 103 | 421 | 193    | 359   | -1.179 | 330   | 153 | 097 | 148    | 588   | -341  |       |
| 441 | 511 | 185    | 010   | -1.355 | 330   | 104 | 467 | 174    | 118   | -1.170 | 330   | 154 | 337 | 148    | 838   | -264  |       |
| 442 | 559 | 176    | 060   | -1.427 | 330   | 105 | 685 | 239    | 371   | -1.481 | 330   | 155 | 211 | 157    | 022   | -2139 |       |
| 443 | 357 | 103    | 744   | -1.019 | 330   | 106 | 490 | 205    | 580   | -1.243 | 330   | 156 | 264 | 191    | 1.048 | -1139 |       |
| 444 | 204 | 204    | 696   | -1.420 | 330   | 107 | 506 | 210    | 343   | -1.164 | 330   | 157 | 281 | 178    | 099   | -223  |       |
| 445 | 264 | 150    | 795   | -1.176 | 330   | 108 | 495 | 179    | 161   | -1.057 | 330   | 158 | 261 | 180    | 823   | -357  |       |
| 446 | 092 | 116    | 474   | -1.301 | 330   | 109 | 688 | 208    | 035   | -1.427 | 330   | 159 | 479 | 206    | 130   | -1629 |       |
| 447 | 106 | 125    | 468   | -1.506 | 330   | 110 | 290 | 171    | 299   | -1.907 | 330   | 160 | 398 | 168    | 072   | -1263 |       |
| 448 | 071 | 134    | 448   | -1.609 | 330   | 111 | 081 | 170    | 515   | -1.619 | 330   | 161 | 163 | 132    | 368   | -547  |       |
| 449 | 021 | 128    | 383   | -1.622 | 330   | 112 | 584 | 174    | 048   | -1.282 | 330   | 162 | 011 | 120    | 667   | -355  |       |
| 450 | 208 | 132    | 183   | -1.447 | 330   | 113 | 307 | 190    | 474   | -1.937 | 330   | 163 | 072 | 129    | 518   | -298  |       |
| 701 | 068 | 113    | 461   | -1.343 | 330   | 114 | 581 | 189    | 083   | -1.286 | 330   | 164 | 116 | 103    | 486   | -151  |       |
| 702 | 062 | 116    | 438   | -1.367 | 330   | 115 | 324 | 206    | 381   | -1.383 | 330   | 165 | 166 | 165    | 848   | -320  |       |
| 703 | 053 | 118    | 433   | -1.339 | 330   | 116 | 060 | 132    | 564   | -1.299 | 330   | 166 | 090 | 161    | 833   | -258  |       |
| 705 | 074 | 114    | 487   | -1.313 | 330   | 117 | 210 | 146    | 691   | -1.296 | 330   | 167 | 083 | 159    | 704   | -874  |       |
| 706 | 070 | 109    | 443   | -1.302 | 330   | 118 | 282 | 155    | 846   | -1.258 | 330   | 168 | 289 | 124    | 148   | -379  |       |
| 707 | 052 | 111    | 512   | -1.319 | 330   | 119 | 349 | 170    | 980   | -1.219 | 330   | 169 | 285 | 116    | 152   | -579  |       |
| 708 | 001 | 126    | 470   | -1.511 | 330   | 120 | 419 | 162    | 994   | -1.127 | 330   | 170 | 065 | 110    | 274   | -413  |       |
| 710 | 055 | 115    | 473   | -1.367 | 330   | 121 | 465 | 198    | 057   | -1.291 | 330   | 171 | 069 | 128    | 484   | -410  |       |
| 711 | 183 | 112    | 594   | -1.187 | 330   | 122 | 441 | 203    | 026   | -1.154 | 330   | 172 | 060 | 109    | 377   | -249  |       |
| 712 | 149 | 138    | 776   | -1.311 | 330   | 123 | 416 | 205    | 130   | -1.418 | 330   | 173 | 138 | 140    | 772   | -338  |       |
| 714 | 190 | 132    | 671   | -1.310 | 330   | 124 | 464 | 169    | 076   | -1.190 | 330   | 174 | 217 | 155    | 918   | -268  |       |
| 714 | 221 | 148    | 978   | -1.222 | 330   | 125 | 027 | 125    | 443   | -1.376 | 330   | 175 | 149 | 145    | 754   | -332  |       |
| 716 | 104 | 111    | 475   | -1.300 | 330   | 126 | 156 | 134    | 632   | -1.297 | 330   | 176 | 170 | 160    | 187   | -516  |       |
| 717 | 233 | 146    | 664   | -1.169 | 330   | 127 | 271 | 149    | 785   | -1.288 | 330   | 177 | 152 | 120    | 240   | -563  |       |
| 801 | 066 | 117    | 458   | -1.269 | 330   | 128 | 370 | 143    | 849   | -1.124 | 330   | 178 | 179 | 123    | 211   | -588  |       |
| 802 | 264 | 131    | 168   | -1.556 | 330   | 129 | 449 | 169    | 003   | -1.034 | 330   | 180 | 177 | 137    | 584   | -338  |       |
| 803 | 380 | 126    | 066   | -1.837 | 330   | 130 | 486 | 180    | 069   | -1.049 | 330   | 181 | 177 | 111    | 339   | -399  |       |
| 804 | 395 | 131    | 082   | -1.842 | 330   | 131 | 420 | 186    | 183   | -1.165 | 330   | 182 | 028 | 112    | 449   | -661  |       |
| 901 | 649 | 171    | 128   | -1.314 | 330   | 132 | 355 | 155    | 053   | -1.136 | 330   | 201 | 288 | 136    | 136   | -861  |       |
| 902 | 711 | 183    | 134   | -1.393 | 330   | 133 | 443 | 175    | 129   | -1.320 | 330   | 202 | 289 | 228    | 484   | -1366 |       |
| 903 | 715 | 176    | 093   | -1.273 | 330   | 134 | 078 | 127    | 436   | -1.566 | 330   | 203 | 282 | 149    | 170   | -624  |       |



APPENDIX A -- PRESSURE DATA: CONFIGURATION C ) ALLEN CENTER FOUR, HOUSTON

|      | TAP | CPMEAN | CPRMS | CPMAX | CPMIN   | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN   | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD   |
|------|-----|--------|-------|-------|---------|------|-----|--------|-------|-------|--------|------|-----|--------|-------|-------|---------|------|-----|--------|-------|-------|--------|------|
| 3000 | 304 | 318    | 160   | 125   | -1.2003 | 3330 | 304 | 286    | 161   | 207   | -1.076 | 3330 | 304 | 318    | 160   | 125   | -1.2003 | 3330 | 304 | 286    | 161   | 207   | -1.076 | 3330 |
| 3001 | 305 | 370    | 164   | 106   | -1.9799 | 3330 | 305 | 289    | 149   | 191   | -1.983 | 3330 | 305 | 370    | 164   | 106   | -1.9799 | 3330 | 305 | 289    | 149   | 191   | -1.983 | 3330 |
| 3002 | 306 | 392    | 158   | 111   | -1.212  | 3330 | 306 | 274    | 168   | 210   | -1.292 | 3330 | 306 | 392    | 158   | 111   | -1.212  | 3330 | 306 | 274    | 168   | 210   | -1.292 | 3330 |
| 3003 | 307 | 491    | 183   | 637   | -1.258  | 3330 | 307 | 262    | 140   | 119   | -1.052 | 3330 | 307 | 491    | 183   | 637   | -1.258  | 3330 | 307 | 262    | 140   | 119   | -1.052 | 3330 |
| 3004 | 308 | 266    | 136   | 139   | -1.943  | 3330 | 308 | 315    | 135   | 164   | -1.884 | 3330 | 308 | 266    | 136   | 139   | -1.943  | 3330 | 308 | 315    | 135   | 164   | -1.884 | 3330 |
| 3005 | 309 | 266    | 131   | 130   | -1.438  | 3330 | 309 | 273    | 145   | 126   | -1.995 | 3330 | 309 | 266    | 131   | 130   | -1.438  | 3330 | 309 | 273    | 145   | 126   | -1.995 | 3330 |
| 3006 | 310 | 276    | 162   | 214   | -1.971  | 3330 | 310 | 262    | 153   | 139   | -1.814 | 3330 | 310 | 276    | 162   | 214   | -1.971  | 3330 | 310 | 262    | 153   | 139   | -1.814 | 3330 |
| 3007 | 311 | 301    | 162   | 177   | -1.986  | 3330 | 311 | 267    | 146   | 245   | -1.998 | 3330 | 311 | 301    | 162   | 177   | -1.986  | 3330 | 311 | 267    | 146   | 245   | -1.998 | 3330 |
| 3008 | 312 | 449    | 157   | 014   | -1.128  | 3330 | 312 | 288    | 145   | 150   | -1.931 | 3330 | 312 | 449    | 157   | 014   | -1.128  | 3330 | 312 | 288    | 145   | 150   | -1.931 | 3330 |
| 3009 | 313 | 266    | 127   | 083   | -1.948  | 3330 | 313 | 271    | 139   | 245   | -1.999 | 3330 | 313 | 266    | 127   | 083   | -1.948  | 3330 | 313 | 271    | 139   | 245   | -1.999 | 3330 |
| 3010 | 314 | 270    | 150   | 129   | -1.988  | 3330 | 314 | 244    | 142   | 288   | -1.979 | 3330 | 314 | 270    | 150   | 129   | -1.988  | 3330 | 314 | 244    | 142   | 288   | -1.979 | 3330 |
| 3011 | 315 | 282    | 135   | 102   | -1.986  | 3330 | 315 | 255    | 125   | 093   | -1.039 | 3330 | 315 | 282    | 135   | 102   | -1.986  | 3330 | 315 | 255    | 125   | 093   | -1.039 | 3330 |
| 3012 | 316 | 292    | 129   | 105   | -1.835  | 3330 | 316 | 255    | 130   | 213   | -1.886 | 3330 | 316 | 292    | 129   | 105   | -1.835  | 3330 | 316 | 255    | 130   | 213   | -1.886 | 3330 |
| 3013 | 317 | 334    | 155   | 109   | -1.022  | 3330 | 317 | 264    | 120   | 083   | -1.884 | 3330 | 317 | 334    | 155   | 109   | -1.022  | 3330 | 317 | 264    | 120   | 083   | -1.884 | 3330 |
| 3014 | 318 | 277    | 139   | 191   | -1.759  | 3330 | 318 | 234    | 132   | 221   | -1.754 | 3330 | 318 | 277    | 139   | 191   | -1.759  | 3330 | 318 | 234    | 132   | 221   | -1.754 | 3330 |
| 3015 | 319 | 366    | 133   | 065   | -1.903  | 3330 | 319 | 220    | 120   | 136   | -1.618 | 3330 | 319 | 366    | 133   | 065   | -1.903  | 3330 | 319 | 220    | 120   | 136   | -1.618 | 3330 |
| 3016 | 320 | 308    | 147   | 201   | -1.194  | 3330 | 320 | 255    | 120   | 175   | -1.780 | 3330 | 320 | 308    | 147   | 201   | -1.194  | 3330 | 320 | 255    | 120   | 175   | -1.780 | 3330 |
| 3017 | 321 | 326    | 136   | 027   | -1.008  | 3330 | 321 | 244    | 115   | 082   | -1.675 | 3330 | 321 | 326    | 136   | 027   | -1.008  | 3330 | 321 | 244    | 115   | 082   | -1.675 | 3330 |
| 3018 | 322 | 331    | 159   | 207   | -1.032  | 3330 | 322 | 277    | 124   | 106   | -1.841 | 3330 | 322 | 331    | 159   | 207   | -1.032  | 3330 | 322 | 277    | 124   | 106   | -1.841 | 3330 |
| 3019 | 323 | 342    | 141   | 097   | -1.023  | 3330 | 323 | 258    | 129   | 146   | -1.791 | 3330 | 323 | 342    | 141   | 097   | -1.023  | 3330 | 323 | 258    | 129   | 146   | -1.791 | 3330 |
| 3020 | 324 | 340    | 164   | 115   | -1.160  | 3330 | 324 | 240    | 119   | 254   | -1.554 | 3330 | 324 | 340    | 164   | 115   | -1.160  | 3330 | 324 | 240    | 119   | 254   | -1.554 | 3330 |
| 3021 | 325 | 360    | 162   | 075   | -1.138  | 3330 | 325 | 254    | 126   | 145   | -1.685 | 3330 | 325 | 360    | 162   | 075   | -1.138  | 3330 | 325 | 254    | 126   | 145   | -1.685 | 3330 |
| 3022 | 326 | 431    | 188   | 133   | -1.430  | 3330 | 326 | 261    | 120   | 109   | -1.634 | 3330 | 326 | 431    | 188   | 133   | -1.430  | 3330 | 326 | 261    | 120   | 109   | -1.634 | 3330 |
| 3023 | 327 | 392    | 184   | 094   | -1.506  | 3330 | 327 | 249    | 117   | 187   | -1.700 | 3330 | 327 | 392    | 184   | 094   | -1.506  | 3330 | 327 | 249    | 117   | 187   | -1.700 | 3330 |
| 3024 | 328 | 367    | 171   | 131   | -1.095  | 3330 | 328 | 245    | 118   | 233   | -1.700 | 3330 | 328 | 367    | 171   | 131   | -1.095  | 3330 | 328 | 245    | 118   | 233   | -1.700 | 3330 |
| 3025 | 329 | 400    | 198   | 145   | -1.405  | 3330 | 329 | 246    | 121   | 124   | -1.715 | 3330 | 329 | 400    | 198   | 145   | -1.405  | 3330 | 329 | 246    | 121   | 124   | -1.715 | 3330 |
| 3026 | 330 | 430    | 194   | 066   | -1.473  | 3330 | 330 | 272    | 110   | 177   | -1.735 | 3330 | 330 | 430    | 194   | 066   | -1.473  | 3330 | 330 | 272    | 110   | 177   | -1.735 | 3330 |
| 3027 | 331 | 500    | 213   | 009   | -1.483  | 3330 | 331 | 291    | 136   | 175   | -1.943 | 3330 | 331 | 500    | 213   | 009   | -1.483  | 3330 | 331 | 291    | 136   | 175   | -1.943 | 3330 |
| 3028 | 332 | 380    | 166   | 162   | -1.076  | 3330 | 332 | 254    | 109   | 128   | -1.706 | 3330 | 332 | 380    | 166   | 162   | -1.076  | 3330 | 332 | 254    | 109   | 128   | -1.706 | 3330 |
| 3029 | 333 | 320    | 179   | 139   | -1.104  | 3330 | 333 | 291    | 110   | 177   | -1.735 | 3330 | 333 | 320    | 179   | 139   | -1.104  | 3330 | 333 | 291    | 110   | 177   | -1.735 | 3330 |
| 3030 | 334 | 453    | 183   | 095   | -1.096  | 3330 | 334 | 267    | 107   | 064   | -1.662 | 3330 | 334 | 453    | 183   | 095   | -1.096  | 3330 | 334 | 267    | 107   | 064   | -1.662 | 3330 |
| 3031 | 335 | 486    | 183   | 110   | -1.276  | 3330 | 335 | 272    | 116   | 087   | -1.645 | 3330 | 335 | 486    | 183   | 110   | -1.276  | 3330 | 335 | 272    | 116   | 087   | -1.645 | 3330 |
| 3032 | 336 | 486    | 193   | 003   | -1.224  | 3330 | 336 | 257    | 115   | 168   | -1.688 | 3330 | 336 | 486    | 193   | 003   | -1.224  | 3330 | 336 | 257    | 115   | 168   | -1.688 | 3330 |
| 3033 | 337 | 553    | 158   | 114   | -1.960  | 3330 | 337 | 273    | 100   | 083   | -1.570 | 3330 | 337 | 553    | 158   | 114   | -1.960  | 3330 | 337 | 273    | 100   | 083   | -1.570 | 3330 |
| 3034 | 338 | 265    | 141   | 102   | -1.907  | 3330 | 338 | 267    | 105   | 067   | -1.708 | 3330 | 338 | 265    | 141   | 102   | -1.907  | 3330 | 338 | 267    | 105   | 067   | -1.708 | 3330 |
| 3035 | 339 | 277    | 165   | 210   | -1.130  | 3330 | 339 | 267    | 113   | 083   | -1.893 | 3330 | 339 | 277    | 165   | 210   | -1.130  | 3330 | 339 | 267    | 113   | 083   | -1.893 | 3330 |
| 3036 | 340 | 268    | 154   | 227   | -1.761  | 3330 | 340 | 310    | 124   | 051   | -1.825 | 3330 | 340 | 268    | 154   | 227   | -1.761  | 3330 | 340 | 310    | 124   | 051   | -1.825 | 3330 |
| 3037 | 341 | 284    | 145   | 077   | -1.781  | 3330 | 341 | 273    | 139   | 223   | -1.036 | 3330 | 341 | 284    | 145   | 077   | -1.781  | 3330 | 341 | 273    | 139   | 223   | -1.036 | 3330 |
| 3038 | 342 | 033    | 113   | 316   | -1.442  | 3330 | 342 | 259    | 125   | 128   | -1.774 | 3330 | 342 | 033    | 113   | 316   | -1.442  | 3330 | 342 | 259    | 125   | 128   | -1.774 | 3330 |
| 3039 | 343 | 242    | 168   | 327   | -1.187  | 3330 | 343 | 270    | 116   | 123   | -1.618 | 3330 | 343 | 242    | 168   | 327   | -1.187  | 3330 | 343 | 270    | 116   | 123   | -1.618 | 3330 |
| 3040 | 344 | 033    | 157   | 176   | -1.969  | 3330 | 344 | 301    | 116   | 014   | -1.905 | 3330 | 344 | 033    | 157   | 176   | -1.969  | 3330 | 344 | 301    | 116   | 014   | -1.905 | 3330 |
| 3041 | 345 | 253    | 153   | 121   | -1.987  | 3330 | 345 | 270    | 208   | 325   | -1.926 | 3330 | 345 | 253    | 153   | 121   | -1.987  | 3330 | 345 | 270    | 208   | 325   | -1.926 | 3330 |
| 3042 | 346 | 253    | 182   | 128   | -1.957  | 3330 | 346 | 286    | 105   | 060   | -1.603 | 3330 | 346 | 253    | 153   | 121   | -1.987  | 3330 | 346 | 286    | 105   | 060   | -1.603 | 3330 |
| 3043 | 347 | 263    | 233   | 435   | -1.006  | 3330 | 347 | 292    | 133   | 111   | -1.827 | 3330 | 347 | 263    | 233   | 435   | -1.006  | 3330 | 347 | 292    | 133   | 111   | -1.827 | 3330 |
| 3044 | 348 | 029    | 119   | 504   | -1.332  | 3330 | 348 | 290    | 140   | 033   | -1.040 | 3330 | 348 | 029    | 119   | 504   | -1.332  | 3330 | 348 | 290    | 140   | 033   | -1.040 | 3330 |
| 3045 | 349 | 011    | 125   | 466   | -1.374  | 3330 | 349 | 350    | 151   | 131   | -1.124 | 3330 | 349 | 011    | 125   | 466   | -1.374  | 3330 | 349 | 350    | 151   | 131   | -1.124 | 3330 |
| 3046 | 350 | 289    | 168   | 176   | -1.099  | 3330 | 350 | 322    | 130   | 037   | -1.140 | 3330 | 350 | 289    | 168   | 176   | -1.099  | 3330 | 350 | 322    | 130   | 037   | -1.140 | 3330 |
| 3047 | 351 | 289    | 161   | 190   | -1.214  | 3330 | 351 | 322    | 149   | 103   | -1.140 | 3330 | 351 | 289    | 161   | 190   | -1.214  | 3330 | 351 | 322    | 149   | 103   | -1.140 | 3330 |
| 3048 | 352 | 262    | 144   | 230   | -1.027  | 3330 | 352 | 324    | 137   | 083   | -1.953 | 3330 | 352 | 262    | 144   | 230   | -1.027  | 3330 | 352 | 324    | 137   | 083   | -1.953 | 3330 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 3333 | 420 | .397   | .135  | .655  | -.856 | 3330 | 902 | -.661  | .186  | -.053 | -1.306 | 340 | 133 | -.431  | .222  | .161  | -1.262 |
| 3333 | 421 | -.330  | .130  | .637  | -.892 | 3330 | 903 | -.657  | .179  | -.002 | -1.336 | 340 | 134 | -.126  | .135  | .313  | -.669  |
| 3333 | 422 | -.284  | .154  | .224  | -.840 | 3330 | 904 | -.568  | .194  | -.011 | -1.333 | 340 | 135 | -.014  | .137  | .508  | -.509  |
| 3333 | 423 | .032   | .171  | .743  | -.406 | 3330 | 905 | -.529  | .192  | -.040 | -1.549 | 340 | 136 | .103   | .131  | .620  | -.286  |
| 3333 | 424 | .242   | .169  | .291  | -.935 | 3330 | 906 | -.629  | .171  | -.001 | -1.106 | 340 | 137 | .172   | .173  | .742  | -.435  |
| 3333 | 425 | .432   | .142  | -.    | -.074 | 3330 | 907 | -.748  | .180  | -.127 | -1.302 | 340 | 138 | .247   | .194  | .935  | -.393  |
| 3333 | 426 | .347   | .162  | .206  | -.058 | 3330 | 908 | -.617  | .184  | -.042 | -1.366 | 340 | 139 | .294   | .220  | 1.056 | -.457  |
| 3333 | 427 | .326   | .147  | .147  | -.927 | 3330 | 909 | -.564  | .175  | -.039 | -1.289 | 340 | 140 | -.256  | .194  | .864  | -.391  |
| 3333 | 428 | .019   | .165  | .536  | -.513 | 3330 | 910 | -.462  | .179  | .192  | -1.253 | 340 | 141 | -.449  | .211  | .196  | -.452  |
| 3333 | 429 | .146   | .186  | .186  | -.850 | 3330 | 911 | -.400  | .144  | -.018 | -1.001 | 340 | 142 | -.484  | .211  | .193  | -.138  |
| 3333 | 430 | .483   | .173  | -.048 | -.134 | 3330 | 912 | -.406  | .194  | .357  | -1.244 | 340 | 143 | -.144  | .144  | .324  | -.708  |
| 3333 | 431 | .429   | .173  | -.016 | -.280 | 3330 | 913 | -.316  | .180  | .235  | -.992  | 340 | 144 | -.015  | .121  | .441  | -.434  |
| 3333 | 432 | .365   | .172  | .193  | -.205 | 3330 | 914 | -.324  | .164  | .171  | -.936  | 340 | 145 | .064   | .144  | .600  | -.375  |
| 3333 | 433 | .071   | .146  | .467  | -.544 | 3330 | 915 | -.312  | .158  | .195  | -.941  | 340 | 146 | .142   | .152  | .739  | -.316  |
| 3333 | 434 | .304   | .173  | .232  | -.989 | 3330 | 916 | -.175  | .157  | .307  | -.852  | 340 | 147 | .215   | .177  | .916  | -.346  |
| 3333 | 435 | .494   | .196  | .020  | -.264 | 3330 | 917 | -.336  | .157  | .331  | -.988  | 340 | 148 | .249   | .172  | .862  | -.248  |
| 3333 | 436 | .481   | .204  | .034  | -.159 | 3330 | 918 | -.288  | .153  | .314  | -.807  | 340 | 149 | .214   | .203  | .971  | -.473  |
| 3333 | 437 | .422   | .163  | .032  | -.095 | 3330 | 919 | -.297  | .165  | .343  | -.965  | 340 | 150 | .459   | .220  | .250  | -.138  |
| 3333 | 438 | .600   | .131  | .436  | -.833 | 3330 | 920 | -.308  | .250  | .514  | -.269  | 340 | 151 | .431   | .206  | .177  | -.228  |
| 3333 | 439 | .381   | .145  | .281  | -.808 | 3330 | 921 | -.359  | .232  | .374  | -.297  | 340 | 152 | .145   | .121  | .219  | -.528  |
| 3333 | 440 | .407   | .196  | .242  | -.055 | 3330 | 922 | -.169  | .284  | .804  | -.195  | 340 | 153 | .040   | .127  | .479  | -.466  |
| 3333 | 441 | .479   | .168  | .016  | -.202 | 3330 | 923 | -.181  | .247  | .612  | -.047  | 340 | 154 | .027   | .136  | .570  | -.407  |
| 3333 | 442 | .471   | .154  | .033  | -.113 | 3330 | 924 | -.437  | .248  | .562  | -.325  | 340 | 155 | .105   | .141  | .631  | -.349  |
| 3333 | 443 | .291   | .092  | .614  | -.024 | 3330 | 925 | -.174  | .278  | .809  | -.221  | 340 | 156 | .162   | .137  | .702  | -.252  |
| 3333 | 444 | .126   | .102  | .479  | -.200 | 3330 | 926 | -.214  | .277  | .716  | -.268  | 340 | 157 | .174   | .172  | .878  | -.321  |
| 3333 | 445 | .133   | .127  | .580  | -.370 | 3330 | 927 | -.231  | .226  | .584  | -.077  | 340 | 158 | .120   | .185  | .905  | -.502  |
| 3333 | 446 | .065   | .112  | .437  | -.358 | 3330 | 928 | -.557  | .253  | .373  | -.312  | 340 | 159 | -.378  | .182  | .097  | -.145  |
| 3333 | 447 | .051   | .123  | .393  | -.408 | 3330 | 929 | -.141  | .232  | .961  | -.132  | 340 | 160 | -.319  | .147  | .109  | -.860  |
| 3333 | 448 | .061   | .126  | .473  | -.479 | 3330 | 930 | -.022  | .226  | .085  | -.908  | 340 | 161 | -.103  | .136  | .283  | -.568  |
| 3333 | 449 | .002   | .127  | .414  | -.444 | 3330 | 931 | -.436  | .199  | .293  | -.055  | 340 | 162 | -.028  | .126  | .364  | -.483  |
| 3333 | 450 | .161   | .127  | .229  | -.680 | 3330 | 932 | -.156  | .225  | .776  | -.142  | 340 | 163 | .017   | .130  | .439  | -.474  |
| 3333 | 701 | .000   | .193  | .418  | -.397 | 3330 | 933 | -.445  | .276  | .468  | -.436  | 340 | 164 | .058   | .101  | .376  | -.275  |
| 3333 | 702 | .007   | .112  | .352  | -.376 | 3330 | 934 | -.150  | .295  | .819  | -.241  | 340 | 165 | .096   | .153  | .764  | -.393  |
| 3333 | 703 | .016   | .115  | .349  | -.417 | 3330 | 935 | -.159  | .177  | .652  | -.335  | 340 | 166 | .113   | .151  | .687  | -.311  |
| 3333 | 704 | .010   | .107  | .353  | -.314 | 3330 | 936 | -.223  | .191  | .900  | -.437  | 340 | 167 | .066   | .158  | .642  | -.404  |
| 3333 | 705 | .016   | .103  | .333  | -.456 | 3330 | 937 | -.118  | .186  | .968  | -.357  | 340 | 168 | -.240  | .136  | .116  | -.634  |
| 3333 | 706 | .016   | .101  | .274  | -.439 | 3330 | 938 | -.317  | .201  | 1.093 | -.313  | 340 | 169 | -.201  | .122  | .164  | -.619  |
| 3333 | 707 | .057   | .122  | .359  | -.496 | 3330 | 939 | -.378  | .198  | 1.101 | -.193  | 340 | 170 | -.114  | .114  | .229  | -.491  |
| 3333 | 710 | .013   | .110  | .342  | -.486 | 3330 | 940 | -.417  | .252  | 1.166 | -.419  | 340 | 171 | -.016  | .127  | .417  | -.379  |
| 3333 | 711 | .119   | .109  | .616  | -.333 | 3330 | 941 | -.380  | .247  | 1.150 | -.514  | 340 | 172 | -.036  | .109  | .321  | -.380  |
| 3333 | 712 | .080   | .147  | .619  | -.310 | 3330 | 942 | -.499  | .267  | .251  | -.771  | 340 | 173 | .048   | .142  | .514  | -.323  |
| 3333 | 713 | .123   | .146  | .633  | -.365 | 3330 | 943 | -.438  | .237  | .238  | -.330  | 340 | 174 | .140   | .157  | .724  | -.298  |
| 3333 | 714 | .154   | .159  | .856  | -.274 | 3330 | 944 | -.053  | .141  | .614  | -.578  | 340 | 175 | .102   | .156  | .696  | -.413  |
| 3333 | 715 | .041   | .183  | .825  | -.233 | 3330 | 945 | -.083  | .134  | .664  | -.340  | 340 | 176 | -.171  | .115  | .394  | -.512  |
| 3333 | 716 | .171   | .137  | .839  | -.499 | 3330 | 946 | -.165  | .152  | .698  | -.350  | 340 | 177 | -.166  | .121  | .238  | -.523  |
| 3333 | 801 | .022   | .114  | .335  | -.335 | 3330 | 947 | -.241  | .152  | .716  | -.259  | 340 | 178 | -.164  | .122  | .212  | -.556  |
| 3333 | 802 | .066   | .137  | .110  | -.825 | 3330 | 948 | -.290  | .205  | .989  | -.324  | 340 | 180 | -.044  | .130  | .469  | -.353  |
| 3333 | 803 | .349   | .127  | .053  | -.789 | 3330 | 949 | -.333  | .243  | 1.111 | -.403  | 340 | 181 | -.029  | .119  | .408  | -.374  |
| 3333 | 804 | .255   | .127  | .133  | -.783 | 3330 | 950 | -.296  | .257  | 1.316 | -.673  | 340 | 182 | -.055  | .116  | .346  | -.392  |
| 3333 | 901 | .619   | .181  | .955  | -.213 | 340  | 951 | -.449  | .184  | .038  | -.284  | 349 | 201 | -.245  | .125  | .198  | -.763  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C / ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 340 | 202 | 249    | 142   | 210   | -0.835 | 340 | 302 | 224    | 158   | 277   | -1.051 | 340 | 352 | 254    | 136   | 190   | -0.914 |
| 340 | 203 | 305    | 163   | 217   | -1.038 | 340 | 303 | 224    | 148   | 277   | -0.861 | 340 | 353 | 298    | 141   | 160   | -1.126 |
| 340 | 204 | 359    | 175   | 185   | -1.662 | 340 | 304 | 224    | 149   | 277   | -1.016 | 340 | 354 | 251    | 125   | 122   | -0.698 |
| 340 | 205 | 408    | 155   | 655   | -1.247 | 340 | 305 | 224    | 159   | 277   | -1.060 | 340 | 355 | 244    | 119   | 119   | -0.813 |
| 340 | 206 | 400    | 156   | 049   | -1.197 | 340 | 306 | 224    | 150   | 277   | -1.095 | 340 | 356 | 258    | 124   | 128   | -0.683 |
| 340 | 207 | 422    | 191   | 090   | -1.321 | 340 | 307 | 224    | 137   | 277   | -0.979 | 340 | 357 | 312    | 146   | 136   | -1.003 |
| 340 | 208 | 244    | 125   | 119   | -1.852 | 340 | 308 | 224    | 134   | 277   | -0.954 | 340 | 358 | 340    | 151   | 082   | -1.089 |
| 340 | 209 | 267    | 152   | 145   | -1.907 | 340 | 309 | 224    | 134   | 277   | -1.106 | 340 | 359 | 340    | 172   | 161   | -1.273 |
| 340 | 210 | 352    | 186   | 195   | -1.074 | 340 | 310 | 224    | 134   | 277   | -0.872 | 340 | 360 | 334    | 167   | 113   | -1.622 |
| 340 | 211 | 451    | 187   | 144   | -1.091 | 340 | 311 | 224    | 133   | 277   | -0.983 | 340 | 361 | 333    | 153   | 082   | -1.356 |
| 340 | 212 | 501    | 186   | 027   | -1.210 | 340 | 312 | 224    | 145   | 277   | -0.875 | 340 | 362 | 263    | 125   | 116   | -0.753 |
| 340 | 213 | 250    | 133   | 091   | -1.823 | 340 | 313 | 224    | 139   | 277   | -0.793 | 340 | 363 | 282    | 118   | 129   | -0.751 |
| 340 | 214 | 253    | 144   | 292   | -1.780 | 340 | 314 | 224    | 148   | 277   | -0.947 | 340 | 364 | 243    | 116   | 094   | -0.665 |
| 340 | 215 | 323    | 171   | 105   | -1.359 | 340 | 315 | 224    | 129   | 277   | -0.814 | 340 | 365 | 255    | 114   | 153   | -0.756 |
| 340 | 216 | 362    | 176   | 116   | -1.579 | 340 | 316 | 224    | 133   | 277   | -0.883 | 340 | 366 | 255    | 123   | 122   | -0.842 |
| 340 | 217 | 423    | 197   | 161   | -1.287 | 340 | 317 | 224    | 120   | 277   | -0.707 | 340 | 367 | 241    | 121   | 149   | -0.804 |
| 340 | 218 | 295    | 152   | 108   | -1.203 | 340 | 318 | 224    | 117   | 277   | -0.707 | 340 | 368 | 380    | 144   | 055   | -0.887 |
| 340 | 219 | 311    | 134   | 067   | -1.020 | 340 | 319 | 224    | 109   | 277   | -0.550 | 340 | 369 | 358    | 135   | 096   | -1.069 |
| 340 | 220 | 285    | 146   | 179   | -1.846 | 340 | 320 | 224    | 115   | 277   | -0.615 | 340 | 370 | 381    | 141   | 039   | -0.917 |
| 340 | 221 | 351    | 163   | 188   | -1.099 | 340 | 321 | 224    | 111   | 277   | -0.648 | 340 | 371 | 247    | 118   | 150   | -0.634 |
| 340 | 222 | 396    | 188   | 108   | -1.381 | 340 | 322 | 224    | 137   | 277   | -0.991 | 340 | 372 | 244    | 118   | 225   | -0.621 |
| 340 | 223 | 316    | 137   | 091   | -1.166 | 340 | 323 | 224    | 148   | 277   | -0.664 | 340 | 373 | 260    | 121   | 126   | -0.627 |
| 340 | 224 | 326    | 148   | 078   | -1.273 | 340 | 324 | 224    | 137   | 277   | -0.928 | 340 | 374 | 197    | 128   | 177   | -0.681 |
| 340 | 225 | 337    | 157   | 087   | -1.210 | 340 | 325 | 224    | 127   | 277   | -0.783 | 340 | 375 | 187    | 109   | 173   | -0.782 |
| 340 | 226 | 336    | 165   | 151   | -1.073 | 340 | 326 | 224    | 122   | 277   | -0.828 | 340 | 376 | 189    | 116   | 207   | -0.599 |
| 340 | 227 | 434    | 192   | 015   | -1.413 | 340 | 327 | 224    | 129   | 277   | -0.751 | 340 | 377 | 313    | 120   | 050   | -0.832 |
| 340 | 228 | 334    | 166   | 096   | -1.228 | 340 | 328 | 224    | 127   | 277   | -0.574 | 340 | 378 | 380    | 132   | 133   | -0.713 |
| 340 | 229 | 352    | 159   | 076   | -1.099 | 340 | 329 | 224    | 127   | 277   | -0.612 | 340 | 379 | 288    | 127   | 171   | -0.637 |
| 340 | 230 | 361    | 188   | 071   | -1.284 | 340 | 330 | 224    | 120   | 277   | -0.670 | 340 | 380 | 217    | 126   | 194   | -0.620 |
| 340 | 231 | 413    | 220   | 232   | -1.424 | 340 | 331 | 224    | 121   | 277   | -0.886 | 340 | 381 | 193    | 111   | 212   | -0.594 |
| 340 | 232 | 496    | 224   | 129   | -1.402 | 340 | 332 | 224    | 149   | 277   | -0.957 | 340 | 382 | 178    | 116   | 173   | -0.891 |
| 340 | 233 | 261    | 138   | 130   | -1.031 | 340 | 333 | 224    | 145   | 277   | -1.242 | 340 | 383 | 173    | 120   | 214   | -0.659 |
| 340 | 234 | 281    | 152   | 194   | -1.857 | 340 | 334 | 224    | 127   | 277   | -0.684 | 340 | 384 | 186    | 116   | 164   | -0.797 |
| 340 | 235 | 301    | 153   | 082   | -1.993 | 340 | 335 | 224    | 126   | 277   | -0.861 | 340 | 401 | 163    | 167   | 552   | -1.000 |
| 340 | 236 | 342    | 192   | 101   | -1.210 | 340 | 336 | 224    | 136   | 277   | -0.634 | 340 | 402 | 354    | 207   | 202   | -1.346 |
| 340 | 237 | 416    | 209   | 209   | -1.799 | 340 | 337 | 224    | 114   | 277   | -0.634 | 340 | 403 | 385    | 160   | 189   | -0.935 |
| 340 | 238 | 223    | 137   | 226   | -1.906 | 340 | 338 | 224    | 108   | 277   | -0.629 | 340 | 404 | 403    | 171   | 073   | -0.977 |
| 340 | 239 | 224    | 145   | 212   | -1.666 | 340 | 339 | 224    | 113   | 277   | -0.651 | 340 | 405 | 376    | 142   | 052   | -0.912 |
| 340 | 240 | 240    | 169   | 291   | -1.521 | 340 | 340 | 224    | 119   | 277   | -0.837 | 340 | 406 | 346    | 158   | 202   | -0.665 |
| 340 | 241 | 230    | 129   | 224   | -1.716 | 340 | 341 | 224    | 159   | 277   | -1.170 | 340 | 407 | 339    | 163   | 164   | -0.454 |
| 340 | 242 | 239    | 134   | 126   | -1.859 | 340 | 342 | 224    | 126   | 277   | -0.911 | 340 | 408 | 133    | 174   | 767   | -0.454 |
| 340 | 243 | 098    | 123   | 277   | -1.549 | 340 | 343 | 224    | 124   | 277   | -0.924 | 340 | 409 | 240    | 158   | 306   | -0.801 |
| 340 | 244 | 190    | 130   | 175   | -1.636 | 340 | 344 | 224    | 111   | 277   | -0.889 | 340 | 410 | 355    | 153   | 098   | -0.946 |
| 340 | 245 | 205    | 130   | 185   | -1.694 | 340 | 345 | 224    | 699   | 277   | -0.587 | 340 | 411 | 316    | 157   | 120   | -0.955 |
| 340 | 246 | 211    | 136   | 281   | -1.681 | 340 | 346 | 224    | 110   | 277   | -0.643 | 340 | 412 | 273    | 142   | 192   | -1.000 |
| 340 | 247 | 224    | 137   | 172   | -1.552 | 340 | 347 | 224    | 130   | 277   | -0.720 | 340 | 413 | 099    | 162   | 661   | -0.642 |
| 340 | 248 | 194    | 128   | 257   | -1.814 | 340 | 348 | 224    | 126   | 277   | -0.812 | 340 | 414 | 264    | 161   | 375   | -0.882 |
| 340 | 249 | 075    | 125   | 326   | -1.538 | 340 | 349 | 224    | 146   | 277   | -0.986 | 340 | 415 | 428    | 178   | 114   | -1.277 |
| 340 | 250 | 062    | 115   | 353   | -1.499 | 340 | 350 | 224    | 144   | 277   | -1.394 | 340 | 416 | 332    | 165   | 170   | -1.029 |
| 340 | 301 | 268    | 175   | 274   | -1.041 | 340 | 351 | 224    | 133   | 277   | -1.123 | 340 | 417 | 267    | 159   | 153   | -0.997 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |
|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|-------|
| 340 | 418 | 024    | 170   | 653   | -604  | 340 | 804 | 216    | 118   | 165   | -592  | 350 | 131 | 047    | 244   | 811   | -900  |
| 340 | 419 | 299    | 152   | 166   | -985  | 340 | 901 | 509    | 199   | 083   | -1427 | 350 | 132 | 370    | 166   | 091   | -958  |
| 340 | 420 | 438    | 169   | 000   | -1318 | 340 | 902 | 567    | 192   | 007   | -1562 | 350 | 133 | 342    | 158   | 260   | -863  |
| 340 | 421 | 342    | 164   | 086   | -1307 | 340 | 903 | 557    | 191   | 032   | -1409 | 350 | 134 | 177    | 124   | 457   | -561  |
| 340 | 422 | 299    | 159   | 107   | -956  | 340 | 904 | 503    | 200   | 058   | -1437 | 350 | 135 | 098    | 128   | 450   | -479  |
| 340 | 423 | 006    | 161   | 521   | -580  | 340 | 905 | 420    | 197   | 156   | -1466 | 350 | 136 | 041    | 113   | 413   | -425  |
| 340 | 424 | 287    | 158   | 232   | -896  | 340 | 906 | 500    | 192   | 063   | -1334 | 350 | 137 | 026    | 151   | 550   | -551  |
| 340 | 425 | 460    | 164   | 035   | -1170 | 340 | 907 | 568    | 207   | 005   | -1508 | 350 | 138 | 057    | 155   | 586   | -622  |
| 340 | 426 | 361    | 180   | 111   | -1327 | 340 | 908 | 485    | 220   | 232   | -1360 | 350 | 139 | 057    | 180   | 737   | -687  |
| 340 | 427 | 305    | 156   | 174   | -1018 | 340 | 909 | 420    | 192   | 093   | -1378 | 350 | 140 | 016    | 171   | 559   | -609  |
| 340 | 428 | 059    | 160   | 562   | -692  | 340 | 910 | 338    | 174   | 284   | -1271 | 350 | 141 | 325    | 171   | 164   | -962  |
| 340 | 429 | 318    | 148   | 121   | -866  | 340 | 911 | 314    | 139   | 117   | -989  | 350 | 142 | 314    | 166   | 159   | -1026 |
| 340 | 430 | 426    | 169   | 085   | -994  | 340 | 912 | 262    | 164   | 205   | -936  | 350 | 143 | 150    | 134   | 321   | -769  |
| 340 | 431 | 387    | 169   | 104   | -1128 | 340 | 913 | 180    | 153   | 246   | -806  | 350 | 144 | 074    | 113   | 342   | -547  |
| 340 | 432 | 306    | 164   | 180   | -958  | 340 | 914 | 382    | 185   | 122   | -1293 | 350 | 145 | 054    | 129   | 399   | -495  |
| 340 | 433 | 128    | 139   | 303   | -672  | 340 | 915 | 261    | 157   | 304   | -1152 | 350 | 146 | 012    | 126   | 370   | -474  |
| 340 | 434 | 293    | 154   | 164   | -881  | 340 | 916 | 133    | 126   | 248   | -565  | 350 | 147 | 027    | 144   | 647   | -425  |
| 340 | 435 | 425    | 198   | 176   | -1333 | 340 | 917 | 254    | 140   | 219   | -825  | 350 | 148 | 046    | 140   | 600   | -373  |
| 340 | 436 | 416    | 187   | 117   | -1256 | 340 | 918 | 171    | 149   | 394   | -813  | 350 | 149 | 034    | 195   | 863   | -543  |
| 340 | 437 | 367    | 157   | 053   | -1052 | 340 | 919 | 273    | 157   | 182   | -1030 | 350 | 150 | 033    | 183   | 271   | -925  |
| 340 | 438 | 120    | 128   | 342   | -632  | 350 | 101 | 142    | 194   | 622   | -936  | 350 | 151 | 255    | 185   | 279   | -982  |
| 340 | 439 | 222    | 142   | 192   | -711  | 350 | 102 | 248    | 196   | 344   | -947  | 350 | 152 | 130    | 127   | 236   | -479  |
| 340 | 440 | 277    | 164   | 215   | -827  | 350 | 103 | 047    | 230   | 799   | -656  | 350 | 153 | 089    | 134   | 422   | -531  |
| 340 | 441 | 371    | 163   | 033   | -1092 | 350 | 104 | 001    | 225   | 653   | -761  | 350 | 154 | 049    | 138   | 464   | -537  |
| 340 | 442 | 396    | 149   | 046   | -1093 | 350 | 105 | 285    | 227   | 635   | -1007 | 350 | 155 | 008    | 136   | 485   | -465  |
| 340 | 443 | 251    | 098   | 567   | -098  | 350 | 106 | 058    | 265   | 879   | -853  | 350 | 156 | 029    | 122   | 472   | -400  |
| 340 | 444 | 128    | 114   | 521   | -224  | 350 | 107 | 085    | 292   | 353   | -909  | 350 | 157 | 066    | 162   | 796   | -549  |
| 340 | 445 | 146    | 132   | 577   | -201  | 350 | 108 | 075    | 232   | 796   | -628  | 350 | 158 | 048    | 174   | 760   | -620  |
| 340 | 446 | 089    | 116   | 425   | -338  | 350 | 109 | 231    | 221   | 724   | -951  | 350 | 159 | 202    | 167   | 378   | -760  |
| 340 | 447 | 086    | 127   | 462   | -383  | 350 | 110 | 111    | 269   | 216   | -791  | 350 | 160 | 198    | 142   | 226   | -677  |
| 340 | 448 | 079    | 105   | 427   | -368  | 350 | 111 | 130    | 265   | 045   | -713  | 350 | 161 | 133    | 124   | 227   | -594  |
| 340 | 449 | 047    | 117   | 479   | -550  | 350 | 112 | 149    | 169   | 457   | -766  | 350 | 162 | 097    | 116   | 271   | -488  |
| 340 | 450 | 102    | 117   | 321   | -545  | 350 | 113 | 018    | 230   | 824   | -909  | 350 | 163 | 066    | 123   | 373   | -497  |
| 340 | 701 | 087    | 106   | 261   | -390  | 350 | 114 | 131    | 228   | 868   | -1241 | 350 | 164 | 032    | 097   | 282   | -394  |
| 340 | 702 | 060    | 109   | 348   | -438  | 350 | 115 | 133    | 247   | 899   | -972  | 350 | 165 | 010    | 144   | 532   | -468  |
| 340 | 703 | 058    | 114   | 434   | -537  | 350 | 116 | 285    | 182   | 967   | -417  | 350 | 166 | 040    | 147   | 516   | -418  |
| 340 | 705 | 057    | 102   | 261   | -367  | 350 | 117 | 338    | 231   | 142   | -459  | 350 | 167 | 039    | 154   | 815   | -431  |
| 340 | 706 | 057    | 111   | 385   | -568  | 350 | 118 | 346    | 228   | 095   | -355  | 350 | 168 | 159    | 123   | 322   | -497  |
| 340 | 707 | 059    | 111   | 306   | -516  | 350 | 119 | 329    | 235   | 160   | -335  | 350 | 169 | 141    | 116   | 211   | -516  |
| 340 | 708 | 110    | 121   | 414   | -524  | 350 | 120 | 283    | 200   | 849   | -314  | 350 | 170 | 112    | 113   | 252   | -486  |
| 340 | 710 | 055    | 124   | 321   | -537  | 350 | 121 | 194    | 240   | 633   | -715  | 350 | 171 | 078    | 123   | 313   | -713  |
| 340 | 711 | 051    | 116   | 716   | -406  | 350 | 122 | 039    | 276   | 915   | -796  | 350 | 172 | 105    | 106   | 257   | -443  |
| 340 | 712 | 022    | 138   | 510   | -375  | 350 | 123 | 333    | 225   | 473   | -1179 | 350 | 173 | 072    | 117   | 326   | -468  |
| 340 | 713 | 095    | 139   | 671   | -308  | 350 | 124 | 190    | 178   | 453   | -821  | 350 | 174 | 012    | 130   | 473   | -392  |
| 340 | 714 | 088    | 149   | 809   | -314  | 350 | 125 | 023    | 148   | 538   | -470  | 350 | 175 | 013    | 132   | 438   | -421  |
| 340 | 716 | 020    | 116   | 484   | -331  | 350 | 126 | 049    | 146   | 642   | -398  | 350 | 176 | 155    | 103   | 244   | -516  |
| 340 | 717 | 098    | 140   | 647   | -317  | 350 | 127 | 085    | 147   | 620   | -362  | 350 | 177 | 155    | 108   | 197   | -491  |
| 340 | 801 | 034    | 114   | 342   | -393  | 350 | 128 | 104    | 124   | 553   | -278  | 350 | 178 | 160    | 109   | 196   | -499  |
| 340 | 802 | 259    | 135   | 165   | -778  | 350 | 129 | 113    | 149   | 679   | -302  | 350 | 180 | 067    | 104   | 328   | -416  |
| 340 | 803 | 290    | 123   | 096   | -699  | 350 | 130 | 059    | 181   | 802   | -708  | 350 | 181 | 123    | 112   | 265   | -492  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C: ALLEN CENTER FOUR, HOUSTON

| WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD   | TAP | CPMEAN | CPRMS | CPMAX | CPMIN |  |
|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|------|-----|--------|-------|-------|-------|--|
| 3350 | 182 | 138    | 110   | 235   | -     | 3350 | 22  | 110    | 109   | 253   | -     | 3350 | 350 | 190    | 121   | 235   | -     |  |
| 3350 | 183 | 229    | 134   | 240   | -     | 3350 | 23  | 143    | 143   | 238   | -     | 3350 | 351 | 166    | 100   | 169   | -     |  |
| 3350 | 184 | 286    | 136   | 107   | -     | 3350 | 24  | 245    | 142   | 291   | -     | 3350 | 352 | 163    | 106   | 158   | -     |  |
| 3350 | 185 | 374    | 146   | 284   | -     | 3350 | 25  | 141    | 141   | 203   | -     | 3350 | 353 | 151    | 106   | 209   | -     |  |
| 3350 | 186 | 419    | 153   | 297   | -     | 3350 | 26  | 147    | 147   | 254   | -     | 3350 | 354 | 163    | 094   | 161   | -     |  |
| 3350 | 187 | 324    | 149   | 128   | -     | 3350 | 27  | 188    | 133   | 166   | -     | 3350 | 355 | 174    | 095   | 186   | -     |  |
| 3350 | 188 | 366    | 132   | 087   | -     | 3350 | 28  | 175    | 119   | 221   | -     | 3350 | 356 | 173    | 093   | 112   | -     |  |
| 3350 | 189 | 419    | 152   | 232   | -     | 3350 | 29  | 190    | 190   | 190   | -     | 3350 | 357 | 173    | 107   | 157   | -     |  |
| 3350 | 190 | 322    | 145   | 194   | -     | 3350 | 30  | 178    | 178   | 160   | -     | 3350 | 358 | 201    | 110   | 120   | -     |  |
| 3350 | 191 | 390    | 179   | 089   | -     | 3350 | 31  | 199    | 199   | 294   | -     | 3350 | 359 | 184    | 108   | 139   | -     |  |
| 3350 | 192 | 453    | 186   | 153   | -     | 3350 | 32  | 115    | 115   | 132   | -     | 3350 | 360 | 186    | 101   | 121   | -     |  |
| 3350 | 193 | 325    | 192   | 165   | -     | 3350 | 33  | 198    | 131   | 180   | -     | 3350 | 361 | 178    | 106   | 194   | -     |  |
| 3350 | 194 | 444    | 144   | 185   | -     | 3350 | 34  | 223    | 132   | 160   | -     | 3350 | 362 | 149    | 102   | 158   | -     |  |
| 3350 | 195 | 359    | 152   | 161   | -     | 3350 | 35  | 266    | 134   | 266   | -     | 3350 | 363 | 160    | 109   | 193   | -     |  |
| 3350 | 196 | 444    | 172   | 144   | -     | 3350 | 36  | 188    | 134   | 188   | -     | 3350 | 364 | 153    | 094   | 208   | -     |  |
| 3350 | 197 | 366    | 167   | 163   | -     | 3350 | 37  | 179    | 134   | 179   | -     | 3350 | 365 | 158    | 111   | 223   | -     |  |
| 3350 | 198 | 444    | 189   | 154   | -     | 3350 | 38  | 221    | 133   | 221   | -     | 3350 | 366 | 167    | 102   | 198   | -     |  |
| 3350 | 199 | 354    | 177   | 134   | -     | 3350 | 39  | 188    | 133   | 188   | -     | 3350 | 367 | 171    | 104   | 189   | -     |  |
| 3350 | 200 | 444    | 184   | 154   | -     | 3350 | 40  | 216    | 133   | 216   | -     | 3350 | 368 | 224    | 113   | 212   | -     |  |
| 3350 | 201 | 378    | 151   | 173   | -     | 3350 | 41  | 188    | 133   | 188   | -     | 3350 | 369 | 171    | 107   | 088   | -     |  |
| 3350 | 202 | 444    | 153   | 161   | -     | 3350 | 42  | 239    | 133   | 239   | -     | 3350 | 370 | 224    | 111   | 206   | -     |  |
| 3350 | 203 | 339    | 153   | 161   | -     | 3350 | 43  | 177    | 111   | 177   | -     | 3350 | 371 | 179    | 111   | 085   | -     |  |
| 3350 | 204 | 444    | 165   | 181   | -     | 3350 | 44  | 238    | 122   | 238   | -     | 3350 | 372 | 179    | 109   | 138   | -     |  |
| 3350 | 205 | 231    | 128   | 181   | -     | 3350 | 45  | 183    | 122   | 183   | -     | 3350 | 373 | 177    | 101   | 150   | -     |  |
| 3350 | 206 | 244    | 122   | 165   | -     | 3350 | 46  | 175    | 147   | 175   | -     | 3350 | 374 | 155    | 092   | 215   | -     |  |
| 3350 | 207 | 327    | 131   | 121   | -     | 3350 | 47  | 161    | 110   | 161   | -     | 3350 | 375 | 123    | 095   | 173   | -     |  |
| 3350 | 208 | 444    | 138   | 232   | -     | 3350 | 48  | 265    | 110   | 265   | -     | 3350 | 376 | 148    | 085   | 131   | -     |  |
| 3350 | 209 | 306    | 138   | 232   | -     | 3350 | 49  | 110    | 110   | 153   | -     | 3350 | 377 | 192    | 109   | 169   | -     |  |
| 3350 | 210 | 444    | 126   | 197   | -     | 3350 | 50  | 104    | 104   | 134   | -     | 3350 | 378 | 183    | 093   | 101   | -     |  |
| 3350 | 211 | 200    | 133   | 131   | -     | 3350 | 51  | 180    | 111   | 180   | -     | 3350 | 379 | 153    | 102   | 171   | -     |  |
| 3350 | 212 | 444    | 132   | 133   | -     | 3350 | 52  | 166    | 111   | 166   | -     | 3350 | 380 | 133    | 096   | 212   | -     |  |
| 3350 | 213 | 340    | 132   | 133   | -     | 3350 | 53  | 179    | 111   | 179   | -     | 3350 | 381 | 126    | 096   | 231   | -     |  |
| 3350 | 214 | 444    | 154   | 157   | -     | 3350 | 54  | 243    | 111   | 243   | -     | 3350 | 382 | 126    | 103   | 253   | -     |  |
| 3350 | 215 | 174    | 110   | 210   | -     | 3350 | 55  | 195    | 111   | 195   | -     | 3350 | 383 | 127    | 113   | 223   | -     |  |
| 3350 | 216 | 205    | 104   | 134   | -     | 3350 | 56  | 177    | 111   | 177   | -     | 3350 | 384 | 131    | 101   | 215   | -     |  |
| 3350 | 217 | 181    | 118   | 237   | -     | 3350 | 57  | 139    | 111   | 139   | -     | 3350 | 401 | 111    | 204   | 674   | -     |  |
| 3350 | 218 | 444    | 143   | 160   | -     | 3350 | 58  | 087    | 109   | 087   | -     | 3350 | 402 | 335    | 165   | 239   | -     |  |
| 3350 | 219 | 189    | 145   | 267   | -     | 3350 | 59  | 172    | 111   | 172   | -     | 3350 | 403 | 386    | 148   | 136   | -     |  |
| 3350 | 220 | 339    | 106   | 220   | -     | 3350 | 60  | 183    | 111   | 183   | -     | 3350 | 404 | 394    | 140   | 049   | -     |  |
| 3350 | 221 | 444    | 102   | 133   | -     | 3350 | 61  | 138    | 111   | 138   | -     | 3350 | 405 | 359    | 156   | 103   | -     |  |
| 3350 | 222 | 160    | 107   | 169   | -     | 3350 | 62  | 146    | 111   | 146   | -     | 3350 | 406 | 331    | 145   | 067   | -     |  |
| 3350 | 223 | 444    | 111   | 133   | -     | 3350 | 63  | 287    | 111   | 287   | -     | 3350 | 407 | 274    | 141   | 145   | -     |  |
| 3350 | 224 | 185    | 116   | 185   | -     | 3350 | 64  | 157    | 111   | 157   | -     | 3350 | 408 | 160    | 231   | 657   | -     |  |
| 3350 | 225 | 444    | 116   | 185   | -     | 3350 | 65  | 177    | 111   | 177   | -     | 3350 | 409 | 378    | 184   | 189   | -     |  |
| 3350 | 226 | 184    | 116   | 184   | -     | 3350 | 66  | 139    | 111   | 139   | -     | 3350 | 410 | 476    | 184   | 113   | -     |  |
| 3350 | 227 | 444    | 109   | 184   | -     | 3350 | 67  | 139    | 111   | 139   | -     | 3350 | 411 | 364    | 179   | 176   | -     |  |
| 3350 | 228 | 140    | 109   | 184   | -     | 3350 | 68  | 130    | 111   | 130   | -     | 3350 | 412 | 289    | 175   | 352   | -     |  |
| 3350 | 229 | 331    | 114   | 223   | -     | 3350 | 69  | 164    | 111   | 164   | -     | 3350 | 413 | 210    | 233   | 596   | -     |  |
| 3350 | 230 | 140    | 109   | 184   | -     | 3350 | 70  | 119    | 111   | 119   | -     | 3350 | 414 | 370    | 199   | 253   | -     |  |
| 3350 | 231 | 331    | 114   | 223   | -     | 3350 | 71  | 176    | 111   | 176   | -     | 3350 | 415 | 407    | 180   | 143   | -     |  |
| 3350 | 232 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 233 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 234 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 235 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 236 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 237 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 238 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 239 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 240 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 241 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 242 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 243 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 244 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 245 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 246 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 247 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 248 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 249 | 331    | 114   | 223   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |
| 3350 | 250 | 140    | 109   | 184   | -     |      |     |        |       |       |       |      |     |        |       |       |       |  |

APPENDIX A -- PRESSURE DATA: CONFIGURATION C ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|-------|-----|-----|--------|-------|-------|--------|
| 350 | 416 | .339   | .163  | .192  | -1.281 | 350 | 440 | -.189  | .135  | .221  | -.756 | 350 | 717 | -.020  | .130  | .447  | -.449  |
| 350 | 417 | -.268  | .161  | .207  | -1.056 | 350 | 441 | -.247  | .131  | .201  | -.755 | 350 | 801 | -.080  | .111  | .281  | -.391  |
| 350 | 418 | -.114  | .176  | .541  | -.738  | 350 | 442 | -.260  | .118  | .105  | -.615 | 350 | 802 | -.179  | .124  | .270  | -.519  |
| 350 | 419 | -.284  | .151  | .215  | -.916  | 350 | 443 | -.253  | .087  | .649  | -.031 | 350 | 803 | -.189  | .105  | .116  | -.457  |
| 350 | 420 | -.380  | .150  | .101  | -1.014 | 350 | 444 | -.133  | .103  | .514  | -.208 | 350 | 804 | -.171  | .119  | .223  | -.516  |
| 350 | 421 | -.309  | .147  | .164  | -1.116 | 350 | 445 | -.125  | .108  | .507  | -.252 | 350 | 901 | -.287  | .167  | .282  | -.902  |
| 350 | 422 | -.242  | .133  | .169  | -1.035 | 350 | 446 | -.128  | .100  | .431  | -.217 | 350 | 902 | -.423  | .167  | .092  | -1.073 |
| 350 | 423 | -.091  | .155  | .533  | -.594  | 350 | 447 | -.136  | .101  | .540  | -.156 | 350 | 903 | -.397  | .161  | .105  | -.986  |
| 350 | 424 | -.235  | .148  | .231  | -.772  | 350 | 448 | -.091  | .092  | .402  | -.184 | 350 | 904 | -.399  | .160  | .154  | -1.171 |
| 350 | 425 | -.342  | .157  | .134  | -.921  | 350 | 449 | -.084  | .107  | .473  | -.361 | 350 | 905 | -.346  | .163  | .211  | -1.065 |
| 350 | 426 | -.281  | .145  | .225  | -.794  | 350 | 450 | -.034  | .096  | .283  | -.418 | 350 | 906 | -.310  | .163  | .291  | -1.055 |
| 350 | 427 | -.226  | .148  | .245  | -.811  | 350 | 701 | -.159  | .103  | .197  | -.497 | 350 | 907 | -.217  | .179  | .325  | -.850  |
| 350 | 428 | -.079  | .148  | .443  | -.600  | 350 | 702 | -.123  | .108  | .179  | -.518 | 350 | 908 | -.258  | .153  | .217  | -.889  |
| 350 | 429 | -.241  | .131  | .187  | -.784  | 350 | 703 | -.097  | .110  | .212  | -.485 | 350 | 909 | -.281  | .128  | .120  | -.731  |
| 350 | 430 | -.300  | .145  | .253  | -.812  | 350 | 705 | -.135  | .102  | .155  | -.528 | 350 | 910 | -.260  | .131  | .227  | -.751  |
| 350 | 431 | -.276  | .136  | .103  | -.918  | 350 | 706 | -.123  | .117  | .253  | -.536 | 350 | 911 | -.270  | .113  | .048  | -.708  |
| 350 | 432 | -.198  | .139  | .295  | -.756  | 350 | 707 | -.099  | .119  | .282  | -.555 | 350 | 912 | -.236  | .155  | .248  | -.826  |
| 350 | 433 | -.079  | .122  | .380  | -.461  | 350 | 708 | -.145  | .126  | .304  | -.611 | 350 | 913 | -.208  | .166  | .302  | -.925  |
| 350 | 434 | -.229  | .136  | .240  | -.728  | 350 | 710 | -.113  | .130  | .263  | -.656 | 350 | 914 | -.352  | .156  | .096  | -1.064 |
| 350 | 435 | -.395  | .146  | .250  | -.893  | 350 | 711 | -.051  | .114  | .403  | -.441 | 350 | 915 | -.236  | .156  | .291  | -.932  |
| 350 | 436 | -.271  | .136  | .147  | -1.009 | 350 | 712 | -.096  | .126  | .339  | -.530 | 350 | 916 | -.082  | .141  | .428  | -.691  |
| 350 | 437 | -.201  | .119  | .175  | -.692  | 350 | 713 | -.004  | .132  | .483  | -.396 | 350 | 917 | -.227  | .133  | .197  | -.748  |
| 350 | 438 | -.140  | .101  | .226  | -.447  | 350 | 714 | -.042  | .130  | .406  | -.490 | 350 | 918 | -.127  | .137  | .329  | -.544  |
| 350 | 439 | -.140  | .112  | .275  | -.526  | 350 | 716 | -.069  | .116  | .323  | -.453 | 350 | 919 | -.235  | .142  | .240  | -1.039 |

APPENDIX A -- PRESSURE DATA: CONFIGURATION D ; ALLEN CENTER FOUR, HOUSTON

| WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  | WD  | TAP | CPMEAN | CPRMS | CPMAX | CPMIN  |
|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|-----|-----|--------|-------|-------|--------|
| 102 | 141 | 698    | 221   | 123   | -1.498 | 116 | 434 | 203    | 152   | 256   | -1.976 | 164 | 424 | 335    | 230   | 260   | -2.511 |
| 102 | 161 | 272    | 150   | 253   | -1.980 | 118 | 141 | 689    | 273   | 034   | -1.770 | 164 | 434 | 268    | 188   | 285   | -1.358 |
| 102 | 424 | 149    | 126   | 250   | -1.625 | 118 | 161 | 433    | 193   | 043   | -1.140 | 166 | 141 | 333    | 221   | 263   | -1.114 |
| 102 | 434 | 126    | 123   | 266   | -1.652 | 118 | 434 | 303    | 189   | 198   | -1.017 | 166 | 161 | 333    | 195   | 233   | -2.934 |
| 104 | 141 | 757    | 249   | 131   | -1.718 | 118 | 434 | 193    | 150   | 257   | -1.900 | 166 | 424 | 333    | 235   | 314   | -2.553 |
| 104 | 161 | 326    | 176   | 332   | -1.128 | 152 | 141 | 337    | 194   | 293   | -1.215 | 166 | 434 | 286    | 176   | 251   | -1.553 |
| 104 | 424 | 159    | 125   | 287   | -1.855 | 152 | 161 | 278    | 159   | 334   | -1.008 | 168 | 141 | 333    | 188   | 212   | -1.816 |
| 104 | 434 | 136    | 121   | 247   | -1.552 | 152 | 424 | 299    | 207   | 374   | -1.509 | 168 | 161 | 366    | 194   | 333   | -1.867 |
| 106 | 141 | 825    | 258   | 177   | -1.823 | 152 | 434 | 169    | 146   | 323   | -1.624 | 168 | 424 | 318    | 220   | 225   | -1.828 |
| 106 | 161 | 376    | 184   | 200   | -1.256 | 154 | 141 | 404    | 204   | 251   | -1.272 | 168 | 434 | 283    | 179   | 229   | -1.239 |
| 106 | 424 | 182    | 116   | 187   | -1.630 | 154 | 161 | 290    | 155   | 332   | -1.837 | 170 | 141 | 339    | 194   | 266   | -1.197 |
| 106 | 434 | 156    | 115   | 208   | -1.500 | 154 | 424 | 342    | 218   | 330   | -1.939 | 170 | 161 | 399    | 205   | 158   | -1.546 |
| 108 | 141 | 865    | 284   | 153   | -2.032 | 154 | 434 | 196    | 144   | 317   | -1.742 | 170 | 424 | 331    | 223   | 282   | -2.251 |
| 108 | 161 | 439    | 207   | 223   | -1.514 | 156 | 141 | 395    | 210   | 245   | -1.753 | 170 | 434 | 308    | 200   | 243   | -1.276 |
| 108 | 424 | 205    | 138   | 282   | -1.757 | 156 | 161 | 300    | 166   | 221   | -1.468 | 172 | 141 | 291    | 204   | 327   | -1.056 |
| 108 | 434 | 193    | 133   | 288   | -1.772 | 156 | 424 | 326    | 199   | 248   | -1.585 | 172 | 161 | 337    | 205   | 184   | -1.443 |
| 110 | 141 | 949    | 323   | 103   | -2.207 | 156 | 434 | 198    | 164   | 275   | -1.036 | 172 | 424 | 285    | 228   | 334   | -2.543 |
| 110 | 161 | 537    | 221   | 120   | -1.427 | 158 | 141 | 288    | 211   | 290   | -1.607 | 172 | 434 | 281    | 208   | 346   | -1.982 |
| 110 | 424 | 239    | 140   | 226   | -1.804 | 158 | 161 | 281    | 163   | 216   | -1.925 | 174 | 141 | 309    | 187   | 326   | -1.079 |
| 110 | 434 | 211    | 138   | 236   | -1.319 | 158 | 424 | 331    | 194   | 222   | -1.415 | 174 | 161 | 335    | 190   | 237   | -1.590 |
| 112 | 141 | 869    | 303   | 096   | -1.999 | 158 | 434 | 203    | 153   | 395   | -1.013 | 174 | 424 | 332    | 230   | 330   | -2.504 |
| 112 | 161 | 527    | 213   | 130   | -1.593 | 160 | 141 | 339    | 212   | 291   | -1.359 | 174 | 434 | 319    | 206   | 337   | -1.696 |
| 112 | 424 | 254    | 150   | 201   | -1.211 | 160 | 161 | 316    | 176   | 134   | -1.114 | 176 | 141 | 266    | 164   | 277   | -1.243 |
| 112 | 434 | 212    | 146   | 227   | -1.955 | 160 | 424 | 331    | 221   | 213   | -1.808 | 176 | 161 | 310    | 182   | 233   | -2.005 |
| 114 | 141 | 823    | 321   | 060   | -2.185 | 160 | 434 | 241    | 162   | 185   | -1.052 | 176 | 424 | 280    | 199   | 347   | -1.285 |
| 114 | 161 | 548    | 233   | 131   | -1.407 | 162 | 141 | 384    | 226   | 287   | -1.413 | 176 | 434 | 254    | 171   | 241   | -1.245 |
| 114 | 424 | 279    | 173   | 231   | -1.914 | 162 | 161 | 351    | 196   | 180   | -1.521 | 178 | 141 | 230    | 159   | 340   | -1.941 |
| 114 | 434 | 207    | 158   | 295   | -1.014 | 162 | 424 | 333    | 229   | 205   | -2.490 | 178 | 161 | 280    | 175   | 254   | -1.123 |
| 116 | 141 | 670    | 319   | 119   | -2.253 | 162 | 434 | 233    | 179   | 215   | -1.247 | 178 | 424 | 247    | 191   | 272   | -1.122 |
| 116 | 161 | 518    | 217   | 093   | -1.541 | 164 | 141 | 333    | 206   | 241   | -1.456 | 178 | 161 | 261    | 186   | 196   | -1.850 |
| 116 | 424 | 293    | 166   | 239   | -1.148 | 164 | 161 | 389    | 198   | 224   | -1.388 | 178 | 434 | 261    | 186   | 196   | -1.850 |

APPENDIX B

MEASUREMENT AND ANALYSIS OF ACCELERATION



APPENDIX B  
MEASUREMENT AND ANALYSIS  
OF ACCELERATION

This appendix deals with the acceleration of a given floor--say the top floor--of a tall building. It is assumed that the motion occurs entirely within the horizontal x-y plane. The motion of an arbitrary two-dimensional body is indicated in Figure B-1. At any given point P(x,y) the acceleration vector  $\underline{a}$  can be resolved into two orthogonal components of magnitude  $a_x$  and  $a_y$  :

$$\underline{a} = a_x \underline{i} + a_y \underline{j} \quad (\text{B.1})$$

Two accelerometers would be both necessary and sufficient to determine the acceleration at this given point. Since the body can rotate about the point 0 (its own z-axis) the two accelerometers are insufficient to determine the acceleration at any other point; that is,  $a_x$ ,  $a_y$ , and  $\underline{a}$  are functions of x and y as well as of time.

The entire acceleration field can be specified using three variables  $\ddot{x}$ ,  $\ddot{y}$ , and  $\ddot{\theta}$ , as shown in Figure B-2:

$$\underline{a}(x,y) = \ddot{x} \underline{i} + \ddot{y} \underline{j} + r \ddot{\theta} \underline{t} \quad (\text{B.2})$$

where

$\underline{a}(x,y)$  = total acceleration at a point P(x,y) having

distance  $\sqrt{r^2 = x^2 + y^2}$  from center of twist 0

$\ddot{x}$  = acceleration due to translation of body along x-axis

$\ddot{y}$  = acceleration due to translation of body along y-axis

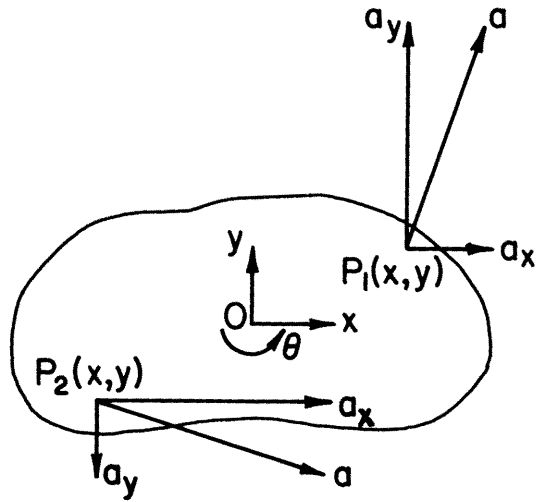


Figure B-1. Total Acceleration Vector at Various Points on a Two-Dimensional Body

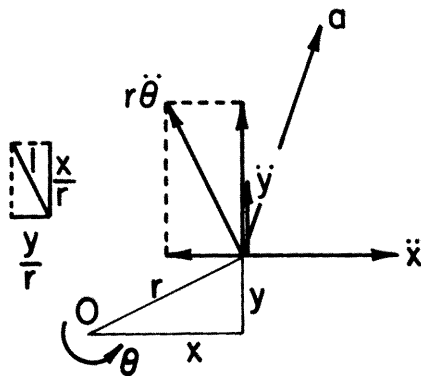


Figure B-2. Total Acceleration Vector as the Sum of Three Components in the X-Y Plane

$\ddot{\theta}$  = angular acceleration (in radians/sec<sup>2</sup>) due to rotation of body about z-axis (assumed center of twist)

$$\underline{t} = \text{unit tangent vector} = -(y/r) \underline{i} = (x/r) \underline{j}$$

This equation can be easily expanded to the form of eqn (B.1), which clearly indicates that  $a_x$  is due to both  $\ddot{x}$ ,  $\ddot{\theta}$ , and  $a_y$  is due to both  $\ddot{y}$ ,  $\ddot{\theta}$ :

$$\begin{aligned} \underline{a}(x,y) &= \ddot{x} \underline{i} + \ddot{y} \underline{j} - (y/r)(r\ddot{\theta})\underline{i} + (x/r)(r\ddot{\theta})\underline{j} \\ &= (\ddot{x}-y\ddot{\theta})\underline{i} + (\ddot{y}+x\ddot{\theta})\underline{j} \\ &= a_x \underline{i} + a_y \underline{j} \end{aligned}$$

Now the magnitude of the acceleration is given by

$$\begin{aligned} a^2 &= a_x^2 + a_y^2 = \ddot{x}^2 - 2y \ddot{x} \ddot{\theta} + y^2 \ddot{\theta}^2 + \ddot{y}^2 + 2x \ddot{y} \ddot{\theta} + x^2 \ddot{\theta}^2 \\ &= \ddot{x}^2 + \ddot{y}^2 + (x^2+y^2) \ddot{\theta}^2 - 2\ddot{\theta}(x\ddot{y}-y\ddot{x}) \end{aligned} \quad (\text{B.3})$$

For the current study, four accelerometers were mounted in the aeroelastic model as shown in the plan view of Figure B-3, at an elevation corresponding to the top floor. Electrical signals from the accelerometers were routed to an analog processing circuit, which instantaneously computes sums and differences of the signals as shown. Thus continuous analog signals were available proportional to  $\ddot{x}$ ,  $\ddot{y}$ , and  $\ddot{\theta}$ . Note that signals representing  $\ddot{\theta}$  were computed in two ways, one of which is redundant and provides a check of overall accuracy.

One way to find peak total acceleration is to digitize the three records  $\ddot{x}$ ,  $\ddot{y}$ ,  $\ddot{\theta}$ , compute  $a$  according to eqn (B.3) for every time sample, then select the largest resulting value. This is a) impractical, and b) subject to statistical variability inherent in the measurement of peaks. Further, there is disagreement among

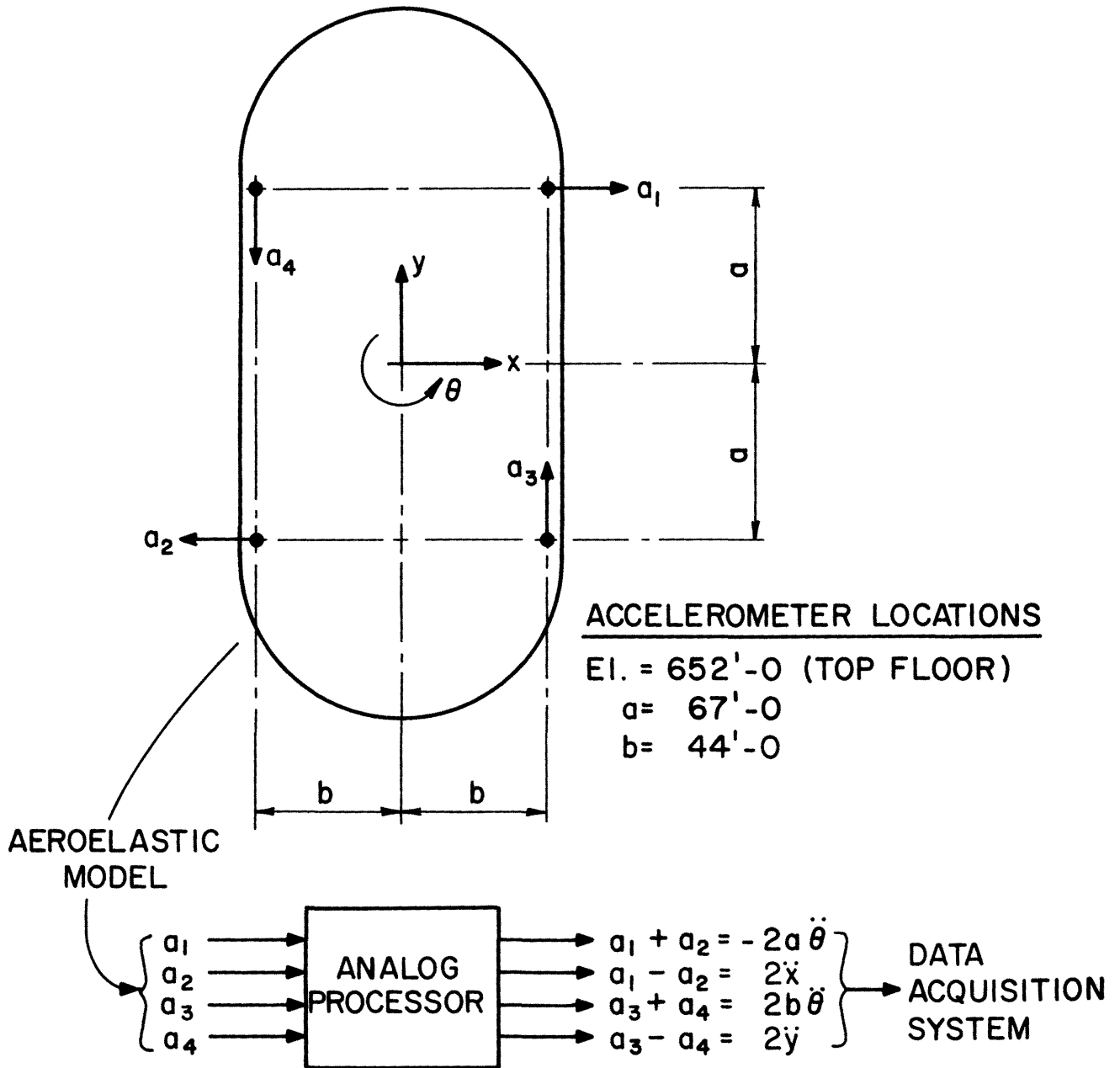


Figure B-3. Measurement of Acceleration in Aeroelastic Model

researchers whether it is  $a_p$  (the peak acceleration) or  $\sigma_a$  (the rms acceleration) which is of significance. The approach taken here, therefore, is to determine  $\sigma_a$  directly from measurements, and then extrapolate an estimated  $a_p$  by multiplying this by a peak factor.

$\sigma_a$  is determined by time-averaging eqn (B.3) over a period  $T$  as follows:

$$\begin{aligned} \overline{a^2} &= \frac{1}{T} \int_0^T |a|^2 dt = \frac{1}{T} \int_0^T (\ddot{x}^2 + \ddot{y}^2 + r^2 \ddot{\theta}^2 - \ddot{\theta}(\ddot{x}y - \ddot{y}x)) dt \\ &= \overline{\ddot{x}^2} + \overline{\ddot{y}^2} + r^2 \overline{\ddot{\theta}^2} + x \overline{\ddot{y}\ddot{\theta}} - y \overline{\ddot{x}\ddot{\theta}} \end{aligned}$$

If the rotational motion is assumed to be independent of the translational motions, then the cross-correlations vanish, resulting in

$$\sigma_a = \sqrt{\overline{a^2}} = \sqrt{\sigma_{\ddot{x}}^2 + \sigma_{\ddot{y}}^2 + \sigma_{r\ddot{\theta}}^2} \quad (\text{B.4})$$

The three signals representing  $\ddot{x}$ ,  $\ddot{y}$ , and  $r\ddot{\theta}$  were digitized by the data acquisition system, and  $\sigma_{\ddot{x}}$ ,  $\sigma_{\ddot{y}}$ ,  $\sigma_{r\ddot{\theta}}$  were computed on-line. Then  $\sigma_a$  is computed off-line by eqn (B.4). This is the "total vector rms acceleration" given in Table 13 and Figure 21, where  $r$  has been arbitrarily selected as the distance from the center of the building to any of the four accelerometer locations.