EXECUTIVE SUMMARY

The purpose of this study is to investigate the expected impact which VDOT's *Hurricane Evacuation Traffic Control Plan* will have on the ability of Hampton Roads residents who desire to leave the local area to actually do so. The only type of storm studied was a Category 4 hurricane, similar in magnitude to hurricanes Hugo and Andrew. Alternative methods of improving evacuation are also analyzed.

Analyses were performed using a spreadsheet-based model which estimates the number of successful evacuations under various scenarios. This study examines only those evacuees which attempt to leave the Hampton Roads area, not those which relocate within the area. The Corps of Engineer's *Virginia Hurricane Evacuation Study* was used to estimate the number of out-of-Hampton-Roads evacuees.

VDOT's plan attempts to keep traffic moving on I-64 and to divide its capacity equitably amongst evacuating localities. It proposes the use of police to limit the number of vehicles which are allowed to enter the interstate at each ramp. Plugging the parameters of the VDOT plan into the HRPDC staff model indicates, however, that the VDOT plan will not achieve its goals. The geometric configuration of the Bowers Hill interchange, having four incoming evacuation lanes and only two outgoing, will cause even the metered traffic on I-64 East (toward Suffolk) to clog at that bottleneck. In addition, the VDOT ramp metering plan does not limit the outlying localities enough to allow all of the evacuees from the geographically disadvantaged cities of Norfolk and Virginia Beach to successfully evacuate.

In light of the limitations of the VDOT plan, three alternate measures were examined. First, the effectiveness of ramp closures was estimated. By closing the on-ramps to I-64 West on the Peninsula and closing I-264 West at Bowers Hill, this measure attempts to provide adequate evacuation capacity for the geographically disadvantaged cities and to encourage the use of arterial routes by the outlying localities. Plugging the parameters of the ramp closure scheme into the HRPDC staff model indicates that this alternative would significantly improve the evacuation, and yet a precarious evacuation is still foreseen.

The second alternate measure examined was a reversal plan whereby the eastbound lanes of I-64 on the Peninsula would be reversed in order to allow them to be used by evacuees traveling the northbound lanes of I-664. This plan adds two additional evacuation lanes to the system and, by making I-664 an evacuation route, solves the bottleneck problem at the Bowers Hill interchange. Like the ramp closure scheme, this plan would significantly improve the evacuation, and yet a precarious evacuation is still foreseen.

Therefore, because the ramp closure and I-64 reversal plans are beneficial and yet may be individually inadequate, this study recommends the third alternate measure examined: a combination of the closure and reversal plans.