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WIND ENGINEERING STUDY OF FIRST NATIONAL BANK OF DENVER BUILDING

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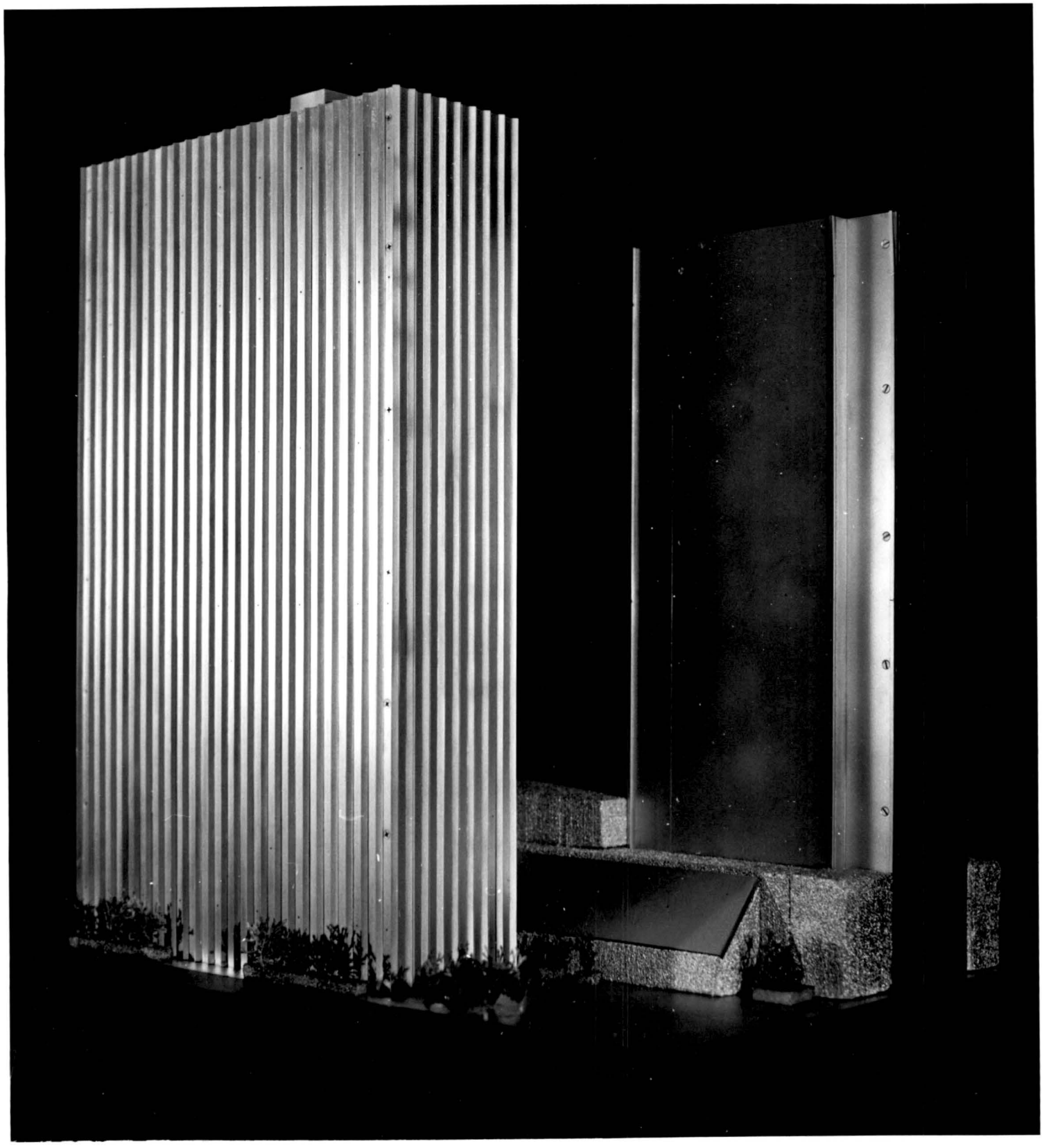

FIRST NATIONAL BANK OF DENVER BUILDING
(1:180 scale model)

ACKNOWLEDGMENTS

Construction of the building model and pressure switch was accomplished by personnel of the Engineering Research Center Machine Shop. Mr. James A. Garrison aided in the motion pictures of flow visualization. Mr. Robert E. Akins supervised pressure-data acquisition and reduction. Dr. S. K. Nayak was responsible for velocity measurements.

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LIST OF SYMBOLS

Symbol	Definition
U	Local mean velocity
D	Characteristic dimension (building height, width, etc.)
ν	Kinematic viscosity of approach flow
$\frac{UD}{\nu}$	Reynolds number
E	Mean voltage
A	Constant
B	Constant
n	Constant
U_{rms}	Root-mean-square of fluctuating velocity
E_{rms}	Root-mean-square of fluctuating voltage
U_∞	Reference mean velocity outside the boundary layer
Y	Height above surface
δ	Height of boundary layer
T_u	Turbulence intensity U_{rms}/U_∞ or U_{rms}/U
$C_{p_{mean}}$	Mean pressure coefficient, $\frac{(p-p_\infty)_{mean}}{\frac{1}{2}\rho U_\infty^2}$
$C_{p_{rms}}$	Root-mean-square pressure coefficient, $\frac{[(p-p_\infty)-(p-p_\infty)_{mean}]_{rms}}{\frac{1}{2}\rho U_\infty^2}$
$C_{p_{max}}$	Peak maximum pressure coefficient, $\frac{(p-p_\infty)_{max}}{\frac{1}{2}\rho U_\infty^2}$
$C_{p_{min}}$	Peak minimum pressure coefficient, $\frac{(p-p_\infty)_{min}}{\frac{1}{2}\rho U_\infty^2}$
ρ	Density of approach flow

LIST OF SYMBOLS (Cont.)

Symbol	Definition
$(\quad)_{min}$	Minimum value during data record
$(\quad)_{max}$	Maximum value during data record
p	Fluctuating pressure at a pressure tap on the structure
p_∞	Static pressure in the wind tunnel above the model

1. INTRODUCTION

1.1 General

A significant characteristic of modern tall building design is lighter cladding and more flexible frames. These features combine to produce an increased vulnerability of glass lights and cladding to wind damage. In addition, increased use of pedestrian plazas has brought about a need to consider wind and gustiness in the design of these areas. Techniques have been developed during the past decade for wind-tunnel modeling of proposed structures which allow the prediction of wind pressures on cladding and wind environment about the building. Knowledge of pressures on the structure permits adequate but economical selection of window strength to meet selected maximum design winds while information on sidewalk level gustiness allows plaza areas to be protected by design changes before the structure is constructed.

Modeling 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 scaled in geometry, 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/ν be similar for model and prototype. Since ν, the kinematic viscosity of air, is identical for both, Reynolds numbers cannot be made precisely equal with reasonable wind velocities. Wind velocity in the wind tunnel would have to be the model scale factor times the prototype wind. However, for sufficiently high Reynolds number ($> 10^5$) a pressure coefficient at any location on the structure will be essentially constant with Reynolds number. Typical values encountered are 10^8 for the full scale and 10^6 for the wind tunnel model. Thus acceptable flow similarity is achieved without precise Reynolds number equality.

1.2 The First National Bank Building

A wind study was performed for the proposed First National Bank Building in Denver, Colorado. The 418 ft high structure was modeled at a 1:180 scale. The objectives of the wind study were to obtain mean and fluctuating pressures on the building as well as wind velocity and gustiness in the plaza adjacent to the structure. In addition, a flow visualization study was performed to define overall flow patterns and regions where local flow features might cause difficulties in panel loading or pedestrian discomfort.

The Bank Building will occupy a portion of the block between 17th and 18th Streets and between California and Welton Streets in Denver. The structure consists of a tower occupying the quarter-block nearest to 18th Street and California with a plaza occupying the remaining area along California. The existing First National Bank Building (366 ft high) occupies the corner of the block at 17th and Welton Streets. A low pedestal structure will occupy the remaining portion of the block along Welton Street. The site is in the center of the downtown

area on flat terrain. Surrounding structures range in height from nearly the same to less than the Bank Building height. The flow approaching the site crosses relatively flat terrain with low structures except for the tall buildings in the downtown area close to the building site.

2. WIND SIMULATION FACILITIES AND BUILDING MODEL

2.1 Wind Tunnels

The wind study was performed in the Meteorological Wind Tunnel located in the Fluid Dynamics and Diffusion Laboratory at Colorado State University, Figure 1. The tunnel is a closed circuit facility driven by a 250 h.p. variable-pitch, variable-speed propeller. The test section is nominally 6 feet square and 88 feet long fed through a 9-to-1 contraction ratio. The test section walls diverge 3/4 in./8 ft and the roof is adjustable to maintain a zero pressure gradient along the test section. The mean velocity can be adjusted continuously from 1 to 120 fps. The facility is described in detail by Plate and Cermak [4].

The flow visualization portion of the study was performed in the Industrial Aerodynamics Wind Tunnel (Figure 1). It has a 6 foot square test section 36 feet long. A 75 h.p., constant speed propeller can generate velocities from 0 to 65 fps.

2.2 Model

In order to obtain an accurate assessment of local pressures using piezometer taps, the model was constructed to the largest scale that would not produce serious blockage in the wind tunnel. A 1:180 scale model was constructed using 3/4 in. "Lucite" plastic for the tower portions of both the new and existing structures on which pressure measurements were to be made and using styrofoam for the lower structure.

Piezometer taps (1/16 in. dia.) were drilled normal to the exterior surface at 68 locations on two sides of the proposed structure,

at 37 locations on the existing structure and at 3 locations on the galleria skylight adjacent to the plaza. The location of the taps on the two structures is shown in Figures 3a to 3e. Pressures on the two sides of the new structure not instrumented were obtained by rotating the building 180 degrees so that the remaining sides were replaced by the instrumented faces.

An area of 1100 ft radius surrounding the building site was modeled in detail. Structures located within this region were modeled from styrofoam which retained the overall height and shape but omitted small surface details. The Building model and surrounding area was mounted on a 76 in. dia. turntable centered 84 ft from the test section entrance. That portion of the modeled area which did not fit on the turntable was placed upstream and downstream from the turntable and changed to match the turntable azimuthal position each time the turntable was rotated. The turntable indicated azimuthal orientation to ± 0.1 degree.

The region upstream from the modeled area was covered with a randomized roughness constructed from bricks. A 12 in. high vortex generator provided a boundary-layer trip at the entrance to the test section. The distribution of bricks was designed to provide a boundary-layer thickness of approximately 50 in., a velocity profile power-law exponent similar to that for a city environment, and a logarithmic velocity profile with a realistic roughness length. A photograph of the complete model in-place in the wind tunnel is shown in Figure 4. The wind-tunnel ceiling was adjusted after placement of the model to obtain a zero pressure gradient along the test section.

For the flow visualization study, the thickness of the turbulent boundary layer in the short test section length available in the

Industrial Aerodynamics Wind Tunnel was increased by adding tapered spires at the test-section entrance.

3. INSTRUMENTATION AND DATA ACQUISITION

3.1 Flow Visualization

Visualization of the flow in the vicinity of the model is helpful in understanding and interpreting mean and fluctuating pressures, in defining zones of separated flow and reattachment where pressure coefficients may be expected to be high, and in indicating areas where pedestrian discomfort may be a problem. Titanium tetrachloride smoke was released from sources on and near the model and motion picture records made. Conclusions obtained from these smoke studies are discussed in section 4.1.

3.2 Pressures

Mean and fluctuating pressures were obtained at each of the 176 pressure tap locations on the buildings indicated on Figure 3. Measurements were made for 68 taps at a time. A 12 in. length of 1/16 I.D. plastic tubing connected 68 pressure ports on the building to a 72 tap pressure switch mounted inside the model. The switch (Model 2) was designed and fabricated in the Fluid Dynamics and Diffusion Laboratory to minimize the attenuation of pressure fluctuations across the switch. Each of the 68 measurement ports was directed in turn by the switch to one of 4 pressure transducers mounted close to the switch. The switch was operated manually by means of a shaft projecting through the floor of the wind tunnel. A mechanical indexing feature locked the switch into each of the 18 required positions while a potentiometer provided an indication of the switch position on a digital voltmeter. The 4 pressure switch input taps not used for transmitting building pressures were connected to a common tube leading outside the wind tunnel and provided a means of performing in-place calibration of the transducers. A photograph of the pressure switch in place is shown in Figure 5.

The pressure transducers used were "Statham" differential strain-gage transducers (Model PM283TC) with a 0.15 psid range. They were selected for the stability and linearity in the working range required. The frequency response of the transducers was greater than 200 Hz and adequately covered the range of frequencies encountered. A reference pressure was obtained by connecting the reference side of the transducer with plastic tubing to the static side of a pitot tube mounted in the wind tunnel free stream above the model building. In this way the transducer measured the instantaneous difference between the local building surface pressure and the static pressure in the free stream above the model.

Each pressure transducer bridge was monitored by a Honeywell Accudata 118 Gage Control/Amplifier unit which provided excitation to the bridge and amplified the bridge output. The instruments are characterized by a very stable excitation voltage and amplifier gain. Output from the Honeywell signal conditioners was fed to an on-line 8 channel System Development, Inc., analog-to-digital conversion unit. The data was processed onto digital tape for later data analysis by computer. Resolution of conversion was ± 0.0016 in pressure coefficient. All 4 transducers were recorded simultaneously for 16 seconds at a 240 sample per second rate. The results of an experiment to determine the length of record required to obtain stable mean and rms pressures and to determine overall accuracy of the pressure data acquisition system is shown in Figure 6. A typical pressure port record was integrated for a number of time periods to obtain the data shown. Examination of a large number of pressure taps showed that the overall accuracy for a 16 second average are, in pressure coefficient form,

0.03 for mean pressures, 0.10 for peak pressures and 0.01 for rms pressures. Pressure coefficients are defined in Section 4.3.

3.3 Velocity

Velocity and turbulence intensity profiles were made upstream from the detailed model area and at the building location (with the model removed) for several approach flow directions. In addition, mean velocity and turbulence intensity measurements were made 0.2 in. (3.0 ft prototype) above the surface for 4 wind directions near the building at locations 1 through 10 shown in Figure 2. The surface measurements were intended to indicate the environment to which a pedestrian in the plaza area would be subjected.

Measurements were made with a single hot-wire anemometer mounted with its axis vertical. The instrumentation used was a DISA constant temperature anemometer (Model 55D05) with a 0.0004 in. dia. platinum (80%) - iridium (20%) sensing element 0.080 in. long. Output was read from a Hewlett-Packard integrating digital voltmeter (Model 2401C) for mean voltage and a DISA RMS meter (Model 55D35) for rms voltage.

Calibration was performed by placing the anemometer in the free stream near the pitot tube used to record wind tunnel velocity and recording the output for several velocities. The calibration data was fit to a variable exponent King's Law relationship

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

where E is the hot-wire output voltage, U the approach velocity and A, B and n are coefficients selected to fit the data. A typical calibration showing the linear relationship between E^2 and U^n is plotted in Figure 7. The above relationship was used to recover the mean velocity at measurement points from the measured mean voltage.

The fluctuating velocity in the form U_{rms} (root-mean-square velocity) was obtained from

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

where E_{rms} is the root-mean-square voltage output from the anemometer. All turbulence measurements were divided by either local mean velocity U or mean velocity outside the boundary layer U_{∞}. Division by U gives an indication of the relative unsteadiness at the location while division by U_{∞} permits easy determination of the actual magnitude of rms velocity fluctuations at a point for various approach velocities.

4. RESULTS

4.1 Flow Visualization

A 1000 ft film is included as part of this report showing the characteristics of flow about the structure with smoke. A listing of the contents of the film is shown in Table 1. Several features can be noted from the visualization. Flow about the upper portion of the new tower structure showed that flow tended to separate cleanly from the corners of the building with no evident tendency of the separated region to reattach to the structure. The large size of the mullions tended to cause a visibly turbulent flow along each building side even when flow was at an angle which prevented the flow from separating from the face. As the flow angle was varied to a direction resulting in separated flow on a particular face, no distinct approach flow direction could be associated with formation of a separated flow. The separation developed gradually as a thickening of the turbulent flow near the surface. For this region, large pressure coefficients would not be anticipated on the building faces, based on smoke flow observations, except possibly in the first one or two window bays where the separated flow region was observed to be thinner than over the rest of the face.

The flow over the top of the structure was always separated with the separation streamline located well above the main penthouse roof. The tops of two small structures extending above the penthouse roof were still within the separated region but were much closer to the separation streamline.

Visualization of smoke near the surface indicated that most of the plaza area should be reasonably well protected from strong winds for

most approach wind directions. Because the plaza was generally in a separated flow region, it was characterized by small but fluctuating velocities. The corner of the plaza at the intersection of 17th and California Streets had fairly high velocities but low turbulence for winds from 330 degrees and 90 degrees. The main entrance to the structure on California Street did not show unusual wind characteristics except when wind approached approximately perpendicular to that building face. For this condition, a strong downdraft created by the broad flat building face impinged on the sidewalk and swept across the street hitting the lower building on the opposite side of the street. A relatively uncomfortable environment on the sidewalks could result if the approach winds were strong.

Smoke visualization with a 380 foot structure located on the corner of 17th and California Streets directly across California from the plaza (Figure 2b) did not significantly change the results discussed above. The largest effect was to lower somewhat the velocities noted in the plaza area.

4.2 Velocity

Typical approach velocity profiles are shown in Figure 8a and b. One profile was taken 89 in. upstream from the model (1335 ft prototype) and is characteristic of the boundary layer approaching the model. The boundary layer thickness, δ, was 48 inches corresponding to a prototype value of approximately 720 ft. In the form (Figure 8a)

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

the velocity profile has an exponent n of 0.26 which is a reasonable value for city environments such as Denver with relatively low building

heights extending right to the downtown area. The profiles plotted in Figure 8b are shown in semilogarithmic form. The roughness height indicated by the zero velocity intercept of the best fit line is 5.3 ft which is reasonable for the site modeled. A velocity profile taken at the building site with the building removed is also shown in Figure 8. Some modification to the approach flow is evident in the profile caused by nearby structures.

Profiles of longitudinal turbulence intensity are shown in Figure 9 for the upstream approach conditions and for the building site. Modifications to the profiles due to topography and local structures are evident. For the purpose of this report, turbulence intensity is defined as the root-mean-square of the longitudinal velocity fluctuations divided by the reference mean velocity U_∞ at the outer edge of the boundary layer,

$$Tu_1 = \frac{U_{rms}}{U_\infty} ,$$

or as the rms velocity divided by the local mean velocity,

$$Tu_2 = \frac{U_{rms}}{U} .$$

Mean velocity and turbulence intensity at plaza locations 1-10 shown in Figure 2 for 4 wind directions are listed in Table 2. Measurements were taken 0.2 in. (3.0 ft prototype) above the surface. The largest mean velocities were recorded at points 3,9 and 10 for a 90 degree wind azimuth and points 4 and 6 for a 330 degree wind azimuth with velocities ranging from 60 to 72 percent of U_∞. The highest 'gustiness' values (U_{rms}/U) were obtained for locations 6 and 8 for wind directions 240 and 330 degrees respectively. Large values of gustiness must be interpreted in terms of the magnitude of mean velocity

since a low wind velocity can lead to large values as effectively as large rms velocities. The large values of U_{rms}/U for these locations are due in large part to low mean velocities. The largest value of gust velocity (U_{rms}/U_∞) occurred at location 3 for a wind direction of 90 degrees. Combined with the large mean velocity at that point, the indication is that a relatively uncomfortable area exists near point 3 in the plaza for easterly winds. It is possible to relate the velocity data to pedestrian comfort. Following the guidelines suggested by Australian researchers (6), peak winds below 35 mph should not cause noticeable pedestrian discomfort.

4.3 Pressures

A total of 1937 pressure recordings were made. These were for each of the 136 pressure ports on the new tower at each of the 10 wind directions examined (plus 68 ports examined with the addition of a neighboring structure and 20 ports examined at 15 closely spaced wind directions), for each of the 37 ports on the existing tower for three flow conditions, and for the three galleria cover ports for each of 10 wind directions. Each data record was analyzed to obtain 4 separate pressure coefficients. The first was the mean pressure coefficient

$$C_{p_{mean}} = \frac{(p - p_\infty)_{mean}}{\frac{1}{2} \rho U_\infty^2}$$

where the symbols are as defined in the List of Symbols. It represents the mean of the instantaneous pressure difference between building pressure port and static pressure in the wind tunnel outside the boundary layer non-dimensionalized by the dynamic pressure $\frac{1}{2} \rho U_\infty^2$ outside

the boundary layer. The magnitude of the fluctuating pressure was obtained by the rms pressure coefficient

$$C_{p_{rms}} = \frac{[(p-p_\infty) - (p-p_\infty)_{mean}]_{rms}}{\frac{1}{2}\rho U_\infty^2}$$

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

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 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:

$$C_{p_{max.}} = \frac{(p - p_\infty)_{max}}{\frac{1}{2}\rho U_\infty^2}$$

$$C_{p_{min.}} = \frac{(p - p_\infty)_{min}}{\frac{1}{2}\rho U_\infty^2}$$

The values of $p - p_\infty$ which were digitized at 240 samples-per-second for 16 seconds were examined individually by the computer to obtain the most positive and most negative values during the 16 second period. These were converted to Cp_{max} and Cp_{min} by non-dimensionalizing with the free stream dynamic pressure.

The four pressure coefficients were calculated by the CSU CDC 6400 computer and tabulated on microfilm. The list of coefficients for the new tower for 10 wind directions is included as Appendix A. The tap code number used in the appendix is given in Figure 3. The first digit

of the code gives the building side while the second and third give sequential tap numbers on the side. Additional information provided in the appendix includes approach wind azimuth in degrees from true north, temperature in the wind tunnel in degrees F, barometric pressure in inches of Hg, and reference velocity outside the boundary layer in feet per second. The largest values of peak maximum C_p and peak minimum C_p were selected for each tap and are listed in Table 3. The largest value of peak maximum C_p was 1.45 at tap 402 for a wind azimuth of 240 degrees. Several other taps showed values above 1.3. The largest peak minimum Cp values were -2.87 at tap 313 for a 180 degree wind and -2.76 at tap 331 for a 220 degree wind. Only a few other taps showed values above -2.

To insure that no flow pattern developed between the azimuths used for approach flow direction which would cause sharply higher pressure coefficients than were anticipated from the normally spaced data, twenty pressure taps were examined for small angular increments. Taps 313-332 were selected for examination for a range of approach flow azimuths from 170 to 200 degrees in two degree increments. These taps were chosen because of high negative mean, rms and peak minimum pressure coefficients in that area. The results of that investigation are shown in Appendix B. For tap 313, showing the largest peak minimum Cp, the pressure coefficients reach a maximum value within the 30 degree span which is no higher than that determined for the original data. However, the fluctuation seen in the peak minimum with small angle variations indicates the large peak minimum is a sharp peaked pressure fluctuation occurring randomly in time. The flow in the region is extremely complex since it is at the upstream corner of the

new tower but in the wake of the old structure. The nature of the pressure fluctuations indicate a flow velocity of large amplitude and strongly varying direction at that corner of the building for southerly winds.

Additional pressure measurements were made on the new tower to determine the influence of a possible tall structure on the corner of California and 17th St. directly across California from the plaza (Figure 2b). A 30 story building (380 ft high) of octagonal shape encompassing slightly less than 1/4 of the block area was installed and pressure measurements were made on sides 1 and 2 of the new tower for wind directions 0 and 330 degrees -- the wind directions expected to show the maximum effect on the structure. The results are shown in Table 4. Comparison with the data in Appendix A indicates that the biggest influence was a moderate increase in peak negative pressures on side 2 and a slight increase in peak positive pressures on the upper portion of side 1 for a 330 degree wind. Flow over the top of the building was always separated sufficiently that all penthouse structures were buried within that region. The two tallest penthouse structures were sufficiently close to the separation surface that somewhat higher negative pressures might be expected on those roofs.

The influence of the new bank tower on pressures on the old structure was obtained by placing 37 taps on the model of the old structure and recording the pressures with and without the new tower in place. Figure 3 shows the tap locations. Only the two sides (and top) facing the new structure were instrumented since only these faces should be affected. Data was taken at a 30 degree wind azimuth without the new tower and at 0 and 30 degrees with the structure. These directions were chosen to show the maximum effects on the old structure.

The results are shown in Table 5. Comparison of the data indicates a general reduction in negative pressure coefficients and a slight increase in positive coefficients. One significant value of negative pressure coefficient was noted -- tap 116 at 0 degree showed a -2.3 value of C_p minimum.

Three measurements of pressure were made on the galleria cover for 10 wind directions. The tap locations are shown in Figure 2. The results of the measurements, Table 6, indicate rather low pressure loadings.

CONCLUSIONS

A wind-tunnel boundary layer flow over the First National Bank building model was established whose characteristics compared favorably with the expected flow over the Denver area. Flow visualization showed that large fluctuating pressures should be expected only near the building corners. Surface wind characteristics determined from smoke flow indicated generally acceptable winds except for the plaza corner near 17th and California Streets for two wind directions and for the winds at the main entrance on California Street for winds approximately perpendicular to the face of the structure.

Measurements of velocity fluctuations showed that the largest values of 'gustiness' (velocity fluctuations relative to the local wind speed) were at plaza locations 6 and 8 for wind directions 240 and 330 degrees respectively, but they occurred for low wind velocities. The largest magnitude of velocity fluctuations occurred at point 3 for a 90 degree wind with a value of rms velocity 23 percent of the approach flow magnitude. This condition also corresponded to the largest mean velocity recorded -- 72 percent of the approach flow magnitude -- indicating an uncomfortable condition for pedestrians. In general, the mean velocities measured were relatively high with many values above 40 percent of U_∞, and the rms velocity fluctuations were not high with very few values over 20 percent of U_∞.

Pressure measurements on the structure confirmed the flow visualization conclusion that the areas near the corners would receive the largest pressure coefficients. The largest peak negative pressure coefficient was -2.87 at tap 313 for a wind azimuth of 180 degrees. Relatively few locations showed coefficients larger than -2, all of

which were located near corners. The largest positive pressure was recorded on a short side at tap 402 for a 240 degree wind with a 1.45 pressure coefficient. A few additional taps showed values above 1.3.

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TABLE 1

MOTION PICTURE SCENE GUIDE

Scene No.	Wind Az.*	Source Elevation	Source Location
1	330°	Ground	Plaza
2	"	"	Along California St.
3	"	"	18th and California
4	"	"	18th St.
5	"	"	18th and Welton
6	"		Garage roof
7	"	Low Roof	17th and Welton
8	"	Ground	17th St.
9	"	255'	Upstream of Tower
10	"	"	18th St.
11	"	"	California St.
12	"	"	17th St. Face of Tower
13	"	"	California St. Face of Bank Bldg.
14	"	"	West Corner Bank Bldg.
15	"	Ground	Plaza
16	"	255'	18th St.
17	"	"	NE Face of Bank Bldg.
18	"	Ground	Plaza - Extra Bldg. in place
19	240°	Ground	17th and California
20	"	"	Plaza
21	"	"	California St.
22	"	"	17th St.
23	"	"	Welton St.
24	"	Low Roof	17th and Welton
25	"	Garage Roof	Welton St.
26	"	Ground	18th St.
27	"	255'	18th St.
28	"	"	Welton Face of Tower
29	"	"	N Corner of Bank Bldg.
30	"	"	17th and Welton
31	"	Ground	Plaza
32	"	"	California St.
33	"	255'	California Face of Tower
34	"	"	Upstream of Bank Bldg.
35	"		Tower Roof
36	"	Ground	17th and Cal. - Extra Bldg. in place
37	"	"	California St. - Extra Bldg. in place
38	"	"	17th St. - Extra Bldg. in place
39	090°	Ground	18th and Welton
40	"	Garage Roof	Welton St.
41	"	Low Roof	17th and Welton
42	"	Ground	18th St.
43	"	"	California St.
44	"	"	Plaza
45	"	"	California St.
46	"	"	17th St.
47	"	255'	17th St. Face of Bank Bldg.
48	"	"	California Face of Bank Bldg.
49	"	"	17th St. Face of Tower
50	"	"	18th and California
51	"	"	Upstream of E. Corner of Tower
52	"	"	Upstream of E. Corner of Bank Bldg.
53	"	"	Over Welton Garage Roof
54	"	Ground	California St. - Extra Bldg. in place
55	"	"	Plaza - Extra Bldg. in Place
56	"		Tower Roof
57	"	Ground	California St.
58	"	255'	California St.
59	020°	Ground	18th St.
60	"	"	18th and California
61	"	"	California St.
62	"	"	Plaza
63	"	"	17th and California
64	"	"	17th and Welton
65	"	Low Roof	17th and Welton
66	"	Garage Roof	Welton
67	"	Ground	18th and Welton
68	"	"	18th St.
69	"	255'	Upstream N. Corner of Tower
70	"	"	E. Corner of Tower
71	"	255'	Over Garage Roof Welton
72	"	"	California St.
73	"	Ground	Plaza - Extra Bldg. in place
74	"	"	California St. - Extra Bldg. in place
75	"	"	17th and California - Extra Bldg. in place
76	"		Tower Roof

*All wind speeds 10 f/s
All film exposed @ 24fr/s

TABLE 2

MEAN AND FLUCTUATING VELOCITIES IN THE PLAZA

Wind Azimuth	Plaza Location	U/U_∞ Percent	U_{rms}/U_∞ Percent	U_{rms}/U Percent
20	1	34.0	14.0	41.3
	2	36.6	13.2	36.0
	3	36.5	11.7	32.1
	4	55.7	12.0	21.6
	5	40.0	11.4	28.4
	6	48.0	9.7	20.2
	7	22.6	8.5	37.8
	8	17.6	8.3	47.0
	9	30.3	15.2	50.2
	10	45.9	15.7	34.3
90	1	49.7	12.0	24.2
	2	47.6	22.2	46.7
	3	72.1	23.7	32.8
	4	35.7	20.4	57.1
	5	43.6	20.2	46.3
	6	23.1	13.3	57.6
	7	26.6	11.1	41.7
	8	22.2	10.5	47.2
	9	68.4	11.6	17.0
	10	60.7	16.5	27.2
240	1	25.9	10.9	42.3
	2	25.6	13.2	51.4
	3	27.2	11.9	43.9
	4	35.3	12.9	36.5
	5	31.6	17.9	56.8
	6	16.6	11.1	66.8
	7	15.9	7.1	44.9
	8	22.9	8.3	36.2
	9	23.4	7.8	33.2
	10	9.3	5.5	59.6
330	1	29.9	13.8	46.1
	2	32.3	17.7	54.4
	3	31.5	14.5	46.0
	4	60.9	10.8	17.7
	5	42.6	19.4	45.5
	6	62.4	10.0	16.1
	7	18.9	9.9	52.5
	8	14.7	8.9	60.7
	9	49.2	12.3	24.9
	10	51.5	16.5	32.0

TABLE 3 PEAK PRESSURE DATA FOR THE NEW TOWER

PRESSURE TAP NUMBER	MAXUMUM PRESSURE COEFFICIENT: AZIMUTH OF MAXIMUM PRESS.COEFF.	MAXIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
101	150	.136	-.325	.145
102	150	.123	-.255	.107
103	240	.498	-.275	.267
104	0	1.215	.770	.175
105	330	1.223	.718	.172
106	300	1.185	.536	.188
107	300	1.215	.549	.215
108	300	1.126	.555	.220
109	300	1.292	.554	.242
110	300	1.282	.519	.247
111	300	1.245	.452	.262
112	270	1.308	.707	.222
113	0	1.237	.784	.167
114	330	1.256	.755	.156
115	330	1.227	.779	.159
116	330	1.217	.767	.159
117	300	1.168	.590	.194
118	300	1.252	.560	.201
119	300	1.206	.527	.201
120	300	1.296	.420	.199
121	270	1.319	.505	.225
122	0	1.172	.705	.154
123	330	1.092	.636	.159
124	330	1.154	.705	.154
125	330	1.154	.675	.148
126	330	1.171	.655	.146
127	330	1.151	.505	.145
128	300	1.039	.448	.150
129	270	1.130	.593	.165
130	270	1.027	.515	.174
131	0	1.074	.550	.164
132	330	1.031	.555	.149
133	330	1.107	.501	.145
134	300	1.062	.570	.148

PRESSURE TAP NUMBER	MAXUMUM PRESSURE COEFFICIENT: AZIMUTH OF MAXIMUM PRESS.COEFF.	MAXIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
135	330	1.131	.552	.135
136	330	1.065	.492	.130
137	300	.935	.359	.124
138	270	.954	.325	.166
139	270	1.008	.277	.184
140	0	.553	.174	.093
141	330	.665	.318	.083
142	330	.856	.477	.102
143	330	1.045	.536	.117
144	330	1.005	.551	.119
145	330	1.045	.550	.124
146	330	.967	.493	.108
147	330	.610	.206	.090
148	300	.424	.159	.070
201	45	1.075	.635	.150
202	45	1.201	.854	.170
203	45	1.201	.795	.174
204	20	1.562	.802	.180
205	45	1.059	.561	.144
206	45	1.290	.858	.165
207	45	1.250	.790	.167
208	20	1.353	.752	.175
209	45	1.163	.461	.140
210	45	1.357	.745	.164
211	45	1.264	.691	.170
212	20	1.233	.616	.190
213	90	1.075	-.075	.310
214	45	1.124	.619	.157
215	45	1.167	.560	.157
216	20	1.035	.416	.169
217	45	.543	.100	.119
218	45	.492	.139	.081
219	0	.480	.029	.104
220	0	.554	.058	.131

TABLE 3 (continued) PEAK PRESSURE DATA FOR THE NEW TOWER

PRESSURE TAP NUMBER	AZIMUTH OF MAXIMUM PRESS.COEFF.	MAXIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
	MAXUMUM PRESSURE COEFFICIENT			
301	180	.402	-.601	.164
302	180	.755	-.230	.160
303	240	.430	-.201	.112
304	180	1.100	.241	.320
305	150	1.105	.359	.219
306	150	1.369	.404	.197
307	150	1.047	.352	.185
308	150	.891	.337	.170
309	150	1.009	.302	.167
310	150	1.053	.206	.175
311	90	.970	.593	.142
312	90	1.174	.757	.172
313	180	.460	-.400	.393
314	150	.590	.120	.126
315	150	.791	.245	.145
316	150	.851	.304	.150
317	150	.839	.302	.157
318	90	.918	.505	.111
319	150	.887	.244	.120
320	90	1.114	.691	.145
321	90	1.227	.781	.178
322	20	.501	-.165	.140
323	90	.460	.104	.088
324	90	.675	.304	.099
325	150	.836	.205	.119
326	90	.860	.402	.100
327	90	.865	.515	.105
328	90	.979	.580	.115
329	90	1.229	.662	.144
330	90	1.192	.685	.161
331	20	.575	-.257	.184
332	330	.576	-.334	.161
333	90	.700	.269	.091
334	90	.857	.359	.097

PRESSURE TAP NUMBER	AZIMUTH OF MAXIMUM PRESS.COEFF.	MAXIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
	MAXUMUM PRESSURE COEFFICIENT			
335	90	.805	.422	.102
336	90	.828	.481	.108
337	90	.994	.532	.130
338	90	1.115	.588	.154
339	90	1.087	.545	.182
340	300	.739	-.102	.180
341	300	.474	.076	.084
342	300	.554	.127	.090
343	150	.466	.090	.060
344	90	.762	.447	.105
345	90	.878	.541	.108
346	90	.834	.528	.095
347	90	.616	.513	.090
348	45	.698	.175	.140
401	240	1.205	.486	.258
402	240	1.451	.686	.255
403	240	1.241	.646	.199
404	180	1.350	.796	.190
405	240	.996	.539	.184
406	240	1.342	.659	.210
407	240	1.381	.678	.192
408	240	1.312	.529	.151
409	240	.936	.282	.164
410	180	1.165	.556	.221
411	240	1.374	.546	.192
412	240	.886	.282	.145
413	240	.787	.139	.166
414	180	.843	.074	.189
415	180	.775	-.076	.211
416	240	.415	-.109	.150
417	240	.866	.140	.177
418	240	1.070	.218	.176
419	240	.850	.140	.161
420	240	.451	-.102	.142

TABLE 3 (continued) PEAK PRESSURE DATA FOR THE NEW TOWER

PRESSURE TAP NUMBER	MINIMUM PRESSURE COEFFICIENT: AZIMUTH OF MINIMUM PRESS.COEFF.	MINIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
101	300	-1.590	-.525	.190
102	300	-2.132	-.633	.191
103	300	-1.696	-.790	.180
104	45	-1.527	-.703	.120
105	45	-1.479	-.705	.136
106	45	-1.592	-.704	.162
107	45	-1.297	-.600	.170
108	45	-1.061	-.433	.179
109	45	-.989	-.334	.179
110	240	-1.200	-.200	.220
111	240	-1.637	-.554	.306
112	240	-1.810	-.725	.246
113	45	-1.662	-.750	.143
114	45	-1.745	-.761	.156
115	45	-1.600	-.744	.192
116	45	-1.305	-.621	.199
117	45	-1.257	-.500	.176
118	45	-.989	-.305	.163
119	240	-1.201	-.207	.209
120	240	-1.557	-.499	.259
121	240	-1.051	-.494	.221
122	45	-1.932	-.760	.166
123	45	-1.895	-.700	.172
124	45	-1.740	-.735	.200
125	45	-1.747	-.604	.219
126	45	-1.185	-.469	.200
127	45	-1.020	-.371	.179
128	240	-1.036	-.245	.177
129	240	-1.666	-.470	.256
130	240	-1.413	-.549	.191
131	45	-1.802	-.874	.205
132	45	-1.849	-.842	.210
133	45	-1.631	-.700	.255
134	45	-1.566	-.529	.241

PRESSURE TAP NUMBER	MINIMUM PRESSURE COEFFICIENT: AZIMUTH OF MINIMUM PRESS.COEFF.	MINIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
135	45	-1.346	-.372	.203
136	45	-1.062	-.259	.161
137	180	-.940	-.466	.110
138	240	-1.569	-.264	.224
139	240	-1.875	-.606	.295
140	45	-1.564	-.459	.181
141	45	-.898	-.235	.153
142	45	-.792	-.188	.079
143	90	-.772	-.546	.064
144	90	-.706	-.540	.065
145	90	-.777	-.520	.064
146	90	-.659	-.420	.065
147	180	-.804	-.316	.087
148	180	-1.959	-.485	.255
201	90	-.976	.253	.201
202	330	-1.204	-.596	.197
203	330	-1.612	-.599	.229
204	330	-1.842	-.684	.255
205	150	-1.759	-.295	.154
206	330	-1.550	-.422	.245
207	330	-1.609	-.577	.255
208	330	-1.667	-.605	.251
209	90	-2.416	.005	.209
210	330	-1.454	-.417	.270
211	330	-2.295	-.591	.261
212	330	-1.912	-.632	.265
213	330	-1.650	-.294	.244
214	330	-1.697	-.399	.245
215	330	-1.801	-.565	.243
216	330	-1.845	-.641	.261
217	270	-1.248	-.350	.082
218	270	-.925	-.371	.085
219	300	-1.393	-.406	.150
220	300	-1.640	-.420	.140

TABLE 3 (continued) PEAK PRESSURE DATA FOR THE NEW TOWER

PRESSURE TAP NUMBER	AZIMUTH OF MINIMUM PRESS.COEFF.	MINIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
	MINIMUM PRESSURE COEFFICIENT			
301	300	-1.514	-.637	.210
302	330	-1.741	-.656	.195
303	90	-1.334	-.799	.129
304	240	-1.708	-.674	.159
305	240	-1.927	-.691	.149
306	220	-1.531	-.562	.154
307	220	-1.340	-.543	.145
308	220	-1.058	-.480	.119
309	220	-1.440	-.645	.147
310	220	-1.322	-.565	.155
311	45	-1.409	-.665	.176
312	45	-1.250	-.670	.146
313	180	-2.060	-.488	.595
314	240	-1.566	-.745	.170
315	240	-1.602	-.694	.195
316	240	-1.486	-.590	.188
317	240	-1.122	-.471	.150
318	45	-.975	-.186	.214
319	45	-1.279	-.405	.245
320	45	-1.604	-.654	.205
321	45	-1.957	-.695	.204
322	180	-2.115	-.694	.295
323	220	-1.755	-.726	.186
324	240	-1.440	-.709	.210
325	240	-1.526	-.566	.206
326	240	-1.140	-.409	.184
327	240	-1.212	-.292	.165
328	45	-1.135	-.256	.245
329	45	-1.725	-.618	.256
330	45	-1.496	-.718	.209
331	220	-2.757	-.852	.289
332	300	-1.853	-.760	.260
333	240	-1.474	-.421	.222
334	240	-1.082	-.307	.139

PRESSURE TAP NUMBER	AZIMUTH OF MINIMUM PRESS.COEFF.	MINIMUM PRESSURE COEFFICIENT	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT
	MINIMUM PRESSURE COEFFICIENT			
335	20	-1.305	-.574	.112
336	20	-1.098	-.584	.117
337	20	-1.095	-.548	.109
338	45	-1.736	-.425	.204
339	45	-2.145	-.650	.262
340	330	-1.562	-.480	.201
341	0	-.791	-.509	.075
342	330	-.830	-.219	.175
343	0	-.629	-.446	.055
344	330	-.764	-.426	.077
345	330	-.720	-.391	.070
346	330	-.442	-.196	.062
347	330	-1.053	-.339	.142
348	220	-.640	-.345	.066
401	300	-2.270	-.849	.262
402	300	-1.841	-.570	.306
403	300	-1.550	-.353	.197
404	150	-2.120	-.750	.302
405	300	-1.853	-.730	.245
406	300	-1.110	-.547	.230
407	300	-1.572	-.579	.255
408	150	-1.601	-.552	.212
409	300	-1.807	-.770	.251
410	300	-1.700	-.575	.315
411	300	-1.435	-.300	.250
412	330	-1.614	-.706	.162
413	300	-1.929	-.670	.247
414	300	-1.652	-.490	.298
415	300	-1.939	-.510	.245
416	330	-1.990	-.902	.200
417	300	-2.079	-.552	.250
418	330	-1.761	-.750	.150
419	330	-1.420	-.705	.155
420	330	-1.885	-.917	.254

TABLE 4 PRESSURE DATA FOR THE NEW TOWER WITH ADDED STRUCTURE

WIND DIRECTION 0 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.11FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.057	.144	-.244	-1.319
102	-.950	.143	-.559	-1.526
103	-.662	.100	-.[illegible]	-1.161
104	.797	.173	1.251	.095
105	.624	.142	1.009	.120
106	.529	.117	.815	.[illegible]
107	.412	.111	.807	.055
108	.341	.102	.647	0.000
109	.271	.095	.500	-.079
110	.201	.092	.506	-.178
111	-.015	.079	.201	-.360
112	-.264	.062	-.054	-.552
113	.778	.169	1.294	.140
114	.710	.148	1.100	.102
115	.617	.129	1.001	.105
116	.545	.117	.870	.172
117	.402	.110	.815	.065
118	.410	.112	.776	.017
119	.314	.106	.776	-.040
120	.054	.085	.594	-.250
121	-.259	.057	-.005	-.420
122	.677	.105	1.254	.075
123	.650	.161	1.055	.166
124	.587	.150	.990	.199
125	.514	.125	.875	.159
126	.471	.115	.850	.067
127	.408	.109	.755	.009
128	.316	.101	.646	-.096
129	.055	.086	.404	-.264
130	-.226	.060	-.055	-.452
131	.511	.109	1.117	.059
132	.504	.150	.992	.020
133	.462	.130	.927	.095
134	.429	.117	.860	.070

WIND DIRECTION 0 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.11FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	.391	.110	.854	.001
136	.342	.105	.849	.039
137	.259	.099	.616	.002
138	.022	.084	.335	-.260
139	-.266	.069	-.020	-.492
140	.112	.080	.433	-.256
141	.246	.072	.556	-.055
142	.357	.093	.661	.053
143	.375	.101	.692	.059
144	.377	.101	.606	.079
145	.374	.101	.736	.016
146	.320	.090	.605	-.090
147	.062	.080	.414	-.450
148	-.201	.075	-.020	-.700
201	-.125	.060	.099	-.355
202	.099	.092	.300	-.247
203	.223	.154	.604	-.452
204	.215	.262	1.065	-1.105
205	-.210	.061	.040	-.450
206	.091	.089	.365	-.202
207	.205	.122	.661	-.201
208	.252	.275	1.024	-.891
209	-.264	.065	-.051	-.452
210	.012	.095	.355	-.329
211	.172	.150	.601	-.464
212	.050	.294	.947	-1.356
213	.319	.054	.447	.200
214	-.075	.090	.305	-.406
215	.044	.159	.557	-.720
216	-.125	.320	.799	-1.425
217	-.116	.072	.155	-.300
218	-.095	.076	.227	-.435
219	-.099	.109	.562	-.515
220	-.150	.145	.601	-.707

TABLE 4 (continued) PRESSURE DATA FOR THE NEW TOWER WITH ADDED STRUCTURE

WIND DIRECTION 330 TEMPERATURE 60.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.90FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.620	.170	-.185	-1.494
102	-.573	.119	-.265	-1.112
103	-.540	.090	-.252	-1.097
104	.485	.170	1.010	-.117
105	.704	.172	1.194	-.057
106	.727	.154	1.187	.055
107	.689	.164	1.121	.020
108	.643	.157	1.119	.066
109	.579	.151	.967	.023
110	.520	.147	1.075	0.000
111	.309	.129	.675	-.150
112	-.007	.090	.370	-.367
113	.424	.170	1.075	-.299
114	.704	.167	1.305	.115
115	.777	.165	1.309	.200
116	.770	.150	1.257	.196
117	.730	.174	1.265	.266
118	.605	.165	1.165	.196
119	.504	.151	1.110	.102
120	.202	.114	.657	-.089
121	-.094	.081	.500	-.366
122	.329	.174	.954	-.375
123	.603	.160	1.140	.102
124	.685	.162	1.220	.260
125	.696	.159	1.187	.205
126	.675	.154	1.146	.197
127	.616	.150	1.175	.129
128	.509	.142	1.051	.041
129	.202	.111	.671	-.120
130	-.135	.070	.141	-.300
131	.250	.172	.829	-.247
132	.502	.165	1.056	.045
133	.574	.146	1.125	.200
134	.576	.145	1.107	.205

WIND DIRECTION 330 TEMPERATURE 60.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.90FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	.547	.142	1.115	.107
136	.491	.139	1.026	.122
137	.399	.132	.892	.020
138	.130	.110	.655	-.104
139	-.109	.084	.194	-.451
140	-.046	.074	.205	-.414
141	.245	.079	.511	0.000
142	.447	.104	.791	.162
143	.498	.111	.859	.224
144	.489	.111	.845	.215
145	.453	.114	.802	.152
146	.393	.099	.772	.114
147	.116	.081	.458	-.132
148	-.258	.069	-.042	-.555
201	-.419	.159	.102	-1.264
202	-.535	.196	.218	-1.555
203	-.821	.270	0.000	-2.058
204	-.957	.321	-.201	-2.578
205	-.555	.220	.365	-1.462
206	-.628	.251	.162	-1.737
207	-.751	.221	-.159	-1.951
208	-.768	.228	-.268	-2.472
209	-.559	.254	.244	-2.025
210	-.604	.258	.117	-1.847
211	-.707	.252	.092	-1.894
212	-.728	.246	-.193	-2.664
213	.176	.121	.546	-.418
214	-.609	.229	.145	-1.742
215	-.755	.257	.194	-1.915
216	-.761	.244	-.290	-2.262
217	-.526	.076	.012	-.672
218	-.520	.117	.102	-.903
219	-.474	.200	.125	-1.556
220	-.657	.176	-.221	-1.552

TABLE 5 PRESSURE DATA FOR EXISTING TOWER - NEW TOWER REMOVED

WIND DIRECTION 30 TEMPERATURE 70.50 DEGREES F
BAROMETRIC PRESS 25.00 IN HG VELOCITY 50.43FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.201	.078	.015	-.760
102	-.441	.136	.048	-.990
103	-.344	.114	.051	-.809
104	-.507	.150	-.006	-1.205
105	-.671	.200	.454	-1.657
106	-.453	.344	.706	-1.647
107	-.098	.251	.498	-.942
108	-.027	.125	.301	-.918
109	-.025	.094	.271	-.612
110	.071	.125	.402	-.558
111	-.605	.251	.405	-2.216
112	-.457	.345	.460	-1.551
113	-.149	.277	.565	-1.209
114	-.047	.178	.493	-.942
115	-.047	.129	.301	-.854
116	.008	.146	.414	-.844
117	-.466	.295	.597	-1.802
118	-.279	.316	.415	-1.458
119	-.138	.242	.485	-1.211
120	-.077	.172	.417	-.948
121	-.055	.119	.427	-.706
122	-.010	.129	.422	-.645
201	.427	.155	.842	-.450
202	.595	.177	1.036	.038
203	.694	.185	1.319	0.000
204	.747	.191	1.309	.071
205	.720	.194	1.365	.122
206	.346	.150	.829	-.157
207	.549	.181	1.044	-.075
208	.645	.195	1.195	.002
209	.675	.158	1.059	.201
210	.617	.206	1.225	-.040
211	.229	.164	.796	-.215
212	.405	.187	1.038	-.081
213	.452	.198	1.107	-.055
214	.457	.202	1.077	-.070
215	.376	.190	1.087	-.089

TABLE 5 (continued) PRESSURE DATA FOR EXISTING TOWER - NEW TOWER IN PLACE

WIND DIRECTION 0 TEMPERATURE 71.60 DEGREES F
BAROMETRIC PRESS 25.00 IN HG VELOCITY 55.23FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.395	.107	.000	-.839
102	-.434	.117	.074	-.889
103	-.318	.130	.210	-.756
104	-.360	.146	.257	-.896
105	-.497	.064	-.270	-.705
106	-.508	.065	-.301	-.810
107	-.524	.070	-.336	-.790
108	-.539	.082	-.295	-.865
109	-.544	.099	-.179	-.991
110	-.572	.162	.015	-1.409
111	-.481	.069	-.265	-.795
112	-.527	.080	-.260	-1.078
113	-.549	.089	-.260	-1.249
114	-.555	.100	-.225	-1.217
115	-.562	.119	.000	-1.167
116	-.612	.210	.125	-2.314
117	-.445	.065	-.229	-.722
118	-.531	.085	-.200	-.878
119	-.562	.105	-.105	-.965
120	-.550	.120	-.051	-1.145
121	-.503	.157	.141	-1.021
122	-.432	.306	.746	-1.722
201	-.501	.151	.051	-1.409
202	-.489	.096	-.055	-.909
203	-.491	.091	-.115	-.975
204	-.492	.086	-.074	-1.018
205	-.496	.079	-.270	-.915
206	-.526	.115	-.092	-1.159
207	-.507	.091	-.105	-.963
208	-.487	.076	-.188	-.856
209	-.478	.041	-.304	-.605
210	-.475	.065	-.252	-.725
211	-.539	.132	-.125	-1.082
212	-.492	.084	-.186	-.858
213	-.485	.070	-.220	-.804
214	-.479	.065	-.271	-.707
215	-.449	.063	-.201	-.655

WIND DIRECTION 30 TEMPERATURE 71.50 DEGREES F
BAROMETRIC PRESS 25.00 IN HG VELOCITY 50.50FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.126	.119	.305	-.806
102	-.210	.105	.397	-1.075
103	-.159	.125	.270	-.720
104	-.318	.214	.230	-1.162
105	-.488	.136	-.046	-1.154
106	-.498	.144	-.055	-1.327
107	-.476	.137	-.079	-1.141
108	-.425	.127	.065	-1.076
109	-.365	.110	.043	-.827
110	-.286	.090	.017	-.614
111	-.306	.096	-.121	-.860
112	-.420	.100	-.146	-.847
113	-.412	.096	-.169	-.809
114	-.385	.088	-.095	-.822
115	-.347	.080	.043	-.706
116	-.309	.085	.100	-.851
117	-.361	.107	-.029	-1.040
118	-.378	.119	-.057	-1.272
119	-.390	.121	-.015	-1.106
120	-.383	.110	-.000	-1.235
121	-.338	.092	-.057	-.806
122	-.316	.096	.057	-.800
201	.553	.245	1.305	-.679
202	.501	.204	1.515	-.509
203	.485	.299	1.351	-.533
204	.295	.206	1.199	-.450
205	.020	.224	.879	-.604
206	.522	.218	1.197	-.814
207	.625	.254	1.456	-.242
208	.576	.251	1.451	-.196
209	.419	.162	.847	-.016
210	.102	.220	.909	-.425
211	.351	.178	.998	-.172
212	.460	.210	1.205	-.076
213	.475	.216	1.524	-.075
214	.426	.211	1.197	-.107
215	.334	.197	.989	-.297

TABLE 6

GALLERIA PRESSURE MEASUREMENTS
FIRST NATIONAL BANK BUILDING, DENVER, COLORADO

Wind Direction	Tap Number	Mean Pressure Coefficient	RMS Pressure Coefficient	Maximum Pressure Coefficient	Minimum Pressure Coefficient
000	1	-.548	.077	-.268	-.874
000	2	-.627	.105	-.225	-1.044
000	3	-.296	.232	.596	-.978
020	1	-.400	.074	-.160	-.657
020	2	-.425	.075	-.184	-.701
020	3	-.376	.096	.049	-.697
045	1	-.276	.073	-.052	-.609
045	2	-.192	.070	.099	-.523
045	3	-.134	.089	.410	-.440
090	1	-.332	.106	.300	-.749
090	2	-.354	.066	-.112	-.736
090	3	-.498	.090	-.138	-.898
150	1	-.101	.093	.380	-.462
150	2	-.192	.070	.084	-.535
150	3	-.188	.052	.048	-.428
180	1	.006	.049	.230	-.170
180	2	-.010	.052	.189	-.257
180	3	-.036	.056	.171	-.278
240	1	.083	.085	.380	-.230
240	2	.079	.077	.401	-.323
240	3	.031	.069	.338	-.297
270	1	-.037	.070	.236	-.283
270	2	.034	.054	.251	-.256
270	3	.079	.063	.333	-.211
300	1	.028	.075	.270	-.292
300	2	.145	.095	.616	-.200
300	3	.210	.103	.808	-.226
330	1	-.282	.162	.146	-.811
330	2	.066	.178	.625	-.638
330	3	.425	.153	1.062	-.008

APPENDIX A

PRESSURE DATA FOR THE NEW TOWER

Notes -

1. Pressure coefficients are defined in section 4.3
2. Pressure tap code is defined in Figure 3
3. Azimuthal orientation can be determined from Figure 2

WIND DIRECTION 0 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.03FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.699	.146	-.212	-1.498
102	-.919	.171	-.570	-1.481
103	-.551	.101	-.227	-.984
104	.770	.175	1.215	.056
105	.578	.124	.919	.109
106	.457	.098	.741	.059
107	.351	.092	.651	-.038
108	.292	.087	.500	-.070
109	.259	.083	.519	-.021
110	.169	.079	.451	-.097
111	-.017	.068	.209	-.226
112	-.220	.054	-.012	-.410
113	.784	.167	1.257	.159
114	.654	.129	1.109	.183
115	.514	.106	.848	.123
116	.441	.095	.757	.111
117	.370	.091	.648	.086
118	.284	.085	.595	.009
119	.188	.081	.459	-.070
120	-.016	.070	.303	-.226
121	-.255	.054	-.039	-.415
122	.705	.154	1.172	.150
123	.590	.124	.971	.215
124	.497	.105	.866	.186
125	.406	.099	.745	.048
126	.331	.090	.675	.025
127	.244	.084	.560	-.012
128	.166	.078	.453	-.075
129	-.039	.066	.200	-.265
130	-.268	.053	-.098	-.458
131	.558	.164	1.074	-.042
132	.483	.129	.857	.124
133	.404	.102	.747	.130
134	.316	.089	.663	.079

WIND DIRECTION 0 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.03FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	.246	.081	.638	.011
136	.192	.075	.519	-.014
137	.121	.074	.421	-.080
138	-.085	.070	.177	-.276
139	-.319	.069	-.027	-.519
140	.174	.093	.553	-.156
141	.212	.077	.474	-.052
142	.232	.084	.516	-.012
143	.221	.088	.548	-.035
144	.236	.086	.563	-.026
145	.239	.076	.522	.005
146	.221	.071	.515	-.021
147	-.046	.073	.223	-.309
148	-.255	.079	.123	-.609
201	-.013	.064	.206	-.252
202	.205	.083	.519	-.104
203	.372	.114	.760	-.008
204	.553	.198	1.198	-.277
205	-.092	.064	.135	-.352
206	.196	.092	.480	-.151
207	.399	.152	.775	-.027
208	.509	.225	1.112	-.300
209	-.135	.064	.089	-.360
210	.150	.090	.491	-.175
211	.340	.127	.765	-.100
212	.442	.226	1.045	-.377
213	-.196	.062	.106	-.388
214	.052	.083	.400	-.307
215	.217	.117	.632	-.366
216	.271	.228	1.024	-.933
217	-.058	.076	.224	-.333
218	-.004	.089	.345	-.391
219	.029	.104	.480	-.292
220	.058	.131	.554	-.445

WIND DIRECTION 0 TEMPERATURE 60.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.22FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.500	.116	-.200	-1.125
302	-.140	.022	-.035	-.230
303	-.386	.140	.110	-.905
304	-.524	.064	-.317	-.754
305	-.493	.066	-.150	-.731
306	-.426	.069	-.146	-.717
307	-.430	.074	-.162	-.677
308	-.402	.075	-.077	-.650
309	-.411	.075	-.150	-.734
310	-.414	.070	-.194	-.651
311	-.405	.063	-.212	-.635
312	-.385	.065	-.100	-.603
313	-.511	.071	-.189	-.855
314	-.460	.067	-.180	-.755
315	-.456	.065	-.169	-.665
316	-.453	.064	-.185	-.650
317	-.449	.059	-.192	-.689
318	-.440	.056	-.271	-.671
319	-.427	.056	-.249	-.635
320	-.393	.058	-.172	-.575
321	-.388	.062	-.152	-.572
322	-.544	.089	-.106	-.909
323	-.489	.080	-.155	-.805
324	-.445	.080	-.048	-.725
325	-.452	.078	0.000	-.797
326	-.464	.066	-.069	-.775
327	-.467	.059	-.182	-.721
328	-.444	.057	-.205	-.651
329	-.423	.058	-.243	-.600
330	-.407	.060	-.165	-.600
331	-.583	.097	-.085	-1.129
332	-.535	.080	-.265	-.974
333	-.497	.069	-.215	-.892
334	-.495	.062	-.225	-.765

WIND DIRECTION 0 TEMPERATURE 60.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.22FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	-.510	.060	-.291	-.805
336	-.499	.059	-.282	-.732
337	-.481	.060	-.268	-.705
338	-.461	.063	-.220	-.666
339	-.466	.075	-.198	-.755
340	-.602	.116	-.355	-1.157
341	-.509	.073	-.246	-.791
342	-.481	.072	-.188	-.794
343	-.446	.055	-.260	-.629
344	-.447	.053	-.271	-.611
345	-.357	.046	-.205	-.540
346	-.118	.040	.102	-.277
347	-.366	.111	.055	-.780
348	-.229	.065	.062	-.505
401	-.536	.057	-.332	-.729
402	-.546	.056	-.332	-.755
403	-.581	.061	-.351	-.792
404	-.610	.078	-.365	-.940
405	-.573	.055	-.378	-.728
406	-.583	.057	-.366	-.755
407	-.615	.064	-.406	-.878
408	-.642	.080	-.397	-1.103
409	-.620	.062	-.369	-.865
410	-.625	.065	-.375	-.881
411	-.647	.069	-.392	-.934
412	-.671	.091	-.406	-1.334
413	-.647	.068	-.418	-.888
414	-.655	.071	-.425	-.932
415	-.678	.075	-.457	-1.049
416	-.704	.097	-.351	-1.100
417	-.755	.125	-.441	-1.351
418	-.797	.085	-.618	-1.065
419	-.612	.165	-.086	-1.160
420	-.515	.133	-.098	-.906

WIND DIRECTION 20 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.00FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.502	.087	-.226	-.902
102	-.505	.194	.002	-1.263
103	-.449	.089	-.145	-.803
104	-.294	.155	.650	-.867
105	.150	.130	.511	-.464
106	.119	.065	.310	-.142
107	.041	.062	.224	-.167
108	.035	.059	.220	-.195
109	.017	.059	.220	-.212
110	-.019	.057	.204	-.187
111	-.135	.053	.064	-.351
112	-.220	.053	-.037	-.446
113	-.157	.106	.561	-.820
114	.109	.164	.630	-.597
115	.137	.071	.396	-.240
116	.111	.064	.369	-.140
117	.008	.059	.309	-.175
118	.040	.056	.251	-.187
119	-.014	.055	.226	-.245
120	-.125	.049	.109	-.324
121	-.219	.052	-.034	-.390
122	-.090	.199	.650	-.902
123	.144	.153	.535	-.546
124	.150	.075	.305	-.299
125	.119	.067	.410	-.153
126	.084	.064	.300	-.193
127	.035	.060	.315	-.164
128	-.005	.058	.260	-.207
129	-.111	.052	.120	-.349
130	-.212	.049	-.026	-.374
131	-.010	.200	.519	-.756
132	.141	.104	.450	-.359
133	.136	.070	.452	-.125
134	.008	.063	.436	-.139

WIND DIRECTION 20 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.00FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	.052	.060	.405	-.140
136	.050	.058	.329	-.209
137	-.002	.057	.324	-.196
138	-.125	.057	.112	-.329
139	-.252	.059	-.026	-.450
140	.116	.076	.552	-.291
141	.127	.061	.369	-.157
142	.110	.058	.369	-.072
143	.072	.057	.307	-.090
144	.081	.054	.299	-.104
145	.082	.050	.249	-.079
146	.120	.047	.377	-.019
147	-.090	.049	.106	-.298
148	-.219	.056	-.016	-.458
201	.271	.102	.617	-.100
202	.535	.157	.930	.059
203	.750	.174	1.106	.147
204	.802	.180	1.362	.170
205	.190	.094	.514	-.301
206	.526	.151	.937	.067
207	.725	.165	1.250	.014
208	.752	.175	1.353	-.075
209	.094	.109	.475	-.334
210	.415	.149	.906	-.020
211	.505	.184	1.220	.083
212	.616	.190	1.255	.104
213	-.020	.118	.418	-.407
214	.229	.141	.670	-.159
215	.365	.169	.994	-.056
216	.416	.169	1.035	-.037
217	.016	.080	.306	-.217
218	.058	.080	.354	-.240
219	.042	.087	.396	-.277
220	.054	.106	.507	-.300

WIND DIRECTION 20 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 99.00FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.381	.102	.032	-1.012
302	-.353	.112	.130	-.874
303	-.403	.117	.002	-.894
304	-.340	.097	-.000	-.944
305	-.325	.110	.172	-.892
306	-.322	.111	.101	-.800
307	-.451	.117	-.037	-1.050
308	-.466	.101	-.130	-.993
309	-.440	.084	-.044	-.780
310	-.400	.072	-.145	-.676
311	-.373	.069	-.107	-.639
312	-.352	.072	-.004	-.612
313	-.281	.107	.170	-.709
314	-.275	.105	.200	-.711
315	-.406	.085	.089	-.695
316	-.479	.074	-.164	-.730
317	-.492	.072	-.264	-.756
318	-.465	.071	-.170	-.750
319	-.434	.066	-.213	-.730
320	-.380	.062	-.169	-.655
321	-.357	.061	-.151	-.691
322	-.165	.140	.501	-.506
323	-.219	.130	.334	-.771
324	-.396	.090	.144	-.894
325	-.488	.089	-.165	-.951
326	-.512	.093	-.167	-1.050
327	-.529	.104	-.255	-1.131
328	-.499	.099	-.229	-.889
329	-.451	.083	-.204	-.796
330	-.429	.075	-.193	-.715
331	-.257	.184	.573	-.930
332	-.312	.152	.469	-.917
333	-.428	.095	.099	-.816
334	-.513	.095	-.114	-.947

WIND DIRECTION 20 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 99.00FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	-.574	.112	-.182	-1.385
336	-.584	.117	-.161	-1.098
337	-.548	.109	-.193	-1.095
338	-.486	.100	-.107	-.981
339	-.477	.108	-.104	-.926
340	-.375	.074	-.128	-.641
341	-.341	.070	-.148	-.603
342	-.328	.068	-.143	-.595
343	-.321	.065	-.127	-.615
344	-.344	.066	-.125	-.600
345	-.282	.065	-.041	-.529
346	-.034	.062	.219	-.224
347	-.124	.137	.354	-.761
348	-.096	.089	.290	-.576
401	-.334	.058	-.140	-.543
402	-.340	.057	-.146	-.561
403	-.357	.058	-.164	-.586
404	-.366	.065	-.172	-.660
405	-.330	.058	-.078	-.548
406	-.346	.058	-.140	-.635
407	-.386	.062	-.143	-.649
408	-.432	.085	-.167	-.874
409	-.326	.068	-.096	-.629
410	-.355	.065	-.044	-.750
411	-.423	.086	-.148	-.840
412	-.521	.119	-.227	-1.145
413	-.358	.066	-.125	-.711
414	-.380	.064	-.128	-.762
415	-.450	.091	-.146	-.949
416	-.514	.123	-.162	-1.108
417	-.490	.078	-.266	-.740
418	-.498	.076	-.277	-.755
419	-.497	.111	-.141	-.879
420	-.357	.077	-.115	-.589

WIND DIRECTION 45 TEMPERATURE 60.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 50.00FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.746	.110	-.411	-1.250
102	-.686	.147	-.129	-1.207
103	-.192	.097	.150	-.665
104	-.703	.120	-.357	-1.527
105	-.705	.136	-.300	-1.479
106	-.704	.162	-.111	-1.592
107	-.600	.170	.117	-1.297
108	-.455	.179	.191	-1.061
109	-.334	.179	.652	-.909
110	-.265	.150	.459	-.875
111	-.262	.116	.500	-1.041
112	-.201	.090	.160	-.662
113	-.750	.143	-.370	-1.662
114	-.761	.156	-.226	-1.745
115	-.744	.192	.072	-1.600
116	-.621	.199	.165	-1.505
117	-.500	.176	.127	-1.257
118	-.305	.163	.344	-.909
119	-.314	.151	.510	-1.000
120	-.262	.116	.210	-.852
121	-.274	.095	.160	-.759
122	-.760	.166	-.272	-1.932
123	-.780	.172	-.220	-1.895
124	-.735	.200	.256	-1.740
125	-.604	.219	.250	-1.747
126	-.469	.200	.223	-1.185
127	-.371	.179	.256	-1.020
128	-.293	.156	.275	-.805
129	-.265	.120	.429	-.919
130	-.270	.072	.106	-.544
131	-.874	.205	-.319	-1.882
132	-.842	.210	-.000	-1.849
133	-.700	.255	.142	-1.651
134	-.529	.241	.095	-1.566

WIND DIRECTION 45 TEMPERATURE 60.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 50.00FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	-.372	.203	.295	-1.346
136	-.259	.161	.290	-1.062
137	-.211	.136	.367	-.766
138	-.219	.101	.272	-.740
139	-.262	.074	.070	-.611
140	-.459	.101	-.010	-1.564
141	-.235	.153	.192	-.898
142	-.188	.079	.135	-.792
143	-.185	.064	.194	-.476
144	-.166	.056	.039	-.420
145	-.154	.054	.049	-.362
146	-.054	.050	.121	-.282
147	-.173	.047	-.015	-.334
148	-.172	.045	-.016	-.325
201	.635	.150	1.075	.101
202	.834	.170	1.201	.142
203	.793	.174	1.201	.067
204	.456	.151	1.012	-.251
205	.561	.144	1.059	.114
206	.838	.163	1.290	.301
207	.790	.167	1.250	.244
208	.588	.144	.877	-.116
209	.461	.148	1.165	-.057
210	.743	.164	1.357	.256
211	.691	.170	1.264	.220
212	.266	.157	1.020	-.325
213	.392	.148	.911	-.025
214	.619	.157	1.124	.179
215	.560	.157	1.167	.104
216	.181	.152	.877	-.357
217	.100	.119	.545	-.500
218	.139	.081	.492	-.250
219	.060	.065	.368	-.209
220	-.142	.076	.121	-.419

WIND DIRECTION 45 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 50.82FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.160	.109	.301	-.675
302	-.232	.145	.155	-.852
303	-.695	.103	.116	-1.332
304	-.225	.083	.208	-.644
305	-.120	.109	.360	-.674
306	-.026	.119	.425	-.610
307	-.071	.137	.440	-.505
308	-.109	.165	.523	-.762
309	-.222	.209	.420	-1.091
310	-.416	.252	.415	-1.247
311	-.663	.176	-.020	-1.409
312	-.678	.146	-.155	-1.238
313	-.157	.088	.404	-.564
314	-.038	.102	.437	-.477
315	-.001	.116	.458	-.592
316	-.005	.130	.481	-.747
317	-.054	.173	.625	-.791
318	-.186	.214	.492	-.973
319	-.405	.243	.347	-1.279
320	-.654	.205	.116	-1.604
321	-.693	.204	-.183	-1.957
322	-.134	.071	.298	-.625
323	-.012	.081	.357	-.512
324	.069	.091	.469	-.353
325	.062	.111	.455	-.507
326	.032	.146	.579	-.795
327	-.085	.180	.456	-.889
328	-.256	.245	.548	-1.133
329	-.618	.256	.252	-1.725
330	-.718	.209	-.170	-1.496
331	-.173	.062	.178	-.410
332	-.050	.055	.196	-.311
333	.034	.068	.294	-.317
334	.033	.071	.347	-.410

WIND DIRECTION 45 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 50.82FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	.016	.089	.342	-.407
336	-.054	.117	.348	-.750
337	-.127	.193	.381	-1.004
338	-.423	.284	.497	-1.736
339	-.650	.262	-.016	-2.145
340	-.182	.065	.018	-.456
341	-.189	.058	.007	-.389
342	-.234	.067	-.045	-.518
343	-.086	.041	.051	-.226
344	.015	.045	.172	-.157
345	.101	.054	.291	-.059
346	.293	.069	.553	.074
347	.167	.104	.546	-.214
348	.175	.140	.698	-.626
401	-.315	.058	-.146	-.580
402	-.308	.049	-.154	-.544
403	-.313	.047	-.167	-.486
404	-.311	.051	-.149	-.517
405	-.345	.087	-.162	-.938
406	-.320	.056	-.160	-.651
407	-.319	.049	-.170	-.489
408	-.314	.051	-.152	-.508
409	-.313	.056	-.129	-.721
410	-.302	.046	-.150	-.461
411	-.307	.045	-.168	-.471
412	-.306	.049	-.141	-.546
413	-.305	.049	-.141	-.625
414	-.301	.044	-.155	-.450
415	-.311	.046	-.167	-.463
416	-.309	.051	-.157	-.538
417	-.217	.063	-.044	-.535
418	-.218	.068	.077	-.595
419	-.192	.100	.146	-.497
420	-.259	.133	.180	-1.161

WIND DIRECTION 90 TEMPERATURE 60.50 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 50.96FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.818	.145	-.220	-1.524
102	-.401	.151	.074	-1.092
103	-.556	.110	-.097	-1.002
104	-.460	.052	-.270	-.649
105	-.465	.054	-.298	-.655
106	-.465	.059	-.264	-.714
107	-.517	.080	-.251	-.965
108	-.504	.070	-.250	-.977
109	-.487	.068	-.215	-.805
110	-.504	.068	-.214	-.995
111	-.515	.081	-.270	-1.005
112	-.498	.091	-.255	-1.047
113	-.445	.052	-.245	-.651
114	-.467	.050	-.275	-.651
115	-.485	.049	-.506	-.678
116	-.490	.049	-.520	-.659
117	-.478	.049	-.524	-.644
118	-.491	.050	-.512	-.644
119	-.491	.052	-.507	-.658
120	-.474	.060	-.251	-.649
121	-.475	.072	-.165	-.756
122	-.466	.048	-.516	-.626
123	-.477	.046	-.520	-.656
124	-.482	.046	-.535	-.642
125	-.485	.047	-.527	-.665
126	-.503	.048	-.298	-.668
127	-.504	.048	-.516	-.662
128	-.485	.051	-.251	-.659
129	-.475	.065	-.244	-.651
130	-.506	.071	-.251	-.727
131	-.492	.055	-.301	-.745
132	-.491	.053	-.505	-.750
133	-.505	.054	-.552	-.706
134	-.550	.055	-.575	-.775

WIND DIRECTION 90 TEMPERATURE 60.50 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 50.96FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	-.544	.056	-.350	-.759
136	-.525	.050	-.293	-.702
137	-.496	.063	-.259	-.715
138	-.505	.072	-.202	-.854
139	-.530	.073	-.209	-.879
140	-.489	.069	-.249	-.744
141	-.488	.065	-.270	-.777
142	-.517	.066	-.320	-.735
143	-.546	.064	-.366	-.772
144	-.540	.063	-.327	-.706
145	-.520	.064	-.225	-.777
146	-.420	.063	.060	-.639
147	-.539	.062	-.165	-.762
148	-.535	.062	-.241	-.727
201	.235	.281	1.021	-.976
202	.207	.122	.547	-.369
203	.044	.088	.346	-.245
204	-.220	.060	.044	-.415
205	.241	.265	.943	-.735
206	.270	.121	.615	-.236
207	.064	.091	.327	-.246
208	-.265	.060	-.039	-.463
209	.005	.289	.930	-2.416
210	.169	.144	.610	-.504
211	-.018	.095	.324	-.415
212	-.326	.066	-.100	-.595
213	-.075	.310	1.075	-1.259
214	.090	.165	.654	-.702
215	-.064	.094	.357	-.421
216	-.326	.063	-.099	-.555
217	-.186	.124	.155	-.796
218	-.072	.079	.160	-.518
219	-.085	.062	.126	-.459
220	-.266	.060	-.049	-.500

WIND DIRECTION 90 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.60FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.550	.124	-.127	-1.445
302	-.576	.111	-.229	-1.140
303	-.799	.129	-.385	-1.334
304	-.247	.066	-.009	-.500
305	-.012	.081	.341	-.306
306	.175	.080	.480	-.160
307	.212	.094	.529	-.125
308	.294	.090	.627	-.093
309	.365	.107	.759	.023
310	.453	.110	.797	.055
311	.593	.142	.970	.145
312	.757	.172	1.174	.259
313	-.160	.065	.078	-.375
314	.099	.085	.390	-.125
315	.260	.099	.575	-.011
316	.255	.009	.290	.206
317	.435	.105	.852	.034
318	.505	.111	.918	.090
319	.557	.119	.886	.102
320	.691	.143	1.114	.201
321	.781	.170	1.227	.142
322	-.165	.069	.116	-.424
323	.104	.080	.460	-.166
324	.304	.099	.675	.050
325	.408	.097	.814	.120
326	.402	.100	.860	.206
327	.513	.103	.865	.225
328	.580	.113	.979	.245
329	.662	.144	1.229	.267
330	.685	.161	1.192	.185
331	-.204	.064	.027	-.418
332	.060	.082	.335	-.250
333	.269	.091	.700	.044
334	.359	.097	.857	.140

WIND DIRECTION 90 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.60FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	.422	.102	.805	.191
336	.481	.108	.820	.241
337	.532	.130	.994	.205
338	.588	.154	1.113	.149
339	.545	.182	1.087	-.047
340	-.246	.070	.049	-.485
341	-.213	.080	.069	-.462
342	-.263	.085	.005	-.591
343	.080	.072	.325	-.143
344	.447	.103	.762	.194
345	.541	.108	.878	.242
346	.528	.095	.834	.291
347	.315	.090	.616	.008
348	.158	.079	.416	-.201
401	-.508	.087	-.247	-.962
402	-.493	.062	-.253	-.744
403	-.496	.058	-.273	-.726
404	-.473	.059	-.271	-.710
405	-.547	.087	-.322	-1.047
406	-.519	.059	-.302	-.799
407	-.518	.057	-.300	-.701
408	-.499	.059	-.250	-.687
409	-.562	.064	-.389	-.791
410	-.538	.055	-.363	-.752
411	-.538	.052	-.375	-.726
412	-.523	.052	-.346	-.704
413	-.580	.057	-.424	-.803
414	-.560	.053	-.385	-.735
415	-.565	.053	-.396	-.739
416	-.552	.054	-.375	-.729
417	-.561	.059	-.361	-.808
418	-.586	.066	-.407	-.966
419	-.583	.063	-.404	-.826
420	-.570	.061	-.361	-.819

WIND DIRECTION 150 TEMPERATURE 60.5 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 59.02FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.325	.145	.136	-.705
102	-.255	.107	.123	-.806
103	-.253	.090	.027	-.752
104	-.206	.067	.004	-.603
105	-.182	.055	-.014	-.474
106	-.174	.049	-.033	-.367
107	-.190	.047	-.043	-.394
108	-.195	.044	-.040	-.401
109	-.189	.047	-.039	-.450
110	-.199	.045	-.045	-.391
111	-.202	.048	-.034	-.411
112	-.197	.052	-.020	-.425
113	-.205	.060	-.013	-.596
114	-.198	.044	-.037	-.474
115	-.196	.038	-.034	-.358
116	-.194	.036	-.055	-.321
117	-.190	.035	-.090	-.311
118	-.208	.036	-.105	-.322
119	-.213	.038	-.103	-.350
120	-.207	.046	-.082	-.385
121	-.205	.064	-.017	-.559
122	-.221	.069	-.025	-.573
123	-.205	.049	-.051	-.448
124	-.188	.034	-.076	-.352
125	-.180	.032	-.065	-.317
126	-.200	.033	-.094	-.305
127	-.212	.035	-.076	-.340
128	-.214	.037	-.101	-.376
129	-.202	.045	-.070	-.440
130	-.224	.063	-.070	-.671
131	-.204	.060	-.036	-.508
132	-.192	.045	-.060	-.352
133	-.176	.036	-.047	-.334
134	-.183	.034	-.060	-.300

WIND DIRECTION 150 TEMPERATURE 60.5 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 59.02FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	-.187	.034	-.060	-.320
136	-.194	.034	-.085	-.309
137	-.196	.033	-.105	-.345
138	-.225	.036	-.090	-.351
139	-.239	.041	-.097	-.414
140	-.220	.044	-.097	-.398
141	-.218	.050	-.081	-.410
142	-.242	.052	-.081	-.460
143	-.232	.050	-.051	-.459
144	-.186	.051	.075	-.351
145	-.195	.048	.119	-.351
146	-.164	.035	-.047	-.291
147	-.224	.033	-.115	-.344
148	-.229	.036	-.125	-.378
201	-.287	.126	.019	-.967
202	-.300	.127	.107	-.955
203	-.272	.109	.212	-.914
204	-.279	.125	.101	-.951
205	-.293	.134	.063	-1.759
206	-.298	.128	.175	-.978
207	-.276	.109	.124	-.967
208	-.282	.117	.120	-.974
209	-.351	.146	.000	-1.421
210	-.327	.159	.072	-1.274
211	-.298	.128	.151	-.853
212	-.278	.127	.092	-1.176
213	-.302	.163	-.081	-1.309
214	-.353	.159	.050	-1.051
215	-.267	.116	.207	-.966
216	-.241	.108	.024	-.815
217	-.312	.108	-.027	-.774
218	-.215	.064	-.035	-.514
219	-.204	.049	-.007	-.426
220	-.218	.045	-.047	-.411

WIND DIRECTION 150 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 59.83FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.246	.164	.191	-1.155
302	-.541	.143	-.019	-1.047
303	-.450	.156	.006	-1.054
304	.100	.009	.220	.160
305	.359	.219	1.105	-.265
306	.404	.197	1.369	-.101
307	.352	.185	1.047	-.200
308	.357	.170	.891	-.099
309	.302	.167	1.009	-.131
310	.206	.175	1.053	-.159
311	.190	.171	.850	-.229
312	.060	.150	.631	-.470
313	-.095	.117	.575	-.760
314	.120	.126	.590	-.441
315	.245	.145	.791	-.292
316	.304	.150	.851	-.112
317	.302	.157	.859	-.004
318	.207	.120	.779	-.090
319	.244	.120	.887	-.111
320	.161	.127	.880	-.225
321	.029	.111	.582	-.314
322	-.126	.079	.274	-.519
323	.010	.090	.420	-.301
324	.135	.104	.640	-.249
325	.205	.119	.836	-.109
326	.210	.109	.737	-.102
327	.195	.097	.647	-.140
328	.170	.088	.551	-.088
329	.115	.099	.710	-.195
330	-.002	.089	.407	-.317
331	-.102	.077	.256	-.423
332	.019	.086	.375	-.296
333	.100	.090	.533	-.241
334	.159	.088	.610	-.152

WIND DIRECTION 150 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 59.83FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	.140	.082	.530	-.103
336	.145	.077	.498	-.097
337	.140	.077	.575	-.072
338	.087	.083	.493	-.185
339	-.039	.092	.455	-.456
340	-.115	.053	.070	-.498
341	-.058	.063	.199	-.248
342	-.088	.074	.201	-.384
343	.090	.060	.466	-.078
344	.240	.083	.720	.050
345	.222	.074	.514	.037
346	.172	.047	.375	.046
347	-.032	.049	.184	-.235
348	-.043	.058	.186	-.292
401	-.204	.066	.062	-.558
402	-.227	.110	.105	-.841
403	-.457	.252	.176	-1.475
404	-.758	.302	.019	-2.120
405	-.264	.095	.029	-.691
406	-.315	.136	.101	-.876
407	-.449	.179	.159	-1.266
408	-.552	.212	.045	-1.601
409	-.204	.081	-.021	-.651
410	-.295	.082	.022	-.606
411	-.354	.086	-.094	-.852
412	-.329	.089	-.088	-.851
413	-.201	.068	-.051	-.590
414	-.275	.057	-.101	-.522
415	-.289	.057	-.093	-.575
416	-.280	.058	-.079	-.672
417	-.201	.041	-.057	-.351
418	-.229	.064	-.015	-.495
419	-.326	.089	-.099	-.809
420	-.341	.095	-.136	-.778

WIND DIRECTION 180 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 54.91FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.310	.103	.095	-.809
102	-.334	.071	-.091	-.646
103	.065	.116	.405	-.478
104	-.209	.064	-.125	-.806
105	-.273	.050	-.188	-.675
106	-.274	.056	-.065	-.588
107	-.330	.075	-.089	-.767
108	-.376	.093	-.105	-.958
109	-.347	.064	-.153	-.665
110	-.352	.054	-.150	-.585
111	-.349	.052	-.178	-.526
112	-.337	.052	-.165	-.545
113	-.297	.047	-.119	-.495
114	-.314	.042	-.188	-.574
115	-.333	.042	-.188	-.551
116	-.347	.043	-.208	-.588
117	-.351	.049	-.185	-.559
118	-.377	.054	-.206	-.602
119	-.385	.057	-.204	-.717
120	-.369	.060	-.184	-.628
121	-.354	.062	-.155	-.719
122	-.325	.050	-.093	-.529
123	-.339	.048	-.165	-.551
124	-.355	.052	-.155	-.542
125	-.378	.059	-.010	-.658
126	-.412	.065	-.181	-.726
127	-.436	.075	-.154	-.886
128	-.454	.089	-.196	-.898
129	-.458	.124	-.095	-1.186
130	-.485	.186	-.215	-1.035
131	-.385	.059	-.025	-.681
132	-.297	.058	-.057	-.588
133	-.385	.060	-.082	-.527
134	-.366	.069	-.129	-.669

WIND DIRECTION 180 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 54.91FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	-.416	.076	-.117	-.691
136	-.455	.087	-.127	-.778
137	-.466	.118	.883	-.948
138	-.531	.188	.864	-1.287
139	-.596	.212	.849	-1.749
140	-.221	.057	-.087	-.418
141	-.244	.053	-.025	-.458
142	-.225	.099	.196	-.528
143	-.142	.181	.275	-.458
144	-.188	.119	.487	-.425
145	-.179	.187	.277	-.578
146	-.184	.073	.154	-.496
147	-.316	.087	-.063	-.884
148	-.483	.253	-.158	-1.959
201	-.272	.868	-.886	-.585
202	-.296	.864	-.893	-.662
203	-.295	.878	-.884	-.787
204	-.285	.876	-.876	-.968
205	-.285	.859	-.895	-.565
206	-.387	.861	-.882	-.666
207	-.389	.855	-.186	-.565
208	-.386	.858	-.159	-.811
209	-.381	.867	-.112	-.595
210	-.325	.878	-.128	-.738
211	-.328	.868	-.157	-.568
212	-.331	.862	-.186	-.666
213	-.348	.185	-.868	-1.182
214	-.347	.888	-.814	-.849
215	-.346	.867	-.151	-.689
216	-.358	.875	-.142	-.846
217	-.387	.185	-.841	-.959
218	-.289	.898	.818	-.658
219	-.258	.891	.128	-.598
228	-.215	.882	.861	-.559

WIND DIRECTION 180 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 55.60FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.601	.164	.402	-1.101
302	-.258	.160	.755	-.856
303	-.346	.165	.267	-1.119
304	.241	.320	1.100	-1.435
305	.294	.161	1.022	-.172
306	.332	.122	.850	-.085
307	.259	.151	.755	-.221
308	.211	.139	.606	-.201
309	.210	.146	.891	-.320
310	.172	.145	.715	-.304
311	.008	.134	.570	-.415
312	-.136	.110	.394	-.555
313	-.400	.393	.460	-2.060
314	-.152	.121	.391	-.619
315	-.058	.119	.445	-.550
316	.026	.129	.598	-.472
317	-0.000	-0.000	-0.000	-0.000
318	-0.000	-0.000	-0.000	-0.000
319	-0.000	-0.000	-0.000	-0.000
320	-0.000	-0.000	-0.000	-0.000
321	-.164	.078	.293	-.405
322	-.694	.295	.004	-2.115
323	-.361	.161	.135	-1.425
324	-.232	.108	.141	-.605
325	-.170	.115	.252	-.609
326	-.093	.120	.426	-.612
327	-.060	.122	.522	-.452
328	-.056	.119	.562	-.409
329	-.080	.106	.497	-.507
330	-.162	.065	.160	-.415
331	-.335	.120	.240	-1.172
332	-.260	.105	.071	-.702
333	-.102	.089	.193	-.611
334	-.119	.082	.256	-.497

WIND DIRECTION 180 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 55.60FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	-.090	.083	.302	-.382
336	-.061	.091	.531	-.361
337	-.066	.100	.510	-.461
338	-.110	.116	.382	-.585
339	-.210	.108	.395	-.777
340	-.106	.069	.240	-.373
341	-.057	.092	.329	-.335
342	-.017	.099	.465	-.256
343	.105	.087	.402	-.130
344	.299	.114	.606	-.087
345	.234	.139	.597	-.490
346	.132	.071	.693	-.055
347	-.194	.100	.272	-.478
348	-.212	.074	.029	-.520
401	.165	.076	.471	-.291
402	.449	.111	.850	-.218
403	.606	.144	1.064	-.094
404	.796	.190	1.350	-.246
405	.155	.104	.651	-.275
406	.460	.157	1.144	-.127
407	.426	.173	1.015	-.199
408	.281	.153	.896	-.266
409	.113	.150	.910	-.518
410	.356	.221	1.165	-.408
411	.193	.225	1.045	-.529
412	-.175	.109	.655	-.801
413	-.043	.104	.646	-.693
414	.074	.109	.843	-.549
415	-.076	.211	.775	-.707
416	-.244	.144	.405	-.759
417	-.253	.070	.244	-.460
418	-.223	.082	.319	-.700
419	-.215	.067	.057	-.494
420	-.197	.065	-.011	-.554

WIND DIRECTION 240 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 52.43FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.191	.090	.095	-.625
102	-.260	.130	.098	-1.102
103	-.273	.267	.498	-1.103
104	-.179	.061	.095	-.447
105	-.114	.083	.445	-.394
106	-.079	.091	.314	-.627
107	-.086	.101	.435	-.654
108	-.078	.117	.465	-.808
109	-.092	.154	.550	-.861
110	-.200	.220	.490	-1.200
111	-.554	.306	.509	-1.657
112	-.725	.246	.365	-1.810
113	-.167	.062	.141	-.415
114	-.147	.071	.161	-.484
115	-.107	.082	.218	-.553
116	-.088	.096	.351	-.485
117	-.073	.119	.498	-.615
118	-.142	.151	.621	-.700
119	-.287	.209	.502	-1.201
120	-.499	.239	.426	-1.557
121	-.494	.221	.083	-1.051
122	-.192	.053	.054	-.424
123	-.159	.060	.090	-.485
124	-.116	.071	.193	-.550
125	-.087	.079	.260	-.657
126	-.094	.104	.507	-.926
127	-.134	.127	.400	-.740
128	-.245	.177	.352	-1.036
129	-.478	.256	.325	-1.666
130	-.549	.191	-.089	-1.413
131	-.189	.044	.055	-.452
132	-.154	.047	.127	-.391
133	-.109	.052	.116	-.386
134	-.123	.052	.075	-.397

WIND DIRECTION 240 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 52.43FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	-.104	.057	.127	-.337
136	-.102	.066	.149	-.397
137	-.101	.093	.294	-.614
138	-.264	.224	.455	-1.569
139	-.606	.293	.175	-1.875
140	-.102	.049	.026	-.354
141	-.150	.042	.000	-.337
142	-.152	.050	.100	-.276
143	-.120	.054	.199	-.296
144	-.097	.062	.175	-.417
145	-.084	.058	.150	-.280
146	-.029	.049	.170	-.201
147	-.100	.057	.155	-.299
148	-.110	.063	.152	-.466
201	-.257	.064	-.034	-.572
202	-.244	.047	-.074	-.409
203	-.255	.045	-.084	-.398
204	-.251	.050	-.083	-.412
205	-.225	.050	-.065	-.559
206	-.230	.040	-.101	-.400
207	-.251	.057	-.116	-.365
208	-.227	.041	-.098	-.438
209	-.221	.051	-.055	-.420
210	-.256	.044	-.097	-.391
211	-.255	.039	-.115	-.380
212	-.220	.043	-.093	-.420
213	-.251	.050	-.066	-.506
214	-.254	.042	-.083	-.440
215	-.220	.036	-.097	-.351
216	-.221	.038	-.089	-.405
217	-.210	.042	-.080	-.377
218	-.225	.039	-.080	-.354
219	-.254	.045	-.093	-.455
220	-.251	.047	-.074	-.339

WIND DIRECTION 240 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.85FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.800	.146	-.259	-1.480
302	-.667	.177	.060	-1.369
303	-.201	.112	.458	-.615
304	-.674	.159	-.227	-1.700
305	-.691	.149	-.085	-1.927
306	-.650	.147	.002	-1.274
307	-.506	.146	0.000	-1.156
308	-.460	.151	.055	-1.007
309	-.372	.151	.094	-1.001
310	-.307	.125	.177	-.860
311	-.256	.105	.107	-.850
312	-.244	.089	.067	-.750
313	-.755	.165	-.302	-1.700
314	-.745	.170	-.147	-1.566
315	-.694	.195	.048	-1.602
316	-.590	.188	.109	-1.486
317	-.471	.150	.065	-1.122
318	-.358	.126	.109	-.959
319	-.280	.112	.135	-.771
320	-.214	.092	.248	-.621
321	-.212	.075	.109	-.559
322	-.866	.181	-.285	-1.956
323	-.851	.197	.008	-1.754
324	-.709	.210	.089	-1.440
325	-.566	.206	.104	-1.326
326	-.409	.184	.257	-1.140
327	-.292	.163	.552	-1.212
328	-.212	.157	.502	-.846
329	-.197	.104	.320	-.719
330	-.198	.058	.127	-.495
331	-.994	.508	-.125	-2.270
332	-.725	.521	.275	-1.737
333	-.421	.222	.221	-1.474
334	-.307	.159	.184	-1.082

WIND DIRECTION 240 TEMPERATURE 70.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 52.85FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	-.252	.111	.151	-.778
336	-.216	.100	.240	-.664
337	-.198	.090	.145	-.644
338	-.198	.077	.131	-.621
339	-.211	.066	.041	-.559
340	.035	.090	.408	-.425
341	.054	.088	.393	-.174
342	.072	.085	.466	-.165
343	-.115	.056	.159	-.275
344	-.209	.061	.035	-.410
345	-.187	.044	-.030	-.345
346	-.092	.035	.042	-.195
347	-.169	.034	-.025	-.284
348	-.172	.034	-.057	-.304
401	.486	.258	1.205	-.325
402	.686	.255	1.451	-.190
403	.646	.199	1.241	-.280
404	.304	.141	.762	-.558
405	.339	.184	.996	-.285
406	.659	.210	1.342	-.076
407	.678	.192	1.381	-.210
408	.329	.151	1.312	-.195
409	.282	.164	.936	-.210
410	.546	.145	.922	.127
411	.546	.192	1.374	-.322
412	.282	.145	.886	-.509
413	.159	.166	.787	-.367
414	.208	.144	.819	-.159
415	.128	.149	.715	-.258
416	-.109	.150	.415	-.508
417	.140	.177	.866	-.345
418	.218	.176	1.070	-.295
419	.140	.161	.850	-.311
420	-.102	.142	.451	-.621

WIND DIRECTION 270 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 54.23FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.474	.170	.050	-1.210
102	-.574	.149	-.136	-1.461
103	-.759	.157	-.016	-1.272
104	-.129	.062	.097	-.394
105	.079	.073	.330	-.176
106	.201	.077	.496	-.216
107	.255	.081	.539	-.222
108	.326	.087	.745	-.092
109	.404	.094	.794	-.050
110	.479	.109	.900	.019
111	.625	.160	1.103	-.106
112	.707	.222	1.300	-.309
113	-.109	.053	.083	-.307
114	.060	.066	.304	-.179
115	.206	.075	.441	-.080
116	.300	.082	.553	.024
117	.410	.093	.741	.056
118	.475	.104	.756	.145
119	.559	.124	.941	.159
120	.650	.192	1.245	.024
121	.505	.225	1.319	-.115
122	-.145	.054	.103	-.347
123	.035	.065	.250	-.196
124	.102	.074	.418	-.090
125	.277	.083	.511	-.059
126	.345	.093	.649	.045
127	.409	.104	.720	.026
128	.499	.128	.970	.024
129	.595	.165	1.150	-.029
130	.515	.174	1.027	-.021
131	-.167	.054	.130	-.304
132	-.012	.060	.259	-.252
133	.120	.071	.455	-.106
134	.165	.076	.471	-.089

WIND DIRECTION 270 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 54.23FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	.232	.086	.559	-.042
136	.283	.100	.645	-.016
137	.325	.124	.759	-.107
138	.325	.166	.954	-.175
139	.277	.184	1.000	-.195
140	-.157	.051	.043	-.352
141	.022	.055	.256	-.145
142	.136	.065	.360	-.066
143	.221	.081	.536	-.054
144	.269	.085	.652	.052
145	.281	.087	.589	.037
146	.294	.080	.614	.050
147	.198	.083	.508	-.067
148	.117	.055	.351	-.077
201	-.372	.069	-.155	-.722
202	-.384	.060	-.198	-.635
203	-.377	.055	-.166	-.549
204	-.364	.055	-.180	-.526
205	-.372	.048	-.211	-.564
206	-.389	.045	-.235	-.557
207	-.375	.045	-.215	-.549
208	-.358	.045	-.199	-.547
209	-.374	.048	-.222	-.619
210	-.393	.046	-.226	-.557
211	-.370	.043	-.209	-.547
212	-.357	.045	-.176	-.521
213	-.381	.054	-.188	-.761
214	-.396	.048	-.222	-.593
215	-.361	.047	-.176	-.557
216	-.343	.049	-.143	-.554
217	-.350	.082	-.063	-1.248
218	-.371	.085	-.135	-.925
219	-.375	.071	-.192	-.759
220	-.364	.066	-.183	-.690

WIND DIRECTION 270 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 54.11FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.467	.215	.074	-1.950
302	-.197	.163	.249	-.741
303	-.414	.114	-.062	-.866
304	-.626	.140	-.226	-1.304
305	-.646	.154	-.138	-1.624
306	-.562	.154	-.065	-1.551
307	-.543	.145	-.155	-1.340
308	-.480	.119	-.151	-1.050
309	-.645	.147	-.159	-1.440
310	-.565	.153	-.065	-1.522
311	-.548	.148	-.099	-1.278
312	-.486	.120	-.012	-1.129
313	-.466	.109	-.144	-.971
314	-.425	.092	-.189	-.905
315	-.385	.078	-.115	-.801
316	-.366	.072	-.099	-.650
317	-.454	.110	.052	-.855
318	-.401	.097	.089	-.762
319	-.376	.081	-.004	-.722
320	-.356	.064	-.050	-.621
321	-.356	.058	-.153	-.602
322	-.745	.188	-.256	-1.740
323	-.726	.186	-.182	-1.755
324	-.621	.166	.010	-1.206
325	-.494	.151	-.056	-1.015
326	-.402	.104	.157	-.775
327	-.359	.087	.059	-.711
328	-.358	.075	.017	-.602
329	-.342	.062	-.065	-.615
330	-.341	.047	-.127	-.502
331	-.852	.209	-.256	-2.757
332	-.670	.211	.022	-1.657
333	-.467	.127	0.000	-.977
334	-.388	.085	-.082	-.751

WIND DIRECTION 270 TEMPERATURE 69.00 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 54.11FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	-.368	.070	-.045	-.715
336	-.355	.075	-.043	-.805
337	-.348	.072	.055	-.640
338	-.345	.067	.057	-.705
339	-.363	.059	-.151	-.656
340	-.176	.150	.383	-1.058
341	-.048	.074	.225	-.350
342	-.008	.071	.238	-.246
343	-.234	.048	-.066	-.389
344	-.378	.055	-.154	-.538
345	-.345	.050	-.143	-.489
346	-.218	.044	-.027	-.375
347	-.382	.072	-.195	-.602
348	-.345	.066	-.141	-.640
401	-.081	.357	1.156	-1.402
402	.088	.160	.855	-.404
403	-.006	.158	.676	-.550
404	-.262	.148	.388	-.754
405	-.406	.252	.373	-1.485
406	-.070	.146	.477	-.855
407	-.121	.103	.565	-.722
408	-.358	.155	.401	-.852
409	-.304	.201	.291	-1.205
410	-.079	.141	.575	-.675
411	-.100	.100	.353	-.522
412	-.356	.142	.274	-.807
413	-.151	.213	.504	-1.015
414	-.002	.098	.402	-.489
415	-.059	.092	.755	-.444
416	-.287	.129	.261	-.914
417	.015	.050	.218	-.297
418	.025	.044	.256	-.158
419	.020	.050	.357	-.151
420	-.006	.060	.205	-.261

WIND DIRECTION 300 TEMPERATURE 69.70 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 54.32FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.525	.190	.066	-1.590
102	-.633	.191	-.110	-2.132
103	-.790	.180	-.305	-1.696
104	.247	.150	.005	-.498
105	.460	.180	1.065	-.160
106	.536	.188	1.183	-.121
107	.549	.213	1.213	-.101
108	.553	.220	1.126	-.110
109	.554	.242	1.292	-.164
110	.519	.247	1.202	-.153
111	.452	.262	1.245	-.251
112	.257	.275	1.120	-.518
113	.212	.146	.845	-.301
114	.423	.169	.966	-.130
115	.525	.184	1.160	-.076
116	.561	.192	1.192	-.056
117	.590	.194	1.160	-.026
118	.560	.201	1.252	-.054
119	.527	.201	1.206	-.027
120	.420	.199	1.296	-.147
121	.167	.201	1.041	-.474
122	.156	.155	.856	-.345
123	.371	.155	1.045	-.118
124	.479	.159	1.001	.029
125	.500	.172	1.020	-.049
126	.488	.168	1.145	-.061
127	.474	.165	1.099	-.020
128	.448	.150	1.059	.025
129	.363	.148	1.085	-.155
130	.124	.150	.699	-.347
131	.078	.129	.561	-.451
132	.263	.141	.729	-.088
133	.375	.154	.959	-.007
134	.378	.148	1.062	.021

WIND DIRECTION 300 TEMPERATURE 69.70 DEGREES F
BAROMETRIC PRESS 24.95 IN HG VELOCITY 54.32FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	.378	.145	.975	.034
136	.370	.134	.961	.033
137	.359	.124	.935	-.003
138	.263	.120	.886	-.146
139	.084	.153	.776	-.564
140	-.035	.076	.218	-.305
141	.208	.090	.547	-.075
142	.330	.100	.712	.029
143	.309	.108	.864	.091
144	.411	.107	.892	.117
145	.409	.105	.895	.114
146	.409	.092	.791	.165
147	.276	.083	.560	.033
148	.159	.078	.424	-.127
201	-.383	.124	-.016	-.973
202	-.386	.112	-.037	-1.063
203	-.389	.116	.037	-1.142
204	-.378	.109	-.006	-1.242
205	-.400	.142	.107	-1.255
206	-.378	.114	.026	-1.051
207	-.367	.110	-.021	-1.109
208	-.348	.097	-.014	-.973
209	-.427	.208	.226	-1.751
210	-.384	.141	.154	-1.257
211	-.377	.129	.015	-1.222
212	-.355	.112	-.039	-1.198
213	-.407	.197	.194	-1.506
214	-.375	.151	.125	-1.011
215	-.392	.122	-.050	-1.460
216	-.370	.108	-.079	-1.200
217	-.240	.101	.136	-.719
218	-.287	.140	.210	-.875
219	-.406	.150	.094	-1.395
220	-.420	.148	-.026	-1.640

WIND DIRECTION 300 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 54.45FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.637	.210	-.016	-1.514
302	-.561	.135	-.110	-1.105
303	-.460	.144	.120	-1.209
304	-.540	.110	-.233	-1.190
305	-.541	.117	-.223	-1.110
306	-.485	.100	-.191	-.888
307	-.500	.096	-.222	-.952
308	-.480	.092	-.196	-.814
309	-.467	.092	-.110	-.800
310	-.424	.089	-.087	-.748
311	-.371	.084	-.050	-.715
312	-.352	.086	-.045	-.879
313	-.600	.151	-.102	-1.416
314	-.581	.137	-.205	-1.222
315	-.559	.123	-.215	-1.017
316	-.525	.112	-.159	-1.007
317	-.490	.101	-.065	-1.037
318	-.444	.095	-.100	-.886
319	-.405	.090	-.020	-.704
320	-.348	.087	-.036	-.740
321	-.340	.090	-.010	-.618
322	-.677	.193	-.174	-1.679
323	-.652	.179	-.142	-1.535
324	-.601	.156	-.057	-1.180
325	-.553	.140	-.100	-1.115
326	-.474	.116	.020	-.951
327	-.408	.101	.071	-.805
328	-.357	.087	.147	-.665
329	-.314	.097	.021	-.714
330	-.310	.098	.091	-.612
331	-.806	.270	-.181	-2.055
332	-.760	.268	-.147	-1.855
333	-.605	.170	-.025	-1.450
334	-.439	.115	-.087	-.902

WIND DIRECTION 300 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.90 IN HG VELOCITY 54.45FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	-.364	.086	.181	-.790
336	-.325	.086	-.010	-.704
337	-.309	.090	.047	-.748
338	-.310	.102	.060	-.852
339	-.333	.124	.160	-.841
340	-.102	.180	.759	-.931
341	.076	.084	.474	-.192
342	.127	.090	.554	-.176
343	-.215	.056	-.014	-.414
344	-.377	.066	-.142	-.620
345	-.325	.058	-.065	-.494
346	-.160	.052	.044	-.350
347	-.411	.101	-.085	-.892
348	-.200	.060	-.026	-.565
401	-.849	.262	.150	-2.270
402	-.578	.306	.189	-1.841
403	-.355	.197	.172	-1.550
404	-.410	.126	.064	-1.074
405	-.738	.245	.201	-1.855
406	-.547	.230	.021	-1.118
407	-.579	.255	.178	-1.572
408	-.405	.160	.194	-1.091
409	-.770	.251	.240	-1.807
410	-.575	.315	.325	-1.780
411	-.500	.250	.262	-1.455
412	-.405	.158	.166	-1.278
413	-.670	.247	.057	-1.929
414	-.490	.298	.277	-1.632
415	-.518	.243	.506	-1.959
416	-.300	.163	.242	-1.160
417	-.552	.258	.258	-2.079
418	-.375	.271	.252	-1.752
419	-.240	.192	.470	-1.392
420	-.349	.144	.514	-.995

WIND DIRECTION 330 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.93 IN HG VELOCITY 52.63FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
101	-.537	.173	-.018	-1.408
102	-.502	.122	-.197	-1.104
103	-.635	.107	-.518	-1.125
104	.558	.164	1.159	-.012
105	.718	.172	1.223	.129
106	.720	.153	1.179	.221
107	.601	.160	1.095	.111
108	.651	.156	1.049	.087
109	.629	.149	1.127	.172
110	.566	.149	.973	.078
111	.388	.137	.757	-.064
112	.068	.110	.435	-.320
113	.515	.152	1.125	-.017
114	.735	.156	1.256	.240
115	.779	.159	1.227	.310
116	.767	.159	1.217	.298
117	.715	.159	1.155	.245
118	.657	.158	1.165	.195
119	.584	.152	1.024	.152
120	.371	.133	.756	-.052
121	.042	.100	.582	-.345
122	.405	.163	1.004	-.164
123	.636	.159	1.092	.088
124	.705	.154	1.154	.190
125	.673	.148	1.154	.265
126	.635	.146	1.171	.219
127	.583	.145	1.151	.169
128	.511	.140	1.022	.084
129	.336	.120	.774	-.075
130	-.018	.093	.272	-.297
131	.334	.159	.902	-.189
132	.533	.149	1.051	.115
133	.581	.145	1.107	.186
134	.564	.140	1.056	.192

WIND DIRECTION 330 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.93 IN HG VELOCITY 52.63FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
135	.552	.135	1.151	.166
136	.492	.130	1.065	.131
137	.448	.128	.934	.087
138	.227	.116	.649	-.114
139	-.097	.111	.435	-.476
140	-0.000	.064	.215	-.240
141	.318	.083	.665	.001
142	.477	.102	.856	.214
143	.536	.117	1.043	.210
144	.551	.119	1.005	.234
145	.550	.124	1.045	.189
146	.493	.108	.967	.179
147	.206	.090	.610	-.154
148	-.094	.099	.597	-.557
201	-.271	.166	.512	-.970
202	-.396	.197	.574	-1.204
203	-.599	.229	.115	-1.612
204	-.684	.255	-.154	-1.842
205	-.309	.226	.541	-1.350
206	-.422	.243	.574	-1.550
207	-.577	.235	.164	-1.609
208	-.605	.251	.076	-1.667
209	-.298	.297	.611	-1.605
210	-.417	.278	.400	-1.454
211	-.591	.261	.164	-2.295
212	-.632	.265	.005	-1.912
213	-.294	.244	.589	-1.650
214	-.399	.245	.547	-1.697
215	-.565	.243	.248	-1.801
216	-.641	.261	-.067	-1.845
217	-.211	.083	.056	-.560
218	-.226	.111	.214	-.727
219	-.330	.160	.149	-1.525
220	-.422	.155	.008	-1.095

WIND DIRECTION 330 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.70 IN HG VELOCITY 51.70FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
301	-.641	.112	-.270	-1.460
302	-.656	.195	.164	-1.741
303	-.446	.144	.157	-1.018
304	-.641	.104	-.202	-1.150
305	-.505	.120	-.000	-1.072
306	-.309	.132	.331	-.845
307	-.369	.100	.229	-.800
308	-.381	.095	.005	-.707
309	-.394	.092	-.049	-.770
310	-.352	.091	-.054	-.669
311	-.279	.100	.062	-.716
312	-.249	.114	.150	-.762
313	-.655	.109	-.219	-1.045
314	-.557	.120	.030	-.999
315	-.371	.140	.256	-1.064
316	-.206	.130	.207	-.757
317	-.345	.095	.075	-.679
318	-.359	.087	-.075	-.705
319	-.334	.088	-.062	-.625
320	-.265	.106	.071	-.656
321	-.255	.135	.215	-.725
322	-.505	.140	.115	-1.040
323	-.452	.141	.256	-.926
324	-.307	.127	.307	-.702
325	-.294	.109	.193	-.795
326	-.322	.098	.110	-.715
327	-.343	.098	.106	-.792
328	-.307	.104	.066	-.926
329	-.244	.132	.249	-.701
330	-.208	.138	.227	-.641
331	-.447	.195	.464	-.956
332	-.334	.161	.576	-.855
333	-.315	.129	.185	-.729
334	-.362	.094	-.017	-.945

WIND DIRECTION 330 TEMPERATURE 69.50 DEGREES F
BAROMETRIC PRESS 24.70 IN HG VELOCITY 51.70FPS

PRESSURE TAP NUMBER	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
335	-.391	.090	.107	-.844
336	-.396	.099	-.017	-.805
337	-.370	.112	-.039	-.901
338	-.311	.146	.200	-.925
339	-.277	.176	.320	-.923
340	-.400	.201	.350	-1.562
341	-.205	.152	.297	-.716
342	-.219	.173	.379	-.830
343	-.300	.074	-.079	-.587
344	-.426	.077	-.100	-.764
345	-.391	.070	-.137	-.720
346	-.196	.062	.006	-.442
347	-.339	.142	.055	-1.055
348	-.271	.086	-.027	-.620
401	-.664	.089	-.401	-.996
402	-.650	.088	-.365	-1.026
403	-.662	.091	-.398	-.975
404	-.680	.105	-.382	-1.160
405	-.660	.080	-.380	-.995
406	-.669	.082	-.374	-.988
407	-.681	.087	-.409	-1.055
408	-.697	.110	-.369	-1.259
409	-.697	.107	-.360	-1.150
410	-.706	.109	-.372	-1.257
411	-.735	.110	-.399	-1.206
412	-.706	.162	-.284	-1.614
413	-.694	.152	-.254	-1.775
414	-.711	.116	-.382	-1.091
415	-.766	.155	-.262	-1.356
416	-.902	.200	-.320	-1.990
417	-.719	.150	-.199	-1.764
418	-.730	.150	-.270	-1.761
419	-.703	.153	-.264	-1.420
420	-.917	.254	-.253	-1.805

APPENDIX B

PRESSURE DATA FOR SELECTED TAPS AT TWO DEGREE WIND INCREMENTS FOR THE NEW TOWER

Notes:

1. Pressure coefficients are defined in section 4.3

2. Pressure tap code is defined in Figure 3

3. Azimuthal orientation can be determined from Figure 2

4. For all data:

   temperature = 72.8 degrees F
   barometric pressure = 24.95 in. Hg
   free stream velocity, U_∞ = 55.3 fps.

TAP NUMBER 313

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.024	.169	.510	-.888
172	-.053	.190	.545	-1.896
174	-.119	.213	.628	-1.411
176	-.189	.246	.461	-1.851
178	-.248	.261	.593	-2.059
180	-.356	.322	.633	-2.401
182	-.456	.355	.485	-2.031
184	-.613	.399	.478	-2.838
186	-.796	.388	.472	-2.838
188	-.855	.371	.563	-2.599
190	-.828	.324	.370	-2.838
192	-.811	.281	.183	-1.925
194	-.795	.255	.229	-2.347
196	-.773	.252	.231	-2.040
198	-.760	.229	.060	-2.404
200	-.739	.223	.018	-2.083

TAP NUMBER 314

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.014	.123	.468	-.515
172	-.021	.119	.472	-.441
174	-.033	.112	.420	-.385
176	-.049	.113	.385	-.424
178	-.065	.109	.389	-.563
180	-.083	.111	.327	-.691
182	-.088	.116	.326	-.769
184	-.091	.129	.333	-.928
186	-.088	.153	.479	-1.224
188	-.064	.170	.568	-1.136
190	-.088	.229	.711	-1.120
192	-.147	.272	.572	-1.197
194	-.182	.287	.607	-1.368
196	-.279	.301	.588	-1.478
198	-.359	.304	.538	-1.427
200	-.426	.282	.439	-1.395

TAP NUMBER 315

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.102	.137	.752	-.471
172	.088	.136	.632	-.391
174	.074	.119	.601	-.337
176	.048	.115	.540	-.412
178	.024	.110	.547	-.367
180	-.001	.104	.400	-.442
182	-.014	.101	.400	-.417
184	-.023	.094	.382	-.376
186	-.033	.088	.303	-.348
188	-.042	.089	.500	-.453
190	-.045	.083	.259	-.405
192	-.057	.084	.272	-.520
194	-.062	.092	.262	-.686
196	-.077	.099	.245	-.732
198	-.086	.103	.227	-.707
200	-.108	.124	.323	-.920

TAP NUMBER 316

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.217	.147	.757	-.406
172	.193	.142	.723	-.341
174	.181	.129	.725	-.305
176	.145	.119	.551	-.313
178	.108	.118	.612	-.287
180	.074	.116	.604	-.280
182	.050	.113	.507	-.448
184	.001	.015	.048	-.064
186	.012	.099	.491	-.382
188	-.005	.096	.536	-.389
190	-.019	.089	.349	-.346
192	-.034	.080	.298	-.464
194	-.037	.083	.492	-.394
196	-.048	.081	.352	-.525
198	-.059	.078	.226	-.371
200	-.065	.080	.269	-.603

TAP NUMBER 317

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.268	.153	.834	-.316
172	.255	.138	.808	-.200
174	.236	.129	.795	-.252
176	.202	.126	.679	-.349
178	.161	.117	.629	-.335
180	.125	.128	.808	-.309
182	.102	.122	.597	-.319
184	.069	.114	.766	-.328
186	.050	.108	.585	-.316
188	.025	.103	.556	-.346
190	.001	.095	.489	-.349
192	-.005	.088	.446	-.316
194	-.015	.085	.323	-.345
196	-.026	.082	.330	-.346
198	-.037	.078	.416	-.400
200	-.045	.072	.222	-.338

TAP NUMBER 318

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.259	.147	.852	-.326
172	.244	.136	.818	-.191
174	.226	.130	.798	-.252
176	.193	.127	.651	-.421
178	.153	.118	.626	-.302
180	.116	.126	.636	-.381
182	.095	.122	.500	-.313
184	.062	.114	.538	-.399
186	.045	.114	.453	-.306
188	.016	.106	.450	-.348
190	-.013	.099	.345	-.345
192	-.020	.092	.373	-.333
194	-.028	.088	.341	-.391
196	-.037	.085	.391	-.366
198	-.052	.080	.364	-.421
200	-.057	.073	.301	-.377

TAP NUMBER 319

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.208	.134	.837	-.344
172	.197	.128	.734	-.200
174	.180	.124	.716	-.305
176	.156	.125	.615	-.417
178	.123	.113	.571	-.255
180	.093	.121	.625	-.345
182	.072	.117	.484	-.274
184	.042	.110	.485	-.407
186	.028	.113	.596	-.339
188	.000	.106	.377	-.391
190	-.024	.100	.352	-.360
192	-.031	.094	.396	-.360
194	-.038	.089	.302	-.380
196	-.047	.086	.319	-.362
198	-.060	.081	.303	-.452
200	-.064	.073	.355	-.366

TAP NUMBER 320

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.049	.110	.493	-.303
172	.041	.109	.637	-.302
174	.027	.104	.482	-.356
176	.017	.107	.474	-.409
178	-.003	.097	.428	-.328
180	-.020	.102	.403	-.482
182	-.035	.099	.335	-.344
184	-.055	.094	.284	-.413
186	-.065	.097	.428	-.382
188	-.088	.093	.290	-.385
190	-.105	.090	.288	-.430
192	-.111	.085	.306	-.395
194	-.116	.081	.236	-.513
196	-.122	.079	.265	-.496
198	-.129	.072	.197	-.463
200	-.130	.067	.204	-.416

TAP NUMBER 321

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.107	.088	.256	-.450
172	-.113	.082	.204	-.392
174	-.120	.085	.284	-.410
176	-.127	.083	.255	-.434
178	-.134	.081	.308	-.427
180	-.136	.079	.310	-.399
182	-.147	.083	.352	-.467
184	-.158	.078	.208	-.481
186	-.169	.079	.164	-.568
188	-.177	.075	.119	-.466
190	-.181	.075	.224	-.475
192	-.182	.071	.108	-.459
194	-.188	.067	.076	-.535
196	-.190	.067	.147	-.533
198	-.190	.066	.068	-.474
200	-.185	.060	.050	-.449

TAP NUMBER 322

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.406	.208	.127	-1.589
172	-.439	.234	.202	-1.738
174	-.498	.257	.097	-2.265
176	-.563	.293	.195	-2.041
178	-.584	.281	.190	-2.235
180	-.561	.260	.169	-2.209
182	-.541	.238	.168	-1.771
184	-.546	.222	.060	-1.645
186	-.517	.193	.072	-1.476
188	-.498	.169	.003	-1.254
190	-.487	.160	.001	-1.135
192	-.491	.112	-.159	-.878
194	-.497	.148	.024	-1.067
196	-.495	.158	.003	-1.127
198	-.518	.176	-.030	-1.388
200	-.518	.185	.026	-1.440

TAP NUMBER 323

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.258	.124	.290	-.818
172	-.265	.126	.211	-.813
174	-.266	.126	.139	-.949
176	-.263	.126	.180	-1.017
178	-.274	.140	.284	-1.072
180	-.278	.146	.212	-.995
182	-.302	.165	.209	-1.021
184	-.350	.185	.175	-1.128
186	-.387	.185	.283	-1.045
188	-.406	.169	.194	-1.092
190	-.400	.165	.180	-1.102
192	-.394	.151	.197	-.921
194	-.394	.154	.085	-.927
196	-.386	.159	.166	-.956
198	-.387	.170	.220	-1.124
200	-.385	.174	.288	-1.057

TAP NUMBER 324

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.139	.124	.400	-.678
172	-.154	.127	.370	-.672
174	-.161	.119	.316	-.640
176	-.163	.105	.255	-.611
178	-.171	.102	.315	-.521
180	-.157	.090	.188	-.511
182	-.151	.096	.241	-.581
184	-.148	.109	.220	-.725
186	-.156	.126	.242	-.794
188	-.172	.132	.219	-.787
190	-.179	.136	.255	-.739
192	-.198	.131	.274	-.683
194	-.204	.127	.164	-.770
196	-.211	.131	.262	-.811
198	-.211	.132	.231	-.758
200	-.218	.134	.226	-.880

TAP NUMBER 325

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.026	.143	.622	-.556
172	-.041	.139	.561	-.572
174	-.053	.129	.540	-.503
176	-.085	.124	.461	-.556
178	-.102	.110	.513	-.536
180	-.112	.093	.308	-.471
182	-.113	.093	.298	-.492
184	-.100	.088	.319	-.459
186	-.101	.093	.230	-.545
188	-.098	.103	.345	-.678
190	-.088	.096	.249	-.488
192	-.091	.102	.244	-.675
194	-.097	.102	.302	-.639
196	-.107	.105	.272	-.675
198	-.111	.106	.248	-.622
200	-.115	.106	.290	-.596

TAP NUMBER 326

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.056	.147	.842	-.407
172	.040	.145	.644	-.599
174	.019	.133	.694	-.398
176	-.030	.129	.626	-.424
178	-.053	.116	.528	-.533
180	-.079	.100	.439	-.436
182	-.090	.093	.316	-.450
184	-.095	.088	.413	-.377
186	-.094	.086	.254	-.459
188	-.089	.083	.524	-.446
190	-.077	.074	.247	-.380
192	-.074	.077	.254	-.475
194	-.077	.078	.230	-.474
196	-.081	.062	.132	-.337
198	-.081	.081	.303	-.478
200	-.084	.082	.258	-.543

TAP NUMBER 327

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.109	.141	.772	-.357
172	.093	.139	.715	-.382
174	.066	.126	.716	-.370
176	.019	.128	.617	-.391
178	-.010	.113	.439	-.421
180	-.044	.103	.484	-.371
182	-.064	.103	.377	-.423
184	-.082	.094	.479	-.373
186	-.092	.088	.381	-.448
188	-.092	.079	.395	-.416
190	-.085	.070	.283	-.413
192	-.077	.070	.191	-.420
194	-.079	.067	.284	-.349
196	-.079	.064	.143	-.352
198	-.075	.066	.211	-.392
200	-.076	.071	.277	-.389

TAP NUMBER 328

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.111	.126	.715	-.385
172	.101	.123	.658	-.341
174	.074	.114	.596	-.424
176	.033	.117	.614	-.481
178	.003	.108	.430	-.373
180	-.035	.100	.488	-.421
182	-.053	.102	.417	-.475
184	-.081	.098	.333	-.421
186	-.096	.091	.341	-.459
188	-.110	.078	.327	-.457
190	-.110	.068	.169	-.425
192	-.105	.066	.187	-.396
194	-.104	.064	.259	-.380
196	-.102	.060	.200	-.335
198	-.097	.059	.132	-.352
200	-.097	.060	.176	-.316

TAP NUMBER 329

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	.019	.102	.515	-.398
172	.013	.098	.608	-.281
174	-.003	.096	.546	-.431
176	-.024	.097	.367	-.449
178	-.049	.099	.430	-.435
180	-.069	.098	.418	-.436
182	-.094	.092	.284	-.417
184	-.117	.091	.403	-.509
186	-.145	.088	.412	-.420
188	-.162	.083	.281	-.553
190	-.167	.069	.168	-.431
192	-.165	.063	.140	-.435
194	-.164	.061	.114	-.434
196	-.163	.060	.082	-.406
198	-.153	.056	.058	-.472
200	-.149	.060	.103	-.506

TAP NUMBER 330

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.116	.063	.194	-.352
172	-.119	.062	.200	-.333
174	-.130	.060	.147	-.410
176	-.142	.060	.118	-.370
178	-.158	.062	.132	-.413
180	-.170	.063	.098	-.402
182	-.183	.060	.109	-.409
184	-.200	.061	.069	-.410
186	-.215	.060	.040	-.456
188	-.230	.058	-.006	-.475
190	-.235	.052	-.054	-.485
192	-.233	.051	-.030	-.412
194	-.231	.050	-.029	-.460
196	-.228	.049	-.061	-.485
198	-.216	.045	.032	-.460
200	-.208	.047	-.026	-.395

TAP NUMBER 331

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.342	.131	.097	-1.082
172	-.356	.139	.197	-1.068
174	-.376	.145	.101	-1.203
176	-.342	.141	.219	-1.145
178	-.315	.132	.172	- .880
180	-.260	.121	.168	- .849
182	-.225	.116	.143	-1.032
184	-.221	.124	.118	-1.027
186	-.230	.138	.262	-1.187
188	-.256	.161	.127	-1.084
190	-.303	.178	.107	-1.309
192	-.345	.181	.147	-1.266
194	-.373	.182	.082	-1.330
196	-.391	.189	.104	-1.467
198	-.400	.181	.026	-1.629
200	-.413	.190	.078	-1.315

TAP NUMBER 332

WIND DIRECTION	MEAN PRESSURE COEFFICIENT	RMS PRESSURE COEFFICIENT	MAXIMUM PRESSURE COEFFICIENT	MINIMUM PRESSURE COEFFICIENT
170	-.260	.094	.096	- .698
172	-.262	.092	.172	- .806
174	-.266	.101	.158	- .748
176	-.248	.099	.179	- .650
178	-.235	.105	.139	- .640
180	-.202	.100	.218	- .576
182	-.183	.094	.173	- .579
184	-.176	.097	.101	- .718
186	-.177	.101	.267	- .705
188	-.189	.121	.155	- .849
190	-.204	.142	.249	-1.132
192	-.225	.156	.352	-1.211
194	-.229	.148	.280	-1.063
196	-.242	.165	.236	-1.182
198	-.246	.156	.273	- .917
200	-.249	.165	.259	- .906

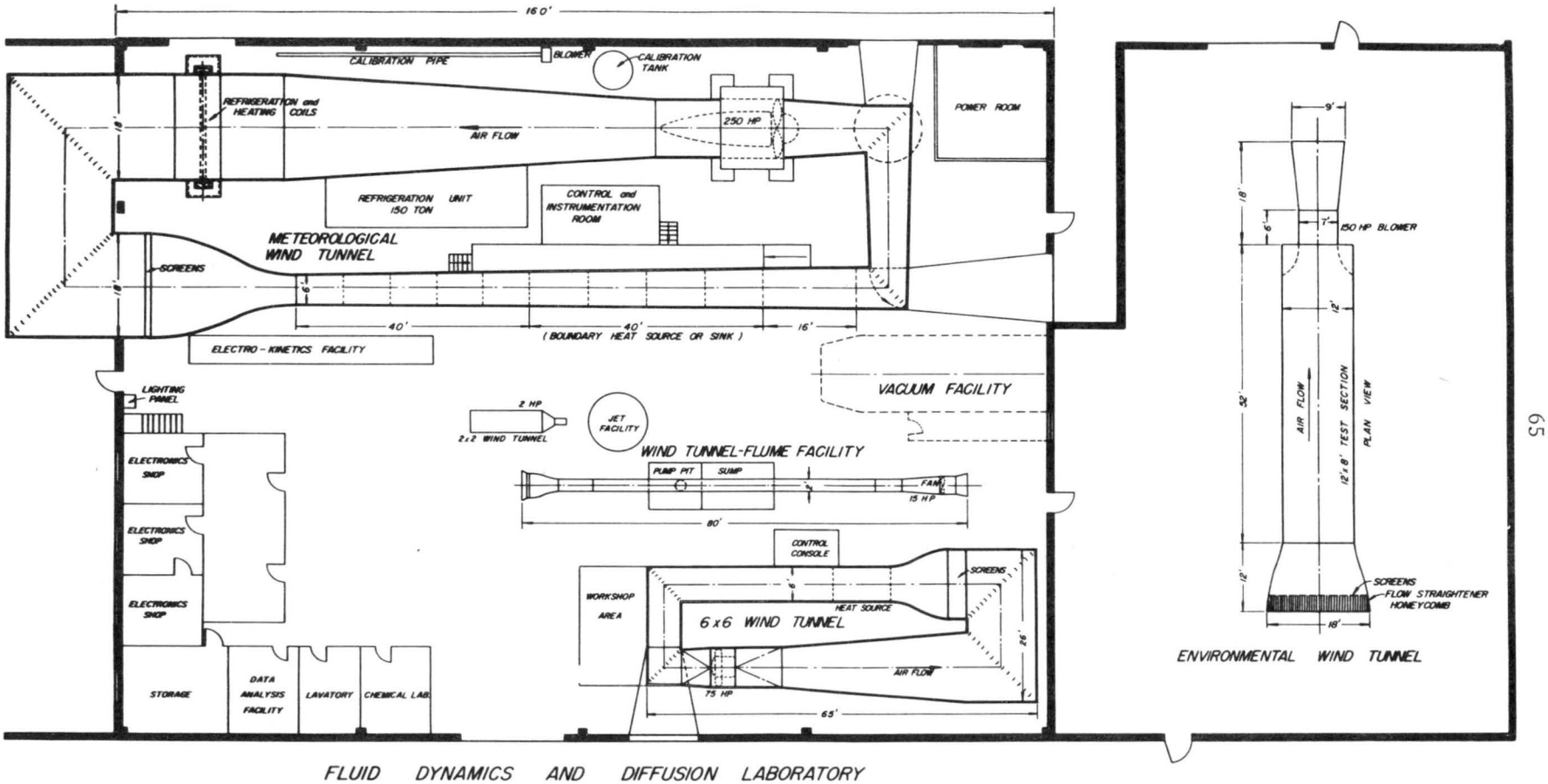


Figure 1. Plan View of Wind Tunnels

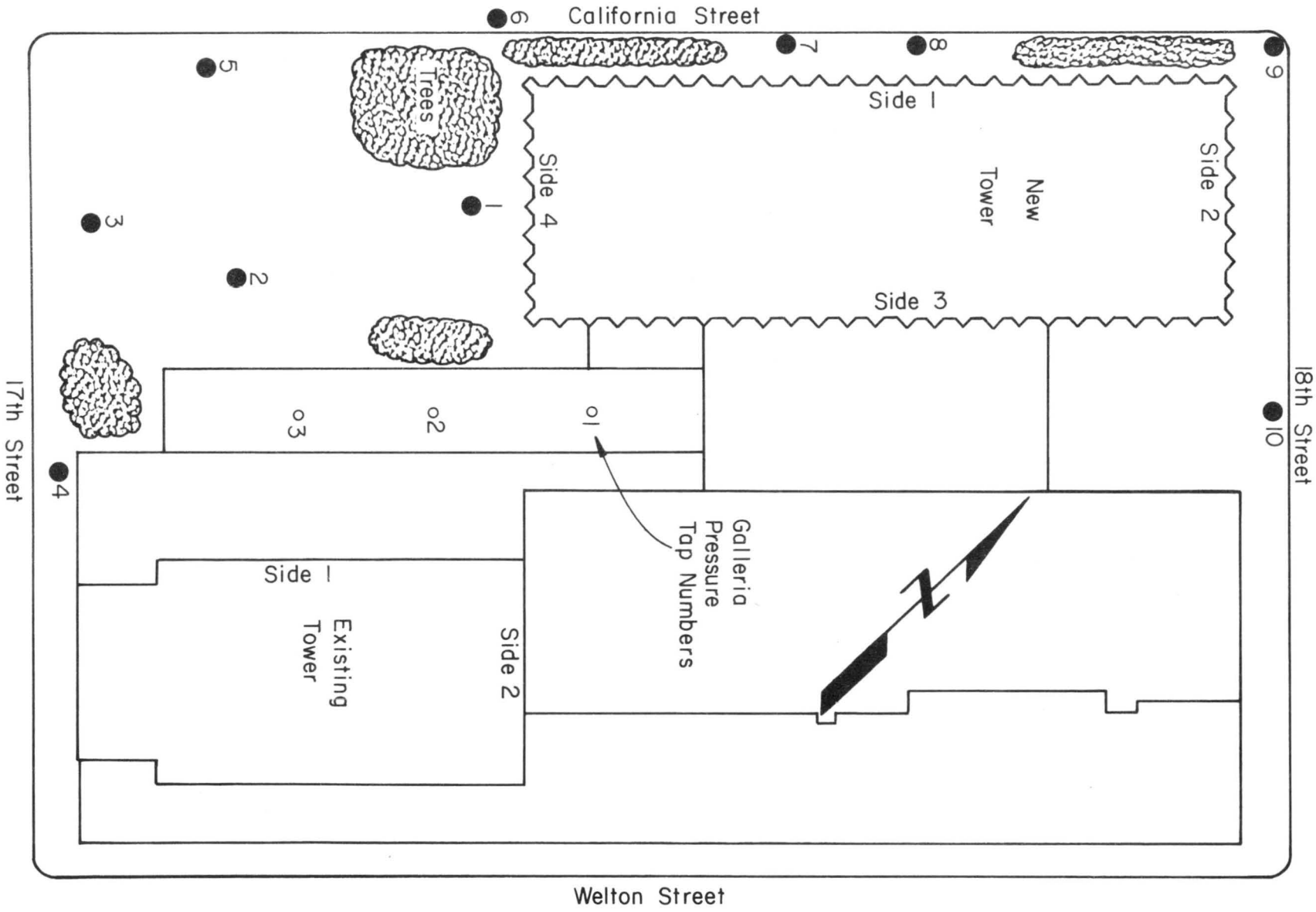


Figure 2a. Site Plan for the First National Bank

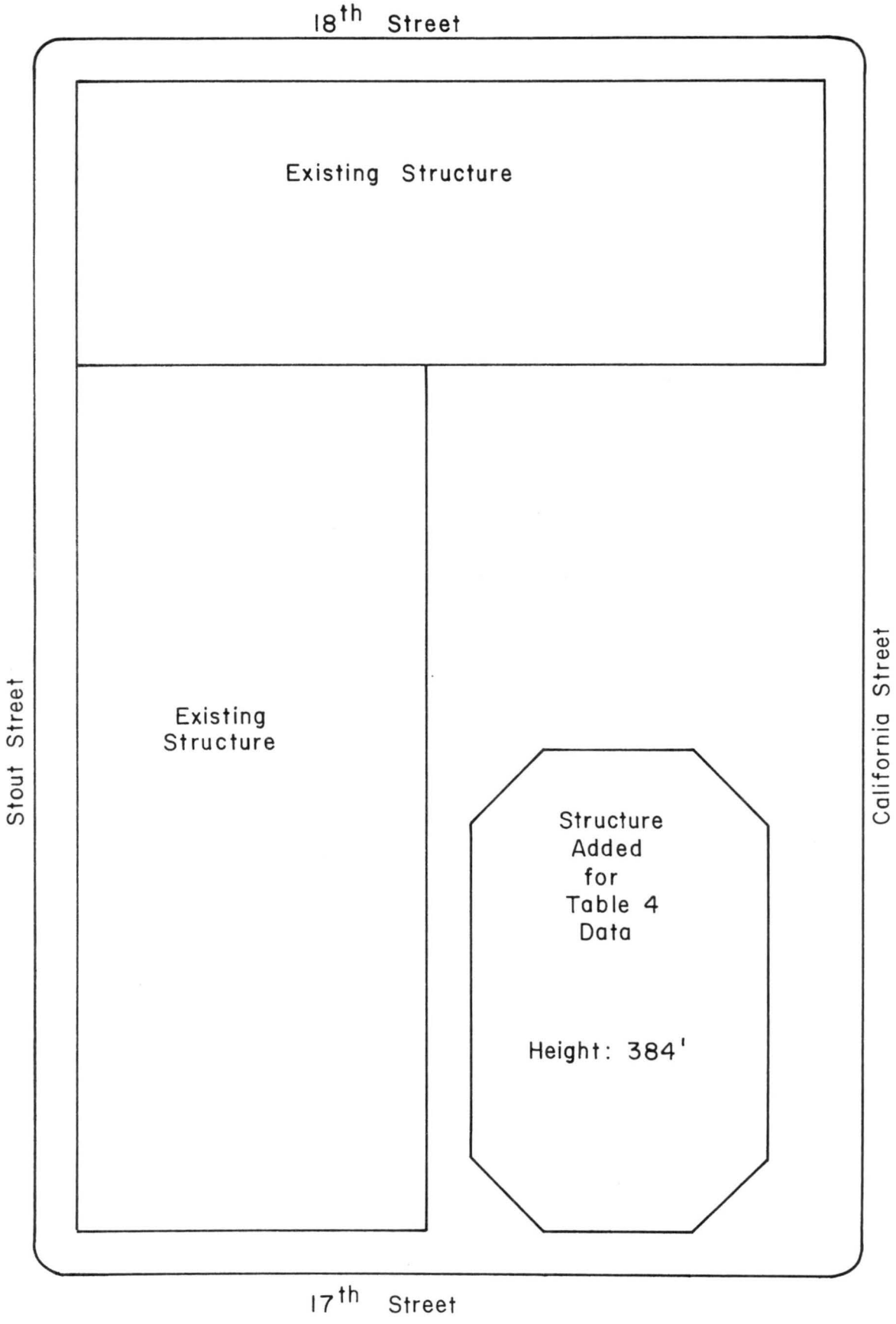
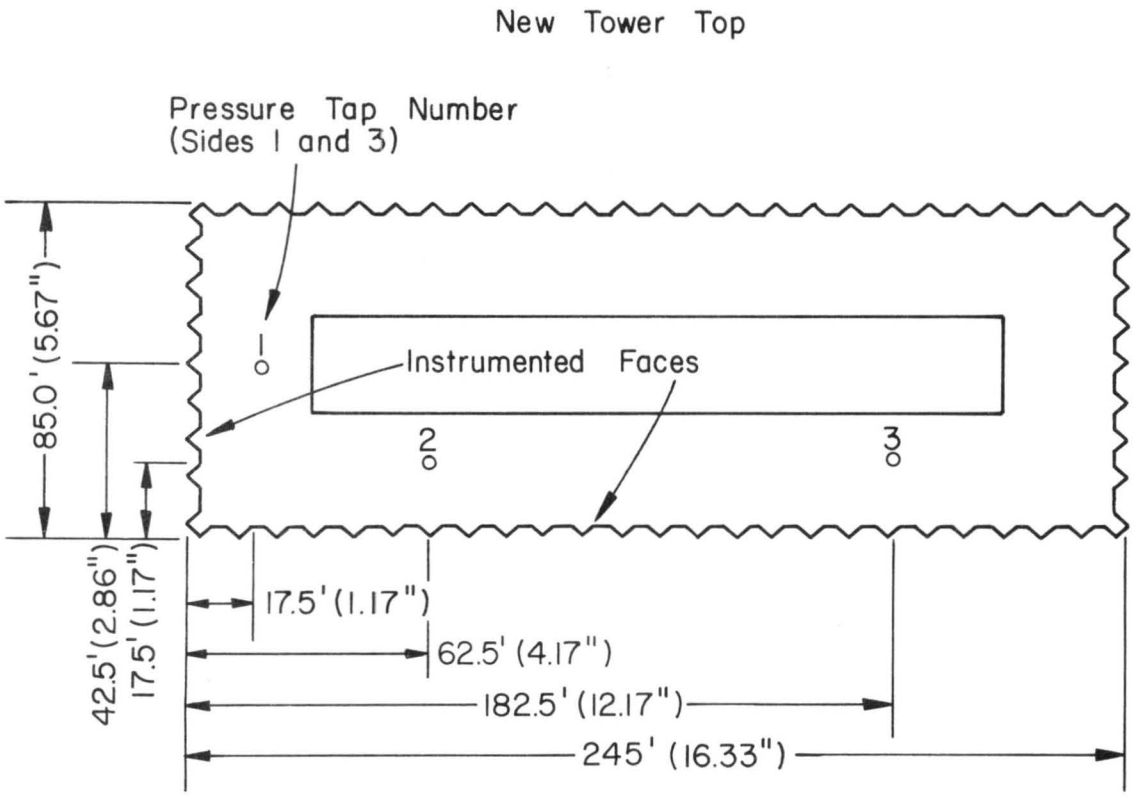


Fig. 2b. Site Plan for the First National Bank.



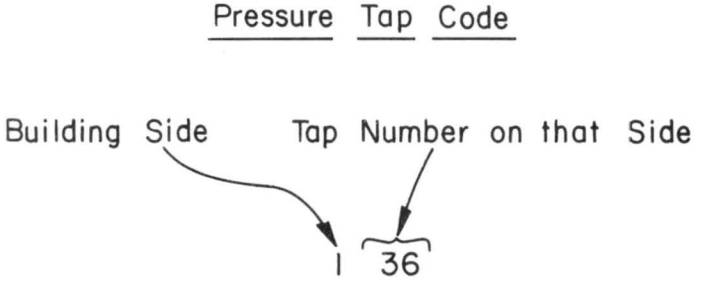


Figure 3a. Pressure tap locations

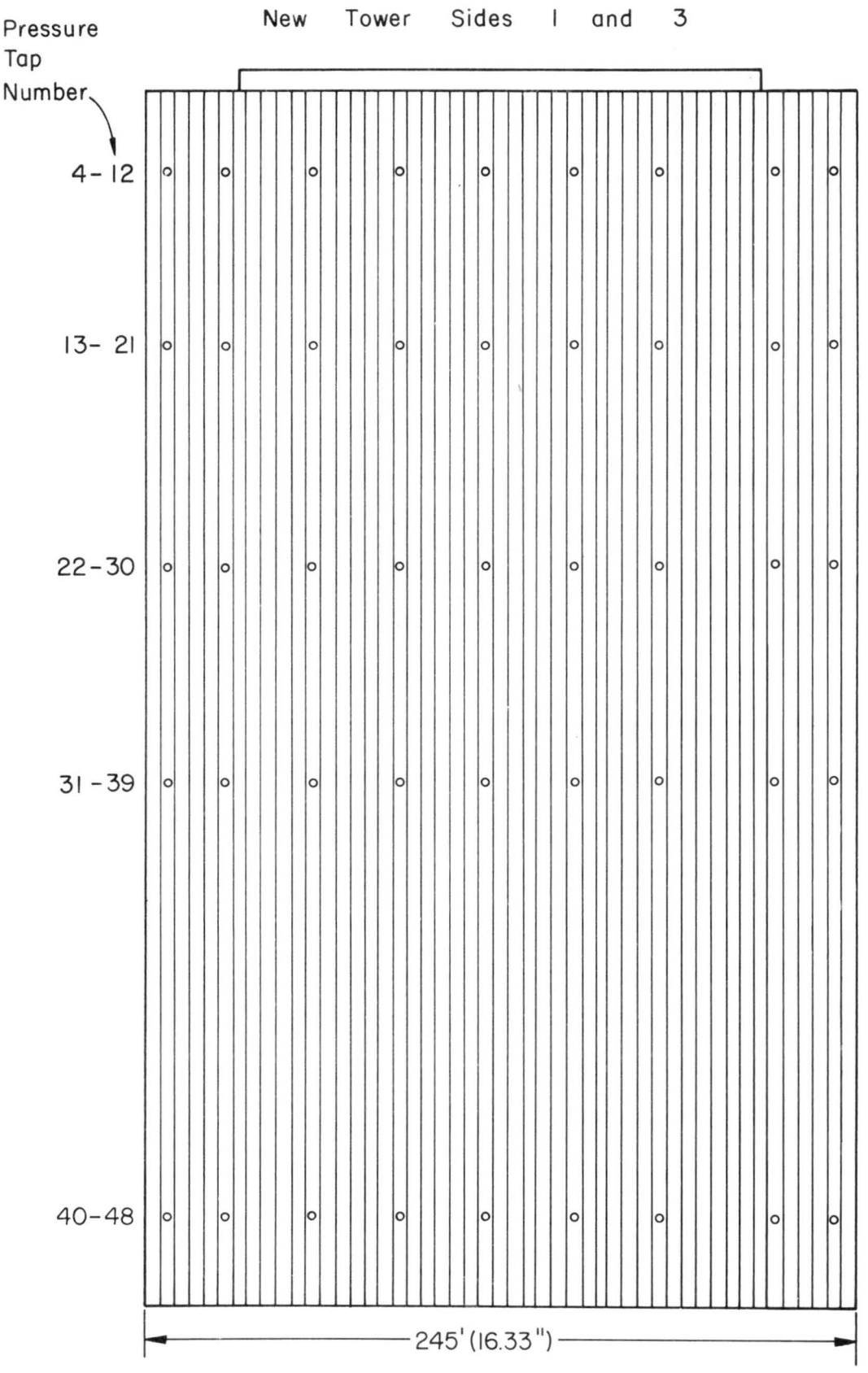


Figure 3b. Pressure tap locations

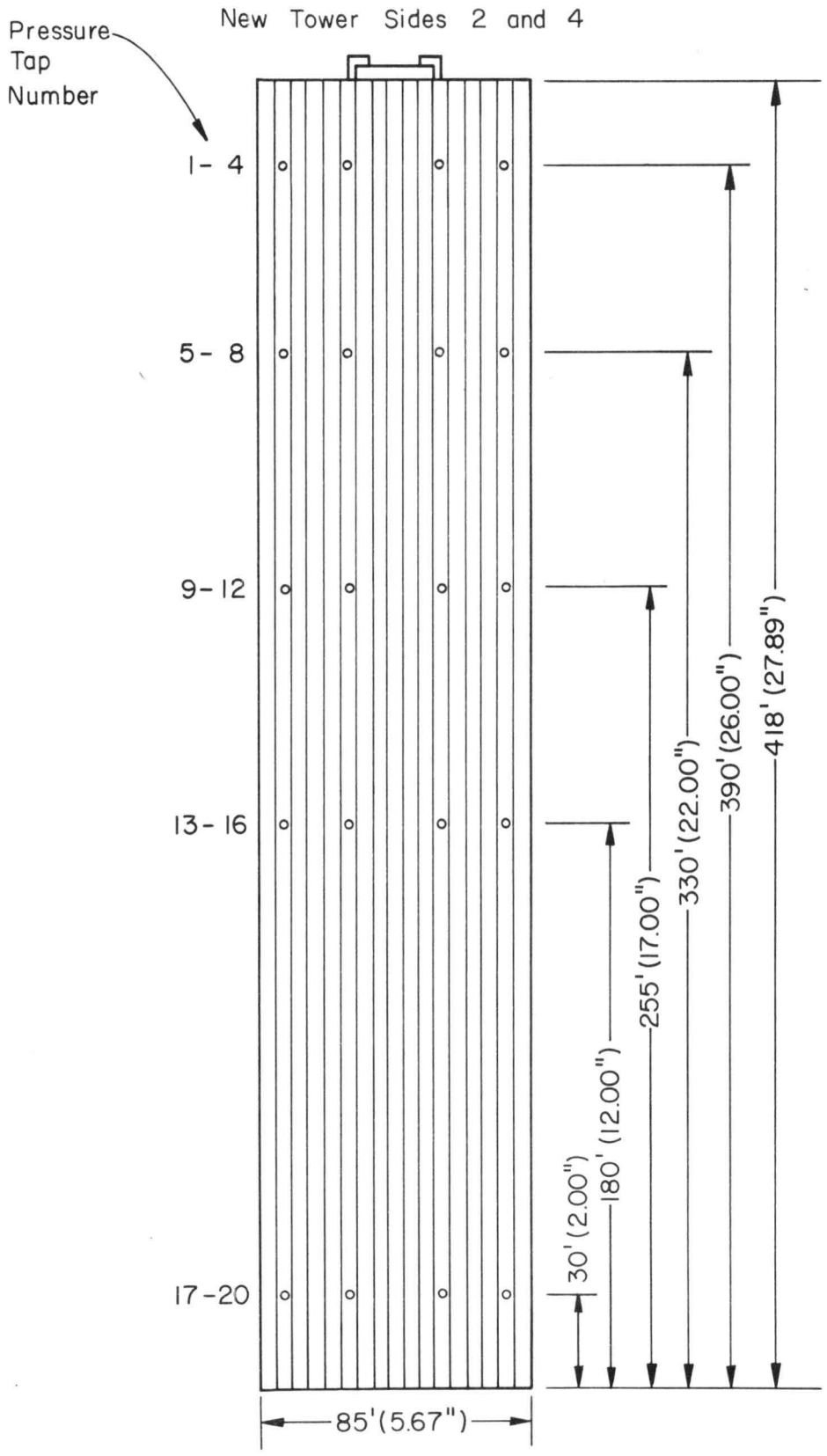


Figure 3c. Pressure tap locations

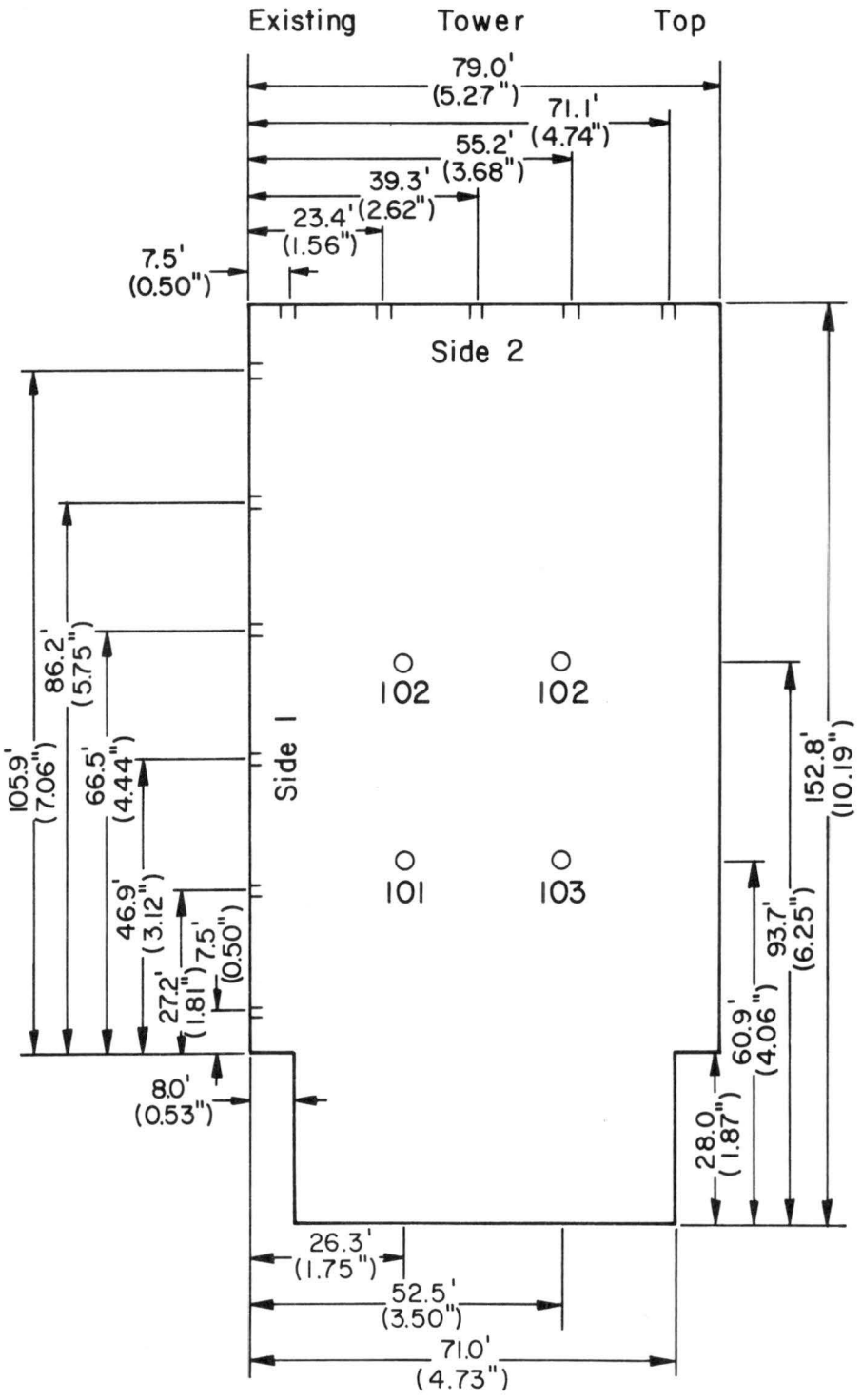


Figure 3d. Pressure tap locations

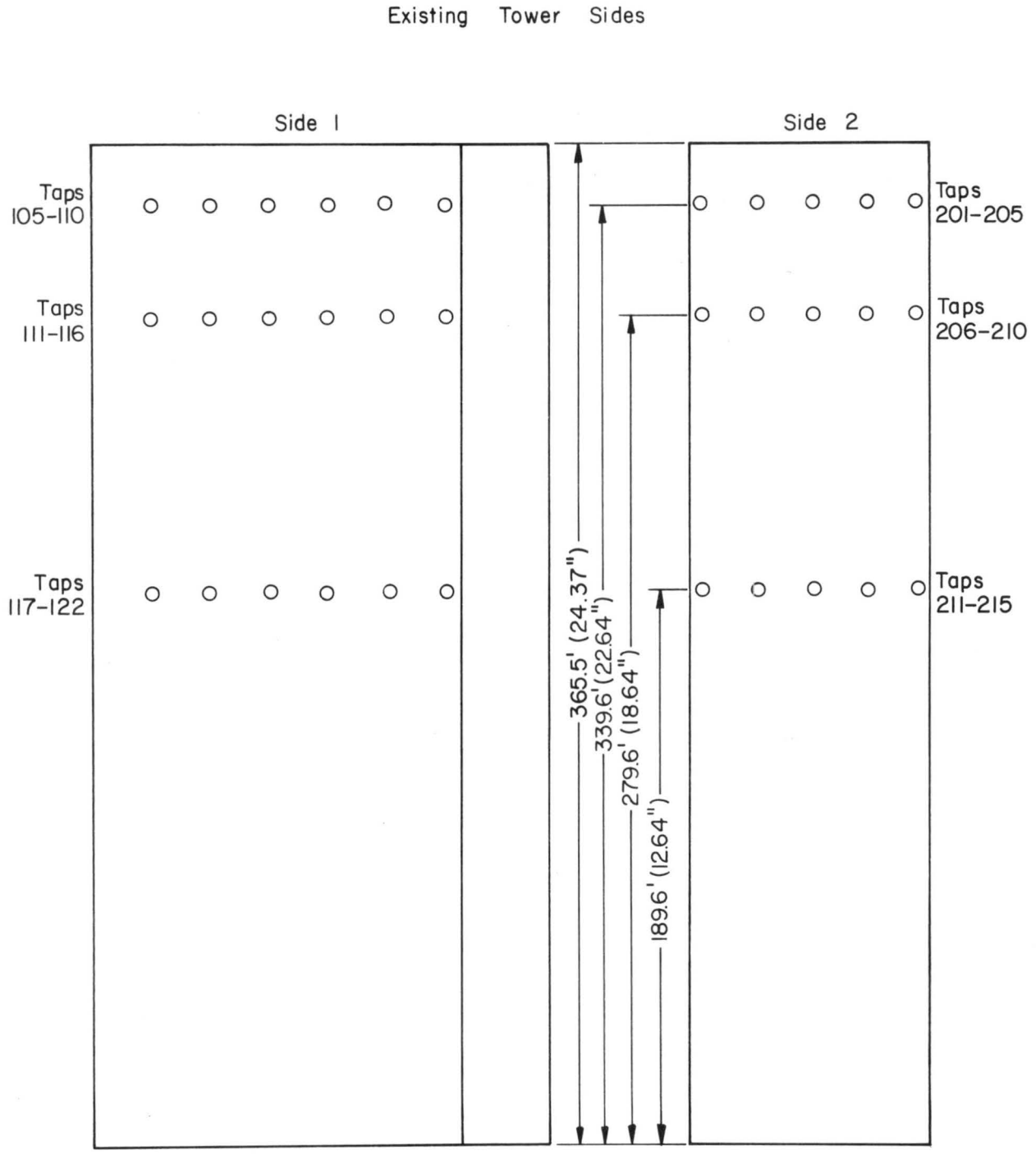


Figure 3e. Pressure tap locations

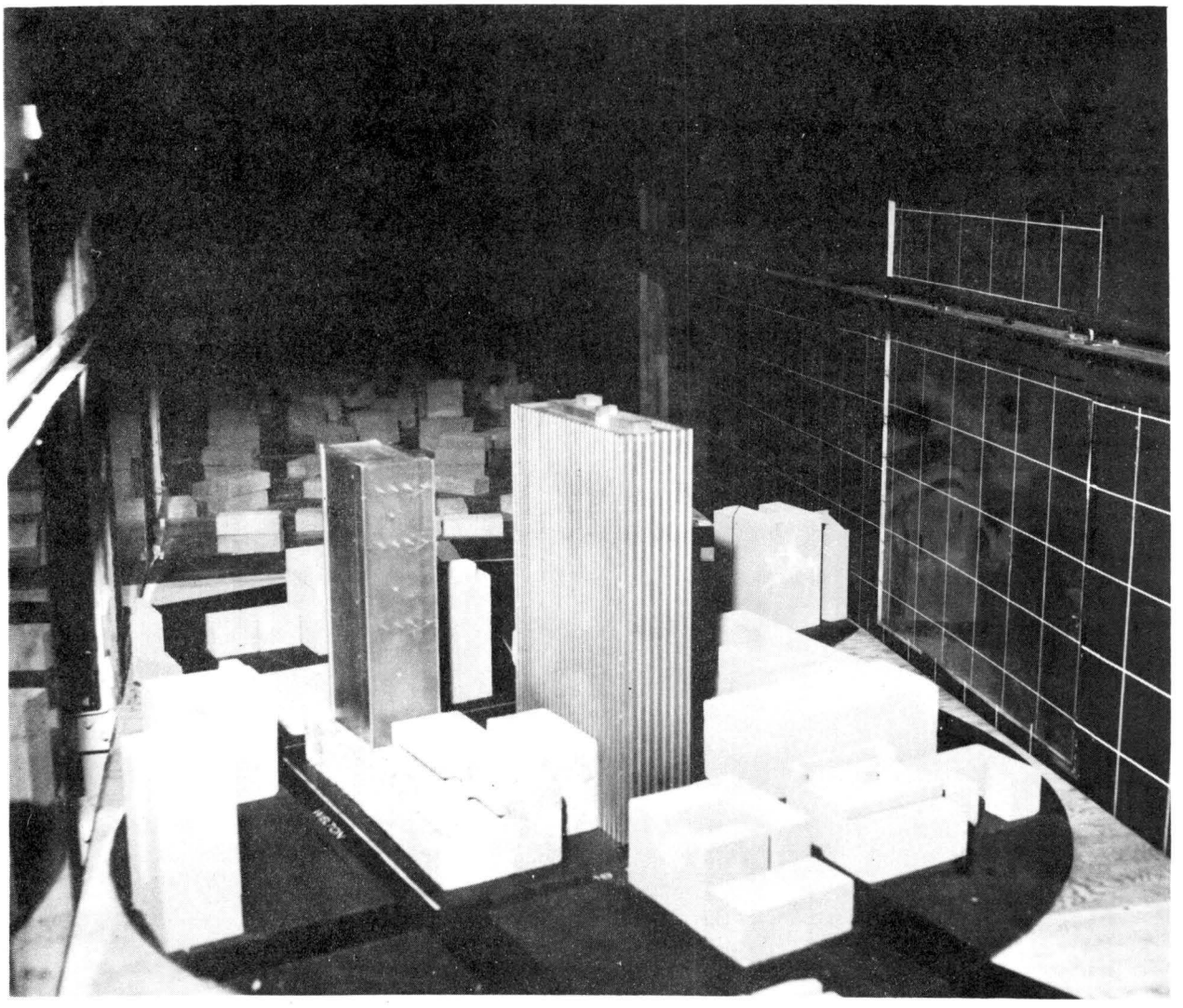


Figure 4. Completed Model Installed in the Wind Tunnel.

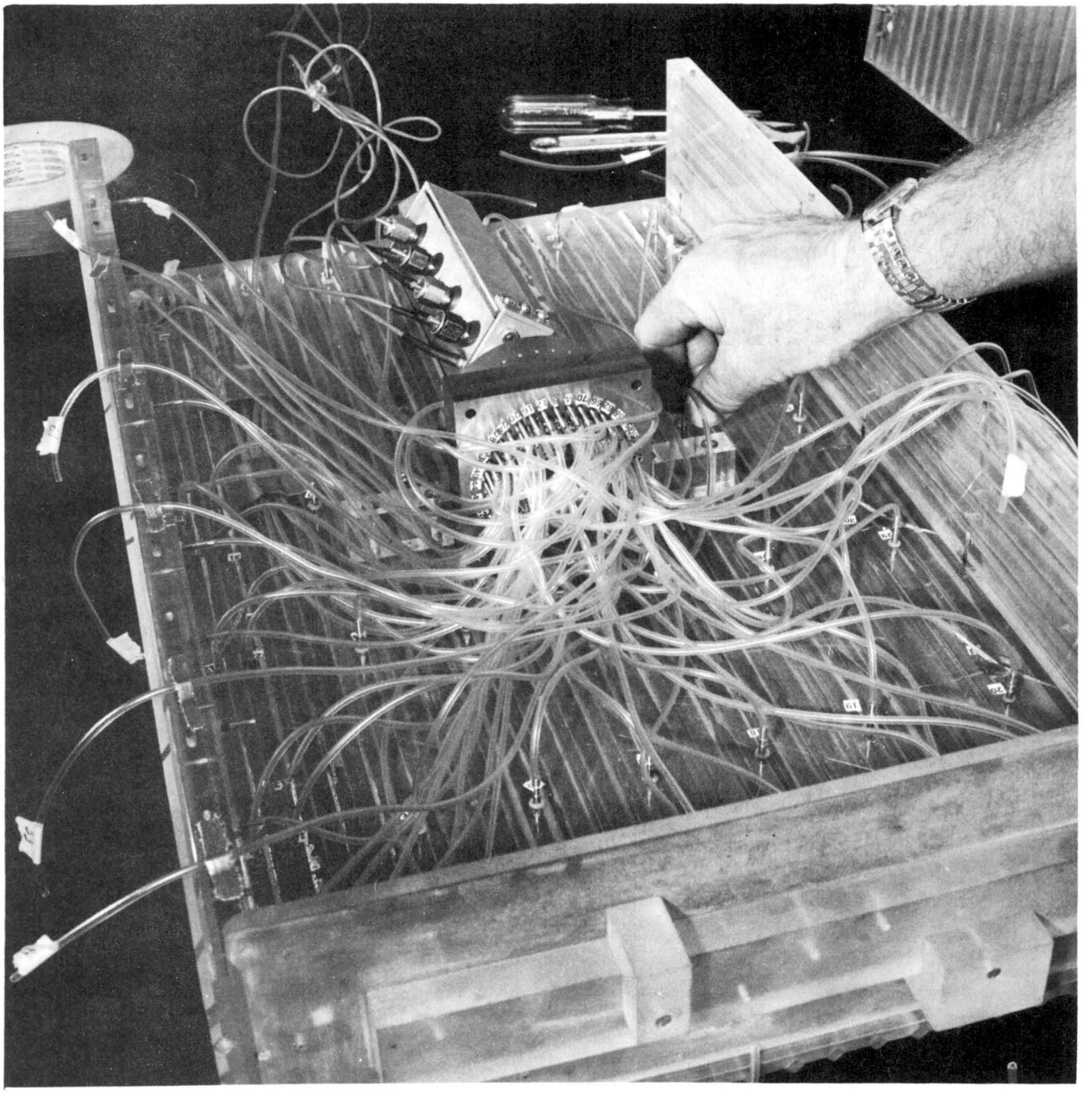


Figure 5. Pressure Switch Installed in the Model.

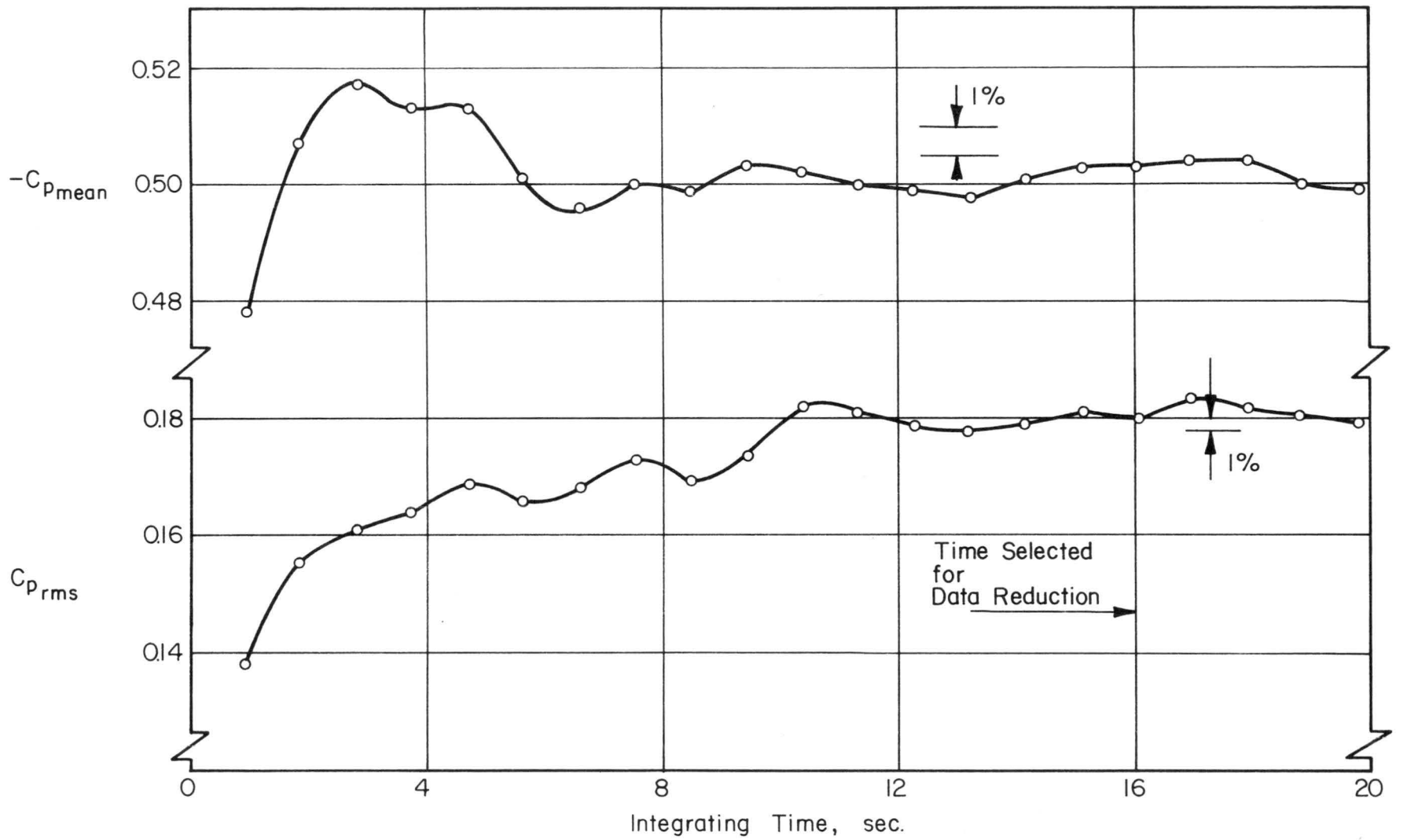


Figure 6. Data Sampling Time Verification

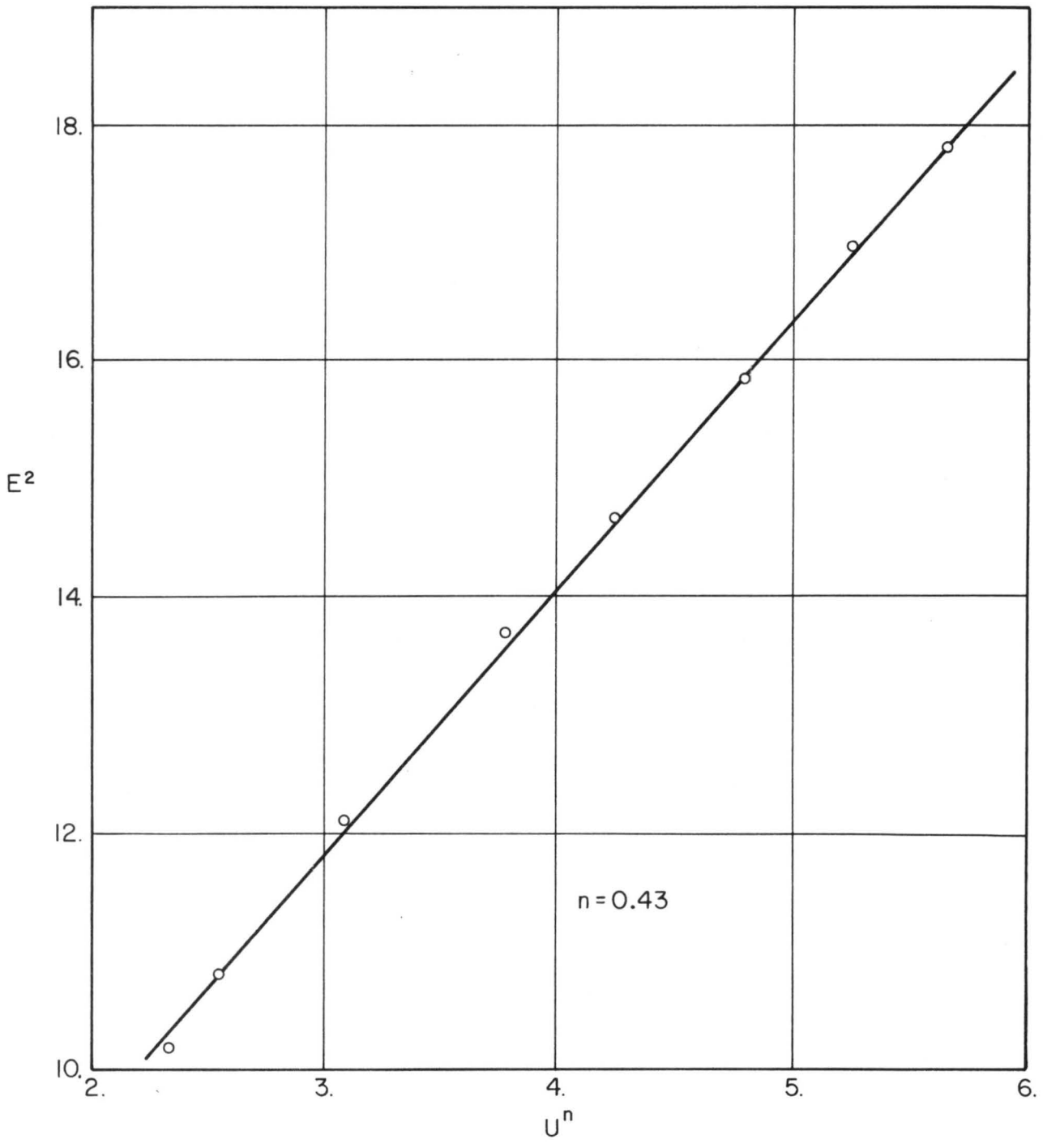


Figure 7. Typical Hot Wire Calibration

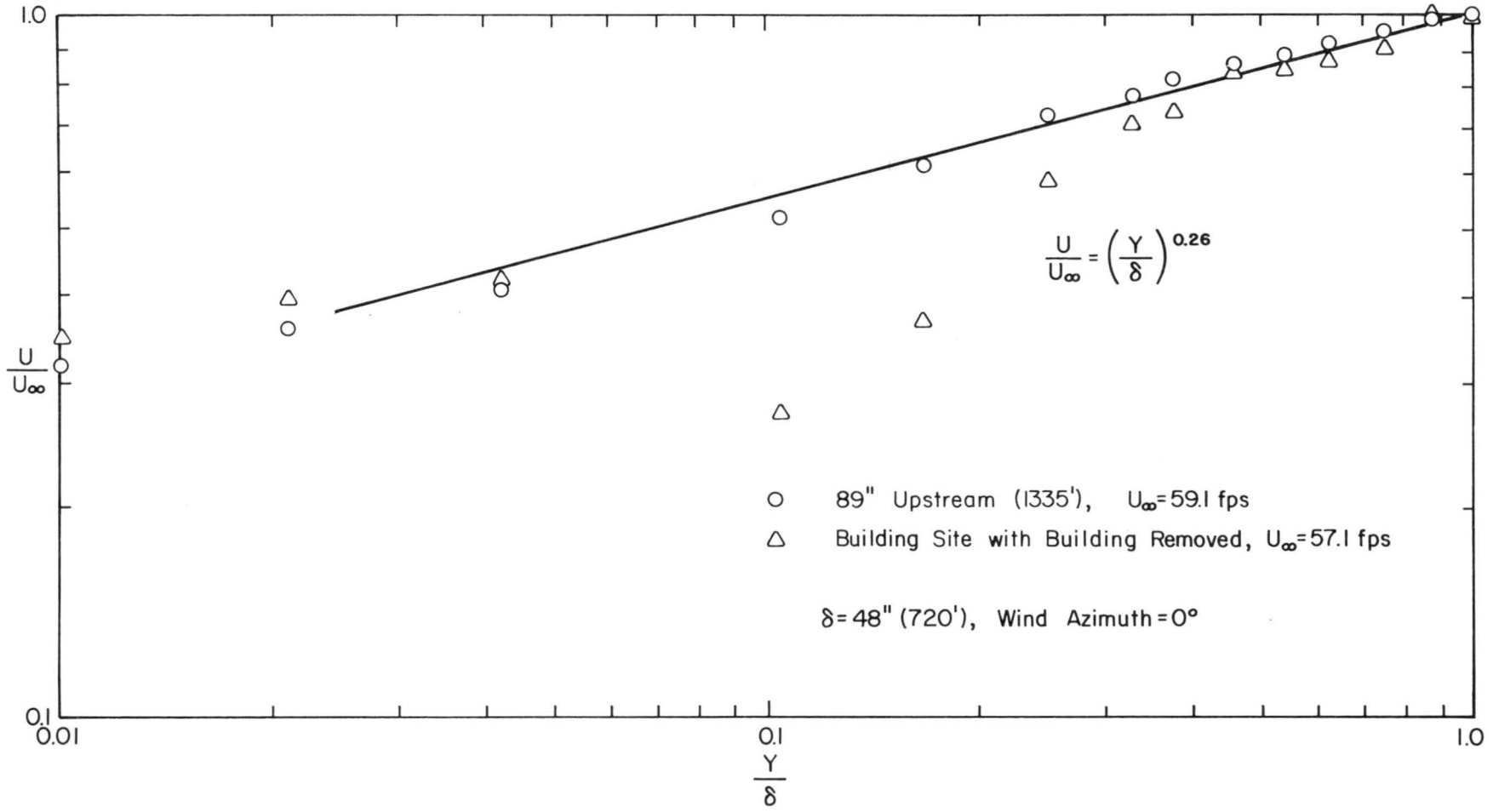


Figure 8a. Mean Velocity Profiles Approaching the Model

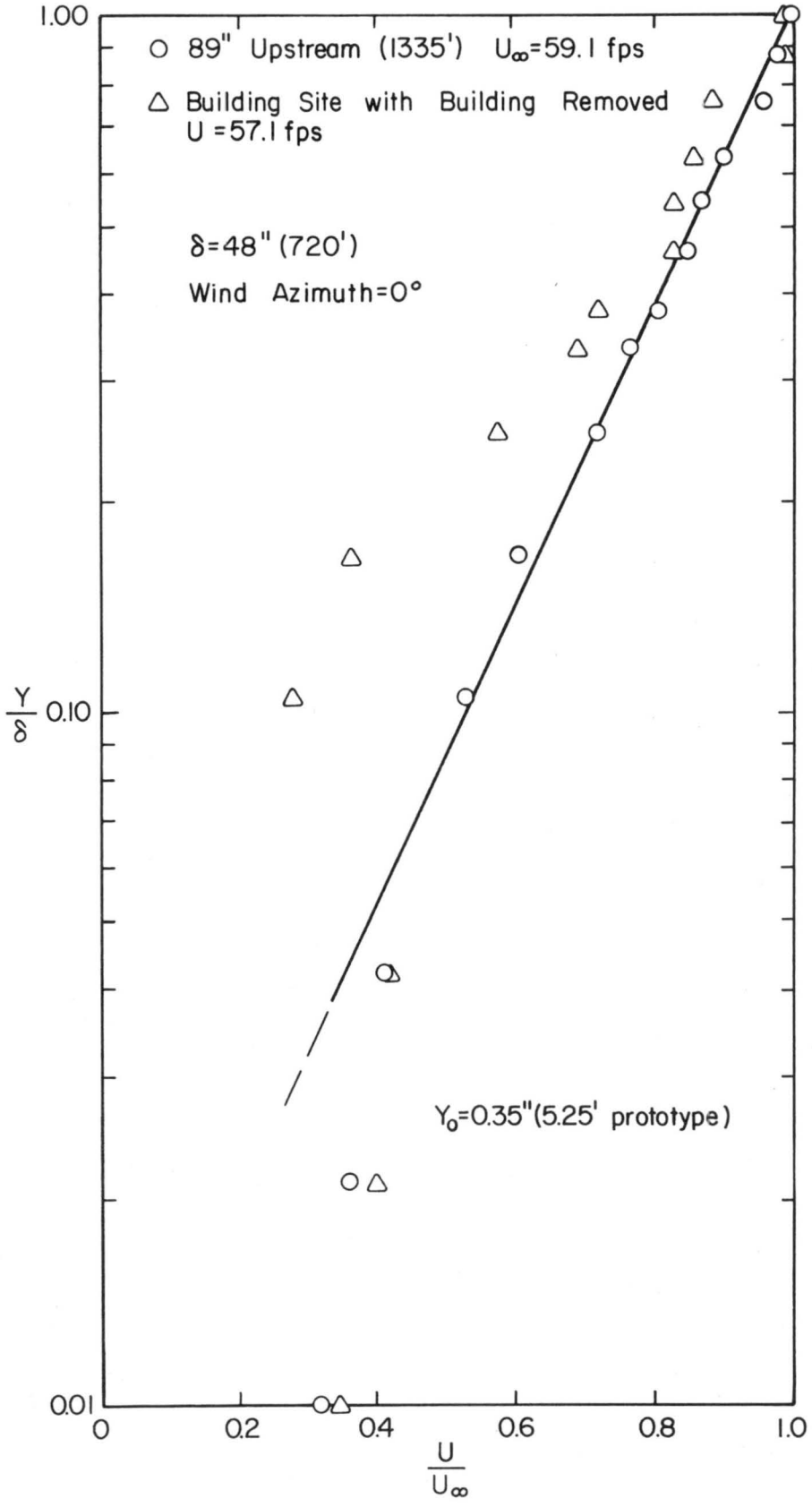


Figure 8b. Mean Velocity Profiles Approaching the Model

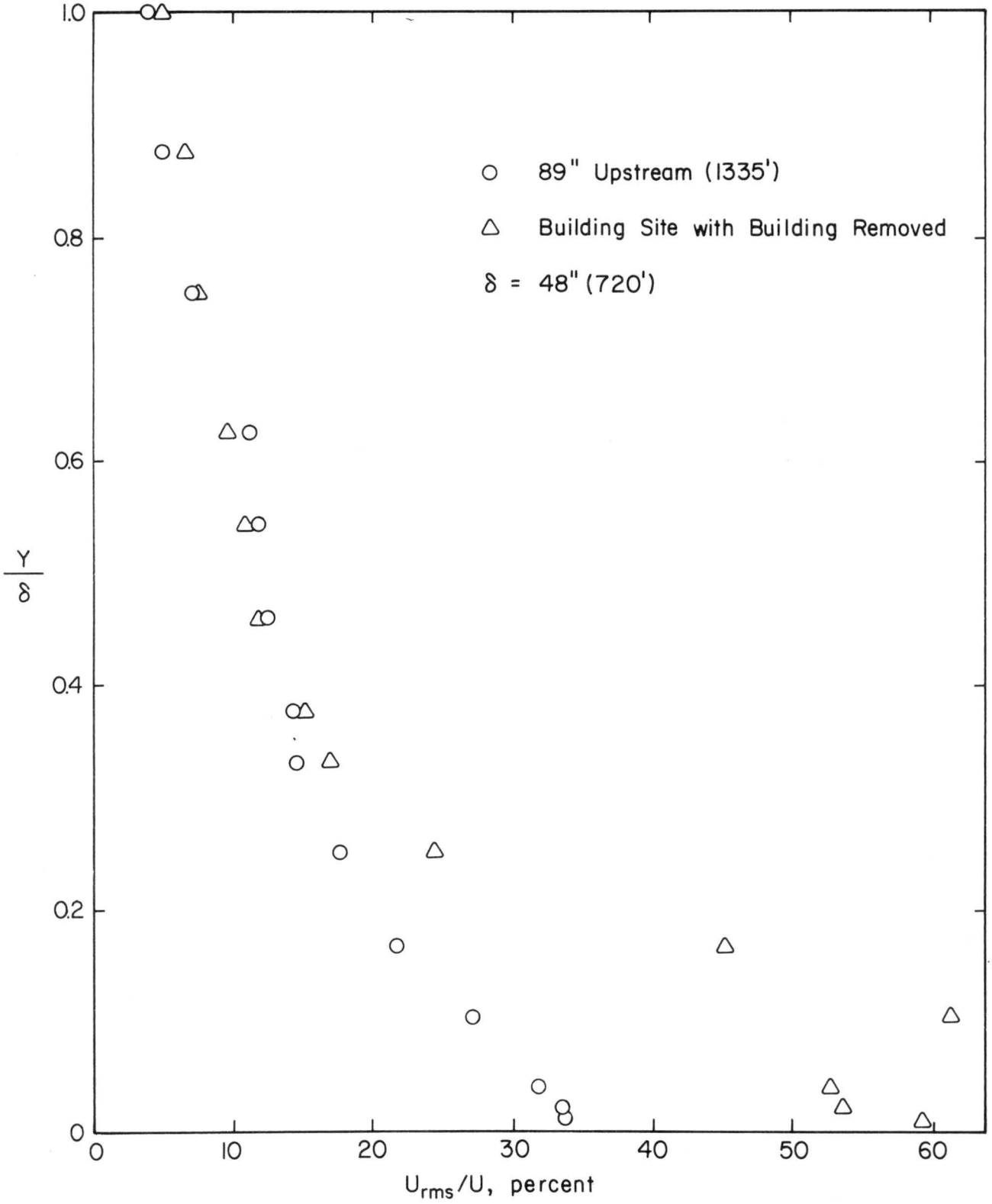


Figure 9. Turbulence Intensity Profiles