WIND PRESSURES ON BUILDINGS

by

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ABSTRACT

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The requirements for rational design for wind loading of structures created by both economic losses caused by damage due to wind and concern for personal safety and comfort of occupants of the structures have resulted in an increased interest in the flow fields around buildings in a turbulent atmospheric boundary layer. Recent advances in experimental techniques have resulted in the ability to study wind loading of structures using specifically designed wind tunnels and appropriate instrumentation.

A wind-tunnel study of a series of model flat-roofed rectangular buildings immersed in thick turbulent boundary layers simulating four typical neutral atmospheric flow conditions was undertaken in order to determine the effects of building geometry and incident flow properties on the wind pressures on these buildings. Measurements were conducted of the mean and fluctuating surface pressures on the buildings including mean and rms pressure coefficients, power spectral density functions of the pressure fluctuations, and cross correlation of the pressure fluctuations. The mean pressures were integrated over the surface of the buildings to obtain mean force and moment coefficients. Detailed measurements of the properties of the approach boundary layer were conducted.

Through the use of a local pressure coefficient based upon a reference velocity in the approach flow at the height of the pressure measurement, the mean pressure measurements were condensed to a form dependent primarily on the side ratio of the building (ratio of adjacent sides) for corresponding locations and wind direction and independent of the approach boundary layer and other features of building geometry. The rms pressures were found to be dependent on the incident flow and side ratio. The mean force and moment coefficients were dependent primarily on the side ratio of the buildings. The power spectral density function of the pressure fluctuations was very different from the power spectral density function of the incident velocity fluctuations. The results of the dissertation are compared with current design procedures and suggestions for modifications of design procedures are presented.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES (continued)

LIST OF FIGURES (continued)

LIST OF FIGURES (continued)

LIST OF SYMBOLS

Fluctuating quantities are denoted by $A = \bar{A} + a$, $\bar{A}$ is the mean component and a is the fluctuating component, $a' = \sqrt{\overline{a^2}}$.

Symbol	Definition
A	Hot film calibration constant
B	Hot film calibration constant
C	Constant, Eq. (4-1)
C_{FX}	Force coefficient, Eq. (3-20)
C_{FY}	Force coefficient, Eq. (3-21)
C_{FZ}	Force coefficient, Eq. (3-22)
C_{MX}	Moment coefficient, Eq. (3-23)
C_{MY}	Moment coefficient, Eq. (3-24)
C_{MZ}	Moment coefficient, Eq. (3-25)
C_{pmax}	Peak maximum pressure coefficient
C_{pmean}	Mean pressure coefficient
C_{pmin}	Peak minimum pressure coefficient
C_{prms}	Root-mean-square pressure coefficient
$Co_{f_1f_2}$	Coherence between functions f_1 and f_2
d	Separation distance, size of cubic roughness elements
E, e	Voltage
f	General function used in data analysis
G_p	Pressure gust factor
G_f	Power spectral density of function f
$G_{f_1f_2}$	Cross power spectral density function between f_1 and f_2
H	Building height
K_z	Height factor

Symbol	Definition
L	Longer side dimension of building
ℓ	Level number
n	Hot film calibration constant
n	Frequency Hz
P_d	Design pressure
P	Pressure
p	Power-law exponent
q_{30}	Reference pressure
R_f	Autocorrelation of f
$R_{f_1 f_2}$	Cross-correlation between f_1 and f_2
r_f	Autocorrelation coefficient
$r_{f_1 f_2}$	Cross-correlation coefficient
S_f	Normalized spectrum of f
s	Side number
T	Time or return period
t	Tap number
U	Longitudinal velocity
$\overline{U}_A$	Eq. (3-26)
$\overline{U}_{T_1}$	Eq. (4-13)
$\overline{U}_{T_2}$	Eq. (4-14)
U_*	Shear velocity
V	Lateral velocity
W	Vertical velocity

LIST OF SYMBOLS (Continued)

Symbol	Definition
W	Narrow building width
x,y,z	Coordinates, Fig. 4, Fig. 12
z_o	Surface roughness length
α	Wind direction
β	Aspect ratio, H/W
γ	Side ratio, W/L
δ	Boundary layer thickness
θ_R	Resultant force direction
η	Reduced variate, Eq. (3-19)
Λ_x	Longitudinal integral scale
ν	Effective fluctuation rate, Eq. (4-7)
ρ	Density of air
τ	Lag time

Subscripts

FS	Full scale
M	Model
$\bar{p}$	Averaged over different boundary layers (Chapter 5)
$\hat{\alpha}$	Sorted for minimum mean pressure coefficient, all α's (Chapter 5)
$\bar{\beta}$	Averaged over different aspect ratios (Chapter 5)

Superscripts

$\bar{\ }$	Time average
$'$	Root-mean-square

Chapter I

INTRODUCTION

The requirements for rational design for wind loading of structures created by both economic losses caused by damage due to wind and concern for personal safety and comfort of occupants of the structures have resulted in an increased interest in the flow fields around buildings in a turbulent atmospheric boundary layer. Recent advances in experimental techniques have resulted in the ability to study wind loading of structures using specifically designed wind tunnels and appropriate instrumentation.

Cermak (1975) has written an extensive review of wind engineering including wind loading of structures. Among many important areas for further research Cermak listed a number relating to surface pressures on structures:

"(1) Determine mean pressure coefficients for a variety of building shapes subjected to a series of different exposures.
(2) Determine extreme value statistics for pressure fluctuations in regions of separated flow, reattachment, and vortex formation.
(3) Determine the effect of turbulence scale and intensity in the approaching wind on pressure fluctuations and separation-bubble geometry.
(4) Confirm the relationship between time scales for pressure fluctuations on a full-scale building and a small-scale model placed in a simulated atmospheric boundary layer."

A major portion of the data concerning surface pressures contained in the present building codes and standards is based on wind-tunnel tests conducted in uniform flows with low incident turbulence intensity. Almost every code or standard has a qualifying comment stating that the applicability of these mean pressure data to a turbulent boundary-layer flow is not fully understood. Also, a number of additional experimental findings from uniform flow past two-dimensional bodies are utilized in the calculation of the dynamic response of a structure. The results concerning the relationship between the statistics of the approach flow and the statistics of the pressure fluctuations on the structure have only been considered in a limited number of cases in the flow of a turbulent boundary layer past three-dimensional bodies.

This dissertation represents one of the first systematic investigations of wind pressures on buildings from the standpoint of a family of building shapes subjected to a standardized set of realistic flow conditions. The primary objectives of this dissertation are to systematically organize the pressure measurements for the range of buildings and boundary layers considered and to isolate relevant geometric and meteorological variables which affect the surface pressure on the buildings.

The scope of work reported is largely experimental utilizing scale models in a boundary-layer wind tunnel. This approach allowed a systematic variation of the parameters of interest in a controlled and readily reproduced environment. The use of scale models in a properly simulated flow is a well established technique in studies of wind loading of structures and was recently reviewed by Cermak (1976). This paper discusses the many applications of wind tunnels to wind engineering problems and deals with the verifications between model and full-scale experiments that have been performed.

The experimental results of this study have been condensed through the use of a local pressure coefficient based upon the velocity profile in the approach flow and a force coefficient based upon an average velocity over the height of the building. Utilizing techniques suggested by Peterka and Cermak (1975) and Davenport (1961a, 1964) the peak pressures have been described by two probability density functions, resulting in the ability to rationally predict peak pressures. Measurements of the spectrum, cross-correlation, and auto-correlation of pressure fluctuations on the surface of the model buildings are reported. The relationship between the pressure fluctuations and the velocity fluctuations in the approach flow has been examined. The experimental findings are summarized and discussed in relation to existing concepts in building codes and standards.

The remaining chapters of the dissertation are organized in the following manner: Chapter II presents a brief summary of available theoretical approaches, previous measurements both in wind-tunnel and full-scale situations, and the salient portions of current building codes and standards. In Chapter III the techniques used in collection and analysis of the experimental data are explained. Chapter IV contains a complete description of the wind-tunnel boundary-layer flows, and an estimate of the scales relating the wind-tunnel situation to a full-scale environment. The experimental results and their relationship to the existing building codes are discussed in Chapter V. The important conclusions and suggestions for logical extensions are summarized in Chapter VI.

Chapter II

BACKGROUND

Due to the complex nature of turbulent shear flows the actual computation of flow fields around or surface pressures on three-dimensional objects in turbulent flows at Reynolds numbers describing either the wind-tunnel or full-scale situation is not within the capability of existing analytical or numerical approaches. The current state of knowledge concerning surface pressures on buildings has developed almost entirely as a result of experimental investigations both in wind-tunnel and full-scale environments. In the future significant progress in the understanding of the phenomena related to surface pressures will continue to depend largely on experimental investigations. However, these experimental investigations should not only provide input to solutions of particular problems, but in addition provide valuable insight into the structure of the complex flow fields surrounding buildings and the relationships between these flow fields and the surface pressures on the buildings. This insight is a useful addition to existing theoretical efforts.

A number of thorough review papers have been written on the subject of wind loading of structures, including prediction of surface pressures. The ASCE Task Committee on Wind Forces Final Report (1961) provided an extensive review of available data and techniques including an extensive bibliography. More recent summaries include a review by Parkinson (1974) describing mathematical models to describe flow-induced vibrations, a review of full-scale measurements by Davenport (1975) and two papers by Cermak on the entire field of wind engineering (Cermak, 1975) and with the aerodynamics of buildings (Cermak, 1976).

These papers all review broad areas of interest related to wind pressures on buildings, including a historical account of the development of techniques and concepts, and therefore only the literature directly related to surface pressures on buildings is discussed in the following sections.

Theoretical Approaches

A number of solutions for mean pressure in the region of a stagnation point are available. These solutions would be of value in limited regions of the upstream (windward) surface only. Exact solutions for viscous laminar stagnation flow for both two-dimensional and axisymmetric cases have been obtained by Hiemenz and Homann. These solutions are discussed by Yih (1969), and are valid for uniform approach flow and either two-dimensional or axisymmetric bodies. They both predict a pressure coefficient based on the approach velocity of 1.0 at the stagnation point and decreasing pressure coefficients away from the stagnation point. Marshall (1968) considered stagnation flow on the surface of a disc in a turbulent flow, but was not able to expand on the theoretical solution of Homann.

Parkinson and Jandali (1970) developed a theory describing two-dimensional incompressible potential flow external to a symmetric bluff body and its wake. The application of this theory requires specification of the location of separation points on the bluff body and the base pressure in the separated regions. The theory is limited to two-dimensional bodies because of the use of transformations in the complex plane in the solution technique. Mean pressures can be calculated for any shape amenable to the technique for attached regions of the flow. While useful in computing drag on two-dimensional bodies, this approach is of little value in the analysis of turbulent flow past three-dimensional bodies.

The most recent development is a theory due to Hunt (1973) which predicts the flow around two-dimensional objects in a uniform flow with isotropic turbulence. This approach makes use of rapid distortion theory in predicting how the turbulence in the approach flow is affected by the flow around the body. The existing theory is capable of predicting both mean and fluctuating surface pressures in regions where there is no flow separation. To date, this is the only theoretical approach which allows prediction of fluctuating surface pressures. However, the most severe pressures which a structure experiences as a result of wind loading occur in separated regions. The ability to theoretically predict these pressures remains a challenge for further research.

Previous Wind-Tunnel Studies

The previous investigations of surface pressures on bodies can be separated into two distinct classes, two-dimensional and three-dimensional shapes. Within each of these classes, some investigations involved measurement of mean pressures only while others also reported properties of fluctuating pressures (root-mean-square, spectra, correlations, etc.). Selected studies involving mean pressures for both the two and three-dimensional cases are described, and then relevant studies of fluctuating pressures for both cases are discussed. In all cases only literature relating to bluff shapes with fixed separation locations is considered.

Mean Pressure Measurements on Two-Dimensional Shapes - A recent study by Lee (1975) reports measurements of surface pressure on a two-dimensional square prism. Lee measured mean pressure coefficients for a number of angles of approach flow and for incident turbulence intensities of up to 12.5 percent. He concluded that an increase in the turbulence intensity in the flow normal to the prism produced a more complete pressure recovery on the side faces and a reduction in the base pressure. Mean pressure measurements on two-dimensional rectangular prisms of various side ratios (0.2 to 3.0) have been reported by Bearman and Trueman (1972) and Bostock and Mair (1972). These measurements show a dependence of the base pressure coefficient on the side ratio of the prisms. The base pressure increased (more complete recovery) as the length of the side face increased relative to the windward face. Both of these studies were conducted in uniform flows with very low turbulence intensity in the approach flow. The effect of increased incident turbulence intensity on the forces acting on a two-dimensional prism have been studied by Laneville (1973) and Laneville, Gartshore, and Parkinson (1975). Both of these studies show that increased incident turbulence intensity for a fixed side ratio reduced the drag acting on the body and therefore increased the base pressure.

Mean Pressure Measurements on Three-Dimensional Shapes - Mean pressure measurements on three-dimensional bodies have been carried out in a uniform flow by many previous investigators. These studies were conducted before the requirements for modeling the atmospheric boundary layer were adequately understood, yet they remain the major source of data available. The early wind-tunnel studies have been summarized by

Cermak (1975, 1976). An extensive series of measurements conducted by J. Ackeret of the Institute for Aerodynamics of Zurich form the basis for most modern building codes and standards (Sachs, 1974). These measurements were first reported as a portion of the Swiss Building Code. They are available in the ASCE Task Committee on Wind Forces (1961) and Sachs (1974). These data are assumed to have been measured in a uniform flow. They include various shape structures and report pressure coefficients averaged over a side. Another extensive study is that of Chien, Feng, Wang, and Siao (1951). This report is a summary of a program carried out at the Iowa Institute of Hydraulic Research from 1946-1951 and includes mean pressure contour plots for hangar-type structures, thin walls, and block-type structures with gabled roofs. The data analysis for the block-type structures concentrated on the maximum values of the average positive and negative pressures over the roof and the vertical walls. The data are reported in terms of a pressure coefficient based upon the uniform velocity in the approach flow. A maximum average positive pressure coefficient of 0.9 and a minimum average negative pressure coefficient of -0.9 are reported.

Leutheusser and Baines (1967) in a discussion of similitude problems in building aerodynamics considered a number of previous measurements of pressure coefficients on block-type structures in a uniform flow. They found a wide range of disagreement among available results. The primary cause of the differences was attributed to the method used to mount the models in the wind tunnel. Models which had been mounted on ground plates which did not extend a distance in the downstream direction equal to the dimension of the wake were found to predict smaller negative pressures in separated regions than cases with longer ground plates or cases using floor-mounted models. On the basis of additional tests using ground plates of various lengths, they concluded the differences between the previous tests were due to incomplete wake sealing with the ground plane.

Two additional studies were reported by Katsura (1970) and Tachikawa (1970). Katsura measured mean pressure distributions which are comparable to the results of Chien et al. (1951) for the upwind face, but which indicate less negative pressures in separated regions than the results obtained by Chien. This difference is about 30 percent and is probably due to the increased turbulence intensity in the study conducted by Katsura. Tachikawa conducted a unique study in that he utilized a "natural" wind tunnel, mounting his models on the roof of a four-story building. His small-scale models were in a uniform flow due to their small size relative to the gradient in the approach wind. He observed high negative pressures on lateral walls near the leading edge and attributes these pressures to local separation and reattachment. The mean pressure measurements reported by Tachikawa in separated regions are comparable to those of Katsura suggesting a significant effect of incident turbulence intensity even in a uniform flow.

A number of previous investigators have studied mean pressures on three-dimensional buildings in boundary-layer flows. Baines (1963) studied two building shapes in both uniform and boundary-layer flows for wind perpendicular to one building face. The mean pressure distribution on a cubic model in a uniform stream compares favorably with that of Chien, et al. (1951). Although Baines did not report the free-stream turbulence level in the uniform flow situation, because of the details of his wind tunnel, it is assumed it was quite low. Baines provided an excellent physical description of the differences in the flow patterns for the uniform and boundary-layer approach flow. On the basis of his study, several recommendations were made concerning the applicability of uniform-flow mean pressure coefficients to a building subjected to boundary-layer flow. Baines suggested using uniform-flow data to predict loads in boundary-layer flows by using the velocity at the height of the building as a reference. In addition he suggested that closely spaced buildings be designed for constant velocity conditions.

Jensen and Franck (1965) conducted an extensive program of mean pressure measurements on a series of small models immersed in turbulent boundary layers and compared them to measurements taken on a small house (3.05 m x 1.50 m x 1.63 m) in a natural wind. On the basis of these comparative studies, Jensen verified his model law (Jensen, 1958), that the ratio of building height to surface-roughness length should be matched in wind tunnel tests. Jensen and Franck studied a number of different geometries in several boundary layers for wind directions normal to the walls of the buildings and at 45° to the walls. They presented a quantity of useful data, but did not attempt to generalize the results. All pressure coefficients were referenced to the velocity in the approach boundary layer at the height of the roof of the building.

In addition to their examination of uniform flow cases, Leutheusser and Baines (1967) considered the case of a building immersed in a boundary layer and concluded that the ratio of the thickness of the boundary layer to the height of the building is also an important similitude parameter in model studies. They used a pressure coefficient based upon the velocity in the approach flow at the height of the building. This choice of coefficient probably biased their conclusions as the building height became larger than the boundary layer thickness.

Many other wind-tunnel tests have been conducted on specific building shapes, but none have resulted in any generalized results applicable to other situations. These studies have normally been made during the design of a structure and the results apply only to one structure and its surroundings.

Fluctuating Pressure Measurements - Fluctuating pressures have been measured by a much smaller number of investigators, primarily because of the requirements for more sophisticated instrumentation. Lee (1975) measured fluctuating pressures on a two-dimensional square prism in both uniform and turbulent flows. Two important measures of the fluctuating surface pressures were considered, the root-mean-square (rms) pressure coefficient and the space correlation of the fluctuations on the surface of the prism. Lee found the rms pressure coefficient on the upwind surface was increased with increasing turbulence intensity in the approach flow while the rms pressure coefficient decreased on the side and rear faces with increasing turbulence intensity in the approach flow. Lee explained this reduction as being a result of a downstream movement of the vortex formation region with increasing turbulence intensity and an associated reduction in the pressure fluctuations on the downwind surface of the prism. The correlation between pressure at two fixed locations on the surface decreased with increasing turbulence intensity, a trend also observed by Vickery (1966). Unfortunately in these studies the effect of increasing turbulence intensity on the scale of turbulence in the approach flow was not measured, so the trend in the space correlation of the surface pressures may be a result of either a decrease in the scale of turbulence in the approach flow or directly a result of the increased turbulence intensity in the approach flow. Kao (1970) found that the impinging turbulent velocity fluctuations were strongly and positively correlated with the fluctuating pressures in the stagnation region on the front face of a rectangular prism. This fact precludes any judgements as to the effect of incident turbulence intensity on pressure correlations without information concerning the scales of turbulence in the approach flow.

Very few measurements of fluctuating pressure on three-dimensional bodies are available even though Vickery (1966) concluded:

> "In both smooth and turbulent flow the fluctuating pressures are sufficiently large to warrant attention in regard to both the dynamic response of a structure and the magnitude of instantaneous local pressures on a face."

Marshall (1968) measured fluctuating surface pressures near an axisymmetric stagnation point. In his study he considered the relationship between incident flow characteristics and pressure fluctuations. He found the pressure fluctuations were related to the velocity fluctuations in the incident flow through a complex mechanism. The energy associated with some ranges of wavelength was amplified while it was reduced in other ranges of wavelength. Integral scales of pressure fluctuations were found to be larger than the corresponding integral scales in the approach flow.

Measurements of fluctuating pressure on a cube in both uniform and boundary-layer velocity fields were made by Keffer and Baines (1962). This study reported much higher values of rms pressure coefficient in boundary-layer flow than in uniform flow. This increase was primarily caused by the higher turbulence levels in the boundary-layer flow. Much larger values of the rms pressure coefficient have been reported in studies of specific buildings such as those reported by Peterka and Cermak (1973). Values of rms pressure coefficient in this study were two to three times as large as those reported by Keffer and Baines for the boundary-layer case.

Peterka and Cermak (1975) considered the probability density function of fluctuating pressures on a model structure immersed in a turbulent boundary layer. They reported several important conclusions: (1) probability densities of pressure fluctuations fall into two basic classes--one for mean pressure coefficients greater than -0.1 and another for mean pressure coefficients less than -0.25 (pressure coefficients based on the free-stream velocity above the boundary layer); (2) probability densities for mean pressure coefficients greater than -0.1 are nearly Gaussian; and (3) probability densities for mean pressure coefficients less than -0.25 are skewed in a negative direction such that the probability for large negative fluctuations of six standard deviations is four orders-of-magnitude greater than for a Gaussian distribution. This was the first reported measurement of probability densities of fluctuating pressures in a wind-tunnel generated boundary-layer flow. These findings are extended in this dissertation.

Full-Scale Measurements

A major portion of the full-scale measurements of wind effects on structures have been to define the overall response of the structure to wind loading. Very few studies have considered local pressures and in particular fluctuations of local pressures. Davenport (1975) summarizes the history of full-scale measurements and outlines many of the difficulties encountered particularly in pressure measurements. The goal of full-scale measurements is actually twofold--(1) to understand the basic phenomena causing the wind loads and, (2) to correlate measurements with existing wind-tunnel measurements of the same building. Due to the costs of full-scale investigations, and the random nature of the natural wind, the second goal is of greater importance. Dalgliesh (1970) stated,

> "The main objective (of full-scale measurements) is the gathering of essential field data for the development and checking of wind tunnel techniques so that eventually they can be used with confidence for the determination of wind effects on buildings and structures."

Dalgliesh (1970) reported measurements of mean pressures on a 34-story office building in downtown Montreal, Canada. The study was limited to 49 measurement locations at two levels on the building. Because of constraints imposed by the setting of the building, the reference velocity was measured at a second location 500 m away from the building. A reference static pressure was used which was an average of the internal pressure in the building. A correction technique was employed in order to convert this pressure to an equivalent static pressure corresponding to the wind-tunnel tests. This field study and the corresponding wind-tunnel tests indicated good agreement between both sets of measurements of mean pressure coefficients.

A much more extensive program has recently been described by Dalgliesh (1975). This study was conducted on the 57-story Commerce Court Tower located in Toronto, Canada. Both mean and fluctuating pressures were measured at four levels utilizing twelve tap locations at each level. An internal static reference pressure was used. The reference velocity was measured on a mast mounted on the roof of the building. The use of an automated data-collection system increased the ability to acquire data rapidly. In the comparison with wind-tunnel tests the problem of reference static pressure was solved by picking one reference tap on both the actual building and wind-tunnel, forcing agreement of the mean pressure coefficient at this location, and determining a fixed correction factor to apply to the full-scale data. The initial results indicate good agreement between full-scale and wind-tunnel data for both mean and rms pressure coefficients over a wide range of approach wind directions.

Eaton and Mayne (1975) have reported preliminary findings of a program directed toward determination of wind pressures on low-rise (residential) buildings. This study involved measurements of both mean and fluctuating pressures. No wind-tunnel tests have yet been conducted to simulate wind pressures on the full-scale building. Melbourne (1971) presented limited mean pressure measurements taken in both full-scale and wind-tunnel environments of the Menzies Building on the campus of Monash University in Melbourne, Australia. His findings showed good agreement between the two sets of measurements of mean pressures.

Various measurements of fluctuating pressures have also been reported in many of these studies. Dalgliesh (1970) showed agreement between full-scale and wind-tunnel measurements of the power spectral density of fluctuating pressures. Dalgliesh (1971) also measured full-scale probability density functions of the peaks of the fluctuating pressures and related them to a theoretical consideration (Davenport, 1961a, 1964). These measurements were carried out primarily on the windward face of a structure.

A summary of an extensive program of full-scale measurements and corresponding wind-tunnel tests has been given by Newberry, Eaton and Mayne (1973). They found the spectra of the pressure fluctuations on the windward face of the building similar to the velocity spectra in the approach wind, but they did not observe a similar relationship on the other three faces of the building. The integral scale of the pressure fluctuations was observed to be larger than the integral scale of the approach velocity fluctuations. A limited study of peak pressures was conducted and the results compared with those of Dalgliesh (1971). Larger peaks were observed in this study than those observed by Dalgliesh, but it should be noted that this study involved both positive and negative pressures while Dalgliesh considered primarily positive pressures.

A wide variety of measurements of fluctuating surface pressures on the Menzies Building in Melbourne, Australia has recently been reported by Holmes (1976). Holmes measured power spectral density functions, cross-correlation functions, and coherence functions of both the surface pressures on the building and of the turbulence in the approach flow. These studies are compared with wind-tunnel measurements in Chapter V.

Building Codes

The sections of many of the building codes and standards relating to wind loads have undergone major revisions in the past ten years, and will probably continue to be updated in the future. There are many reasons for these changes including more sophisticated wind tunnel techniques, more full-scale measurements, and an improved understanding of the flow fields around bluff bodies. All of these advances allow a more accurate assessment of the wind loads a structure can be expected to experience during its designed lifetime. Wyatt (1971) has written a brief review of the wind loading specifications of twenty-four different countries pointing out both similarities and differences among the various specifications. In order to relate the findings of this dissertation to a few of these building codes and standards, a short summary of the techniques used in three codes will be presented. The codes or standards are: (1) American National Standard Building Code Requirements for Minimum Design Loads in Buildings and other Structures, ANSI A58.1-1972 (1972), (2) Canadian Structural Design Manual, Supplement No. 4 to the National Building Code of Canada (1970), and (3) Code of Basic Data for the Design of Buildings, Chapter V, Loading, Part 2 Wind Loads, British Standards Institution (1972).

Each of these codes provides a procedure for calculating a design pressure using approaches that are similar. In the nomenclature of the ANSI standard (ANSI, 1972, eq. 6 and eq. A6), the design pressure at a location on a structure, P_d, is given by:

$$P_d = C_p K_z G_p q_{30} \tag{2-1}$$

where P_d is the design pressure, C_p is a mean pressure coefficient,

K_z is a height factor which takes the variation of velocity with height in the atmospheric boundary layer into account, G_p is a gust factor (in this case for parts and portions of the structure), and q_{30} is the basic wind pressure at a height of 9.1 m above the ground based on the annual extreme fastest-mile. The "simple procedure" of the Canadian Code uses the same approach as the ANSI standard. The Canadian Code also includes a "detailed procedure" which uses a similar formulation although the gust factor, G_p, and the height (or exposure) factor are computed for the specific design case rather than taken from a table. The British Code also uses this type approach, although the gust and height factors are defined based on a velocity instead of a dynamic pressure and are therefore just the square-root of the factors used in the other approaches.

The choice of reference velocity or reference wind pressure is not relevant to this dissertation. The techniques used are discussed by Davenport (1960), Thom (1968), and Shellard (1962). All of these techniques predict a design wind velocity or pressure for a specified recurrence interval at a standard reference height above the ground. Once this velocity is specified, the important task of translating it into a design wind pressure follows.

All of the codes recognize the effect of the atmospheric boundary layer on the design and include a provision for the increase of velocity with height. The factor K_z, the height or exposure factor, provides an increase in design wind pressure with height according to a power-law variation:

$$\frac{\overline{U}(z)}{\overline{U}(10)} = \left(\frac{z}{10}\right)^{p} \tag{2-2}$$

where $\overline{U}(z)$ is the mean velocity at a height z above the ground, $\overline{U}(10)$ is the mean velocity at a height of 10 m above the surface, and p is the exponent of the power-law profile. The codes all allow for either three or four choices of p which are dependent upon the features of the surface upwind of the building under consideration. Because most standard meteorological data is taken at a reference height of 10 m, this height is taken as the reference. The existing data used for reference wind speeds or pressures are all based on this 10 m reference height in one of the exposures, normally the most open. The height or exposure factor therefore accounts for both the increase of wind speed with height and the difference in upwind exposure. Davenport (1960) described the relationship between surface roughness and velocity profiles and introduced the categories now in general use.

The values of the mean pressure coefficient, C_p, used in the various codes are similar. They are virtually all obtained from wind-tunnel tests conducted in low-turbulence uniform-flow environments. Wyatt (1971) discussed the significant differences between pressure coefficients used in the various codes. Sachs (1974) has tabulated most available data concerning pressure coefficients. It should be reiterated that the pressure coefficients used in all of the codes are based on uniform-flow wind-tunnel data and that virtually every comment on the building codes contains a qualifying statement that the errors involved in applying these coefficients to a boundary-layer flow are unknown.

The gust factor, G_p, has developed over the past thirty years, and is used in a number of different contexts. The term gust factor was first used with respect to wind loading of structures by Sherlock (1947). The gust factor used by Sherlock was defined as the ratio of the maximum two-second gust in a five minute period to the mean wind speed in this period. This factor was introduced in an attempt to include the effects of the gustiness of the natural wind in the design process. Davenport (1961a) introduced a different type of gust factor based upon the overall response of a structure. Whereas the gust factor used by Sherlock was simply a velocity ratio, the gust factor used by Davenport was based upon considering the response of a structure to be a Gaussian random process. His definition of a gust factor was the number of standard deviations from the mean the peak response could be expected to fall in some specified recurrence period. This gust factor is dependent on the dynamic and aerodynamic characteristics of the structure, the location of the structure and the roughness of its surroundings, and the recurrence period. Davenport (1967) refined the approach but the emphasis was still on the overall response of the structure. Vellozzi and Cohen (1968) introduced an approximate method of calculating, gust response factors. This technique is the basis for the current form of the ANSI standard. It also is intended to predict the effects of the gustiness of the wind on the overall response of the structure. Vickery (1970) examined the accuracy of the simplified gust factor approach and concluded:

> "The gust factor relates only to the overall loads in the direction of the mean wind. Lateral loads or local pressures are not predictable by the gust factor."

In spite of these limitations, all three of the building codes considered use a gust factor in the determination of local pressures. The ANSI and Canadian specifications use a gust factor based upon building response while the British code uses a gust factor based on a velocity ratio concept. While there is some allowance made in the pressure coefficients for local effects near corners or on the roof, by and large the gustiness of the approach wind is treated in an overall manner even for local pressures.

Dalgliesh (1971) considered local pressure fluctuations on a full-scale structure and used Davenport's approach to examine the gust factor of the pressure, the number of standard deviations from the mean at which the peak pressures fall. The use of this type of gust factor requires a measure of both the mean pressure and the root-mean-square (or standard deviation) of the pressure fluctuations. Both of these quantities have only recently been measured either in a full-scale or wind-tunnel situation and hence the limited use of a pressure-gust-factor. Most wind-tunnel studies conducted recently (such as those at Colorado State University and the University of Western Ontario) report values of the rms pressure coefficient, and therefore the use of a gust factor based on the local pressure fluctuations is becoming a viable alternative to existing code applications for cladding design.

In addition to the properties of the local pressures already considered, existing building codes make use of a number of additional assumptions concerning the nature of the pressure fluctuations in the calculation of the response of a structure in the direction of the wind (alongwind response). These assumptions are summarized by Simiu and Lozier (1975). Although this summary is not a part of any of the current building codes, the important assumptions are common to most of the approaches utilized in the codes.

The primary assumption is that the fluctuating pressure at a location on a structure is described by the expression:

$$p(x,z,t) = \rho C_p \overline{U}(z)\ u(z). \qquad (2\text{-}3)$$

This expression simply assumes that the fluctuating pressure is linearly related to the fluctuating velocity and that $|u(z)| << |\overline{U}(z)|$. It then follows that the power spectral density of the pressure fluctuations $G_p(n)$ is related to the power spectral density of the velocity fluctuations $G_u(n)$ by

$$G_p(x,z,n) = (\rho C_p \overline{U}(z))^2\ G_u(n) \qquad (2\text{-}4)$$

Similar expressions can be readily derived for cross-channel measurements described in Chapter III. The limitations of this assumption at high frequencies has been pointed out by Marshall (1968) and Bearman (1972). Both authors found that the pressure fluctuations were not linearly related to the velocity fluctuations in some ranges of frequency.

Virtually all of the data presently used in the design of structures for wind loading was obtained in low turbulence uniform flows. In addition, the values of mean pressure coefficients were averaged over an entire surface of a building. The primary goal of this dissertation is to determine the nature of both the mean and rms pressures on buildings immersed in thick turbulent boundary layers and to report these pressures over an entire surface so that regions of severe local pressures may be identified. The data reported may allow updating of certain portions of existing building codes and standards and provide a framework for study of other building shapes.

Chapter III

DATA ACQUISITION AND ANALYSIS

The Wind Tunnel

All measurements were made in the industrial aerodynamics wind tunnel located in the Fluid Dynamics and Diffusion Laboratory of Colorado State University, Fort Collins, Colorado. A schematic of the wind tunnel is shown in Fig. 1. Photographs of both the exterior and interior of the tunnel are shown in Fig. 2. This is a closed-test-section wind tunnel powered by a 75 hp single-speed induction motor. A 16-blade variable-pitch axial fan provides control of the speed in the tunnel. The square cross section of the tunnel is 3.3 m^2 and the length of the test section is 18.3 m. The contraction ratio at the entrance of the test section is 4:1. The available velocity in the test section ranges from 1.0 m/s to 24.4 m/s. All of the data reported in this dissertation were taken at a nominal velocity of 16.0 m/s. The ceiling of the last 7.3 m of the test section is adjustable, allowing removal of any longituinal pressure gradients in the tunnel.

The long test section in conjunction with spires and roughness elements on the floor of the wind tunnel were used to generate thick turbulent boundary layers simulating four typical thermally neutral atmospheric flow conditions. A detailed description of the boundary layers used in the study is contained in Chapter IV.

Buildings

A series of 15 buildings was used in this investigation. The buildings were made of 0.013 m thick plexiglass and instrumented on three surfaces. The pressure taps were 0.0015 m in diameter and drilled normal to the surface of the building. A brass tube with an inside diameter of 0.0015 m was countersunk into the inside surface of the building with the tube extending inside of the building. Flexible Tygon tubing (1.5×10^{-3}m I.D., 7.5×10^{-4}m wall) was attached to the brass tube allowing further connection to a pressure selector valve. Figure 3 is a photograph of some of the buildings.

The dimensions of the buildings are given in Table 1. Two nondimensional ratios are included which are useful in considering the different buildings. The side ratio, γ, is defined as the ratio of the width of the smaller side of the building, W, to the width of the larger side of the building, L, or

$$\gamma = \frac{W}{L} . \tag{3-1}$$

The aspect ratio, β, is defined as the ratio of the height of the building, H, to the width of the smaller side of the building, W, or

$$\beta = \frac{H}{W} . \tag{3-2}$$

Three values of γ were considered; 1.0, 0.5, and 0.25. Values of β ranged from 1.0 to 8.0. The coordinate system used is shown in Fig. 4. The x, y, and z directions are fixed relative to the building; x always measured in the direction of the longer side of the building and y always measured in the direction of the shorter side of the building. The wind direction, α, was varied from 000 to 090 degrees. An α of 000 was from the negative x direction and an α of 090 was from the positive y direction.

The number of taps on a particular building and the spacing of the taps is described in Tables 1-3 and examples are shown in Fig. 5. The horizontal spacing for either the narrow, W, or large, L, side is denoted by H1-H4 in Table 1. These spacings are listed in non-dimensional form in Table 2. The vertical spacing of each horizontal row of taps is denoted by V1 or V2 with these spacings also listed in Table 2. The locations of the taps on the roof of the building are denoted in Table 1 by R1-R3 with these locations listed in Table 3. These coordinates are all based upon a system with the origin located in the bottom left-hand corner of each face and the bottom left-hand corner of the roof when looking down on the building. The layout is such that in a top view of the building, side 1 should be at the bottom of the page (Fig. 6).

The different sides of the building are referenced as 0 through 4, side 0 denoting the roof and sides 1-4 the vertical sides. The arrangement of the sides is shown in Fig. 6 for all three γ's. Individual tap numbers were used in the form s-l-t where s indicates the side number (0-4), l indicates the level on a side numbered from top to bottom (1-5 or 1-10), and t indicates the tap location on a given level numbered from left to right when looking from the outside of a building (1-6, 1-10, or 1-12). For example tap 2-3-6 on building B6 is located on side 2 and has nondimensional coordinates (y/W,z/H) of (0.90, 0.50).

The buildings were mounted on a turntable at the downwind end of the test section. The turntable was supported by a large inertial mass to isolate the building from any vibrations in the wind tunnel. The buildings were aligned in the wind tunnel using a small laser. The laser was placed at the upstream end of the wind tunnel and reflected off a mirror on the building surface 16 m downstream. The building was rotated so that the reflected beam was within 0.05 m of the incident beam resulting in a maximum error of the building orientation of 0.2 deg. Other building orientations were then set using a graduated scale located on the base of the turntable.

Pressure Measurements

A sophisticated digital-data-acquisition system was used for the pressure measurements. A listing of equipment used is contained in Appendix A. The important components of the system are a pressure-selector valve and an analog-to-digital converter. A block diagram of the system is shown in Fig. 7. The instantaneous pressure at a location on the model was transmitted from the tap to the selector valve in a short section of tubing (0.30 - 0.91 m). The selector valve allowed rapid monitoring of up to 72 locations on a building. The base of the selector valve contained four differential pressure transducers. The pressure from the tap on the building was connected to the positive side of the transducer. The negative side of the transducer was connected to the static pressure measured in the free-stream above the boundary layer. The pressure difference measured by the transducer corresponds to the difference between the external pressure on a building and local atmospheric pressure. In terms of the building codes this represents an external pressure coefficient when nondimensionalized with an appropriate dynamic pressure. The voltage output of the transducer was a fluctuating d.c. signal. It was fed to an amplifier and then to the analog-to-digital converter.

The analog-to-digital converter, mini-computer, and digital tape unit are an integrated system. An operator can control the system through a teletype. The number of channels, sample rate, and details of digital tape formatting are all input parameters. In most cases, the pressures were measured simultaneously on four channels at a sample rate of 250 samples/s for 16.3 s. The raw data was stored on digital magnetic tape for later reduction on the Colorado State University CDC 6400 computer.

In order to determine the effect of the pressure-selector valve and the lengths of tubing on the frequency response of the entire system, a comparison of the entire system with a flush-mounted pressure transducer was conducted. A number of cases were run using building B3 with the flush-mounted transducer located on one face of the building and a pressure tap at a comparable location on another face. The building could therefore be rotated to place either device in the same location relative to the approach flow. The pressure spectra measured using the flush-mount transducer and those obtained using the standard measuring system with various tube lengths (0.30 m - 0.91 m) are compared in Fig. 8. This figure is a plot of the ratio of the amplitude of the pressure fluctuations for the valve with tube case to the flush mounted case. This plot should be considered in conjunction with a typical pressure spectrum (Fig. 69, $\overline{U}(\delta)$ = 15 m/sec). While Fig. 8 shows the ratio of amplitudes at a particular frequency it should be noted that as the frequency increases, the absolute amplitude of the fluctuations decreases. A region of amplification is evident in the frequency range 20-60 Hz. The amplification is a function of tube length and decreases with increasing tube length. From comparisons of the spectra it was estimated that this amplification could result in a maximum error in the rms of 10 percent. This error would always be positive. Most of the data reported were taken using tube lengths in the range 0.46-0.61 m and the errors would be a maximum of 5 percent in these cases. The contributions of the fluctuations at frequencies above 50 Hz ($n/\overline{U}(\delta) = 3.3\ m^{-1}$) to the rms are insignificant due to the low energy levels (10^{-2} of level at 1 Hz) above this frequency and therefore the effects of attenuation at these frequencies are not significant.

A second comparison was conducted examining the probability density functions of the fluctuations in order to investigate any effects of tube length on this measure of the character of the fluctuating pressures. Figure 9 is a plot of the probability density function of the pressure fluctuations measured both with the flush-mounted transducer and with two separate tube lengths. No significant differences are evident in this plot. In order to consider the negative-tail of the probability density function in more detail, a semi-logarithmic plot is shown in Fig. 10. A slight difference in the functions is evident in the region -4 to -6. The shorter tube length (0.30 m) actually has a higher probability density in this region than the flush-mount transducer. This difference could be a result of two different effects: (1) amplification in the region 20-60 Hz, or (2) averaging over the area of the flush-mount transducer which was 16 times as large as the normal pressure taps. The separation of these two effects was not possible with available instrumentation and resources.

Neither the amplification nor the differences in the probability densities were felt to be significant. All mean and rms pressures have been reported exactly as measured without any correction. All pressure spectra have been reported only out to a frequency of 100 Hz or to the corresponding wavenumber.

In situations where power spectra or cross-channel statistics were to be measured, pressure measurements were taken at a sample rate of 500 samples/s on eight channels simultaneously. The analog-to-digital converter operated in a parallel mode with eight sample-and-hold circuits allowing each channel to be sampled at exactly the same instant. In these cases, the pressure-selector valve was not used and each tap had the same length of tubing (0.45 m) between the tap and the pressure transducer.

The pressure measurement system consisting of both the transducers and amplifiers was calibrated in one operation. The gains of the amplifiers were adjusted so that each pressure transducer/amplifier combination had the same calibration factor. All calibrations were linear and repeatable to within 0.5 percent. The calibrations were checked every three months, but rarely required correction. An indirect check of the calibrations was conducted every test run (approximately 10 min). The velocity in the wind tunnel was measured using one position of the selector valve (4 channels). The total pressure from a pitot tube in the wind tunnel was connected to the positive side of all four transducers and all transducers were monitored simultaneously for a 16.3 s run. The average pressure on each of the four channels was printed out during the data reduction and a quick check of the repeatability was available. If all channels were in error by a comparable amount, this check would not be valid. It was felt that the chances of this situation happening were remote.

Velocity Measurements

The properties of the boundary layers in the wind tunnel were measured using both a pitot tube and hot-film anemometers. These measurements were made to adequately define the flow approaching the model; no effort was made to measure any effects of the building on the flow field. All measurements were made without a model building in the tunnel.

A mechanical traverse with a travel of 1.3 m was used to remotely position the probe vertically. The traverse could be moved manually to other locations in the tunnel. By modifying the manner in which the probe was attached to the traverse, measurements could be taken over the entire height of the wind tunnel. The traverse could be positioned within $\pm 3.0 \times 10^{-4}$ m in its direction of travel.

Pitot-tube measurements were made to determine the lateral and longitudinal homogeneity of the flow in the tunnel. The ease of measurement and the lack of the requirement for frequent calibration were the prime factors in the choice of the pitot tube. Measurements were corrected for turbulence intensity using the approximate method suggested by Sandborn (1972). This correction was never greater than two percent of the free-stream velocity. The turbulence intensity was determined from the hot-film measurements.

Measurements of the fluctuating velocity were made using both single and cross-film probes. A constant-temperature anemometer was used without a linearizer. The hot films were calibrated daily using a commercial calibration device. The calibrations were carried out at 10 different velocities and the data fitted to the functional form of King's law

$$E^2 = A + BU^n. \tag{3-3}$$

E is the instantaneous voltage in the hot-film, A, B, and n are constants, and U is the instantaneous velocity. All three constants were fitted using an iterative technique. All hot-film measurements were carried out using the digital-data-acquisition system and instantaneous voltages were converted to instantaneous velocities. All averaging and associated data reduction was conducted using the velocity record. This technique avoided any errors which arise due to the nonlinearity of the hot-film sensor.

It was not practical to calibrate the hot films in air at the same temperature as the air in the tunnel test section. In addition the temperature in the tunnel test section normally increased slowly while the tunnel was operating. To correct for the difference between the calibration temperature and the temperature in the tunnel at the time of the measurement the method of Bearman (1970) was used to correct the measured voltages to the value that would be measured if the sensor were in air at the temperature of the calibration flow. Two conditions should be met in applying this correction technique. Temperature differences must be small (less than 12°C) and wind speeds should be greater than 0.9 to 1.5 m/s. Both of these conditions were met in all measurements.

Cross-film measurements were carried out at the model location with the model removed to determine the vertical and lateral turbulence intensity and the correlation between the longitudinal and vertical turbulence. The cross film was also calibrated using the commercial calibration device. Data reduction was accomplished using digital techniques in a manner similar to the single film.

Data Reduction

Digital Techniques - All data were taken in digital form and similar techniques were employed in the reduction of both the pressure and velocity records. Therefore a general outline of the techniques is presented and then specific details of the pressure and velocity calculations are discussed.

The digital tape contained a record of a voltage signal $e(t)$ in a discrete form consisting of N values obtained by sampling at intervals of Δt. This record is denoted by $e(t_i)$, $t_i = \Delta t, N\Delta t$. N is the total number of values in the record and Δt is the sampling interval in seconds (1/sample rate). The total length of the record in seconds, T, is then equal to NΔT. The first step in the data reduction was to convert the voltage signal into physical units, either pressure or velocity. In the case of the linear pressure transducers, this operation was simply a multiplication. For the velocity measurements taken with the hot-film, the more complex expression of equation (3-3) was used. The discrete form of the record in physical units was then expressed as $f(t_i)$ or more concisely as f_i. The mean of this signal is simply

$$\overline{f} = \frac{1}{T}\int_{o}^{T} f(t)dt \tag{3-4a}$$

or in discrete form

$$\overline{f} = \frac{1}{N}\sum_{i=1}^{N} f_i \ . \tag{3-4b}$$

The variance of the signal is

$$\overline{f^2} = \frac{1}{T}\int_{o}^{T} (f(t) - \overline{f})^2 dt \tag{3-5a}$$

or in discrete form

$$\overline{f^2} = \frac{1}{(N-1)} \sum_{i=1}^{N} (f_i - \overline{f})^2 \ . \qquad (3\text{-}5b)$$

The rms of the signal is the square root of the variance. The N values were also searched for the maximum and minimum value in the N samples. These two quantities are called the peak maximum, f_{max}, and the peak minimum, f_{min}.

Calculations of characteristics of the fluctuations of f such as the autocorrelation, power spectral density, or probability density function are easily carried out using digital techniques. These types of calculations are generally made using a signal with a mean of zero. Therefore define $\hat{f}_i$ such that

$$\hat{f}_i = f_i - \overline{f} \ . \qquad (3\text{-}6)$$

The autocorrelation of the quantity f is defined by

$$R_f(\tau) = \lim_{T\to\infty} \frac{1}{T} \int_0^T \hat{f}(t)\ \hat{f}(t+\tau)dt \qquad (3\text{-}7a)$$

or in discrete form

$$R_f(\tau) = \frac{1}{N-r} \sum_{i=1}^{N-r} \hat{f}_i \hat{f}_{i+r} \quad r = 0, \ldots, N-r, \ \tau = r\Delta t \ . \qquad (3\text{-}7b)$$

The power spectral density function is the forward Fourier transform of the autocorrelation:

$$G_f(n) = 2 \int_{-\infty}^{\infty} R_f(\tau)\ e^{-i2\pi n\tau}\ d\tau, \ n \geq 0 \ . \qquad (3\text{-}8)$$

The power spectral density function (hereafter referred to as the spectrum) describes the frequency composition of the data in terms of the contributions of the fluctuations at a given frequency to the variance of the signal. Both the autocorrelation function and the spectrum are often normalized with respect to the variance of the signal. The normalized autocorrelation, commonly called the autocorrelation coefficient, is denoted by $r_f(\tau)$ where

$$r_f(\tau) = \frac{R_f(\tau)}{\overline{f^2}} . \tag{3-9}$$

Similarly the normalized spectrum $S_f(n)$ is defined

$$S_f(n) = \frac{G_f(n)}{\overline{f^2}} . \tag{3-10}$$

The spectrum was computed directly from the data records using Fast-Fourier-Transform techniques. A general description of the techniques can be found in Bendat and Piersol (1971). The programs used in the data analysis of this dissertation and a detailed description of their use has been discussed by Akins and Peterka (1975). The autocorrelation coefficients were obtained by taking an inverse Fourier transform of the spectrum. This technique uses much less computer time than a direct calculation using equations (3-7) and (3-8) would require.

The two-channel data analysis can be described in similar terms. Let $\hat{f}_{1,\,i}$ and $\hat{f}_{2,\,i}$ denote the digital records with the mean removed. The cross-correlation between these two signals is defined by:

$$R_{f_1 f_2}(\tau) = \lim_{T\to\infty} \frac{1}{T} \int_o^T \hat{f}_1(t)\ \hat{f}_2(t+\tau)\ dt \tag{3-11a}$$

or in discrete form

$$R_{f_1 f_2}(\tau) = \frac{1}{N-r} \sum_{i=1}^{N-r} \hat{f}_{1,\,i} \hat{f}_{2,\,i+r} \quad r = 0, \ldots, N-r,\ \tau = r\Delta t . \tag{3-11b}$$

The cross-correlation function of two signals describes the general dependence of the values of one signal on the values of the second signal. The cross correlation is often normalized to have values between $\pm$ 1.0 through division by the product of the square root of the variances of the individual channels:

$$r_{f_1f_2}(\tau) = \frac{R_{f_1f_2}(\tau)}{\sqrt{\overline{f_1^2}}\,\sqrt{\overline{f_2^2}}} \,. \tag{3-12}$$

The cross-spectral density function of a pair of signals is the Fourier transform of the cross-correlation function. Because the cross-correlation function is not normally an even function, the cross-spectral density function is generally a complex quantity defined by

$$G_{f_1f_2}(n) = 2\int_{-\infty}^{\infty} R_{f_1f_2}(\tau)\, e^{-i2\pi n\tau} d\tau,\ n \geq 0 \,. \tag{3-13}$$

When applying the cross-spectral density to problems involving wind pressures on buildings, the coherence between the two signals is often used. The coherence is a real-valued quantity defined by

$$Co_{f_1f_2}(n) = \frac{|G_{f_1f_2}(n)|^2}{G_{f_1}(n)\, G_{f_2}(n)} \,. \tag{3-14}$$

The coherence is a measure of how well the two signals are correlated at a particular frequency.

Although equations (3-12) and (3-13) are the most straightforward method of defining the cross correlation and the cross-spectral density function, the calculation of these quantities was carried out such that the cross-spectral density function was obtained directly from the digital signal. The cross correlation was then calculated by taking the inverse Fourier transform of the cross-spectral density function. Details of this type calculation are found in Bendat and Piersol (1971) and Akins and Peterka (1975).

Pressure Measurements - Measurements of the surface pressures on the models were reduced to a non-dimensional pressure coefficient, C_p. The data records were taken at a sample rate of 250 samples/sec for a period of 16.32 sec for a total of 4080 individual values. The mean, rms, peak maximum, and peak minimum of the record were computed and converted into pressure coefficients defined as follows:

$$C_{pmean} = \frac{\overline{P-P_{static}}}{0.5\rho\ \overline{U}(z)^2}, \tag{3-15}$$

$$C_{prms} = \frac{\overline{\{(P-P_{static}) - \overline{(P-P_{static})}\}^2}^{\,1/2}}{0.5\rho\ \overline{U}(z)^2}, \tag{3-16}$$

$$C_{pmax} = \frac{(P-P_{static})}{0.5\rho\ \overline{U}(z)^2}\ \text{maximum in record, and} \tag{3-17}$$

$$C_{pmin} = \frac{(P-P_{static})}{0.5\rho\ \overline{U}(z)^2}\ \text{minimum in record.} \tag{3-18}$$

These are local pressure coefficients in that they are based on a reference velocity in the approach flow at the height of the pressure measurement. The reasons for and advantages of this choice of reference velocity are discussed in Chapter V.

In order to minimize the amount of wind-tunnel time necessary to carry out the study, the symmetry of certain flow directions was used to reduce the number of taps at which actual measurements were conducted. In a typical case where 60 tap locations were reported on each vertical side, only 30 taps were actually used on just two of the four vertical sides. This resulted in just the pressures at odd-numbered taps on sides 1 and 2 actually being measured in the wind-tunnel tests and the remainder of the data filled in during the data reduction. No values were used which were not measured in the wind-tunnel tests, as the tests were conducted for 40 wind directions over a range of α from 000 - 340 while the reflected data was reported over a range of α from 000 - 090.

The actual reflection was straightforward. Data for wind direction 000 or 090 was generated using the raw data from wind directions 000, 180 or 090, 270 respectively. The data was also reflected on a given face, forcing symmetry about the centerline of the building for these cases only. For other wind directions, four separate wind directions were used. The data for wind direction 020 was for instance made up of data taken at wind directions of 020, 160, 200 and 340. Prior to using this technique, one building was instrumented at all 60 locations on all four sides and the assumptions used in the reflection verified. The reflection of the data was possible because the buildings studied were all considered in an isolated environment with no adjacent structures present and in an approach flow that was two-dimensional having no lateral variation.

In order to make comparisons between the many cases studied, a software package was developed with the capability to produce contour plots of any of the pressure coefficients over an entire side of the building. Due to the requirement of the available contour-plot packages that the data be equally spaced, it was necessary to transform the available data into a uniform grid. This transformation was accomplished using a two-dimensional cubic spline routine developed by Falkner (1974). This routine is capable of taking arbitrarily spaced data and through the use of a least-squares technique evaluates the coefficients for a doubly-cubic spline at specified locations, not necessarily related to the original data. These coefficients can then be used to evaluate the smoothed function at any location on the plane of interest. This technique allowed both interpolation and limited extrapolation of the pressure coefficients. Once a uniform grid of data values was obtained, plots were generated using subroutine CALCNT, a part of the Fortran library available at the Colorado State University Computer Center.

Probability density functions of peak pressures were obtained from the pressure coefficients. A reduced variate or pressure peak fluctuation variable was used in these calculations. It is defined by

$$\eta = \frac{(C_{pmax} - C_{pmean})}{C_{prms}} \tag{3-19a}$$

or

$$\eta = \frac{(C_{pmin} - C_{pmean})}{C_{prms}} \tag{3-19b}$$

for positive and negative peaks respectively. All probability density functions were determined digitally from the reduced pressure coefficient data.

<u>Forces and Moments</u> - Force and moment coefficients were computed by integrating the mean pressures over the surface of each building. Because a nonuniform tap spacing was used, the forces and moments were first computed after interpolating in order to obtain a uniform spacing. A second calculation was performed using the data at the actual tap

locations and assigning an area to each tap. The differences between these two techniques were minimal and the second technique was used in all calculations. The forces and moments on the buildings were expressed in terms of

$$C_{FX} = \frac{F_x}{0.5\rho\overline{U}_A^{\,2}WH} \tag{3-20}$$

$$C_{FY} = \frac{F_y}{0.5\rho\overline{U}_A^{\,2}LH} \tag{3-21}$$

$$C_{FZ} = \frac{F_z}{0.5\rho\overline{U}_A^{\,2}WL} \tag{3-22}$$

$$C_{MX} = \frac{M_x}{0.5\rho\overline{U}_A^{\,2}LH^2} \tag{3-23}$$

$$C_{MY} = \frac{M_y}{0.5\rho\overline{U}_A^{\,2}WH^2} \tag{3-24}$$

$$C_{MZ} = \frac{M_z}{0.5\rho\overline{U}_A^{\,2}WLH} \tag{3-25}$$

$F_{x,y,z}$ and $M_{x,y,z}$ denote the forces and moments acting on the building. The remainder of the symbols are defined in the list of symbols. The measured force and moment coefficients were collapsed onto a small number of curves by using an average velocity over the height of the building. This velocity, $\overline{U}_A$, is defined as

$$\overline{U}_A = \frac{1}{H}\int_0^H \overline{U}(z)dz. \tag{3-26}$$

The use of an average velocity instead of an average of the velocity squared was based on how well the force coefficients agreed when using each type. There was not a major difference, but the mean velocity was chosen in preference to the mean of the squared velocity because of better agreement between the various cases. $\overline{U}_A$ was calculated from measured values of the velocity and not from a power-law or logarithmic expression for the profile.

The coordinate system describing these forces and moments is shown in Fig. 4. These are forces and moments in a body reference system, i.e., F_x is always defined relative to a fixed direction on the building independent of wind direction. The moments in the x and y directions are with respect to the base of the building and the moment in the z direction is with respect to the vertical axis through the center of the building. Force and moment coefficients were computed from mean surface pressure data measured at 11 wind directions over a 90° range. Since all of the buildings studied were placed in an isolated environment with no adjacent structures present, a 90° variation in wind direction is adequate to define the forces and moments acting on the structure for any wind direction. No corrections for tunnel blockage were applied because blockage was small (less than seven percent) and the flexible roof was adjusted to remove the longitudinal pressure gradient in the tunnel.

Velocity Measurements - The velocity measurements were obtained from digital records. For single-channel measurements the mean and rms of the record were computed using equations (3-4) and (3-5). Records were taken at 2000 samples/sec and generally a record length of 140 sec or 280,000 data values was used. The velocity spectra were obtained from the same records using segment averaging (Akins and Peterka, 1975) over eight segments consisting of 8192 data values. This corresponds to 32.8 sec of data.

The cross-film data was reduced to instantaneous values of the longitudinal and lateral (or vertical) velocity and these records of velocity were then used to determine the mean and the rms values for a particular period.

The values of longitudinal integral scale of the turbulence were obtained by averaging the results of two separate techniques. One technique involved integration of the velocity autocorrelation coefficient from a time lag of zero to the first zero crossing (Akins and Peterka, 1975) and the second utilized the zero intercept of the normalized velocity spectrum. The zero intercept of the spectrum was obtained by visual smoothing of the low-frequency portion. The zero intercept is related to the conventional definition of the integral scale.

$$\Lambda_x = \overline{U} \int_o^\infty r_u(t)dt \tag{3-27}$$

by the relationship

$$\Lambda_x = \frac{\overline{U}}{4} S_u(0) \tag{3-28}$$

This relationship follows from equation (3-8) and Taylor's hypothesis. Due to limited record lengths of the velocity, equation (3-27) was only integrated to the first zero crossing. A discussion of the validity of this approximation has been given by Akins and Peterka (1975).

Accuracy and Repeatability

Ideally the overall accuracy of experimental measurements can be obtained by considering each instrument involved in the measurement.

In wind-tunnel measurements such as those described in this dissertation many factors in addition to the accuracy of each individual instrument are involved in the overall accuracy of the final measurement. In order to include all relevant factors in an assessment of the accuracy of a measurement the repeatability of each measurement was directly measured. While this is not a measure of the absolute accuracy of each measurement, it is felt to be a more realistic and easily understood measure of the quality of the measurements.

Pressure Measurements - In order to assess the consistency of the pressure measurements, several test cases were randomly selected to be repeated. These repeat runs were normally conducted on different days than the initial runs, and in most cases the model had been removed from the tunnel. The calibration of the pressure transducer/ amplifier combination was linear and repeatable to within 0.5 percent. The overall repeatability of the measurements was slightly larger due to small errors in setting the building orientation and drift of the zeros of both the signal-conditioning units and the analog-to-digital converter. A total of six repeatability checks were conducted and 432 individual taps were considered. The average error plus one standard deviation when expressed in terms of a local pressure coefficient was 0.10 for the mean pressure coefficients and 0.03 for the rms coefficients. These values should be considered upper limits of the repeatability of the measurements if the same building was rerun in the same flow condition.

Velocity Measurements - The pressure differences across the pitot tube were measured using the Statham differential pressure transducers. The accuracy of the calibration of the transducers when expressed as a percentage of the free-stream velocity above the boundary layer (nominally 16.0 m/s) was 1 percent. Due to inaccuracies inherent in the averaging of a fluctuating signal and probe placement and alignment, the actual measurements were repeatable to within $\pm$ 2 percent of the free-stream velocity.

The repeatability of the hot-film measurements is more difficult to estimate due to the nonlinear behavior of the sensor. Measurements of mean velocity were repeatable to within $\pm$ 2 percent of the free-stream velocity and measurements of local turbulence intensity were repeatable to within $\pm$ 5 percent of the value measured. These repeatabilities are based upon repeated measurements at selected locations. They include errors due to calibration drift, probe alignment and positioning, and actual calibration accuracy.

The measurements of longitudinal integral scale using the two methods outlined in the preceding section were compared to obtain an estimate of the reliability of the individual measurements. There was an average difference of 10 percent between the two methods. The values of integral scale reported are the average of the two methods.

Forces and Moments - The buildings with $\gamma = 1$ were studied at wind directions of both 0° and 90°. Due to the symmetry of these buildings and the fact that these measurements were generally made on separate days and in some cases the models had been removed from the wind-tunnel between runs, a comparison of the coefficients measured at these wind directions provided a means of evaluating the repeatability of the measurements. An average of eight cases showed a difference of 1.8 percent for the force coefficients and 1.7 percent for the moment coefficients. Since these values are obtained by integrating the mean pressures over the surface of the structure, it is not surprising that their repeatability is better than that of the individual pressure coefficients.

Chapter IV

THE BOUNDARY LAYERS

In order to adequately relate the findings of this dissertation to both other wind-tunnel investigations and to appropriate full-scale studies, a complete description of the flow field approaching the models is required. An extensive series of measurements were conducted in order to characterize the properties of the four boundary layers used. These measurements are summarized and related to appropriate full-scale data in the following sections.

Wind-Tunnel Configurations

In order to obtain a thick turbulent boundary layer in the wind tunnel, spires and roughness elements were used in addition to the length of available test section. Descriptions of this type approach to developing boundary layers have been provided by Peterka and Cermak (1974) and Standen (1972). These discussions both stress the need for the development of an equilibrium boundary layer at the model location. In this context an equilibrium boundary layer is a flow in which any changes in the downstream direction are less than the resolution of the measurement system. The long test section (9.3 spire heights) allowed the development of an equilibrium boundary layer in this study.

The spires used were developed by Peterka and Cermak (1974). The dimensions of the spires are shown in Fig. 11 and the positions at which they were located are shown in Fig. 12. In addition to the spires, a barrier and roughness elements were used. The barrier was located 0.61 m downstream of the spires and had dimensions 0.089 m x 0.191 m. The roughness elements began at a distance 1.22 m downstream of the spires and extended the length of the test section. The spacing and size of the roughness elements for the four boundary layers used are listed in Fig. 13. All boundary layers were developed using the same spires and barrier; only the roughness configuration was varied. Boundary layer 1 was developed using a smooth floor with the spires and barrier.

Velocity Measurements

Measurements were made of mean velocity profiles, local turbulence intensity, longitudinal scales of turbulence, longitudinal velocity spectra, cross correlations of the turbulent fluctuations both at a fixed location and as a function of both vertical and horizontal separation, and the coherence function for both vertical and horizontal separation. These measurements are summarized in Tables 4-8 and Figs. 14-31. A comparison of wind-tunnel measurements with appropriate full-scale measurements is presented in the next section.

A linear plot of the mean velocity profiles is shown in Fig. 14. This is a non-dimensional plot normalized in the vertical direction with the boundary-layer thickness, δ, and in the horizontal direction with the mean velocity at the top of the boundary layer, $\overline{U}(\delta)$. The case with no roughness elements, boundary layer 1, has the fullest profile while the case with the largest roughness elements, boundary layer 4, for a constant z has the largest velocity defect, $\overline{U}(\delta) - \overline{U}(z)$. Semi-logarithmic and logarithmic plots of the mean velocity profiles are shown in Figs. 15 and 16. The semi-logarithmic plot was used to determine the roughness length, z_o, which ranged from 1.22×10^{-5} m for boundary layer 1 to 1.09×10^{-2} for boundary layer 4. The logarithmic plot was used to determine the exponent of the power-law formulation of the velocity profile. It can be observed that a single straight line does not exactly describe any of the velocity profiles and in selecting the values of p reported for the boundary layers, a visual best-fit was used with an emphasis on the lower 50 percent of the profile.

The variation of mean velocity across the wind tunnel at the model location is shown in Fig. 17. The coordinate system used to describe the measurement locations is shown in Fig. 12. These profiles were all taken for boundary layer 2 and within the accuracy of the measurements ($\pm$ 0.02 $\overline{U}(\delta)$) there is virtually no lateral variation in the mean velocity for $\pm$ 0.31 m. The variation of the mean velocity profile in the longitudinal direction is shown in Fig. 18. These measurements were also taken in boundary layer 2. For a distance of 4.27 m upstream of the model location there was no appreciable change in the mean velocity profiles. This absence of a change in the downstream direction is one indication that an equilibrium boundary layer had developed. Similar measurements were conducted for the other three boundary layers with comparable results.

The local turbulence intensity is plotted in Figs. 19-21 and listed in Tables 4-7. The local turbulence intensity is defined as the ratio of the rms velocity fluctuations, u', v', or w', to the mean velocity, $\overline{U}(z)$, at the height of the measurement. In the coordinate system of Fig. 12, v' is the lateral rms velocity and w' is the vertical rms velocity. In all three plots, the local turbulence intensity increases with increasing roughness size in the lower 50 percent of the boundary layer. There was very little variation between the different cases in the upper 50 percent of the boundary layer.

Figure 22 is a plot of the Reynolds stress in the four boundary layers. The correlation $\overline{uw}$ has been normalized with the mean velocity at the top of the boundary layer. The average value of $\sqrt{-\overline{uw}}$ in the lower 20 percent of the boundary layer was used as the surface shear velocity, U_* .

The reduced velocity spectrum is plotted as a function of wavenumber, $n/\overline{U}(\delta)$, in Fig. 23. It should be recalled that $S_u(n)$ has been normalized with the variance of the velocity, $(u')^2$, at the height at which the spectrum was measured. Over the range of z/δ from 0.10 to 0.40, the spectra are similar. Very low in the boundary layer, $z/\delta = 0.02$, the low frequency portion of the spectrum contains less energy than in the rest of the boundary layer. The spectrum at the top of the boundary layer shows a general shift to higher frequencies. This may be due to interaction with the roof boundary layer. All of the measurements shown in Fig. 23 are from boundary layer 2. The effect of the different boundary layers on the velocity spectrum is shown in Fig. 24. This is a plot of the velocity spectrum measured at a z/δ of 0.18 in all four boundary layers. When plotted in these coordinates there is no variation of the velocity spectrum with the different boundary layers.

The downstream variation of the velocity spectra is shown in Fig. 23. This plot includes spectra measured at the same height, $z/\delta = 0.18$ and two different downstream locations, $x = 0.0$ and $x = -3.36$ m. There is no difference between these two curves; another indication that an equilibrium boundary layer had developed.

The autocorrelation functions corresponding to the spectra of Figs. 23 and 24 are shown in Figs. 26 and 25 respectively. A variation from the other data in the autocorrelation for $z/\delta = 0.02$ and 1.0 is seen in Fig. 25. In all of the other cases, there are no significant differences as a function of height or boundary layer.

The variation of longitudinal integral scale with height in the four boundary layers is shown in Fig. 27. There is a general increase of integral scale with height in the lower half of the boundary layer and a gradual decrease with height in the upper half.

The cross-correlation coefficients for the longitudinal, u, velocity are shown in Figs. 28 and 29 for boundary layers 1 and 2 respectively. These cross-correlation coefficients are for both a vertical and horizontal (or lateral) separation. There is a definite downward convective velocity present in both sets of cross-correlations with vertical separation. Figure 30 is a plot of the space-correlations for $\tau = 0.0$ taken from Figs. 28 and 29. These plots show the velocity fluctuations to be more highly correlated as a function of separation distance in boundary layer 1 than in boundary layer 2. These measurements were taken at $z = 0.13$ m. In this region Λ_x is larger for boundary layer 1 than for boundary layer 2 and therefore the velocity fluctuations should exhibit a greater correlation as a function of distance. The cross correlations were not measured for boundary layers 3 and 4.

The coherence functions for the cases corresponding to Figs. 28 and 29 were fitted to an exponential function. This type of approximation has been used frequently in descriptions of atmospheric data. In this formulation the coherence is expressed by

$$\sqrt{Co_{u_1,u_2}} = e^{-C(nd/\overline{U})} \qquad (4\text{-}1)$$

n - frequency Hz

d - separation of points at which measurements were made

$\overline{U}$ - average of mean velocity at the two locations considered.

The results for various separations are given in Table 8. When averaged over all of the separations C was 9.2 for both boundary layers 1 and 2.

Comparison with Full-Scale Measurements/Scales of Simulation

A wide range of available full-scale measurements is reported in the literature. These data have been condensed into a few summaries which are particularly useful in the consideration of wind loading of structures. Three of these summaries will be used as primary references in the following discussion (Davenport, 1960, Harris, 1971, and ESDU, 1972). The most elementary comparison of the wind-tunnel data to full-scale measurements involves the character of the mean velocity profiles. A common method of expressing the mean velocity profile makes use of the power-law formulation, equation (2-2). In terms of this type expression, the exponent of the power-law profile, p, in full-scale situations has been reported to range from 0.12 for very smooth surfaces upwind of the measurement location to 0.40 for an upwind terrain with large and irregular obstacles. ANSI A58.1-1972 has specified three standard categories corresponding to power-law exponents of 0.14, 0.22, and 0.33. The range of values used in this dissertation, 0.12 to 0.38, adequately span the range of applicable full-scale values. It should be emphasized that there is no theoretical basis for this type expression and that all values are obtained from some type of approximate technique.

Harris (1971) compiled a range of local longitudinal turbulence intensities which are representative of the values which have been observed over the range of power-law exponents corresponding to ANSI A58.1-1972. These values range from 0.18 to 0.58 measured at a height 10 m above the ground for the full-scale. The lower values of local turbulence intensity correspond to the lower values of the power-law exponent. The range of values for the wind-tunnel ranged from 0.12 to 0.30 (Fig. 19) for the lower 5 percent of the boundary layer. While these values are lower the estimate by Harris, Counihan (1973) has estimated values of 0.20 to 0.30 in the lower regions of the atmospheric boundary layer. In any case, the wind-tunnel values are close to full-scale estimates, and the trend of local turbulence intensity with increasing power-law exponent is the same in the wind tunnel as in the full-scale environment. Comparisons of other properties of the full-scale and wind-tunnel boundary layers all involve assumptions regarding the scaling between the two systems. In order to provide a more complete presentation, the remainder of the comparisons will be made in connection with a discussion of the scaling.

Geometric Scaling - Three lengths are useful for comparison with full-scale measurements. These are the roughness length z_o, the longitudinal integral scale, Λ_x and the boundary-layer thickness, δ. Because a range of available atmospheric flow data exist, no exact comparisons can be made, but a range of reported values has been compiled in Table 9 which correspond to the categories described by the power-law exponents. It is felt that the values of δ are more difficult to obtain than values of either Λ_x or z_o, so the scales obtained from a comparisosn of δ may be less reliable. There is a larger variation in reported values of z_o than in the other parameters and therefore a range of values of z_o is listed for each category. Based on all values listed, the geometric scale of the boundary layers ranges from 1:200 to 1:300. In some cases the wind-tunnel value of z_o is slightly larger than would be indicated by this scale range, but the difference is never larger than a factor of 2.0. The effects of z_o on surface pressures discussed in the following chapter indicate that this magnitude difference is not important. In order to make further comparisons more convenient, a geometric scale of 1:250 is used in the remainder of the discussion. Any scale range in the region 1:200 to 1:300 would be equally appropriate.

With the geometric scale established, the velocity spectra measured in the wind tunnel can be compared with expressions used to describe the full-scale boundary layer. The reduced form of the velocity spectrum is used with an abscissa of $n\delta/\overline{U}(\delta)$. Two empirical forms of the atmospheric spectrum (Harris, 1971 and Davenport, 1961b) are plotted in Fig. 31 along with the values for boundary layer 2 at a z/δ of 0.18 (Fig. 24). The wind tunnel results agree well with both empirical forms for nondimensional wavenumbers above 0.3. At nondimensional wavenumbers below 0.3, the wind-tunnel spectrum falls below the empirical forms. This difference for low wavenumbers is a result of the size of the wind-tunnel test section. A nondimensional wavenumber of 0.3 corresponds to a wavelength of 4.2 m in the wind tunnel. This is more than twice the cross section of the test section and accurate simulation at longer wavelengths is not possible. If a geometric scale had been selected such that the peaks of the reduced spectra coincided, this disagreement in the lower values of nondimensional wavenumber would not appear. Such a selection would indicate a geometric scale between 1:500 and 1:600 for the wind-tunnel simulation. This method of selection of a geometric scale is not appropriate because such a choice would imply that wavelengths of the order of two times the cross section of the wind tunnel were being properly simulated. The dotted portions of the empirical forms in the range of $n\delta/\overline{U}(\delta)$ from 0.1 to 0.01 indicate that no full-scale data were available to fit in these areas. The empirical curves in this region are extrapolated based upon data at higher wavenumbers. No comparison between the wind-tunnel data and the empirical formulations is possible in this region.

Time Scaling - If only mean quantities are of interest in a particular wind-tunnel investigation, then the time scaling between the wind tunnel and the full-scale environments is of little importance. However, if such quantities as peak pressures, correlations, and other time dependent variables are of interest, the time scaling becomes an important factor. A relationship which is frequently applied to time scaling is the concept of the reduced velocity. This parameter arises from considerations of the dynamics of a structure and its application to static structures is best understood when considered in terms of a Strouhal number, the reciprocal of the reduced velocity. The scaling specified by equality of reduced velocities is given by

$$\left(\frac{\overline{U}}{n_o D}\right)_M = \left(\frac{\overline{U}}{n_o D}\right)_{FS} . \tag{4-2}$$

D is an appropriate dimension of the building under consideration and n_o is a characteristic frequency of the structure such as the natural frequency. When considered as a Strouhal number, the frequency and dimension could also be considered to relate to the incident flow instead of the building itself. For a fixed geometric scale and velocity ratio, this parameter can be used to obtain a time scaling

$$\frac{T_M}{T_{FS}} = \left(\frac{\overline{U}}{D}\right)_{FS} / \left(\frac{\overline{U}}{D}\right)_M \quad . \tag{4-3}$$

In comparing the spectra in Fig. 31, the use of a nondimensional wavenumber also tacitly assumed a time scaling in that

$$\left(\frac{n\delta}{\overline{U}(\delta)}\right)_M = \left(\frac{n\delta}{\overline{U}(\delta)}\right)_{FS} \quad . \tag{4-4}$$

The frequency in the equation is not related to any particular frequency of a structure and this relationship is more general than equation (4-2). Transformed into a time ratio equation (4-4) becomes

$$\frac{T_M}{T_{FS}} = \left(\frac{\overline{U}(\delta)}{\delta}\right)_{FS} / \left(\frac{\overline{U}(\delta)}{\delta}\right)_M \tag{4-5}$$

which is the same as equation (4-3) or in terms of a general velocity and geometric scale

$$\frac{T_M}{T_{FS}} = \left(\frac{\overline{U}_{FS}}{\overline{U}_M}\right) \times \left(\frac{D_M}{D_{FS}}\right) \quad . \tag{4-6}$$

Theoretical analysis of extreme value statistics (Rice, 1945) predict peak values of a random variable as a function of a variable νT_R where ν is the average effective fluctuation rate per second and T_R is the observation period in seconds. The parameter ν is defined as

$$\nu = \left(\frac{\int_0^\infty n^2 S(n)\,dn}{\int_0^\infty S(n)\,dn} \right)^{1/2} . \tag{4-7}$$

The fact that S(n) may be scaled using a nondimensional wavenumber leads directly to a scaling for ν such that

$$\left(\frac{\nu\delta}{\overline{U}(\delta)}\right)_M = \left(\frac{\nu\delta}{\overline{U}(\delta)}\right)_{FS} \tag{4-8}$$

or

$$\frac{\nu_M}{\nu_{FS}} = \frac{\overline{U}_M}{\overline{U}_{FS}} \times \frac{D_{FS}}{D_M} . \tag{4-9}$$

This scaling in conjunction with equation (4-6) leads to the relationship

$$(\nu T)_M = (\nu T)_{FS} . \tag{4-10}$$

Comparisons of full-scale values of ν with wind-tunnel values enable a check of this to be made of the criterion for time scaling given by equation (4-10). Davenport (1964) has estimated a value for a full-scale ν for velocity fluctuations of

$$\nu = 2.13 \times 10^{-2} \times \overline{U} . \tag{4-11}$$

If ν for a $\overline{U}$ of 15.0 m/sec is computed to correspond with the wind-tunnel values of $\overline{U}$, $\nu = 0.32$. Since $\overline{U}_M/\overline{U}_{FS} = 1.0$, $\nu_M = \nu_{FS} \times (D_{FS}/D_M)$ or $\nu_M = 80.0$. The measured ν's for the wind-tunnel boundary layers ranged from 50 for boundary layer 1 to 150 for boundary layer 4. The value for boundary layer 2 which simulates a flow closest to that corresponding to the data used to obtain equation (4-11) was 90.0. This close agreement with the predicted value indicates a consistency in the time scaling between the full-scale and wind tunnel.

Dalgliesh (1971) has reported full-scale values of ν for pressure fluctuations, but unfortunately he did not report any velocity measurements so it is not possible to scale his measurements and compare them with wind-tunnel measurements. His data does show that $\nu_{pressure}/\nu_{velocity}$ is approximately 0.5. In the wind-tunnel measurements this ratio was 0.25 for both stagnation and separated regions. Dalgliesh's ν's were obtained by computing zero crossings and not from integration of spectra. This difference in calculation procedure may be the cause of the difference in this ratio. As further full-scale measurements become available, it will be useful to compare ν measurements for pressure fluctuations using the relationship in equation (4-9).

With a time scaling factor established, the wind-tunnel measurements of the autocorrelation function (Figs. 25 and 26) can be compared to available full-scale measurements. This comparison is shown in Fig. 32. The format used to express the coherence (equation (4-1)) has also been used in full-scale applications. The values of C reported in the literature are all near 8.0, very close to the wind-tunnel values of 9.2. The use of a factor $nd/\overline{U}$ in the comparison is another instance of the time scaling of equation (4-4).

An additional indication of the time scale relating flow characteristics in the wind tunnel to a full-scale boundary layer may be obtained by considering the gust velocity over a period of time. The gust ratio is normally defined as the ratio of the mean velocity over a time T_1 to the maximum mean velocity over a time T_2 in a period T_1, or

$$\overline{U}_{T_1} / (\overline{U}_{T_2})_{max \text{ over } T_1} \tag{4-12}$$

where $T_1 > T_2$ and

$$\overline{U}_{T_1} = \frac{1}{T_1} \int_o^{T_1} U dt \tag{4-13}$$

$$(\overline{U}_{T_2})_{max \text{ over } T_1} = \left[\frac{1}{T_2} \int_o^{T_2} U dt\right]_{max \text{ in } T_1} \tag{4-14}$$

In the actual calculation the record of length T_1 sec is broken into segments T_2 sec long and the individual integrations performed. No attempt is made to determine the effect of starting at different locations shifted by a fraction of T_2. It is assumed that T_2/T_1 is very small and that enough records T_2 sec long are present to obtain an accurate measure of the gust ratio.

Deacon (1955) and Durst (1960) provided much of the initial data used in this type analysis. This work has been summarized by Deacon (1965) and data from the reference is included in Fig. 33. This is a plot of the ratio of the mean velocity in a time T_1 to the maximum 2 second average in that time period. Deacon used the 2 second average as a reference (T_2 = 2 sec), and the wind-tunnel results were transformed to equivalent full-scale times for comparison. Since velocity ratios are being considered, the velocity scaling is 1:1 and therefore only the geometric scale is involved in the time scaling (equation (4-6)). Using the average scale of 1:250, 1 second in the wind tunnel was equivalent to 250 seconds for the full-scale flow. Deacon has summarized results for three different exposures with the following nomenclature, exposure A - smooth approach $p = 0.12 - 0.18$, exposure B - rolling country $p = 0.25$, and exposure C - built-up approach $p = 0.3 - 0.4$. The gust ratio for each of these exposures at a height of 10 m is shown in Fig. 33. The solid lines in this figure are taken from Deacon (1965). Deacon also included data for exposure C measured 25 m above the ground. The lowest values of velocity measured in the wind tunnel correspond to a height of approximately 20 m above the ground, and therefore no direct comparison is possible with the data taken by Deacon. A plot is included for each of the four wind-tunnel boundary layers at a height corresponding to a full-scale height of 20 m. The trend with increasing roughness corresponds to the full-scale measurements. The range of the gust ratio for the wind-tunnel data is consistent with the fact that the wind-tunnel measurements correspond to higher elevation than the data taken by Deacon. One curve is included for boundary layer 2 at a scaled elevation of 60 m. The trend with increasing height indicated by the measurements at 20 m and 60 m exhibit the same trend as the data taken by Deacon. The agreement between the full-scale and wind-tunnel measurements in Fig. 33 is further evidence of the validity of the time-scaling relationship given by equation (4-6).

The preceding discussion has centered on the geometric and temporal scales of the wind-tunnel simulation. A complete discussion of other scaling parameters has been published by Cermak (1971).

Chapter V

RESULTS AND DISCUSSION

Over 90,000 pressure measurements were recorded during the course of the research described in this dissertation. This quantity of data could only be examined and presented by taking advantage of the speed and versatility of a digital computer in conjunction with a number of simplifying assumptions. While the use of the computer and simplifying assumptions may in some instances reduce the precision of the resulting representations the ability to process large quantities of data relating to a wide range of conditions far outweighs any of the limitations introduced by the approximations. Instances in which a local effect may have been overlooked are carefully discussed in the following sections.

Mean Pressures

Types of Pressure Coefficients - Two different types of mean pressure coefficients are frequently used in the literature. These two types of coefficients differ only in the choice of the reference velocity used to nondimensionalize the pressure. Most recent wind-tunnel studies use the mean velocity of the undisturbed flow above the boundary layer. This velocity is an easily measured quantity in the wind tunnel, but full-scale measurements are much more difficult due to the uncertainty associated with the actual depth of the boundary layer and the difficulty of making measurements. The second type of coefficient uses the velocity in the approach flow at the height of the building as a reference. This velocity is easier to measure in the full-scale but it is a difficult task to relate the mean velocity at the top of a building in an urban environment to existing records of velocity which are normally measured at airports. Because each of these coefficients is based upon a quantity which is related to a particular structure, a different type coefficient was selected for use in this dissertation. This coefficient was based upon the mean velocity in the approach flow at the height of the location of the pressure measurement. Obvious advantages of this type coefficient are that the coefficient is not dependent upon a knowledge of the boudary-layer thickness and that for different height buildings the reference velocity is not directly dependent on the height of the building. This type of coefficient will be referred to as a local pressure coefficient because it is based upon the velocity at the height of the measurement location, or the local velocity. It is interesting to note that for a uniform flow with no vertical velocity gradient all three types of pressure coefficients are equivalent.

Before a local pressure coefficient was selected, the relative merits of each type coefficient were evaluated. Examples of the different types of coefficients for all of the boundary layers considered showing the mean pressure distribution for building B3 for $\alpha = 0$ and $\alpha = 20$ are shown in Figs. 34-45. Three sides are shown. The arrangement of the sides relative to the approach wind was shown in Fig. 6. These plots and all subsequent plots are presented in a normalized format such that all sides always appear as squares. The horizontal dimension is normalized with the width of the face and the vertical dimension is normalized with the height of the building.

The mean pressure coefficients based upon the free-stream velocity are shown in Figs. 34-37. A definite decrease in the values of the mean pressure coefficient on the upwind face, side 2, is evident as the power-law exponent increases. This decrease can be attributed to the reduced velocity in the lower portions of the boundary layer as the power-law exponent increases. This difference in the velocity profiles was shown in Fig. 14. The value of H/δ for building B3 is 0.20. The values on the side face, side 3, are similar except for the data taken in boundary layer 1. The values of the mean pressure on the side are more negative in this case than for boundary layers 2-4. This difference as well as a similar difference on the downwind face for $\alpha = 0$ is a result of the fact that the flow has not reattached to the side face in boundary layer 1 while it has reattached in the other three boundary layers.

The coefficients based upon the velocity in the approach flow at roof height are in better agreement for the different boundary layers than those based upon the free-stream velocity. These plots are shown in Figs. 38-41 for boundary layers 1-4 respectively. The values on the upwind face, side 2, are quite similar for boundary layers 2-4 but again a difference exists for boundary layer 1. The values of the mean pressure coefficients for boundary layer 1 are again higher than for the other cases as a result of the higher velocity present in the approach at a particular height. The differences on the side and downwind faces, due to the difference in reattachment locations between the various boundary layers, remain evident.

The same cases plotted in terms of a local pressure coefficient are shown in Figs. 42-45. This type of coefficient provides better agreement on the upwind face than either of the other previous two types of coefficient. The differences due to the reattachment locations are not affected by the use of a local pressure coefficient.

Use of a local pressure coefficient results in positive pressure coefficients greater than 1.0. This is due to the fact that a downward flow exists on the upwind face of a building and therefore fluid present in the boundary layer approaching the building is carried to a lower level before it impinges on the building.

Near the bottom of a building the use of a local pressure coefficient can lead to difficulties. At the bottom of the building the velocity in the approach boundary layer is zero and the local pressure coefficient would be infinite. To avoid this problem no values of local pressure coefficient are reported for the lower 10 percent of the buildings. In order to determine a pressure in this region the pressure at the $z/H = 0.1$ level can be assumed constant over the lower 10 percent of the building.

A further comparison between pressure coefficients based on the velocity at the roof and those based on the local velocity can be seen in Figs. 46 and 47. These are plots of building B4 ($H/\delta = 0.4$) in terms of these two types of coefficients. When compared with Figs. 39 and 43 respectively, very little difference can be seen in the way either type of coefficient allows the two cases to be expressed by a single plot. A variation of H/δ can therefore be adequately accounted for through use of a pressure coefficient based upon either the velocity in the approach flow at the level of the pressure measurement or the velocity in the approach flow at roof height.

The use of a coefficient based upon the local velocity was selected primarily because it allowed data taken in all of the boundary layers used in the study to be described by a single mean pressure plot in more instances than the other types of pressure coefficient.

The difference between the use of a pressure coefficient based upon a local velocity and one based upon the velocity at the roof were not great and similar conclusions concerning the nature of surface pressures would have been evident no matter which type of coefficient was selected.

Parameters Affecting Mean Pressure Distributions - Jensen and Franck (1965) stressed the importance of the effect of the surface roughness length z_o on the mean pressure distributions. Because the use of a local pressure coefficient removes the effect of the different velocity profiles, the plots in Figs. 42-45 may be used to consider the effect of z_o. The only major difference for the four boundary layers is on sides 3 and 4 for boundary layer 1. The flow in boundary layer 1 had a z_o which was two orders of magnitude less than the other three boundary layers. The mean local pressure coefficients on sides 3 and 4 are more negative for boundary layer 1 than for the other cases. This more negative pressure could be an effect of a smaller z_o, or it could also be due to the effect of lower level of incident turbulence intensity on reattachment. If reattachment does not occur for $\alpha = 0$, then the pressure recovery on the side face will be less than if reattachment did occur. This would indicate that the cause of the more negative regions is a function of incident turbulence intensity rather than z_o. Because both z_o and the incident turbulence intensity varied in the same manner in the boundary layers, it is not possible to evaluate the two parameters separately. The turbulence intensity appears to be the more important of the two factors because the trends agree with observed effects in uniform flows about two-dimensional bodies. On surfaces where reattachment is not a dominant mechanism neither z_o nor the incident turbulence intensity had a significant effect on the mean pressure distribution. This conclusion is supported by the data shown in Figs. 42-45 for $\alpha = 0$ side 2 and for $\alpha = 20$ sides 2, 3 and 4.

The effect of the mean velocity profile, or power-law-exponent p was found to be minimal when a local pressure coefficient was used. No significant effects of the ratio of building width to integral scale W/Λ_x were found over the range studied. The ratio of building height to boundary-layer thickness in the range considered, 0.2-0.4, did not have an appreciable effect on the mean pressure distributions. As this ratio becomes close to 1.0 or very small, a more significant effect may be observed. Very little variation in the mean pressure distribution was observed over the range of aspect ratio H/W considered, 0.25-8.0.

Averaged Mean Pressure Coefficients - A significant variation in the mean pressure distribution was observed as a function of side ratio γ, W/L. Three values of γ were considered, 0.25, 0.5 and 1.0. Because of this variation, a method of averaging various cases together was employed in which the mean local pressure coefficients for all buildings of the same side ratio were averaged for different boundary layers and β's. This averaging used the contour-plot routine to obtain a uniform grid (equally spaced in the x or y and z directions for the sides and in the x and y directions for the roof) with spacing 0.1L, 0.1W or 0.1H. The values of the mean local pressure coefficient for each grid location for a particular side and wind direction were then averaged for all values of β and for all boundary layers for a fixed γ. The coefficient obtained using this averaging procedure are denoted by $C_{pmean, \bar{\beta}, \bar{p}}$ and will be called an averaged mean local pressure coefficient. The subscript $\bar{\beta}$ indicates averaging for different aspect ratios and the subscript $\bar{p}$ indicates averaging for different boundary layers. Such an averaging technique enabled a large number of cases to be described by a single plot. Some effects are overlooked in this type of condensation, but such a technique was the only realistic method of presenting the volume of data collected. Three sets of plots for $C_{pmean, \bar{\beta}, \bar{p}}$ are shown in Appendix B, Figs. B1-B15. Five wind directions are shown for each side ratio, 0, 20, 40, 70 and 90 degrees. Tabular values for the same cases are listed in Appendix C, Tables C1-C3. These tables list $C_{pmean, \bar{\beta}, \bar{p}}$ in a uniform grid over each face of the building.

The figures in Appendix B represent all five exterior surfaces of a building folded out. All of the side surfaces are shown in a horizontal line with the roof above side 3. A small diagram is included with each figure to indicate the relationship between the incident wind and the sides. These plots are averages of up to 10 different cases. In order to obtain a quantitative measure for the accuracy of the averaging, the standard deviations of the C_{pmean} values used to compute $C_{pmean, \bar{\beta}, \bar{p}}$ were computed. The standard deviations of the values of C_{pmean} used to compute $C_{pmean, \bar{\beta}, \bar{p}}$ were computed for each grid location on all four sides and the roof. These 565 separate standard deviations were then averaged to obtain one number for the $\bar{\beta}, \bar{p}$ averaging for a particular γ and α. These values are shown in Table 10 for each γ and α. An additional value obtained by averaging the standard deviation for all α and a fixed γ is also shown in Table 10. These standard deviations may be best evaluated when compared with the repeatability of the measurement system for mean pressures discussed in Chapter III. The standard deviation of a measurement repeated for a fixed γ, β and α was 0.11 when expressed in terms of a mean local pressure coefficient. The values of standard deviation listed in Table 10 emphasize the fact that there is very little dependence of the mean local pressure coefficients on β and the different boundary layers. While the standard deviations of the averaged mean local pressure coefficients are larger than the repeatability of the measurements, when averaged over all values of α, the difference is less than 50 percent of the repeatability of the system. The fact that the mean local pressure coefficients are not significantly dependent on β or the properties of the approach boundary layer allows a large number of situations to be described by a single plot or corresponding table.

The regions near the edges of the roof are subject to local flow phenomena as a result of corner vortices being formed for certain ranges of wind direction. The limitations of available instrumentation did not allow a large number of taps to be located on the roofs. In order to obtain an overall picture of the character of the surface pressures on the roofs, the available taps were distributed over the entire surface with the knowledge that certain local effects may be overlooked. In order to assess the validity of the data obtained in this manner, the roof of building B5 was instrumented with 64 tap locations and rerun for several wind directions. It was established that within 0.1W and 0.1L of the edge large negative pressures existed for wind directions from 20 to 70 degrees. In order to utilize existing data for the roofs, surface pressures were only reported for the region inside of this band. Additional studies will be required in order to establish the nature of the surface pressures in these local areas. Mean local pressure coefficients as large as -4.0 were observed in these regions. Peak local pressure coefficients exceeded -6.0.

The effects of incident wind direction on the mean surface pressures is readily evident in the summary plots of Fig. B1-B15. The largest negative local pressure coefficients occur on sides 1 and 3 for $\alpha = 0$ or on sides 2 and 4 for $\alpha = 90$. Positive pressures can be observed for upwind faces such as side 2 for $\alpha = 0$ or side 3 for $\alpha = 90$. The magnitude of these positive pressures is not strongly dependent upon side ratio. The most significant effects of side ratio can be seen on the sides which are on the downwind side of the building and are therefore influenced by the pressure in the wake, side 4 for $\alpha = 0$ and side 1 for $\alpha = 90$. For the case of a side ratio of 0.25 and $\alpha = 0$, the mean local pressure coefficient on side 4 is less negative than that on side 1 for $\alpha = 90$. This difference is due to the fact that for $\alpha = 0$ the flow is parallel to the longer side allowing reattachment on the side face and therefore more complete pressure recovery along that face. For $\alpha = 90$, the flow is parallel to the shorter face resulting in less pressure recovery and therefore a more negative mean local pressure coefficient on side 1.

The plots in Appendix B and the tables in Appendix C are averaged and depending on their application it may be appropriate to add one standard deviation to the absolute value of C_{pmean}, $\bar{\beta}$, $\bar{p}$ to provide a conservative estimate.

RMS Pressures

The rms pressures were also measured for all cases studied. No type of coefficient was found which resulted in a common distribution for the various boundary layers. In order to maintain as much consistency as possible in the data presentation, the rms pressure coefficients were also reported in a format based upon the local velocity.

Parameters Affecting RMS Pressure Distributions - The only two parameters found to have a significant effect on the rms pressures were the side ratio and the approach flow. Because the properties of the approach boundary layers could not be varied independently it was not possible to determine if either the turbulence intensity, power-law exponent, surface roughness length or longitudinal integral scale had the most important effect on the rms pressures. It would be very difficult to generate a boundary layer with a constant z_o, p, and Λ_x and yet still vary the turbulence intensity. Until such a simulation can be accomplished it will be difficult to separate the effects of the different properties of a boundary layer. In order to make the following discussion more concise, all effects of the boundary layers are discussed in terms of the incident turbulence intensity.

Averaged RMS Pressure Coefficients - Because the rms local pressure coefficients were dependent on both γ and approach boundary layer, they were only averaged over β. The averaging was conducted using the same techniques as were used with $C_{pmean, \overline{\beta}, \overline{p}}$. The averaged rms local pressure coefficients are denoted by $C_{prms, \overline{\beta}}$ because they are only averaged over different values of β. This procedure resulted in four sets of values for each side ratio. To limit the number of figures presented, only the results for two boundary layers are shown for each side ratio in Appendix B. The values for all side ratios and boundary layers are included in tabular form in Appendix C. The standard deviations of the values of C_{prms} used to compute $C_{prms,\,\bar{\beta}}$ are listed in Table 11. In all cases, the standard deviation of the averaged values was very close to the repeatability of the individual measurements.

On upwind and side faces $C_{prms,\,\bar{\beta}}$ increases with increasing turbulence intensity in the approach flow. The maximum values observed for a given boundary layer are similar for all three side ratios; however, the distribution on a particular face is a function of side ratio. Peaks in $C_{prms,\,\bar{\beta}}$ were observed on the side faces in regions where reattachment occurs. A more detailed description of the reattachment phenomena is included in a subsequent section. On the downwind faces or those faces which are located in the wake region of the flow $C_{prms,\,\bar{\beta}}$ decreased with increasing turbulence intensity. This reduction is caused by the same mechanism which caused less negative mean pressures in these regions. Increased turbulence intensity for a fixed geometry results in reattachment at a more upstream location and hence less intense fluctuations in the wake. $C_{prms,\,\bar{\beta}}$ on the roof increased with increasing turbulence intensity.

Peak Pressures

The design of cladding for structures requires a knowledge of the properties of the peak pressures which a structure can be expected to experience during its projected lifetime. The nature of the response of the type of material used in the cladding will determine the method in which the peak pressures should be integrated into the design process. While the properties of metallic cladding under a dynamic load are well established, the response of glass to a transient load is not clearly understood. Because of these differing levels of knowledge, this section will concentrate on the actual nature of the peak pressures on a building but will also propose a technique for predicting peak pressures that could be integrated into a design procedure.

Probability Density and Distribution Functions - Both the peak minimum and peak maximum pressure coefficients (eqs. 3-17 and 3-18) were recorded for each pressure tap location. Recent work by Peterka and Cermak (1974) indicates that the probability density functions of the peak pressures fall into two distinct classes. These classes are based on mean pressure coefficients using a reference velocity above the boundary layer. When expressed in terms of a local pressure coefficient these classes are all mean local pressure coefficients greater than -0.3 and all mean local pressure coefficients less than -0.75. The probability density function of the peak pressures for these two classes are shown in Fig. 48. These probability density functions are very similar to those found by Peterka and Cermak (1974). The difference between the distribution of the peaks for the two classes is significant in that locations with large negative mean local pressure coefficients have a higher probability of peaks occurring 10 times the rms below the mean than do the locations with mean local pressure coefficients greater than -0.3. The peak probability density function is a function of sample time (Davenport, 1961a). The peaks used were all observed during a 16.3 sec interval in the wind tunnel. Scaling to values of sample time for the full-scale can be accomplished using the techniques discussed in Chapter IV. The cumulative probability distribution function corresponding to these two cases is also shown in Fig. 48. The cumulative probability distribution also shows the difference between the two cases. For the large negative means a cumulative probability of 0.9 occurs at $\eta = -6.6$ while for the mean local pressure coefficients greater than -0.3, the cumulative probability of 0.9 occurs at an $\eta = 4.4$. The nature of the probability density of the peaks in the region between these two cases is not well established although a conservative approach would be to use the peak minimum distribution for all local pressure coefficients less than -0.3. The probability density and distribution functions were obtained by using the peak pressure coefficients at each tap location for each building, boundary layer and wind direction. The peaks were sorted into the two classes based on the mean pressure coefficient corresponding to the peak. No effects of either building geometry or incident flow characteristics were evident and all of the cases were combined to one plot.

Techniques for predicting peak probability density functions are available for the positive peaks (Davenport, 1964) and are being developed by Peterka (1976) for the non-Gaussian fluctuations in the regions of high negative pressure. These prediction techniques both require the value of the average effective fluctuation rate ν in peaks per second. For the pressure fluctuations studied in both stagnation and separated regions ν was approximately 20. These techniques coupled with a knowledge of ν allow prediction of the plots in Fig. 48 for other sample periods.

The cumulative probability distribution shown in Fig. 48 together with the plots of the mean and rms coefficients in Appendix B allow prediction of peak pressures for a specified probability of occurrence.

The peak pressure coefficient can be expressed as

$$C_{ppeak} = C_{pmean} + \eta C_{prms} \tag{5-1}$$

where η would be selected from Fig. 48 or an equivalent plot for the particular sample period under consideration.

Averaged Minimum Mean Pressure Coefficients - In order to accurately specify peak pressure coefficients, a technique which utilizes the mean and rms pressure coefficients would be more accurate than a procedure which merely recorded the maximum or minimum pressure coefficient observed at a particular location. This improved accuracy is best understood when the character of the peak probability density function of Fig. 48 is taken into account. If a measurement of a mean or rms pressure coefficient at a particular location is repeated, the values of each individual measurement fall within the repeatability of the measurement system. The peak pressure coefficients for a repeated condition could correspond to a value of which lies anywhere on the peak pressure probability density leading to a difference of easily 2 to 3 times the rms pressure coefficient. This could be as large as $\pm$ 1.5 in the peak local pressure coefficient compared to a repeatability of $\pm$ 0.3 and $\pm$ 0.1 respectively for the mean local and rms local pressure coefficients. In a particular design application it would be desirable to specify peak pressures with a constant probability of occurrence over the entire surface of a building. Such an approach cannot be accomplished by merely sorting the largest peak pressure which occurs at a particular location for all values of approach wind. Peak pressures would be obtained using such a technique which would correspond to the entire range of η. In order to relate a sorting technique to the mean pressure coefficients instead of the peak pressure coefficients, the pressure coefficients for building B13 in all four boundary layers were examined to find the wind direction at which the minimum mean pressure coefficient occurred and also the wind direction at which the minimum peak minimum pressure coefficient occurred. At 61 percent of the tap locations the minimum mean and the minimum peak minimum for a particular tap location occurred at the same wind direction. For the remaining 39 percent of the tap locations, the average η for the minimum mean case was 4.52 for boundary layer 1 and 5.11 for boundary layer 2. The average η's for the corresponding peak minimum were 6.34 for boundary layer 1 and 6.90 for boundary layer 2. The fact that the average η for the minimum mean cases which did not correspond to the minimum peak minimum was smaller than the η for the minimum peak minimum at the same tap locations supports an argument that the reason the minimum mean and minimum peak minimum do not correspond is because of the smaller values of η. If a fixed η of -8.0 were used for the calculation of the minimum peak minimum 81 percent of the cases correspond to the minimum mean condition. In order to provide a repeatable sorting technique, a system which uses the minimum mean and fixed η dependent on the properties of the cladding and the design philosophy is a desirable alternative to an approach which involves sorting peak pressure coefficients. Only minimum means were sorted to allow prediction of minimum peak minimum coefficients because in almost all cases these have a larger absolute value than the maximum peak maximum coefficients.

The minimum mean pressure coefficients for all wind directions were obtained by sorting all wind directions observed for a particular location for a given building and boundary layer. For most of the buildings this was 11 different wind directions, only five of which are listed in Appendices B and C. After this sorting was completed these values and the rms associated with each location were averaged for each side ratio for the different β's and boundary layers. The averaged minimum mean pressure coefficients are denoted by $_{\hat{\alpha}}C_{mean, \overline{\beta}, \overline{p}}$ where the subscript $\hat{\alpha}$ indicates that the value is the minimum mean for all values of α studied. The rms local pressure coefficient corresponding to $_{\hat{\alpha}}C_{pmean, \overline{\beta}, \overline{p}}$ is denoted by $_{\hat{\alpha}}C_{prms, \overline{\beta}, \overline{p}}$. The $\hat{\alpha}$ subscript indicates that the sorting was done with respect to the minimum mean value and that the value used for the rms local pressure coefficient is that value corresponding to the minimum mean. The resulting values can be used to predict the peak minimum pressure coefficients for all wind directions using the technique described by equation (5-1). Plots of $_{\hat{\alpha}}C_{pmean, \overline{\beta}, \overline{p}}$ and $_{\hat{\alpha}}C_{prms, \overline{\beta}, \overline{p}}$ are shown in Figs. 49-54 for side ratios of 1.0, 0.5 and 0.25. The values in tabular form are listed in Tables 12-14. The standard deviations of the values of C_{pmean} and C_{prms} used to compute $_{\hat{\alpha}}C_{pmean, \overline{\beta}, \overline{p}}$ and $_{\hat{\alpha}}C_{prms, \overline{\beta}, \overline{p}}$ are listed in Table 15. The standard deviation for $_{\hat{\alpha}}C_{prms, \overline{\beta}, \overline{p}}$ are larger than those for $C_{prms, \overline{\beta}}$ listed in Table 11. This difference is due to the fact that $_{\hat{\alpha}}C_{prms, \overline{\beta}, \overline{p}}$ was averaged over all four boundary layers in order to condense the plots.

A Suggested Procedure for Predicting Peak Pressure Coefficients - Using equation (5-1) and the values of $_{\hat{\alpha}} C_{pmean,\ \overline{\beta},\ \overline{p}}$ and $_{\hat{\alpha}} C_{prms,\ \overline{\beta},\ \overline{p}}$ from the previous section, a procedure for predicting peak pressures for cladding design may be outlined. While the $\hat{\alpha}$ sort was done for wind directions 0-90, in an actual design situation the wind could be expected to come from any direction 0-360. Because only an isolated building was studied, each side should be divided in half and corresponding locations measured from the leading edge compared to obtain the minimum at a location. For γ of 1.0, all four sides could be included and 8 separate locations would be compared to obtain the design valve. For γ of 0.5 and 0.25, the longer and shorter sides should be sorted separately resulting in 4 values being compared for a given location. Once these values of $_{\hat{\alpha}} C_{pmean,\ \overline{\beta},\ \overline{p}}$ and the corresponding values of $_{\hat{\alpha}} C_{prms,\ \overline{\beta},\ \overline{p}}$ are available , the only factor remaining in the prediction of a peak pressure coefficient is the choice of η. As has been pointed out earlier, the peak pressure probability density curve is dependent on sample time. If the peak pressure coefficient is to be used with a reference pressure based upon an hourly mean velocity, then a peak pressure probability density based upon a one-hour sample period would be appropriate. If a reference pressure based upon a fastest-mile velocity is used, a time duration associated with the passage of one mile of wind would be appropriate. The peak pressure probability density in Fig. 48 is based upon a 16.3 sec sample period in the wind tunnel which corresponds to about a one-hour sample period in the full-scale. Once the proper peak pressures probability density is established, then a choice of η must be made based upon both the properties of the cladding being designed and the design philosophy.

Reattachment

In many instances an interpretation of the surface pressures requires a knowledge of whether or not reattachment of the flow occurs on a given face for a particular wind direction and the approximate location of reattachment when it does take place. In order to correlate existing pressure data with reattachment, tufts were attached to three buildings allowing visual identification of the reattachment location. The data from these visual observations were compared with the rms pressure distributions and a criteria that reattachment occurs where the rms pressure coefficient on a particular horizontal line is a maximum was established. An example of this comparison is shown in Fig. 55. This is a plot of reattachment position on side 3 as a function α. The visual observations of reattachment as well as the peaks in the mean and rms pressures are plotted. The location of the pressure peaks as well as the visual observations of reattachment varied somewhat with height and the results plotted are the average of the location at all five levels at which taps were located. The reattachment position based on visual observations coincides with the peak of the rms pressures. It should be emphasized that this reattachment location varies with time and the visual observation is based on a time averaged position. It would be more precise to consider a reattachment region equal to perhaps 20 percent of the width of the face centered in the position plotted in Fig. 55.

Using the peak in the rms pressure distribution as a criteria, all data obtained were examined in order to locate the wind direction at which reattachment first was observed and the wind direction at which reattachment no longer was evident and the flow was fully attached along side 3. These results are summarized in Table 16. Data were not available for α's less than 0, and therefore reattachment is only indicated as occuring <0. The spacing of wind directions considered did not allow similar observations for side 2 in the range of α from 70° to 90°. Certain trends were observed which are shown in Figs. 56-58. The effect of incident turbulence intensity on the reattachment location for building B3 is shown in Fig. 56. For the approach flow with the lowest level of turbulence intensity, no reattachment was observed for a wind direction of 0 degrees. As the turbulence intensity increased, reattachment on side 3 was initiated and the reattachment location moved closer to the leading edge of the building as the turbulence intensity increased.

The effect of side ratio γ for a fixed turbulence intensity is shown in Fig. 57. In a nondimensional format, the reattachment location was closer to the leading edge as the side ratio decreased. In terms of a dimensional variable, the reattachment occurred at almost the same location in each case. The effect of absolute building size, or for instance the ratio of building width to the integral scale, W/Λ_x, is shown in Fig. 58. As the ratio W/Λ_x increased (always remaining less than 1), the nondimensional reattachment location moved closer to the leading edge of the building for $\alpha = 0$. As α increased to 20 degrees, very little difference due to W/Λ_x was evident.

Laneville, Gartshore and Parkinson (1975) measured the minimum reattachment angle for two-dimensional bodies in flows with a lower incident turbulence intensity than the boundary layers used in this dissertation. In all cases, initial reattachment occurred for a smaller angle of attack in the case of a three-dimensional body than for a two-dimensional body. For boundary layer 1, which had a comparable incident turbulence intensity to one of the cases studied by Laneville, et al., initial reattachment still occurred at a smaller angle for the boundary-layer flow about a three-dimensional body than for the uniform flow about a two-dimensional body.

Forces and Moments

The mean pressure for the series of buildings studied was integrated over the surface of each building to obtain the mean forces and moments acting on the structure caused by the surface pressures. As would be expected, the force and moment coefficients obtained were found to depend on the same factors as the mean pressure coefficients: side ratio γ and for a limited range of wind directions incident turbulent intensity. No significant effects which could be attributed to aspect ratio, mean velocity profile, surface roughness length, H/δ, or W/Λ_x were observed. The concept of a local pressure coefficient was extended to the force and moment coefficients through the use of a velocity integrated over the height of the structure (eq. 3-26). The use of such a reference velocity in the definition of the force and moment coefficients (eqs. 3-20 to 3-25) removed the effects caused by the different mean velocity profiles. Another logical technique which could have been used to incorporate the effects of different mean velocity profiles would have been to integrate the square of the velocity instead of the velocity. This approach did not provide as good agreement between the four boundary layers considered. The difference between the two techniques was not large.

The mean force and moment coefficients for side ratios of 1.0, 0.5, and 0.25 are shown in Figs. 59-61. In most instances, the values of a particular force or moment coefficient for a specified side ratio and wind direction lie on a single curve. Exceptions are discussed in the following paragraphs. Another useful parameter in the evaluation of the force on a structure due to the wind is the direction of the resultant horizontal force acting on the structure as a function of wind direction, θ_R. This variation is shown in Figs. 62-64 for side ratios 1.0, 0.5, and 0.25 respectively. θ_R is defined such that a force in the x direction has a θ_R of 0° and a force in the negative y direction has a θ_R of 90°. For a side ratio of 1.0, the resultant force direction is usually very close to the direction of the incident wind. As the side ratio decreases to 0.25, the resultant force direction is quite different from the incident wind direction.

The effect of local turbulence intensity was important for C_{FY} for small α. $\partial C_{FY}/\partial \alpha$ was found to be positive in some cases for small α. A similar effect was evident for C_{MX} and $\partial C_{MX}/\partial \alpha$ for small α. This effect was most evident for a side ratio of 1.0. While the magnitude of C_{FY} and C_{MX} coefficients for small α is small, the shape of the C_{FY} curve is of importance in consideration of the dynamics of the structure (Parkinson, 1974). The most striking indication of the nature of the situation in these regions can be seen in Figs. 62-64. There are instances in which the component of the force acting on the buildings in a direction opposite to the direction of the corresponding component of the approach wind. For instance in Fig. 62 for building B4 and for building B3 in boundary layer 1 there is a region where θ_R is negative. A negative θ_R in this instance means that there is a component of the incident wind from the positive y direction (Fig. 4) but the y-force is acting in the positive y direction, opposite to the incident wind. This reversal of direction is caused by the reattachment on the side face, side 3. As the reattachment location moves closer to the leading edge due to either a change in the approach wind direction or due to increased turbulence intensity for a fixed wind direction, the pressure in the separation bubble upstream of the reattachment location becomes less negative. For large separation bubbles, this large negative pressure causes a net force with a component in the direction opposite to that of the incident wind. The cases which exhibit this reversal are those in which the separation bubble is large in comparison with the length of the side ($1.0 > \frac{r}{W} > 0.5$). This characteristic of the force coefficient was observed for low incident turbulence intensity (15 percent and less) and for the smaller building sizes studied.

One particular situation did show an effect of a combination of β and γ. The curves for C_{MY} in Figs. 60 and 61 show a trend for buildings B10 and B15 for wind directions 0°-30°. This increase in C_{MY} is due to the increased contribution to the y-moment due to suction on the roof as L/H increases. C_{MY} was defined in equation (3-21) using a factor of WH^2, the area of the smaller face multiplied by the height of the building. The contribution of the y-moment due to the suction on the roof should be divided by a factor of the form WL^2 to accurately nondimensionalize these effects. In order to make the coefficient more convenient to use, the factor WH^2 was selected as being most appropriate. This results in the roof effect being weighted by a factor of WL^2/WH^2 of $(L/H)^2$. For buildings B10 and B15 this factor is 4 and 16 respectively resulting in a much greater influence of the roof suction on the C_{MY} than was present in the other cases and hence an increase in C_{MY} which does not collapse to the other data. It is felt that the form of the coefficient used is appropriate because of its simplicity but the use of the collapsed band of data to predict C_{MY} will give a low estimate of C_{MY} for wind directions 0 to 30 for cases where the long side the building L is greater than the height H.

Single-Channel Statistics

Certain applications require a knowledge of the nature of the pressure fluctuations at a particular location on the structure. The most common single-channel measurements which may be used to describe the pressure fluctuations are the autocorrelation coefficient (eq. 3-9) and the power spectral density function (eq. 3-10). These quantities provide information about the pressure fluctuations in the time and frequency domain respectively. Measreuments were conducted using building B3 ($\gamma = 1.0$, $\beta = 2.0$) in boundary layer 2. A limited number of additional measurements were made using building B4 ($\gamma = 1.0$, $\beta = 4.0$) and B13 ($\gamma = 0.25$, $\beta = 2.0$). The goal of these measurements was to qualitatively examine both the relationship between the pressure fluctuations and the velocity fluctuations in the approach flow and variation in the nature of pressure fluctuations around the building. The expense involved with the measurement of power spectra restricted the cases considered. The scope of the measurements of single channel statistics is much less than the scope of the previous sections. Full-scale measurements of pressure spectra are available primarily on the upwind face of a structure only. While this region is important in many instances, the largest local pressures generally occur in separated regions. The nature of the fluctuations in these separated regions therefore is very important.

The autocorrelation coefficients for a number of cases are shown in Figs. 65-68. Figure 65 shows the autocorrelation coefficients on the upwind or stagnation face of building B3. The mean and rms pressure coefficients for these cases are shown in Figs. B1 and B16. The autocorrelation coefficient of the longitudinal velocity fluctuations measured at $z/H = 0.70$, $x = 0.0$ (building not present) is also shown. There is very little variation in the autocorrelation coefficient of the pressure fluctuations across the stagnation face. The pressure fluctuations are more correlated as a function of lag time on the central region of the upwind face than are the velocity fluctuations in the approach flow. Figure 66 shows the autocorrelation coefficients on the side face for $\alpha = 0$. These plots exhibit less correlation as a function of lag time than those on the stagnation face. There is also a periodic component evident, especially in the plot of tap 1-6-5 of building B4. These fluctuations correspond to a Strouhal number, $nW/\overline{U}(\delta)$ of 0.1. This is approximately the value observed by Vickery (1968) for a three-dimensional body in a uniform flow ($\gamma = 1.0$, $\beta = 4.0$). Therefore, these periodic fluctuations are most likely a result of a vortex shedding phenomena. The amount of energy associated with this vortex shedding can be determined from the power spectral density function.

Figure 67 shows the autocorrelation functions for pressure fluctuations on the rear face of building B3. These also show a higher correlation than the incident flow. A periodic component is evident at the lower taps, 4-4-9 and 4-5-5. The corresponding Strouhal number is 0.1.

The autocorrelation coefficients for the pressure fluctuations at $\alpha = 20$ are shown in Fig. 68. These are for taps located on the rear faces exposed to the wake. A definite periodic component is evident. The Strouhal number is 0.08.

The power spectral densities for the cases corresponding to Figs. 65-68 are shown in Figs. 69-72. These plots are of $nS_p(n)$ vs. $n/\overline{U}(\delta)$. The area is proportional to a normalized variance such that the area under each spectrum is equal to 1.0. The horizontal scale is in terms of a dimensional wavenumber. These plots could be scaled to a full-scale situation using the techniques in Chapter IV.

The pressure spectra on the stagnation face are shown in Fig. 69 along with the incident velocity spectra at $z/\delta = 0.18$ or z/H of 0.9. This velocity spectrum has been smoothed (both segment and frequency averaged (Akins and Peterka, 1975)) more than the pressure spectra. There is a shift in the location of the peak of the pressure spectra between the edge, tap 2-3-1, and the middle of the face, tap 2-3-7. In the center of the face, tap 2-3-7, the reduced pressure spectra is a maximum at a higher wavenumber than the incident reduced velocity spectrum. The maximum occurs in the range of wavenumbers from 0.3 to 3.0 m^{-1}. In this region the reduced pressure spectra exhibits a higher normalized variance level than the incident flow. This increase is due to the effect of the presence of the building on the flow field. This effect qualitatively agrees with the theoretical prediction of Hunt (1973) for uniform flow on the upwind surface of a two-dimensional body.

Figure 70 shows the reduced pressure spectra for the side face. These plots are very different from those for the front face. The variance associated with the pressure fluctuations is concentrated in two regions when compared with either the incident flow or the pressure fluctuations on the stagnation face. One of these peaks occurs at a wavenumber corresponding to vortex shedding. This peak is present at tap location 1-3-1 and 1-3-5. At the down wind edge of the side face, tap 1-3-11, this peak is no longer present. For building B4 which is taller than B3 and for which the incident turbulence intensity was lower the peak at the wavenumber of 0.63 m^{-1} contains virtually all of the variance associated with the pressure fluctuations. The second peak in the spectra on the side face occurs at wavenumbers of 1.0 - 3.0 m^{-1}. This peak is not present in the incident longitudinal velocity spectrum and is probably caused by the interaction of the turbulence in the approach flow with the shear layers originating at the separation location. The relative magnitude of these regions varies along the side. Near the leading edge at tap location 1-3-1 the vortex shedding peak is dominant although the higher wavenumber peak is present. Near the reattachment location, tap 1-3-5, the peaks are comparable in magnitude. At the downwind edge of the side face, tap 1-3-11, the peak due to vortex shedding has disappeared entirely and most of the variance associated with the pressure fluctuations is located in the second region. The second region is not present at any appreciable level in the spectra for building B4, tap 1-6-5. This absence is a result of the fact that no reattachment took place for this configuration. Reattachment has some similar effects on vortex shedding as those of a splitter plate. Therefore, in the case where there was no reattachment, the amount of variance associated with vortex shedding was much larger than in the case where reattachment had occurred. The peak in the spectra for the side face of building B4 occurred at the same wavenumber for all levels. This means that a Strouhal number based on $\overline{U}(\delta)$ or $\overline{U}(H)$ would be constant as a function of height, while if the Strouhal number were based upon the local velocity in the approach boundary layer, $\overline{U}(z)$, it would vary with height.

Pressure spectra measured on the rear face of building B3 are shown in Fig. 71. These also exhibit two distinct regions of concentration of variance. The peak at a wavenumber of 0.63 m^{-1} is present in spectra obtained near the bottom of the face, taps 4-4-9 and 4-5-5, while the higher wavenumber peak is dominant higher on the face. The spectra for the rear faces for $\alpha = 20$ (Fig. 72) show peaks at a wavenumber which corresponds to vortex shedding.

In order to definitely relate these peaks to the flow field, additional measurements are necessary in both the near wake in the separated regions near the leading edge of the building. Such measurements are extremely difficult using existing instrumentation.

The most important feature of these measures of the pressure fluctuations is that while the pressure and velocity fluctuations may have similarities in some regions of the stagnation face, there is very little similarity on the side and rear faces. This difference is important in design considerations which involve either local effects on the side faces such as response of individual cladding panels or the across-wind response of the entire structure.

Two-Channel Statistics

The calculation of the overall response of a structure to fluctuating pressures requires a knowledge of the relationship between the pressure fluctuations at different locations on the structure. This relationship may be described in terms of a cross-correlation coefficient (eq. 3-12), a cospectrum function (eq. 3-13), or a coherence function (eq. 3-14). A cross-correlation coefficient in most instances is most easily related to physical behavior of the pressures and therefore all results are presented by this type expression. Knowledge of the cross-correlation coefficient allows computation of any of the other functions using the techniques described in Chapter III. The cross-correlation coefficients were computed using the pressure signals. Some investigators have adjusted the signs of the pressure terms to compute the cross correlation of the forces caused by the pressures. In the following figures, a positive pressure on the upwind face and a negative pressure on a downwind face would have a negative cross correlation even though the forces caused by these pressures act in the same direction relative to the building.

The cross correlation coefficients for the upwind face of building B3 in boundary layer 2 are shown in Fig. 73 for both horizontal and vertical separation. This figure is in terms of actual time in the wind tunnel and can be compared directly with Fig. 29 which shows comparable plots for the incident velocity fluctuations. For a vertical separation of 0.05 m, the pressure fluctuations exhibit a higher correlation than do the incident velocity fluctuations. A Similar relationship is present at larger vertical separations and for the horizontal separation. Therefore not only are the pressure fluctuations in the center of the upwind face more correlated as a function of time than the velocity fluctuations, they are also more correlated as a function of space.

The cross correlations for the side face of building B3 are shown in Fig. 74. For a vertical separation at approximately the reattachment position, the pressures are less correlated than on the stagnation face. These correlations are comparable to those in the approach velocity fluctuations. A periodic component of a relatively small amplitude is present in the cross correlations of the side face. The frequency at which this component occurs corresponds to a Strouhal number of 0.1, indicating a relationship to vortex shedding. The cross correlations for a horizontal separation on the side face are shown in Fig. 74. The cross correlation between taps 1-3-1 and 1-3-5 is large and positive. These two tap locations were both located within the separation bubble for $\alpha = 0$. The cross correlation between taps 1-3-5 and 1-3-11 is very different. For positive lag times greater than 0.02 sec, the cross correlation is comparable to that between 1-3-1 and 1-3-5. For lag times between 0.0 and 0.1 sec, the cross correlation is negative. This negative cross correlation with a peak at a lag time of -0.05 sec could be caused by a periodic movement of the reattachment location as a result of a tendency to shed vortices. The correlation between symmetric locations on the two opposite side faces is also negative. As the pressure increases at tap location 1-3-5, it decreases at tap location 3-3-7. The cross correlation is a minimum at a zero lag time, indicating that the fluctuations are exactly 180 degress out of phase. The value of τ for one period about the minimum lag corresponds to a Strouhal number of 0.09. The behavior can be explained by a periodic movement of the reattachment locations as a result of a tendency of the building to induce vortex shedding.

The cross correlations on the roof and rear face are shown in Fig. 75. The pressure on the rear face was positively correlated with the pressure on the roof (tap 4-1-5 and tap 0-8-1). No periodic components were evident in any of these cross correlations.

The cross correlations for three special cases are shown in Fig. 76. For $\alpha = 0$ the cross correlation between taps 4-3-7 and 2-3-3 was negative. This indicates that as the pressure increases on the upwind face of the building, it decreases (becomes more negative) on the downwind face. The mean pressure coefficient at tap 2-3-3 for $\alpha = 0$ is positive while the mean pressure coefficient at tap 4-3-7 for $\alpha = 0$ is negative. As a gust impinges on the building, the pressure will increase at tap 2-3-3 and decrease at tap 4-3-7, resulting in a negative correlation coefficient. This cross correlation would be positive if the forces caused by these pressures were considered instead of the pressures themselves. The correlation at a zero lag time (-0.24) agrees well with full-scale values reported by Holmes (1976). Two other cross correlations are included on Fig. 76 for $\alpha = 70$. These are between taps 2-3-3 and 3-3-7 and taps 4-4-8 and 2-3-3. A diagram indicating these positions is shown in Fig. 76. Tap 2-3-3 is located inside the separation bubble while tap 3-3-7 is in a stagnation region. These pressures are highly negatively correlated. This correlation is due both to the longitudinal fluctuations in the approach flow and variations in the instantaneous wind direction as a result of lateral turbulence. As the velocity increases, the pressure at tap location 3-3-7 increases while the pressure in the separated region including tap 2-3-3 decreases causing a negative correlation. A similar effect is caused by a decrease in α; the pressure at tap 2-3-3 would increase and the pressure at tap 3-3-7 would decrease. The correlation between separation bubble (tap 2-3-3) and the wake (4-4-3) was positive and relatively low.

The effect of both building geometry and incident flow on the pressure cross correlations is shown in Fig. 77. These plots are for both a horizontal and vertical separation on side 3 of building B13 for $\alpha = 90$. There is very little difference evident between the cross correlations for boundary layers 1 and 2. A very significant difference is evident when these plots are compared with those for building B3 (Fig. 73). The correlation for taps at opposite sides of the upwind face (3-3-11 and 3-3-1 for B13 and 2-3-11 and 2-3-1 for B3) was positive for the narrower face (B3) and negative for the wider face (B13). The negative correlation for building B13 with a maximum value at a lag time of zero indicates a variation which was out of phase by 180 degrees. The period is approximately 0.2 sec which again corresponds to a Strouhal number near 0.1 indicating a relationship with vortex shedding. For $\alpha = 90$ there was no reattachment on the side faces of building B13 and there was therefore a stronger tendency toward vortex shedding than was evident for building B3.

Comparisons with Current Techniques Used in Design

Mean Pressure Coefficients - ANSI A58.1-1972 (Table 7, $\beta < 2.5$ and Table 10) specifies the mean coefficients shown in Fig. 78. These coefficients are used with a reference pressure which increases with height and may therefore be compared with the mean local coefficients shown in Figs. B1, B6, and B11. In actual usage, ANSI uses a fastest-mile velocity in conjunction with the mean pressure coefficients, while the mean local pressure coefficients from this dissertation correspond to an hourly mean velocity. This difference has no effect on the pressure coefficients which may be compared directly. In using the pressure coefficients to obtain a pressure, care should be exercised to see what reference velocity, hourly mean or fastest mile, should be employed. Either velocity can be accurately used with the mean local pressure coefficients of this dissertation.

In order to easily compare Figs. B1, B6 and B11 with the ANSI values in Fig. 78, the values of $C_{pmean, \bar{\beta}, \bar{p}}$ were averaged over an entire face to obtain a single value to compare with the ANSI values. These values averaged for an entire side are shown in Fig. 79 for $\gamma = 1.0$, 0.5, and 0.25. With the exception of the side faces for

$\gamma = 1.0$, the averaged values of C_{pmean}, $\overline{\beta}$, $\overline{p}$ are less than those specified by ANSI A58.1-1972. While the averaged values over a side are less, there are regions in Figs. B1, B6, and B11 which have much larger mean local pressure coefficients than are indicated by the average values. A comparison of the peak pressures specified by ANSI A58.1-1972 and those predicted using the findings of this dissertation is contained in a subsequent section.

Assumptions used in the Calculating Alongwind Response - The results of this dissertation allow verification of many of the assumptions used in the calculation of alongwind response of structures due to wind loading. While there has been considerable discussion recently concerning the expression which should be used for the incident velocity spectrum (Simiu and Loizer, 1975), very little previous experimental data exists which would allow verification of either the mean pressure distributions used or the relationship between the incident velocity fluctuations and the pressure fluctuations. Existing procedures for calculation of alongwind response apply only to a wind normal to a side of the building.

The assumption that the pressure fluctuations are linearly related to the incident velocity fluctuations, equation (2-3), and the relationship between the pressure and incident velocity spectra which follows, equation (2-4), were valid only in the stagnation region in the center of the upwind face. Near the edges of the upwind face and on the entire downwind face neither of the assumptions was valid. The spectra were shown in Figs. 69-71.

Most alongwind response calculations use the mean pressure coefficients from ANSI A58.1-1972 (Table 7, ANSI-1972). These values have already been compared with the results of this dissertation.

Recommended Design Technique for Peak Surface Pressures - The results of this dissertation allow the consideration of revised design technique for surface pressures based on the properties of the pressure fluctuations. Sufficient data have been presented to emphasize the major differences between the pressure and velocity fluctuations. The current design procedure using a gust factor G_p (eq. 2-1) may no longer be the most rational approach. As an alternative, an approach based on a knowledge of the spatial distribution of the mean and rms pressures and the probability distribution of the peak pressures is recommended. While this approach has been suggested by Dalgliesh (1971), the generality of the findings of this dissertation allow consideration of such an approach in a code situation.

This modified approach would make use of the peak local pressure coefficients determining using equation (5-1) and the values of $\hat{\alpha}\, C_{pmean}, \overline{\beta}, \overline{p}$ and $\hat{\alpha}\, C_{prms}, \overline{\beta}, \overline{p}$ from Tables 12-14. The large number of different buildings and flow conditions which have been condensed into these values through the use of a local pressure coefficient allow prediction of peak local pressure coefficients for a wide range of parameters. Prior techniques were based only on mean pressure coefficients, and the ability to actually specify peak local pressure coefficients is a significant advance in cladding design. In terms of the notation of equation (2-1), the modified approach can be expressed as

$$P_d = C_{ppeak} K_z q_{30} \tag{5-2}$$

where K_z represents a height factor and q_{30} is the dynamic pressure at a height of 9.1 m above the ground. If the peak probability density of Fig. 48 is used in the determination of C_{ppeak}, then q_{30} would be based on an hourly mean velocity instead of the fastest mile used in ANSI A58.1-1972. The peak local pressure coefficient used in this approach can be modified to take into account the properties of the cladding by varying the choice of η used in determining C_{ppeak}.

While the values averaged together to obtain $\hat{\alpha}\, C_{pmean,\ \overline{\beta},\ \overline{p}}$ and $\hat{\alpha}\, C_{prms,\ \overline{\beta},\ \overline{p}}$ for a particular γ did not exactly agree for all β's and boundary layers, the errors involved in this averaging are of the order of 10 percent of the peak local pressure coefficient. Other factors involved in the specification of a peak pressure are much more uncertain than the peak local pressure coefficient which has been averaged over a large number of cases. Determination of an appropriate q_{30} at a building location may involve more than 10 percent error. In addition, such factors as adjacent buildings, local architectural modifications, or the physical properties of the cladding may introduce even more uncertainty into the required design pressure. The potential errors introduced by these other factors may be far greater than the error introduced by using $\hat{\alpha}\, C_{pmean,\ \overline{\beta},\ \overline{p}}$ and $\hat{\alpha}\, C_{prms,\ \overline{\beta},\ \overline{p}}$.

In order to compare the peak pressure coefficients determined using the data from the dissertation and this suggested approach with the peak pressure coefficients used in ANSI A58.1972, a number of assumptions must be made. $\gamma = 1.0$ was chosen as a comparison because of the large difference on the side faces in the mean pressure coefficient obtained by averaging all values on a side. η was selected to be +4.0 for positive peaks and -8.0 for negative peaks. These values correspond to approximately a cumulative probability distribution of 0.95. In order to account for the hourly mean vs. fastest-mile reference velocity, the coefficients obtained using the data of this dissertation were divided by $(1.28)^2$ to correct them into a form based upon a fastest-mile velocity (Velozzi and Cohen, 1968). This assumed a fastest-mile velocity of 60 mph (26.8 m/s). In order to use the ANSI values, exposure B in the ANSI terminology was compared with boundary layer 2. The comparison was made for parts and portions and therefore $C_{pmean} \cdot G_p$ for ANSI was compared with $C_{ppeak} = C_{pmean} + \eta C_{prms}$. To obtain a design pressure, these peak pressure coefficients would be multiplied by a reference pressure of $K_z q_{30}$ which would increase with height in the boundary layer. G_p was computed using the equation for the fastest-mile velocity, $G_p = 0.63 + 4.96u'(z)/\overline{U}(z)$ (Velozzi and Cohen, 1968, McDonald, Mehta, and Minor, 1975). A building 75' x 75' x 300' (22.9 x 22.9 x 91.4 m) was selected and peak pressure coefficients were computed for $\alpha = 0$ sides 2, 3, and 4 at $z/H = 0.1$, 0.5, and 0.9.

The coefficients are compared in Fig. 80. These coefficients are to be used with a fastest-mile velocity. At $z/H = 0.9$ the coefficients compare well except in the corner regions where the ANSI are much larger than predicted using the data from this dissertation (Fig. B1, B16, Tables C1, C5). At a z/H of 0.5 sides 2 and 4 agree well, but the peak coefficients on the side face, side 3, predicted using Figs. B1 and B16 are much larger (200%) than those specified by ANSI. At z/H of 0.1 almost all values predicted using Figs. B1, B16 are considerably larger than those specified by ANSI.

There are a number of reasons for these differences. In all cases, the ANSI values use an averaged mean pressure coefficient for the entire face (except within 0.1W of the corners) and a fixed gust factor at a particular level. The results based on Figs. B1, B16 actually incorporate the variation of both the mean and rms pressure coefficients on a particular face. The ANSI approach does not take into account the non-Gaussian nature of the pressure fluctuations in regions with negative mean pressure coefficients. The area with the largest difference (z/H = 0.1) corresponds to the region with the smallest reference pressure. In many cases design in this region is determined by the 15 psf minimum in ANSI for parts and portions (Section 6.4) and the difference may not have an effect on the final design pressures.

Because the pressure coefficients in ANSI are only specified for $\alpha = 0$, a comparison between those values and peak values obtained using $\hat{\alpha}\ C_{pmean},\ \overline{\beta},\ \overline{p}$ and $\hat{\alpha}\ C_{prms},\ \overline{\beta},\ \overline{p}$ is not entirely appropriate. Nevertheless, a comparison was conducted for the same situation to see the differences. The comparison was conducted in terms of the absolute value of the peak pressure coefficient. The three sides specified in ANSI were searched for the largest $|C_{ppeak}|$ and compared with the values of C_{ppeak} computed using eq. 5-1 and Table 12. Again $\eta = -4$ and -8 was used. The comparison is shown in Fig. 81 for x/L from 0 to 0.5 ($\gamma = 1.0$). In most areas the values obtained using Table 12 ($\hat{\alpha}\ C_{pmean},\ \overline{\beta},\ \overline{p}$ and $\hat{\alpha}\ C_{prms},\ \overline{\beta},\ \overline{p}$) are larger than those specified by ANSI. The reasons for the differences are the same as listed in the previous paragraph. In addition, the values in Table 12 include data from α's from 0-90 instead of just 0. These comparisons were made for the side ratio, $\gamma = 1.0$, which had the largest mean pressure coefficients and used conservative choices for η. Selection of a lower value of η would, of course, cause the current data to assume smaller values in both Figs. 80 and 81.

Chapter VI

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

Conclusions

The experimental findings of this dissertation allow several conclusions to be made concerning the nature of surface pressures on buildings caused by turbulent boundary-layer winds:

1. Mean local pressure coefficients for corresponding locations and wind directions for isolated flat-roofed rectangular buildings are primarily dependent on the side ratio of the building. Results for different aspect ratios and different approach flow conditions may be satisfactorily condensed to one set of mean local pressure coefficients for each side ratio and wind direction.

2. RMS local pressure coefficients for corresponding locations and wind directions for isolated flat-roofed rectangular buildings are dependent on the side ratio of the building and on the incident turbulence intensity. With the exception of a small region on the upwind face of a building, rms pressures cannot be predicted using a quasi-steady assumption.

3. The peak probability density function for the pressure fluctuations has two distinct forms dependent on the value of the mean pressure coefficient for a wide range of building shapes and incident flow conditions. Certain local phenomena such as corner vortices on the roof may not follow these forms.

4. By using an average velocity integrated over the height of the building, the mean force and moment coefficients for isolated flat-roofed rectangular buildings are described by a series of curves

dependent primarily on the side ratio of the building. No significant effect of the aspect ratio of the building on the mean force and moment coefficient was observed.

5. The pressure fluctuations on the side and rear faces of a building are dominated by the flow around the building as opposed to the approach flow. Correlations of pressure fluctuations on all sides of the building are not in general similar to those for the velocity fluctuations in the approach flow. Calculations of alongwind response of a structure which assume a linear relationship between pressure and velocity fluctuations may be inaccurate as a result of this assumption.

6. The cross correlation between pressure on the upwind and downwind faces of a building is negative. The negative cross correlation is caused by an increase in the positive pressure on the upwind face due to a gust and corresponding decrease in the negative pressure on the downwind face.

7. The Strouhal number, $nW/\overline{U}(\delta)$, based upon a fixed reference velocity is constant at all heights on the building as determined by frequencies obtained using correlations and spectral data of the pressure fluctuations on the building.

8. The time averaged reattachment position corresponds to a local maximum in the rms pressure coefficient.

9. Time scaling between the wind tunnel and full-scale is related by a reduced velocity or reduced frequency.

$$\frac{T_M}{T_{FS}} = \left(\frac{U_{FS}}{U_M}\right) \times \left(\frac{D_M}{D_{FS}}\right)$$

10. The use of the coordinates $nS(n)$ and $\frac{n\delta}{\overline{U}(\delta)}$ allowed the longitudinal velocity spectra for different heights and boundary layers to be described by a single plot. This method of representation is superior to the $nG(n)/U_*^2$ vs. $nz/\overline{U}(z)$ coordinates for the wind-tunnel data.

11. Mean pressure coefficients obtained in this dissertation when averaged over an entire side agree well with those of ANSI A58.1-1972.

12. A new technique for predicting peak pressure coefficients was established based on the peak probability density of the pressure fluctuations. Values for the minimum peak minimum pressure coefficients were obtained by sorting for the minimum mean for all wind directions studied. A technique which allowed sorting for the minimum mean to obtain the minimum peak minimum was established.

Recommendations for Further Study

A number of logical extensions to the work discussed in this dissertation exist. These areas for further study can be grouped into several categories:

1. Further wind-tunnel studies to determine the effect of corner geometry, surface texture of the building and adjacent structures on the pressure distribution, mean force and moment coefficients and the probability density function of the peak pressures.

2. Additional studies for aspect ratios less than one may be of value for the design of low-rise buildings.

3. Full-scale verification of the probability density functions for the peak pressures.

4. The effect of Reynolds number on reattachment and on the power spectral density functions in separated regions.

5. Further investigation of the pressure fluctuations near the edges of the roof.

6. A more detailed study of the frequency response of the pressure-measurement system to include the effects of the area of the sensing surface on the peak pressures.

7. Additional studies of spectra, correlations, and other properties of fluctuating pressures on buildings to further examine the flow around the structure and the pressure inputs to the dynamic analysis of structures.

8. Studies of the failure properties of glass and risk analysis of curtainwall design to determine peak factors and other design criteria for cladding design.

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TABLE 1

Model Building Dimensions

BUILDING	DIMENSIONS - m W	L	H	γ	β	PRESSURE TAP SPACINGS* W SIDE	L SIDE	VERTICAL	ROOF	TOTAL NUMBER OF TAP LOCATIONS
B1	0.032	0.032	0.254	1.0	8.0	H3	--	V1	R3	76
B2	0.064	0.064	0.254	1.0	4.0	H2	--	V1	R1	152
B3	0.127	0.127	0.254	1.0	2.0	H2	H2	V1	R1	272
B4	0.127	0.127	0.508	1.0	4.0	H2	H2	V2	R1	512
B5	0.254	0.254	0.254	1.0	1.0	H1	H4	V1	R1	272
B6	0.032	0.064	0.254	0.5	8.0	H3	H2	V1	R2	212
B7	0.064	0.127	0.254	0.5	4.0	H2	H2	V1	R2	272
B8	0.127	0.254	0.254	0.5	2.0	H2	H1	V1	R2	272
B9	0.127	0.254	0.508	0.5	4.0	H2	H1	V2	R2	512
B10	0.254	0.508	0.254	0.5	1.0	H1	H1	V1	R2	272
B11	0.032	0.127	0.254	0.25	8.0	H3	H2	V1	R2	212
B12	0.064	0.254	0.254	0.25	4.0	H2	H1	V1	R2	272
B13	0.127	0.508	0.254	0.25	2.0	H2	H1	V1	R2	272
B14	0.127	0.508	0.508	0.25	4.0	H2	H1	V2	R2	512
B15	0.254	1.016	0.254	0.25	4.0	H1	H1	V1	R2	272

*See Tables 2 and 3

TABLE 2

Pressure Tap Spacings

(Diagram of Spacings H1, H2, and V1 in Figure 5)

HORIZONTAL SPACING	TAP NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
H1	0.025	0.05	0.10	0.15	0.20	0.40	0.60	0.80	0.85	0.90	0.95	0.975
H2	0.05	0.10	0.15	0.20	0.30	0.40	0.60	0.70	0.80	0.85	0.90	0.95
H3	0.10	0.20	0.40	0.60	0.80	0.90	-	-	-	-	-	-
H4	0.025	0.10	0.15	0.20	0.40	0.60	0.80	0.85	0.90	0.975	-	-

X/L, Y/W

VERTICAL SPACING	LEVEL NUMBER 1	2	3	4	5	6	7	8	9	10
V1	0.90	0.70	0.50	0.30	0.10	-	-	-	-	-
V2	0.95	0.85	0.75	0.65	0.55	0.45	0.35	0.25	0.15	0.05

Z/H

TABLE 3

Pressure Tap Locations--Roof

x/W \ y/L	0.10	0.20	0.30	0.40	0.60	0.70	0.80	0.90
0.90	*	*	*	*	*	*	*	*
0.80		*		*	*		*	
0.60		*		*	*		*	
0.40		*		*	*		*	
0.20		*		*	*		*	
0.10	*	*	*	*	*	*	*	*

R1

x/W \ y/L	0.10	0.20	0.30	0.40	0.60	0.70	0.80	0.90
0.80	*	*	*	*	*	*	*	*
0.60	*	*	*	*	*	*	*	*
0.40	*	*	*	*	*	*	*	*
0.20	*	*	*	*	*	*	*	*

R2

x/W \ y/L	0.20	0.40	0.60	0.80
0.20	*	*	*	*
0.40	*	*	*	*
0.60	*	*	*	*
0.80	*	*	*	*

R3

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*Denotes pressure tap location

TABLE 4

Summary of Properties--Boundary Layer 1

z/δ	$\overline{U}(z)/\overline{U}(\delta)$	$u'(z)/\overline{U}(z)$	$v'(z)/\overline{U}(z)$	$w'(z)/\overline{U}(z)$	$\frac{\sqrt{-\overline{uw}}}{\overline{U}(\delta)}$	Λ_x (m)
0.02	0.64	0.128				0.42
0.04	0.70	0.107	0.073	0.045	0.024	
0.06	0.72	0.091	0.071	0.047	0.026	0.33
0.10	0.75	0.086	0.068	0.049	0.029	0.39
0.14	0.77	0.082	0.063	0.049	0.027	0.38
0.18	0.79	0.082	0.062	0.048	0.027	0.44
0.20	0.80	0.072	0.062	0.051	0.030	0.38
0.30	0.83	0.066	0.057	0.048	0.030	0.46
0.40	0.86	0.070	0.051	0.049	0.030	0.48
0.50	0.89	0.064	0.049	0.043	0.029	0.42
0.60	0.92	0.052	0.042	0.038	0.025	0.56
0.70	0.93	0.050	0.038	0.036	0.026	
0.80	0.96	0.042	0.031	0.030	0.021	
0.90	0.98	0.037	0.027	0.026	0.019	
1.00	1.00	0.035	0.026	0.024	0.011	0.32

$\frac{U_*}{\overline{U}(\delta)} = 0.028$

$z_o = 1.22 \times 10^{-5}$ m

$p = 0.12$

$\delta = 1.27$ m

TABLE 5

Summary of Properties--Boundary Layer 2

z/δ	$\overline{U}(z)/\overline{U}(\delta)$	$u'(z)/\overline{U}(z)$	$v'(z)/\overline{U}(z)$	$w'(z)/\overline{U}(z)$	$\frac{\sqrt{-\overline{uw}}}{\overline{U}(\delta)}$	Λ_x (m)
0.02	0.39	0.245				0.22
0.04	0.46	0.225	0.161	0.129	0.053	
0.06	0.52	0.210	0.147	0.117	0.053	0.27
0.10	0.60	0.175	0.120	0.101	0.054	0.41
0.14	0.66	0.150	0.104	0.081	0.049	0.35
0.18	0.70	0.133	0.091	0.073	0.048	0.40
0.20	0.72	0.125	0.088	0.070	0.043	0.53
0.30	0.80	0.096	0.069	0.087	0.041	0.63
0.40	0.85	0.075	0.056	0.049	0.031	0.60
0.50	0.89	0.064	0.048			0.50
0.60	0.92	0.054	0.040	0.035	0.027	0.50
0.70	0.94	0.044	0.034	0.032	0.023	
0.80	0.96	0.040		0.030	0.022	
0.90	0.98					
1.00	1.00					0.54

$$\frac{U_*}{\overline{U}(\delta)} = 0.052$$

$$z_o = 2.79 \times 10^{-3} \text{ m}$$

$$p = 0.26$$

$$\delta = 1.27 \text{ m}$$

TABLE 6

Summary of Properties--Boundary Layer 3

z/δ	$\overline{U}(z)/\overline{U}(\delta)$	$u'(z)/\overline{U}(z)$	$v'(z)/\overline{U}(z)$	$w'(z)/\overline{U}(z)$	$\frac{\sqrt{-\overline{uw}}}{\overline{U}(\delta)}$	Λ_x (m)
0.02	0.37	0.250				0.19
0.04	0.45	0.257	0.188	0.144	0.048	
0.06	0.47	0.255	0.167			0.16
0.10	0.55	0.220	0.145	0.115	0.053	0.29
0.14	0.63	0.185	0.128	0.098	0.049	0.35
0.18	0.67	0.160	0.109	0.092	0.049	0.40
0.20	0.69	0.150	0.103	0.086	0.045	0.43
0.30	0.80	0.111		0.065	0.037	0.41
0.40	0.85	0.085	0.062	0.055	0.034	0.51
0.50	0.90	0.068	0.051	0.043	0.026	0.50
0.60	0.93	0.051	0.041	0.035	0.022	0.52
0.70	0.96	0.046	0.034	0.030	0.020	
0.80	0.97	0.042	0.028	0.028	0.018	
0.90	0.99	0.038	0.025	0.024	0.017	
1.00	1.00	0.035	0.025	0.022	0.011	0.48

$$\frac{U_*}{\overline{U}(\delta)} = 0.051$$

$z_o = 4.9 \times 10^{-3}$ m

$p = 0.34$

$\delta = 1.27$ m

TABLE 7

Summary of Properties--Boundary Layer 4

z/δ	$\overline{U}(z)/\overline{U}(\delta)$	$u'(z)/\overline{U}(z)$	$v'(z)/\overline{U}(z)$	$w'(z)/\overline{U}(z)$	$\frac{\sqrt{-\overline{uw}}}{\overline{U}(\delta)}$	Λ_x (m)
0.02	0.34	0.300				0.15
0.04	0.38	0.295	0.191	0.154	0.052	
0.06	0.42	0.285	0.181	0.154	0.059	0.22
0.10	0.51	0.255	0.155	0.153	0.065	0.30
0.14	0.59	0.213	0.137	0.133	0.060	0.31
0.18	0.64	0.184	0.121	0.104	0.060	0.35
0.20	0.67	0.173	0.112	0.096	0.054	0.34
0.30	0.77	0.136	0.088	0.078	0.048	0.48
0.40	0.84	0.090	0.069	0.060	0.040	0.54
0.50	0.90	0.066	0.055	0.049	0.036	0.53
0.60	0.93	0.050	0.044	0.041	0.029	0.37
0.70	0.96	0.043	0.036	0.033	0.023	
0.80	0.98	0.037	0.030	0.027	0.020	
0.90	0.99	0.033	0.026	0.025	0.019	
1.00	1.00	0.031	0.028	0.024	0.009	

$$\frac{U_*}{\overline{U}(\delta)} = 0.062$$

$$z_o = 1.09 \times 10^{-2} \text{ m}$$

$$p = 0.38$$

$$\delta = 1.27 \text{ m}$$

TABLE 8

Coherence Functions

Boundary Layer 1				Boundary Layer 2			
Δz (m)	C	Δy (m)	C	Δz (m)	C	Δy (m)	C
-0.10	13.5	-0.03	7.9	-0.10	8.4	-0.04	7.4
-0.05	9.7	-0.05	6.6	-0.05	9.2	-0.05	10.5
0.05	8.5	-0.08	9.0	0.05	10.9	-0.12	10.1
0.10	11.1	-0.10	9.1	0.10	11.8	-0.15	12.8
0.25	7.3	-0.15	9.0	0.25	6.6		
				0.38	4.5		
Average C	10.0		8.3	Average C	8.6		10.2
Average C for Δz & Δy = 9.2				Average C for Δz & Δy = 9.2			

TABLE 9

Geometric Scaling--Wind Tunnel to Full-Scale

Boundary Layer	p Power-Law Exponent	z_o m Full-Scale	z_o Wind Tunnel	z_o Scale	Λ_x m Full-Scale	Λ_x Wind Tunnel	Λ_x Scale	δ m Full-Scale	δ Wind Tunnel	δ Scale	Terrain Description
1	0.12	0.001-0.01	1.22×10^{-5}	82-820	122	0.45	270	270	1.27	210	level surfaces with very small surface obstructions, grassland
2	0.26	0.1-0.5	2.79×10^{-3}	36-180	130	0.60	220	360	1.27	280	rolling or level surface broken by numerous obstructions such as trees or small houses
3	0.34	0.5-1.0	4.9×10^{-3}	100-204	140	0.50	280	360	1.27	280	heterogenous surface with structures larger than one story
4	0.38	0.7-1.5	1.1×10^{-2}	64-140	152	0.50	300	450	1.27	350	heavily built up suburban area, typical of approach flow over a large metropolitan area
	Source	ESDU(1972)			Templin(1969)			ANSI A58.1-1972			

TABLE 10

Standard Deviations of C_{pmean} used to Compute C_{pmean}, $\bar{\beta}$, $\bar{p}$

γ	α = 0	20	40	70	90	AVERAGE over α
1.0	0.19	0.16	0.13	0.15	0.17	0.16
0.5	0.14	0.14	0.15	0.20	0.22	0.17
0.25	0.11	0.13	0.19	0.21	0.23	0.17

Standard Deviation of a Repetition of the Same Condition = 0.11

TABLE 11

Standard Deviations of C_{prms} used to Compute C_{prms}, $\bar{\beta}$

γ	BOUNDARY LAYER	α = 0	20	40	70	90	AVERAGE over α
1.0	1	0.03	0.02	0.02	0.02	0.02	0.02
	2	0.05	0.06	0.06	0.05	0.06	0.06
	3	0.07	0.05	0.04	0.03	0.04	0.05
	4	0.03	0.03	0.02	0.03	0.04	0.03
0.5	2	0.05	0.05	0.04	0.06	0.07	0.05
	3	0.04	0.03	0.03	0.05	0.06	0.04
0.25	2	0.04	0.04	0.04	0.06	0.06	0.05
	3	0.02	--	--	--	0.04	0.03

Standard Deviation of a Repetition of the Same Condition = 0.04

TABLE 12

$\hat{\alpha}\ C_{pmean},\ \overline{\beta},\ \overline{p}$ and $\hat{\alpha}\ C_{prms},\ \overline{\beta},\ \overline{p}$, $\gamma = 1.0$

MEAN PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO ROOF

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-.92	-.81	-.73	-.68	-.63	-.56	-.49	-.45	-.44	
.80		-.93	-.81	-.71	-.61	-.53	-.49	-.46	-.45	-.44	
.70		-.92	-.80	-.70	-.60	-.52	-.48	-.45	-.44	-.44	
.60		-.90	-.79	-.70	-.64	-.58	-.52	-.46	-.43	-.42	
.50		-.88	-.77	-.70	-.66	-.61	-.54	-.46	-.41	-.40	
.40		-.88	-.77	-.68	-.62	-.56	-.50	-.44	-.41	-.40	
.30		-.88	-.77	-.66	-.56	-.49	-.44	-.42	-.41	-.40	
.20		-.88	-.76	-.65	-.56	-.48	-.43	-.41	-.40	-.39	
.10		-.85	-.74	-.66	-.61	-.56	-.49	-.42	-.38	-.37	

MEAN PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 1

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.69	-.89	-1.00	-.92	-.71	-.53	-.51	-.58	-.61	-.57	-.50
.90	-.83	-.93	-.97	-.92	-.79	-.67	-.64	-.65	-.67	-.66	-.65
.80	-.95	-.98	-.99	-.95	-.89	-.82	-.76	-.74	-.73	-.75	-.78
.70	-1.02	-1.05	-1.07	-1.06	-1.02	-.96	-.89	-.84	-.83	-.85	-.90
.60	-1.08	-1.16	-1.21	-1.22	-1.17	-1.10	-1.03	-.97	-.95	-.96	-.99
.50	-1.18	-1.28	-1.36	-1.37	-1.32	-1.25	-1.17	-1.10	-1.08	-1.08	-1.11
.40	-1.38	-1.44	-1.48	-1.48	-1.45	-1.39	-1.31	-1.24	-1.21	-1.22	-1.26
.30	-1.66	-1.65	-1.64	-1.62	-1.59	-1.53	-1.46	-1.40	-1.37	-1.39	-1.44
.20	-2.00	-1.98	-1.94	-1.86	-1.76	-1.68	-1.63	-1.62	-1.62	-1.61	-1.61
.10	-2.37	-2.41	-2.38	-2.22	-1.99	-1.82	-1.83	-1.92	-1.95	-1.88	-1.76

MEAN PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 2

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.54	-.97	-1.24	-1.20	-.88	-.52	-.31	-.25	-.26	-.32	-.41
.90	-.72	-.97	-1.13	-1.09	-.88	-.63	-.45	-.36	-.34	-.38	-.44
.80	-.84	-.98	-1.07	-1.04	-.91	-.74	-.58	-.46	-.41	-.43	-.47
.70	-.84	-1.00	-1.10	-1.11	-1.00	-.84	-.67	-.53	-.47	-.48	-.53
.60	-.80	-1.05	-1.23	-1.26	-1.14	-.95	-.74	-.58	-.51	-.53	-.59
.50	-.85	-1.15	-1.36	-1.41	-1.27	-1.06	-.83	-.65	-.57	-.58	-.64
.40	-1.13	-1.33	-1.47	-1.47	-1.36	-1.16	-.95	-.77	-.67	-.64	-.65
.30	-1.55	-1.59	-1.60	-1.55	-1.43	-1.27	-1.09	-.92	-.78	-.68	-.61
.20	-1.97	-1.94	-1.87	-1.74	-1.56	-1.38	-1.22	-1.07	-.90	-.71	-.52
.10	-2.35	-2.35	-2.28	-2.07	-1.77	-1.48	-1.32	-1.20	-1.01	-.72	-.38

MEAN PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 3

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.22	-.24	-.26	-.30	-.38	-.54	-.82	-1.08	-1.20	-1.14	-.99
.90	-.28	-.31	-.35	-.41	-.50	-.65	-.86	-1.05	-1.15	-1.15	-1.09
.80	-.35	-.38	-.43	-.51	-.62	-.76	-.92	-1.05	-1.14	-1.17	-1.18
.70	-.42	-.45	-.50	-.59	-.73	-.88	-1.02	-1.14	-1.20	-1.23	-1.23
.60	-.51	-.53	-.57	-.67	-.82	-.99	-1.15	-1.28	-1.33	-1.31	-1.25
.50	-.58	-.61	-.66	-.76	-.91	-1.10	-1.28	-1.41	-1.46	-1.41	-1.32
.40	-.64	-.69	-.76	-.87	-1.03	-1.21	-1.37	-1.49	-1.55	-1.54	-1.50
.30	-.67	-.77	-.88	-1.01	-1.16	-1.32	-1.46	-1.58	-1.67	-1.73	-1.78
.20	-.66	-.84	-1.01	-1.16	-1.29	-1.43	-1.59	-1.76	-1.91	-2.03	-2.13
.10	-.60	-.91	-1.16	-1.32	-1.41	-1.54	-1.78	-2.06	-2.29	-2.44	-2.55

MEAN PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 4

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.54	-.67	-.72	-.64	-.49	-.48	-.76	-1.09	-1.16	-.92	-.51
.90	-.72	-.73	-.71	-.66	-.60	-.63	-.80	-1.00	-1.06	-.96	-.76
.80	-.87	-.79	-.72	-.70	-.71	-.78	-.87	-.97	-1.01	-.99	-.94
.70	-.97	-.85	-.78	-.78	-.84	-.92	-1.00	-1.04	-1.05	-1.03	-.99
.60	-1.02	-.93	-.88	-.89	-.97	-1.07	-1.16	-1.21	-1.18	-1.08	-.94
.50	-1.09	-1.03	-1.00	-1.03	-1.11	-1.22	-1.32	-1.37	-1.33	-1.18	-.98
.40	-1.23	-1.16	-1.13	-1.17	-1.26	-1.36	-1.45	-1.48	-1.45	-1.35	-1.22
.30	-1.39	-1.34	-1.31	-1.34	-1.42	-1.51	-1.58	-1.62	-1.63	-1.61	-1.59
.20	-1.53	-1.55	-1.57	-1.58	-1.60	-1.66	-1.76	-1.88	-1.96	-1.98	-1.97
.10	-1.63	[illegible]	[illegible]	-1.89	-1.80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-2.31

RMS PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO ROOF

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.22	.19	.18	.18	.17	.15	.12	.11	.10	
.80		.22	.20	.17	.15	.14	.12	.12	.11	.11	
.70		.22	.20	.17	.15	.14	.12	.12	.11	.11	
.60		.22	.20	.18	.17	.16	.14	.12	.11	.11	
.50		.22	.19	.18	.18	.18	.16	.13	.11	.11	
.40		.22	.20	.18	.17	.16	.14	.12	.11	.11	
.30		.23	.20	.18	.16	.14	.13	.12	.12	.11	
.20		.23	.20	.18	.16	.14	.13	.12	.12	.11	
.10		.22	.20	.19	.18	.17	.15	.13	.11	.11	

RMS PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 1

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.14	.25	.31	.29	.21	.12	.07	.07	.09	.13	.17
.90	.19	.27	.31	.30	.25	.18	.14	.12	.13	.15	.19
.80	.24	.29	.33	.32	.29	.24	.20	.17	.16	.18	.21
.70	.28	.33	.37	.38	.35	.30	.26	.22	.21	.22	.25
.60	.32	.39	.44	.45	.42	.37	.31	.27	.26	.27	.29
.50	.37	.45	.51	.52	.48	.43	.37	.33	.31	.32	.35
.40	.47	.52	.56	.57	.54	.49	.43	.39	.37	.39	.42
.30	.60	.62	.63	.62	.59	.55	.50	.46	.45	.46	.49
.20	.76	.77	.76	.73	.67	.61	.58	.56	.55	.56	.57
.10	.94	.96	.95	.88	.77	.68	.66	.67	.69	.68	.66

RMS PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 2

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.03	.26	.41	.40	.26	.12	.09	.14	.17	.17	.15
.90	.13	.26	.35	.35	.27	.19	.17	.18	.20	.21	.21
.80	.20	.27	.32	.33	.31	.27	.24	.22	.23	.24	.26
.70	.21	.29	.35	.38	.37	.34	.30	.27	.26	.27	.29
.60	.19	.32	.43	.47	.46	.41	.36	.32	.30	.30	.31
.50	.22	.38	.50	.56	.54	.48	.43	.38	.34	.33	.33
.40	.35	.47	.56	.60	.60	.56	.50	.44	.40	.37	.34
.30	.54	.60	.64	.66	.66	.63	.59	.53	.47	.41	.35
.20	.72	.78	.81	.80	.75	.70	.68	.65	.58	.47	.33
.10	.86	1.00	1.08	1.03	.89	.78	.77	.80	.74	.55	.29

RMS PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 3

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.08	.13	.16	.14	.11	.12	.21	.32	.36	.31	.21
.90	.13	.16	.18	.18	.17	.19	.25	.31	.34	.31	.26
.80	.18	.20	.21	.23	.24	.26	.30	.33	.34	.33	.30
.70	.24	.24	.26	.28	.31	.34	.36	.38	.38	.36	.34
.60	.30	.31	.32	.34	.38	.41	.44	.46	.45	.42	.37
.50	.36	.37	.39	.41	.45	.49	.52	.55	.53	.49	.42
.40	.41	.43	.45	.48	.52	.56	.59	.60	.59	.56	.51
.30	.45	.49	.52	.56	.60	.63	.66	.67	.67	.65	.64
.20	.45	.54	.62	.66	.69	.71	.74	.78	.80	.79	.77
.10	.43	.60	.73	.78	.78	.78	.86	.95	.99	.97	.92

RMS PRESSURE COEFFICIENTS MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-1 SIDE RATIO SIDE 4

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.34	.24	.15	.08	.05	.11	.26	.40	.39	.23	.02
.90	.34	.23	.15	.10	.11	.17	.27	.36	.35	.24	.08
.80	.33	.23	.15	.13	.16	.22	.29	.34	.33	.26	.15
.70	.33	.24	.17	.16	.21	.28	.34	.38	.36	.28	.17
.60	.34	.26	.20	.20	.25	.33	.41	.45	.42	.31	.16
.50	.38	.30	.24	.24	.30	.39	.47	.52	.48	.36	.20
.40	.44	.35	.29	.29	.36	.44	.52	.55	.53	.44	.34
.30	.52	.43	.37	.37	.42	.50	.56	.60	.60	.57	.53
.20	.58	.53	.49	.48	.50	.56	.64	.72	.76	.75	.71
.10	.63	.66	.67	.63	.59	.61	.76	.93	1.01	.98	.87

TABLE 13

$\hat{\alpha}\ C_{pmean},\ \bar{\beta},\ \bar{p}$ and $\hat{\alpha}\ C_{prms},\ \bar{\beta},\ \bar{p}$, $\gamma = 0.5$

MEAN PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — ROOF

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-.75	-.74	-.72	-.71	-.70	-.69	-.68	-.67	-.66	
.80		-.73	-.72	-.70	-.69	-.68	-.67	-.66	-.64	-.63	
.70		-.70	-.68	-.67	-.65	-.64	-.63	-.61	-.60	-.58	
.60		-.64	-.63	-.61	-.59	-.57	-.56	-.54	-.52	-.50	
.50		-.60	-.57	-.55	-.53	-.51	-.48	-.46	-.44	-.41	
.40		-.59	-.56	-.54	-.51	-.48	-.45	-.42	-.40	-.37	
.30		-.67	-.63	-.60	-.57	-.54	-.51	-.47	-.44	-.41	
.20		-.83	-.80	-.76	-.73	-.70	-.66	-.63	-.59	-.56	
.10		-1.06	-1.03	-.99	-.96	-.92	-.89	-.85	-.82	-.78	

MEAN PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 1

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.66	-.88	-1.03	-1.05	-.97	-.87	-.82	-.80	-.78	-.73	-.68
.90	-.85	-.95	-1.01	-.99	-.90	-.80	-.74	-.71	-.70	-.71	-.72
.80	-1.03	-1.03	-1.01	-.95	-.87	-.77	-.69	-.65	-.65	-.69	-.75
.70	-1.19	-1.12	-1.05	-.97	-.88	-.79	-.71	-.65	-.65	-.70	-.78
.60	-1.31	-1.22	-1.13	-1.05	-.98	-.90	-.81	-.74	-.72	-.75	-.81
.50	-1.42	-1.35	-1.28	-1.22	-1.15	-1.07	-.99	-.91	-.86	-.85	-.85
.40	-1.59	-1.54	-1.49	-1.44	-1.37	-1.30	-1.22	-1.14	-1.07	-1.02	-.97
.30	-1.87	-1.82	-1.76	-1.70	-1.62	-1.54	-1.47	-1.40	-1.33	-1.26	-1.20
.20	-2.27	-2.18	-2.08	-1.98	-1.88	-1.79	-1.72	-1.67	-1.63	-1.59	-1.55
.10	-2.77	-2.60	-2.44	-2.29	-2.14	-2.03	-1.97	-1.94	-1.95	-1.97	-2.00

MEAN PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 2

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-1.16	-1.22	-1.23	-1.15	-1.00	-.88	-.83	-.82	-.79	-.71	-.60
.90	-1.26	-1.23	-1.18	-1.10	-.98	-.87	-.79	-.74	-.71	-.68	-.66
.80	-1.37	-1.26	-1.16	-1.07	-.98	-.89	-.78	-.69	-.65	-.67	-.72
.70	-1.47	-1.32	-1.19	-1.10	-1.03	-.94	-.81	-.70	-.65	-.69	-.78
.60	-1.58	-1.42	-1.29	-1.19	-1.13	-1.05	-.92	-.79	-.73	-.76	-.82
.50	-1.71	-1.58	-1.46	-1.37	-1.30	-1.21	-1.09	-.97	-.89	-.87	-.88
.40	-1.88	-1.78	-1.68	-1.59	-1.51	-1.42	-1.31	-1.21	-1.12	-1.05	-.99
.30	-2.12	-2.04	-1.96	-1.86	-1.76	-1.65	-1.56	-1.48	-1.39	-1.29	-1.19
.20	-2.42	-2.35	-2.27	-2.16	-2.03	-1.91	-1.82	-1.76	-1.69	-1.60	-1.50
.10	-2.77	-2.70	-2.61	-2.47	-2.31	-2.17	-2.09	-2.05	-2.01	-1.95	-1.89

MEAN PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 3

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.20	-.27	-.33	-.36	-.39	-.49	-.70	-.90	-.91	-.72	-.43
.90	-.29	-.27	-.26	-.28	-.34	-.47	-.70	-.91	-1.00	-.95	-.83
.80	-.35	-.26	-.20	-.21	-.31	-.48	-.71	-.93	-1.09	-1.16	-1.18
.70	-.33	-.22	-.16	-.19	-.31	-.51	-.74	-.97	-1.16	-1.31	-1.43
.60	-.21	-.17	-.16	-.23	-.38	-.57	-.79	-1.01	-1.21	-1.38	-1.53
.50	-.06	-.12	-.21	-.33	-.49	-.68	-.88	-1.08	-1.26	-1.41	-1.55
.40	.02	-.13	-.29	-.45	-.62	-.80	-.99	-1.18	-1.34	-1.48	-1.61
.30	-.10	-.25	-.40	-.57	-.76	-.94	-1.12	-1.30	-1.48	-1.65	-1.83
.20	-.47	-.49	-.55	-.68	-.87	-1.08	-1.26	-1.45	-1.68	-1.96	-2.26
.10	-1.01	-.82	-.72	-.78	-.98	-1.22	-1.41	-1.63	-1.93	-2.36	-2.83

MEAN PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 4

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.65	-.76	-.86	-.92	-.94	-.98	-1.06	-1.12	-1.06	-.88	-.64
.90	-.78	-.78	-.79	-.82	-.85	-.91	-.97	-1.01	-.99	-.92	-.82
.80	-.90	-.81	-.75	-.75	-.80	-.87	-.91	-.93	-.95	-.97	-1.00
.70	-1.00	-.86	-.77	-.76	-.82	-.88	-.91	-.93	-.97	-1.05	-1.15
.60	-1.05	-.94	-.86	-.87	-.93	-.99	-1.01	-1.02	-1.07	-1.15	-1.27
.50	-1.10	-1.06	-1.05	-1.07	-1.13	-1.18	-1.21	-1.22	-1.25	-1.31	-1.39
.40	-1.22	-1.25	-1.29	-1.34	-1.39	-1.43	-1.46	-1.49	-1.51	-1.54	-1.56
.30	-1.48	-1.54	-1.59	-1.64	-1.68	-1.72	-1.76	-1.80	-1.83	-1.84	-1.85
.20	-1.90	-1.92	-1.93	-1.95	-1.98	-2.03	-2.08	-2.13	-2.19	-2.23	-2.27
.10	-2.44	-2.36	-2.30	-2.27	-2.29	-2.34	-2.41	-2.49	-2.58	-2.68	-2.78

RMS PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — ROOF

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.20	.19	.19	.19	.19	.19	.18	.18	.18	
.80		.18	.18	.18	.18	.17	.17	.17	.17	.16	
.70		.17	.17	.16	.16	.16	.16	.15	.15	.15	
.60		.15	.15	.15	.15	.14	.14	.14	.13	.13	
.50		.15	.14	.14	.14	.13	.13	.12	.12	.12	
.40		.15	.15	.14	.14	.13	.13	.12	.12	.11	
.30		.17	.17	.16	.16	.15	.15	.14	.14	.13	
.20		.22	.21	.21	.20	.20	.19	.19	.18	.18	
.10		.28	.27	.27	.26	.26	.25	.25	.24	.24	

RMS PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 1

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.00	.13	.23	.29	.30	.29	.26	.24	.23	.24	.26
.90	.14	.21	.26	.28	.25	.22	.20	.18	.19	.21	.23
.80	.27	.29	.30	.27	.22	.17	.15	.14	.15	.17	.20
.70	.36	.35	.33	.28	.21	.16	.13	.13	.14	.15	.17
.60	.41	.39	.36	.31	.24	.19	.16	.15	.15	.15	.14
.50	.43	.42	.40	.36	.31	.26	.23	.21	.20	.17	.14
.40	.48	.48	.46	.43	.39	.35	.32	.29	.26	.23	.19
.30	.62	.59	.55	.52	.49	.46	.42	.38	.35	.33	.31
.20	.87	.77	.68	.62	.59	.56	.52	.47	.45	.48	.52
.10	1.20	.99	.82	.73	.70	.67	.61	.55	.56	.65	.78

RMS PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 2

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.37	.40	.41	.39	.34	.30	.31	.33	.33	.30	.25
.90	.35	.37	.38	.36	.33	.30	.29	.28	.28	.28	.28
.80	.34	.35	.35	.35	.34	.32	.28	.25	.25	.27	.31
.70	.36	.36	.36	.36	.36	.34	.30	.25	.24	.28	.34
.60	.42	.41	.41	.41	.41	.40	.35	.30	.28	.32	.37
.50	.52	.51	.49	.49	.49	.48	.43	.39	.37	.38	.41
.40	.63	.62	.61	.60	.59	.57	.54	.51	.48	.47	.47
.30	.75	.75	.75	.74	.71	.69	.66	.64	.62	.59	.56
.20	.85	.88	.90	.89	.85	.81	.79	.78	.76	.73	.69
.10	.94	1.01	1.06	1.05	.99	.94	.92	.93	.92	.88	.83

RMS PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 3

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.17	.23	.27	.31	.32	.32	.31	.27	.21	.13	.04
.90	.09	.15	.19	.23	.26	.29	.30	.30	.27	.23	.18
.80	.03	.08	.13	.17	.22	.26	.30	.32	.33	.33	.31
.70	.00	.04	.10	.15	.20	.25	.31	.36	.39	.41	.42
.60	.00	.05	.11	.17	.23	.29	.35	.40	.45	.48	.51
.50	.03	.10	.17	.23	.29	.35	.41	.46	.51	.55	.58
.40	.09	.17	.25	.31	.37	.43	.48	.53	.58	.62	.66
.30	.17	.25	.33	.40	.46	.52	.57	.63	.68	.72	.77
.20	.24	.33	.42	.49	.55	.61	.67	.73	.80	.86	.92
.10	.31	.41	.50	.57	.64	.70	.77	.85	.93	1.01	1.09

RMS PRESSURE COEFFICIENTS / MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY
1-2 SIDE RATIO — SIDE 4

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.23	.28	.32	.33	.33	.32	.33	.33	.30	.23	.15
.90	.29	.28	.27	.27	.29	.30	.30	.29	.27	.25	.22
.80	.35	.28	.24	.23	.26	.29	.29	.27	.26	.27	.28
.70	.39	.30	.23	.22	.26	.30	.29	.28	.28	.31	.35
.60	.41	.32	.27	.26	.30	.34	.34	.32	.33	.36	.41
.50	.42	.38	.35	.35	.39	.42	.42	.41	.42	.44	.48
.40	.46	.46	.46	.47	.50	.52	.53	.53	.54	.55	.57
.30	.55	.57	[illegible]	[illegible]	[illegible]	[illegible]	.65	.57	[illegible]	[illegible]	[illegible]
.20	.71	.73	.74	.75	.75	.76	.79	.82	.83	.83	.81
.10	.92	.91	.90	.89	.88	.89	.93	.98	1.00	.99	.96

TABLE 14

$\hat{\alpha}$ C_{pmean}. $\overline{\beta}$, $\overline{p}$ and $\hat{\alpha}$ C_{prms}, $\overline{\beta}$, $\overline{p}$, γ = 0.25

MEAN PRESSURE COEFFICIENTS
1-4 SIDE RATIO ROOF
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-1.01	-1.00	-.99	-.98	-.97	-.96	-.95	-.94	-.93	
.80		-.84	-.84	-.83	-.82	-.81	-.80	-.79	-.78	-.77	
.70		-.71	-.70	-.69	-.68	-.67	-.66	-.66	-.65	-.64	
.60		-.61	-.60	-.59	-.59	-.58	-.57	-.56	-.55	-.54	
.50		-.55	-.54	-.54	-.53	-.52	-.52	-.51	-.50	-.49	
.40		-.53	-.52	-.52	-.51	-.50	-.50	-.49	-.49	-.48	
.30		-.54	-.54	-.53	-.53	-.52	-.51	-.51	-.50	-.50	
.20		-.58	-.57	-.57	-.56	-.56	-.55	-.55	-.54	-.54	
.10		-.63	-.63	-.62	-.62	-.61	-.61	-.60	-.60	-.59	

MEAN PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 1
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.54	-.78	-.95	-.98	-.89	-.81	-.83	-.88	-.86	-.74	-.57
.90	-.78	-.88	-.94	-.91	-.83	-.75	-.73	-.75	-.74	-.70	-.64
.80	-1.00	-.98	-.94	-.87	-.79	-.72	-.67	-.65	-.65	-.67	-.69
.70	-1.18	-1.07	-.97	-.89	-.81	-.74	-.67	-.62	-.61	-.66	-.73
.60	-1.28	-1.17	-1.06	-.98	-.91	-.84	-.76	-.68	-.66	-.69	-.74
.50	-1.37	-1.28	-1.20	-1.14	-1.08	-1.02	-.93	-.85	-.79	-.77	-.77
.40	-1.51	-1.46	-1.41	-1.36	-1.31	-1.24	-1.16	-1.07	-.99	-.93	-.86
.30	-1.78	-1.74	-1.69	-1.63	-1.56	-1.48	-1.41	-1.34	-1.26	-1.18	-1.09
.20	-2.20	-2.12	-2.03	-1.93	-1.81	-1.72	-1.66	-1.62	-1.56	-1.52	-1.46
.10	-2.74	-2.58	-2.42	-2.24	-2.08	-1.96	-1.92	-1.92	-1.93	-1.94	-1.94

MEAN PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 2
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-1.28	-1.30	-1.27	-1.15	-.95	-.78	-.71	-.70	-.67	-.59	-.49
.90	-1.28	-1.27	-1.22	-1.11	-.96	-.83	-.75	-.71	-.70	-.68	-.67
.80	-1.30	-1.25	-1.19	-1.10	-1.00	-.89	-.80	-.74	-.73	-.77	-.83
.70	-1.33	-1.27	-1.20	-1.13	-1.06	-.98	-.88	-.81	-.80	-.85	-.94
.60	-1.40	-1.33	-1.28	-1.23	-1.18	-1.11	-1.02	-.93	-.90	-.93	-.99
.50	-1.50	-1.46	-1.42	-1.38	-1.34	-1.28	-1.19	-1.10	-1.05	-1.03	-1.03
.40	-1.67	-1.65	-1.63	-1.60	-1.55	-1.48	-1.41	-1.32	-1.25	-1.18	-1.12
.30	-1.93	-1.92	-1.90	-1.85	-1.79	-1.71	-1.64	-1.57	-1.50	-1.42	-1.34
.20	-2.26	-2.24	-2.21	-2.14	-2.05	-1.96	-1.89	-1.85	-1.81	-1.77	-1.73
.10	-2.66	-2.61	-2.55	-2.45	-2.33	-2.22	-2.16	-2.14	-2.15	-2.18	-2.23

MEAN PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 3
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.32	-.23	-.14	-.06	-.02	-.12	-.37	-.64	-.73	-.61	-.37
.90	-.30	-.20	-.12	-.06	-.08	-.15	-.39	-.65	-.81	-.83	-.78
.80	-.26	-.17	-.10	-.06	-.08	-.20	-.41	-.67	-.88	-1.02	-1.13
.70	-.18	-.13	-.09	-.08	-.13	-.25	-.45	-.69	-.93	-1.14	-1.34
.60	-.06	-.06	-.08	-.12	-.19	-.32	-.51	-.73	-.96	-1.17	-1.37
.50	.06	-.01	-.08	-.16	-.27	-.41	-.59	-.79	-.97	-1.14	-1.29
.40	.11	.00	-.10	-.22	-.35	-.50	-.67	-.85	-1.01	-1.15	-1.27
.30	-.01	-.07	-.15	-.27	-.43	-.60	-.75	-.91	-1.08	-1.28	-1.48
.20	-.33	-.25	-.23	-.32	-.51	-.70	-.83	-.97	-1.21	-1.57	-1.98
.10	-.77	-.50	-.33	-.37	-.58	-.79	-.90	-1.03	-1.37	-1.96	-2.68

MEAN PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 4
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.50	-.65	-.75	-.77	-.74	-.72	-.77	-.82	-.79	-.65	-.46
.90	-.67	-.71	-.73	-.73	-.71	-.70	-.73	-.76	-.75	-.69	-.62
.80	-.82	-.77	-.72	-.70	-.70	-.71	-.71	-.71	-.72	-.74	-.76
.70	-.95	-.84	-.76	-.73	-.74	-.76	-.74	-.72	-.74	-.80	-.87
.60	-1.02	-.92	-.85	-.83	-.85	-.86	-.84	-.81	-.82	-.87	-.95
.50	-1.09	-1.04	-1.00	-1.00	-1.02	-1.03	-1.01	-.98	-.97	-.98	-1.01
.40	-1.21	-1.21	-1.21	-1.22	-1.23	-1.23	-1.22	-1.20	-1.18	-1.16	-1.14
.30	-1.45	-1.47	-1.48	-1.49	-1.48	-1.47	-1.47	-1.47	-1.45	-1.42	-1.37
.20	-1.82	-1.81	-1.80	-1.78	-1.75	-1.73	-1.74	-1.77	-1.78	-1.77	-1.74
.10	-2.29	-2.22	-2.16	-2.09	-2.03	-2.00	-2.03	-2.08	-2.14	-2.18	-2.21

RMS PRESSURE COEFFICIENTS
1-4 SIDE RATIO ROOF
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.25	.25	.24	.24	.24	.23	.23	.23	.22	
.80		.22	.22	.21	.21	.21	.20	.20	.20	.19	
.70		.19	.19	.19	.18	.18	.16	.17	.17	.17	
.60		.17	.17	.17	.16	.16	.16	.16	.15	.15	
.50		.16	.16	.15	.15	.15	.15	.15	.15	.15	
.40		.15	.15	.15	.15	.15	.15	.15	.15	.14	
.30		.15	.15	.15	.15	.15	.15	.15	.15	.15	
.20		.16	.16	.16	.16	.16	.16	.16	.16	.16	
.10		.17	.17	.17	.17	.17	.17	.17	.17	.17	

RMS PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 1
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.14	.21	.25	.28	.29	.32	.33	.31	.26	.19
.90	.18	.21	.23	.24	.23	.22	.22	.22	.22	.21	.19
.80	.30	.28	.26	.23	.20	.17	.15	.14	.15	.17	.19
.70	.39	.34	.29	.24	.19	.14	.11	.09	.10	.13	.18
.60	.44	.39	.34	.28	.22	.17	.12	.10	.10	.11	.14
.50	.47	.43	.39	.34	.29	.23	.19	.16	.13	.12	.11
.40	.54	.50	.47	.42	.37	.33	.28	.24	.20	.16	.12
.30	.68	.62	.57	.52	.47	.43	.38	.34	.30	.26	.23
.20	.91	.79	.69	.62	.58	.53	.48	.43	.41	.42	.46
.10	1.20	1.01	.84	.73	.68	.64	.57	.52	.53	.62	.75

RMS PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 2
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.55	.52	.50	.48	.44	.39	.33	.25	.20	.16	.14
.90	.44	.45	.46	.45	.42	.37	.31	.25	.22	.22	.23
.80	.36	.40	.42	.43	.40	.36	.30	.26	.25	.28	.32
.70	.32	.38	.42	.43	.41	.37	.32	.29	.29	.32	.38
.60	.36	.41	.45	.46	.45	.42	.38	.35	.34	.36	.40
.50	.47	.50	.52	.53	.52	.49	.46	.43	.41	.40	.40
.40	.60	.61	.62	.62	.61	.59	.57	.54	.50	.47	.43
.30	.72	.73	.73	.73	.72	.70	.67	.65	.61	.57	.53
.20	.82	.84	.86	.85	.83	.80	.78	.76	.74	.73	.71
.10	.91	.96	.99	.99	.95	.91	.88	.87	.88	.91	.96

RMS PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 3
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.24	.16	.10	.10	.14	.19	.24	.24	.19	.08	.06
.90	.14	.09	.07	.07	.12	.18	.25	.29	.28	.22	.14
.80	.05	.04	.04	.06	.11	.18	.26	.33	.36	.35	.32
.70	.00	.00	.02	.06	.11	.19	.28	.37	.43	.46	.46
.60	.00	.00	.04	.09	.15	.22	.32	.41	.49	.53	.55
.50	.00	.00	.07	.13	.20	.28	.37	.46	.53	.58	.62
.40	.00	.04	.12	.19	.27	.34	.43	.51	.58	.64	.69
.30	.04	.11	.18	.26	.34	.42	.50	.57	.65	.73	.81
.20	.16	.20	.25	.32	.40	.49	.57	.65	.75	.87	1.00
.10	.31	.30	.32	.37	.47	.56	.65	.74	.87	1.05	1.25

RMS PRESSURE COEFFICIENTS
1-4 SIDE RATIO SIDE 4
MINIMUM MEAN COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.18	.21	.23	.23	.23	.24	.24	.23	.18	.12
.90	.23	.22	.21	.21	.20	.20	.21	.20	.19	.18	.16
.80	.32	.26	.22	.19	.19	.19	.18	.18	.17	.18	.19
.70	.38	.30	.23	.20	.20	.20	.19	.17	.17	.19	.22
.60	.41	.34	.27	.25	.24	.24	.23	.21	.20	.22	.25
.50	.42	.38	.34	.32	.32	.31	.30	.28	.27	.27	.27
.40	.46	.44	.43	.42	.41	.40	.39	.37	.36	.34	.33
.30	.56	.55	.54	.53	.52	.51	.49	.48	.47	.45	.42
.20	.74	.70	.67	.65	.63	.61	.60	.60	.59	.58	.57
.10	.77	.89	.82	[illegible]	[illegible]	.72	.72	[illegible]	.73	.74	.74

TABLE 15

Standard Deviations of C_{pmean} used to Compute

$\hat{\alpha}\ C_{pmean}, \bar{\beta}, \bar{p}$ and C_{prms} used to Compute $\hat{\alpha}\ C_{prms}, \bar{\beta}, \bar{p}$

STANDARD DEVIATIONS

γ	$\hat{\alpha}\ C_{pmean}, \bar{\beta}, \bar{p}$	$\hat{\alpha}\ C_{prms}, \bar{\beta}, \bar{p}$	$C_{pmean}, \bar{\beta}, \bar{p}$ (TABLE 10)	$C_{prms}, \bar{\beta}$ (TABLE 11)
1.0	0.19	0.10	0.16	0.04
0.50	0.20	0.10	0.17	0.04
0.25	0.22	0.10	0.17	0.04

TABLE 16

Summary of Reattachment Side 3

BUILDING	γ	β	BOUNDARY LAYER	α FOR REATTACHMENT ON SIDE 3 FIRST	LAST
B2	1.0	4.0	2	10	35
B3	1.0	2.0	1	4	35
B3			2	<0	35
B3			3	<0	30
B3			4	<0	28
B4	1.0	4.0	2	4	35
B4			3	2	35
B5	1.0	1.0	2	<0	30
B6	0.5	8.0	2	<0	25
B7	0.5	4.0	2	<0	25
B7			3	<0	27
B8	0.5	2.0	2	<0	20
B8			3	<0	27
B9	0.5	4.0	2	<0	35
B10	0.5	1.0	1	<0	27
B10			2	<0	20
B10			3	<0	20
B10			4	<0	20
B11	0.25	8.0	2	<0	22
B12	0.25	4.0	1	<0	25
B12			2	<0	20
B12			3	<0	20
B12			4	<0	20
B14	0.25	4.0	2	<0	22
B15	0.25	4.0	2	<0	15

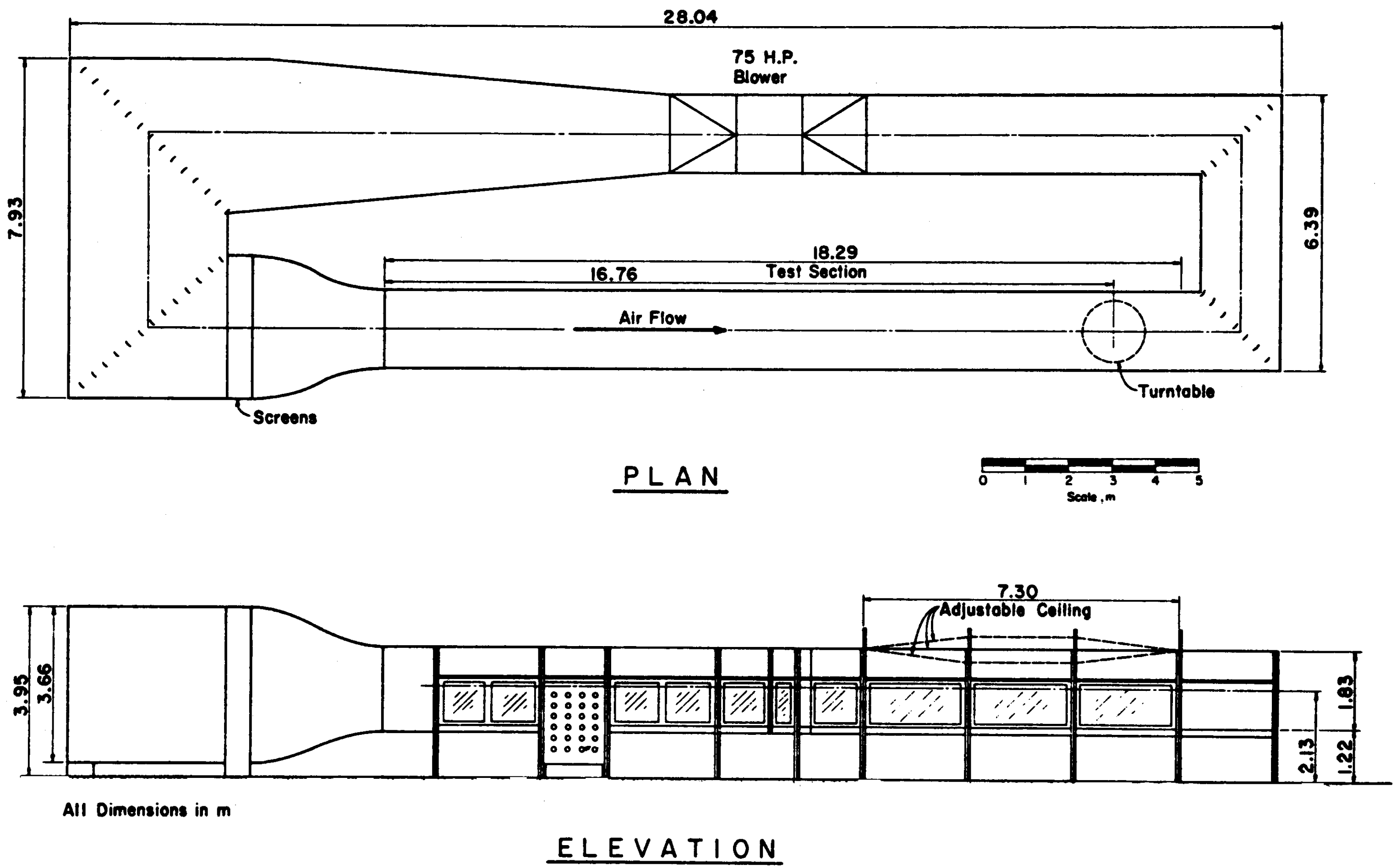


Figure 1. Industrial Aerodynamics Wind Tunnel, Fluid Dynamics and Diffusion Laboratory, Colorado State University.

Figure 2. Model Building Installed in the Wind Tunnel.

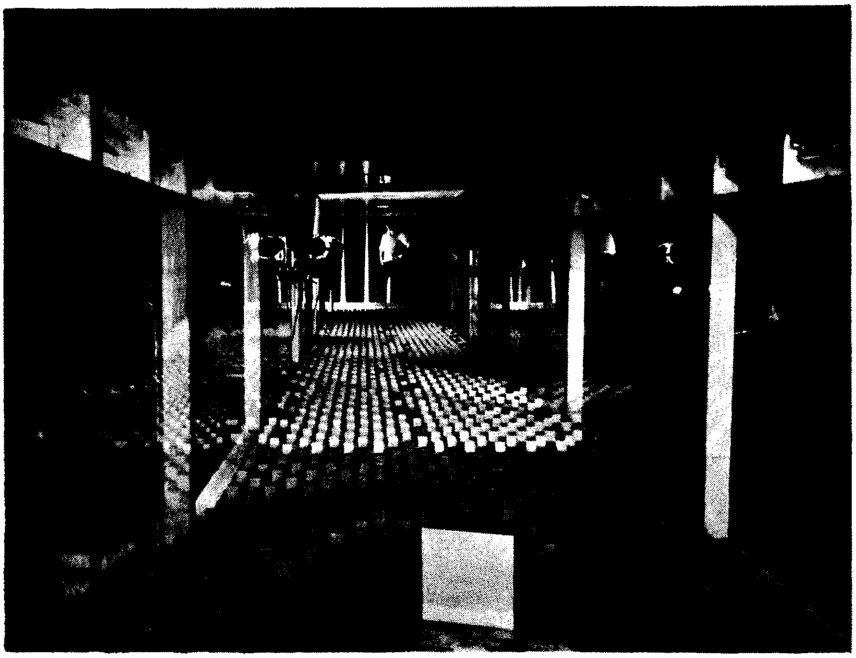


Figure 2. Model Building Installed in the Wind Tunnel.

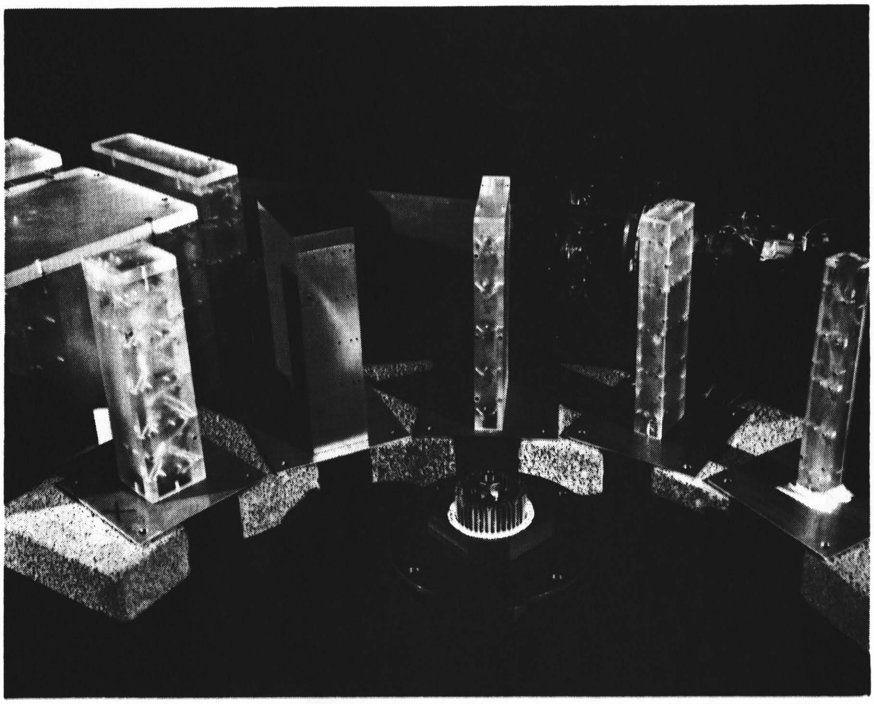


Figure 3. Model Buildings and Pressure-Selector Valve.

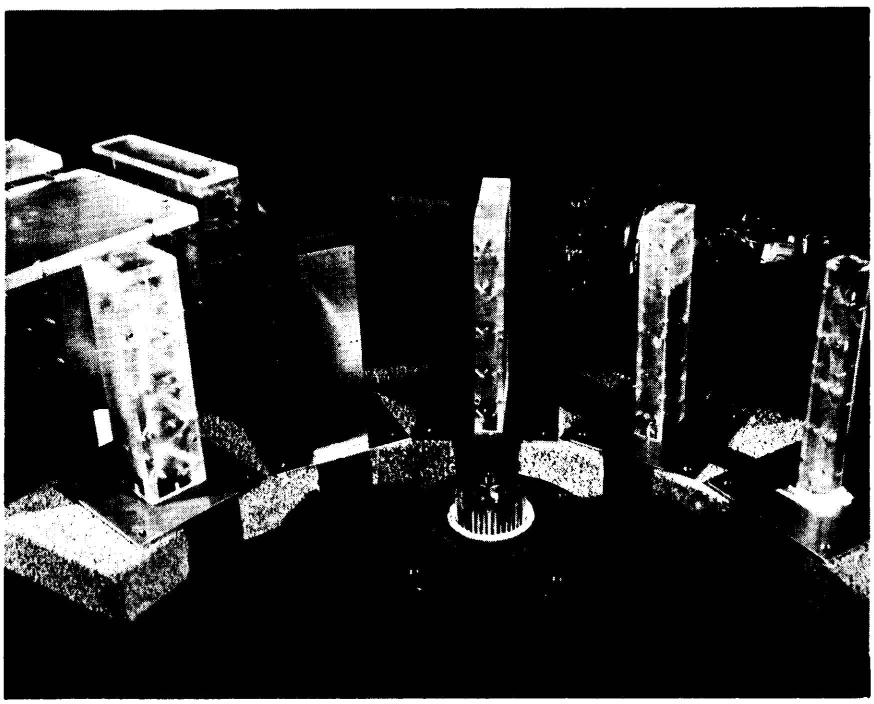


Figure 3. Model Buildings and Pressure-Selector Valve.

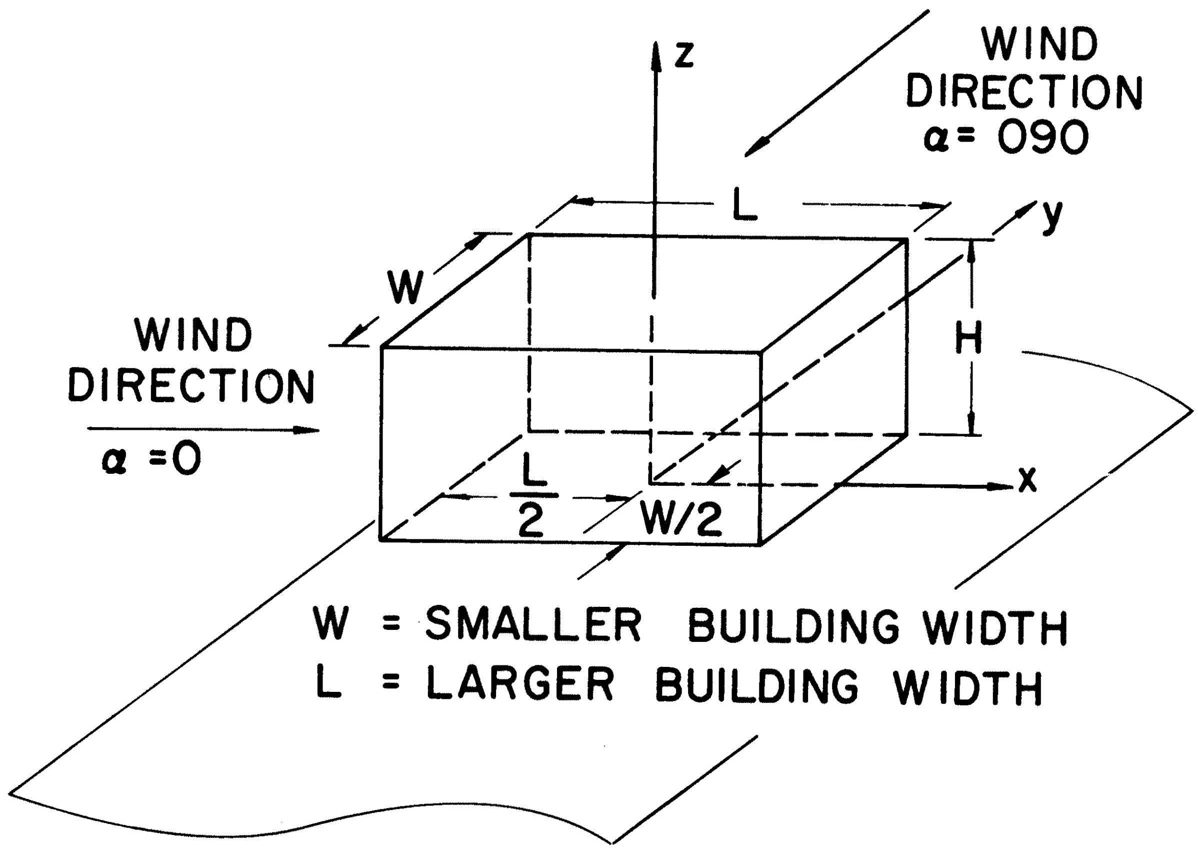


Figure 4. Coordinate System.

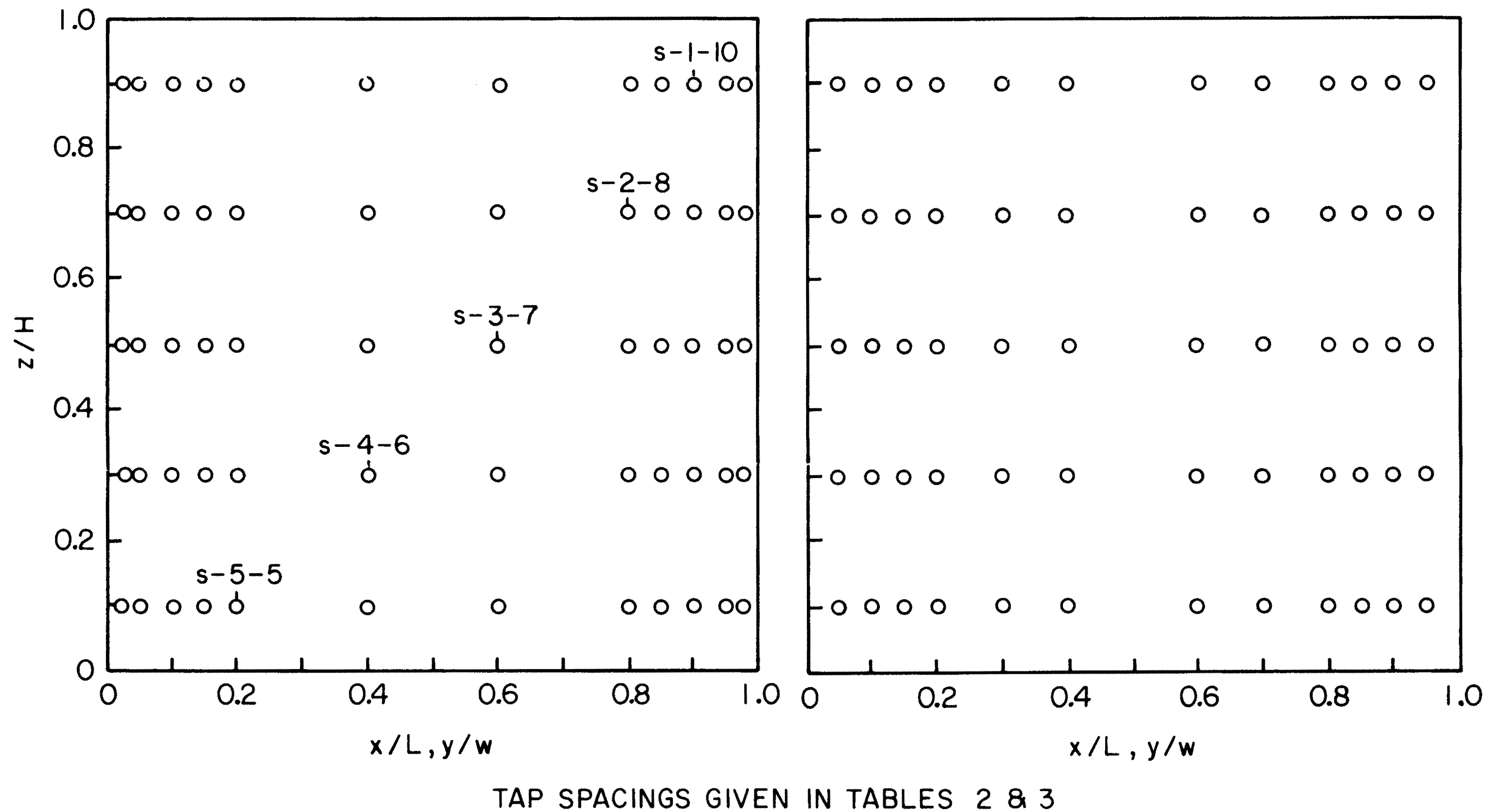


Figure 5. Pressure Tap Spacing.

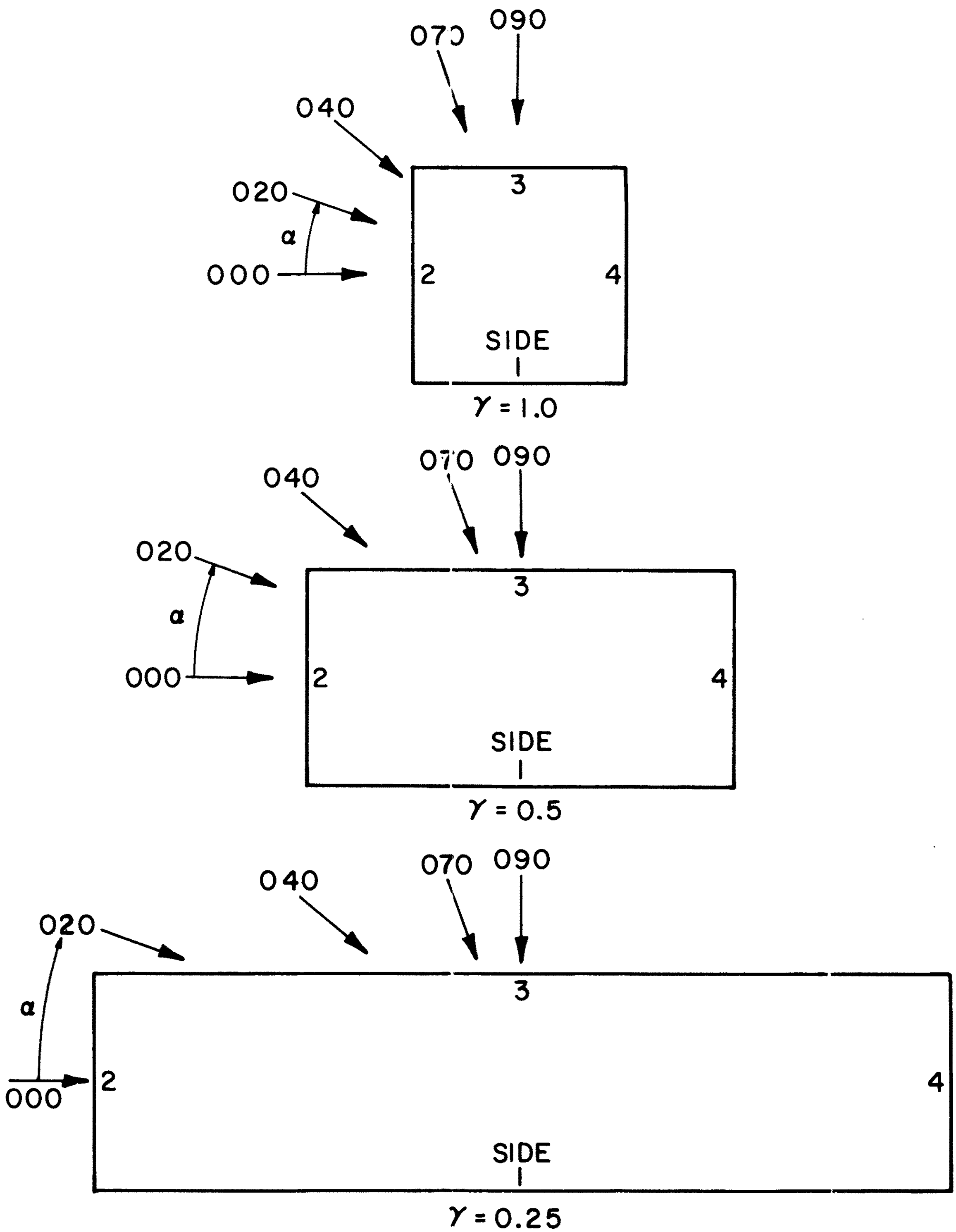


Figure 6. Wind Directions.

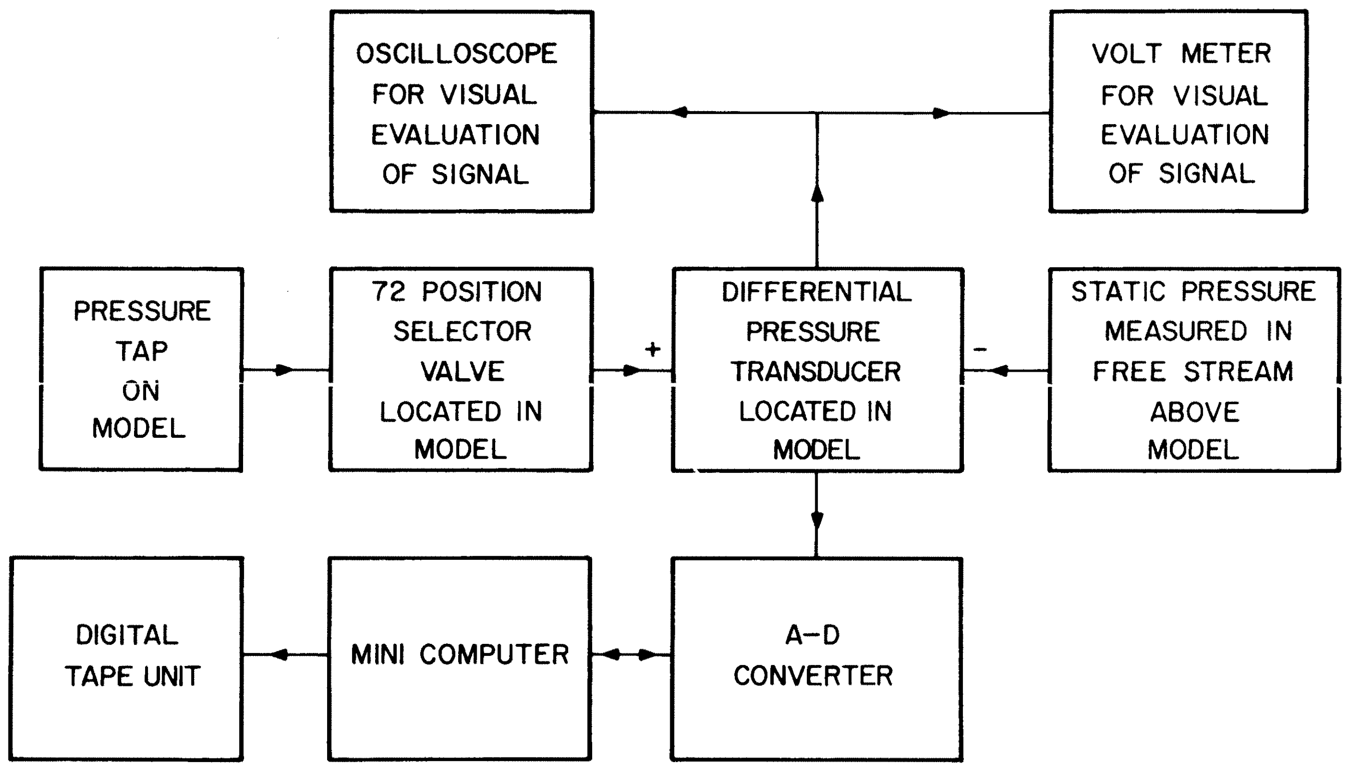


Figure 7. Schematic of Data-Acquisition System.

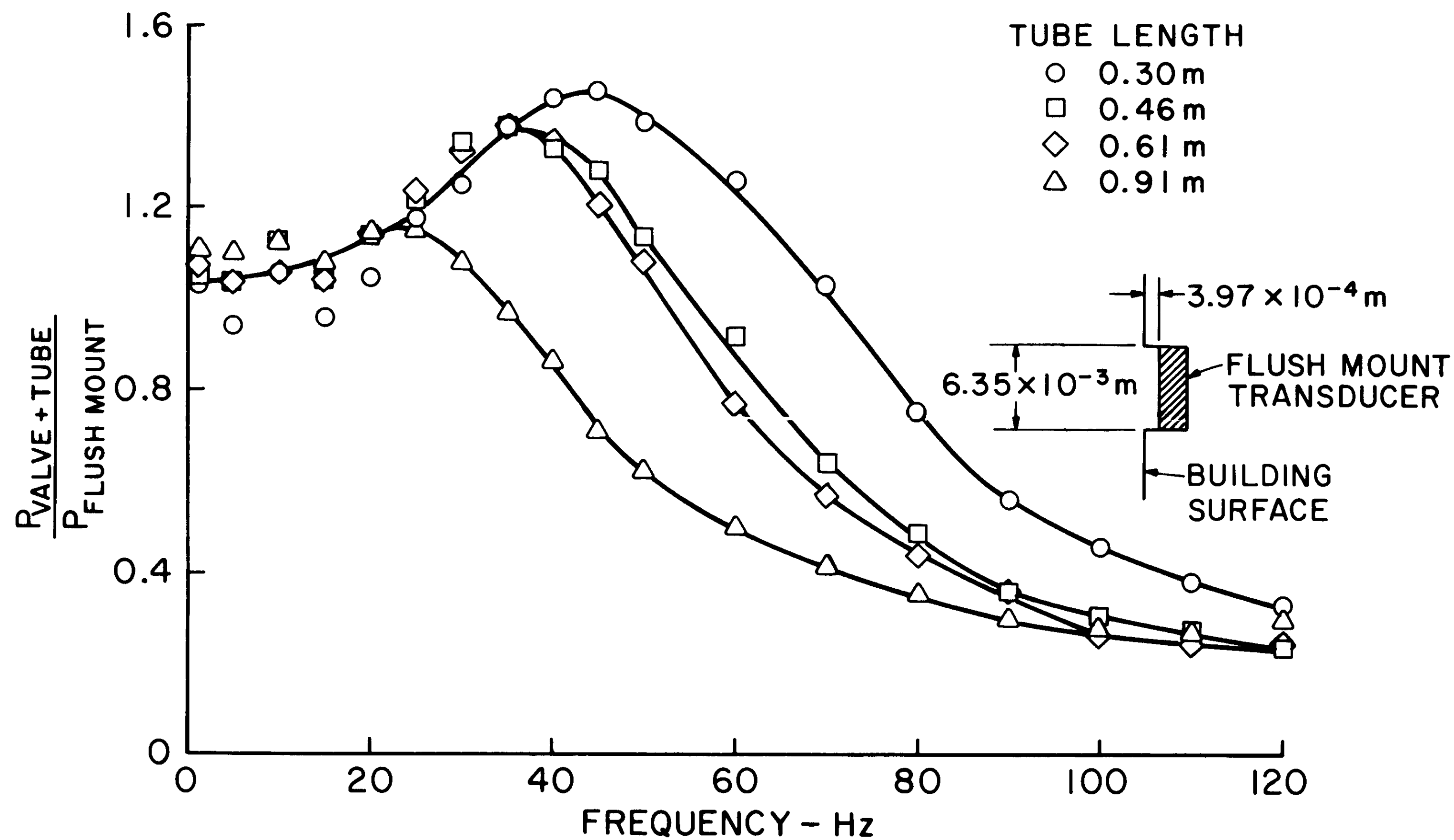


Figure 8. Frequency Response of Pressure Measurement System.

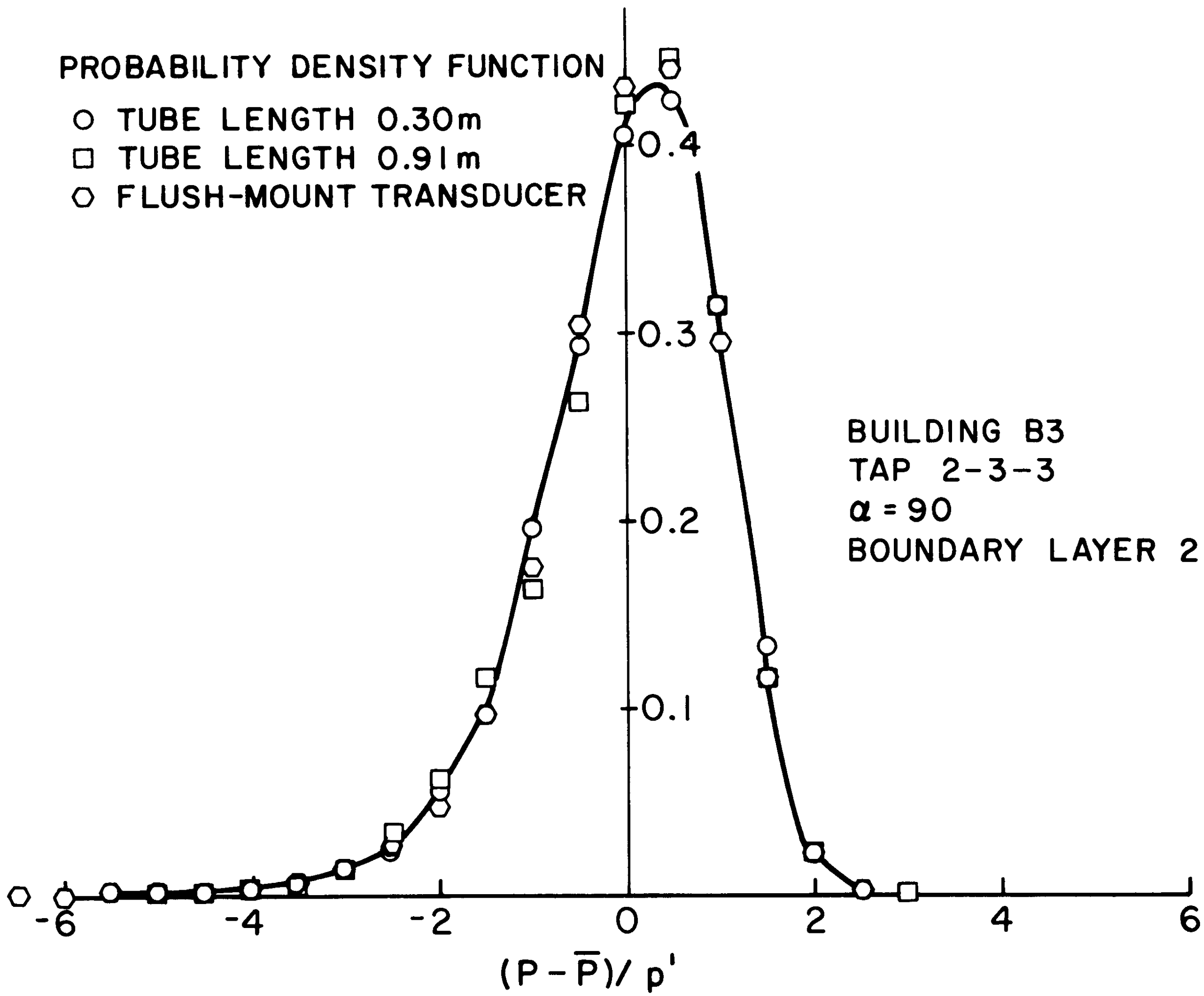


Figure 9. Probability Density Function of Pressure Fluctuations.

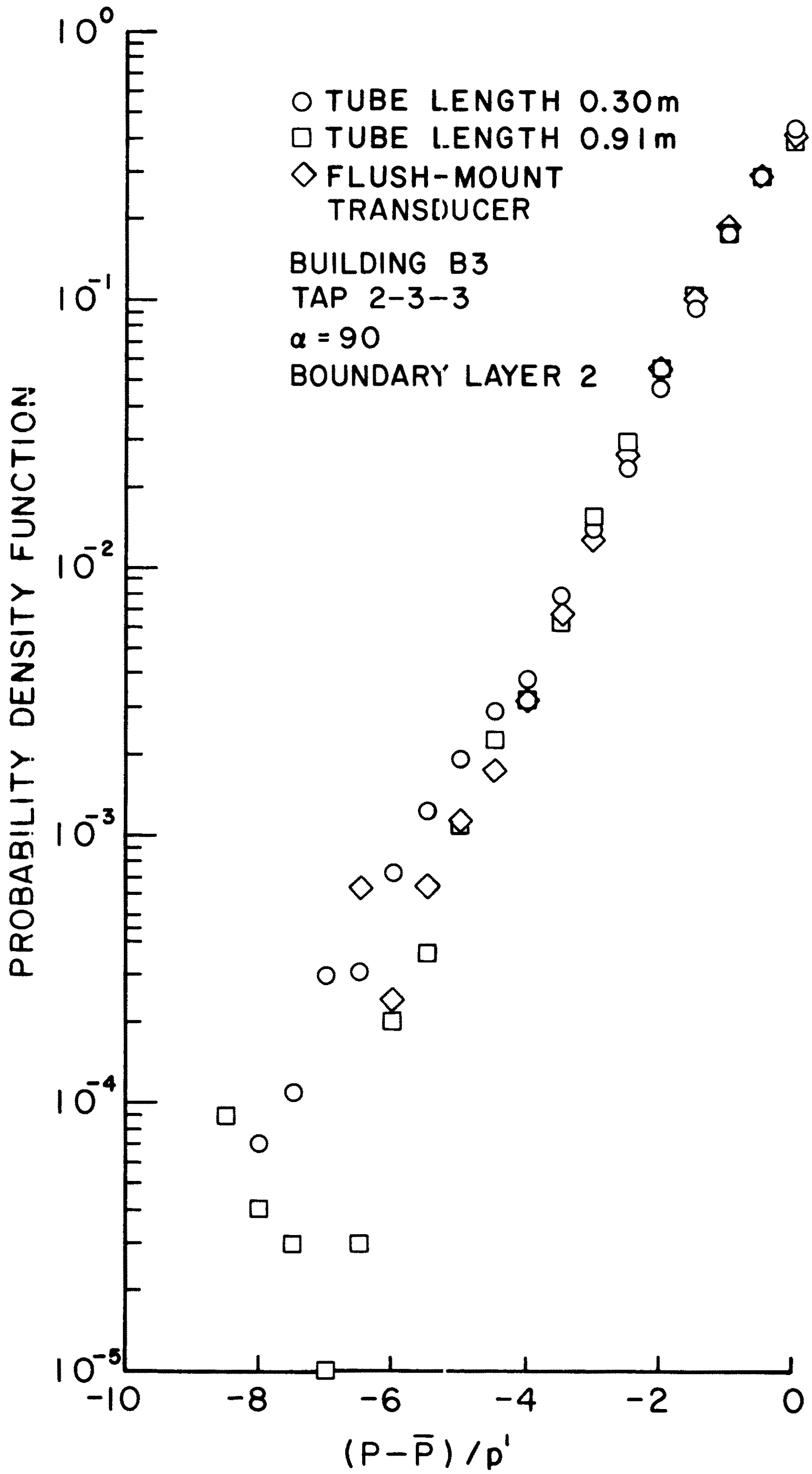


Figure 10. Probability Density Function of Pressure Fluctuations, Semi-Logarithmic Plot.

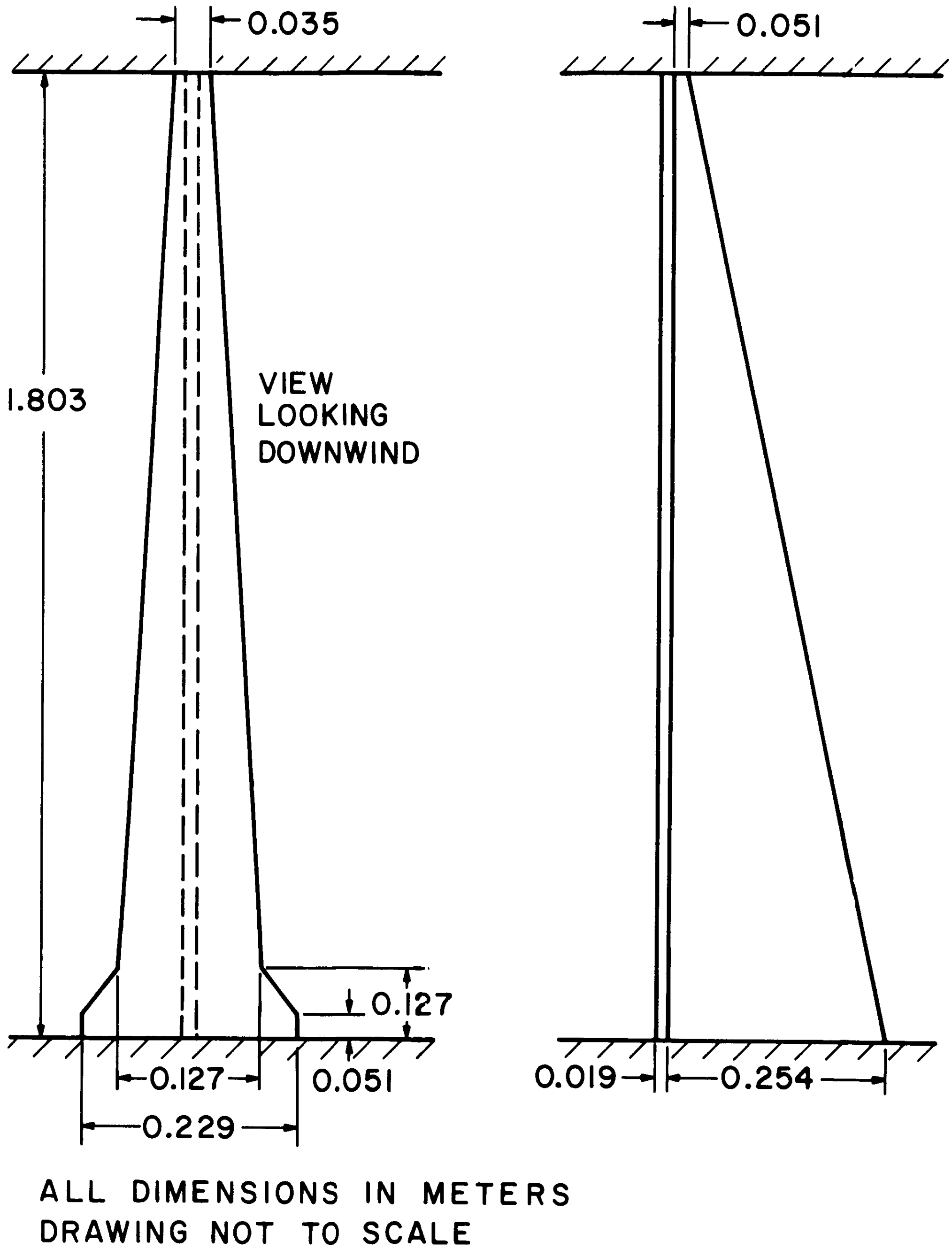


Figure 11. Spire Geometry.

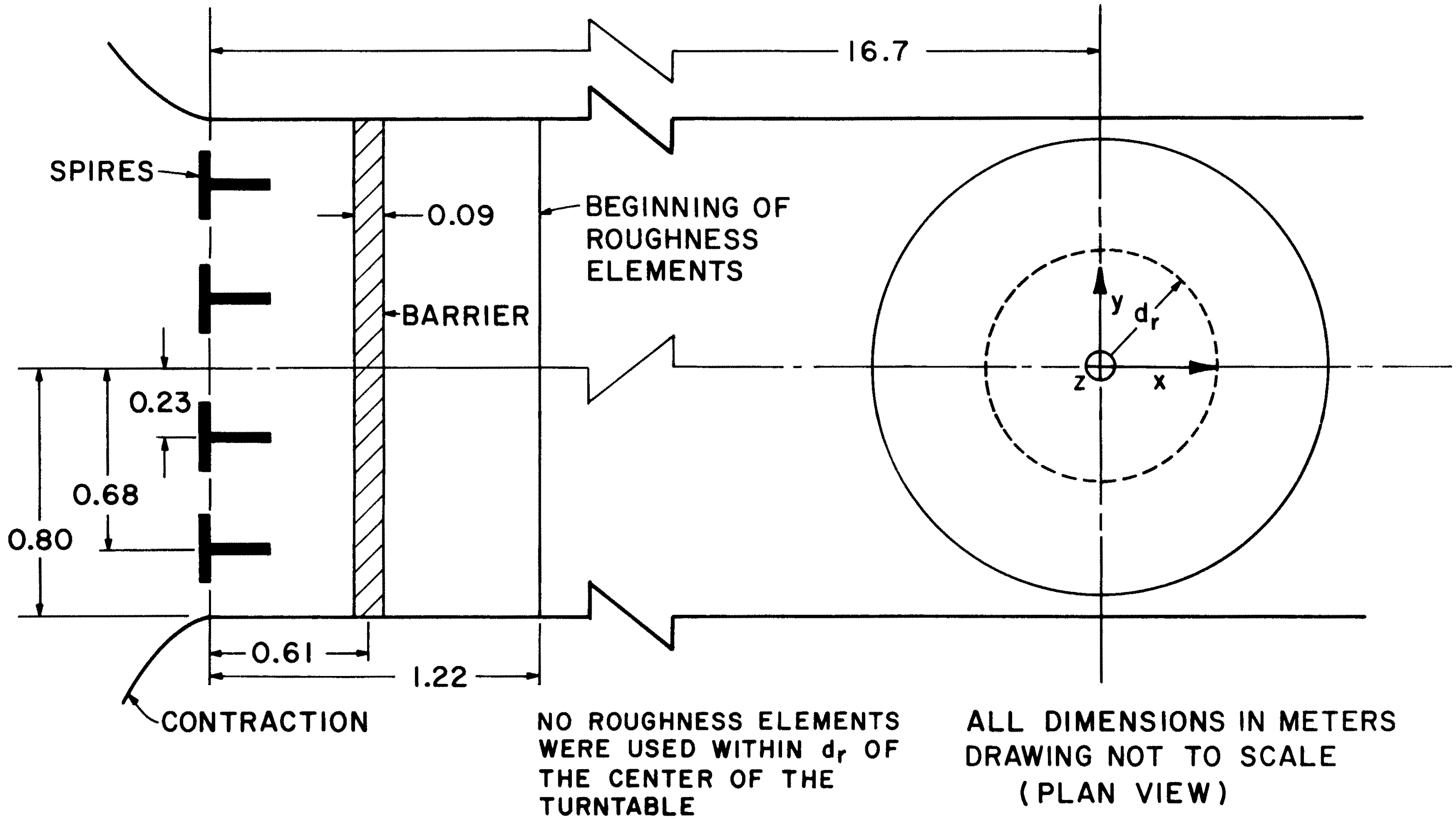
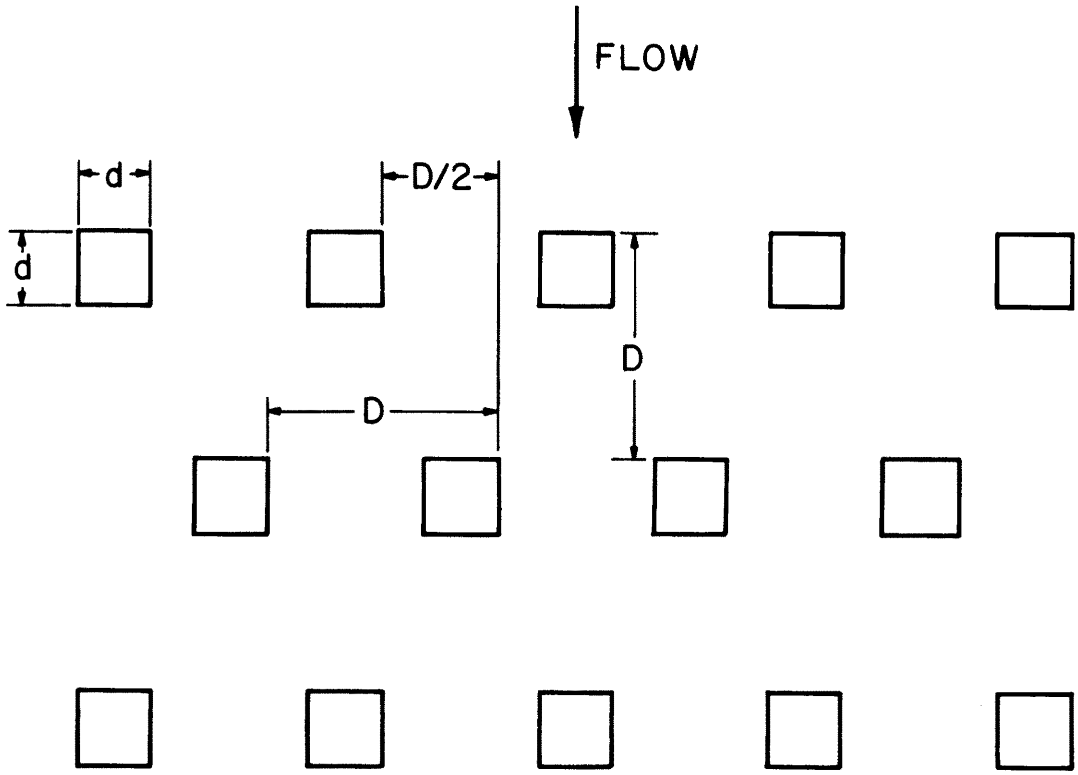


Figure 12. Wind Tunnel Arrangment.



INDIVIDUAL BLOCKS ARE CUBES

BOUNDARY LAYER	D(m)	d(m)	d_r(m)
1	—	0.000	—
2	0.075	0.025	0.84
3	0.153	0.051	1.07
4	0.228	0.076	1.27

D/d = 3.0

Figure 13. Roughness Configuration.

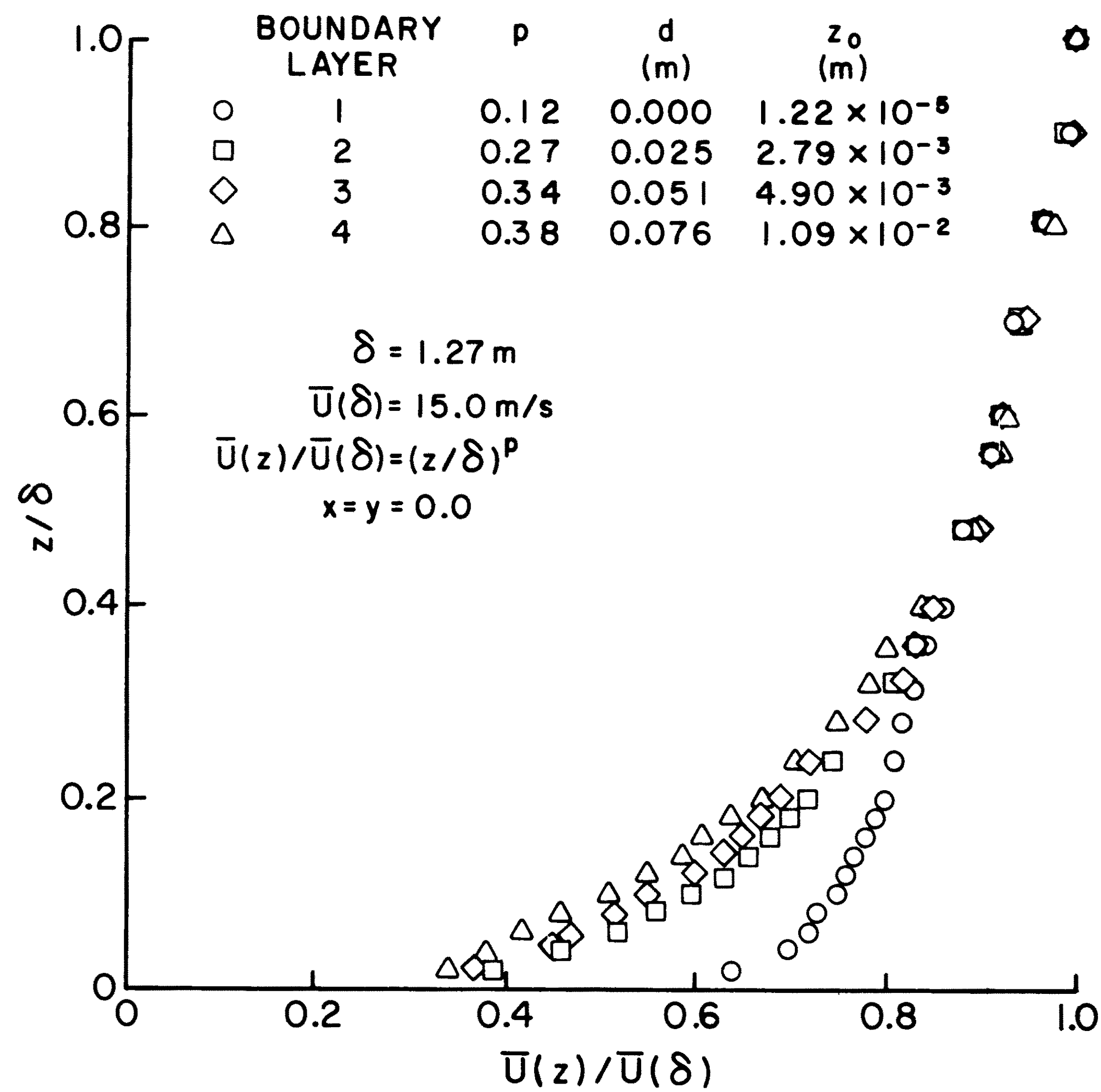


Figure 14. Mean Velocity Profiles.

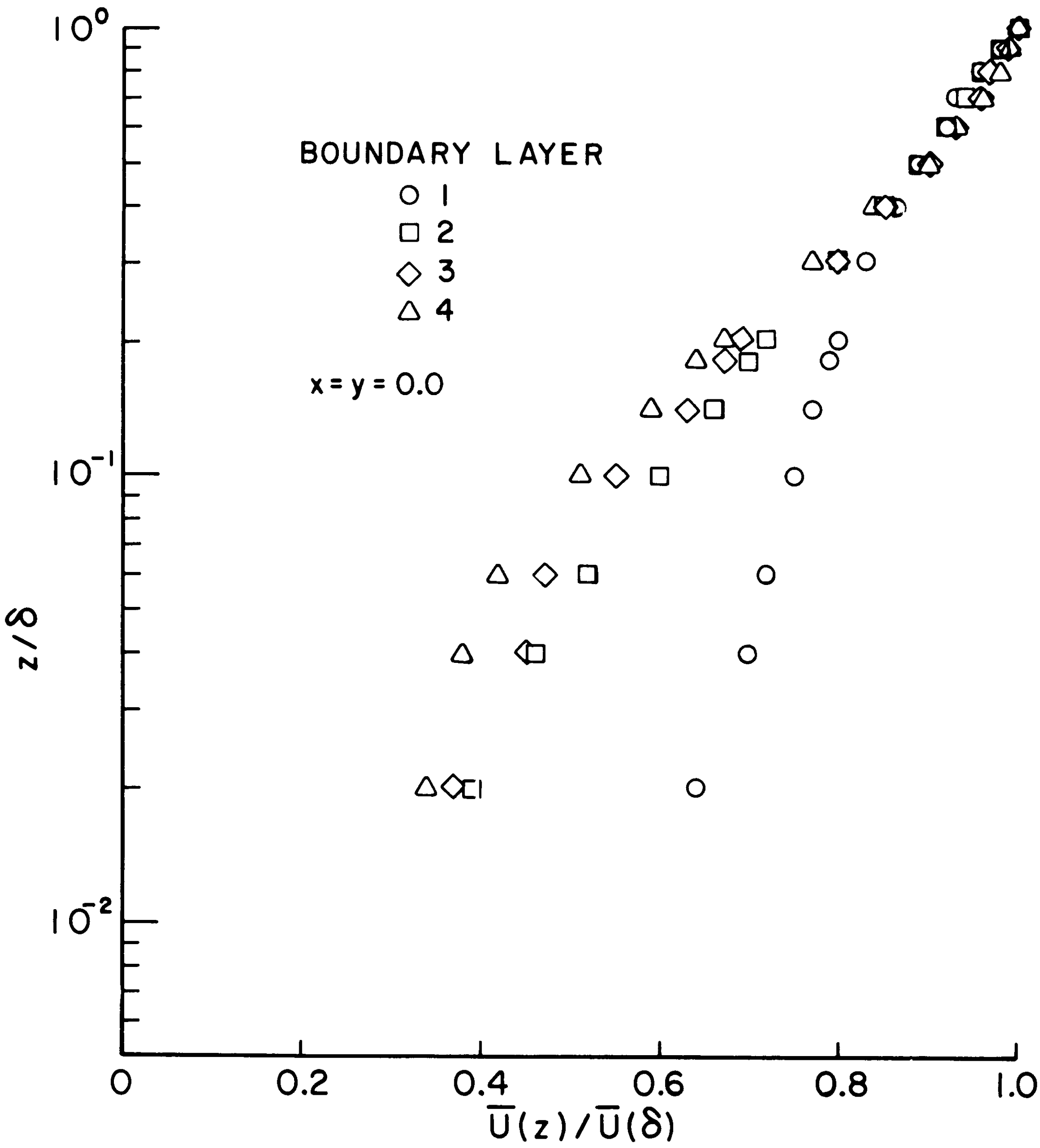


Figure 15. Mean Velocity Profiles--Semi-Logarithmic Presentation.

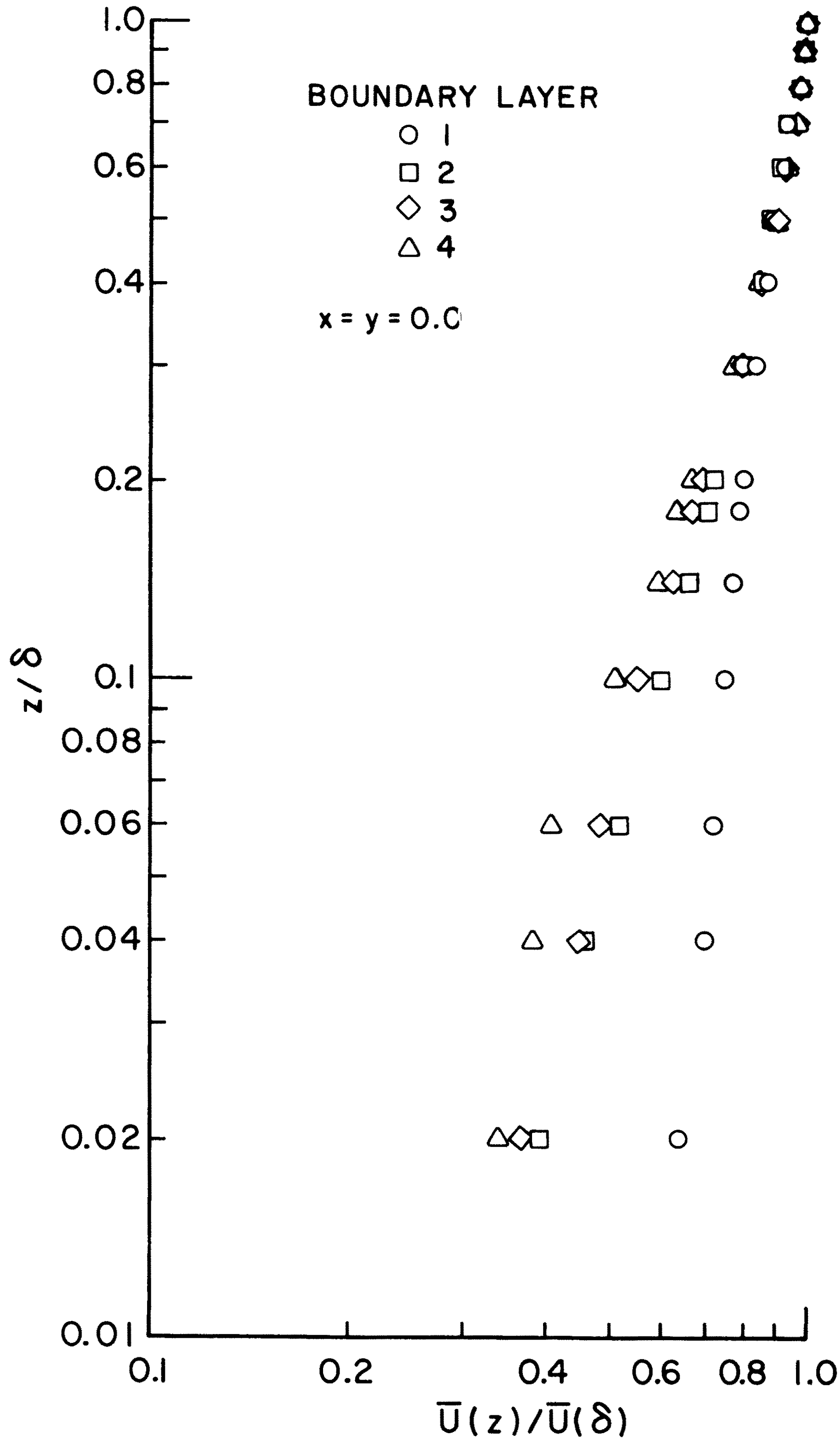


Figure 16. Mean Velocity Profiles--Logarithmic Presentation.

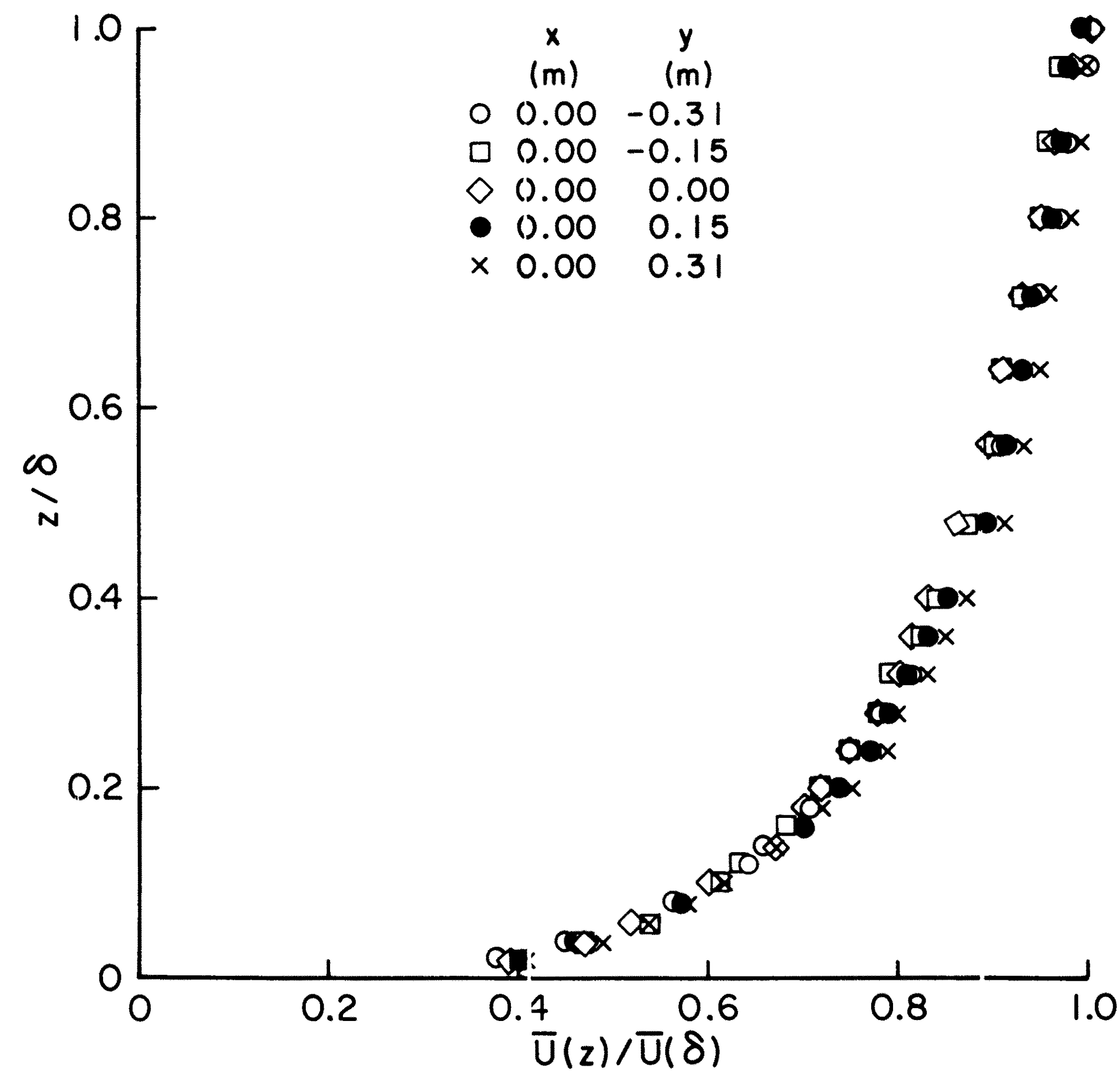


Figure 17. Lateral Variation of Mean Velocity Profiles, Boundary Layer 2.

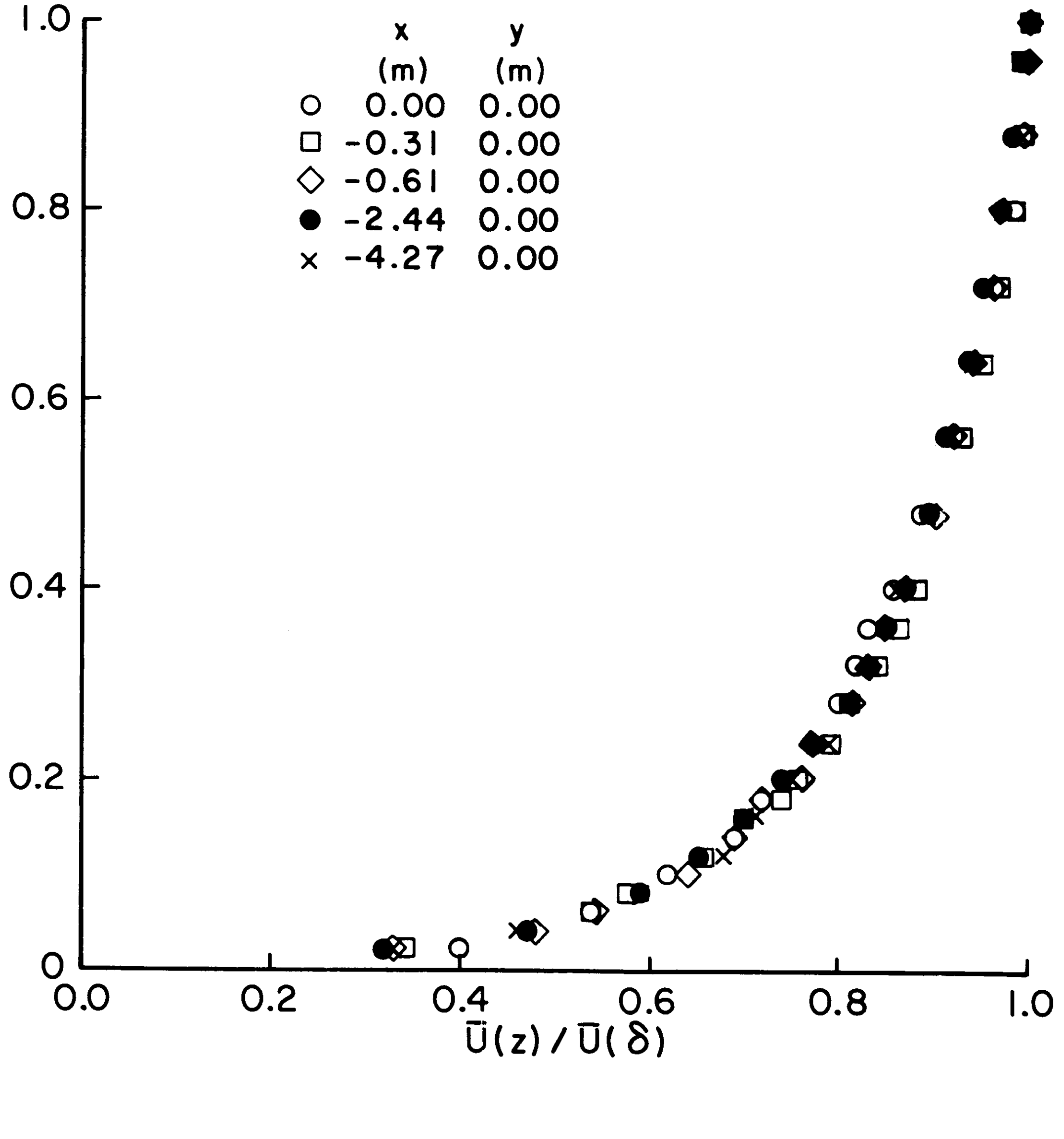


Figure 18. Longitudinal Variation of Mean Velocity Profiles, Boundary Layer 2.

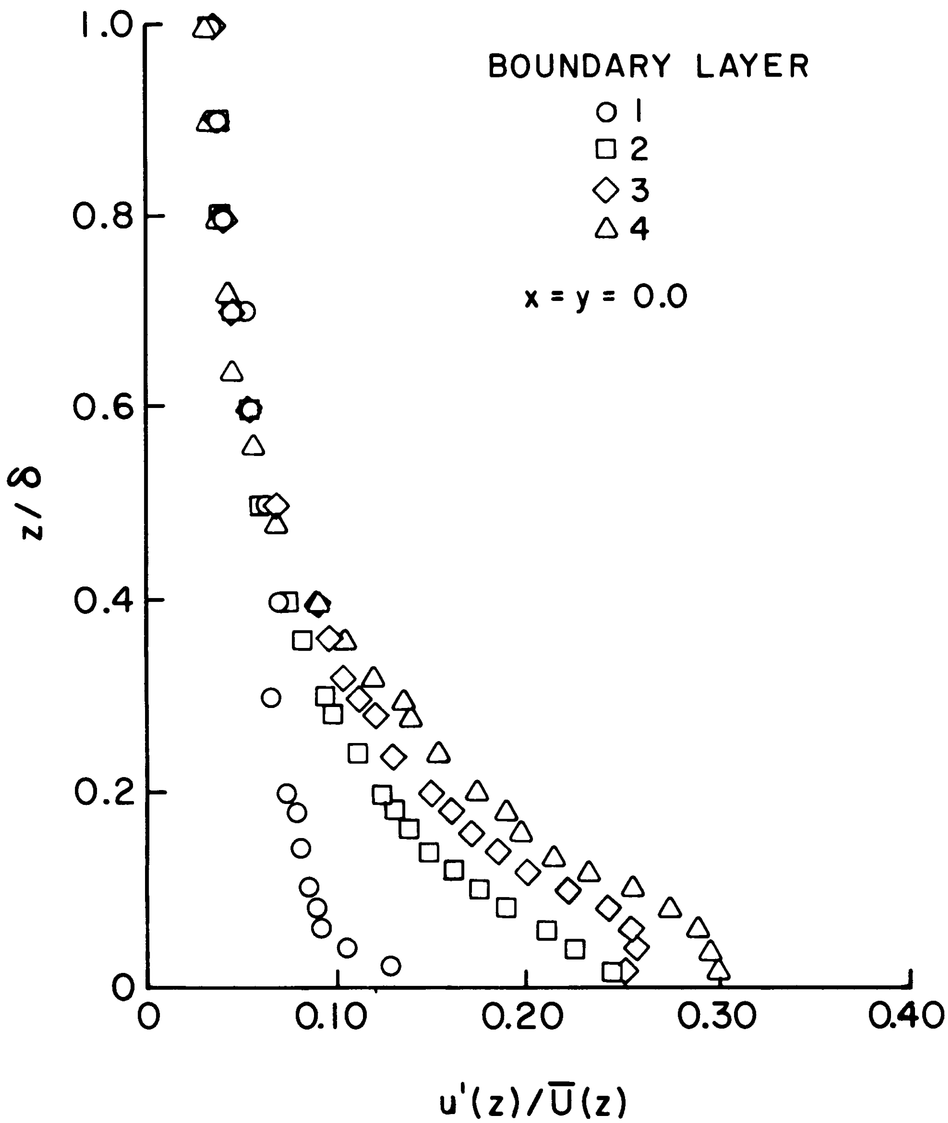


Figure 19. Local Longitudinal Turbulence Intensity.

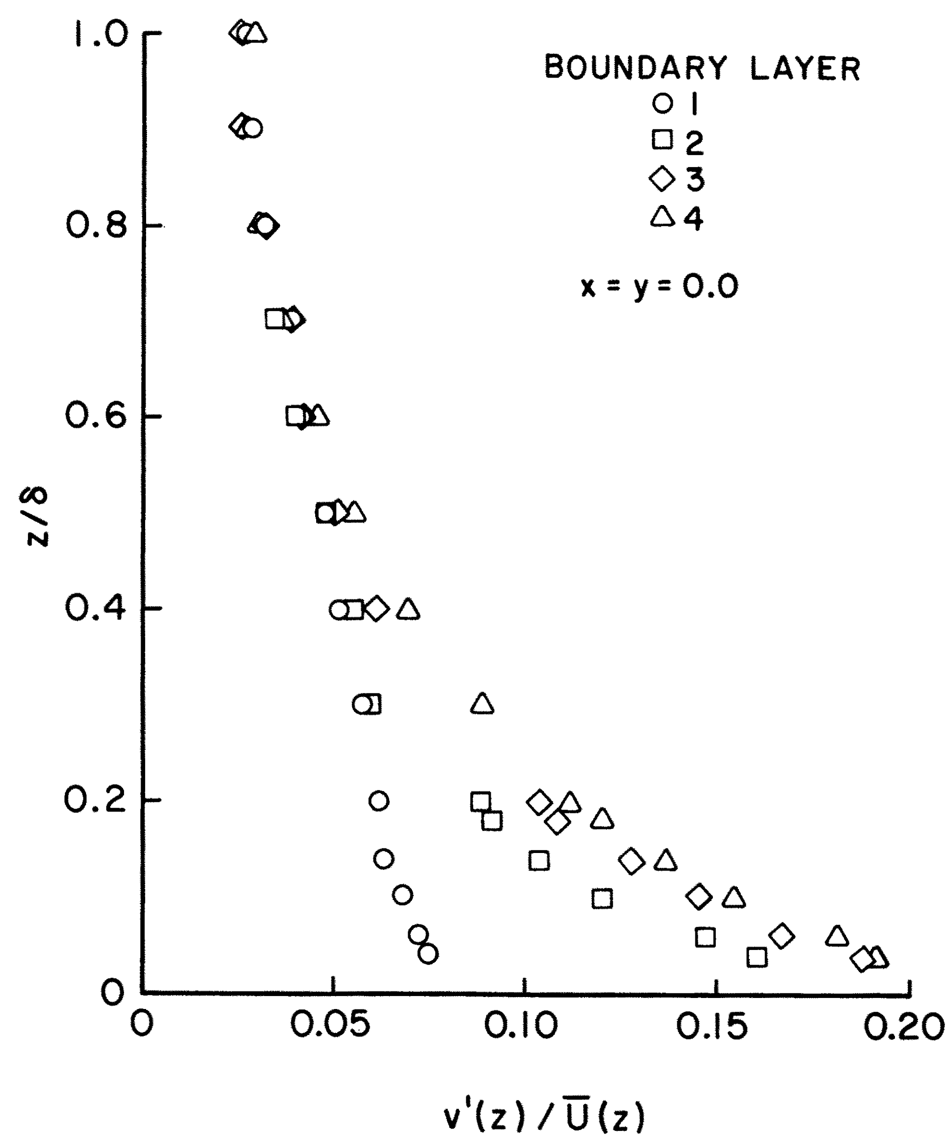


Figure 20. Local Lateral Turbulence Intensity.

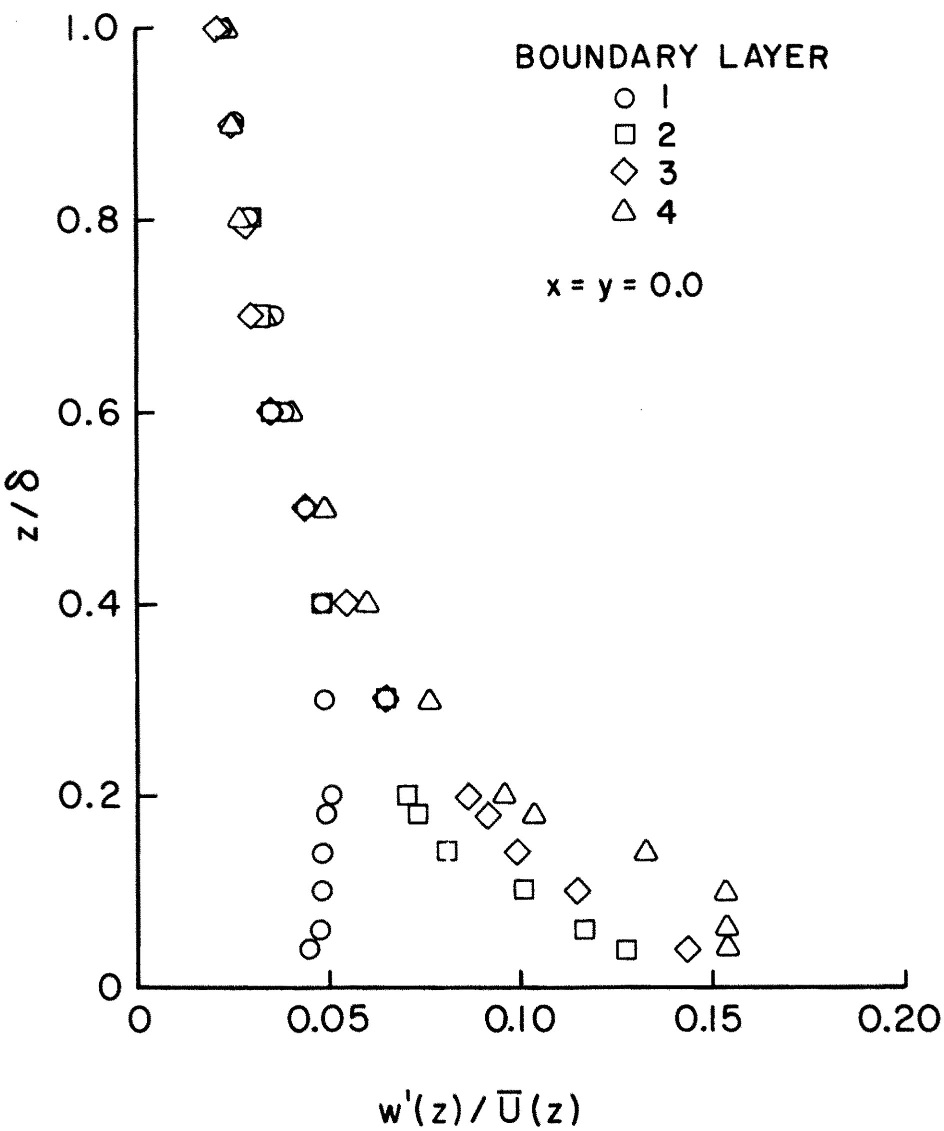


Figure 21. Local Vertical Turbulence Intensity.

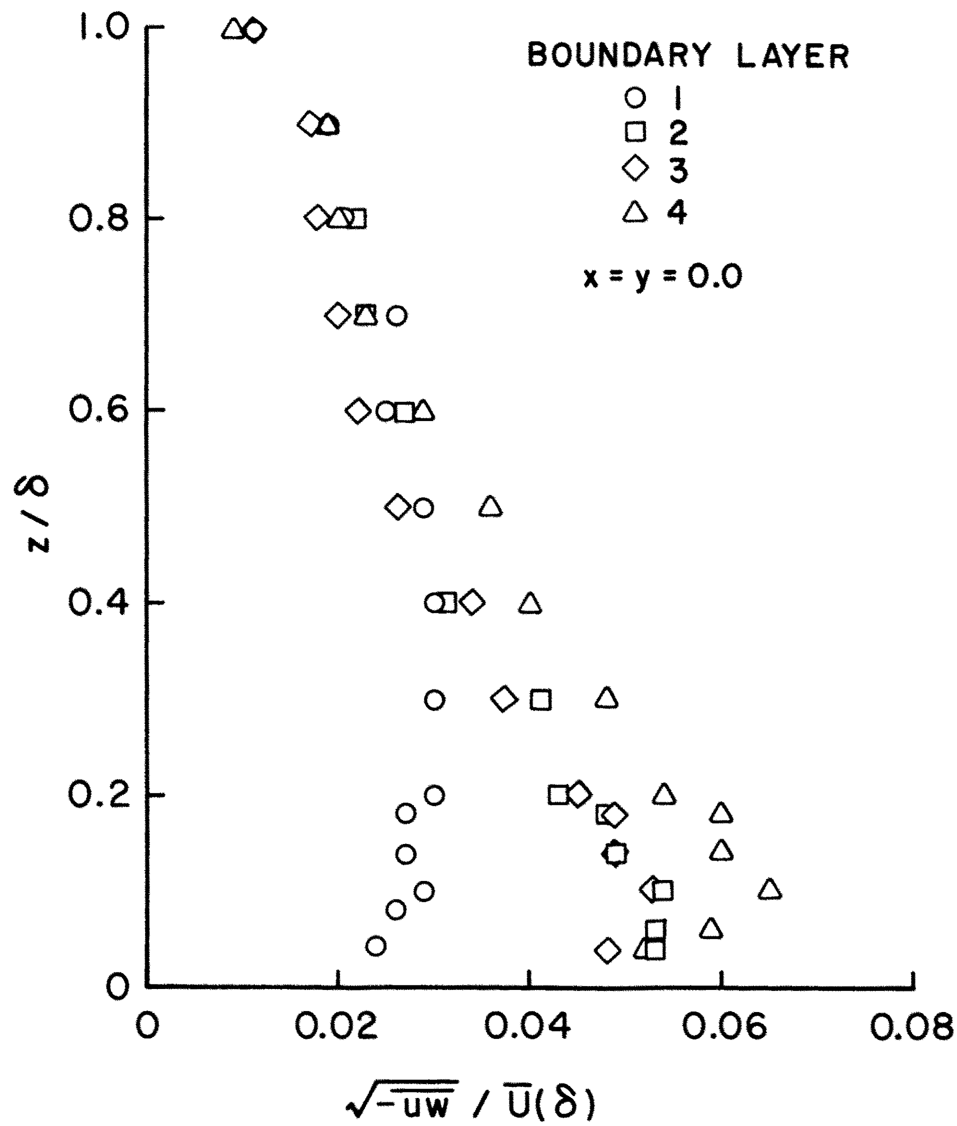


Figure 22. Reynolds Stress.

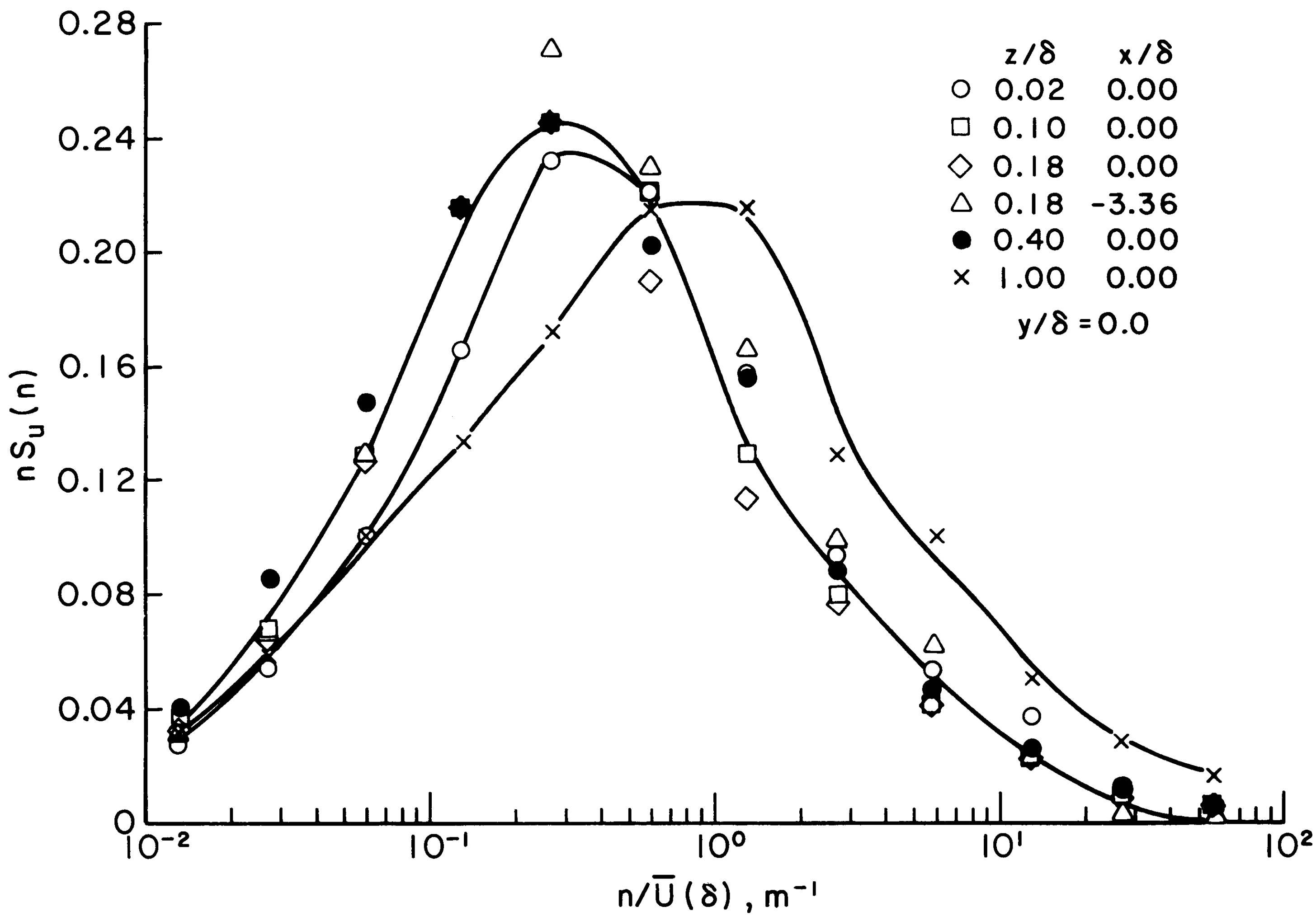


Figure 23. Longitudinal Velocity Spectra, Boundary Layer 2.

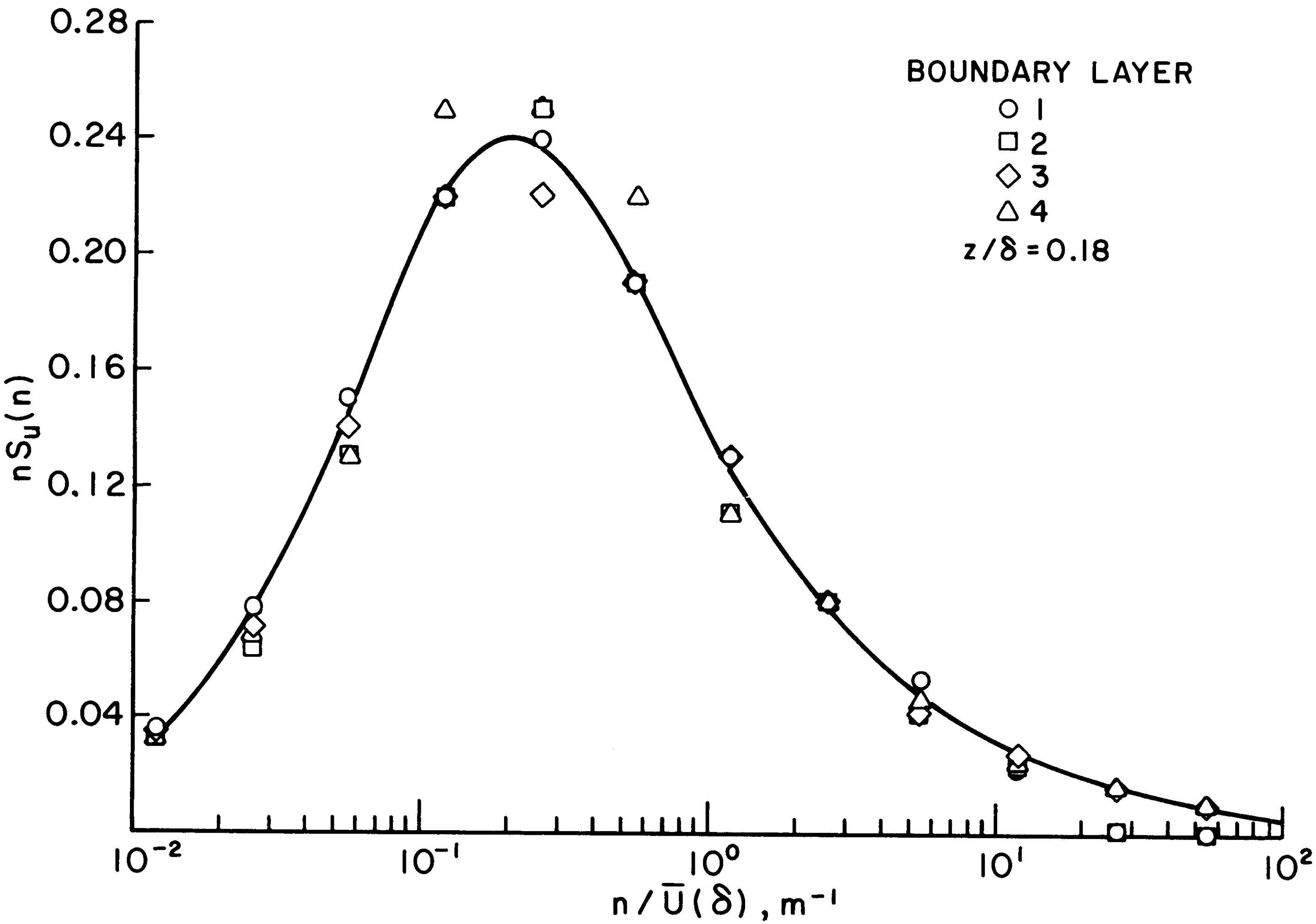


Figure 24. Longitudinal Velocity Spectra, $z/\delta = 0.18$.

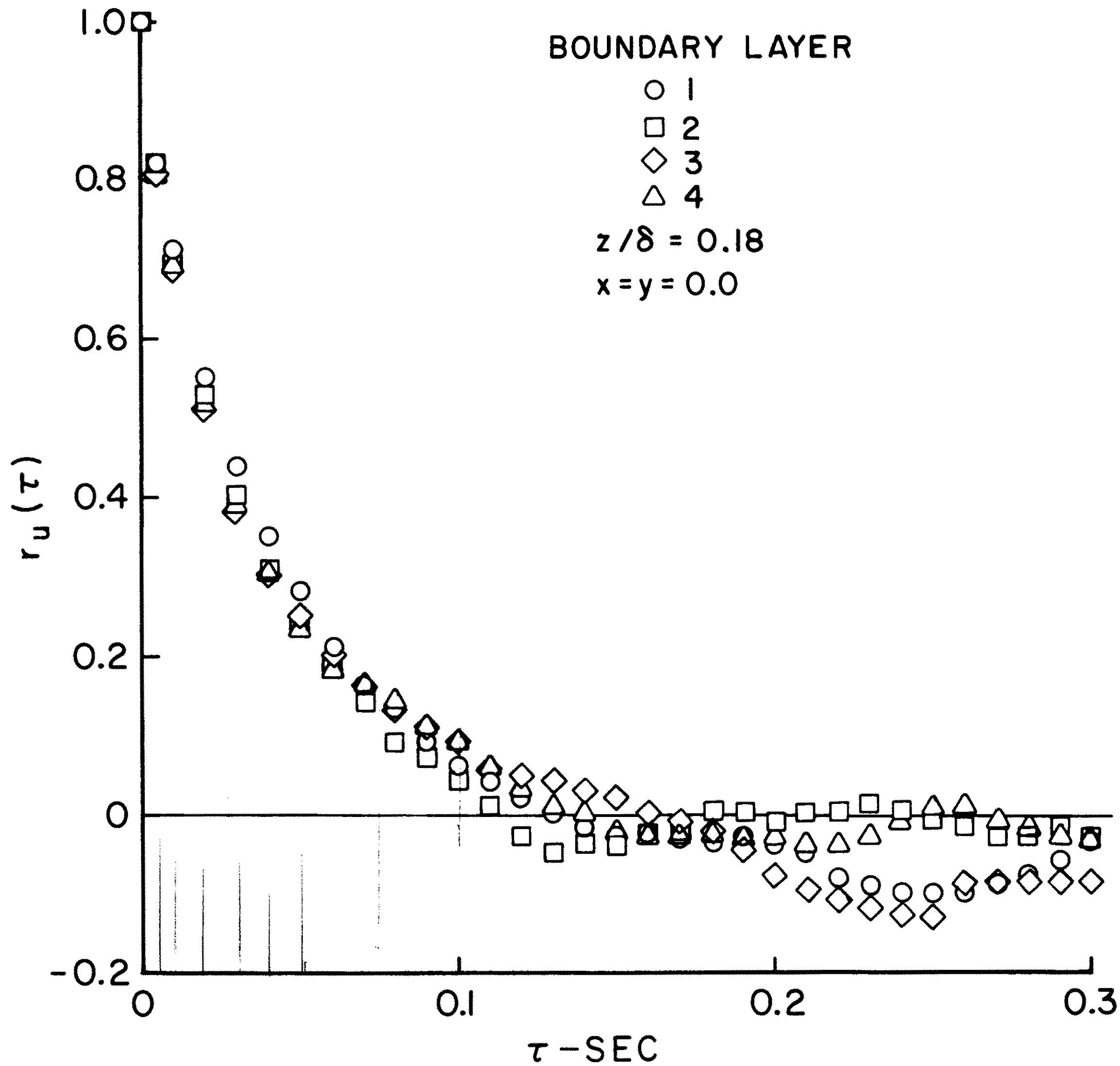


Figure 25. Autocorrelation Coefficient, z/δ = 0.18.

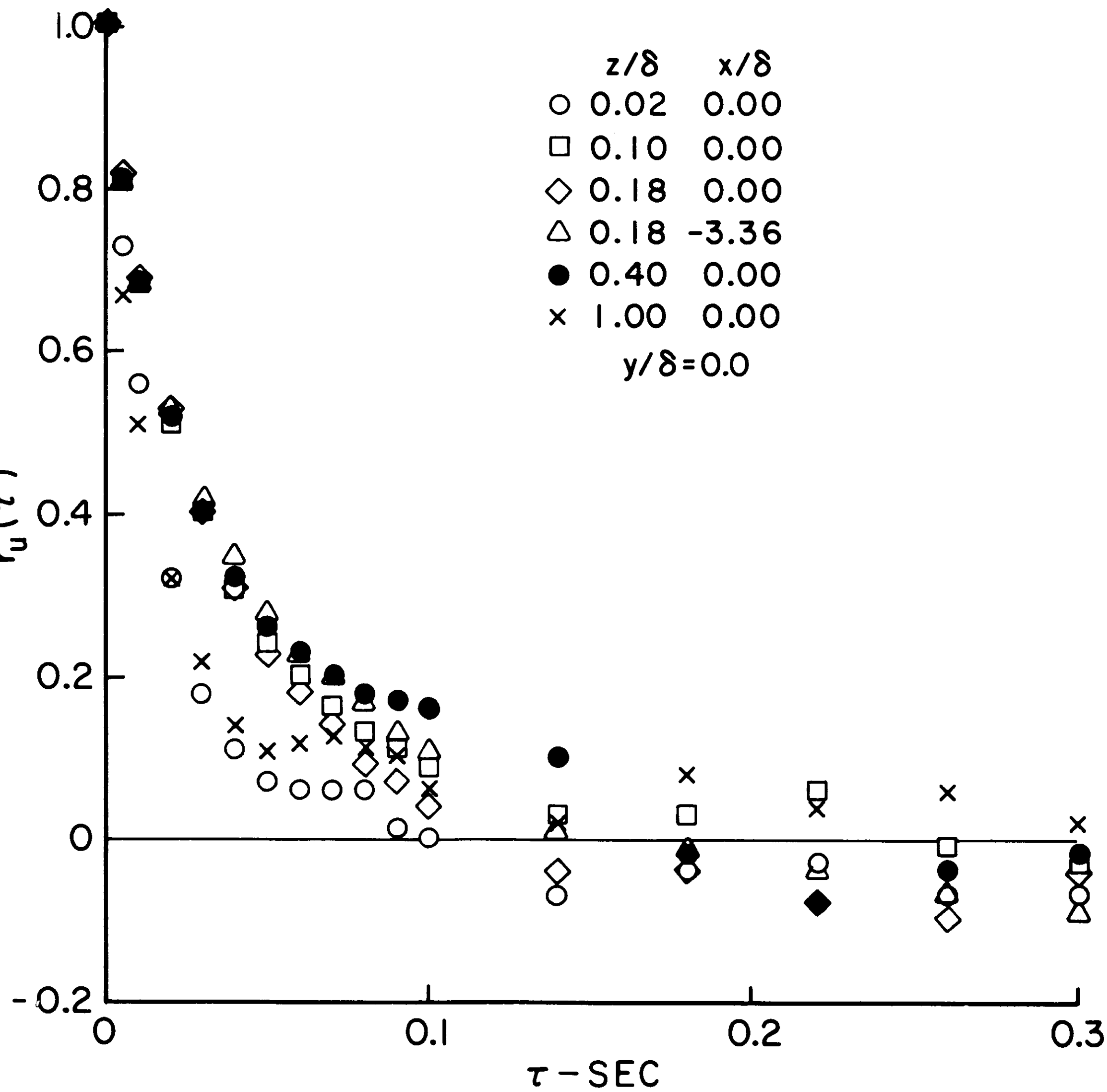


Figure 26. Autocorrelation Coefficient, Boundary Layer 2.

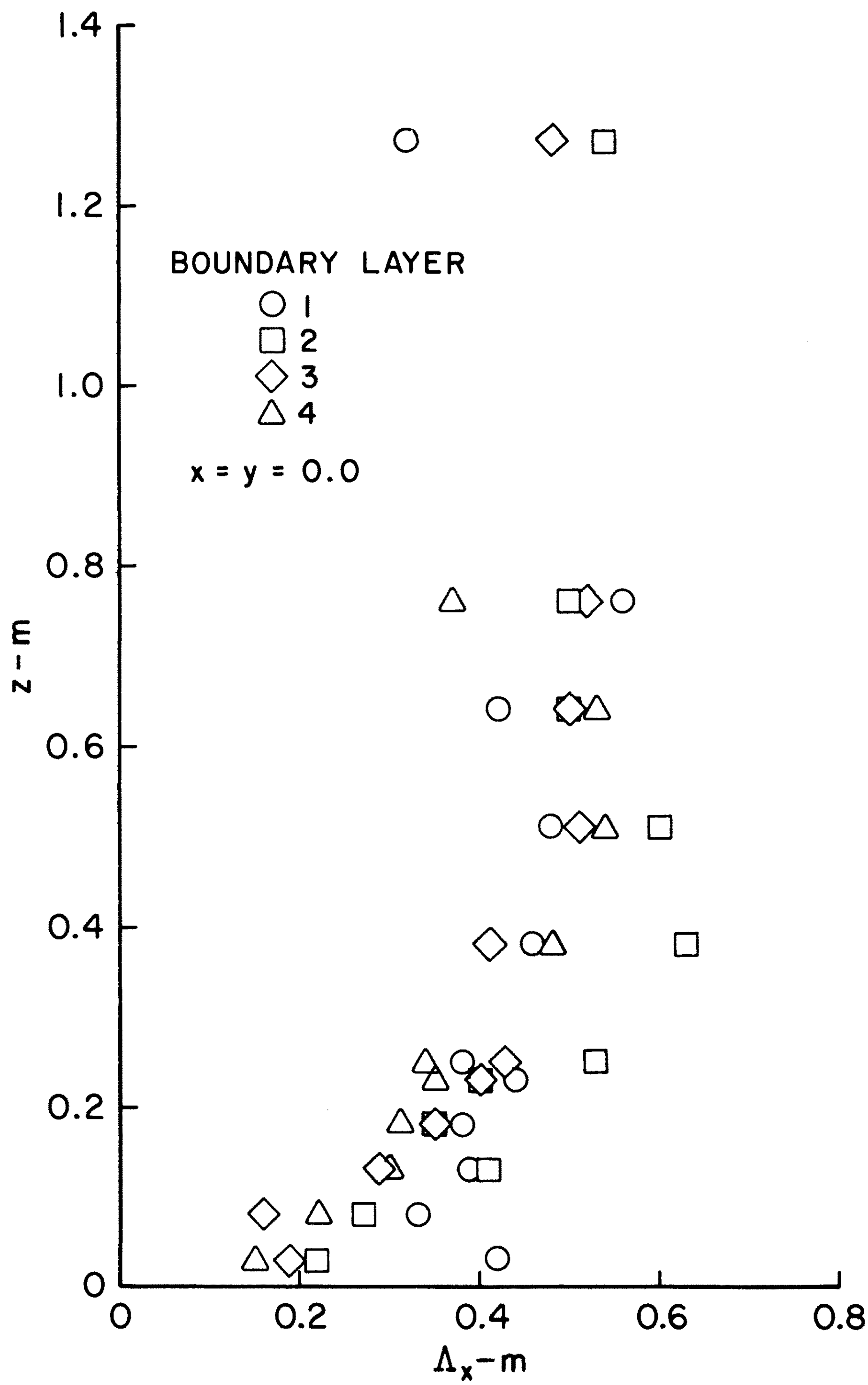


Figure 27. Longitudinal Integral Scale.

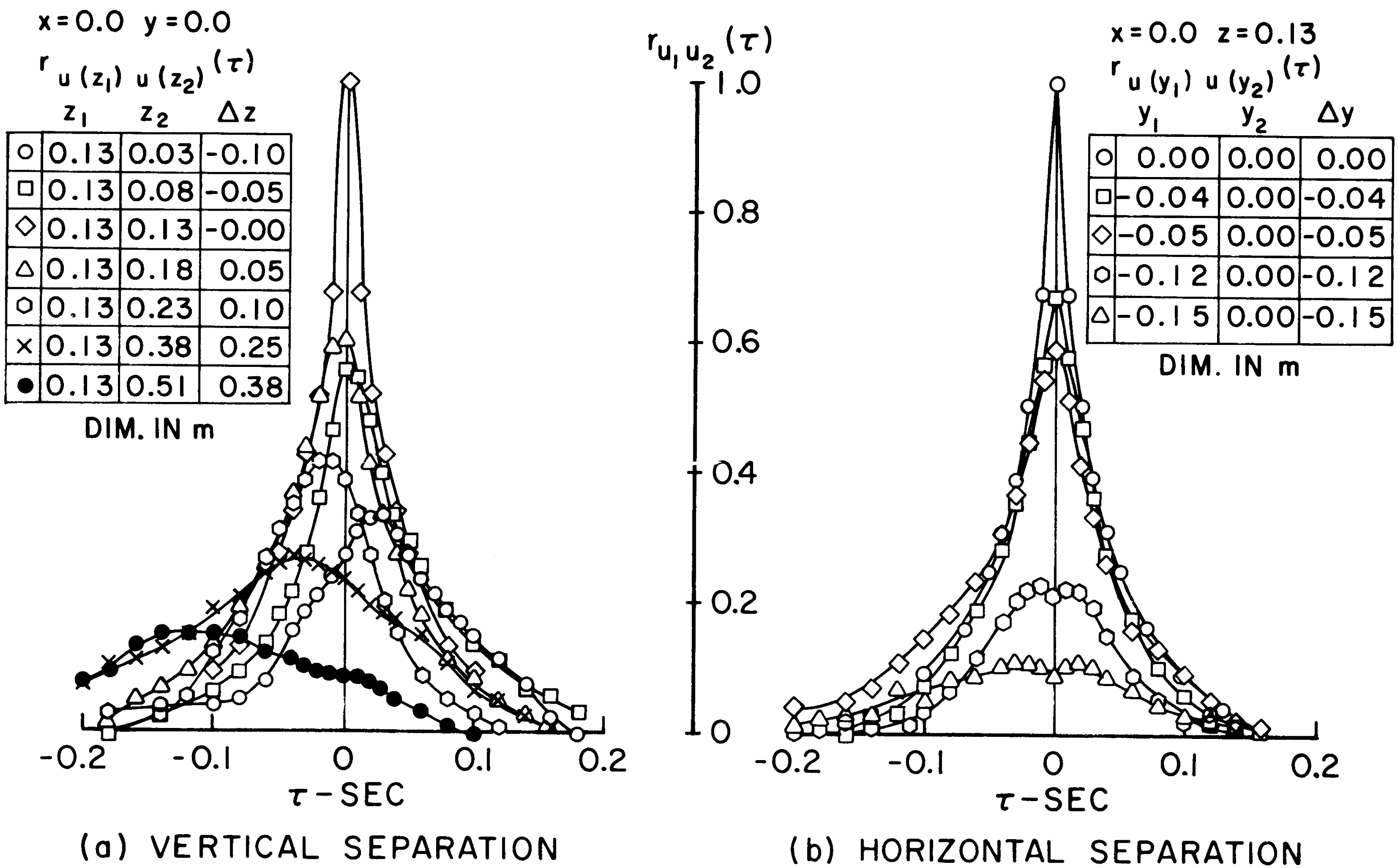


Figure 28. Velocity Cross-Correlation Coefficients, Boundary Layer 1.

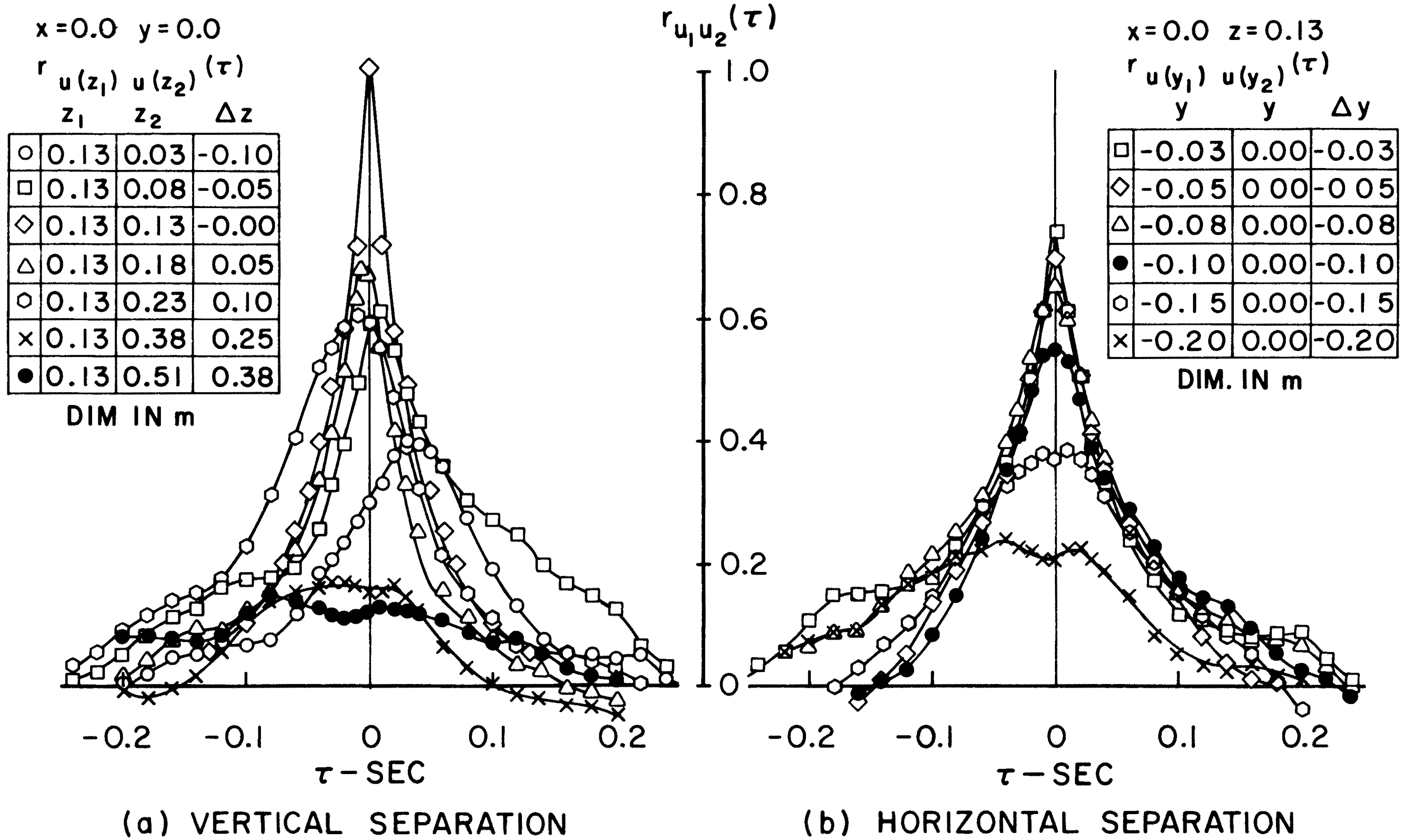
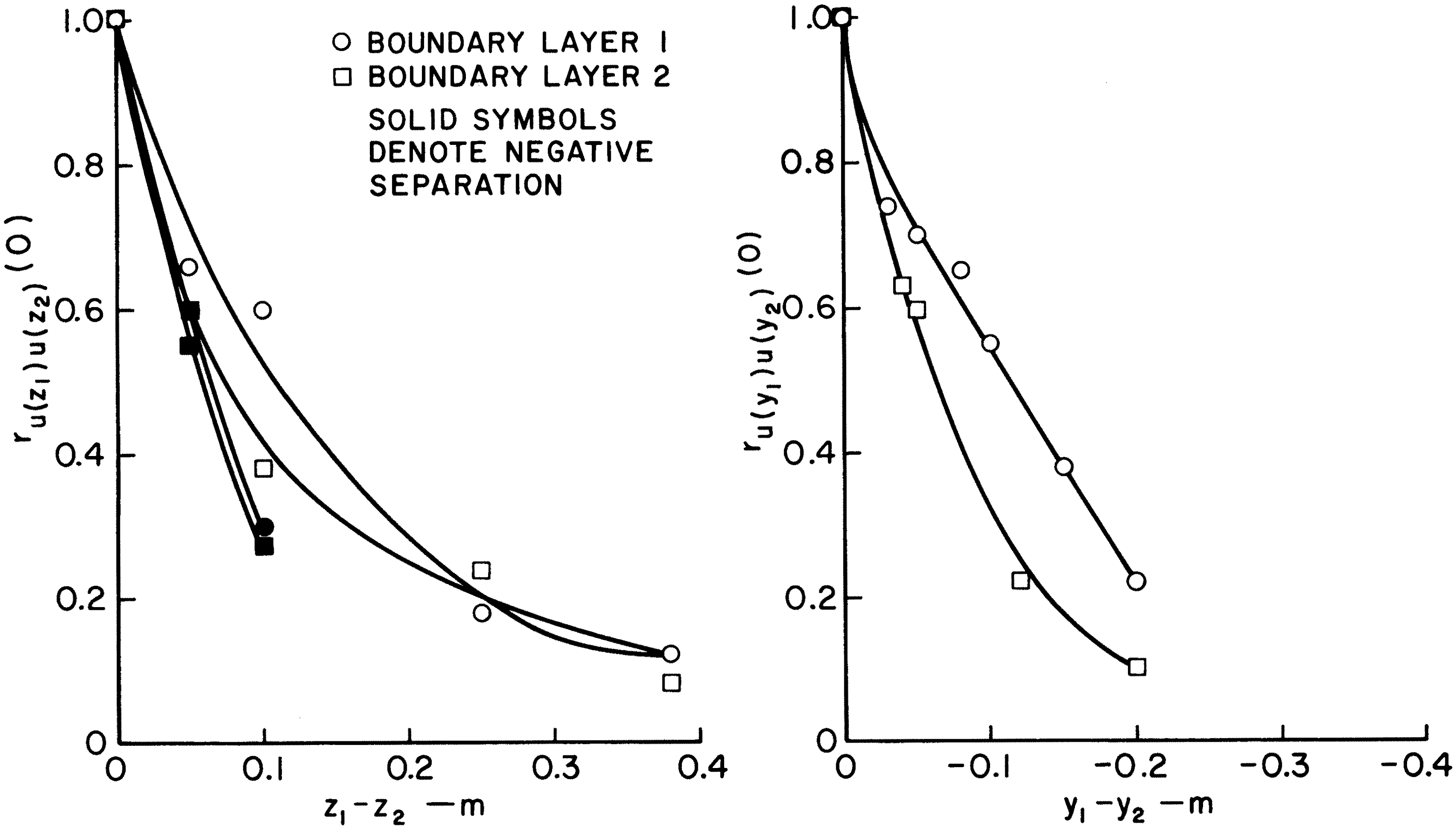


Figure 29. Velocity Cross-Correlation Coefficients, Boundary Layer 2.



(a) VERTICAL SEPARATION (b) HORIZONTAL SEPARATION

Figure 30. Space Correlations.

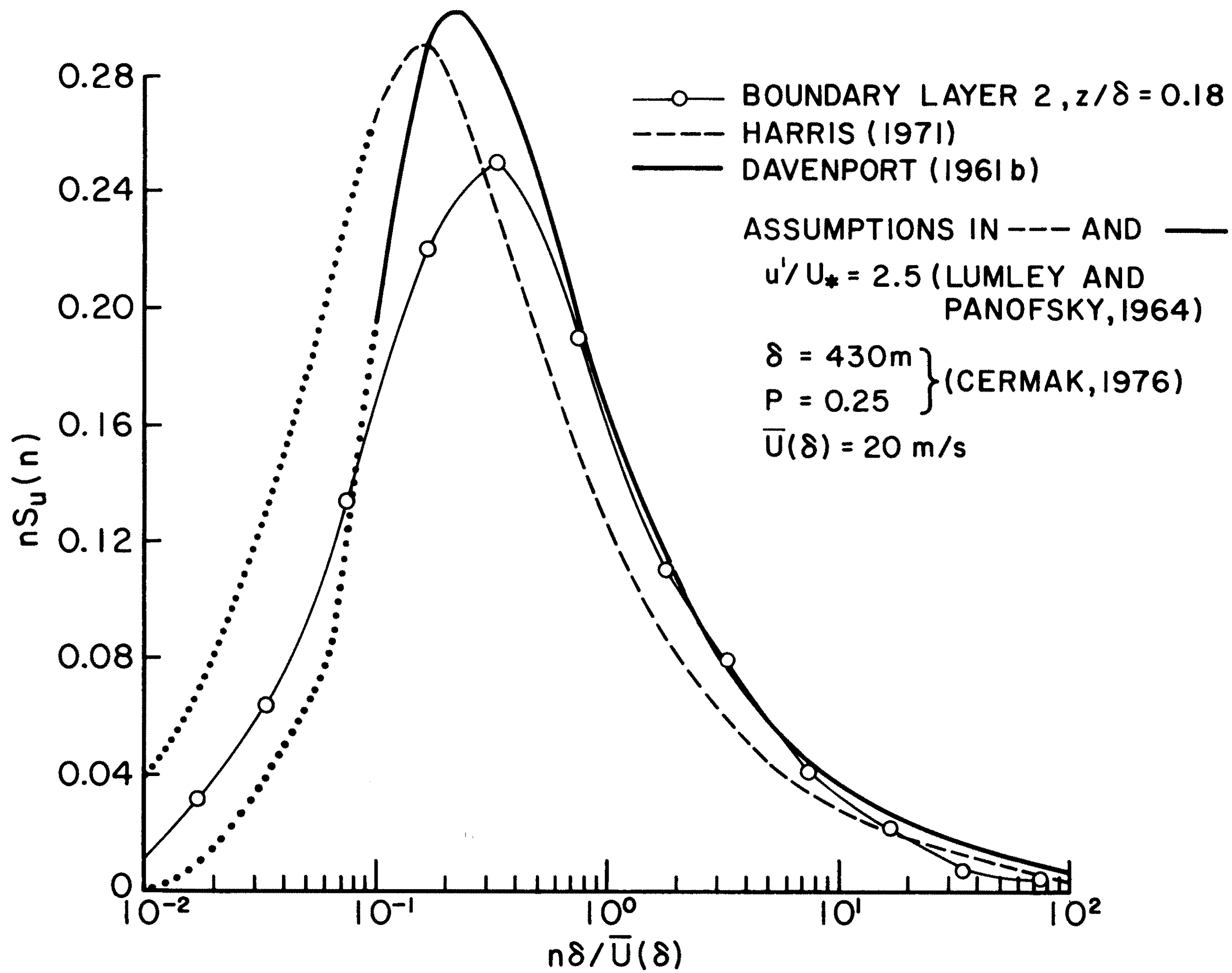


Figure 31. Comparison of Wind-Tunnel Longitudinal Velocity Spectra with Atmospheric Models.

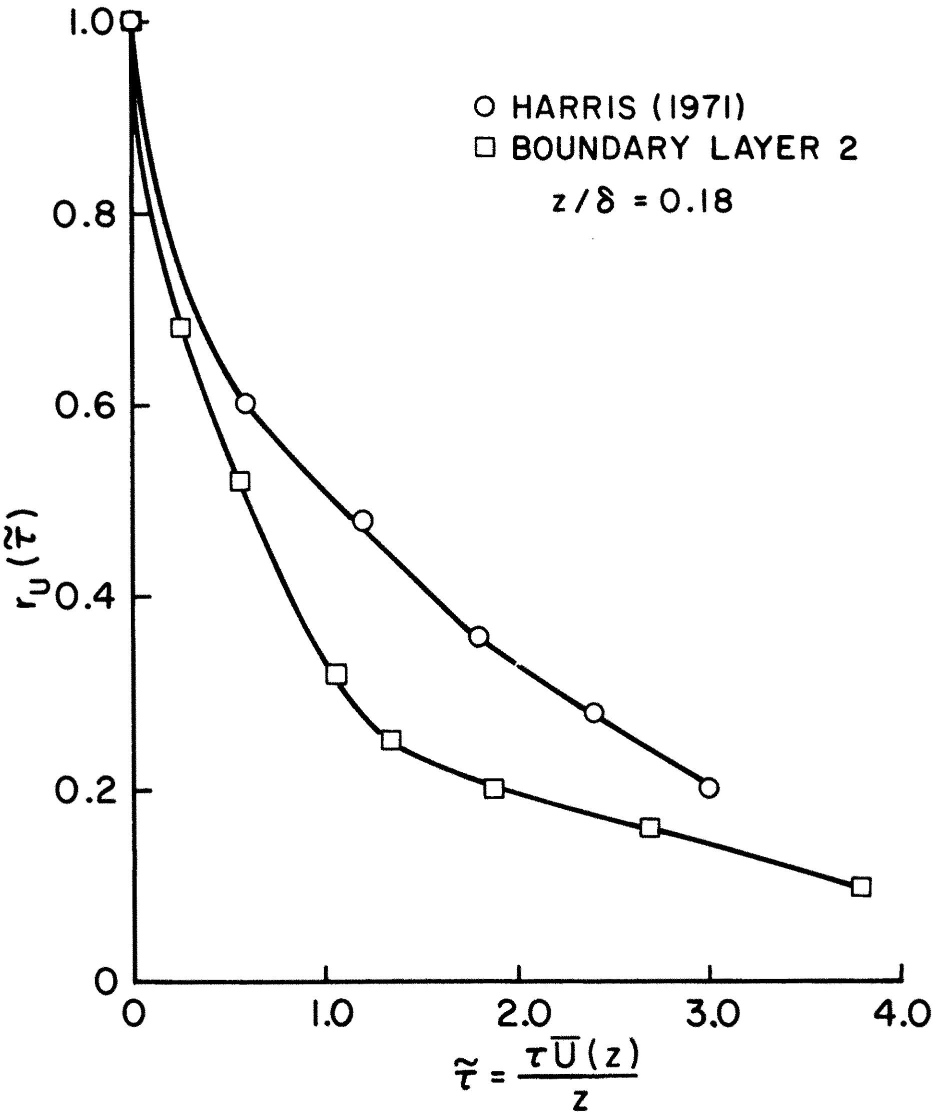


Figure 32. Comparison of Wind-Tunnel Autocorrelation Coefficients with Atmospheric Models.

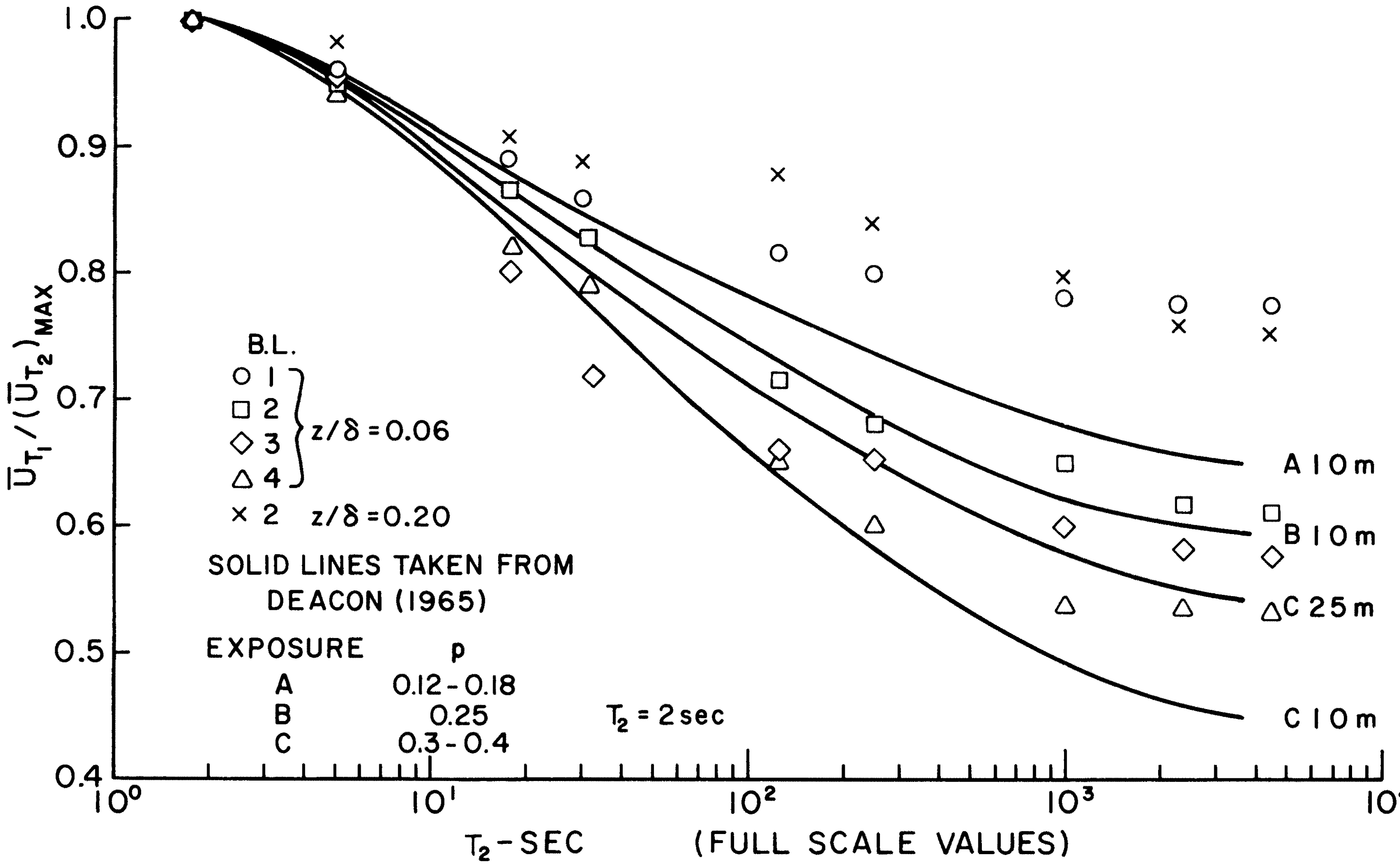


Figure 33. Comparison of Wind-Tunnel Gust Measurements with Atmospheric Measurements.

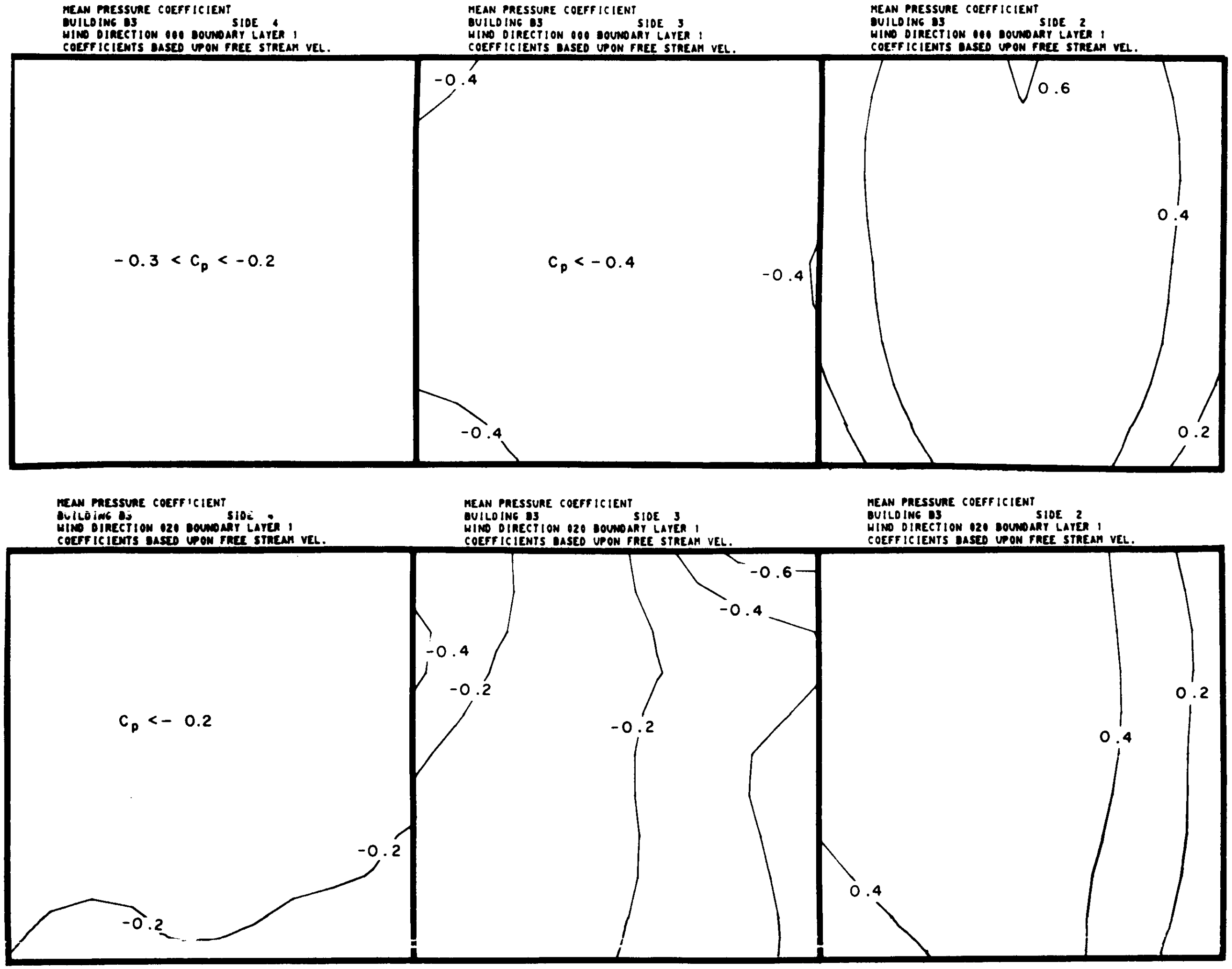


Figure 34. Mean Pressure Coefficients Based Upon Free Stream Velocity, Building B3, Boundary Layer 1.

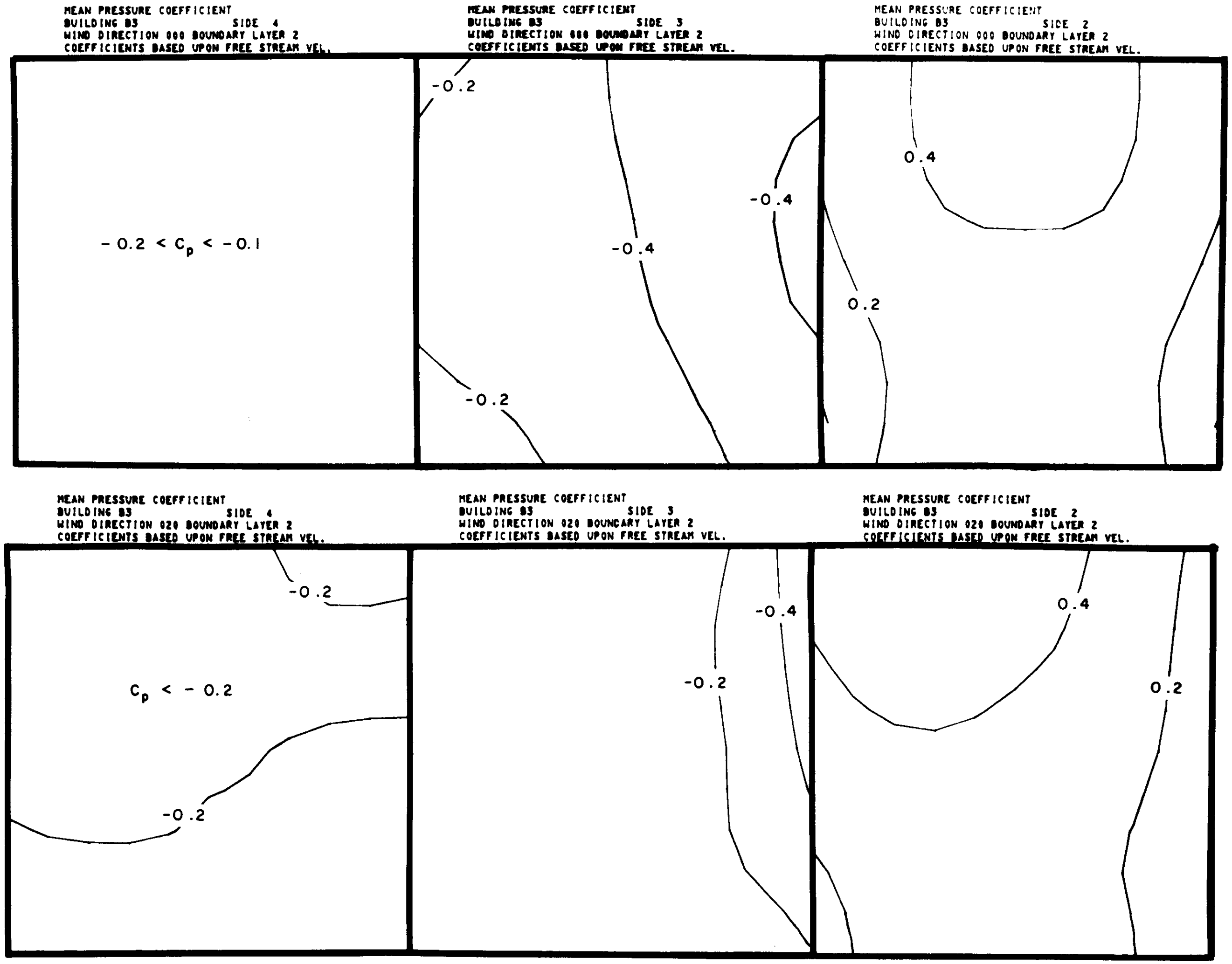


Figure 35. Mean Pressure Coefficients Based Upon Free Stream Velocity, Building B3, Boundary Layer 2.

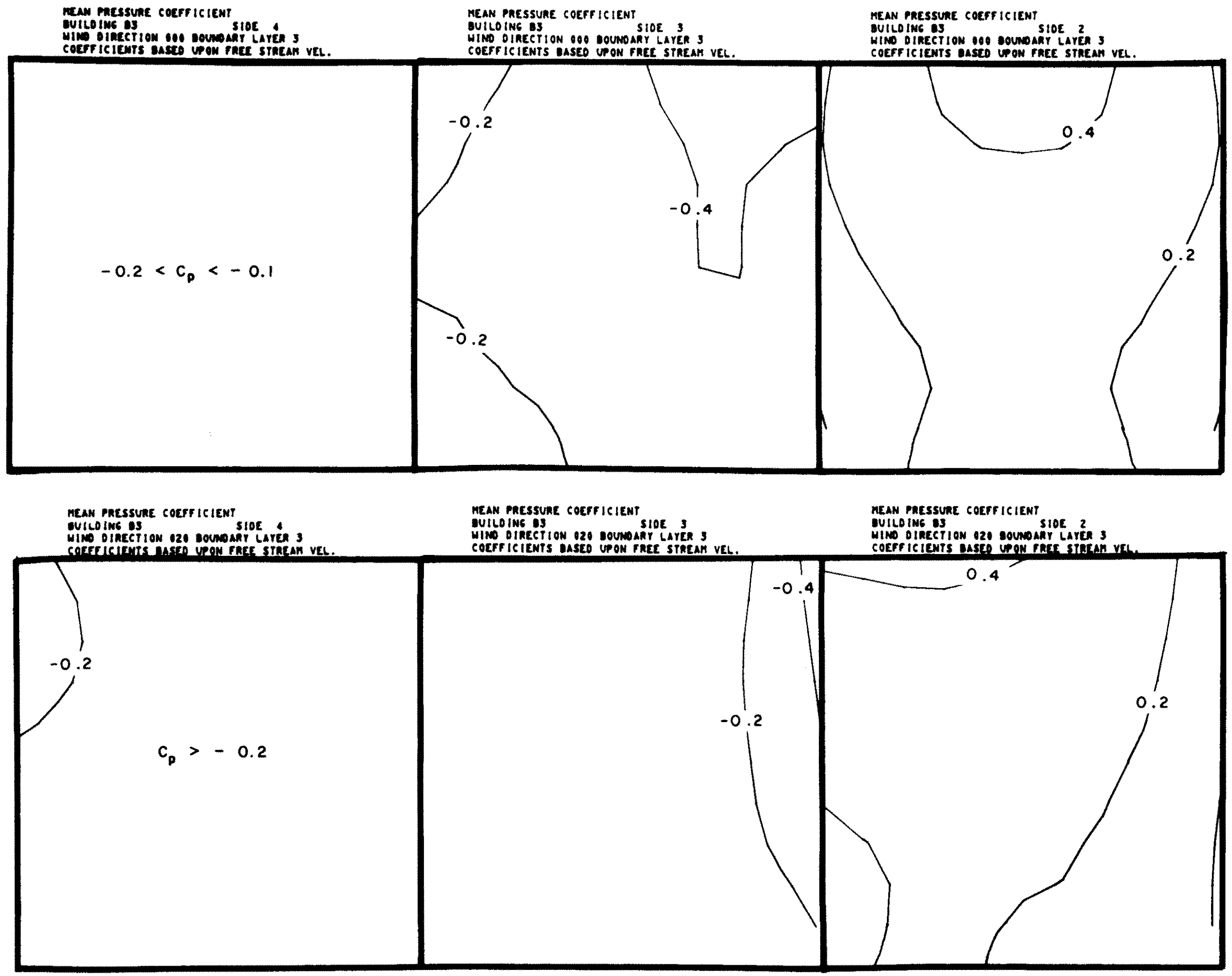


Figure 36. Mean Pressure Coefficients Based Upon Free Stream Velocity, Building B3, Boundary Layer 3.

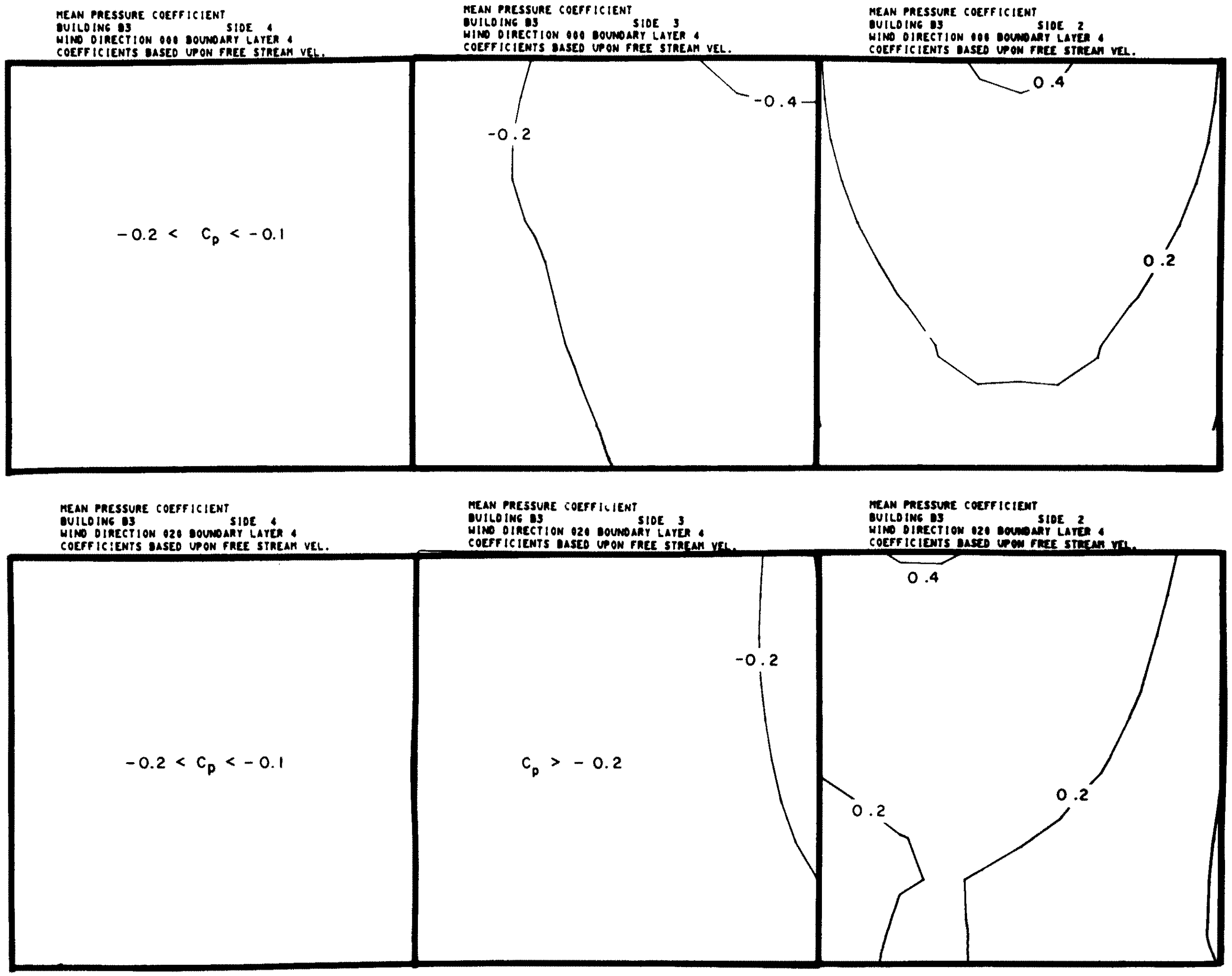


Figure 37. Mean Pressure Coefficients Based Upon Free Stream Velocity, Building B3, Boundary Layer 4.

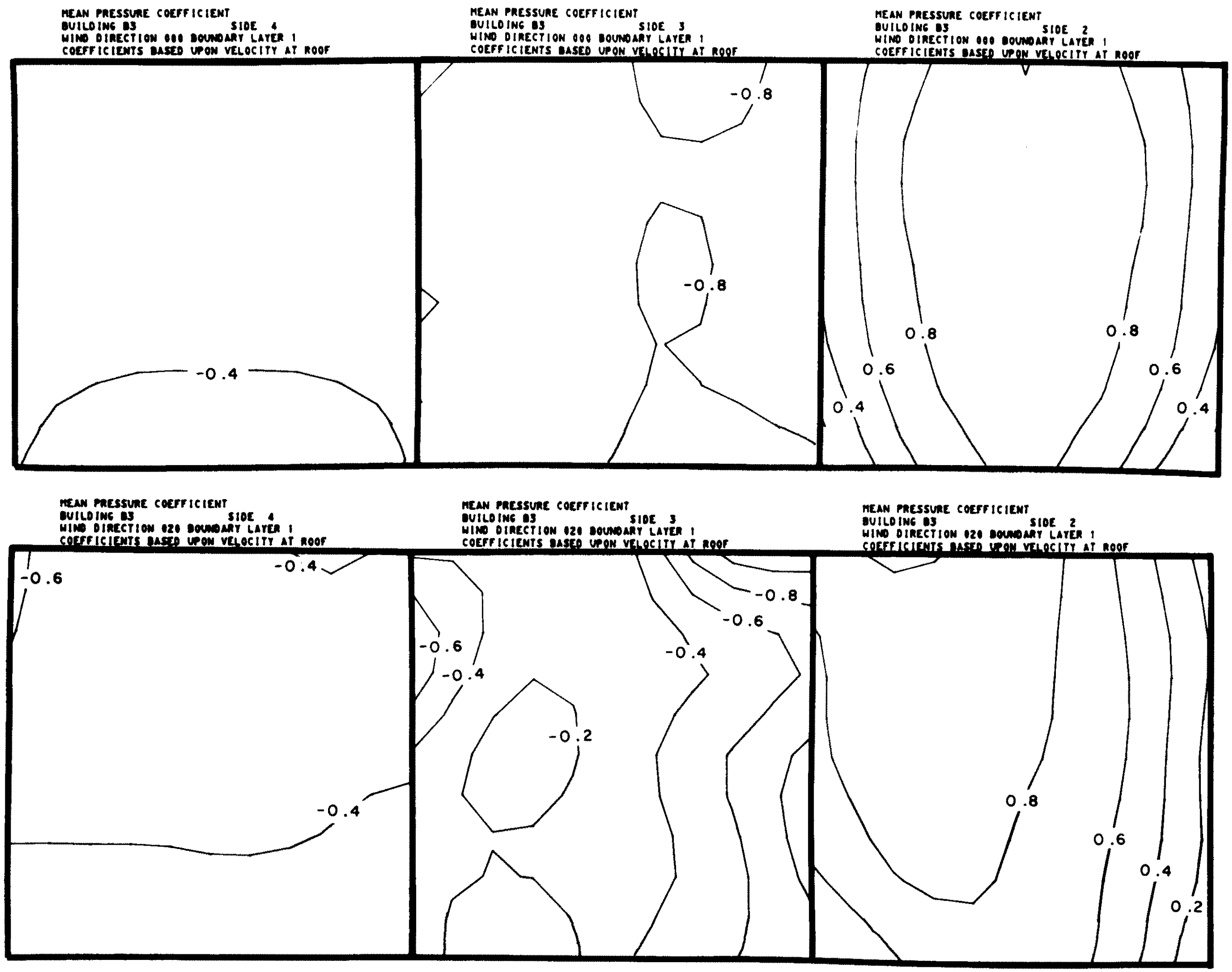


Figure 38. Mean Pressure Coefficients Based Upon Velocity at Roof, Building B3, Boundary Layer 1.

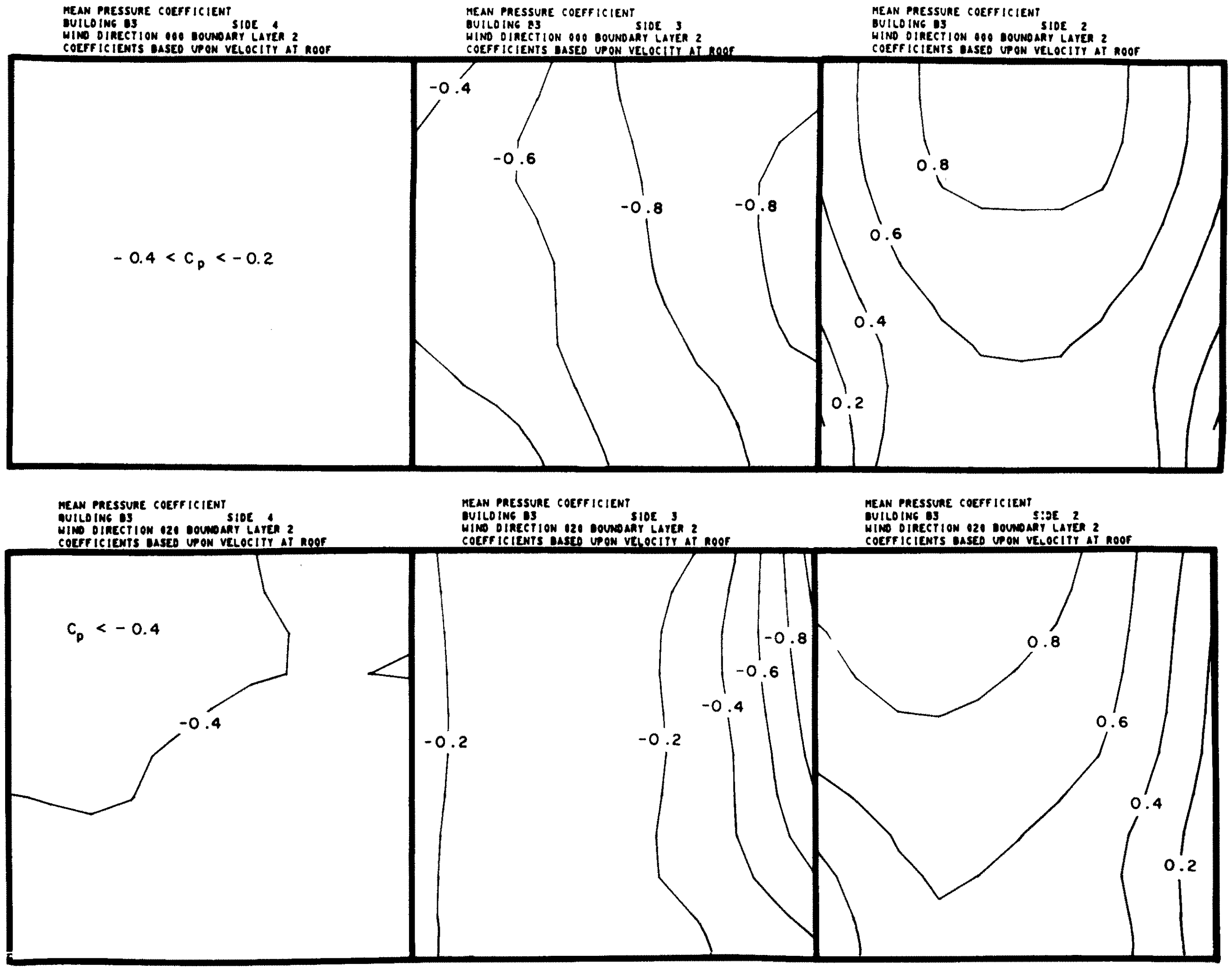


Figure 39. Mean Pressure Coefficients Based Upon Velocity at Roof Building B3, Boundary Layer 2.

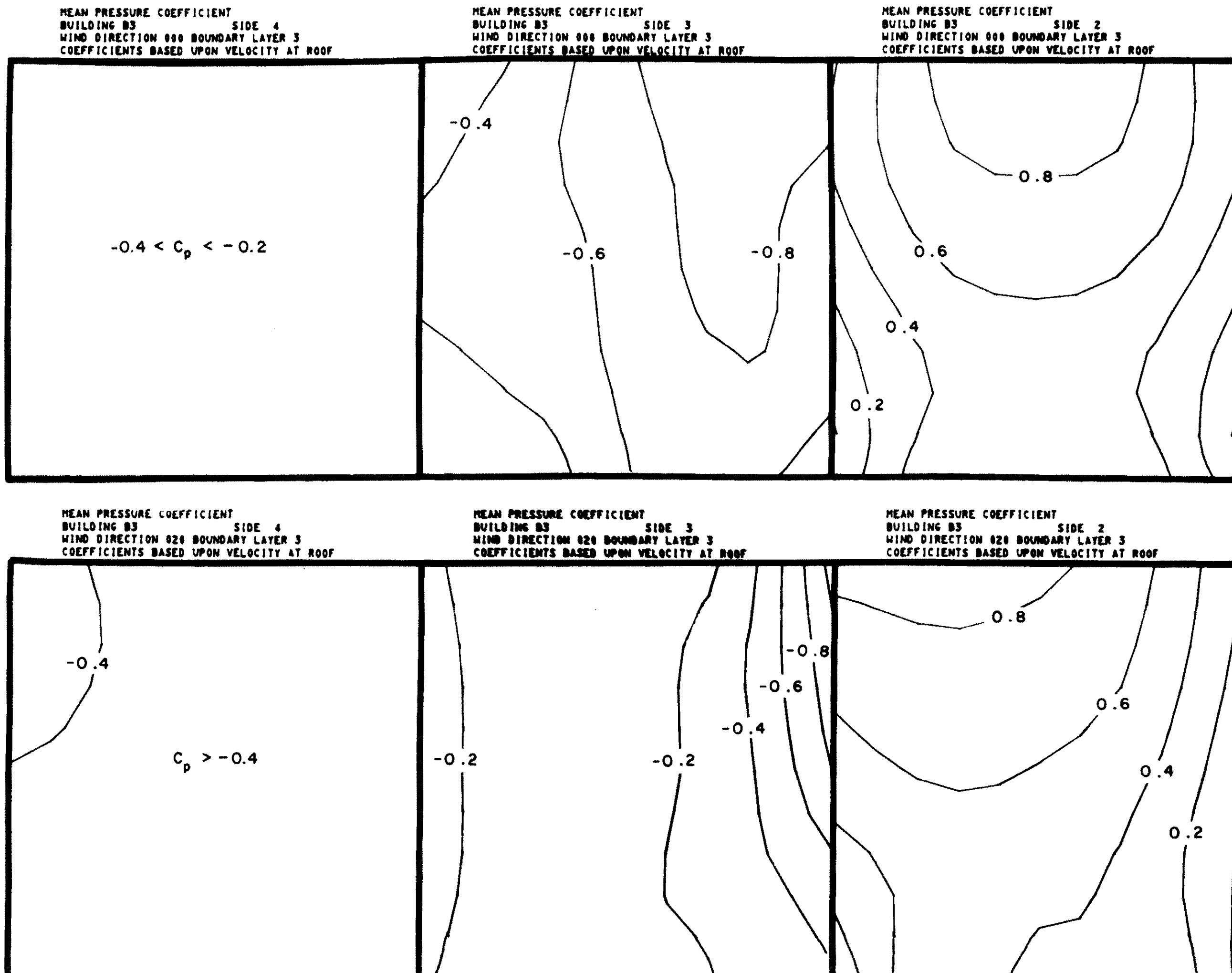


Figure 40. Mean Pressure Coefficients Based Upon Velocity at Roof, Building B3, Boundary Layer 3.

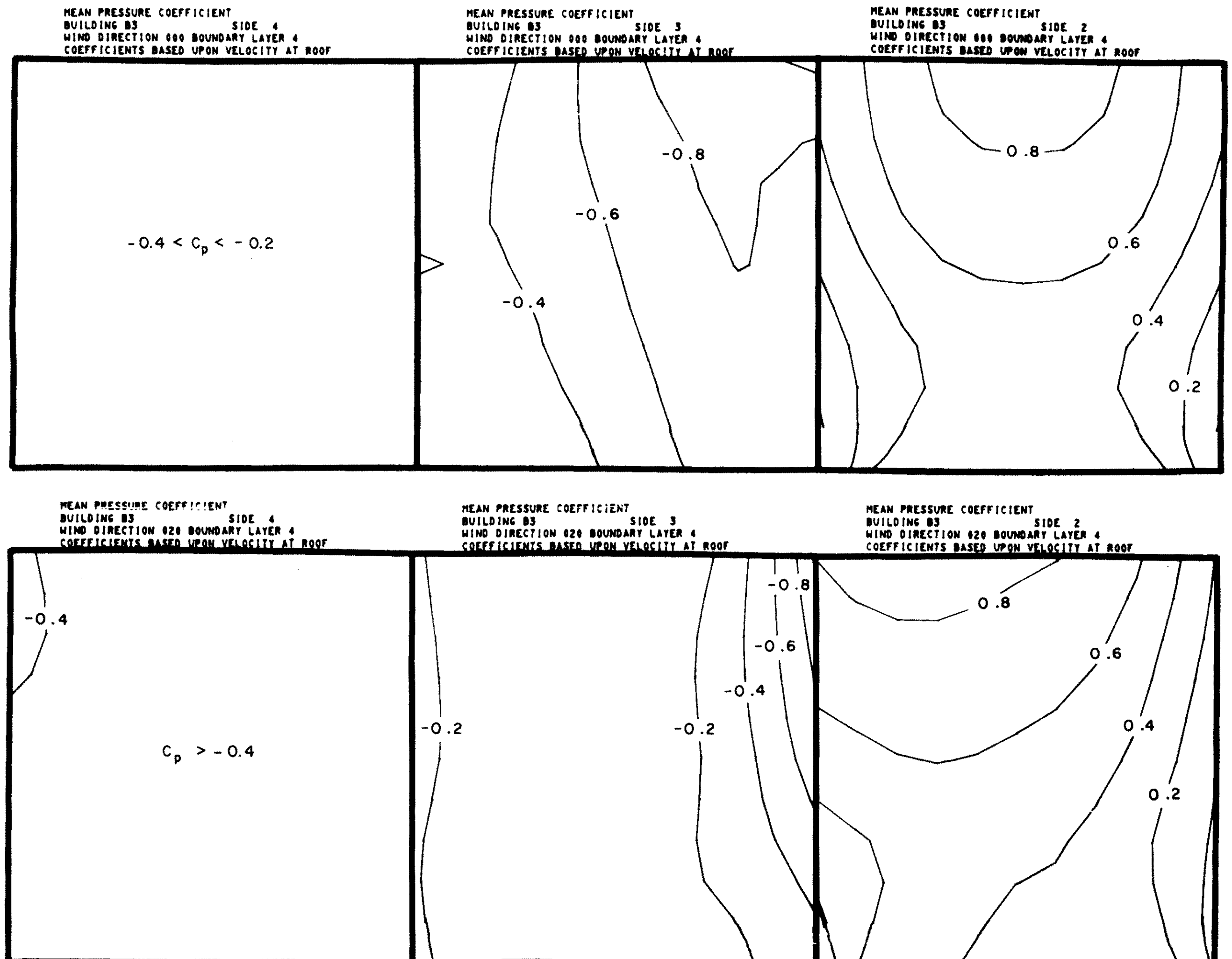


Figure 41. Mean Pressure Coefficients Based Upon Velocity at Roof, Building 83, Boundary Layer 4.

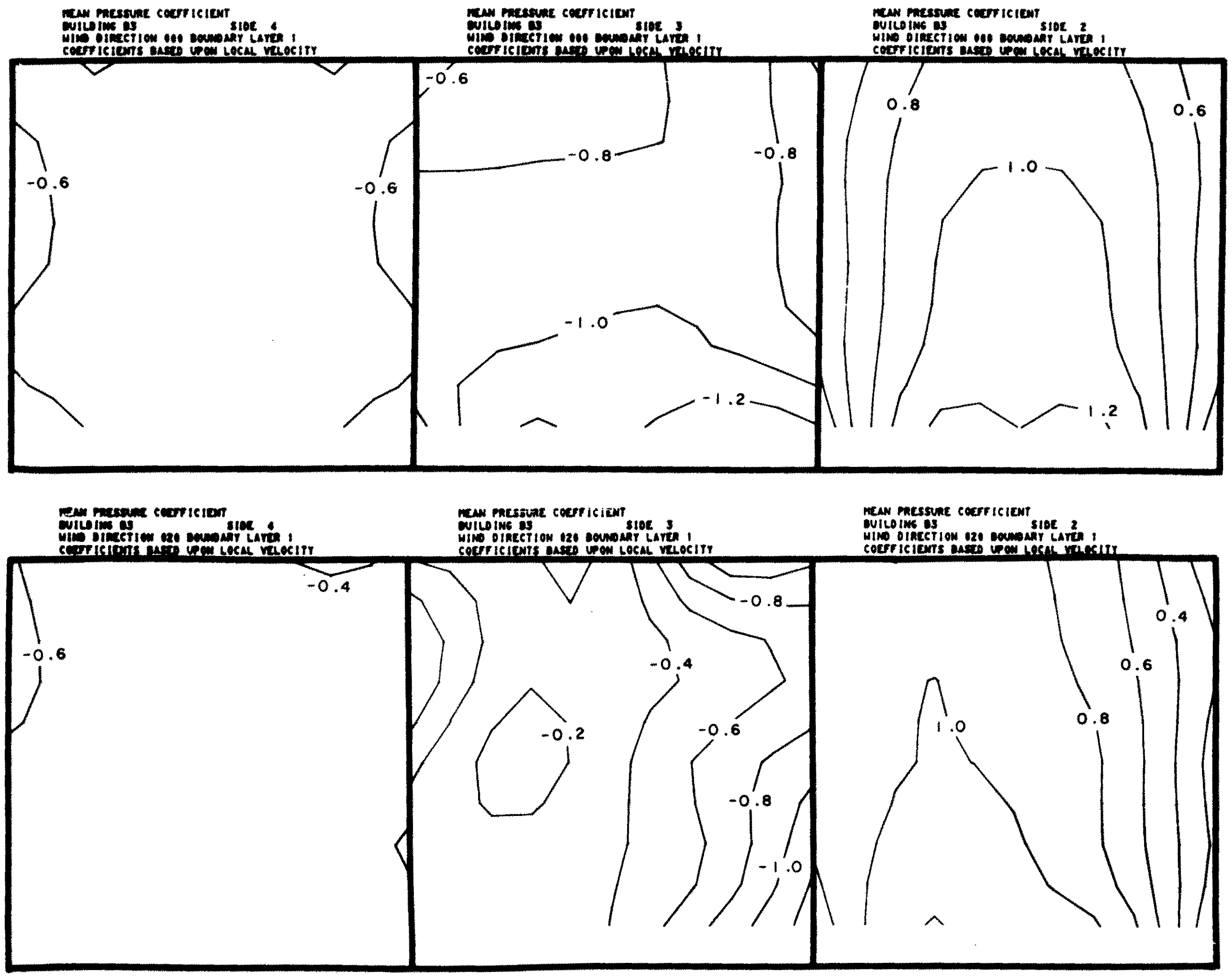


Figure 42. Mean Local Pressure Coefficients, Building B3, Boundary Layer 1.

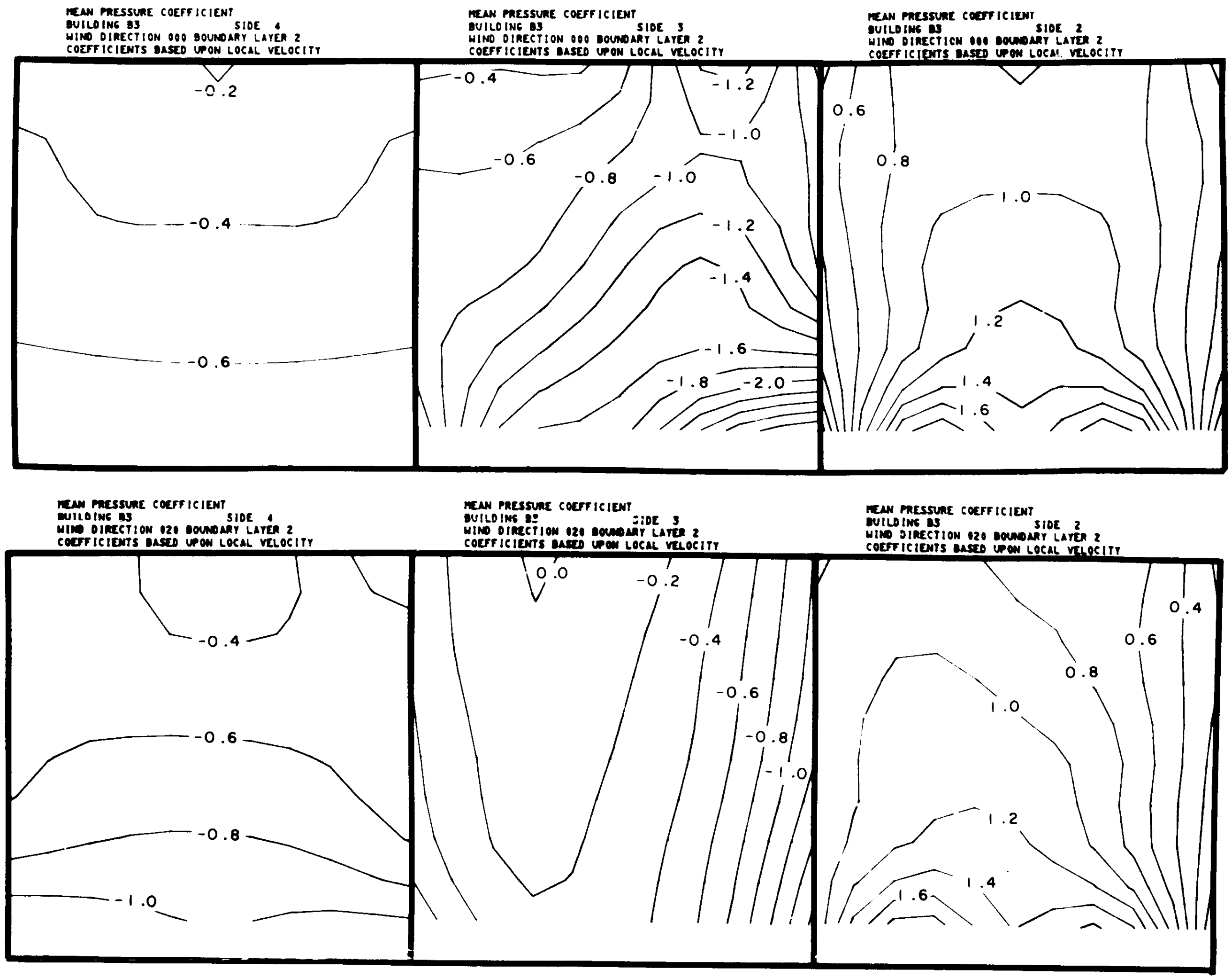


Figure 43. Mean Local Pressure Coefficients, Building B3, Boundary Layer 2.

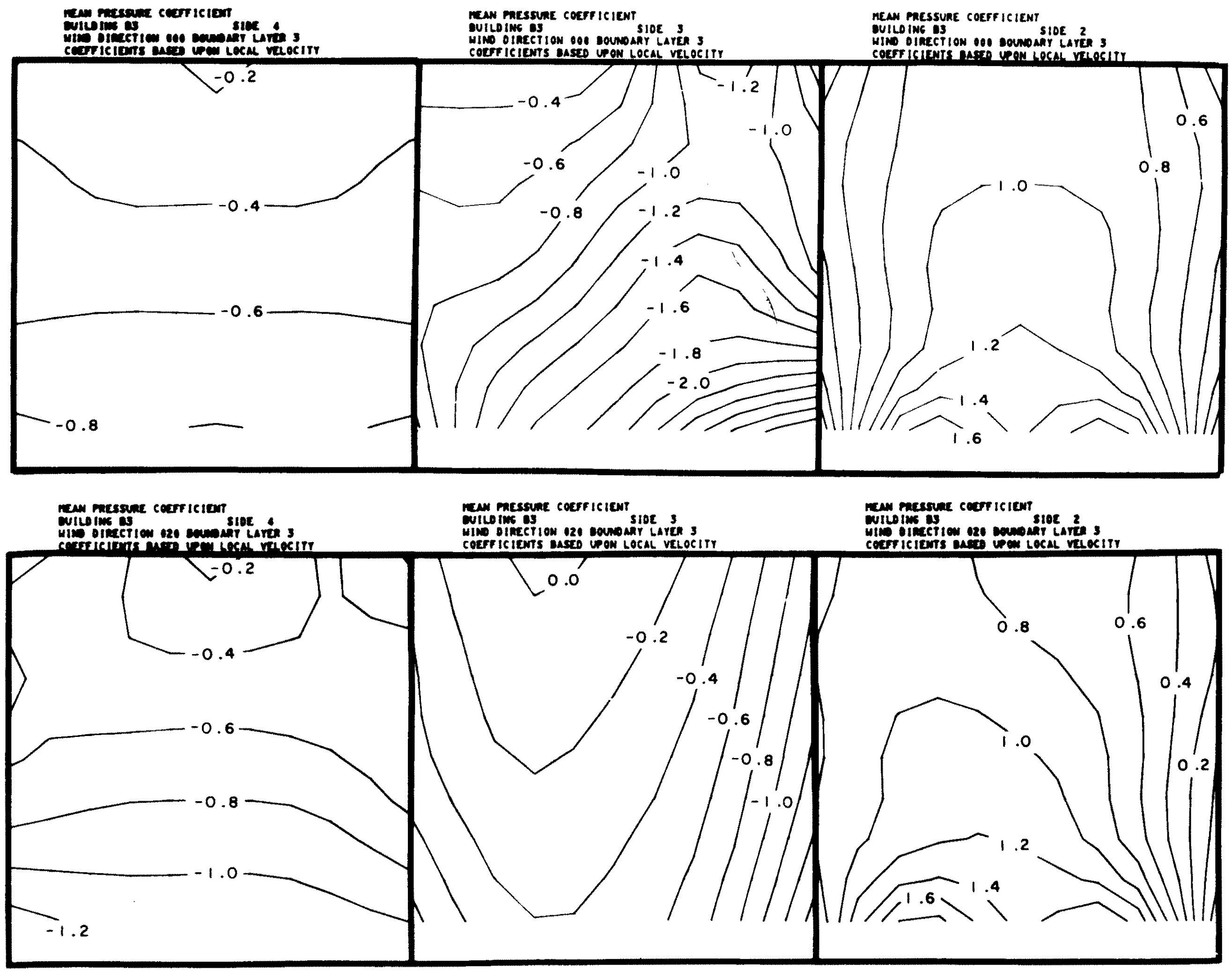


Figure 44. Mean Local Pressure Coefficients, Building B3, Boundary Layer 3.

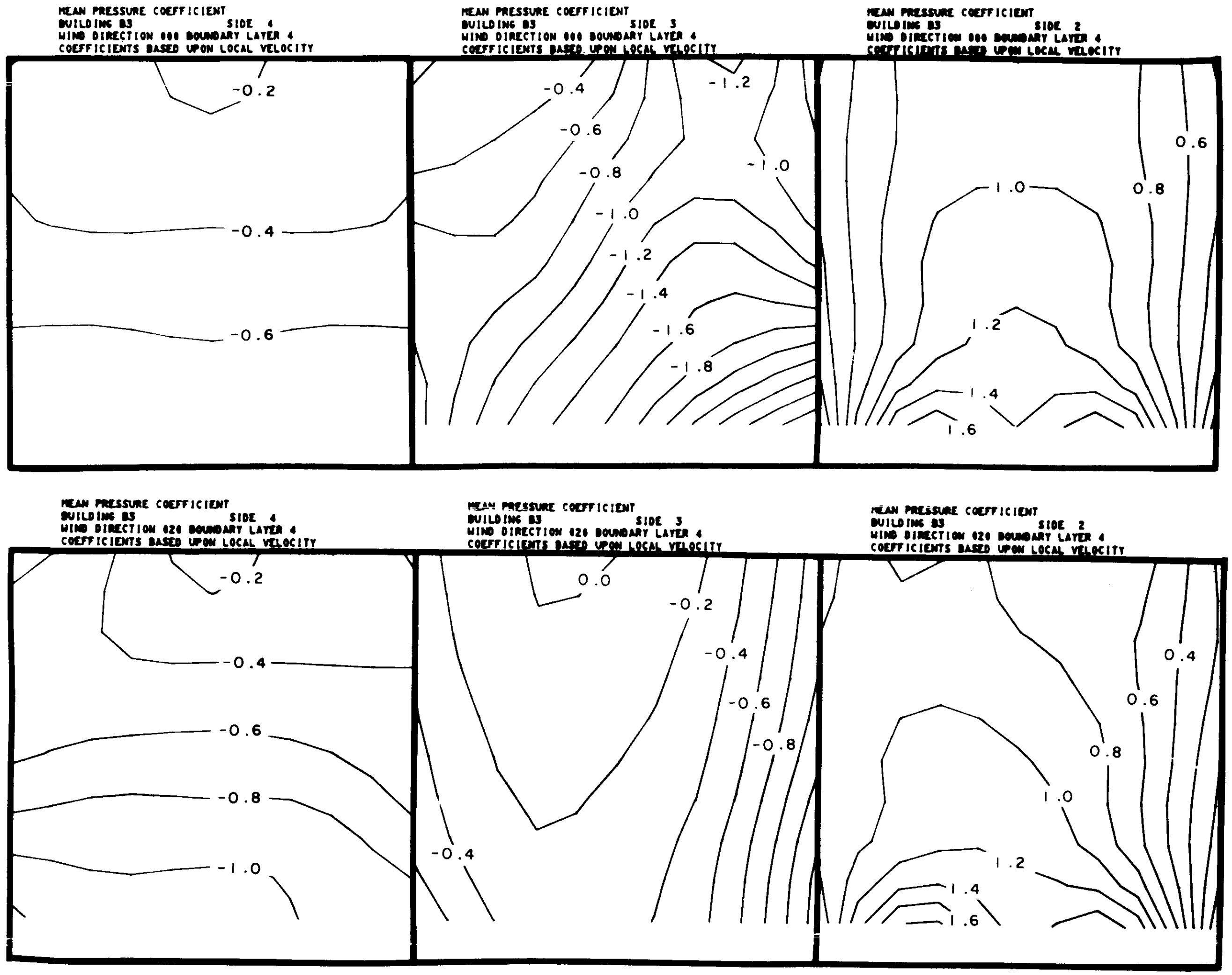


Figure 45. Mean Local Pressure Coefficients, Building B3, Boundary Layer 4.

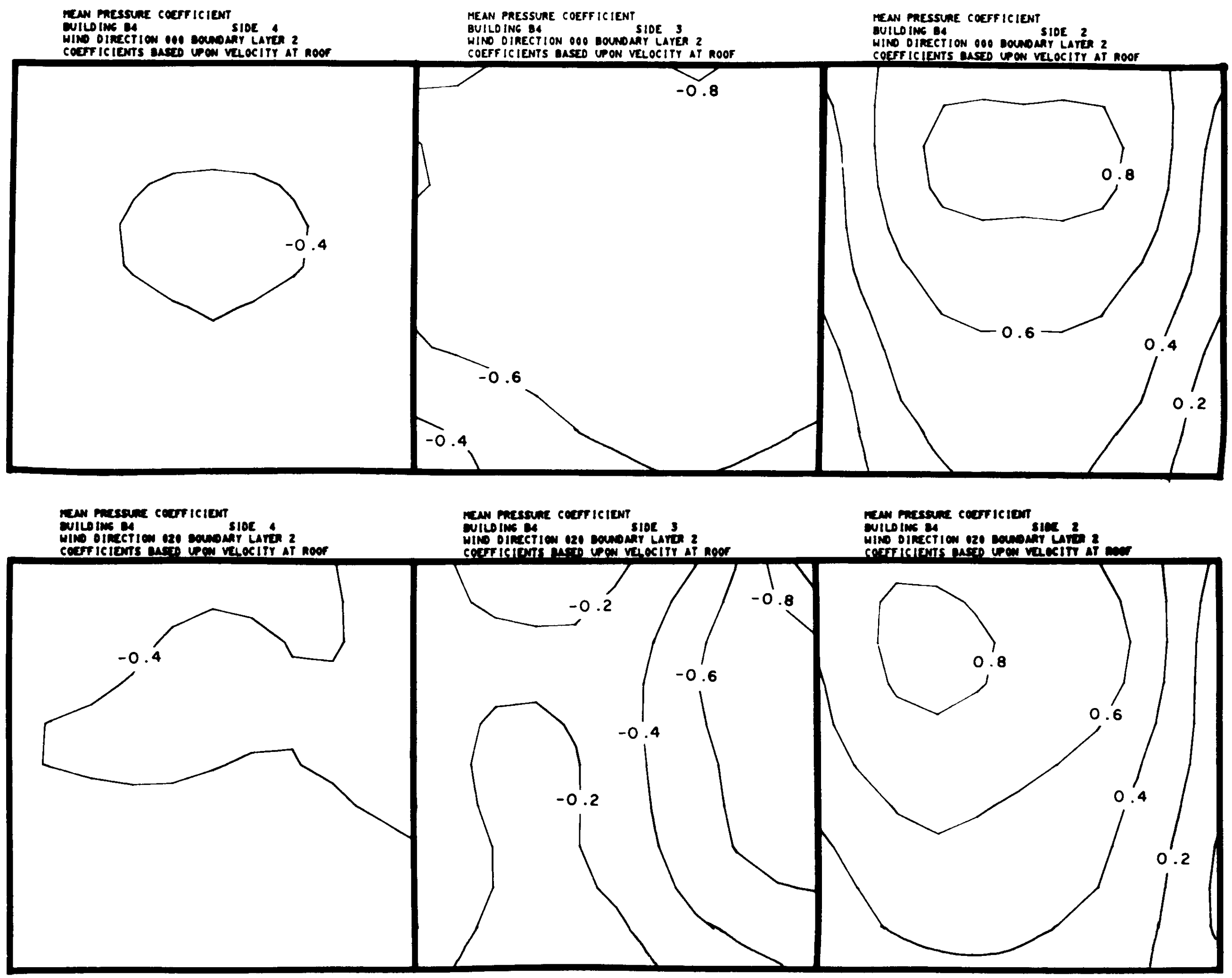


Figure 46. Mean Pressure Coefficients Based Upon Velocity at Roof, Building B4, Boundary Layer 2.

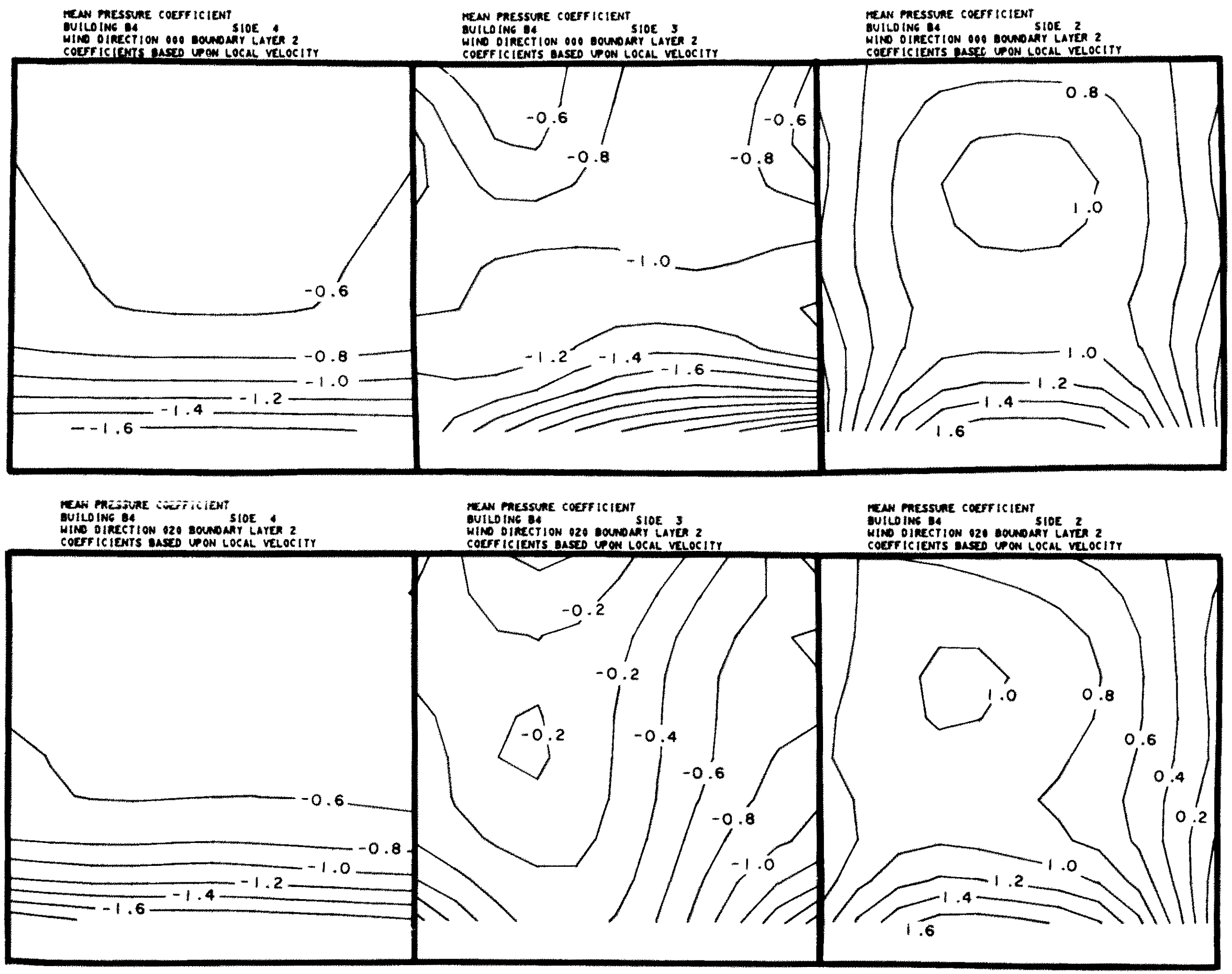


Figure 47. Mean Local Pressure Coefficients, Building B4, Boundary Layer 2.

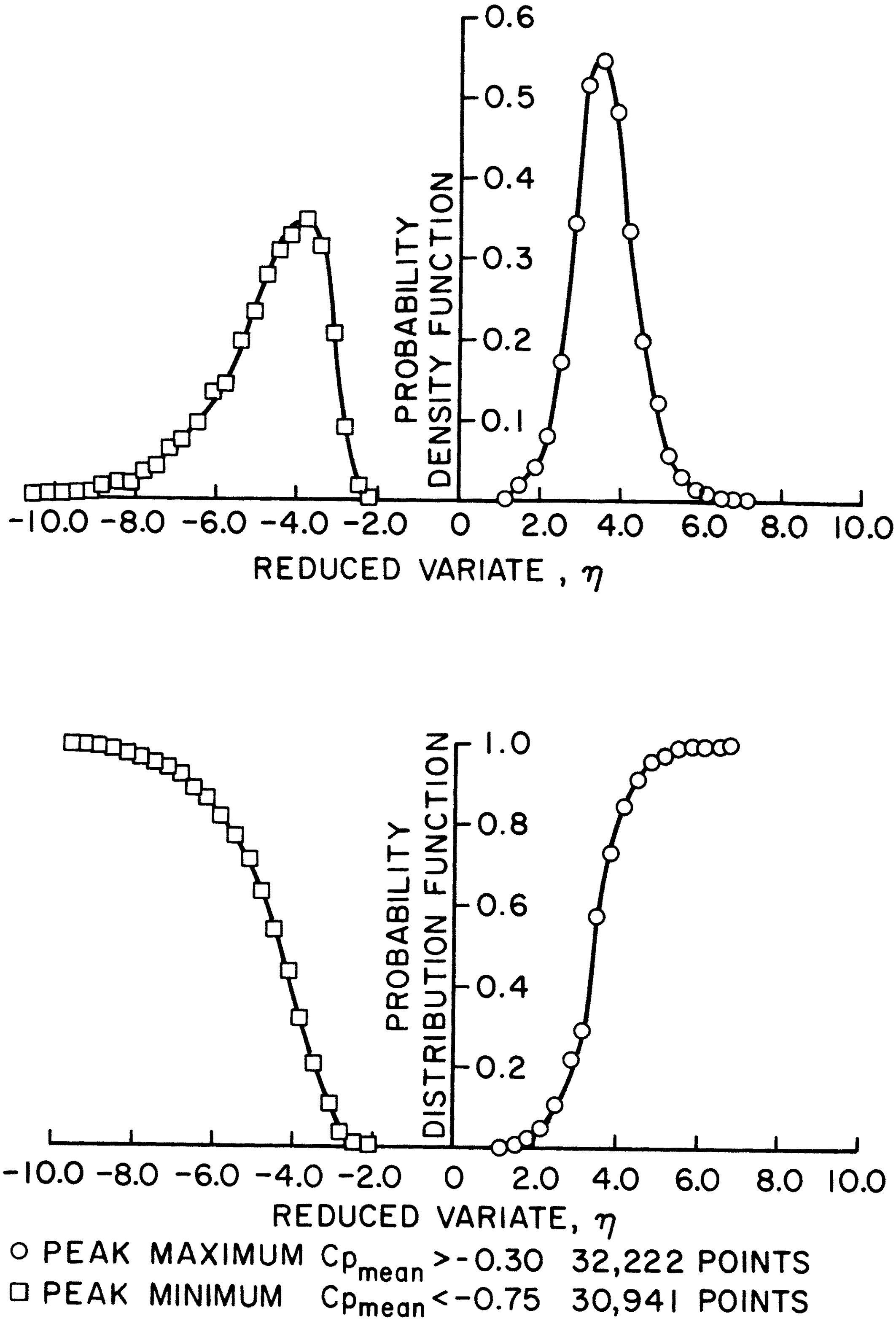


Figure 48. Peak Pressure Probability Distribution and Probability Density.

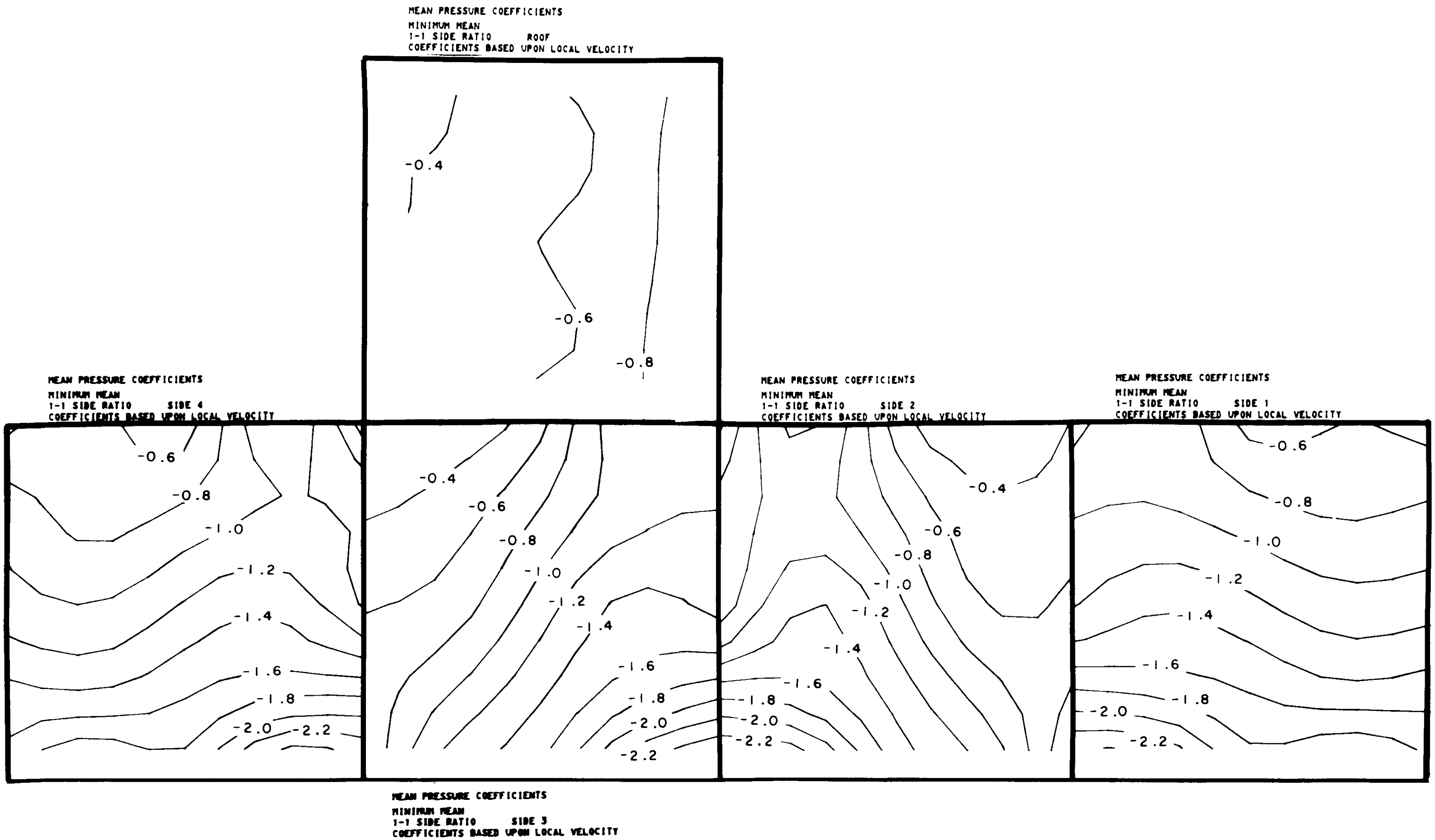


Figure 49. $\hat{\alpha}$ C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\gamma = 1.0$.

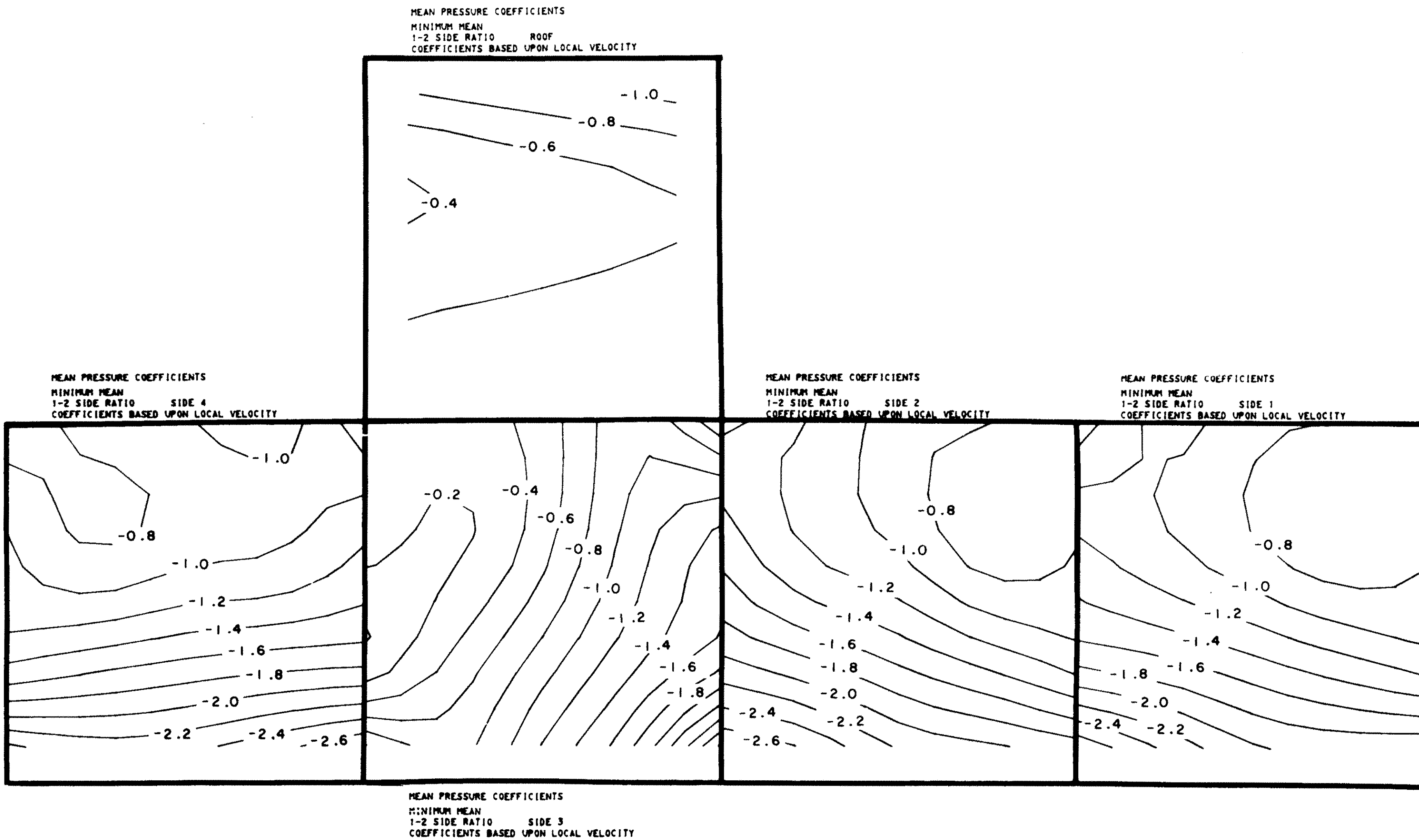


Figure 50. $\hat{\alpha}$ C_{pmean}, $\bar{\beta}$, $\bar{p}$, $\gamma = 0.5$.

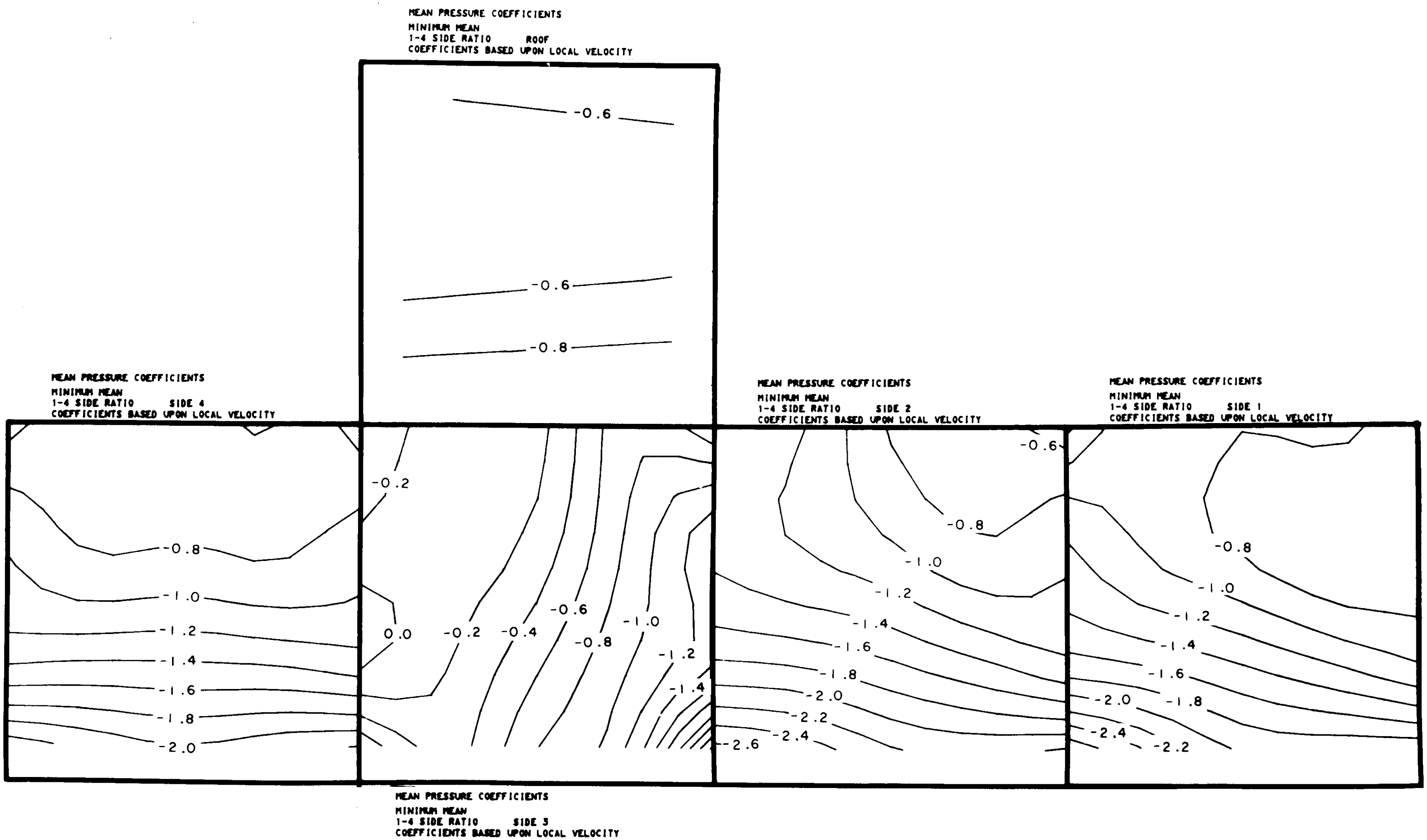


Figure 51. $\hat{\alpha}\ C_{pmean}, \bar{\beta}, \bar{p}, \gamma = 0.25$.

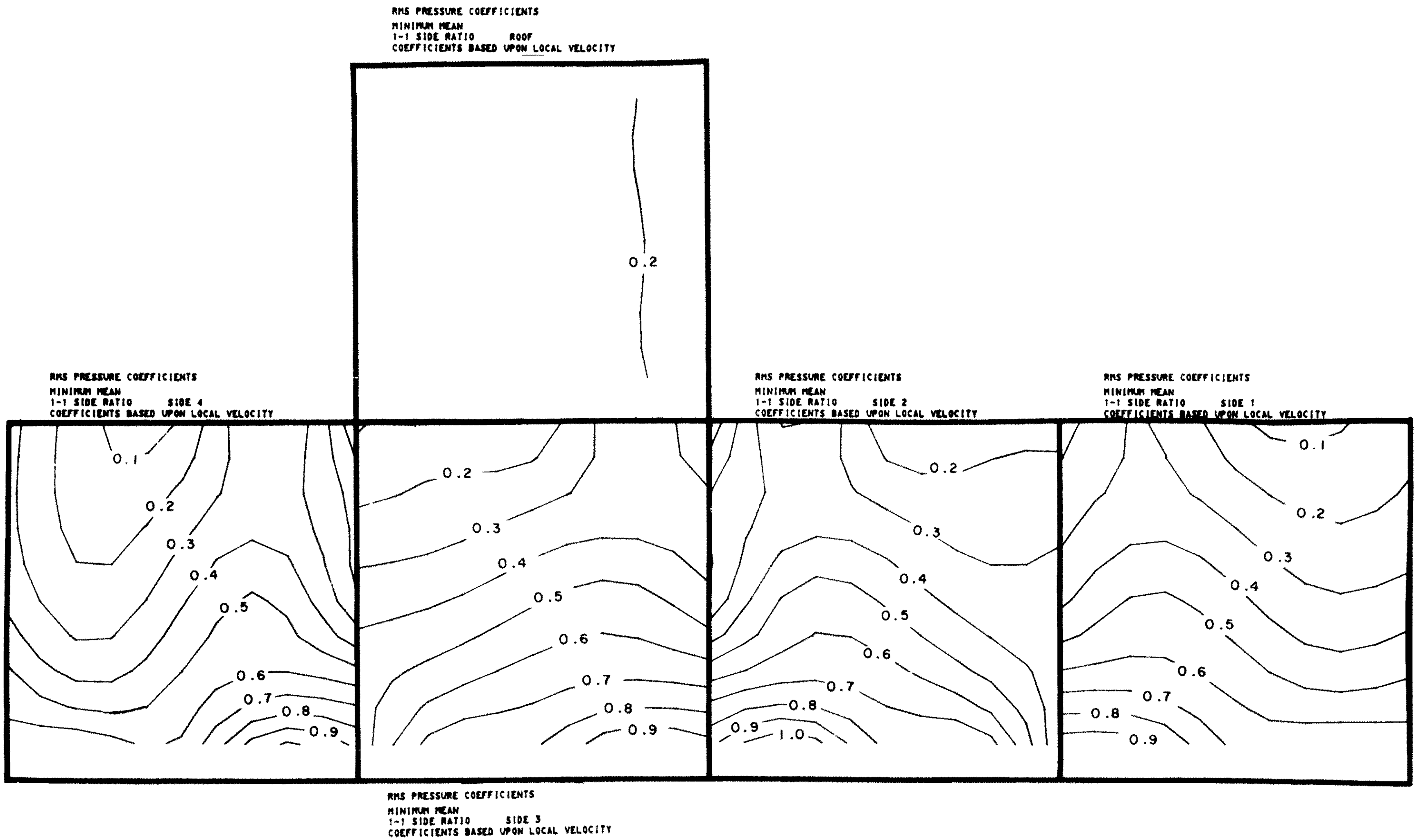


Figure 52. $\hat{\alpha}$ C_{prms}, $\overline{\beta}$, $\overline{p}$, $\gamma = 1.0$.

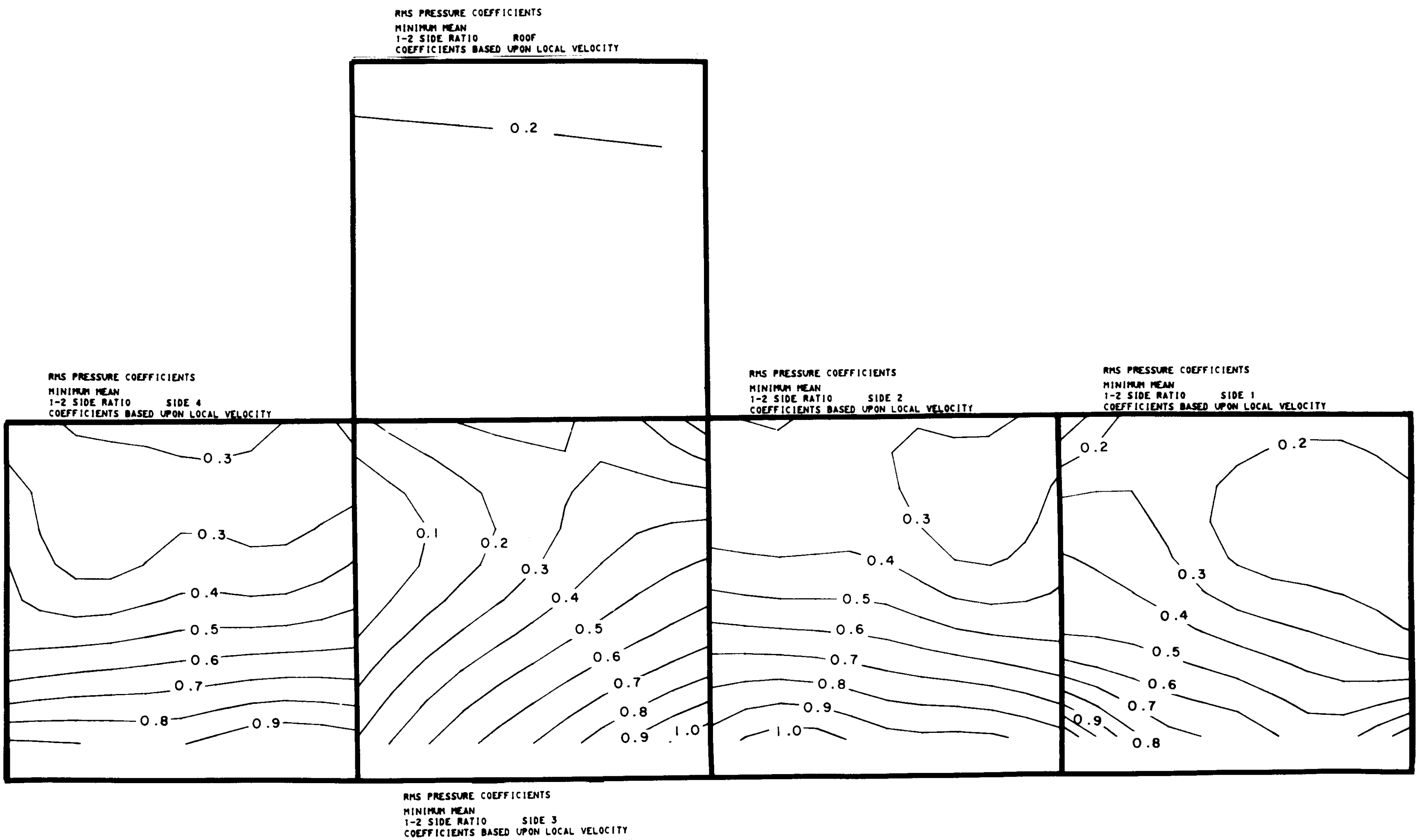


Figure 53. $_{\alpha}\hat{C}_{prms,\bar{\beta},\bar{p}}$, $\gamma = 0.5$.

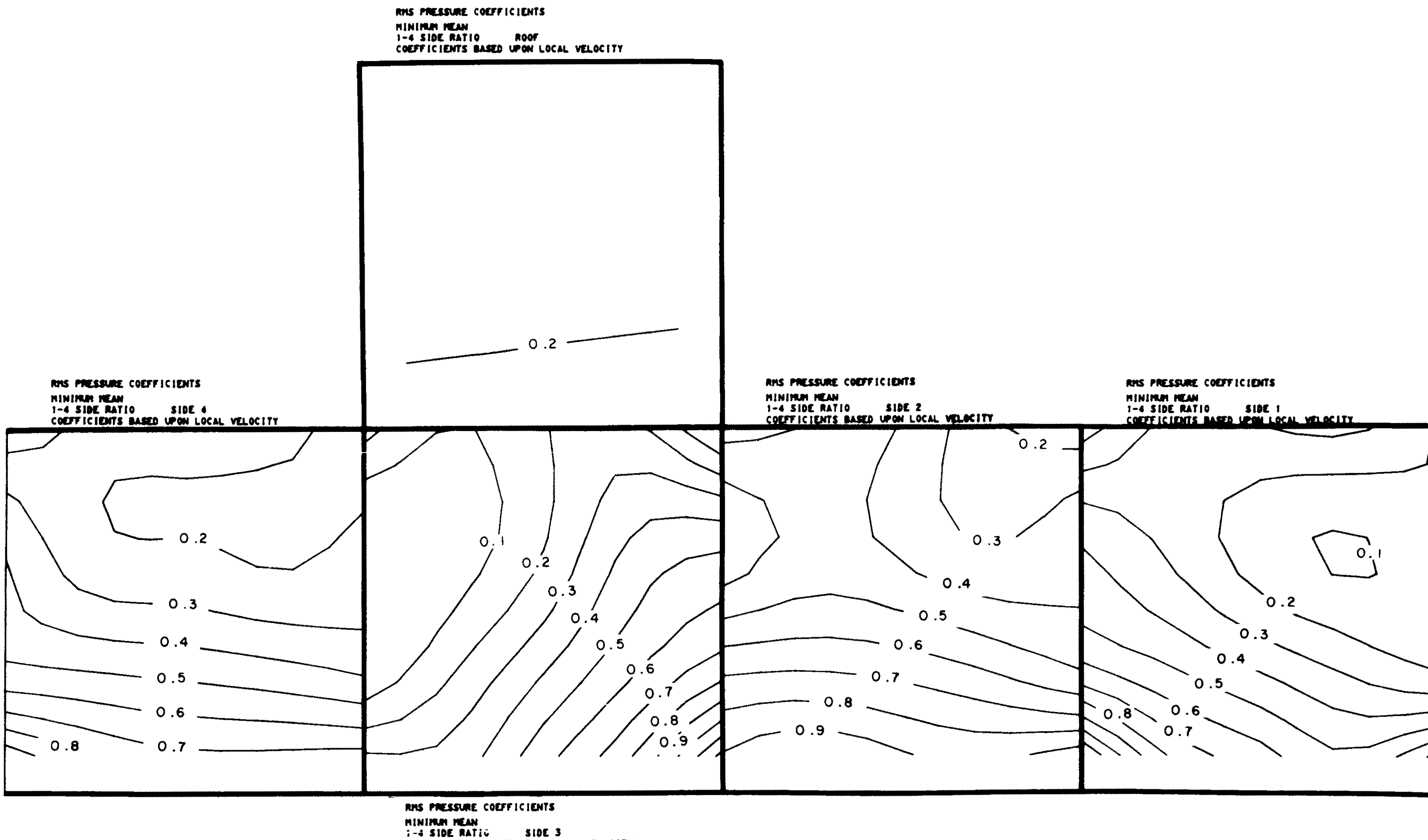


Figure 54. $\hat{\alpha}$ C_{prms}, $\bar{\beta}$, $\bar{p}$, γ = 0.25.

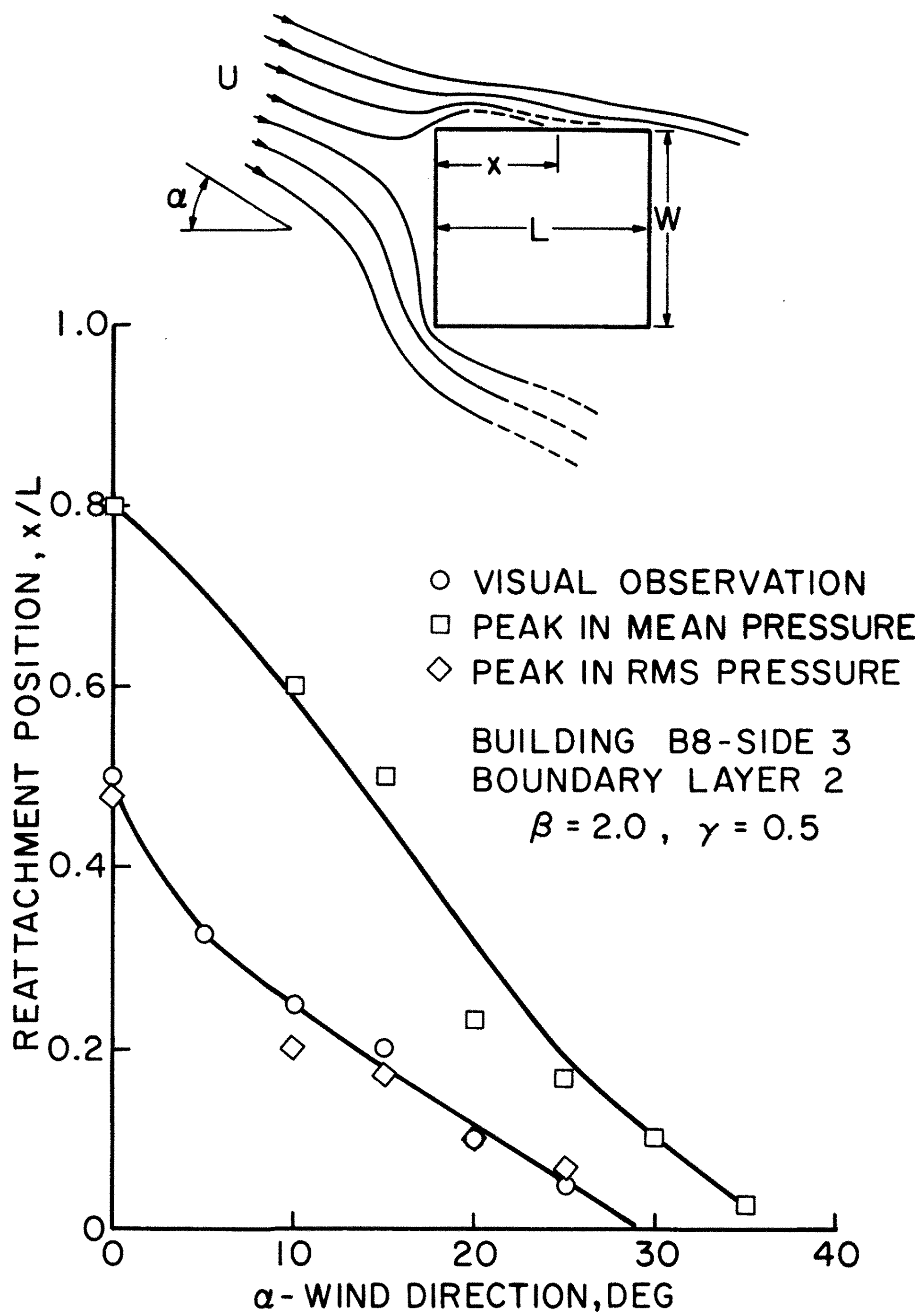


Figure 55. Comparison of Visual Observation of Reattachment Location with Mean and RMS Pressure Distributions.

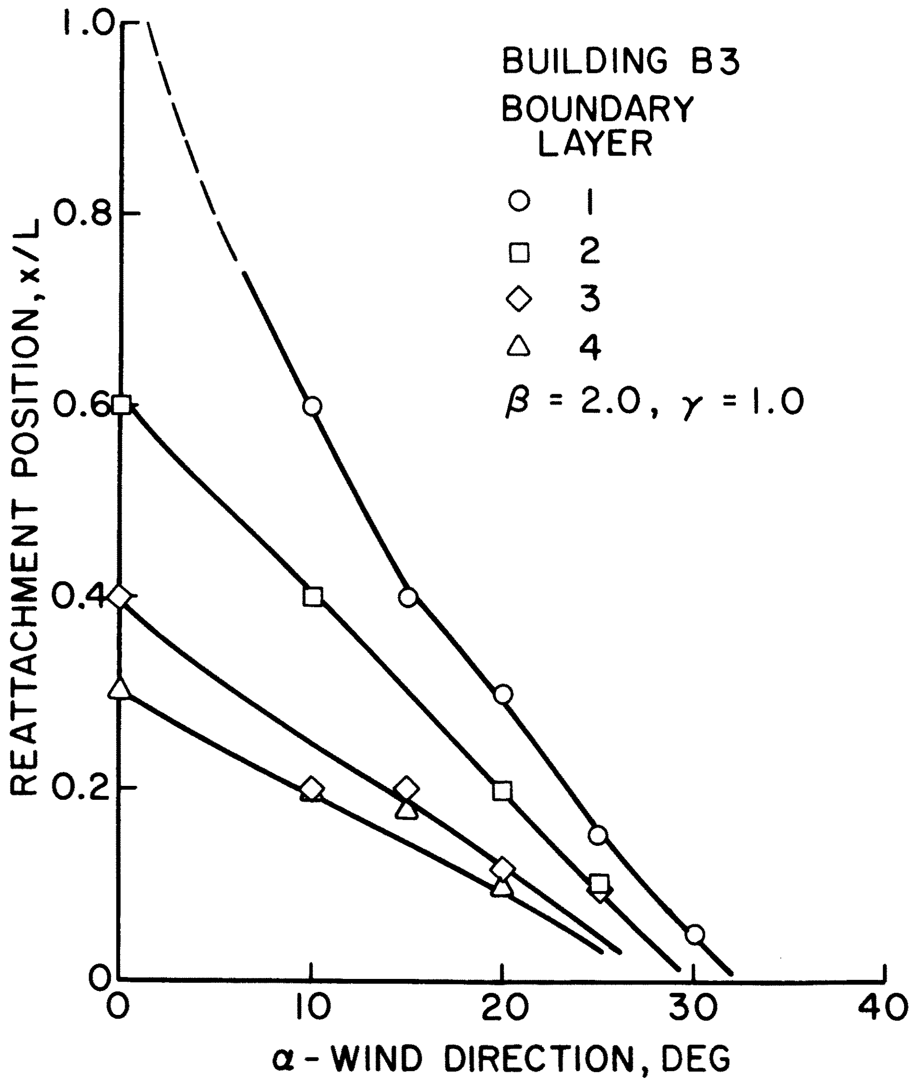


Figure 56. Effect of Incident Boundary Layer on Reattachment.

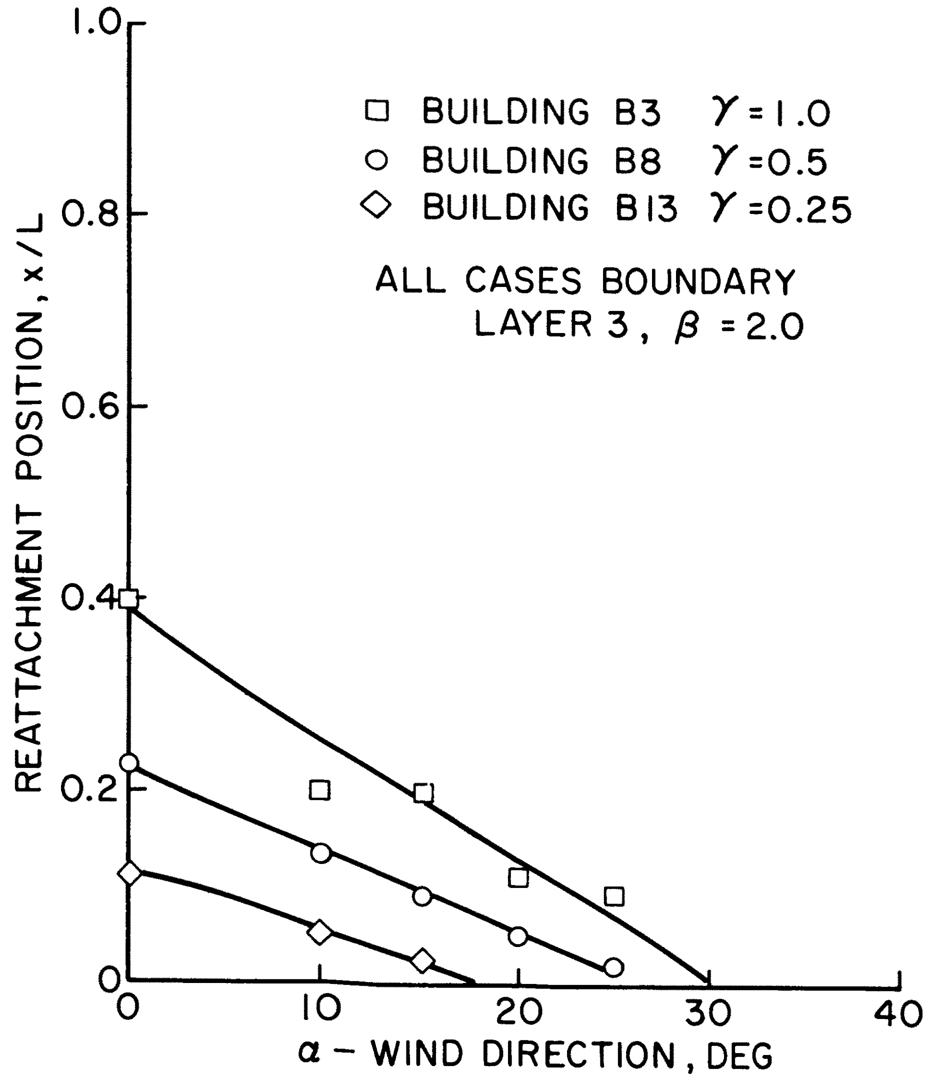


Figure 57. Effect of Side Ratio on Reattachment.

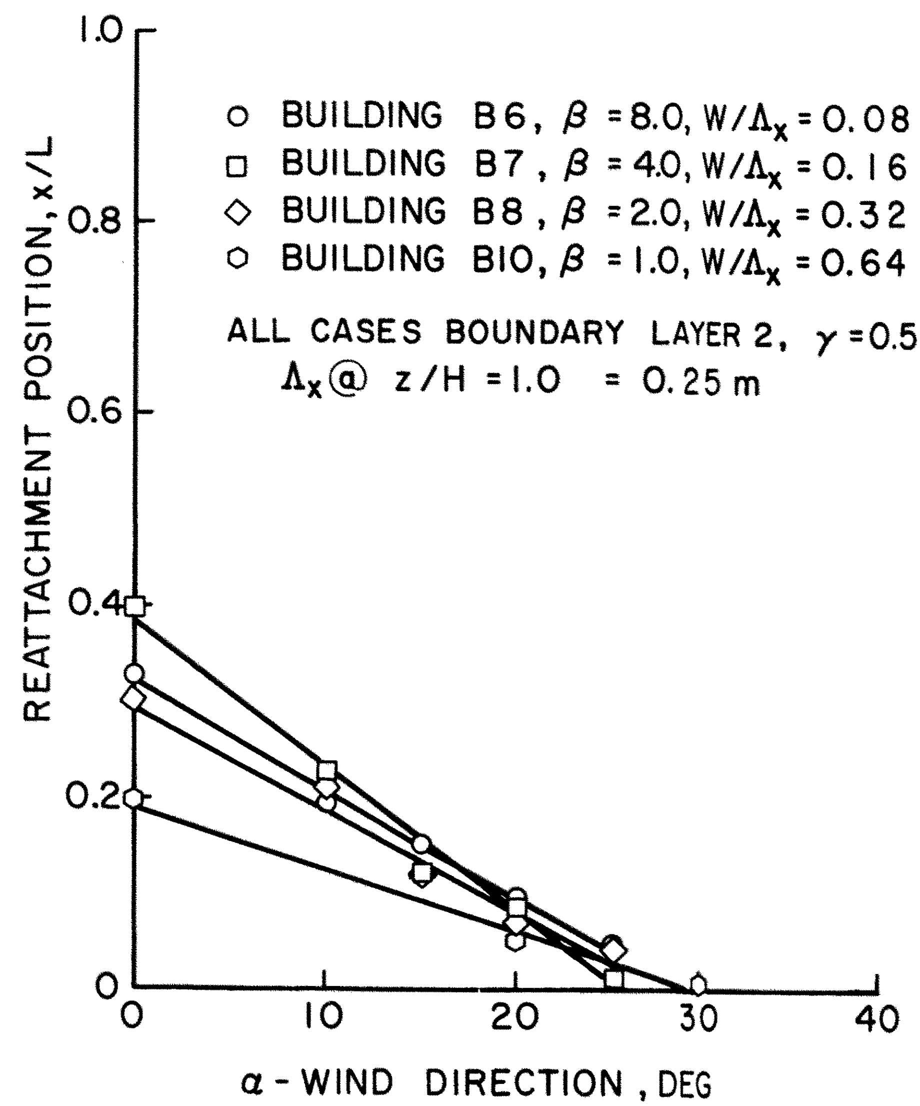
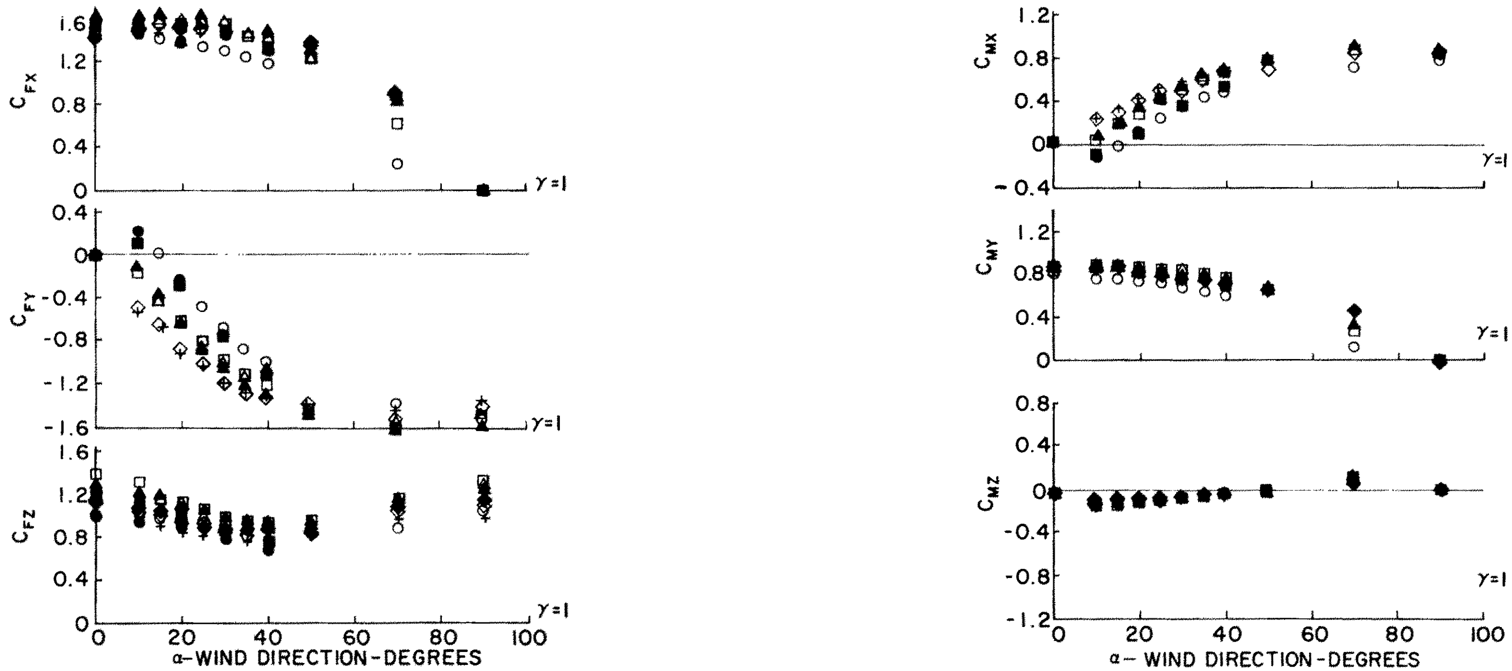
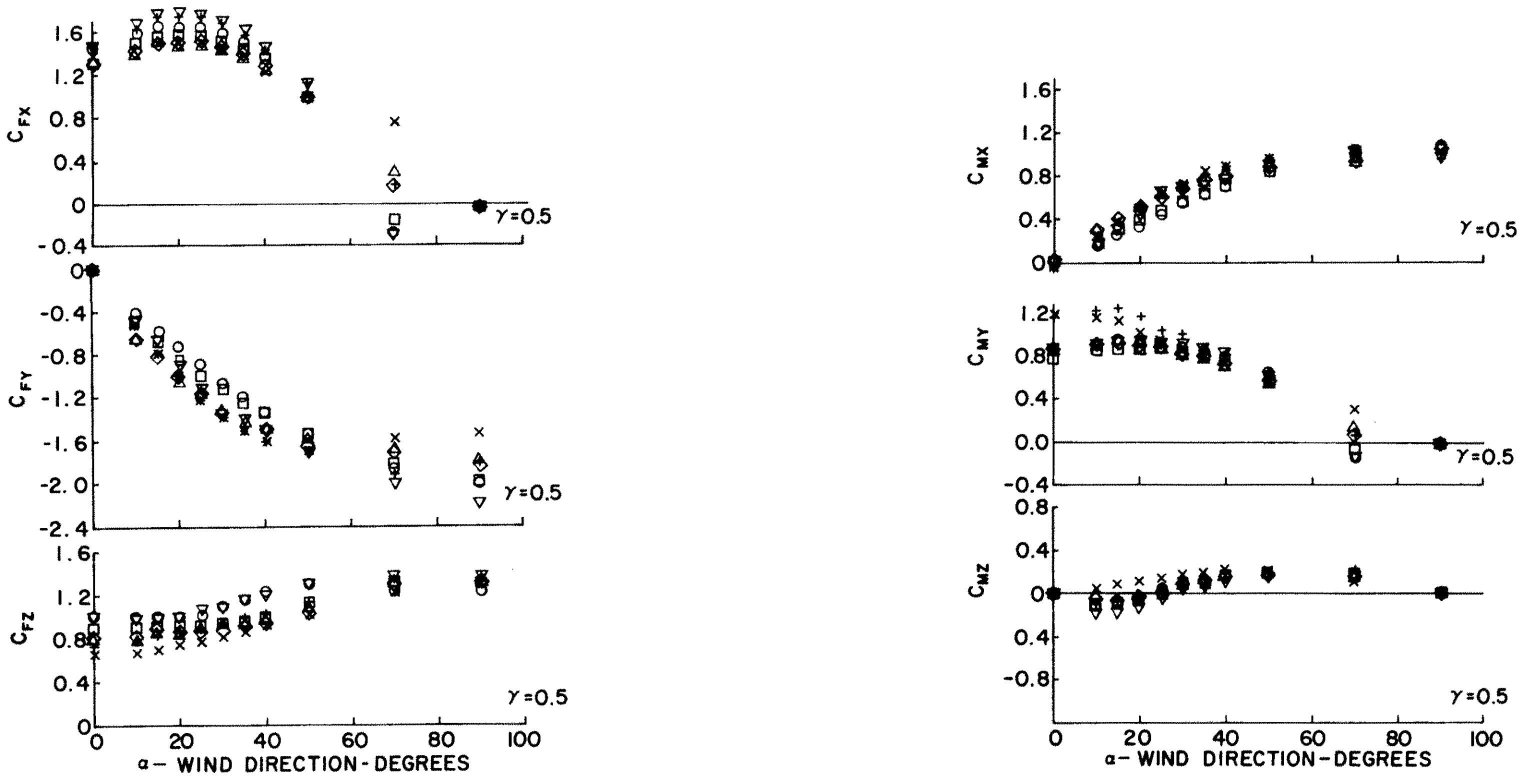


Figure 58. Effect of Longitudinal Integral Scale on Reattachment.



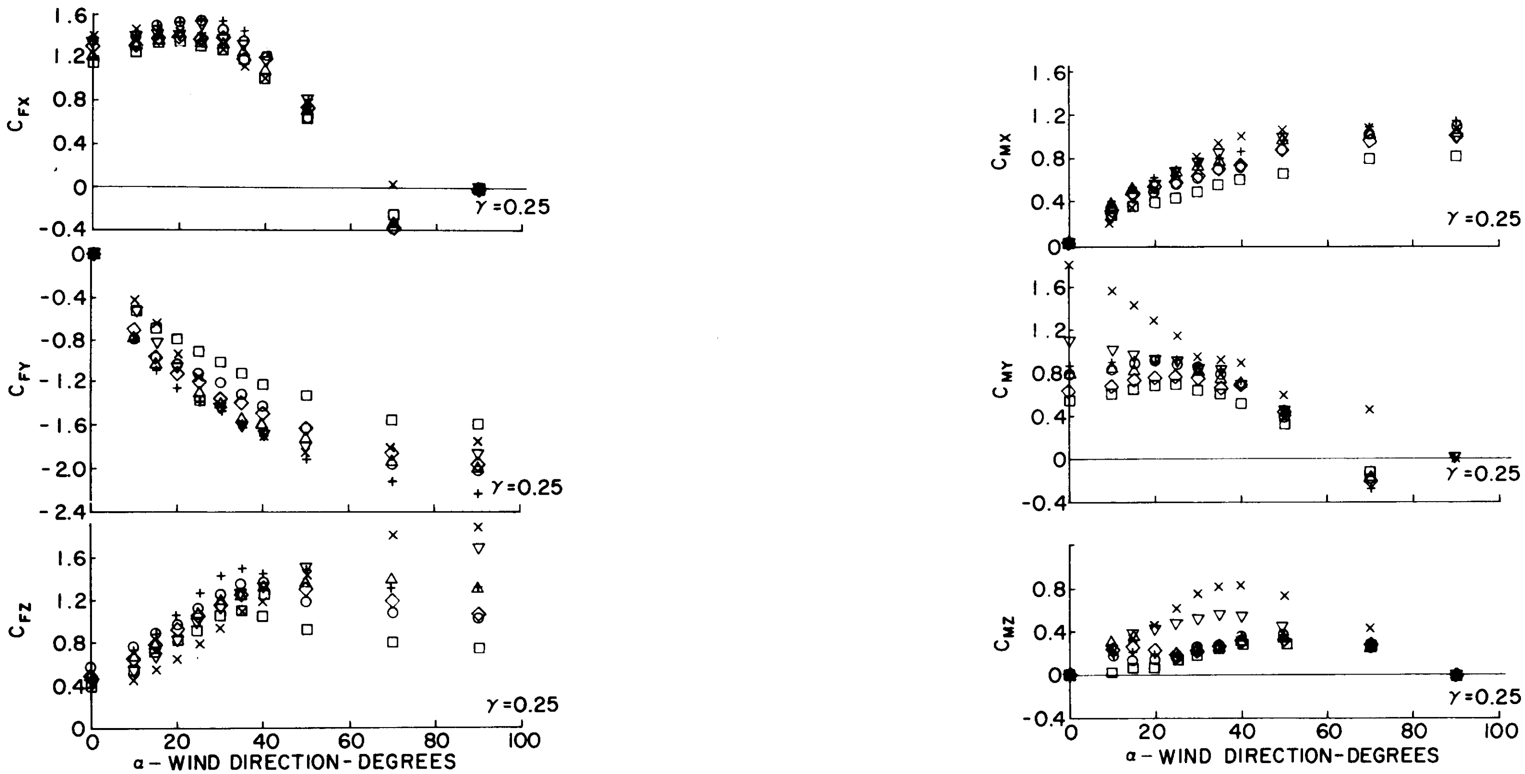
SYMBOL	○	□	△	●	■	▲	◇	◆	+
BUILDING	B3	B3	B3	B4	B4	B5	B5	B5	B5
BOUNDARY LAYER	1	3	4	2	3	1	2	3	4
β - ASPECT RATIO	2	2	2	4	4	1	1	1	1

Figure 59. Mean Force and Moment Coefficients, $\gamma = 1.0$.



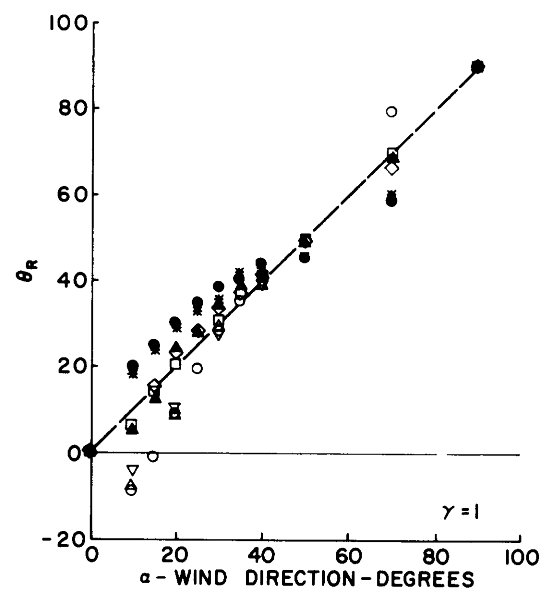
SYMBOL	○	□	◇	△	▽	+	×
BUILDING	B6	B7	B8	B8	B9	B10	B10
BOUNDARY LAYER	2	2	2	3	2	1	3
β- ASPECT RATIO	8	4	2	2	4	1	1

Figure 60. Mean Force and Moment Coefficients, γ = 0.5.



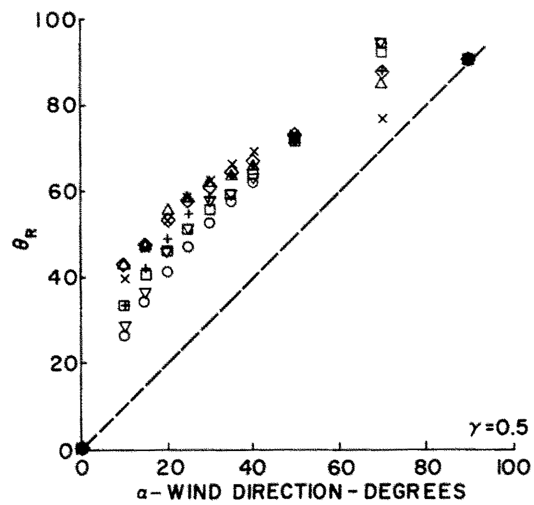
SYMBOL	○	□	◇	△	▽	+	×
BUILDING	B11	B12	B12	B12	B13	B14	B15
BOUNDARY LAYER	2	1	2	3	3	2	2
β - ASPECT RATIO	8	4	4	4	2	4	1

Figure 61. Mean Force and Moment Coefficients, γ = 0.25.



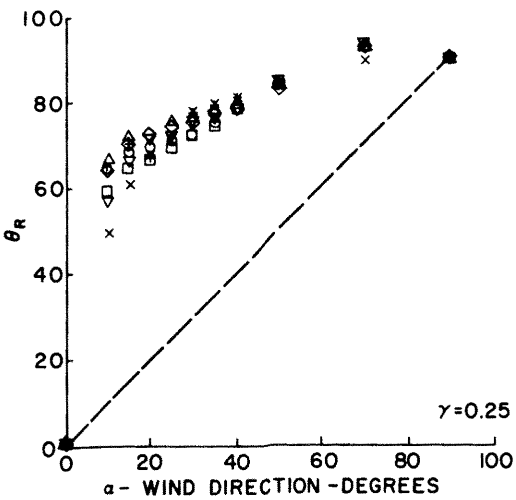
SYMBOL	○	□	◇	△	▽	▲	×	+	●
BUILDING	B3	B3	B3	B4	B4	B5	B5	B5	B5
BOUNDARY LAYER	1	3	4	2	3	1	2	3	4
β - ASPECT RATIO	2	2	2	4	4	1	1	1	1

Figure 62. θ_R, $\gamma = 1.0$.



SYMBOL	○	□	◇	△	▽	+	×
BUILDING	B6	B7	B8	B8	B9	B10	B10
BOUNDARY LAYER	2	2	2	3	2	1	3
β-ASPECT RATIO	8	4	2	2	4	1	1

Figure 63. θ_R, γ = 0.5.



SYMBOL	○	□	◇	△	▽	+	×
BUILDING	B11	B12	B12	B12	B13	B14	B15
BOUNDARY LAYER	2	1	2	3	3	2	2
β – ASPECT RATIO	8	4	4	4	2	4	1

Figure 64. θ_R, γ = 0.25.

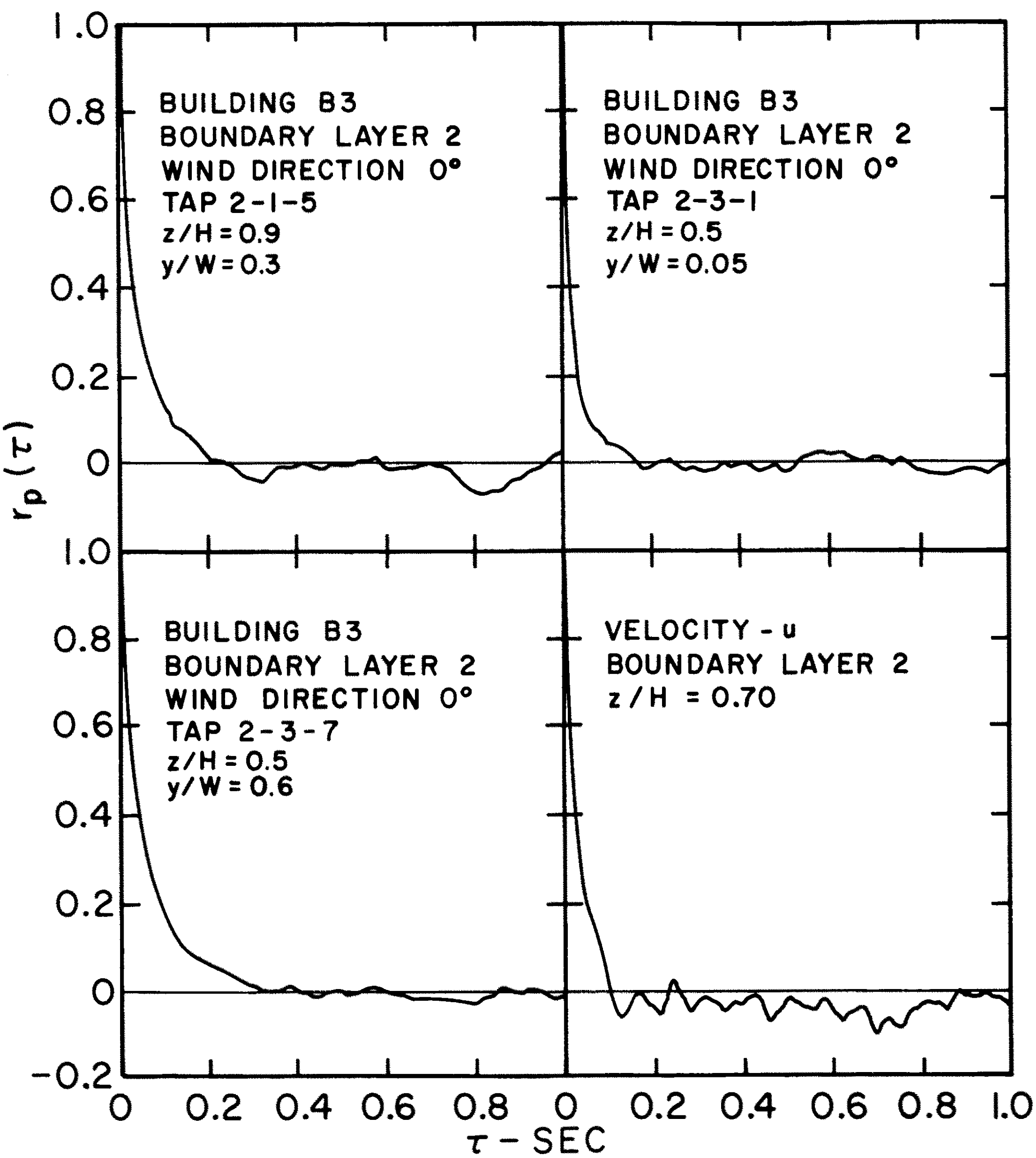


Figure 65. Autocorrelation Coefficients of Pressure Fluctuations, Building B3, α = 0, Side 2, Boundary Layer 2 and of Velocity Fluctuations, Boundary Layer 2.

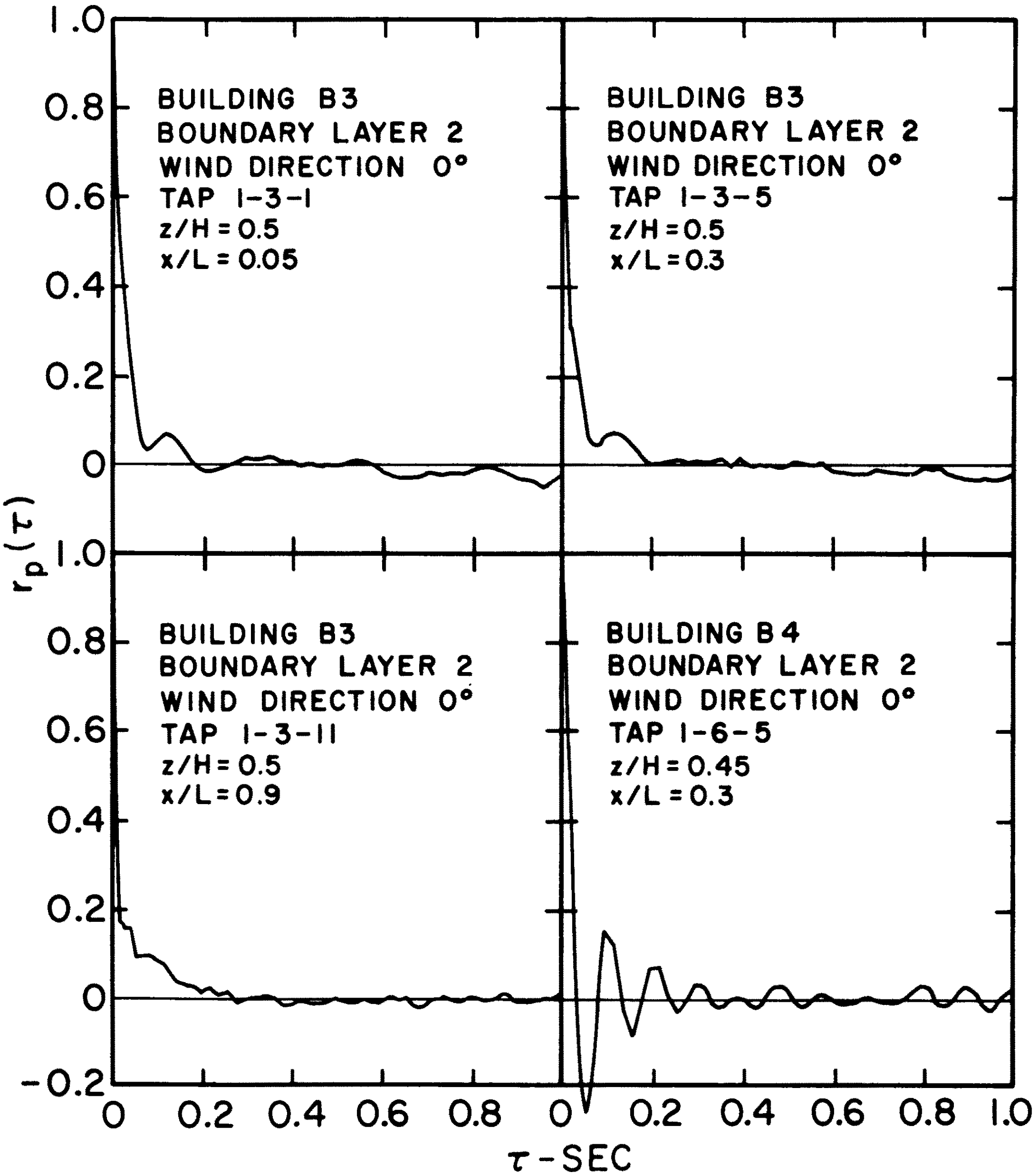


Figure 66. Autocorrelation Coefficients of Pressure Fluctuations Building B3 and B4, α = 0, Side 1, Boundary Layer 2.

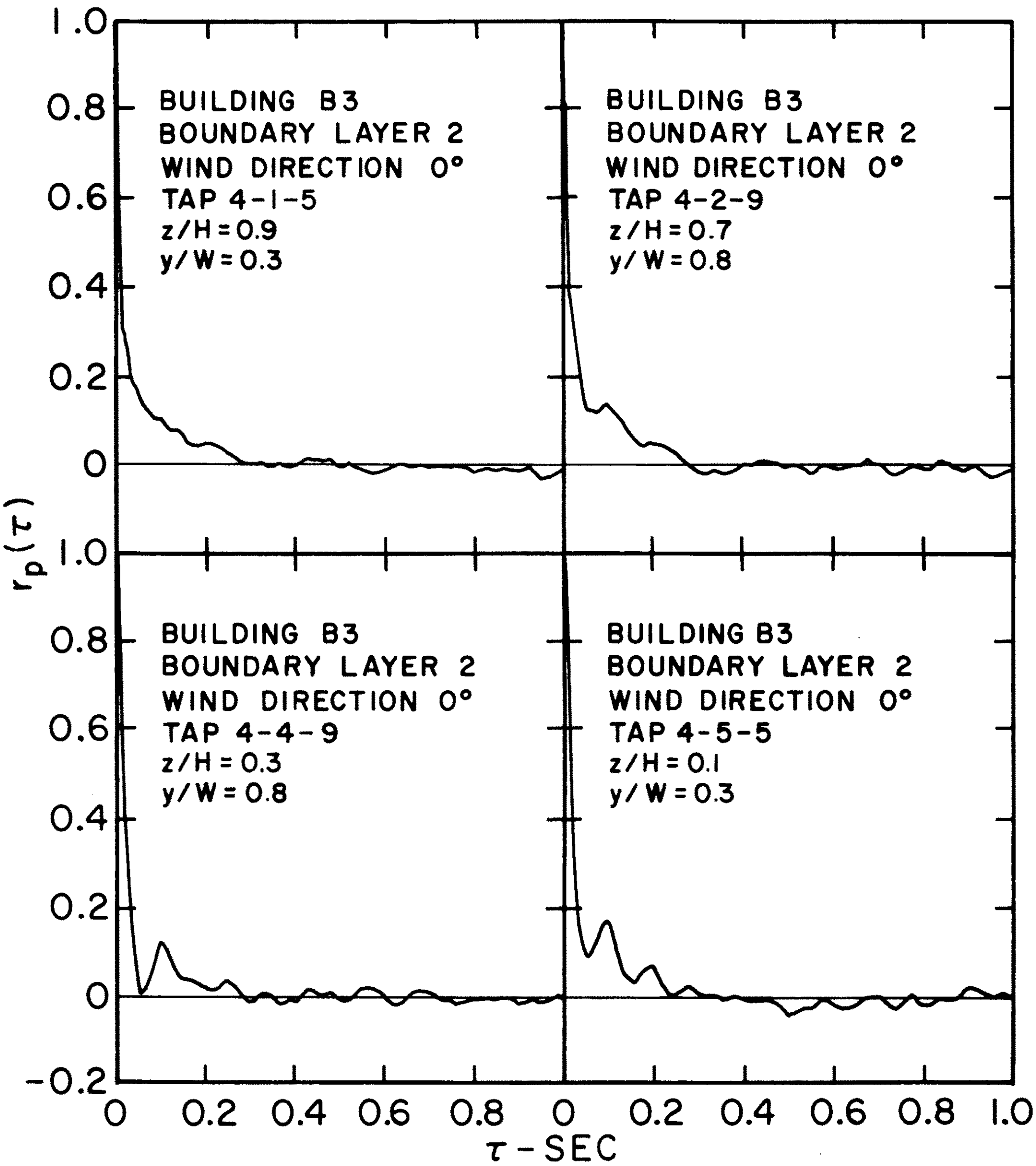


Figure 67. Autocorrelation Coefficients of Pressure Fluctuations, Building B3, α = 0, Side 4, Boundary Layer 2.

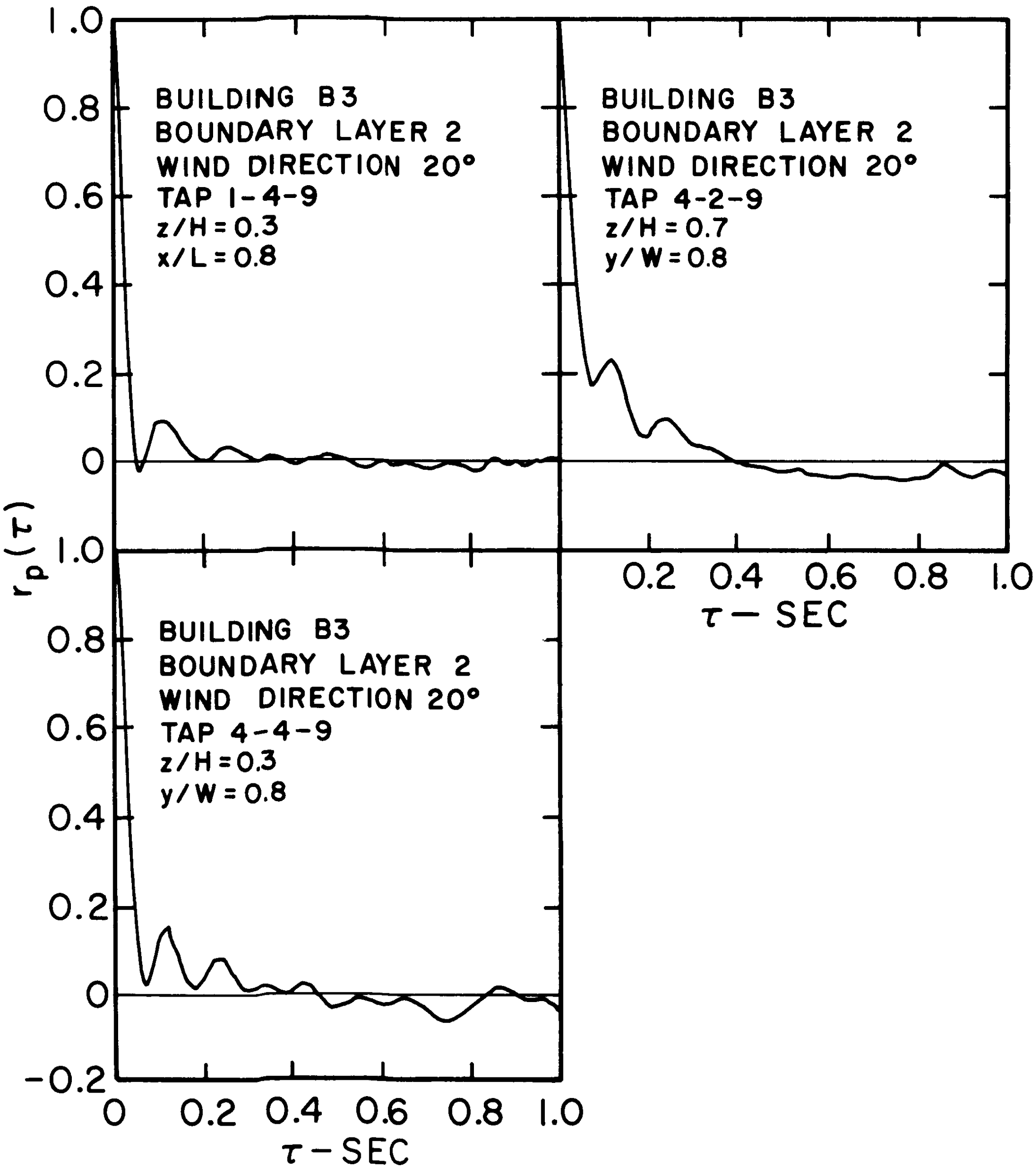


Figure 68. Autocorrelation Coefficients of Pressure Fluctuations, Building B3, α = 20, Sides 1 and 4, Boundary Layer 2.

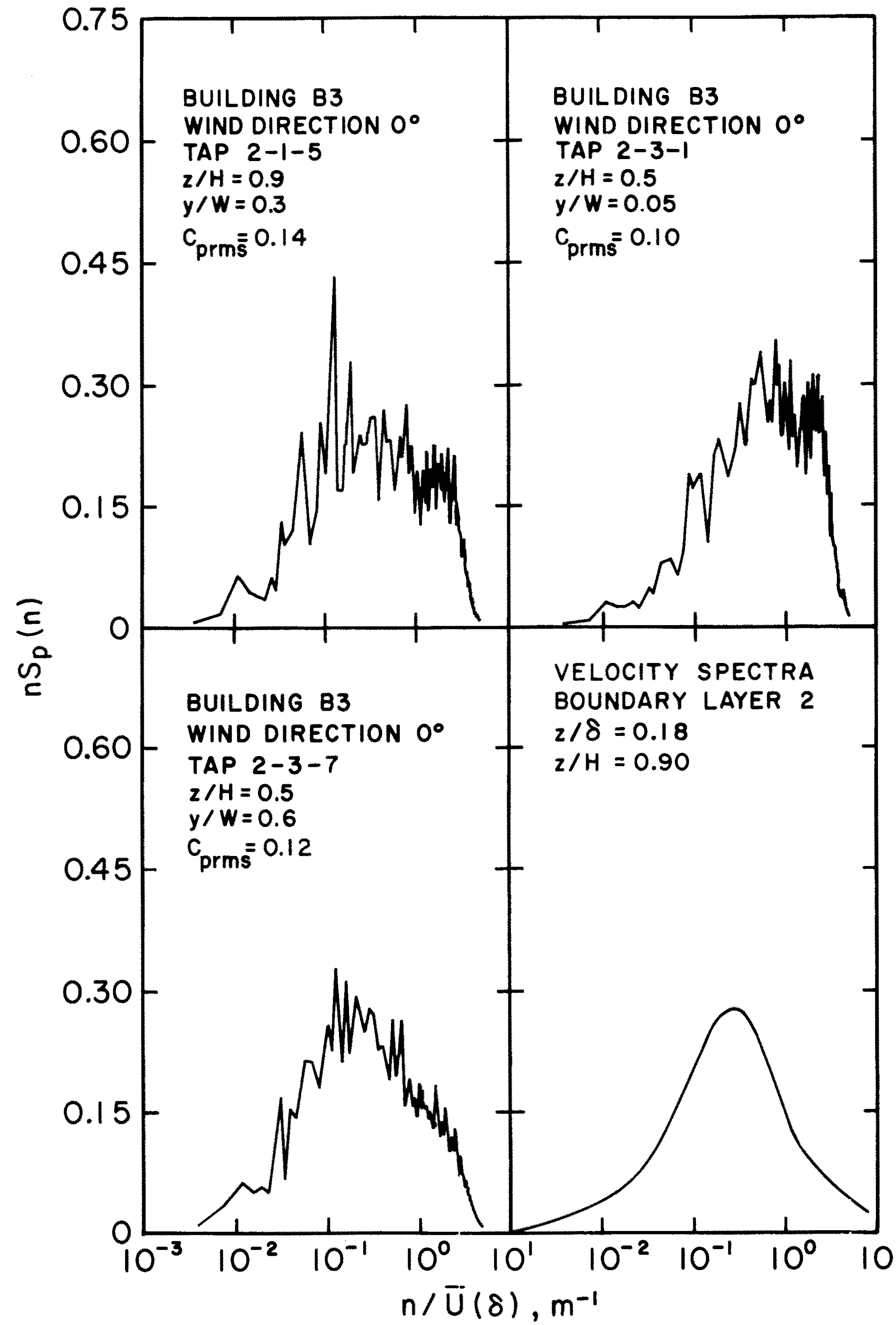


Figure 69. Power Spectral Density Function of Pressure Fluctuations, Building B3, α = 0, Side 2, Boundary Layer 2, and of Velocity Fluctuations Boundary Layer 2 (RMS pressure coefficients based on $\overline{U}(\delta)$).

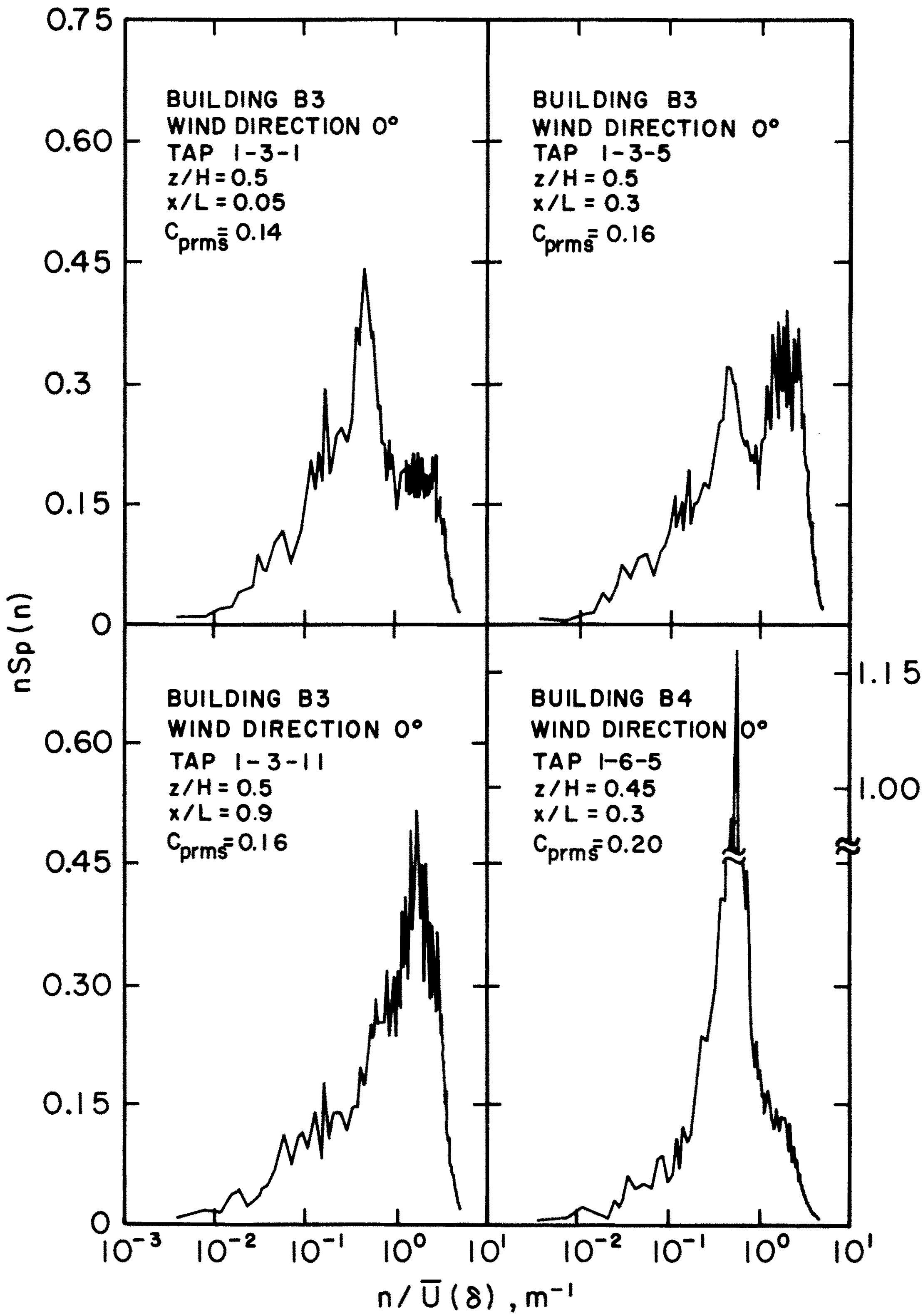


Figure 70. Power Spectral Density Function of Pressure Fluctuations, Buildings B3 and B4, α = 0, Side 1, Boundary Layer 2 (RMS pressure coefficients based on $\overline{U}(\delta)$).

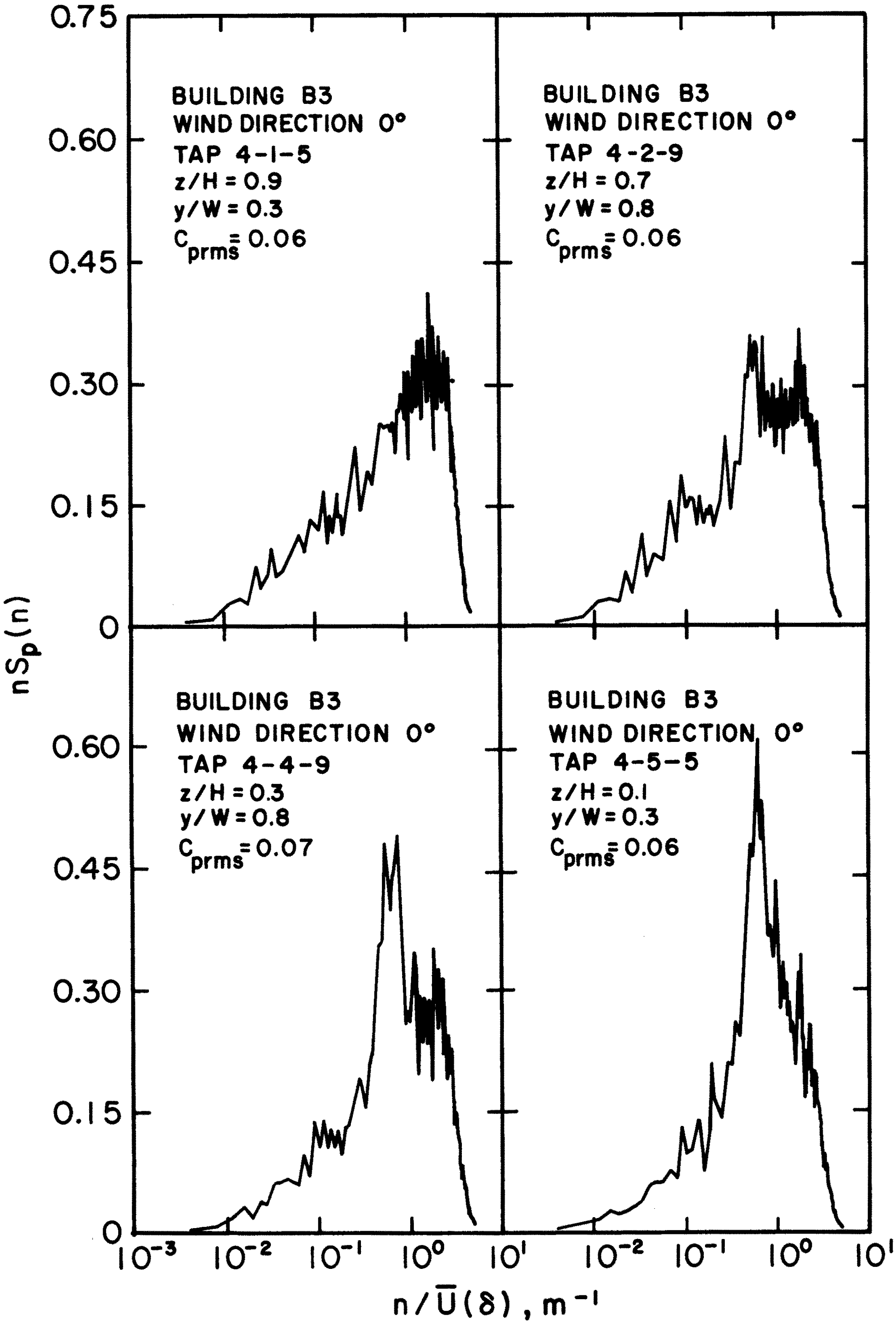


Figure 71. Power Spectral Density Function of Pressure Fluctuations, Building B3, Side 4, Boundary Layer 2 (RMS pressure coefficients based on $\overline{U}(\delta)$).

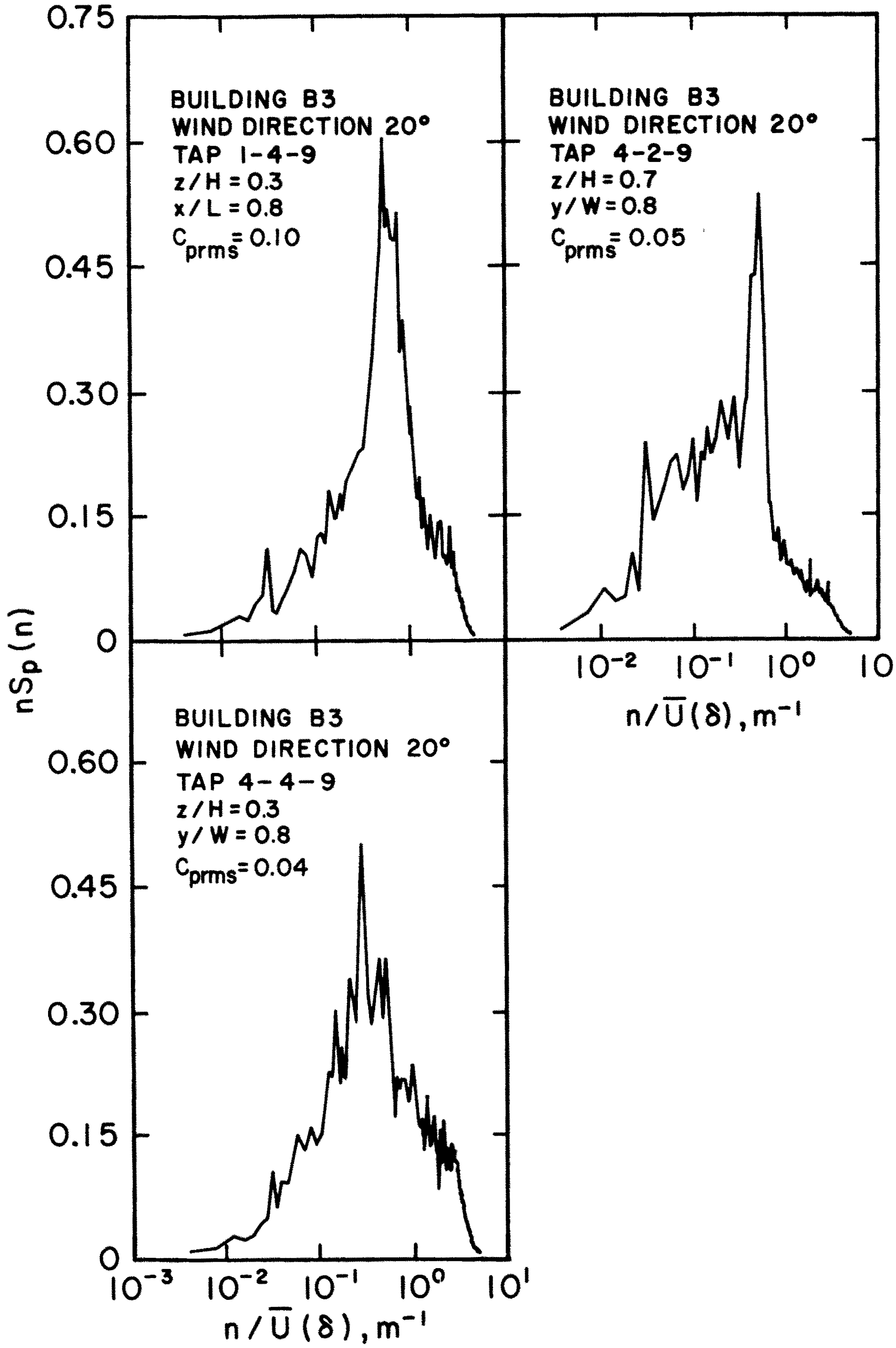
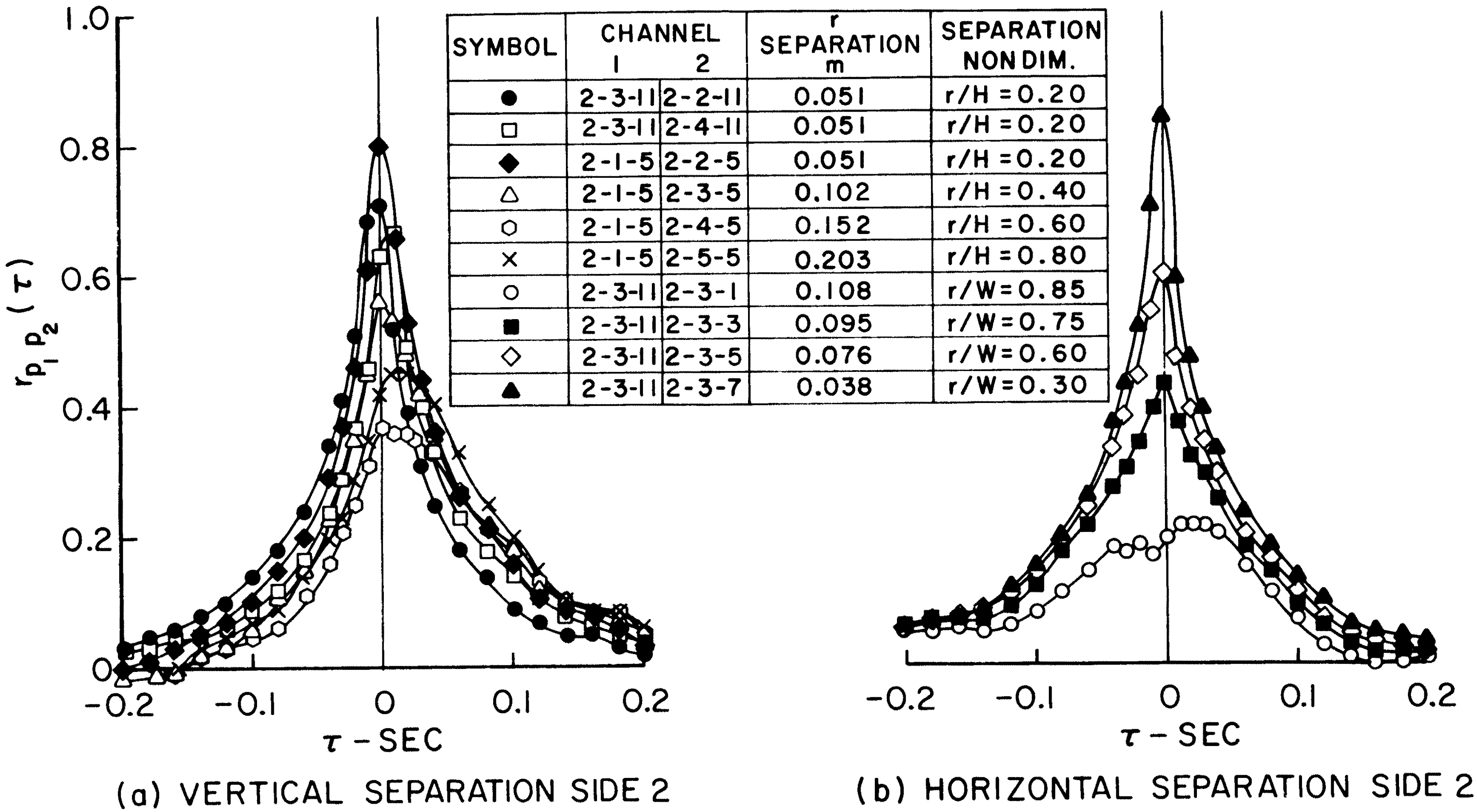
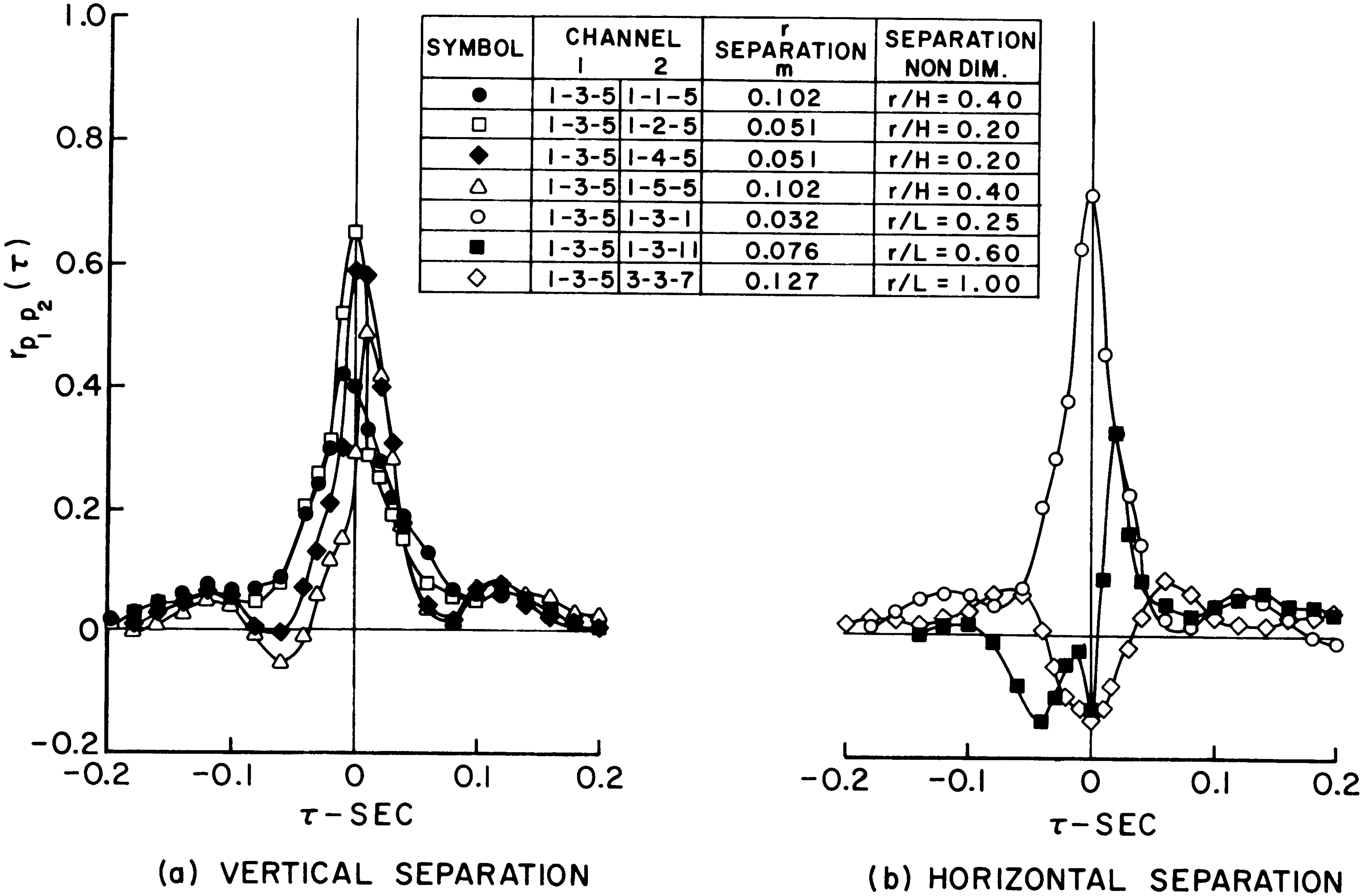


Figure 72. Power Spectral Density Function of Pressure Fluctuations, Building B3, α = 20, Sides 1 and 4, Boundary Layer 2 (RMS pressure coefficients based on $\overline{U}(\delta)$).



SYMBOL	CHANNEL 1	CHANNEL 2	r SEPARATION m	SEPARATION NONDIM.
●	2-3-11	2-2-11	0.051	r/H = 0.20
□	2-3-11	2-4-11	0.051	r/H = 0.20
◆	2-1-5	2-2-5	0.051	r/H = 0.20
△	2-1-5	2-3-5	0.102	r/H = 0.40
⬡	2-1-5	2-4-5	0.152	r/H = 0.60
×	2-1-5	2-5-5	0.203	r/H = 0.80
○	2-3-11	2-3-1	0.108	r/W = 0.85
■	2-3-11	2-3-3	0.095	r/W = 0.75
◇	2-3-11	2-3-5	0.076	r/W = 0.60
▲	2-3-11	2-3-7	0.038	r/W = 0.30

Figure 73. Pressure Cross-Correlation Coefficients, Building B3, α = 0, Side 2, Boundary Layer 2.



SYMBOL	CHANNEL 1	CHANNEL 2	r SEPARATION m	SEPARATION NON DIM.
●	1-3-5	1-1-5	0.102	r/H = 0.40
□	1-3-5	1-2-5	0.051	r/H = 0.20
◆	1-3-5	1-4-5	0.051	r/H = 0.20
△	1-3-5	1-5-5	0.102	r/H = 0.40
○	1-3-5	1-3-1	0.032	r/L = 0.25
■	1-3-5	1-3-11	0.076	r/L = 0.60
◇	1-3-5	3-3-7	0.127	r/L = 1.00

Figure 74. Pressure Cross-Correlation Coefficients, Building B3, $\alpha = 0$, Sides 1 and 3, Boundary Layer 2.

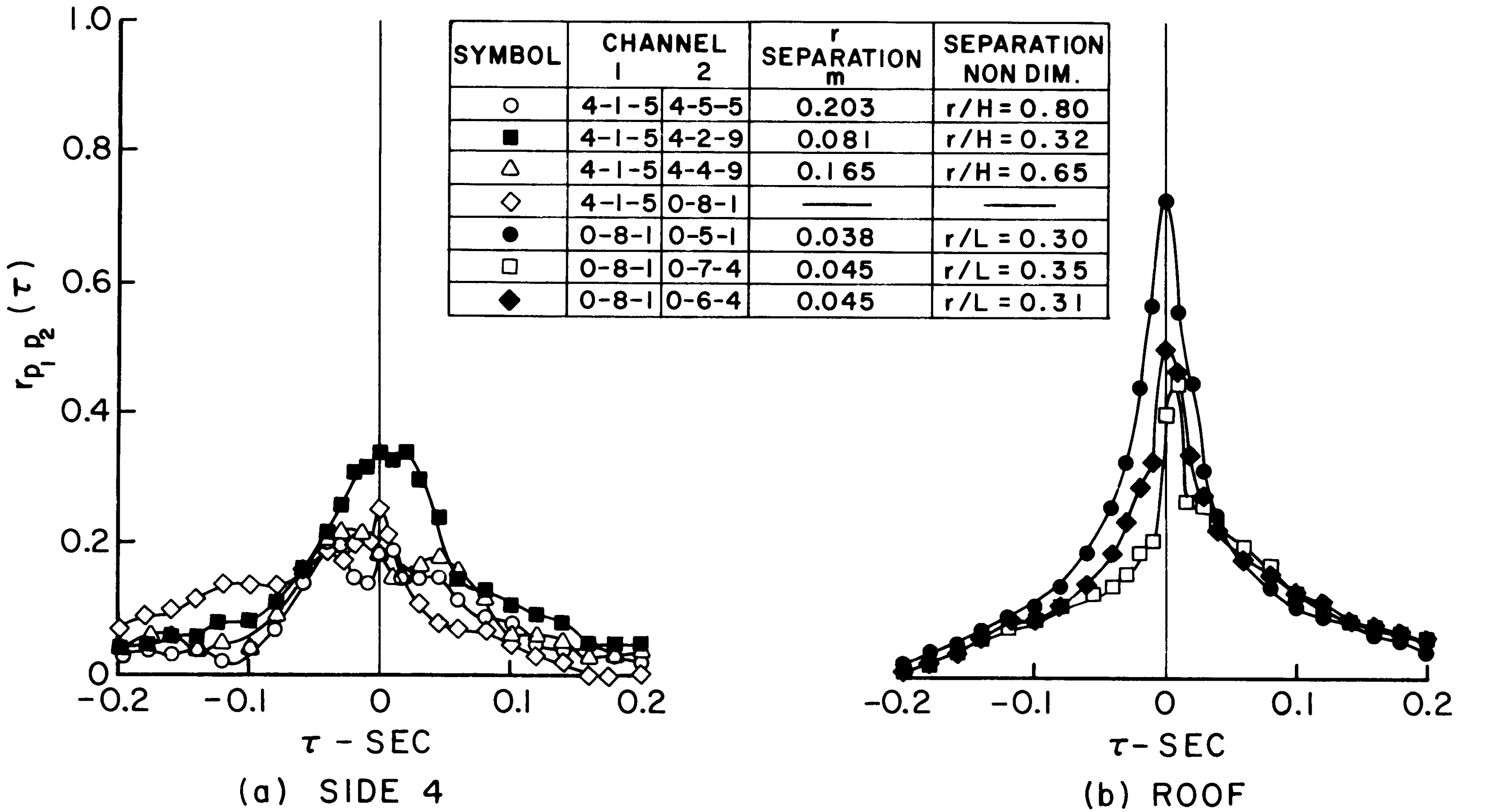


Figure 75. Pressure Cross-Correlation Coefficients, Building B3, α = 0, Roof and Side 4, Boundary Layer 2.

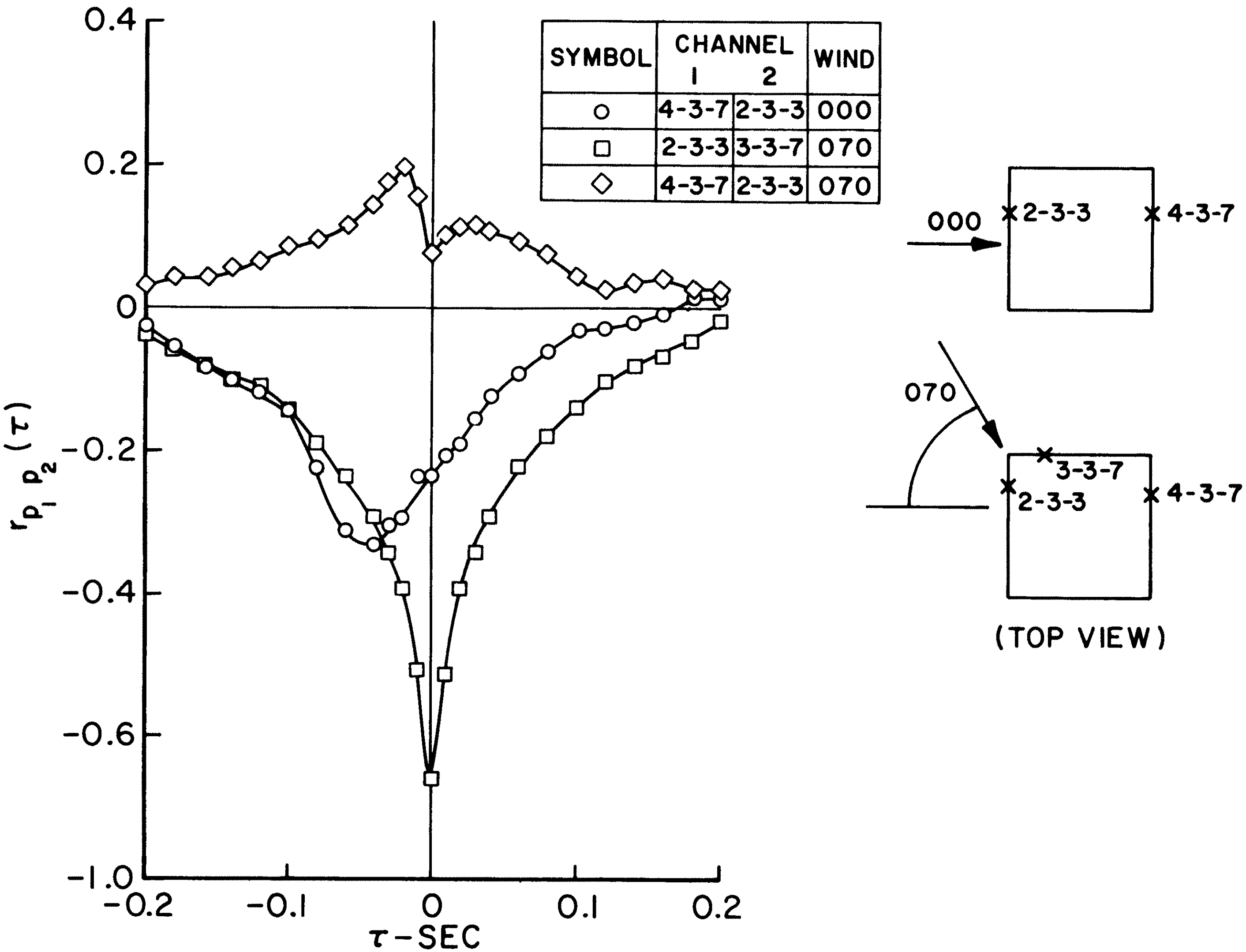


Figure 76. Pressure Cross-Correlation Coefficients, Building B3, Special Cases, Boundary Layer 2.

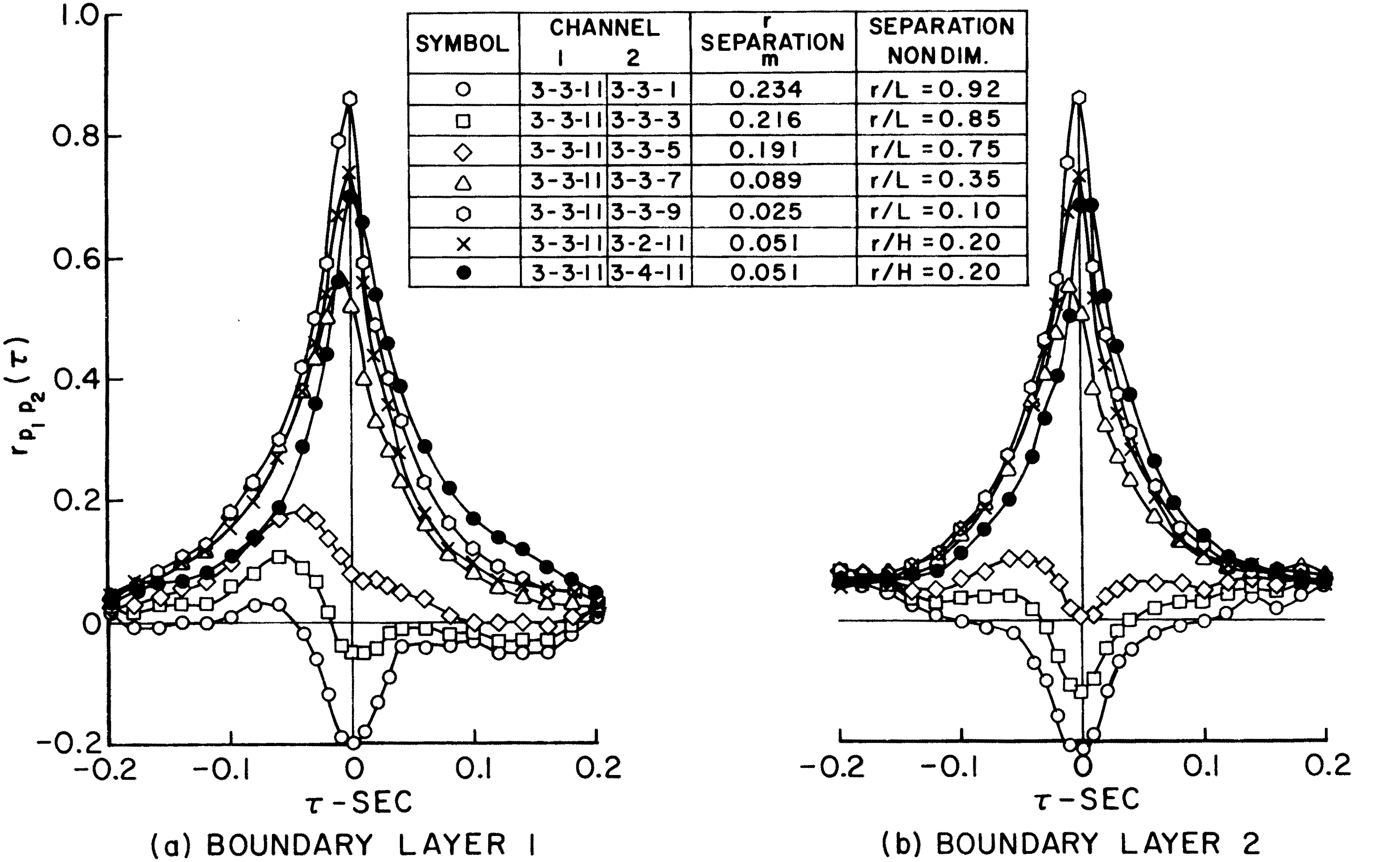


Figure 77. Pressure Cross-Correlation Coefficients, Building B13, α = 90, Side 3, Boundary Layers 1 and 2.

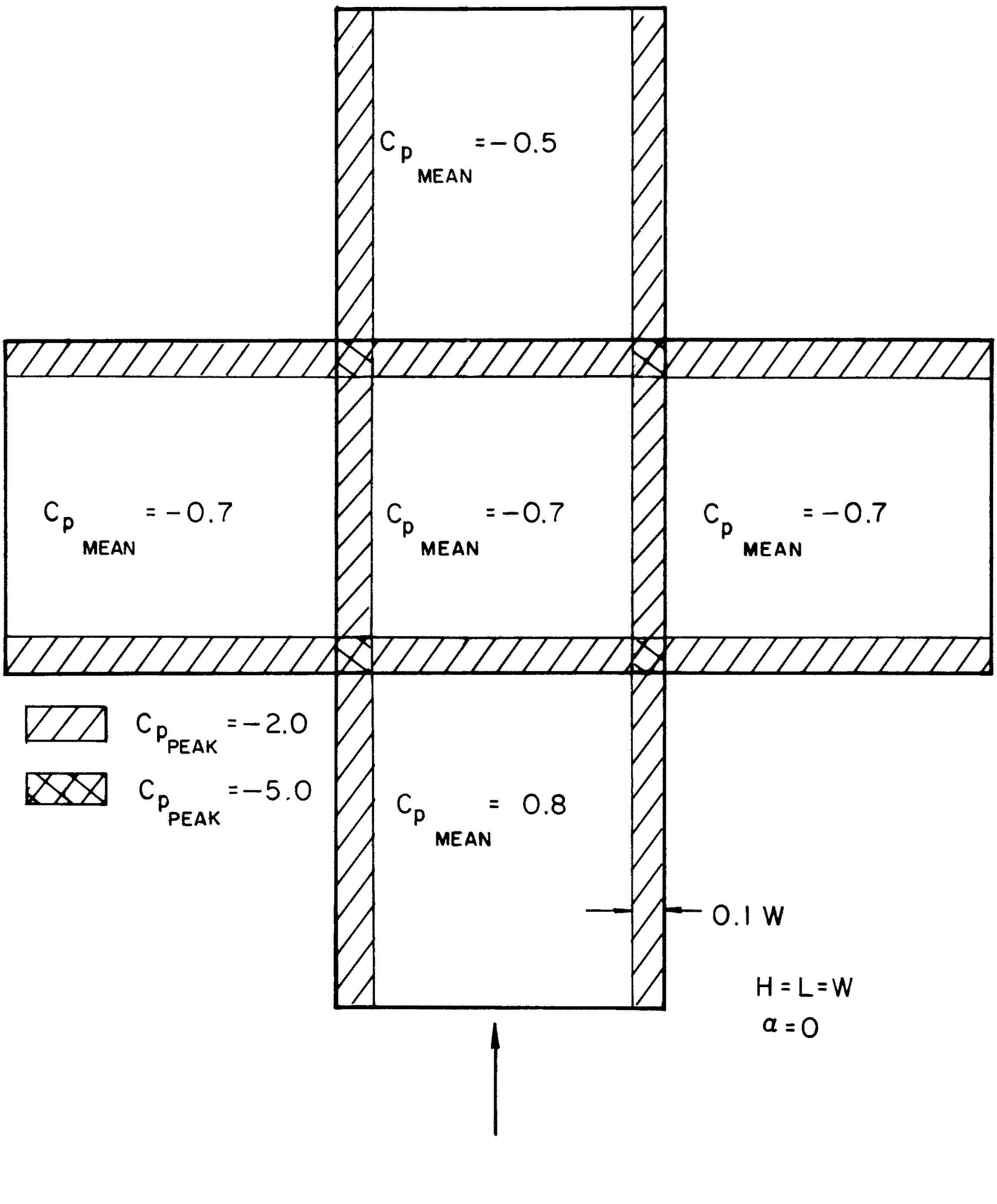


Figure 78. Mean Local Pressure Coefficients, ANSI A58.1-1972.

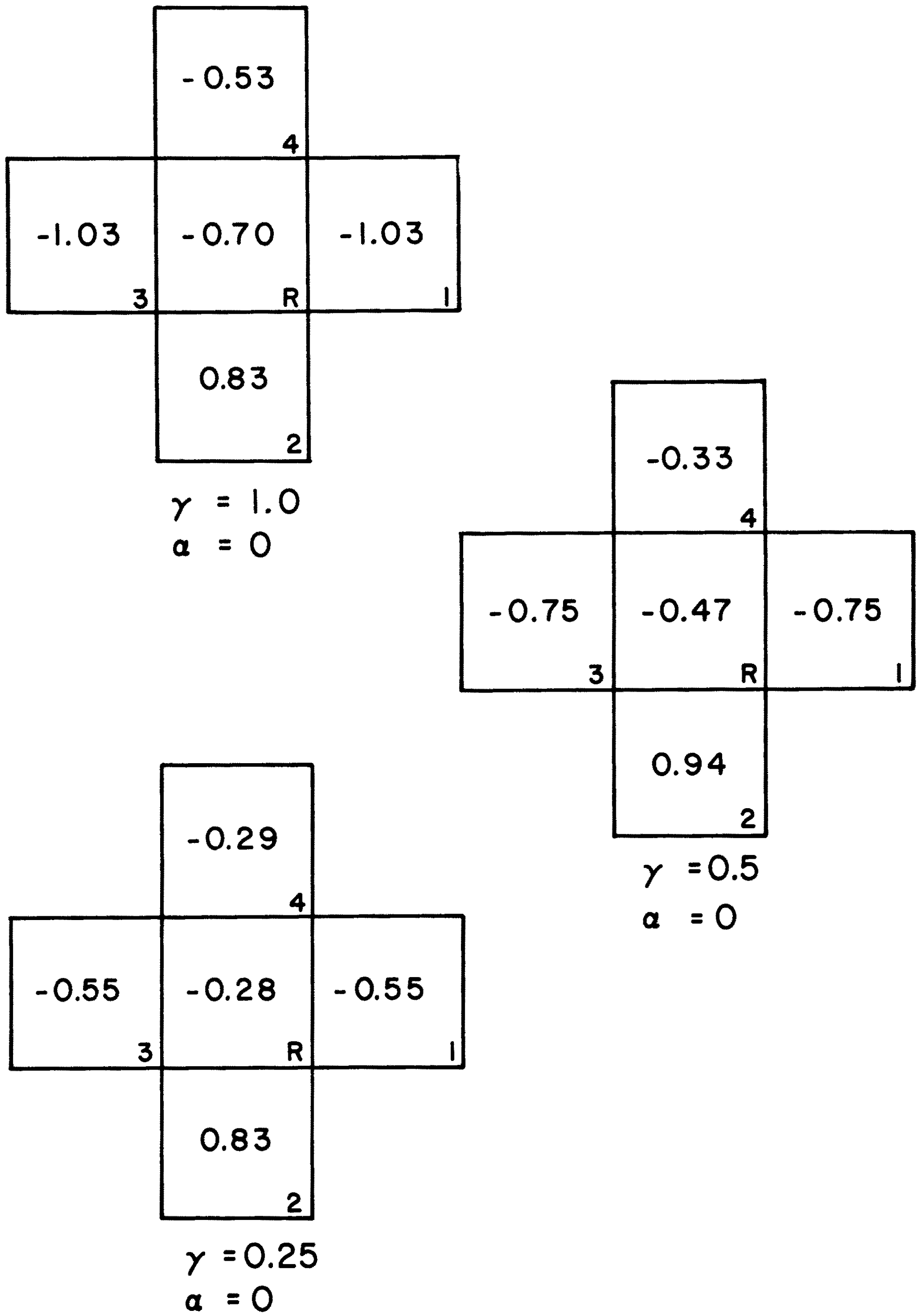


Figure 79. C_{pmean}, $\bar{\beta}$, $\bar{p}$ Averaged Over An Entire Side, γ = 1.0, 0.5, 0.25; α = 0.

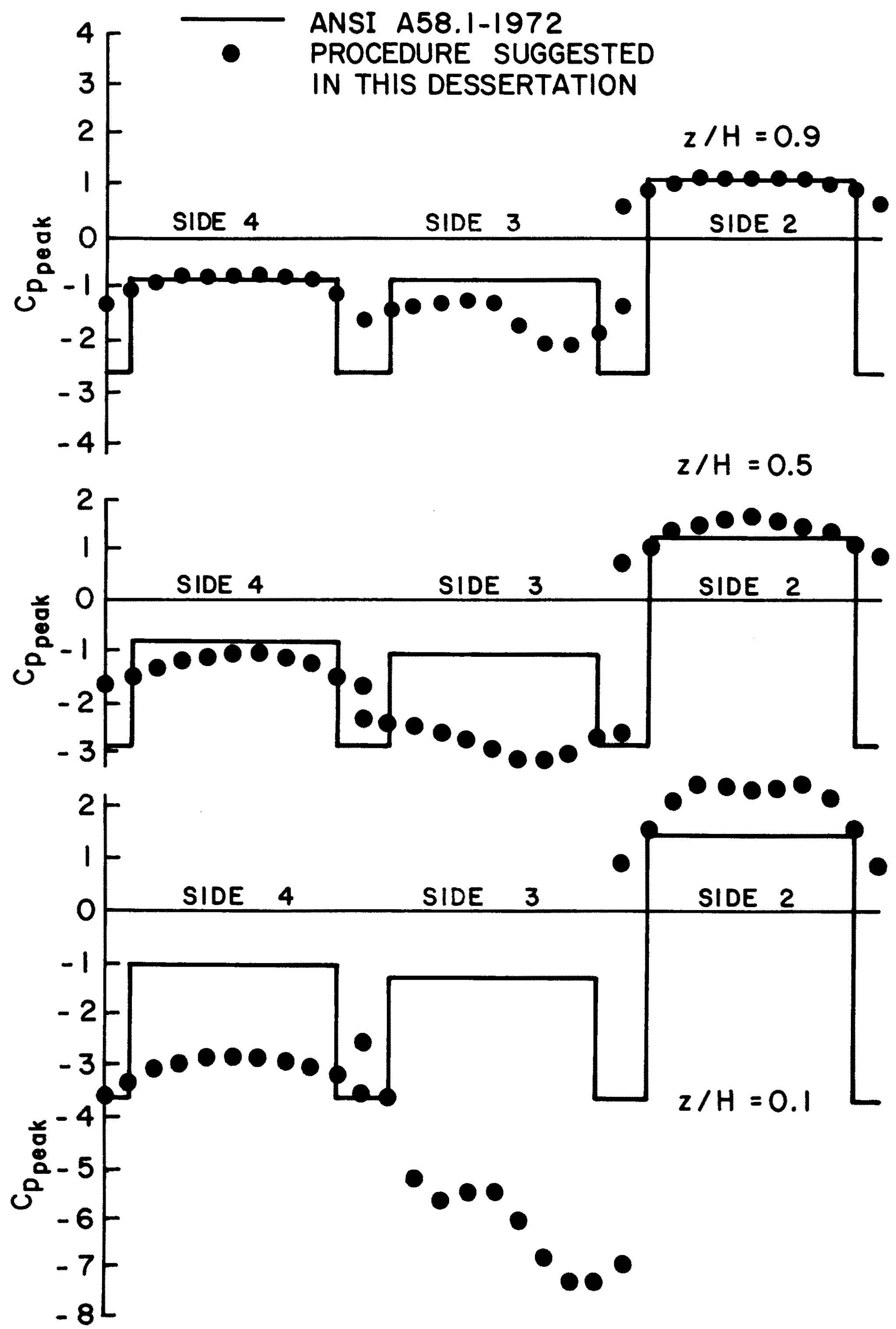


Figure 80. Comparison of Peak Pressure Coefficients Based Upon a Fastest Mile Reference Velocity (see Chapter V for a discussion of assumptions used in the comparison).

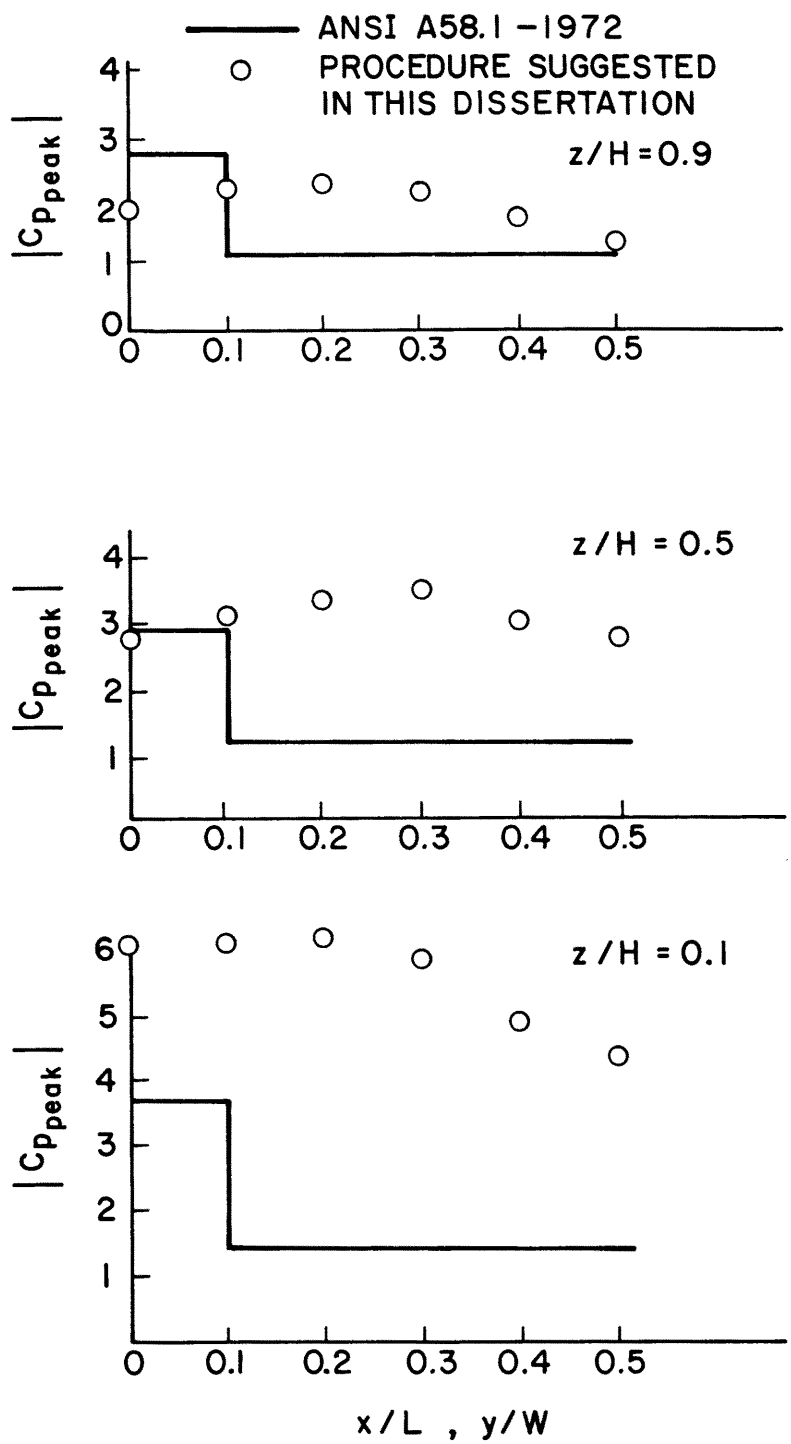


Figure 81. Comparison of the Maximum Value of $|C_{ppeak}|$ for all α. Fastest-Mile Reference Velocity.

Appendix A

EQUIPMENT

Pressure Measurements

(a) Transducers
Statham Model PM283TC ±0.15-350 Differential Pressure Transducer
Setra Model 242TC ± 0.25 Differential Pressure Transducer
MKS Baratron Pressure Meter, Type 77

(b) Amplifier/Signal Conditioner
Honeywell Accudata 118 Gage Control Unit/Amplifier

Velocity Measurements

(a) Anemometer
Thermo-Systems Model 1050

(b) Hot-Film Probes
Thermo-Systems Model 1210-20 Normal Film
Thermo-Systems Model 1241-20 Cross Film

(c) Calibrator
Thermo-Systems Model 1125

(d) Pitot Tube
United Sensor and Control Model PAC-12-KL

Digital Data Acquisition System

Digital Data Recording System, Systems Development Inc., Dallas, Texas

Miscellaneous Equipment

(a) Digital Volt Meter
Hewlett-Packard Model 3440A

(b) Oscilloscope
Tektronix Model 561A

Appendix B

CONTOUR PLOTS OF MEAN AND RMS LOCAL PRESSURE COEFFICIENTS

A listing of all data used in compiling these averaged values is available from

Dr. J. E. Cermak
Professor-in-Charge
Fluid Mechanics and Wind Engineering Program
Department of Civil Engineering
Colorado State University
Fort Collins, Colorado 80523

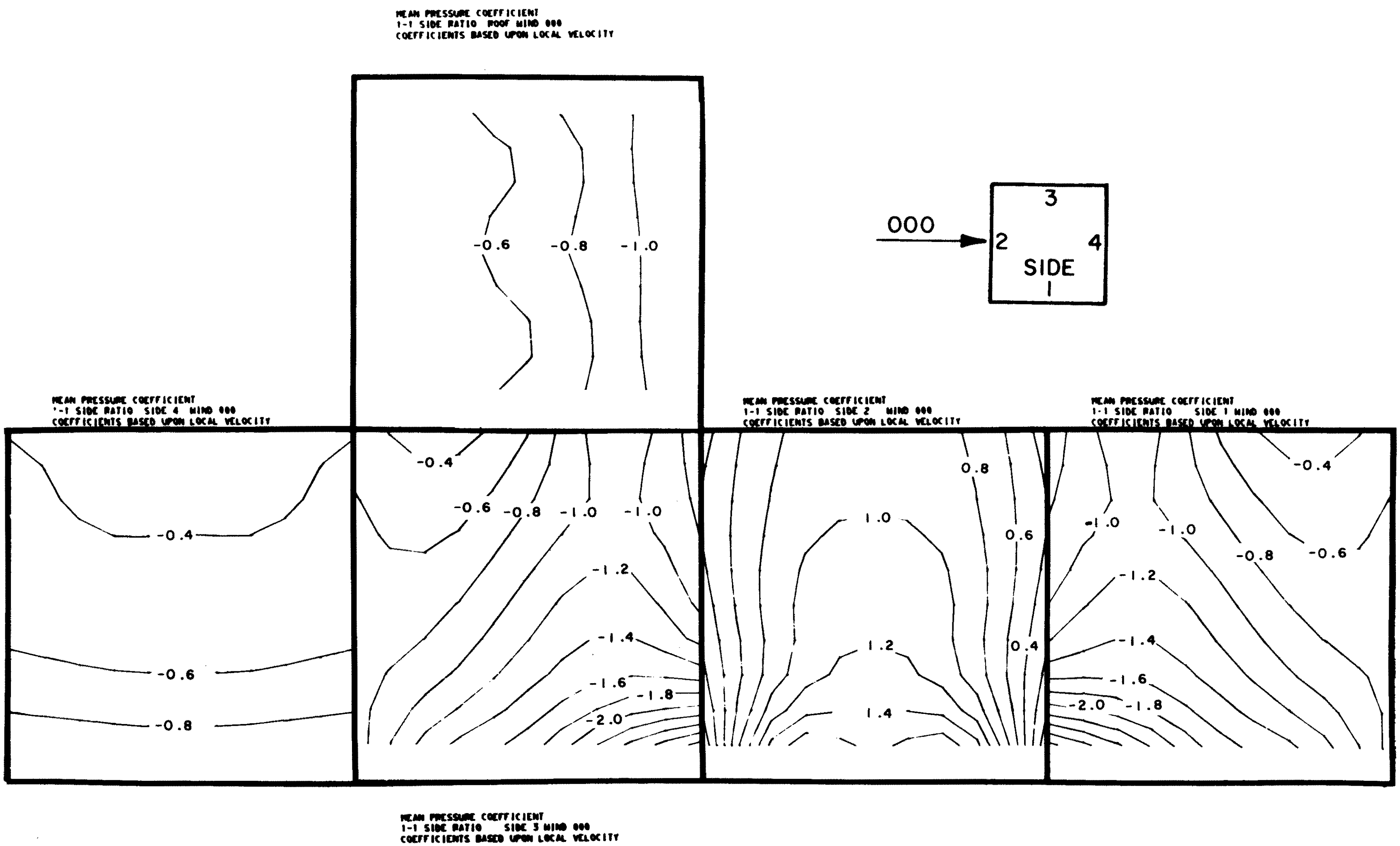


Figure B1. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\alpha = 0$, $\gamma = 1.0$

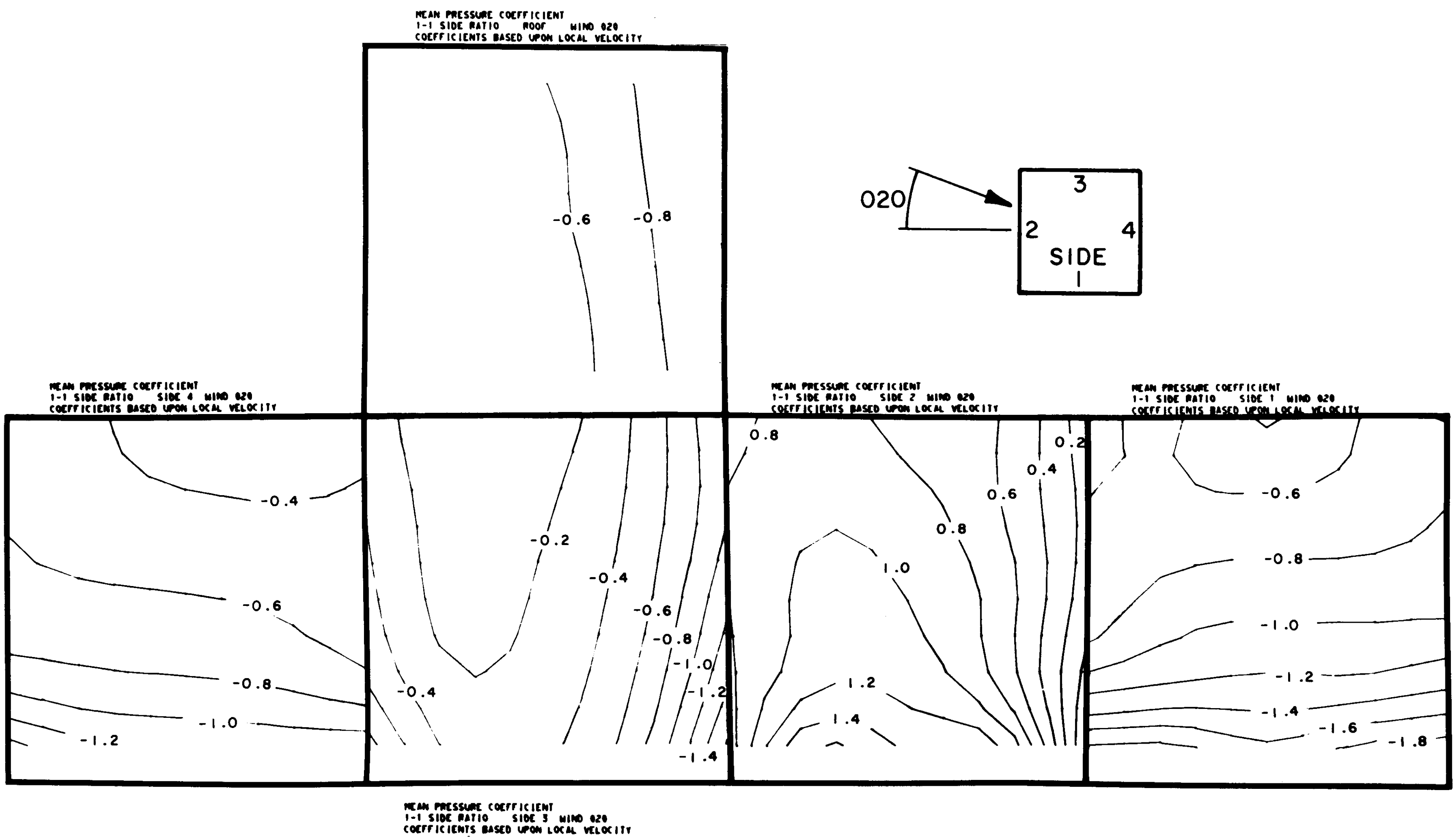


Figure B2. C_{pmean}, $\overline{\beta}$, $\overline{p}$, α = 20, γ = 1.0

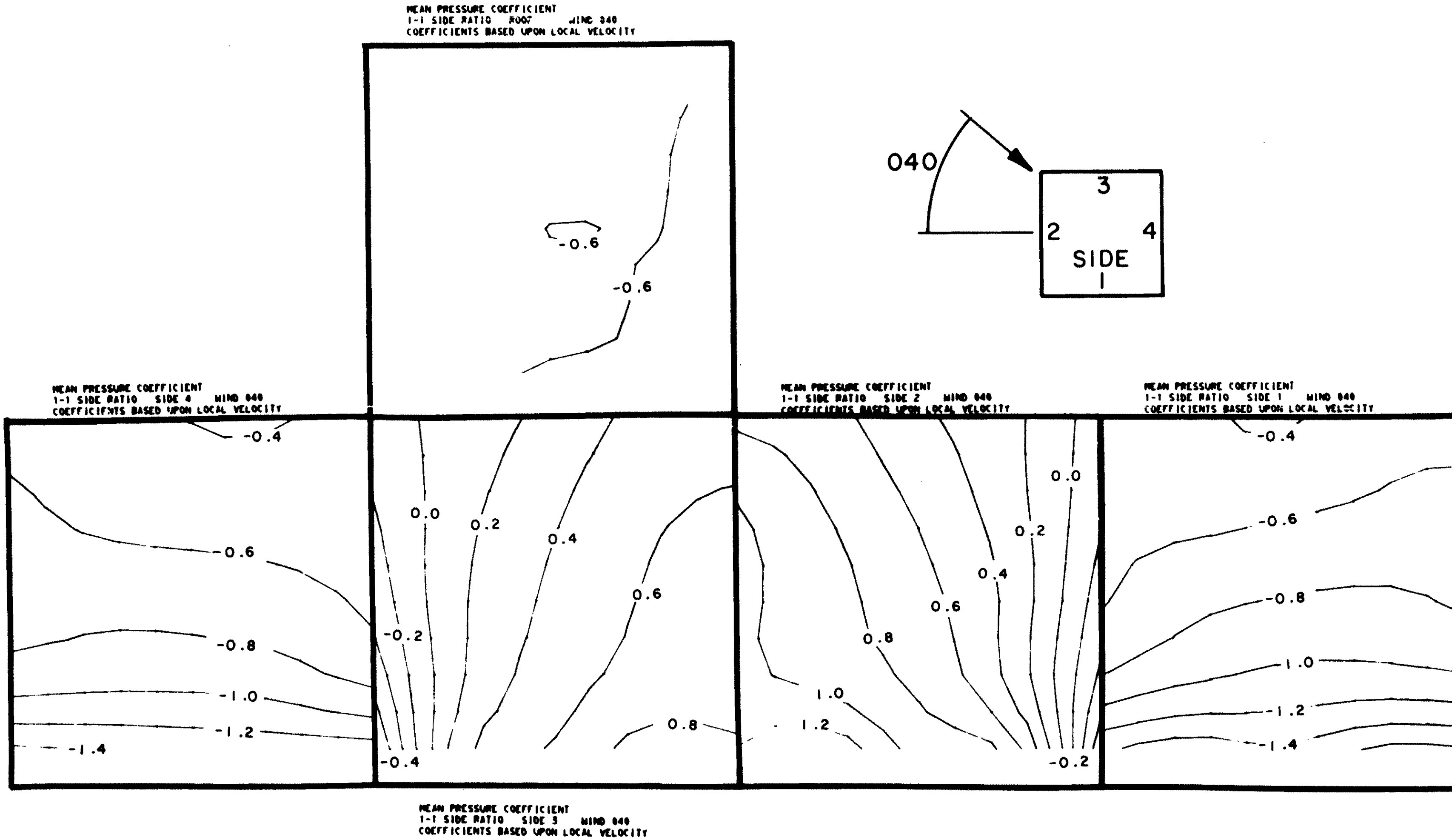


Figure B3. C_{pmean}, $\overline{\beta}$, $\overline{p}$, α = 40, γ = 1.0

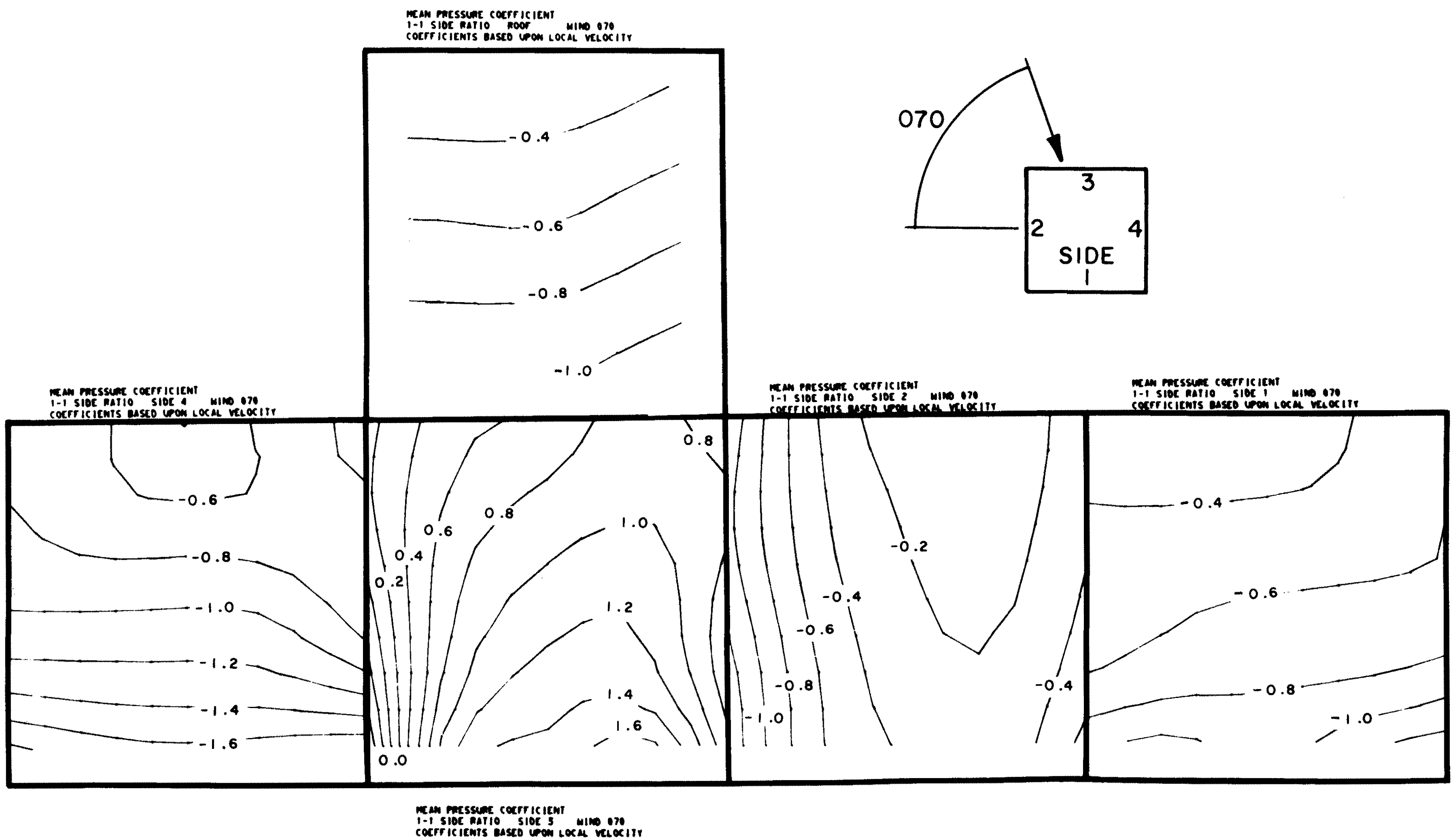


Figure B4. C_{pmean}, $\overline{\beta}$, $\overline{p}$, α = 70, γ = 1.0

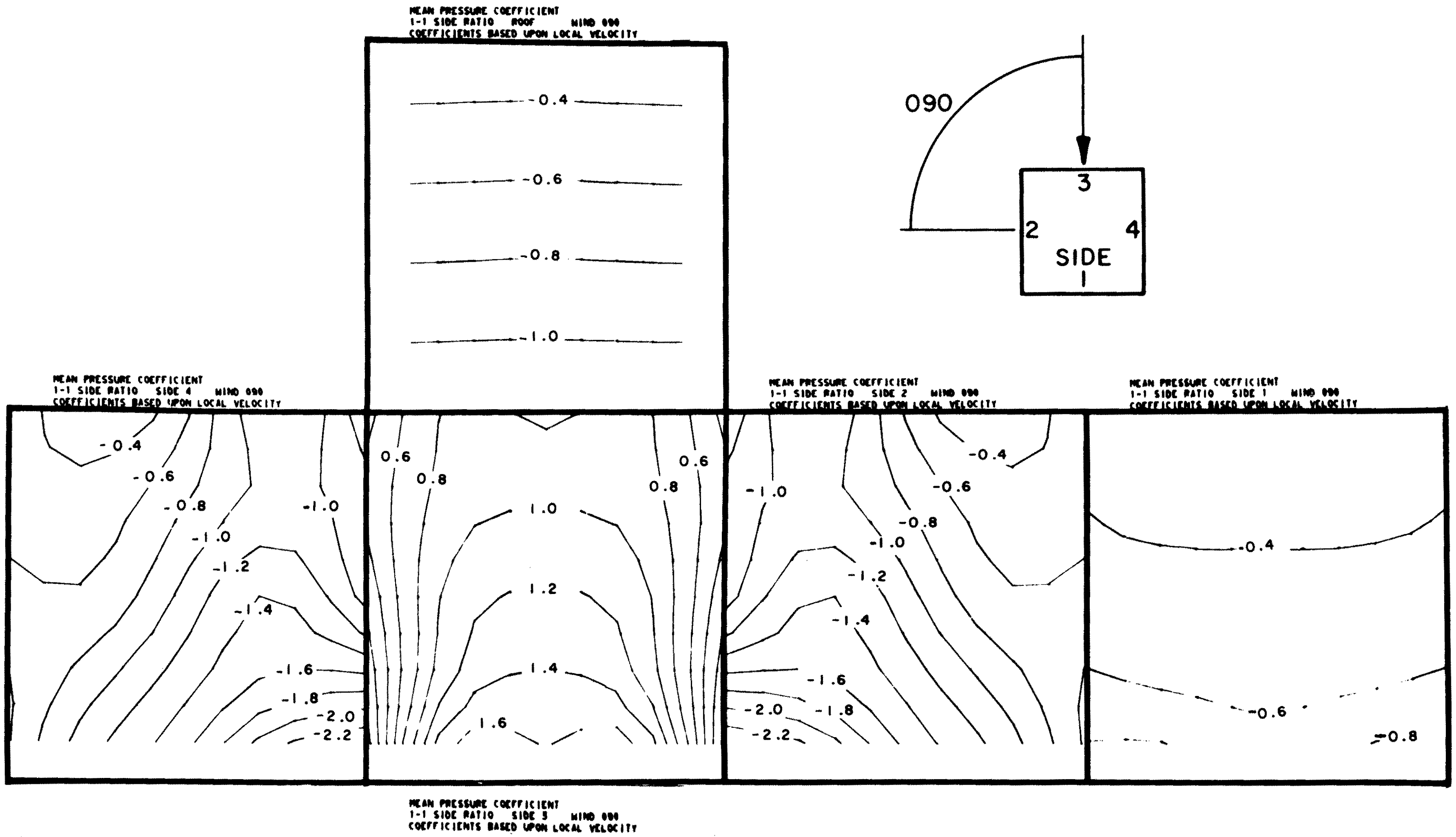


Figure B5. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\alpha = 90$, $\gamma = 1.0$

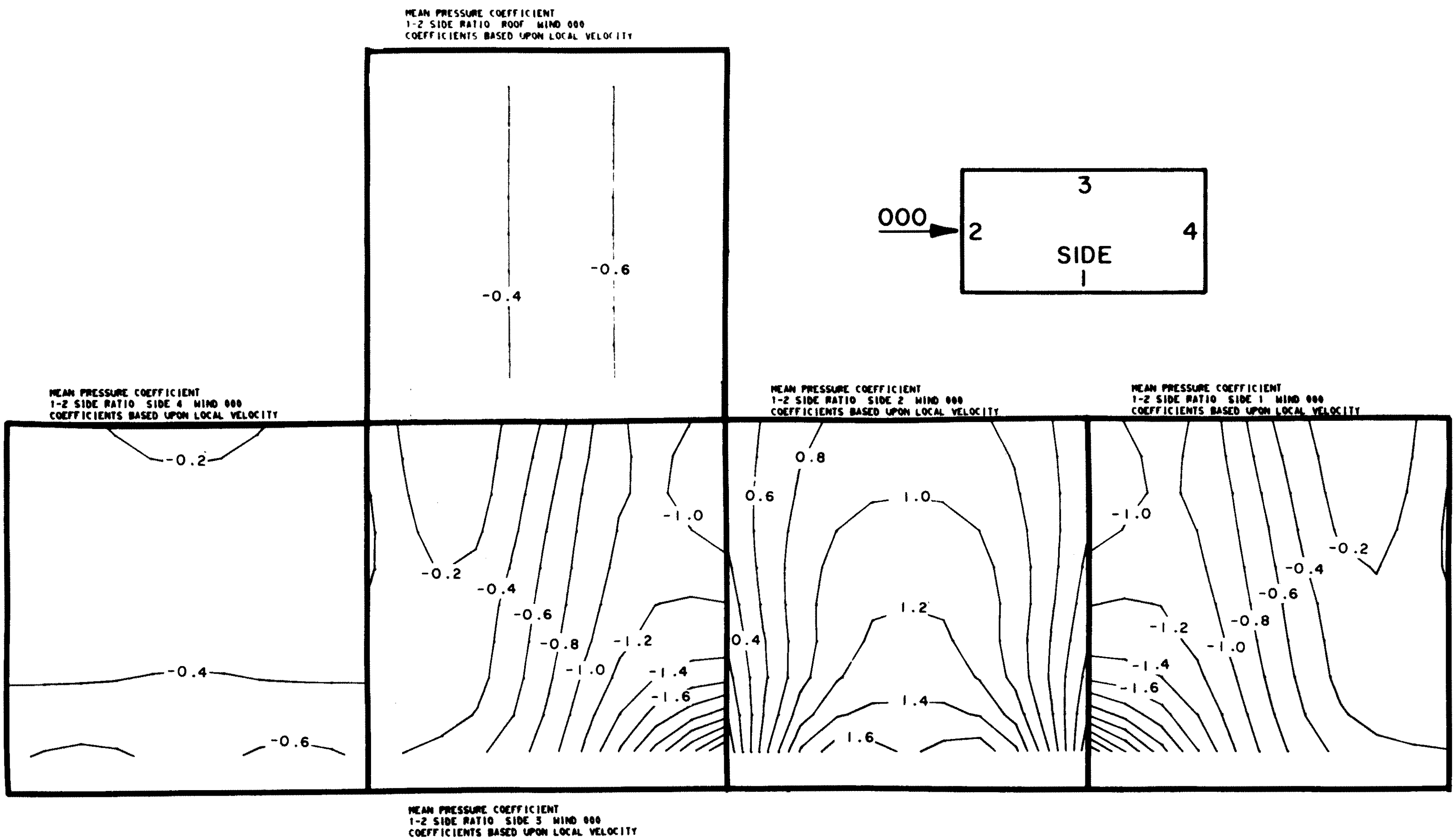


Figure B6. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\alpha = 0$, $\gamma = 0.5$

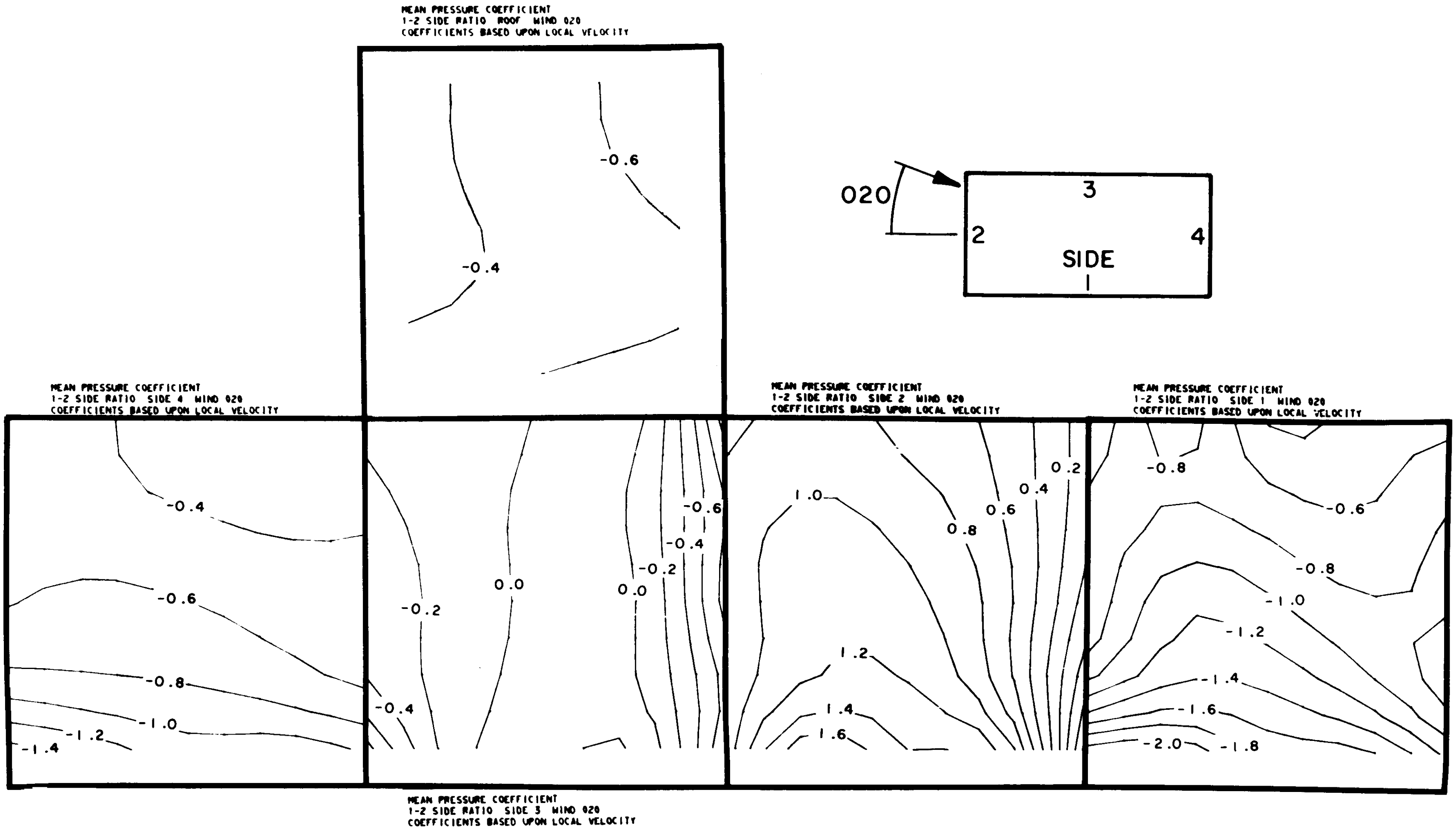


Figure B7. $C_{pmean}, \overline{\beta}, \overline{p}, \alpha = 20, \gamma = 0.5$

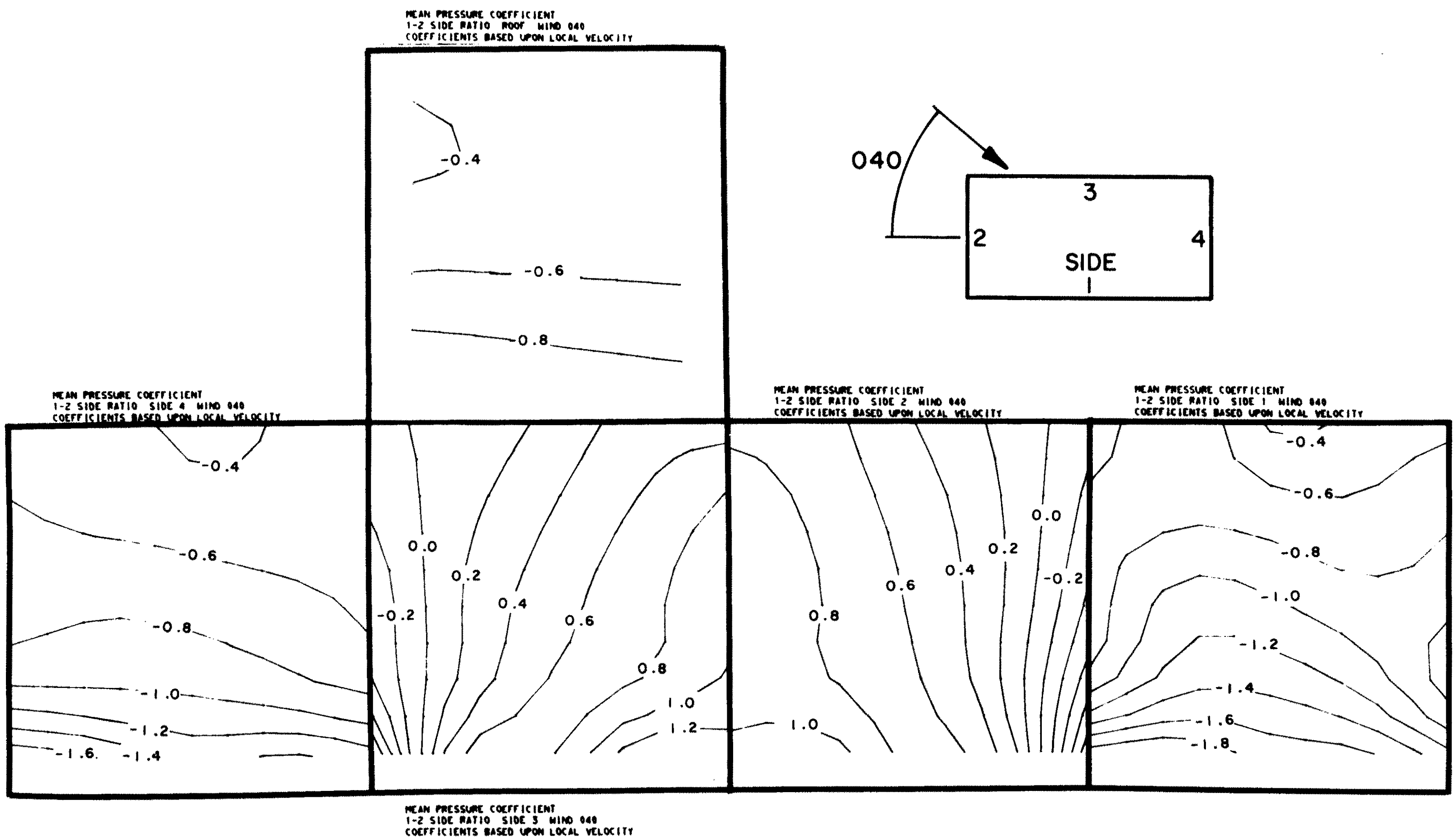


Figure B8. $C_{pmean}, \overline{\beta}, \overline{p}$, $\alpha = 40$, $\gamma = 0.5$

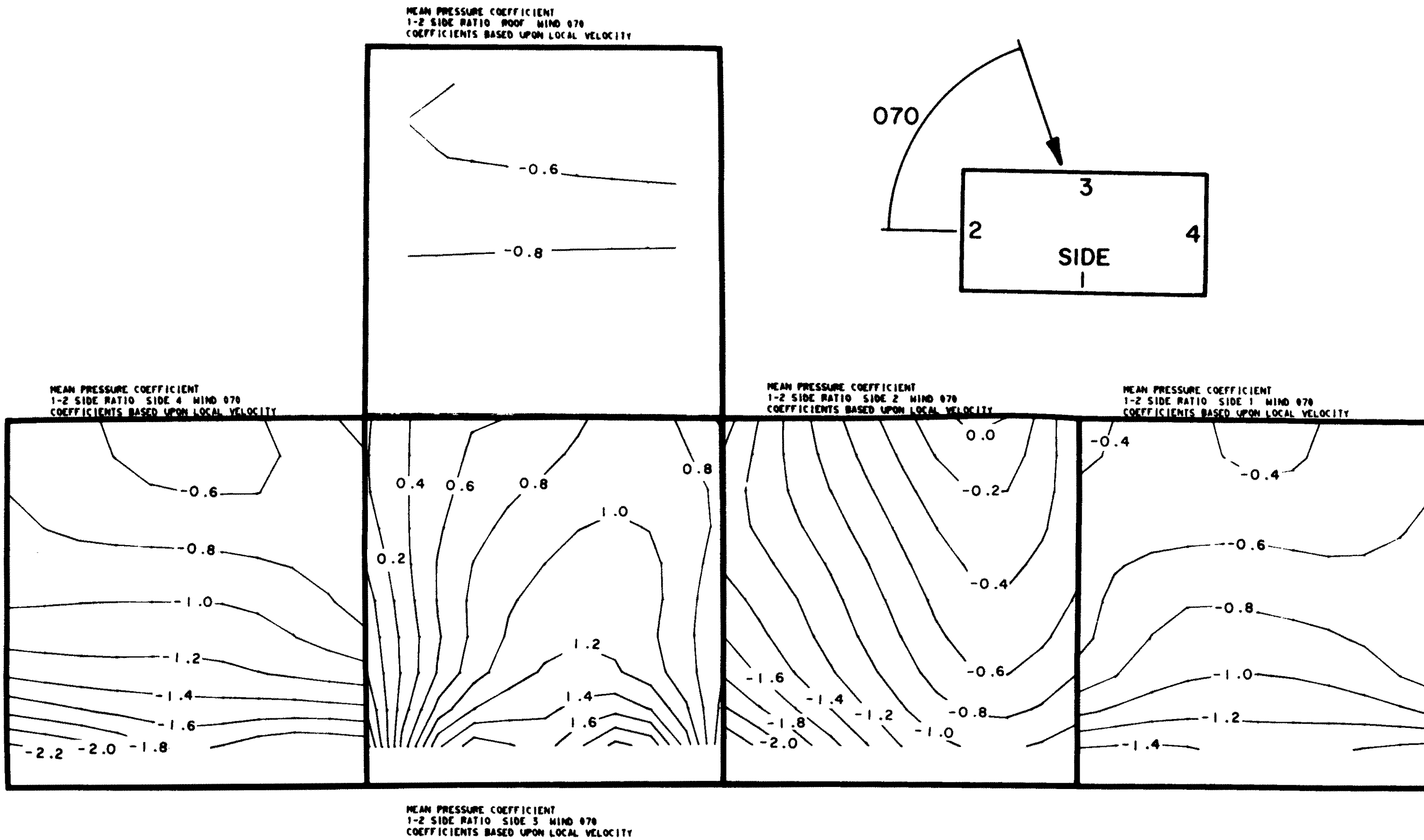


Figure B9. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\alpha = 70$, $\gamma = 0.5$

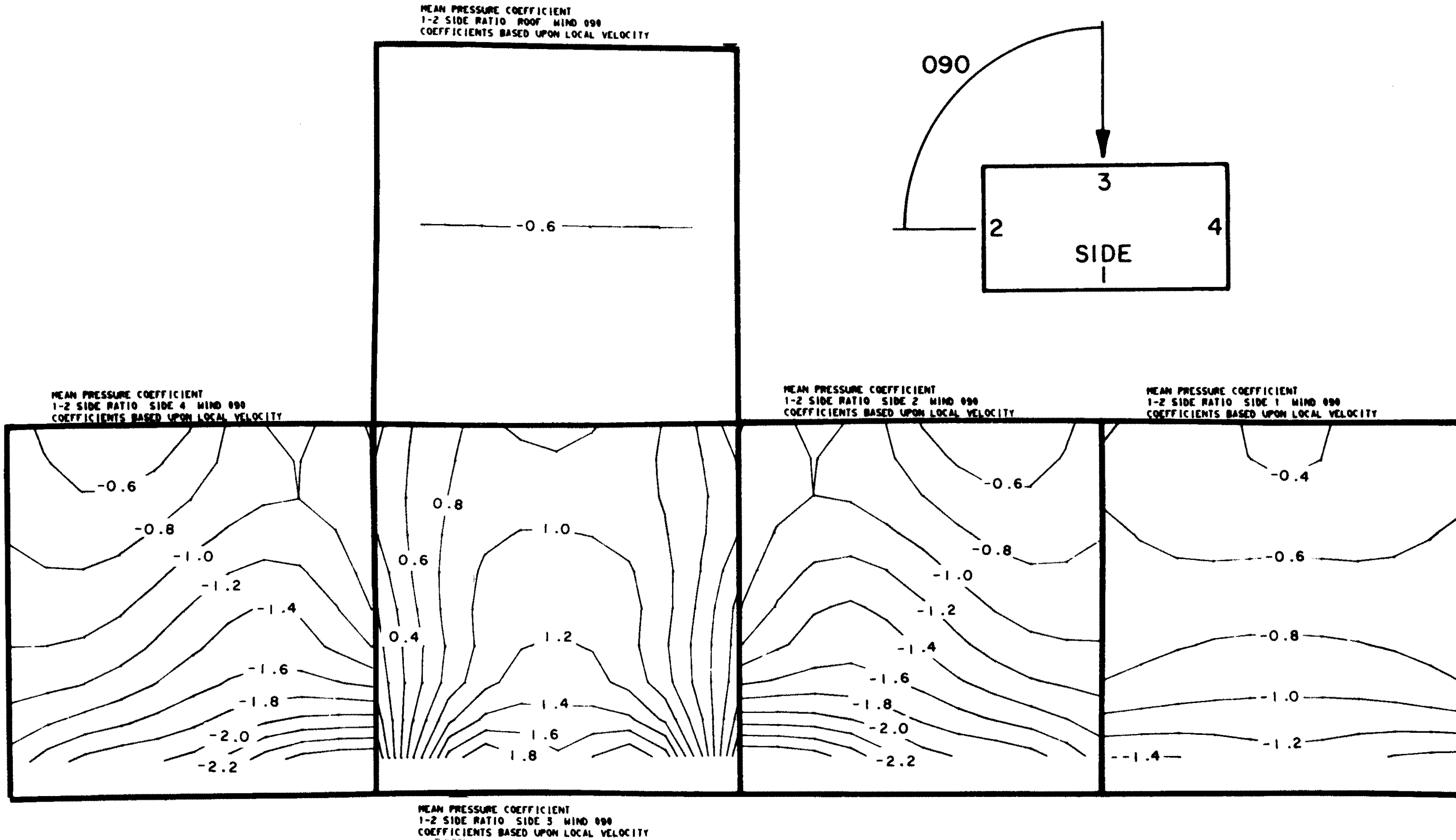


Figure B10. C_{pmean}, $\overline{\beta}$, $\overline{p}$, α = 90, γ = 0.5

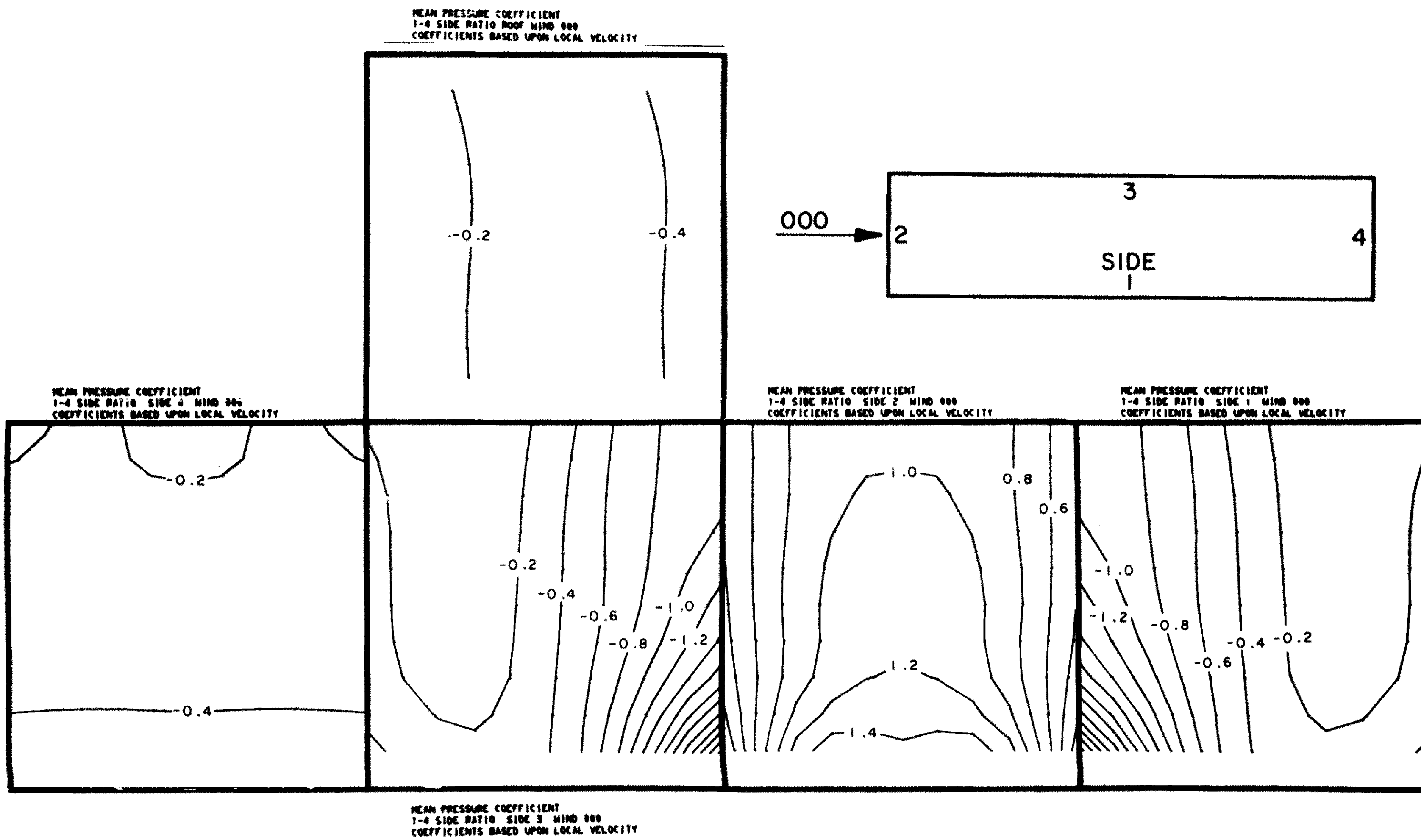


Figure B11. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\alpha = 0$, $\gamma = 0.25$

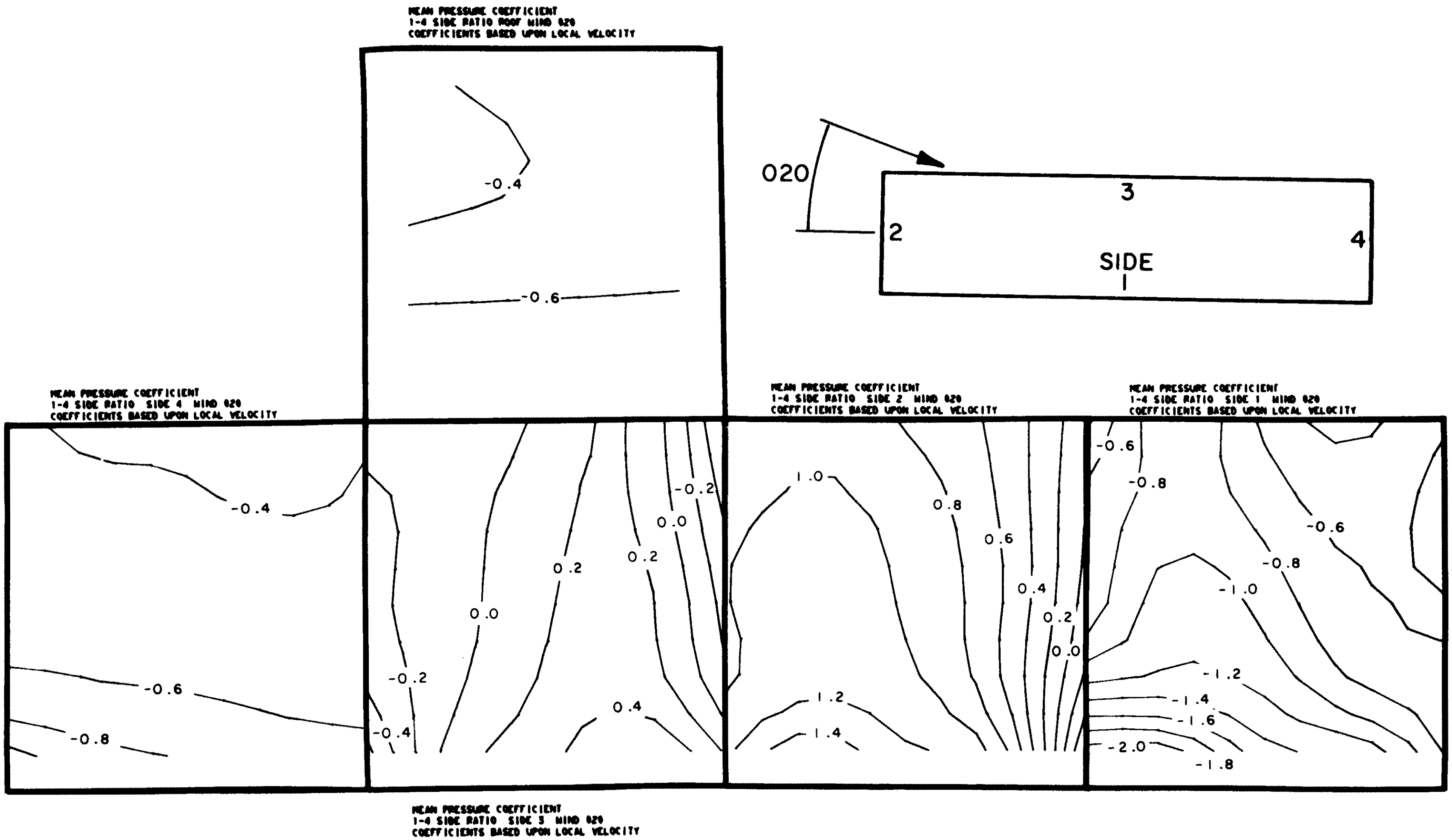


Figure B12. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\alpha = 20$, $\gamma = 0.25$

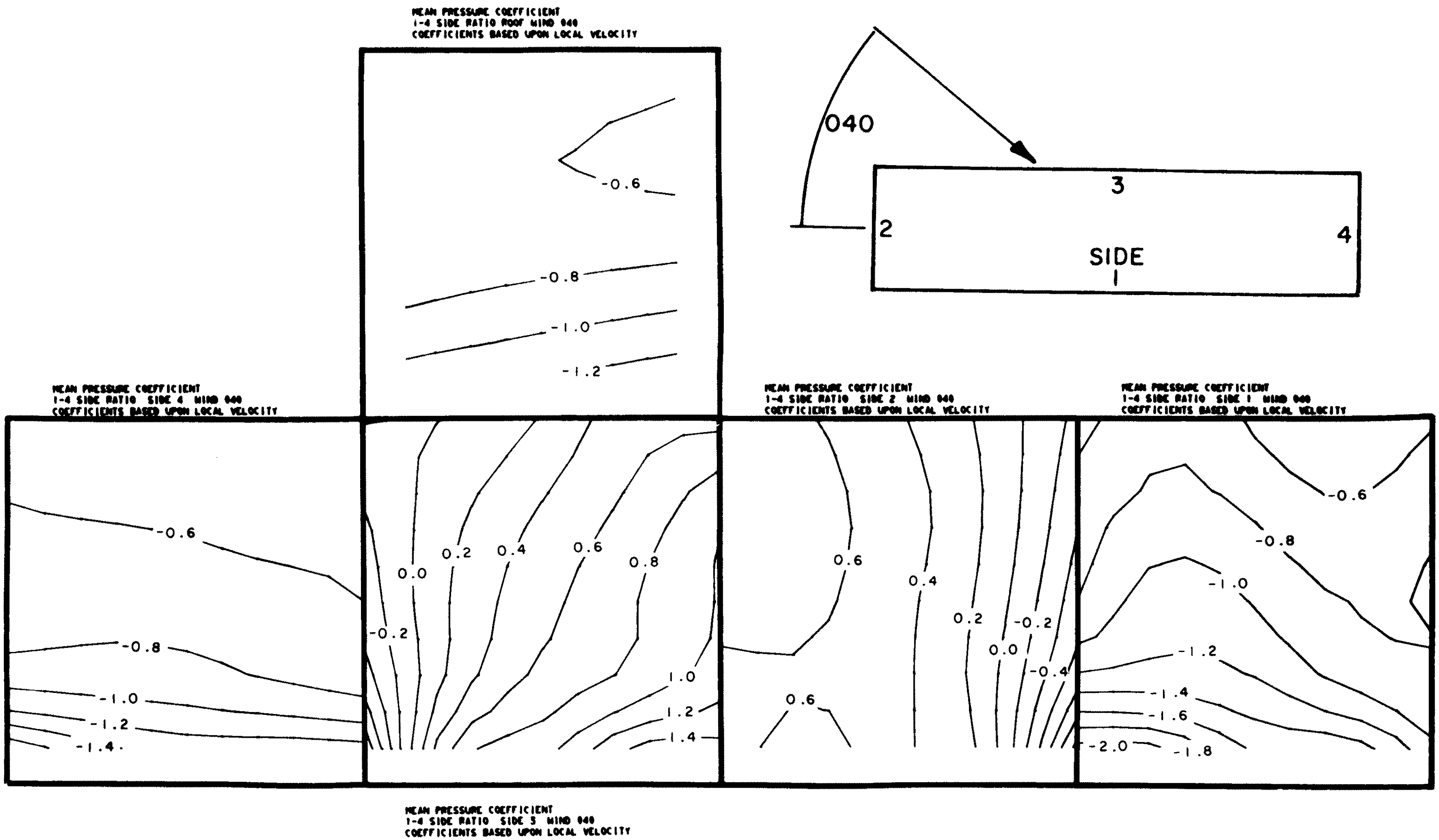


Figure B13. $C_{pmean}, \overline{\beta}, \overline{p}$, $\alpha = 40$, $\gamma = 0.25$

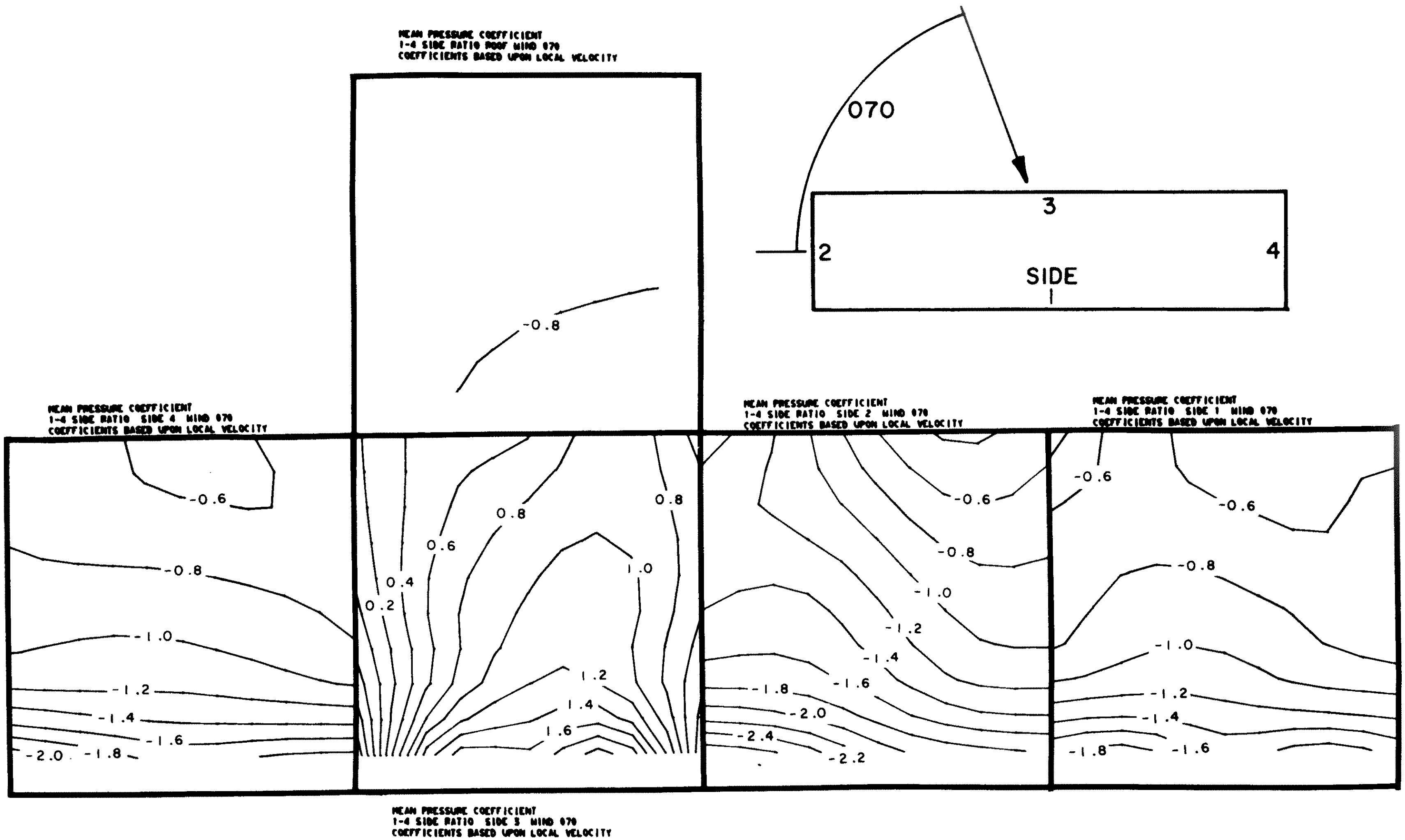


Figure B14. C_{pmean}, $\overline{\beta}$, $\overline{p}$, α = 70, γ = 0.25

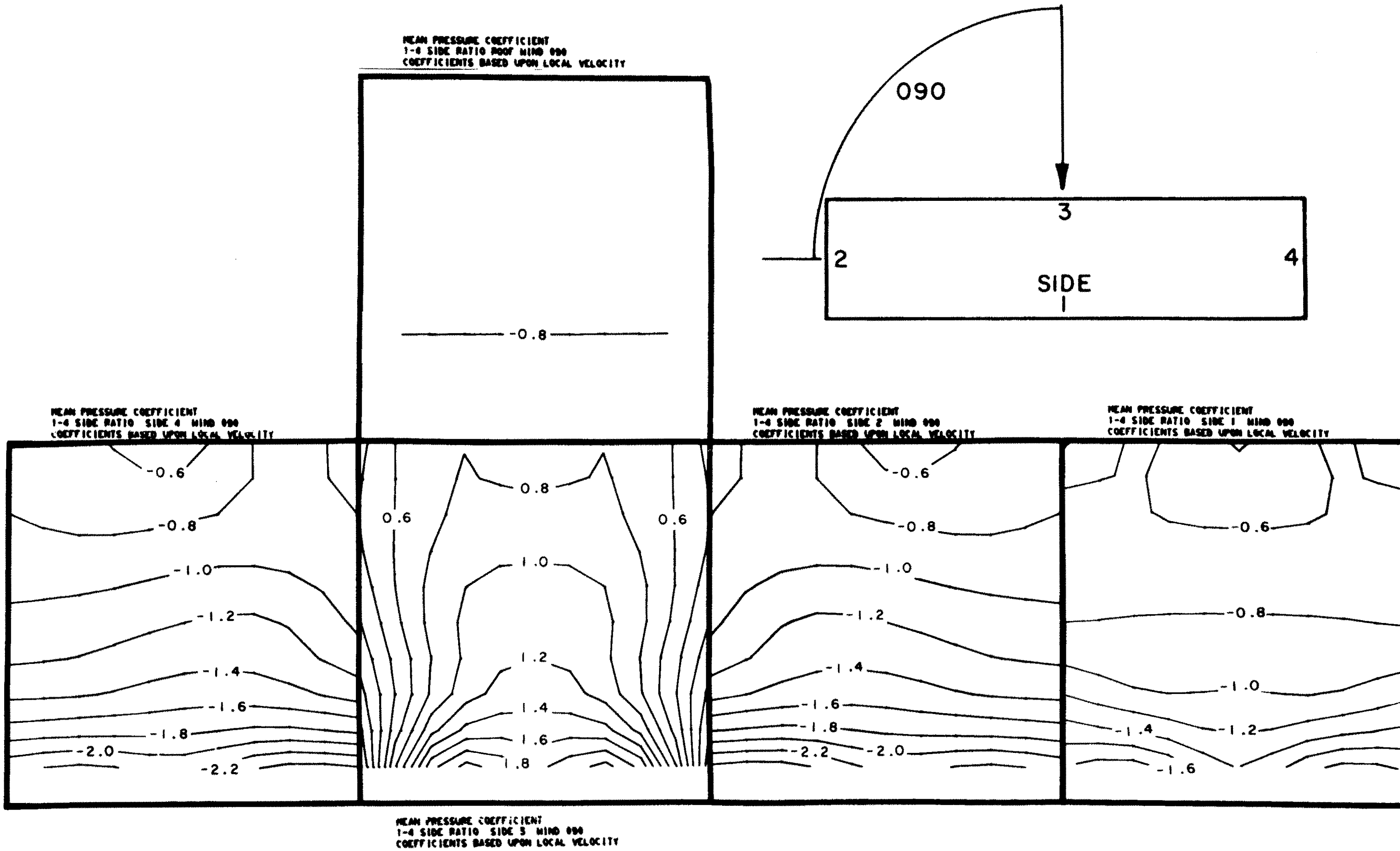


Figure B15. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\alpha = 90$, $\gamma = 0.25$

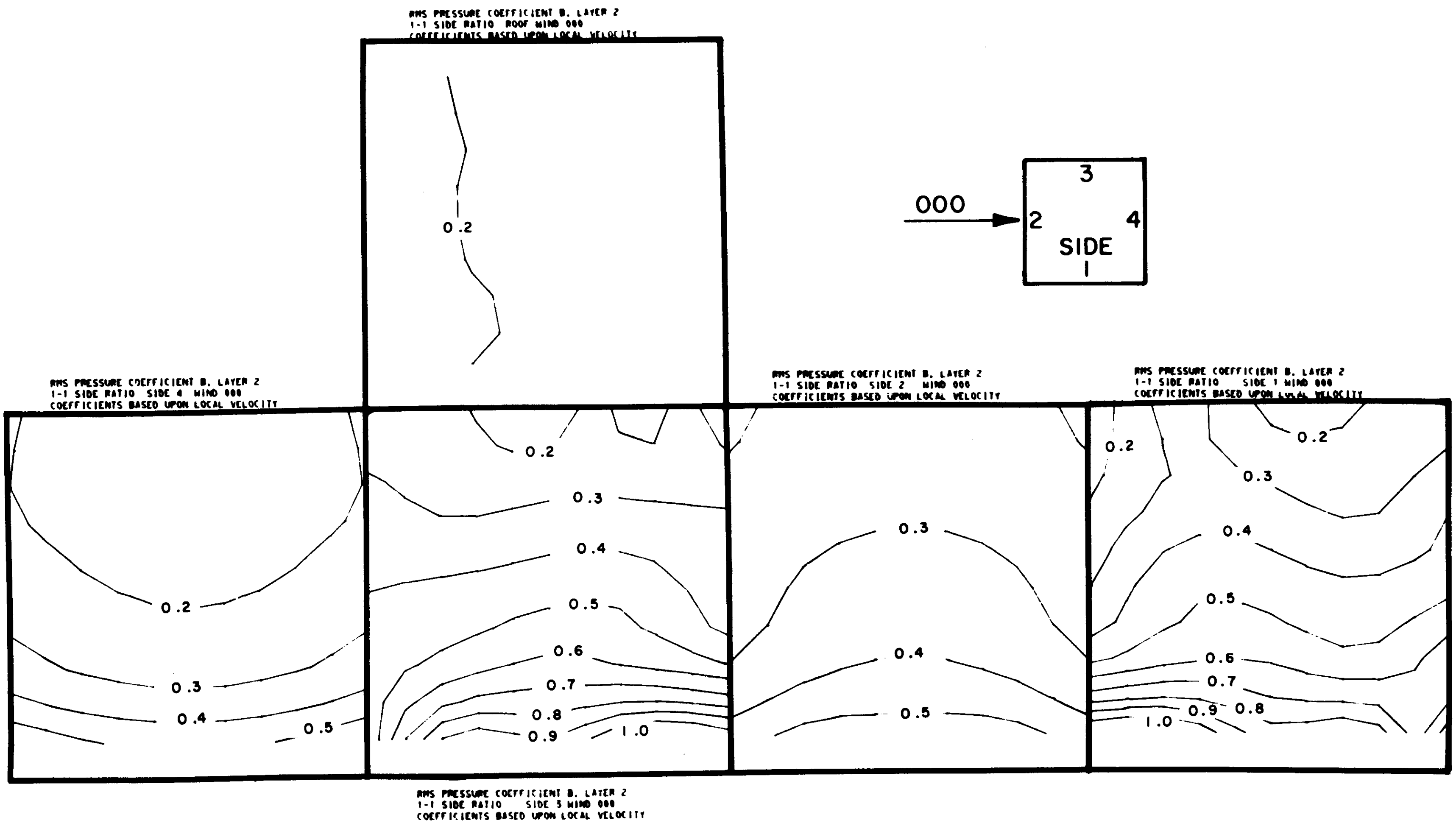


Figure B16. $C_{prms,\ \overline{\beta}}$, $\alpha = 0$, $\gamma = 1.0$, Boundary Layer 2

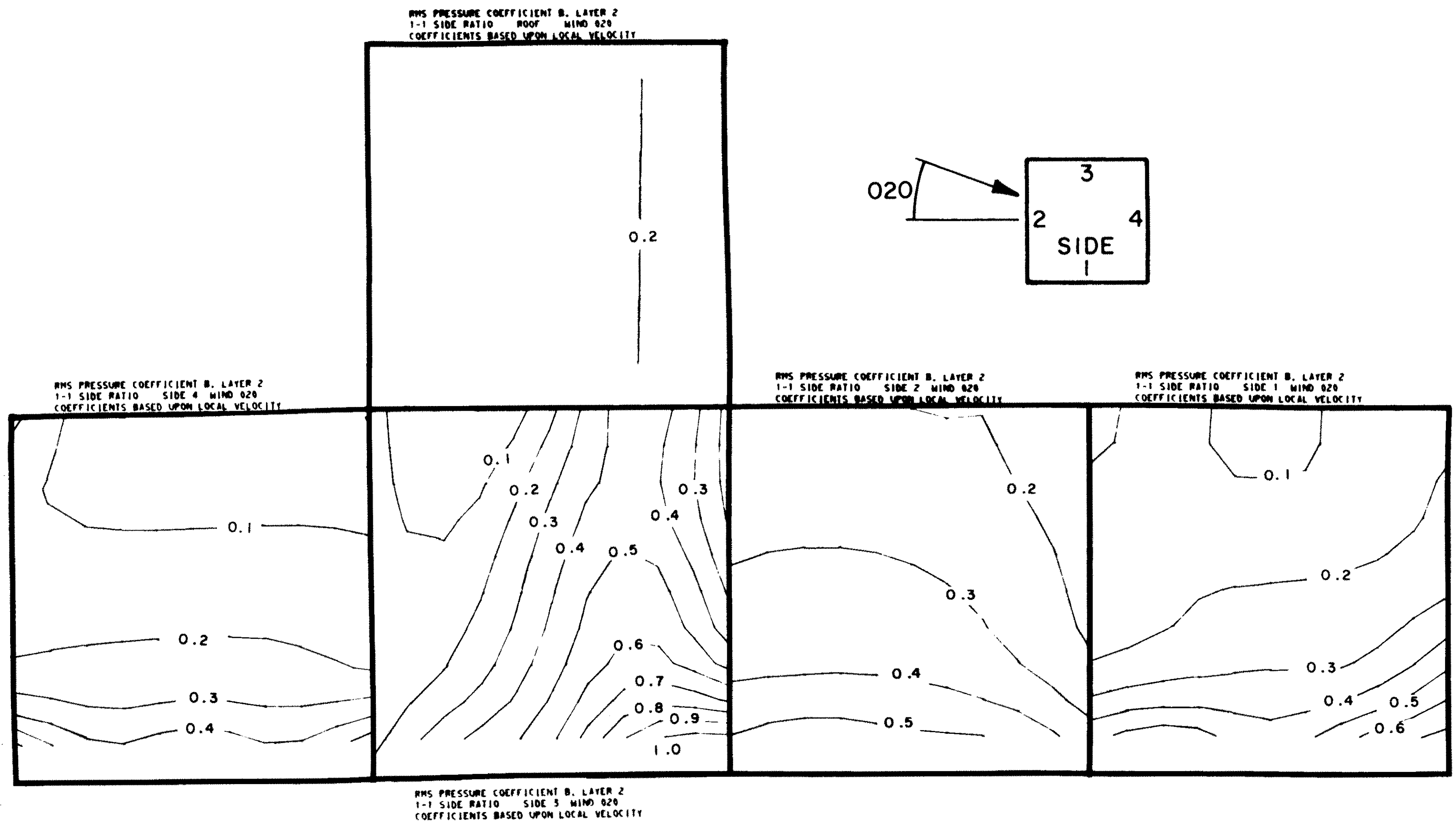


Figure B17. $C_{prms,\ \overline{\beta}}$, α = 20, γ = 1.0, Boundary Layer 2

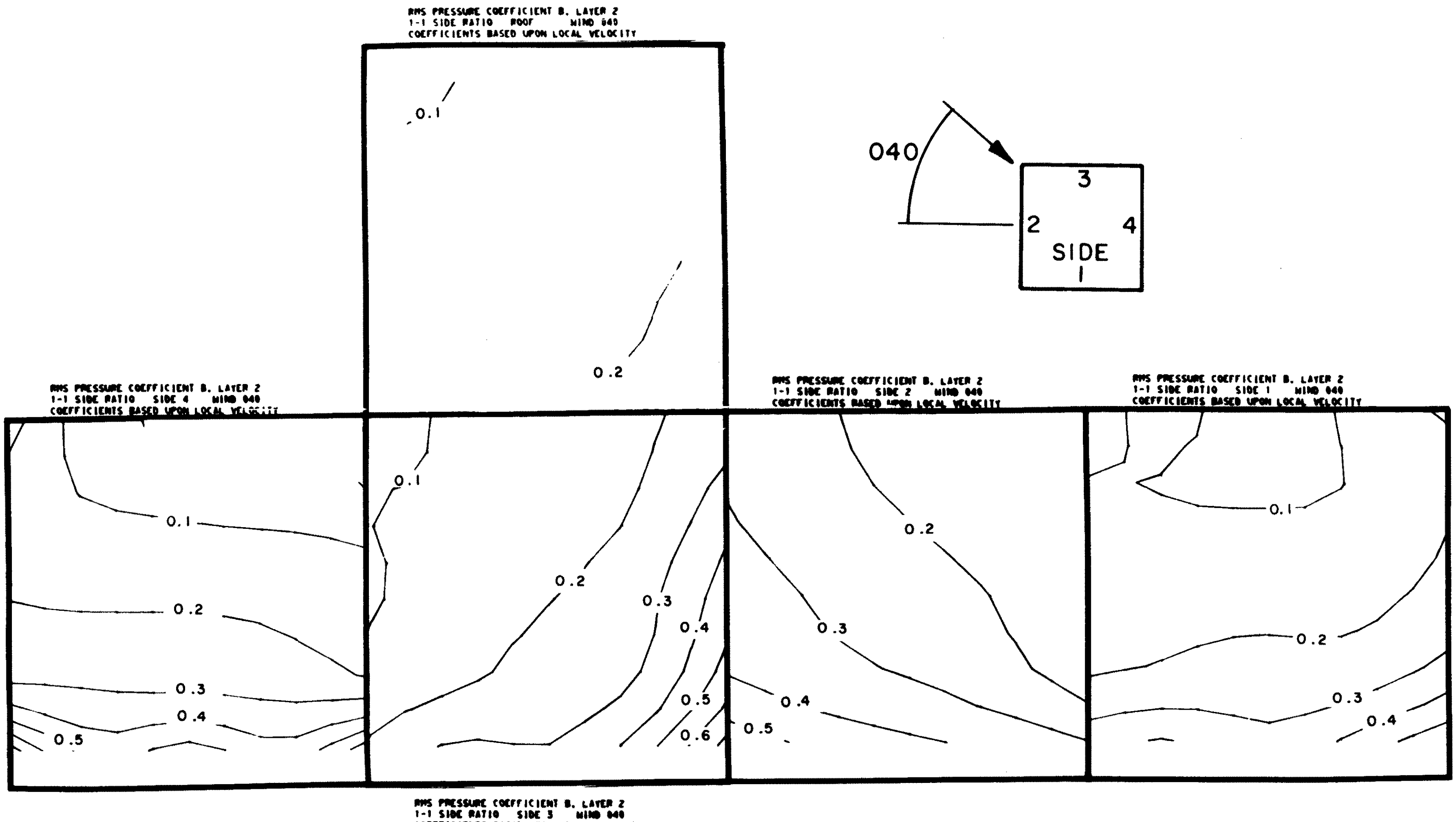


Figure B18. $C_{prms,\ \overline{\beta}}$, α = 40, γ = 1.0, Boundary Layer 2

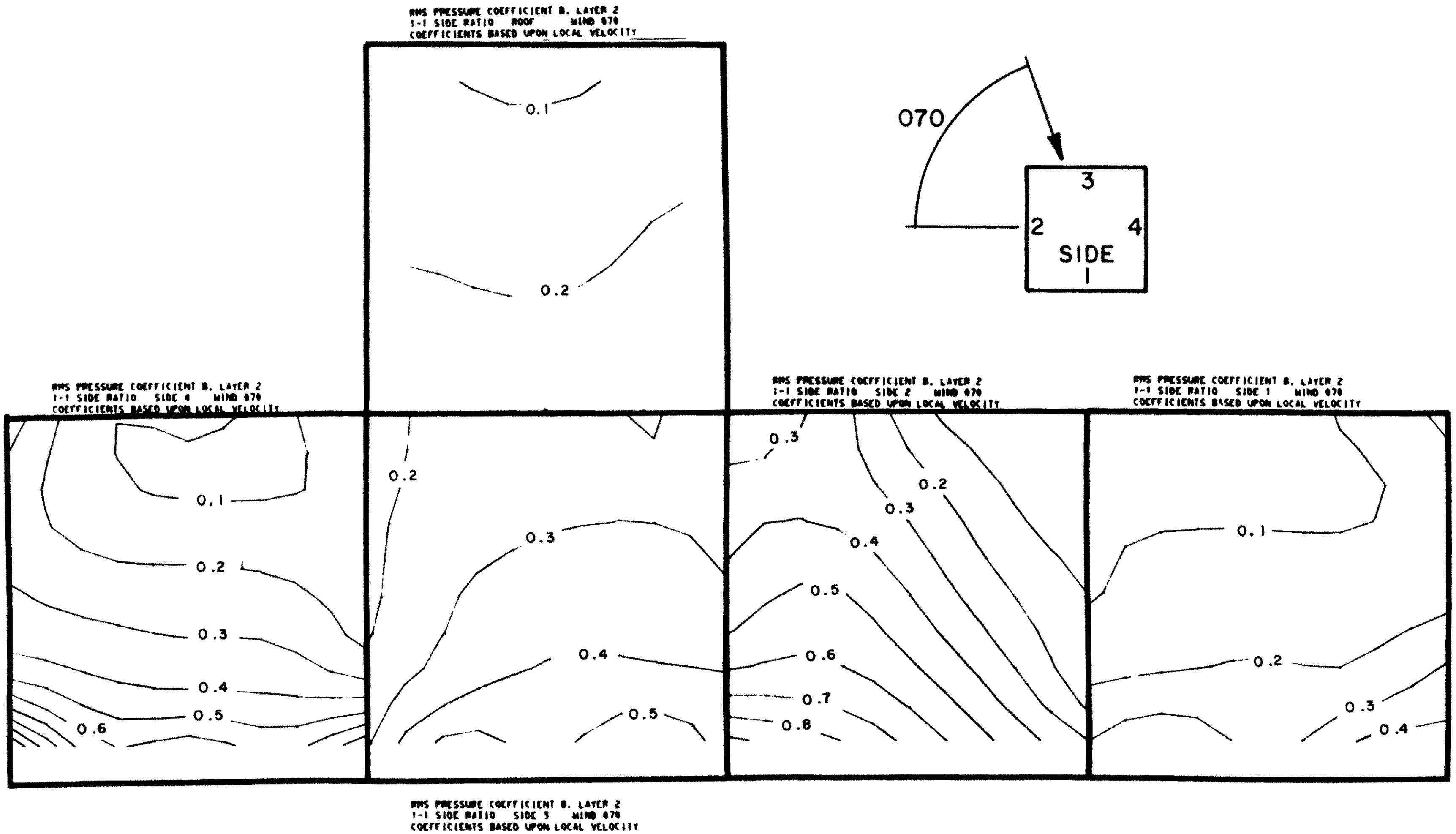


Figure B19. $C_{prms,\ \overline{\beta}}$, α = 70, γ = 1.0, Boundary Layer 2

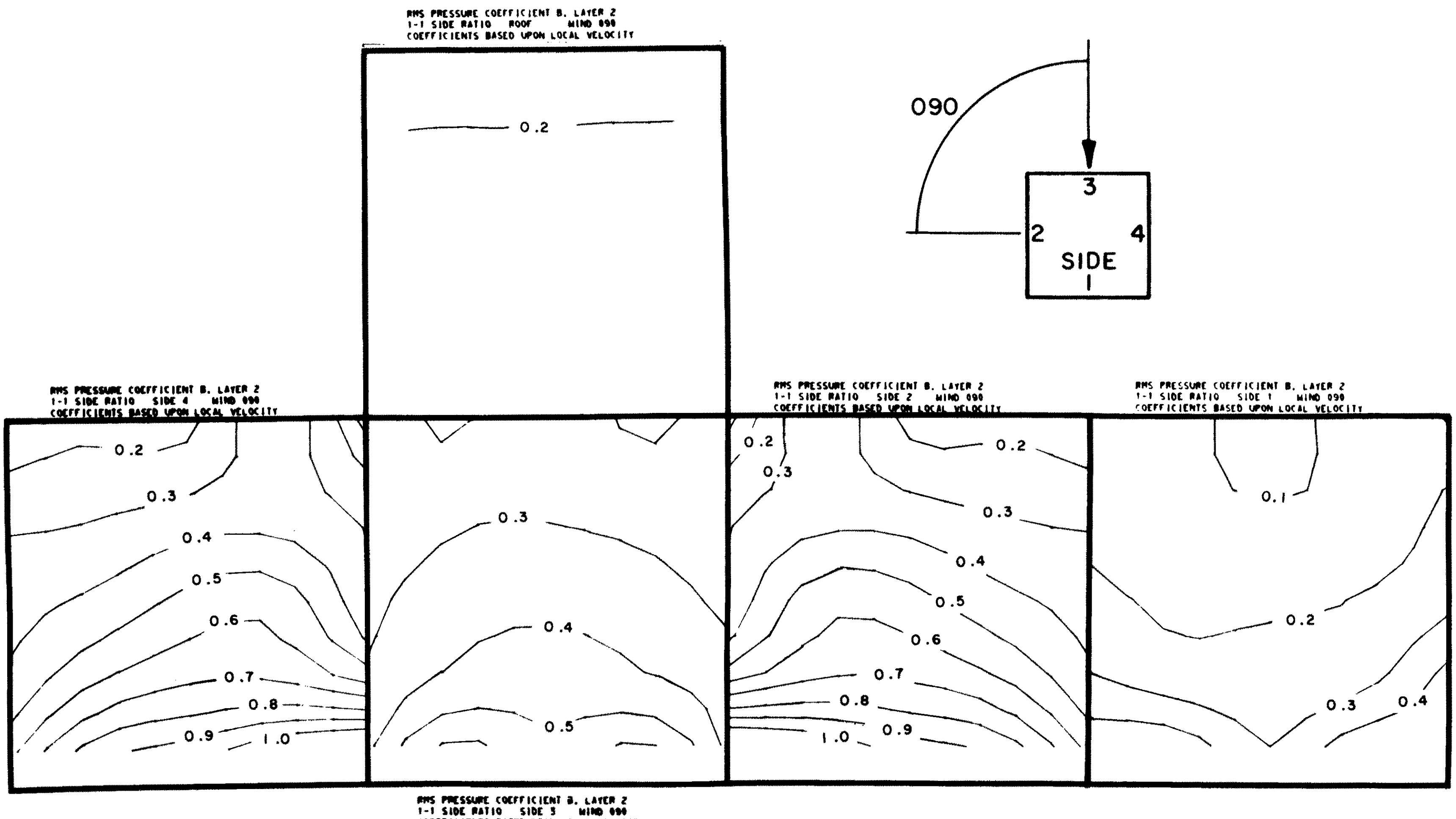


Figure B20. $C_{prms, \overline{\beta}}$, α = 90, γ = 1.0, Boundary Layer 2

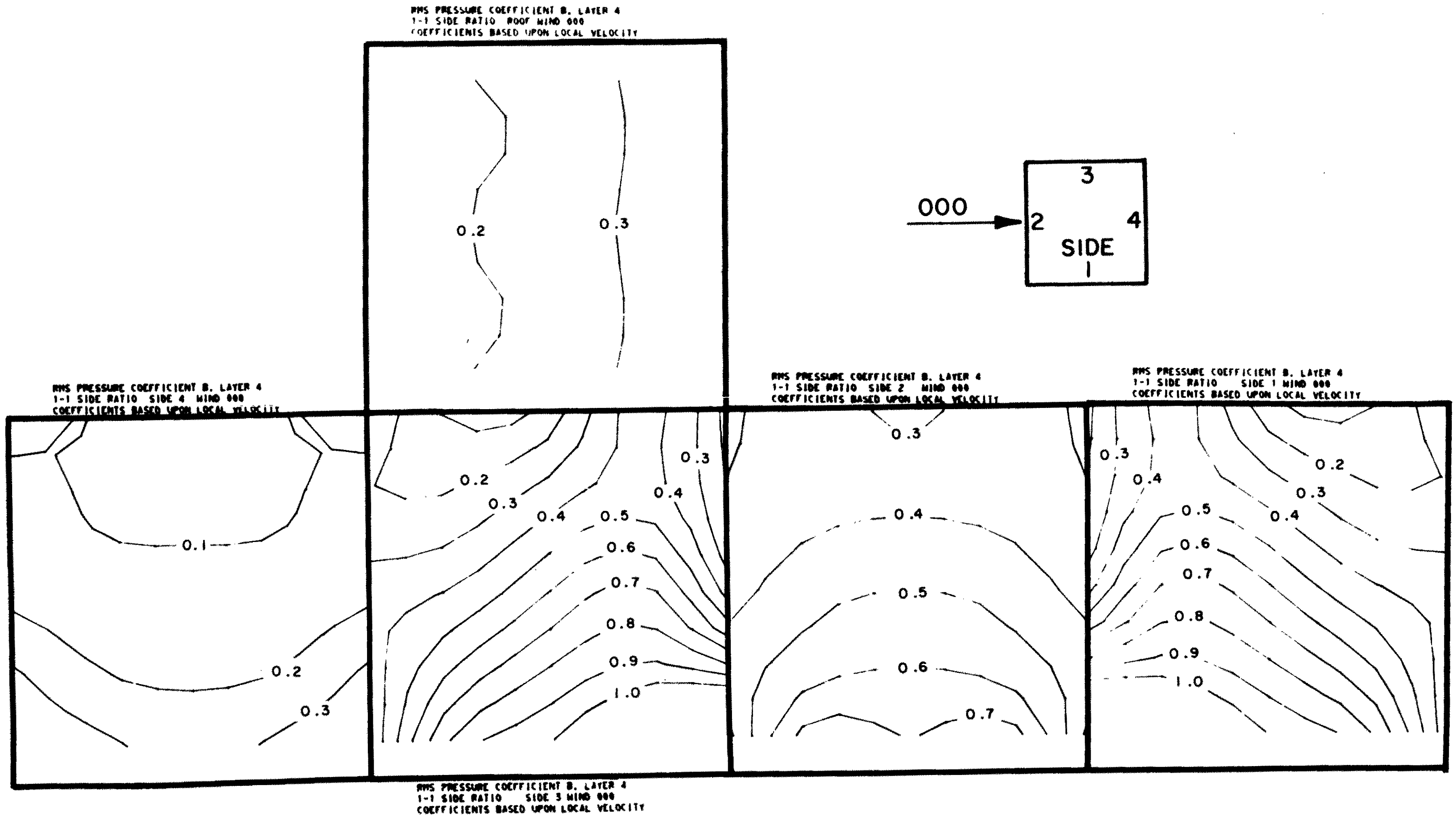


Figure B 21. C_{prms}, $\overline{\beta}$, $\alpha = 0$, $\gamma = 1.0$, Boundary Layer 4

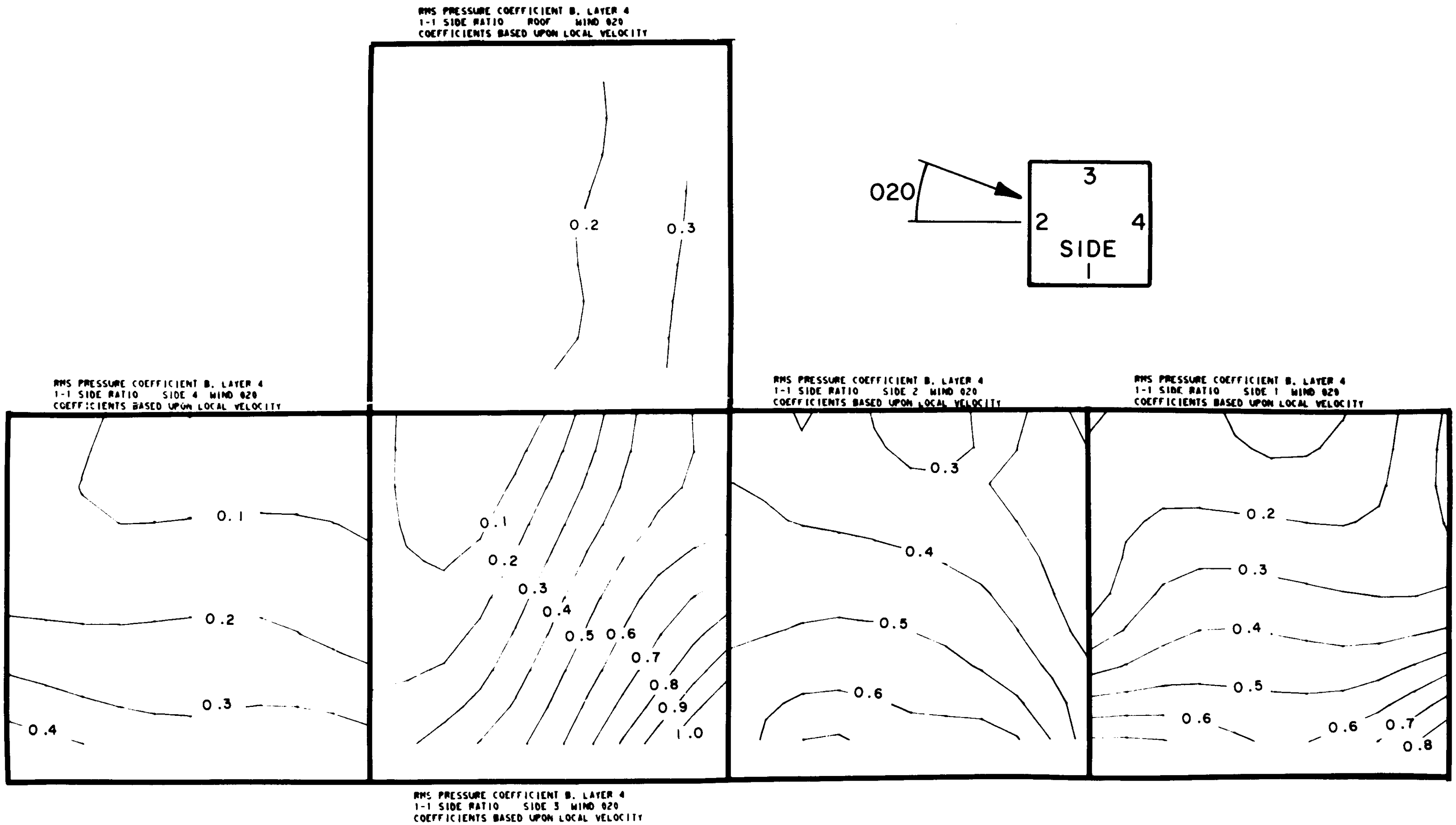


Figure B22. $C_{prms, \bar{\beta}}$, α = 20, γ = 1.0, Boundary Layer 4

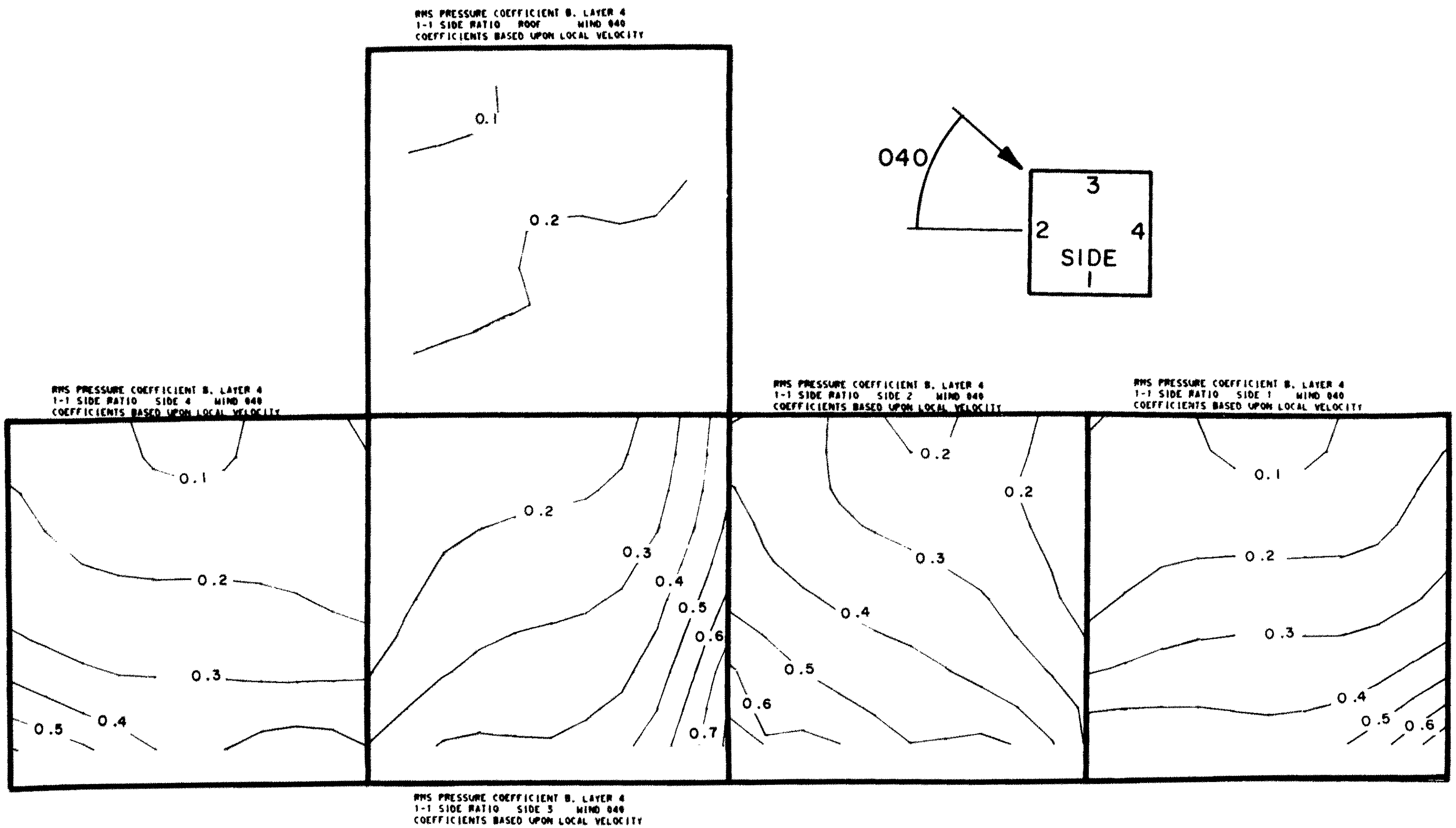


Figure B23. $C_{prms, \overline{\beta}}$, $\alpha = 40$, $\gamma = 1.0$, Boundary Layer 4

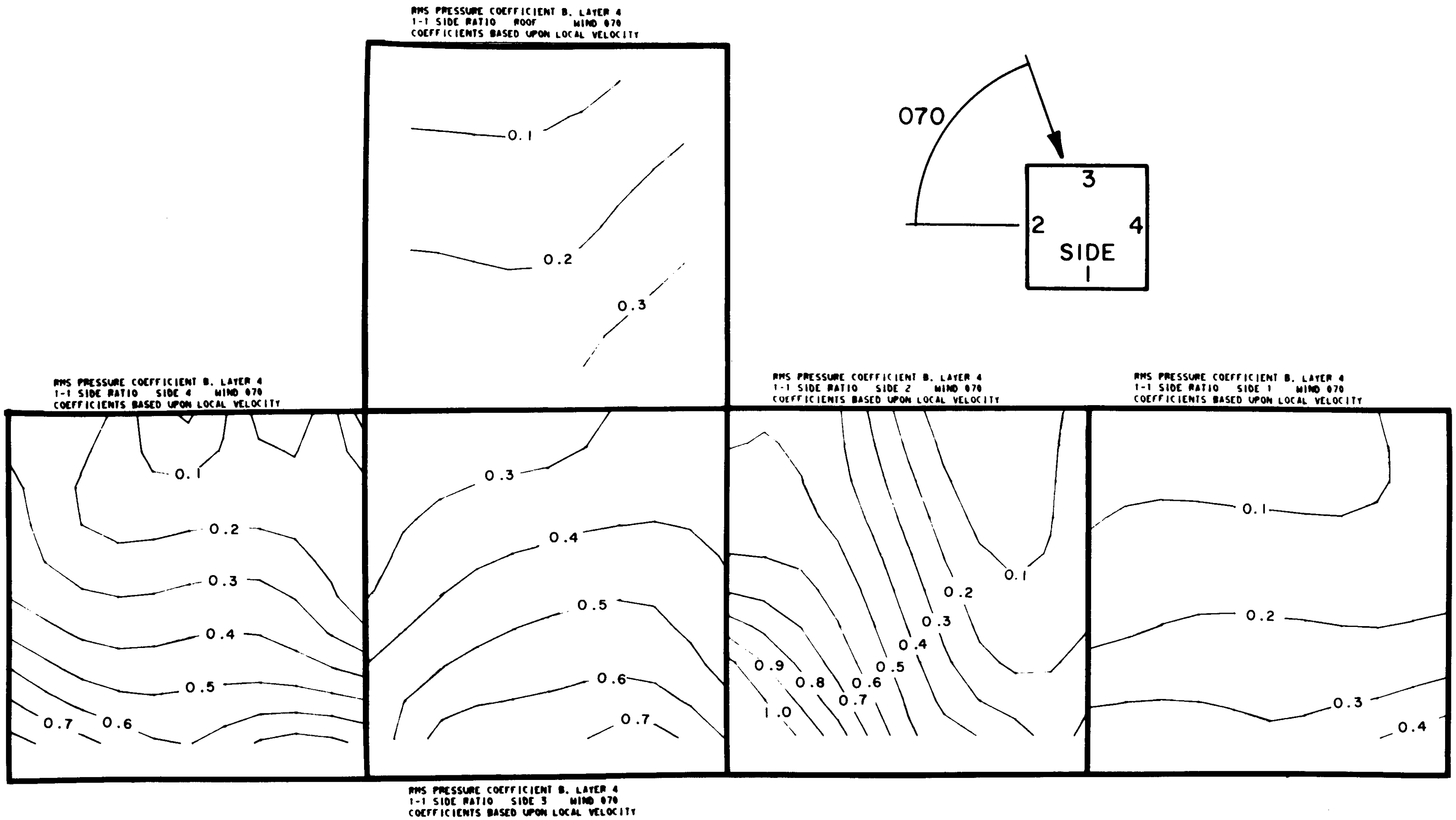


Figure B24. $C_{prms, \overline{\beta}}$, α = 70, γ = 1.0, Boundary Layer 4

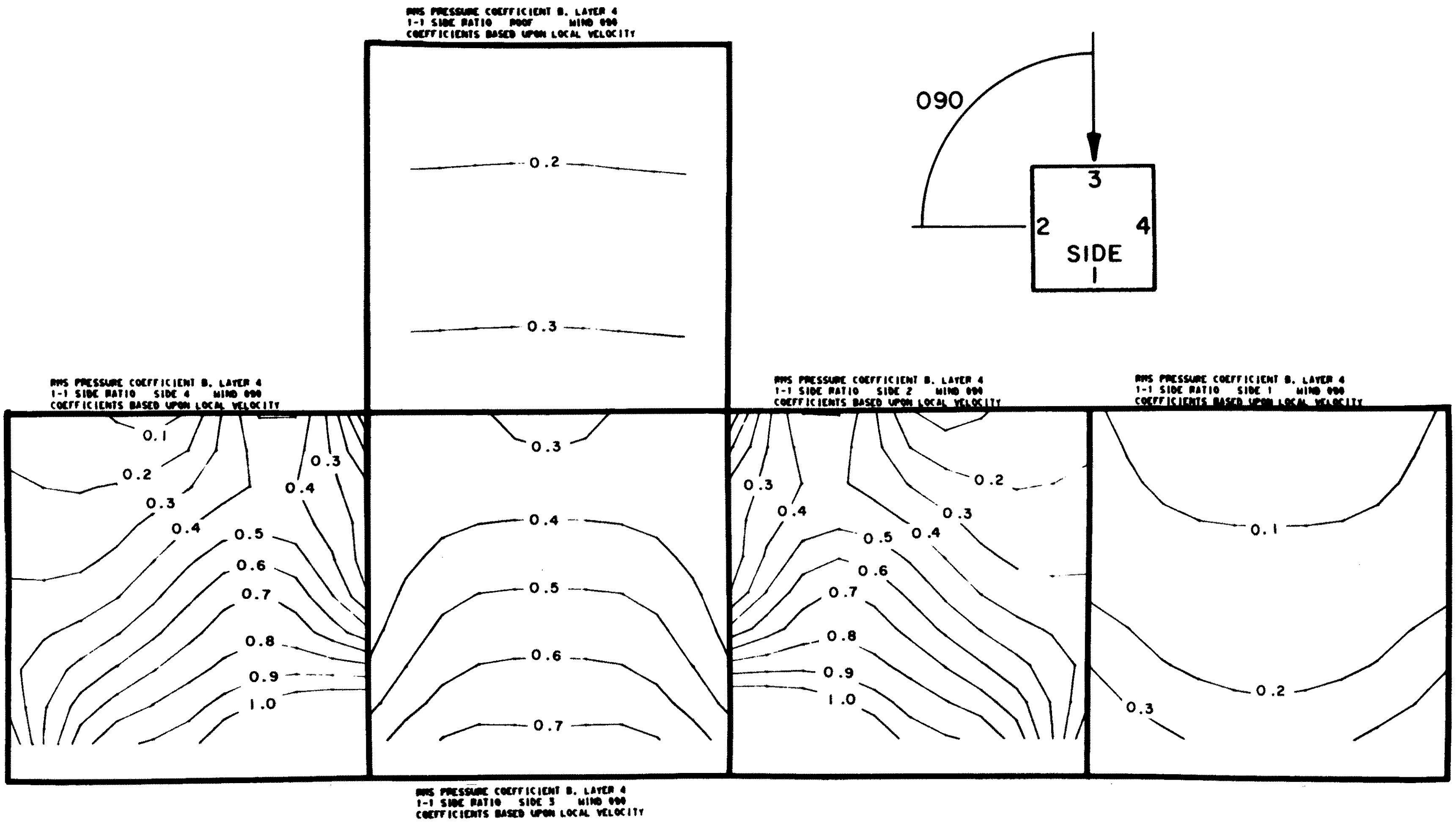


Figure B25. $C_{prms, \overline{\beta}}$, α = 90, γ = 1.0, Boundary Layer 4

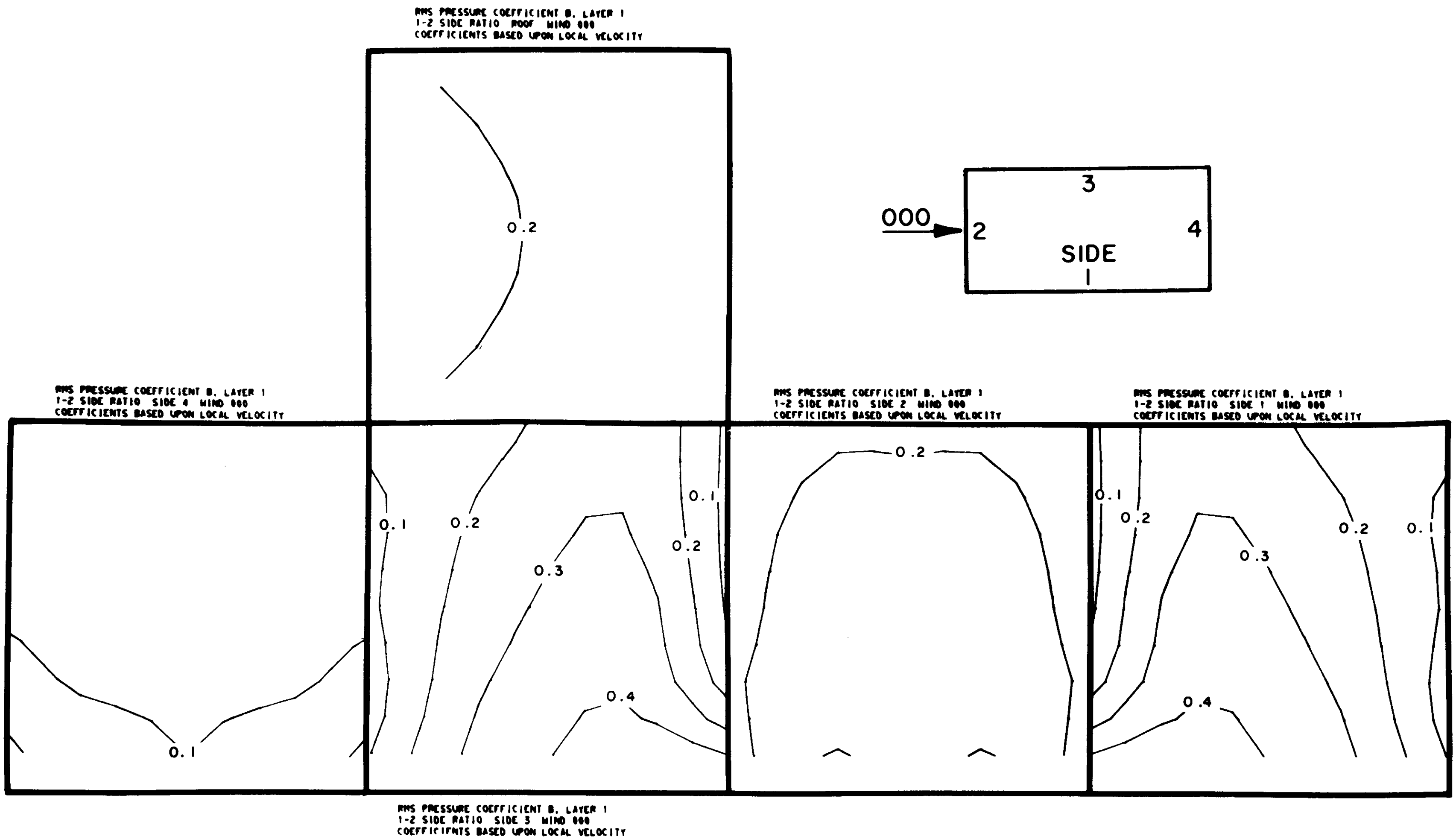


Figure B26. $C_{prms, \overline{\beta}}$, $\alpha = 0$, $\gamma = 0.5$, Boundary Layer 1

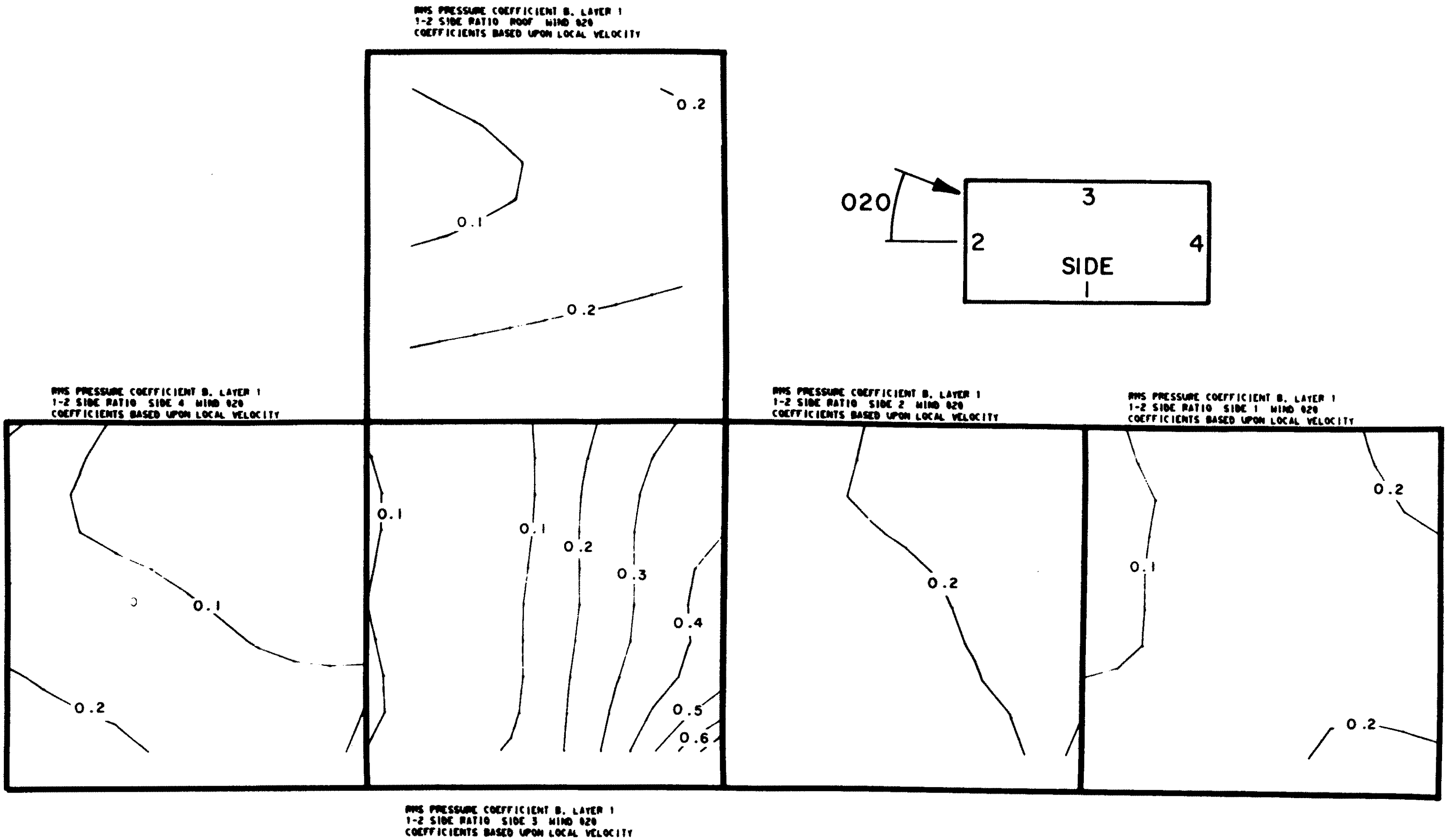


Figure B27. C_{prms}, $\overline{\beta}$, α = 20, γ = 0.5, Boundary Layer 1

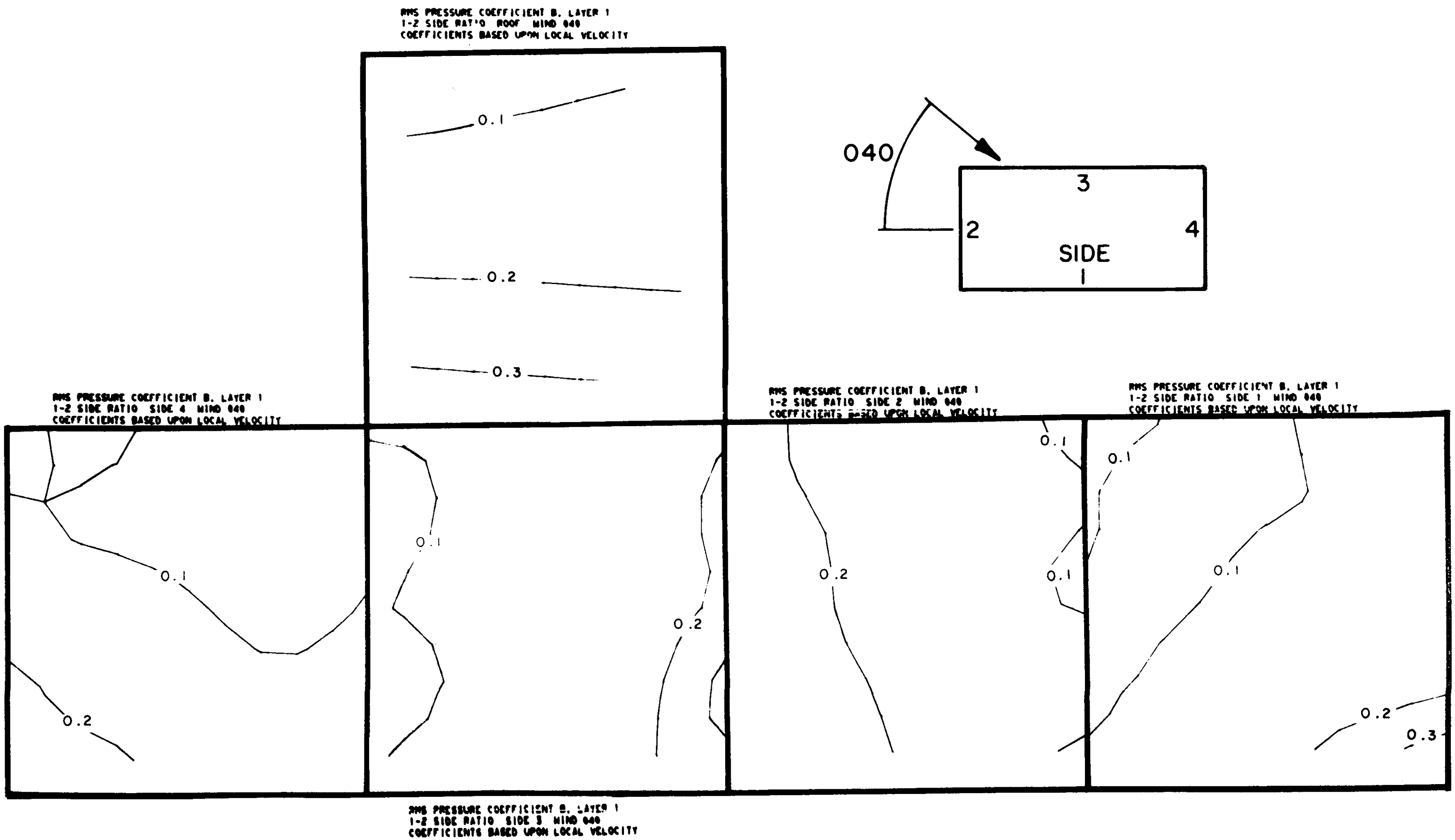


Figure B28. $C_{prms,\ \overline{\beta}}$, α = 40, γ = 0.5, Boundary Layer 1

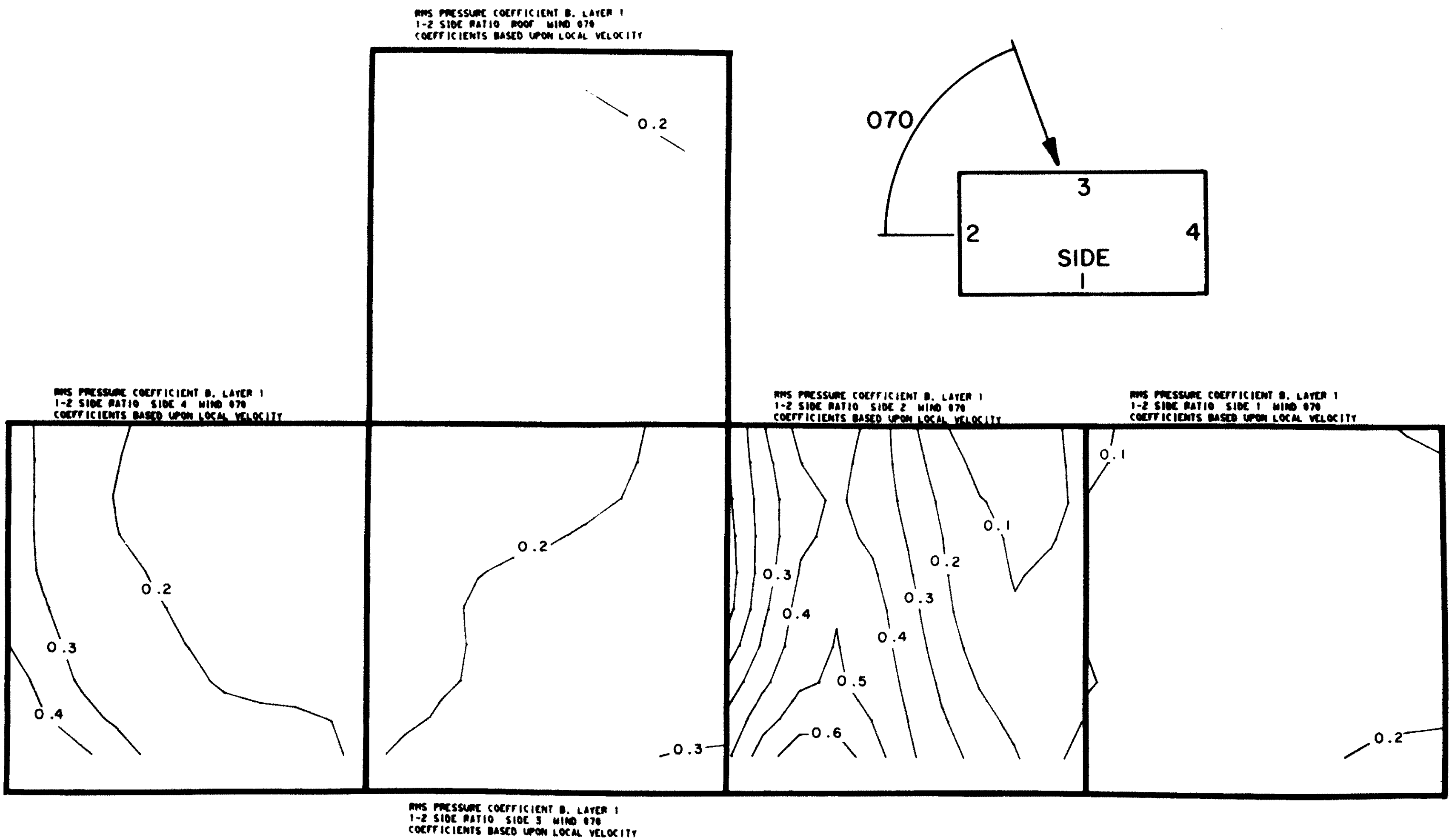


Figure B29. $C_{prms, \bar{\beta}}$, $\alpha = 70$, $\gamma = 0.5$, Boundary Layer 1

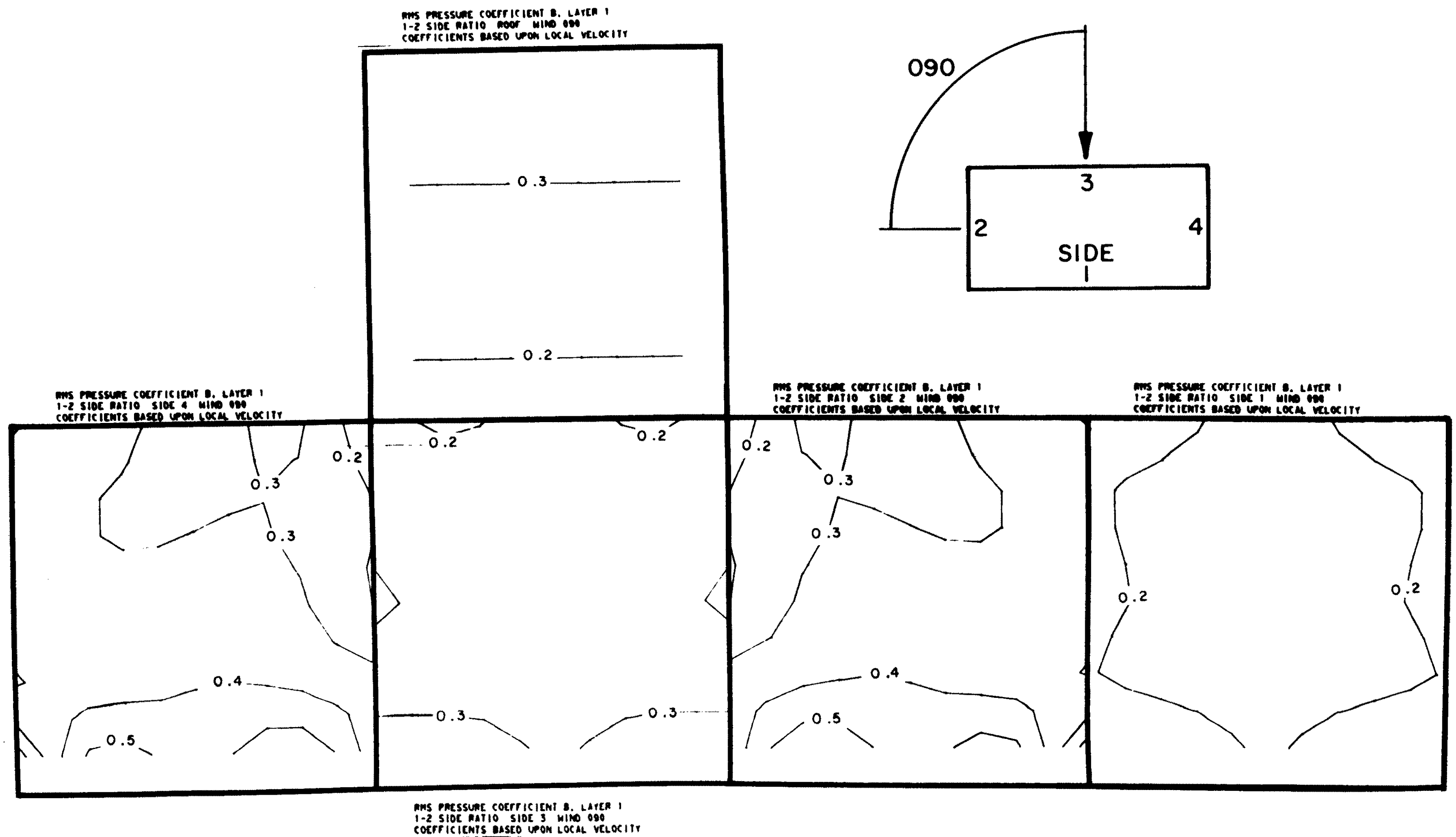


Figure B30. $C_{prms,\ \bar{\beta}}$, α = 90, γ = 0.5, Boundary Layer 1

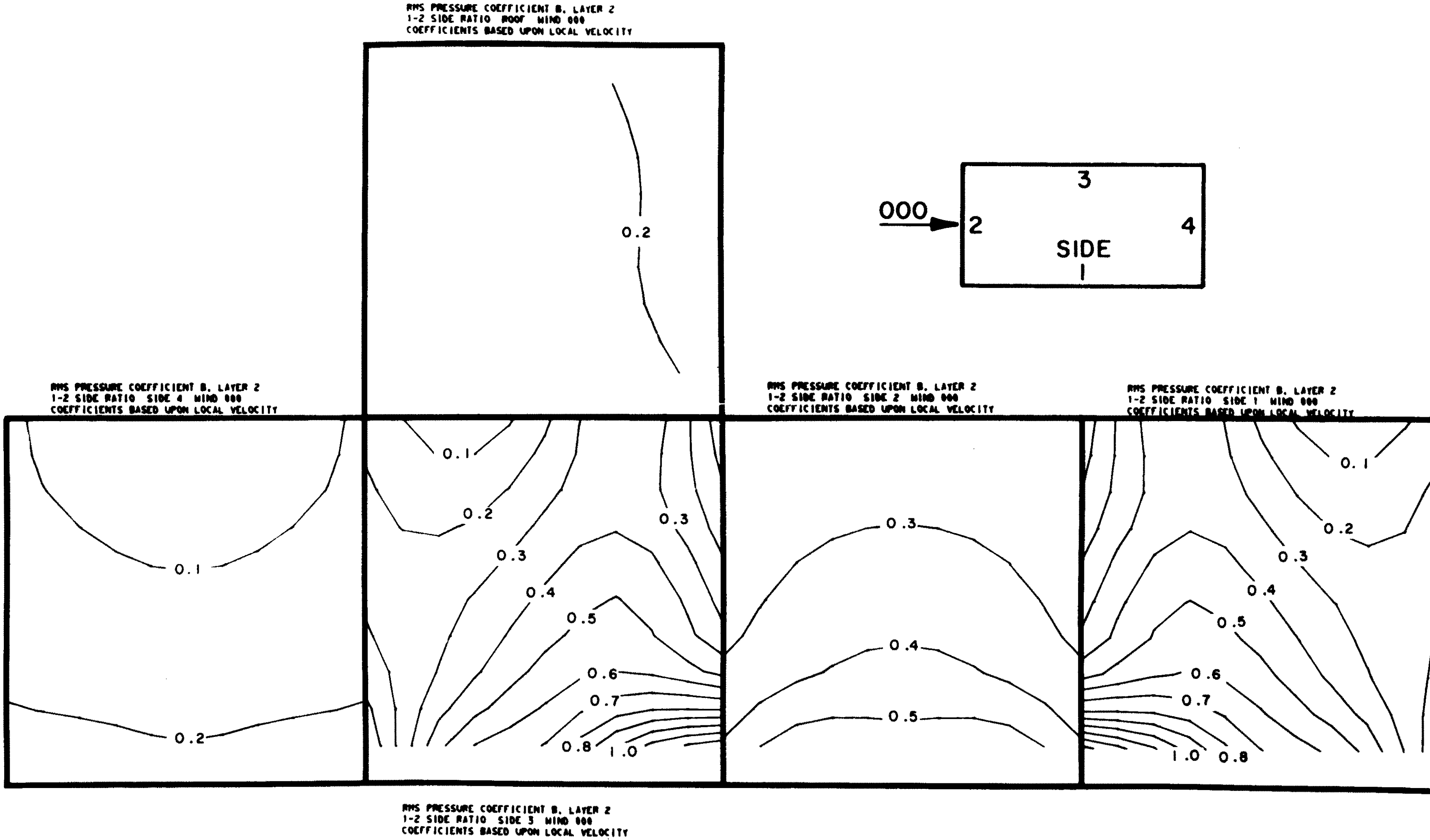


Figure B31. $C_{prms, \overline{\beta}}$, $\alpha = 0$, $\gamma = 0.5$, Boundary Layer 2

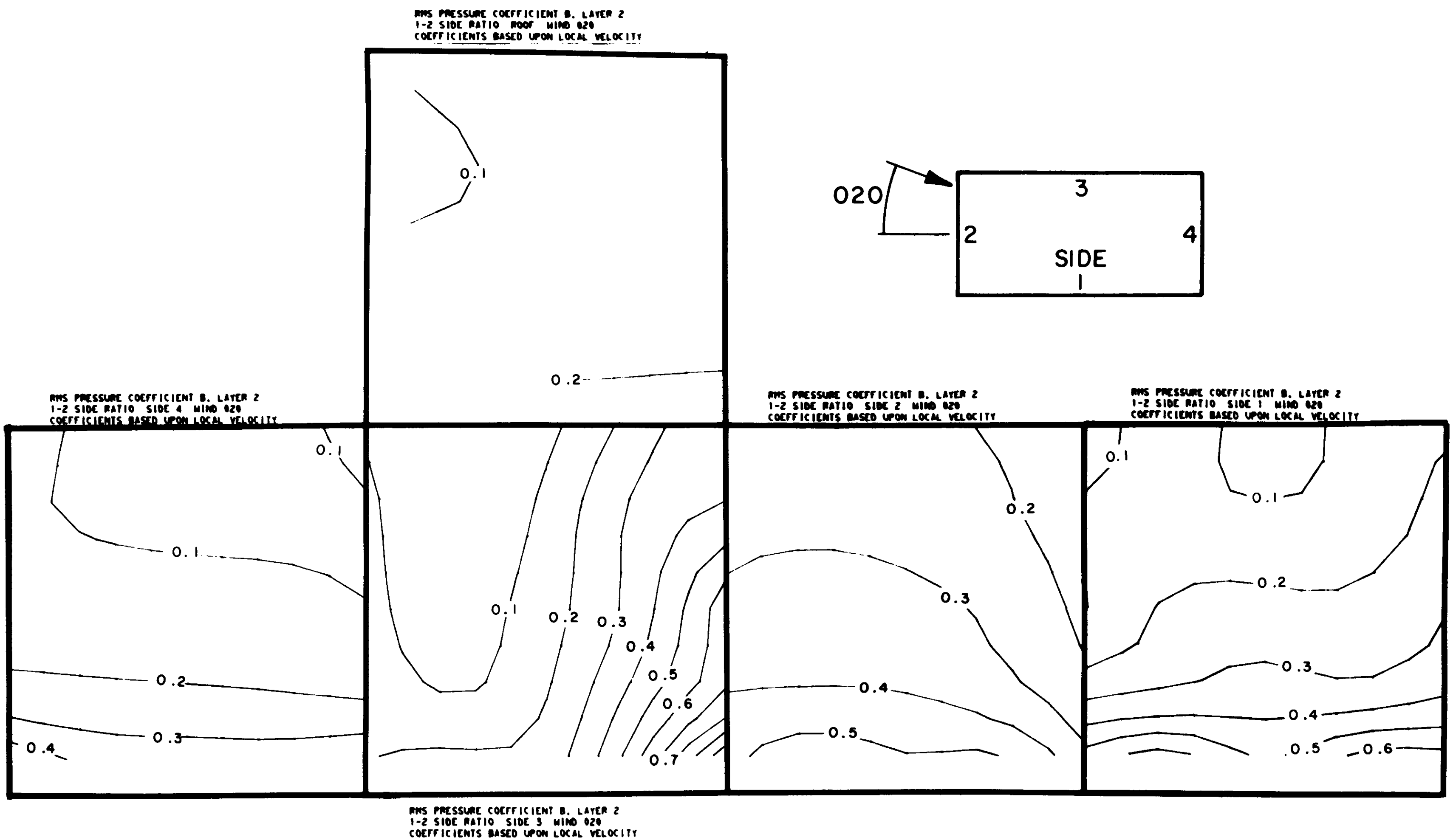


Figure B32. $C_{prms,\ \overline{\beta}}$, α = 20, γ = 0.5, Boundary Layer 2

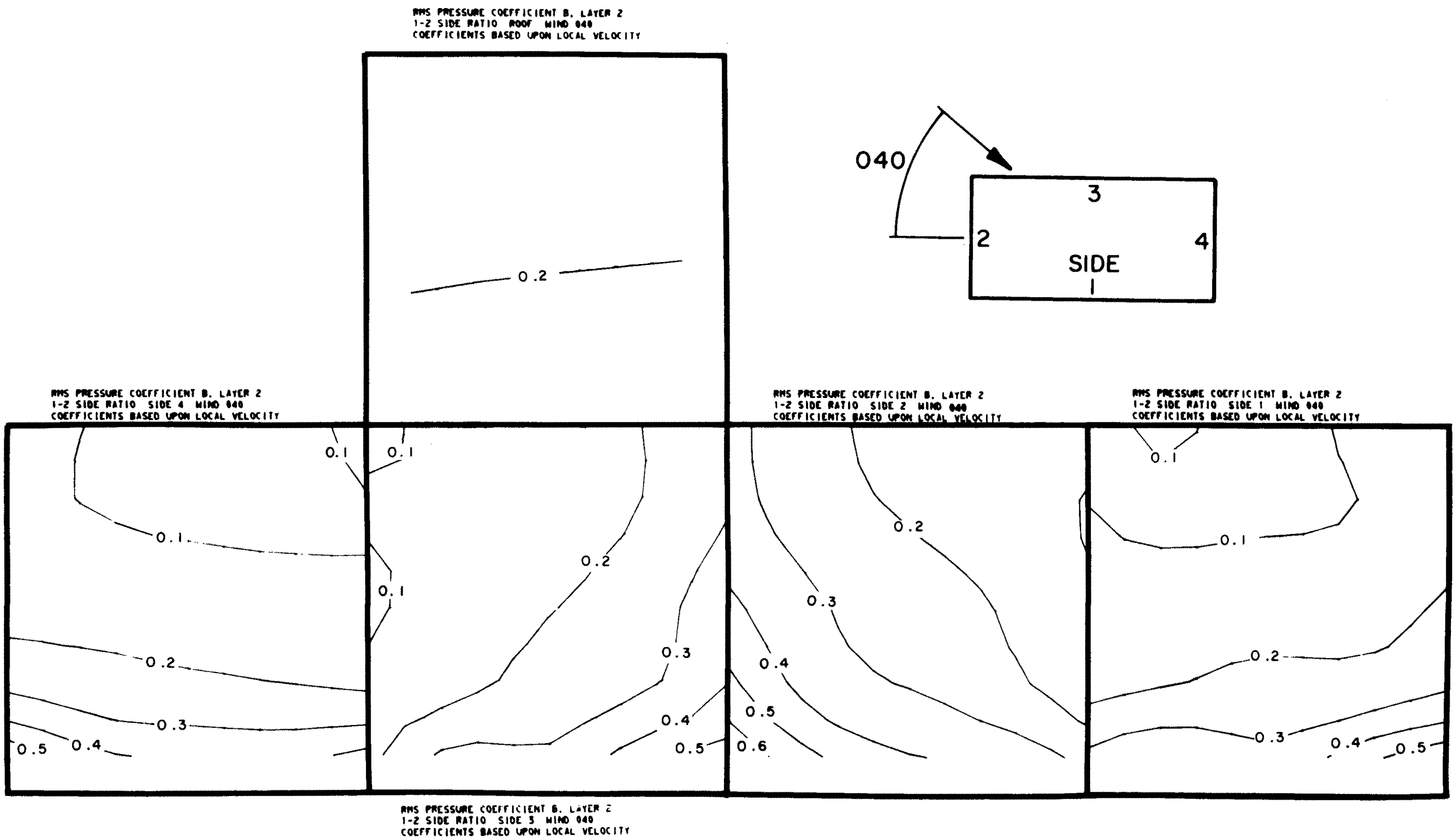


Figure B33. $C_{prms, \overline{\beta}}$, α = 40, γ = 0.5, Boundary Layer 2

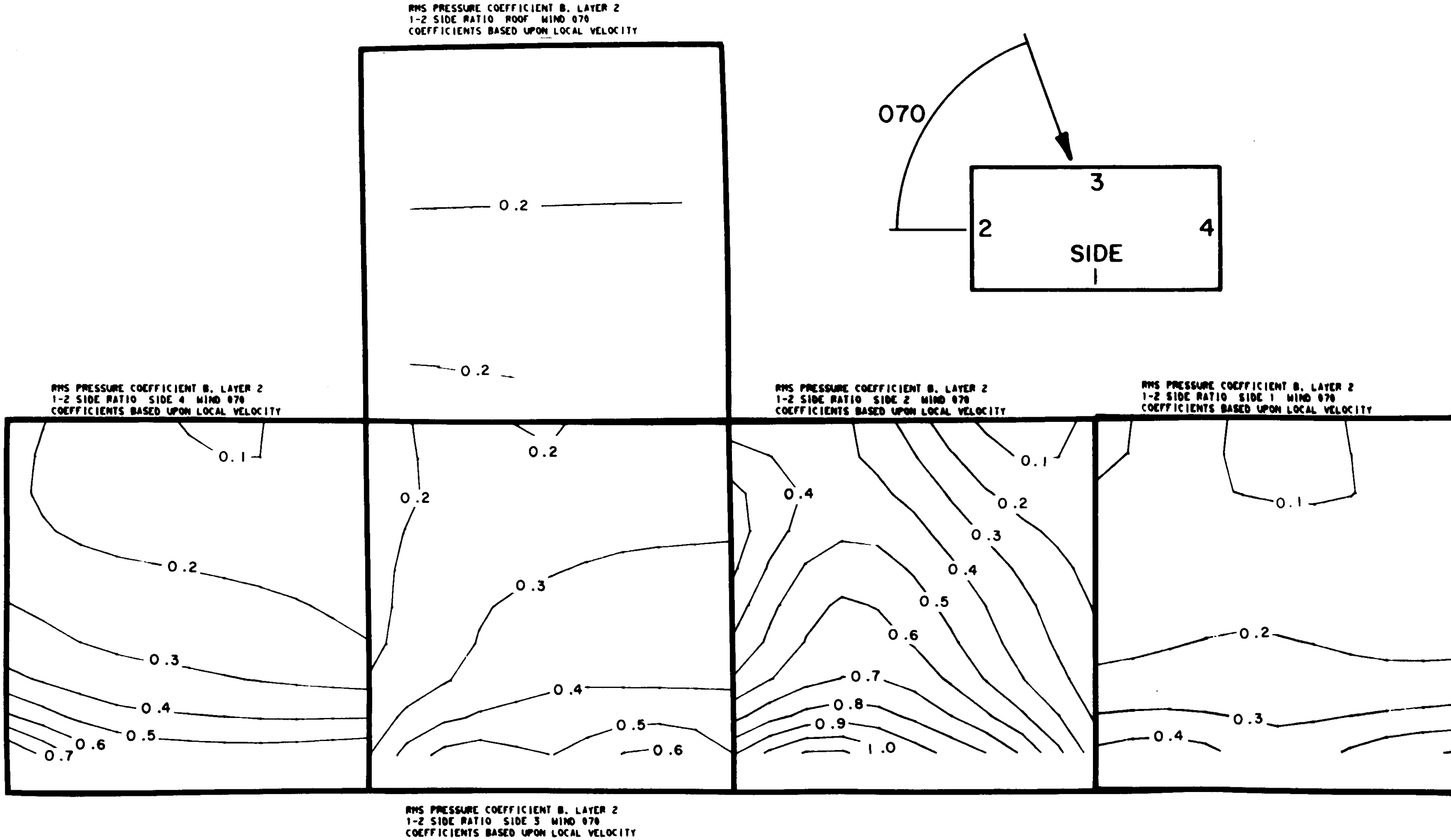


Figure B34. $C_{p_{rms}, \bar{\beta}}$, α = 70, γ = 0.5, Boundary Layer 2

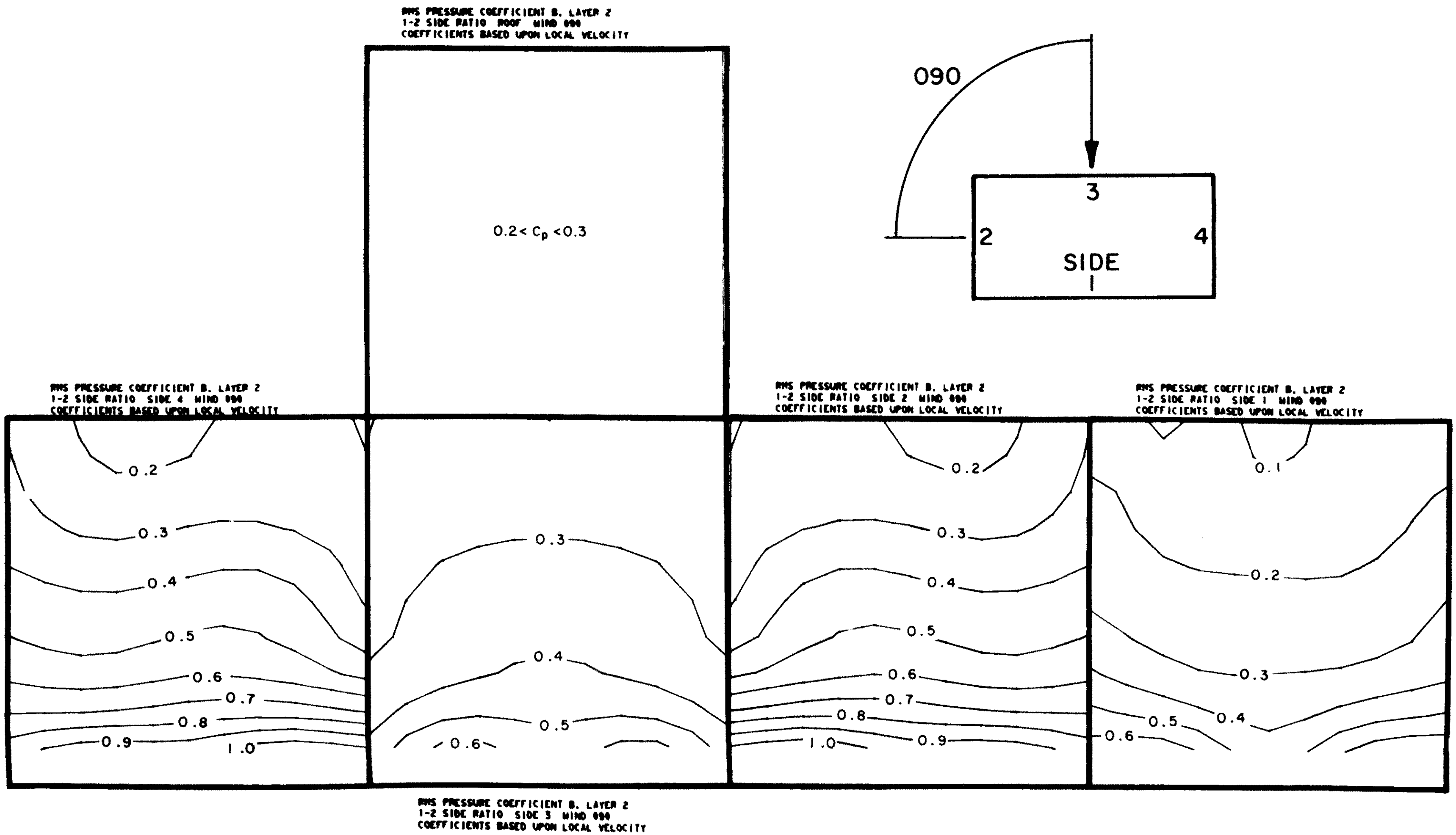


Figure B35. $C_{prms, \bar{\beta}}$, α = 90, γ = 0.5, Boundary Layer 2

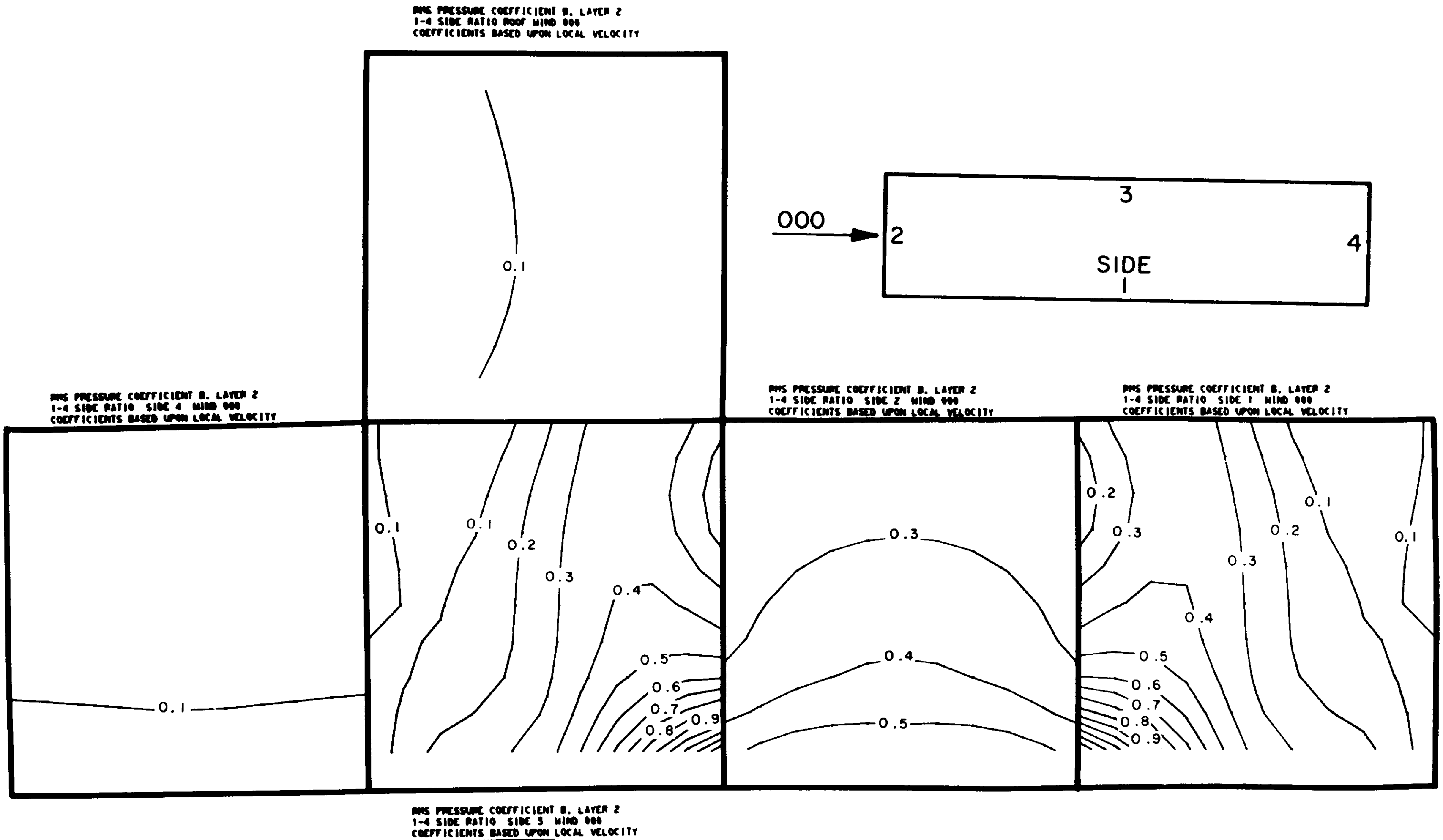


Figure B36. $C_{prms, \overline{\beta}}$, $\alpha = 0$, $\gamma = 0.25$, Boundary Layer 2

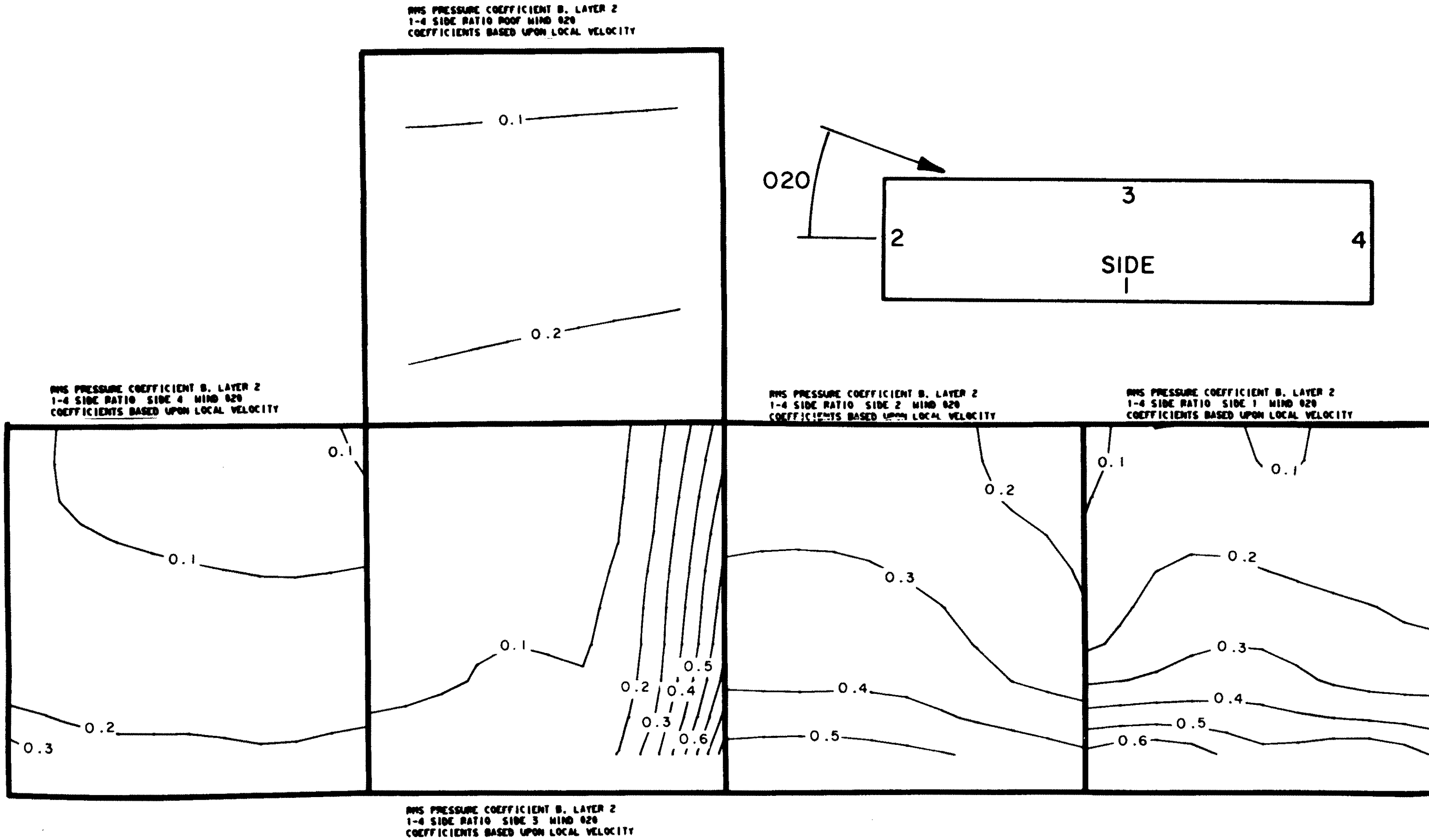


Figure B37. $C_{prms, \overline{\beta}}$, α = 20, γ = 0.25, Boundary Layer 2

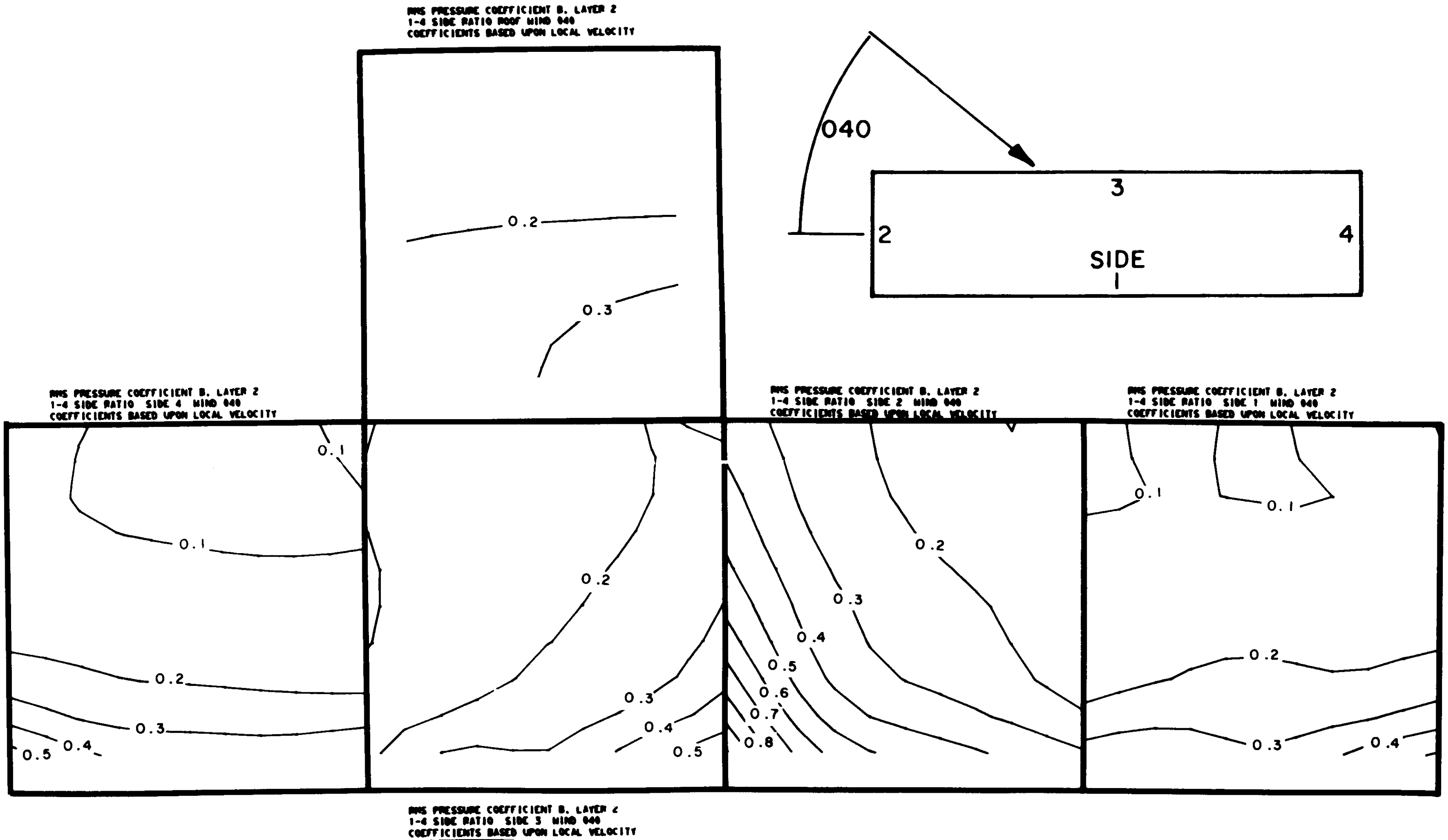


Figure B38. $C_{prms,\ \overline{\beta}}$, α = 40, γ = 0.25, Boundary Layer 2

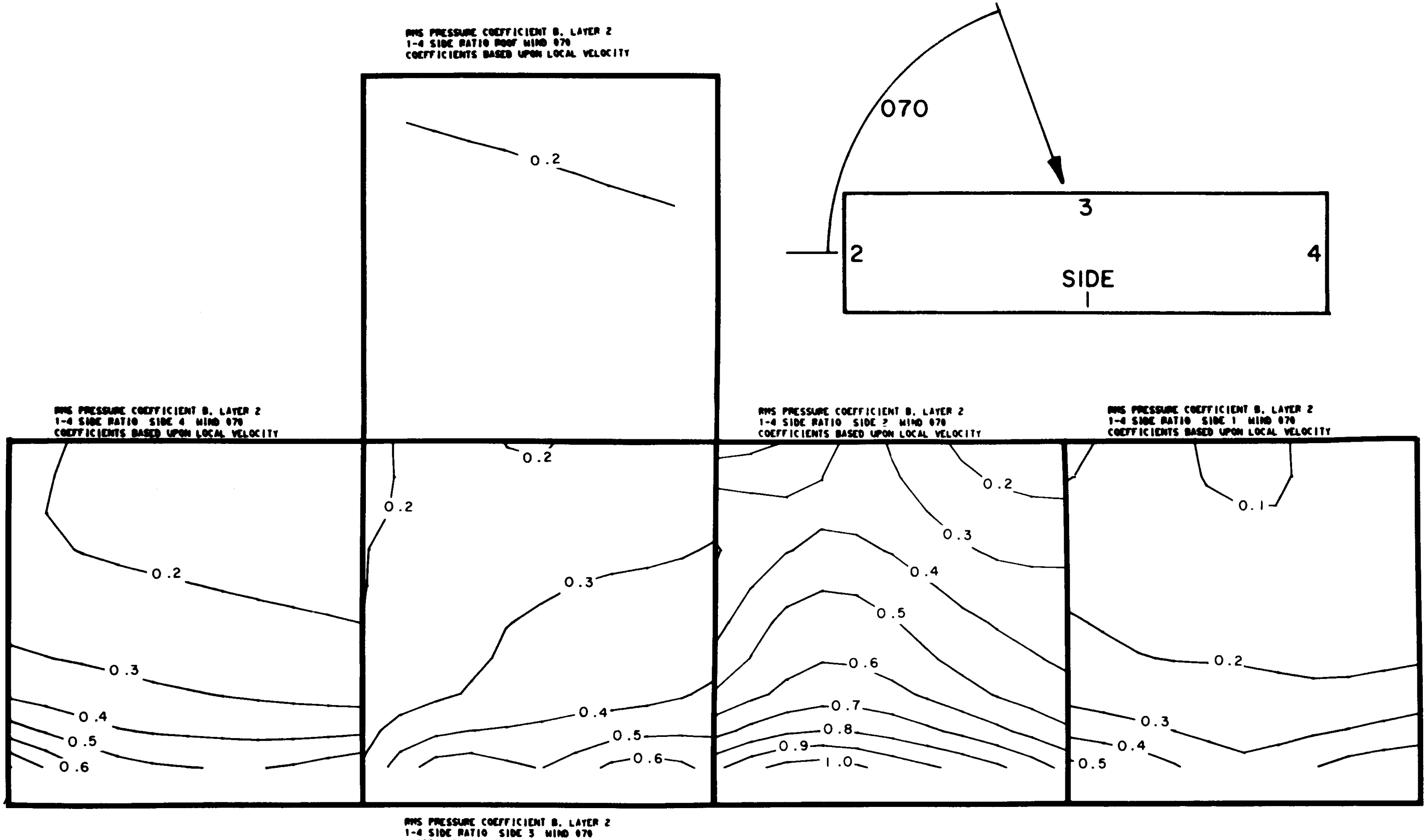


Figure B39. $C_{prms, \bar{\beta}}$, $\alpha = 70$, $\gamma = 0.25$, Boundary Layer 2

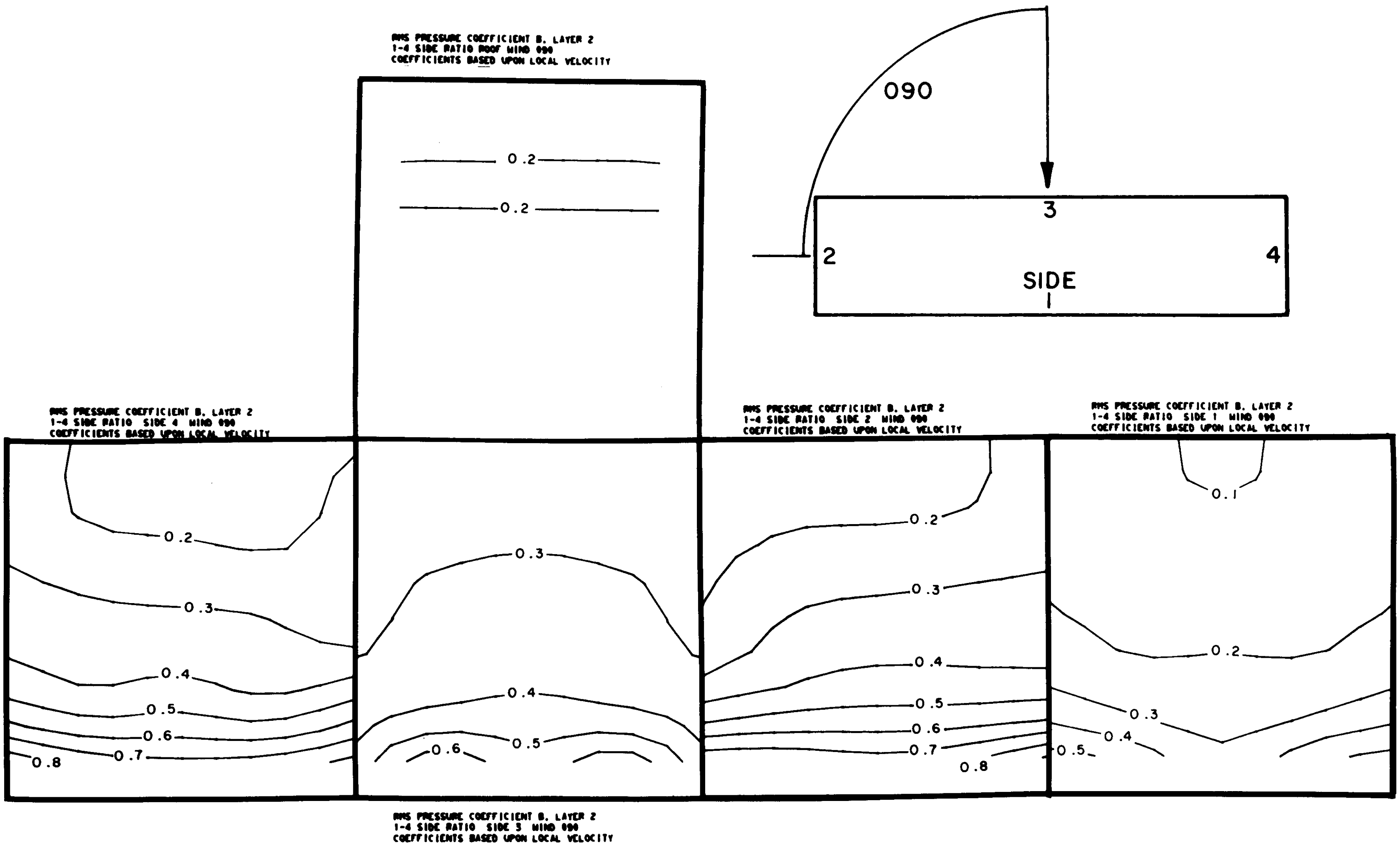


Figure B40. $C_{p_{rms}, \bar{\beta}}$, α = 90, γ = 0.25, Boundary Layer 2

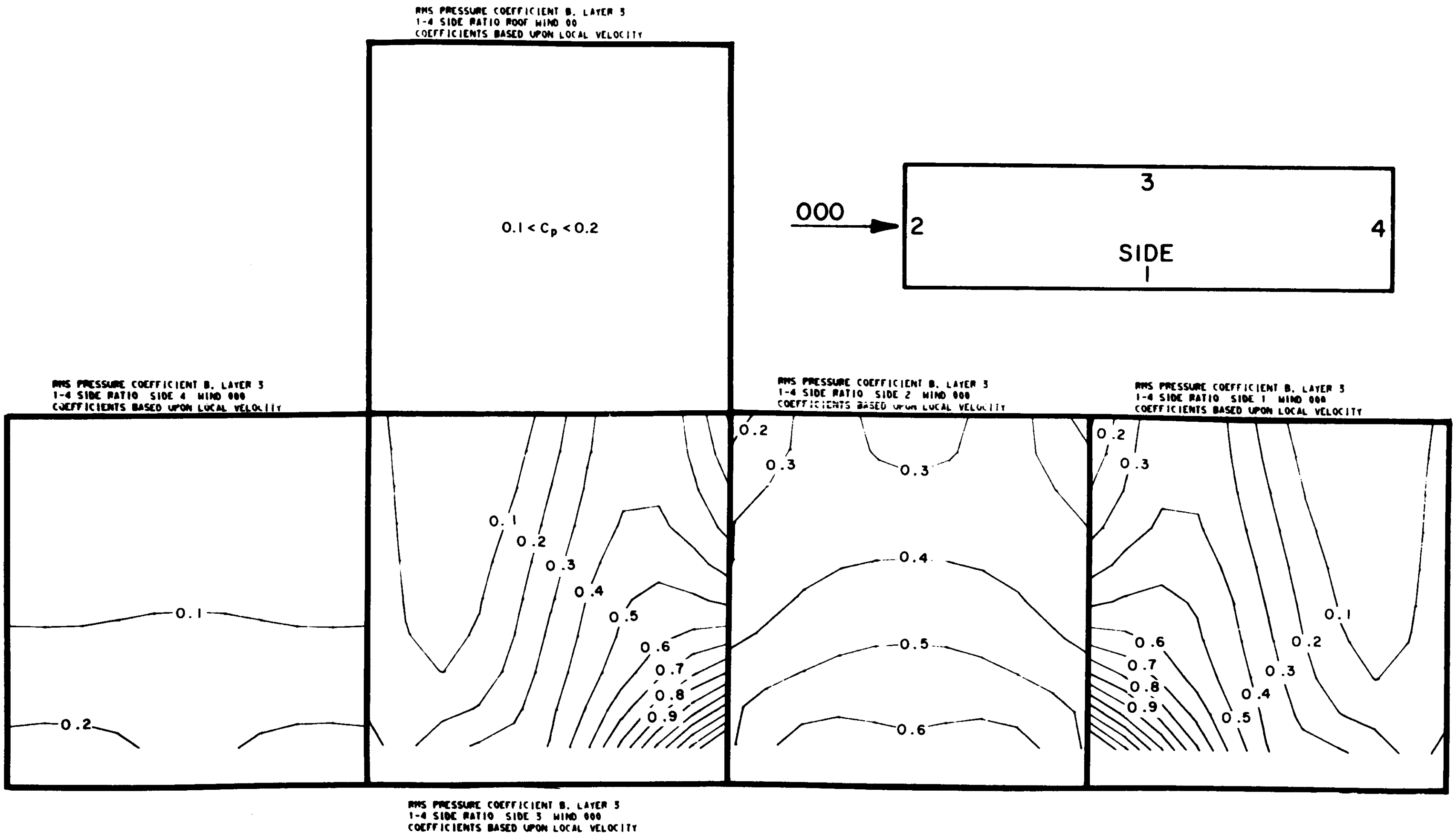


Figure B41. $C_{prms, \overline{\beta}}$, $\alpha = 0$, $\gamma = 0.25$, Boundary Layer 3

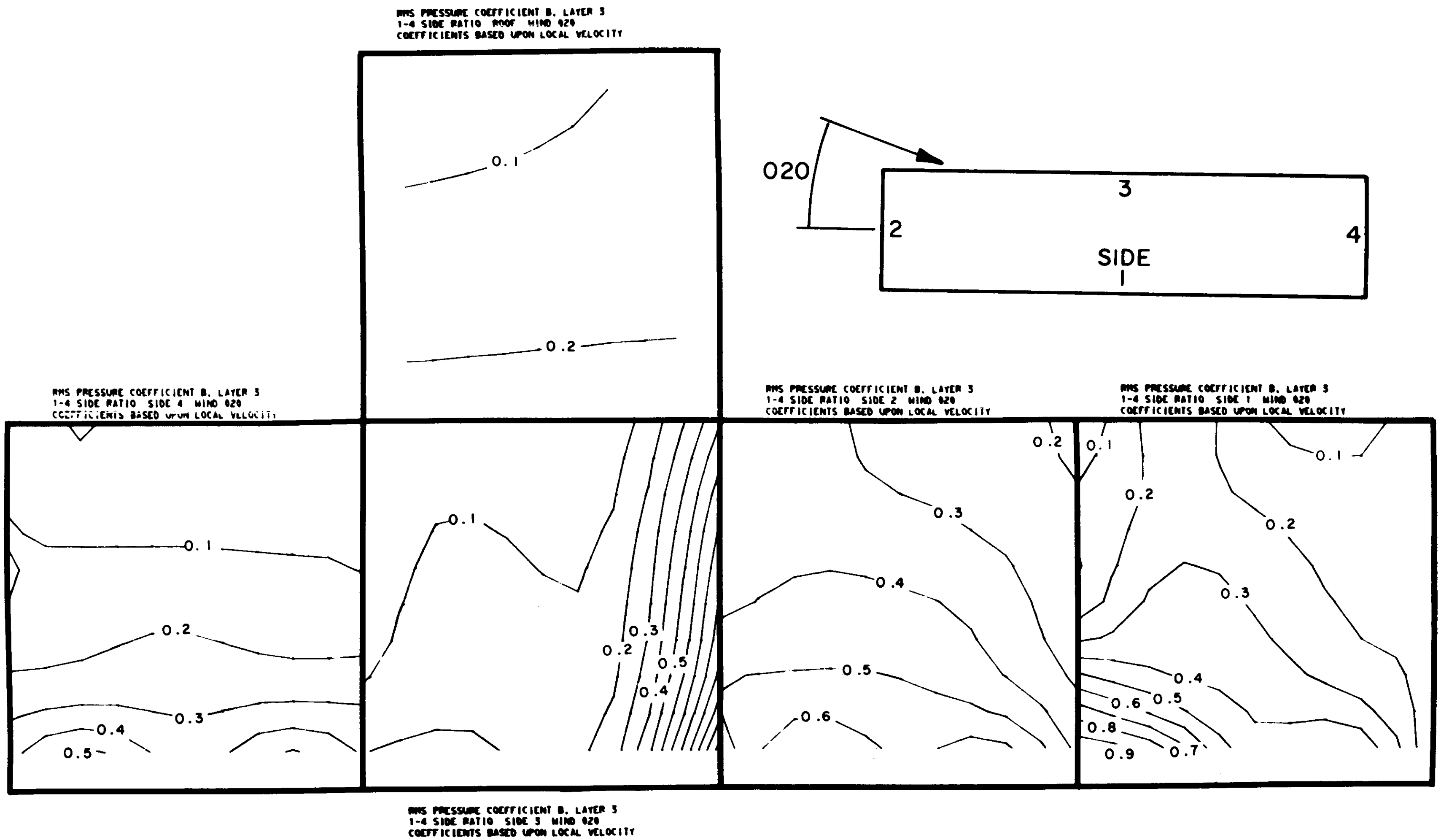


Figure B42. $C_{prms,\ \overline{\beta}}$, α = 20, γ = 0.25, Boundary Layer 3

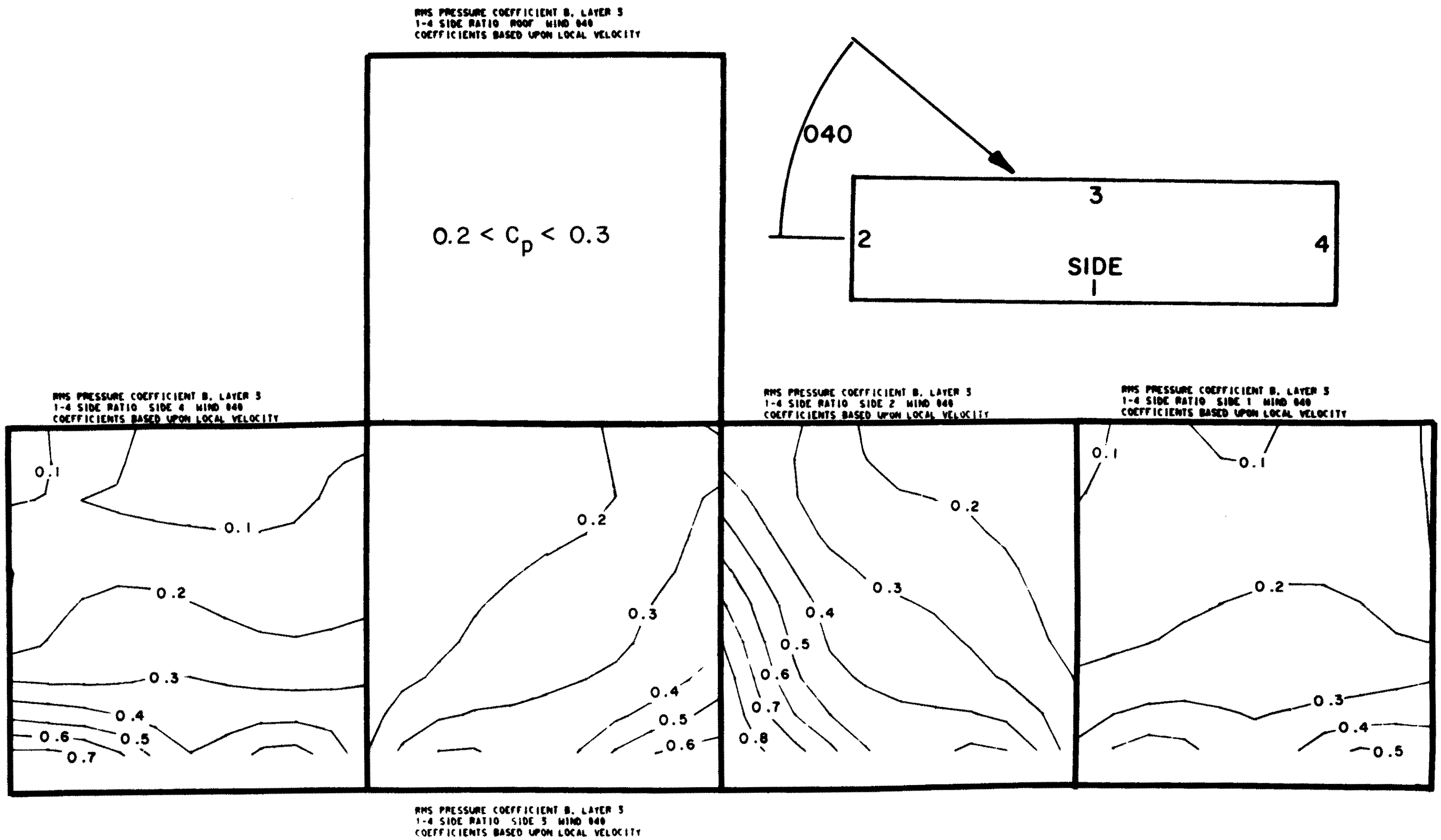


Figure B43. $C_{prms, \overline{\beta}}$, α = 40, γ = 0.25, Boundary Layer 3

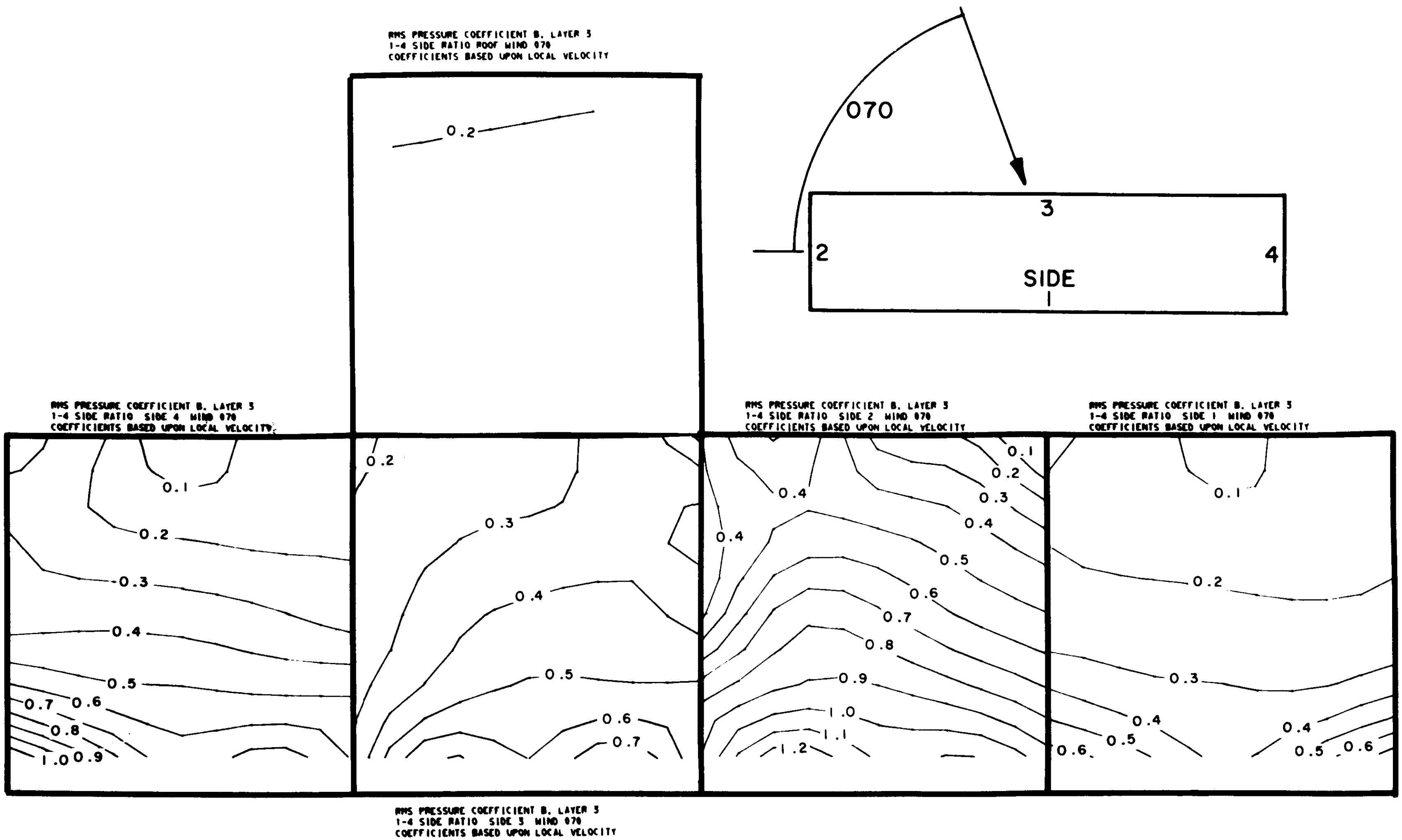


Figure B44. $C_{prms, \overline{\beta}}$, α = 70, γ = 0.25, Boundary Layer 3

Appendix C

TABULAR VALUES OF MEAN AND RMS LOCAL PRESSURE COEFFICIENTS

A listing of all data used in compiling these averaged values is available from

Dr. J. E. Cermak, Professor-in-Charge
Fluid Mechanics and Wind Engineering Program
Department of Civil Engineering
Colorado State University
Fort Collins, Colorado 80523

Table C1. C_{pmean}, $\overline{\beta}$, $\overline{p}$, γ = 1.0

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-1.07	-.93	-.82	-.75	-.67	-.59	-.51	-.46	-.45	
.80		-1.09	-.95	-.81	-.68	-.59	-.53	-.50	-.48	-.47	
.70		-1.10	-.96	-.82	-.69	-.59	-.53	-.51	-.49	-.48	
.60		-1.10	-.96	-.84	-.75	-.67	-.59	-.53	-.49	-.48	
.50		-1.10	-.96	-.86	-.79	-.72	-.63	-.54	-.49	-.48	
.40		-1.11	-.97	-.85	-.76	-.68	-.61	-.54	-.50	-.49	
.30		-1.13	-.99	-.85	-.72	-.62	-.56	-.53	-.52	-.51	
.20		-1.14	-.99	-.85	-.73	-.63	-.57	-.54	-.53	-.51	
.10		-1.13	-.99	-.88	-.80	-.73	-.65	-.57	-.52	-.51	

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.66	-.94	-1.10	-1.05	-.82	-.57	-.40	-.33	-.33	-.39	-.49
.90	-.72	-.92	-1.04	-1.01	-.85	-.56	-.51	-.42	-.40	-.46	-.56
.80	-.78	-.93	-1.02	-1.01	-.90	-.76	-.62	-.51	-.47	-.52	-.62
.70	-.83	-.97	-1.07	-1.07	-.98	-.86	-.72	-.61	-.55	-.58	-.65
.60	-.89	-1.07	-1.18	-1.19	-1.10	-.97	-.83	-.71	-.64	-.64	-.67
.50	-1.00	-1.18	-1.30	-1.31	-1.21	-1.07	-.93	-.80	-.72	-.69	-.69
.40	-1.19	-1.32	-1.41	-1.40	-1.31	-1.18	-1.04	-.90	-.80	-.75	-.72
.30	-1.53	-1.56	-1.57	-1.53	-1.44	-1.31	-1.17	-1.03	-.91	-.82	-.75
.20	-2.09	-2.01	-1.91	-1.79	-1.63	-1.46	-1.34	-1.21	-1.06	-.91	-.74
.10	-2.85	-2.65	-2.44	-2.14	-1.91	-1.66	-1.55	-1.45	-1.27	-1.01	-.70

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.31	.57	.77	.85	.82	.79	.82	.85	.77	.57	.31
.90	.37	.60	.78	.88	.89	.88	.89	.88	.78	.60	.37
.80	.41	.63	.81	.92	.96	.97	.96	.92	.81	.63	.41
.70	.41	.64	.84	.97	1.03	1.04	1.03	.97	.84	.64	.41
.60	.36	.64	.88	1.03	1.09	1.09	1.09	1.03	.88	.64	.36
.50	.30	.62	.89	1.06	1.13	1.14	1.13	1.06	.89	.62	.30
.40	.23	.57	.86	1.06	1.16	1.19	1.16	1.06	.86	.57	.23
.30	.15	.55	.89	1.12	1.24	1.26	1.24	1.12	.89	.55	.15
.20	.02	.61	1.09	1.35	1.40	1.38	1.40	1.35	1.09	.61	.02
.10	-.17	.76	1.47	1.74	1.65	1.54	1.65	1.74	1.47	.76	-.17

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.49	-.39	-.33	-.34	-.41	-.58	-.84	-1.07	-1.12	-.95	-.66
.90	-.56	-.46	-.40	-.43	-.52	-.67	-.87	-1.03	-1.05	-.92	-.71
.80	-.61	-.52	-.48	-.52	-.63	-.77	-.91	-1.02	-1.03	-.92	-.76
.70	-.64	-.58	-.56	-.61	-.73	-.87	-1.00	-1.08	-1.08	-.97	-.80
.60	-.66	-.63	-.64	-.71	-.83	-.98	-1.11	-1.20	-1.19	-1.05	-.85
.50	-.68	-.69	-.72	-.81	-.94	-1.08	-1.22	-1.32	-1.31	-1.17	-.95
.40	-.71	-.74	-.80	-.91	-1.05	-1.19	-1.32	-1.41	-1.41	-1.30	-1.14
.30	-.73	-.81	-.91	-1.03	-1.18	-1.32	-1.45	-1.54	-1.58	-1.55	-1.49
.20	-.73	-.90	-1.06	-1.21	-1.35	-1.49	-1.64	-1.80	-1.92	-2.01	-2.07
.10	-.69	-1.01	-1.27	-1.45	-1.56	-1.69	-1.92	-2.20	-2.45	-2.67	-2.87

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.39	-.39	-.38	-.36	-.34	-.32	-.34	-.36	-.38	-.39	-.39
.90	-.42	-.40	-.38	-.36	-.35	-.34	-.35	-.36	-.38	-.40	-.42
.80	-.44	-.41	-.39	-.37	-.37	-.37	-.37	-.37	-.39	-.41	-.44
.70	-.47	-.44	-.41	-.40	-.40	-.40	-.40	-.40	-.41	-.44	-.47
.60	-.50	-.47	-.46	-.45	-.44	-.44	-.44	-.45	-.46	-.47	-.50
.50	-.53	-.52	-.50	-.50	-.49	-.49	-.49	-.50	-.50	-.52	-.53
.40	-.58	-.56	-.55	-.54	-.54	-.54	-.54	-.54	-.55	-.56	-.58
.30	-.66	-.64	-.62	-.61	-.60	-.60	-.60	-.61	-.62	-.64	-.66
.20	-.79	-.77	-.75	-.73	-.72	-.72	-.72	-.73	-.75	-.77	-.79
.10	-.97	-.95	-.93	-.91	-.89	-.89	-.89	-.91	-.93	-.95	-.97

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-.85	-.75	-.65	-.56	-.50	-.46	-.43	-.43	-.42	
.80		-.87	-.76	-.66	-.56	-.49	-.46	-.44	-.44	-.44	
.70		-.88	-.78	-.67	-.58	-.50	-.47	-.46	-.45	-.45	
.60		-.89	-.79	-.69	-.60	-.53	-.49	-.47	-.46	-.46	
.50		-.90	-.80	-.70	-.61	-.55	-.51	-.48	-.47	-.47	
.40		-.92	-.81	-.71	-.62	-.55	-.51	-.49	-.49	-.48	
.30		-.93	-.82	-.72	-.63	-.55	-.52	-.50	-.50	-.50	
.20		-.94	-.84	-.73	-.64	-.57	-.53	-.52	-.51	-.51	
.10		-.95	-.85	-.75	-.66	-.59	-.55	-.53	-.52	-.52	

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.51	-.60	-.64	-.58	-.45	-.37	-.43	-.56	-.63	-.62	-.58
.90	-.56	-.60	-.61	-.58	-.52	-.48	-.52	-.58	-.64	-.67	-.69
.80	-.60	-.61	-.61	-.61	-.60	-.59	-.60	-.63	-.66	-.72	-.78
.70	-.61	-.64	-.66	-.68	-.70	-.71	-.71	-.71	-.73	-.77	-.83
.60	-.61	-.69	-.76	-.80	-.82	-.82	-.82	-.82	-.83	-.85	-.87
.50	-.64	-.77	-.87	-.92	-.94	-.94	-.94	-.94	-.94	-.94	-.94
.40	-.77	-.88	-.97	-1.02	-1.05	-1.06	-1.06	-1.05	-1.05	-1.06	-1.09
.30	-1.00	-1.06	-1.12	-1.16	-1.19	-1.21	-1.20	-1.19	-1.21	-1.25	-1.30
.20	-1.35	-1.39	-1.42	-1.42	-1.41	-1.40	-1.42	-1.45	-1.49	-1.53	-1.58
.10	-1.80	-1.85	-1.86	-1.81	-1.70	-1.64	-1.70	-1.81	-1.89	-1.91	-1.91

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.67	.82	.92	.90	.79	.70	.67	.66	.56	.35	.07
.90	.75	.86	.93	.93	.86	.78	.73	.66	.54	.34	.11
.80	.80	.89	.95	.95	.92	.85	.78	.68	.54	.35	.14
.70	.83	.91	.98	1.00	.97	.91	.83	.72	.56	.37	.15
.60	.82	.93	1.01	1.04	1.02	.96	.88	.77	.61	.38	.13
.50	.79	.93	1.03	1.07	1.05	1.00	.92	.81	.63	.38	.09
.40	.78	.92	1.03	1.09	1.09	1.04	.95	.82	.61	.33	.03
.30	.76	.94	1.08	1.15	1.15	1.10	1.01	.86	.62	.31	-.05
.20	.73	1.02	1.24	1.33	1.29	1.21	1.15	1.03	.78	.36	-.13
.10	.69	1.18	1.54	1.63	1.49	1.35	1.36	1.34	1.08	.51	-.20

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.36	-.18	-.05	.00	-.02	-.09	-.19	-.32	-.50	-.74	-1.02
.90	-.37	-.21	-.04	-.04	-.06	-.13	-.22	-.34	-.51	-.73	-.98
.80	-.39	-.23	-.12	-.07	-.10	-.16	-.25	-.36	-.51	-.72	-.96
.70	-.41	-.25	-.13	-.09	-.12	-.19	-.28	-.38	-.53	-.75	-.99
.60	-.43	-.26	-.14	-.10	-.14	-.22	-.30	-.41	-.57	-.79	-1.05
.50	-.46	-.28	-.15	-.11	-.16	-.24	-.32	-.43	-.60	-.85	-1.14
.40	-.49	-.31	-.18	-.15	-.19	-.26	-.35	-.46	-.64	-.91	-1.23
.30	-.56	-.37	-.24	-.19	-.22	-.29	-.37	-.50	-.70	-.99	-1.33
.20	-.68	-.47	-.31	-.24	-.26	-.32	-.41	-.55	-.77	-1.08	-1.46
.10	-.87	-.60	-.40	-.30	-.30	-.36	-.46	-.61	-.86	-1.21	-1.62

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.54	-.49	-.45	-.39	-.35	-.32	-.32	-.34	-.36	-.36	-.36
.90	-.56	-.50	-.45	-.41	-.38	-.36	-.35	-.36	-.37	-.38	-.38
.80	-.57	-.52	-.47	-.43	-.41	-.40	-.39	-.38	-.38	-.39	-.41
.70	-.59	-.55	-.51	-.48	-.47	-.46	-.45	-.43	-.43	-.42	-.43
.60	-.62	-.60	-.57	-.55	-.54	-.54	-.52	-.51	-.49	-.47	-.45
.50	-.67	-.65	-.64	-.63	-.62	-.61	-.60	-.58	-.55	-.51	-.47
.40	-.74	-.72	-.71	-.70	-.69	-.68	-.67	-.65	-.62	-.57	-.51
.30	-.87	-.84	-.82	-.80	-.79	-.78	-.77	-.75	-.71	-.66	-.61
.20	-1.11	-1.05	-1.00	-.97	-.96	-.95	-.93	-.91	-.88	-.85	-.81
.10	-1.47	-1.35	-1.26	-1.20	-1.15	-1.16	-1.16	-1.14	-1.12	-1.12	-1.12

Table C1. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\gamma = 1.0$

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-.67	-.64	-.63	-.64	-.64	-.60	-.55	-.52	-.52	
.80		-.67	-.64	-.60	-.58	-.56	-.54	-.53	-.52	-.51	
.70		-.66	-.63	-.59	-.57	-.54	-.53	-.52	-.51	-.50	
.60		-.64	-.61	-.59	-.59	-.58	-.55	-.52	-.49	-.48	
.50		-.63	-.60	-.59	-.61	-.61	-.57	-.51	-.48	-.47	
.40		-.62	-.59	-.57	-.57	-.56	-.53	-.49	-.47	-.46	
.30		-.62	-.59	-.55	-.53	-.50	-.49	-.47	-.46	-.46	
.20		-.61	-.58	-.54	-.52	-.49	-.48	-.46	-.45	-.45	
.10		-.59	-.56	-.55	-.56	-.55	-.52	-.47	-.44	-.43	

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.48	-.48	-.47	-.43	-.37	-.35	-.42	-.50	-.54	-.50	-.43
.90	-.52	-.50	-.49	-.46	-.44	-.44	-.48	-.53	-.57	-.57	-.56
.80	-.55	-.53	-.51	-.51	-.51	-.53	-.55	-.58	-.61	-.64	-.67
.70	-.56	-.56	-.57	-.58	-.60	-.62	-.64	-.65	-.67	-.70	-.73
.60	-.56	-.61	-.65	-.67	-.70	-.72	-.73	-.75	-.75	-.75	-.75
.50	-.58	-.66	-.73	-.77	-.79	-.81	-.83	-.84	-.83	-.81	-.77
.40	-.65	-.73	-.80	-.85	-.89	-.91	-.92	-.93	-.91	-.89	-.85
.30	-.79	-.86	-.93	-.97	-1.01	-1.04	-1.05	-1.05	-1.04	-1.03	-1.01
.20	-1.03	-1.10	-1.16	-1.19	-1.19	-1.21	-1.23	-1.27	-1.29	-1.29	-1.27
.10	-1.35	-1.44	-1.50	-1.50	-1.44	-1.42	-1.49	-1.59	-1.65	-1.65	-1.62

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.76	.74	.70	.63	.53	.44	.37	.30	.20	.06	-.10
.90	.88	.82	.76	.68	.59	.50	.41	.32	.20	.05	-.11
.80	.98	.90	.81	.73	.64	.55	.46	.35	.21	.05	-.13
.70	1.04	.95	.86	.77	.69	.60	.50	.38	.23	.04	-.17
.60	1.06	.98	.90	.81	.73	.64	.54	.43	.25	.03	-.23
.50	1.05	.98	.91	.83	.75	.67	.58	.45	.26	-.00	-.29
.40	1.04	.97	.90	.84	.78	.70	.60	.44	.23	-.04	-.34
.30	1.05	1.00	.94	.89	.83	.75	.64	.47	.23	-.08	-.42
.20	1.11	1.12	1.10	1.03	.93	.82	.73	.60	.34	-.07	-.55
.10	1.21	1.34	1.39	1.29	1.08	.91	.89	.85	.56	-.02	-.74

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.09	-.02	.05	.12	.19	.26	.34	.42	.46	.45	.42
.90	-.14	-.04	.06	.15	.23	.31	.39	.46	.51	.53	.52
.80	-.19	-.05	.07	.18	.27	.35	.43	.51	.56	.59	.61
.70	-.24	-.06	.09	.21	.31	.39	.47	.54	.59	.63	.65
.60	-.28	-.07	.11	.24	.34	.42	.50	.57	.62	.64	.66
.50	-.33	-.09	.11	.26	.36	.44	.52	.59	.63	.64	.64
.40	-.41	-.13	.10	.27	.38	.47	.54	.60	.64	.64	.62
.30	-.51	-.18	.10	.30	.41	.50	.55	.64	.67	.66	.63
.20	-.65	-.22	.14	.36	.47	.55	.64	.72	.76	.75	.71
.10	-.82	-.25	.21	.46	.56	.62	.73	.85	.91	.90	.86

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.50	-.50	-.49	-.47	-.43	-.40	-.38	-.38	-.40	-.44	-.48
.90	-.57	-.54	-.51	-.48	-.45	-.43	-.42	-.42	-.43	-.45	-.48
.80	-.63	-.58	-.54	-.51	-.49	-.48	-.47	-.47	-.47	-.47	-.48
.70	-.67	-.63	-.59	-.57	-.56	-.55	-.54	-.53	-.52	-.51	-.49
.60	-.69	-.68	-.67	-.66	-.65	-.64	-.52	-.61	-.59	-.56	-.53
.50	-.72	-.73	-.74	-.74	-.74	-.73	-.71	-.69	-.66	-.61	-.57
.40	-.76	-.79	-.81	-.82	-.82	-.81	-.80	-.77	-.73	-.67	-.61
.30	-.88	-.90	-.91	-.92	-.92	-.92	-.91	-.88	-.84	-.78	-.71
.20	-1.11	-1.11	-1.11	-1.11	-1.11	-1.10	-1.09	-1.07	-1.03	-.99	-.94
.10	-1.45	-1.43	-1.41	-1.39	-1.37	-1.35	-1.33	-1.32	-1.31	-1.29	-1.28

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-1.15	-1.11	-1.06	-1.01	-.98	-.96	-.99	-1.00	-1.00	
.80		-1.06	-1.02	-.97	-.94	-.91	-.90	-.90	-.90	-.91	
.70		-.96	-.92	-.88	-.85	-.82	-.81	-.81	-.81	-.82	
.60		-.87	-.83	-.79	-.74	-.72	-.71	-.72	-.73	-.73	
.50		-.78	-.74	-.70	-.65	-.62	-.61	-.62	-.64	-.64	
.40		-.69	-.65	-.61	-.56	-.53	-.53	-.54	-.54	-.55	
.30		-.60	-.56	-.52	-.48	-.46	-.45	-.45	-.45	-.46	
.20		-.51	-.47	-.43	-.39	-.37	-.36	-.36	-.36	-.37	
.10		-.42	-.38	-.33	-.29	-.26	-.25	-.26	-.28	-.28	

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.29	-.32	-.34	-.31	-.26	-.23	-.28	-.37	-.44	-.47	-.49
.90	-.35	-.35	-.35	-.34	-.31	-.30	-.33	-.39	-.44	-.49	-.54
.80	-.39	-.38	-.38	-.37	-.37	-.38	-.39	-.42	-.46	-.52	-.59
.70	-.41	-.41	-.42	-.43	-.44	-.45	-.46	-.47	-.50	-.55	-.60
.60	-.41	-.45	-.48	-.50	-.52	-.53	-.54	-.55	-.56	-.58	-.61
.50	-.42	-.49	-.54	-.57	-.59	-.60	-.61	-.62	-.63	-.63	-.63
.40	-.48	-.54	-.59	-.63	-.66	-.68	-.68	-.68	-.68	-.70	-.71
.30	-.58	-.63	-.67	-.71	-.73	-.75	-.75	-.76	-.77	-.81	-.85
.20	-.73	-.78	-.82	-.83	-.83	-.82	-.85	-.88	-.93	-.98	-1.04
.10	-.92	-1.00	-1.04	-1.01	-.94	-.90	-.96	-1.07	-1.16	-1.23	-1.28

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-1.16	-.82	-.52	-.30	-.17	-.09	-.03	-.01	-.06	-.19	-.35
.90	-1.10	-.79	-.53	-.33	-.20	-.12	-.06	-.04	-.09	-.20	-.34
.80	-1.06	-.78	-.54	-.35	-.24	-.16	-.10	-.08	-.12	-.22	-.35
.70	-1.05	-.79	-.55	-.38	-.26	-.19	-.13	-.10	-.14	-.24	-.36
.60	-1.08	-.82	-.58	-.40	-.29	-.21	-.15	-.13	-.16	-.26	-.39
.50	-1.14	-.86	-.62	-.43	-.31	-.23	-.17	-.15	-.19	-.29	-.42
.40	-1.21	-.92	-.66	-.47	-.34	-.26	-.20	-.18	-.23	-.33	-.46
.30	-1.27	-.96	-.70	-.50	-.37	-.29	-.23	-.21	-.26	-.37	-.50
.20	-1.31	-.99	-.72	-.52	-.40	-.32	-.26	-.24	-.29	-.41	-.58
.10	-1.31	-.99	-.72	-.53	-.43	-.37	-.29	-.25	-.31	-.47	-.67

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.32	.48	.57	.60	.65	.76	.86	.88	.78	.63
.90	.17	.36	.52	.63	.68	.74	.82	.89	.91	.85	.75
.80	.18	.39	.57	.69	.77	.83	.89	.94	.95	.90	.83
.70	.14	.40	.62	.76	.85	.91	.97	1.01	1.00	.94	.84
.60	.06	.39	.66	.84	.93	1.00	1.07	1.10	1.07	.95	.78
.50	-.04	.37	.70	.91	1.02	1.09	1.15	1.18	1.12	.95	.71
.40	-.13	.34	.73	.97	1.10	1.18	1.23	1.24	1.16	.95	.67
.30	-.23	.33	.78	1.05	1.19	1.26	1.31	1.32	1.22	.99	.69
.20	-.36	.33	.88	1.19	1.30	1.35	1.42	1.46	1.37	1.11	.75
.10	-.52	.36	1.04	1.37	1.42	1.44	1.56	1.69	1.62	1.31	.87

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.62	-.68	-.68	-.59	-.45	-.39	-.48	-.62	-.68	-.62	-.49
.90	-.71	-.70	-.66	-.59	-.51	-.48	-.52	-.60	-.63	-.61	-.56
.80	-.79	-.73	-.67	-.62	-.59	-.58	-.59	-.60	-.62	-.62	-.62
.70	-.85	-.79	-.73	-.70	-.70	-.70	-.70	-.68	-.66	-.65	-.63
.60	-.91	-.87	-.84	-.83	-.84	-.85	-.84	-.82	-.77	-.70	-.62
.50	-.98	-.98	-.98	-.98	-.98	-.99	-.99	-.97	-.90	-.79	-.66
.40	-1.11	-1.11	-1.11	-1.11	-1.11	-1.12	-1.12	-1.09	-1.03	-.92	-.78
.30	-1.29	-1.27	-1.26	-1.26	-1.25	-1.25	-1.25	-1.23	-1.18	-1.10	-1.01
.20	-1.54	-1.50	-1.46	-1.44	-1.43	-1.42	-1.42	-1.42	-1.41	-1.38	-1.34
.10	-1.85	-1.78	-1.72	-1.67	-1.64	-1.64	-1.65	-1.67	-1.70	-1.72	-1.75

Table C1. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\gamma = 1.0$

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-1.07	-1.08	-1.08	-1.09	-1.09	-1.09	-1.08	-1.08	-1.08	
.80		-.98	-.98	-.99	-.99	-.99	-.99	-.99	-.99	-.98	
.70		-.89	-.89	-.89	-.90	-.90	-.90	-.89	-.89	-.89	
.60		-.80	-.80	-.80	-.81	-.81	-.81	-.80	-.80	-.80	
.50		-.70	-.71	-.71	-.72	-.72	-.72	-.71	-.71	-.70	
.40		-.61	-.61	-.62	-.62	-.62	-.62	-.62	-.61	-.61	
.30		-.52	-.52	-.52	-.53	-.53	-.53	-.52	-.52	-.52	
.20		-.43	-.43	-.43	-.43	-.43	-.43	-.43	-.43	-.43	
.10		-.33	-.33	-.34	-.35	-.35	-.35	-.34	-.34	-.33	

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.30	-.33	-.34	-.32	-.27	-.24	-.27	-.32	-.34	-.33	-.30
.90	-.35	-.35	-.34	-.32	-.30	-.28	-.30	-.32	-.34	-.35	-.35
.80	-.39	-.37	-.35	-.34	-.33	-.32	-.33	-.34	-.35	-.37	-.39
.70	-.41	-.39	-.38	-.37	-.37	-.37	-.37	-.37	-.38	-.39	-.41
.60	-.42	-.42	-.42	-.41	-.41	-.41	-.41	-.41	-.42	-.42	-.42
.50	-.45	-.45	-.46	-.46	-.46	-.46	-.46	-.46	-.46	-.45	-.45
.40	-.51	-.50	-.49	-.49	-.50	-.50	-.50	-.49	-.49	-.50	-.51
.30	-.61	-.57	-.55	-.54	-.54	-.54	-.54	-.54	-.55	-.57	-.61
.20	-.71	-.68	-.65	-.62	-.60	-.59	-.60	-.62	-.65	-.68	-.71
.10	-.81	-.82	-.81	-.76	-.68	-.63	-.68	-.76	-.81	-.82	-.81

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.61	-.96	-1.18	-1.15	-.89	-.58	-.36	-.26	-.28	-.39	-.54
.90	-.76	-.96	-1.09	-1.06	-.89	-.67	-.49	-.39	-.36	-.41	-.48
.80	-.86	-.98	-1.05	-1.03	-.91	-.76	-.61	-.49	-.44	-.44	-.46
.70	-.87	-1.01	-1.10	-1.10	-1.00	-.86	-.70	-.57	-.50	-.49	-.51
.60	-.84	-1.07	-1.23	-1.25	-1.14	-.97	-.78	-.62	-.55	-.56	-.60
.50	-.91	-1.18	-1.37	-1.40	-1.28	-1.08	-.87	-.70	-.62	-.62	-.67
.40	-1.17	-1.35	-1.47	-1.47	-1.36	-1.18	-.99	-.82	-.71	-.67	-.65
.30	-1.55	-1.59	-1.60	-1.55	-1.44	-1.29	-1.13	-.97	-.82	-.70	-.59
.20	-1.98	-1.92	-1.85	-1.73	-1.58	-1.41	-1.26	-1.11	-.94	-.76	-.56
.10	-2.39	-2.33	-2.23	-2.04	-1.79	-1.55	-1.38	-1.24	-1.06	-.83	-.57

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.32	.60	.80	.85	.80	.76	.80	.85	.80	.60	.33
.90	.40	.63	.81	.88	.87	.85	.87	.88	.81	.64	.40
.80	.44	.66	.84	.93	.94	.94	.94	.93	.84	.66	.44
.70	.42	.68	.89	.99	1.03	1.03	1.03	.99	.89	.66	.42
.60	.34	.68	.94	1.08	1.12	1.13	1.12	1.08	.94	.68	.34
.50	.24	.66	.99	1.16	1.21	1.22	1.21	1.16	.99	.66	.24
.40	.15	.63	1.01	1.22	1.29	1.31	1.29	1.22	1.01	.63	.15
.30	.07	.62	1.06	1.30	1.36	1.40	1.36	1.30	1.06	.62	.07
.20	-.02	.67	1.21	1.46	1.51	1.49	1.51	1.46	1.21	.67	-.02
.10	-.10	.79	1.46	1.72	1.66	1.59	1.66	1.72	1.46	.79	-.10

MEAN PRESSURE COEFFICIENT 1-1 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.54	-.39	-.28	-.26	-.36	-.58	-.89	-1.15	-1.18	-.96	-.61
.90	-.48	-.41	-.36	-.39	-.49	-.67	-.89	-1.06	-1.09	-.96	-.76
.80	-.46	-.44	-.44	-.49	-.61	-.76	-.91	-1.03	-1.05	-.98	-.86
.70	-.51	-.49	-.50	-.57	-.70	-.86	-1.00	-1.10	-1.10	-1.01	-.87
.60	-.60	-.56	-.55	-.62	-.78	-.97	-1.14	-1.25	-1.23	-1.07	-.84
.50	-.67	-.62	-.62	-.70	-.87	-1.08	-1.28	-1.40	-1.37	-1.18	-.91
.40	-.65	-.67	-.71	-.82	-.99	-1.18	-1.36	-1.47	-1.47	-1.35	-1.17
.30	-.59	-.70	-.82	-.97	-1.13	-1.29	-1.44	-1.55	-1.60	-1.59	-1.55
.20	-.56	-.76	-.94	-1.11	-1.26	-1.41	-1.58	-1.73	-1.85	-1.92	-1.98
.10	-.57	-.83	-1.06	-1.24	-1.38	-1.55	-1.79	-2.04	-2.23	-2.33	-2.39

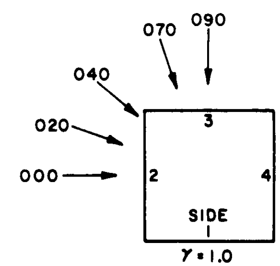


Table C2. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\gamma = 0.5$

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		-.74	-.67	-.61	-.54	-.47	-.40	-.33	-.27	-.20	
.80		-.74	-.67	-.61	-.54	-.47	-.40	-.33	-.27	-.20	
.70		-.74	-.68	-.61	-.54	-.47	-.40	-.33	-.27	-.20	
.60		-.74	-.68	-.61	-.54	-.47	-.40	-.34	-.27	-.20	
.50		-.74	-.68	-.61	-.54	-.47	-.40	-.34	-.27	-.20	
.40		-.74	-.68	-.61	-.54	-.47	-.40	-.34	-.27	-.20	
.30		-.74	-.68	-.61	-.54	-.47	-.40	-.33	-.27	-.20	
.20		-.74	-.67	-.61	-.54	-.47	-.40	-.33	-.27	-.20	
.10		-.74	-.67	-.61	-.54	-.47	-.40	-.33	-.27	-.20	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.83	-1.00	-1.08	-.98	-.72	-.43	-.22	-.11	-.11	-.18	-.30
.90	-.80	-.96	-1.04	-.97	-.76	-.49	-.26	-.11	-.09	-.20	-.37
.80	-.81	-.95	-1.03	-.98	-.80	-.55	-.30	-.13	-.10	-.22	-.41
.70	-.90	-1.01	-1.05	-1.00	-.84	-.60	-.36	-.17	-.13	-.25	-.44
.60	-1.05	-1.11	-1.12	-1.04	-.87	-.65	-.41	-.24	-.19	-.28	-.43
.50	-1.19	-1.21	-1.19	-1.09	-.91	-.68	-.46	-.29	-.23	-.28	-.38
.40	-1.29	-1.30	-1.27	-1.15	-.96	-.72	-.49	-.32	-.24	-.25	-.31
.30	-1.54	-1.49	-1.40	-1.24	-1.02	-.77	-.53	-.35	-.25	-.23	-.26
.20	-2.16	-1.92	-1.67	-1.39	-1.11	-.83	-.60	-.42	-.32	-.29	-.29
.10	-3.15	-2.60	-2.07	-1.61	-1.22	-.92	-.69	-.55	-.46	-.42	-.40
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.43	.61	.75	.82	.83	.81	.83	.82	.75	.61	.43
.90	.45	.64	.79	.88	.90	.92	.90	.88	.79	.64	.45
.80	.45	.65	.82	.93	.98	.99	.98	.93	.82	.65	.45
.70	.42	.66	.87	1.00	1.06	1.07	1.06	1.00	.87	.66	.42
.60	.36	.66	.91	1.06	1.12	1.13	1.12	1.06	.91	.66	.36
.50	.29	.63	.92	1.10	1.18	1.19	1.18	1.10	.92	.63	.29
.40	.23	.59	.90	1.12	1.23	1.25	1.23	1.12	.90	.59	.23
.30	.14	.57	.94	1.18	1.30	1.33	1.30	1.18	.94	.57	.14
.20	.01	.62	1.11	1.38	1.45	1.44	1.45	1.38	1.11	.62	.01
.10	-.16	.74	1.44	1.72	1.66	1.57	1.66	1.72	1.44	.74	-.16
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.29	-.18	-.11	-.12	-.22	-.43	-.71	-.97	-1.08	-1.01	-.86
.90	-.37	-.20	-.09	-.11	-.26	-.49	-.76	-.97	-1.04	-.96	-.80
.80	-.42	-.22	-.09	-.12	-.30	-.55	-.80	-.98	-1.03	-.95	-.80
.70	-.45	-.25	-.13	-.17	-.35	-.61	-.84	-1.01	-1.06	-1.00	-.89
.60	-.43	-.28	-.19	-.24	-.41	-.65	-.87	-1.05	-1.12	-1.11	-1.05
.50	-.38	-.28	-.23	-.29	-.46	-.69	-.91	-1.09	-1.20	-1.22	-1.20
.40	-.32	-.25	-.23	-.31	-.49	-.72	-.96	-1.15	-1.27	-1.30	-1.29
.30	-.27	-.23	-.24	-.34	-.53	-.77	-1.02	-1.25	-1.40	-1.48	-1.52
.20	-.28	-.28	-.31	-.42	-.60	-.84	-1.12	-1.40	-1.67	-1.89	-2.10
.10	-.35	-.40	-.47	-.57	-.70	-.92	-1.23	-1.62	-2.07	-2.56	-3.06
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.23	-.22	-.21	-.20	-.18	-.17	-.18	-.20	-.21	-.22	-.23
.90	-.25	-.23	-.22	-.21	-.20	-.20	-.20	-.21	-.22	-.23	-.25
.80	-.26	-.25	-.24	-.23	-.23	-.22	-.23	-.23	-.24	-.25	-.26
.70	-.27	-.27	-.26	-.26	-.26	-.26	-.26	-.26	-.26	-.27	-.27
.60	-.28	-.29	-.30	-.30	-.30	-.30	-.30	-.30	-.30	-.29	-.28
.50	-.30	-.31	-.32	-.33	-.33	-.33	-.33	-.33	-.32	-.31	-.30
.40	-.34	-.34	-.35	-.36	-.37	-.37	-.37	-.36	-.35	-.34	-.34
.30	-.39	-.39	-.40	-.40	-.41	-.41	-.41	-.40	-.40	-.39	-.39
.20	-.47	-.49	-.50	-.49	-.48	-.47	-.48	-.49	-.50	-.49	-.47
.10	-.56	-.62	-.65	-.63	-.57	-.54	-.57	-.63	-.65	-.62	-.56
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		-.70	-.68	-.66	-.63	-.61	-.59	-.56	-.54	-.52	
.80		-.62	-.60	-.57	-.55	-.53	-.50	-.48	-.45	-.43	
.70		-.57	-.55	-.52	-.49	-.47	-.44	-.41	-.39	-.36	
.60		-.57	-.54	-.51	-.48	-.45	-.42	-.39	-.36	-.33	
.50		-.60	-.57	-.53	-.50	-.46	-.42	-.39	-.35	-.32	
.40		-.65	-.61	-.57	-.53	-.49	-.44	-.40	-.36	-.32	
.30		-.69	-.64	-.60	-.55	-.51	-.46	-.42	-.37	-.33	
.20		-.71	-.66	-.61	-.57	-.52	-.47	-.42	-.38	-.33	
.10		-.71	-.66	-.61	-.57	-.52	-.47	-.42	-.38	-.33	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.35	-.69	-.89	-.85	-.60	-.38	-.34	-.43	-.51	-.54	-.54
.90	-.50	-.69	-.81	-.79	-.65	-.51	-.46	-.49	-.55	-.60	-.66
.80	-.61	-.71	-.78	-.78	-.72	-.64	-.58	-.56	-.59	-.67	-.77
.70	-.65	-.76	-.83	-.86	-.83	-.77	-.70	-.65	-.66	-.73	-.84
.60	-.64	-.82	-.96	-1.02	-.99	-.91	-.82	-.75	-.74	-.79	-.86
.50	-.63	-.89	-1.09	-1.17	-1.14	-1.04	-.94	-.86	-.82	-.81	-.82
.40	-.71	-.96	-1.16	-1.26	-1.25	-1.18	-1.08	-.98	-.88	-.80	-.73
.30	-.94	-1.14	-1.30	-1.38	-1.39	-1.33	-1.25	-1.13	-1.00	-.85	-.70
.20	-1.39	-1.53	-1.63	-1.65	-1.59	-1.51	-1.45	-1.37	-1.24	-1.05	-.83
.10	-2.06	-2.15	-2.18	-2.08	-1.88	-1.72	-1.68	-1.68	-1.60	-1.41	-1.15
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.57	.83	.93	.91	.80	.69	.64	.60	.49	.31	.10
.90	.80	.89	.96	.95	.87	.79	.72	.64	.51	.32	.10
.80	.89	.95	.99	.99	.94	.87	.79	.68	.52	.32	.08
.70	.92	.99	1.04	1.05	1.01	.95	.86	.74	.55	.32	.05
.60	.91	1.02	1.09	1.11	1.08	1.00	.92	.79	.58	.31	-.01
.50	.88	1.02	1.12	1.16	1.13	1.06	.96	.82	.59	.27	-.09
.40	.86	1.00	1.11	1.17	1.17	1.11	1.01	.83	.57	.21	-.19
.30	.87	1.03	1.16	1.23	1.23	1.18	1.08	.89	.58	.16	-.31
.20	.89	1.15	1.36	1.42	1.37	1.28	1.21	1.07	.73	.18	-.48
.10	.91	1.39	1.72	1.76	1.57	1.40	1.40	1.37	1.01	.26	-.68
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.16	-.13	-.11	-.08	-.04	.03	.14	.16	-.06	-.53	-1.13
.90	-.19	-.15	-.11	-.07	-.02	.05	.11	.09	-.11	-.48	-.96
.80	-.23	-.18	-.12	-.06	.00	.06	.09	.04	-.14	-.46	-.84
.70	-.28	-.21	-.13	-.06	.01	.06	.09	.04	-.14	-.45	-.82
.60	-.32	-.23	-.15	-.07	.00	.07	.11	.07	-.12	-.46	-.88
.50	-.34	-.25	-.16	-.07	.00	.07	.12	.09	-.10	-.46	-.89
.40	-.34	-.24	-.15	-.07	.01	.07	.11	.08	-.10	-.41	-.80
.30	-.38	-.26	-.14	-.05	.02	.08	.11	.07	-.08	-.35	-.68
.20	-.55	-.33	-.15	-.03	.04	.09	.13	.12	-.03	-.32	-.67
.10	-.86	-.49	-.18	.00	.07	.11	.20	.23	.07	-.31	-.79
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.43	-.45	-.45	-.40	-.32	-.26	-.25	-.28	-.31	-.33	-.34
.90	-.47	-.46	-.44	-.41	-.35	-.31	-.29	-.30	-.32	-.34	-.37
.80	-.51	-.48	-.46	-.43	-.40	-.37	-.35	-.33	-.34	-.36	-.38
.70	-.53	-.52	-.50	-.48	-.46	-.44	-.41	-.39	-.38	-.39	-.40
.60	-.55	-.56	-.57	-.57	-.55	-.52	-.49	-.47	-.44	-.42	-.41
.50	-.59	-.62	-.64	-.65	-.63	-.60	-.57	-.54	-.50	-.46	-.42
.40	-.67	-.69	-.71	-.71	-.70	-.68	-.64	-.60	-.56	-.51	-.45
.30	-.84	-.82	-.81	-.80	-.79	-.77	-.74	-.69	-.65	-.59	-.53
.20	-1.11	-1.06	-1.02	-.96	-.93	-.90	-.88	-.86	-.82	-.77	-.71
.10	-1.48	-1.41	-1.34	-1.24	-1.14	-1.08	-1.08	-1.10	-1.10	-1.04	-.96
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C2. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\gamma = 0.5$

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			-.86	-.87	-.89	-.91	-.92	-.94	-.96	-.97	-.99	
.80			-.74	-.76	-.77	-.79	-.80	-.82	-.83	-.85	-.86	
.70			-.64	-.65	-.67	-.68	-.69	-.70	-.71	-.73	-.74	
.60			-.57	-.57	-.58	-.59	-.59	-.60	-.60	-.61	-.61	
.50			-.52	-.52	-.52	-.51	-.51	-.51	-.51	-.50	-.50	
.40			-.50	-.49	-.48	-.47	-.46	-.45	-.44	-.43	-.41	
.30			-.51	-.49	-.47	-.46	-.44	-.42	-.40	-.39	-.37	
.20			-.54	-.52	-.49	-.47	-.45	-.43	-.41	-.39	-.37	
.10			-.58	-.56	-.53	-.51	-.49	-.47	-.45	-.43	-.41	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.39	-.63	-.77	-.73	-.53	-.36	-.34	-.43	-.51	-.54	-.56
.90		-.52	-.65	-.73	-.70	-.60	-.50	-.48	-.51	-.56	-.60	-.64
.80		-.63	-.69	-.72	-.72	-.68	-.64	-.60	-.60	-.62	-.67	-.73
.70		-.69	-.75	-.80	-.82	-.81	-.77	-.73	-.69	-.70	-.74	-.80
.60		-.70	-.83	-.93	-.97	-.96	-.91	-.85	-.80	-.79	-.81	-.85
.50		-.68	-.89	-1.05	-1.12	-1.10	-1.04	-.97	-.91	-.87	-.84	-.83
.40		-.69	-.93	-1.12	-1.21	-1.22	-1.17	-1.11	-1.03	-.94	-.84	-.74
.30		-.84	-1.05	-1.23	-1.33	-1.35	-1.32	-1.27	-1.18	-1.06	-.89	-.70
.20		-1.23	-1.39	-1.51	-1.56	-1.54	-1.50	-1.46	-1.40	-1.27	-1.09	-.87
.10		-1.87	-1.95	-1.98	-1.92	-1.81	-1.71	-1.68	-1.66	-1.59	-1.44	-1.25
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.70	.70	.68	.62	.52	.41	.31	.21	.11	-.01	-.13
.90		.83	.79	.73	.66	.56	.46	.36	.25	.12	-.03	-.19
.80		.94	.86	.77	.69	.60	.51	.40	.28	.13	-.05	-.24
.70		.98	.90	.81	.72	.63	.54	.44	.31	.14	-.07	-.30
.60		.97	.90	.83	.75	.66	.56	.46	.33	.14	-.10	-.37
.50		.94	.89	.84	.77	.68	.58	.47	.33	.12	-.15	-.45
.40		.92	.87	.82	.76	.69	.60	.49	.33	.09	-.21	-.55
.30		.93	.89	.84	.79	.72	.63	.52	.34	.07	-.29	-.70
.20		.97	.97	.95	.88	.78	.67	.57	.42	.11	-.36	-.90
.10		1.04	1.12	1.15	1.05	.88	.72	.66	.55	.20	-.41	-1.16
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.02	-.00	.03	.08	.15	.24	.35	.44	.50	.51	.49
.90		-.08	-.02	.05	.12	.21	.31	.41	.50	.57	.62	.67
.80		-.14	-.04	.07	.17	.27	.37	.47	.56	.64	.73	.81
.70		-.23	-.07	.09	.22	.33	.43	.52	.62	.71	.80	.89
.60		-.32	-.09	.11	.26	.38	.47	.57	.67	.76	.84	.92
.50		-.36	-.11	.11	.29	.41	.51	.61	.70	.79	.86	.93
.40		-.36	-.12	.10	.29	.44	.56	.64	.71	.78	.87	.96
.30		-.41	-.13	.12	.34	.49	.61	.69	.76	.83	.92	1.02
.20		-.62	-.16	.23	.48	.60	.69	.80	.93	1.03	1.09	1.14
.10		-1.03	-.22	.41	.73	.76	.78	.98	1.24	1.39	1.38	1.29
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.53	-.55	-.54	-.49	-.40	-.34	-.35	-.39	-.44	-.46	-.47
.90		-.56	-.56	-.54	-.50	-.44	-.40	-.39	-.41	-.44	-.47	-.50
.80		-.60	-.58	-.55	-.52	-.50	-.47	-.45	-.44	-.45	-.48	-.52
.70		-.63	-.62	-.61	-.59	-.57	-.55	-.53	-.51	-.50	-.52	-.53
.60		-.66	-.68	-.69	-.69	-.67	-.65	-.63	-.60	-.58	-.56	-.55
.50		-.71	-.75	-.78	-.78	-.77	-.75	-.72	-.69	-.66	-.61	-.57
.40		-.81	-.83	-.85	-.86	-.85	-.84	-.81	-.76	-.72	-.67	-.61
.30		-.99	-.98	-.97	-.97	-.96	-.94	-.91	-.87	-.82	-.77	-.72
.20		-1.31	-1.27	-1.23	-1.19	-1.14	-1.11	-1.09	-1.08	-1.06	-1.01	-.95
.10		-1.76	-1.71	-1.64	-1.53	-1.40	-1.33	-1.35	-1.41	-1.42	-1.37	-1.28
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			-.99	-.97	-.96	-.94	-.93	-.92	-.90	-.89	-.88	
.80			-.99	-.98	-.97	-.95	-.94	-.93	-.91	-.90	-.89	
.70			-.96	-.95	-.94	-.93	-.92	-.90	-.89	-.88	-.87	
.60			-.87	-.86	-.86	-.85	-.84	-.84	-.83	-.83	-.82	
.50			-.75	-.75	-.74	-.74	-.74	-.74	-.74	-.74	-.74	
.40			-.62	-.63	-.63	-.64	-.64	-.65	-.65	-.66	-.66	
.30			-.54	-.55	-.56	-.57	-.58	-.58	-.59	-.60	-.61	
.20			-.51	-.52	-.53	-.54	-.56	-.57	-.58	-.59	-.60	
.10			-.52	-.53	-.54	-.56	-.57	-.58	-.59	-.61	-.62	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.18	-.41	-.55	-.52	-.36	-.24	-.29	-.43	-.53	-.56	-.53
.90		-.33	-.44	-.50	-.48	-.40	-.34	-.37	-.45	-.51	-.55	-.57
.80		-.46	-.48	-.49	-.48	-.46	-.45	-.46	-.48	-.51	-.55	-.60
.70		-.52	-.53	-.55	-.56	-.56	-.56	-.55	-.54	-.55	-.59	-.64
.60		-.53	-.59	-.64	-.67	-.68	-.67	-.65	-.63	-.63	-.65	-.68
.50		-.52	-.64	-.74	-.79	-.79	-.77	-.75	-.73	-.71	-.69	-.67
.40		-.54	-.69	-.81	-.88	-.89	-.88	-.86	-.83	-.78	-.72	-.64
.30		-.66	-.79	-.90	-.97	-1.00	-1.01	-.99	-.96	-.89	-.80	-.70
.20		-.95	-1.04	-1.11	-1.15	-1.16	-1.16	-1.15	-1.14	-1.10	-1.05	-.98
.10		-1.40	-1.43	-1.44	-1.42	-1.37	-1.33	-1.34	-1.37	-1.41	-1.46	-1.51
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-1.52	-1.20	-.90	-.66	-.46	-.27	-.07	.06	-.00	-.26	-.62
.90		-1.39	-1.15	-.93	-.73	-.55	-.37	-.19	-.07	-.11	-.30	-.56
.80		-1.30	-1.13	-.96	-.80	-.63	-.46	-.30	-.19	-.20	-.33	-.53
.70		-1.30	-1.17	-1.03	-.88	-.72	-.55	-.40	-.29	-.29	-.38	-.53
.60		-1.37	-1.25	-1.12	-.98	-.81	-.64	-.48	-.37	-.36	-.44	-.56
.50		-1.48	-1.35	-1.21	-1.06	-.89	-.72	-.56	-.44	-.42	-.50	-.62
.40		-1.60	-1.44	-1.28	-1.12	-.96	-.80	-.63	-.51	-.49	-.57	-.70
.30		-1.76	-1.57	-1.39	-1.22	-1.05	-.89	-.73	-.61	-.59	-.67	-.80
.20		-2.03	-1.81	-1.60	-1.40	-1.20	-1.02	-.87	-.76	-.75	-.82	-.94
.10		-2.40	-2.16	-1.92	-1.67	-1.42	-1.20	-1.05	-.98	-.97	-1.02	-1.10
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.16	.36	.51	.59	.60	.64	.76	.88	.89	.77	.57
.90		.18	.36	.52	.62	.68	.74	.84	.91	.91	.82	.69
.80		.17	.36	.54	.67	.76	.84	.91	.96	.94	.87	.76
.70		.11	.35	.57	.73	.85	.93	.99	1.03	.99	.89	.76
.60		-.00	.32	.61	.80	.92	1.00	1.07	1.11	1.05	.90	.70
.50		-.10	.28	.61	.84	.98	1.07	1.13	1.15	1.07	.88	.64
.40		-.15	.23	.58	.84	1.02	1.13	1.18	1.15	1.04	.85	.63
.30		-.22	.22	.62	.92	1.11	1.22	1.26	1.22	1.09	.88	.62
.20		-.40	.30	.88	1.20	1.31	1.35	1.46	1.52	1.38	1.03	.55
.10		-.70	.47	1.37	1.72	1.61	1.53	1.77	2.06	1.94	1.31	.42
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.68	-.68	-.65	-.56	-.45	-.40	-.47	-.59	-.65	-.62	-.55
.90		-.74	-.71	-.66	-.60	-.53	-.50	-.52	-.58	-.61	-.62	-.61
.80		-.80	-.74	-.69	-.65	-.62	-.60	-.60	-.60	-.61	-.63	-.66
.70		-.85	-.80	-.77	-.75	-.74	-.73	-.71	-.69	-.67	-.67	-.67
.60		-.90	-.89	-.88	-.87	-.87	-.86	-.85	-.83	-.79	-.73	-.67
.50		-.98	-.99	-1.00	-1.00	-1.00	-1.00	-.99	-.97	-.91	-.82	-.71
.40		-1.13	-1.12	-1.12	-1.12	-1.13	-1.13	-1.11	-1.07	-1.01	-.93	-.84
.30		-1.38	-1.33	-1.30	-1.28	-1.28	-1.27	-1.25	-1.21	-1.17	-1.12	-1.08
.20		-1.76	-1.69	-1.63	-1.56	-1.51	-1.48	-1.48	-1.50	-1.49	-1.48	-1.45
.10		-2.27	-2.20	-2.11	-1.98	-1.83	-1.76	-1.82	-1.93	-2.00	-1.98	-1.93
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C2. C_{pmean}, $\overline{\beta}$, $\overline{p}$, γ = 0.5

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			-.90	-.90	-.90	-.90	-.90	-.90	-.90	-.90	-.90	
.80			-.94	-.94	-.94	-.94	-.94	-.94	-.94	-.94	-.94	
.70			-.94	-.94	-.94	-.94	-.94	-.94	-.94	-.94	-.94	
.60			-.90	-.90	-.90	-.90	-.90	-.90	-.90	-.90	-.90	
.50			-.82	-.82	-.82	-.82	-.82	-.82	-.82	-.82	-.82	
.40			-.74	-.74	-.74	-.74	-.73	-.74	-.74	-.74	-.74	
.30			-.67	-.67	-.67	-.67	-.67	-.67	-.67	-.67	-.67	
.20			-.64	-.64	-.64	-.64	-.64	-.64	-.64	-.64	-.64	
.10			-.64	-.64	-.64	-.64	-.64	-.64	-.64	-.64	-.64	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.31	-.50	-.60	-.54	-.36	-.26	-.35	-.51	-.58	-.50	-.35
.90		-.46	-.52	-.54	-.49	-.40	-.35	-.40	-.49	-.53	-.52	-.47
.80		-.58	-.54	-.51	-.48	-.46	-.45	-.46	-.49	-.52	-.54	-.57
.70		-.65	-.59	-.54	-.53	-.53	-.54	-.54	-.53	-.55	-.59	-.64
.60		-.67	-.65	-.63	-.63	-.63	-.64	-.63	-.62	-.63	-.65	-.68
.50		-.68	-.70	-.72	-.73	-.73	-.73	-.73	-.72	-.71	-.70	-.69
.40		-.70	-.75	-.79	-.81	-.83	-.83	-.82	-.81	-.78	-.75	-.70
.30		-.81	-.85	-.88	-.91	-.93	-.94	-.94	-.92	-.89	-.84	-.79
.20		-1.04	-1.07	-1.09	-1.09	-1.09	-1.09	-1.04	-1.10	-1.09	-1.07	-1.04
.10		-1.40	-1.41	-1.40	-1.36	-1.30	-1.26	-1.29	-1.36	-1.41	-1.44	-1.46
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.77	-.95	-1.05	-.99	-.80	-.58	-.45	-.41	-.45	-.56	-.70
.90		-.84	-.95	-1.00	-.97	-.84	-.69	-.57	-.52	-.53	-.61	-.73
.80		-.89	-.96	-1.00	-.98	-.91	-.80	-.70	-.63	-.62	-.67	-.75
.70		-.90	-1.01	-1.08	-1.09	-1.03	-.93	-.83	-.74	-.71	-.74	-.79
.60		-.92	-1.10	-1.23	-1.26	-1.20	-1.08	-.96	-.86	-.82	-.82	-.84
.50		-.99	-1.21	-1.38	-1.43	-1.36	-1.23	-1.10	-.99	-.92	-.91	-.91
.40		-1.19	-1.36	-1.49	-1.53	-1.48	-1.37	-1.24	-1.12	-1.04	-1.01	-1.01
.30		-1.54	-1.61	-1.65	-1.67	-1.62	-1.53	-1.42	-1.30	-1.21	-1.16	-1.13
.20		-2.08	-2.08	-2.06	-1.99	-1.88	-1.76	-1.67	-1.58	-1.49	-1.39	-1.29
.10		-2.77	-2.75	-2.68	-2.51	-2.26	-2.06	-1.99	-1.96	-1.87	-1.71	-1.50
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.32	.59	.78	.83	.76	.72	.78	.86	.80	.58	.27
.90		.39	.61	.78	.86	.85	.82	.85	.86	.78	.61	.39
.80		.42	.63	.80	.90	.93	.93	.91	.88	.79	.64	.46
.70		.38	.63	.83	.96	1.01	1.01	1.00	.94	.82	.63	.41
.60		.27	.60	.87	1.03	1.08	1.09	1.08	1.02	.86	.59	.27
.50		.17	.55	.87	1.07	1.14	1.15	1.14	1.07	.87	.54	.15
.40		.11	.50	.83	1.07	1.19	1.22	1.19	1.06	.83	.50	.12
.30		.04	.49	.88	1.15	1.28	1.32	1.27	1.13	.87	.51	.10
.20		-.13	.58	1.16	1.45	1.49	1.45	1.47	1.43	1.15	.61	-.06
.10		-.43	.78	1.68	1.99	1.81	1.63	1.81	1.99	1.70	.81	-.38
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT 1-2 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		-.70	-.56	-.45	-.41	-.45	-.58	-.80	-.99	-1.05	-.95	-.77
.90		-.73	-.61	-.53	-.52	-.57	-.69	-.84	-.97	-1.00	-.95	-.84
.80		-.75	-.67	-.62	-.63	-.70	-.80	-.91	-.98	-1.00	-.96	-.89
.70		-.79	-.74	-.71	-.74	-.83	-.93	-1.03	-1.09	-1.08	-1.01	-.90
.60		-.84	-.82	-.82	-.86	-.96	-1.08	-1.20	-1.26	-1.23	-1.10	-.92
.50		-.91	-.91	-.92	-.99	-1.10	-1.23	-1.36	-1.43	-1.38	-1.21	-.99
.40		-1.01	-1.01	-1.04	-1.12	-1.24	-1.37	-1.48	-1.53	-1.49	-1.36	-1.19
.30		-1.13	-1.16	-1.21	-1.30	-1.42	-1.53	-1.62	-1.67	-1.66	-1.61	-1.54
.20		-1.29	-1.39	-1.49	-1.58	-1.67	-1.76	-1.88	-1.99	-2.06	-2.08	-2.08
.10		-1.50	-1.71	-1.87	-1.96	-1.99	-2.06	-2.26	-2.51	-2.68	-2.75	-2.77
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

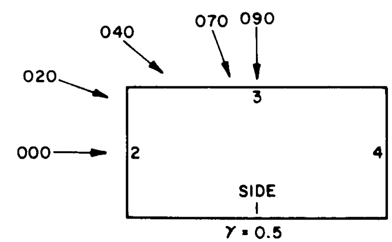


Table C3. C_{pmean}, $\overline{\beta}$, $\overline{p}$, $\gamma = 0.25$

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		-.42	-.39	-.35	-.31	-.28	-.24	-.21	-.17	-.13	
.80		-.42	-.39	-.35	-.32	-.28	-.24	-.21	-.17	-.14	
.70		-.42	-.39	-.35	-.32	-.28	-.24	-.21	-.17	-.14	
.60		-.42	-.39	-.35	-.31	-.28	-.24	-.20	-.17	-.13	
.50		-.42	-.38	-.35	-.31	-.27	-.24	-.20	-.17	-.13	
.40		-.42	-.38	-.35	-.31	-.27	-.24	-.20	-.17	-.13	
.30		-.42	-.39	-.35	-.31	-.28	-.24	-.20	-.17	-.13	
.20		-.43	-.39	-.36	-.32	-.28	-.25	-.21	-.18	-.14	
.10		-.44	-.40	-.37	-.33	-.29	-.26	-.22	-.19	-.15	
Y/W X/L	00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.97	-.89	-.78	-.62	-.42	-.24	-.13	-.08	-.08	-.12	-.17
.90	-.95	-.88	-.78	-.64	-.45	-.27	-.14	-.07	-.07	-.13	-.22
.80	-.96	-.89	-.79	-.65	-.47	-.30	-.15	-.07	-.07	-.14	-.26
.70	-1.03	-.92	-.80	-.66	-.49	-.31	-.16	-.06	-.06	-.15	-.29
.60	-1.16	-.99	-.82	-.65	-.49	-.32	-.17	-.06	-.06	-.15	-.29
.50	-1.30	-1.08	-.86	-.67	-.49	-.33	-.17	-.07	-.06	-.15	-.29
.40	-1.45	-1.19	-.93	-.71	-.51	-.33	-.18	-.09	-.08	-.17	-.29
.30	-1.73	-1.39	-1.06	-.77	-.54	-.34	-.20	-.12	-.12	-.20	-.31
.20	-2.29	-1.76	-1.27	-.86	-.57	-.36	-.23	-.17	-.19	-.26	-.36
.10	-3.13	-2.29	-1.54	-.97	-.60	-.37	-.26	-.24	-.27	-.35	-.45
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.41	.65	.83	.93	.93	.92	.93	.93	.83	.65	.41
.90	.42	.64	.83	.94	.98	.98	.98	.94	.83	.64	.42
.80	.42	.64	.84	.96	1.02	1.03	1.02	.96	.84	.64	.42
.70	.41	.65	.86	.99	1.06	1.08	1.06	.99	.86	.65	.41
.60	.39	.66	.88	1.03	1.09	1.10	1.09	1.03	.88	.66	.39
.50	.37	.65	.90	1.05	1.12	1.13	1.12	1.05	.90	.65	.37
.40	.34	.63	.88	1.05	1.14	1.16	1.14	1.05	.88	.63	.34
.30	.29	.62	.91	1.10	1.19	1.22	1.19	1.10	.91	.62	.29
.20	.18	.65	1.04	1.26	1.31	1.31	1.31	1.26	1.04	.65	.18
.10	.01	.73	1.29	1.53	1.50	1.44	1.50	1.53	1.29	.73	.01
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.17	-.12	-.08	-.08	-.13	-.24	-.42	-.62	-.78	-.89	-.97
.90	-.22	-.13	-.07	-.07	-.14	-.27	-.45	-.64	-.78	-.88	-.95
.80	-.26	-.14	-.07	-.07	-.15	-.30	-.47	-.65	-.79	-.89	-.96
.70	-.29	-.15	-.06	-.06	-.16	-.31	-.49	-.66	-.80	-.92	-1.03
.60	-.29	-.15	-.06	-.06	-.17	-.32	-.49	-.65	-.82	-.99	-1.16
.50	-.29	-.15	-.06	-.07	-.17	-.33	-.49	-.67	-.86	-1.08	-1.30
.40	-.29	-.17	-.08	-.09	-.18	-.33	-.51	-.71	-.93	-1.19	-1.45
.30	-.31	-.20	-.12	-.12	-.20	-.34	-.54	-.77	-1.06	-1.39	-1.73
.20	-.36	-.26	-.19	-.17	-.23	-.36	-.57	-.86	-1.27	-1.76	-2.29
.10	-.45	-.35	-.27	-.24	-.26	-.37	-.60	-.97	-1.54	-2.29	-3.13
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.16	-.20	-.21	-.20	-.17	-.16	-.17	-.20	-.21	-.20	-.16
.90	-.20	-.21	-.21	-.21	-.19	-.18	-.19	-.21	-.21	-.21	-.20
.80	-.22	-.22	-.22	-.21	-.21	-.21	-.21	-.21	-.22	-.22	-.22
.70	-.24	-.23	-.23	-.23	-.24	-.24	-.24	-.23	-.23	-.23	-.24
.60	-.24	-.25	-.26	-.26	-.26	-.26	-.26	-.26	-.26	-.25	-.24
.50	-.25	-.27	-.28	-.29	-.29	-.29	-.29	-.29	-.28	-.27	-.25
.40	-.28	-.29	-.30	-.31	-.31	-.32	-.31	-.31	-.30	-.29	-.28
.30	-.33	-.33	-.33	-.34	-.35	-.35	-.35	-.34	-.33	-.33	-.33
.20	-.41	-.41	-.42	-.41	-.41	-.41	-.41	-.41	-.42	-.41	-.41
.10	-.51	-.54	-.55	-.53	-.50	-.48	-.50	-.53	-.55	-.54	-.51
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		-.79	-.79	-.79	-.79	-.79	-.80	-.80	-.80	-.80	
.80		-.70	-.70	-.70	-.70	-.70	-.71	-.71	-.71	-.71	
.70		-.63	-.63	-.62	-.62	-.62	-.62	-.61	-.61	-.61	
.60		-.57	-.56	-.55	-.55	-.54	-.53	-.52	-.52	-.51	
.50		-.53	-.51	-.50	-.48	-.47	-.46	-.44	-.43	-.42	
.40		-.51	-.49	-.46	-.44	-.42	-.40	-.38	-.36	-.34	
.30		-.51	-.49	-.46	-.43	-.41	-.38	-.36	-.33	-.31	
.20		-.54	-.51	-.48	-.46	-.43	-.40	-.37	-.34	-.32	
.10		-.59	-.56	-.53	-.50	-.47	-.44	-.41	-.38	-.36	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.33	-.68	-.91	-.93	-.77	-.55	-.40	-.35	-.37	-.45	-.56
.90	-.51	-.72	-.87	-.88	-.77	-.62	-.50	-.43	-.44	-.51	-.63
.80	-.63	-.76	-.85	-.87	-.80	-.70	-.58	-.50	-.50	-.57	-.68
.70	-.66	-.80	-.90	-.93	-.87	-.77	-.66	-.57	-.55	-.59	-.67
.60	-.63	-.84	-1.00	-1.04	-.97	-.85	-.73	-.63	-.59	-.59	-.63
.50	-.65	-.89	-1.07	-1.13	-1.06	-.93	-.79	-.68	-.61	-.59	-.59
.40	-.81	-.98	-1.11	-1.16	-1.12	-1.01	-.87	-.73	-.64	-.60	-.60
.30	-1.12	-1.17	-1.22	-1.23	-1.20	-1.12	-.98	-.83	-.73	-.67	-.64
.20	-1.55	-1.56	-1.55	-1.49	-1.39	-1.27	-1.16	-1.05	-.94	-.83	-.71
.10	-2.08	-2.14	-2.12	-1.96	-1.69	-1.47	-1.39	-1.38	-1.28	-1.07	-.79
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.80	.90	.96	.95	.87	.77	.70	.62	.49	.30	.07
.90	.86	.94	.98	.98	.92	.85	.76	.66	.50	.29	.05
.80	.92	.98	1.01	1.01	.97	.91	.82	.69	.51	.28	.02
.70	.97	1.02	1.05	1.05	1.01	.95	.86	.72	.53	.28	-.00
.60	.99	1.05	1.09	1.08	1.04	.97	.88	.75	.55	.28	-.03
.50	.99	1.06	1.10	1.10	1.05	.98	.89	.75	.54	.26	-.06
.40	.98	1.04	1.08	1.09	1.06	1.00	.90	.75	.52	.22	-.12
.30	.98	1.05	1.10	1.12	1.10	1.04	.94	.77	.51	.17	-.21
.20	1.03	1.15	1.24	1.25	1.20	1.12	1.04	.89	.59	.14	-.38
.10	1.14	1.37	1.51	1.50	1.36	1.23	1.19	1.10	.76	.15	-.61
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.08	-.10	-.11	-.10	-.05	.04	.17	.23	.11	-.20	-.62
.90	-.18	-.14	-.11	-.07	-.01	.08	.19	.23	.12	-.17	-.54
.80	-.25	-.18	-.11	-.04	.03	.11	.20	.24	.13	-.13	-.47
.70	-.27	-.19	-.11	-.03	.05	.14	.22	.25	.15	-.09	-.39
.60	-.26	-.18	-.10	-.02	.07	.16	.25	.28	.18	-.04	-.32
.50	-.25	-.18	-.10	-.02	.08	.18	.27	.30	.21	-.00	-.27
.40	-.28	-.19	-.10	-.00	.10	.20	.28	.31	.22	.02	-.23
.30	-.35	-.22	-.09	.03	.13	.22	.31	.33	.25	.07	-.17
.20	-.48	-.25	-.05	.09	.18	.27	.37	.42	.37	.19	-.04
.10	-.64	-.29	.00	.18	.26	.33	.46	.58	.57	.40	.16
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

MEAN PRESSURE COEFFICIENT — 1-4 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	-.44	-.40	-.37	-.36	-.37	-.36	-.33	-.29	-.29	-.33	-.39
.90	-.47	-.44	-.41	-.40	-.40	-.39	-.36	-.34	-.33	-.36	-.40
.80	-.50	-.47	-.45	-.44	-.43	-.42	-.40	-.38	-.38	-.39	-.41
.70	-.52	-.50	-.49	-.48	-.47	-.45	-.44	-.42	-.42	-.42	-.43
.60	-.54	-.53	-.53	-.52	-.51	-.49	-.47	-.46	-.45	-.45	-.45
.50	-.55	-.55	-.56	-.55	-.54	-.52	-.50	-.48	-.47	-.46	-.45
.40	-.56	-.57	-.57	-.57	-.56	-.54	-.52	-.50	-.48	-.45	-.43
.30	-.63	-.62	-.61	-.60	-.59	-.57	-.56	-.53	-.51	-.48	-.44
.20	-.80	-.75	-.71	-.69	-.67	-.66	-.64	-.62	-.60	-.57	-.54
.10	-1.07	-.98	-.90	-.84	-.81	-.79	-.77	-.76	-.75	-.74	-.73
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C3. C_{pmean}, $\overline{\beta}$, $\overline{p}$, γ = 0.25

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-1.32	-1.29	-1.27	-1.24	-1.21	-1.18	-1.15	-1.12	-1.09	
.80		-1.15	-1.12	-1.09	-1.07	-1.04	-1.01	-.98	-.96	-.93	
.70		-.98	-.96	-.94	-.91	-.89	-.87	-.84	-.82	-.80	
.60		-.83	-.81	-.80	-.78	-.77	-.75	-.73	-.72	-.70	
.50		-.69	-.69	-.68	-.68	-.67	-.67	-.66	-.66	-.65	
.40		-.60	-.60	-.61	-.61	-.62	-.62	-.63	-.63	-.64	
.30		-.56	-.57	-.58	-.59	-.61	-.62	-.63	-.64	-.66	
.20		-.57	-.58	-.60	-.62	-.63	-.65	-.66	-.68	-.70	
.10		-.61	-.63	-.65	-.67	-.68	-.70	-.72	-.74	-.75	

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.48	-.66	-.77	-.78	-.68	-.55	-.46	-.42	-.44	-.50	-.57
.90	-.59	-.71	-.78	-.79	-.73	-.64	-.56	-.51	-.51	-.57	-.66
.80	-.68	-.76	-.81	-.83	-.79	-.73	-.65	-.59	-.59	-.64	-.73
.70	-.72	-.82	-.89	-.91	-.88	-.81	-.74	-.68	-.67	-.71	-.78
.60	-.74	-.88	-.99	-1.02	-.98	-.90	-.82	-.76	-.74	-.76	-.81
.50	-.79	-.96	-1.08	-1.11	-1.07	-.98	-.89	-.82	-.79	-.79	-.81
.40	-.94	-1.05	-1.13	-1.16	-1.14	-1.07	-.97	-.88	-.82	-.80	-.80
.30	-1.20	-1.23	-1.25	-1.25	-1.24	-1.19	-1.09	-.98	-.90	-.84	-.81
.20	-1.57	-1.56	-1.55	-1.50	-1.43	-1.35	-1.28	-1.20	-1.11	-1.01	-.89
.10	-2.03	-2.07	-2.04	-1.92	-1.72	-1.57	-1.54	-1.55	-1.48	-1.29	-1.05

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.66	.65	.63	.58	.51	.42	.33	.22	.08	-.07	-.24
.90	.72	.70	.66	.61	.54	.46	.36	.24	.09	-.09	-.29
.80	.77	.73	.69	.64	.57	.49	.39	.26	.10	-.11	-.33
.70	.79	.75	.70	.65	.58	.49	.39	.26	.08	-.14	-.39
.60	.77	.74	.70	.64	.56	.48	.38	.25	.06	-.18	-.45
.50	.71	.69	.67	.62	.55	.46	.36	.22	.03	-.22	-.50
.40	.62	.63	.62	.59	.53	.45	.34	.19	-.01	-.28	-.57
.30	.53	.57	.58	.57	.52	.44	.34	.18	-.05	-.35	-.69
.20	.47	.55	.61	.60	.53	.44	.35	.20	-.07	-.47	-.93
.10	.42	.59	.70	.68	.55	.43	.36	.25	-.07	-.62	-1.29

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.01	-.01	-.00	.03	.11	.22	.35	.47	.53	.54	.52
.90	-.09	-.03	.03	.11	.20	.30	.41	.52	.60	.67	.73
.80	-.17	-.05	.07	.18	.29	.38	.48	.57	.67	.78	.90
.70	-.24	-.06	.10	.24	.35	.45	.54	.63	.74	.86	.99
.60	-.28	-.06	.13	.28	.40	.50	.60	.70	.80	.91	1.02
.50	-.32	-.08	.14	.31	.43	.54	.64	.74	.83	.92	1.02
.40	-.37	-.11	.12	.32	.47	.58	.67	.74	.83	.92	1.03
.30	-.47	-.15	.14	.37	.54	.65	.73	.80	.88	.98	1.09
.20	-.67	-.17	.25	.53	.67	.76	.87	.99	1.09	1.17	1.24
.10	-.96	-.18	.45	.79	.87	.92	1.10	1.33	1.48	1.50	1.46

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.58	-.57	-.55	-.53	-.50	-.47	-.44	-.44	-.46	-.51	-.58
.90	-.58	-.57	-.55	-.53	-.51	-.49	-.47	-.46	-.47	-.51	-.56
.80	-.59	-.58	-.56	-.55	-.54	-.53	-.51	-.49	-.49	-.52	-.55
.70	-.62	-.62	-.61	-.61	-.60	-.58	-.56	-.54	-.54	-.55	-.56
.60	-.66	-.68	-.69	-.69	-.67	-.65	-.63	-.61	-.60	-.59	-.59
.50	-.70	-.73	-.75	-.75	-.74	-.72	-.70	-.67	-.65	-.62	-.60
.40	-.74	-.77	-.78	-.79	-.79	-.77	-.74	-.71	-.67	-.64	-.60
.30	-.88	-.87	-.87	-.87	-.87	-.85	-.83	-.79	-.75	-.71	-.67
.20	-1.20	-1.15	-1.11	-1.07	-1.05	-1.03	-1.01	-.98	-.96	-.92	-.89
.10	-1.73	-1.61	-1.51	-1.41	-1.34	-1.30	-1.29	-1.30	-1.30	-1.29	-1.27

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-.84	-.83	-.83	-.82	-.81	-.81	-.80	-.79	-.79	
.80		-.83	-.83	-.82	-.81	-.81	-.80	-.80	-.79	-.78	
.70		-.82	-.82	-.81	-.81	-.80	-.79	-.79	-.78	-.78	
.60		-.80	-.80	-.79	-.79	-.79	-.78	-.78	-.78	-.77	
.50		-.78	-.77	-.77	-.77	-.77	-.77	-.77	-.76	-.76	
.40		-.75	-.75	-.75	-.75	-.75	-.75	-.75	-.75	-.75	
.30		-.72	-.73	-.73	-.73	-.73	-.73	-.73	-.74	-.74	
.20		-.70	-.70	-.71	-.71	-.71	-.72	-.72	-.72	-.72	
.10		-.68	-.69	-.69	-.69	-.70	-.70	-.70	-.70	-.71	

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.26	-.52	-.68	-.67	-.52	-.40	-.43	-.54	-.60	-.56	-.47
.90	-.44	-.57	-.65	-.65	-.57	-.50	-.50	-.54	-.57	-.59	-.59
.80	-.58	-.62	-.65	-.65	-.63	-.60	-.57	-.55	-.57	-.62	-.68
.70	-.64	-.68	-.70	-.72	-.72	-.69	-.65	-.61	-.60	-.64	-.69
.60	-.64	-.73	-.79	-.82	-.82	-.78	-.74	-.70	-.67	-.65	-.64
.50	-.66	-.78	-.88	-.92	-.91	-.87	-.83	-.79	-.74	-.68	-.62
.40	-.76	-.86	-.93	-.98	-.99	-.97	-.92	-.85	-.79	-.74	-.69
.30	-.97	-1.02	-1.06	-1.09	-1.10	-1.09	-1.04	-.97	-.92	-.89	-.87
.20	-1.30	-1.34	-1.37	-1.35	-1.31	-1.27	-1.25	-1.23	-1.22	-1.19	-1.15
.10	-1.73	-1.84	-1.88	-1.79	-1.62	-1.50	-1.54	-1.65	-1.69	-1.63	-1.51

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-1.53	-1.39	-1.22	-1.03	-.81	-.61	-.46	-.37	-.36	-.42	-.51
.90	-1.38	-1.29	-1.18	-1.05	-.90	-.74	-.60	-.50	-.47	-.52	-.60
.80	-1.27	-1.23	-1.18	-1.10	-1.00	-.88	-.74	-.63	-.59	-.62	-.69
.70	-1.25	-1.26	-1.25	-1.20	-1.12	-1.01	-.88	-.76	-.71	-.72	-.76
.60	-1.31	-1.35	-1.37	-1.34	-1.25	-1.13	-1.00	-.89	-.83	-.82	-.83
.50	-1.40	-1.46	-1.49	-1.46	-1.36	-1.24	-1.11	-1.00	-.93	-.90	-.90
.40	-1.52	-1.55	-1.57	-1.54	-1.46	-1.34	-1.21	-1.09	-1.01	-.99	-.98
.30	-1.73	-1.73	-1.72	-1.67	-1.59	-1.48	-1.35	-1.23	-1.15	-1.13	-1.13
.20	-2.13	-2.11	-2.05	-1.98	-1.87	-1.73	-1.60	-1.50	-1.43	-1.40	-1.40
.10	-2.74	-2.69	-2.61	-2.47	-2.28	-2.10	-1.98	-1.90	-1.85	-1.81	-1.77

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.16	.34	.47	.53	.53	.58	.74	.89	.90	.75	.51
.90	.15	.33	.48	.58	.63	.70	.82	.91	.90	.79	.61
.80	.13	.32	.50	.63	.73	.82	.90	.95	.92	.82	.68
.70	.09	.33	.54	.70	.82	.91	.98	1.01	.97	.85	.70
.60	.03	.32	.58	.77	.89	.97	1.06	1.09	1.03	.88	.67
.50	-.06	.28	.59	.80	.94	1.03	1.11	1.13	1.05	.86	.61
.40	-.16	.20	.54	.80	.98	1.09	1.15	1.12	1.00	.79	.53
.30	-.31	.15	.56	.87	1.08	1.20	1.24	1.20	1.03	.76	.44
.20	-.51	.21	.81	1.17	1.31	1.38	1.48	1.51	1.32	.89	.33
.10	-.77	.40	1.31	1.71	1.68	1.64	1.87	2.09	1.88	1.18	.22

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.64	-.68	-.69	-.64	-.54	-.48	-.52	-.59	-.64	-.64	-.61
.90	-.70	-.69	-.67	-.64	-.58	-.55	-.55	-.58	-.61	-.62	-.63
.80	-.75	-.71	-.68	-.66	-.64	-.62	-.61	-.60	-.60	-.62	-.64
.70	-.80	-.77	-.75	-.73	-.73	-.72	-.69	-.67	-.65	-.66	-.67
.60	-.85	-.85	-.85	-.85	-.84	-.83	-.81	-.78	-.75	-.73	-.71
.50	-.91	-.93	-.95	-.95	-.95	-.93	-.91	-.89	-.85	-.80	-.75
.40	-.99	-1.01	-1.03	-1.04	-1.04	-1.02	-1.00	-.97	-.92	-.87	-.82
.30	-1.18	-1.17	-1.17	-1.16	-1.17	-1.16	-1.13	-1.09	-1.05	-1.02	-.98
.20	-1.58	-1.53	-1.48	-1.44	-1.41	-1.39	-1.37	-1.36	-1.35	-1.34	-1.33
.10	-2.17	-2.07	-1.97	-1.87	-1.77	-1.72	-1.74	-1.79	-1.83	-1.85	-1.85

Table C3. C_{pmean}, $\overline{\beta}$, $\overline{p}$, γ = 0.25

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W	X/L .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		-.82	-.82	-.82	-.82	-.82	-.82	-.82	-.82	-.82	
.80		-.81	-.81	-.81	-.81	-.81	-.81	-.81	-.81	-.81	
.70		-.80	-.80	-.80	-.80	-.80	-.80	-.80	-.80	-.80	
.60		-.78	-.79	-.79	-.79	-.79	-.79	-.78	-.78	-.78	
.50		-.77	-.77	-.77	-.77	-.77	-.77	-.77	-.77	-.77	
.40		-.75	-.75	-.75	-.75	-.75	-.75	-.75	-.75	-.75	
.30		-.72	-.72	-.72	-.72	-.72	-.72	-.72	-.72	-.72	
.20		-.69	-.69	-.69	-.69	-.69	-.69	-.69	-.69	-.69	
.10		-.66	-.66	-.66	-.66	-.66	-.66	-.66	-.66	-.66	

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	X/L .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.35	-.53	-.63	-.59	-.45	-.37	-.45	-.59	-.63	-.53	-.35
.90	-.54	-.59	-.61	-.58	-.51	-.47	-.51	-.58	-.61	-.59	-.54
.80	-.69	-.65	-.61	-.59	-.57	-.56	-.57	-.59	-.61	-.65	-.69
.70	-.75	-.70	-.66	-.64	-.65	-.65	-.65	-.64	-.66	-.70	-.75
.60	-.75	-.74	-.73	-.73	-.73	-.74	-.73	-.73	-.73	-.74	-.75
.50	-.79	-.80	-.81	-.82	-.82	-.82	-.82	-.82	-.81	-.80	-.79
.40	-.94	-.90	-.88	-.88	-.89	-.90	-.89	-.88	-.88	-.90	-.94
.30	-1.17	-1.09	-1.02	-.99	-1.00	-1.01	-1.00	-.99	-1.02	-1.09	-1.17
.20	-1.46	-1.41	-1.35	-1.28	-1.21	-1.18	-1.21	-1.28	-1.35	-1.41	-1.46
.10	-1.76	-1.85	-1.86	-1.73	-1.51	-1.39	-1.51	-1.73	-1.86	-1.85	-1.76

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	Y/W .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.68	-.81	-.88	-.81	-.63	-.49	-.50	-.58	-.66	-.69	-.69
.90	-.74	-.81	-.84	-.80	-.71	-.63	-.62	-.65	-.69	-.72	-.74
.80	-.80	-.83	-.84	-.83	-.80	-.77	-.74	-.74	-.74	-.77	-.80
.70	-.85	-.89	-.92	-.93	-.93	-.91	-.88	-.85	-.84	-.85	-.87
.60	-.89	-.98	-1.05	-1.09	-1.09	-1.06	-1.03	-.99	-.97	-.96	-.96
.50	-.95	-1.08	-1.19	-1.24	-1.23	-1.20	-1.16	-1.13	-1.10	-1.07	-1.05
.40	-1.07	-1.19	-1.28	-1.34	-1.35	-1.33	-1.29	-1.25	-1.21	-1.18	-1.17
.30	-1.32	-1.39	-1.46	-1.50	-1.51	-1.50	-1.46	-1.42	-1.38	-1.36	-1.35
.20	-1.77	-1.82	-1.85	-1.84	-1.80	-1.77	-1.75	-1.74	-1.72	-1.70	-1.67
.10	-2.43	-2.47	-2.48	-2.39	-2.23	-2.13	-2.14	-2.21	-2.24	-2.20	-2.12

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	X/L .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.33	.59	.77	.79	.69	.62	.69	.79	.77	.59	.33
.90	.38	.59	.76	.81	.78	.75	.78	.81	.76	.59	.38
.80	.40	.60	.76	.85	.87	.87	.87	.85	.76	.60	.40
.70	.37	.60	.80	.92	.96	.97	.96	.92	.80	.60	.37
.60	.29	.60	.85	1.00	1.05	1.05	1.05	1.00	.85	.60	.29
.50	.19	.55	.86	1.04	1.11	1.12	1.11	1.04	.86	.55	.19
.40	.07	.46	.80	1.04	1.16	1.20	1.16	1.04	.80	.46	.07
.30	-.07	.41	.83	1.12	1.27	1.31	1.27	1.12	.83	.41	-.07
.20	-.24	.52	1.13	1.46	1.51	1.49	1.51	1.46	1.13	.52	-.24
.10	-.43	.81	1.74	2.07	1.91	1.74	1.91	2.07	1.74	.81	-.43

MEAN PRESSURE COEFFICIENT 1-4 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	Y/W .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	-.69	-.69	-.66	-.58	-.50	-.49	-.63	-.81	-.88	-.81	-.68
.90	-.74	-.72	-.69	-.65	-.62	-.63	-.71	-.80	-.84	-.81	-.74
.80	-.80	-.77	-.74	-.74	-.74	-.77	-.80	-.83	-.84	-.83	-.80
.70	-.87	-.85	-.84	-.85	-.88	-.91	-.93	-.93	-.92	-.89	-.85
.60	-.96	-.96	-.97	-.99	-1.03	-1.06	-1.09	-1.09	-1.05	-.98	-.89
.50	-1.05	-1.07	-1.10	-1.13	-1.16	-1.20	-1.23	-1.24	-1.19	-1.08	-.95
.40	-1.17	-1.18	-1.21	-1.25	-1.29	-1.33	-1.35	-1.34	-1.28	-1.19	-1.07
.30	-1.35	-1.36	-1.38	-1.42	-1.46	-1.50	-1.51	-1.50	-1.46	-1.39	-1.32
.20	-1.67	-1.70	-1.72	-1.74	-1.75	-1.77	-1.80	-1.84	-1.85	-1.82	-1.77
.10	-2.12	-2.20	-2.24	-2.21	-2.14	-2.13	-2.23	-2.39	-2.48	-2.47	-2.43

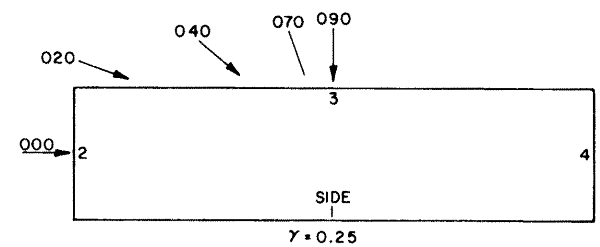


Table C4. $C_{prms,\ \overline{\beta}}$, γ = 1.0, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.20	.21	.22	.23	.24	.24	.23	.23	.23	
.80		.20	.21	.22	.23	.23	.23	.23	.23	.23	
.70		.20	.21	.22	.23	.23	.23	.23	.23	.23	
.60		.20	.21	.22	.23	.24	.24	.23	.23	.23	
.50		.20	.21	.22	.23	.24	.24	.24	.23	.23	
.40		.20	.21	.22	.23	.24	.24	.23	.23	.23	
.30		.20	.21	.22	.23	.23	.23	.23	.23	.23	
.20		.20	.21	.22	.23	.23	.23	.23	.23	.23	
.10		.20	.21	.22	.23	.24	.24	.23	.23	.23	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.17	.21	.24	.24	.21	.19	.19	.21	.23	.26	.28
.90	.18	.21	.23	.24	.22	.21	.22	.23	.25	.27	.30
.80	.19	.22	.24	.24	.24	.24	.24	.25	.27	.29	.32
.70	.19	.23	.25	.27	.27	.27	.27	.27	.29	.31	.34
.60	.19	.24	.28	.30	.30	.30	.30	.30	.31	.33	.36
.50	.20	.26	.30	.33	.33	.33	.32	.32	.33	.35	.38
.40	.21	.27	.32	.35	.36	.35	.35	.35	.36	.38	.41
.30	.25	.30	.35	.37	.38	.38	.38	.38	.40	.42	.45
.20	.33	.37	.40	.41	.41	.41	.41	.42	.44	.47	.51
.10	.47	.48	.48	.47	.45	.44	.44	.46	.49	.53	.58

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.17	.21	.19	.13	.10	.13	.19	.21	.17	.10
.90	.14	.17	.19	.17	.14	.13	.14	.17	.19	.17	.14
.80	.18	.18	.17	.16	.16	.15	.16	.16	.17	.18	.18
.70	.18	.18	.17	.17	.17	.16	.17	.17	.17	.18	.18
.60	.16	.17	.18	.19	.20	.20	.20	.19	.18	.17	.16
.50	.14	.17	.20	.22	.22	.23	.22	.22	.20	.17	.14
.40	.13	.18	.22	.24	.25	.25	.25	.24	.22	.18	.13
.30	.13	.19	.24	.27	.27	.27	.27	.27	.24	.19	.13
.20	.16	.21	.25	.28	.30	.30	.30	.28	.25	.21	.16
.10	.20	.23	.26	.29	.32	.32	.32	.29	.26	.23	.20

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.28	.26	.23	.21	.19	.19	.21	.24	.24	.21	.17
.90	.30	.27	.25	.23	.22	.21	.22	.24	.23	.21	.18
.80	.32	.29	.27	.25	.24	.24	.24	.24	.24	.22	.19
.70	.34	.31	.29	.27	.27	.27	.27	.27	.25	.23	.19
.60	.36	.33	.31	.30	.30	.30	.30	.30	.28	.24	.19
.50	.38	.35	.33	.32	.32	.33	.33	.33	.30	.26	.20
.40	.41	.38	.36	.35	.35	.35	.36	.35	.32	.27	.21
.30	.45	.42	.40	.38	.38	.38	.38	.37	.35	.30	.25
.20	.51	.47	.44	.42	.41	.41	.41	.41	.40	.37	.33
.10	.58	.53	.49	.46	.44	.44	.45	.47	.48	.48	.47

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.16	.17	.17	.15	.13	.11	.13	.15	.17	.17	.16
.90	.18	.17	.16	.14	.13	.12	.13	.14	.16	.17	.18
.80	.20	.18	.15	.14	.13	.13	.13	.14	.15	.18	.20
.70	.21	.18	.15	.14	.13	.13	.13	.14	.15	.18	.21
.60	.21	.18	.16	.14	.14	.14	.14	.14	.16	.18	.21
.50	.22	.19	.17	.15	.14	.14	.14	.15	.17	.19	.22
.40	.24	.20	.17	.15	.15	.15	.15	.15	.17	.20	.24
.30	.26	.21	.18	.16	.15	.16	.15	.16	.18	.21	.26
.20	.28	.24	.21	.18	.17	.16	.17	.18	.21	.24	.28
.10	.30	.29	.27	.23	.19	.17	.19	.23	.27	.29	.30

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.20	.19	.20	.20	.20	.20	.19	.19	.19	
.80		.19	.19	.19	.19	.19	.18	.18	.18	.18	
.70		.18	.18	.18	.18	.18	.18	.18	.18	.18	
.60		.18	.18	.18	.18	.18	.17	.17	.17	.17	
.50		.17	.17	.17	.17	.17	.17	.17	.16	.16	
.40		.16	.16	.16	.16	.16	.16	.16	.16	.16	
.30		.16	.16	.16	.15	.15	.15	.15	.15	.15	
.20		.15	.15	.15	.15	.15	.15	.15	.14	.14	
.10		.15	.14	.14	.15	.15	.14	.14	.14	.14	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.09	.09	.09	.08	.06	.06	.06	.06	.11	.15	.21
.90	.09	.09	.08	.08	.07	.07	.07	.09	.11	.14	.18
.80	.09	.09	.08	.08	.08	.08	.08	.09	.11	.13	.17
.70	.09	.09	.09	.09	.09	.09	.10	.10	.11	.14	.17
.60	.08	.09	.10	.10	.10	.11	.11	.11	.13	.16	.19
.50	.08	.10	.11	.11	.12	.12	.12	.12	.14	.18	.22
.40	.10	.11	.12	.13	.13	.13	.13	.14	.16	.20	.25
.30	.13	.13	.13	.14	.14	.14	.14	.15	.18	.23	.30
.20	.16	.15	.15	.15	.15	.15	.16	.17	.21	.29	.38
.10	.18	.18	.18	.17	.17	.17	.17	.19	.25	.37	.51

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.16	.18	.20	.19	.16	.15	.15	.16	.15	.12	.09
.90	.19	.19	.19	.19	.16	.15	.15	.15	.15	.13	.11
.80	.21	.19	.18	.17	.16	.16	.15	.15	.14	.14	.13
.70	.21	.19	.18	.17	.17	.16	.16	.15	.14	.14	.13
.60	.19	.19	.18	.18	.17	.17	.16	.16	.15	.14	.14
.50	.19	.19	.19	.18	.18	.17	.17	.16	.15	.15	.14
.40	.20	.19	.19	.19	.18	.18	.17	.16	.16	.16	.15
.30	.23	.21	.20	.19	.19	.19	.18	.17	.17	.17	.17
.20	.24	.23	.22	.21	.20	.19	.19	.19	.19	.18	.17
.10	.25	.26	.26	.25	.22	.20	.20	.22	.22	.19	.16

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.11	.06	.02	.03	.06	.14	.29	.42	.42	.27	.02
.90	.13	.08	.05	.06	.10	.17	.27	.36	.38	.29	.13
.80	.15	.09	.06	.08	.13	.20	.27	.33	.35	.30	.21
.70	.15	.09	.07	.09	.16	.22	.29	.34	.36	.30	.21
.60	.13	.08	.06	.10	.17	.25	.33	.39	.39	.30	.17
.50	.11	.08	.07	.11	.19	.28	.37	.43	.42	.30	.13
.40	.09	.08	.10	.15	.23	.31	.39	.44	.43	.32	.16
.30	.07	.10	.14	.20	.27	.33	.40	.45	.45	.36	.24
.20	.07	.11	.15	.22	.29	.36	.43	.48	.49	.44	.35
.10	.10	.11	.15	.21	.30	.39	.47	.54	.56	.54	.49

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.08	.09	.10	.09	.06	.05	.06	.07	.08	.08	.07
.90	.09	.09	.09	.08	.07	.06	.06	.07	.07	.08	.08
.80	.10	.09	.09	.08	.07	.07	.07	.07	.07	.07	.08
.70	.11	.10	.09	.08	.08	.08	.07	.07	.07	.08	.08
.60	.11	.10	.10	.09	.09	.08	.08	.08	.08	.08	.08
.50	.12	.11	.11	.10	.10	.09	.09	.09	.08	.08	.08
.40	.13	.12	.11	.11	.10	.10	.10	.09	.09	.09	.09
.30	.15	.14	.12	.12	.11	.11	.11	.10	.10	.10	.10
.20	.18	.16	.14	.13	.12	.12	.12	.12	.12	.12	.12
.10	.22	.20	.17	.15	.13	.13	.13	.14	.14	.14	.14

Table C4. $C_{prms,\ \overline{\beta}}$, γ = 1.0, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		.28	.26	.26	.27	.27	.25	.22	.20	.19	
.80		.27	.25	.23	.22	.21	.20	.19	.18	.18	
.70		.25	.23	.22	.20	.19	.18	.17	.17	.16	
.60		.23	.21	.21	.21	.20	.18	.16	.14	.14	
.50		.21	.19	.19	.20	.20	.18	.15	.12	.12	
.40		.19	.17	.17	.17	.17	.15	.13	.11	.10	
.30		.18	.16	.15	.13	.12	.11	.10	.09	.09	
.20		.16	.14	.13	.11	.10	.09	.08	.08	.07	
.10		.14	.12	.12	.13	.12	.10	.07	.05	.05	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.07	.08	.09	.08	.07	.07	.07	.08	.09	.10	.12
.90	.07	.08	.09	.09	.08	.07	.08	.08	.09	.11	.14
.80	.08	.09	.09	.09	.09	.08	.08	.08	.09	.12	.15
.70	.08	.09	.09	.09	.09	.09	.09	.09	.10	.13	.16
.60	.09	.10	.10	.10	.10	.10	.10	.10	.11	.13	.17
.50	.09	.10	.11	.11	.11	.11	.11	.11	.12	.14	.17
.40	.10	.11	.12	.12	.12	.12	.11	.12	.12	.15	.17
.30	.12	.13	.13	.13	.13	.12	.12	.12	.14	.16	.19
.20	.15	.15	.14	.14	.14	.13	.13	.14	.16	.19	.24
.10	.18	.17	.17	.16	.15	.14	.14	.16	.19	.25	.32
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.19	.18	.17	.15	.14	.12	.12	.12	.10	.07	.03
.90	.19	.18	.17	.16	.14	.13	.12	.11	.11	.09	.07
.80	.19	.18	.17	.16	.15	.13	.12	.12	.11	.11	.10
.70	.20	.19	.17	.16	.15	.14	.13	.12	.11	.11	.11
.60	.22	.20	.18	.17	.15	.14	.13	.12	.11	.10	.09
.50	.23	.21	.19	.17	.16	.15	.14	.13	.11	.10	.08
.40	.21	.20	.19	.17	.16	.16	.14	.13	.12	.10	.08
.30	.20	.19	.19	.18	.17	.16	.15	.14	.12	.11	.09
.20	.21	.21	.20	.19	.18	.17	.16	.15	.13	.12	.10
.10	.25	.24	.22	.21	.19	.17	.17	.16	.15	.13	.10
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.09	.09	.08	.09	.09	.09	.09	.09	.12	.18	.25
.90	.07	.08	.09	.10	.10	.10	.09	.10	.13	.20	.30
.80	.06	.08	.09	.10	.10	.10	.10	.11	.14	.22	.33
.70	.06	.08	.10	.11	.11	.11	.10	.11	.15	.23	.34
.60	.06	.08	.10	.11	.11	.11	.11	.12	.15	.23	.34
.50	.06	.09	.10	.11	.11	.11	.11	.12	.16	.24	.34
.40	.06	.09	.11	.12	.12	.12	.12	.13	.17	.25	.35
.30	.06	.09	.11	.12	.12	.12	.12	.13	.17	.26	.38
.20	.09	.11	.12	.13	.13	.13	.12	.13	.18	.27	.39
.10	.14	.14	.13	.13	.13	.13	.13	.14	.18	.28	.40
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.08	.09	.09	.08	.07	.06	.06	.08	.08	.08	.07
.90	.10	.10	.09	.08	.07	.07	.07	.07	.08	.07	.07
.80	.12	.10	.09	.09	.08	.08	.08	.08	.08	.07	.07
.70	.12	.11	.10	.09	.09	.09	.08	.08	.08	.08	.08
.60	.12	.11	.10	.10	.10	.10	.09	.09	.09	.09	.09
.50	.12	.11	.11	.11	.11	.10	.10	.10	.10	.10	.10
.40	.13	.12	.12	.12	.12	.11	.11	.11	.11	.10	.10
.30	.15	.14	.13	.13	.12	.12	.12	.12	.11	.11	.11
.20	.19	.17	.15	.14	.13	.13	.13	.13	.13	.13	.13
.10	.24	.21	.19	.16	.15	.14	.14	.15	.16	.16	.16
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		.20	.20	.19	.18	.17	.17	.17	.18	.18	
.80		.19	.19	.18	.17	.17	.17	.17	.17	.17	
.70		.19	.18	.17	.16	.16	.16	.16	.16	.16	
.60		.18	.17	.16	.15	.15	.15	.15	.15	.15	
.50		.17	.16	.15	.14	.14	.14	.14	.14	.15	
.40		.16	.15	.15	.14	.13	.13	.13	.14	.14	
.30		.15	.14	.14	.13	.13	.12	.13	.13	.13	
.20		.14	.14	.13	.12	.12	.12	.12	.12	.12	
.10		.14	.13	.12	.11	.10	.10	.11	.11	.11	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.10	.08	.07	.06	.06	.06	.06	.07	.07	.09	.11
.90	.08	.07	.07	.06	.06	.06	.07	.07	.08	.09	.10
.80	.08	.07	.07	.07	.07	.07	.07	.08	.08	.09	.10
.70	.07	.07	.07	.08	.08	.08	.08	.08	.09	.09	.10
.60	.08	.08	.08	.08	.08	.09	.09	.09	.09	.10	.10
.50	.08	.09	.09	.09	.09	.10	.10	.10	.10	.11	.11
.40	.08	.09	.09	.10	.10	.10	.10	.11	.11	.12	.12
.30	.09	.09	.10	.10	.11	.11	.11	.12	.12	.13	.14
.20	.11	.11	.12	.12	.12	.12	.12	.13	.14	.15	.17
.10	.14	.14	.14	.13	.13	.13	.13	.14	.16	.18	.21
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.10	.28	.40	.41	.32	.20	.10	.04	.02	.05	.11
.90	.10	.26	.37	.39	.32	.21	.12	.06	.04	.06	.10
.80	.10	.24	.34	.37	.32	.23	.14	.08	.05	.06	.09
.70	.08	.23	.35	.38	.33	.25	.15	.09	.06	.07	.10
.60	.07	.24	.37	.40	.36	.26	.17	.09	.06	.07	.11
.50	.08	.26	.39	.43	.38	.28	.18	.10	.07	.08	.12
.40	.13	.29	.40	.44	.39	.30	.20	.12	.08	.09	.12
.30	.22	.34	.43	.45	.40	.31	.22	.14	.10	.09	.11
.20	.32	.42	.48	.48	.42	.33	.24	.17	.12	.10	.09
.10	.40	.50	.57	.55	.45	.34	.26	.20	.15	.10	.06
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.11	.13	.14	.15	.15	.15	.16	.17	.18	.18	.19
.90	.12	.14	.15	.15	.16	.16	.17	.17	.18	.18	.19
.80	.12	.14	.15	.16	.16	.17	.17	.17	.18	.18	.18
.70	.12	.14	.15	.16	.17	.17	.18	.18	.18	.18	.18
.60	.12	.14	.16	.17	.18	.18	.18	.19	.19	.19	.19
.50	.11	.14	.16	.18	.18	.19	.19	.20	.20	.20	.19
.40	.11	.14	.17	.18	.19	.19	.20	.20	.20	.20	.20
.30	.12	.15	.18	.19	.20	.20	.21	.21	.21	.22	.22
.20	.13	.16	.19	.20	.21	.21	.21	.22	.23	.23	.24
.10	.14	.17	.20	.21	.22	.22	.22	.24	.25	.26	.27
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.18	.16	.14	.11	.08	.06	.07	.08	.09	.09	.08
.90	.18	.15	.13	.10	.08	.07	.07	.08	.09	.09	.08
.80	.18	.15	.12	.10	.09	.08	.08	.08	.08	.09	.09
.70	.18	.15	.12	.10	.09	.09	.09	.08	.08	.08	.09
.60	.19	.16	.13	.11	.11	.10	.10	.09	.09	.09	.09
.50	.21	.18	.15	.13	.12	.11	.11	.10	.10	.09	.09
.40	.26	.21	.16	.14	.13	.12	.12	.11	.11	.11	.11
.30	.32	.25	.19	.15	.14	.13	.13	.13	.12	.12	.13
.20	.39	.31	.23	.18	.15	.14	.14	.15	.15	.15	.14
.10	.46	.37	.29	.22	.17	.15	.16	.18	.18	.17	.15
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C4. C_{prms}, $\overline{\beta}$, γ = 1.0, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		.20	.20	.20	.19	.19	.19	.19	.20	.20	
.80		.20	.20	.20	.20	.20	.20	.20	.20	.20	
.70		.21	.21	.20	.20	.20	.20	.20	.20	.20	
.60		.21	.21	.21	.20	.20	.20	.20	.21	.21	
.50		.21	.21	.21	.20	.20	.20	.21	.21	.21	
.40		.22	.21	.21	.21	.21	.21	.21	.21	.21	
.30		.22	.22	.22	.21	.21	.21	.21	.21	.21	
.20		.22	.22	.22	.22	.21	.22	.22	.22	.22	
.10		.23	.22	.22	.21	.21	.21	.22	.22	.22	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.17	.16	.15	.13	.12	.11	.12	.13	.15	.16	.17
.90	.19	.17	.14	.13	.12	.12	.12	.13	.14	.17	.19
.80	.20	.17	.15	.13	.13	.13	.13	.13	.15	.17	.20
.70	.21	.17	.15	.14	.13	.13	.13	.14	.15	.17	.21
.60	.21	.18	.16	.15	.14	.14	.14	.15	.16	.18	.21
.50	.21	.18	.16	.15	.15	.15	.15	.15	.16	.18	.21
.40	.23	.20	.17	.16	.16	.16	.16	.16	.17	.20	.23
.30	.26	.22	.18	.17	.16	.16	.16	.17	.18	.22	.26
.20	.29	.25	.21	.18	.17	.17	.17	.18	.21	.25	.29
.10	.33	.28	.24	.21	.19	.18	.19	.21	.24	.28	.33
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.15	.20	.23	.23	.21	.19	.21	.25	.26	.23	.18
.90	.17	.21	.23	.24	.22	.22	.23	.25	.27	.27	.28
.80	.19	.21	.23	.24	.24	.24	.24	.25	.28	.31	.34
.70	.19	.22	.24	.26	.26	.27	.27	.27	.29	.33	.37
.60	.18	.22	.25	.28	.29	.29	.29	.30	.31	.34	.37
.50	.18	.23	.27	.30	.31	.31	.32	.32	.33	.35	.37
.40	.21	.26	.30	.32	.33	.34	.34	.34	.35	.38	.41
.30	.26	.30	.33	.35	.36	.36	.36	.37	.38	.42	.46
.20	.33	.36	.38	.39	.39	.39	.39	.41	.43	.46	.50
.10	.41	.44	.46	.45	.43	.41	.43	.47	.50	.52	.53
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.16	.17	.17	.17	.17	.16	.17	.17	.17	.17	.16
.90	.16	.17	.17	.17	.17	.17	.17	.17	.17	.17	.16
.80	.16	.17	.18	.18	.18	.18	.18	.18	.18	.17	.16
.70	.16	.17	.18	.19	.19	.19	.19	.19	.18	.17	.16
.60	.16	.18	.19	.19	.20	.20	.20	.19	.19	.18	.16
.50	.16	.18	.19	.20	.20	.20	.20	.20	.19	.18	.16
.40	.17	.18	.20	.21	.21	.21	.21	.21	.20	.18	.17
.30	.18	.19	.21	.22	.22	.22	.22	.22	.21	.19	.18
.20	.20	.21	.22	.23	.23	.23	.23	.23	.22	.21	.20
.10	.23	.24	.25	.25	.24	.24	.24	.25	.25	.24	.23
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1 1-1 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.18	.23	.26	.25	.21	.19	.21	.23	.23	.20	.15
.90	.28	.27	.27	.25	.23	.22	.22	.24	.23	.21	.17
.80	.34	.31	.28	.25	.24	.24	.24	.24	.23	.21	.19
.70	.37	.33	.29	.27	.27	.27	.26	.26	.24	.22	.19
.60	.37	.34	.31	.30	.29	.29	.29	.28	.25	.22	.18
.50	.37	.35	.33	.32	.32	.31	.31	.30	.27	.23	.18
.40	.41	.38	.35	.34	.34	.34	.33	.32	.30	.26	.21
.30	.46	.42	.38	.37	.36	.36	.36	.35	.33	.30	.26
.20	.50	.46	.43	.41	.39	.39	.39	.39	.38	.36	.33
.10	.53	.52	.50	.47	.43	.41	.43	.45	.46	.44	.41
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

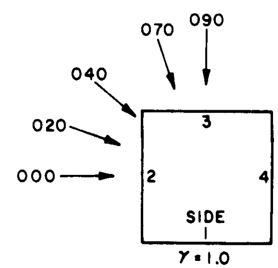


Table C5. C_{prms}, $\overline{\beta}$, γ = 1.0, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.23	.22	.22	.23	.23	.21	.20	.19	.19	
.80		.23	.22	.22	.21	.21	.20	.20	.19	.19	
.70		.23	.23	.22	.21	.21	.20	.20	.19	.19	
.60		.23	.22	.22	.22	.22	.21	.20	.19	.19	
.50		.23	.22	.22	.23	.23	.22	.20	.19	.19	
.40		.23	.23	.22	.22	.22	.21	.20	.19	.19	
.30		.24	.23	.22	.21	.21	.20	.20	.20	.20	
.20		.24	.23	.22	.22	.21	.21	.20	.20	.20	
.10		.23	.23	.23	.23	.23	.22	.21	.20	.19	

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.11	.24	.33	.32	.24	.16	.15	.18	.21	.20	.19
.90	.14	.24	.30	.31	.27	.23	.20	.21	.23	.25	.29
.80	.17	.24	.29	.32	.31	.29	.26	.24	.25	.30	.36
.70	.21	.28	.33	.36	.36	.34	.31	.29	.30	.34	.40
.60	.25	.33	.40	.43	.42	.40	.37	.36	.36	.38	.42
.50	.30	.38	.45	.48	.46	.46	.43	.41	.42	.44	.47
.40	.35	.42	.48	.52	.53	.51	.48	.46	.46	.51	.58
.30	.47	.52	.56	.59	.60	.59	.55	.52	.53	.58	.66
.20	.73	.76	.78	.77	.73	.70	.68	.67	.65	.64	.62
.10	1.13	1.16	1.16	1.07	.93	.84	.85	.89	.84	.66	.43

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.16	.21	.24	.24	.22	.21	.22	.24	.24	.21	.16
.90	.19	.22	.24	.25	.24	.23	.24	.25	.24	.22	.19
.80	.22	.24	.25	.26	.26	.26	.26	.26	.25	.24	.22
.70	.23	.25	.27	.28	.29	.29	.29	.28	.27	.25	.23
.60	.24	.27	.29	.31	.32	.32	.32	.31	.29	.27	.24
.50	.25	.28	.31	.33	.34	.35	.34	.33	.31	.28	.25
.40	.26	.30	.33	.35	.37	.37	.37	.35	.33	.30	.26
.30	.30	.33	.36	.39	.40	.41	.40	.39	.36	.33	.30
.20	.36	.40	.43	.45	.46	.46	.46	.45	.43	.40	.36
.10	.44	.49	.53	.55	.55	.55	.55	.55	.53	.49	.44

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.19	.22	.23	.19	.13	.12	.21	.32	.34	.24	.08
.90	.26	.25	.24	.22	.19	.19	.24	.29	.30	.26	.19
.80	.32	.28	.26	.25	.25	.26	.27	.28	.28	.28	.27
.70	.36	.33	.30	.30	.32	.33	.33	.32	.32	.31	.31
.60	.38	.37	.37	.37	.39	.40	.41	.41	.39	.35	.31
.50	.40	.41	.42	.44	.45	.47	.48	.48	.45	.39	.32
.40	.43	.44	.46	.49	.52	.54	.54	.52	.48	.43	.37
.30	.45	.49	.53	.57	.60	.62	.62	.59	.56	.53	.50
.20	.45	.57	.67	.73	.74	.74	.76	.78	.79	.77	.73
.10	.43	.70	.91	.97	.92	.90	.98	1.10	1.17	1.14	1.07

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.23	.17	.12	.11	.11	.12	.11	.11	.12	.17	.23
.90	.21	.16	.13	.11	.11	.11	.11	.11	.13	.16	.21
.80	.20	.17	.14	.12	.12	.12	.12	.12	.14	.17	.20
.70	.22	.19	.16	.14	.13	.13	.13	.14	.16	.19	.22
.60	.25	.22	.19	.17	.16	.16	.16	.17	.19	.22	.25
.50	.28	.25	.22	.20	.19	.19	.19	.20	.22	.25	.28
.40	.30	.27	.25	.23	.22	.21	.22	.23	.25	.27	.30
.30	.34	.31	.29	.27	.26	.25	.26	.27	.29	.31	.34
.20	.44	.41	.38	.36	.34	.34	.34	.36	.38	.41	.44
.10	.61	.56	.52	.49	.48	.47	.48	.49	.52	.56	.61

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.23	.21	.19	.17	.16	.15	.14	.13	.13	
.80		.24	.21	.19	.16	.15	.14	.14	.13	.13	
.70		.23	.21	.19	.16	.15	.14	.14	.13	.13	
.60		.23	.21	.19	.17	.15	.14	.14	.13	.13	
.50		.23	.21	.19	.17	.16	.15	.14	.13	.13	
.40		.23	.21	.19	.17	.15	.14	.14	.13	.13	
.30		.23	.21	.18	.16	.14	.14	.13	.13	.13	
.20		.23	.21	.18	.16	.14	.14	.13	.13	.13	
.10		.23	.21	.18	.17	.15	.14	.13	.13	.13	

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.11	.14	.12	.06	.03	.07	.14	.18	.18	.15
.90	.08	.11	.12	.11	.08	.06	.08	.12	.16	.17	.19
.80	.11	.11	.11	.11	.10	.10	.11	.12	.14	.18	.21
.70	.12	.12	.12	.12	.13	.14	.14	.14	.16	.19	.23
.60	.12	.13	.15	.16	.17	.17	.17	.18	.19	.22	.25
.50	.12	.15	.18	.19	.20	.21	.21	.22	.23	.26	.29
.40	.14	.17	.19	.22	.23	.24	.24	.24	.27	.31	.37
.30	.20	.22	.24	.26	.28	.29	.28	.29	.32	.40	.49
.20	.31	.34	.36	.36	.36	.35	.36	.39	.45	.52	.61
.10	.46	.52	.55	.53	.47	.44	.48	.56	.64	.69	.73

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.24	.25	.26	.25	.22	.20	.20	.20	.19	.16	.13
.90	.25	.26	.26	.25	.23	.22	.21	.21	.19	.17	.14
.80	.27	.27	.26	.26	.25	.24	.23	.22	.20	.18	.16
.70	.28	.28	.28	.28	.27	.27	.25	.23	.21	.19	.16
.60	.29	.30	.30	.30	.30	.29	.28	.26	.23	.20	.17
.50	.31	.32	.33	.33	.33	.32	.30	.28	.25	.22	.17
.40	.33	.34	.35	.35	.35	.34	.33	.30	.27	.23	.18
.30	.37	.37	.38	.38	.38	.37	.36	.34	.30	.26	.21
.20	.43	.44	.45	.45	.44	.43	.42	.40	.37	.32	.26
.10	.50	.53	.55	.55	.53	.51	.51	.50	.47	.41	.34

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.14	.06	.00	.00	.05	.17	.32	.44	.45	.34	.17
.90	.14	.07	.03	.04	.11	.23	.35	.43	.42	.32	.16
.80	.14	.08	.05	.08	.17	.28	.38	.43	.41	.31	.17
.70	.14	.09	.08	.12	.22	.32	.42	.46	.43	.33	.19
.60	.13	.11	.11	.16	.25	.36	.46	.51	.48	.38	.23
.50	.13	.13	.14	.19	.28	.39	.50	.56	.53	.43	.28
.40	.12	.13	.16	.22	.32	.42	.52	.58	.57	.47	.34
.30	.12	.15	.20	.27	.36	.46	.56	.63	.63	.56	.46
.20	.13	.20	.26	.34	.42	.52	.63	.73	.77	.74	.68
.10	.17	.27	.37	.43	.49	.59	.74	.89	1.00	1.03	1.02

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.24	.13	.06	.06	.10	.13	.10	.06	.06	.12	.22
.90	.17	.11	.07	.06	.08	.10	.09	.05	.07	.10	.15
.80	.12	.10	.08	.07	.06	.08	.08	.07	.08	.09	.11
.70	.11	.11	.10	.10	.09	.10	.10	.10	.10	.10	.09
.60	.14	.13	.13	.13	.13	.14	.14	.13	.13	.12	.11
.50	.16	.16	.16	.17	.17	.17	.17	.17	.16	.14	.13
.40	.17	.19	.19	.19	.19	.20	.20	.19	.18	.17	.14
.30	.22	.22	.23	.23	.23	.23	.23	.23	.22	.21	.19
.20	.37	.33	.30	.30	.31	.32	.31	.30	.30	.31	.33
.10	.63	.51	.42	.40	.44	.46	.44	.40	.40	.47	.56

Table C5. $C_{prms, \overline{\beta}}$, γ = 1.0, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.22	.21	.20	.21	.20	.19	.16	.14	.14	
.80			.22	.20	.19	.17	.18	.15	.15	.14	.14	
.70			.21	.20	.18	.17	.16	.15	.14	.14	.13	
.60			.20	.19	.18	.18	.17	.16	.14	.13	.12	
.50			.20	.18	.18	.18	.18	.16	.14	.12	.11	
.40			.19	.17	.17	.17	.16	.14	.13	.11	.11	
.30			.19	.17	.16	.14	.13	.12	.11	.11	.10	
.20			.18	.17	.15	.14	.12	.11	.11	.10	.10	
.10			.17	.15	.15	.15	.15	.13	.11	.09	.09	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.04	.10	.13	.11	.06	.03	.06	.11	.13	.12	.08
.90		.08	.10	.11	.10	.07	.06	.07	.10	.12	.13	.13
.80		.10	.10	.10	.09	.08	.08	.09	.10	.12	.14	.17
.70		.11	.11	.11	.11	.11	.11	.11	.11	.13	.16	.20
.60		.11	.12	.13	.13	.14	.14	.14	.14	.15	.18	.21
.50		.11	.14	.15	.16	.17	.17	.17	.17	.18	.20	.23
.40		.13	.15	.17	.19	.19	.20	.19	.19	.21	.23	.27
.30		.18	.19	.21	.22	.23	.23	.23	.23	.25	.29	.33
.20		.25	.27	.28	.28	.28	.27	.28	.30	.34	.38	.44
.10		.36	.39	.41	.39	.35	.33	.35	.41	.47	.52	.58
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.28	.25	.23	.20	.18	.16	.15	.14	.13	.12	.12
.90		.29	.26	.23	.21	.19	.17	.15	.14	.13	.12	.11
.80		.29	.26	.24	.22	.20	.18	.16	.15	.13	.12	.11
.70		.31	.28	.26	.24	.22	.20	.18	.16	.14	.13	.11
.60		.33	.30	.28	.26	.24	.22	.20	.19	.16	.14	.12
.50		.35	.32	.30	.28	.25	.24	.23	.21	.18	.16	.13
.40		.36	.34	.31	.29	.28	.26	.24	.22	.19	.16	.13
.30		.39	.36	.34	.32	.30	.29	.27	.24	.22	.18	.15
.20		.45	.42	.40	.37	.36	.34	.32	.30	.27	.24	.21
.10		.56	.52	.49	.46	.44	.42	.40	.38	.36	.33	.31
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.06	.09	.10	.11	.11	.11	.13	.17	.19	.21	.23
.90		.08	.09	.10	.11	.12	.13	.15	.17	.20	.24	.28
.80		.10	.10	.11	.12	.13	.15	.16	.18	.22	.27	.33
.70		.10	.11	.12	.13	.15	.17	.18	.20	.24	.30	.38
.60		.09	.11	.13	.15	.17	.18	.20	.22	.27	.34	.42
.50		.09	.12	.14	.17	.18	.20	.21	.24	.29	.37	.45
.40		.10	.13	.15	.17	.20	.21	.23	.25	.30	.39	.49
.30		.14	.15	.17	.19	.21	.23	.24	.27	.32	.42	.54
.20		.17	.20	.22	.24	.25	.26	.28	.32	.39	.50	.62
.10		.21	.27	.30	.31	.30	.30	.33	.40	.50	.61	.74
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.27	.15	.06	.06	.11	.15	.11	.05	.05	.12	.23
.90		.20	.13	.08	.07	.09	.11	.09	.05	.06	.10	.15
.80		.16	.12	.10	.09	.09	.09	.06	.07	.07	.08	.10
.70		.15	.14	.12	.12	.11	.10	.10	.10	.10	.09	.09
.60		.18	.17	.16	.15	.15	.15	.15	.14	.13	.12	.11
.50		.20	.20	.19	.19	.19	.19	.19	.18	.17	.16	.14
.40		.21	.22	.23	.22	.22	.21	.22	.21	.20	.17	.14
.30		.27	.27	.27	.27	.26	.25	.25	.25	.24	.22	.19
.20		.45	.40	.36	.34	.35	.36	.35	.33	.32	.34	.36
.10		.76	.59	.48	.46	.51	.54	.50	.44	.44	.53	.66
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.29	.28	.26	.23	.22	.22	.24	.25	.25	
.80			.27	.25	.24	.23	.22	.22	.23	.23	.23	
.70			.25	.24	.22	.21	.21	.20	.21	.21	.22	
.60			.23	.22	.20	.18	.17	.17	.19	.20	.20	
.50			.21	.20	.19	.16	.14	.15	.17	.18	.18	
.40			.20	.18	.17	.14	.13	.13	.15	.16	.16	
.30			.17	.16	.15	.14	.13	.13	.14	.14	.14	
.20			.16	.14	.13	.12	.11	.11	.12	.12	.13	
.10			.14	.13	.11	.09	.07	.08	.10	.11	.11	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.04	.08	.11	.09	.03	.01	.05	.11	.14	.12	.07
.90		.07	.09	.10	.08	.05	.04	.05	.09	.11	.12	.11
.80		.09	.09	.09	.08	.07	.07	.07	.08	.09	.12	.14
.70		.10	.10	.09	.09	.09	.09	.09	.09	.10	.12	.15
.60		.09	.10	.11	.12	.12	.12	.12	.12	.13	.14	.15
.50		.09	.11	.13	.14	.15	.15	.15	.16	.16	.16	.17
.40		.12	.13	.15	.16	.17	.18	.18	.17	.18	.20	.23
.30		.17	.18	.19	.20	.21	.21	.20	.20	.22	.26	.31
.20		.23	.25	.26	.26	.25	.24	.24	.27	.30	.34	.38
.10		.30	.36	.34	.36	.30	.26	.30	.38	.43	.44	.43
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.44	.44	.41	.35	.25	.15	.08	.05	.03	.03	.04
.90		.41	.40	.39	.34	.27	.20	.14	.09	.06	.04	.02
.80		.39	.39	.38	.35	.30	.25	.19	.13	.08	.05	.02
.70		.38	.40	.40	.39	.35	.30	.24	.17	.11	.07	.04
.60		.40	.44	.46	.45	.41	.35	.28	.21	.15	.11	.07
.50		.43	.48	.52	.51	.47	.40	.33	.26	.20	.15	.10
.40		.49	.54	.56	.56	.52	.46	.39	.31	.24	.17	.11
.30		.59	.61	.62	.61	.57	.52	.45	.38	.30	.21	.12
.20		.73	.73	.71	.69	.65	.59	.53	.45	.37	.28	.18
.10		.92	.89	.85	.80	.74	.68	.61	.53	.45	.38	.30
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.10	.19	.25	.25	.22	.20	.24	.30	.31	.27	.19
.90		.14	.20	.23	.24	.23	.23	.26	.29	.29	.27	.23
.80		.17	.20	.23	.25	.25	.26	.27	.28	.29	.28	.27
.70		.18	.21	.24	.25	.28	.29	.30	.30	.30	.29	.28
.60		.18	.22	.26	.29	.31	.32	.33	.33	.33	.31	.29
.50		.18	.24	.28	.32	.34	.35	.36	.36	.35	.33	.31
.40		.19	.25	.30	.34	.36	.38	.38	.36	.37	.36	.35
.30		.22	.28	.33	.37	.39	.41	.41	.41	.41	.40	.40
.20		.26	.34	.40	.43	.43	.44	.45	.47	.48	.46	.43
.10		.30	.43	.52	.53	.49	.47	.51	.58	.59	.54	.44
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.37	.24	.14	.10	.10	.11	.11	.09	.10	.13	.18
.90		.30	.21	.14	.10	.09	.09	.09	.08	.09	.11	.15
.80		.26	.19	.14	.11	.10	.09	.09	.09	.10	.11	.12
.70		.25	.21	.17	.15	.13	.13	.13	.13	.12	.12	.12
.60		.28	.25	.22	.20	.20	.20	.19	.19	.17	.15	.13
.50		.32	.29	.27	.26	.26	.26	.25	.25	.22	.18	.14
.40		.36	.34	.33	.32	.30	.30	.30	.29	.27	.22	.16
.30		.46	.43	.40	.38	.36	.35	.35	.35	.33	.30	.25
.20		.71	.60	.51	.47	.46	.46	.45	.44	.43	.44	.46
.10		1.11	.86	.67	.59	.62	.65	.62	.56	.57	.66	.79
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C5. $C_{p_{rms}, \overline{\beta}}$, γ = 1.0, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.26	.26	.26	.26	.26	.26	.26	.26	.26	
.80		.25	.25	.25	.25	.25	.25	.25	.25	.25	
.70		.24	.24	.24	.24	.24	.24	.24	.24	.24	
.60		.23	.23	.23	.23	.23	.23	.23	.23	.23	
.50		.23	.23	.22	.22	.22	.22	.22	.22	.22	
.40		.22	.22	.22	.22	.21	.21	.22	.22	.22	
.30		.21	.21	.21	.21	.21	.21	.21	.21	.21	
.20		.20	.20	.20	.20	.20	.20	.20	.20	.20	
.10		.19	.19	.19	.19	.19	.19	.19	.19	.19	

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.14	.17	.17	.13	.06	.04	.08	.15	.18	.15	.08
.90	.15	.15	.14	.11	.08	.06	.09	.13	.15	.16	.15
.80	.16	.14	.13	.11	.10	.09	.10	.12	.14	.17	.21
.70	.18	.15	.13	.12	.12	.12	.12	.13	.15	.19	.23
.60	.20	.18	.16	.15	.15	.15	.16	.16	.18	.21	.24
.50	.22	.20	.19	.18	.18	.18	.19	.20	.22	.24	.27
.40	.25	.22	.20	.20	.20	.21	.21	.21	.24	.29	.35
.30	.30	.27	.24	.23	.24	.24	.24	.24	.28	.35	.43
.20	.37	.35	.33	.31	.28	.27	.28	.32	.36	.41	.47
.10	.47	.49	.49	.43	.34	.30	.35	.44	.49	.49	.44

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.24	.36	.36	.26	.16	.14	.16	.17	.15	.10
.90	.17	.26	.33	.33	.29	.23	.21	.21	.21	.20	.18
.80	.25	.30	.33	.33	.32	.30	.28	.27	.26	.25	.24
.70	.30	.34	.37	.39	.39	.38	.35	.33	.31	.30	.30
.60	.31	.39	.45	.49	.46	.46	.42	.39	.36	.34	.34
.50	.32	.44	.53	.58	.57	.54	.49	.45	.42	.39	.37
.40	.38	.49	.58	.63	.63	.60	.57	.52	.48	.43	.39
.30	.53	.60	.66	.69	.69	.68	.65	.61	.56	.49	.42
.20	.80	.82	.83	.83	.81	.79	.77	.74	.68	.59	.48
.10	1.19	1.16	1.12	1.06	1.00	.94	.92	.89	.82	.71	.57

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.21	.28	.32	.30	.23	.20	.24	.31	.33	.29	.21
.90	.21	.26	.29	.29	.25	.23	.25	.28	.29	.26	.22
.80	.21	.25	.27	.28	.28	.27	.27	.27	.26	.25	.23
.70	.23	.26	.28	.30	.31	.30	.30	.28	.27	.25	.24
.60	.25	.29	.32	.33	.34	.34	.33	.32	.31	.28	.25
.50	.28	.32	.35	.37	.37	.37	.37	.36	.34	.31	.27
.40	.29	.33	.37	.39	.41	.41	.40	.39	.36	.34	.31
.30	.31	.36	.40	.43	.44	.45	.43	.42	.39	.37	.34
.20	.34	.42	.48	.50	.49	.48	.48	.49	.47	.42	.37
.10	.38	.52	.61	.61	.56	.52	.55	.61	.60	.51	.38

RMS PRESSURE COEFFICIENT B. LAYER 2 1-1 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.15	.17	.16	.14	.16	.26	.36	.36	.24	.06
.90	.18	.20	.21	.21	.21	.23	.24	.33	.33	.26	.17
.80	.24	.25	.26	.27	.28	.30	.32	.33	.33	.30	.25
.70	.30	.30	.31	.33	.35	.38	.39	.39	.37	.34	.30
.60	.34	.34	.36	.39	.42	.46	.48	.49	.45	.39	.31
.50	.37	.39	.42	.45	.49	.54	.57	.58	.53	.44	.32
.40	.39	.43	.48	.52	.57	.60	.63	.63	.58	.49	.38
.30	.42	.49	.56	.61	.65	.68	.69	.69	.66	.60	.53
.20	.48	.59	.68	.74	.77	.79	.81	.83	.83	.82	.80
.10	.57	.71	.82	.89	.92	.94	1.00	1.06	1.12	1.16	1.19

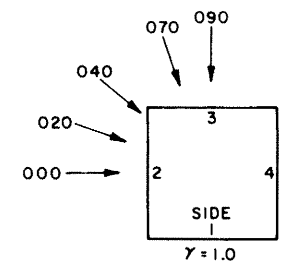


Table C6. $C_{prms, \overline{\beta}}$, γ = 1.0, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.27	.25	.24	.23	.22	.21	.19	.18	.18	
.80		.27	.25	.23	.22	.20	.19	.19	.18	.18	
.70		.27	.25	.23	.22	.20	.19	.19	.18	.18	
.60		.27	.25	.24	.23	.22	.21	.19	.18	.18	
.50		.27	.25	.24	.24	.23	.21	.19	.18	.18	
.40		.27	.25	.24	.23	.22	.21	.19	.18	.18	
.30		.27	.25	.23	.22	.20	.20	.19	.19	.18	
.20		.27	.25	.24	.22	.21	.20	.19	.19	.18	
.10		.27	.25	.24	.23	.23	.21	.20	.18	.18	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.25	.33	.31	.21	.12	.09	.11	.13	.15	.18
.90	.15	.26	.32	.32	.26	.20	.16	.15	.16	.20	.25
.80	.18	.27	.33	.34	.32	.27	.23	.20	.20	.24	.31
.70	.22	.31	.38	.40	.38	.35	.31	.27	.26	.29	.33
.60	.27	.37	.45	.48	.46	.44	.40	.36	.34	.33	.33
.50	.32	.44	.53	.56	.55	.52	.49	.46	.42	.38	.34
.40	.38	.52	.62	.65	.64	.60	.57	.54	.49	.44	.38
.30	.53	.64	.73	.76	.75	.71	.67	.63	.58	.51	.43
.20	.82	.89	.93	.94	.91	.87	.82	.77	.69	.59	.47
.10	1.28	1.25	1.21	1.18	1.13	1.07	1.02	.95	.84	.68	.49

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.19	.25	.29	.28	.23	.21	.23	.28	.29	.25	.19
.90	.22	.26	.28	.28	.26	.24	.26	.28	.28	.26	.22
.80	.25	.27	.28	.28	.28	.28	.28	.28	.28	.27	.25
.70	.27	.28	.30	.31	.31	.32	.31	.31	.30	.28	.27
.60	.27	.30	.33	.34	.35	.35	.35	.34	.33	.30	.27
.50	.29	.33	.36	.38	.39	.39	.39	.38	.36	.33	.29
.40	.32	.35	.39	.41	.42	.43	.42	.41	.39	.35	.32
.30	.35	.39	.43	.45	.47	.47	.47	.45	.43	.39	.35
.20	.39	.46	.51	.53	.54	.54	.54	.53	.51	.46	.39
.10	.43	.54	.62	.65	.64	.62	.64	.65	.62	.54	.43

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.18	.15	.13	.11	.09	.12	.21	.31	.33	.25	.13
.90	.25	.20	.16	.15	.16	.20	.26	.32	.32	.26	.15
.80	.31	.24	.20	.20	.23	.27	.32	.34	.33	.27	.18
.70	.33	.29	.26	.27	.31	.35	.38	.40	.38	.31	.22
.60	.33	.33	.34	.36	.40	.44	.46	.48	.45	.37	.27
.50	.34	.38	.42	.46	.49	.52	.55	.56	.53	.44	.32
.40	.38	.44	.49	.54	.57	.60	.64	.65	.62	.52	.38
.30	.43	.51	.58	.63	.67	.71	.75	.76	.73	.64	.53
.20	.47	.59	.69	.77	.82	.87	.91	.94	.93	.89	.82
.10	.49	.68	.84	.95	1.02	1.07	1.13	1.18	1.21	1.25	1.28

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.09	.11	.12	.10	.07	.05	.07	.10	.12	.11	.09
.90	.13	.12	.11	.10	.08	.08	.08	.10	.11	.12	.13
.80	.16	.14	.11	.10	.10	.10	.10	.10	.11	.14	.16
.70	.20	.16	.13	.11	.11	.12	.11	.11	.13	.16	.20
.60	.22	.18	.15	.14	.13	.13	.13	.14	.15	.18	.22
.50	.24	.21	.18	.16	.15	.15	.15	.16	.18	.21	.24
.40	.26	.23	.19	.18	.17	.17	.17	.18	.19	.23	.26
.30	.31	.27	.24	.22	.21	.21	.21	.22	.24	.27	.31
.20	.40	.37	.35	.32	.30	.30	.30	.32	.35	.37	.40
.10	.54	.54	.53	.49	.45	.43	.45	.49	.53	.54	.54

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.25	.22	.19	.17	.15	.14	.13	.13	.13	
.80		.25	.22	.19	.16	.15	.14	.13	.13	.13	
.70		.25	.22	.19	.16	.14	.13	.13	.13	.13	
.60		.25	.22	.19	.17	.15	.14	.13	.13	.13	
.50		.25	.22	.19	.17	.16	.14	.13	.13	.13	
.40		.25	.22	.19	.17	.15	.14	.13	.13	.13	
.30		.25	.22	.19	.16	.14	.13	.13	.13	.13	
.20		.25	.22	.19	.16	.14	.13	.13	.13	.13	
.10		.25	.22	.19	.17	.15	.14	.13	.13	.13	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.07	.12	.14	.12	.05	.01	.03	.07	.13	.18	.23
.90	.09	.11	.13	.11	.08	.06	.06	.09	.13	.18	.25
.80	.10	.12	.12	.12	.11	.10	.10	.11	.14	.19	.26
.70	.11	.13	.14	.15	.15	.15	.14	.14	.16	.21	.27
.60	.11	.15	.19	.20	.20	.20	.19	.19	.21	.24	.28
.50	.11	.18	.23	.25	.26	.25	.24	.24	.25	.28	.32
.40	.14	.21	.27	.29	.30	.30	.29	.29	.30	.34	.40
.30	.22	.28	.33	.35	.37	.37	.36	.35	.38	.44	.52
.20	.39	.43	.46	.47	.47	.47	.46	.47	.51	.58	.68
.10	.64	.66	.67	.65	.62	.60	.60	.63	.69	.78	.88

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.22	.29	.32	.30	.24	.19	.20	.22	.23	.19	.14
.90	.26	.29	.30	.29	.25	.23	.22	.23	.23	.20	.16
.80	.30	.29	.29	.28	.27	.26	.25	.24	.23	.21	.18
.70	.32	.31	.31	.30	.30	.29	.28	.26	.24	.21	.19
.60	.33	.34	.34	.34	.34	.32	.31	.29	.26	.23	.18
.50	.36	.37	.38	.38	.37	.36	.34	.32	.29	.24	.19
.40	.40	.40	.40	.40	.40	.39	.37	.35	.31	.26	.21
.30	.44	.44	.44	.44	.44	.43	.42	.39	.35	.31	.25
.20	.48	.50	.52	.52	.51	.50	.49	.48	.44	.37	.29
.10	.48	.59	.66	.66	.62	.58	.59	.60	.57	.47	.34

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.19	.05	-.04	-.06	.01	.11	.24	.36	.41	.39	.34
.90	.18	.06	-.02	-.01	.07	.18	.30	.38	.41	.38	.31
.80	.17	.07	.01	.03	.13	.25	.35	.41	.43	.38	.31
.70	.15	.08	.04	.08	.18	.29	.39	.45	.46	.41	.34
.60	.14	.10	.09	.13	.23	.33	.42	.49	.50	.47	.41
.50	.13	.12	.13	.18	.26	.36	.45	.53	.56	.54	.50
.40	.13	.14	.16	.21	.29	.39	.49	.58	.62	.62	.59
.30	.15	.17	.20	.25	.33	.43	.54	.64	.70	.72	.71
.20	.18	.22	.26	.32	.40	.50	.62	.74	.83	.89	.93
.10	.22	.29	.35	.42	.50	.60	.73	.88	1.01	1.13	1.24

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.09	.10	.10	.08	.04	.02	.05	.09	.11	.08	.04
.90	.12	.11	.09	.07	.05	.05	.06	.08	.09	.08	.06
.80	.14	.11	.08	.07	.07	.07	.08	.08	.08	.08	.08
.70	.15	.12	.09	.09	.09	.09	.10	.09	.09	.09	.09
.60	.14	.13	.12	.11	.12	.12	.12	.12	.11	.10	.09
.50	.15	.14	.14	.14	.14	.14	.15	.14	.14	.12	.10
.40	.18	.17	.16	.16	.17	.17	.17	.17	.16	.14	.13
.30	.24	.22	.20	.20	.21	.21	.21	.20	.20	.19	.18
.20	.35	.32	.30	.28	.28	.28	.29	.29	.28	.27	.25
.10	.49	.47	.45	.42	.39	.38	.40	.42	.42	.39	.35

Table C6. $C_{prms,\ \overline{\beta}}$, γ = 1.0, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.23	.21	.20	.21	.20	.18	.16	.15	.14	
.80		.22	.21	.19	.18	.17	.16	.15	.14	.14	
.70		.22	.20	.18	.17	.16	.15	.14	.14	.13	
.60		.21	.19	.18	.18	.17	.16	.14	.13	.12	
.50		.20	.18	.18	.18	.18	.16	.14	.12	.12	
.40		.20	.18	.17	.17	.16	.15	.13	.12	.11	
.30		.19	.18	.16	.15	.13	.13	.12	.11	.11	
.20		.19	.17	.15	.14	.13	.12	.11	.11	.10	
.10		.18	.16	.16	.16	.15	.13	.11	.10	.09	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.10	.10	.08	.06	.04	.05	.08	.10	.11	.13
.90	.09	.10	.10	.09	.07	.07	.07	.08	.10	.13	.16
.80	.10	.10	.10	.10	.09	.09	.09	.10	.11	.15	.19
.70	.11	.11	.12	.12	.12	.12	.12	.12	.13	.17	.21
.60	.12	.14	.15	.15	.15	.15	.15	.15	.16	.19	.23
.50	.14	.16	.18	.18	.18	.18	.18	.18	.19	.22	.26
.40	.16	.18	.20	.21	.21	.21	.21	.21	.23	.27	.32
.30	.21	.23	.24	.25	.25	.26	.25	.25	.28	.33	.40
.20	.31	.31	.32	.32	.32	.31	.32	.33	.36	.43	.51
.10	.45	.44	.44	.42	.40	.39	.40	.43	.48	.56	.66

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.21	.24	.25	.23	.18	.14	.14	.15	.15	.13	.09
.90	.28	.27	.25	.23	.19	.17	.16	.16	.15	.13	.11
.80	.33	.30	.26	.23	.21	.19	.18	.17	.15	.14	.12
.70	.36	.31	.28	.25	.23	.22	.20	.18	.16	.14	.13
.60	.36	.33	.30	.28	.26	.24	.23	.21	.18	.15	.12
.50	.37	.35	.33	.31	.29	.27	.25	.23	.20	.16	.12
.40	.42	.38	.35	.33	.31	.30	.28	.25	.22	.19	.15
.30	.49	.44	.39	.36	.35	.33	.32	.29	.26	.22	.18
.20	.54	.50	.46	.43	.40	.38	.37	.35	.32	.28	.22
.10	.58	.57	.56	.53	.48	.45	.45	.45	.42	.35	.26

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.11	.10	.10	.09	.09	.09	.11	.14	.19	.26	.34
.90	.11	.10	.10	.11	.11	.12	.13	.15	.19	.27	.37
.80	.10	.11	.11	.12	.14	.14	.15	.16	.20	.29	.40
.70	.10	.11	.13	.15	.16	.17	.17	.19	.23	.32	.44
.60	.09	.13	.16	.17	.19	.19	.20	.22	.27	.37	.49
.50	.10	.14	.18	.20	.21	.22	.23	.25	.31	.41	.54
.40	.12	.16	.19	.22	.23	.24	.25	.27	.33	.45	.60
.30	.16	.19	.22	.24	.26	.28	.28	.29	.36	.50	.67
.20	.20	.24	.27	.29	.31	.32	.33	.35	.42	.57	.75
.10	.26	.31	.35	.37	.38	.38	.39	.43	.52	.66	.83

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.07	.10	.12	.10	.06	.04	.06	.09	.11	.09	.05
.90	.12	.12	.12	.10	.08	.06	.07	.09	.10	.09	.08
.80	.15	.13	.12	.10	.09	.09	.09	.09	.10	.10	.10
.70	.18	.15	.13	.12	.11	.11	.11	.11	.11	.11	.11
.60	.19	.17	.16	.15	.14	.14	.14	.14	.13	.13	.12
.50	.21	.19	.18	.18	.17	.17	.17	.17	.16	.14	.13
.40	.23	.22	.21	.20	.20	.20	.20	.19	.18	.17	.15
.30	.29	.27	.25	.24	.24	.24	.24	.23	.22	.21	.20
.20	.39	.36	.33	.31	.30	.29	.30	.30	.29	.28	.27
.10	.53	.49	.45	.41	.38	.37	.37	.39	.40	.39	.38

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.35	.33	.30	.27	.25	.25	.26	.27	.27	
.80		.33	.30	.28	.26	.24	.24	.24	.24	.25	
.70		.30	.28	.25	.23	.22	.21	.22	.22	.22	
.60		.28	.25	.23	.20	.18	.18	.19	.20	.20	
.50		.25	.23	.20	.17	.15	.15	.16	.17	.17	
.40		.23	.20	.18	.15	.13	.13	.14	.15	.15	
.30		.20	.18	.15	.13	.12	.11	.12	.12	.12	
.20		.17	.15	.13	.11	.09	.09	.09	.09	.10	
.10		.15	.13	.10	.07	.05	.05	.06	.07	.07	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.07	.08	.08	.05	.02	.00	.01	.05	.08	.11	.13
.90	.08	.08	.08	.06	.04	.03	.03	.05	.08	.11	.14
.80	.09	.08	.08	.08	.07	.06	.06	.07	.08	.11	.15
.70	.09	.09	.10	.10	.10	.09	.09	.09	.10	.12	.15
.60	.09	.11	.12	.13	.13	.13	.12	.12	.12	.13	.14
.50	.09	.13	.15	.17	.17	.16	.16	.15	.15	.15	.14
.40	.12	.15	.18	.19	.20	.20	.19	.18	.18	.18	.18
.30	.17	.20	.22	.23	.23	.23	.22	.22	.22	.23	.25
.20	.24	.26	.28	.28	.27	.26	.26	.27	.29	.31	.35
.10	.34	.35	.36	.34	.31	.30	.31	.34	.38	.42	.48

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.27	.41	.49	.45	.30	.13	.02	.00	.01	.07	.14
.90	.37	.45	.48	.43	.31	.17	.06	.01	.02	.08	.17
.80	.45	.48	.48	.43	.33	.21	.10	.03	.03	.09	.18
.70	.48	.50	.51	.46	.37	.26	.14	.06	.04	.09	.18
.60	.49	.53	.55	.52	.42	.30	.18	.09	.06	.10	.16
.50	.55	.59	.61	.57	.47	.34	.22	.12	.09	.11	.16
.40	.71	.69	.66	.60	.51	.39	.26	.16	.12	.14	.19
.30	.91	.82	.74	.65	.54	.43	.31	.21	.16	.17	.21
.20	1.05	.96	.87	.75	.61	.48	.37	.30	.25	.21	.19
.10	1.11	1.11	1.05	.91	.70	.52	.44	.42	.37	.26	.12

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.21	.22	.23	.22	.20	.20	.22	.26	.29	.30	.30
.90	.22	.23	.24	.24	.24	.24	.26	.29	.31	.32	.33
.80	.23	.24	.26	.27	.28	.29	.30	.32	.33	.35	.36
.70	.22	.26	.29	.31	.33	.34	.35	.36	.37	.37	.38
.60	.20	.27	.32	.36	.38	.39	.40	.41	.41	.39	.38
.50	.20	.29	.36	.40	.42	.44	.45	.45	.45	.42	.38
.40	.22	.32	.40	.45	.47	.48	.49	.50	.48	.45	.41
.30	.26	.36	.45	.50	.52	.53	.54	.54	.53	.50	.45
.20	.32	.43	.52	.56	.57	.58	.59	.61	.60	.57	.52
.10	.40	.52	.61	.64	.63	.63	.65	.69	.70	.66	.60

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.19	.24	.25	.16	.03	.00	.05	.19	.22	.12	.00
.90	.26	.24	.20	.13	.06	.03	.08	.15	.17	.13	.04
.80	.31	.24	.17	.12	.09	.09	.11	.13	.14	.13	.12
.70	.33	.25	.18	.14	.14	.16	.16	.16	.15	.14	.13
.60	.33	.27	.22	.20	.20	.22	.22	.22	.19	.15	.10
.50	.35	.31	.28	.27	.27	.28	.29	.28	.25	.18	.09
.40	.43	.38	.34	.32	.33	.34	.35	.34	.30	.24	.16
.30	.56	.48	.42	.39	.39	.41	.41	.40	.38	.34	.29
.20	.71	.63	.55	.49	.47	.47	.49	.51	.50	.48	.44
.10	.88	.81	.73	.64	.56	.53	.58	.66	.69	.65	.58

Table C6. $C_{prms,\ \overline{\beta}}$, γ = 1.0, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.28	.29	.29	.29	.29	.29	.29	.29	.29	
.80			.27	.27	.27	.27	.27	.27	.27	.27	.27	
.70			.25	.25	.26	.26	.26	.26	.26	.26	.26	
.60			.24	.24	.24	.24	.24	.24	.24	.24	.24	
.50			.22	.22	.22	.22	.22	.22	.22	.22	.22	
.40			.21	.21	.21	.21	.21	.21	.21	.21	.21	
.30			.19	.19	.19	.19	.19	.19	.19	.19	.19	
.20			.17	.17	.18	.18	.18	.18	.18	.18	.18	
.10			.16	.16	.16	.16	.16	.16	.16	.16	.16	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.10	.09	.07	.06	.03	.02	.03	.06	.07	.09	.10
.90		.13	.10	.08	.06	.05	.05	.05	.06	.08	.10	.13
.80		.15	.12	.09	.08	.07	.07	.07	.08	.09	.12	.15
.70		.16	.13	.11	.10	.09	.09	.09	.10	.11	.13	.16
.60		.17	.15	.13	.12	.12	.12	.12	.12	.13	.15	.17
.50		.18	.17	.15	.14	.14	.14	.14	.14	.15	.17	.18
.40		.21	.19	.17	.16	.16	.16	.16	.16	.17	.19	.21
.30		.26	.22	.20	.19	.19	.19	.19	.19	.20	.22	.26
.20		.32	.28	.25	.23	.22	.21	.22	.23	.25	.28	.32
.10		.39	.36	.33	.30	.25	.23	.25	.30	.33	.36	.39
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.00	.19	.41	.42	.25	.08	.04	.08	.13	.15	.16
.90		.05	.24	.37	.38	.29	.18	.13	.13	.15	.18	.20
.80		.18	.29	.36	.38	.33	.27	.22	.19	.19	.21	.24
.70		.21	.32	.41	.44	.42	.36	.30	.25	.24	.25	.29
.60		.18	.36	.50	.55	.52	.45	.38	.32	.30	.31	.33
.50		.21	.43	.59	.66	.63	.55	.46	.39	.35	.34	.34
.40		.41	.55	.66	.72	.70	.64	.55	.46	.39	.34	.29
.30		.63	.71	.77	.79	.78	.73	.66	.56	.46	.35	.23
.20		.72	.86	.96	.97	.90	.83	.78	.73	.61	.42	.19
.10		.63	1.00	1.25	1.26	1.08	.92	.92	.96	.87	.58	.20
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.27	.27	.26	.25	.23	.22	.23	.25	.26	.27	.27
.90		.29	.29	.29	.28	.28	.27	.28	.28	.29	.29	.29
.80		.31	.31	.32	.32	.32	.32	.32	.32	.32	.31	.31
.70		.31	.34	.35	.37	.37	.37	.37	.37	.35	.34	.31
.60		.31	.36	.40	.41	.42	.42	.42	.41	.40	.36	.31
.50		.31	.38	.44	.46	.47	.47	.47	.46	.44	.38	.31
.40		.33	.41	.48	.51	.52	.52	.52	.51	.48	.41	.33
.30		.37	.46	.52	.56	.57	.57	.57	.56	.52	.46	.37
.20		.42	.52	.59	.62	.62	.62	.62	.62	.59	.52	.42
.10		.49	.61	.69	.71	.69	.67	.69	.71	.69	.61	.49
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-1 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.16	.15	.13	.08	.04	.08	.25	.42	.41	.19	.00
.90		.20	.18	.15	.13	.13	.18	.29	.38	.37	.24	.05
.80		.24	.21	.19	.19	.22	.27	.33	.38	.36	.29	.18
.70		.29	.25	.24	.25	.30	.36	.42	.44	.41	.32	.21
.60		.33	.31	.30	.32	.38	.45	.52	.55	.50	.36	.18
.50		.34	.34	.35	.39	.46	.55	.63	.66	.59	.43	.21
.40		.29	.34	.39	.46	.55	.64	.70	.72	.66	.55	.41
.30		.23	.35	.46	.56	.66	.73	.78	.79	.77	.71	.63
.20		.19	.42	.61	.73	.78	.83	.90	.97	.96	.86	.72
.10		.20	.58	.87	.96	.92	.92	1.08	1.26	1.25	1.00	.63
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

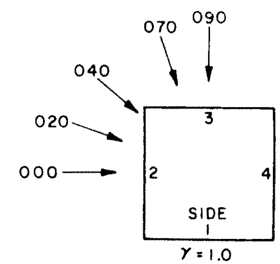


Table C7. $C_{prms,\ \overline{\beta}}$, γ = 1.0, Boundary Layer 4

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.37	.33	.30	.28	.26	.23	.20	.18	.17	
.80		.38	.33	.29	.25	.22	.20	.19	.18	.18	
.70		.38	.33	.29	.25	.22	.20	.19	.18	.18	
.60		.37	.33	.30	.27	.25	.22	.20	.18	.17	
.50		.37	.33	.30	.29	.27	.24	.20	.18	.17	
.40		.37	.33	.30	.27	.25	.22	.20	.18	.17	
.30		.38	.33	.29	.25	.22	.20	.19	.18	.18	
.20		.38	.33	.29	.25	.22	.20	.19	.18	.18	
.10		.37	.33	.30	.28	.26	.23	.20	.18	.17	

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.17	.34	.44	.40	.26	.12	.06	.06	.10	.19	.31
.90	.18	.33	.42	.40	.32	.22	.16	.13	.14	.18	.24
.80	.20	.34	.43	.43	.38	.32	.26	.21	.18	.18	.20
.70	.22	.38	.49	.51	.47	.41	.35	.29	.24	.23	.23
.60	.26	.46	.59	.62	.58	.51	.44	.37	.32	.30	.29
.50	.36	.56	.70	.73	.68	.61	.53	.46	.40	.38	.36
.40	.54	.69	.80	.82	.77	.70	.63	.55	.49	.43	.37
.30	.80	.87	.91	.90	.86	.80	.73	.66	.57	.47	.35
.20	1.13	1.12	1.09	1.04	.96	.90	.84	.77	.67	.52	.34
.10	1.52	1.44	1.34	1.23	1.10	.99	.94	.90	.79	.58	.33

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.26	.34	.39	.37	.30	.25	.30	.37	.39	.34	.26
.90	.28	.33	.37	.36	.32	.30	.32	.36	.37	.33	.28
.80	.30	.33	.35	.36	.36	.35	.36	.36	.35	.33	.30
.70	.32	.34	.37	.39	.40	.40	.40	.39	.37	.34	.32
.60	.33	.37	.41	.44	.45	.45	.45	.44	.41	.37	.33
.50	.36	.41	.46	.48	.50	.50	.50	.48	.46	.41	.36
.40	.40	.45	.49	.52	.54	.54	.54	.52	.49	.45	.40
.30	.45	.49	.54	.57	.59	.59	.59	.57	.54	.49	.45
.20	.44	.54	.61	.65	.65	.64	.65	.65	.61	.54	.44
.10	.38	.58	.73	.77	.73	.69	.73	.77	.73	.58	.38

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.31	.19	.10	.06	.06	.12	.26	.40	.44	.34	.17
.90	.24	.18	.14	.13	.16	.22	.32	.40	.42	.33	.18
.80	.20	.18	.18	.21	.26	.32	.38	.43	.43	.34	.20
.70	.23	.23	.24	.29	.35	.41	.47	.51	.49	.38	.22
.60	.29	.30	.32	.37	.44	.51	.58	.62	.59	.46	.26
.50	.36	.38	.40	.46	.53	.61	.68	.73	.70	.56	.36
.40	.37	.43	.49	.55	.63	.70	.77	.82	.80	.69	.54
.30	.35	.47	.57	.66	.73	.80	.86	.90	.91	.87	.80
.20	.34	.52	.67	.77	.84	.90	.96	1.04	1.09	1.12	1.13
.10	.33	.58	.79	.90	.94	.99	1.10	1.23	1.34	1.44	1.52

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.09	.10	.08	.04	.01	.04	.08	.10	.09	.05
.90	.10	.10	.10	.08	.05	.04	.05	.08	.10	.10	.10
.80	.14	.12	.09	.08	.07	.06	.07	.08	.09	.12	.14
.70	.16	.13	.10	.09	.09	.09	.09	.09	.10	.13	.16
.60	.16	.14	.12	.12	.11	.11	.11	.12	.12	.14	.16
.50	.19	.17	.15	.14	.14	.14	.14	.14	.15	.17	.19
.40	.25	.21	.18	.16	.16	.16	.16	.16	.18	.21	.25
.30	.32	.26	.22	.19	.19	.19	.19	.19	.22	.26	.32
.20	.37	.32	.27	.24	.22	.21	.22	.24	.27	.32	.37
.10	.40	.38	.35	.31	.26	.24	.26		.35	.38	.40

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.33	.29	.25	.22	.20	.18	.16	.16	.15	
.80		.33	.29	.25	.21	.18	.16	.15	.15	.15	
.70		.33	.28	.24	.20	.17	.16	.15	.15	.15	
.60		.32	.28	.24	.21	.18	.16	.15	.14	.14	
.50		.31	.27	.23	.21	.18	.16	.14	.13	.13	
.40		.31	.27	.23	.20	.17	.15	.14	.13	.13	
.30		.31	.26	.22	.18	.15	.14	.13	.13	.13	
.20		.30	.26	.21	.18	.15	.13	.13	.12	.12	
.10		.29	.25	.21	.18	.16	.14	.12	.12	.11	

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.13	.18	.15	.07	.02	.04	.09	.16	.23	.32
.90	.12	.16	.17	.15	.11	.08	.09	.12	.17	.25	.33
.80	.16	.17	.18	.17	.16	.14	.14	.15	.19	.25	.34
.70	.16	.19	.21	.22	.21	.21	.20	.19	.21	.25	.31
.60	.14	.21	.26	.28	.28	.27	.26	.25	.25	.26	.29
.50	.15	.24	.31	.35	.35	.33	.32	.31	.30	.30	.31
.40	.22	.31	.37	.40	.40	.40	.38	.37	.37	.39	.42
.30	.36	.41	.44	.46	.46	.46	.45	.45	.46	.51	.58
.20	.53	.54	.55	.55	.54	.52	.52	.54	.58	.65	.75
.10	.71	.71	.70	.67	.62	.59	.60	.64	.70	.79	.90

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.29	.37	.41	.38	.29	.23	.26	.32	.32	.25	.14
.90	.35	.38	.39	.36	.31	.28	.28	.30	.30	.26	.20
.80	.40	.39	.38	.36	.34	.32	.31	.30	.29	.27	.24
.70	.42	.41	.40	.39	.38	.36	.35	.32	.30	.27	.24
.60	.41	.42	.43	.43	.42	.41	.39	.37	.33	.28	.23
.50	.42	.45	.47	.47	.47	.45	.44	.41	.37	.30	.23
.40	.47	.49	.51	.51	.51	.50	.48	.45	.40	.34	.26
.30	.53	.54	.55	.56	.55	.54	.52	.49	.44	.38	.31
.20	.54	.58	.62	.62	.61	.59	.58	.56	.51	.44	.34
.10	.50	.62	.70	.71	.67	.63	.64	.65	.61	.49	.35

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.18	.07	.00	.00	.03	.11	.24	.37	.46	.50	.53
.90	.17	.07	.01	.01	.07	.16	.27	.38	.46	.50	.52
.80	.16	.07	.02	.04	.12	.21	.31	.41	.48	.51	.54
.70	.16	.09	.05	.08	.16	.26	.36	.45	.51	.56	.58
.60	.16	.11	.09	.13	.21	.31	.41	.50	.58	.63	.66
.50	.17	.13	.13	.17	.26	.36	.46	.56	.64	.70	.76
.40	.18	.16	.17	.22	.31	.41	.51	.61	.69	.78	.86
.30	.19	.19	.21	.27	.36	.46	.56	.66	.75	.86	.97
.20	.21	.23	.27	.33	.41	.51	.62	.72	.84	.97	1.11
.10	.23	.29	.34	.41	.47	.56	.68	.81	.96	1.11	1.28

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.11	.13	.13	.09	.03	-.00	.03	.09	.12	.09	.04
.90	.13	.12	.11	.08	.05	.03	.05	.08	.10	.09	.06
.80	.14	.12	.10	.08	.07	.07	.08	.09	.09	.09	.09
.70	.15	.13	.11	.10	.10	.11	.11	.11	.10	.10	.10
.60	.16	.14	.14	.13	.14	.14	.14	.14	.13	.12	.10
.50	.18	.17	.17	.17	.18	.18	.18	.18	.17	.15	.12
.40	.22	.22	.21	.21	.21	.22	.22	.21	.20	.18	.16
.30	.29	.27	.25	.25	.25	.25	.25	.25	.24	.23	.21
.20	.37	.34	.32	.30	.29	.29	.30	.30	.30	.29	.27
.10	.45	.43	.40	.37	.34	.33	.34	.37	.38	.36	.33

Table C7. $C_{prms,\ \overline{\beta}}$, γ = 1.0, Boundary Layer 4

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.30	.28	.28	.28	.28	.26	.23	.21	.21	
.80			.29	.27	.25	.24	.22	.21	.21	.20	.20	
.70			.27	.25	.23	.22	.21	.19	.19	.18	.18	
.60			.25	.23	.22	.22	.21	.20	.17	.16	.15	
.50			.22	.21	.20	.21	.21	.19	.16	.14	.13	
.40			.21	.19	.18	.18	.18	.16	.14	.12	.12	
.30			.19	.18	.16	.14	.13	.12	.11	.11	.10	
.20			.18	.16	.14	.13	.11	.10	.09	.09	.08	
.10			.15	.14	.13	.14	.13	.11	.08	.07	.06	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.09	.11	.12	.10	.05	.02	.05	.10	.14	.15	.16
.90		.11	.12	.13	.11	.08	.07	.08	.11	.14	.17	.21
.80		.13	.13	.13	.13	.12	.11	.12	.13	.15	.19	.25
.70		.14	.15	.16	.16	.16	.16	.16	.16	.18	.22	.27
.60		.15	.17	.19	.20	.21	.21	.21	.21	.22	.25	.29
.50		.17	.20	.23	.25	.25	.25	.25	.25	.26	.29	.33
.40		.21	.25	.28	.29	.30	.30	.30	.30	.31	.34	.39
.30		.29	.31	.33	.34	.34	.34	.34	.35	.37	.42	.48
.20		.38	.39	.40	.40	.39	.39	.39	.41	.45	.52	.62
.10		.48	.49	.48	.47	.45	.44	.45	.49	.55	.66	.79
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.28	.32	.33	.29	.21	.16	.18	.23	.23	.16	.09
.90		.35	.34	.33	.29	.23	.20	.20	.22	.21	.18	.13
.80		.41	.37	.33	.29	.26	.24	.22	.21	.20	.18	.16
.70		.43	.39	.34	.31	.29	.28	.25	.23	.21	.16	.16
.60		.44	.41	.37	.35	.33	.31	.29	.27	.24	.19	.15
.50		.47	.44	.41	.39	.37	.35	.33	.31	.27	.21	.15
.40		.54	.49	.45	.42	.40	.39	.37	.34	.30	.25	.19
.30		.61	.55	.50	.46	.44	.43	.40	.37	.34	.29	.25
.20		.62	.59	.56	.52	.49	.46	.45	.43	.40	.35	.28
.10		.56	.60	.63	.60	.54	.50	.51	.53	.50	.41	.28
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.15	.14	.13	.13	.12	.12	.14	.17	.23	.34	.46
.90		.14	.14	.14	.15	.15	.15	.16	.19	.25	.35	.48
.80		.13	.14	.16	.17	.18	.18	.19	.21	.27	.37	.49
.70		.12	.15	.18	.20	.21	.22	.22	.24	.30	.40	.52
.60		.12	.17	.21	.23	.24	.25	.26	.28	.33	.43	.56
.50		.13	.19	.23	.26	.27	.28	.29	.31	.37	.48	.62
.40		.16	.21	.26	.29	.30	.31	.32	.34	.41	.54	.70
.30		.20	.25	.29	.32	.33	.34	.35	.38	.45	.59	.76
.20		.25	.30	.34	.36	.37	.38	.39	.42	.50	.64	.81
.10		.31	.37	.41	.42	.41	.41	.43	.47	.55	.68	.82
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.13	.15	.15	.12	.07	.04	.07	.12	.14	.12	.08
.90		.17	.16	.15	.12	.09	.06	.09	.12	.13	.12	.10
.80		.21	.18	.15	.13	.12	.11	.12	.12	.13	.13	.13
.70		.23	.20	.17	.16	.15	.15	.15	.14	.14	.14	.14
.60		.25	.22	.20	.19	.19	.19	.19	.18	.17	.16	.14
.50		.27	.25	.24	.23	.22	.22	.23	.22	.21	.19	.17
.40		.32	.29	.27	.26	.26	.26	.26	.25	.24	.23	.22
.30		.39	.35	.32	.30	.30	.30	.30	.29	.29	.29	.29
.20		.49	.44	.40	.37	.35	.34	.34	.35	.36	.36	.35
.10		.61	.57	.52	.46	.40	.37	.40	.44	.46	.44	.40
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.39	.37	.33	.30	.28	.28	.29	.30	.30	
.80			.36	.34	.31	.28	.27	.26	.26	.26	.27	
.70			.33	.31	.28	.25	.24	.23	.23	.23	.24	
.60			.30	.28	.25	.22	.20	.19	.20	.21	.21	
.50			.28	.25	.22	.18	.16	.16	.17	.18	.18	
.40			.24	.22	.19	.16	.14	.13	.14	.15	.15	
.30			.21	.19	.16	.14	.12	.11	.11	.12	.12	
.20			.18	.16	.13	.11	.09	.08	.08	.09	.09	
.10			.16	.13	.10	.06	.04	.04	.05	.06	.06	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.08	.09	.09	.07	.03	.00	.02	.06	.10	.13	.16
.90		.08	.09	.09	.07	.05	.04	.05	.07	.09	.12	.15
.80		.09	.09	.09	.09	.08	.07	.07	.08	.09	.12	.15
.70		.10	.10	.11	.11	.11	.11	.10	.10	.11	.13	.15
.60		.10	.12	.14	.14	.14	.14	.14	.13	.14	.15	.16
.50		.13	.15	.17	.18	.18	.18	.17	.17	.17	.17	.18
.40		.17	.19	.20	.21	.21	.21	.21	.20	.20	.21	.22
.30		.22	.23	.24	.25	.25	.25	.24	.24	.24	.25	.27
.20		.28	.29	.30	.30	.29	.28	.28	.29	.30	.33	.36
.10		.35	.37	.38	.37	.33	.31	.33	.36	.40	.43	.47
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.45	.49	.49	.41	.28	.14	.05	.01	.02	.07	.14
.90		.49	.51	.49	.42	.31	.18	.08	.02	.03	.08	.16
.80		.53	.53	.50	.44	.34	.22	.11	.04	.03	.09	.17
.70		.56	.55	.53	.47	.38	.26	.15	.07	.05	.09	.17
.60		.59	.59	.57	.52	.42	.31	.19	.11	.08	.10	.16
.50		.68	.66	.63	.56	.47	.35	.24	.15	.11	.12	.16
.40		.85	.77	.69	.61	.50	.39	.28	.18	.14	.15	.19
.30		1.02	.90	.77	.66	.55	.44	.32	.22	.18	.19	.23
.20		1.12	1.00	.87	.74	.60	.48	.37	.29	.25	.23	.22
.10		1.13	1.07	.99	.85	.67	.52	.44	.40	.34	.26	.17
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.22	.24	.25	.24	.23	.22	.26	.31	.34	.36	.36
.90		.24	.26	.26	.27	.27	.27	.30	.33	.35	.36	.37
.80		.26	.27	.29	.30	.31	.32	.34	.35	.37	.37	.37
.70		.27	.29	.32	.34	.35	.37	.38	.39	.40	.39	.38
.60		.27	.32	.36	.38	.40	.42	.43	.44	.44	.42	.39
.50		.29	.35	.40	.43	.45	.47	.48	.49	.49	.45	.41
.40		.35	.40	.44	.48	.50	.52	.53	.53	.52	.48	.43
.30		.41	.45	.50	.53	.55	.56	.57	.58	.56	.52	.47
.20		.43	.50	.56	.59	.60	.61	.63	.65	.64	.59	.52
.10		.41	.54	.64	.67	.67	.66	.70	.74	.74	.68	.59
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-1 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.23	.27	.27	.18	.04	.00	.08	.23	.26	.14	.00
.90		.29	.26	.22	.15	.08	.05	.11	.19	.21	.15	.05
.80		.33	.26	.19	.14	.12	.12	.14	.17	.17	.15	.12
.70		.35	.27	.20	.17	.17	.19	.19	.19	.18	.16	.14
.60		.36	.30	.25	.23	.24	.26	.27	.26	.23	.18	.11
.50		.40	.35	.32	.30	.31	.32	.34	.34	.29	.22	.12
.40		.49	.43	.39	.37	.38	.39	.40	.40	.36	.29	.21
.30		.61	.53	.47	.44	.45	.46	.47	.46	.44	.41	.36
.20		.73	.65	.59	.54	.52	.53	.55	.57	.57	.55	.52
.10		.84	.79	.73	.67	.61	.60	.64	.71	.74	.72	.67
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C7. $C_{p_{rms}}$, $\overline{\beta}$, γ = 1.0, Boundary Layer 4

RMS PRESSURE COEFFICIENT B. LAYER 4   1-1 SIDE RATIO   ROOF   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.32	.32	.33	.33	.33	.33	.33	.33	.32	
.80			.30	.30	.30	.30	.31	.31	.30	.30	.30	
.70			.28	.28	.28	.28	.28	.28	.28	.28	.28	
.60			.25	.26	.26	.26	.26	.26	.26	.26	.26	
.50			.23	.23	.24	.24	.24	.24	.24	.24	.23	
.40			.21	.21	.21	.22	.22	.22	.22	.21	.21	
.30			.19	.19	.19	.19	.19	.19	.19	.19	.19	
.20			.16	.17	.17	.17	.17	.17	.17	.17	.17	
.10			.14	.14	.15	.15	.15	.15	.15	.15	.14	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4   1-1 SIDE RATIO   SIDE 1   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.11	.09	.07	.05	.04	.03	.04	.05	.07	.09	.11
.90		.12	.10	.08	.06	.06	.05	.06	.06	.08	.10	.12
.80		.13	.11	.09	.08	.08	.07	.08	.08	.09	.11	.13
.70		.14	.12	.11	.10	.10	.10	.10	.10	.11	.12	.14
.60		.15	.14	.13	.12	.12	.12	.12	.12	.13	.14	.15
.50		.19	.17	.15	.14	.14	.14	.14	.14	.15	.17	.19
.40		.24	.20	.17	.16	.16	.16	.16	.16	.17	.20	.24
.30		.30	.25	.20	.18	.18	.18	.18	.18	.20	.25	.30
.20		.35	.30	.25	.23	.21	.20	.21	.23	.25	.30	.35
.10		.38	.35	.32	.29	.25	.23	.25	.29	.32	.35	.38
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4   1-1 SIDE RATIO   SIDE 2   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.00	.26	.51	.51	.31	.10	.04	.09	.14	.16	.16
.90		.08	.29	.44	.44	.33	.20	.14	.15	.16	.18	.19
.80		.21	.32	.40	.41	.36	.29	.24	.21	.19	.20	.21
.70		.25	.36	.44	.47	.44	.39	.32	.26	.23	.23	.25
.60		.24	.41	.54	.59	.56	.48	.39	.32	.28	.27	.28
.50		.30	.50	.66	.71	.67	.58	.48	.40	.34	.32	.32
.40		.52	.65	.75	.78	.75	.67	.58	.49	.43	.39	.36
.30		.83	.86	.87	.86	.82	.77	.69	.61	.53	.45	.37
.20		1.12	1.11	1.08	1.02	.94	.86	.81	.75	.64	.49	.31
.10		1.34	1.39	1.39	1.29	1.11	.96	.91	.88	.76	.51	.19
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4   1-1 SIDE RATIO   SIDE 3   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.34	.34	.34	.31	.27	.25	.27	.31	.34	.34	.34
.90		.33	.34	.34	.33	.31	.30	.31	.33	.34	.34	.33
.80		.31	.34	.35	.36	.35	.35	.35	.36	.35	.34	.31
.70		.31	.35	.38	.40	.40	.40	.40	.40	.38	.35	.31
.60		.32	.38	.42	.45	.45	.46	.45	.45	.42	.38	.32
.50		.34	.42	.47	.50	.51	.51	.51	.50	.47	.42	.34
.40		.37	.46	.52	.55	.56	.56	.56	.55	.52	.46	.37
.30		.41	.50	.57	.60	.61	.61	.61	.60	.57	.50	.41
.20		.47	.56	.63	.66	.67	.67	.67	.66	.63	.56	.47
.10		.56	.64	.71	.73	.72	.72	.72	.73	.71	.64	.56
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4   1-1 SIDE RATIO   SIDE 4   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.16	.16	.14	.09	.04	.10	.31	.51	.51	.26	.00
.90		.19	.18	.16	.15	.14	.20	.33	.44	.44	.29	.08
.80		.21	.20	.19	.21	.24	.29	.36	.41	.40	.32	.21
.70		.25	.23	.23	.26	.32	.39	.44	.47	.44	.36	.25
.60		.28	.27	.28	.32	.39	.48	.56	.59	.54	.41	.24
.50		.32	.32	.34	.40	.48	.58	.67	.71	.66	.50	.30
.40		.36	.39	.43	.49	.58	.67	.75	.78	.75	.65	.52
.30		.37	.45	.53	.61	.69	.77	.82	.86	.87	.86	.83
.20		.31	.49	.64	.75	.81	.86	.94	1.02	1.08	1.11	1.12
.10		.19	.51	.76	.88	.91	.96	1.11	1.29	1.39	1.39	1.34
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

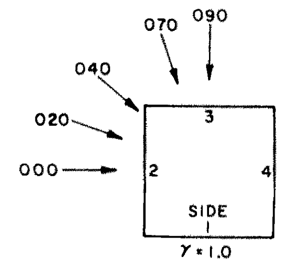


Table C8. $C_{prms, \overline{\beta}}$, γ = 0.5, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.25	.24	.23	.23	.22	.21	.21	.20	.19	
.80			.24	.23	.23	.22	.21	.21	.20	.19	.19	
.70			.23	.23	.22	.21	.21	.20	.20	.19	.18	
.60			.23	.22	.22	.21	.21	.20	.19	.19	.18	
.50			.23	.22	.22	.21	.21	.20	.19	.18	.18	
.40			.23	.22	.22	.21	.21	.20	.19	.19	.18	
.30			.23	.23	.22	.21	.21	.20	.20	.19	.18	
.20			.24	.23	.23	.22	.21	.21	.20	.19	.19	
.10			.25	.24	.23	.23	.22	.21	.21	.20	.19	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.07	.17	.25	.28	.26	.23	.19	.15	.14	.14	.15
.90		.07	.17	.25	.28	.28	.25	.21	.18	.15	.13	.11
.80		.06	.17	.25	.29	.29	.27	.24	.20	.17	.13	.08
.70		.06	.18	.27	.31	.31	.28	.25	.22	.18	.13	.07
.60		.07	.19	.29	.33	.33	.30	.27	.23	.19	.14	.08
.50		.08	.21	.31	.36	.35	.32	.29	.25	.20	.14	.08
.40		.10	.22	.32	.37	.37	.34	.30	.26	.21	.14	.07
.30		.15	.26	.34	.38	.38	.36	.33	.29	.22	.14	.05
.20		.26	.33	.39	.41	.40	.38	.35	.31	.24	.16	.06
.10		.40	.44	.46	.46	.43	.40	.36	.33	.27	.19	.09
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.17	.18	.19	.20	.19	.19	.19	.20	.19	.18	.17
.90		.18	.19	.20	.20	.20	.20	.20	.20	.20	.19	.18
.80		.18	.19	.20	.21	.21	.21	.21	.21	.20	.19	.18
.70		.18	.20	.21	.22	.22	.22	.22	.22	.21	.20	.18
.60		.18	.20	.21	.22	.23	.23	.23	.22	.21	.20	.18
.50		.18	.20	.22	.23	.24	.24	.24	.23	.22	.20	.18
.40		.19	.21	.22	.23	.24	.24	.24	.23	.22	.21	.19
.30		.19	.21	.23	.24	.25	.25	.25	.24	.23	.21	.19
.20		.18	.22	.25	.27	.27	.26	.27	.27	.25	.22	.18
.10		.14	.23	.29	.31	.29	.27	.29	.31	.29	.23	.14
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.15	.14	.14	.15	.19	.23	.26	.28	.25	.17	.07
.90		.11	.13	.15	.18	.21	.25	.28	.28	.25	.17	.07
.80		.08	.13	.17	.20	.24	.27	.29	.29	.25	.17	.06
.70		.07	.13	.18	.22	.25	.28	.31	.31	.27	.18	.06
.60		.08	.14	.19	.23	.27	.30	.33	.33	.29	.19	.07
.50		.08	.14	.20	.25	.29	.32	.35	.36	.31	.21	.08
.40		.07	.14	.21	.26	.30	.34	.37	.37	.32	.22	.10
.30		.05	.14	.22	.29	.33	.36	.38	.38	.34	.26	.15
.20		.06	.16	.24	.31	.35	.38	.40	.41	.39	.33	.26
.10		.09	.19	.27	.33	.36	.40	.43	.46	.46	.44	.40
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.06	.07	.08	.07	.05	.04	.05	.07	.08	.07	.06
.90		.07	.07	.07	.06	.05	.05	.05	.06	.07	.07	.07
.80		.08	.07	.07	.06	.06	.06	.06	.06	.07	.07	.08
.70		.08	.07	.07	.06	.06	.06	.06	.06	.07	.07	.08
.60		.08	.07	.07	.07	.07	.07	.07	.07	.07	.07	.08
.50		.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
.40		.10	.09	.08	.08	.08	.08	.08	.08	.08	.09	.10
.30		.12	.10	.09	.08	.09	.09	.09	.08	.09	.10	.12
.20		.12	.12	.11	.11	.10	.09	.10	.11	.11	.12	.12
.10		.08	.12	.14	.14	.12	.10	.12	.14	.14	.12	.08
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.28	.27	.27	.26	.26	.25	.24	.24	.23	
.80			.25	.24	.24	.23	.22	.22	.21	.20	.20	
.70			.22	.21	.20	.20	.19	.18	.18	.17	.16	
.60			.19	.18	.17	.17	.16	.15	.14	.13	.12	
.50			.17	.16	.15	.14	.13	.12	.11	.10	.09	
.40			.16	.15	.13	.12	.11	.10	.09	.07	.06	
.30			.16	.15	.14	.12	.11	.10	.08	.07	.05	
.20			.18	.17	.15	.14	.13	.11	.10	.08	.07	
.10			.21	.20	.18	.17	.15	.14	.13	.11	.10	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.09	.10	.11	.11	.12	.13	.15	.17	.21	.24	.28
.90		.10	.10	.10	.11	.12	.14	.16	.17	.20	.22	.24
.80		.10	.10	.10	.11	.12	.14	.16	.17	.19	.20	.21
.70		.09	.10	.10	.11	.13	.14	.16	.18	.19	.19	.20
.60		.08	.09	.10	.12	.13	.15	.16	.18	.19	.19	.20
.50		.08	.09	.10	.12	.13	.15	.17	.18	.19	.19	.19
.40		.08	.09	.10	.12	.14	.15	.17	.18	.18	.18	.17
.30		.10	.10	.11	.12	.14	.16	.17	.18	.18	.17	.16
.20		.14	.14	.13	.14	.15	.16	.18	.20	.20	.19	.17
.10		.20	.18	.17	.16	.16	.16	.19	.22	.23	.23	.22
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.22	.23	.23	.22	.20	.17	.17	.18	.18	.17	.15
.90		.21	.21	.22	.21	.19	.18	.18	.18	.17	.16	.14
.80		.20	.20	.21	.20	.20	.19	.18	.18	.17	.16	.14
.70		.21	.21	.21	.21	.20	.20	.19	.18	.17	.15	.13
.60		.22	.22	.22	.22	.21	.21	.20	.19	.17	.15	.13
.50		.23	.23	.23	.23	.22	.21	.20	.19	.17	.15	.13
.40		.25	.24	.23	.23	.22	.22	.21	.20	.18	.15	.13
.30		.25	.24	.24	.23	.23	.23	.22	.21	.18	.16	.13
.20		.24	.25	.26	.26	.24	.24	.23	.23	.20	.16	.10
.10		.21	.26	.30	.30	.27	.24	.25	.26	.23	.16	.06
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.07	.06	.05	.06	.08	.12	.17	.24	.28	.31	.33
.90		.10	.06	.03	.03	.06	.12	.19	.26	.30	.33	.34
.80		.13	.05	.01	.01	.05	.13	.20	.27	.32	.35	.36
.70		.13	.05	.01	.01	.06	.13	.21	.28	.33	.37	.40
.60		.11	.05	.02	.02	.07	.14	.21	.27	.33	.39	.45
.50		.10	.05	.03	.03	.08	.14	.21	.27	.34	.40	.47
.40		.11	.06	.02	.03	.08	.15	.21	.28	.34	.40	.46
.30		.13	.06	.02	.02	.08	.15	.23	.30	.36	.42	.47
.20		.13	.07	.03	.04	.08	.16	.24	.32	.41	.50	.58
.10		.10	.08	.08	.08	.11	.16	.24	.35	.49	.64	.81
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.09	.11	.12	.10	.06	.03	.03	.04	.06	.07	.08
.90		.11	.11	.10	.08	.06	.04	.04	.05	.06	.07	.08
.80		.13	.11	.10	.08	.07	.06	.05	.05	.06	.07	.08
.70		.13	.11	.10	.09	.08	.08	.07	.06	.06	.06	.07
.60		.12	.12	.11	.11	.10	.09	.08	.07	.07	.07	.07
.50		.12	.13	.13	.13	.12	.10	.09	.08	.08	.07	.07
.40		.16	.15	.14	.13	.13	.12	.11	.10	.09	.09	.09
.30		.22	.19	.16	.15	.14	.14	.13	.12	.11	.11	.11
.20		.25	.23	.21	.18	.16	.15	.15	.15	.14	.12	.10
.10		.26	.28	.28	.25	.20	.17	.17	.19	.18	.13	.06
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C8. $C_{prms,\ \overline{\beta}}$, γ = 0.5, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.29	.30	.30	.31	.31	.31	.32	.32	.32	
.80		.25	.26	.26	.26	.27	.27	.27	.28	.28	
.70		.21	.22	.22	.22	.23	.23	.23	.23	.24	
.60		.18	.19	.19	.19	.19	.19	.20	.20	.20	
.50		.16	.16	.16	.16	.16	.16	.17	.17	.17	
.40		.15	.14	.14	.14	.14	.14	.14	.14	.14	
.30		.13	.13	.13	.12	.12	.12	.12	.12	.11	
.20		.12	.12	.11	.11	.11	.10	.10	.10	.10	
.10		.10	.10	.10	.10	.09	.09	.09	.08	.08	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.10	.10	.09	.07	.07	.11	.15	.17	.16	.12
.90	.10	.10	.10	.09	.08	.08	.10	.13	.14	.14	.13
.80	.10	.10	.09	.09	.09	.09	.10	.11	.12	.13	.14
.70	.10	.10	.09	.09	.10	.10	.10	.11	.12	.13	.14
.60	.10	.09	.09	.09	.10	.11	.12	.13	.13	.13	.13
.50	.09	.09	.09	.10	.11	.12	.13	.14	.14	.13	.12
.40	.08	.09	.10	.11	.12	.13	.14	.14	.14	.13	.13
.30	.07	.09	.11	.13	.13	.14	.15	.15	.15	.16	.16
.20	.08	.11	.13	.14	.15	.15	.16	.17	.19	.21	.23
.10	.11	.14	.16	.17	.16	.16	.19	.23	.27	.31	.35

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.26	.22	.19	.17	.16	.15	.15	.14	.12	.10	.06
.90	.23	.21	.20	.18	.17	.16	.14	.13	.12	.11	.09
.80	.21	.21	.20	.19	.18	.16	.14	.13	.12	.11	.11
.70	.22	.22	.21	.20	.18	.17	.15	.13	.12	.11	.10
.60	.25	.23	.21	.20	.18	.17	.16	.14	.12	.10	.08
.50	.28	.25	.22	.20	.18	.17	.16	.15	.13	.11	.08
.40	.29	.25	.22	.20	.19	.18	.16	.15	.14	.14	.14
.30	.28	.25	.23	.21	.20	.18	.16	.15	.15	.17	.20
.20	.27	.26	.25	.23	.21	.18	.17	.16	.16	.16	.17
.10	.27	.27	.27	.25	.21	.19	.19	.19	.17	.11	.05

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.11	.11	.11	.11	.11	.12	.12	.13	.14	.16	.18
.90	.08	.09	.10	.11	.12	.12	.12	.13	.15	.18	.21
.80	.06	.08	.10	.11	.12	.12	.12	.13	.15	.19	.23
.70	.07	.09	.10	.12	.12	.12	.13	.13	.16	.19	.23
.60	.09	.10	.11	.12	.12	.12	.13	.14	.16	.18	.22
.50	.09	.10	.11	.12	.12	.12	.13	.14	.16	.19	.23
.40	.08	.09	.10	.11	.12	.13	.13	.14	.17	.22	.28
.30	.05	.08	.10	.11	.12	.13	.13	.14	.18	.25	.34
.20	.05	.08	.11	.12	.13	.13	.13	.15	.20	.26	.34
.10	.08	.11	.14	.14	.13	.13	.14	.17	.20	.23	.27

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.10	.13	.12	.08	.06	.05	.07	.08	.09	.09
.90	.08	.10	.11	.10	.08	.07	.06	.07	.08	.09	.09
.80	.10	.10	.10	.09	.08	.08	.07	.08	.08	.09	.09
.70	.11	.10	.10	.09	.09	.09	.08	.08	.08	.09	.10
.60	.12	.12	.11	.11	.10	.10	.09	.08	.08	.09	.10
.50	.13	.13	.13	.12	.12	.11	.10	.09	.09	.10	.10
.40	.18	.16	.14	.13	.12	.12	.11	.10	.10	.10	.12
.30	.24	.19	.16	.14	.13	.13	.12	.11	.11	.12	.13
.20	.26	.23	.19	.17	.15	.14	.14	.14	.14	.13	.12
.10	.25	.26	.25	.22	.18	.15	.16	.18	.18	.15	.11

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.25	.25	.25	.26	.26	.26	.27	.27	.27	
.80		.25	.25	.26	.26	.26	.27	.27	.27	.28	
.70		.25	.25	.26	.26	.26	.27	.27	.27	.28	
.60		.24	.25	.25	.25	.26	.26	.27	.27	.28	
.50		.23	.24	.24	.25	.25	.26	.26	.27	.27	
.40		.22	.22	.23	.24	.24	.25	.25	.26	.26	
.30		.20	.21	.22	.22	.23	.24	.24	.25	.26	
.20		.19	.20	.21	.21	.22	.22	.23	.24	.25	
.10		.18	.19	.19	.20	.21	.21	.22	.23	.24	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.11	.15	.16	.13	.12	.13	.16	.18	.21	.23
.90	.08	.11	.13	.14	.13	.12	.13	.14	.16	.18	.19
.80	.10	.11	.12	.13	.13	.13	.13	.14	.14	.15	.16
.70	.12	.12	.12	.13	.13	.13	.13	.13	.14	.14	.15
.60	.12	.13	.13	.14	.14	.14	.14	.14	.14	.14	.15
.50	.12	.13	.14	.15	.15	.14	.14	.14	.14	.14	.14
.40	.10	.12	.14	.15	.15	.15	.15	.15	.14	.14	.13
.30	.09	.12	.13	.15	.15	.16	.16	.15	.15	.14	.14
.20	.11	.13	.15	.16	.16	.16	.17	.17	.17	.18	.18
.10	.16	.18	.19	.19	.18	.17	.17	.19	.22	.25	.27

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.30	.44	.46	.37	.22	.11	.03	.03	.08	.16
.90	.10	.27	.40	.43	.36	.25	.14	.07	.05	.08	.13
.80	.09	.25	.38	.41	.36	.27	.18	.10	.08	.08	.12
.70	.07	.25	.38	.43	.38	.29	.20	.12	.09	.10	.13
.60	.05	.26	.41	.46	.41	.31	.21	.13	.10	.11	.15
.50	.07	.28	.44	.50	.44	.34	.22	.14	.10	.12	.17
.40	.14	.32	.46	.50	.46	.36	.25	.16	.12	.13	.16
.30	.24	.38	.48	.51	.47	.38	.28	.20	.15	.13	.14
.20	.32	.46	.55	.57	.50	.40	.31	.24	.18	.13	.10
.10	.38	.55	.67	.66	.55	.42	.34	.28	.21	.14	.05

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.15	.17	.18	.18	.18	.18	.18	.19	.20	.21	.22
.90	.17	.17	.18	.18	.18	.18	.19	.20	.21	.21	.22
.80	.18	.18	.18	.18	.19	.19	.20	.20	.21	.22	.23
.70	.18	.18	.19	.19	.20	.20	.20	.21	.21	.23	.24
.60	.17	.18	.19	.20	.20	.21	.21	.21	.23	.24	.26
.50	.16	.18	.19	.20	.21	.21	.22	.22	.23	.25	.27
.40	.14	.17	.19	.21	.21	.22	.22	.22	.23	.25	.27
.30	.13	.16	.19	.21	.22	.23	.23	.23	.24	.25	.26
.20	.14	.18	.21	.23	.23	.23	.24	.25	.26	.27	.28
.10	.18	.22	.25	.26	.25	.24	.26	.28	.30	.31	.31

RMS PRESSURE COEFFICIENT B. LAYER 1 1-2 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.32	.29	.26	.22	.17	.14	.13	.13	.13	.13	.13
.90	.33	.29	.24	.20	.17	.15	.14	.13	.13	.14	.14
.80	.34	.28	.23	.20	.17	.16	.15	.14	.14	.14	.14
.70	.34	.28	.24	.20	.18	.17	.16	.15	.14	.14	.14
.60	.33	.29	.25	.22	.20	.18	.17	.15	.15	.15	.15
.50	.35	.30	.26	.23	.21	.19	.17	.16	.15	.15	.16
.40	.40	.33	.27	.23	.21	.20	.18	.16	.16	.16	.17
.30	.46	.36	.29	.24	.22	.21	.19	.18	.17	.18	.18
.20	.48	.41	.34	.28	.24	.22	.21	.22	.21	.20	.18
.10	.48	.46	.42	.36	.28	.23	.24	.28	.28	.23	.15

Table C8. $C_{p_{rms}, \overline{\beta}}$, $\gamma = 0.5$, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO   ROOF   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.17	.17	.17	.17	.17	.17	.17	.17	.17	
.80		.22	.22	.22	.22	.22	.22	.22	.22	.22	
.70		.26	.26	.26	.26	.26	.26	.26	.26	.26	
.60		.28	.28	.28	.28	.28	.28	.28	.28	.28	
.50		.29	.29	.29	.29	.29	.29	.29	.29	.29	
.40		.30	.30	.30	.30	.30	.30	.30	.30	.30	
.30		.30	.30	.30	.30	.30	.30	.30	.30	.30	
.20		.32	.32	.32	.32	.32	.32	.32	.32	.32	
.10		.33	.33	.33	.33	.33	.33	.33	.33	.33	

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO   SIDE 1   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.22	.24	.24	.21	.17	.15	.17	.21	.24	.24	.22
.90	.21	.21	.20	.18	.16	.15	.16	.18	.20	.21	.21
.80	.21	.20	.18	.17	.16	.16	.16	.17	.18	.20	.21
.70	.22	.19	.17	.16	.16	.16	.16	.16	.17	.19	.22
.60	.22	.20	.18	.17	.17	.17	.17	.17	.18	.20	.22
.50	.22	.20	.18	.17	.17	.17	.17	.17	.18	.20	.22
.40	.21	.19	.18	.17	.17	.17	.17	.17	.18	.19	.21
.30	.20	.19	.18	.17	.18	.18	.18	.17	.18	.19	.20
.20	.22	.22	.21	.20	.19	.18	.19	.20	.21	.22	.22
.10	.28	.28	.28	.25	.21	.19	.21	.25	.28	.28	.28

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO   SIDE 2   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.11	.23	.32	.32	.27	.23	.28	.35	.38	.35	.26
.90	.16	.24	.30	.31	.28	.26	.27	.31	.34	.35	.35
.80	.20	.25	.29	.30	.29	.28	.27	.28	.31	.35	.40
.70	.21	.25	.29	.30	.31	.30	.29	.29	.31	.35	.39
.60	.19	.25	.30	.32	.33	.32	.32	.32	.32	.34	.36
.50	.20	.26	.31	.34	.35	.35	.34	.34	.34	.35	.35
.40	.26	.30	.33	.36	.37	.37	.36	.35	.35	.36	.38
.30	.33	.35	.37	.39	.40	.39	.38	.36	.36	.38	.41
.20	.36	.42	.46	.46	.44	.42	.42	.43	.42	.38	.33
.10	.34	.49	.59	.58	.50	.44	.48	.55	.52	.37	.15

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO   SIDE 3   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.22	.20	.19	.20	.21	.22	.21	.20	.19	.20	.22
.90	.22	.21	.21	.22	.23	.23	.23	.22	.21	.21	.22
.80	.23	.23	.23	.24	.24	.24	.24	.24	.23	.23	.23
.70	.26	.26	.25	.25	.25	.25	.25	.25	.25	.26	.26
.60	.30	.29	.27	.26	.26	.25	.26	.26	.27	.29	.30
.50	.31	.29	.28	.27	.26	.26	.26	.27	.28	.29	.31
.40	.29	.28	.27	.27	.27	.27	.27	.27	.27	.28	.29
.30	.27	.27	.27	.27	.27	.28	.27	.27	.27	.27	.27
.20	.29	.30	.30	.29	.29	.28	.29	.29	.30	.30	.29
.10	.38	.37	.36	.33	.30	.29	.30	.33	.36	.37	.38

RMS PRESSURE COEFFICIENT B. LAYER 1   1-2 SIDE RATIO   SIDE 4   WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.28	.35	.38	.35	.28	.23	.27	.32	.32	.23	.11
.90	.35	.35	.34	.31	.27	.26	.28	.31	.30	.24	.16
.80	.40	.35	.31	.28	.27	.28	.29	.30	.29	.25	.20
.70	.39	.35	.31	.29	.29	.30	.31	.30	.29	.25	.21
.60	.36	.34	.32	.32	.32	.32	.33	.32	.30	.25	.19
.50	.35	.35	.34	.34	.34	.35	.35	.34	.31	.26	.20
.40	.38	.36	.35	.35	.36	.37	.37	.36	.33	.30	.26
.30	.41	.38	.36	.36	.38	.39	.40	.39	.37	.35	.33
.20	.33	.38	.42	.43	.42	.42	.44	.46	.46	.42	.36
.10	.15	.37	.52	.55	.48	.44	.50	.58	.59	.49	.34

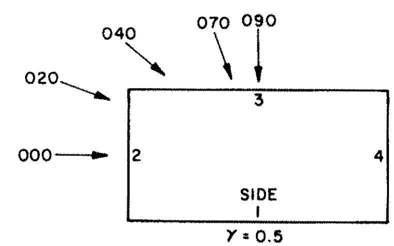


Table C9. $C_{prms, \bar{\beta}}$, γ = 0.5, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90			.20	.19	.18	.17	.16	.15	.14	.13	.12
.80			.21	.20	.19	.18	.17	.16	.15	.14	.13
.70			.21	.20	.19	.18	.17	.16	.15	.14	.13
.60			.21	.20	.19	.18	.17	.16	.15	.14	.13
.50			.21	.20	.19	.18	.17	.16	.15	.14	.13
.40			.21	.20	.19	.18	.17	.16	.15	.14	.13
.30			.21	.20	.19	.18	.17	.16	.15	.14	.13
.20			.22	.21	.20	.19	.18	.16	.15	.14	.13
.10			.22	.21	.20	.19	.18	.17	.16	.15	.14
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.04	.22	.36	.38	.29	.17	.09	.05	.05	.09	.14
.90		.07	.22	.34	.37	.31	.22	.14	.10	.09	.13	.19
.80		.10	.23	.33	.37	.34	.27	.20	.15	.14	.17	.23
.70		.15	.27	.36	.40	.38	.32	.25	.20	.18	.20	.24
.60		.21	.33	.42	.45	.43	.37	.31	.26	.23	.22	.22
.50		.26	.38	.47	.50	.48	.42	.36	.30	.26	.23	.20
.40		.31	.42	.51	.54	.52	.47	.41	.34	.28	.23	.19
.30		.45	.53	.59	.61	.59	.53	.46	.38	.31	.24	.18
.20		.79	.80	.79	.75	.69	.61	.54	.46	.37	.26	.15
.10		1.34	1.23	1.11	.97	.82	.71	.64	.58	.48	.30	.11
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.21	.25	.27	.26	.24	.23	.24	.26	.27	.25	.2[illegible]
.90		.21	.24	.26	.26	.26	.25	.26	.26	.26	.24	.21
.80		.22	.24	.26	.27	.27	.27	.27	.27	.26	.24	.22
.70		.22	.25	.27	.29	.30	.30	.30	.29	.27	.25	.22
.60		.24	.27	.30	.32	.33	.33	.33	.32	.30	.27	.24
.50		.26	.30	.33	.35	.36	.36	.36	.35	.33	.30	.26
.40		.28	.32	.35	.37	.39	.39	.39	.37	.35	.32	.28
.30		.31	.35	.38	.41	.42	.43	.42	.41	.38	.35	.31
.20		.36	.41	.45	.48	.48	.48	.48	.48	.45	.41	.36
.10		.41	.50	.56	.58	.57	.55	.57	.58	.56	.50	.41
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.16	.10	.05	.05	.08	.17	.30	.39	.36	.22	.03
.90		.19	.13	.09	.10	.14	.22	.31	.36	.33	.22	.07
.80		.21	.17	.14	.15	.20	.27	.33	.36	.32	.23	.11
.70		.22	.20	.19	.21	.26	.32	.37	.39	.36	.27	.15
.60		.22	.22	.23	.26	.31	.37	.42	.45	.42	.33	.21
.50		.21	.24	.27	.31	.36	.42	.48	.50	.47	.38	.26
.40		.19	.23	.28	.34	.41	.47	.52	.54	.50	.42	.32
.30		.15	.23	.30	.39	.47	.53	.58	.60	.58	.53	.46
.20		.08	.23	.37	.47	.55	.61	.68	.75	.79	.79	.78
.10		.01	.25	.48	.61	.65	.71	.83	.99	1.13	1.21	1.27
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.11	.09	.07	.06	.06	.06	.06	.06	.07	.09	.11
.90		.11	.09	.08	.07	.07	.07	.07	.07	.08	.09	.11
.80		.12	.10	.09	.08	.07	.07	.07	.08	.09	.10	.12
.70		.13	.11	.10	.09	.09	.08	.09	.09	.10	.11	.13
.60		.14	.13	.11	.10	.10	.10	.10	.10	.11	.13	.14
.50		.16	.14	.13	.12	.11	.11	.11	.12	.13	.14	.16
.40		.16	.15	.13	.13	.12	.12	.12	.13	.13	.15	.16
.30		.17	.16	.15	.14	.14	.14	.14	.14	.15	.16	.17
.20		.21	.20	.19	.18	.17	.17	.17	.18	.19	.20	.21
.10		.27	.26	.25	.23	.22	.21	.22	.23	.25	.26	.27
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90			.21	.21	.21	.20	.20	.20	.20	.20	.20
.80			.19	.19	.18	.18	.18	.18	.18	.17	.17
.70			.17	.17	.16	.16	.16	.16	.15	.15	.15
.60			.15	.15	.15	.14	.14	.14	.13	.13	.13
.50			.15	.14	.14	.13	.13	.12	.11	.11	.10
.40			.14	.14	.13	.12	.12	.11	.10	.10	.09
.30			.15	.14	.13	.12	.12	.11	.10	.09	.08
.20			.16	.15	.14	.13	.12	.11	.10	.10	.09
.10			.17	.16	.15	.14	.13	.12	.12	.11	.10
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.02	.10	.18	.16	.08	.04	.05	.12	.18	.19	.18
.90		.06	.11	.14	.13	.09	.06	.07	.12	.16	.19	.21
.80		.11	.11	.12	.11	.10	.10	.10	.12	.15	.19	.23
.70		.12	.12	.13	.13	.14	.14	.14	.14	.16	.20	.25
.60		.10	.14	.17	.18	.19	.18	.18	.18	.20	.23	.27
.50		.10	.16	.20	.23	.23	.23	.22	.22	.23	.26	.30
.40		.14	.18	.22	.25	.27	.27	.26	.25	.26	.28	.32
.30		.23	.25	.27	.29	.32	.33	.32	.30	.31	.33	.36
.20		.36	.38	.40	.41	.40	.40	.40	.41	.43	.45	.47
.10		.53	.59	.63	.60	.53	.48	.51	.58	.63	.64	.63
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.90		.27	.27	.27	.25	.23	.21	.20	.20	.20	.19	.18
.90		.27	.27	.27	.26	.24	.23	.22	.21	.20	.18	.16
.80		.28	.27	.27	.27	.26	.25	.24	.22	.20	.18	.16
.70		.28	.29	.29	.29	.28	.27	.26	.24	.22	.19	.16
.60		.30	.31	.32	.32	.31	.30	.29	.27	.24	.21	.16
.50		.32	.34	.35	.35	.34	.33	.32	.29	.26	.22	.18
.40		.35	.36	.36	.37	.36	.36	.34	.31	.28	.24	.19
.30		.39	.39	.39	.39	.39	.39	.37	.34	.31	.27	.22
.20		.43	.45	.46	.46	.45	.44	.43	.41	.38	.33	.26
.10		.46	.52	.57	.57	.53	.51	.51	.52	.49	.42	.32
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.09	.07	.06	.06	.05	.07	.13	.20	.27	.34	.39
.90		.10	.07	.04	.03	.05	.10	.17	.25	.31	.35	.38
.80		.12	.07	.03	.03	.06	.12	.20	.28	.34	.37	.39
.70		.12	.07	.03	.04	.07	.13	.21	.29	.36	.42	.47
.60		.13	.08	.05	.05	.09	.15	.22	.29	.38	.48	.58
.50		.13	.08	.06	.07	.10	.16	.22	.30	.40	.52	.66
.40		.14	.10	.07	.07	.11	.17	.24	.32	.42	.54	.66
.30		.16	.12	.09	.09	.13	.19	.27	.36	.46	.57	.68
.20		.18	.15	.14	.14	.16	.21	.30	.42	.54	.67	.80
.10		.20	.21	.22	.21	.21	.24	.34	.48	.66	.86	1.07
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.19	.13	.08	.06	.07	.08	.07	.06	.07	.10	.15
.90		.15	.11	.08	.07	.07	.07	.06	.06	.07	.09	.12
.80		.12	.10	.09	.08	.07	.07	.07	.06	.07	.08	.09
.70		.12	.11	.10	.10	.09	.09	.08	.08	.08	.08	.08
.60		.14	.13	.13	.12	.12	.12	.11	.11	.11	.10	.09
.50		.17	.16	.15	.15	.15	.15	.14	.14	.13	.12	.10
.40		.18	.18	.17	.17	.17	.17	.17	.16	.15	.14	.12
.30		.22	.21	.21	.21	.20	.20	.20	.19	.18	.17	.16
.20		.32	.30	.28	.27	.26	.26	.26	.25	.25	.25	.25
.10		.48	.43	.38	.36	.35	.35	.35	.35	.35	.37	.39
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C9. $C_{prms, \overline{\beta}}$, γ = 0.5, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.26	.26	.25	.25	.24	.24	.23	.23	.22	
.80		.25	.25	.25	.24	.24	.23	.23	.22	.22	
.70		.24	.24	.23	.23	.23	.22	.22	.22	.21	
.60		.22	.21	.21	.21	.20	.20	.20	.19	.19	
.50		.18	.18	.17	.17	.17	.16	.16	.16	.16	
.40		.14	.14	.14	.14	.13	.13	.13	.13	.12	
.30		.12	.12	.12	.12	.11	.11	.11	.11	.11	
.20		.12	.12	.12	.12	.11	.11	.11	.11	.11	
.10		.13	.13	.13	.13	.13	.13	.12	.12	.12	

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.04	.09	.13	.10	.05	.03	.05	.11	.15	.14	.11
.90	.07	.09	.10	.08	.06	.04	.06	.10	.12	.13	.13
.80	.10	.09	.08	.08	.07	.07	.08	.09	.11	.13	.15
.70	.11	.10	.09	.09	.09	.10	.10	.10	.12	.14	.17
.60	.11	.11	.12	.12	.13	.13	.13	.13	.15	.17	.19
.50	.11	.13	.14	.15	.16	.16	.16	.17	.18	.19	.21
.40	.12	.14	.16	.17	.18	.19	.19	.19	.19	.21	.23
.30	.16	.17	.19	.20	.22	.23	.22	.22	.23	.25	.28
.20	.22	.25	.27	.27	.27	.27	.28	.30	.33	.36	.40
.10	.32	.37	.40	.39	.35	.32	.35	.42	.49	.54	.58

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.33	.28	.24	.21	.18	.16	.14	.13	.12	.13	.13
.90	.33	.28	.25	.21	.19	.17	.15	.14	.13	.12	.11
.80	.34	.29	.25	.22	.20	.19	.17	.15	.13	.11	.09
.70	.35	.31	.27	.24	.22	.20	.19	.17	.15	.12	.09
.60	.39	.34	.30	.27	.25	.23	.21	.19	.17	.14	.10
.50	.42	.37	.33	.29	.27	.25	.23	.21	.18	.15	.12
.40	.47	.40	.35	.31	.28	.27	.25	.22	.19	.16	.12
.30	.52	.44	.37	.33	.31	.29	.27	.25	.21	.18	.14
.20	.59	.51	.43	.38	.36	.34	.32	.30	.27	.23	.19
.10	.68	.61	.54	.48	.43	.41	.39	.38	.36	.32	.27

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.07	.10	.12	.11	.10	.10	.13	.18	.21	.24	.26
.90	.10	.10	.10	.11	.11	.12	.15	.18	.21	.24	.27
.80	.11	.10	.10	.11	.12	.14	.16	.18	.21	.25	.28
.70	.10	.10	.11	.12	.14	.16	.18	.20	.23	.27	.31
.60	.09	.11	.13	.14	.16	.18	.20	.22	.25	.29	.34
.50	.08	.11	.14	.16	.18	.20	.21	.23	.27	.31	.37
.40	.10	.12	.14	.17	.19	.21	.23	.24	.27	.32	.38
.30	.13	.14	.16	.18	.21	.23	.25	.26	.29	.34	.40
.20	.15	.19	.21	.24	.25	.27	.29	.32	.36	.40	.45
.10	.17	.25	.31	.33	.32	.31	.35	.42	.47	.51	.54

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.18	.14	.10	.08	.08	.08	.06	.06	.07	.10	.15
.90	.15	.12	.10	.08	.08	.07	.06	.06	.06	.09	.12
.80	.13	.11	.10	.09	.08	.07	.07	.07	.07	.08	.10
.70	.14	.12	.11	.11	.10	.09	.09	.09	.09	.09	.09
.60	.15	.15	.14	.14	.13	.13	.12	.12	.11	.11	.10
.50	.18	.18	.17	.17	.16	.16	.15	.14	.14	.13	.12
.40	.21	.20	.20	.19	.19	.18	.17	.17	.16	.15	.13
.30	.26	.25	.24	.23	.22	.21	.21	.20	.19	.18	.17
.20	.39	.35	.32	.30	.29	.28	.27	.27	.27	.27	.27
.10	.59	.51	.44	.41	.39	.39	.38	.37	.38	.40	.43

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.22	.22	.21	.21	.20	.20	.19	.18	.18	
.80		.25	.25	.24	.24	.23	.23	.23	.22	.22	
.70		.27	.26	.26	.26	.25	.25	.24	.24	.24	
.60		.26	.26	.25	.25	.25	.24	.24	.24	.23	
.50		.23	.23	.22	.22	.22	.22	.22	.22	.22	
.40		.19	.19	.19	.19	.19	.19	.19	.19	.19	
.30		.17	.17	.17	.17	.18	.18	.18	.18	.18	
.20		.17	.17	.17	.17	.18	.18	.18	.18	.18	
.10		.18	.18	.18	.19	.19	.19	.19	.19	.20	

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.03	.10	.15	.13	.08	.04	.06	.11	.14	.15	.13
.90	.07	.10	.12	.11	.08	.06	.07	.10	.12	.13	.14
.80	.11	.11	.11	.11	.10	.09	.09	.10	.11	.12	.14
.70	.13	.12	.12	.12	.12	.12	.12	.11	.12	.13	.15
.60	.13	.14	.15	.15	.15	.15	.14	.14	.14	.15	.16
.50	.14	.16	.18	.18	.18	.18	.17	.16	.16	.16	.16
.40	.16	.18	.19	.20	.21	.20	.20	.19	.18	.18	.18
.30	.21	.22	.22	.23	.24	.24	.23	.22	.22	.22	.22
.20	.30	.31	.31	.30	.29	.28	.29	.30	.31	.32	.33
.10	.41	.44	.45	.42	.37	.34	.36	.41	.46	.49	.51

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.47	.48	.47	.42	.35	.25	.14	.08	.05	.06	.13
.90	.35	.40	.42	.42	.38	.31	.22	.13	.09	.10	.13
.80	.27	.35	.41	.43	.42	.37	.29	.21	.16	.14	.14
.70	.25	.35	.44	.48	.48	.43	.36	.28	.22	.18	.15
.60	.28	.41	.51	.55	.54	.49	.42	.35	.28	.22	.17
.50	.34	.47	.57	.61	.59	.54	.47	.40	.33	.26	.19
.40	.41	.52	.60	.65	.64	.59	.52	.43	.36	.28	.22
.30	.50	.59	.66	.70	.70	.66	.58	.49	.40	.32	.25
.20	.66	.76	.83	.86	.83	.78	.70	.61	.51	.40	.29
.10	.89	1.02	1.11	1.11	1.04	.94	.87	.80	.69	.52	.35

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.12	.19	.24	.23	.20	.18	.21	.27	.29	.27	.23
.90	.15	.19	.22	.22	.21	.21	.23	.26	.28	.27	.25
.80	.18	.19	.21	.22	.23	.24	.25	.27	.27	.28	.27
.70	.18	.20	.22	.24	.25	.27	.28	.28	.29	.29	.29
.60	.17	.21	.24	.27	.28	.30	.31	.31	.32	.32	.31
.50	.17	.22	.26	.29	.31	.32	.33	.34	.34	.34	.33
.40	.18	.22	.27	.30	.33	.35	.35	.35	.35	.35	.35
.30	.21	.25	.29	.33	.36	.38	.39	.38	.38	.38	.39
.20	.25	.32	.38	.41	.43	.43	.45	.47	.47	.46	.43
.10	.30	.44	.53	.56	.52	.50	.54	.61	.62	.58	.50

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.25	.20	.16	.13	.11	.10	.09	.10	.11	.13	.16
.90	.23	.19	.15	.13	.11	.10	.10	.10	.11	.13	.15
.80	.22	.19	.16	.14	.13	.12	.12	.11	.11	.12	.14
.70	.24	.21	.18	.17	.16	.15	.15	.14	.14	.14	.14
.60	.27	.25	.23	.21	.21	.20	.19	.18	.17	.16	.15
.50	.30	.29	.27	.26	.25	.24	.23	.22	.21	.19	.17
.40	.34	.32	.30	.29	.28	.27	.26	.25	.24	.22	.20
.30	.43	.39	.35	.33	.32	.31	.31	.30	.28	.27	.26
.20	.62	.54	.47	.43	.41	.41	.40	.39	.39	.39	.39
.10	.91	.78	.67	.59	.56	.55	.54	.54	.55	.57	.58

Table C9. $C_{prms, \overline{\beta}}$, $\gamma = 0.5$, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.23	.23	.23	.23	.23	.23	.23	.23	.23	
.80		.24	.24	.24	.24	.24	.24	.24	.24	.24	
.70		.24	.24	.24	.24	.24	.24	.24	.24	.24	
.60		.24	.24	.24	.24	.24	.24	.24	.24	.24	
.50		.24	.24	.24	.24	.24	.24	.24	.24	.24	
.40		.23	.23	.23	.23	.23	.23	.23	.23	.23	
.30		.23	.23	.23	.23	.23	.23	.23	.23	.23	
.20		.23	.23	.23	.23	.23	.23	.23	.23	.23	
.10		.24	.24	.24	.24	.24	.24	.24	.24	.24	

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.18	.22	.19	.11	.06	.09	.16	.20	.19	.15
.90	.17	.18	.18	.16	.11	.09	.11	.15	.18	.18	.18
.80	.22	.19	.16	.14	.13	.12	.13	.15	.17	.19	.21
.70	.25	.21	.17	.15	.15	.16	.16	.16	.18	.21	.24
.60	.27	.24	.21	.20	.19	.19	.19	.19	.21	.24	.28
.50	.29	.27	.25	.24	.23	.23	.22	.23	.24	.27	.31
.40	.34	.30	.28	.26	.26	.26	.26	.26	.27	.30	.34
.30	.41	.37	.33	.31	.30	.30	.31	.32	.33	.36	.39
.20	.52	.49	.46	.42	.38	.36	.38	.43	.46	.49	.51
.10	.64	.66	.66	.59	.49	.44	.49	.59	.66	.69	.69

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.18	.23	.27	.26	.21	.16	.14	.16	.19	.24	.30
.90	.20	.23	.25	.25	.22	.20	.18	.18	.21	.25	.31
.80	.22	.24	.25	.26	.25	.24	.23	.22	.24	.27	.33
.70	.24	.27	.30	.31	.31	.30	.29	.28	.29	.32	.36
.60	.26	.32	.37	.39	.39	.38	.36	.35	.36	.37	.40
.50	.29	.37	.43	.46	.46	.45	.43	.42	.42	.43	.45
.40	.35	.42	.47	.51	.52	.51	.49	.47	.47	.48	.51
.30	.47	.51	.55	.58	.60	.60	.57	.55	.54	.56	.58
.20	.69	.72	.75	.76	.75	.74	.72	.71	.70	.70	.70
.10	1.00	1.04	1.07	1.04	.99	.95	.94	.96	.95	.91	.85

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.19	.26	.30	.28	.23	.20	.23	.28	.29	.26	.19
.90	.21	.25	.27	.27	.24	.23	.24	.27	.27	.25	.22
.80	.23	.25	.26	.27	.26	.26	.26	.26	.26	.25	.23
.70	.25	.26	.27	.28	.29	.29	.29	.28	.27	.26	.25
.60	.26	.28	.30	.32	.32	.32	.32	.31	.30	.28	.26
.50	.27	.30	.33	.34	.35	.35	.35	.34	.33	.30	.27
.40	.28	.31	.34	.36	.37	.38	.37	.36	.33	.31	.28
.30	.31	.34	.36	.39	.41	.42	.41	.39	.36	.34	.31
.20	.36	.41	.46	.48	.48	.47	.47	.48	.46	.42	.37
.10	.42	.54	.62	.63	.57	.54	.57	.62	.62	.55	.45

RMS PRESSURE COEFFICIENT B. LAYER 2 1-2 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.30	.24	.19	.16	.14	.16	.21	.26	.27	.23	.18
.90	.31	.25	.21	.18	.18	.20	.22	.25	.25	.23	.20
.80	.33	.27	.24	.22	.23	.24	.25	.26	.25	.24	.22
.70	.36	.32	.29	.28	.29	.30	.31	.31	.30	.27	.24
.60	.40	.37	.36	.35	.36	.38	.39	.39	.37	.32	.26
.50	.45	.43	.42	.42	.43	.45	.46	.46	.43	.37	.29
.40	.51	.48	.47	.47	.49	.51	.52	.51	.47	.42	.35
.30	.58	.56	.54	.55	.57	.60	.60	.58	.55	.51	.47
.20	.70	.70	.70	.71	.72	.74	.75	.76	.75	.72	.69
.10	.85	.91	.95	.96	.94	.95	.99	1.04	1.07	1.04	1.00

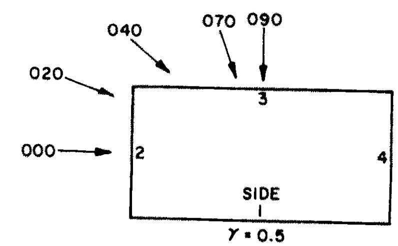


Table C10. $C_{prms,\ \overline{\beta}}$, γ = 0.5, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.24	.22	.21	.19	.17	.15	.13	.12	.10	
.80		.24	.22	.21	.19	.17	.15	.13	.12	.10	
.70		.24	.22	.21	.19	.17	.15	.13	.12	.10	
.60		.24	.22	.20	.19	.17	.15	.13	.11	.10	
.50		.24	.22	.20	.19	.17	.15	.13	.11	.10	
.40		.24	.22	.20	.19	.17	.15	.13	.11	.10	
.30		.24	.22	.21	.19	.17	.15	.13	.12	.10	
.20		.24	.22	.21	.19	.17	.15	.13	.12	.10	
.10		.24	.22	.21	.19	.17	.15	.13	.12	.10	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.27	.41	.40	.28	.13	.05	.03	.05	.08	.13
.90	.10	.27	.39	.40	.31	.19	.10	.06	.06	.10	.15
.80	.15	.29	.39	.40	.34	.25	.16	.10	.08	.11	.16
.70	.20	.33	.42	.45	.40	.31	.21	.14	.11	.13	.18
.60	.26	.40	.50	.52	.46	.37	.26	.18	.15	.16	.19
.50	.36	.49	.58	.59	.53	.42	.32	.23	.19	.18	.19
.40	.51	.59	.65	.64	.58	.48	.38	.29	.22	.19	.17
.30	.74	.75	.74	.70	.63	.54	.44	.35	.26	.20	.14
.20	1.07	.99	.91	.81	.70	.60	.51	.42	.32	.21	.10
.10	1.49	1.32	1.15	.97	.80	.66	.58	.51	.40	.24	.06

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.28	.28	.28	.26	.23	.21	.23	.26	.28	.28	.28
.90	.27	.28	.29	.28	.27	.26	.27	.28	.29	.28	.27
.80	.27	.29	.30	.31	.31	.31	.31	.31	.30	.29	.27
.70	.27	.30	.33	.35	.35	.35	.35	.35	.33	.30	.27
.60	.28	.33	.37	.39	.40	.40	.40	.39	.37	.33	.28
.50	.31	.36	.41	.44	.45	.45	.45	.44	.41	.36	.31
.40	.36	.41	.45	.48	.49	.50	.49	.48	.45	.41	.36
.30	.40	.45	.49	.52	.54	.55	.54	.52	.49	.45	.40
.20	.41	.50	.57	.60	.60	.59	.60	.60	.57	.50	.41
.10	.39	.55	.67	.70	.67	.64	.67	.70	.67	.55	.39

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.08	.05	.03	.05	.13	.28	.40	.41	.27	.06
.90	.15	.10	.06	.06	.10	.19	.31	.40	.39	.27	.10
.80	.16	.11	.08	.10	.16	.25	.34	.40	.39	.29	.15
.70	.18	.13	.11	.14	.21	.31	.40	.45	.42	.33	.20
.60	.19	.16	.15	.18	.26	.37	.46	.52	.50	.40	.26
.50	.19	.18	.19	.23	.32	.42	.53	.59	.58	.49	.36
.40	.17	.19	.22	.29	.38	.48	.58	.64	.65	.59	.51
.30	.14	.20	.26	.35	.44	.54	.63	.70	.74	.75	.74
.20	.10	.21	.32	.42	.51	.60	.70	.81	.91	.99	1.07
.10	.06	.24	.40	.51	.58	.66	.80	.97	1.15	1.32	1.49

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.04	.06	.07	.05	.03	.01	.03	.05	.07	.06	.04
.90	.06	.07	.06	.05	.04	.03	.04	.05	.06	.07	.06
.80	.09	.07	.06	.06	.05	.05	.05	.06	.06	.07	.09
.70	.10	.08	.07	.07	.07	.07	.07	.07	.07	.08	.10
.60	.10	.09	.09	.09	.08	.08	.08	.09	.09	.09	.10
.50	.11	.11	.10	.10	.10	.10	.10	.10	.10	.11	.11
.40	.13	.12	.11	.11	.12	.12	.12	.11	.11	.12	.13
.30	.16	.15	.13	.13	.13	.14	.13	.13	.13	.15	.16
.20	.19	.19	.19	.17	.16	.16	.16	.17	.19	.19	.19
.10	.22	.25	.27	.24	.20	.17	.20	.24	.27	.25	.22

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.24	.23	.23	.22	.21	.21	.20	.19	.18	
.80		.20	.19	.18	.18	.17	.16	.15	.15	.14	
.70		.17	.16	.15	.14	.13	.13	.12	.11	.10	
.60		.15	.14	.13	.12	.12	.11	.10	.09	.08	
.50		.15	.14	.13	.12	.11	.10	.09	.08	.07	
.40		.16	.15	.14	.12	.11	.10	.09	.07	.06	
.30		.17	.16	.14	.13	.12	.10	.09	.07	.06	
.20		.18	.16	.15	.13	.12	.11	.09	.08	.06	
.10		.18	.17	.15	.14	.12	.11	.09	.08	.06	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.02	.13	.24	.21	.09	.04	.05	.15	.22	.22	.18
.90	.04	.13	.19	.18	.11	.07	.08	.13	.18	.21	.23
.80	.10	.14	.16	.16	.14	.12	.11	.13	.16	.21	.26
.70	.12	.15	.17	.19	.19	.18	.16	.15	.17	.21	.27
.60	.11	.17	.22	.25	.25	.24	.22	.21	.21	.23	.27
.50	.12	.21	.28	.32	.32	.30	.28	.26	.26	.26	.27
.40	.19	.27	.33	.37	.37	.36	.34	.32	.30	.29	.29
.30	.32	.36	.40	.42	.43	.42	.40	.38	.36	.35	.33
.20	.49	.52	.53	.53	.50	.48	.47	.47	.46	.43	.40
.10	.70	.72	.73	.68	.59	.54	.56	.60	.60	.55	.48

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.24	.33	.38	.35	.26	.19	.22	.29	.31	.25	.15
.90	.30	.33	.35	.33	.27	.24	.25	.28	.28	.24	.18
.80	.34	.34	.33	.32	.30	.28	.28	.27	.26	.24	.20
.70	.36	.35	.35	.34	.33	.33	.31	.29	.27	.24	.21
.60	.37	.38	.39	.39	.38	.37	.36	.34	.30	.25	.20
.50	.39	.41	.43	.43	.43	.42	.40	.38	.33	.27	.20
.40	.44	.45	.46	.46	.47	.46	.44	.41	.36	.30	.24
.30	.48	.49	.49	.50	.51	.50	.49	.45	.40	.34	.27
.20	.46	.53	.58	.59	.57	.55	.55	.54	.49	.40	.27
.10	.36	.57	.72	.74	.66	.59	.63	.69	.64	.47	.22

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.09	.05	.04	.05	.07	.09	.14	.23	.36	.51
.90	.13	.08	.04	.03	.06	.09	.13	.19	.28	.41	.55
.80	.13	.08	.04	.04	.07	.11	.16	.22	.32	.46	.60
.70	.11	.08	.05	.06	.09	.13	.18	.25	.36	.50	.67
.60	.09	.08	.08	.09	.12	.15	.20	.27	.39	.55	.74
.50	.09	.09	.09	.11	.14	.17	.21	.28	.41	.59	.80
.40	.10	.09	.10	.12	.15	.19	.24	.30	.43	.61	.83
.30	.12	.11	.11	.13	.17	.22	.26	.34	.47	.67	.89
.20	.14	.14	.15	.17	.20	.24	.29	.40	.56	.80	1.07
.10	.13	.19	.24	.25	.25	.26	.33	.47	.70	1.01	1.36

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.08	.11	.11	.08	.02	.00	.03	.09	.11	.08	.02
.90	.10	.10	.10	.08	.04	.03	.04	.07	.09	.09	.09
.80	.11	.10	.09	.08	.06	.05	.05	.06	.08	.10	.13
.70	.12	.11	.10	.09	.09	.08	.08	.07	.08	.11	.14
.60	.12	.12	.12	.12	.11	.11	.11	.11	.11	.12	.13
.50	.14	.14	.14	.14	.14	.14	.14	.14	.14	.15	.16
.40	.17	.17	.16	.16	.17	.17	.16	.16	.17	.20	.24
.30	.22	.21	.20	.20	.20	.20	.19	.19	.21	.26	.32
.20	.27	.28	.28	.27	.24	.23	.23	.25	.28	.31	.34
.10	.32	.37	.40	.37	.30	.26	.29	.36	.38	.34	.28

Table C10. $C_{p_{rms}, \overline{\beta}}$, $\gamma = 0.5$, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		.31	.31	.31	.31	.32	.32	.32	.32	.32	
.80		.26	.26	.26	.26	.26	.26	.26	.26	.26	
.70		.22	.22	.22	.22	.22	.22	.22	.22	.22	
.60		.18	.18	.18	.18	.18	.18	.18	.18	.18	
.50		.16	.16	.16	.16	.16	.15	.15	.15	.15	
.40		.15	.15	.14	.14	.14	.13	.13	.13	.12	
.30		.14	.13	.13	.13	.12	.12	.11	.11	.10	
.20		.12	.12	.11	.11	.10	.10	.09	.09	.08	
.10		.11	.10	.10	.09	.09	.08	.08	.07	.07	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.04	.10	.14	.11	.04	.02	.05	.13	.17	.16	.12
.90	.07	.10	.12	.10	.06	.04	.06	.11	.14	.16	.16
.80	.11	.11	.11	.10	.09	.08	.09	.10	.13	.16	.19
.70	.13	.12	.12	.12	.12	.12	.12	.12	.14	.17	.21
.60	.13	.14	.15	.16	.16	.16	.16	.16	.17	.19	.22
.50	.13	.16	.18	.20	.20	.21	.21	.21	.21	.22	.23
.40	.15	.18	.22	.24	.24	.25	.25	.25	.25	.26	.27
.30	.19	.23	.26	.28	.29	.29	.28	.29	.30	.32	.35
.20	.28	.30	.32	.33	.33	.33	.33	.35	.38	.43	.48
.10	.38	.40	.41	.40	.38	.37	.38	.43	.49	.57	.66
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.35	.33	.30	.25	.18	.13	.13	.16	.18	.17	.15
.90	.36	.33	.30	.25	.20	.16	.15	.16	.17	.19	.21
.80	.39	.34	.30	.26	.22	.19	.17	.16	.17	.20	.24
.70	.41	.37	.32	.28	.25	.23	.20	.18	.19	.21	.25
.60	.45	.40	.35	.32	.28	.26	.23	.22	.21	.22	.24
.50	.51	.45	.39	.35	.31	.29	.26	.25	.24	.25	.26
.40	.58	.49	.42	.37	.34	.32	.29	.27	.26	.28	.31
.30	.64	.55	.46	.41	.38	.35	.32	.30	.29	.32	.36
.20	.68	.61	.54	.48	.42	.38	.37	.36	.36	.35	.33
.10	.67	.68	.66	.59	.48	.42	.43	.47	.45	.36	.22
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.10	.14	.15	.14	.12	.11	.15	.20	.24	.26	.26
.90	.12	.13	.14	.14	.13	.14	.16	.21	.25	.29	.32
.80	.12	.13	.14	.14	.15	.16	.18	.21	.26	.32	.38
.70	.12	.13	.14	.16	.18	.19	.21	.23	.27	.34	.41
.60	.11	.14	.16	.18	.20	.22	.23	.26	.30	.36	.42
.50	.11	.15	.18	.21	.23	.25	.26	.29	.32	.37	.43
.40	.11	.16	.20	.23	.26	.27	.29	.31	.34	.40	.46
.30	.13	.18	.22	.26	.28	.30	.31	.34	.38	.44	.51
.20	.17	.22	.27	.30	.32	.33	.35	.38	.43	.49	.56
.10	.21	.29	.35	.37	.36	.35	.39	.45	.51	.57	.61
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.08	.13	.15	.12	.04	.01	.04	.10	.13	.10	.04
.90	.11	.13	.13	.11	.06	.04	.05	.08	.11	.11	.11
.80	.13	.13	.12	.11	.09	.07	.06	.07	.09	.13	.17
.70	.14	.13	.13	.12	.12	.11	.09	.09	.10	.14	.18
.60	.14	.15	.16	.15	.15	.14	.13	.13	.13	.15	.18
.50	.16	.18	.18	.19	.18	.18	.17	.17	.18	.20	.22
.40	.22	.21	.21	.21	.21	.21	.20	.19	.22	.27	.34
.30	.30	.28	[illegible]	.35	.25	.24	.23	.23	.27	.35	.46
.20	.40	.39	.37	.34	.30	.28	.28	.31	.35	.40	.47
.10	.51	.53	.53	.47	.37	.31	.35	.42	.45	.41	.34
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		.38	.37	.37	.36	.35	.35	.34	.34	.33	
.80		.34	.34	.33	.32	.32	.31	.31	.30	.29	
.70		.30	.30	.29	.29	.28	.28	.28	.27	.27	
.60		.26	.26	.26	.26	.25	.25	.25	.25	.24	
.50		.23	.23	.23	.23	.23	.23	.23	.23	.23	
.40		.19	.20	.20	.20	.21	.21	.21	.21	.22	
.30		.16	.17	.17	.18	.18	.19	.19	.20	.20	
.20		.13	.14	.15	.15	.16	.17	.17	.18	.19	
.10		.11	.12	.13	.13	.14	.15	.15	.16	.17	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.03	.09	.13	.11	.05	.01	.04	.11	.15	.14	.11
.90	.06	.10	.11	.10	.07	.04	.06	.10	.13	.14	.14
.80	.10	.10	.10	.10	.09	.08	.08	.09	.11	.13	.15
.70	.12	.11	.11	.12	.12	.12	.11	.11	.12	.13	.16
.60	.12	.13	.14	.15	.15	.15	.15	.15	.14	.15	.15
.50	.13	.16	.18	.19	.19	.19	.19	.18	.18	.17	.16
.40	.16	.18	.21	.22	.23	.23	.22	.22	.21	.20	.20
.30	.20	.23	.25	.26	.26	.26	.26	.25	.25	.26	.26
.20	.28	.29	.31	.31	.30	.30	.30	.31	.32	.34	.36
.10	.37	.39	.39	.38	.35	.34	.35	.38	.42	.46	.49
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.50	.53	.52	.45	.31	.16	.04	.01	.03	.06	.16
.90	.44	.48	.50	.45	.35	.23	.13	.06	.05	.09	.15
.80	.39	.46	.50	.48	.41	.31	.21	.14	.10	.12	.15
.70	.35	.46	.53	.54	.48	.38	.28	.20	.15	.14	.15
.60	.36	.51	.61	.63	.56	.46	.35	.26	.20	.18	.17
.50	.42	.58	.69	.71	.64	.53	.42	.32	.25	.22	.20
.40	.56	.67	.75	.76	.71	.61	.49	.38	.30	.26	.24
.30	.73	.79	.84	.83	.77	.68	.58	.47	.38	.31	.26
.20	.88	.96	1.00	.97	.87	.76	.67	.59	.49	.37	.24
.10	1.00	1.16	1.24	1.18	1.00	.83	.77	.74	.64	.43	.18
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.15	.25	.32	.30	.22	.18	.24	.34	.37	.32	.23
.90	.20	.25	.28	.28	.24	.23	.27	.32	.35	.34	.31
.80	.24	.26	.27	[illegible]	.27	.28	.30	.32	.34	.36	.37
.70	.25	.27	.28	[illegible]	.31	.33	.34	.34	.36	.38	.40
.60	.24	.28	.31	.34	.36	.37	.38	.39	.40	.40	.40
.50	.23	.29	.35	.38	.41	.42	.43	.44	.43	.42	.41
.40	.22	.30	.37	.42	.45	.47	.47	.47	.46	.45	.43
.30	.24	.32	.40	.46	.49	.51	.52	.52	.50	.48	.46
.20	.27	.39	.49	.54	.56	.56	.58	.60	.59	.55	.49
.10	.33	.51	.64	.67	.63	.61	.66	.73	.73	.65	.52
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-2 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.20	.23	.23	.16	.05	.02	.06	.16	.20	.15	.06
.90	.23	.22	.20	.15	.09	.06	.08	.13	.16	.15	.13
.80	.25	.22	.19	.16	.13	.11	.11	.12	.14	.16	.19
.70	.26	.23	.20	.19	.18	.17	.15	.15	.15	.18	.21
.60	.27	.25	.24	.24	.23	.22	.21	.21	.21	.21	.21
.50	.32	.31	.30	.29	.28	.28	.27	.27	.26	.26	.25
.40	.43	.38	.35	.33	.33	.33	.32	.31	.31	.33	.37
.30	.57	.49	.43	.40	.39	.39	.37	.35	.38	.43	.49
.20	.71	.65	.58	.52	.47	.44	.45	.47	.50	.52	.54
.10	.84	.84	.80	.70	.57	.50	.56	.66	.69	.62	.50
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C10. $C_{prms,\ \overline{\beta}}$, γ = 0.5, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3   1-2 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90			.29	.29	.29	.29	.29	.29	.29	.29	.29
.80			.30	.30	.30	.30	.30	.30	.30	.30	.30
.70			.31	.31	.31	.31	.31	.31	.31	.31	.31
.60			.30	.30	.30	.30	.30	.30	.30	.30	.30
.50			.29	.29	.29	.29	.29	.29	.29	.29	.29
.40			.28	.28	.28	.28	.28	.28	.28	.28	.28
.30			.26	.26	.26	.26	.26	.26	.26	.26	.26
.20			.23	.23	.23	.23	.23	.23	.23	.23	.23
.10			.20	.20	.20	.20	.20	.20	.20	.20	.20
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3   1-2 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.06	.14	.17	.14	.06	.02	.06	.14	.17	.14	.06
.90		.14	.15	.15	.12	.08	.05	.08	.12	.15	.15	.14
.80		.20	.17	.14	.12	.10	.09	.10	.12	.14	.17	.20
.70		.23	.19	.15	.14	.13	.13	.13	.14	.15	.19	.23
.60		.24	.21	.19	.18	.17	.18	.17	.18	.19	.21	.24
.50		.26	.25	.23	.22	.22	.22	.22	.22	.23	.25	.26
.40		.31	.29	.27	.26	.26	.26	.26	.26	.27	.29	.31
.30		.39	.35	.32	.30	.30	.30	.30	.30	.32	.35	.39
.20		.48	.43	.39	.36	.35	.34	.35	.36	.39	.43	.48
.10		.57	.53	.49	.44	.40	.38	.40	.44	.49	.53	.57
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3   1-2 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.11	.30	.41	.36	.20	.06	.05	.11	.17	.19	.19
.90		.19	.29	.35	.33	.24	.15	.14	.17	.21	.25	.28
.80		.25	.30	.33	.32	.29	.25	.23	.23	.26	.30	.35
.70		.26	.32	.37	.39	.38	.36	.32	.30	.31	.34	.38
.60		.24	.37	.46	.51	.50	.46	.41	.38	.36	.37	.39
.50		.28	.44	.56	.62	.61	.56	.50	.46	.43	.43	.43
.40		.43	.54	.64	.69	.69	.66	.60	.55	.52	.51	.52
.30		.64	.70	.74	.77	.78	.76	.72	.67	.64	.63	.62
.20		.85	.92	.97	.96	.91	.86	.84	.84	.82	.76	.68
.10		1.02	1.21	1.31	1.26	1.09	.96	.98	1.07	1.05	.89	.67
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3   1-2 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.23	.32	.36	.34	.26	.22	.26	.34	.36	.32	.23
.90		.28	.32	.34	.33	.29	.27	.29	.33	.34	.32	.28
.80		.32	.33	.33	.33	.32	.32	.32	.33	.33	.33	.32
.70		.34	.35	.35	.36	.36	.37	.36	.36	.35	.35	.34
.60		.34	.37	.39	.41	.41	.41	.41	.41	.39	.37	.34
.50		.33	.38	.43	.45	.46	.46	.46	.45	.43	.38	.33
.40		.34	.40	.45	.48	.51	.51	.51	.48	.45	.40	.34
.30		.37	.43	.49	.53	.55	.56	.55	.53	.49	.43	.37
.20		.41	.51	.59	.62	.62	.61	.62	.62	.59	.51	.41
.10		.47	.63	.75	.76	.70	.66	.70	.76	.75	.63	.47
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3   1-2 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.19	.19	.17	.11	.05	.06	.20	.36	.41	.30	.11
.90		.28	.25	.21	.17	.14	.15	.24	.33	.35	.29	.19
.80		.35	.30	.26	.23	.23	.25	.29	.32	.33	.30	.25
.70		.38	.34	.31	.30	.32	.36	.38	.39	.37	.32	.26
.60		.39	.37	.36	.38	.41	.46	.50	.51	.46	.37	.24
.50		.43	.43	.43	.46	.50	.56	.61	.62	.56	.44	.28
.40		.52	.51	.52	.55	.60	.66	.69	.69	.64	.54	.43
.30		.62	.63	.64	.67	.72	.76	.78	.77	.74	.70	.64
.20		.68	.76	.82	.84	.84	.86	.91	.96	.97	.92	.85
.10		.67	.89	1.05	1.07	.98	.96	1.09	1.26	1.31	1.21	1.02
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

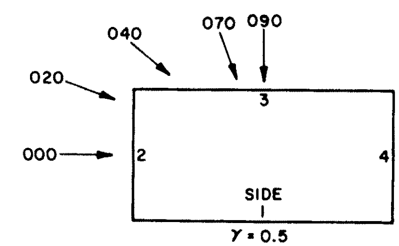


Table C11. $C_{prms, \bar{\beta}}$, $\gamma = 0.5$, Boundary Layer 4

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.21	.19	.17	.16	.14	.12	.10	.08	.06	
.80		.22	.20	.18	.17	.15	.13	.11	.09	.07	
.70		.23	.21	.19	.17	.16	.14	.12	.10	.08	
.60		.24	.22	.20	.18	.16	.14	.12	.11	.09	
.50		.24	.22	.20	.18	.16	.14	.13	.11	.09	
.40		.24	.22	.20	.18	.16	.14	.12	.11	.09	
.30		.23	.21	.19	.17	.16	.14	.12	.10	.08	
.20		.22	.20	.18	.17	.15	.13	.11	.09	.07	
.10		.21	.19	.17	.16	.14	.12	.10	.08	.06	

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.21	.36	.44	.40	.26	.10	.03	.02	.04	.09	.14
.90	.19	.32	.40	.38	.28	.15	.06	.02	.03	.08	.16
.80	.20	.31	.38	.38	.30	.19	.09	.02	.02	.08	.17
.70	.27	.36	.41	.41	.34	.23	.13	.05	.03	.08	.17
.60	.38	.45	.48	.46	.38	.28	.17	.08	.06	.10	.16
.50	.49	.54	.55	.52	.43	.32	.21	.12	.09	.11	.15
.40	.59	.60	.59	.55	.47	.36	.25	.15	.10	.11	.14
.30	.76	.72	.66	.59	.51	.40	.29	.19	.13	.12	.13
.20	1.10	.97	.84	.70	.57	.45	.35	.27	.21	.16	.11
.10	1.62	1.38	1.13	.88	.65	.49	.42	.39	.33	.22	.08

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.22	.33	.39	.37	.29	.24	.29	.37	.39	.33	.22
.90	.29	.34	.37	.36	.32	.29	.32	.36	.37	.34	.29
.80	.33	.35	.36	.36	.35	.34	.35	.36	.36	.35	.33
.70	.34	.36	.37	.38	.39	.39	.39	.38	.37	.36	.34
.60	.33	.37	.41	.43	.44	.44	.44	.43	.41	.37	.33
.50	.33	.39	.45	.48	.49	.49	.49	.48	.45	.39	.33
.40	.38	.43	.47	.51	.53	.54	.53	.51	.47	.43	.38
.30	.42	.47	.52	.56	.58	.59	.58	.56	.52	.47	.42
.20	.38	.51	.61	.66	.65	.64	.65	.66	.61	.51	.38
.10	.26	.55	.75	.81	.74	.69	.74	.81	.75	.55	.26

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.14	.09	.04	.02	.03	.10	.26	.40	.44	.36	.21
.90	.16	.08	.03	.02	.06	.15	.28	.38	.40	.32	.19
.80	.17	.08	.02	.02	.09	.19	.30	.38	.38	.31	.20
.70	.17	.08	.03	.05	.13	.23	.34	.41	.41	.36	.27
.60	.16	.10	.06	.08	.17	.28	.38	.46	.48	.45	.38
.50	.15	.11	.09	.12	.21	.32	.43	.52	.55	.54	.49
.40	.14	.11	.10	.15	.25	.36	.47	.55	.59	.60	.59
.30	.13	.12	.13	.19	.29	.40	.51	.59	.66	.72	.76
.20	.11	.16	.21	.27	.35	.45	.57	.70	.84	.97	1.10
.10	.08	.22	.33	.39	.42	.49	.65	.88	1.13	1.38	1.62

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.01	.05	.07	.06	.02	0.00	.02	.06	.07	.05	.01
.90	.05	.06	.06	.05	.03	.02	.03	.05	.06	.06	.05
.80	.07	.07	.06	.05	.05	.04	.05	.05	.06	.07	.07
.70	.08	.07	.07	.06	.07	.07	.07	.06	.07	.07	.08
.60	.07	.08	.08	.09	.09	.09	.09	.09	.08	.08	.07
.50	.08	.09	.10	.11	.11	.11	.11	.11	.10	.09	.08
.40	.11	.12	.12	.13	.13	.14	.13	.13	.12	.12	.11
.30	.15	.15	.15	.15	.16	.16	.16	.15	.15	.15	.15
.20	.18	.19	.20	.20	.19	.18	.19	.20	.20	.19	.18
.10	.18	.23	.27	.26	.22	.20	.22	.26	.27	.23	.18

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.18	.17	.17	.16	.15	.14	.13	.13	.12	
.80		.17	.16	.15	.14	.14	.13	.12	.11	.10	
.70		.16	.15	.14	.13	.12	.12	.11	.10	.09	
.60		.16	.15	.14	.13	.12	.10	.09	.08	.07	
.50		.16	.15	.14	.12	.11	.10	.09	.07	.06	
.40		.17	.15	.14	.13	.11	.10	.08	.07	.05	
.30		.18	.16	.14	.13	.11	.10	.08	.06	.05	
.20		.18	.17	.15	.13	.12	.10	.08	.07	.05	
.10		.19	.18	.16	.14	.12	.11	.09	.07	.06	

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.17	.25	.24	.17	.10	.08	.10	.13	.16	.18
.90	.08	.16	.21	.22	.18	.14	.12	.12	.13	.15	.16
.80	.10	.15	.20	.21	.20	.17	.16	.14	.14	.14	.15
.70	.11	.17	.22	.24	.23	.21	.19	.17	.16	.15	.15
.60	.13	.21	.26	.29	.28	.25	.22	.19	.18	.18	.18
.50	.16	.24	.30	.33	.32	.28	.25	.22	.20	.20	.19
.40	.22	.28	.32	.35	.34	.32	.29	.25	.22	.20	.19
.30	.34	.36	.37	.38	.37	.36	.33	.29	.25	.21	.17
.20	.56	.54	.51	.47	.43	.39	.38	.36	.32	.25	.17
.10	.87	.81	.74	.63	.51	.43	.44	.47	.44	.33	.18

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.17	.30	.38	.36	.28	.22	.26	.33	.35	.29	.19
.90	.29	.34	.37	.35	.30	.26	.27	.30	.30	.27	.22
.80	.39	.38	.38	.36	.33	.31	.29	.29	.27	.26	.24
.70	.43	.41	.39	.38	.37	.35	.33	.31	.28	.26	.24
.60	.42	.43	.43	.42	.41	.39	.38	.36	.32	.28	.23
.50	.42	.44	.46	.46	.45	.44	.42	.40	.36	.30	.24
.40	.46	.47	.48	.49	.49	.48	.46	.42	.37	.32	.27
.30	.48	.50	.52	.53	.54	.53	.50	.46	.40	.35	.29
.20	.45	.55	.62	.64	.61	.57	.57	.56	.50	.39	.25
.10	.34	.60	.79	.80	.70	.62	.67	.74	.68	.46	.15

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.16	.11	.08	.06	.06	.05	.03	.05	.19	.44	.75
.90	.14	.10	.07	.06	.07	.08	.08	.12	.24	.44	.68
.80	.11	.08	.06	.06	.08	.10	.12	.17	.28	.45	.65
.70	.09	.08	.08	.09	.10	.12	.15	.20	.32	.49	.69
.60	.07	.09	.11	.12	.13	.14	.16	.22	.35	.55	.80
.50	.07	.10	.13	.15	.16	.17	.17	.23	.37	.61	.89
.40	.09	.11	.14	.16	.17	.19	.20	.26	.41	.64	.92
.30	.12	.13	.15	.17	.19	.21	.24	.30	.45	.69	.97
.20	.15	.17	.18	.20	.21	.23	.26	.35	.53	.80	1.13
.10	.17	.21	.25	.26	.26	.25	.28	.38	.63	1.00	1.43

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.09	.10	.08	.02	0.00	.02	.08	.11	.08	.04
.90	.08	.09	.09	.06	.03	.02	.03	.06	.08	.08	.06
.80	.11	.09	.08	.06	.05	.05	.05	.06	.07	.07	.08
.70	.11	.09	.08	.08	.08	.08	.07	.07	.07	.08	.08
.60	.10	.10	.10	.10	.10	.10	.10	.10	.09	.09	.08
.50	.10	.11	.12	.13	.13	.13	.13	.13	.12	.11	.09
.40	.14	.14	.15	.16	.16	.17	.16	.16	.15	.14	.13
.30	.19	.19	.19	.19	.19	.19	.19	.18	.18	.18	.18
.20	.22	.23	.24	.24	.23	.22	.23	.24	.24	.23	.21
.10	.22	.28	.32	.31	.28	.25	.28	.31	.32	.28	.22

Table C11. $C_{prms,\ \overline{\beta}}$, γ = 0.5, Boundary Layer 4

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.30	.30	.30	.31	.31	.31	.31	.32	.32	
.80			.22	.22	.23	.23	.23	.24	.24	.24	.24	
.70			.17	.17	.17	.17	.17	.17	.18	.18	.18	
.60			.14	.14	.14	.14	.14	.14	.14	.14	.14	
.50			.13	.13	.13	.13	.13	.12	.12	.12	.12	
.40			.14	.14	.13	.13	.12	.12	.11	.11	.10	
.30			.14	.13	.13	.12	.12	.11	.10	.10	.09	
.20			.13	.12	.12	.11	.10	.09	.09	.08	.07	
.10			.11	.10	.09	.09	.08	.07	.06	.06	.05	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.10	.13	.13	.10	.05	.03	.08	.15	.18	.15	.09
.90		.10	.12	.13	.11	.08	.07	.08	.12	.13	.13	.12
.80		.10	.12	.13	.13	.12	.10	.10	.10	.11	.12	.13
.70		.12	.13	.14	.15	.15	.14	.13	.12	.12	.12	.13
.60		.14	.16	.17	.17	.18	.17	.17	.16	.15	.14	.13
.50		.15	.17	.19	.20	.21	.21	.21	.21	.19	.16	.13
.40		.15	.18	.22	.24	.25	.25	.24	.23	.21	.19	.16
.30		.16	.21	.25	.28	.29	.28	.27	.26	.24	.23	.22
.20		.21	.28	.33	.34	.34	.32	.32	.32	.32	.32	.32
.10		.33	.39	.44	.43	.38	.36	.38	.44	.47	.47	.45
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.35	.37	.36	.30	.21	.15	.17	.22	.24	.20	.13
.90		.38	.36	.32	.28	.22	.18	.19	.21	.21	.18	.14
.80		.42	.36	.31	.27	.24	.22	.21	.21	.19	.17	.15
.70		.49	.40	.34	.29	.27	.26	.24	.22	.20	.18	.15
.60		.58	.48	.40	.34	.31	.29	.28	.26	.23	.19	.15
.50		.67	.55	.45	.38	.34	.32	.31	.29	.25	.21	.17
.40		.73	.59	.47	.40	.37	.36	.34	.30	.27	.23	.19
.30		.74	.60	.49	.43	.40	.39	.37	.34	.30	.25	.21
.20		.69	.63	.57	.51	.46	.43	.43	.43	.38	.29	.17
.10		.57	.66	.71	.66	.54	.46	.50	.56	.51	.32	.06
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.16	.19	.20	.17	.14	.13	.18	.25	.29	.27	.22
.90		.15	.17	.18	.17	.16	.16	.19	.23	.27	.29	.30
.80		.14	.16	.17	.17	.18	.18	.20	.23	.27	.31	.37
.70		.14	.15	.17	.18	.20	.21	.22	.25	.28	.34	.41
.60		.13	.16	.18	.21	.22	.24	.26	.28	.32	.37	.43
.50		.13	.17	.20	.23	.25	.27	.29	.31	.34	.39	.44
.40		.13	.17	.21	.25	.28	.30	.31	.32	.36	.40	.46
.30		.14	.19	.24	.28	.31	.32	.33	.35	.38	.43	.50
.20		.16	.24	.30	.34	.35	.35	.37	.41	.45	.50	.55
.10		.19	.31	.41	.43	.40	.38	.43	.52	.58	.61	.62
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		0.00	.12	.19	.17	.07	0.00	.01	.07	.10	.09	.06
.90		.06	.11	.14	.12	.07	.03	.04	.07	.09	.09	.09
.80		.11	.11	.10	.09	.08	.07	.07	.07	.08	.10	.11
.70		.13	.12	.11	.10	.10	.10	.09	.09	.09	.10	.12
.60		.12	.13	.14	.15	.14	.13	.12	.11	.10	.11	.12
.50		.14	.17	.18	.19	.18	.16	.15	.13	.13	.13	.14
.40		.21	.21	.21	.21	.20	.20	.18	.16	.16	.17	.18
.30		.30	.27	.24	.23	.23	.23	.22	.21	.21	.21	.23
.20		.35	.34	.33	.31	.28	.26	.27	.28	.28	.27	.24
.10		.33	.42	.47	.44	.36	.29	.32	.38	.39	.32	.21
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT H. LAYER 4 1-2 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.42	.43	.45	.46	.47	.48	.49	.50	.51	
.80			.36	.37	.38	.39	.40	.41	.42	.43	.44	
.70			.29	.30	.31	.32	.33	.34	.35	.36	.37	
.60			.22	.23	.24	.25	.26	.27	.28	.29	.30	
.50			.16	.17	.18	.19	.20	.21	.22	.23	.24	
.40			.11	.12	.13	.14	.15	.16	.17	.18	.19	
.30			.08	.09	.10	.11	.12	.13	.14	.16	.17	
.20			.08	.09	.10	.11	.12	.13	.14	.15	.16	
.10			.09	.10	.11	.12	.13	.14	.15	.16	.17	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT H. LAYER 4 1-2 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.13	.11	.10	.09	.09	.08	.07	.06	.07	.11	.16
.90		.07	.09	.10	.12	.13	.13	.12	.12	.11	.11	.10
.80		.04	.09	.13	.15	.16	.17	.17	.17	.16	.13	.10
.70		.10	.14	.17	.20	.21	.21	.22	.22	.22	.21	.19
.60		.21	.22	.24	.25	.26	.26	.26	.27	.28	.31	.35
.50		.31	.31	.31	.31	.30	.30	.30	.31	.34	.39	.46
.40		.37	.37	.36	.36	.35	.35	.35	.36	.38	.41	.44
.30		.39	.39	.39	.39	.39	.39	.40	.41	.40	.39	.37
.20		.40	.39	.39	.40	.42	.43	.43	.42	.40	.38	.35
.10		.42	.39	.37	.40	.45	.48	.45	.40	.37	.39	.42
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT H. LAYER 4 1-2 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.89	.48	.21	.19	.36	.46	.29	.02	0.00	.02	.24
.90		.65	.37	.18	.17	.30	.42	.40	.29	.19	.12	.08
.80		.57	.35	.20	.17	.26	.38	.47	.48	.39	.20	0.00
.70		.80	.53	.32	.22	.25	.35	.46	.52	.44	.23	0.00
.60		1.19	.80	.47	.29	.26	.31	.38	.42	.37	.22	.01
.50		1.33	.88	.51	.29	.24	.27	.31	.32	.29	.19	.07
.40		.96	.60	.31	.17	.17	.24	.30	.32	.28	.19	.06
.30		.40	.21	.06	.02	.09	.20	.30	.36	.32	.19	.02
.20		.13	.04	0.00	0.00	.06	.16	.28	.35	.32	.20	.02
.10		.27	.21	.15	.11	.10	.13	.20	.27	.27	.20	.08
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT H. LAYER 4 1-2 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.25	.34	.38	.34	.25	.20	.28	.41	.46	.39	.27
.90		.27	.31	.33	.31	.27	.25	.30	.37	.40	.38	.34
.80		.28	.29	.29	.30	.29	.30	.32	.34	.37	.38	.39
.70		.28	.29	.30	.31	.33	.35	.36	.37	.38	.40	.42
.60		.27	.30	.34	.36	.38	.39	.41	.42	.43	.43	.43
.50		.27	.32	.37	.40	.43	.44	.46	.47	.46	.45	.43
.40		.28	.33	.38	.43	.47	.49	.50	.49	.47	.46	.44
.30		.29	.36	.42	.47	.52	.54	.54	.53	.51	.49	.47
.20		.32	.46	.56	.60	.59	.59	.62	.65	.65	.60	.52
.10		.37	.63	.80	.81	.70	.64	.73	.88	.92	.80	.60
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.27	.28	.27	.20	.10	.06	.14	.25	.26	.14	0.00
.90		.31	.28	.23	.17	.12	.11	.15	.21	.21	.15	.04
.80		.34	.27	.21	.17	.15	.15	.17	.19	.18	.16	.11
.70		.33	.26	.21	.18	.18	.20	.21	.21	.19	.17	.13
.60		.30	.26	.23	.22	.23	.25	.26	.26	.23	.18	.12
.50		.33	.29	.27	.26	.27	.29	.31	.31	.28	.22	.14
.40		.46	.38	.32	.30	.31	.34	.35	.34	.32	.28	.24
.30		.62	.50	.40	.36	.36	.38	.39	.38	.37	.36	.35
.20		.70	.61	.53	.47	.43	.43	.46	.48	.49	.45	.39
.10		.69	.71	.70	.63	.52	.47	.55	.66	.66	.53	.34
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C11. $C_{prms,\ \overline{\beta}}$, γ = 0.5, Boundary Layer 4

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.37	.37	.37	.37	.37	.37	.37	.37	.37	
.80		.37	.37	.37	.37	.37	.37	.37	.37	.37	
.70		.36	.36	.36	.36	.36	.36	.36	.36	.36	
.60		.32	.32	.32	.32	.32	.32	.32	.32	.32	
.50		.26	.26	.26	.26	.26	.26	.26	.26	.26	
.40		.20	.20	.20	.20	.20	.20	.20	.20	.20	
.30		.16	.16	.16	.16	.16	.16	.16	.16	.16	
.20		.15	.15	.15	.15	.15	.15	.15	.15	.15	
.10		.16	.16	.16	.16	.16	.16	.16	.16	.16	

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.11	.14	.11	.04	.01	.04	.11	.14	.11	.06
.90	.08	.10	.10	.09	.05	.03	.05	.09	.10	.10	.08
.80	.09	.09	.08	.08	.07	.06	.07	.08	.08	.09	.09
.70	.10	.09	.08	.08	.09	.09	.09	.08	.08	.09	.10
.60	.11	.11	.11	.11	.12	.12	.12	.11	.11	.11	.11
.50	.12	.13	.14	.14	.15	.15	.15	.14	.14	.13	.12
.40	.14	.16	.17	.17	.18	.17	.18	.17	.17	.16	.14
.30	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20	.19
.20	.29	.27	.25	.23	.23	.23	.23	.23	.25	.27	.29
.10	.46	.37	.30	.26	.26	.26	.26	.26	.30	.37	.46

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.00	.29	.48	.47	.31	.13	.05	.07	.11	.15	.19
.90	.13	.30	.41	.41	.31	.20	.14	.13	.13	.15	.17
.80	.22	.31	.37	.38	.33	.27	.21	.18	.16	.16	.16
.70	.25	.34	.40	.43	.39	.34	.28	.22	.19	.17	.17
.60	.23	.38	.49	.53	.49	.41	.33	.26	.22	.20	.20
.50	.28	.45	.57	.61	.57	.48	.39	.31	.26	.24	.24
.40	.44	.54	.62	.64	.62	.55	.46	.37	.31	.29	.28
.30	.66	.68	.70	.69	.67	.62	.55	.46	.39	.33	.28
.20	.82	.88	.90	.87	.78	.69	.65	.61	.52	.36	.16
.10	.89	1.12	1.26	1.18	.95	.77	.77	.81	.70	.37	0.00

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.30	.39	.43	.39	.30	.25	.30	.39	.43	.39	.30
.90	.34	.38	.39	.37	.32	.30	.32	.37	.39	.38	.34
.80	.37	.37	.37	.36	.35	.35	.35	.36	.37	.37	.37
.70	.38	.38	.39	.39	.40	.40	.40	.39	.39	.38	.38
.60	.37	.40	.43	.44	.45	.45	.45	.44	.43	.40	.37
.50	.38	.43	.47	.49	.50	.50	.50	.49	.47	.43	.38
.40	.42	.45	.48	.51	.54	.55	.54	.51	.48	.45	.42
.30	.47	.50	.53	.56	.59	.60	.59	.56	.53	.50	.47
.20	.51	.61	.68	.70	.68	.65	.68	.70	.68	.61	.51
.10	.53	.79	.95	.94	.80	.71	.80	.94	.95	.79	.53

RMS PRESSURE COEFFICIENT B. LAYER 4 1-2 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.19	.15	.11	.07	.05	.13	.31	.47	.48	.29	.00
.90	.17	.15	.13	.13	.14	.20	.31	.41	.41	.30	.13
.80	.16	.16	.16	.18	.21	.27	.33	.38	.37	.31	.22
.70	.17	.17	.19	.22	.28	.34	.39	.43	.40	.34	.25
.60	.20	.20	.22	.26	.33	.41	.49	.53	.49	.38	.23
.50	.24	.24	.26	.31	.39	.48	.57	.61	.57	.45	.28
.40	.28	.29	.31	.37	.46	.55	.62	.64	.62	.54	.44
.30	.28	.33	.39	[illegible]	.55	.62	.67	.69	.70	.68	.66
.20	.16	.36	.52	.61	.65	.69	.78	.87	.90	.88	.82
.10	0.00	.37	.70	.81	.77	.77	.95	1.18	1.26	1.12	.89

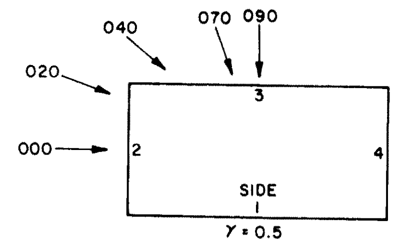


Table C12. $C_{prms, \bar{\beta}}$, γ = 0.25, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO ROOF WIND 00
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.18	.17	.15	.14	.13	.12	.10	.09	.08	
.80		.17	.15	.14	.13	.12	.10	.09	.08	.06	
.70		.16	.15	.13	.12	.11	.10	.08	.07	.06	
.60		.16	.14	.13	.12	.11	.10	.08	.07	.06	
.50		.16	.15	.14	.12	.11	.10	.09	.07	.06	
.40		.16	.15	.14	.13	.11	.10	.09	.08	.06	
.30		.16	.15	.14	.13	.11	.10	.09	.08	.06	
.20		.16	.14	.13	.12	.11	.10	.08	.07	.06	
.10		.15	.13	.12	.11	.10	.08	.07	.06	.05	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.15	.19	.21	.19	.14	.08	.02	.01	.03	.08
.90	.10	.15	.19	.21	.20	.16	.12	.07	.05	.05	.06
.80	.09	.15	.20	.22	.21	.18	.15	.12	.09	.07	.05
.70	.07	.15	.21	.24	.23	.20	.17	.14	.11	.08	.05
.60	.05	.15	.23	.26	.25	.22	.18	.14	.11	.09	.06
.50	.04	.16	.25	.29	.27	.24	.19	.15	.12	.09	.07
.40	.07	.18	.26	.30	.29	.25	.21	.18	.14	.10	.06
.30	.15	.23	.29	.31	.30	.27	.24	.20	.16	.10	.05
.20	.27	.30	.33	.34	.32	.29	.26	.22	.17	.10	.04
.10	.41	.41	.40	.38	.35	.31	.27	.22	.16	.10	.03

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.11	.14	.16	.17	.15	.15	.15	.17	.16	.14	.11
.90	.12	.14	.16	.16	.16	.15	.16	.16	.16	.14	.12
.80	.12	.14	.15	.16	.16	.16	.16	.16	.15	.14	.12
.70	.13	.14	.16	.17	.17	.17	.17	.17	.16	.14	.13
.60	.14	.16	.17	.17	.18	.18	.18	.17	.17	.16	.14
.50	.15	.16	.18	.18	.19	.19	.19	.18	.18	.16	.15
.40	.15	.17	.18	.19	.20	.20	.20	.19	.18	.17	.15
.30	.15	.17	.19	.20	.20	.21	.20	.20	.19	.17	.15
.20	.17	.19	.21	.21	.21	.21	.21	.21	.21	.19	.17
.10	.22	.23	.24	.23	.23	.22	.23	.23	.24	.23	.22

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.08	.03	.01	.02	.08	.14	.19	.21	.19	.15	.10
.90	.06	.05	.05	.07	.12	.16	.20	.21	.19	.15	.10
.80	.05	.07	.09	.12	.15	.18	.21	.22	.20	.15	.09
.70	.05	.08	.11	.14	.17	.20	.23	.24	.21	.15	.07
.60	.06	.09	.11	.14	.18	.22	.25	.26	.23	.15	.05
.50	.07	.09	.12	.15	.19	.24	.27	.29	.25	.16	.04
.40	.06	.10	.14	.18	.21	.25	.29	.30	.26	.18	.07
.30	.05	.10	.16	.20	.24	.27	.30	.31	.29	.23	.15
.20	.04	.10	.17	.22	.26	.29	.32	.34	.33	.30	.27
.10	.03	.10	.16	.22	.27	.31	.35	.38	.40	.41	.41

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.05	.04	.04	.04	.05	.05	.05	.04	.04	.04	.05
.90	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
.80	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
.70	.07	.07	.06	.06	.06	.06	.06	.06	.06	.07	.07
.60	.08	.08	.07	.06	.06	.06	.06	.06	.07	.08	.08
.50	.09	.08	.07	.06	.06	.06	.06	.06	.07	.08	.09
.40	.08	.08	.07	.06	.06	.06	.06	.06	.07	.08	.08
.30	.08	.07	.07	.06	.06	.06	.06	.06	.07	.07	.08
.20	.08	.08	.07	.07	.06	.06	.06	.07	.07	.08	.08
.10	.09	.09	.09	.08	.07	.07	.07	.08	.09	.09	.09

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.22	.21	.21	.20	.20	.19	.18	.18	.17	
.80		.21	.21	.20	.20	.19	.19	.18	.18	.17	
.70		.20	.20	.19	.19	.18	.18	.18	.17	.17	
.60		.18	.18	.18	.18	.17	.17	.17	.17	.16	
.50		.16	.16	.16	.16	.16	.16	.16	.15	.15	
.40		.13	.13	.14	.14	.14	.14	.14	.14	.14	
.30		.11	.11	.11	.11	.12	.12	.12	.12	.13	
.20		.08	.08	.09	.09	.09	.10	.10	.10	.11	
.10		.06	.06	.06	.07	.07	.07	.08	.08	.08	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.01	.08	.13	.14	.11	.10	.12	.16	.18	.17	.16
.90	.05	.09	.12	.13	.11	.10	.12	.14	.16	.18	.20
.80	.08	.10	.11	.12	.12	.11	.11	.13	.15	.19	.24
.70	.10	.10	.11	.12	.12	.12	.12	.12	.15	.19	.24
.60	.09	.10	.11	.12	.13	.13	.13	.13	.15	.18	.22
.50	.09	.10	.12	.13	.13	.13	.13	.14	.16	.18	.21
.40	.09	.11	.13	.14	.14	.14	.14	.15	.16	.19	.22
.30	.11	.13	.14	.15	.15	.15	.15	.15	.17	.21	.25
.20	.14	.15	.16	.16	.16	.16	.16	.17	.21	.26	.32
.10	.18	.19	.19	.18	.17	.16	.17	.20	.26	.33	.42

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.16	.17	.18	.17	.16	.14	.14	.14	.13	.12	.09
.90	.16	.17	.17	.17	.16	.15	.14	.14	.13	.12	.09
.80	.16	.17	.17	.17	.16	.16	.15	.14	.13	.12	.10
.70	.17	.17	.17	.17	.17	.16	.16	.15	.13	.12	.10
.60	.17	.17	.18	.18	.17	.17	.16	.15	.14	.12	.11
.50	.17	.18	.18	.18	.18	.17	.17	.16	.14	.13	.11
.40	.17	.18	.18	.19	.18	.18	.17	.16	.15	.13	.10
.30	.18	.18	.19	.19	.19	.18	.18	.17	.15	.13	.11
.20	.20	.21	.21	.20	.20	.19	.19	.18	.17	.15	.12
.10	.25	.25	.24	.23	.21	.20	.20	.20	.19	.17	.15

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.04	.04	.04	.04	.05	.06	.07	.09	.13	.20	.28
.90	.06	.05	.04	.04	.05	.06	.08	.11	.16	.24	.32
.80	.08	.05	.03	.03	.04	.06	.08	.12	.18	.27	.36
.70	.08	.05	.04	.03	.04	.06	.09	.12	.19	.28	.38
.60	.07	.05	.04	.04	.05	.06	.08	.12	.18	.28	.39
.50	.06	.05	.04	.04	.05	.07	.08	.12	.19	.29	.40
.40	.07	.05	.04	.04	.05	.07	.09	.13	.20	.31	.43
.30	.08	.05	.04	.04	.05	.07	.09	.14	.22	.34	.48
.20	.09	.06	.04	.04	.05	.07	.10	.14	.23	.37	.53
.10	.10	.07	.05	.05	.06	.07	.09	.14	.24	.40	.59

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.09	.07	.06	.07	.08	.07	.05	.05	.06	.07
.90	.12	.10	.08	.07	.08	.08	.07	.07	.06	.07	.08
.80	.12	.10	.09	.08	.08	.08	.08	.08	.08	.08	.08
.70	.13	.11	.10	.09	.09	.08	.08	.08	.08	.08	.08
.60	.14	.12	.11	.10	.09	.09	.09	.09	.09	.09	.09
.50	.15	.13	.11	.10	.09	.09	.09	.09	.09	.09	.08
.40	.14	.12	.11	.10	.09	.09	.09	.09	.08	.08	.08
.30	.14	.12	.11	.10	.10	.10	.09	.09	.09	.08	.08
.20	.15	.13	.12	.11	.10	.10	.10	.10	.10	.10	.09
.10	.18	.16	.14	.12	.11	.10	.11	.12	.12	.12	.12

Table C12. $C_{prms,\,\overline{\beta}}$, γ = 0.25, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.39	.37	.34	.32	.29	.27	.24	.21	.19	
.80		.39	.36	.34	.31	.29	.26	.24	.21	.19	
.70		.36	.34	.32	.29	.27	.25	.23	.20	.18	
.60		.31	.30	.28	.26	.24	.22	.21	.19	.17	
.50		.25	.24	.23	.21	.20	.19	.18	.17	.16	
.40		.19	.18	.17	.17	.16	.16	.15	.15	.14	
.30		.14	.14	.14	.14	.14	.14	.14	.14	.14	
.20		.13	.13	.13	.13	.13	.13	.14	.14	.14	
.10		.13	.13	.13	.13	.14	.14	.14	.15	.15	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	0.00	.05	.10	.11	.08	.08	.12	.17	.17	.12	.04
.90	.02	.06	.09	.10	.08	.08	.10	.12	.13	.12	.09
.80	.05	.07	.08	.09	.08	.08	.08	.09	.10	.11	.13
.70	.06	.07	.07	.08	.08	.08	.08	.08	.09	.12	.14
.60	.07	.07	.07	.07	.08	.08	.09	.09	.10	.12	.14
.50	.07	.07	.07	.07	.08	.09	.10	.10	.12	.13	.14
.40	.08	.08	.08	.08	.08	.09	.09	.10	.12	.14	.17
.30	.10	.09	.09	.09	.09	.09	.09	.10	.12	.16	.21
.20	.12	.11	.10	.10	.10	.09	.10	.11	.14	.19	.25
.10	.14	.13	.12	.11	.10	.10	.11	.14	.17	.22	.27

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.20	.18	.16	.14	.13	.12	.11	.10	.09	.08	.07
.90	.26	.21	.17	.15	.13	.13	.12	.11	.10	.08	.07
.80	.30	.24	.19	.15	.14	.13	.12	.11	.10	.09	.07
.70	.34	.27	.20	.16	.14	.13	.13	.12	.10	.09	.07
.60	.36	.28	.21	.17	.14	.14	.13	.12	.11	.09	.07
.50	.38	.29	.22	.17	.15	.14	.13	.12	.11	.09	.07
.40	.40	.30	.22	.17	.15	.14	.13	.12	.11	.09	.08
.30	.43	.32	.23	.18	.16	.15	.14	.13	.12	.10	.08
.20	.48	.36	.26	.20	.16	.15	.15	.14	.13	.11	.08
.10	.54	.41	.30	.22	.17	.16	.16	.16	.15	.12	.08

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.06	.06	.07	.08	.10	.11	.12	.12	.11	.10
.90	.06	.06	.06	.07	.08	.10	.11	.12	.13	.14	.15
.80	.05	.06	.07	.08	.09	.10	.11	.13	.14	.16	.18
.70	.05	.06	.07	.08	.09	.10	.12	.13	.15	.17	.19
.60	.05	.06	.07	.08	.09	.10	.12	.13	.15	.16	.18
.50	.06	.06	.07	.08	.09	.11	.12	.13	.14	.16	.16
.40	.06	.07	.07	.08	.10	.11	.12	.13	.14	.16	.17
.30	.07	.08	.08	.09	.10	.11	.12	.13	.15	.17	.19
.20	.09	.09	.09	.10	.10	.11	.13	.14	.17	.19	.22
.10	.11	.11	.11	.11	.11	.12	.13	.16	.19	.22	.24

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.09	.09	.09	.08	.06	.05	.06	.07	.08	.08	.07
.90	.09	.09	.09	.08	.07	.06	.06	.07	.08	.08	.07
.80	.10	.09	.08	.08	.07	.07	.07	.07	.07	.07	.08
.70	.10	.09	.09	.08	.08	.08	.08	.08	.08	.08	.08
.60	.10	.10	.10	.09	.09	.09	.09	.09	.09	.09	.09
.50	.12	.11	.11	.10	.10	.10	.10	.10	.10	.10	.10
.40	.13	.12	.12	.11	.11	.11	.11	.11	.10	.10	.10
.30	.16	.14	.13	.13	.12	.12	.12	.12	.11	.11	.11
.20	.21	.18	.16	.15	.14	.13	.13	.14	.14	.14	.13
.10	.27	.24	.21	.18	.16	.14	.15	.17	.18	.18	.18

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.11	.11	.11	.11	.11	.11	.11	.11	.11	
.80		.12	.12	.12	.12	.12	.12	.12	.12	.12	
.70		.12	.12	.12	.12	.12	.12	.12	.13	.13	
.60		.12	.12	.12	.13	.13	.13	.13	.13	.13	
.50		.12	.12	.12	.12	.13	.13	.13	.13	.13	
.40		.12	.12	.12	.12	.13	.13	.13	.13	.13	
.30		.13	.13	.13	.13	.13	.13	.13	.13	.13	
.20		.14	.14	.14	.14	.14	.14	.14	.14	.14	
.10		.15	.15	.15	.15	.16	.16	.16	.16	.16	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.09	.10	.10	.08	.08	.10	.12	.14	.13	.13
.90	.11	.11	.11	.11	.10	.09	.10	.11	.12	.13	.13
.80	.15	.13	.12	.11	.11	.10	.10	.10	.11	.12	.13
.70	.17	.15	.13	.12	.12	.11	.11	.11	.11	.12	.13
.60	.17	.15	.14	.13	.12	.12	.12	.12	.13	.13	.13
.50	.18	.16	.14	.14	.13	.13	.14	.14	.13	.13	.13
.40	.20	.18	.16	.15	.14	.14	.14	.14	.14	.14	.14
.30	.23	.20	.18	.16	.16	.16	.15	.15	.15	.15	.16
.20	.26	.23	.21	.19	.17	.17	.17	.17	.18	.19	.20
.10	.28	.26	.24	.22	.19	.18	.19	.22	.25	.26	.27

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.42	.42	.40	.34	.25	.19	.19	.22	.21	.14	.05
.90	.35	.35	.33	.30	.25	.21	.21	.22	.21	.17	.12
.80	.29	.29	.28	.27	.25	.24	.23	.23	.22	.21	.19
.70	.25	.26	.27	.27	.27	.26	.25	.24	.24	.24	.24
.60	.22	.26	.29	.30	.30	.29	.27	.26	.26	.27	.28
.50	.23	.28	.32	.34	.33	.31	.29	.28	.28	.29	.30
.40	.26	.30	.33	.35	.35	.34	.32	.30	.30	.31	.32
.30	.30	.33	.35	.37	.37	.36	.35	.34	.33	.33	.33
.20	.35	.38	.40	.41	.40	.38	.38	.38	.37	.36	.36
.10	.38	.44	.48	.48	.44	.41	.41	.42	.43	.41	.39

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.09	.12	.13	.13	.13	.15	.17	.17	.15	.13
.90	.09	.11	.12	.13	.13	.14	.15	.17	.17	.17	.16
.80	.12	.12	.13	.13	.14	.15	.16	.17	.17	.17	.18
.70	.11	.12	.13	.13	.14	.15	.16	.17	.17	.17	.18
.60	.10	.11	.13	.14	.15	.16	.17	.17	.17	.17	.17
.50	.09	.11	.13	.14	.16	.17	.17	.18	.18	.17	.16
.40	.10	.12	.13	.15	.16	.17	.18	.18	.18	.18	.18
.30	.13	.13	.14	.16	.17	.18	.18	.19	.20	.20	.21
.20	.13	.15	.16	.17	.18	.18	.19	.21	.22	.23	.24
.10	.11	.16	.19	.20	.19	.19	.21	.24	.26	.25	.25

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.12	.14	.15	.14	.12	.10	.11	.12	.13	.12	.10
.90	.14	.14	.14	.13	.12	.11	.11	.12	.12	.12	.12
.80	.16	.15	.14	.14	.13	.13	.12	.12	.12	.13	.13
.70	.16	.15	.15	.14	.14	.14	.13	.13	.13	.13	.13
.60	.16	.16	.16	.16	.15	.15	.15	.14	.14	.14	.13
.50	.16	.17	.17	.17	.17	.16	.16	.15	.15	.14	.14
.40	.17	.17	.17	.18	.18	.17	.17	.16	.16	.15	.15
.30	.20	.19	.19	.19	.19	.19	.18	.17	.17	.17	.17
.20	.23	.23	.23	.22	.21	.20	.20	.20	.20	.20	.19
.10	.27	.29	.29	.27	.23	.21	.22	.25	.26	.24	.21

Table C12. $C_{p_{rms},\overline{\beta}}$, γ = 0.25, Boundary Layer 1

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W	X/L .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.10	.10	.10	.10	.10	.10	.10	.10	.10	
.80		.10	.10	.10	.10	.10	.10	.10	.10	.10	
.70		.10	.10	.10	.10	.10	.10	.10	.10	.10	
.60		.10	.10	.10	.10	.10	.10	.10	.10	.10	
.50		.10	.10	.10	.10	.10	.10	.10	.10	.10	
.40		.11	.11	.11	.11	.11	.11	.11	.11	.11	
.30		.11	.11	.11	.11	.11	.11	.11	.11	.11	
.20		.12	.12	.12	.12	.12	.12	.12	.12	.12	
.10		.12	.12	.12	.12	.12	.12	.12	.12	.12	

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	X/L .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.09	.10	.10	.10	.09	.08	.09	.10	.10	.10	.09
.90	.11	.11	.11	.10	.10	.09	.10	.10	.11	.11	.11
.80	.13	.12	.11	.11	.10	.10	.10	.11	.11	.12	.13
.70	.14	.13	.12	.11	.11	.11	.11	.11	.12	.13	.14
.60	.14	.13	.13	.12	.12	.12	.12	.12	.13	.13	.14
.50	.15	.14	.14	.13	.13	.13	.13	.13	.14	.14	.15
.40	.17	.16	.14	.14	.14	.14	.14	.14	.14	.16	.17
.30	.19	.17	.16	.15	.15	.15	.15	.15	.16	.17	.19
.20	.21	.19	.18	.17	.16	.16	.16	.17	.18	.19	.21
.10	.21	.22	.22	.21	.18	.17	.18	.21	.22	.22	.21

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	Y/W .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.12	.12	.12	.11	.08	.08	.09	.11	.13	.14	.14
.90	.11	.11	.11	.10	.09	.09	.10	.12	.13	.14	.15
.80	.11	.11	.11	.10	.10	.11	.11	.12	.13	.14	.16
.70	.12	.12	.12	.12	.12	.12	.13	.13	.14	.15	.17
.60	.13	.13	.13	.13	.14	.14	.14	.15	.15	.16	.17
.50	.14	.14	.15	.15	.15	.16	.16	.16	.17	.17	.18
.40	.14	.14	.15	.16	.17	.17	.17	.17	.18	.20	.21
.30	.14	.15	.16	.17	.18	.19	.19	.19	.21	.23	.26
.20	.16	.18	.20	.20	.20	.20	.21	.23	.25	.28	.32
.10	.21	.24	.26	.25	.23	.22	.24	.28	.32	.35	.38

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	X/L .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.09	.13	.16	.17	.15	.14	.15	.17	.16	.13	.09
.90	.12	.14	.16	.16	.16	.15	.16	.16	.16	.14	.12
.80	.15	.15	.16	.16	.16	.16	.16	.16	.16	.15	.15
.70	.15	.15	.16	.16	.17	.17	.17	.16	.16	.15	.15
.60	.13	.15	.16	.17	.17	.17	.17	.17	.16	.15	.13
.50	.12	.14	.16	.18	.18	.18	.18	.18	.16	.14	.12
.40	.14	.16	.17	.18	.19	.19	.19	.18	.17	.16	.14
.30	.16	.17	.18	.19	.20	.20	.20	.19	.18	.17	.16
.20	.17	.19	.20	.21	.21	.20	.21	.21	.20	.19	.17
.10	.16	.20	.22	.23	.22	.21	.22	.23	.22	.20	.16

RMS PRESSURE COEFFICIENT B. LAYER 1 1-4 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H	Y/W .00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.14	.14	.13	.11	.09	.08	.08	.11	.12	.12	.12
.90	.15	.14	.13	.12	.10	.09	.09	.10	.11	.11	.11
.80	.16	.14	.13	.12	.11	.11	.10	.10	.11	.11	.11
.70	.17	.15	.14	.13	.13	.12	.12	.12	.12	.12	.12
.60	.17	.16	.15	.15	.14	.14	.14	.13	.13	.13	.13
.50	.18	.17	.17	.16	.16	.16	.15	.15	.15	.14	.14
.40	.21	.20	.18	.17	.17	.17	.17	.16	.15	.14	.14
.30	.26	.23	.21	.19	.19	.19	.18	.17	.16	.15	.14
.20	.32	.28	.25	.23	.21	.20	.20	.20	.20	.18	.15
.10	.38	.35	.32	.28	.24	.22	.23	.25	.26	.24	.21

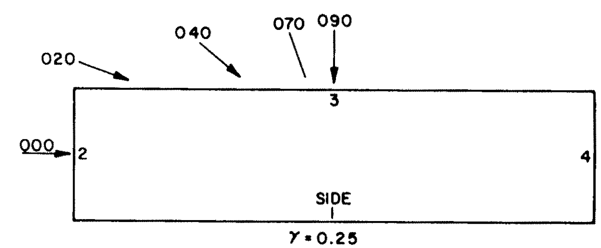


Table C13. $C_{p_{rms},\,\bar{\beta}}$, $\gamma = 0.25$, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO ROOF WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.18	.16	.15	.14	.13	.11	.10	.08	.07	
.80			.17	.16	.15	.13	.12	.11	.09	.08	.07	
.70			.17	.15	.14	.13	.11	.10	.09	.07	.06	
.60			.16	.15	.14	.12	.11	.10	.08	.07	.06	
.50			.16	.15	.14	.12	.11	.10	.08	.07	.06	
.40			.16	.15	.14	.12	.11	.10	.08	.07	.06	
.30			.17	.15	.14	.13	.11	.10	.09	.07	.06	
.20			.17	.16	.14	.13	.12	.10	.09	.08	.06	
.10			.18	.16	.15	.14	.12	.11	.10	.08	.07	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.23	.32	.38	.37	.29	.18	.08	.05	.03	.04	.13
.90		.17	.28	.36	.37	.31	.21	.12	.05	.03	.06	.12
.80		.14	.25	.35	.37	.33	.24	.15	.08	.05	.07	.13
.70		.16	.27	.36	.38	.34	.26	.17	.10	.07	.09	.13
.60		.24	.33	.38	.39	.35	.27	.18	.12	.09	.10	.13
.50		.34	.39	.42	.41	.35	.27	.19	.13	.10	.10	.12
.40		.43	.46	.46	.43	.36	.27	.20	.14	.10	.10	.10
.30		.59	.58	.55	.48	.38	.29	.21	.16	.12	.10	.09
.20		.95	.84	.72	.58	.43	.31	.24	.21	.17	.11	.06
.10		1.49	1.23	.97	.72	.51	.36	.30	.28	.23	.14	.03
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.23	.23	.23	.24	.24	.24	.24	.24	.23	.23	.23
.90		.22	.23	.24	.25	.25	[illegible]	.25	.25	.24	.23	.22
.80		.22	.23	.25	.26	.27	.27	.27	.26	.25	.23	.22
.70		.23	.25	.27	.28	.29	.29	.29	.28	.27	.25	.23
.60		.24	.27	.30	.31	.32	.32	.32	.31	.30	.27	.24
.50		.26	.29	.32	.34	.35	.35	.35	.34	.32	.29	.26
.40		.28	.31	.34	.36	.38	.38	.38	.36	.34	.31	.28
.30		.31	.34	.37	.40	.41	.42	.41	.40	.37	.34	.31
.20		.37	.41	.44	.47	.47	.48	.47	.47	.44	.41	.37
.10		.47	.52	.55	.57	.56	.56	.56	.57	.55	.52	.47
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.13	.04	.03	.05	.08	.18	.29	.37	.38	.32	.23
.90		.12	.06	.03	.05	.12	.21	.31	.37	.36	.28	.17
.80		.13	.07	.05	.08	.15	.24	.33	.37	.35	.25	.14
.70		.13	.09	.07	.10	.17	.26	.34	.38	.36	.27	.16
.60		.13	.10	.09	.12	.18	.27	.35	.39	.38	.33	.24
.50		.12	.10	.10	.13	.19	.27	.35	.41	.42	.39	.34
.40		.10	.10	.10	.14	.20	.27	.36	.43	.46	.46	.43
.30		.09	.10	.12	.16	.21	.29	.38	.48	.55	.58	.59
.20		.06	.11	.17	.21	.24	.31	.43	.58	.72	.84	.95
.10		.03	.14	.23	.28	.30	.36	.51	.72	.97	1.23	1.49
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.05	.05	.05	.04	.04	.03	.04	.04	.05	.05	.05
.90		.06	.05	.05	.05	.04	.04	.04	.05	.05	.05	.06
.80		.06	.06	.05	.05	.05	.05	.05	.05	.05	.06	.06
.70		.07	.07	.06	.06	.06	.06	.06	.06	.06	.07	.07
.60		.08	.07	.07	.07	.06	.06	.06	.07	.07	.07	.08
.50		.08	.08	.07	.07	.07	.07	.07	.07	.07	.08	.08
.40		.08	.08	.08	.08	.07	.07	.07	.08	.08	.08	.08
.30		.09	.09	.09	.08	.08	[illegible]	.08	.08	.09	.09	.09
.20		.12	.12	.11	.11	.11	.11	.11	.11	.11	.12	.12
.10		.18	.17	.16	.15	.14	.14	.14	.15	.16	.17	.18
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.24	.23	.23	.23	.22	.22	.22	.21	.21	
.80			.22	.22	.21	.21	.21	.20	.20	.20	.19	
.70			.20	.20	.19	.19	.19	.18	.18	.18	.18	
.60			.18	.18	.17	.17	.17	.17	.16	.16	.16	
.50			.16	.15	.15	.15	.15	.15	.14	.14	.14	
.40			.14	.13	.13	.13	.13	.13	.13	.13	.12	
.30			.12	.12	.12	.12	.11	.11	.11	.11	.11	
.20			.10	.10	.10	.10	.10	.10	.10	.10	.10	
.10			.09	.09	.09	.09	.09	.09	.09	.09	.09	
Y/W	X/L	0.0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.02	.12	.21	.20	.13	.07	.08	.13	.18	.19	.19
.90		.05	.12	.17	.17	.13	.09	.09	.12	.15	.18	.20
.80		.09	.13	.15	.16	.14	.13	.12	.12	.14	.17	.20
.70		.10	.14	.16	.18	.17	.16	.15	.14	.15	.17	.20
.60		.10	.16	.20	.22	.22	.20	.19	.18	.18	.18	.19
.50		.11	.18	.23	.26	.26	.25	.23	.21	.20	.19	.19
.40		.17	.22	.26	.28	.30	.29	.27	.24	.22	.21	.21
.30		.28	.30	.31	.33	.35	.35	.32	.29	.26	.26	.26
.20		.44	.45	.46	.45	.44	.43	.41	.40	.38	.37	.35
.10		.63	.67	.69	.65	.58	.53	.54	.58	.59	.55	.48
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.25	.26	.27	.27	.25	.23	.22	.20	.19	.18	.18
.90		.26	.27	.27	.26	.25	.24	.22	.20	.19	.18	.18
.80		.28	.27	.27	.27	.26	.25	.23	.21	.19	.19	.19
.70		.29	.29	.29	.29	.28	.27	.25	.23	.21	.20	.19
.60		.31	.31	.32	.32	.31	.29	.28	.26	.24	.21	.19
.50		.33	.34	.34	.34	.33	.32	.30	.28	.26	.23	.20
.40		.35	.35	.36	.36	.35	.34	.32	.30	.27	.25	.22
.30		.39	.38	.38	.38	.38	.37	.35	.32	.30	.28	.26
.20		.45	.45	.45	.45	.44	.43	.41	.39	.36	.34	.33
.10		.54	.55	.56	.55	.54	.52	.51	.49	.47	.44	.42
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.06	.07	.07	.06	.05	.04	.04	.07	.15	.29	.45
.90		.06	.06	.07	.06	.05	.04	.04	.08	.17	.32	.50
.80		.06	.06	.07	.07	.06	.05	.05	.09	.18	.35	.54
.70		.05	.06	.07	.07	.07	.06	.06	.10	.20	.37	.58
.60		.05	.07	.08	.08	.08	.07	.07	.11	.22	.40	.62
.50		.05	.07	.09	.09	.09	.08	.08	.12	.23	.43	.65
.40		.06	.07	.09	.10	.10	.10	.09	.13	.24	.44	.69
.30		.07	.08	.09	.10	.11	.11	.10	.14	.26	.48	.74
.20		.10	.11	.11	.12	.13	.13	.13	.16	.30	.54	.83
.10		.15	.15	.16	.16	.16	.15	.15	.21	.37	.64	.97
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.16	.11	.08	.07	.08	.09	.07	.05	.05	.09	.14
.90		.14	.11	.08	.07	.08	.08	.07	.06	.06	.08	.11
.80		.13	.11	.09	.08	.08	.08	.08	.07	.07	.08	.09
.70		.13	.12	.11	.10	.09	.09	.09	.08	.08	.09	.09
.60		.14	.13	.12	.11	.11	.10	.10	.10	.10	.10	.10
.50		.15	.14	.13	.13	.12	.12	.11	.11	.11	.11	.11
.40		.15	.14	.14	.13	.13	.12	.12	.12	.12	.11	.11
.30		.16	.16	.15	.15	.14	.14	.13	.13	.13	.12	.12
.20		.23	.21	.19	.18	.18	.18	.17	.17	.16	.17	.18
.10		.37	.31	.26	.24	.24	.24	.23	.22	.23	.25	.29
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C13. $C_{prms,\ \overline{\beta}}$, $\gamma = 0.25$, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		.36	.35	.33	.32	.30	.29	.27	.26	.24	
.80		.35	.34	.32	.31	.30	.28	.27	.25	.24	
.70		.33	.32	.30	.29	.28	.27	.26	.24	.23	
.60		.29	.28	.27	.26	.25	.24	.23	.23	.22	
.50		.23	.22	.22	.22	.21	.21	.20	.20	.20	
.40		.17	.17	.17	.17	.18	.18	.18	.18	.18	
.30		.13	.14	.14	.15	.15	.15	.16	.16	.17	
.20		.12	.13	.13	.14	.14	.15	.16	.16	.17	
.10		.12	.13	.13	.14	.15	.15	.16	.17	.17	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.03	.09	.14	.13	.09	.07	.11	.17	.19	.15	.09
.90	.05	.09	.12	.11	.09	.08	.10	.13	.14	.13	.11
.80	.09	.10	.10	.10	.10	.10	.10	.10	.11	.12	.14
.70	.11	.11	.11	.11	.11	.12	.11	.10	.11	.13	.15
.60	.12	.12	.13	.13	.14	.14	.14	.13	.14	.15	.16
.50	.12	.14	.15	.16	.16	.16	.16	.16	.17	.17	.17
.40	.13	.15	.17	.18	.19	.19	.19	.18	.18	.19	.19
.30	.15	.17	.19	.21	.22	.22	.21	.21	.21	.22	.24
.20	.22	.25	.26	.27	.26	.26	.26	.27	.29	.32	.35
.10	.33	.36	.38	.36	.33	.31	.33	.38	.43	.48	.51
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.35	.31	.26	.23	.20	.17	.14	.11	.10	.11	.14
.90	.39	.33	.28	.23	.21	.18	.15	.12	.10	.11	.12
.80	.43	.36	.29	.24	.21	.19	.16	.13	.11	.11	.11
.70	.47	.39	.32	.27	.23	.21	.18	.16	.14	.12	.10
.60	.52	.43	.35	.29	.26	.23	.21	.19	.16	.14	.11
.50	.57	.47	.39	.32	.28	.25	.23	.21	.19	.15	.12
.40	.65	.53	.42	.34	.30	.27	.25	.23	.20	.17	.13
.30	.74	.60	.47	.38	.33	.30	.27	.25	.22	.19	.15
.20	.87	.70	.56	.45	.40	.36	.34	.31	.28	.25	.21
.10	1.01	.83	.67	.57	.51	.47	.44	.41	.38	.35	.31
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.10	.11	.12	.11	.11	.11	.14	.18	.20	.20	.18
.90	.10	.10	.11	.11	.11	.13	.15	.18	.20	.21	.21
.80	.10	.10	.10	.11	.13	.14	.16	.18	.20	.22	.25
.70	.10	.10	.11	.12	.14	.16	.17	.19	.21	.24	.27
.60	.09	.11	.13	.14	.16	.17	.19	.20	.23	.25	.29
.50	.09	.11	.14	.15	.17	.18	.20	.22	.24	.27	.30
.40	.10	.12	.13	.16	.18	.20	.21	.22	.25	.28	.33
.30	.11	.13	.15	.17	.20	.22	.23	.24	.27	.32	.37
.20	.14	.17	.20	.22	.24	.25	.27	.30	.34	.39	.45
.10	.18	.25	.30	.32	.30	.30	.34	.41	.47	.52	.56
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.20	.15	.11	.09	.09	.09	.08	.06	.07	.11	.16
.90	.16	.13	.10	.08	.08	.08	.07	.06	.07	.09	.12
.80	.14	.11	.10	.08	.08	.08	.07	.07	.07	.08	.10
.70	.13	.12	.11	.10	.10	.09	.09	.08	.08	.09	.09
.60	.14	.14	.13	.13	.12	.12	.11	.11	.11	.11	.11
.50	.16	.16	.16	.16	.15	.15	.14	.13	.13	.13	.12
.40	.19	.18	.18	.17	.17	.16	.16	.15	.15	.14	.13
.30	.25	.23	.21	.20	.20	.19	.19	.18	.18	.17	.16
.20	.37	.33	.29	.27	.26	.26	.25	.25	.24	.25	.25
.10	.55	.48	.42	.38	.37	.36	.35	.35	.36	.37	.40
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90		.20	.20	.20	.20	.20	.20	.20	.20	.20	
.80		.21	.21	.21	.21	.21	.21	.21	.21	.21	
.70		.21	.21	.21	.21	.21	.21	.21	.21	.22	
.60		.21	.21	.21	.21	.21	.22	.22	.22	.22	
.50		.21	.21	.21	.21	.21	.22	.22	.22	.22	
.40		.20	.20	.21	.21	.21	.21	.21	.22	.22	
.30		.20	.20	.20	.20	.21	.21	.21	.21	.21	
.20		.19	.19	.19	.19	.20	.20	.20	.20	.21	
.10		.18	.18	.18	.18	.19	.19	.19	.20	.20	
Y/W X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.05	.11	.14	.13	.09	.06	.08	.13	.15	.15	.13
.90	.09	.12	.13	.12	.10	.08	.09	.11	.13	.14	.14
.80	.13	.13	.12	.12	.11	.10	.10	.11	.12	.13	.15
.70	.17	.15	.14	.13	.13	.13	.12	.12	.12	.13	.15
.60	.19	.17	.16	.15	.15	.15	.14	.14	.14	.15	.15
.50	.21	.20	.19	.18	.17	.17	.17	.16	.16	.16	.16
.40	.22	.21	.20	.20	.20	.19	.19	.18	.18	.18	.19
.30	.27	.25	.24	.23	.23	.22	.22	.21	.22	.23	.25
.20	.37	.35	.32	.30	.28	.27	.27	.28	.30	.32	.34
.10	.53	.50	.47	.41	.35	.32	.34	.39	.44	.46	.48
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.56	.54	.50	.44	.36	.29	.23	.18	.15	.14	.15
.90	.43	.43	.42	.40	.36	.31	.26	.22	.19	.18	.17
.80	.33	.36	.38	.39	.37	.35	.30	.26	.23	.22	.22
.70	.29	.35	.40	.42	.42	.39	.35	.31	.29	.28	.27
.60	.31	.40	.46	.49	.49	.45	.41	.37	.34	.33	.33
.50	.37	.46	.53	.56	.55	.51	.46	.42	.39	.38	.37
.40	.42	.50	.57	.59	.59	.56	.51	.47	.43	.41	.39
.30	.51	.58	.63	.65	.65	.63	.59	.54	.49	.46	.42
.20	.66	.73	.78	.80	.79	.76	.72	.67	.62	.57	.52
.10	.88	.97	1.04	1.05	1.02	.96	.92	.88	.82	.75	.67
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.17	.21	.24	.23	.20	.18	.22	.27	.30	.27	.23
.90	.18	.20	.22	.22	.22	.22	.24	.27	.28	.28	.26
.80	.19	.20	.21	.22	.24	.25	.26	.27	.28	.28	.29
.70	.20	.21	.22	.24	.26	.27	.28	.28	.29	.30	.30
.60	.20	.22	.25	.27	.28	.29	.30	.31	.31	.31	.31
.50	.20	.23	.26	.28	.30	.31	.32	.32	.33	.33	.33
.40	.22	.24	.26	.29	.31	.33	.33	.33	.34	.35	.37
.30	.24	.26	.28	.31	.34	.36	.36	.36	.37	.39	.42
.20	.27	.33	.37	.40	.41	.41	.43	.46	.47	.48	.49
.10	.31	.45	.55	.56	.52	.50	.55	.63	.66	.63	.56
Z/H X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00	.27	.22	.18	.16	.14	.13	.12	.12	.13	.15	.18
.90	.24	.21	.17	.15	.14	.13	.13	.12	.12	.14	.16
.80	.23	.20	.18	.16	.15	.14	.14	.13	.13	.13	.14
.70	.23	.21	.20	.18	.18	.17	.16	.15	.15	.15	.15
.60	.25	.24	.23	.22	.21	.20	.20	.19	.18	.18	.18
.50	.28	.27	.27	.26	.25	.24	.23	.22	.21	.21	.20
.40	.31	.30	.29	.28	.28	.27	.26	.25	.24	.23	.21
.30	.38	.36	.34	.32	.31	.31	.30	.29	.28	.27	.26
.20	.54	.49	.44	.41	.39	.38	.38	.37	.37	.37	.38
.10	.80	.69	.60	.54	.51	.50	.50	.50	.51	.55	.59
Z/H Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C13. $C_{prms,\ \overline{\beta}}$, γ = 0.25, Boundary Layer 2

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00												
.90			.19	.19	.19	.19	.19	.19	.19	.19	.19	
.80			.18	.18	.18	.18	.18	.18	.18	.18	.18	
.70			.18	.18	.18	.18	.18	.18	.18	.18	.18	
.60			.18	.18	.18	.18	.18	.18	.18	.18	.18	
.50			.19	.19	.19	.19	.19	.19	.19	.19	.19	
.40			.20	.20	.20	.20	.20	.20	.20	.20	.20	
.30			.20	.20	.20	.20	.20	.20	.20	.20	.20	
.20			.20	.20	.20	.20	.20	.20	.20	.20	.20	
.10			.19	.19	.19	.19	.19	.19	.19	.19	.19	
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.09	.13	.15	.13	.09	.06	.09	.13	.15	.13	.09
.90		.13	.14	.14	.12	.10	.08	.10	.12	.14	.14	.13
.80		.16	.14	.13	.12	.11	.11	.11	.12	.13	.14	.16
.70		.18	.16	.14	.13	.13	.13	.13	.13	.14	.16	.18
.60		.19	.17	.16	.15	.15	.15	.15	.15	.16	.17	.19
.50		.20	.19	.18	.18	.17	.17	.17	.18	.18	.19	.20
.40		.23	.21	.20	.19	.19	.20	.19	.19	.20	.21	.23
.30		.29	.26	.23	.22	.22	.23	.22	.22	.23	.26	.29
.20		.39	.36	.33	.30	.28	.27	.28	.30	.33	.36	.39
.10		.53	.51	.48	.42	.35	.32	.35	.42	.48	.51	.53
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.18	.18	.18	.17	.15	.14	.14	.15	.18	.23	.29
.90		.17	.17	.18	.17	.16	.16	.16	.17	.19	.22	.26
.80		.17	.18	.18	.18	.18	.18	.18	.19	.20	.22	.24
.70		.17	.19	.21	.22	.22	.22	.23	.23	.24	.25	.26
.60		.19	.22	.25	.26	.27	.28	.28	.29	.30	.30	.31
.50		.21	.25	.29	.31	.32	.33	.33	.34	.34	.35	.35
.40		.24	.29	.32	.35	.37	.37	.38	.37	.37	.37	.37
.30		.33	.36	.39	.42	.43	.44	.44	.43	.43	.43	.43
.20		.50	.52	.54	.55	.55	.55	.55	.56	.57	.59	.61
.10		.77	.77	.77	.76	.74	.73	.73	.76	.80	.85	.91
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.20	.25	.28	.27	.23	.21	.23	.27	.28	.25	.20
.90		.23	.26	.27	.27	.25	.24	.25	.27	.27	.26	.23
.80		.26	.26	.27	.27	.27	.27	.27	.27	.27	.26	.26
.70		.27	.27	.28	.29	.29	.30	.29	.29	.28	.27	.27
.60		.27	.29	.31	.32	.32	.32	.32	.32	.31	.29	.27
.50		.27	.30	.32	.33	.34	.34	.34	.33	.32	.30	.27
.40		.30	.31	.32	.34	.35	.36	.35	.34	.32	.31	.30
.30		.33	.34	.35	.36	.39	.40	.39	.36	.35	.34	.33
.20		.38	.42	.45	.47	.46	.45	.46	.47	.45	.42	.38
.10		.43	.56	.65	.65	.58	.54	.58	.65	.65	.56	.43
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 2 1-4 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.28	.23	.19	.16	.15	.14	.15	.16	.18	.18	.19
.90		.27	.22	.19	.16	.16	.15	.15	.15	.17	.19	.22
.80		.26	.23	.19	.18	.18	.17	.17	.16	.17	.20	.23
.70		.28	.25	.23	.22	.21	.21	.20	.20	.20	.21	.23
.60		.32	.30	.29	.28	.27	.27	.26	.26	.25	.23	.22
.50		.36	.35	.33	.32	.32	.32	.32	.31	.29	.27	.24
.40		.39	.37	.36	.36	.36	.36	.35	.34	.33	.32	.32
.30		.46	.43	.41	.41	.42	.43	.41	.39	.39	.41	.45
.20		.62	.58	.54	.53	.54	.55	.53	.52	.53	.57	.63
.10		.88	.82	.77	.74	.72	.72	.72	.73	.75	.79	.83
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

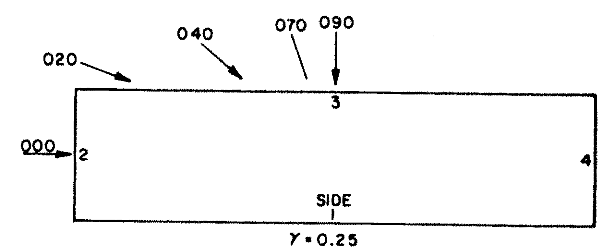


Table C14. $C_{prms, \overline{\beta}}$, γ = 0.25, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO ROOF WIND 00
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.13	.13	.13	.13	.13	.14	.14	.14	.14	
.80		.13	.13	.13	.13	.13	.13	.13	.13	.13	
.70		.12	.12	.12	.12	.12	.12	.12	.12	.12	
.60		.12	.12	.12	.12	.12	.12	.12	.12	.12	
.50		.11	.11	.11	.11	.11	.11	.11	.11	.11	
.40		.11	.11	.11	.11	.11	.11	.12	.12	.12	
.30		.12	.12	.12	.12	.12	.12	.12	.12	.12	
.20		.13	.13	.13	.13	.13	.13	.13	.13	.13	
.10		.14	.14	.14	.14	.14	.14	.14	.14	.14	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 1 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.08	.26	.38	.38	.28	.14	.05	.01	.02	.06	.13
.90	.14	.28	.37	.38	.29	.17	.07	.01	.01	.06	.15
.80	.20	.31	.38	.38	.31	.20	.10	.03	.02	.07	.15
.70	.27	.36	.42	.41	.34	.23	.12	.05	.03	.08	.16
.60	.35	.43	.47	.45	.37	.26	.15	.07	.05	.09	.15
.50	.48	.51	.53	.49	.40	.29	.18	.09	.07	.09	.15
.40	.66	.62	.58	.51	.43	.32	.20	.11	.07	.10	.16
.30	.92	.79	.67	.56	.45	.35	.23	.14	.10	.11	.16
.20	1.29	1.06	.85	.66	.50	.38	.28	.21	.16	.14	.12
.10	1.75	1.43	1.12	.83	.57	.40	.34	.31	.27	.17	.05

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 2 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.25	.33	.33	.27	.23	.27	.33	.33	.25	.13
.90	.21	.28	.32	.32	.29	.28	.29	.32	.32	.28	.21
.80	.27	.30	.32	.33	.32	.32	.32	.33	.32	.30	.27
.70	.30	.32	.34	.35	.36	.36	.36	.35	.34	.32	.30
.60	.30	.34	.37	.39	.40	.40	.40	.39	.37	.34	.30
.50	.31	.36	.41	.44	.45	.45	.45	.44	.41	.36	.31
.40	.37	.41	.45	.48	.49	.49	.49	.48	.45	.41	.37
.30	.44	.47	.50	.52	.53	.53	.53	.52	.50	.47	.44
.20	.48	.53	.56	.58	.58	.58	.58	.58	.56	.53	.48
.10	.48	.58	.65	.66	.64	.62	.64	.66	.65	.58	.48

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 3 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.13	.06	.02	.01	.05	.14	.28	.38	.38	.26	.08
.90	.15	.06	.01	.01	.07	.17	.29	.38	.37	.28	.14
.80	.15	.07	.02	.03	.10	.20	.31	.38	.38	.31	.20
.70	.16	.08	.03	.05	.12	.23	.34	.41	.42	.36	.27
.60	.15	.09	.05	.07	.15	.26	.37	.45	.47	.43	.35
.50	.15	.09	.07	.09	.18	.29	.40	.49	.53	.51	.48
.40	.16	.10	.07	.11	.20	.32	.43	.51	.58	.62	.66
.30	.16	.11	.10	.14	.23	.35	.45	.56	.67	.79	.92
.20	.12	.14	.16	.21	.28	.38	.50	.66	.85	1.06	1.29
.10	.05	.17	.27	.31	.34	.40	.57	.83	1.12	1.43	1.75

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 4 WIND 000
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.02	.05	.06	.05	.02	.01	.02	.05	.06	.05	.02
.90	.05	.05	.06	.05	.03	.03	.03	.05	.06	.05	.05
.80	.07	.06	.05	.05	.04	.04	.04	.05	.05	.06	.07
.70	.07	.07	.06	.06	.06	.06	.06	.06	.06	.07	.07
.60	.07	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07
.50	.08	.09	.09	.09	.09	.09	.09	.09	.09	.09	.08
.40	.11	.10	.10	.11	.11	.11	.11	.11	.10	.10	.11
.30	.14	.13	.12	.12	.13	.13	.13	.12	.12	.13	.14
.20	.18	.18	.17	.16	.15	.15	.15	.16	.17	.18	.18
.10	.22	.24	.25	.22	.18	.16	.18	.22	.25	.24	.22

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO ROOF WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.22	.22	.22	.22	.21	.21	.21	.21	.21	
.80		.20	.20	.20	.20	.20	.20	.20	.19	.19	
.70		.19	.18	.18	.18	.18	.18	.18	.17	.17	
.60		.17	.17	.16	.16	.16	.16	.15	.15	.15	
.50		.15	.14	.14	.14	.14	.13	.13	.13	.13	
.40		.13	.13	.12	.12	.12	.11	.11	.11	.10	
.30		.12	.12	.11	.11	.10	.10	.10	.09	.09	
.20		.11	.11	.10	.10	.10	.09	.09	.08	.08	
.10		.11	.10	.10	.10	.09	.09	.08	.08	.08	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 1 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	0.00	.12	.23	.25	.20	.12	.06	.05	.06	.11	.17
.90	.05	.14	.21	.23	.20	.15	.12	.10	.10	.12	.14
.80	.11	.17	.21	.22	.21	.18	.16	.14	.13	.13	.13
.70	.11	.18	.23	.25	.24	.22	.19	.17	.16	.15	.14
.60	.08	.19	.27	.30	.29	.25	.22	.19	.17	.17	.17
.50	.12	.23	.31	.35	.33	.29	.24	.21	.19	.18	.19
.40	.28	.31	.34	.36	.35	.32	.28	.23	.20	.19	.20
.30	.51	.46	.41	.39	.37	.36	.32	.28	.24	.21	.18
.20	.75	.67	.59	.50	.43	.39	.38	.37	.33	.25	.15
.10	.97	.93	.86	.72	.54	.42	.45	.50	.48	.32	.11

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 2 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.30	.35	.37	.34	.27	.22	.25	.30	.30	.22	.12
.90	.33	.35	.36	.34	.29	.26	.27	.28	.27	.23	.17
.80	.35	.36	.35	.34	.32	.30	.29	.28	.26	.24	.21
.70	.36	.36	.36	.36	.35	.34	.32	.30	.28	.25	.23
.60	.36	.38	.39	.39	.39	.38	.36	.34	.31	.27	.22
.50	.38	.40	.42	.43	.43	.42	.40	.38	.34	.29	.22
.40	.44	.45	.46	.46	.46	.46	.44	.41	.36	.30	.24
.30	.50	.50	.51	.51	.51	.50	.47	.44	.40	.34	.28
.20	.51	.55	.58	.58	.56	.54	.53	.52	.48	.41	.33
.10	.45	.59	.68	.68	.62	.57	.60	.64	.62	.52	.38

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 3 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.10	.09	.08	.06	.05	.04	.02	.04	.13	.29	.48
.90	.08	.08	.08	.08	.07	.05	.04	.07	.17	.35	.57
.80	.07	.08	.09	.09	.08	.07	.06	.09	.21	.40	.64
.70	.06	.08	.10	.11	.10	.08	.07	.11	.24	.45	.71
.60	.06	.09	.11	.12	.11	.10	.09	.13	.26	.49	.77
.50	.06	.10	.12	.13	.13	.11	.10	.15	.29	.52	.81
.40	.07	.11	.13	.15	.14	.13	.12	.16	.31	.55	.86
.30	.10	.13	.15	.16	.16	.14	.14	.18	.34	.61	.93
.20	.14	.16	.18	.18	.17	.16	.16	.21	.39	.70	1.06
.10	.20	.21	.22	.22	.20	.17	.18	.26	.47	.82	1.24

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 4 WIND 020
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.01	.08	.11	.08	.01	0.00	0.00	.04	.07	.06	.03
.90	.06	.08	.08	.06	.03	.00	.01	.05	.07	.07	.06
.80	.10	.08	.07	.06	.05	.04	.05	.06	.07	.08	.09
.70	.10	.09	.09	.08	.08	.08	.08	.08	.08	.09	.10
.60	.10	.11	.12	.13	.13	.13	.12	.12	.11	.10	.10
.50	.10	.13	.16	.17	.17	.17	.16	.15	.14	.13	.12
.40	.14	.16	.18	.20	.21	.21	.20	.18	.17	.17	.17
.30	.21	.22	.22	.23	.25	.25	.25	.24	.23	.24	.25
.20	.29	.32	.33	.33	.31	.29	.31	.33	.34	.34	.32
.10	.37	.47	.52	.49	.39	.34	.38	.47	.51	.46	.38

Table C14. $C_{prms,\ \overline{\beta}}$, $\gamma = 0.25$, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO ROOF WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90			.26	.25	.24	.24	.23	.22	.22	.21	.20
.80			.26	.25	.24	.24	.23	.22	.22	.21	.20
.70			.25	.25	.24	.24	.23	.23	.22	.22	.21
.60			.24	.24	.23	.23	.23	.23	.22	.22	.22
.50			.22	.22	.23	.23	.23	.23	.23	.23	.23
.40			.21	.21	.22	.22	.23	.23	.24	.24	.25
.30			.20	.21	.22	.22	.23	.24	.25	.25	.26
.20			.20	.21	.22	.23	.24	.25	.25	.26	.27
.10			.21	.22	.23	.24	.25	.26	.26	.27	.28
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 1 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.07	.10	.12	.10	.07	.07	.11	.17	.19	.15	.08
.90		.08	.11	.12	.12	.10	.10	.12	.14	.15	.13	.09
.80		.10	.11	.13	.13	.13	.12	.13	.13	.12	.11	.10
.70		.11	.13	.14	.15	.15	.15	.15	.14	.13	.12	.10
.60		.13	.14	.16	.17	.18	.18	.19	.18	.17	.14	.10
.50		.15	.16	.18	.19	.20	.21	.22	.22	.20	.17	.13
.40		.17	.18	.20	.21	.23	.24	.24	.23	.22	.21	.20
.30		.21	.22	.24	.25	.26	.27	.26	.25	.25	.27	.29
.20		.26	.29	.32	.32	.31	.29	.30	.33	.35	.37	.38
.10		.32	.40	.45	.43	.36	.32	.38	.47	.51	.50	.45
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 2 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.31	.32	.31	.27	.19	.14	.15	.18	.20	.17	.11
.90		.38	.35	.30	.25	.20	.17	.17	.18	.18	.16	.13
.80		.46	.38	.31	.25	.22	.21	.20	.19	.18	.16	.14
.70		.54	.43	.34	.28	.25	.24	.23	.21	.19	.17	.14
.60		.63	.50	.40	.33	.29	.27	.26	.24	.21	.18	.14
.50		.72	.57	.45	.37	.33	.31	.29	.27	.24	.19	.14
.40		.80	.63	.48	.39	.36	.34	.32	.29	.26	.21	.17
.30		.87	.68	.52	.42	.39	.38	.36	.33	.29	.24	.19
.20		.89	.74	.60	.50	.44	.41	.41	.40	.37	.30	.21
.10		.88	.81	.73	.63	.51	.45	.47	.52	.50	.39	.22
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 3 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.13	.14	.15	.13	.11	.11	.16	.23	.26	.23	.17
.90		.14	.14	.14	.14	.13	.13	.17	.21	.24	.26	.26
.80		.14	.14	.14	.14	.15	.16	.18	.20	.24	.28	.33
.70		.15	.15	.15	.16	.17	.18	.20	.22	.25	.30	.35
.60		.14	.15	.16	.18	.19	.21	.23	.25	.28	.31	.35
.50		.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.35
.40		.14	.16	.18	.21	.24	.26	.28	.29	.31	.35	.39
.30		.15	.18	.21	.24	.27	.29	.30	.31	.34	.40	.46
.20		.17	.23	.28	.31	.31	.31	.34	.38	.44	.49	.55
.10		.19	.32	.40	.41	.36	.34	.40	.51	.59	.63	.64
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 4 WIND 040
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		0.00	.09	.18	.16	.05	0.00	0.00	.03	.08	.09	.08
.90		.04	.10	.13	.11	.06	.02	.02	.05	.08	.10	.10
.80		.10	.10	.10	.09	.08	.07	.07	.08	.09	.10	.12
.70		.11	.11	.12	.12	.12	.12	.11	.10	.11	.12	.13
.60		.10	.14	.17	.18	.18	.16	.15	.14	.13	.14	.15
.50		.10	.17	.21	.24	.23	.21	.19	.17	.17	.17	.18
.40		.17	.21	.24	.26	.27	.26	.24	.22	.21	.22	.24
.30		.31	.30	.29	.30	.30	.31	.29	.28	.27	.28	.30
.20		.50	.48	.45	.41	.38	.36	.36	.38	.38	.36	.33
.10		.74	.75	.72	.62	.48	.40	.44	.52	.54	.46	.33
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO ROOF WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00											
.90			.21	.21	.21	.21	.21	.21	.21	.21	.21
.80			.24	.24	.24	.24	.24	.24	.24	.24	.24
.70			.26	.26	.26	.26	.26	.26	.26	.26	.26
.60			.27	.27	.27	.27	.27	.27	.27	.27	.27
.50			.27	.27	.27	.28	.28	.28	.28	.28	.28
.40			.27	.27	.27	.28	.28	.28	.28	.28	.28
.30			.27	.27	.28	.28	.28	.28	.29	.29	.29
.20			.28	.28	.29	.29	.29	.29	.29	.30	.30
.10			.29	.30	.30	.30	.30	.31	.31	.31	.31
Y/W	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 1 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.02	.11	.17	.15	.08	.04	.07	.14	.19	.18	.15
.90		.10	.14	.16	.14	.10	.08	.09	.13	.16	.17	.17
.80		.16	.16	.15	.14	.13	.11	.11	.12	.14	.16	.18
.70		.20	.18	.17	.16	.16	.15	.14	.14	.15	.17	.19
.60		.21	.21	.20	.20	.19	.19	.18	.18	.18	.19	.20
.50		.24	.24	.24	.24	.23	.23	.22	.21	.21	.21	.22
.40		.30	.28	.27	.27	.27	.26	.25	.25	.24	.25	.26
.30		.39	.35	.32	.31	.30	.30	.29	.29	.29	.32	.35
.20		.51	.46	.42	.38	.35	.34	.34	.36	.40	.46	.52
.10		.65	.61	.56	.49	.42	.38	.40	.48	.57	.67	.76
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 2 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.40	.54	.61	.56	.41	.27	.22	.22	.16	.03	0.00
.90		.39	.48	.53	.51	.43	.36	.33	.31	.27	.17	.05
.80		.37	.44	.48	.49	.47	.45	.43	.40	.36	.29	.21
.70		.34	.44	.51	.55	.55	.54	.51	.47	.43	.39	.34
.60		.33	.48	.61	.67	.66	.63	.58	.54	.50	.46	.43
.50		.38	.57	.71	.78	.77	.72	.66	.61	.57	.53	.50
.40		.55	.68	.79	.84	.84	.81	.76	.71	.66	.62	.58
.30		.74	.81	.88	.91	.91	.90	.87	.83	.78	.73	.68
.20		.87	.96	1.03	1.05	1.02	.99	.98	.96	.93	.87	.80
.10		.91	1.12	1.26	1.27	1.17	1.08	1.07	1.10	1.10	1.03	.93
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 3 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.13	.23	.29	.28	.23	.20	.26	.34	.36	.29	.17
.90		.18	.24	.28	.28	.25	.25	.28	.33	.36	.34	.31
.80		.21	.24	.27	.28	.28	.29	.30	.33	.36	.38	.41
.70		.22	.25	.28	.30	.32	.33	.34	.35	.37	.40	.43
.60		.21	.26	.31	.34	.36	.38	.39	.40	.40	.39	.38
.50		.21	.28	.34	.38	.41	.42	.43	.44	.43	.40	.36
.40		.23	.30	.36	.41	.45	.47	.47	.46	.45	.44	.42
.30		.27	.34	.40	.46	.49	.51	.51	.51	.50	.51	.51
.20		.30	.42	.51	.55	.56	.55	.58	.61	.61	.59	.55
.10		.32	.53	.68	.71	.64	.60	.67	.77	.78	.67	.50
Z/H	X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 4 WIND 070
COEFFICIENTS BASED UPON LOCAL VELOCITY

1.00		.08	.19	.24	.19	.07	0.00	.04	.14	.19	.16	.09
.90		.19	.21	.22	.17	.10	.06	.08	.14	.17	.17	.15
.80		.27	.24	.21	.18	.15	.13	.14	.15	.16	.17	.18
.70		.31	.27	.24	.22	.21	.21	.20	.19	.18	.19	.20
.60		.32	.31	.30	.29	.29	.28	.27	.25	.24	.22	.20
.50		.35	.36	.37	.37	.36	.35	.34	.32	.30	.28	.24
.40		.44	.43	.43	.43	.43	.43	.41	.39	.38	.36	.35
.30		.61	.56	.53	.51	.50	.50	.49	.47	.46	.47	.47
.20		.87	.78	.70	.63	.59	.57	.57	.58	.59	.57	.56
.10		1.20	1.07	.95	.82	.70	.64	.67	.73	.74	.68	.58
Z/H	Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00

Table C14. $C_{prms,\overline{\beta}}$, $\gamma = 0.25$, Boundary Layer 3

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO ROOF WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Y/W \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00											
.90		.32	.32	.32	.32	.32	.32	.32	.32	.32	
.80		.30	.30	.30	.30	.30	.30	.30	.30	.30	
.70		.29	.29	.29	.29	.29	.29	.29	.29	.29	
.60		.29	.29	.29	.29	.29	.29	.29	.29	.29	
.50		.29	.29	.29	.29	.29	.29	.29	.29	.29	
.40		.29	.29	.29	.29	.29	.29	.29	.29	.29	
.30		.28	.28	.28	.28	.28	.28	.28	.28	.28	
.20		.26	.26	.26	.26	.26	.26	.26	.26	.26	
.10		.24	.24	.24	.24	.24	.24	.24	.24	.24	

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 1 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.07	.16	.20	.17	.09	.04	.09	.17	.20	.16	.07
.90	.15	.17	.18	.15	.10	.08	.10	.15	.18	.17	.15
.80	.21	.18	.16	.14	.12	.12	.12	.14	.16	.18	.21
.70	.24	.20	.17	.15	.15	.15	.15	.15	.17	.20	.24
.60	.24	.22	.20	.19	.19	.19	.19	.19	.20	.22	.24
.50	.26	.25	.24	.23	.23	.23	.23	.23	.24	.25	.26
.40	.34	.30	.27	.26	.26	.26	.26	.26	.27	.30	.34
.30	.45	.38	.33	.30	.30	.30	.30	.30	.33	.38	.45
.20	.57	.50	.43	.38	.35	.34	.35	.38	.43	.50	.57
.10	.67	.64	.59	.51	.42	.37	.42	.51	.59	.64	.67

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 2 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.06	.26	.38	.33	.17	.05	.11	.24	.30	.25	.14
.90	.16	.25	.31	.28	.20	.14	.17	.24	.29	.29	.26
.80	.23	.26	.27	.27	.25	.23	.23	.26	.29	.33	.36
.70	.26	.28	.30	.31	.32	.32	.31	.31	.33	.37	.43
.60	.25	.32	.38	.41	.42	.41	.39	.39	.40	.43	.47
.50	.27	.37	.46	.51	.51	.50	.48	.47	.48	.50	.53
.40	.34	.44	.51	.57	.59	.59	.57	.55	.56	.59	.64
.30	.49	.55	.60	.65	.67	.68	.66	.65	.67	.72	.79
.20	.69	.76	.81	.82	.79	.77	.78	.82	.86	.89	.92
.10	.94	1.08	1.15	1.09	.95	.86	.92	1.05	1.12	1.10	1.03

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 3 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ X/L	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.16	.31	.40	.37	.25	.18	.25	.37	.40	.31	.16
.90	.26	.33	.36	.33	.27	.24	.27	.33	.36	.33	.26
.80	.34	.34	.33	.32	.30	.29	.30	.32	.33	.34	.34
.70	.36	.35	.34	.34	.34	.35	.34	.34	.34	.35	.36
.60	.33	.36	.38	.39	.40	.40	.40	.39	.38	.36	.33
.50	.32	.37	.42	.45	.46	.46	.46	.45	.42	.37	.32
.40	.35	.40	.45	.48	.51	.52	.51	.48	.45	.40	.35
.30	.41	.46	.50	.54	.56	.57	.56	.54	.50	.46	.41
.20	.46	.56	.64	.66	.64	.63	.64	.66	.64	.56	.46
.10	.48	.71	.86	.86	.75	.68	.75	.86	.86	.71	.48

RMS PRESSURE COEFFICIENT B. LAYER 3 1-4 SIDE RATIO SIDE 4 WIND 090
COEFFICIENTS BASED UPON LOCAL VELOCITY

Z/H \ Y/W	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
1.00	.14	.25	.30	.24	.11	.05	.17	.33	.38	.26	.06
.90	.26	.29	.29	.24	.17	.14	.20	.28	.31	.25	.16
.80	.36	.33	.29	.26	.23	.23	.25	.27	.27	.26	.23
.70	.43	.37	.33	.31	.31	.32	.32	.31	.30	.28	.26
.60	.47	.43	.40	.39	.39	.41	.42	.41	.38	.32	.25
.50	.53	.50	.48	.47	.48	.50	.51	.51	.46	.37	.27
.40	.64	.59	.56	.55	.57	.59	.59	.57	.51	.44	.34
.30	.79	.72	.67	.65	.66	.68	.67	.65	.60	.55	.49
.20	.92	.89	.86	.82	.78	.77	.79	.82	.81	.76	.69
.10	1.03	1.10	1.12	1.05	.92	.86	.95	1.09	1.15	1.08	.94