

# ROLE OF THE FEDERAL HIGHWAY ADMINISTRATION IN RESTORING HIGHWAYS DAMAGED BY DISASTERS

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Even before the disaster of Hurricane Agnes in 1972, the Federal Highway Administration had been involved in the cleanup of hundreds of disasters in the conterminous United States, Alaska, and the Virgin Islands caused by rainstorms, hurricanes, and earthquakes. Agnes almost proved to be overpowering to the Federal Highway Administration and to other state and federal agencies. The ways in which the Federal Highway Administration went about assisting the heavily damaged areas of New York, Pennsylvania, Maryland, and Virginia are described. Its involvement in the repair or reconstruction of damaged federal-aid roads and bridges is discussed.

●THE MOST DEVASTATING of all disasters occurred in 1972, and during this same year there were more disasters than in any previous year. For many years, the Federal Highway Administration has been involved in hundreds of disasters throughout the continental United States, Alaska, and the Virgin Islands. Most of these disasters were caused by severe rainstorms, hurricanes, and earthquakes and resulted in billions of dollars in damage. As long as these phenomena exist, the Federal Highway Administration will continually be involved in the repair and reconstruction of damaged roads and bridges that they cause.

In addition to involvement in disasters, under its own legislative authority, FHWA provides technical assistance and guidance to the Office of Emergency Preparedness with respect to non-federal-aid roads, streets, and bridges under the Disaster Relief Act of 1970.

Under the legislative authority of FHWA, financial assistance is provided to states under emergency relief provisions for the repair or reconstruction of highway facilities on the federal-aid system that are damaged as a result of a natural disaster over a wide area.

Congress has authorized \$100 million annually for this purpose. Sixty percent of the yearly expenditures for emergency relief is appropriated from the Highway Trust Fund, and the remaining 40 percent comes from unappropriated funds in the U.S. Treasury.

Under the federal-aid highway acts, assistance cannot be provided to a state after a governor proclaims a disaster unless the Secretary of Transportation concurs in the proclamation and the state highway department makes a formal application for assistance to FHWA. When this is done, the FHWA division engineer of the state in which the disaster occurred arranges for inspection of the area; estimation of the cost of repairing or replacing the highway facility; approval of the plans, which must meet minimum AASHO standards; and inspection of the facility when work is actually under way.

When the Secretary of Transportation determines that it is in the public interest, FHWA will contribute 100 percent of all costs; otherwise, the federal contribution will be at least 50 percent.

When FHWA is requested to assist the Office of Emergency Preparedness, it provides the engineering assistance necessary to ensure that non-federal-aid roads, streets, bridges, and related structures are repaired or reconstructed in accordance with the OEP law and standards. FHWA provides the engineers to estimate the repairs or reconstruction of these damaged non-federal-aid roads or bridges, to review and approve plans, and to inspect the highway or bridge when the work is actually under way.

FHWA finds itself working with two sets of criteria (FHWA and OEP) that do not coincide. As a result of the OEP criteria, many decisions and recommendations require the judgment of the engineer in the field; however, OEP has the authority to make the final approval or recommend any changes deemed necessary.

Until Hurricane Agnes almost washed out several states, FHWA believed it dealt with some fairly large, difficult-to-manage disasters. However, Agnes proved to be the nightmare of nightmares from which participating agencies are still trying to wake up. Not a day has gone by that FHWA engineers have not had discussions with, met with, or made a trip to the field with OEP representatives regarding Agnes. Problems are still being resolved in the areas of criteria, standards, and design of roads and bridges. Congressional mail is being answered, and actions that were or should have been taken in the early stages of the disaster are being reviewed.

As an idea of the awesomeness of Agnes, comparisons will be made. The cost of the disaster, in terms of OEP federal financial participation, was equal to the 10 most devastating disasters of the past decade, and it was greater than the costs of all of the disasters of the last 5 years. To add to the magnitude of involvement, there were 47 other disasters this past year, more than double the average yearly disasters of the past. FHWA was involved in all 47.

Agnes almost proved to be completely overpowering, not only to FHWA but also to other federal and state agencies. In the past, it was routine to provide the necessary engineers and coordinate disaster operations within FHWA and with other agencies, but Agnes was so big and widespread that it was necessary to use engineers from states outside the disaster areas and an additional 30 from Washington headquarters. The total number of engineers involved in the heavily damaged states of New York, Pennsylvania, Maryland, and Virginia was 600 from the state highway departments and 300 from FHWA field and Washington offices. In Pennsylvania alone there were 11,000 damaged highway sites including more than 700 bridges that had to be inspected. In all four states there were about 25,000 damaged sites to inspect.

There were many problems encountered:

1. Many of the state and federal engineers were inexperienced with the new disaster act of 1970;
2. Initial estimates of damage were difficult to make because of inaccessibility to damaged areas because of high water, so the preliminary estimates were extremely high;
3. It was difficult to coordinate operations with state and local representatives;
4. The nonuniformity of damage evaluation and recommendations required that personal judgment be used;
5. The OEP criteria were difficult to apply to many situations encountered; and
6. The cost of estimating repairs or reconstruction varied within and between states.

As a result of these and numerous other problems, FHWA and OEP are trying to resolve problems in the areas of bridge replacement versus repair; design of bridges and applicable standards; and bridge relocation, realignment, and/or abandonment. A very critical judgment confronting the engineers was determining whether a bridge was repairable or required rebuilding. FHWA objected to the reconstruction of a superstructure on abutments that were the only remains of the bridge after the flood. Some of the minor problems eventually resolved themselves; others are still in the works.

It will cost about \$250 million to repair all highways, roads, and bridges in all four states affected by Agnes.

Other involvements of FHWA included the coordination of debris removal by the state highway department from federal-aid highways and from non-federal-aid roads and streets. Agnes was so widespread and devastating that the Corps of Engineers assisted in the removal of debris from the state system and off-system roads in Pennsylvania.

FHWA and the Corps of Engineers worked together in the erection of Bailey bridges at critical river crossings where essential bridges were completely destroyed. Between 40 and 45 Bailey bridges were used at critical highway crossings. Some of these bridges will remain in place for 2 years or more.

One of the outstanding coordinating efforts by the FHWA was in the movement of 18,500 mobile homes from the disaster areas of Pennsylvania and New York. This involved working with HUD, 35 state highway departments, mobile home manufacturers, hauling contractors, and, in some instances, the governors of the 35 involved states through which mobile homes were transported; OEP coordinated the whole disaster operation.

Mobile home movement was expedited by streamlining special permit procedures; permitting nighttime, holiday, and weekend movements; lifting restrictions on load, length, and width of tractor and mobile home combinations; and lifting restrictions on the use of escorts. All this was done without compromise to safety on the highways, and no serious accidents were reported.

We are now, and will be continuously, dealing with the Environmental Protection Agency by ensuring that man and nature are disturbed to a minimum when making repairs; with HUD by ensuring that future floods and floodplains are taken into consideration in the design of new or replacement highway structures; with the OEP by striving to iron out standards, criteria, and inspection procedures so that the restoration work after the next disaster will be a smoother operation; and finally, with several congressmen in explaining why the bridge scheduled for reconstruction a year ago has not been completed and how much longer it will be until it is completed.

There was a time when we had a breather between disasters, but we now find that before one disaster is overcome another is upon us. If this past year is an indication of what the future will be, we may find that in the next 20 years the face of much of the United States will have been reshaped.

Hurricane Agnes, without a doubt, is the most devastating disaster that ever hit this country and may be the beginning of a series of great disasters that will follow.