

ATC-44

**Hurricane Fran, North Carolina,
September 5, 1996:
Reconnaissance Report**

by

APPLIED TECHNOLOGY COUNCIL
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Preface

Recognizing that structural damage from wind and wave action has much in common with earthquake damage, the Board of Directors of the Applied Technology Council has extended ATC's mandate to address problems in wind and coastal engineering. This move toward an approach that examines effects and treats causes as integrated problems recognizes the similarity in the dynamic response, probabilities of occurrence, and post-elastic behavior of buildings and other structures to wind storms, wave action, and earthquakes. Two new Board positions were created to assist in embracing ATC's focus of multi-hazard mitigation. Arthur Chiu, Emeritus Professor of Civil Engineering, University of Hawaii, and Robert Dean, Chair and Graduate Research Professor of the Coastal and Oceanographic Engineering Department of the University of Florida in Gainesville were appointed to these new positions.

As ATC moved to add these two members to the Board, Hurricane Fran, a Category 3 Hurricane, made landfall on the North Carolina coast on September 5, 1996. Three weeks later, newly-appointed Director Robert Dean led an ATC-organized team consisting of Dan Cuoco of Thornton-Tomasetti Engineers, New York, New York, and Michael J. Griffin of EQE International, Aiken, South Carolina, on a two-day mission to gather relevant material for a field reconnaissance study, documented in this report. The timing of the trip was opportune, in that security was still high and the damage intact; in addition, the barrier island beach roads were repaired and sand-free, and nearby lodging was available, permitting convenient access.

The primary objectives of the reconnaissance investigation were to (1) examine the types and extent of damage, (2) collect data, (3) interpret damage causes, and (4) identify means of damage reduction in the landfall area.

The team rendezvoused in Yaupon Beach, North Carolina, approximately 40 miles south of Wilmington on Thursday evening, September 26, 1996. On Friday morning Tom Jarrett, Chief of Coastal Engineering, Wilmington District of the U.S. Army Corps of Engineers, provided an overview of the damage and escorted the team to the damaged areas of Carolina Beach, Kure Beach, Fort Fisher and Wrightsville Beach. The team drove to Topsail Island to investigate the southern end of the island in the remaining daylight hours, and returned to Yaupon Beach.

On September 28, 1996, the team returned to the Wilmington Airport to conduct a one-hour aerial survey of the damaged areas. The flight extended from North Topsail Island south to the Cape Fear Inlet. This aerial survey provided an overview and perspective of damage, ensuring that the remainder of the time available for ground inspection could be allocated effectively. After landing, the team proceeded to the north side of Topsail Island and spent the remaining available time inspecting the extensive damage there.

In addition to the team of three, ATC is indebted to Tom Jarrett, of the U.S. Army Corps of Engineers, who assisted the team the first day, providing valuable information on the extent and location of damage, debris removal, and recovery efforts performed in the preceding three weeks. Additionally, two of the areas visited on Topsail Island were still under fairly tight security. The Army Corps of Engineers, through Mr. Jarrett, provided valuable identification allowing access to these areas.

ATC Deputy Executive Director, A. Gerald Brady, served as Project Manager, and Peter Mork, ATC Computer Specialist, provided report production services.

Christopher Rojahn
ATC Executive Director

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