

## Supplemental Mission Specifications

A&AE 451, Fall 2000

Design of a Small Remotely-Piloted Variable Stability Aircraft

Take-off Distance  $\leq 120$  ft of ground roll

Landing Distance  $\leq 120$  ft of ground roll

Minimum Climb Angle 5.5 degrees ( $\gamma_{\text{climb}} \geq 5.5$  degrees)

Maximum Descent Angle -5.5 degrees ( $\gamma_{\text{descent}} \leq -5.5$  degrees)

$V_T \leq$  Loiter Velocity  $\leq 30$  ft/sec

where  $V_T$  is the speed for which  $\alpha_{\text{turn}} = \alpha_{\text{take-off}}$

$\alpha_{\text{take-off}}$  is the angle of attack at take-off

$V_{\text{to}} = 1.2V_{\text{stall}}$

and where  $V_{\text{stall}}$  occurs at  $C_{L\text{max}}$

$V_{\text{stall}} \leq 20$  ft/sec

Turn Radius at the loiter speed is 50 ft

Operating Altitude = Altitude of Mollenkopf Athletic Center plus 6-30 feet

Operational Airspace is within the marked football field (360x150 feet)