NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

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DIRECT-READING DESIGN CHARTS FOR 75S-T6 ALUMINUM-ALLOY FLAT COMPRESSION PANELS HAVING LONGITUDINAL EXTRUDED Z-SECTION STIFFENERS

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SUMMARY

Direct-reading design charts are presented for 75S-T6 aluminum-alloy flat compression panels having longitudinal extruded Z-section stiffeners. These charts, which cover a wide range of proportions, make possible the direct determination of the stress and all panel dimensions required to carry a given intensity of loading with a given skin thickness and effective length of panel.

INTRODUCTION

Design charts for wing compression panels have been presented in several different forms (see, for example, references 1 and 2) and have evolved over a period of years into the form presented in reference 3. This form permitted the direct selection of the various panel proportions which meet given values of the principal design conditions - intensity of loading, skin thickness, and effective length of panel. This form also made possible the ready determination of the proportions having minimum weight to meet these conditions.

In the present paper, direct-reading design charts similar to those of reference 3 are presented. These charts are based on the extensive test data contained in references 4 and 5 for 75S-T6 aluminum-alloy flat compression panels having longitudinal extruded Z-section stiffeners. The proportions covered vary from panels in which the stiffeners are relatively large, thick, and closely spaced (fig. 1) to panels in which the stiffeners are relatively thin compared to the skin and are small and widely spaced (fig. 2).

SYMBOLS

The symbols used for the panel dimensions are given in figure 3. In addition the following symbols are used:

c	coefficient of end fixity as used in Euler column formula
d	rivet diameter, inches
L	length of panel, inches
p	rivet pitch, inches
P_i	compressive load per inch of panel width, kips per inch
r	all fillet radii, inches
$\bar{t}$	cross-sectional area per inch of panel width, expressed as an equivalent or average thickness, inches
ρ	radius of gyration, inches
$\bar{\sigma}_f$	average stress at failing load, ksi
σ_{cr}	stress for local buckling of sheet, ksi
σ_{cy}	compressive yield stress, ksi

DIRECT-READING DESIGN CHARTS

Direct-reading design charts for 75S-T6 aluminum-alloy flat compression panels with longitudinal extruded Z-section stiffeners having the properties and proportions given in tables 1 to 8 are presented in two forms in figures 4 to 17.

First form.- In the first form (figs. 4 to 10), the design conditions of intensity of loading, effective length of panel, and skin thickness are incorporated in the ordinate P_i/t_S and the abscissa $\frac{P_i}{L/\sqrt{c}}$. This form, having the design conditions incorporated in the ordinate and abscissa, is the more useful for most design purposes because the curves are more widely spaced and interpolation is more straightforward.

Second (alternate) form.- In the second form (figs. 11 to 17), the average stress at failure $\bar{\sigma}_f$ is plotted against P_i/t_S as was done in the summary plots of reference 6. This alternate form, having the stress (an inverse measure of weight for a given load) as ordinate, is often the more useful for making generalizations and comparisons of structural efficiency. Such comparisons may readily be made because the charts show directly how nearly the stress actually carried approaches the upper-limit stress corresponding to that which would be achieved by a pure shell construction if a pure shell could carry the load without failure. This upper-limit stress is represented by the lines for $\bar{\sigma}_f = \frac{P_i}{t_S}$ (infinite stiffener spacing) in figures 11 to 17.

From either form of chart the panel proportions which will satisfy the design conditions may be found directly. Values of the ratios of stiffener thickness to skin thickness t_W/t_S, stiffener spacing to skin thickness b_S/t_S, and height of stiffener to stiffener thickness H/t_W may be found directly for given values of P_i/t_S and $\frac{P_i}{L/\sqrt{c}}$, and the corresponding section properties $\bar{t}/t_S$, $\bar{h}/t_S$, and ρ/t_S may be found from tables 2 to 8.

Because several different quantities are presented simultaneously on these charts, several broken- and solid-line conventions have been used to distinguish among them. For example, in the first form of design chart (figs. 4 to 10) dashed lines are used to indicate values of average stress at failure $\bar{\sigma}_f$; whereas, on the alternate form of design chart (figs. 11 to 17) dashed lines are used to indicate values of $\frac{P_i}{L/\sqrt{c}}$. In both forms the value of $\bar{\sigma}_f$ corresponding to the point at which each curve is cut by a short heavy line is the value of the stress for local buckling σ_{cr} for the proportions represented by the curve. For example, the value of σ_{cr} for $\frac{H}{t_W} = 16$ and $\frac{b_S}{t_S} = 20$ in figure 4 is approximately 61 ksi. (Only a very short panel of these proportions would buckle before failure - one having a value of $\frac{P_i}{L/\sqrt{c}} \geqq 3.75$.) If the value of σ_{cr} is so low that the short heavy line would fall outside the boundaries of the chart, a numerical value of σ_{cr} is given and is associated with the proper proportions by a leader to the curve. For a few of the extreme proportions, namely, panels having very small stiffeners very widely spaced, the value of σ_{cr} is not independent of the panel length. For such proportions the value of σ_{cr} given in the design charts will be too low if the panel length is short, and reference to the actual test data (references 4 and 5) is suggested if more definite values of σ_{cr} for such panels are required.

The panel proportions which have minimum weight are indicated on both forms of these charts by the use of colors as follows:

(1) If the proportions correspond to a blue line or region, they are the proportions which give the lightest possible 75S-T6 Z-stiffened panel which will meet the design conditions

(2) If the proportions correspond to a red line or region, they are the proportions which give the lightest possible 75S-T6 Z-stiffened panel at the ratio of stiffener thickness to skin thickness given by that particular chart, but some other thickness ratio would give a lighter design

(3) If the proportions correspond to a white region, the panel will meet the design conditions but will not be the lightest panel which will meet the conditions

Because in many cases the proportions may be varied somewhat from those indicated by the red and blue colors to have minimum weight, with little change in the value of the stress that can be carried, too much importance should not be attached to the exact proportions associated with the red or blue colors. In any particular case for which a deviation from the minimum-weight proportions is made, however, caution dictates that the weight penalty associated with this deviation be determined.

The stresses achieved by the panels having the proportions indicated in the design charts to have minimum weight are summarized in figures 18 and 19. Figure 18 covers the most general case, in which no minimum skin thickness is required. In this case curves of $\bar{\sigma}_f$ against the structural index $\frac{P_i}{L\sqrt{c}}$ (reference 7) measure the panel structural efficiency.

Inasmuch as the required sheet thickness in the design of wing compression panels is often dictated by the torsional-stiffness requirements of the wing, curves showing the effect of a variation in sheet thickness upon the maximum stress that can be carried provide an evaluation of the panel structural efficiency which is applicable in many cases not covered by figure 18. In figure 19, such curves of $\bar{\sigma}_f$

against the parameter P_i/t_S for a series of values of the structural index $\frac{P_i}{L/\sqrt{c}}$ are presented for the 75S-T6 Z-stiffened panels. Figure 19 is similar to the summary plots of reference 6 for 24S-T aluminum-alloy Z-stiffened panels and 24S-T and 75S-T aluminum-alloy Y-stiffened panels.

USE OF THE DIRECT-READING DESIGN CHARTS

The manner of using the direct-reading design charts depends in some measure on the desired degree of precision of interpolation among the curves. For many purposes, interpolation by inspection is of adequate accuracy, and the use of the charts requires only the calculation of the values of the design parameters P_i/t_S and $\frac{P_i}{L/\sqrt{c}}$ to permit the desired proportions to be read directly from the curves. The proportions for minimum weight, moreover, may be found directly as those corresponding to the blue lines or regions on the curves.

If more accurate interpolation is desired, a plot can readily be made of H/t_W, $\bar{\sigma}_f$, and σ_{cr} against b_S/t_S $\left(\text{or } S/t_S\right)$ at the given values of P_i/t_S and $\frac{P_i}{L/\sqrt{c}}$ and the proportions can be picked from it. On a plot of this type, the proportions for minimum weight correspond to those associated with the highest value of $\bar{\sigma}_f$. This plot, which is described in more detail in connection with the illustrative example of the following section, is the same as that used with previously available design charts (references 2 and 6).

As a check on the accuracy of interpolation, the product of the cross-sectional area per inch of width of the design and the stress that the charts indicate should be achieved by the design may be compared with the design value of the intensity of loading. For this purpose values of $\bar{t}/t_S$ may be found from tables 2 to 8 and the corresponding values of cross-sectional area per inch $\bar{t}$ obtained by multiplying by the skin thickness t_S.

The value of $\bar{\sigma}_f$ obtained from the design charts can be achieved only if the panels are riveted with large-diameter, closely spaced rivets that have essentially the same strength characteristics as A17S-T4 aluminum-alloy flat-head rivets (AN442AD) used on the test specimens of references 4 and 5. Reference 8 presents curves for determining the rivet diameter and pitch required to insure the development of a given average stress for local instability; these curves may be used as a guide for estimating the effect of a variation in riveting.

ILLUSTRATIVE EXAMPLE

In order to illustrate the use of the direct-reading design charts and the simplicity of the computations associated with them, a panel will be designed for minimum weight to meet the same principal design conditions used to illustrate the design procedures in reference 2, namely:

(1) Intensity of loading $P_i = 3.0$ kips per inch

(2) Skin thickness $t_S = 0.064$ inch

(3) Effective length $\frac{L}{\sqrt{c}} = 20$ inches

First the values of P_i/t_S and $\frac{P_i}{L/\sqrt{c}}$ are calculated

$$\frac{P_i}{t_S} = \frac{3.0}{0.064}$$

$$= 46.9 \text{ ksi}$$

$$\frac{P_i}{L/\sqrt{c}} = \frac{3.0}{20}$$

$$= 0.15 \text{ ksi}$$

Then a trial value of t_W/t_S is assumed. If desired, figure 19 may be used to aid in the selection of a suitable skin-stiffener thickness ratio. For the example, however, an arbitrary value of $\frac{t_W}{t_S} = 1.00$ will be used. In the chart for this value of t_W/t_S (fig. 10) the points corresponding to the design values of P_i/t_S and $\frac{P_i}{L/\sqrt{c}}$ lie on the red line at $\frac{H}{t_W} = 21$ $\left(\text{or } \frac{b_W}{t_W} = 20\right)$. Accordingly, the value of H/t_W for minimum weight for $\frac{t_W}{t_S} = 1.00$ is 21, and, because the value is established by a red line, not a blue line, some value of t_W/t_S other than 1.00 will give less weight. Inspection of the charts for other values of t_W/t_S reveals that at the given design values of P_i/t_S and $\frac{P_i}{L/\sqrt{c}}$ the blue region lies between $\frac{H}{t_W} = 26$ and $\frac{H}{t_W} = 31$ on the chart for $\frac{t_W}{t_S} = 0.79$ (fig. 9). By interpolation, the panel proportions corresponding to this blue region are found to be $\frac{H}{t_W} \approx 28$ $\left(\frac{b_W}{t_W} \approx 27\right)$ and $\frac{S}{t_S} = \frac{b_S}{t_S} \approx 53.5$, and for these proportions $\bar{\sigma}_f \approx 30.0$ ksi and $\sigma_{cr} \approx 14.5$ ksi. The actual panel dimensions are calculated from these proportions as

$$t_W = \frac{t_W}{t_S} t_S$$

$$= 0.79 \times 0.064$$

$$\approx 0.051 \text{ inch}$$

$$H = \frac{H}{t_W} t_W$$

$$= 28 \times 0.051$$

$$= 1.43 \text{ inches}$$

$$S = \frac{S}{t_S} t_S$$

$$= 53.5 \times 0.064$$

$$= 3.42 \text{ inches}$$

and the section properties can be determined from table 7 as

$$\bar{h} = \frac{\bar{h}}{t_S} t_S$$

$$= 4.71 \times 0.064$$

$$= 0.302 \text{ inch}$$

$$\rho = \frac{\rho}{t_S} t_S$$

$$= 7.59 \times 0.064$$

$$= 0.485 \text{ inch}$$

In order to illustrate the use of the direct-reading design charts when more accuracy than that corresponding to interpolation by inspection is desired, a plot has been made (fig. 20) of the values of $\bar{\sigma}_f$, σ_{cr}, and H/t_W given by the charts at the design values of P_i/t_S and $\frac{P_i}{L/\sqrt{c}}$. The proportions which give the highest value of $\bar{\sigma}_f$ can be readily selected from a plot of this kind. For the example these proportions are so nearly the same as were obtained by inspection that the values will not be repeated.

As a check on the accuracy of interpolation, the magnitude of $\bar{t}/t_S$ for these proportions can be determined from table 7 and multiplied by the values of t_S and $\bar{\sigma}_f$ for the design. This product should be equal to the design value of P_i.

For the example (see fig. 20)

$$\bar{\sigma}_f = 30.0 \text{ ksi}$$

$$\frac{\bar{t}}{t_S} = 1.554$$

and

$$P_i = \bar{\sigma}_f \bar{t}$$

$$= \bar{\sigma}_f \frac{\bar{t}}{t_S} t_S$$

$$= 30.0 \times 1.554 \times 0.064$$

$$= 3.0 \text{ kips per inch}$$

which agrees with the design value of P_i originally assumed.

Langley Aeronautical Laboratory
National Advisory Committee for Aeronautics
Langley Field, Va., May 4, 1951

REFERENCES

1. Langhaar, Henry L.: Design of Hat-Type Plate-Stringer Combinations. Auto. and Aviation Ind., vol. 91, no. 11, Dec. 1, 1944, pp. 28-32 and 103-104.

2. Schuette, Evan H.: Charts for the Minimum-Weight Design of 24S-T Aluminum-Alloy Flat Compression Panels with Longitudinal Z-Section Stiffeners. NACA Rep. 827, 1945.

3. Dow, Norris F., and Hickman, William A.: Direct-Reading Design Charts for 75S-T Aluminum-Alloy Flat Compression Panels Having Longitudinal Straight-Web Y-Section Stiffeners. NACA TN 1640, 1948.

4. Hickman, William A., and Dow, Norris F.: Data on the Compressive Strength of 75S-T6 Aluminum-Alloy Flat Panels with Longitudinal Extruded Z-Section Stiffeners. NACA TN 1829, 1949.

5. Hickman, William A., and Dow, Norris F.: Data on the Compressive Strength of 75S-T6 Aluminum-Alloy Flat Panels Having Small, Thin, Widely Spaced, Longitudinal Extruded Z-Section Stiffeners. NACA TN 1978, 1949.

6. Dow, Norris F., and Hickman, William A.: Design Charts for Flat Compression Panels Having Longitudinal Extruded Y-Section Stiffeners and Comparison with Panels Having Formed Z-Section Stiffeners. NACA TN 1389, 1947.

7. Shanley, F. R.: Principles of Structural Design for Minimum Weight. Jour. Aero. Sci., vol. 16, no. 3, March 1949, pp. 133-149.

8. Dow, Norris F., and Hickman, William A.: Effect of Variation in Rivet Diameter and Pitch on the Average Stress at Maximum Load for 24S-T3 and 75S-T6 Aluminum-Alloy, Flat, Z-Stiffened Panels That Fail by Local Instability. NACA TN 2139, 1950.

TABLE 1. - MATERIAL PROPERTIES AND PROPORTIONS

OF 75S-T6 ALUMINUM-ALLOY PANELS HAVING

EXTRUDED Z-SECTION STIFFENERS

[For details of stiffener proportions and diameter and pitch of rivets, see tables 2 to 8; for panel dimensions see fig. 1]

Material Properties		
	Aluminum Alloy	σ_{cy} (ksi)
Sheet	75S-T6 (nonclad)	74.4
Stiffeners	75S-T6 extruded	79.0
Range of Proportions Tested (References 4 and 5)		
$\frac{t_W}{t_S}$ from 0.25 to 1.00		
$\frac{b_S}{t_S}$ from 15 to 75		
$\frac{b_W}{t_W}$ from 12 to 40		
$\left(\frac{L}{\rho}\right)_{c\approx 3.75}$ from 20 to 125		

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TABLE 2.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.25;\ \frac{b_A}{t_W} = 20.3;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.75;\ \frac{p}{t_S} = 5.00\right)$

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
15	$\frac{\bar{t}}{t_S}$	1.143	1.149	1.155	1.160	1.166	1.172	1.178	1.184	1.190	1.201	1.213	1.225	1.230	1.236	1.248	1.260	1.277	1.289	1.295	1.318	1.347
16		1.133	1.140	1.145	1.150	1.156	1.161	1.167	1.172	1.177	1.189	1.200	1.211	1.216	1.221	1.232	1.243	1.260	1.271	1.276	1.299	1.325
17		1.126	1.131	1.136	1.142	1.147	1.152	1.157	1.162	1.167	1.178	1.188	1.198	1.203	1.209	1.219	1.229	1.245	1.255	1.260	1.281	1.306
18		1.119	1.124	1.129	1.134	1.139	1.143	1.148	1.153	1.158	1.168	1.178	1.187	1.192	1.197	1.207	1.216	1.231	1.241	1.245	1.265	1.289
19		1.114	1.117	1.122	1.127	1.131	1.136	1.141	1.145	1.150	1.159	1.168	1.177	1.182	1.187	1.196	1.205	1.219	1.228	1.233	1.251	1.274
20		1.107	1.112	1.116	1.120	1.125	1.129	1.133	1.138	1.142	1.151	1.160	1.168	1.173	1.177	1.186	1.195	1.208	1.217	1.221	1.238	1.260
21		1.102	1.106	1.110	1.115	1.119	1.123	1.127	1.131	1.135	1.144	1.152	1.160	1.165	1.169	1.177	1.185	1.198	1.206	1.210	1.227	1.248
22		1.097	1.101	1.105	1.109	1.113	1.117	1.121	1.125	1.129	1.137	1.145	1.153	1.157	1.161	1.169	1.177	1.189	1.197	1.201	1.217	1.237
23		1.093	1.097	1.101	1.105	1.108	1.112	1.116	1.120	1.124	1.131	1.139	1.147	1.150	1.154	1.162	1.169	1.181	1.188	1.192	1.207	1.227
24		1.089	1.093	1.097	1.100	1.104	1.108	1.111	1.115	1.119	1.126	1.133	1.140	1.144	1.148	1.155	1.162	1.173	1.180	1.184	1.199	1.217
25		1.086	1.089	1.093	1.096	1.100	1.103	1.107	1.110	1.114	1.121	1.128	1.135	1.138	1.142	1.149	1.156	1.166	1.173	1.177	1.191	1.208
26		1.083	1.086	1.089	1.093	1.096	1.099	1.103	1.106	1.109	1.116	1.123	1.130	1.133	1.136	1.143	1.150	1.160	1.167	1.170	1.183	1.200
27		1.079	1.083	1.086	1.089	1.092	1.096	1.099	1.102	1.105	1.112	1.118	1.125	1.128	1.131	1.138	1.144	1.154	1.160	1.164	1.177	1.193
28		1.077	1.080	1.083	1.086	1.089	1.092	1.095	1.098	1.102	1.108	1.114	1.120	1.123	1.127	1.133	1.139	1.148	1.155	1.158	1.170	1.186
29		1.074	1.077	1.080	1.083	1.086	1.089	1.092	1.095	1.098	1.104	1.110	1.116	1.119	1.122	1.128	1.134	1.143	1.149	1.152	1.164	1.180
30		1.071	1.074	1.077	1.080	1.083	1.086	1.089	1.092	1.095	1.101	1.107	1.112	1.115	1.118	1.124	1.130	1.139	1.144	1.147	1.159	1.174
31		1.069	1.072	1.075	1.078	1.080	1.083	1.086	1.089	1.092	1.097	1.103	1.109	1.111	1.114	1.120	1.126	1.134	1.140	1.143	1.154	1.168
32		1.067	1.070	1.073	1.075	1.078	1.080	1.083	1.086	1.089	1.094	1.100	1.105	1.108	1.111	1.116	1.122	1.130	1.135	1.138	1.149	1.163
33		1.065	1.068	1.070	1.073	1.076	1.078	1.081	1.084	1.086	1.092	1.097	1.102	1.105	1.107	1.113	1.118	1.126	1.131	1.134	1.145	1.158
34		1.063	1.066	1.068	1.071	1.073	1.076	1.079	1.081	1.084	1.089	1.094	1.099	1.102	1.104	1.109	1.115	1.122	1.127	1.130	1.140	1.153
35		1.061	1.064	1.066	1.069	1.071	1.074	1.076	1.079	1.081	1.086	1.091	1.097	1.099	1.101	1.106	1.111	1.119	1.124	1.126	1.136	1.149
36		1.060	1.062	1.064	1.067	1.069	1.072	1.074	1.077	1.079	1.084	1.089	1.094	1.096	1.098	1.103	1.108	1.116	1.120	1.123	1.133	1.145
37		1.058	1.060	1.063	1.065	1.067	1.070	1.072	1.075	1.077	1.082	1.086	1.091	1.093	1.096	1.101	1.105	1.112	1.117	1.119	1.129	1.141
38		1.056	1.059	1.061	1.063	1.066	1.068	1.070	1.073	1.075	1.079	1.084	1.089	1.091	1.093	1.098	1.103	1.109	1.114	1.116	1.126	1.137
39		1.055	1.057	1.060	1.062	1.064	1.066	1.068	1.071	1.073	1.077	1.082	1.086	1.089	1.091	1.095	1.100	1.107	1.111	1.113	1.122	1.134
40		1.054	1.056	1.058	1.060	1.062	1.065	1.067	1.069	1.071	1.076	1.080	1.084	1.086	1.089	1.093	1.097	1.104	1.108	1.110	1.119	1.130
42		1.051	1.053	1.055	1.057	1.059	1.062	1.064	1.066	1.068	1.072	1.076	1.080	1.082	1.084	1.089	1.093	1.099	1.103	1.105	1.114	1.124
44		1.049	1.051	1.053	1.055	1.057	1.059	1.061	1.063	1.065	1.069	1.073	1.077	1.079	1.081	1.085	1.089	1.095	1.098	1.100	1.108	1.118
46		1.047	1.049	1.050	1.052	1.054	1.056	1.058	1.060	1.062	1.066	1.069	1.073	1.075	1.077	1.081	1.085	1.090	1.094	1.096	1.104	1.113
48		1.045	1.047	1.048	1.050	1.052	1.054	1.056	1.057	1.059	1.063	1.067	1.070	1.072	1.074	1.076	1.081	1.087	1.090	1.092	1.099	1.109
50		1.043	1.045	1.046	1.048	1.050	1.052	1.053	1.055	1.057	1.060	1.064	1.068	1.069	1.071	1.074	1.078	1.083	1.087	1.088	1.095	1.104
52		1.041	1.043	1.045	1.046	1.048	1.050	1.051	1.053	1.055	1.058	1.061	1.065	1.066	1.068	1.072	1.075	1.080	1.083	1.085	1.092	1.100
54		1.040	1.041	1.043	1.045	1.046	1.048	1.049	1.051	1.053	1.056	1.059	1.062	1.064	1.066	1.069	1.072	1.077	1.080	1.082	1.088	1.096
56		1.038	1.040	1.041	1.043	1.045	1.046	1.048	1.049	1.051	1.054	1.057	1.060	1.062	1.063	1.066	1.070	1.074	1.077	1.079	1.085	1.092
58		1.037	1.039	1.040	1.041	1.043	1.045	1.046	1.048	1.049	1.052	1.055	1.058	1.060	1.061	1.064	1.067	1.072	1.075	1.076	1.082	1.090
60		1.036	1.037	1.039	1.040	1.042	1.043	1.045	1.046	1.047	1.050	1.053	1.056	1.058	1.059	1.062	1.065	1.069	1.072	1.074	1.080	1.087
63		1.034	1.035	1.037	1.039	1.040	1.041	1.042	1.044	1.045	1.048	1.051	1.054	1.055	1.056	1.059	1.062	1.066	1.069	1.070	1.076	1.083
66		1.033	1.034	1.035	1.036	1.038	1.039	1.040	1.042	1.043	1.046	1.048	1.051	1.052	1.054	1.056	1.059	1.063	1.066	1.067	1.072	1.079
69		1.031	1.032	1.034	1.035	1.036	1.037	1.039	1.040	1.041	1.044	1.046	1.048	1.050	1.051	1.054	1.056	1.060	1.063	1.064	1.069	1.076
72		1.030	1.031	1.032	1.033	1.035	1.036	1.037	1.038	1.040	1.042	1.044	1.047	1.048	1.049	1.052	1.054	1.058	1.060	1.061	1.066	1.072
75		1.029	1.030	1.031	1.032	1.033	1.034	1.036	1.037	1.038	1.040	1.043	1.045	1.046	1.047	1.050	1.052	1.055	1.058	1.059	1.064	1.069
78		1.028	1.029	1.030	1.031	1.032	1.033	1.034	1.035	1.037	1.039	1.041	1.043	1.044	1.045	1.048	1.050	1.053	1.056	1.057	1.061	1.067
81		1.027	1.028	1.029	1.030	1.031	1.032	1.033	1.034	1.035	1.037	1.039	1.042	1.043	1.044	1.046	1.048	1.051	1.053	1.055	1.059	1.064
84		1.026	1.027	1.028	1.029	1.030	1.031	1.032	1.033	1.034	1.036	1.038	1.040	1.041	1.042	1.044	1.046	1.050	1.052	1.053	1.057	1.062
15	$\frac{\bar{h}}{t_S}$	.6602	.6797	.7006	.7230	.7466	.7717	.7982	.8259	.8549	.9169	.9838	1.056	1.093	1.132	1.213	1.299	1.435	1.531	1.581	1.789	2.070
16		.6513	.6698	.6897	.7109	.7333	.7571	.7822	.8085	.8361	.8950	.9586	1.027	1.063	1.100	1.177	1.259	1.389	1.480	1.528	1.727	1.996
17		.6435	.6610	.6798	.7000	.7213	.7440	.7678	.7929	.8192	.8752	.9359	1.001	1.035	1.071	1.144	1.222	1.347	1.434	1.480	1.671	1.929
18		.6363	.6530	.6710	.6902	.7106	.7321	.7549	.7788	.8039	.8574	.9154	.9775	1.010	1.044	1.115	1.189	1.309	1.393	1.436	1.619	1.867
19		.6299	.6459	.6630	.6813	.7007	.7214	.7431	.7660	.7899	.8412	.8966	.9562	.9876	1.020	1.088	1.159	1.274	1.354	1.396	1.572	1.811
20		.6240	.6393	.6557	.6732	.6918	.7115	.7324	.7543	.7773	.8264	.8795	.9368	.9668	.9979	1.063	1.132	1.242	1.319	1.360	1.529	1.759
21		.6186	.6333	.6490	.6658	.6836	.7026	.7226	.7436	.7656	.8127	.8638	.9188	.9477	.9775	1.040	1.106	1.212	1.287	1.326	1.489	1.711
22		.6138	.6278	.6429	.6590	.6761	.6944	.7136	.7337	.7549	.8003	.8494	.9023	.9301	.9588	1.019	1.083	1.185	1.257	1.294	1.452	1.666
23		.6092	.6227	.6372	.6528	.6693	.6868	.7052	.7247	.7451	.7888	.8360	.8870	.9139	.9416	.9997	1.061	1.160	1.229	1.265	1.418	1.625
24		.6051	.6180	.6320	.6470	.6629	.6797	.6975	.7163	.7359	.7780	.8237	.8729	.8988	.9256	.9816	1.041	1.136	1.204	1.239	1.386	1.586
25		.6011	.6137	.6271	.6416	.6569	.6732	.6904	.7085	.7274	.7681	.8122	.8597	.8848	.9106	.9648	1.022	1.114	1.180	1.213	1.356	1.551
26		.5976	.6098	.6227	.6366	.6514	.6671	.6838	.7012	.7196	.7589	.8015	.8475	.8717	.8968	.9493	1.005	1.094	1.157	1.190	1.328	1.517
27		.5942	.6059	.6185	.6320	.6463	.6615	.6776	.6945	.7123	.7503	.7915	.8360	.8595	.8837	.9346	.9885	1.075	1.136	1.168	1.302	1.486
28		.5911	.6024	.6146	.6276	.6415	.6562	.6718	.6882	.7053	.7422	.7822	.8253	.8481	.8716	.9209	.9731	1.057	1.117	1.147	1.278	1.456
29		.5881	.5992	.6109	.6236	.6370	.6513	.6664	.6823	.6989	.7346	.7734	.8153	.8374	.8602	.9080	.9585	1.040	1.098	1.128	1.255	1.428
30		.5853	.5961	.6075	.6198	.6328	.6467	.6612	.6766	.6928	.7276	.7652	.8058	.8273	.8495	.8959	.9452	1.025	1.081	1.110	1.233	1.401
31		.5828	.5932	.6043	.6162	.6289	.6423	.6565	.6714	.6872	.7208	.7574	.7969	.8178	.8393	.8845	.9325	1.010	1.064	1.093	1.212	1.376
32		.5804	.5905	.6012	.6128	.6251	.6381	.6520	.6665	.6818	.7145	.7501	.7885	.8088	.8298	.8742	.9204	.9954	1.049	1.076	1.193	1.353
33		.5781	.5879	.5984	.6096	.6216	.6343	.6477	.6619	.6767	.7085	.7432	.7806	.8003	.8207	.8636	.9090	.9821	1.034	1.061	1.175	1.331
34		.5759	.5855	.5957	.6066	.6183	.6306	.6437	.6574	.6719	.7029	.7367	.7731	.7923	.8122	.8539	.8983	.9696	1.020	1.046	1.157	1.309
35		.5738	.5831	.5931	.6038	.6151	.6271	.6398	.6532	.6673	.6976	.7304	.7660	.7847	.8041	.8447	.8880	.9575	1.007	1.032	1.141	1.289
36		.5720	.5810	.5907	.6011	.6121	.6238	.6363	.6493	.6631	.6925	.7346	.7592	.7775	.7965	.8361	.8783	.9460	.9943	1.019	1.125	1.270

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TABLE 2.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.25;\ \frac{b_A}{t_W} = 20.3;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.75;\ \frac{p}{t_S} = 5.00\right)$ - Concluded

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
37	$\frac{h}{t_S}$	.5701	.5789	.5883	.5985	.6093	.6207	.6328	.6456	.6589	.6877	.7190	.7528	.7706	.7891	.8279	.8691	.9353	.9823	1.007	1.110	1.252
38		.5684	.5770	.5862	.5960	.6065	.6177	.6296	.6420	.6551	.6832	.7137	.7467	.7641	.7821	.8200	.8602	.9249	.9709	.9947	1.096	1.234
39		.5667	.5751	.5841	.5937	.6040	.6149	.6264	.6386	.6513	.6788	.7086	.7409	.7579	.7755	.8125	.8518	.9151	.9600	.9834	1.082	1.218
40		.5651	.5733	.5821	.5915	.6016	.6122	.6235	.6354	.6478	.6746	.7038	.7353	.7520	.7692	.8053	.8438	.9057	.9497	.9725	1.069	1.202
42		.5622	.5700	.5784	.5874	.5970	.6071	.6180	.6293	.6412	.6669	.6948	.7249	.7409	.7573	.7920	.8288	.8881	.9302	.9521	1.045	1.172
44		.5595	.5670	.5750	.5836	.5928	.6025	.6129	.6238	.6352	.6598	.6865	.7154	.7307	.7466	.7798	.8151	.8719	.9124	.9335	1.023	1.145
46		.5570	.5642	.5719	.5802	.5890	.5983	.6083	.6187	.6297	.6533	.6790	.7067	.7214	.7366	.7685	.8025	.8571	.8961	.9162	1.002	1.120
48		.5547	.5616	.5691	.5770	.5854	.5944	.6040	.6140	.6246	.6472	.6720	.6987	.7128	.7274	.7581	.7908	.8435	.8809	.9003	.9828	1.096
50		.5527	.5593	.5664	.5741	.5822	.5909	.6000	.6097	.6198	.6417	.6655	.6912	.7048	.7189	.7485	.7800	.8308	.8669	.8856	.9652	1.075
52		.5507	.5571	.5640	.5713	.5792	.5876	.5964	.6057	.6155	.6365	.6595	.6843	.6974	.7110	.7398	.7700	.8190	.8539	.8720	.9489	1.055
54		.5489	.5551	.5617	.5688	.5764	.5844	.5930	.6020	.6114	.6318	.6539	.6779	.6905	.7037	.7313	.7607	.8080	.8417	.8593	.9336	1.036
56		.5472	.5532	.5596	.5670	.5738	.5816	.5898	.5985	.6076	.6273	.6487	.6719	.6842	.6968	.7236	.7520	.7978	.8304	.8474	.9193	1.018
58		.5456	.5514	.5576	.5643	.5713	.5789	.5868	.5953	.6041	.6231	.6438	.6663	.6782	.6905	.7163	.7438	.7882	.8198	.8362	.9060	1.002
60		.5442	.5498	.5558	.5622	.5690	.5764	.5841	.5922	.6008	.6192	.6393	.6611	.6725	.6845	.7095	.7362	.7792	.8099	.8258	.8934	.9866
63		.5421	.5475	.5532	.5593	.5659	.5728	.5802	.5880	.5962	.6138	.6330	.6538	.6648	.6761	.7001	.7256	.7667	.7961	.8113	.8760	.9653
66		.5403	.5454	.5509	.5567	.5630	.5697	.5767	.5841	.5920	.6089	.6272	.6472	.6576	.6685	.6915	.7159	.7553	.7834	.7980	.8600	.9456
69		.5386	.5435	.5487	.5544	.5604	.5667	.5735	.5807	.5882	.6043	.6219	.6410	.6511	.6616	.6836	.7071	.7449	.7718	.7859	.8454	.9276
72		.5370	.5417	.5468	.5522	.5579	.5640	.5705	.5774	.5846	.6002	.6170	.6354	.6451	.6552	.6763	.6988	.7352	.7612	.7746	.8319	.9110
75		.5356	.5401	.5449	.5501	.5557	.5616	.5678	.5744	.5814	.5963	.6126	.6302	.6396	.6492	.6696	.6913	.7263	.7513	.7643	.8194	.8956
78		.5342	.5386	.5433	.5483	.5536	.5594	.5653	.5717	.5783	.5927	.6084	.6254	.6344	.6438	.6634	.6843	.7180	.7421	.7546	.8079	.8814
81		.5330	.5372	.5417	.5465	.5517	.5572	.5630	.5691	.5755	.5894	.6046	.6210	.6297	.6386	.6576	.6777	.7104	.7336	.7457	.7971	.8681
84		.5319	.5359	.5403	.5449	.5499	.5552	.5608	.5667	.5729	.5864	.6010	.6168	.6252	.6339	.6522	.6717	.7032	.7257	.7374	.7870	.8557
15	$\frac{\rho}{t_S}$	.6021	.6574	.7159	.7773	.8415	.9081	.9768	1.048	1.120	1.271	1.429	1.589	1.672	1.756	1.927	2.102	2.371	2.554	2.647	3.025	3.510
16		.5901	.6438	.7006	.7605	.8230	.8878	.9549	1.024	1.095	1.242	1.397	1.554	1.635	1.718	1.885	2.057	2.321	2.502	2.593	2.965	3.442
17		.5791	.6313	.6866	.7449	.8058	.8691	.9346	1.002	1.072	1.215	1.367	1.521	1.601	1.681	1.846	2.013	2.275	2.452	2.542	2.908	3.379
18		.5689	.6197	.6735	.7304	.7898	.8516	.9156	.9817	1.050	1.191	1.339	1.490	1.568	1.647	1.809	1.975	2.230	2.405	2.493	2.854	3.318
19		.5593	.6088	.6614	.7168	.7749	.8353	.8979	.9625	1.029	1.167	1.313	1.461	1.537	1.615	1.774	1.937	2.189	2.360	2.447	2.803	3.261
20		.5506	.5988	.6500	.7042	.7609	.8201	.8813	.9446	1.010	1.145	1.288	1.433	1.508	1.585	1.742	1.902	2.149	2.318	2.404	2.754	3.206
21		.5424	.5894	.6394	.6923	.7479	.8057	.8657	.9277	.9916	1.124	1.265	1.408	1.482	1.557	1.710	1.868	2.112	2.278	2.363	2.708	3.154
22		.5347	.5805	.6295	.6812	.7356	.7922	.8510	.9118	.9745	1.105	1.243	1.383	1.456	1.530	1.681	1.836	2.076	2.240	2.324	2.664	3.105
23		.5274	.5722	.6201	.6707	.7240	.7795	.8372	.8968	.9583	1.086	1.222	1.360	1.431	1.504	1.653	1.806	2.042	2.204	2.287	2.622	3.057
24		.5206	.5642	.6112	.6609	.7130	.7675	.8240	.8826	.9430	1.069	1.202	1.338	1.408	1.480	1.627	1.777	2.010	2.170	2.251	2.582	3.012
25		.5142	.5571	.6030	.6515	.7027	.7562	.8117	.8692	.9285	1.052	1.183	1.317	1.386	1.457	1.601	1.750	1.980	2.137	2.217	2.544	2.968
26		.5081	.5500	.5950	.6427	.6929	.7453	.7998	.8563	.9147	1.036	1.165	1.297	1.365	1.435	1.577	1.724	1.950	2.106	2.185	2.508	2.927
27		.5024	.5435	.5875	.6343	.6836	.7351	.7887	.8443	.9016	1.021	1.148	1.278	1.345	1.414	1.554	1.698	1.922	2.076	2.154	2.473	2.887
28		.4970	.5372	.5804	.6263	.6747	.7254	.7780	.8327	.8892	1.007	1.132	1.260	1.326	1.394	1.532	1.675	1.895	2.047	2.124	2.439	2.848
29		.4919	.5312	.5737	.6187	.6663	.7161	.7679	.8217	.8773	.9933	1.117	1.243	1.308	1.375	1.511	1.652	1.870	2.019	2.095	2.405	2.811
30		.4870	.5256	.5672	.6115	.6583	.7071	.7583	.8112	.8658	.9801	1.102	1.226	1.291	1.356	1.491	1.630	1.845	1.993	2.068	2.376	2.776
31		.4823	.5202	.5611	.6046	.6506	.6988	.7490	.8011	.8550	.9677	1.088	1.210	1.274	1.339	1.472	1.609	1.821	1.967	2.041	2.350	2.742
32		.4778	.5150	.5553	.5980	.6432	.6907	.7401	.7914	.8446	.9554	1.074	1.195	1.258	1.322	1.453	1.588	1.798	1.943	2.016	2.317	2.709
33		.4736	.5101	.5497	.5917	.6363	.6829	.7316	.7822	.8346	.9442	1.061	1.180	1.242	1.305	1.435	1.569	1.776	1.919	1.992	2.289	2.677
34		.4696	.5054	.5443	.5857	.6295	.6755	.7235	.7734	.8250	.9331	1.048	1.166	1.227	1.290	1.418	1.550	1.755	1.896	1.968	2.263	2.646
35		.4657	.5010	.5392	.5800	.6231	.6684	.7157	.7649	.8158	.9225	1.036	1.152	1.213	1.276	1.401	1.532	1.735	1.874	1.945	2.237	2.617
36		.4619	.4967	.5343	.5744	.6169	.6615	.7082	.7567	.8069	.9122	1.024	1.140	1.199	1.260	1.386	1.515	1.715	1.853	1.924	2.212	2.588
37		.4583	.4925	.5296	.5691	.6109	.6550	.7009	.7488	.7984	.9023	1.013	1.127	1.186	1.246	1.370	1.498	1.696	1.833	1.902	2.188	2.560
38		.4549	.4886	.5250	.5640	.6053	.6486	.6940	.7413	.7902	.8928	1.002	1.115	1.173	1.233	1.355	1.482	1.678	1.813	1.882	2.164	2.533
39		.4517	.4847	.5207	.5590	.5997	.6426	.6873	.7340	.7822	.8836	.9919	1.103	1.161	1.220	1.341	1.466	1.660	1.794	1.862	2.142	2.507
40		.4485	.4811	.5165	.5543	.5944	.6365	.6809	.7269	.7746	.8748	.9818	1.092	1.149	1.207	1.327	1.451	1.643	1.775	1.843	2.120	2.482
42		.4425	.4742	.5085	.5453	.5844	.6256	.6686	.7135	.7601	.8579	.9625	1.070	1.126	1.183	1.300	1.422	1.610	1.740	1.806	2.078	2.433
44		.4370	.4677	.5011	.5369	.5750	.6152	.6572	.7010	.7466	.8422	.9445	1.050	1.105	1.161	1.276	1.394	1.579	1.707	1.772	2.039	2.388
46		.4318	.4617	.4943	.5291	.5662	.6054	.6465	.6893	.7338	.8274	.9276	1.031	1.083	1.139	1.252	1.369	1.550	1.675	1.739	2.002	2.345
48		.4271	.4562	.4878	.5218	.5581	.5961	.6364	.6783	.7219	.8137	.9117	1.013	1.065	1.119	1.230	1.344	1.523	1.646	1.708	1.966	2.304
50		.4226	.4508	.4817	.5149	.5504	.5877	.6270	.6680	.7107	.8004	.8967	.9958	1.048	1.100	1.209	1.322	1.497	1.618	1.679	1.933	2.265
52		.4184	.4459	.4761	.5081	.5431	.5796	.6180	.6582	.7000	.7881	.8825	.9798	1.031	1.083	1.189	1.300	1.472	1.591	1.652	1.901	2.228
54		.4144	.4413	.4707	.5024	.5362	.5720	.6096	.6490	.6900	.7763	.8690	.9646	1.015	1.066	1.171	1.279	1.449	1.566	1.625	1.871	2.193
56		.4106	.4369	.4657	.4960	.5297	.5648	.6017	.6402	.6804	.7652	.8563	.9501	.9992	1.049	1.153	1.260	1.427	1.542	1.600	1.842	2.161
58		.4072	.4328	.4609	.4912	.5236	.5580	.5941	.6319	.6714	.7546	.8441	.9364	.9847	1.034	1.136	1.241	1.406	1.519	1.577	1.815	2.128
60		.4038	.4289	.4563	.4860	.5178	.5514	.5869	.6240	.6628	.7446	.8325	.9233	.9709	1.019	1.119	1.223	1.385	1.497	1.554	1.789	2.097
63		.3992	.4234	.4500	.4788	.5096	.5424	.5768	.6130	.6506	.7304	.8162	.9049	.9513	.9987	1.097	1.198	1.358	1.468	1.522	1.752	2.054
66		.3949	.4183	.4441	.4721	.5020	.5338	.5674	.6026	.6394	.7171	.8009	.8876	.9330	.9794	1.076	1.174	1.329	1.436	1.491	1.717	2.013
69		.3909	.4136	.4387	.4658	.4948	.5259	.5586	.5929	.6288	.7048	.7867	.8714	.9158	.9612	1.055	1.152	1.304	1.409	1.463	1.684	1.975
72		.3872	.4093	.4335	.4599	.4883	.5185	.5504	.5839	.6189	.6931	.7732	.8562	.8997	.9441	1.036	1.131	1.280	1.383	1.436	1.653	1.939
75		.3837	.4052	.4288	.4545	.4822	.5115	.5427	.5755	.6096	.6822	.7608	.8419	.8845	.9281	1.018	1.111	1.258	1.359	1.411	1.624	1.905
78		.3805	.4013	.4243	.4494	.4763	.5050	.5354	.5674	.6009	.6719	.7487	.8283	.8701	.9129	1.001	1.093	1.236	1.336	1.387	1.596	1.872
81		.3775	.3977	.4201	.4445	.4709	.4989	.5286	.5599	.5926	.6622	.7374	.8155	.8565	.8985	.9851	1.075	1.216	1.314	1.364	1.570	1.841
84		.3746	.3944	.4162	.4400	.4657	.4931	.5222	.5528	.5849	.6530	.7268	.8035	.8437	.8849	.9700	1.059	1.197	1.293	1.342	1.545	1.812

NACA

TABLE 3.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.31;\ \frac{b_A}{t_W} = 16.3;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.69;\ \frac{p}{t_S} = 4.91\right)$

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
15	$\frac{\bar{t}}{t_S}$	1.220	1.229	1.238	1.247	1.256	1.265	1.274	1.283	1.292	1.309	1.327	1.345	1.354	1.363	1.381	1.399	1.426	1.444	1.453	1.489	1.534
16		1.206	1.214	1.223	1.231	1.240	1.248	1.257	1.265	1.273	1.290	1.307	1.324	1.332	1.341	1.357	1.374	1.399	1.416	1.425	1.458	1.500
17		1.194	1.202	1.210	1.218	1.228	1.234	1.241	1.249	1.257	1.273	1.289	1.305	1.313	1.321	1.336	1.352	1.376	1.392	1.400	1.431	1.471
18		1.183	1.191	1.198	1.206	1.213	1.221	1.228	1.236	1.243	1.258	1.273	1.288	1.295	1.303	1.318	1.333	1.355	1.370	1.377	1.407	1.445
19		1.174	1.181	1.188	1.195	1.202	1.209	1.216	1.223	1.230	1.244	1.258	1.273	1.280	1.287	1.301	1.315	1.336	1.351	1.358	1.386	1.421
20		1.165	1.172	1.178	1.185	1.192	1.199	1.205	1.212	1.219	1.232	1.246	1.259	1.266	1.272	1.286	1.299	1.320	1.333	1.340	1.367	1.400
21		1.157	1.163	1.170	1.176	1.183	1.189	1.195	1.202	1.208	1.221	1.234	1.247	1.253	1.259	1.272	1.285	1.304	1.317	1.324	1.349	1.381
22		1.150	1.156	1.162	1.168	1.174	1.180	1.187	1.193	1.199	1.211	1.223	1.235	1.242	1.248	1.260	1.272	1.291	1.303	1.309	1.333	1.364
23		1.143	1.149	1.155	1.161	1.167	1.173	1.178	1.184	1.190	1.202	1.214	1.225	1.231	1.237	1.249	1.260	1.278	1.290	1.295	1.319	1.348
24		1.137	1.143	1.149	1.154	1.160	1.165	1.171	1.177	1.182	1.193	1.205	1.216	1.221	1.227	1.238	1.249	1.266	1.277	1.283	1.306	1.334
25		1.132	1.137	1.143	1.148	1.153	1.159	1.164	1.170	1.175	1.186	1.196	1.207	1.213	1.218	1.229	1.239	1.256	1.266	1.272	1.293	1.320
26		1.127	1.132	1.137	1.142	1.148	1.153	1.158	1.163	1.168	1.179	1.189	1.199	1.204	1.210	1.220	1.230	1.246	1.256	1.261	1.282	1.308
27		1.122	1.127	1.132	1.137	1.142	1.147	1.152	1.157	1.162	1.172	1.182	1.192	1.197	1.202	1.212	1.222	1.237	1.247	1.252	1.272	1.296
28		1.118	1.123	1.127	1.132	1.137	1.142	1.147	1.151	1.156	1.166	1.175	1.185	1.190	1.195	1.204	1.214	1.228	1.238	1.243	1.262	1.286
29		1.114	1.118	1.123	1.128	1.132	1.137	1.142	1.146	1.151	1.160	1.169	1.179	1.183	1.188	1.197	1.206	1.220	1.230	1.234	1.253	1.276
30		1.110	1.114	1.119	1.123	1.128	1.132	1.137	1.141	1.146	1.155	1.164	1.173	1.177	1.182	1.191	1.200	1.213	1.222	1.226	1.244	1.267
31		1.106	1.111	1.115	1.119	1.124	1.128	1.132	1.137	1.141	1.150	1.158	1.167	1.171	1.176	1.184	1.193	1.206	1.215	1.219	1.236	1.258
32		1.103	1.107	1.111	1.116	1.120	1.124	1.128	1.132	1.137	1.145	1.153	1.162	1.166	1.170	1.179	1.187	1.200	1.208	1.212	1.229	1.250
33		1.100	1.104	1.108	1.112	1.116	1.120	1.124	1.128	1.133	1.141	1.149	1.157	1.161	1.165	1.173	1.181	1.194	1.202	1.206	1.222	1.243
34		1.097	1.101	1.105	1.109	1.113	1.117	1.121	1.125	1.129	1.137	1.144	1.152	1.156	1.160	1.168	1.176	1.188	1.196	1.200	1.216	1.235
35		1.094	1.098	1.102	1.106	1.110	1.113	1.117	1.121	1.125	1.133	1.140	1.148	1.152	1.156	1.163	1.171	1.183	1.190	1.194	1.210	1.229
36		1.092	1.095	1.099	1.103	1.107	1.110	1.114	1.118	1.122	1.129	1.136	1.144	1.147	1.151	1.159	1.166	1.178	1.185	1.189	1.204	1.222
37		1.089	1.093	1.096	1.100	1.103	1.107	1.111	1.115	1.118	1.126	1.133	1.140	1.144	1.147	1.155	1.162	1.173	1.180	1.184	1.198	1.216
38		1.087	1.090	1.094	1.097	1.101	1.104	1.108	1.112	1.115	1.122	1.129	1.136	1.140	1.143	1.150	1.158	1.168	1.175	1.179	1.193	1.211
39		1.085	1.088	1.091	1.095	1.098	1.102	1.105	1.109	1.112	1.119	1.126	1.133	1.136	1.140	1.147	1.154	1.164	1.171	1.174	1.188	1.205
40		1.082	1.086	1.089	1.093	1.096	1.099	1.103	1.106	1.109	1.116	1.123	1.129	1.133	1.136	1.143	1.150	1.160	1.166	1.170	1.183	1.200
42		1.079	1.082	1.085	1.088	1.091	1.095	1.098	1.101	1.104	1.111	1.117	1.123	1.127	1.130	1.136	1.143	1.152	1.159	1.162	1.175	1.191
44		1.075	1.078	1.081	1.084	1.087	1.090	1.093	1.096	1.099	1.106	1.112	1.118	1.121	1.124	1.130	1.136	1.145	1.159	1.154	1.167	1.182
46		1.072	1.075	1.078	1.080	1.083	1.086	1.089	1.092	1.095	1.101	1.107	1.113	1.116	1.118	1.124	1.130	1.139	1.145	1.148	1.159	1.174
48		1.069	1.072	1.074	1.077	1.080	1.083	1.086	1.088	1.091	1.097	1.102	1.108	1.111	1.114	1.119	1.125	1.133	1.139	1.142	1.153	1.167
50		1.066	1.069	1.071	1.074	1.077	1.079	1.082	1.085	1.088	1.093	1.098	1.104	1.106	1.109	1.114	1.120	1.128	1.133	1.136	1.147	1.160
52		1.063	1.066	1.069	1.071	1.074	1.076	1.079	1.082	1.084	1.089	1.094	1.100	1.102	1.105	1.110	1.115	1.123	1.128	1.131	1.141	1.154
54		1.061	1.064	1.066	1.069	1.071	1.074	1.076	1.079	1.081	1.086	1.091	1.096	1.098	1.101	1.106	1.111	1.118	1.123	1.126	1.136	1.148
56		1.059	1.061	1.064	1.066	1.069	1.071	1.073	1.076	1.078	1.083	1.088	1.092	1.095	1.097	1.102	1.107	1.114	1.119	1.121	1.131	1.143
58		1.057	1.059	1.062	1.064	1.066	1.068	1.071	1.073	1.075	1.080	1.085	1.089	1.091	1.094	1.099	1.103	1.110	1.115	1.117	1.126	1.138
60		1.055	1.057	1.059	1.062	1.064	1.066	1.068	1.071	1.073	1.077	1.082	1.086	1.089	1.091	1.095	1.100	1.107	1.111	1.113	1.122	1.133
63		1.052	1.055	1.057	1.059	1.061	1.063	1.065	1.067	1.069	1.074	1.078	1.082	1.084	1.086	1.091	1.095	1.101	1.106	1.108	1.116	1.127
66		1.050	1.052	1.054	1.056	1.058	1.060	1.062	1.064	1.066	1.070	1.074	1.078	1.081	1.083	1.087	1.091	1.097	1.101	1.103	1.111	1.121
69		1.048	1.050	1.052	1.054	1.056	1.058	1.060	1.061	1.063	1.067	1.071	1.075	1.077	1.079	1.083	1.087	1.093	1.097	1.098	1.106	1.116
72		1.046	1.048	1.050	1.051	1.053	1.055	1.057	1.059	1.061	1.065	1.068	1.072	1.074	1.076	1.079	1.083	1.089	1.093	1.094	1.102	1.111
75		1.044	1.046	1.048	1.049	1.051	1.053	1.055	1.057	1.058	1.062	1.065	1.069	1.071	1.073	1.076	1.080	1.085	1.089	1.091	1.098	1.107
78		1.042	1.044	1.048	1.047	1.049	1.051	1.053	1.054	1.056	1.060	1.063	1.066	1.068	1.070	1.073	1.077	1.082	1.085	1.087	1.094	1.103
81		1.041	1.042	1.044	1.046	1.047	1.049	1.051	1.052	1.054	1.057	1.061	1.064	1.066	1.067	1.071	1.074	1.079	1.082	1.084	1.091	1.099
84		1.039	1.041	1.042	1.044	1.046	1.047	1.049	1.051	1.052	1.055	1.058	1.062	1.063	1.065	1.068	1.071	1.076	1.079	1.081	1.087	1.095
15	$\frac{\bar{h}}{t_S}$	.7645	.7980	.8337	.8719	.9124	.9551	1.000	1.047	1.096	1.201	1.313	1.433	1.496	1.561	1.696	1.837	2.061	2.218	2.299	2.636	3.088
16		.7509	.7826	.8167	.8530	.8916	.9323	.9751	1.020	1.067	1.167	1.274	1.389	1.449	1.511	1.641	1.776	1.991	2.142	2.220	2.544	2.980
17		.7385	.7688	.8013	.8360	.8733	.9117	.9526	.9955	1.041	1.136	1.239	1.349	1.407	1.466	1.590	1.720	1.927	2.073	2.147	2.461	2.881
18		.7273	.7562	.7973	.8205	.8557	.8930	.9321	.9732	1.016	1.108	1.207	1.313	1.368	1.425	1.544	1.670	1.869	2.009	2.081	2.383	2.789
19		.7171	.7448	.7746	.8064	.8401	.8766	.9134	.9529	.9943	1.082	1.177	1.279	1.332	1.387	1.502	1.623	1.815	1.950	2.020	2.312	2.705
20		.7078	.7344	.7629	.7934	.8259	.8601	.8963	.9342	.9740	1.059	1.150	1.248	1.299	1.352	1.463	1.579	1.765	1.896	1.963	2.245	2.626
21		.6992	.7248	.7522	.7816	.8127	.8457	.8805	.9170	.9553	1.037	1.125	1.220	1.269	1.320	1.427	1.540	1.719	1.845	1.910	2.184	2.553
22		.6914	.7160	.7424	.7706	.8006	.8324	.8659	.9011	.9380	1.017	1.102	1.193	1.241	1.290	1.394	1.502	1.676	1.798	1.861	2.126	2.484
23		.6841	.7078	.7333	.7604	.7894	.8201	.8524	.8864	.9220	.9980	1.080	1.168	1.215	1.263	1.363	1.468	1.638	1.754	1.816	2.073	2.420
24		.6773	.7002	.7248	.7510	.7790	.8086	.8399	.8727	.9071	.9806	1.060	1.146	1.190	1.237	1.334	1.435	1.599	1.714	1.773	2.023	2.360
25		.6710	.6932	.7169	.7423	.7693	.7980	.8282	.8600	.8933	.9644	1.041	1.124	1.168	1.213	1.306	1.405	1.564	1.675	1.733	1.976	2.304
26		.6652	.6866	.7096	.7342	.7603	.7880	.8173	.8481	.8803	.9493	1.024	1.104	1.146	1.190	1.281	1.377	1.531	1.639	1.695	1.931	2.251
27		.6598	.6804	.7027	.7266	.7519	.7787	.8071	.8369	.8682	.9351	1.008	1.085	1.126	1.169	1.257	1.350	1.500	1.605	1.660	1.889	2.201
28		.6547	.6747	.6963	.7194	.7440	.7700	.7975	.8264	.8568	.9217	.9921	1.068	1.107	1.149	1.235	1.326	1.471	1.573	1.627	1.850	2.154
29		.6499	.6693	.6903	.7127	.7366	.7618	.7885	.8167	.8461	.9091	.9775	1.051	1.090	1.130	1.214	1.302	1.443	1.543	1.595	1.813	2.109
30		.6454	.6642	.6846	.7064	.7296	.7541	.7801	.8074	.8360	.8974	.9639	1.035	1.073	1.112	1.194	1.280	1.417	1.515	1.565	1.778	2.067
31		.6412	.6595	.6793	.7004	.7230	.7469	.7721	.7987	.8265	.8862	.9509	1.021	1.057	1.095	1.175	1.259	1.393	1.488	1.537	1.744	2.026
32		.6371	.6550	.6742	.6948	.7168	.7400	.7646	.7905	.8176	.8756	.9387	1.007	1.042	1.079	1.157	1.239	1.370	1.462	1.510	1.713	1.988
33		.6334	.6507	.6695	.6895	.7109	.7335	.7575	.7827	.8091	.8656	.9272	.9934	1.028	1.064	1.140	1.220	1.348	1.438	1.485	1.683	1.952
34		.6298	.6467	.6649	.6845	.7053	.7274	.7507	.7752	.8010	.8562	.9162	.9808	1.015	1.050	1.124	1.202	1.327	1.415	1.461	1.654	1.917
35		.6264	.6429	.6607	.6797	.7000	.7215	.7443	.7682	.7934	.8473	.9058	.9688	1.002	1.036	1.108	1.184	1.307	1.393	1.438	1.627	1.885
36		.6232	.6393	.6566	.6752	.6950	.7160	.7382	.7616	.7861	.8387	.8958	.9574	.9891	1.023	1.094	1.168	1.288	1.372	1.416	1.601	1.853

NACA

TABLE 3.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.31;\ \frac{b_A}{t_W} = 16.3;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.69;\ \frac{p}{t_S} = 4.91\right)$ - Concluded

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
37	$\frac{h}{t_S}$	.6201	.6358	.6527	.6709	.6900	.7107	.7324	.7552	.7792	.8305	.8864	.9466	.9783	1.011	1.080	1.153	1.289	1.352	1.395	1.576	1.823
38		.6172	.6325	.6491	.6668	.6857	.7057	.7269	.7492	.7726	.8228	.8774	.9362	.9672	.9993	1.067	1.138	1.252	1.333	1.375	1.552	1.794
39		.6145	.6294	.6456	.6629	.6813	.7009	.7216	.7434	.7663	.8154	.8688	.9264	.9567	.9881	1.054	1.124	1.235	1.315	1.356	1.530	1.767
40		.6118	.6264	.6423	.6591	.6772	.6963	.7166	.7379	.7603	.8084	.8606	.9169	.9466	.9773	1.042	1.110	1.220	1.297	1.338	1.508	1.740
42		.6069	.6209	.6360	.6522	.6695	.6878	.7072	.7276	.7491	.7951	.8452	.8993	.9277	.9572	1.019	1.085	1.190	1.265	1.303	1.467	1.691
44		.6023	.6158	.6303	.6458	.6624	.6800	.6986	.7182	.7388	.7830	.8311	.8830	.9104	.9387	.9983	1.061	1.163	1.227	1.272	1.429	1.645
46		.5982	.6111	.6250	.6400	.6558	.6728	.6906	.7095	.7293	.7718	.8181	.8680	.8944	.9217	.9790	1.040	1.137	1.207	1.243	1.394	1.602
48		.5943	.6068	.6202	.6345	.6498	.6661	.6834	.7015	.7206	.7615	.8060	.8542	.8796	.9059	.9612	1.020	1.114	1.181	1.215	1.362	1.563
50		.5908	.6028	.6157	.6295	.6443	.6600	.6765	.6940	.7124	.7519	.7949	.8414	.8659	.8912	.9446	1.001	1.092	1.157	1.190	1.332	1.526
52		.5875	.5991	.6115	.6248	.6391	.6543	.6703	.6871	.7049	.7430	.7845	.8294	.8531	.8776	.9292	.9838	1.072	1.134	1.167	1.304	1.492
54		.5845	.5956	.6077	.6205	.6343	.6489	.6644	.6807	.6979	.7347	.7749	.8183	.8412	.8649	.9148	.9676	1.053	1.113	1.145	1.278	1.460
56		.5816	.5924	.6040	.6165	.6298	.6439	.6589	.6747	.6913	.7270	.7659	.8079	.8301	.8530	.9014	.9526	1.035	1.094	1.124	1.253	1.430
58		.5790	.5894	.6006	.6127	.6256	.6393	.6538	.6691	.6852	.7198	.7574	.7981	.8198	.8419	.8888	.9384	1.019	1.075	1.105	1.230	1.402
60		.5766	.5866	.5975	.6092	.6217	.6360	.6490	.6639	.6794	.7129	.7495	.7890	.8099	.8315	.8770	.9251	1.003	1.058	1.087	1.209	1.376
63		.5730	.5826	.5931	.6043	.6162	.6289	.6424	.6565	.6714	.7035	.7385	.7763	.7962	.8169	.8605	.9066	.9811	1.034	1.062	1.178	1.339
66		.5699	.5791	.5891	.5998	.6112	.6234	.6362	.6498	.6641	.6949	.7284	.7646	.7838	.8036	.8454	.8897	.9612	1.012	1.039	1.151	1.305
69		.5669	.5758	.5854	.5957	.6066	.6183	.6306	.6437	.6574	.6869	.7191	.7539	.7723	.7914	.8315	.8741	.9428	.9918	1.017	1.125	1.273
72		.5643	.5728	.5820	.5919	.6024	.6136	.6255	.6380	.6513	.6796	.7106	.7441	.7618	.7801	.8188	.8597	.9259	.9730	.9975	1.101	1.244
75		.5619	.5700	.5789	.5884	.5985	.6093	.6208	.6328	.6456	.6728	.7027	.7349	.7520	.7697	.8069	.8464	.9102	.9556	.9792	1.079	1.217
78		.5595	.5674	.5760	.5851	.5949	.6053	.6163	.6280	.6402	.6666	.6953	.7265	.7429	.7600	.7959	.8340	.8956	.9395	.9623	1.059	1.192
81		.5574	.5650	.5733	.5821	.5916	.6016	.6122	.6235	.6353	.6607	.6885	.7186	.7345	.7509	.7857	.8225	.8820	.9245	.9465	1.040	1.169
84		.5555	.5628	.5708	.5793	.5885	.5982	.6084	.6193	.6307	.6553	.6821	.7112	.7266	.7425	.7761	.8117	.8693	.9104	.9317	1.022	1.147
15	$\frac{p}{t_S}$	.7964	.8801	.9678	1.059	1.153	1.250	1.350	1.452	1.556	1.770	1.991	2.218	2.334	2.450	2.688	2.928	3.297	3.545	3.671	4.180	4.827
16		.7804	.8621	.9477	1.037	1.129	1.224	1.322	1.422	1.524	1.734	1.952	2.176	2.289	2.404	2.638	2.875	3.239	3.485	3.609	4.112	4.754
17		.7655	.8453	.9290	1.016	1.106	1.200	1.296	1.394	1.494	1.701	1.914	2.134	2.246	2.360	2.590	2.824	3.184	3.427	3.550	4.048	4.684
18		.7514	.8295	.9115	.9969	1.085	1.177	1.271	1.367	1.466	1.669	1.879	2.096	2.206	2.318	2.545	2.776	3.131	3.371	3.493	3.986	4.616
19		.7384	.8147	.8950	.9787	1.066	1.155	1.248	1.342	1.439	1.639	1.846	2.059	2.168	2.278	2.502	2.730	3.081	3.318	3.438	3.926	4.550
20		.7261	.8008	.8795	.9616	1.047	1.135	1.226	1.319	1.414	1.610	1.814	2.029	2.132	2.240	2.461	2.687	3.033	3.267	3.386	3.869	4.488
21		.7145	.7877	.8648	.9454	1.029	1.116	1.205	1.296	1.390	1.583	1.784	1.991	2.097	2.204	2.422	2.645	2.987	3.219	3.336	3.814	4.427
22		.7035	.7753	.8510	.9301	1.012	1.097	1.185	1.275	1.367	1.558	1.756	1.960	2.064	2.170	2.385	2.605	2.943	3.172	3.289	3.761	4.368
23		.6932	.7636	.8379	.9156	.9963	1.080	1.166	1.255	1.346	1.533	1.728	1.930	2.033	2.137	2.350	2.566	2.901	3.128	3.243	3.711	4.312
24		.6834	.7523	.8255	.9019	.9812	1.064	1.148	1.236	1.326	1.510	1.702	1.901	2.002	2.105	2.315	2.530	2.860	3.085	3.198	3.662	4.257
25		.6741	.7420	.8137	.8887	.9669	1.048	1.131	1.217	1.305	1.488	1.677	1.873	1.974	2.075	2.283	2.495	2.821	3.043	3.156	3.615	4.205
26		.6653	.7320	.8024	.8762	.9532	1.033	1.115	1.200	1.287	1.466	1.654	1.847	1.946	2.047	2.252	2.461	2.784	3.004	3.115	3.569	4.154
27		.6569	.7225	.7917	.8644	.9401	1.019	1.100	1.183	1.269	1.446	1.631	1.822	1.920	2.019	2.221	2.428	2.748	2.965	3.076	3.526	4.105
28		.6489	.7133	.7815	.8530	.9276	1.005	1.085	1.167	1.252	1.427	1.609	1.798	1.893	1.992	2.193	2.397	2.714	2.929	3.038	3.483	4.057
29		.6413	.7047	.7718	.8422	.9157	.9920	1.071	1.152	1.235	1.408	1.588	1.774	1.870	1.967	2.165	2.367	2.680	2.893	3.001	3.442	4.011
30		.6340	.6964	.7625	.8318	.9043	.9794	1.057	1.137	1.219	1.390	1.568	1.752	1.846	1.942	2.138	2.338	2.648	2.859	2.966	3.403	3.967
31		.6270	.6884	.7535	.8219	.8933	.9674	1.044	1.123	1.204	1.373	1.548	1.730	1.824	1.919	2.112	2.310	2.617	2.826	2.932	3.365	3.924
32		.6203	.6808	.7449	.8124	.8828	.9559	1.032	1.110	1.190	1.356	1.530	1.710	1.802	1.896	2.087	2.284	2.587	2.794	2.899	3.328	3.882
33		.6139	.6735	.7367	.8032	.8726	.9448	1.020	1.097	1.176	1.340	1.512	1.690	1.781	1.874	2.063	2.258	2.558	2.763	2.867	3.292	3.842
34		.6078	.6665	.7288	.7943	.8629	.9342	1.008	1.084	1.162	1.325	1.494	1.671	1.761	1.853	2.040	2.232	2.530	2.733	2.836	3.257	3.802
35		.6019	.6597	.7212	.7859	.8536	.9239	.9968	1.072	1.149	1.310	1.478	1.652	1.741	1.832	2.018	2.208	2.503	2.704	2.806	3.224	3.764
36		.5963	.6533	.7139	.7778	.8446	.9141	.9860	1.060	1.137	1.296	1.462	1.634	1.723	1.812	2.000	2.185	2.476	2.676	2.777	3.191	3.727
37		.5908	.6470	.7069	.7699	.8360	.9046	.9757	1.049	1.125	1.282	1.446	1.616	1.704	1.793	1.975	2.162	2.451	2.648	2.749	3.159	3.691
38		.5855	.6410	.7001	.7623	.8275	.8953	.9656	1.038	1.113	1.268	1.431	1.600	1.686	1.774	1.955	2.140	2.426	2.622	2.721	3.128	3.656
39		.5805	.6353	.6935	.7550	.8194	.8864	.9559	1.028	1.102	1.255	1.416	1.583	1.669	1.756	1.935	2.118	2.402	2.596	2.695	3.099	3.622
40		.5756	.6297	.6872	.7479	.8116	.8778	.9466	1.018	1.091	1.243	1.402	1.568	1.653	1.739	1.916	2.098	2.379	2.572	2.669	3.070	3.589
42		.5664	.6190	.6752	.7345	.7967	.8615	.9288	.9982	1.070	1.219	1.375	1.537	1.621	1.706	1.879	2.058	2.335	2.524	2.620	3.014	3.525
44		.5577	.6091	.6639	.7219	.7827	.8461	.9120	.9801	1.050	1.196	1.350	1.509	1.591	1.674	1.845	2.020	2.292	2.474	2.573	2.961	3.465
46		.5497	.5998	.6534	.7101	.7696	.8318	.8962	.9630	1.032	1.175	1.326	1.482	1.563	1.644	1.812	1.985	2.253	2.435	2.529	2.911	3.407
48		.5420	.5911	.6435	.6990	.7566	.8181	.8813	.9468	1.014	1.155	1.303	1.457	1.536	1.616	1.781	1.951	2.215	2.395	2.487	2.863	3.353
50		.5348	.5828	.6341	.6885	.7456	.8053	.8673	.9316	.9979	1.136	1.281	1.432	1.511	1.590	1.752	1.919	2.179	2.356	2.447	2.818	3.300
52		.5281	.5751	.6253	.6786	.7345	.7931	.8540	.9171	.9823	1.118	1.261	1.410	1.486	1.564	1.724	1.889	2.144	2.319	2.408	2.774	3.251
54		.5217	.5677	.6169	.6691	.7241	.7816	.8414	.9034	.9674	1.101	1.241	1.388	1.463	1.540	1.698	1.860	2.111	2.284	2.372	2.733	3.203
56		.5158	.5608	.6990	.6602	.7142	.7707	.8294	.8904	.9533	1.085	1.223	1.367	1.441	1.517	1.672	1.832	2.080	2.250	2.337	2.693	3.157
58		.5100	.5542	.6015	.6518	.7048	.7602	.8180	.8783	.9399	1.069	1.205	1.347	1.421	1.495	1.648	1.806	2.050	2.218	2.304	2.655	3.114
60		.5046	.5479	.5943	.6437	.6958	.7503	.8072	.8661	.9270	1.054	1.188	1.328	1.401	1.474	1.625	1.780	2.022	2.188	2.272	2.619	3.072
63		.4969	.5390	.5842	.6323	.6831	.7363	.7918	.8493	.9089	1.033	1.164	1.302	1.372	1.444	1.592	1.744	1.981	2.144	2.227	2.567	3.012
66		.4898	.5308	.5748	.6217	.6712	.7232	.7774	.8337	.8919	1.014	1.142	1.276	1.346	1.416	1.561	1.710	1.943	2.102	2.184	2.518	2.955
69		.4833	.5230	.5660	.6117	.6601	.7110	.7639	.8189	.8759	.9952	1.121	1.253	1.319	1.390	1.532	1.678	1.907	2.064	2.144	2.472	2.902
72		.4771	.5158	.5577	.6025	.6498	.6994	.7512	.8051	.8610	.9778	1.101	1.230	1.297	1.365	1.505	1.648	1.873	2.027	2.105	2.429	2.851
75		.4712	.5091	.5500	.5937	.6399	.6885	.7393	.7921	.8467	.9615	1.083	1.209	1.275	1.341	1.479	1.620	1.840	1.992	2.069	2.387	2.803
78		.4658	.5028	.5427	.5856	.6307	.6783	.7280	.7798	.8335	.9459	1.065	1.189	1.254	1.319	1.454	1.593	1.810	1.959	2.035	2.348	2.757
81		.4607	.4968	.5358	.5777	.6219	.6686	.7174	.7681	.8207	.9312	1.048	1.170	1.234	1.298	1.431	1.567	1.781	1.927	2.002	2.311	2.714
84		.4558	.4911	.5293	.5702	.6137	.6594	.7073	.7571	.8088	.9172	1.032	1.152	1.214	1.278	1.408	1.543	1.753	1.897	1.971	2.275	2.673

TABLE 4.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.40;\ \frac{b_A}{t_W} = 12.8;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.68;\ \frac{p}{t_S} = 4.90\right)$

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
15		1.285	1.300	1.315	1.330	1.345	1.360	1.374	1.389	1.404	1.434	1.464	1.494	1.509	1.524	1.554	1.583	1.628	1.658	1.673	1.733	1.807
16		1.267	1.281	1.295	1.309	1.323	1.337	1.351	1.365	1.379	1.407	1.435	1.463	1.477	1.491	1.519	1.547	1.589	1.617	1.631	1.687	1.757
17		1.251	1.265	1.278	1.291	1.304	1.317	1.330	1.344	1.357	1.383	1.409	1.436	1.449	1.462	1.488	1.515	1.554	1.581	1.594	1.647	1.712
18		1.237	1.250	1.262	1.275	1.287	1.300	1.312	1.324	1.337	1.362	1.387	1.412	1.424	1.436	1.461	1.486	1.524	1.548	1.561	1.611	1.673
19		1.225	1.237	1.248	1.260	1.272	1.284	1.296	1.307	1.319	1.343	1.366	1.390	1.402	1.413	1.437	1.461	1.496	1.520	1.531	1.579	1.637
20		1.214	1.225	1.236	1.247	1.258	1.270	1.281	1.292	1.303	1.326	1.348	1.370	1.382	1.393	1.415	1.438	1.471	1.494	1.505	1.550	1.606
21		1.203	1.214	1.225	1.235	1.246	1.257	1.267	1.278	1.289	1.310	1.331	1.353	1.363	1.374	1.395	1.417	1.449	1.470	1.481	1.523	1.577
22		1.194	1.204	1.215	1.225	1.235	1.245	1.255	1.266	1.276	1.296	1.316	1.337	1.347	1.357	1.377	1.398	1.428	1.449	1.459	1.500	1.551
23		1.186	1.196	1.205	1.215	1.225	1.234	1.244	1.254	1.264	1.283	1.303	1.322	1.332	1.342	1.361	1.381	1.410	1.429	1.439	1.478	1.527
24		1.178	1.187	1.197	1.206	1.215	1.225	1.234	1.243	1.253	1.271	1.290	1.309	1.318	1.327	1.346	1.365	1.393	1.411	1.421	1.458	1.505
25		1.171	1.180	1.189	1.198	1.207	1.216	1.225	1.234	1.243	1.261	1.278	1.296	1.305	1.314	1.332	1.350	1.377	1.395	1.404	1.440	1.484
26		1.164	1.173	1.182	1.190	1.199	1.207	1.216	1.225	1.233	1.251	1.268	1.285	1.294	1.302	1.319	1.337	1.362	1.380	1.388	1.423	1.466
27		1.158	1.167	1.175	1.183	1.191	1.200	1.208	1.216	1.225	1.241	1.258	1.274	1.283	1.291	1.308	1.324	1.349	1.366	1.374	1.407	1.449
28		1.153	1.161	1.169	1.177	1.185	1.193	1.201	1.209	1.217	1.233	1.249	1.265	1.273	1.281	1.297	1.313	1.337	1.353	1.361	1.393	1.433
29		1.147	1.155	1.163	1.171	1.178	1.186	1.194	1.201	1.209	1.225	1.240	1.256	1.263	1.271	1.286	1.302	1.325	1.340	1.348	1.379	1.418
30		1.142	1.150	1.157	1.165	1.172	1.180	1.187	1.195	1.202	1.217	1.232	1.247	1.254	1.262	1.277	1.292	1.314	1.329	1.337	1.366	1.404
31		1.138	1.145	1.152	1.160	1.167	1.174	1.181	1.184	1.196	1.210	1.225	1.239	1.246	1.253	1.268	1.282	1.304	1.318	1.326	1.355	1.391
32		1.134	1.141	1.148	1.155	1.162	1.169	1.176	1.183	1.190	1.204	1.218	1.232	1.239	1.246	1.260	1.274	1.295	1.309	1.316	1.344	1.379
33		1.130	1.136	1.143	1.150	1.157	1.163	1.170	1.177	1.184	1.197	1.211	1.225	1.231	1.238	1.252	1.265	1.286	1.299	1.306	1.333	1.367
34		1.126	1.132	1.139	1.145	1.152	1.159	1.165	1.172	1.178	1.192	1.205	1.218	1.224	1.231	1.244	1.257	1.277	1.290	1.297	1.323	1.356
35	$\frac{\bar{t}}{t_S}$	1.122	1.129	1.135	1.141	1.148	1.154	1.161	1.167	1.173	1.186	1.199	1.212	1.218	1.224	1.237	1.250	1.269	1.282	1.288	1.314	1.346
36		1.119	1.125	1.131	1.137	1.144	1.150	1.156	1.162	1.168	1.181	1.193	1.206	1.212	1.218	1.231	1.243	1.262	1.274	1.280	1.305	1.336
37		1.116	1.122	1.128	1.134	1.140	1.146	1.152	1.158	1.164	1.176	1.188	1.200	1.206	1.212	1.224	1.237	1.255	1.267	1.273	1.297	1.327
38		1.112	1.118	1.124	1.130	1.136	1.142	1.148	1.154	1.160	1.171	1.183	1.195	1.201	1.207	1.219	1.230	1.248	1.260	1.266	1.289	1.319
39		1.110	1.115	1.121	1.127	1.133	1.138	1.144	1.150	1.156	1.167	1.179	1.190	1.196	1.201	1.213	1.224	1.242	1.253	1.259	1.282	1.311
40		1.107	1.112	1.118	1.124	1.129	1.135	1.140	1.146	1.152	1.163	1.174	1.185	1.191	1.196	1.208	1.219	1.236	1.247	1.252	1.275	1.303
42		1.102	1.107	1.112	1.118	1.123	1.128	1.134	1.139	1.144	1.155	1.166	1.176	1.182	1.187	1.198	1.208	1.224	1.235	1.240	1.262	1.288
44		1.097	1.102	1.107	1.112	1.118	1.123	1.128	1.133	1.138	1.148	1.158	1.168	1.173	1.179	1.189	1.199	1.214	1.224	1.229	1.250	1.275
46		1.093	1.098	1.103	1.108	1.112	1.117	1.122	1.127	1.132	1.142	1.151	1.161	1.166	1.171	1.181	1.190	1.205	1.215	1.219	1.239	1.263
48		1.089	1.094	1.098	1.103	1.108	1.112	1.117	1.122	1.126	1.136	1.145	1.154	1.159	1.164	1.173	1.182	1.196	1.206	1.210	1.229	1.252
50		1.085	1.090	1.094	1.099	1.103	1.108	1.112	1.117	1.121	1.130	1.139	1.148	1.153	1.157	1.166	1.175	1.188	1.197	1.202	1.220	1.242
52		1.082	1.087	1.091	1.095	1.099	1.104	1.108	1.112	1.117	1.125	1.134	1.143	1.146	1.152	1.160	1.168	1.181	1.190	1.194	1.211	1.233
54		1.079	1.083	1.087	1.092	1.096	1.100	1.104	1.108	1.112	1.121	1.129	1.137	1.141	1.145	1.154	1.162	1.175	1.183	1.187	1.204	1.224
56		1.076	1.080	1.084	1.088	1.092	1.096	1.100	1.104	1.108	1.116	1.124	1.132	1.136	1.140	1.148	1.156	1.168	1.176	1.180	1.196	1.216
58		1.074	1.078	1.081	1.085	1.089	1.093	1.097	1.101	1.105	1.112	1.120	1.128	1.132	1.135	1.143	1.151	1.162	1.170	1.174	1.190	1.209
60		1.071	1.075	1.079	1.082	1.086	1.090	1.094	1.097	1.101	1.109	1.116	1.124	1.127	1.131	1.138	1.146	1.157	1.165	1.168	1.183	1.202
63		1.068	1.071	1.075	1.079	1.082	1.086	1.089	1.093	1.096	1.103	1.111	1.118	1.121	1.125	1.132	1.139	1.150	1.157	1.160	1.174	1.192
66		1.065	1.068	1.072	1.075	1.078	1.082	1.085	1.089	1.092	1.099	1.106	1.112	1.116	1.119	1.126	1.133	1.143	1.150	1.153	1.167	1.184
69		1.062	1.065	1.068	1.072	1.075	1.078	1.081	1.085	1.088	1.094	1.101	1.107	1.111	1.114	1.120	1.127	1.137	1.143	1.146	1.159	1.176
72		1.059	1.062	1.066	1.069	1.072	1.075	1.078	1.081	1.084	1.090	1.097	1.103	1.106	1.109	1.115	1.122	1.131	1.137	1.140	1.153	1.168
75		1.057	1.060	1.063	1.066	1.069	1.072	1.075	1.078	1.081	1.087	1.093	1.099	1.102	1.105	1.111	1.117	1.126	1.132	1.135	1.147	1.161
78		1.055	1.058	1.061	1.063	1.066	1.069	1.072	1.075	1.078	1.087	1.089	1.095	1.098	1.101	1.106	1.112	1.121	1.127	1.129	1.141	1.155
81		1.053	1.056	1.058	1.061	1.064	1.067	1.069	1.072	1.075	1.080	1.086	1.092	1.094	1.097	1.103	1.108	1.116	1.122	1.125	1.136	1.150
84		1.051	1.054	1.056	1.059	1.062	1.064	1.067	1.070	1.072	1.078	1.083	1.088	1.091	1.094	1.099	1.104	1.112	1.118	1.120	1.131	1.144
15		.9541	1.019	1.088	1.162	1.239	1.321	1.406	1.495	1.588	1.783	1.991	2.212	2.327	2.444	2.687	2.940	3.338	3.615	3.756	4.342	5.115
16		.9317	.9936	1.060	1.130	1.204	1.282	1.364	1.449	1.538	1.726	1.926	2.139	2.249	2.363	2.597	2.842	3.227	3.494	3.631	4.199	4.951
17		.9114	.9706	1.034	1.101	1.172	1.247	1.326	1.408	1.493	1.674	1.867	2.072	2.178	2.288	2.514	2.751	3.124	3.383	3.516	4.067	4.798
18		.8929	.9497	1.011	1.075	1.143	1.215	1.291	1.370	1.452	1.626	1.812	2.010	2.113	2.219	2.438	2.667	3.028	3.280	3.409	3.944	4.655
19		.8761	.9306	.9890	1.051	1.117	1.186	1.259	1.335	1.414	1.582	1.762	1.953	2.052	2.155	2.337	2.589	2.939	3.183	3.309	3.829	4.522
20		.8605	.9130	.9692	1.029	1.092	1.159	1.229	1.302	1.379	1.541	1.715	1.900	1.996	2.095	2.301	2.516	2.856	3.093	3.215	3.722	4.396
21		.8463	.8968	.9509	1.009	1.070	1.134	1.202	1.273	1.346	1.503	1.671	1.850	1.944	2.040	2.239	2.448	2.779	3.009	3.128	3.621	4.279
22		.8331	.8818	.9341	.9898	1.049	1.111	1.176	1.245	1.316	1.468	1.630	1.805	1.895	1.988	2.182	2.385	2.706	2.931	3.046	3.527	4.168
23	$\frac{\bar{h}}{t_S}$	.8209	.8679	.9184	.9722	1.029	1.089	1.153	1.219	1.288	1.435	1.593	1.762	1.847	1.940	2.128	2.326	2.638	2.857	2.969	3.438	4.063
24		.8096	.8551	.9038	.9559	1.011	1.069	1.131	1.195	1.262	1.405	1.558	1.721	1.807	1.895	2.078	2.270	2.574	2.787	2.897	3.354	3.965
25		.7989	.8430	.8902	.9406	.9941	1.051	1.110	1.172	1.237	1.376	1.525	1.684	1.767	1.853	2.031	2.217	2.514	2.722	2.829	3.274	3.871
26		.7891	.8318	.8776	.9264	.9782	1.033	1.091	1.151	1.215	1.349	1.494	1.648	1.729	1.813	1.986	2.168	2.457	2.660	2.764	3.199	3.788
27		.7798	.8212	.8657	.9131	.9634	1.017	1.073	1.131	1.193	1.324	1.464	1.615	1.694	1.775	1.944	2.121	2.403	2.602	2.703	3.128	3.699
28		.7711	.8113	.8545	.9005	.9494	1.001	1.056	1.113	1.172	1.300	1.437	1.583	1.660	1.739	1.904	2.077	2.352	2.546	2.645	3.061	3.619
29		.7630	.8021	.8439	.8888	.9363	.9866	1.040	1.095	1.153	1.277	1.411	1.554	1.629	1.706	1.866	2.036	2.304	2.493	2.590	2.997	3.543
30		.7553	.7933	.8341	.8776	.9238	.9729	1.024	1.079	1.135	1.256	1.386	1.526	1.599	1.674	1.831	1.996	2.258	2.443	2.538	2.936	3.471
31		.7481	.7850	.8247	.8671	.9122	.9599	1.010	1.063	1.118	1.236	1.363	1.499	1.570	1.644	1.797	1.958	2.215	2.395	2.489	2.878	3.402
32		.7412	.7772	.8159	.8572	.9011	.9475	.9965	1.048	1.101	1.217	1.341	1.474	1.543	1.615	1.765	1.922	2.174	2.350	2.441	2.823	3.336
33		.7347	.7698	.8075	.8478	.8905	.9359	.9837	1.034	1.086	1.199	1.320	1.450	1.517	1.588	1.734	1.888	2.134	2.307	2.396	2.770	3.274
34		.7286	.7628	.7996	.8388	.8806	.9248	.9714	1.020	1.072	1.181	1.300	1.427	1.493	1.562	1.705	1.856	2.096	2.266	2.353	2.719	3.213
35		.7228	.7561	.7920	.8303	.8711	.9143	.9598	1.008	1.058	1.165	1.281	1.405	1.470	1.537	1.677	1.825	2.061	2.226	2.312	2.671	3.156
36		.7173	.7498	.7849	.8223	.8621	.9042	.9488	.9956	1.045	1.149	1.262	1.384	1.448	1.513	1.651	1.795	2.026	2.189	2.273	2.625	3.101

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TABLE 4.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.40;\ \frac{b_A}{t_W} = 12.8;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.68;\ \frac{p}{t_S} = 4.90\right)$ - Concluded

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
37	$\frac{\bar{h}}{t_S}$	.7120	.7438	.7780	.8146	.8536	.8948	.9383	.9843	1.032	1.134	1.245	1.364	1.426	1.491	1.625	1.767	1.993	2.153	2.235	2.581	3.048
38		.7070	.7381	.7715	.8073	.8453	.8856	.9282	.9729	1.020	1.120	1.228	1.345	1.406	1.469	1.601	1.740	1.962	2.118	2.199	2.538	2.997
39		.7022	.7326	.7653	.8003	.8375	.8769	.9186	.9624	1.008	1.106	1.213	1.327	1.387	1.448	1.578	1.714	1.932	2.085	2.164	2.497	2.948
40		.6977	.7274	.7594	.7936	.8300	.8687	.9094	.9523	.9973	1.093	1.197	1.309	1.368	1.429	1.555	1.689	1.903	2.053	2.131	2.458	2.901
42		.6891	.7176	.7483	.7811	.8160	.8531	.8922	.9334	.9766	1.069	1.169	1.276	1.333	1.391	1.513	1.642	1.848	1.993	2.069	2.384	2.812
44		.6813	.7086	.7380	.7696	.8032	.8388	.8765	.9161	.9576	1.046	1.143	1.246	1.301	1.357	1.475	1.599	1.798	1.938	2.011	2.316	2.730
46		.6740	.7004	.7287	.7590	.7913	.8256	.8618	.8999	.9400	1.026	1.118	1.218	1.271	1.325	1.439	1.559	1.751	1.887	1.957	2.252	2.653
48		.6674	.6927	.7200	.7492	.7804	.8135	.8483	.8851	.9237	1.006	1.096	1.192	1.243	1.296	1.405	1.521	1.707	1.839	1.907	2.193	2.581
50		.6613	.6857	.7120	.7402	.7702	.8021	.8358	.8713	.9086	.9884	1.075	1.168	1.217	1.268	1.374	1.487	1.667	1.794	1.860	2.137	2.514
52		.6654	.6790	.7045	.7317	.7608	.7916	.8242	.8585	.8945	.9717	1.055	1.146	1.193	1.242	1.345	1.454	1.629	1.752	1.816	2.085	2.452
54		.6502	.6729	.6975	.7238	.7520	.7817	.8133	.8465	.8814	.9561	1.037	1.125	1.171	1.218	1.318	1.424	1.593	1.713	1.775	2.036	2.393
56		.6452	.6672	.6910	.7165	.7437	.7726	.8031	.8353	.8691	.9415	1.020	1.105	1.150	1.196	1.293	1.395	1.600	1.676	1.736	1.991	2.337
58		.6405	.6619	.6849	.7097	.7360	.7640	.7936	.8248	.8575	.9278	1.004	1.087	1.130	1.175	1.269	1.368	1.528	1.641	1.700	1.947	2.285
60		.6362	.6569	.6792	.7032	.7288	.7559	.7846	.8150	.8467	.9150	.9891	1.069	1.111	1.155	1.246	1.343	1.499	1.609	1.666	1.907	2.235
63		.6301	.6499	.6713	.6942	.7187	.7447	.7722	.8012	.8316	.8970	.9681	1.045	1.085	1.127	1.215	1.308	1.457	1.563	1.618	1.850	2.166
66		.6245	.6435	.6640	.6860	.7095	.7344	.7608	.7886	.8179	.8806	.9488	1.023	1.061	1.102	1.186	1.275	1.419	1.521	1.574	1.797	2.102
69		.6194	.6376	.6573	.6784	.7010	.7250	.7503	.7771	.8052	.8655	.9311	1.002	1.039	1.078	1.159	1.246	1.384	1.482	1.533	1.748	2.043
72		.6148	.6323	.6512	.6715	.6932	.7162	.7406	.7664	.7935	.8516	.9147	.9830	1.019	1.057	1.135	1.218	1.351	1.446	1.495	1.703	1.988
75		.6104	.6273	.6455	.6651	.6860	.7082	.7317	.7565	.7826	.8386	.8996	.9655	1.000	1.036	1.112	1.192	1.321	1.413	1.460	1.661	1.936
78		.6063	.6227	.6402	.6591	.6792	.7007	.7234	.7473	.7725	.8240	.8855	.9491	.9828	1.018	1.091	1.168	1.293	1.382	1.428	1.622	1.889
81		.6026	.6183	.6353	.6536	.6730	.6937	.7157	.7388	.7631	.8154	.8724	.9339	.9665	1.000	1.071	1.146	1.267	1.353	1.397	1.586	1.844
84		.5991	.6143	.6307	.6483	.6672	.6872	.7084	.7308	.7543	.8049	.8600	.9197	.9512	.9838	1.052	1.125	1.242	1.325	1.368	1.551	1.802
15	$\frac{\rho}{t_S}$	1.164	1.297	1.435	1.577	1.723	1.871	2.022	2.175	2.331	2.648	2.971	3.300	3.466	3.633	3.970	4.310	4.825	5.170	5.344	6.040	6.914
16		1.141	1.272	1.407	1.547	1.690	1.836	1.984	2.136	2.289	2.602	2.922	3.248	3.412	3.578	3.912	4.250	4.761	5.105	5.277	5.971	6.844
17		1.119	1.248	1.381	1.518	1.659	1.803	1.949	2.098	2.250	2.559	2.875	3.197	3.360	3.525	3.856	4.191	4.700	5.041	5.213	5.904	6.774
18		1.099	1.225	1.356	1.491	1.629	1.771	1.916	2.063	2.212	2.518	2.830	3.149	3.311	3.473	3.802	4.135	4.639	4.979	5.150	5.838	6.705
19		1.079	1.204	1.332	1.465	1.601	1.741	1.884	2.029	2.176	2.478	2.787	3.103	3.263	3.424	3.750	4.080	4.581	4.919	5.089	5.773	6.637
20		1.061	1.182	1.310	1.441	1.575	1.713	1.853	1.996	2.142	2.440	2.746	3.058	3.217	3.376	3.700	4.027	4.525	4.860	5.029	5.710	6.571
21		1.044	1.164	1.289	1.417	1.550	1.685	1.824	1.965	2.109	2.404	2.705	3.016	3.172	3.331	3.651	3.976	4.470	4.803	4.971	5.648	6.505
22		1.027	1.146	1.268	1.395	1.526	1.659	1.796	1.936	2.078	2.369	2.668	2.974	3.130	3.287	3.604	3.926	4.416	4.747	4.914	5.588	6.441
23		1.012	1.128	1.249	1.374	1.503	1.635	1.770	1.908	2.048	2.336	2.632	2.935	3.090	3.244	3.559	3.878	4.365	4.694	4.859	5.529	6.378
24		.9968	1.111	1.231	1.354	1.481	1.611	1.744	1.881	2.019	2.304	2.597	2.897	3.049	3.203	3.515	3.832	4.315	4.641	4.808	5.471	6.316
25		.9826	1.096	1.213	1.335	1.460	1.588	1.720	1.855	1.992	2.273	2.563	2.860	3.011	3.163	3.472	3.787	4.266	4.590	4.754	5.414	6.256
26		.9691	1.083	1.196	1.316	1.440	1.567	1.697	1.830	1.965	2.244	2.530	2.824	2.974	3.125	3.431	3.743	4.219	4.541	4.703	5.361	6.197
27		.9562	1.066	1.180	1.298	1.421	1.546	1.674	1.806	1.940	2.215	2.499	2.790	2.938	3.088	3.392	3.701	4.173	4.493	4.654	5.308	6.139
28		.9438	1.052	1.164	1.281	1.402	1.526	1.653	1.783	1.915	2.187	2.469	2.757	2.904	3.052	3.353	3.660	4.129	4.446	4.606	5.256	6.083
29		.9320	1.039	1.150	1.265	1.384	1.507	1.632	1.761	1.892	2.161	2.439	2.725	2.871	3.018	3.316	3.620	4.085	4.401	4.560	5.205	6.028
30		.9206	1.026	1.136	1.250	1.367	1.488	1.612	1.739	1.869	2.136	2.411	2.694	2.838	2.984	3.280	3.582	4.044	4.357	4.515	5.156	5.974
31		.9097	1.014	1.122	1.235	1.351	1.470	1.593	1.719	1.847	2.111	2.384	2.664	2.807	2.952	3.245	3.545	4.003	4.314	4.471	5.108	5.921
32		.8991	1.002	1.109	1.220	1.335	1.453	1.575	1.699	1.826	2.087	2.357	2.635	2.777	2.920	3.212	3.508	3.963	4.272	4.428	5.061	5.870
33		.8891	.9904	1.096	1.206	1.320	1.437	1.557	1.680	1.805	2.064	2.332	2.607	2.748	2.890	3.179	3.473	3.924	4.231	4.386	5.015	5.820
34		.8795	.9794	1.084	1.193	1.305	1.421	1.540	1.661	1.786	2.042	2.307	2.580	2.719	2.860	3.147	3.439	3.887	4.192	4.346	4.971	5.771
35		.8701	.9689	1.072	1.180	1.291	1.405	1.523	1.643	1.767	2.020	2.283	2.554	2.692	2.831	3.116	3.406	3.851	4.153	4.306	4.927	5.723
36		.8611	.9587	1.061	1.167	1.277	1.390	1.507	1.626	1.748	1.999	2.259	2.528	2.665	2.804	3.086	3.374	3.815	4.116	4.267	4.885	5.676
37		.8524	.9489	1.050	1.155	1.264	1.376	1.491	1.609	1.730	1.979	2.237	2.503	2.639	2.777	3.056	3.342	3.781	4.079	4.230	4.843	5.630
38		.8439	.9394	1.039	1.143	1.251	1.362	1.476	1.593	1.713	1.960	2.215	2.479	2.614	2.750	3.028	3.311	3.747	4.043	4.192	4.803	5.585
39		.8358	.9302	1.029	1.132	1.239	1.348	1.461	1.577	1.696	1.941	2.194	2.456	2.589	2.725	3.000	3.282	3.714	4.009	4.157	4.763	5.541
40		.8279	.9213	1.019	1.201	1.226	1.335	1.447	1.562	1.680	1.922	2.174	2.433	2.565	2.700	2.973	3.253	3.682	3.974	4.122	4.725	5.498
42		.8130	.9044	1.000	1.100	1.203	1.310	1.420	1.533	1.648	1.887	2.134	2.389	2.520	2.652	2.921	3.197	3.620	3.909	4.055	4.650	5.414
44		.7989	.8884	.9823	1.080	1.182	1.287	1.394	1.505	1.619	1.853	2.096	2.348	2.476	2.607	2.872	3.144	3.562	3.846	3.991	4.578	5.335
46		.7853	.8734	.9655	1.062	1.161	1.264	1.370	1.479	1.591	1.821	2.061	2.308	2.435	2.563	2.825	3.093	3.505	3.787	3.929	4.510	5.258
48		.7733	.8593	.9496	1.044	1.142	1.243	1.347	1.454	1.564	1.791	2.027	2.271	2.396	2.522	2.780	3.045	3.452	3.730	3.871	4.445	5.184
50		.7615	.8459	.9346	1.027	1.123	1.223	1.325	1.431	1.539	1.762	1.995	2.235	2.358	2.483	2.738	2.999	3.401	3.675	3.814	4.382	5.114
52		.7504	.8332	.9204	1.011	1.106	1.204	1.305	1.409	1.515	1.735	1.964	2.201	2.323	2.446	2.697	2.955	3.352	3.623	3.760	4.322	5.046
54		.7397	.8211	.9067	.9963	1.089	1.186	1.285	1.387	1.492	1.709	1.935	2.169	2.288	2.410	2.658	2.912	3.305	3.573	3.709	4.264	4.980
56		.7297	.8096	.8939	.9820	1.074	1.168	1.266	1.367	1.470	1.684	1.907	2.138	2.256	2.376	2.621	2.872	3.260	3.525	3.659	4.208	4.917
58		.7201	.7988	.8816	.9683	1.059	1.152	1.248	1.348	1.449	1.660	1.880	2.107	2.225	2.343	2.585	2.833	3.216	3.478	3.611	4.154	4.856
60		.7110	.7883	.8699	.9553	1.044	1.136	1.231	1.330	1.429	1.638	1.854	2.079	2.195	2.312	2.551	2.796	3.175	3.434	3.565	4.103	4.798
63		.6981	.7736	.8533	.9368	1.024	1.114	1.207	1.303	1.401	1.605	1.818	2.039	2.152	2.267	2.502	2.743	3.115	3.370	3.499	4.028	4.714
66		.6860	.7598	.8377	.9194	1.005	1.093	1.184	1.278	1.374	1.575	1.783	2.000	2.111	2.224	2.455	2.692	3.059	3.310	3.437	3.958	4.634
69		.6747	.7469	.8231	.9032	.9865	1.073	1.163	1.255	1.349	1.546	1.751	1.964	2.073	2.184	2.411	2.645	3.005	3.252	3.378	3.892	4.558
72		.6640	.7347	.8094	.8878	.9696	1.054	1.142	1.233	1.326	1.519	1.720	1.930	2.037	2.146	2.370	2.600	2.955	3.198	3.322	3.828	4.485
75		.6541	.7232	.7964	.8733	.9535	1.037	1.123	1.212	1.303	1.493	1.691	1.897	2.003	2.110	2.330	2.557	2.906	3.146	3.268	3.767	4.416
78		.6447	.7124	.7842	.8596	.9383	1.020	1.105	1.192	1.282	1.468	1.664	1.866	1.970	2.076	2.293	2.516	2.861	3.097	3.217	3.710	4.350
81		.6357	.7020	.7726	.8466	.9239	1.004	1.088	1.173	1.262	1.445	1.637	1.837	1.939	2.044	2.257	2.477	2.817	3.050	3.169	3.655	4.286
84		.6273	.6924	.7616	.8343	.9102	.9893	1.071	1.156	1.242	1.427	1.612	1.809	1.910	2.013	2.223	2.440	2.775	3.005	3.122	3.602	4.226

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TABLE 5.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.51;\ \frac{b_A}{t_W} = 11.0;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.77;\ \frac{p}{t_S} = 5.50\right)$

b_S/t_S \ b_W/t_W		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
15	$\bar{t}/t_S$	1.463	1.487	1.512	1.536	1.560	1.584	1.609	1.633	1.657	1.706	1.754	1.802	1.827	1.851	1.900	1.949	2.021	2.070	2.094	2.191	2.313
16		1.434	1.457	1.480	1.502	1.525	1.548	1.571	1.593	1.616	1.662	1.707	1.753	1.775	1.798	1.844	1.890	1.957	2.003	2.026	2.117	2.231
17		1.409	1.430	1.451	1.473	1.494	1.516	1.537	1.558	1.580	1.623	1.666	1.708	1.730	1.751	1.794	1.837	1.901	1.944	1.965	2.051	2.158
18		1.386	1.406	1.426	1.447	1.467	1.487	1.507	1.527	1.548	1.588	1.629	1.669	1.689	1.709	1.750	1.790	1.851	1.892	1.912	1.993	2.094
19		1.366	1.385	1.404	1.423	1.442	1.461	1.481	1.500	1.519	1.557	1.595	1.634	1.653	1.672	1.710	1.749	1.806	1.845	1.864	1.941	2.036
20		1.347	1.365	1.384	1.402	1.420	1.438	1.456	1.475	1.493	1.529	1.566	1.602	1.620	1.639	1.675	1.711	1.766	1.802	1.821	1.893	1.984
21		1.331	1.348	1.365	1.383	1.400	1.417	1.435	1.452	1.469	1.504	1.539	1.573	1.591	1.608	1.643	1.678	1.730	1.764	1.782	1.851	1.938
22		1.316	1.332	1.349	1.365	1.382	1.398	1.415	1.431	1.448	1.481	1.514	1.547	1.564	1.581	1.614	1.647	1.696	1.730	1.746	1.812	1.895
23		1.302	1.318	1.334	1.350	1.365	1.381	1.397	1.413	1.429	1.460	1.492	1.524	1.539	1.555	1.587	1.619	1.666	1.698	1.714	1.773	1.856
24		1.289	1.305	1.320	1.335	1.350	1.365	1.380	1.396	1.411	1.441	1.471	1.502	1.517	1.532	1.563	1.593	1.638	1.669	1.684	1.745	1.820
25		1.278	1.292	1.306	1.321	1.336	1.351	1.365	1.379	1.394	1.423	1.453	1.481	1.496	1.511	1.540	1.569	1.613	1.642	1.656	1.715	1.788
26		1.267	1.281	1.295	1.309	1.323	1.337	1.351	1.365	1.379	1.407	1.435	1.463	1.477	1.491	1.519	1.547	1.589	1.617	1.631	1.687	1.757
27		1.257	1.271	1.284	1.298	1.311	1.325	1.338	1.352	1.365	1.392	1.419	1.446	1.460	1.473	1.500	1.527	1.567	1.594	1.608	1.662	1.729
28		1.248	1.261	1.274	1.287	1.300	1.313	1.326	1.339	1.352	1.378	1.404	1.430	1.443	1.456	1.482	1.508	1.547	1.573	1.586	1.638	1.703
29		1.239	1.252	1.265	1.277	1.290	1.302	1.315	1.327	1.340	1.365	1.390	1.415	1.428	1.440	1.466	1.491	1.528	1.553	1.566	1.616	1.679
30		1.231	1.244	1.256	1.270	1.280	1.292	1.304	1.316	1.329	1.353	1.377	1.401	1.414	1.426	1.450	1.474	1.511	1.535	1.547	1.596	1.656
31		1.224	1.236	1.248	1.259	1.271	1.283	1.295	1.306	1.318	1.341	1.365	1.388	1.400	1.412	1.435	1.459	1.494	1.518	1.529	1.576	1.635
32		1.217	1.228	1.240	1.251	1.263	1.274	1.285	1.297	1.308	1.331	1.354	1.376	1.388	1.399	1.422	1.445	1.479	1.502	1.513	1.558	1.615
33		1.210	1.221	1.233	1.244	1.255	1.266	1.277	1.288	1.299	1.321	1.343	1.365	1.376	1.387	1.409	1.431	1.464	1.486	1.497	1.542	1.597
34		1.204	1.215	1.226	1.236	1.247	1.258	1.269	1.279	1.290	1.311	1.333	1.354	1.365	1.376	1.397	1.418	1.451	1.472	1.483	1.526	1.579
35		1.198	1.209	1.219	1.230	1.240	1.250	1.261	1.271	1.282	1.302	1.323	1.344	1.354	1.365	1.386	1.406	1.438	1.459	1.469	1.511	1.563
36		1.193	1.203	1.213	1.223	1.233	1.243	1.254	1.264	1.274	1.294	1.314	1.335	1.345	1.355	1.375	1.395	1.426	1.446	1.456	1.496	1.547
37		1.188	1.198	1.207	1.217	1.227	1.237	1.247	1.257	1.266	1.286	1.306	1.325	1.335	1.345	1.365	1.385	1.414	1.434	1.444	1.483	1.532
38		1.183	1.192	1.202	1.212	1.221	1.231	1.240	1.250	1.259	1.278	1.298	1.317	1.327	1.336	1.355	1.374	1.403	1.422	1.432	1.470	1.518
39		1.178	1.187	1.197	1.206	1.215	1.225	1.234	1.243	1.253	1.271	1.290	1.307	1.318	1.327	1.346	1.365	1.393	1.412	1.421	1.458	1.505
40		1.174	1.183	1.192	1.201	1.210	1.219	1.228	1.237	1.264	1.265	1.283	1.301	1.310	1.319	1.338	1.356	1.383	1.401	1.410	1.447	1.492
42		1.165	1.174	1.183	1.191	1.200	1.209	1.217	1.226	1.235	1.252	1.269	1.287	1.295	1.304	1.321	1.339	1.365	1.382	1.391	1.425	1.469
44		1.158	1.166	1.174	1.183	1.191	1.199	1.207	1.216	1.224	1.241	1.257	1.274	1.282	1.290	1.307	1.323	1.348	1.365	1.373	1.406	1.447
46		1.151	1.158	1.167	1.175	1.183	1.191	1.198	1.206	1.214	1.230	1.246	1.262	1.270	1.278	1.293	1.309	1.333	1.349	1.357	1.389	1.428
48		1.145	1.152	1.160	1.167	1.175	1.183	1.190	1.198	1.205	1.221	1.236	1.251	1.258	1.266	1.281	1.296	1.319	1.334	1.342	1.372	1.410
50		1.139	1.146	1.154	1.161	1.168	1.175	1.183	1.190	1.197	1.212	1.226	1.241	1.248	1.255	1.270	1.285	1.306	1.321	1.328	1.357	1.394
52		1.134	1.141	1.148	1.155	1.162	1.169	1.176	1.183	1.190	1.204	1.218	1.232	1.239	1.246	1.260	1.274	1.295	1.309	1.316	1.344	1.379
54		1.129	1.135	1.142	1.149	1.156	1.162	1.169	1.176	1.183	1.196	1.210	1.223	1.230	1.237	1.250	1.263	1.284	1.297	1.304	1.331	1.365
56		1.124	1.131	1.137	1.144	1.150	1.157	1.163	1.170	1.176	1.189	1.202	1.215	1.222	1.228	1.241	1.254	1.274	1.287	1.293	1.320	1.352
58		1.120	1.126	1.132	1.139	1.145	1.151	1.157	1.164	1.170	1.183	1.195	1.208	1.214	1.220	1.233	1.245	1.264	1.277	1.283	1.308	1.339
60		1.116	1.122	1.128	1.134	1.140	1.146	1.152	1.158	1.164	1.176	1.189	1.201	1.207	1.213	1.225	1.237	1.255	1.267	1.274	1.298	1.328
63		1.110	1.116	1.122	1.128	1.133	1.139	1.145	1.151	1.156	1.168	1.180	1.191	1.197	1.203	1.214	1.226	1.243	1.255	1.261	1.284	1.313
66		1.105	1.111	1.116	1.121	1.127	1.133	1.138	1.144	1.149	1.160	1.171	1.182	1.188	1.194	1.205	1.216	1.232	1.243	1.249	1.271	1.298
69		1.101	1.106	1.111	1.116	1.122	1.127	1.132	1.138	1.143	1.153	1.164	1.175	1.180	1.185	1.196	1.206	1.222	1.233	1.240	1.259	1.286
72		1.096	1.102	1.107	1.112	1.117	1.122	1.127	1.132	1.137	1.147	1.157	1.167	1.172	1.177	1.187	1.198	1.213	1.223	1.228	1.248	1.273
75		1.093	1.097	1.102	1.107	1.112	1.117	1.121	1.127	1.131	1.141	1.151	1.161	1.165	1.170	1.180	1.190	1.204	1.214	1.219	1.238	1.263
78		1.089	1.094	1.098	1.103	1.108	1.112	1.117	1.122	1.126	1.135	1.145	1.154	1.159	1.164	1.173	1.182	1.196	1.206	1.210	1.229	1.252
81		1.086	1.092	1.095	1.099	1.104	1.108	1.113	1.117	1.122	1.131	1.140	1.149	1.153	1.158	1.167	1.176	1.189	1.198	1.203	1.221	1.243
84		1.083	1.087	1.091	1.096	1.100	1.104	1.109	1.113	1.117	1.126	1.135	1.143	1.148	1.152	1.161	1.169	1.182	1.191	1.196	1.213	1.234
15	$\bar{h}/t_S$	1.283	1.395	1.514	1.639	1.771	1.909	2.052	2.201	2.356	2.679	3.021	3.379	3.564	3.753	4.142	4.544	5.170	5.601	5.802	6.722	7.898
16		1.249	1.357	1.471	1.592	1.719	1.852	1.991	2.135	2.284	2.597	2.928	3.276	3.456	3.640	4.018	4.410	5.020	5.441	5.656	6.538	7.690
17		1.218	1.321	1.432	1.548	1.671	1.800	1.933	2.073	2.217	2.521	2.843	3.181	3.356	3.535	3.903	4.285	4.881	5.292	5.502	6.365	7.494
18		1.189	1.289	1.395	1.508	1.627	1.751	1.881	2.016	2.156	2.450	2.763	3.092	3.262	3.436	3.795	4.167	4.749	5.151	5.356	6.202	7.309
19		1.162	1.259	1.362	1.471	1.585	1.706	1.832	1.962	2.098	2.384	2.688	3.008	3.174	3.344	3.694	4.057	4.625	5.018	5.219	6.047	7.133
20		1.137	1.231	1.331	1.436	1.547	1.664	1.786	1.913	2.045	2.323	2.618	2.930	3.092	3.257	3.599	3.953	4.509	4.893	5.090	5.901	6.966
21		1.115	1.205	1.302	1.404	1.512	1.624	1.743	1.867	1.995	2.265	2.553	2.856	3.014	3.175	3.508	3.855	4.398	4.775	4.967	5.768	6.807
22		1.094	1.181	1.275	1.374	1.478	1.588	1.703	1.823	1.948	2.211	2.491	2.787	2.941	3.098	3.424	3.762	4.294	4.662	4.851	5.630	6.656
23		1.074	1.159	1.249	1.346	1.447	1.554	1.666	1.782	1.904	2.160	2.433	2.722	2.872	3.026	3.344	3.675	4.195	4.556	4.740	5.504	6.511
24		1.055	1.138	1.226	1.319	1.418	1.522	1.631	1.744	1.862	2.112	2.387	2.660	2.807	2.957	3.268	3.592	4.101	4.454	4.635	5.385	6.374
25		1.038	1.118	1.204	1.294	1.391	1.492	1.597	1.708	1.823	2.067	2.326	2.602	2.745	2.892	3.196	3.513	4.011	4.358	4.535	5.270	6.242
26		1.022	1.100	1.183	1.271	1.365	1.463	1.566	1.674	1.786	2.024	2.777	2.547	2.687	2.830	3.128	3.438	3.926	4.266	4.440	5.162	6.117
27		1.006	1.082	1.163	1.249	1.340	1.436	1.537	1.642	1.751	1.983	2.311	2.494	2.631	2.772	3.063	3.367	3.845	4.179	4.350	5.058	5.996
28		.9917	1.065	1.144	1.228	1.317	1.411	1.509	1.611	1.718	1.945	2.187	2.444	2.578	2.716	3.001	3.299	3.768	4.095	4.263	4.959	5.881
29		.9782	1.050	1.127	1.209	1.295	1.387	1.482	1.583	1.687	1.908	2.145	2.397	2.528	2.668	2.942	3.234	3.695	4.015	4.180	4.863	5.771
30		.9652	1.035	1.110	1.190	1.275	1.364	1.457	1.555	1.657	1.874	2.105	2.352	2.480	2.612	2.886	3.172	3.624	3.931	4.101	4.772	5.665
31		.9529	1.021	1.094	1.172	1.255	1.342	1.433	1.529	1.629	1.841	2.067	2.309	2.435	2.564	2.832	3.113	3.557	3.866	4.025	4.685	5.563
32		.9412	1.008	1.079	1.156	1.236	1.321	1.412	1.504	1.602	1.809	2.031	2.268	2.391	2.518	2.781	3.057	3.492	3.796	3.952	4.601	5.465
33		.9302	.9953	1.065	1.139	1.218	1.302	1.389	1.481	1.576	1.779	1.997	2.229	2.350	2.474	2.732	3.003	3.430	3.729	3.882	4.520	5.370
34		.9198	.9833	1.052	1.124	1.202	1.282	1.368	1.458	1.552	1.750	1.964	2.191	2.310	2.432	2.685	2.951	3.371	3.664	3.815	4.443	5.280
35		.9097	.9721	1.039	1.110	1.185	1.265	1.349	1.437	1.528	1.723	1.932	2.155	2.272	2.391	2.640	2.901	3.314	3.602	3.751	4.368	5.192
36		.9002	.9610	1.026	1.096	1.170	1.248	1.330	1.416	1.506	1.697	1.902	2.121	2.345	2.353	2.597	2.853	3.259	3.543	3.688	4.296	5.108

NACA

TABLE 5.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.51;\ \frac{b_A}{t_W} = 11.0;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.77;\ \frac{p}{t_S} = 5.50\right)$ - Concluded

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
37		.8911	.9506	1.015	1.083	1.155	1.232	1.312	1.396	1.484	1.672	1.873	2.088	2.200	2.315	2.555	2.807	3.206	3.485	3.629	4.227	5.027
38		.8824	.9407	1.003	1.070	1.141	1.216	1.295	1.378	1.464	1.647	1.845	2.056	2.166	2.280	2.515	2.763	3.155	3.430	3.571	4.161	4.948
39		.8741	.9311	.9925	1.058	1.128	1.201	1.278	1.359	1.444	1.624	1.818	2.026	2.134	2.245	2.477	2.720	3.106	3.377	3.516	4.096	4.873
40		.8661	.9219	.9821	1.046	1.115	1.187	1.262	1.342	1.425	1.602	1.793	1.996	2.103	2.212	2.440	2.680	3.059	3.325	3.462	4.034	4.800
42		.8511	.9049	.9627	1.025	1.090	1.160	1.233	1.309	1.389	1.560	1.744	1.941	2.044	2.150	2.370	2.602	2.970	3.228	3.361	3.916	4.660
44		.8374	.8891	.9448	1.004	1.068	1.135	1.205	1.279	1.356	1.521	1.699	1.889	1.989	2.091	2.305	2.530	2.887	3.137	3.266	3.806	4.530
46		.8246	.8745	.9282	.9857	1.047	1.111	1.179	1.251	1.326	1.485	1.657	1.841	1.938	2.037	2.444	2.462	2.809	3.052	3.178	3.702	4.407
48		.8128	.8610	.9129	.9683	1.027	1.090	1.156	1.225	1.297	1.452	1.618	1.797	1.891	1.987	2.188	2.399	2.736	2.973	3.094	3.605	4.291
50		.8018	.8484	.8985	.9522	1.009	1.070	1.133	1.200	1.271	1.420	1.582	1.755	1.846	1.939	2.135	2.340	2.667	2.898	3.016	3.513	4.182
52		.7916	.8366	.8852	.9371	.9924	1.051	1.113	1.178	1.246	1.391	1.548	1.716	1.804	1.895	2.085	2.285	2.603	2.827	2.943	3.427	4.080
54	$\frac{\bar{h}}{t_S}$	.7820	.8256	.8727	.9231	.9766	1.033	1.093	1.156	1.222	1.363	1.516	1.679	1.765	1.853	2.038	2.232	2.542	2.761	2.874	3.346	3.983
56		.7730	.8153	.8610	.9099	.9619	1.017	1.075	1.136	1.200	1.337	1.485	1.644	1.728	1.814	1.994	2.183	2.485	2.698	2.808	3.269	3.890
58		.7646	.8057	.8500	.8974	.9479	1.002	1.058	1.117	1.179	1.313	1.457	1.612	1.693	1.777	1.952	2.136	2.431	2.639	2.746	3.196	3.803
60		.7567	.7964	.8396	.8857	.9347	.9869	1.042	1.100	1.160	1.290	1.430	1.581	1.660	1.742	1.912	2.092	2.380	2.582	2.687	3.128	3.720
63		.7457	.7839	.8253	.8694	.9166	.9674	1.019	1.075	1.133	1.258	1.393	1.538	1.614	1.692	1.867	2.030	2.308	2.503	2.604	3.029	3.603
66		.7356	.7723	.8120	.8545	.8998	.9478	.9985	1.052	1.108	1.228	1.358	1.498	1.571	1.647	1.806	1.973	2.241	2.430	2.528	2.939	3.495
69		.7263	.7616	.8000	.8407	.8843	.9305	.9794	1.031	1.085	1.201	1.326	1.461	1.532	1.605	1.758	1.920	2.179	2.361	2.454	2.854	3.394
72		.7177	.7517	.7885	.8279	.8699	.9145	.9617	1.011	1.064	1.175	1.296	1.426	1.495	1.566	1.714	1.871	2.121	2.299	2.390	2.776	3.299
75		.7097	.7425	.7780	.8160	.8566	.8997	.9452	.9932	1.044	1.151	1.268	1.395	1.461	1.529	1.673	1.825	2.068	2.239	2.328	2.702	3.210
78		.7023	.7340	.7683	.8051	.8442	.8859	.9299	.9763	1.025	1.129	1.243	1.365	1.429	1.495	1.635	1.782	2.017	2.184	2.270	2.633	3.127
81		.6954	.7261	.7620	.7948	.8327	.8730	.9156	.9605	1.008	1.109	1.219	1.337	1.399	1.464	1.598	1.741	1.970	2.132	2.216	2.569	3.049
84		.6890	.7186	.7507	.7851	.8219	.8609	.9022	.9457	.9914	1.089	1.196	1.311	1.371	1.434	1.565	1.703	1.926	2.083	2.164	2.508	2.975
15		1.642	1.835	2.032	2.234	2.438	2.646	2.856	3.068	3.282	3.715	4.152	4.593	4.815	5.037	5.482	5.928	6.598	7.045	7.268	8.159	9.268
16		1.615	1.805	2.000	2.199	2.402	2.607	2.815	3.026	3.238	3.668	4.103	4.543	4.763	4.985	5.429	5.874	6.544	6.990	7.214	8.107	9.218
17		1.589	1.777	1.969	2.166	2.367	2.570	2.776	2.985	3.196	3.623	4.055	4.492	4.712	4.933	5.376	5.820	6.490	6.936	7.160	8.053	9.167
18		1.565	1.750	1.940	2.134	2.333	2.534	2.739	2.945	3.154	3.579	4.008	4.443	4.662	4.882	5.324	5.767	6.435	6.882	7.105	7.999	9.114
19		1.541	1.724	1.912	2.104	2.300	2.500	2.702	2.907	3.115	3.536	3.963	4.396	4.613	4.832	5.272	5.714	6.381	6.827	7.050	7.944	9.060
20		1.518	1.699	1.885	2.075	2.269	2.466	2.667	2.870	3.076	3.494	3.918	4.349	4.565	4.783	5.221	5.662	6.327	6.773	6.995	7.889	9.006
21		1.496	1.675	1.858	2.046	2.238	2.435	2.633	2.834	3.038	3.453	3.875	4.303	4.519	4.735	5.171	5.611	6.274	6.718	6.941	7.834	8.951
22		1.475	1.652	1.833	2.019	2.209	2.403	2.600	2.800	3.002	3.414	3.832	4.258	4.473	4.688	5.123	5.561	6.222	6.665	6.887	7.778	8.895
23		1.455	1.630	1.809	1.993	2.181	2.373	2.568	2.766	2.967	3.376	3.792	4.214	4.428	4.642	5.075	5.511	6.170	6.612	6.834	7.724	8.840
24		1.436	1.608	1.786	1.968	2.154	2.344	2.537	2.734	2.933	3.338	3.752	4.172	4.384	4.597	5.028	5.462	6.119	6.560	6.781	7.669	8.784
25		1.418	1.588	1.763	1.944	2.128	2.316	2.508	2.703	2.900	3.302	3.713	4.130	4.341	4.554	4.981	5.414	6.068	6.508	6.729	7.615	8.729
26		1.400	1.568	1.742	1.920	2.103	2.289	2.479	2.672	2.868	3.267	3.675	4.090	4.299	4.511	4.937	5.367	6.019	6.457	6.677	7.562	8.674
27		1.383	1.549	1.721	1.897	2.078	2.263	2.451	2.642	2.837	3.233	3.637	4.050	4.259	4.469	4.893	5.321	5.970	6.328	6.626	7.508	8.619
28		1.367	1.531	1.701	1.876	2.055	2.238	2.424	2.614	2.807	3.200	3.602	4.012	4.219	4.428	4.849	5.276	5.922	6.358	6.576	7.456	8.564
29		1.350	1.513	1.681	1.854	2.032	2.213	2.398	2.586	2.777	3.167	3.567	3.974	4.180	4.388	4.807	5.232	5.876	6.309	6.527	7.404	8.511
30		1.335	1.496	1.663	1.834	2.010	2.190	2.373	2.559	2.749	3.136	3.533	3.937	4.142	4.349	4.766	5.188	5.829	6.261	6.479	7.353	8.457
31		1.320	1.479	1.645	1.814	1.988	2.166	2.348	2.533	2.721	3.106	3.500	3.901	4.105	4.311	4.725	5.146	5.784	6.204	6.431	7.303	8.404
32		1.306	1.464	1.627	1.795	1.968	2.144	2.324	2.508	2.694	3.076	3.467	3.867	4.069	4.273	4.686	5.104	5.740	6.168	6.384	7.252	8.352
33		1.292	1.448	1.610	1.776	1.947	2.122	2.301	2.483	2.668	3.047	3.436	3.833	4.034	4.234	4.647	5.063	5.696	6.123	6.338	7.204	8.300
34		1.279	1.433	1.593	1.758	1.928	2.102	2.279	2.459	2.643	3.019	3.405	3.799	3.999	4.201	4.609	5.023	5.653	6.079	6.292	7.156	8.248
35		1.266	1.419	1.577	1.741	1.909	2.081	2.257	2.436	2.618	2.992	3.375	3.767	3.966	4.166	4.572	4.984	5.611	6.035	6.248	7.108	8.198
36	$\frac{\rho}{t_S}$	1.253	1.405	1.562	1.724	1.890	2.061	2.235	2.413	2.594	2.965	3.346	3.735	3.933	4.132	4.536	4.946	5.570	5.992	6.204	7.061	8.148
37		1.241	1.391	1.547	1.708	1.873	2.042	2.215	2.391	2.571	2.939	3.317	3.701	3.901	4.099	4.501	4.908	5.530	5.949	6.161	7.015	8.098
38		1.229	1.378	1.532	1.692	1.855	2.023	2.195	2.370	2.548	2.914	3.289	3.674	3.869	4.066	4.466	4.872	5.490	5.908	6.119	6.970	8.050
39		1.218	1.365	1.518	1.676	1.838	2.005	2.175	2.349	2.526	2.889	3.262	3.644	3.839	4.035	4.432	4.835	5.451	5.867	6.077	6.925	8.002
40		1.207	1.352	1.504	1.661	1.822	1.987	2.156	2.329	2.504	2.865	3.235	3.615	3.808	4.004	4.399	4.800	5.413	5.827	6.036	6.881	7.954
42		1.186	1.329	1.478	1.632	1.789	1.953	2.119	2.289	2.463	2.818	3.184	3.559	3.750	3.943	4.334	4.732	5.339	5.749	5.957	6.795	7.861
44		1.165	1.306	1.453	1.604	1.760	1.921	2.085	2.252	2.423	2.774	3.135	3.506	3.695	3.885	4.272	4.666	5.267	5.674	5.880	6.712	7.771
46		1.146	1.285	1.429	1.578	1.732	1.890	2.051	2.217	2.384	2.731	3.088	3.455	3.641	3.830	4.213	4.602	5.198	5.602	5.806	6.631	7.683
48		1.128	1.264	1.405	1.552	1.704	1.860	2.018	2.183	2.347	2.691	3.043	3.405	3.590	3.777	4.155	4.541	5.131	5.532	5.734	6.552	7.598
50		1.111	1.245	1.385	1.530	1.679	1.832	1.989	2.150	2.313	2.652	3.000	3.359	3.541	3.726	4.100	4.483	5.067	5.464	5.664	6.477	7.515
52		1.094	1.227	1.364	1.507	1.654	1.805	1.961	2.119	2.182	2.615	2.959	3.313	3.494	3.677	4.047	4.426	5.005	5.398	5.597	6.404	7.434
54		1.079	1.209	1.345	1.485	1.630	1.780	1.933	2.090	2.250	2.579	2.919	3.270	3.448	3.629	3.996	4.371	4.945	5.335	5.532	6.332	7.356
56		1.064	1.192	1.326	1.465	1.608	1.756	1.906	2.061	2.219	2.545	2.881	3.228	3.404	3.583	3.947	4.318	4.887	5.274	5.469	6.263	7.280
58		1.050	1.176	1.308	1.445	1.586	1.732	1.881	2.034	2.190	2.511	2.845	3.188	3.362	3.539	3.900	4.267	4.831	5.215	5.408	6.196	7.206
60		1.036	1.161	1.291	1.426	1.565	1.709	1.856	2.008	2.162	2.480	2.809	3.149	3.322	3.497	3.854	4.218	4.777	5.157	5.348	6.131	7.133
63		1.017	1.139	1.266	1.399	1.536	1.676	1.822	1.970	2.122	2.433	2.759	3.093	3.263	3.436	3.788	4.147	4.699	5.074	5.264	6.037	7.029
66		.9983	1.118	1.243	1.373	1.508	1.646	1.789	1.934	2.084	2.392	2.711	3.040	3.208	3.378	3.725	4.079	4.624	4.995	5.183	5.947	6.928
69		.9810	1.099	1.222	1.349	1.481	1.617	1.757	1.901	2.048	2.351	2.665	2.989	3.155	3.323	3.665	4.015	4.553	4.919	5.106	5.861	6.832
72		.9647	1.080	1.200	1.326	1.456	1.590	1.728	1.869	2.014	2.312	2.622	2.941	3.105	3.271	3.608	3.953	4.484	4.847	5.030	5.778	6.739
75		.9493	1.063	1.181	1.304	1.432	1.564	1.700	1.839	1.981	2.275	2.580	2.896	3.057	3.220	3.554	3.895	4.419	4.777	4.959	5.698	6.650
78		.9347	1.046	1.163	1.284	1.410	1.540	1.673	1.810	1.950	2.240	2.541	2.852	3.011	3.173	3.501	3.838	4.357	4.711	4.890	5.621	6.564
81		.9209	1.030	1.145	1.265	1.389	1.516	1.648	1.783	1.921	2.206	2.503	2.810	2.967	3.127	3.452	3.784	4.295	4.647	4.824	5.548	6.481
84		.9077	1.015	1.128	1.246	1.368	1.494	1.623	1.756	1.893	2.174	2.467	2.771	2.925	3.083	3.404	3.732	4.239	4.585	4.761	5.478	6.401

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TABLE 6.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.63;\ \frac{b_A}{t_W} = 9.7;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.92;\ \frac{p}{t_S} = 6.27\right)$

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
15		1.627	1.664	1.701	1.738	1.775	1.812	1.849	1.886	1.923	1.998	2.072	2.146	2.183	2.220	2.924	2.368	2.479	2.553	2.590	2.738	2.924
16		1.588	1.623	1.657	1.692	1.727	1.762	1.796	1.831	1.866	1.935	2.005	2.074	2.109	2.144	2.213	2.283	2.387	2.456	2.491	2.630	2.803
17		1.553	1.586	1.619	1.651	1.684	1.717	1.749	1.782	1.815	1.880	1.946	2.011	2.044	2.076	2.142	2.207	2.305	2.370	2.403	2.534	2.697
18		1.523	1.554	1.584	1.615	1.646	1.677	1.708	1.739	1.770	1.831	1.893	1.955	1.986	2.017	2.078	2.140	2.233	2.294	2.325	2.449	2.603
19		1.495	1.524	1.554	1.583	1.612	1.641	1.671	1.700	1.729	1.788	1.846	1.905	1.934	1.963	2.021	2.080	2.168	2.226	2.255	2.372	2.519
20		1.470	1.498	1.526	1.554	1.581	1.609	1.637	1.665	1.693	1.748	1.804	1.859	1.887	1.915	1.970	2.026	2.109	2.165	2.193	2.304	2.443
21		1.448	1.474	1.501	1.527	1.554	1.580	1.607	1.633	1.660	1.713	1.765	1.818	1.845	1.871	1.924	1.977	2.057	2.109	2.136	2.242	2.374
22		1.428	1.453	1.478	1.503	1.529	1.554	1.579	1.604	1.630	1.680	1.731	1.781	1.806	1.832	1.882	1.933	2.008	2.059	2.084	2.185	2.312
23		1.409	1.433	1.457	1.481	1.506	1.530	1.554	1.578	1.602	1.651	1.699	1.747	1.771	1.796	1.844	1.892	1.965	2.013	2.037	2.134	2.255
24		1.392	1.415	1.438	1.461	1.485	1.508	1.531	1.554	1.577	1.624	1.670	1.716	1.739	1.762	1.809	1.855	1.924	1.971	1.994	2.087	2.202
25		1.376	1.399	1.421	1.443	1.465	1.487	1.510	1.532	1.554	1.599	1.643	1.687	1.710	1.732	1.776	1.821	1.887	1.932	1.954	2.043	2.154
26		1.362	1.383	1.405	1.426	1.447	1.469	1.490	1.511	1.533	1.576	1.618	1.661	1.682	1.704	1.746	1.789	1.853	1.896	1.917	2.003	2.110
27		1.348	1.369	1.390	1.410	1.431	1.451	1.472	1.492	1.513	1.554	1.595	1.637	1.657	1.678	1.719	1.760	1.822	1.863	1.883	1.966	2.069
28		1.336	1.356	1.376	1.395	1.415	1.435	1.455	1.475	1.495	1.534	1.574	1.614	1.634	1.653	1.693	1.733	1.792	1.832	1.852	1.931	2.031
29		1.324	1.344	1.363	1.382	1.401	1.420	1.439	1.459	1.478	1.516	1.554	1.593	1.612	1.631	1.669	1.708	1.765	1.803	1.823	1.899	1.995
30		1.314	1.332	1.351	1.369	1.388	1.406	1.425	1.443	1.462	1.499	1.536	1.573	1.591	1.610	1.647	1.684	1.740	1.777	1.795	1.869	1.962
31		1.303	1.321	1.339	1.357	1.375	1.393	1.411	1.429	1.447	1.483	1.519	1.554	1.572	1.590	1.626	1.662	1.716	1.752	1.769	1.841	1.931
32		1.294	1.311	1.329	1.346	1.363	1.381	1.398	1.416	1.433	1.468	1.502	1.537	1.554	1.572	1.607	1.641	1.693	1.728	1.745	1.815	1.902
33		1.285	1.302	1.319	1.336	1.352	1.369	1.386	1.403	1.420	1.453	1.487	1.521	1.538	1.554	1.588	1.622	1.672	1.706	1.723	1.790	1.874
34		1.277	1.293	1.309	1.326	1.342	1.358	1.375	1.391	1.408	1.440	1.472	1.505	1.522	1.538	1.571	1.604	1.653	1.685	1.702	1.767	1.849
35	$\frac{\bar{t}}{t_S}$	1.269	1.285	1.301	1.316	1.332	1.348	1.364	1.380	1.396	1.428	1.459	1.491	1.507	1.523	1.555	1.586	1.634	1.666	1.682	1.745	1.824
36		1.261	1.277	1.292	1.308	1.323	1.338	1.354	1.369	1.385	1.416	1.447	1.477	1.493	1.508	1.539	1.570	1.616	1.647	1.663	1.724	1.802
37		1.254	1.269	1.284	1.299	1.314	1.329	1.344	1.359	1.374	1.404	1.434	1.464	1.479	1.495	1.525	1.555	1.600	1.630	1.645	1.706	1.780
38		1.248	1.262	1.277	1.291	1.306	1.321	1.335	1.350	1.365	1.394	1.423	1.452	1.467	1.482	1.511	1.540	1.584	1.613	1.628	1.686	1.759
39		1.241	1.255	1.270	1.284	1.298	1.312	1.327	1.341	1.355	1.384	1.412	1.441	1.455	1.469	1.498	1.526	1.569	1.597	1.612	1.669	1.740
40		1.235	1.249	1.263	1.277	1.291	1.305	1.319	1.332	1.346	1.374	1.402	1.430	1.444	1.457	1.485	1.513	1.555	1.582	1.596	1.652	1.721
42		1.224	1.237	1.250	1.264	1.277	1.290	1.303	1.317	1.330	1.356	1.383	1.409	1.422	1.436	1.462	1.489	1.528	1.555	1.568	1.621	1.687
44		1.214	1.226	1.239	1.252	1.264	1.277	1.290	1.302	1.315	1.340	1.365	1.391	1.403	1.416	1.441	1.466	1.504	1.530	1.542	1.593	1.656
46		1.204	1.217	1.229	1.241	1.253	1.265	1.277	1.289	1.301	1.325	1.349	1.374	1.386	1.398	1.422	1.446	1.482	1.506	1.519	1.567	1.627
48		1.196	1.208	1.219	1.231	1.242	1.254	1.265	1.277	1.289	1.311	1.334	1.358	1.370	1.381	1.404	1.428	1.462	1.485	1.497	1.543	1.601
50		1.188	1.199	1.210	1.221	1.233	1.244	1.255	1.266	1.277	1.299	1.321	1.344	1.355	1.366	1.388	1.410	1.444	1.466	1.477	1.522	1.577
52		1.181	1.192	1.202	1.213	1.224	1.234	1.245	1.256	1.266	1.288	1.309	1.330	1.341	1.352	1.373	1.395	1.427	1.448	1.459	1.501	1.555
54		1.174	1.185	1.195	1.205	1.215	1.226	1.236	1.246	1.257	1.277	1.298	1.318	1.329	1.339	1.359	1.380	1.411	1.431	1.442	1.483	1.534
56		1.168	1.178	1.188	1.198	1.208	1.218	1.228	1.237	1.247	1.267	1.287	1.307	1.317	1.327	1.347	1.366	1.396	1.416	1.426	1.466	1.515
58		1.162	1.172	1.181	1.191	1.201	1.210	1.220	1.230	1.239	1.258	1.277	1.296	1.306	1.315	1.335	1.354	1.383	1.402	1.411	1.450	1.497
60		1.157	1.166	1.175	1.185	1.194	1.203	1.212	1.222	1.231	1.249	1.268	1.286	1.296	1.305	1.323	1.342	1.370	1.388	1.398	1.435	1.481
63		1.149	1.158	1.167	1.176	1.185	1.193	1.202	1.211	1.220	1.238	1.255	1.273	1.282	1.290	1.308	1.326	1.352	1.370	1.379	1.414	1.458
66		1.143	1.151	1.159	1.168	1.176	1.185	1.193	1.202	1.210	1.227	1.244	1.260	1.269	1.277	1.294	1.311	1.336	1.353	1.361	1.395	1.437
69		1.136	1.144	1.152	1.160	1.169	1.177	1.185	1.193	1.201	1.217	1.233	1.249	1.257	1.265	1.281	1.297	1.322	1.338	1.346	1.378	1.418
72		1.131	1.138	1.146	1.154	1.162	1.169	1.177	1.185	1.192	1.208	1.223	1.239	1.246	1.254	1.270	1.285	1.308	1.324	1.331	1.362	1.401
75		1.125	1.133	1.140	1.148	1.155	1.162	1.170	1.177	1.185	1.200	1.214	1.229	1.237	1.244	1.259	1.274	1.296	1.311	1.318	1.348	1.385
78		1.121	1.128	1.135	1.142	1.149	1.156	1.163	1.171	1.178	1.192	1.206	1.220	1.227	1.235	1.249	1.263	1.284	1.299	1.306	1.334	1.370
81		1.116	1.123	1.130	1.137	1.144	1.150	1.157	1.164	1.171	1.185	1.198	1.212	1.219	1.226	1.240	1.253	1.274	1.288	1.294	1.322	1.356
84		1.112	1.119	1.125	1.132	1.138	1.145	1.152	1.158	1.165	1.178	1.191	1.205	1.211	1.218	1.231	1.244	1.264	1.277	1.284	1.310	1.344
15		1.736	1.916	2.106	2.305	2.512	2.728	2.951	3.181	3.418	3.911	4.427	4.963	5.237	5.517	6.087	6.673	7.577	8.194	8.507	9.783	11.43
16		1.688	1.862	2.045	2.238	2.439	2.649	2.866	3.090	3.321	3.801	4.304	4.828	5.097	5.370	5.930	6.504	7.391	7.998	8.306	9.563	11.18
17		1.643	1.811	1.989	2.176	2.372	2.575	2.786	3.004	3.229	3.698	4.189	4.702	4.965	5.232	5.780	6.344	7.215	7.812	8.115	9.352	10.95
18		1.601	1.764	1.937	2.119	2.309	2.507	2.712	2.924	3.144	3.601	4.081	4.582	4.840	5.102	5.639	6.192	7.048	7.635	7.933	9.151	10.73
19		1.562	1.721	1.888	2.065	2.250	2.442	2.642	2.849	3.063	3.510	3.979	4.469	4.722	4.979	5.505	6.048	6.889	7.466	7.759	8.960	10.51
20		1.526	1.680	1.843	2.014	2.194	2.382	2.577	2.779	2.987	3.423	3.882	4.363	4.610	4.862	5.378	5.911	6.738	7.306	7.594	8.776	10.31
21		1.492	1.642	1.800	1.967	2.142	2.325	2.515	2.712	2.916	3.342	3.791	4.261	4.504	4.751	5.258	5.781	6.593	7.152	7.436	8.600	10.11
22		1.461	1.606	1.760	1.923	2.093	2.272	2.457	2.650	2.849	3.265	3.705	4.165	4.403	4.645	5.143	5.657	6.455	7.005	7.284	8.432	9.924
23		1.431	1.572	1.723	1.881	2.047	2.221	2.402	2.590	2.785	3.192	3.623	4.074	4.307	4.545	5.033	5.538	6.324	6.865	7.140	8.270	9.742
24	$\frac{\bar{h}}{t_S}$	1.403	1.541	1.687	1.842	2.004	2.174	2.351	2.534	2.725	3.123	3.545	3.987	4.216	4.450	4.929	5.425	6.198	6.730	7.001	8.115	9.567
25		1.377	1.511	1.654	1.805	1.963	2.129	2.302	2.481	2.667	3.058	3.471	3.905	4.129	4.358	4.829	5.317	6.077	6.601	6.868	7.966	9.399
26		1.352	1.483	1.622	1.769	1.924	2.086	2.255	2.431	2.613	2.995	3.400	3.826	4.046	4.271	4.734	5.213	5.961	6.477	6.740	7.822	9.236
27		1.329	1.456	1.592	1.736	1.887	2.046	2.211	2.383	2.561	2.936	3.333	3.751	3.967	4.188	4.643	5.114	5.850	6.358	6.617	7.684	9.080
28		1.307	1.431	1.564	1.704	1.852	2.007	2.169	2.337	2.512	2.879	3.269	3.679	3.891	4.108	4.555	5.019	5.743	6.244	6.499	7.552	8.929
29		1.286	1.407	1.537	1.674	1.819	1.971	2.129	2.294	2.465	2.825	3.207	3.610	3.818	4.032	4.471	4.928	5.641	6.134	6.386	7.424	8.783
30		1.266	1.385	1.511	1.646	1.787	1.936	2.091	2.252	2.420	2.773	3.148	3.544	3.749	3.959	4.391	4.840	5.543	6.029	6.277	7.300	8.643
31		1.247	1.363	1.487	1.618	1.757	1.903	2.055	2.213	2.377	2.724	3.092	3.481	3.682	3.888	4.314	4.756	5.448	5.927	6.171	7.181	8.507
32		1.229	1.342	1.464	1.593	1.728	1.871	2.020	2.175	2.336	2.676	3.038	3.420	3.618	3.821	4.240	4.675	5.356	5.829	6.070	7.066	8.375
33		1.212	1.323	1.442	1.568	1.701	1.840	1.987	2.139	2.297	2.631	2.986	3.362	3.557	3.756	4.168	4.597	5.268	5.734	5.972	6.955	8.248
34		1.195	1.304	1.421	1.544	1.674	1.811	1.955	2.104	2.260	2.588	2.937	3.306	3.498	3.694	4.100	4.522	5.184	5.643	5.877	6.847	8.124
35		1.179	1.286	1.400	1.521	1.649	1.784	1.924	2.071	2.224	2.546	2.889	3.252	3.441	3.634	4.033	4.449	5.102	5.555	5.786	6.743	8.005
36		1.165	1.269	1.381	1.500	1.625	1.757	1.895	2.039	2.189	2.506	2.843	3.201	3.386	3.576	3.970	4.379	5.023	5.469	5.698	6.643	7.889

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TABLE 6.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.63;\ \frac{b_A}{t_W} = 9.7;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.92;\ \frac{p}{t_S} = 6.27\right)$ - Concluded

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
37	$\frac{\bar{h}}{t_S}$	1.150	1.253	1.362	1.479	1.602	1.731	1.867	2.009	2.156	2.467	2.799	3.151	3.334	3.521	3.908	4.312	4.946	5.387	5.612	6.545	7.777
38		1.136	1.237	1.345	1.464	1.580	1.707	1.840	1.979	2.124	2.430	2.757	3.103	3.283	3.468	3.849	4.247	4.872	5.307	5.529	6.451	7.668
39		1.123	1.222	1.328	1.440	1.558	1.683	1.814	1.951	2.093	2.394	2.716	3.056	3.234	3.415	3.792	4.184	4.801	5.230	5.449	6.360	7.563
40		1.111	1.208	1.311	1.421	1.538	1.661	1.789	1.924	2.064	2.360	2.676	3.012	3.186	3.365	3.736	4.123	4.732	5.155	5.372	6.271	7.460
42		1.087	1.180	1.280	1.387	1.499	1.618	1.742	1.872	2.008	2.294	2.601	2.927	3.096	3.270	3.631	4.007	4.600	5.013	5.224	6.101	7.264
44		1.065	1.155	1.252	1.354	1.463	1.578	1.698	1.824	1.955	2.234	2.531	2.848	3.012	3.181	3.532	3.898	4.476	4.879	5.085	5.942	7.078
46		1.045	1.132	1.225	1.325	1.430	1.541	1.658	1.780	1.907	2.177	2.466	2.773	2.933	3.098	3.439	3.798	4.359	4.752	4.953	5.791	6.902
48		1.026	1.110	1.200	1.297	1.399	1.506	1.619	1.738	1.861	2.123	2.405	2.703	2.859	3.020	3.352	3.700	4.249	4.633	4.830	5.648	6.736
50		1.008	1.090	1.177	1.271	1.370	1.474	1.584	1.699	1.819	2.073	2.347	2.638	2.790	2.946	3.270	3.609	4.145	4.520	4.712	5.512	6.577
52		.9913	1.071	1.155	1.246	1.342	1.444	1.550	1.662	1.779	2.026	2.292	2.576	2.724	2.876	3.192	3.524	4.047	4.413	4.601	5.384	6.427
54		.9758	1.053	1.135	1.223	1.317	1.415	1.519	1.627	1.741	1.982	2.241	2.518	2.662	2.811	3.119	3.442	3.954	4.312	4.496	5.262	6.284
56		.9613	1.036	1.116	1.202	1.292	1.388	1.489	1.595	1.705	1.940	2.193	2.463	2.603	2.748	3.049	3.366	3.866	4.216	4.396	5.146	6.148
58		.9476	1.020	1.098	1.181	1.270	1.363	1.461	1.564	1.672	1.901	2.147	2.410	2.548	2.689	2.984	3.292	3.782	4.125	4.300	5.035	6.018
60		.9347	1.005	1.081	1.162	1.248	1.339	1.435	1.535	1.640	1.864	2.104	2.361	2.495	2.633	2.921	3.223	3.702	4.038	4.210	4.930	5.893
63		.9167	.9845	1.057	1.135	1.218	1.306	1.398	1.495	1.596	1.811	2.043	2.291	2.421	2.555	2.833	3.125	3.589	3.915	4.082	4.781	5.717
66		.9001	.9653	1.036	1.111	1.190	1.275	1.364	1.457	1.554	1.763	1.987	2.227	2.352	2.482	2.751	3.034	3.484	3.800	3.962	4.641	5.552
69		.8848	.9477	1.015	1.088	1.165	1.246	1.332	1.422	1.516	1.717	1.934	2.167	2.288	2.414	2.675	2.949	3.386	3.693	3.850	4.511	5.397
72		.8706	.9313	.9966	1.067	1.141	1.219	1.302	1.390	1.481	1.675	1.885	2.110	2.228	2.350	2.603	2.870	3.294	3.592	3.746	4.388	5.252
75		.8574	.9160	.9792	1.047	1.119	1.195	1.275	1.359	1.448	1.636	1.840	2.058	2.173	2.290	2.536	2.796	3.208	3.498	3.647	4.273	5.114
78		.8452	.9019	.9629	1.028	1.098	1.172	1.249	1.331	1.417	1.600	1.797	2.009	2.120	2.235	2.474	2.726	3.127	3.409	3.554	4.164	4.985
81		.8337	.8886	.9478	1.011	1.079	1.150	1.225	1.306	1.388	1.565	1.757	1.963	2.071	2.182	2.415	2.660	3.050	3.325	3.467	4.061	4.862
84		.8230	.8762	.9336	.9950	1.060	1.130	1.203	1.280	1.361	1.533	1.719	1.919	2.025	2.133	2.359	2.598	2.978	3.246	3.384	3.964	4.746
15	$\frac{\rho}{t_S}$	2.236	2.495	2.758	3.024	3.293	3.564	3.836	4.109	4.384	4.934	5.485	6.037	6.312	6.587	7.137	7.683	8.499	9.040	9.309	10.38	11.70
16		2.205	2.462	2.723	2.988	3.255	3.524	3.795	4.068	4.342	4.892	5.442	5.994	6.270	6.545	7.095	7.644	8.463	9.006	9.277	10.35	11.68
17		2.176	2.431	2.690	2.952	3.218	3.486	3.756	4.027	4.300	4.849	5.399	5.951	6.227	6.502	7.053	7.603	8.425	8.970	9.242	10.32	11.66
18		2.147	2.399	2.657	2.917	3.181	3.448	3.717	3.987	4.259	4.806	5.356	5.907	6.183	6.459	7.011	7.562	8.385	8.932	9.205	10.29	11.63
19		2.119	2.370	2.625	2.884	3.146	3.411	3.678	3.948	4.219	4.764	5.313	5.863	6.139	6.415	6.967	7.519	8.344	8.892	9.166	10.26	11.60
20		2.092	2.341	2.594	2.851	3.111	3.375	3.641	3.909	4.179	4.722	5.270	5.820	6.095	6.371	6.923	7.475	8.301	8.851	9.125	10.22	11.57
21		2.066	2.312	2.563	2.819	3.078	3.339	3.604	3.871	4.139	4.681	5.227	5.776	6.052	6.327	6.879	7.431	8.258	8.809	9.084	10.18	11.54
22		2.041	2.285	2.534	2.788	3.045	3.305	3.568	3.833	4.101	4.641	5.185	5.733	6.008	6.283	6.835	7.387	8.215	8.766	9.041	10.14	11.50
23		2.017	2.259	2.506	2.757	3.013	3.271	3.533	3.797	4.063	4.601	5.144	5.690	5.965	6.239	6.790	7.342	8.170	8.722	8.998	10.10	11.46
24		1.994	2.233	2.478	2.728	2.981	3.238	3.499	3.761	4.026	4.561	5.103	5.648	5.922	6.196	6.746	7.298	8.126	8.678	8.954	10.06	11.42
25		1.971	2.208	2.451	2.699	2.951	3.206	3.465	3.726	3.990	4.523	5.062	5.606	5.879	6.153	6.702	7.253	8.081	8.633	8.909	10.01	11.38
26		1.949	2.184	2.425	2.671	2.921	3.175	3.432	3.692	3.954	4.485	5.022	5.564	5.837	6.110	6.659	7.209	8.036	8.588	8.865	9.968	11.34
27		1.928	2.161	2.400	2.644	2.892	3.145	3.400	3.660	3.919	4.448	4.983	5.523	5.795	6.068	6.615	7.165	7.992	8.544	8.820	9.924	11.30
28		1.907	2.138	2.375	2.618	2.864	3.115	3.369	3.626	3.885	4.411	4.944	5.483	5.754	6.026	6.572	7.121	7.947	8.499	8.775	9.879	11.26
29		1.887	2.116	2.352	2.592	2.837	3.086	3.338	3.594	3.852	4.375	4.906	5.443	5.713	5.985	6.530	7.077	7.903	8.454	8.730	9.834	11.21
30		1.867	2.095	2.328	2.567	2.810	3.058	3.308	3.563	3.819	4.340	4.869	5.404	5.673	5.944	6.488	7.034	7.858	8.409	8.695	9.789	11.17
31		1.848	2.074	2.306	2.543	2.784	3.030	3.279	3.532	3.787	4.305	4.832	5.365	5.634	5.904	6.446	6.992	7.814	8.364	8.640	9.744	11.12
32		1.830	2.054	2.284	2.519	2.759	3.003	3.251	3.502	3.756	4.272	4.796	5.327	5.595	5.864	6.405	6.949	7.770	8.320	8.596	9.699	11.08
33		1.812	2.034	2.262	2.496	2.734	2.977	3.223	3.473	3.725	4.239	4.761	5.290	5.556	5.824	6.364	6.907	7.727	8.276	8.551	9.654	11.03
34		1.795	2.015	2.242	2.474	2.710	2.951	3.196	3.444	3.695	4.206	4.726	5.253	5.519	5.786	6.324	6.865	7.684	8.232	8.507	9.609	10.99
35		1.778	1.997	2.221	2.452	2.687	2.926	3.169	3.416	3.666	4.174	4.691	5.217	5.482	5.748	6.284	6.825	7.641	8.189	8.463	6.564	10.94
36		1.762	1.979	2.202	2.430	2.664	2.902	3.143	3.389	3.637	4.143	4.658	5.181	5.445	5.710	6.245	6.785	7.599	8.145	8.419	9.519	10.90
37		1.746	1.961	2.182	2.409	2.641	2.878	3.118	3.362	3.609	4.112	4.625	5.146	5.409	5.674	6.207	6.744	7.557	8.102	8.376	9.475	10.85
38		1.730	1.944	2.166	2.389	2.620	2.854	3.093	3.336	3.582	4.082	4.593	5.112	5.374	5.637	6.168	6.704	7.516	8.060	8.333	9.430	10.81
39		1.715	1.927	2.145	2.369	2.598	2.832	3.069	3.310	3.555	4.053	4.561	5.078	5.339	5.601	6.131	6.665	7.475	8.018	8.291	9.386	10.76
40		1.700	1.911	2.128	2.350	2.577	2.809	3.045	3.285	3.528	4.024	4.530	5.044	5.304	5.566	6.094	6.627	7.434	7.976	8.248	9.342	10.72
42		1.672	1.879	2.093	2.312	2.537	2.766	3.000	3.237	3.477	3.968	4.469	4.980	5.237	5.497	6.022	6.551	7.354	7.894	8.165	9.256	10.63
44		1.645	1.850	2.060	2.277	2.498	2.725	2.956	3.190	3.428	3.914	4.411	4.916	5.173	5.431	5.951	6.478	7.276	7.814	8.083	9.170	10.54
46		1.620	1.821	2.029	2.243	2.462	2.685	2.913	3.145	3.381	3.862	4.354	4.856	5.110	5.366	5.883	6.406	7.201	7.735	8.004	9.086	10.45
48		1.595	1.794	1.999	2.210	2.426	2.647	2.873	3.102	3.336	3.812	4.300	4.797	5.049	5.303	5.817	6.337	7.126	7.658	7.926	9.004	10.37
50		1.572	1.768	1.970	2.179	2.393	2.611	2.834	3.061	3.292	3.763	4.247	4.740	4.990	5.242	5.752	6.269	7.054	7.583	7.850	8.923	10.28
52		1.550	1.743	1.943	2.149	2.360	2.576	2.797	3.021	3.250	3.717	4.196	4.685	4.933	5.184	5.690	6.203	6.983	7.510	7.775	8.843	10.20
54		1.528	1.719	1.917	2.120	2.329	2.542	2.761	2.983	3.208	3.672	4.146	4.632	4.878	5.126	5.629	6.139	6.915	7.438	7.702	8.766	10.11
56		1.508	1.696	1.891	2.092	2.299	2.501	2.726	2.946	3.170	3.628	4.099	4.580	4.824	5.071	5.570	6.076	6.847	7.368	7.630	8.689	10.03
58		1.488	1.674	1.867	2.066	2.270	2.479	2.693	2.910	3.132	3.586	4.053	4.530	4.772	5.017	5.513	6.015	6.782	7.300	7.561	8.615	9.952
60		1.469	1.653	1.844	2.040	2.242	2.449	2.660	2.876	3.096	3.545	4.008	4.481	4.722	4.965	5.457	5.956	6.718	7.233	7.493	8.542	9.873
63		1.442	1.623	1.810	2.003	2.202	2.406	2.614	2.827	3.043	3.487	3.944	4.411	4.649	4.889	5.376	5.871	6.625	7.136	7.393	8.435	9.758
66		1.417	1.594	1.779	1.969	2.164	2.365	2.570	2.780	2.993	3.431	3.882	4.344	4.579	4.817	5.298	5.788	6.536	7.042	7.298	8.331	9.646
69		1.392	1.567	1.749	1.936	2.128	2.326	2.528	2.735	2.946	3.378	3.823	4.280	4.512	4.747	5.224	5.709	6.450	6.951	7.205	8.230	9.537
72		1.370	1.541	1.718	1.904	2.094	2.289	2.489	2.692	2.900	3.327	3.767	4.218	4.448	4.682	5.152	5.632	6.367	6.864	7.115	8.133	9.431
75		1.348	1.517	1.693	1.875	2.062	2.534	2.451	2.652	2.857	3.278	3.713	4.159	4.387	4.617	5.083	5.559	6.286	6.780	7.029	8.039	9.328
78		1.327	1.494	1.667	1.846	2.031	2.220	2.414	2.613	2.815	3.231	3.661	4.103	4.328	4.555	5.017	5.488	6.209	6.698	6.945	7.947	9.228
81		1.307	1.472	1.642	1.819	2.001	2.188	2.379	2.575	2.775	3.187	3.611	4.048	4.271	4.496	4.953	5.419	6.134	6.619	6.864	7.859	9.130
84		1.289	1.450	1.619	1.793	1.973	2.157	2.346	2.540	2.737	3.144	3.564	3.998	4.216	4.439	4.892	5.354	6.062	6.543	6.786	7.773	9.035

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TABLE 7.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.79;\ \frac{b_A}{t_W} = 8.2;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.97;\ \frac{p}{t_S} = 6.36\right)$

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
15	$\frac{\bar{t}}{t_S}$	1.986	2.044	2.103	2.161	2.219	2.277	2.336	2.394	2.452	2.569	2.685	2.802	2.860	2.918	3.035	3.151	3.326	3.443	3.501	3.734	4.025
16		1.924	1.979	2.034	2.088	2.143	2.198	2.252	2.307	2.361	2.471	2.580	2.689	2.744	2.798	2.907	3.017	3.181	3.290	3.344	3.563	3.836
17		1.870	1.922	1.973	2.024	2.076	2.127	2.178	2.230	2.281	2.384	2.487	2.590	2.641	2.692	2.795	2.898	3.052	3.155	3.206	3.412	3.669
18		1.822	1.870	1.919	1.967	2.016	2.065	2.113	2.162	2.210	2.307	2.404	2.501	2.550	2.598	2.696	2.793	2.938	3.035	3.084	3.278	3.521
19		1.779	1.825	1.870	1.916	1.962	2.008	2.054	2.100	2.146	2.238	2.330	2.422	2.468	2.514	2.606	2.698	2.836	2.928	2.974	3.158	3.388
20		1.740	1.783	1.827	1.871	1.914	1.958	2.002	2.045	2.089	2.176	2.264	2.351	2.395	2.439	2.526	2.613	2.745	2.832	2.875	3.050	3.269
21		1.704	1.746	1.788	1.829	1.871	1.912	1.954	1.996	2.037	2.120	2.204	2.287	2.328	2.370	2.453	2.536	2.661	2.744	2.786	2.953	3.161
22		1.672	1.712	1.752	1.792	1.831	1.871	1.911	1.950	1.990	2.070	2.149	2.228	2.268	2.308	2.387	2.467	2.586	2.665	2.705	2.864	3.062
23		1.643	1.681	1.719	1.757	1.795	1.833	1.871	1.909	1.947	2.023	2.099	2.175	2.214	2.251	2.327	2.403	2.517	2.593	2.631	2.783	2.973
24		1.616	1.653	1.689	1.726	1.762	1.798	1.835	1.871	1.908	1.980	2.053	2.126	2.162	2.199	2.272	2.344	2.454	2.526	2.563	2.709	2.891
25		1.592	1.627	1.662	1.697	1.732	1.766	1.801	1.836	1.871	1.941	2.011	2.081	2.116	2.151	2.221	2.291	2.396	2.465	2.500	2.640	2.815
26		1.569	1.603	1.636	1.670	1.703	1.737	1.771	1.804	1.838	1.905	1.972	2.039	2.073	2.107	2.174	2.241	2.342	2.409	2.443	2.577	2.745
27		1.548	1.580	1.613	1.645	1.677	1.710	1.742	1.774	1.807	1.871	1.936	2.001	2.033	2.066	2.130	2.195	2.292	2.357	2.389	2.519	2.681
28		1.528	1.560	1.591	1.622	1.653	1.684	1.716	1.747	1.778	1.840	1.903	1.965	1.996	2.028	2.090	2.152	2.460	2.308	2.340	2.464	2.620
29		1.510	1.540	1.570	1.600	1.631	1.661	1.691	1.721	1.751	1.811	1.872	1.932	1.962	1.992	2.052	2.113	2.203	2.263	2.393	2.413	2.565
30		1.493	1.522	1.551	1.580	1.610	1.639	1.668	1.697	1.726	1.784	1.843	1.901	1.930	1.959	2.017	2.076	2.163	2.221	2.250	2.367	2.512
31		1.477	1.505	1.534	1.562	1.590	1.618	1.646	1.674	1.703	1.759	1.815	1.872	1.900	1.928	1.985	2.041	2.125	2.182	2.210	2.323	2.464
32		1.462	1.490	1.517	1.544	1.571	1.600	1.626	1.653	1.681	1.735	1.790	1.845	1.872	1.900	1.954	2.008	2.090	2.145	2.172	2.281	2.418
33		1.448	1.475	1.501	1.528	1.554	1.581	1.607	1.634	1.660	1.713	1.766	1.819	1.845	1.872	1.925	1.978	2.057	2.110	2.137	2.243	2.375
34		1.435	1.461	1.486	1.512	1.538	1.564	1.589	1.615	1.641	1.692	1.743	1.795	1.821	1.846	1.898	1.949	2.026	2.078	2.103	2.206	2.335
35		1.423	1.448	1.473	1.498	1.523	1.547	1.572	1.597	1.622	1.672	1.722	1.772	1.797	1.822	1.872	1.922	1.997	2.047	2.072	2.172	2.296
36		1.411	1.435	1.459	1.484	1.508	1.532	1.557	1.581	1.605	1.654	1.702	1.751	1.775	1.799	1.848	1.896	1.969	2.018	2.042	2.139	2.260
37		1.400	1.423	1.447	1.471	1.498	1.518	1.542	1.565	1.589	1.636	1.683	1.730	1.753	1.778	1.825	1.872	1.943	1.990	2.014	2.108	2.226
38		1.389	1.412	1.435	1.458	1.481	1.504	1.527	1.550	1.573	1.619	1.665	1.711	1.734	1.757	1.803	1.849	1.918	1.964	1.987	2.079	2.194
39		1.379	1.402	1.424	1.447	1.469	1.491	1.514	1.536	1.559	1.603	1.648	1.693	1.715	1.738	1.783	1.827	1.895	1.939	1.962	2.051	2.163
40		1.370	1.392	1.414	1.435	1.457	1.479	1.501	1.523	1.545	1.588	1.632	1.676	1.697	1.719	1.763	1.807	1.872	1.916	1.938	2.025	2.134
42		1.352	1.373	1.394	1.415	1.435	1.456	1.477	1.498	1.519	1.560	1.602	1.643	1.664	1.685	1.727	1.768	1.831	1.872	1.893	1.976	2.080
44		1.336	1.358	1.376	1.396	1.416	1.436	1.455	1.475	1.495	1.535	1.575	1.614	1.634	1.654	1.694	1.733	1.793	1.833	1.853	1.932	2.031
46		1.322	1.341	1.360	1.379	1.398	1.417	1.436	1.455	1.474	1.512	1.550	1.588	1.606	1.626	1.663	1.701	1.758	1.796	1.815	1.891	1.986
48		1.308	1.326	1.345	1.363	1.381	1.399	1.417	1.436	1.454	1.490	1.527	1.563	1.581	1.599	1.636	1.672	1.727	1.763	1.781	1.854	1.945
50		1.296	1.313	1.331	1.348	1.366	1.383	1.407	1.418	1.436	1.471	1.506	1.541	1.558	1.575	1.610	1.645	1.698	1.733	1.750	1.820	1.907
52		1.284	1.301	1.318	1.335	1.352	1.369	1.386	1.402	1.419	1.453	1.486	1.520	1.536	1.553	1.587	1.621	1.671	1.704	1.721	1.789	1.873
54		1.274	1.390	1.306	1.323	1.339	1.355	1.371	1.387	1.403	1.436	1.468	1.501	1.517	1.533	1.565	1.598	1.646	1.678	1.695	1.759	1.840
56		1.264	1.280	1.295	1.311	1.327	1.342	1.358	1.373	1.389	1.420	1.451	1.483	1.498	1.514	1.545	1.576	1.623	1.654	1.670	1.732	1.810
58		1.255	1.270	1.285	1.300	1.315	1.330	1.345	1.360	1.376	1.406	1.436	1.466	1.481	1.496	1.526	1.556	1.602	1.631	1.647	1.707	1.782
60		1.247	1.261	1.276	1.290	1.305	1.319	1.334	1.349	1.363	1.392	1.421	1.450	1.465	1.480	1.509	1.538	1.582	1.611	1.625	1.683	1.756
63		1.235	1.249	1.263	1.276	1.290	1.304	1.318	1.332	1.346	1.374	1.401	1.429	1.443	1.457	1.484	1.512	1.554	1.581	1.595	1.651	1.720
66		1.224	1.237	1.251	1.264	1.277	1.290	1.304	1.317	1.300	1.357	1.383	1.410	1.423	1.436	1.462	1.489	1.529	1.555	1.568	1.621	1.687
69		1.214	1.227	1.240	1.252	1.265	1.278	1.290	1.303	1.316	1.341	1.366	1.392	1.404	1.417	1.442	1.468	1.506	1.531	1.544	1.594	1.658
72		1.205	1.218	1.230	1.242	1.254	1.266	1.278	1.290	1.303	1.327	1.351	1.375	1.387	1.400	1.424	1.448	1.485	1.509	1.521	1.570	1.630
75		1.197	1.209	1.221	1.232	1.244	1.256	1.267	1.279	1.290	1.314	1.337	1.360	1.372	1.384	1.407	1.430	1.465	1.488	1.500	1.547	1.605
78		1.190	1.201	1.212	1.223	1.234	1.246	1.257	1.268	1.279	1.302	1.324	1.347	1.358	1.369	1.391	1.414	1.447	1.470	1.481	1.526	1.582
81		1.183	1.193	1.204	1.215	1.226	1.237	1.247	1.258	1.269	1.291	1.312	1.334	1.344	1.355	1.377	1.398	1.431	1.452	1.463	1.506	1.560
84		1.176	1.187	1.197	1.207	1.218	1.228	1.239	1.249	1.259	1.280	1.301	1.322	1.332	1.343	1.363	1.384	1.415	1.436	1.447	1.488	1.540
15	$\frac{\bar{h}}{t_S}$	2.434	2.708	2.995	3.295	3.605	3.925	4.254	4.593	4.939	5.653	6.394	7.158	7.547	7.942	8.743	9.560	10.81	11.66	12.09	13.83	16.06
16		2.371	2.638	2.919	3.211	3.514	3.827	4.150	4.482	4.822	5.223	6.251	7.003	7.387	7.775	8.566	9.372	10.61	11.45	11.88	13.60	15.80
17		2.312	2.573	2.847	3.132	3.429	3.735	4.052	4.377	4.710	5.399	6.115	6.855	7.233	7.616	8.396	9.192	10.41	11.25	11.67	13.37	15.56
18		2.257	2.511	2.779	3.058	3.348	3.648	3.958	4.277	4.605	5.281	5.986	6.714	7.087	7.464	8.233	9.020	10.23	11.05	11.47	13.16	15.32
19		2.205	2.453	2.715	2.988	3.272	3.566	3.870	4.182	4.503	5.169	5.862	6.579	6.946	7.318	8.077	8.853	10.05	10.86	11.27	12.95	15.09
20		2.156	2.399	2.654	2.921	3.199	3.487	3.785	4.092	4.408	5.062	5.743	6.450	6.812	7.178	7.927	8.694	9.873	10.68	11.08	12.74	14.87
21		2.110	2.347	2.596	2.858	3.131	3.413	3.705	4.007	4.316	4.959	5.630	6.326	6.682	7.044	7.783	8.540	9.705	10.50	10.90	12.54	14.65
22		2.066	2.298	2.542	2.798	3.065	3.342	3.629	3.925	4.229	4.861	5.521	6.207	6.559	6.915	7.644	8.392	9.543	10.33	10.73	12.35	14.44
23		2.025	2.251	2.490	2.741	3.003	3.275	3.556	3.847	4.146	4.767	5.417	6.093	6.437	6.792	7.511	8.249	9.387	10.16	10.56	12.17	14.24
24		1.985	2.207	2.441	2.687	2.944	3.211	3.487	3.773	4.066	4.678	5.318	5.983	6.325	6.672	7.382	8.111	9.236	10.01	10.40	11.99	14.04
25		1.948	2.165	2.395	2.636	2.887	3.149	3.421	3.701	3.990	4.592	5.222	5.878	6.215	6.558	7.259	7.978	9.090	9.851	10.24	11.81	13.85
26		1.912	2.125	2.350	2.587	2.833	3.091	3.357	3.633	3.917	4.509	5.129	5.777	6.109	6.447	7.138	7.850	8.949	9.702	10.08	11.64	13.66
27		1.879	2.087	2.308	2.540	2.782	3.035	3.296	3.568	3.847	4.430	5.041	5.679	6.007	6.341	7.023	7.726	8.813	9.557	9.935	11.48	13.48
28		1.846	2.051	2.267	2.495	2.733	2.981	3.238	3.505	3.780	4.353	4.956	5.585	5.908	6.237	6.912	7.606	8.681	9.417	9.791	11.32	13.30
29		1.816	2.016	2.228	2.452	2.685	2.929	3.182	3.444	3.715	4.280	4.874	5.494	5.813	6.138	6.804	7.490	8.553	9.282	9.652	11.17	13.13
30		1.786	1.983	2.191	2.410	2.640	2.880	3.129	3.387	3.653	4.209	4.795	5.406	5.721	6.042	6.700	7.377	8.428	9.150	9.516	11.02	12.96
31		1.758	1.951	2.156	2.371	2.597	2.832	3.077	3.331	3.593	4.141	4.718	5.322	5.633	5.949	6.599	7.269	8.308	9.022	9.385	10.87	12.80
32		1.731	1.921	2.121	2.333	2.555	2.787	3.028	3.278	3.536	4.076	4.645	5.240	5.547	5.860	6.502	7.164	8.191	8.898	9.257	10.73	12.64
33		1.706	1.891	2.089	2.297	2.515	2.743	2.980	3.226	3.480	4.012	4.574	5.161	5.464	5.775	6.407	7.061	8.078	8.777	9.133	10.59	12.48
34		1.681	1.863	2.057	2.262	2.477	2.701	2.934	3.176	3.427	3.952	4.505	5.085	5.384	5.689	6.315	6.962	7.968	8.660	9.012	10.46	12.33
35		1.657	1.836	2.027	2.228	2.439	2.660	2.890	3.128	3.375	3.893	4.438	5.011	5.306	5.608	6.227	6.866	7.861	8.546	8.895	10.32	12.19
36		1.634	1.811	1.998	2.196	2.404	2.621	2.847	3.082	3.326	3.835	4.374	4.939	5.231	5.529	6.141	6.773	7.757	8.435	8.780	10.20	12.04

NACA

TABLE 7.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 0.79;\ \frac{b_A}{t_W} = 8.2;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.97;\ \frac{p}{t_S} = 6.36\right)$ - Concluded.

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
37	$\frac{h}{t_S}$	1.612	1.786	1.970	2.165	2.369	2.583	2.806	3.038	3.278	3.780	4.312	4.870	5.158	5.452	6.057	6.683	7.656	8.327	8.669	10.07	11.90
38		1.591	1.762	1.943	2.135	2.336	2.547	2.766	2.995	3.231	3.727	4.252	4.803	5.088	5.378	5.976	6.595	7.558	8.223	8.561	9.951	11.77
39		1.571	1.739	1.917	2.106	2.304	2.511	2.728	2.953	3.186	3.675	4.193	4.738	5.019	5.306	5.897	6.509	7.463	8.120	8.456	9.833	11.63
40		1.551	1.716	1.892	2.078	2.273	2.478	2.691	2.913	3.143	3.626	4.137	4.674	4.952	5.236	5.821	6.426	7.370	8.021	8.353	9.718	11.50
42		1.514	1.674	1.844	2.025	2.214	2.413	2.620	2.836	3.060	3.530	4.029	4.553	4.825	5.102	5.674	6.266	7.191	7.830	8.155	9.496	11.25
44		1.480	1.635	1.800	1.975	2.159	2.352	2.554	2.764	2.982	3.440	3.927	4.439	4.705	4.976	5.535	6.115	7.021	7.648	7.967	9.284	11.01
46		1.448	1.598	1.759	1.928	2.108	2.295	2.492	2.696	2.909	3.356	3.831	4.331	4.591	4.856	5.403	5.972	6.860	7.475	7.789	9.082	10.78
48		1.417	1.564	1.719	1.885	2.059	2.242	2.433	2.634	2.840	3.276	3.740	4.229	4.483	4.743	5.278	5.835	6.707	7.310	7.618	8.889	10.56
50		1.389	1.531	1.683	1.844	2.013	2.192	2.378	2.573	2.775	3.200	3.654	4.132	4.381	4.635	5.160	5.706	6.561	7.153	7.455	8.705	10.35
52		1.363	1.501	1.648	1.805	1.970	2.144	2.326	2.516	2.713	3.129	3.572	4.041	4.284	4.533	5.047	5.582	6.421	7.003	7.300	8.528	10.15
54		1.338	1.472	1.616	1.768	1.930	2.099	2.277	2.462	2.654	3.061	3.494	3.953	4.191	4.435	4.939	5.464	6.288	6.859	7.152	8.360	9.951
56		1.314	1.445	1.585	1.734	1.891	2.057	2.230	2.411	2.599	2.997	3.421	3.870	4.103	4.342	4.837	5.351	6.160	6.722	7.009	8.197	9.765
58		1.292	1.419	1.556	1.701	1.855	2.016	2.186	2.362	2.547	2.936	3.351	3.791	4.019	4.254	4.739	5.244	6.039	6.590	6.873	8.042	9.586
60		1.270	1.395	1.528	1.670	1.820	1.978	2.143	2.316	2.496	2.877	3.284	3.715	3.939	4.169	4.645	5.141	5.922	6.464	6.742	7.893	9.413
63		1.241	1.360	1.489	1.626	1.771	1.924	2.084	2.251	2.425	2.795	3.189	3.608	3.826	4.049	4.512	4.995	5.755	6.285	6.558	7.680	9.166
66		1.213	1.329	1.454	1.586	1.726	1.874	2.029	2.191	2.360	2.718	3.101	3.508	3.719	3.937	4.387	4.858	5.600	6.116	6.380	7.478	8.933
69		1.188	1.300	1.420	1.548	1.684	1.827	1.977	2.135	2.299	2.646	3.018	3.414	3.620	3.831	4.270	4.729	5.452	5.956	6.215	7.288	8.712
72		1.164	1.272	1.389	1.513	1.645	1.783	1.929	2.082	2.241	2.579	2.940	3.325	3.526	3.732	4.160	4.607	5.313	5.805	6.058	7.108	8.502
75		1.142	1.247	1.360	1.480	1.608	1.742	1.884	2.032	2.187	2.515	2.867	3.242	3.438	3.639	4.056	4.492	5.182	5.663	5.910	6.937	8.302
78		1.121	1.223	1.333	1.449	1.573	1.704	1.842	1.986	2.136	2.456	2.799	3.164	3.355	3.551	3.957	4.384	5.057	5.528	5.769	6.774	8.113
81		1.102	1.201	1.307	1.420	1.541	1.668	1.802	1.942	2.088	2.400	2.734	3.090	3.276	3.467	3.864	4.280	4.939	5.400	5.636	6.620	7.932
84		1.083	1.179	1.283	1.393	1.510	1.634	1.764	1.901	2.043	2.347	2.672	3.020	3.202	3.388	3.776	4.184	4.827	5.278	5.509	6.474	7.560
15	$\frac{p}{t_S}$	2.987	3.326	3.668	4.011	4.355	4.701	5.046	5.391	5.736	6.424	7.108	7.788	8.127	8.464	9.134	9.800	10.79	11.44	11.77	13.06	14.65
16		2.959	3.296	3.637	3.980	4.323	4.668	5.013	5.359	5.704	6.394	7.080	7.762	8.102	8.441	9.115	9.784	10.78	11.44	11.76	13.06	14.66
17		2.930	3.266	3.606	3.948	4.291	4.636	4.981	5.326	5.672	6.362	7.050	7.735	8.076	8.416	9.092	9.765	10.77	11.43	11.75	13.06	14.67
18		2.902	3.237	3.575	3.916	4.259	4.603	4.948	5.293	5.639	6.330	7.019	7.706	8.048	8.388	9.068	9.743	10.75	11.41	11.74	13.05	14.67
19		2.875	3.208	3.545	3.885	4.227	4.572	4.915	5.260	5.606	6.297	6.987	7.675	8.018	8.360	9.042	9.719	10.73	11.40	11.73	13.05	14.67
20		2.848	3.180	3.516	3.854	4.195	4.538	4.882	5.227	5.572	6.263	6.955	7.643	7.987	8.330	9.014	9.694	10.71	11.38	11.71	13.03	14.68
21		2.822	3.152	3.486	3.823	4.163	4.505	4.848	5.193	5.538	6.230	6.921	7.612	7.956	8.299	8.985	9.667	10.68	11.36	11.69	13.02	14.66
22		2.796	3.124	3.457	3.793	4.132	4.473	4.816	5.160	5.505	6.196	6.888	7.578	7.895	8.268	8.954	9.638	10.66	11.33	11.67	13.00	14.65
23		2.770	3.097	3.428	3.763	4.101	4.441	4.783	5.126	5.471	6.161	6.853	7.545	7.889	8.235	8.923	9.608	10.63	11.30	11.65	12.99	14.64
24		2.746	3.070	3.400	3.733	4.070	4.409	4.750	5.093	5.437	6.127	6.819	7.511	7.856	8.201	8.890	9.577	10.60	11.28	11.62	12.96	14.63
25		2.721	3.044	3.372	3.704	4.039	4.378	4.718	5.060	5.403	6.093	6.784	7.476	7.822	8.167	8.858	9.546	10.57	11.25	11.59	12.94	14.61
26		2.698	3.018	3.346	3.676	4.010	4.347	4.686	5.027	5.370	6.059	6.750	7.441	7.788	8.133	8.824	9.513	10.54	11.23	11.57	12.92	14.59
27		2.674	2.993	3.318	3.647	3.980	4.316	4.654	4.995	5.337	6.024	6.715	7.407	7.753	8.099	8.790	9.480	10.51	11.20	11.54	12.89	14.57
28		2.651	2.968	3.292	3.619	3.951	4.286	4.623	4.963	5.304	5.990	6.680	7.372	7.718	8.064	8.756	9.446	10.48	11.16	11.51	12.87	14.55
29		2.628	2.944	3.266	3.592	3.922	4.256	4.592	4.931	5.271	5.956	6.645	7.337	7.683	8.028	8.721	9.412	10.45	11.13	11.48	12.84	14.53
30		2.607	2.921	3.241	3.565	3.894	4.227	4.562	4.899	5.239	5.923	6.611	7.301	7.647	7.993	8.686	9.377	10.41	11.10	11.44	12.81	14.50
31		2.585	2.897	3.216	3.539	3.867	4.198	4.532	4.868	5.207	5.890	6.577	7.267	7.613	7.959	8.651	9.343	10.38	11.07	11.41	12.78	14.48
32		2.564	2.875	3.192	3.513	3.839	4.169	4.502	4.838	5.176	5.856	6.542	7.232	7.577	7.923	8.615	9.308	10.35	11.03	11.38	12.75	14.45
33		2.544	2.853	3.168	3.488	3.813	4.141	4.473	4.807	5.144	5.823	6.508	7.197	7.542	7.880	8.580	9.272	10.31	10.97	11.35	12.72	14.42
34		2.524	2.831	3.144	3.463	3.786	4.113	4.444	4.777	5.113	5.791	6.475	7.162	7.507	7.853	8.544	9.237	10.28	10.97	11.31	12.69	14.40
35		2.504	2.809	3.121	3.438	3.760	4.086	4.416	4.751	5.083	5.759	6.441	7.128	7.473	7.818	8.509	9.202	10.24	10.93	11.28	12.65	14.37
36		2.485	2.788	3.099	3.415	3.735	4.059	4.387	4.719	5.053	5.727	6.408	7.093	7.438	7.782	8.473	9.165	10.20	10.90	11.24	12.62	14.33
37		2.466	2.768	3.076	3.391	3.710	4.033	4.360	4.690	5.023	5.695	6.375	7.060	7.403	7.748	8.438	9.130	10.17	10.86	11.21	12.59	14.30
38		2.447	2.748	3.056	3.367	3.685	4.007	4.333	4.662	4.994	5.664	6.342	7.025	7.369	7.713	8.403	9.094	10.13	10.83	11.17	12.55	14.27
39		2.429	2.728	3.033	3.345	3.661	3.982	4.306	4.634	4.965	5.634	6.311	6.992	7.335	7.679	8.368	9.059	10.10	10.79	11.14	12.52	14.24
40		2.412	2.709	3.012	3.322	3.637	3.956	4.280	4.608	4.736	5.603	6.278	6.959	7.301	7.644	8.333	9.023	10.06	10.75	11.10	12.48	14.21
42		2.377	2.671	2.972	3.278	3.590	3.907	4.228	4.553	4.880	5.543	6.215	6.893	7.234	7.576	8.263	8.953	9.990	10.68	11.03	12.41	14.14
44		2.344	2.635	2.933	3.236	3.546	3.860	4.178	4.500	4.826	5.485	6.153	6.827	7.168	7.509	8.195	8.883	9.918	10.61	10.96	12.34	14.07
46		2.313	2.600	2.895	3.196	3.502	3.814	4.130	4.450	4.773	5.428	6.093	6.765	7.104	7.443	8.127	8.813	9.847	10.51	10.88	12.27	14.00
48		2.282	2.567	2.858	3.155	3.461	3.770	4.083	4.400	4.721	5.372	6.034	6.703	7.040	7.379	8.060	8.744	9.777	10.47	10.81	12.20	13.93
50		2.253	2.534	2.823	3.119	3.420	3.726	4.037	4.352	4.671	5.318	5.976	6.642	6.978	7.315	7.994	8.677	9.707	10.40	10.74	12.13	13.86
52		2.224	2.503	2.790	3.082	3.380	3.684	3.993	4.306	4.622	5.265	5.919	6.582	6.917	7.253	7.929	8.610	9.637	10.33	10.67	12.05	13.78
54		2.197	2.473	2.757	3.046	3.343	3.644	3.950	4.261	4.576	5.214	5.864	6.524	6.857	7.191	7.865	8.544	9.569	10.26	10.60	11.98	13.71
56		2.171	2.444	2.725	3.012	3.306	3.605	3.909	4.217	4.529	5.164	5.810	6.467	6.798	7.131	7.802	8.479	9.501	10.19	10.53	11.91	13.64
58		2.146	2.416	2.694	2.979	3.270	3.566	3.868	4.174	4.484	5.115	5.758	6.411	6.741	7.072	7.741	8.416	9.434	10.12	10.46	11.84	13.57
60		2.121	2.389	2.663	2.947	3.235	3.529	3.829	4.132	4.440	5.067	5.706	6.356	6.684	7.015	7.680	8.352	9.368	10.05	10.39	11.77	13.50
63		2.085	2.350	2.622	2.900	3.185	3.476	3.772	4.072	4.377	4.998	5.631	6.276	6.603	6.930	7.591	8.259	9.271	9.950	10.29	11.66	13.39
66		2.052	2.313	2.581	2.855	3.137	3.425	3.717	4.014	4.316	4.931	5.559	6.199	6.522	6.848	7.505	8.169	9.176	9.852	10.19	11.56	13.28
69		2.020	2.277	2.541	2.813	3.091	3.375	3.665	3.959	4.257	4.866	5.489	6.124	6.445	6.768	7.421	8.081	9.082	9.756	10.01	11.46	13.17
72		1.990	2.243	2.504	2.773	3.048	3.328	3.615	3.905	4.201	4.804	5.422	6.051	6.370	6.691	7.339	7.995	8.992	9.662	9.999	11.36	13.07
75		1.960	2.210	2.468	2.734	3.005	3.283	3.566	3.854	4.147	4.744	5.356	5.980	6.297	6.616	7.260	7.912	8.903	9.570	9.906	11.26	12.97
78		1.932	2.179	2.434	2.696	2.966	3.239	3.520	3.805	4.094	4.687	5.293	5.912	6.226	6.543	7.183	7.831	8.816	9.504	9.814	11.16	12.86
81		1.906	2.149	2.401	2.660	2.927	3.197	3.475	3.757	4.044	4.630	5.232	5.846	6.158	6.472	7.108	7.752	8.731	9.392	9.724	11.07	12.76
84		1.880	2.121	2.369	2.626	2.888	3.157	3.432	3.711	3.995	4.576	5.173	5.782	6.092	6.403	7.036	7.674	8.649	9.306	9.637	10.97	12.66

NACA

TABLE 8.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 1.00;\ \frac{b_A}{t_W} = 6.7;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.90;\ \frac{p}{t_S} = 5.99\right)$

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	38	40	45
15	$\frac{\bar{t}}{t_S}$	2.380	2.473	2.567	2.660	2.753	2.847	2.940	3.033	3.127	3.313	3.500	3.687	3.780	3.873	4.060	4.247	4.527	4.713	4.807	5.180	5.647
16		2.294	2.381	2.469	2.556	2.644	2.271	2.819	2.906	2.994	3.169	3.344	3.519	3.606	3.694	3.869	4.044	4.306	4.481	4.569	4.919	5.356
17		2.218	2.300	2.382	2.465	2.547	2.629	2.712	2.794	2.877	3.041	3.206	3.371	3.453	3.535	3.700	3.865	4.112	4.276	4.359	4.688	5.100
18		2.150	2.228	2.306	2.383	2.461	2.539	2.617	2.694	2.772	2.928	3.083	3.239	3.317	3.394	3.550	3.706	3.939	4.094	4.172	4.483	4.872
19		2.090	2.163	2.237	2.311	2.384	2.458	2.532	2.605	2.679	2.826	2.974	3.121	3.195	3.268	3.416	3.563	3.784	3.932	4.005	4.300	4.668
20		2.035	2.105	2.175	2.245	2.315	2.385	2.455	2.525	2.595	2.735	2.875	3.015	3.085	3.155	3.295	3.435	3.645	3.785	3.855	4.135	4.485
21		1.986	2.052	2.119	2.186	2.252	2.819	2.386	2.452	2.519	2.652	2.786	2.919	2.986	3.052	3.186	3.319	3.519	3.652	3.719	3.986	4.319
22		1.941	2.005	2.068	2.132	2.196	2.259	2.323	2.386	2.450	2.577	2.705	2.832	2.895	2.959	3.086	3.214	3.405	3.532	3.596	3.850	4.168
23		1.900	1.961	2.022	2.083	2.144	2.204	2.265	2.326	2.388	2.509	2.630	2.752	2.813	2.874	2.996	3.117	3.300	3.422	3.483	3.726	4.030
24		1.863	1.921	1.979	2.038	2.096	2.154	2.213	2.271	2.329	2.446	2.563	2.679	2.738	2.796	2.913	3.029	3.204	3.321	3.379	3.613	3.904
25		1.828	1.884	1.940	1.996	2.052	2.108	2.164	2.220	2.276	2.388	2.500	2.612	2.668	2.724	2.836	2.948	3.116	3.228	3.284	3.508	3.788
26		1.796	1.850	1.904	1.957	2.012	2.065	2.119	2.173	2.227	2.335	2.442	2.550	2.604	2.658	2.765	2.873	3.035	3.142	3.196	3.412	3.681
27		1.767	1.819	1.870	1.922	1.974	2.026	2.078	2.130	2.182	2.285	2.389	2.493	2.544	2.596	2.700	2.804	2.959	3.063	3.115	3.322	3.582
28		1.739	1.789	1.839	1.889	1.939	1.989	2.039	2.089	2.139	2.239	2.339	2.439	2.489	2.539	2.639	2.739	2.889	2.989	3.039	3.239	3.489
29		1.714	1.762	1.810	1.859	1.907	1.955	2.003	2.052	2.100	2.197	2.293	2.390	2.438	2.486	2.583	2.679	2.824	2.921	2.969	3.162	3.403
30		1.690	1.737	1.783	1.830	1.877	1.923	1.970	2.017	2.063	2.157	2.250	2.343	2.390	2.437	2.530	2.623	2.763	2.857	2.903	3.090	3.323
31		1.668	1.713	1.758	1.803	1.848	1.894	1.939	1.984	2.029	2.119	2.210	2.300	2.345	2.390	2.481	2.571	2.707	2.797	2.842	3.023	3.248
32		1.647	1.691	1.733	1.778	1.822	1.866	1.909	1.953	1.997	2.084	2.172	2.259	2.303	2.347	2.434	2.522	2.653	2.741	2.784	2.954	3.178
33		1.627	1.670	1.712	1.755	1.797	1.839	1.882	1.924	1.967	2.052	2.136	2.221	2.263	2.306	2.391	2.476	2.603	2.688	2.730	2.900	3.112
34		1.609	1.650	1.691	1.732	1.774	1.815	1.856	1.897	1.938	2.021	2.103	2.185	2.265	2.268	2.350	2.432	2.556	2.638	2.679	2.844	3.050
35		1.591	1.631	1.671	1.711	1.751	1.791	1.831	1.871	1.911	1.991	2.071	2.151	2.191	2.231	2.311	2.391	2.511	2.591	2.631	2.791	2.991
36		1.575	1.614	1.653	1.692	1.731	1.769	1.808	1.847	1.886	1.964	2.042	2.119	2.158	2.197	2.275	2.353	2.469	2.547	2.586	2.742	2.936
37		1.560	1.597	1.635	1.673	1.711	1.749	1.787	1.824	1.862	1.938	2.014	2.089	2.127	2.165	2.241	2.316	2.430	2.505	2.543	2.695	2.884
38		1.545	1.582	1.618	1.655	1.692	1.729	1.766	1.803	1.840	1.913	1.987	2.061	2.097	2.134	2.208	2.282	2.392	2.466	2.503	2.650	2.834
39		1.531	1.567	1.603	1.639	1.674	1.710	1.746	1.782	1.818	1.900	1.962	2.033	2.069	2.105	2.177	2.249	2.356	2.428	2.464	2.608	2.787
40		1.518	1.553	1.588	1.623	1.658	1.693	1.728	1.763	1.798	1.868	1.938	2.008	2.043	2.078	2.148	2.218	2.323	2.393	2.428	2.568	2.743
42		1.493	1.526	1.560	1.593	1.626	1.660	1.693	1.726	1.760	1.826	1.893	1.960	1.993	2.026	2.093	2.160	2.260	2.326	2.360	2.439	2.660
44		1.471	1.502	1.534	1.566	1.598	1.630	1.661	1.693	1.725	1.789	1.852	1.916	1.948	1.980	2.043	2.107	2.202	2.266	2.298	2.425	2.584
46		1.450	1.480	1.511	1.541	1.572	1.602	1.633	1.663	1.694	1.754	1.815	1.876	1.907	1.937	1.998	2.059	2.150	2.211	2.241	2.363	2.516
48		1.431	1.460	1.490	1.519	1.548	1.577	1.606	1.635	1.665	1.723	1.781	1.840	1.869	1.898	1.956	2.015	2.102	2.160	2.190	2.306	2.452
50		1.414	1.442	1.470	1.498	1.526	1.554	1.582	1.610	1.638	1.694	1.750	1.806	1.834	1.862	1.918	1.974	2.058	2.114	2.142	2.254	2.394
52		1.398	1.425	1.452	1.479	1.506	1.533	1.560	1.587	1.614	1.667	1.721	1.775	1.802	1.829	1.883	1.937	2.017	2.071	2.098	2.206	2.340
54		1.384	1.409	1.435	1.461	1.487	1.513	1.539	1.565	1.591	1.643	1.694	1.746	1.772	1.798	1.850	1.902	1.980	2.031	2.057	2.161	2.291
56		1.369	1.395	1.420	1.445	1.470	1.495	1.520	1.545	1.570	1.620	1.670	1.720	1.745	1.770	1.820	1.870	1.945	1.995	2.020	2.120	2.245
58		1.357	1.381	1.405	1.429	1.453	1.478	1.502	1.526	1.550	1.598	1.647	1.695	1.719	1.743	1.791	1.840	1.912	1.960	1.984	2.081	2.201
60		1.345	1.368	1.392	1.415	1.438	1.462	1.485	1.508	1.532	1.578	1.625	1.672	1.695	1.718	1.765	1.812	1.882	1.928	1.952	2.045	2.161
63		1.329	1.351	1.373	1.395	1.418	1.440	1.462	1.484	1.506	1.551	1.595	1.640	1.662	1.684	1.729	1.773	1.840	1.884	1.906	1.995	2.106
66		1.314	1.335	1.356	1.377	1.399	1.420	1.441	1.462	1.483	1.526	1.568	1.611	1.632	1.653	1.695	1.738	1.802	1.844	1.865	1.950	2.056
69		1.300	1.320	1.341	1.361	1.381	1.401	1.422	1.442	1.462	1.503	1.543	1.584	1.604	1.625	1.665	1.706	1.767	1.807	1.828	1.909	2.010
72		1.288	1.307	1.326	1.346	1.365	1.385	1.404	1.444	1.443	1.482	1.521	1.560	1.579	1.599	1.638	1.673	1.735	1.774	1.793	1.871	1.968
75		1.276	1.295	1.313	1.332	1.351	1.369	1.388	1.407	1.425	1.463	1.500	1.537	1.556	1.575	1.612	1.649	1.705	1.743	1.761	1.836	1.929
78		1.265	1.283	1.301	1.319	1.337	1.355	1.373	1.391	1.409	1.445	1.481	1.517	1.535	1.553	1.588	1.624	1.678	1.714	1.732	1.804	1.894
81		1.258	1.273	1.290	1.307	1.325	1.342	1.359	1.377	1.394	1.428	1.463	1.498	1.515	1.532	1.567	1.601	1.653	1.688	1.705	1.774	1.860
84		1.246	1.263	1.280	1.296	1.313	1.330	1.346	1.363	1.380	1.413	1.446	1.480	1.496	1.513	1.546	1.580	1.630	1.663	1.680	1.746	1.830
15	$\frac{\bar{h}}{t_S}$	3.601	4.031	4.477	4.936	5.408	5.891	6.384	6.887	7.398	8.442	9.511	10.60	11.16	11.71	12.84	13.98	15.71	16.88	17.47	19.84	22.84
16		3.516	3.938	4.376	4.828	5.292	5.768	6.254	6.749	7.254	8.285	9.343	10.42	10.97	11.52	12.64	13.77	15.49	16.65	17.24	19.59	22.58
17		3.436	3.850	4.280	4.724	5.181	5.650	6.129	6.618	7.116	8.134	9.181	10.25	10.79	11.34	12.46	13.57	15.28	16.43	17.01	19.35	22.32
18		3.361	3.767	4.189	4.626	5.076	5.537	6.010	6.492	6.983	7.990	9.024	10.08	10.62	11.16	12.26	13.37	15.07	16.22	16.79	19.12	22.08
19		3.288	3.687	4.102	4.532	4.976	5.429	5.895	6.371	6.856	7.850	8.873	9.922	10.45	10.99	12.08	13.18	14.87	16.00	16.58	18.89	21.83
20		3.220	3.612	4.020	4.442	4.878	5.326	5.785	6.255	6.733	7.716	8.728	9.765	10.29	10.82	11.90	13.00	14.67	15.80	16.37	18.67	21.59
21		3.156	3.539	3.941	4.358	4.786	5.227	5.680	6.143	6.615	7.586	8.587	9.614	10.14	10.66	11.73	12.82	14.48	15.60	16.17	18.45	21.36
22		3.093	3.471	3.865	4.274	4.697	5.132	5.578	6.035	6.502	7.461	8.451	9.468	9.985	10.51	11.57	12.65	14.29	15.41	15.97	18.24	21.13
23		3.033	3.405	3.793	4.195	4.612	5.041	5.481	5.932	6.391	7.341	8.320	9.326	9.839	10.36	11.41	12.48	14.11	15.22	15.77	18.03	20.91
24		2.977	3.342	3.723	4.120	4.530	4.953	5.387	5.832	6.287	7.224	8.193	9.189	9.696	10.21	11.25	12.31	13.93	15.03	15.59	17.83	20.69
25		2.922	3.281	3.657	4.047	4.451	4.868	5.297	5.736	6.185	7.111	8.070	9.056	9.558	10.07	11.10	12.16	13.76	14.86	15.40	17.63	20.48
26		2.870	3.224	3.593	3.977	4.376	4.787	5.210	5.643	6.087	7.003	7.950	8.927	9.425	9.928	10.95	12.00	13.59	14.68	15.22	17.44	20.27
27		2.821	3.168	3.532	3.911	4.303	4.708	5.126	5.554	5.992	6.897	7.835	8.802	9.295	9.794	10.81	11.84	13.43	14.50	15.05	17.25	20.07
28		2.773	3.115	3.473	3.846	4.233	4.633	5.045	5.468	5.901	6.795	7.723	8.680	9.169	9.663	10.67	11.70	13.27	14.34	14.88	17.07	19.87
29		2.727	3.064	3.416	3.784	4.165	4.560	4.967	5.384	5.812	6.696	7.614	8.562	9.046	9.536	10.53	11.55	13.11	14.17	14.71	16.89	19.67
30		2.683	3.014	3.362	3.724	4.100	4.490	4.891	5.303	5.726	6.600	7.509	8.448	8.927	9.412	10.40	11.41	12.96	14.01	14.55	16.71	19.48
31		2.641	2.967	3.309	3.666	4.038	4.422	4.818	5.225	5.643	6.508	7.407	8.336	8.811	9.292	10.27	11.27	12.81	13.86	14.39	16.54	19.29
32		2.601	2.922	3.259	3.611	3.977	4.356	4.747	5.150	5.563	6.418	7.307	8.227	8.698	9.175	10.15	11.14	12.67	13.71	14.23	16.37	19.11
33		2.561	2.878	3.210	3.557	3.918	4.292	4.679	5.077	5.485	6.330	7.211	8.122	8.588	9.061	10.02	11.01	12.53	13.56	14.08	16.20	18.92
34		2.524	2.835	3.163	3.505	3.862	4.231	4.613	5.005	5.409	6.245	7.117	8.020	8.482	8.950	9.906	10.88	12.39	13.41	13.93	16.04	18.75
35		2.488	2.794	3.117	3.455	3.807	4.172	4.548	4.937	5.336	6.163	7.026	7.920	8.377	8.842	9.789	10.76	12.25	13.27	13.78	15.88	18.57
36		2.452	2.755	3.073	3.406	3.754	4.114	4.486	4.870	5.264	6.083	6.937	7.823	8.276	8.737	9.676	10.64	12.12	13.13	13.64	15.72	18.40

TABLE 8.- Z-PANEL PROPERTIES $\left(\frac{t_W}{t_S} = 1.00;\ \frac{b_A}{t_W} = 6.7;\ \frac{b_F}{b_W} = 0.4;\ \frac{d}{t_S} = 1.90;\ \frac{p}{t_S} = 5.99\right)$ - Concluded.

$\frac{b_S}{t_S}$ \ $\frac{b_W}{t_W}$		10	11	12	13	14	15	16	17	18	20	22	24	25	26	28	30	33	35	36	40	45
37		2.419	2.717	3.031	3.359	3.702	4.058	4.426	4.805	5.195	6.005	6.850	7.728	8.177	8.634	9.565	10.52	11.99	12.99	13.50	15.57	18.23
38		2.386	2.680	2.990	3.314	3.652	4.004	4.367	4.742	5.128	5.929	6.766	7.638	8.081	8.533	9.457	10.40	11.86	12.86	13.37	15.42	18.07
39		2.354	2.644	2.950	3.270	3.604	3.951	4.311	4.681	5.063	5.856	6.684	7.546	7.987	8.436	9.352	10.29	11.74	12.73	13.23	15.28	17.91
40		2.324	2.610	2.911	3.227	3.557	3.900	4.256	4.622	4.999	5.784	6.605	7.458	7.895	8.340	9.249	10.19	11.62	12.60	13.10	15.13	17.75
42		2.266	2.544	2.838	3.146	3.468	3.803	4.150	4.508	4.878	5.646	6.451	7.289	7.719	8.156	9.049	9.968	11.39	12.35	12.95	14.85	17.44
44		2.211	2.482	2.768	3.069	3.383	3.711	4.050	4.401	4.762	5.515	6.305	7.128	7.550	7.980	8.859	9.763	11.16	12.12	12.60	14.58	17.14
46		2.160	2.424	2.703	2.997	3.304	3.623	3.955	4.299	4.653	5.391	6.166	6.974	7.389	7.812	8.677	9.568	10.95	11.89	12.38	14.32	16.85
48		2.111	2.369	2.641	2.928	3.228	3.541	3.866	4.202	4.549	5.273	6.033	6.827	7.236	7.652	8.503	9.380	10.74	11.67	12.14	14.07	16.58
50		2.066	2.317	2.583	2.863	3.157	3.463	3.780	4.110	4.450	5.160	5.907	6.687	7.089	7.498	8.338	9.200	10.54	11.46	11.92	13.83	16.31
52		2.023	2.268	2.528	2.802	3.089	3.388	3.700	4.023	4.356	5.053	5.786	6.553	6.948	7.351	8.176	9.027	10.35	11.25	11.71	13.60	16.05
54	$\frac{\bar{h}}{t_S}$	1.982	2.221	2.476	2.743	3.024	3.318	3.623	3.939	4.266	4.950	5.671	6.425	6.813	7.210	8.023	8.861	10.16	11.06	11.51	13.38	15.80
56		1.943	2.177	2.426	2.688	2.963	3.250	3.549	3.860	4.180	4.852	5.560	6.032	6.684	7.074	7.876	8.702	9.986	10.87	11.32	13.16	15.55
58		1.907	2.136	2.379	2.635	2.904	3.186	3.479	3.784	4.098	4.758	5.454	6.184	6.560	6.944	7.733	8.548	9.815	10.69	11.13	12.95	15.32
60		1.872	2.096	2.334	2.585	2.849	3.125	3.413	3.711	4.020	4.668	5.352	6.070	6.441	6.819	7.594	8.400	9.650	10.51	10.95	12.75	15.09
63		1.823	2.039	2.270	2.514	2.770	3.038	3.318	3.608	3.909	4.540	5.207	5.909	6.271	6.640	7.401	8.188	9.413	10.26	10.68	12.45	14.76
66		1.777	1.987	2.211	2.447	2.696	2.957	3.229	3.512	3.804	4.420	5.071	5.756	6.110	6.472	7.216	7.987	9.188	10.02	10.44	12.18	14.44
69		1.734	1.938	2.155	2.385	2.627	2.881	3.145	3.421	3.706	4.306	4.942	5.612	5.958	6.312	7.041	7.796	8.974	9.788	10.20	11.91	14.14
72		1.695	1.892	2.103	2.327	2.562	2.809	3.067	3.335	3.614	4.199	4.821	5.475	5.814	6.160	6.874	7.614	8.771	9.570	9.977	11.66	13.85
75		1.657	1.849	2.054	2.272	2.501	2.742	2.993	3.255	3.526	4.098	4.705	5.346	5.677	6.017	6.716	7.442	8.577	9.361	9.762	11.41	13.58
78		1.622	1.809	2.008	2.220	2.443	2.678	2.923	3.178	3.444	4.002	4.596	5.223	5.548	5.880	6.565	7.277	8.392	9.163	9.556	11.18	13.31
81		1.589	1.771	1.965	2.171	2.389	2.618	2.857	3.106	3.366	3.911	4.492	5.106	5.424	5.750	6.422	7.121	8.215	8.973	9.360	10.96	13.06
84		1.557	1.735	1.924	2.125	2.338	2.561	2.795	3.038	3.291	3.825	4.394	4.995	5.307	5.626	6.285	6.971	8.045	8.791	9.171	10.74	12.81
15		4.063	4.499	4.934	5.368	5.800	6.231	6.659	7.084	7.507	8.347	9.177	9.997	10.40	10.81	11.61	12.41	13.59	14.36	14.75	16.28	18.17
16		4.040	4.476	4.912	5.346	5.780	6.211	6.641	7.069	7.494	8.338	9.172	9.997	10.41	10.81	11.62	12.42	13.61	14.39	14.78	16.32	18.22
17		4.015	4.452	4.888	5.324	5.758	6.191	6.622	7.051	7.478	8.326	9.165	9.995	10.41	10.82	11.63	12.43	13.63	14.42	14.81	16.36	18.27
18		3.991	4.427	4.864	5.300	5.735	6.169	6.602	7.032	7.461	8.312	9.155	9.989	10.40	10.81	11.63	12.44	13.64	14.44	14.83	16.39	18.31
19		3.966	4.402	4.839	5.276	5.712	6.146	6.580	7.012	7.442	8.297	9.143	9.981	10.40	10.81	11.63	12.45	13.66	14.45	14.85	16.42	18.35
20		3.941	4.377	4.813	5.250	5.687	6.123	6.557	6.990	7.422	8.279	9.129	9.971	10.39	10.80	11.63	12.45	13.66	14.47	14.86	16.44	18.39
21		3.916	4.351	4.788	5.225	5.662	6.098	6.533	6.968	7.400	8.260	9.113	9.959	10.38	10.80	11.63	12.45	13.67	14.48	14.88	16.46	18.42
22		3.891	4.325	4.762	5.199	5.636	6.073	6.509	6.944	7.378	8.240	9.096	9.945	10.37	10.79	11.62	12.45	13.67	14.48	14.89	16.48	18.44
23		3.865	4.299	4.736	5.173	5.610	6.047	6.484	6.920	7.353	8.219	9.078	9.929	10.35	10.77	11.61	12.44	13.67	14.49	14.89	16.49	18.47
24		3.841	4.274	4.710	5.146	5.584	6.021	6.458	6.895	7.330	8.197	9.058	9.912	10.34	10.76	11.60	12.43	13.67	14.49	14.89	16.51	18.49
25		3.816	4.248	4.683	5.120	5.557	5.995	6.432	6.869	7.305	8.174	9.037	9.894	10.32	10.74	11.59	12.42	13.67	14.49	14.90	16.51	18.51
26		3.791	4.223	4.652	5.093	5.531	5.968	6.406	6.843	7.280	8.150	9.015	9.874	10.30	10.73	11.57	12.41	13.66	14.49	14.90	16.52	18.52
27		3.767	4.197	4.631	5.067	5.504	5.941	6.379	6.817	7.254	8.125	8.992	9.853	10.28	10.71	11.56	12.40	13.65	14.48	14.89	16.52	18.53
28		3.743	4.172	4.605	5.040	5.477	5.914	6.352	6.790	7.227	8.100	8.968	9.832	10.26	10.69	11.54	12.39	13.64	14.47	14.89	16.53	18.54
29		3.719	4.147	4.580	5.014	5.450	5.887	6.325	6.763	7.200	8.074	8.944	9.809	10.24	10.67	11.52	12.37	13.63	14.47	14.88	16.53	18.55
30		3.695	4.122	4.554	4.987	5.423	5.860	6.298	6.736	7.173	8.048	8.919	9.786	10.22	10.65	11.50	12.35	13.62	14.46	14.87	16.52	18.56
31		3.672	4.098	4.528	4.961	5.396	5.833	6.270	6.708	7.146	8.021	8.894	9.762	10.19	10.63	11.48	12.34	13.61	14.45	14.86	16.52	18.56
32		3.649	4.074	4.503	4.935	5.370	5.806	6.243	6.681	7.119	7.994	8.868	9.737	10.17	10.60	11.46	12.32	13.59	14.43	14.85	16.51	18.56
33		3.626	4.050	4.478	4.909	5.343	5.779	6.216	6.653	7.091	7.967	8.841	9.712	10.15	10.58	11.44	12.30	13.57	14.42	14.84	16.51	18.56
34		3.603	4.026	4.453	4.883	5.317	5.752	6.188	6.626	7.064	7.940	8.815	9.687	10.12	10.55	11.42	12.28	13.56	14.40	14.82	16.50	18.56
35		3.581	4.002	4.428	4.858	5.290	5.725	6.161	6.598	7.036	7.912	8.788	9.660	10.10	10.53	11.39	12.26	13.54	14.39	14.81	16.49	18.55
36	$\frac{\rho}{t_S}$	3.559	3.979	4.404	4.833	5.264	5.698	6.134	6.571	7.009	7.885	8.760	9.634	10.07	10.50	11.37	12.23	13.52	14.37	14.79	16.47	18.55
37		3.538	3.956	4.380	4.808	5.239	5.672	6.107	6.544	6.981	7.857	8.733	9.607	10.04	10.48	11.35	12.21	13.50	14.35	14.78	16.46	18.54
38		3.516	3.933	4.356	4.783	5.213	5.646	6.080	6.516	6.953	7.829	8.705	9.580	10.02	10.45	11.32	12.19	13.48	14.33	14.76	16.45	18.53
39		3.495	3.911	4.332	4.758	5.187	5.619	6.053	6.489	6.926	7.801	8.678	9.553	9.990	10.43	11.30	12.16	13.46	14.31	14.74	16.43	18.52
40		3.475	3.889	4.309	4.734	5.162	5.593	6.027	6.462	6.898	7.773	8.650	9.525	9.963	10.40	11.27	12.14	13.43	14.29	14.72	16.42	18.51
42		3.434	3.846	4.263	4.686	5.111	5.542	5.974	6.408	6.843	7.718	8.594	9.470	9.908	10.35	11.22	12.09	13.39	14.25	14.68	16.38	18.49
44		3.395	3.804	4.219	4.639	5.063	5.491	5.922	6.354	6.789	7.662	8.537	9.414	9.852	10.29	11.16	12.04	13.34	14.20	14.63	16.34	18.46
46		3.357	3.763	4.175	4.593	5.015	5.441	5.870	6.302	6.735	7.606	8.481	9.358	9.796	10.23	11.11	11.98	13.29	14.15	14.59	16.30	18.43
48		3.319	3.723	4.132	4.548	4.968	5.392	5.821	6.250	6.682	7.551	8.425	9.301	9.739	10.18	11.05	11.93	13.24	14.10	14.54	16.26	18.39
50		3.283	3.684	4.091	4.504	4.922	5.345	5.771	6.199	6.630	7.497	8.369	9.245	9.683	10.12	11.00	11.87	13.18	14.05	14.49	16.22	18.36
52		3.248	3.646	4.051	4.461	4.877	5.298	5.722	6.149	6.578	7.443	8.314	9.188	9.626	10.06	10.94	11.82	13.13	14.00	14.44	16.17	18.31
54		3.214	3.609	4.011	4.420	4.833	5.252	5.674	6.099	6.527	7.390	8.259	9.132	9.570	10.01	10.88	11.76	13.07	13.95	14.38	16.12	18.27
56		3.181	3.573	3.973	4.379	4.790	5.206	5.627	6.050	6.477	7.337	8.204	9.076	9.513	9.951	10.83	11.70	13.02	13.89	14.33	16.07	18.23
58		3.149	3.538	3.935	4.339	4.748	5.162	5.581	6.002	6.428	7.285	8.160	9.021	9.457	9.895	10.77	11.65	12.96	13.84	14.27	16.02	18.18
60		3.118	3.504	3.899	4.300	4.707	5.119	5.535	5.956	6.380	7.234	8.097	8.966	9.402	9.839	10.72	11.59	12.91	13.78	14.22	15.96	18.13
63		3.073	3.455	3.845	4.243	4.647	5.056	5.469	5.887	6.308	7.159	8.018	8.884	9.319	9.755	10.63	11.50	12.82	13.70	14.13	15.88	18.06
66		3.029	3.407	3.794	4.188	4.589	4.994	5.405	5.820	6.238	7.085	7.941	8.804	9.238	9.672	10.54	11.42	12.73	13.61	14.05	15.80	17.98
69		2.987	3.362	3.745	4.135	4.532	4.935	5.343	5.755	6.171	7.012	7.864	8.725	9.157	9.591	10.46	11.33	12.65	13.52	13.96	15.72	17.90
72		2.947	3.318	3.697	4.084	4.478	4.877	5.282	5.691	6.105	6.942	7.790	8.647	9.078	9.510	10.38	11.25	12.56	13.44	13.88	15.63	17.82
75		2.908	3.275	3.651	4.035	4.425	4.822	5.223	5.630	6.040	6.873	7.717	8.570	9.000	9.431	10.30	11.17	12.48	13.35	13.79	15.54	17.73
78		2.871	3.235	3.607	3.986	4.374	4.768	5.166	5.570	5.978	6.805	7.646	8.495	8.923	9.353	10.22	11.08	12.39	13.27	13.71	15.46	17.65
81		2.835	3.195	3.564	3.941	4.325	4.715	5.111	5.512	5.917	6.740	7.576	8.422	8.848	9.276	10.14	11.00	12.31	13.18	13.62	15.37	17.56
84		2.801	3.157	3.522	3.896	4.277	4.664	5.057	5.455	5.858	6.676	7.507	8.360	8.774	9.201	10.06	10.92	12.23	13.10	13.54	15.29	17.48

Figure 1.- Test specimen with a large proportion of material in the stiffeners.

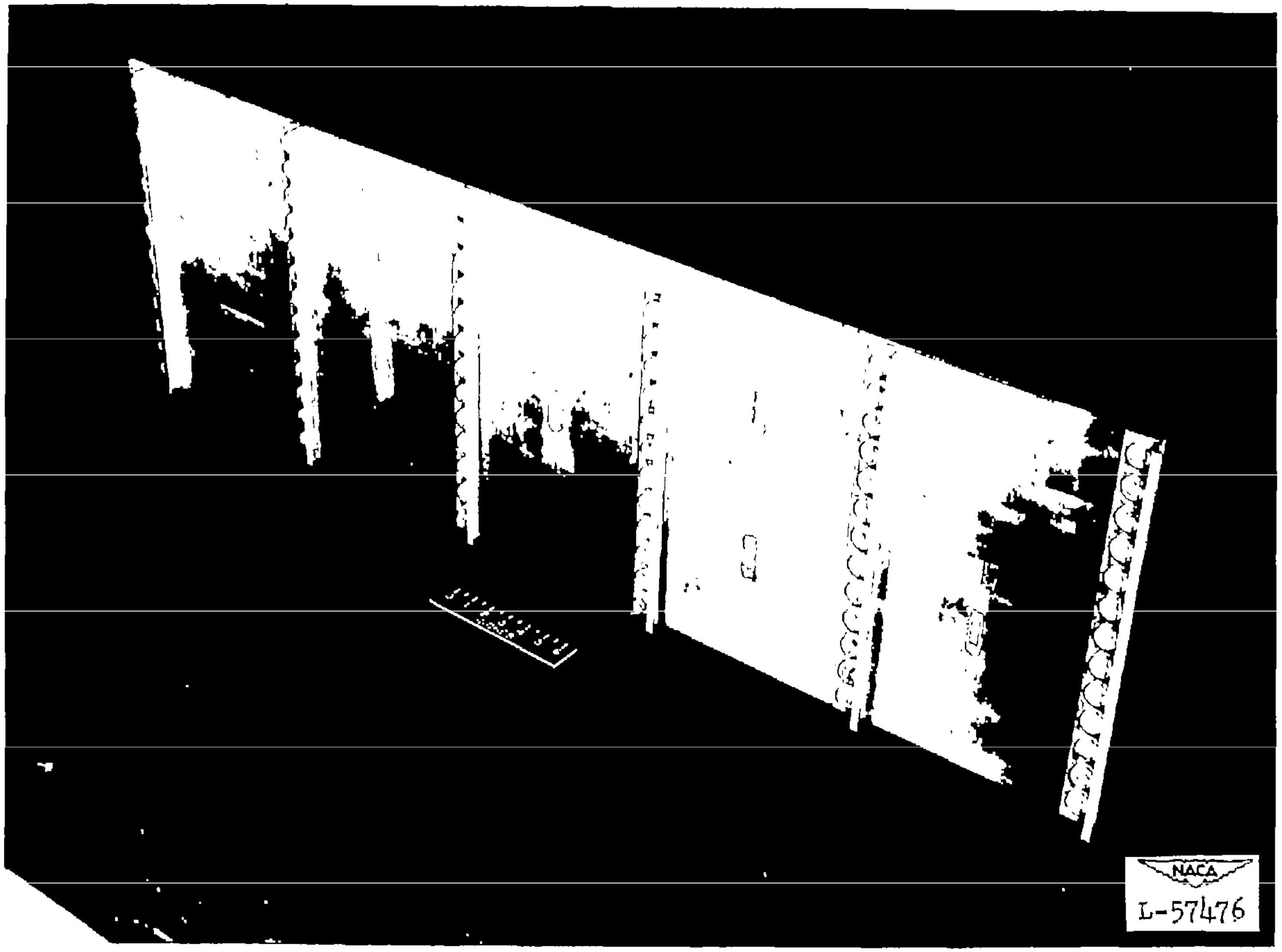

Figure 2.- Test specimen with a small proportion of material in stiffeners.

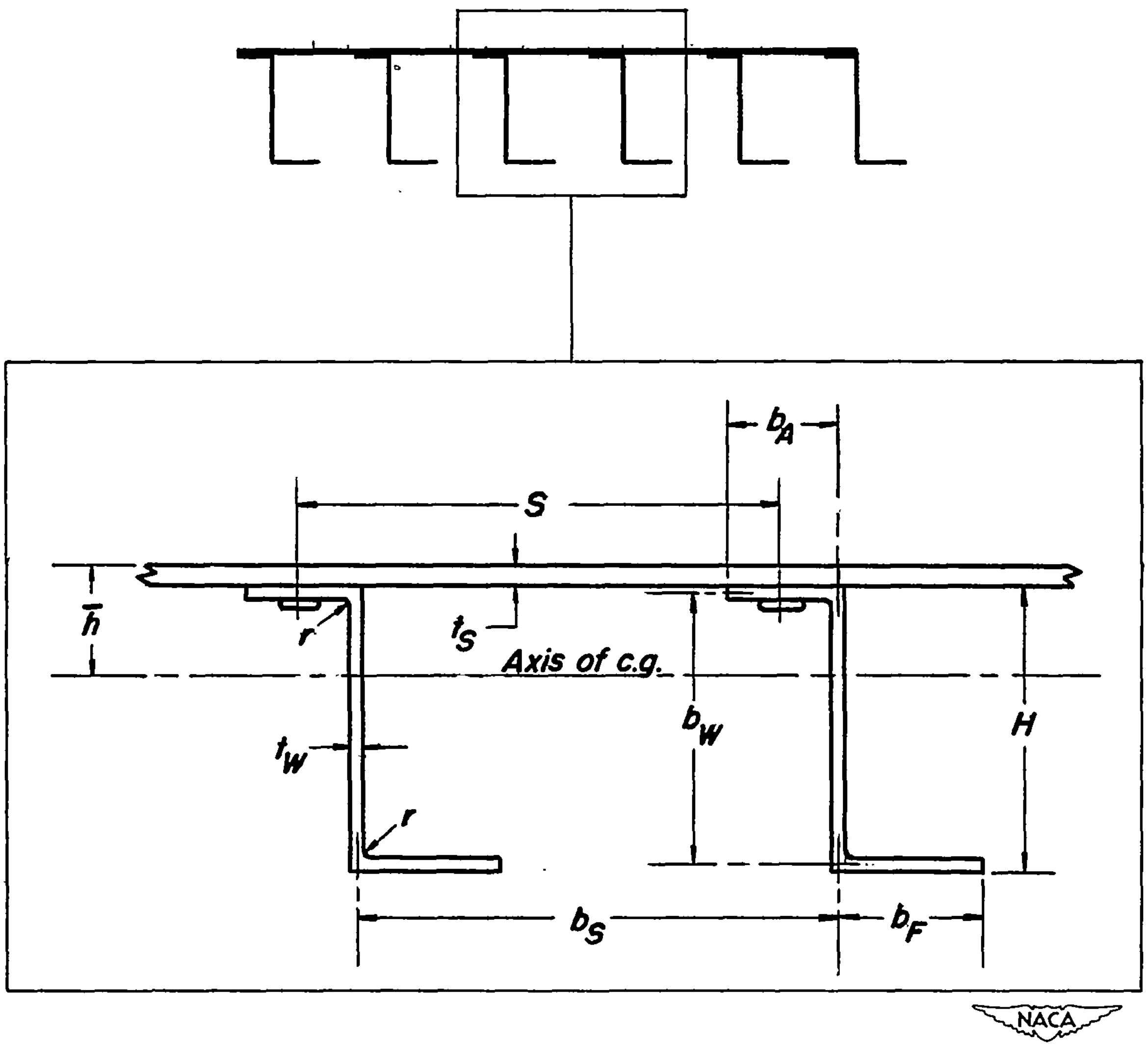

Figure 3.- Symbols for panel dimensions.

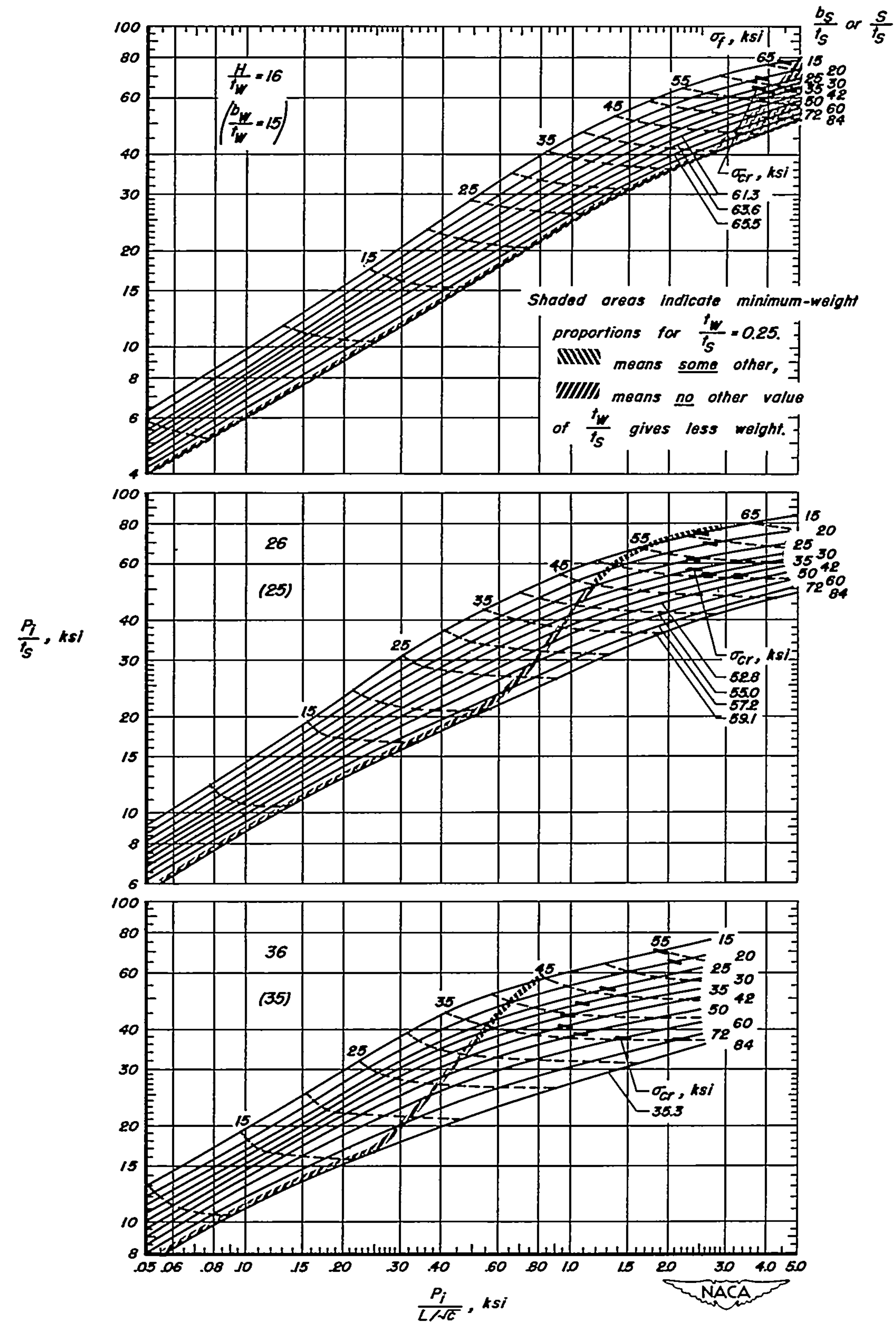

Figure 4.—Direct-reading design chart for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.25$.

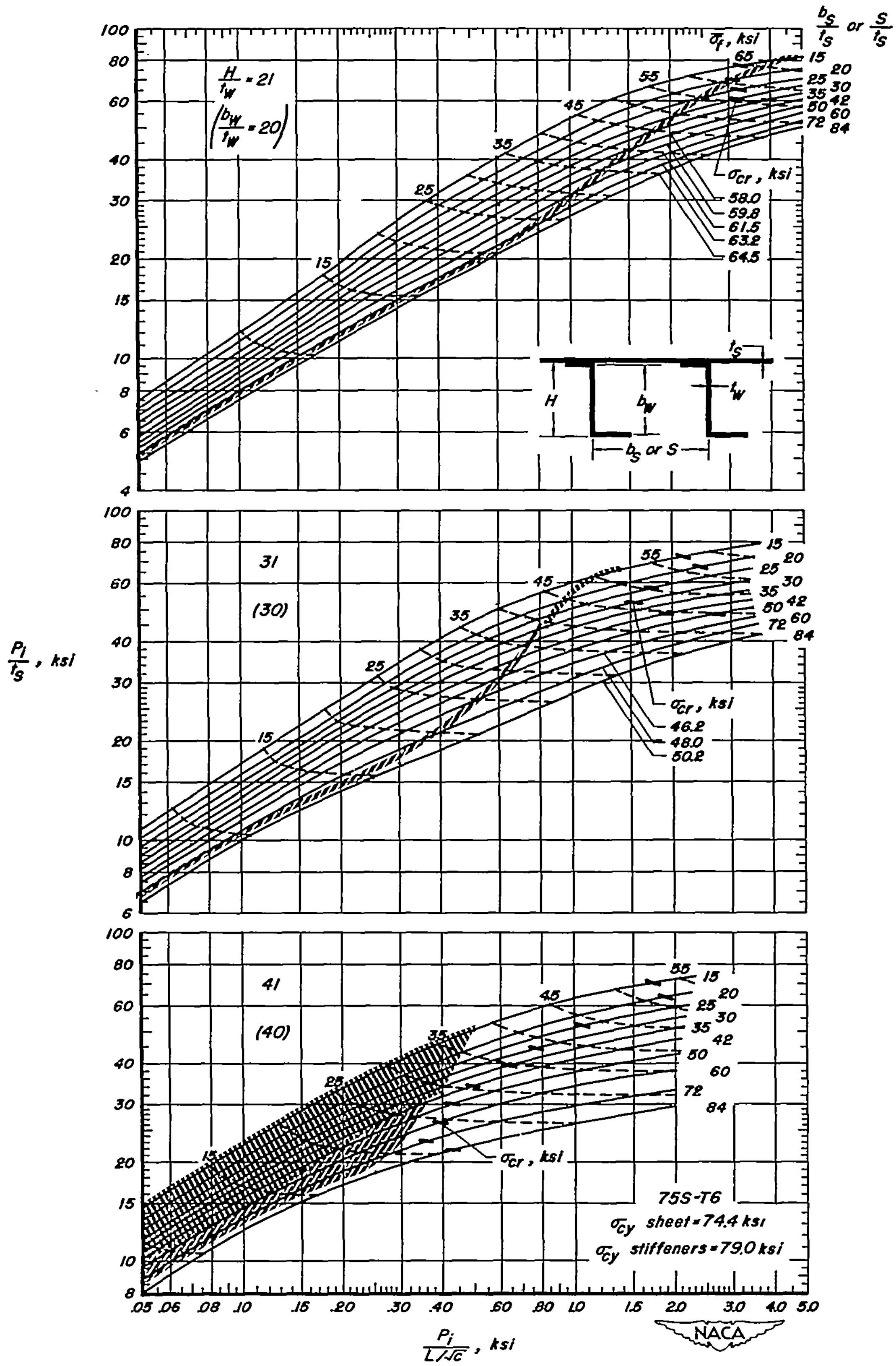

Figure 4.—Concluded. $\left(\frac{t_W}{t_S} = 0.25\right)$

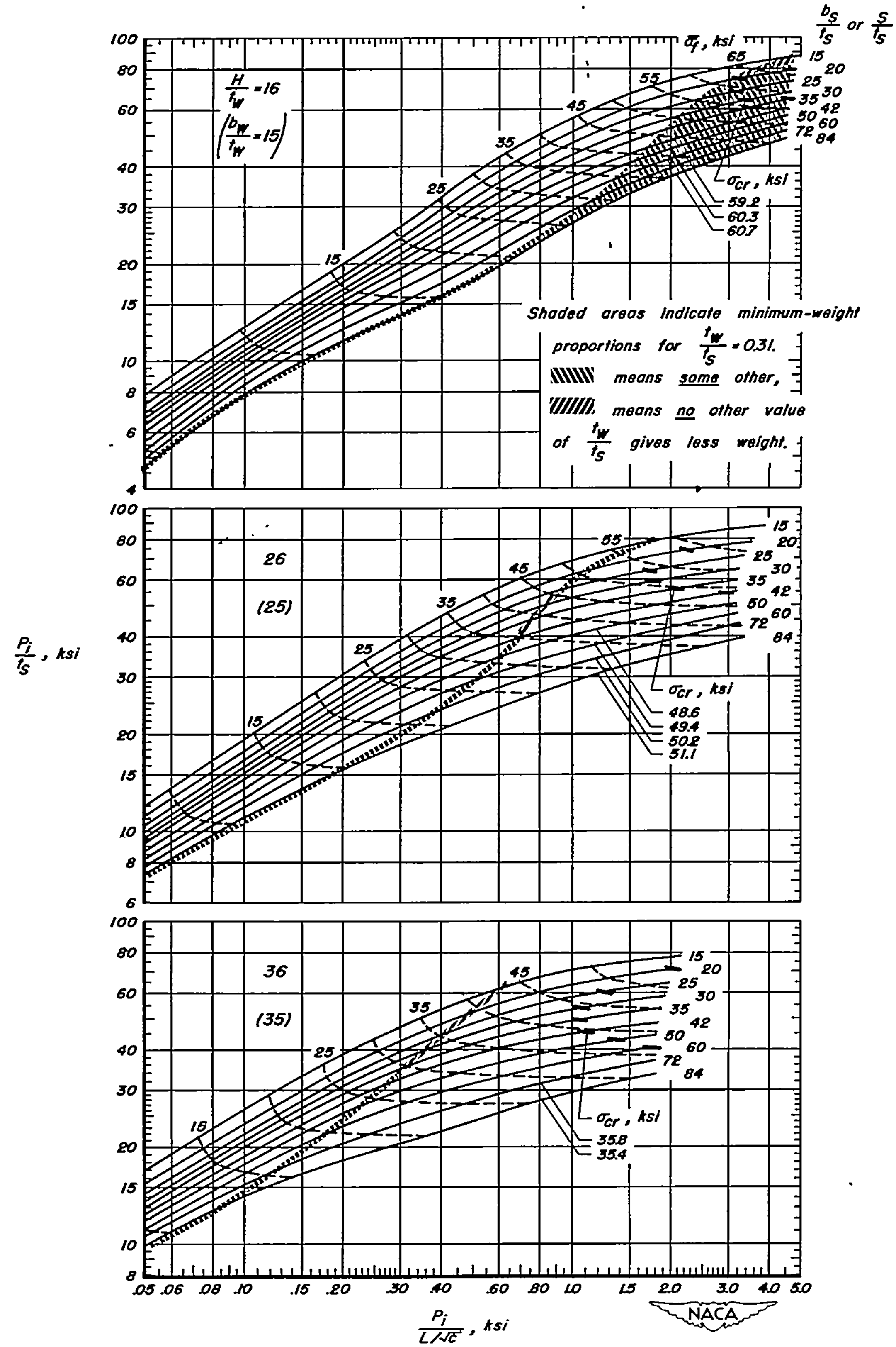

Figure 5.—Direct-reading design chart for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.31$.

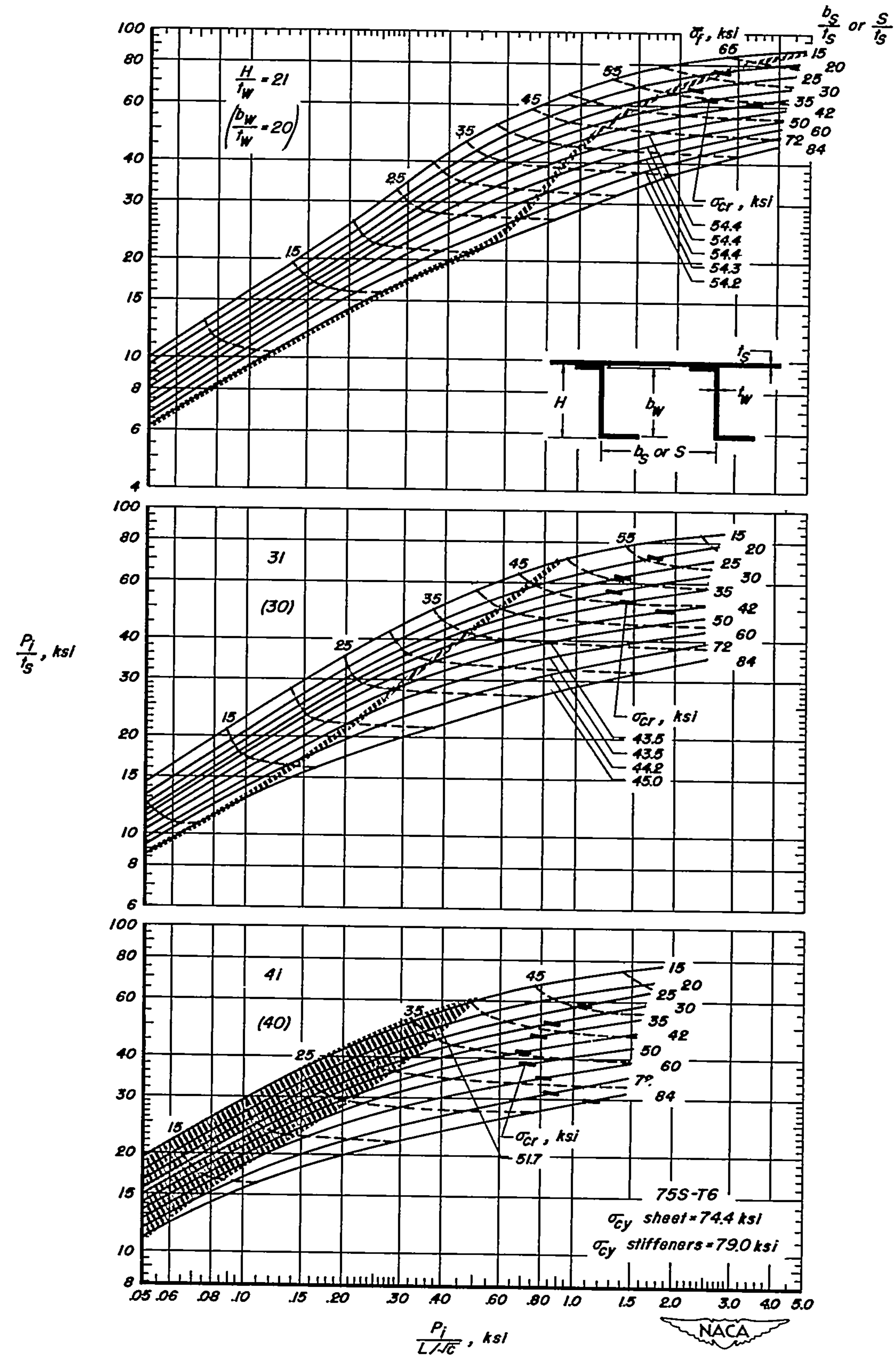

Figure 5.—Concluded. $\left(\frac{t_W}{t_S} = 0.31\right)$

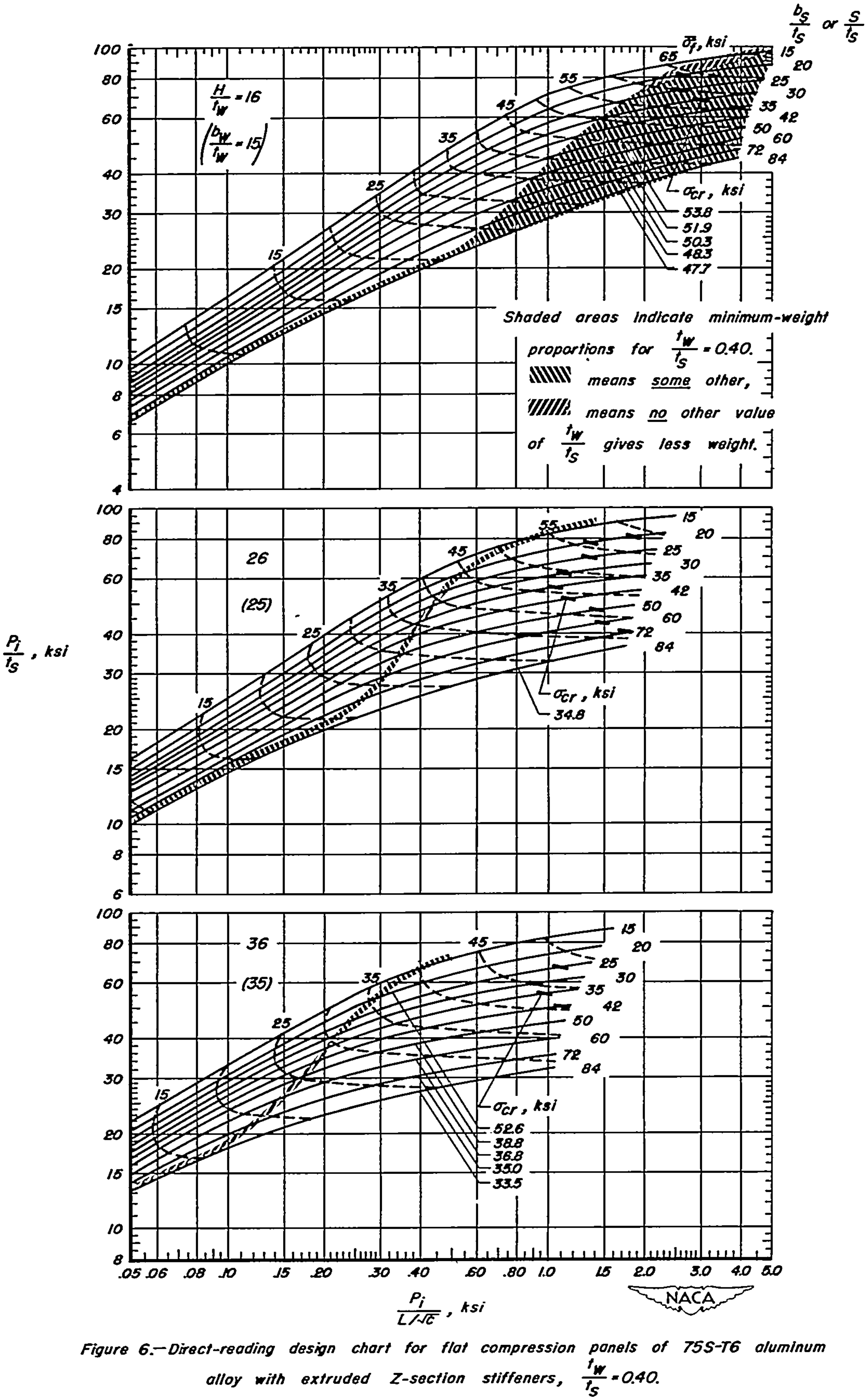

Figure 6.—Direct-reading design chart for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.40$.

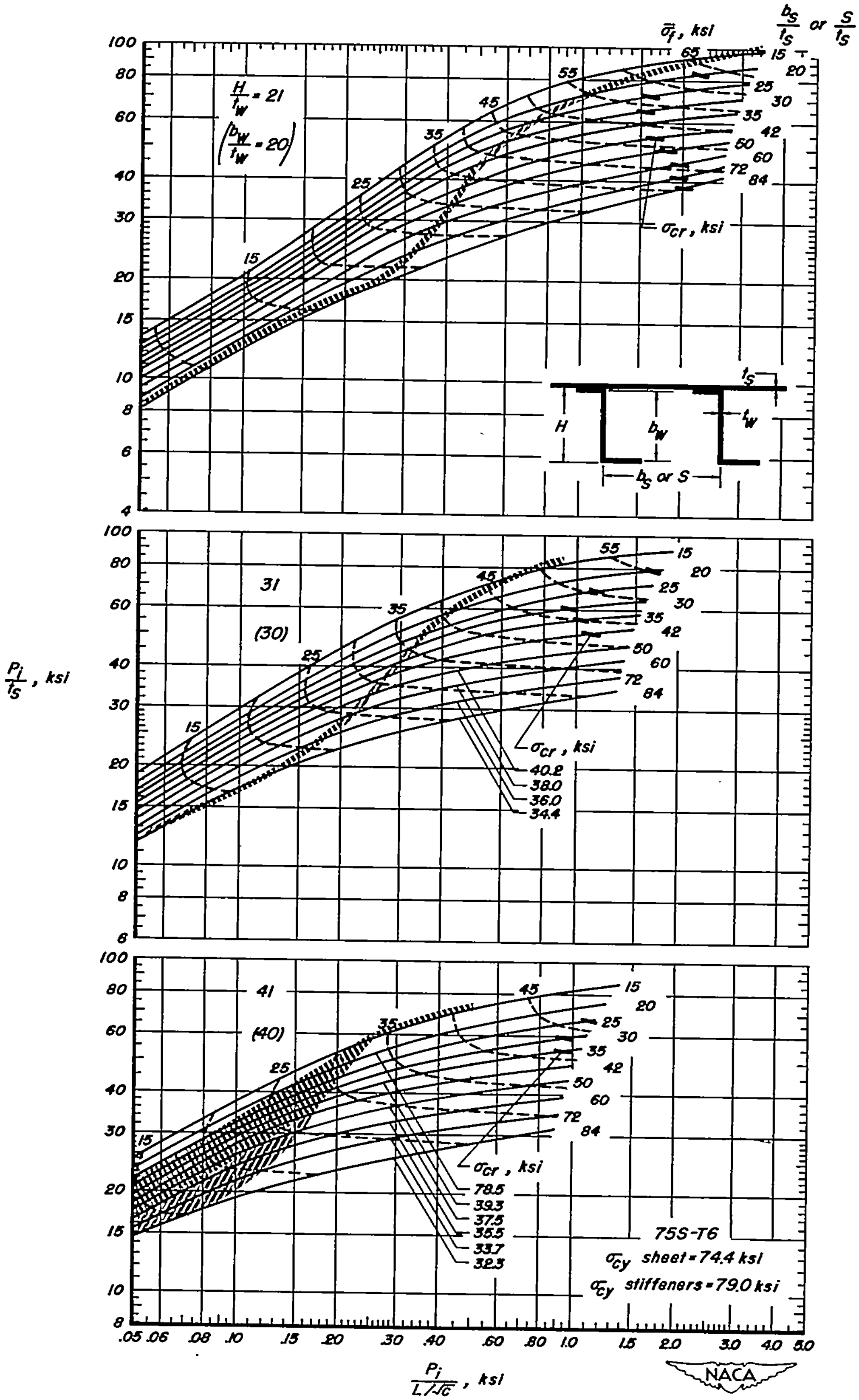

Figure 6.— Concluded. $\left(\frac{t_W}{t_S} = 0.40\right)$

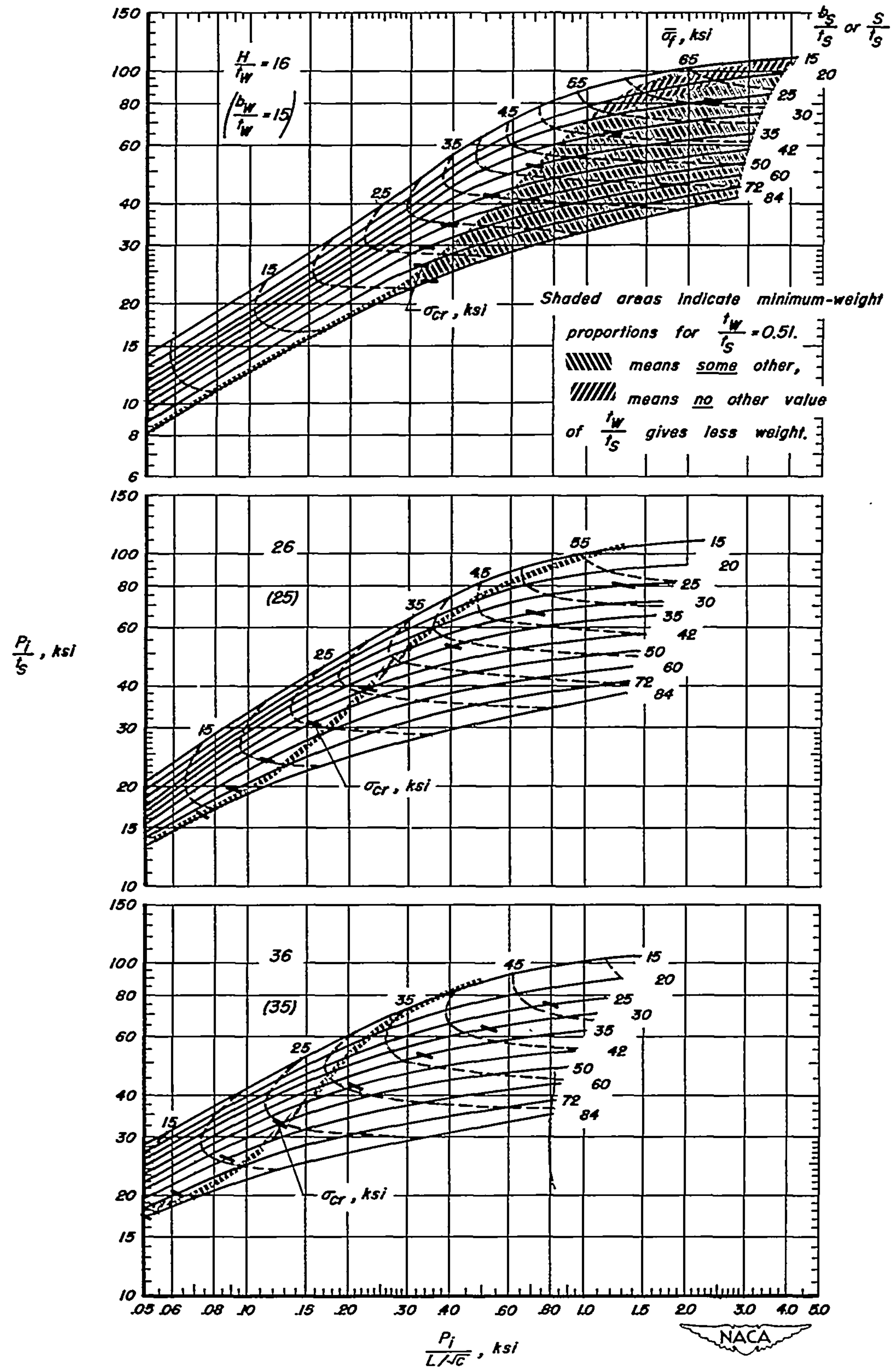

Figure 7.—Direct-reading design chart for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.51$.

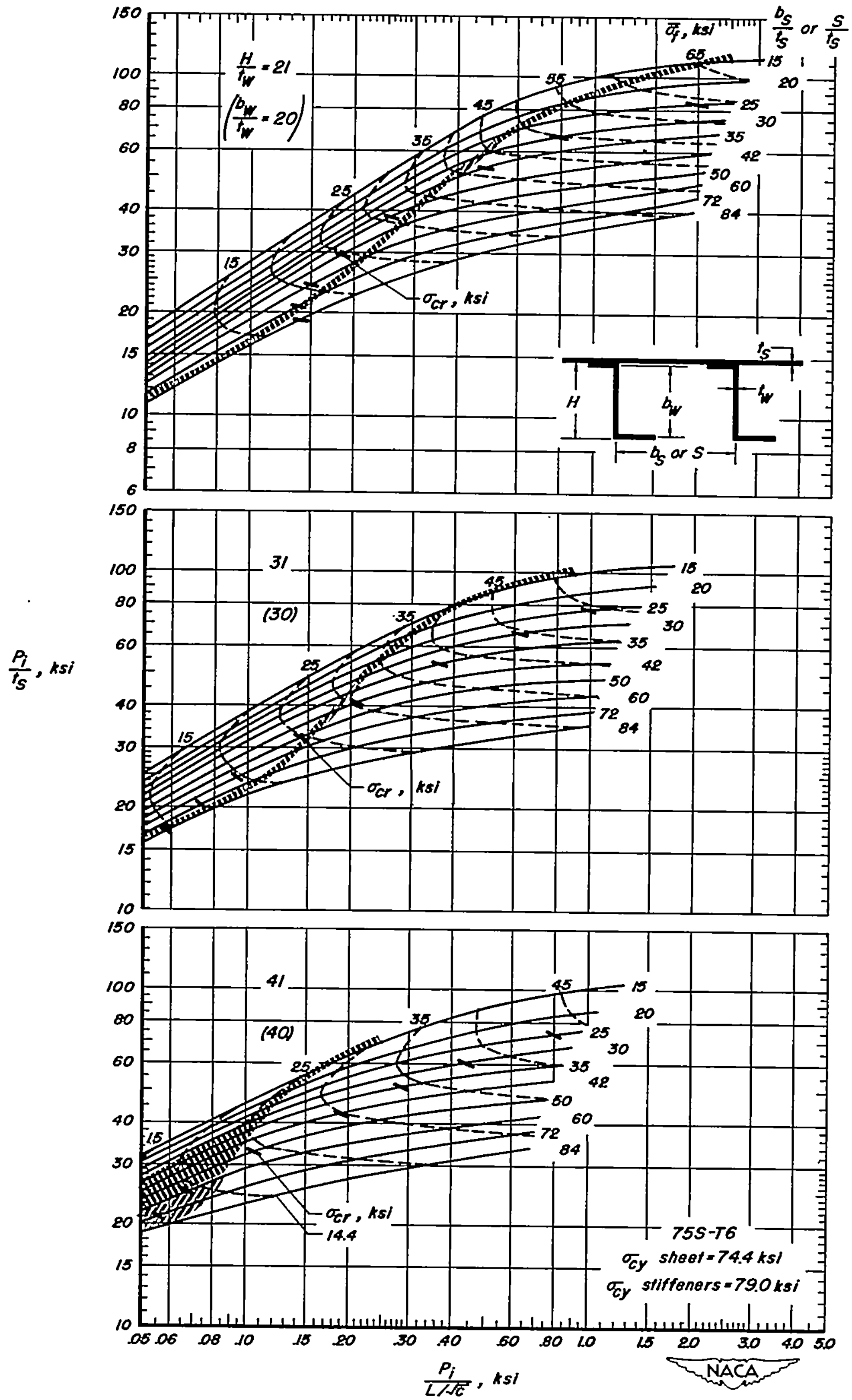

Figure 7.—Concluded. $\left(\frac{t_W}{t_S} = 0.51\right)$

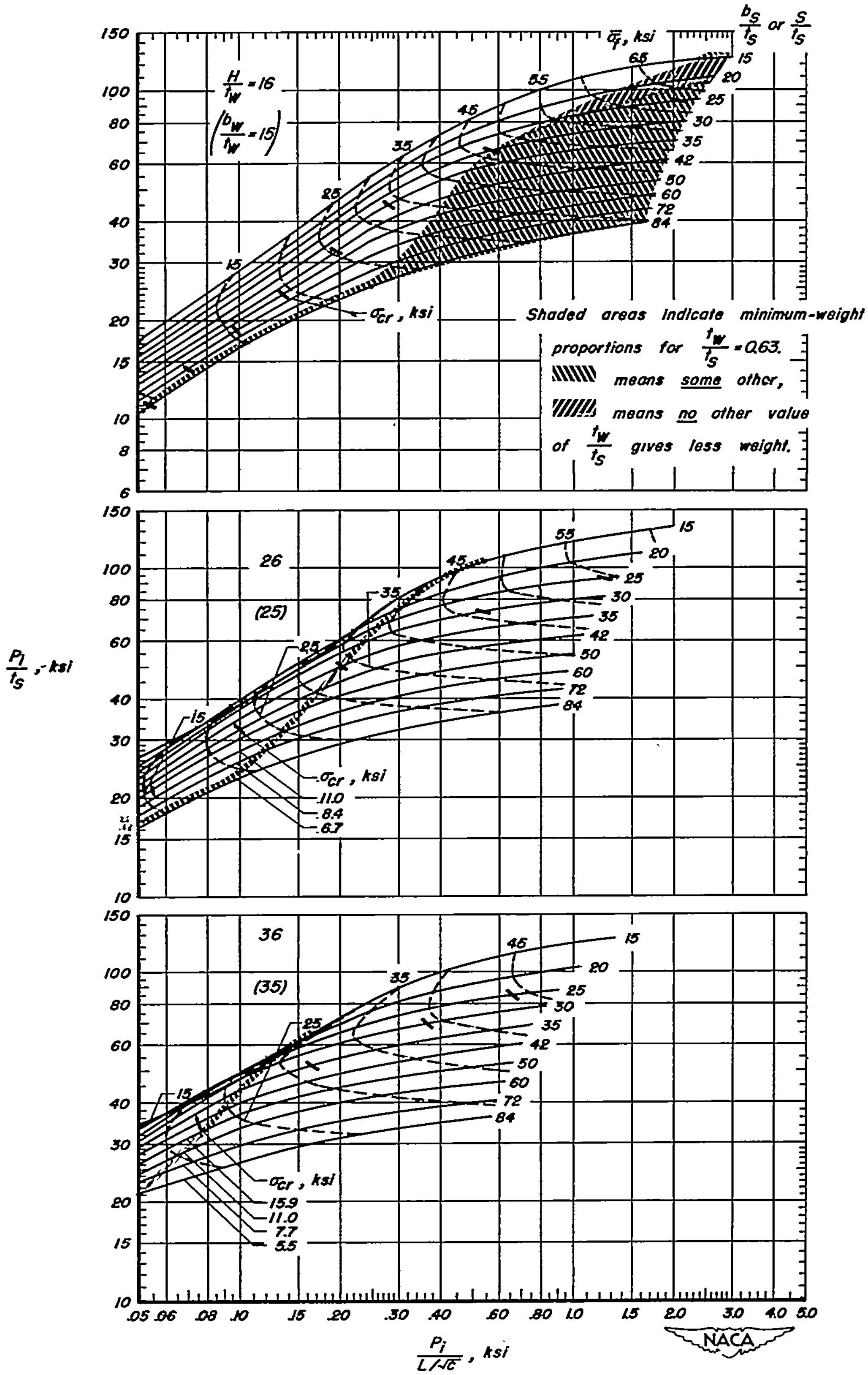

Figure 8.—Direct-reading design chart for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.63$.

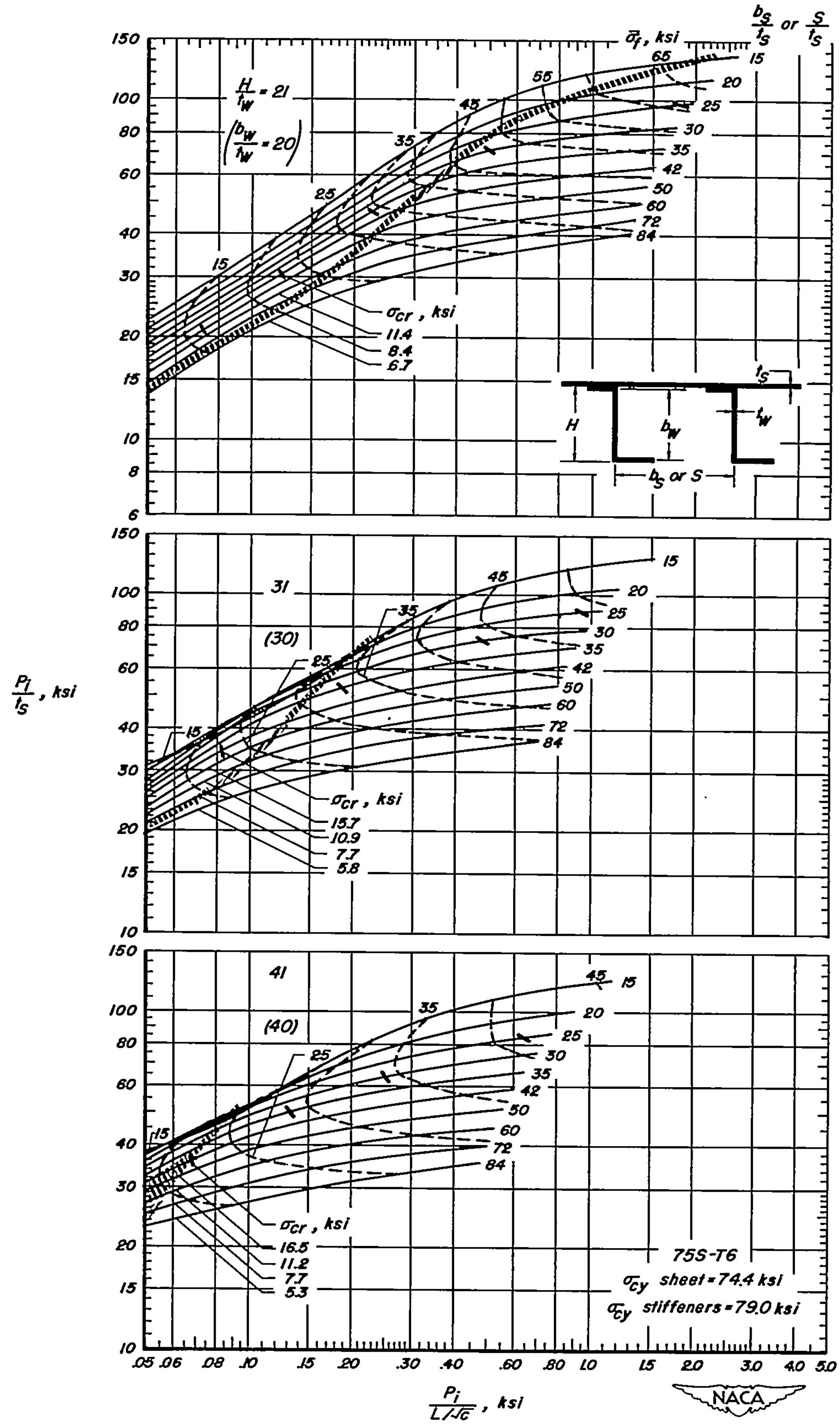

Figure 8.—Concluded. $\left(\frac{t_W}{t_S} = 0.63\right)$

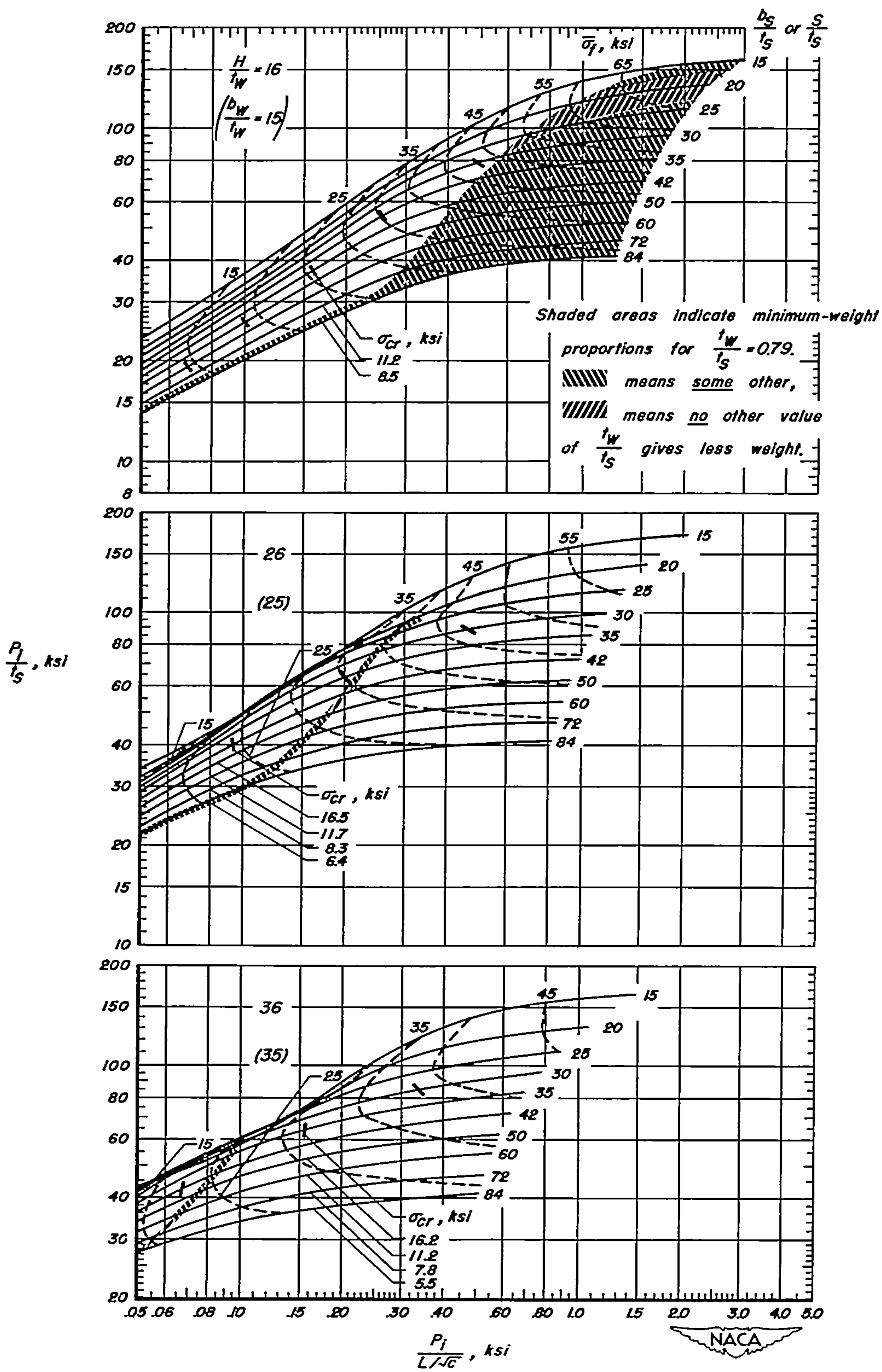

Figure 9.—Direct-reading design chart for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.79$.

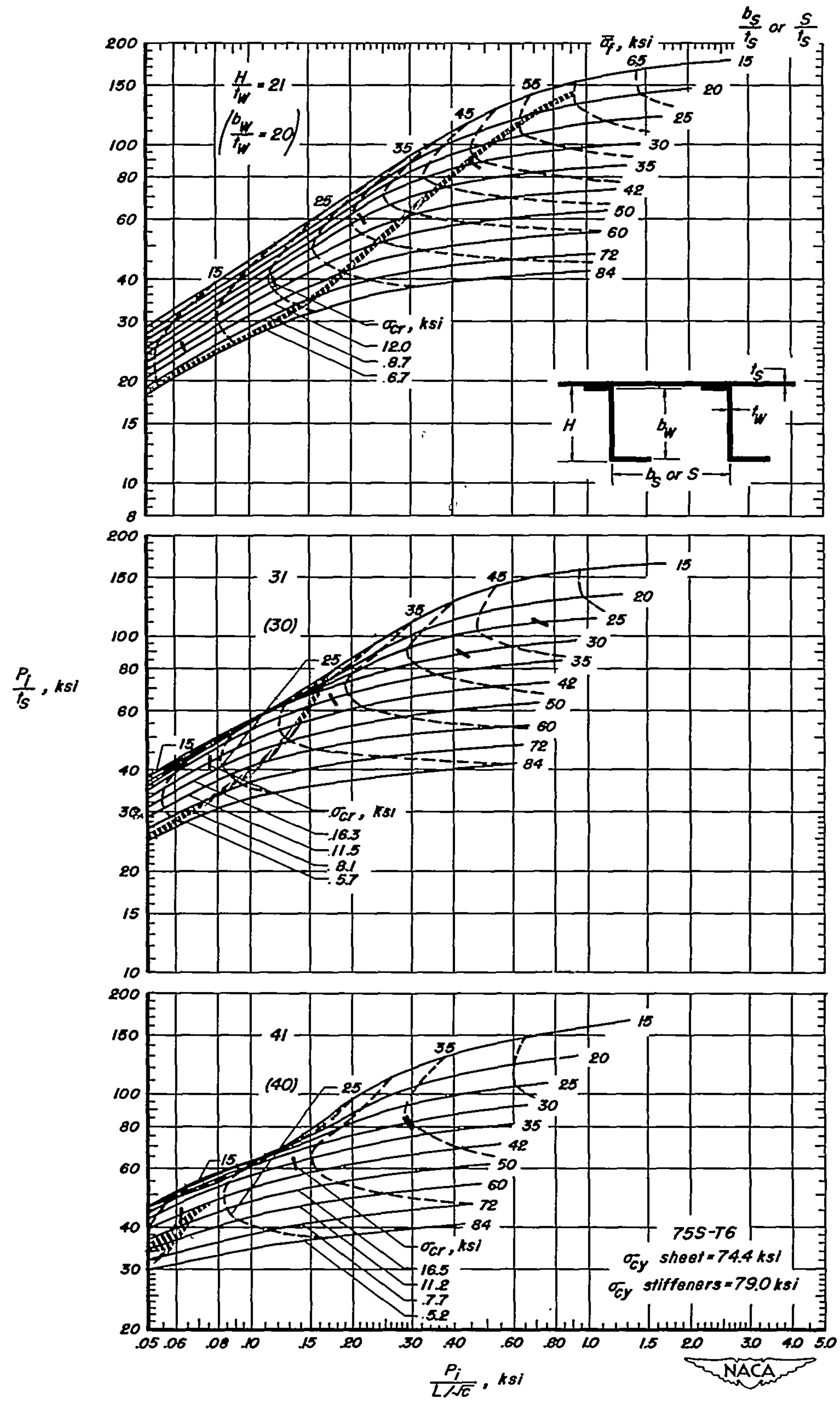

Figure 9.—Concluded. $\left(\frac{t_W}{t_S} = 0.79\right)$

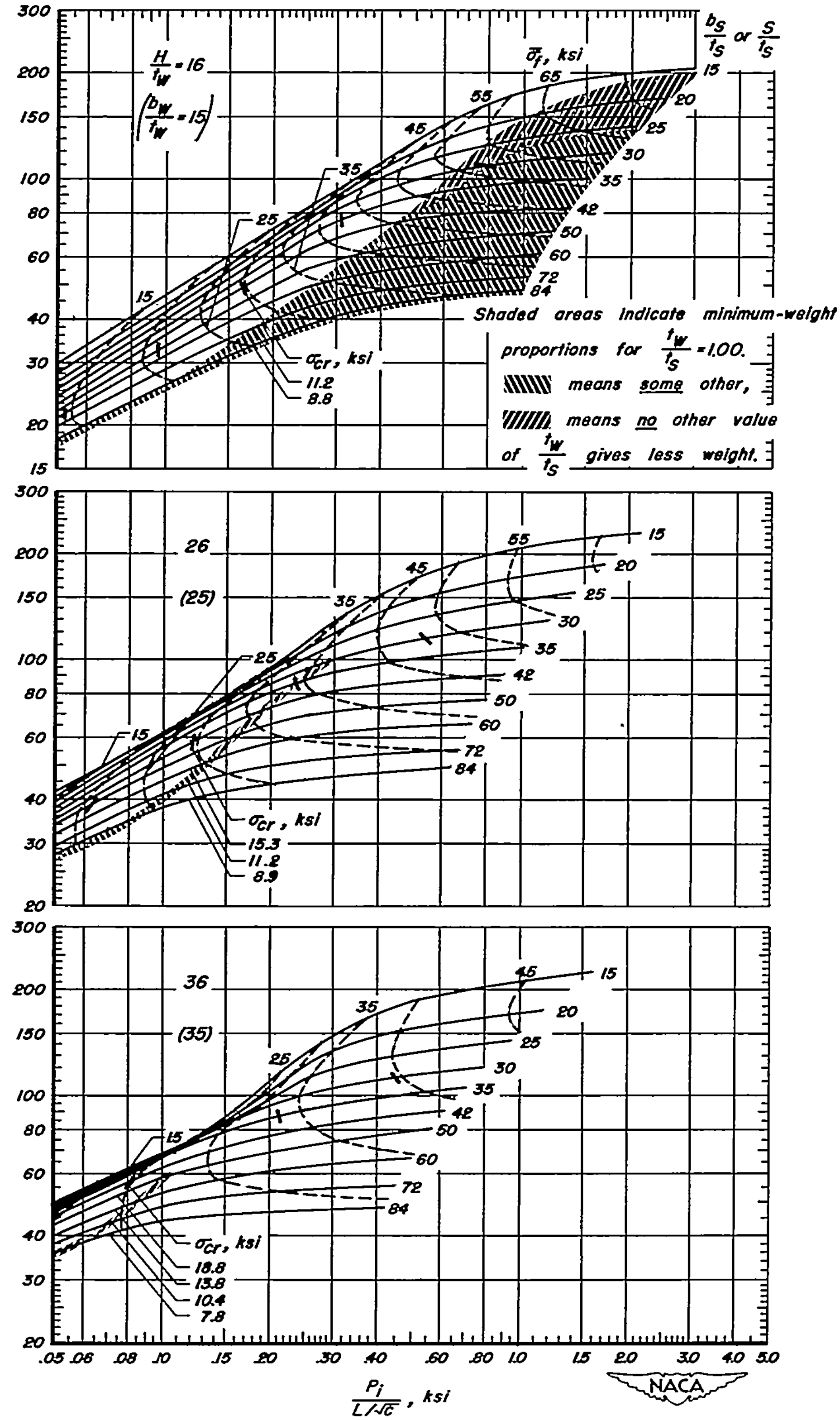

Figure 10.—Direct-reading design chart for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 1.00$.

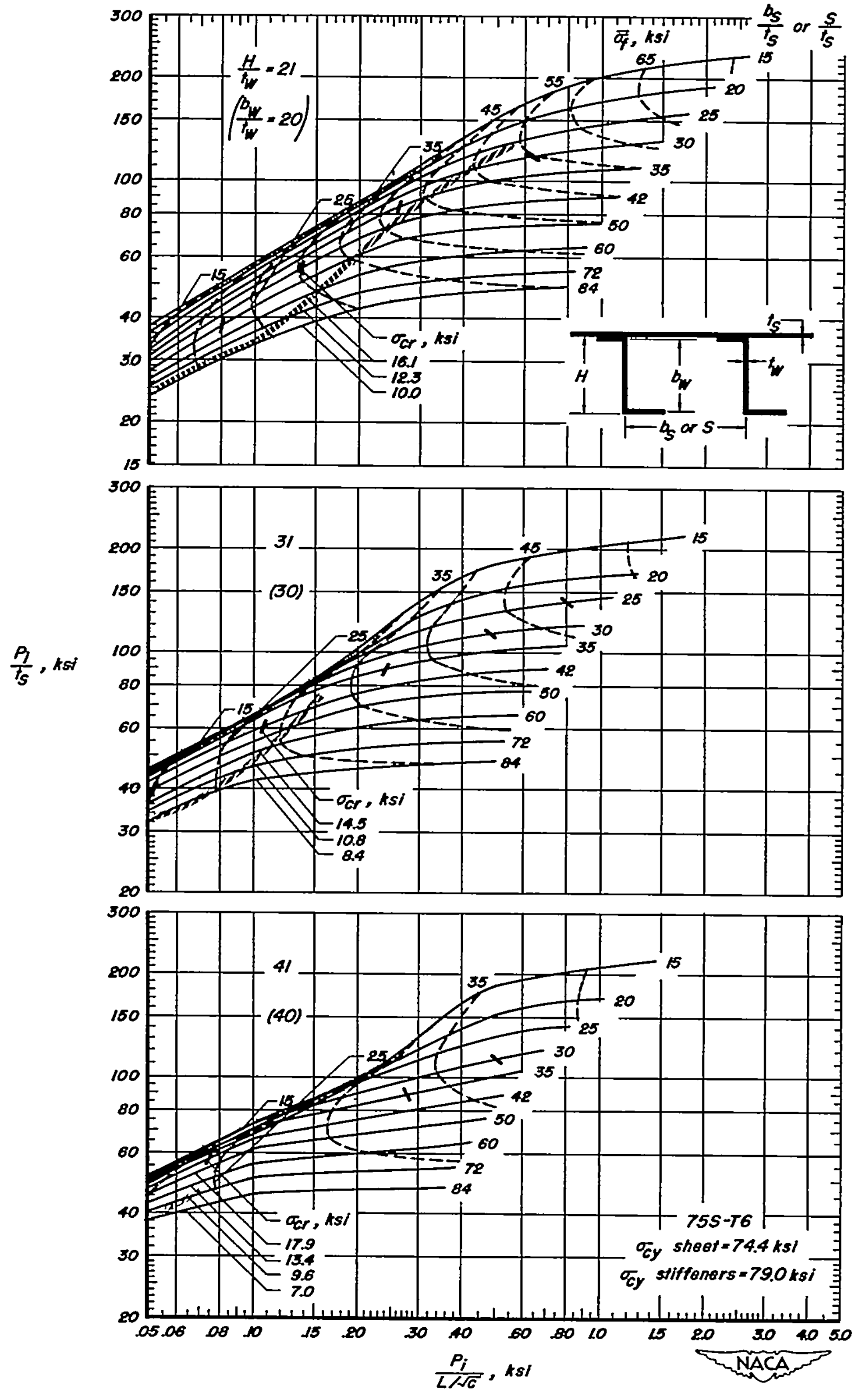

Figure 10.— Concluded. $\left(\frac{t_W}{t_S} = 1.00\right)$

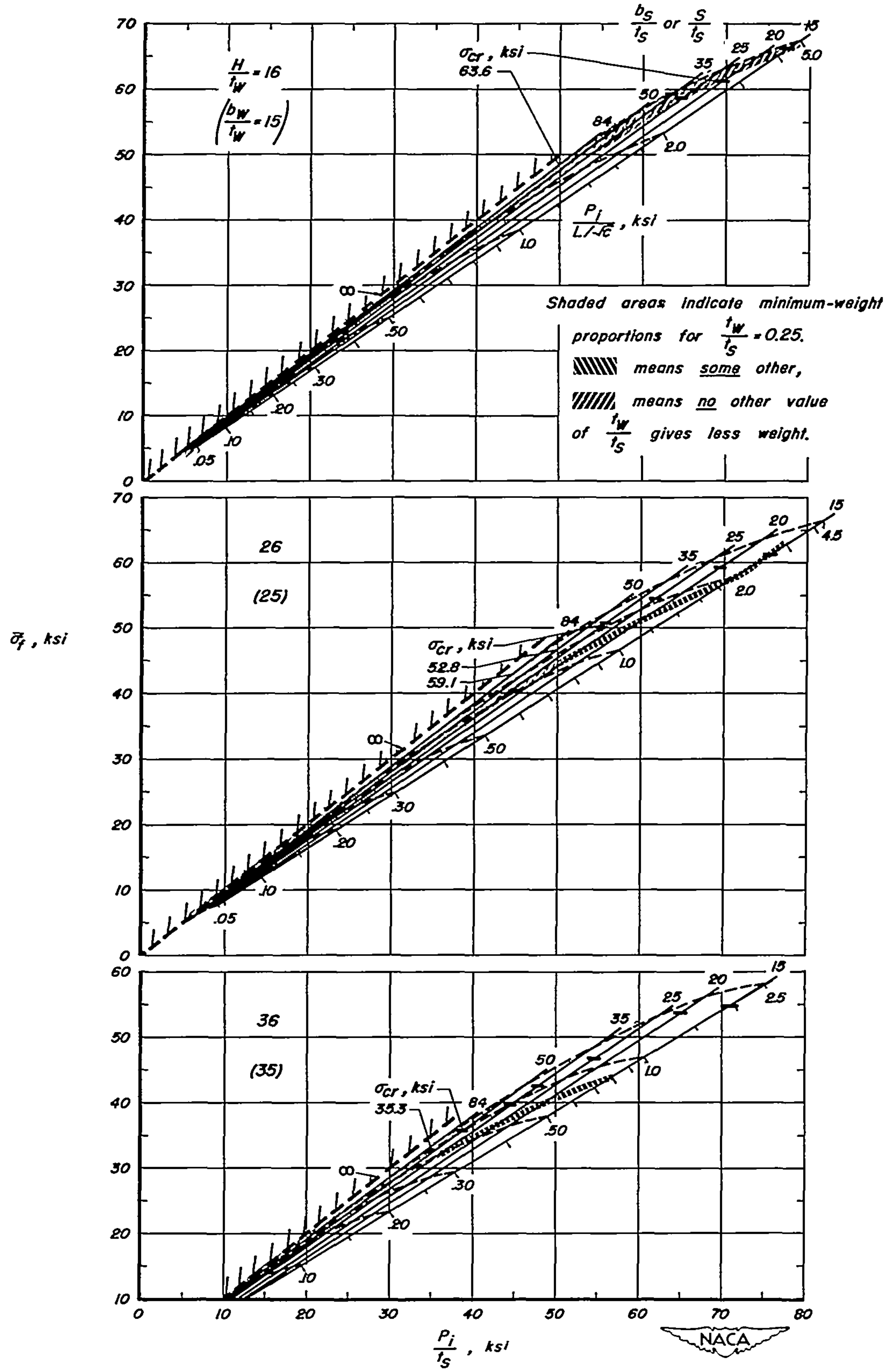

Figure 11.—Direct-reading design chart (alternate form) for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.25$.

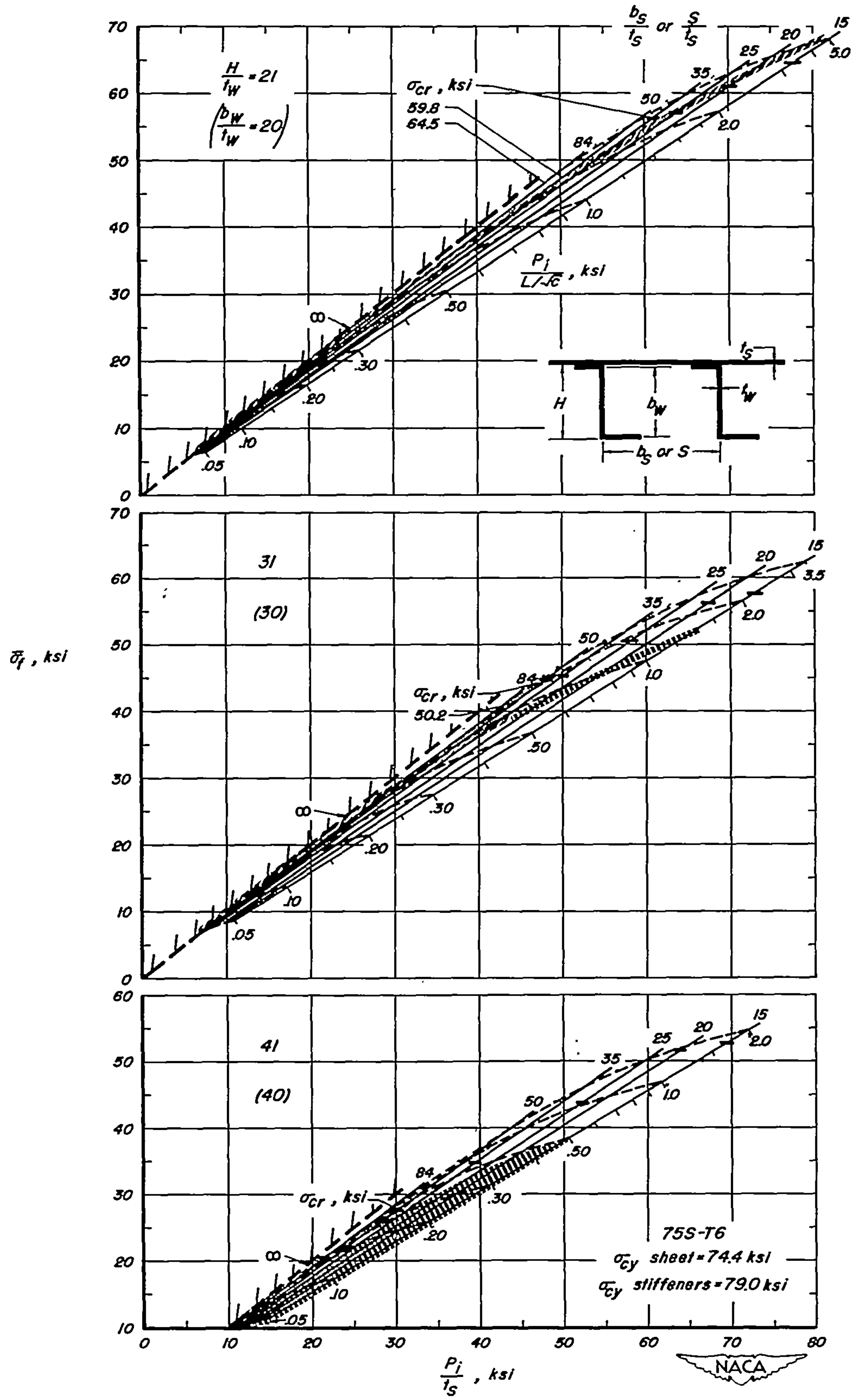

Figure 11.—Concluded. $\left(\frac{t_W}{t_S} = 0.25\right)$

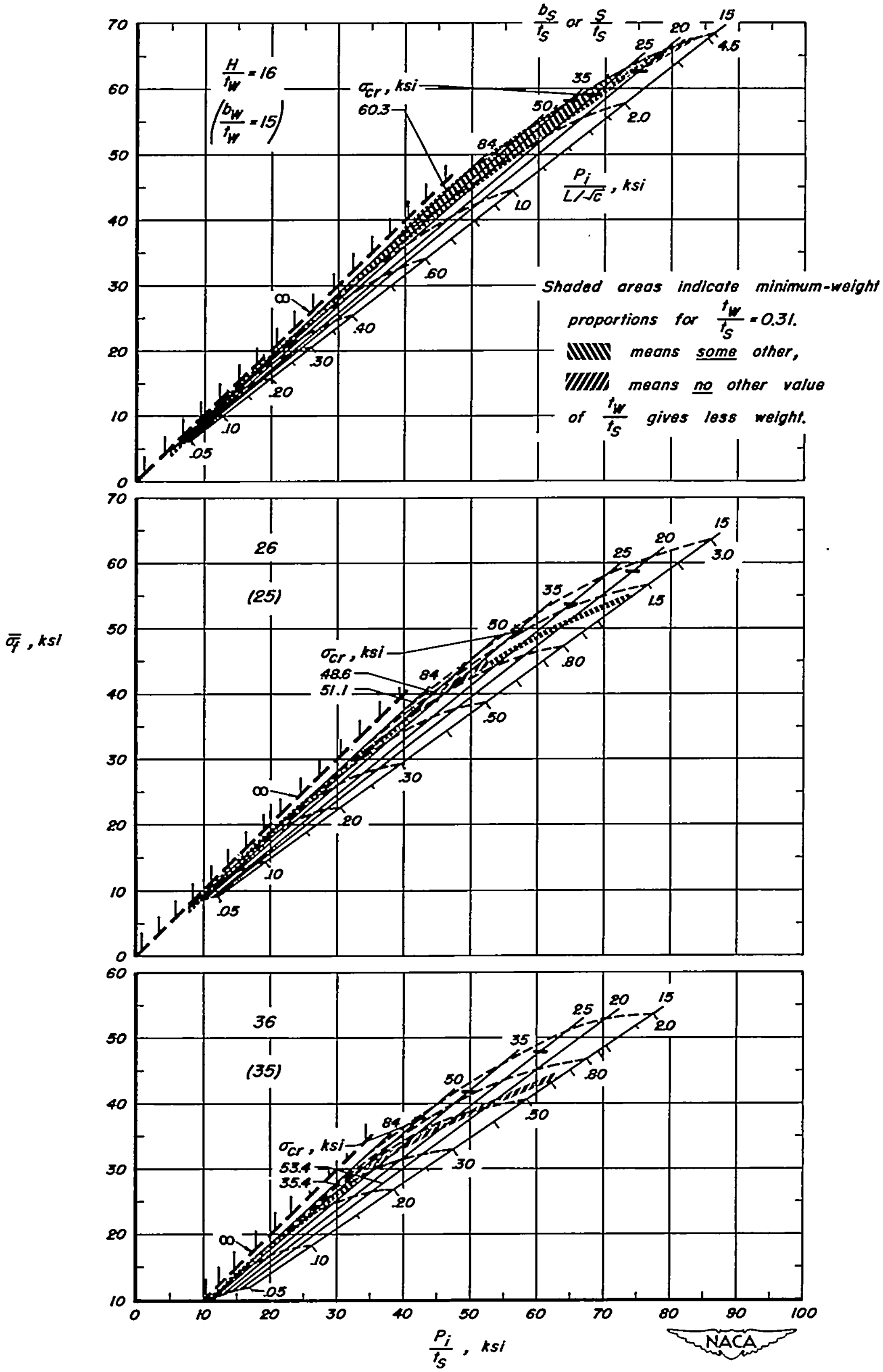

Figure 12.—Direct-reading design chart (alternate form) for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.31$.

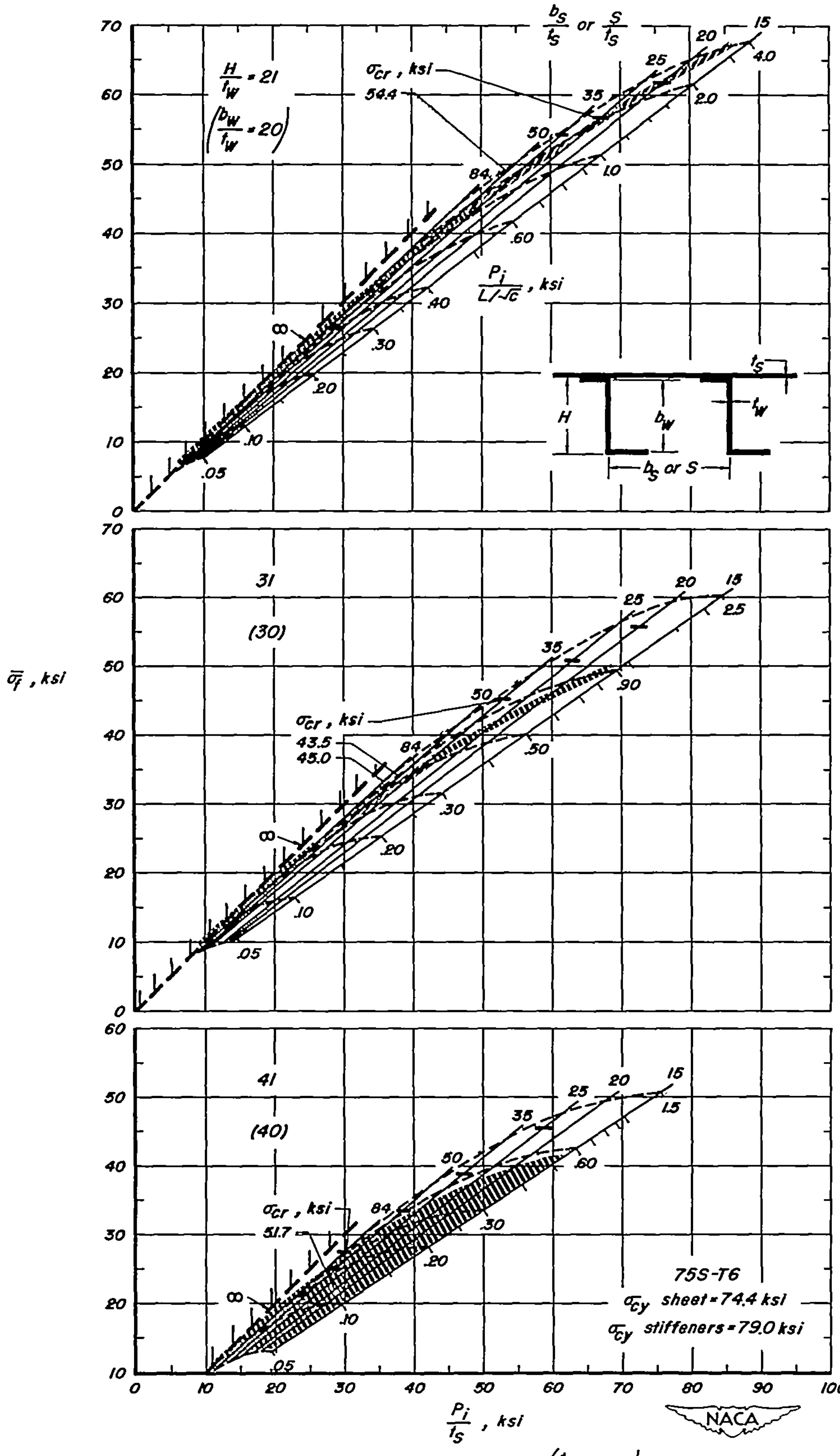

Figure 12.—Concluded. $\left(\frac{t_W}{t_S} = 0.31\right)$

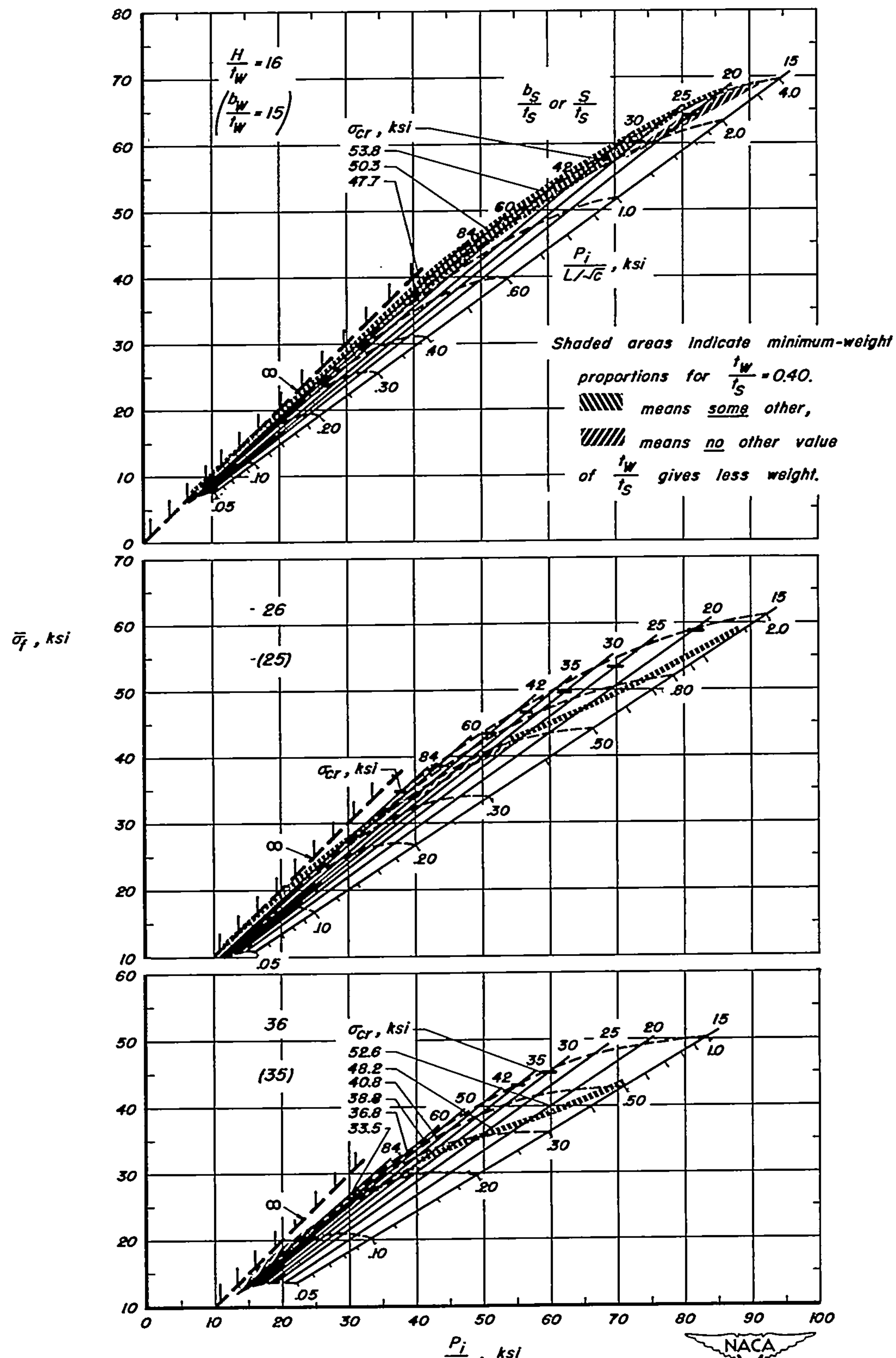

Figure 13.—Direct-reading design chart (alternate form) for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_w}{t_s} = 0.40$.

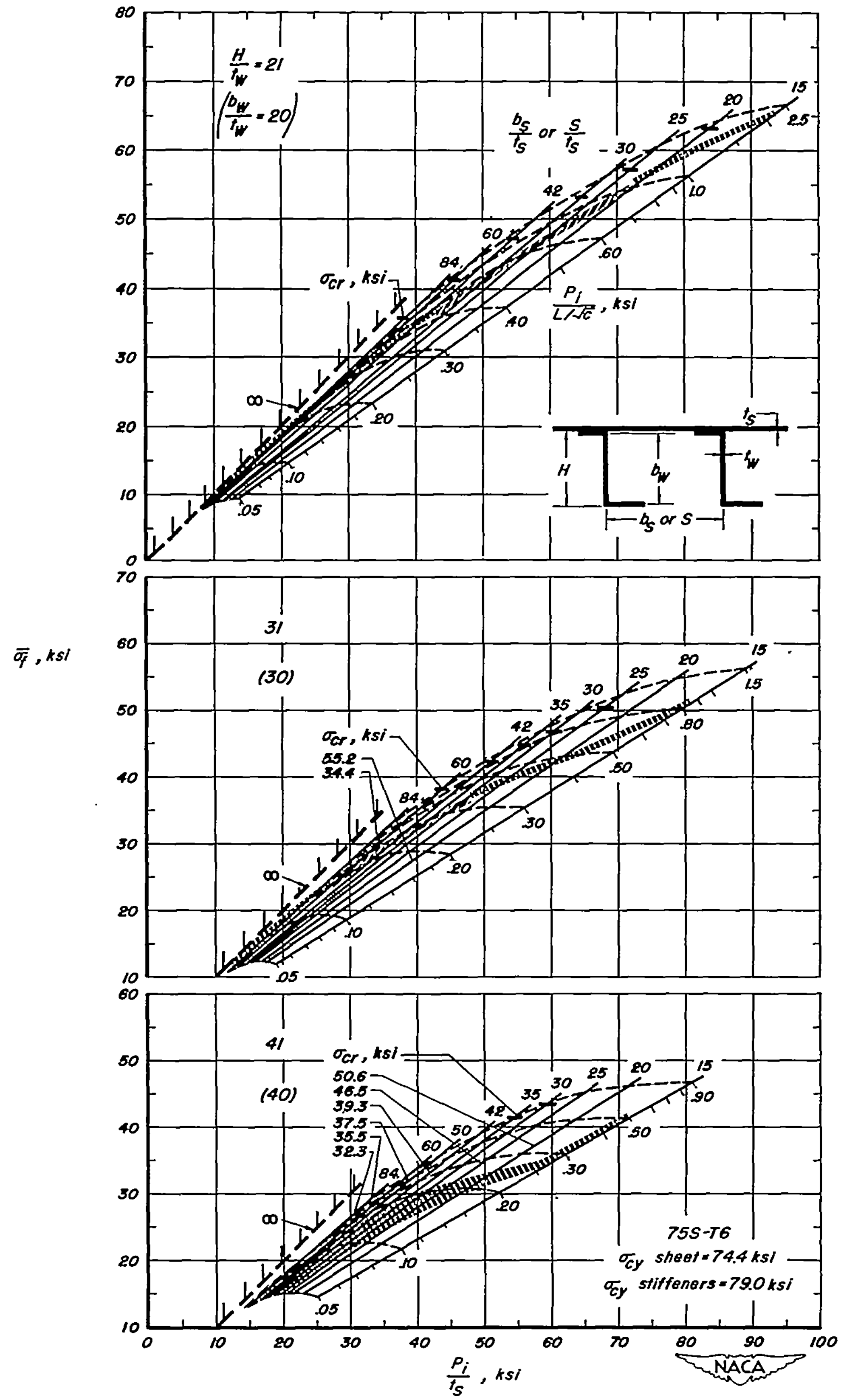

Figure 13.—Concluded. $\left(\frac{t_W}{t_S} = 0.40\right)$

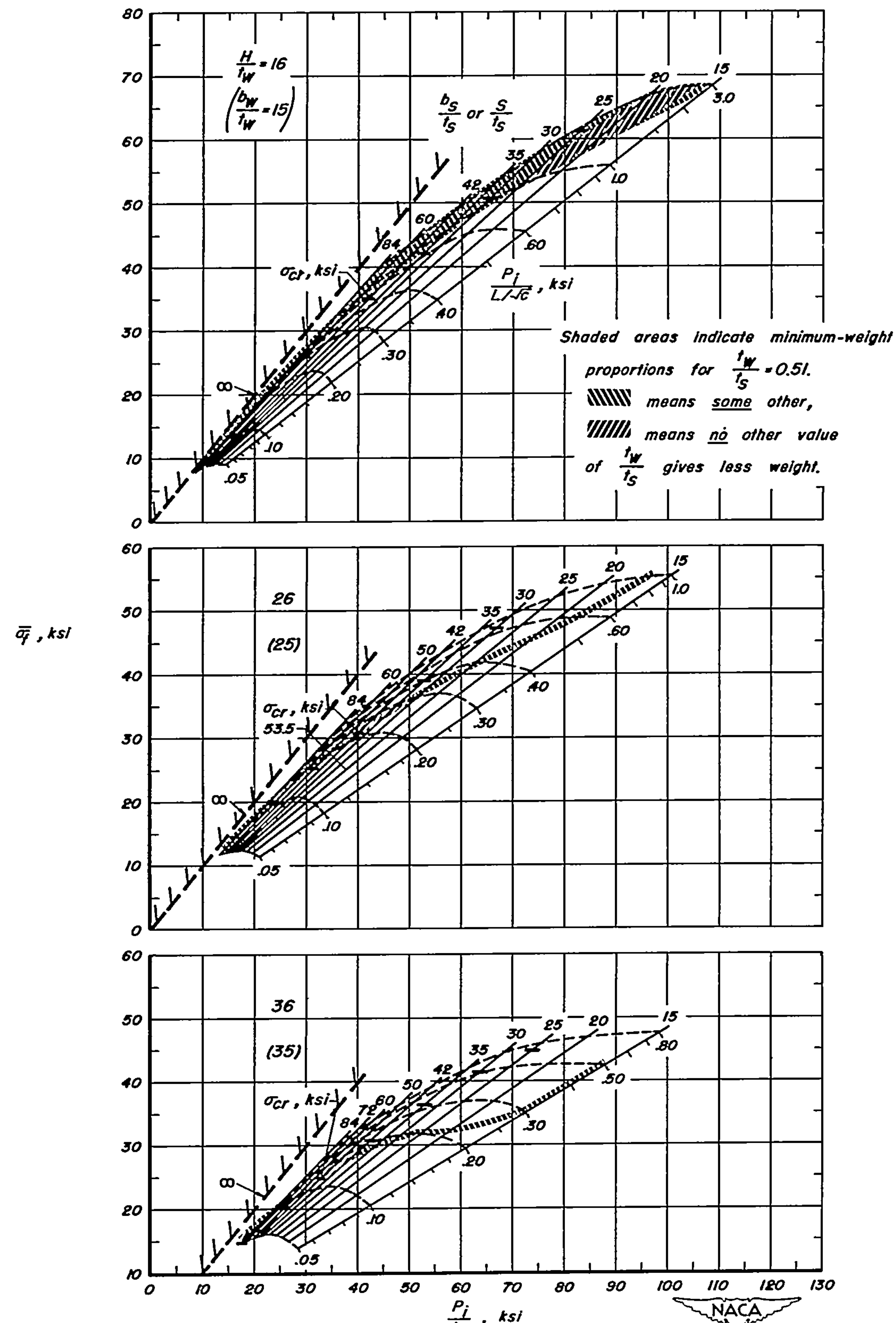

Figure 14.—Direct-reading design chart (alternate form) for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.51$.

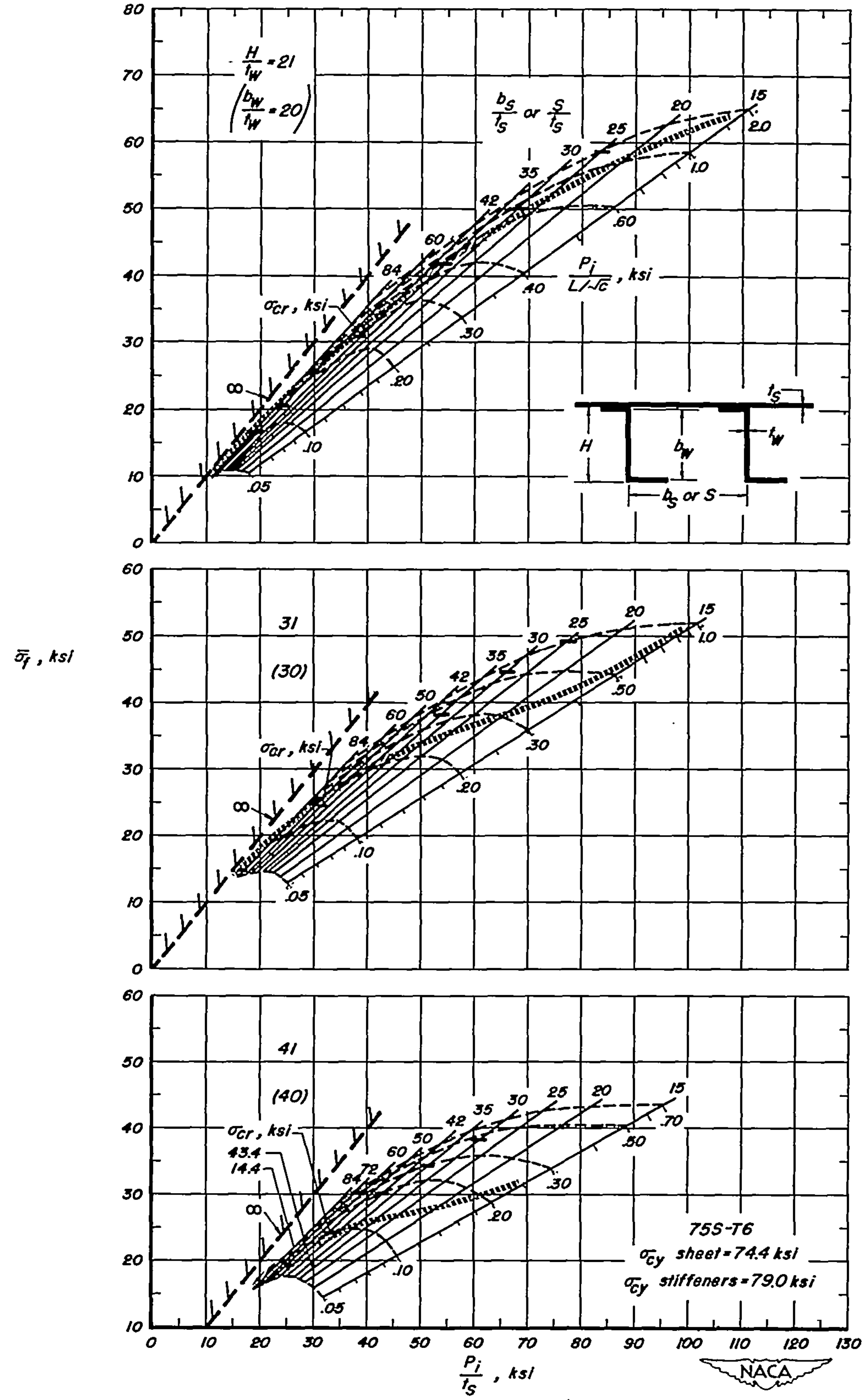

Figure 14.—Concluded. $\left(\frac{t_W}{t_S} = 0.51\right)$

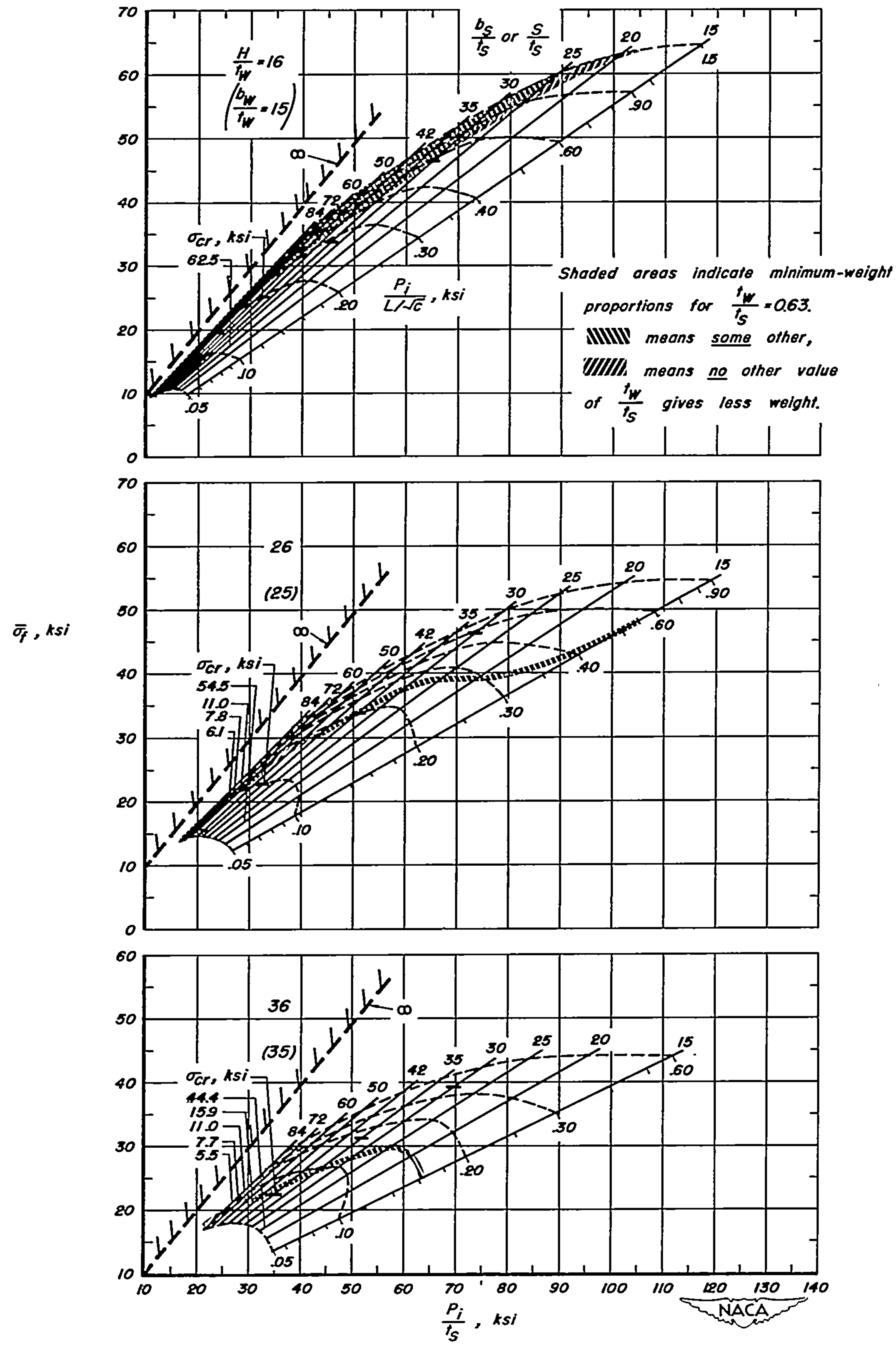

Figure 15.—Direct-reading design chart (alternate form) for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.63$.

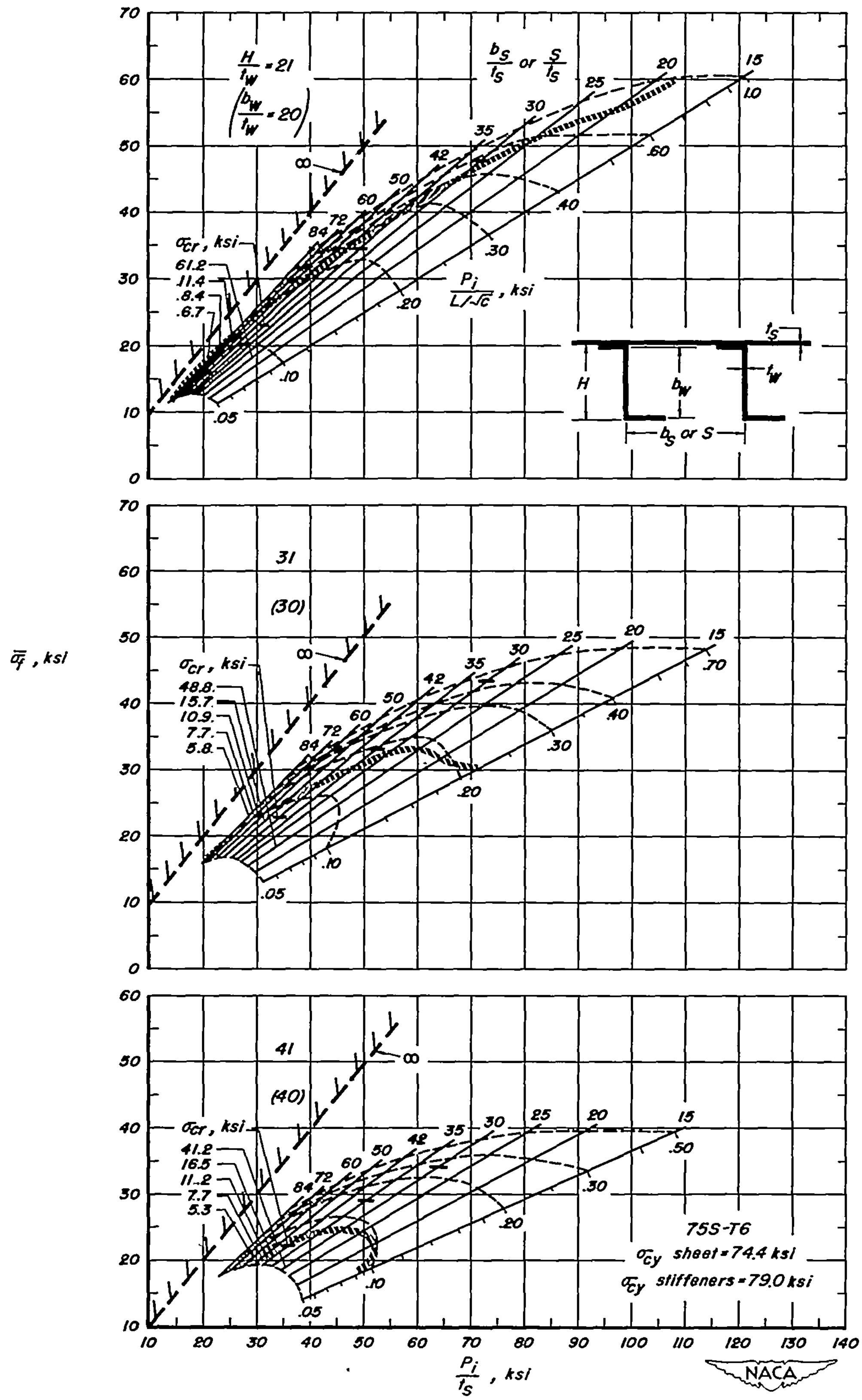

Figure 15.—Concluded. $\left(\frac{t_W}{t_S} = 0.63\right)$

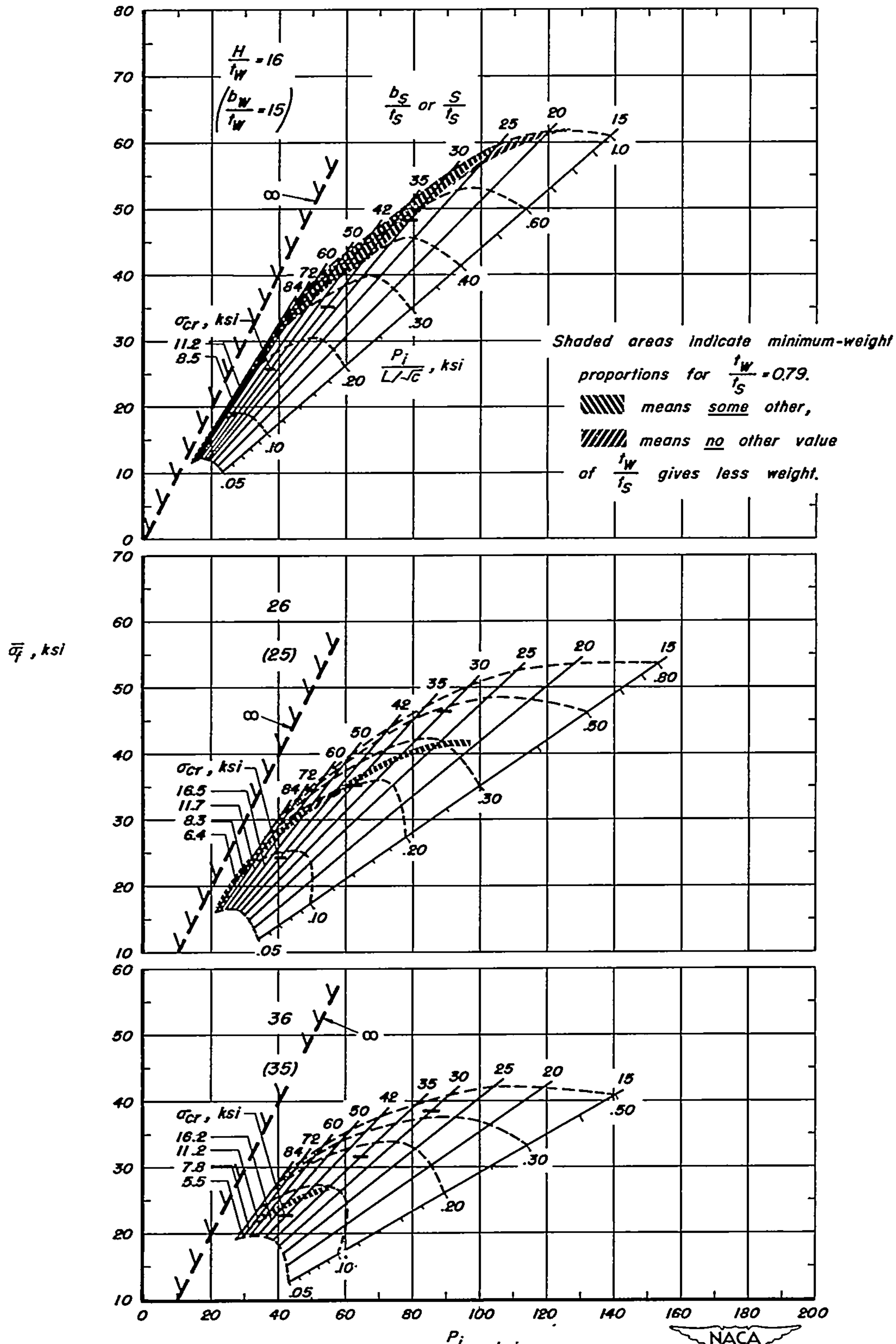

Figure 16.— Direct-reading design chart (alternate form) for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 0.79$.

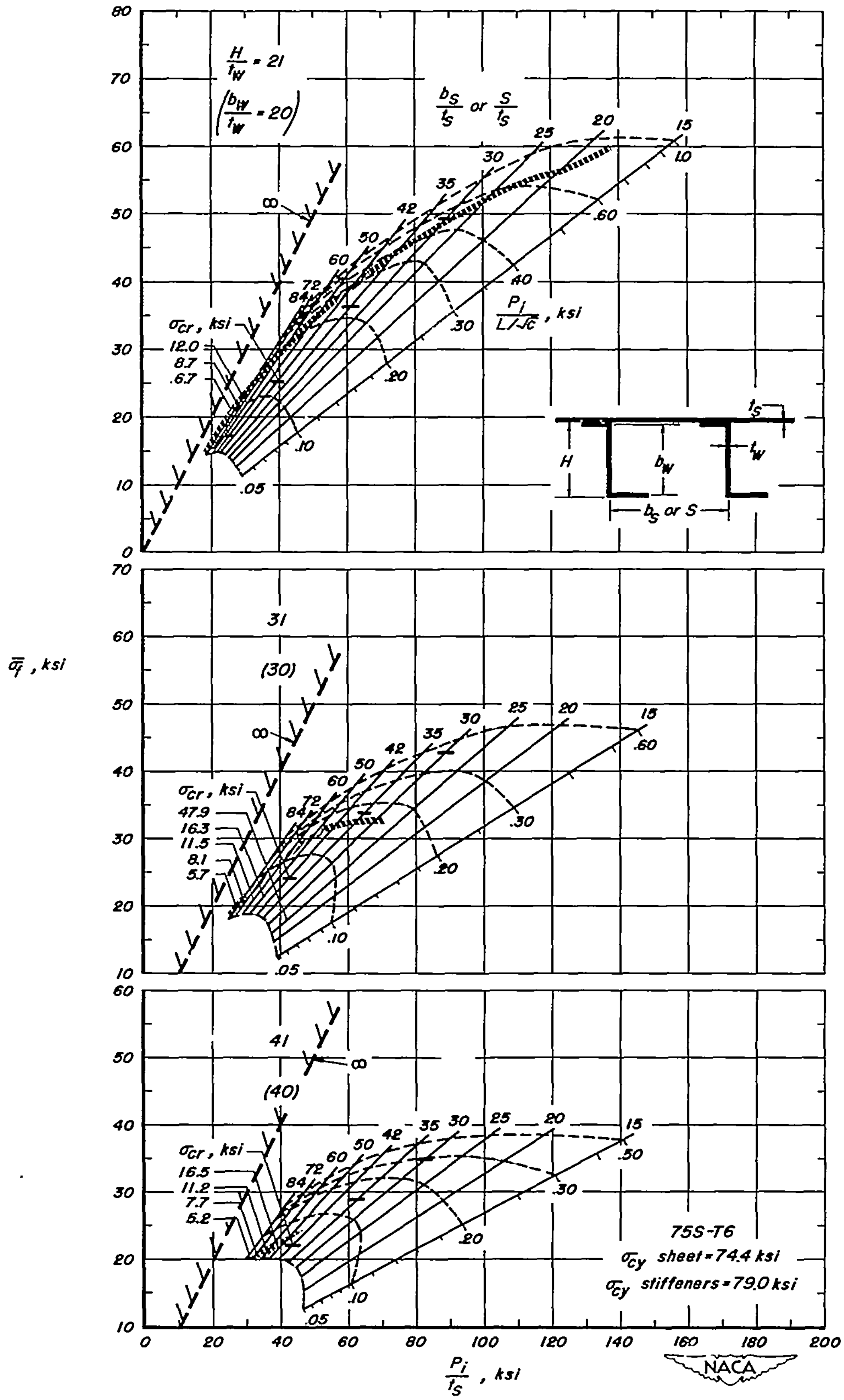

Figure 16.—Concluded. $\left(\frac{t_W}{t_S} = 0.79\right)$

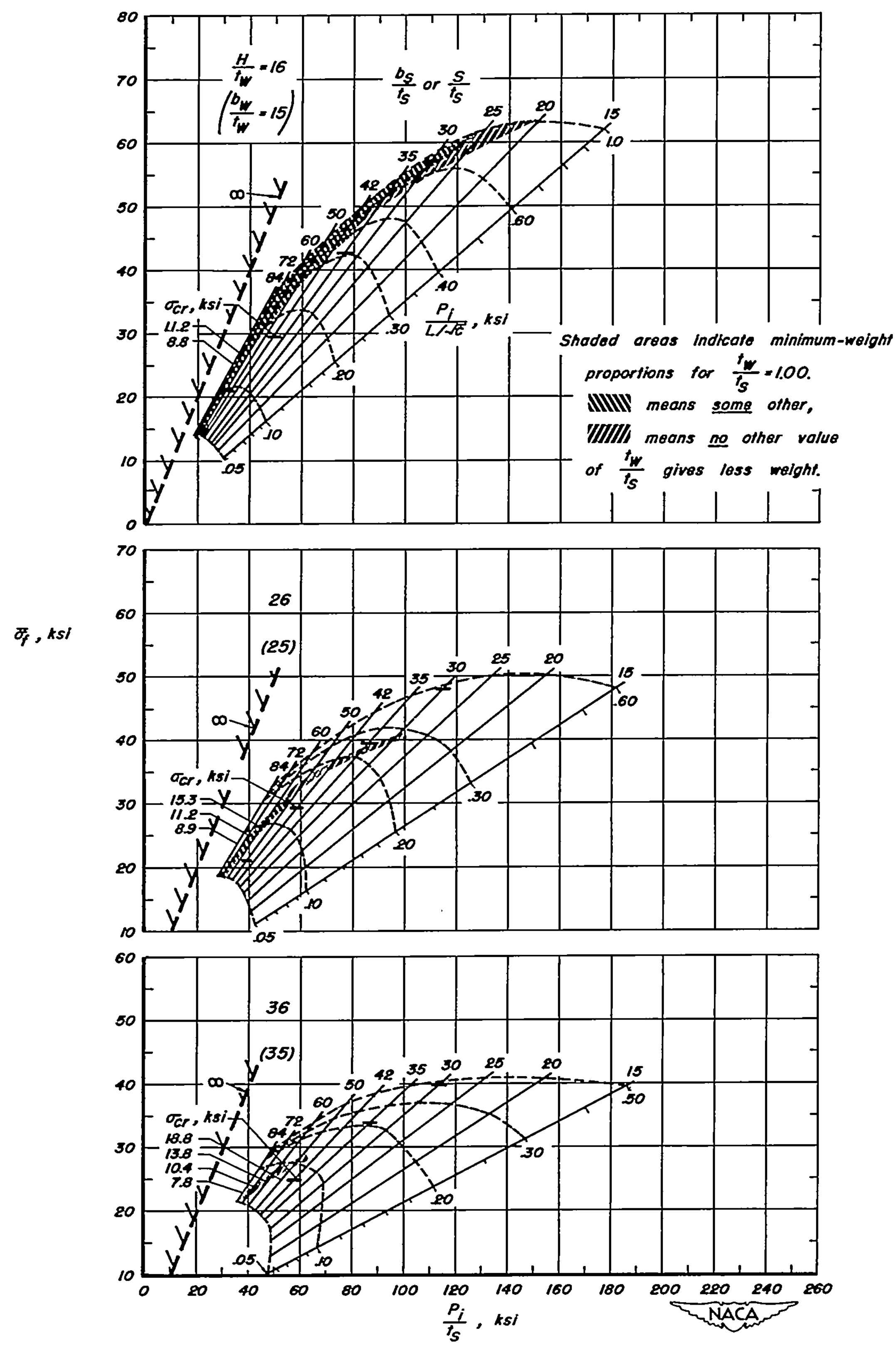

Figure 17.— Direct-reading design chart (alternate form) for flat compression panels of 75S-T6 aluminum alloy with extruded Z-section stiffeners, $\frac{t_W}{t_S} = 1.00$.

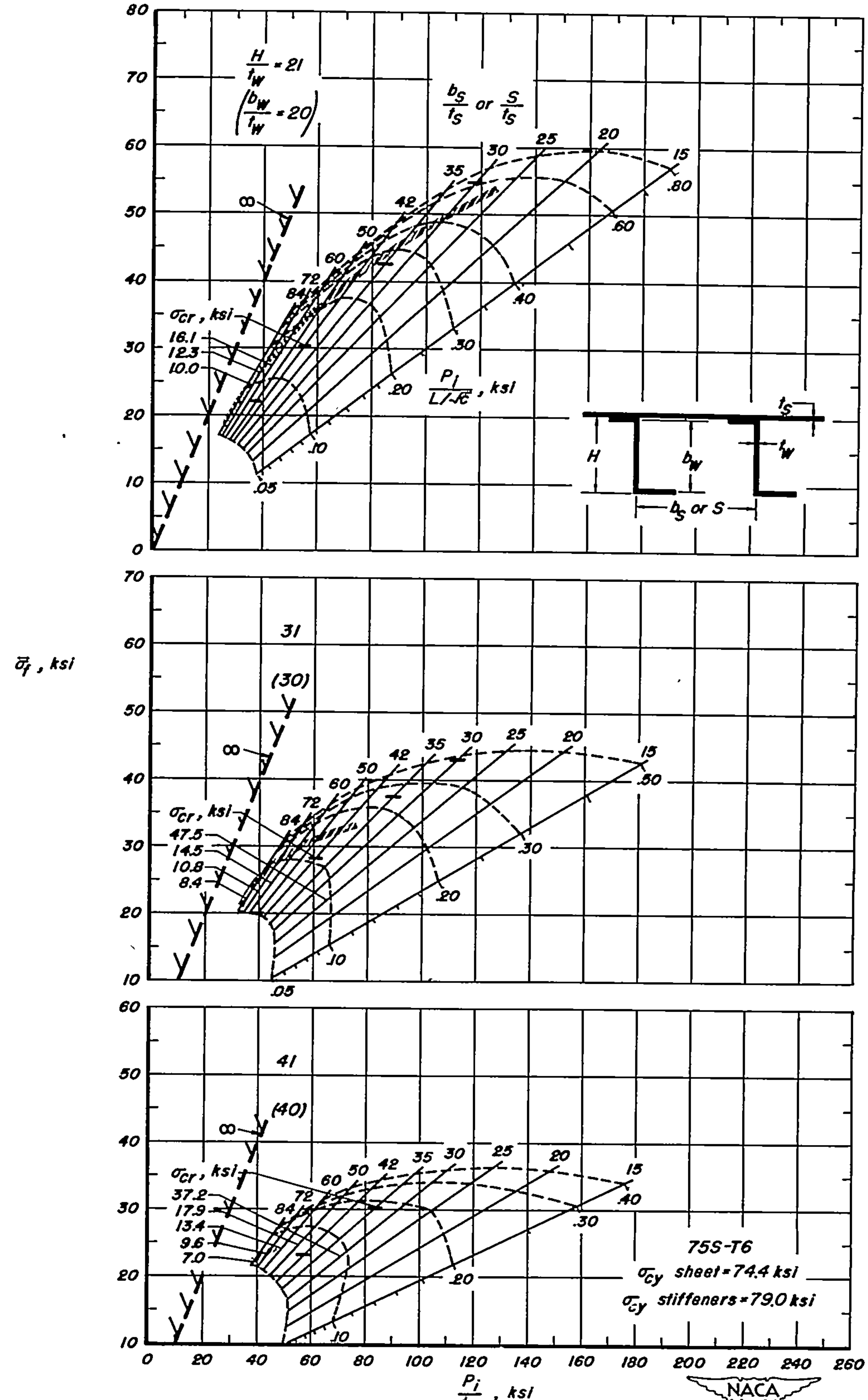

Figure 17.—Concluded. $\left(\frac{t_W}{t_S} = 1.00\right)$

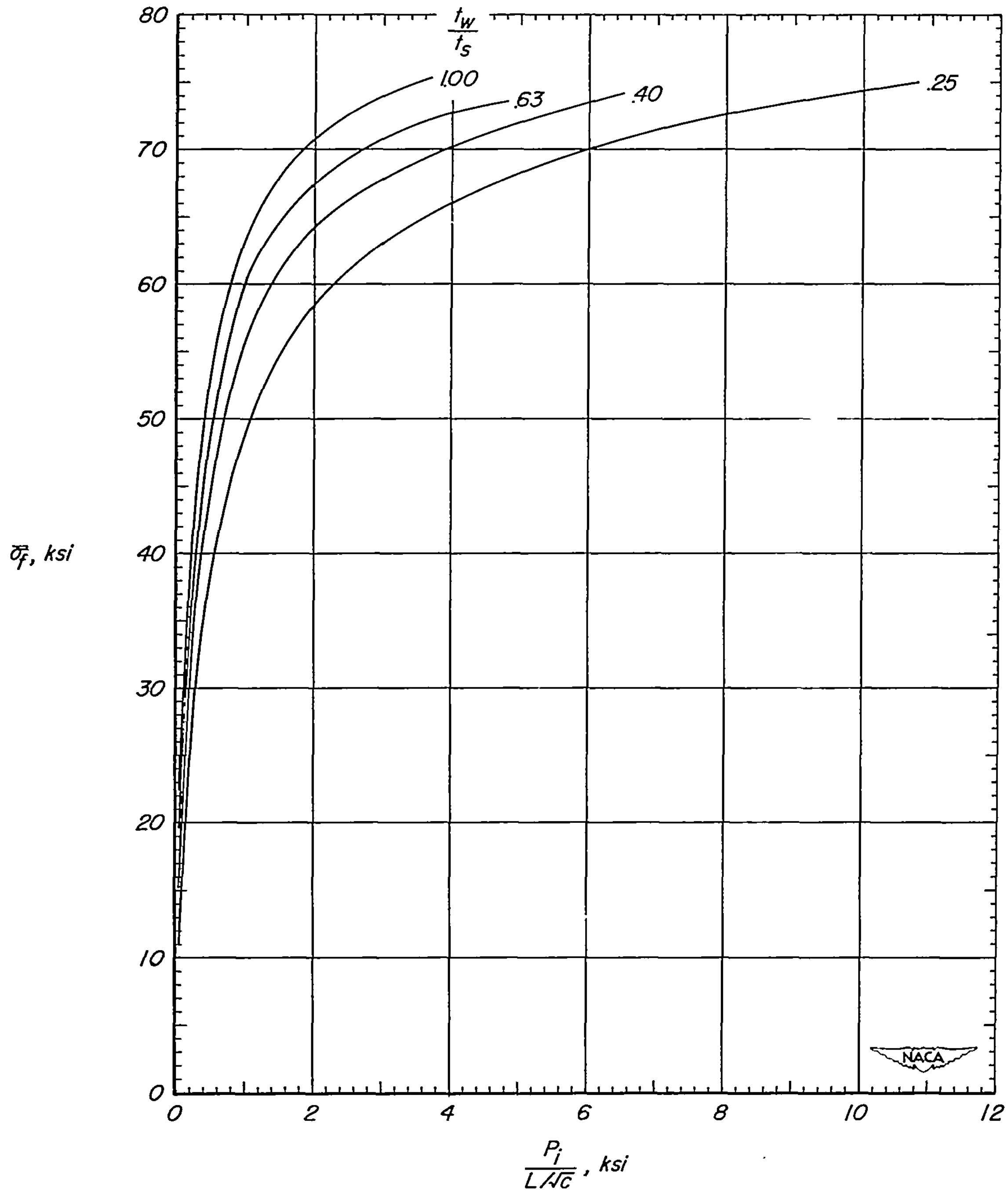

Figure 18.- Highest values of average stress at failure for 75S-T6 aluminum-alloy flat compression panels having extruded Z-section stiffeners.

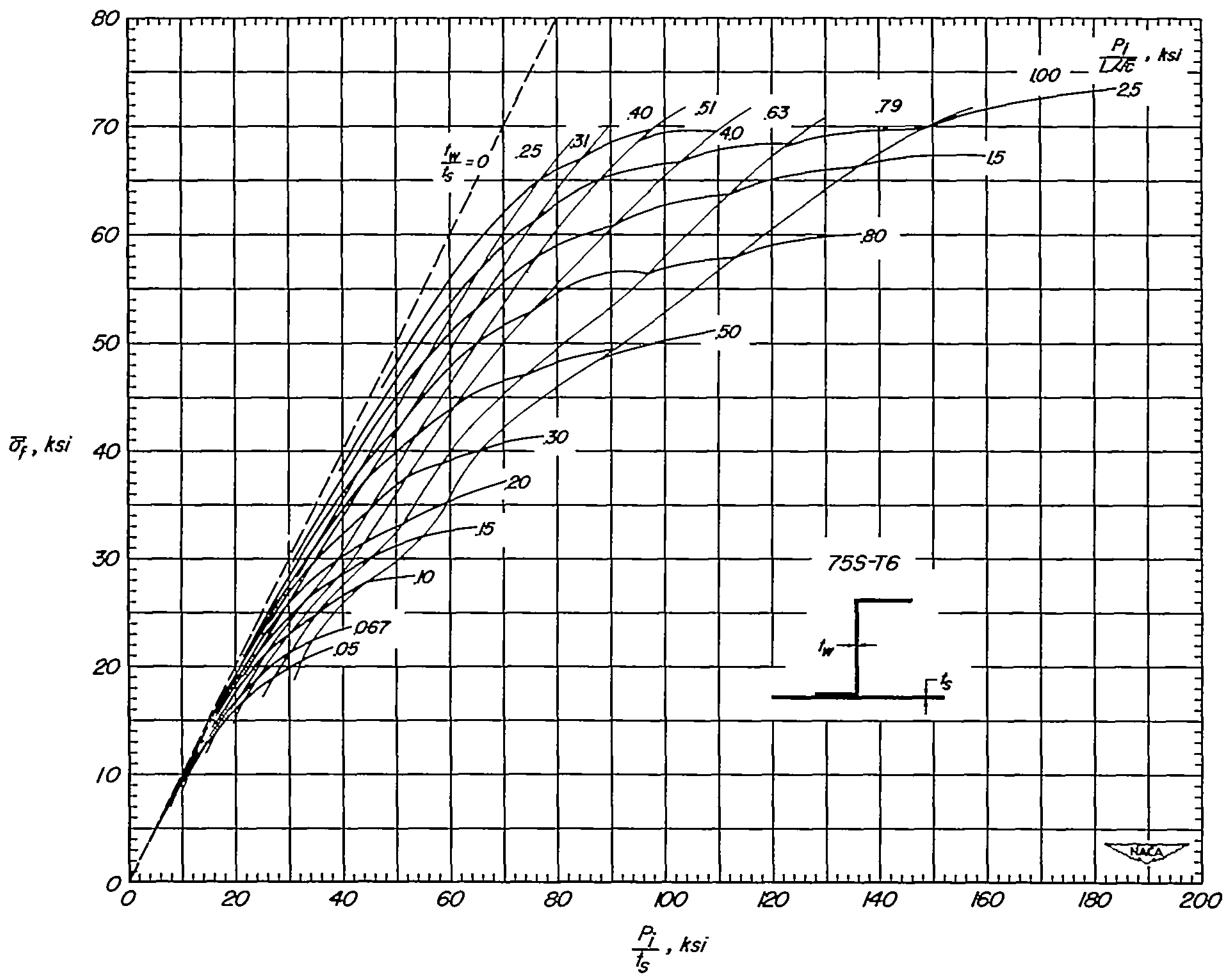

Figure 19.- Design chart for the determination of the average stress at failure that can be carried by minimum-weight designs of 75S-T6 aluminum-alloy flat compression panels having extruded Z-section stiffeners.

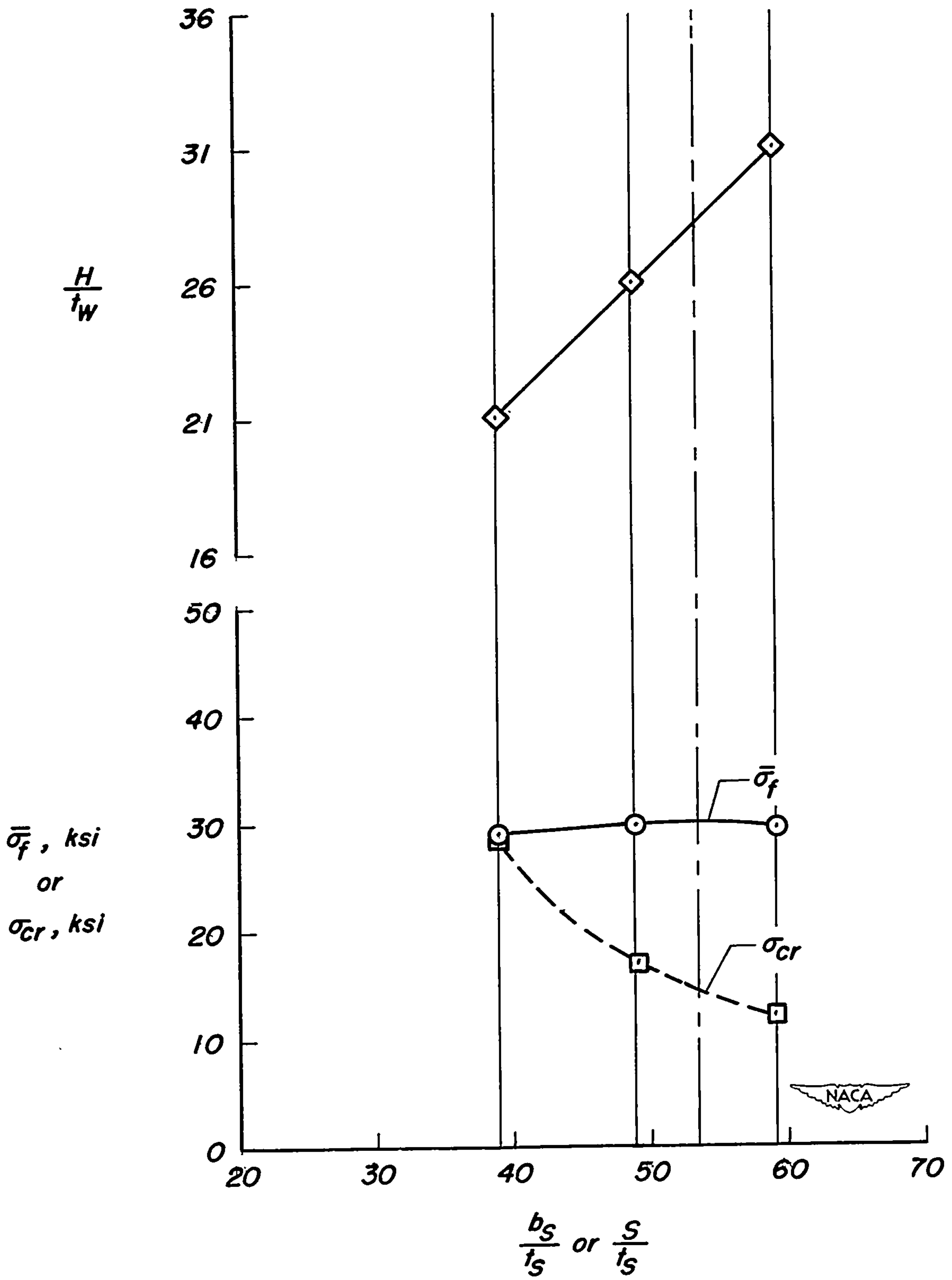

Figure 20.- Plot for obtaining design from design charts.

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