traced parallel to p_l' and tangent to the ellipse. It is then deduced that $p_l = \sigma_0$ CD and $p_i = \sigma_0$ DP.

The determination of the extrema can be done by this method, thus producing the following results:

Maximum Value	Given Value	Corresponding Value	
$p_i = p_e + \frac{\sigma_0}{\sqrt{3}}\left(1 - \frac{1}{k^2}\right)$	p_e	$p_l = p_e - \frac{\sigma_0}{\sqrt{3}\, k^2}$	(11a)
$p_i = \frac{2\,\sigma_0}{\sqrt{3}} + p_e$	p_l	$p_e = \frac{\sigma_0}{2\sqrt{3}}\left(3 + \frac{1}{k^2}\right) + p_l$ ..	(11b)
$p_e = p_l + \sigma_0\sqrt{1 + \frac{1}{3\,k^4}}$	p_l	$p_i = p_e + \frac{\sigma_0}{\sqrt{3}}\,\frac{3\,k^2 + 1}{\sqrt{3\,k^4 + 1}}$ ..	(11c)
$p_e = p_i + \frac{\sigma_0}{\sqrt{3}}\left(1 - \frac{1}{k^2}\right)$	p_i	$p_l = p_i + \frac{\sigma_0}{\sqrt{3}}$	(11d)
$p_l = p_i + \frac{2\,\sigma_0}{\sqrt{3}}$	p_i	$p_e = p_i + \frac{\sigma_0}{2\sqrt{3}}\left(1 - \frac{1}{k^2}\right)$ ..	(11e)

and

$p_l = p_e + \sigma_0\sqrt{1 + \frac{1}{3\,k^4}}$	p_e	$p_i = \dfrac{p_e - \frac{\sigma_0}{\sqrt{3}}\left(1 - \frac{1}{k^2}\right)}{\sqrt{3\,k^4 + 1}}$ ..	(11f)

ELASTIC LOADING FOR THE CRITERION OF THE INTRINSIC CURVE OF MOHR-CAQUOT

For simplification, a linearized intrinsic curve is used, obtained by drawing the right lines tangents to the circles of diameters, σ_0 and σ_c, in which σ_0 and σ_c are the absolute values of the elastic limits for pure tension and pure compression.

There is plastic flow at a point in the wall of the cylinder if the local values of the constraints are such that the Mohr circle constructed by the major σ_M and the minor σ_m stressed is tangent to or cuts these lines and the necessary condition that the cylinder remains elastic is expressed by the inequality

$$\sigma_M - \sigma_m \frac{\sigma_0}{\sigma_c} < \sigma_0 \quad \ldots\ldots\ldots\ldots\ldots \quad (12)$$

According to the relative magnitudes of the principal stresses given by Eqs. 1, 2, and 3, Eq. 12 can be written in six different ways. Just as for the criterion of Von Mises, it can be shown that plastic flow begins at the internal diameter. Then, at the limit, and with $r = r_i$, these inequalities become equalities and present six planes in the space p_i, p_e, p_l.

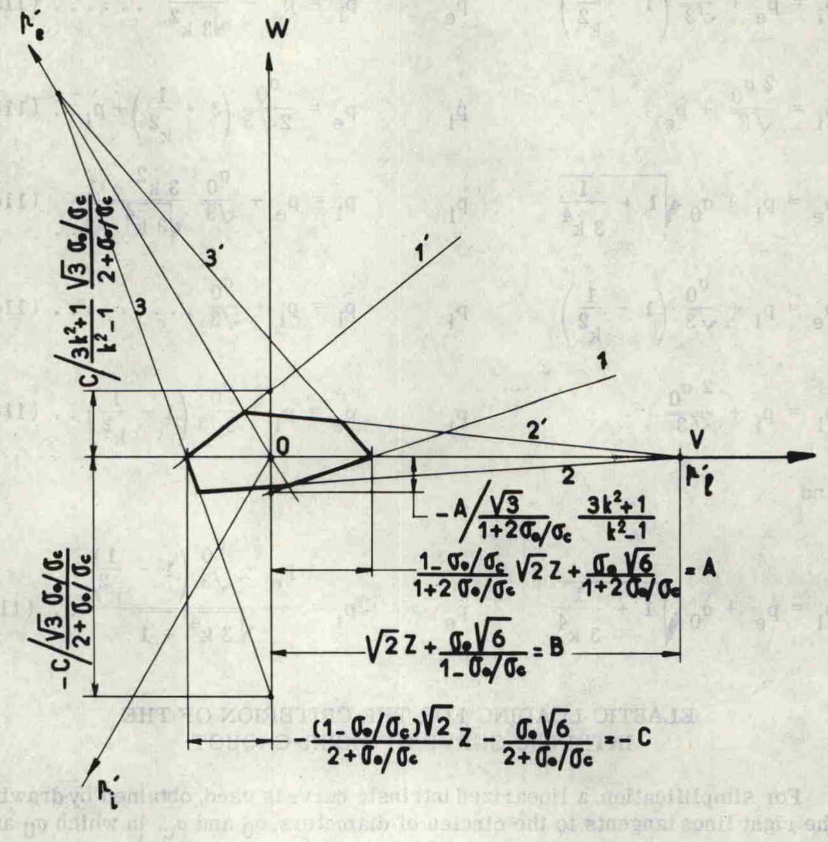

FIG. 4

In the new coordinate system V, W, Z (where the axis Z coincides with the line $p_i = p_e = p_l$ while W is at the intersection of the plane formed by the coordinates p_i and p_e and the plane π perpendicular to Z and passing through the origin) the contours formed by their traces on the planes perpendicular to the line $p_i = p_l = p_e$ are represented in Fig. 4. It can be seen that the slopes of these traces vary with the ratios σ_0/σ_c and k (except for the lines 3 and 3').