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Mass Evacuation: Developing a Contraflow Plan

SUMMARY

Mass evacuations can create significant traffic congestion in the outbound lanes of major evacuation routes. Transportation engineers and law enforcement personnel should consider developing contraflow plans for major limited-access evacuation routes.

DESCRIPTION

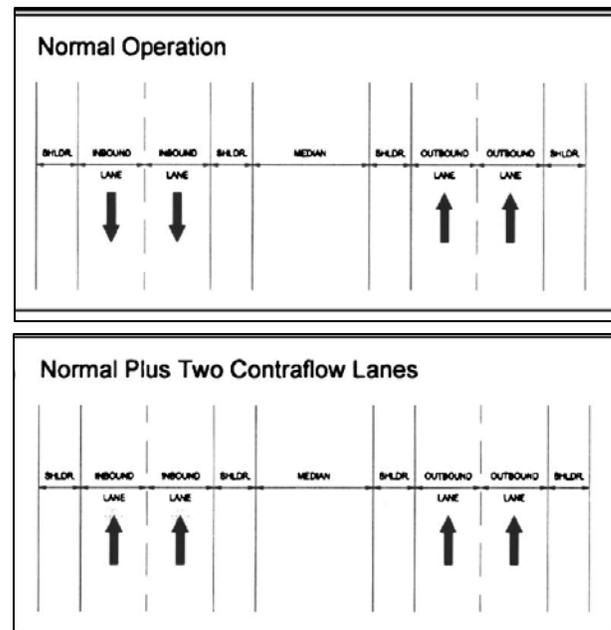
State and local officials in Texas did not have a contraflow plan before the Hurricane Rita evacuation in September 2005. The state evacuation plan was based on the assumption that only people living in projected flood zones would evacuate before a hurricane. Since the number of evacuees from the flood zones would not exceed the transportation network's outbound capacity, Texas emergency planners had concluded that contraflow would not be necessary.

However, Hurricane Rita caused the evacuation of nearly three million people, more than twice the number that Texas emergency planners had expected to evacuate. Many of these people lived outside the projected flood zones and evacuated even though they could have safely sheltered-in-place; this event is known as a "shadow evacuation." This shadow evacuation had two principal causes:

- Most Texas residents had seen television news broadcasts of people stranded on rooftops after Hurricane Katrina flooded New Orleans earlier that month. Many Texans chose to evacuate rather than to risk sheltering-in-place because they feared that Hurricane Rita would cause similar destruction in Texas.
- Some county judges and mayors ordered mandatory evacuations for areas outside the flood zone. These officials had been only recently empowered to order mandatory evacuations by a June 2005 state law.

Contraflow

Contraflow is the reversal of traffic flow in the inbound lanes of a limited-access divided highway, which results in an increase in outbound traffic capacity.



Source: [National Review of Hurricane Evacuation Plans and Policies](#), p. 20.

The enormous number of evacuating vehicles exceeded the capacities of coastal evacuation routes and created gridlock conditions in outbound lanes. The prolonged traffic congestion caused many frustrated motorists to turn around and to return to their homes. Some of those evacuees lived in the projected flood zone. If Hurricane Rita had made a direct hit on Houston as predicted, these evacuees would have been in life-threatening danger.

In an attempt to ease this gridlock, the governor of Texas ordered the Texas Department of Public Safety (DPS) and the Texas Department of Transportation (TxDOT) to start planning for contraflow at 4:00 a.m. the day before Hurricane Rita's landfall. Only 2 hours later, they began to execute the plan. The absence of prior preparation for contraflow caused a number of problems. Texas DPS and TxDOT had little time to familiarize individuals with their specific responsibilities. Partly as a result, the agencies had difficulty coordinating assignments and deployments for the large number of people required to implement contraflow on the highways. Moreover, without pre-built crossovers, TxDOT had to break down concrete median barriers to load traffic into the contraflow lanes.

Mass evacuations can create significant traffic congestion in the outbound lanes of major evacuation routes. Transportation engineers and law enforcement personnel should consider developing contraflow plans for major limited-access evacuation routes. In response to the events of Hurricane Rita, Texas developed contraflow plans for all coastal areas and staged exercises to put those plans into action.

CITATION

Alley, Scott. Emergency Management Coordinator, Texas Department of Transportation. Interview with *Lessons Learned Information Sharing*, 13 Oct 2006.

Alley, Scott. Emergency Management Coordinator, Texas Department of Transportation. Presentation during the Contraflow Evacuation Workshop in Orlando, Florida, 14 Feb 2006. <http://www.teachamerica.com/ContraFlow/index.html>

State of Texas. *Governor's Task Force on Evacuation, Transportation, and Logistics Final Report*. 14 Feb 2006. https://www.llis.dhs.gov/member/secure/detail.cfm?content_id=16236

Texas Legislature. *Texas Legislative Session 79(R): House Bill No. 3111*. 9 Jun 2005. https://www.llis.dhs.gov/member/secure/detail.cfm?content_id=20871

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