By (2.27) we have in a similar fashion, $t_{r\zeta} = t_{r'r'}$, and $t_{s'\zeta} \sim t_{s's'}$.
By Remark 5, we have on a C^r-boundary

$$t_{r'\zeta} = t_{rj} = t_{rr} = t_{r'r'}, \quad t_{s'f} = t_{sf} = t_{ss} = t_{s's'} \qquad (3.17)$$

Pn a $(?_x$-boundary $t_* = t_s = t_{s'} = t_{r'}$. Let C be a smooth portion of a C_t-boundary having proper slope. We parameterize C in the (r,s) plane by (h(J),k({)) and c' in the (r',s') plane by $(\bar{h}(f),\bar{k}(f))$. Then

$$t_{r\pounds} = h'\, t_{rr} + k'\, t_{rs},$$

$$t_{sf} = h'\, t_{sr} + k'\, t_{ss}.$$

By (2.24) and the fact that $t_r = t_s$, $t_{rs} = 0$ on C.
Thus, on C $t_{.,} = h'\, t$ and $t_v = k'\, t$.
Similarly on c' $t_{rf} = \bar{h}'\, t_{rr}$ and $t_{s'J} = \bar{k}'\, t_{ss}$.
Since on C $t_r = t_s = t_{s'} = t_{r'}$, we have $t_{rj} = t_{s\wedge} = t_{s} = t_{r'j}$.
Select J so that $h'(J) > 0$, then on the 0^*_t-boundary C and C *, since C has proper slope,

$$\operatorname{sgn}(t_{x}) = \operatorname{sgn}(t_{ii}) = \operatorname{sgn}(t_{oo}) = \operatorname{sgn}(t_{li}) = \operatorname{sgn}(t_{ss}) = \operatorname{sgn}(t_{*J})$$

for C with positive slope,

(3.18)

$$\operatorname{sgn}(t_{r\zeta}) = \operatorname{sgn}(t_{rr}) = \operatorname{sgn}(-t_{sg}) = \operatorname{sgn} t_{f} = \operatorname{sgn}(-t_{g'g'}) = \operatorname{sgn} t$$

for C with negative slope.

By (1.101) the condition $(f = 0$ or $ff_t = 0$ is necessary in order for a curve to be an internal boundary. We now investigate the extent to which this is sufficient. ' A curve is an internal boundary if it separates plastic