EMERGENCY PLAN
FOR BRIDGES AND BRIDGE TUNNEL FACILITIES
IN THE TIDEWATER AREA

REPORTED TO

THE GOVERNOR

AND

THE GENERAL ASSEMBLY

House Document No. 6

COMMONWEALTH OF VIRGINIA
Department of Purchases and Supply
Richmond

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In response to the 1973 General Assembly House Joint Resolution 197 requesting that the Secretary of Transportation and Public Safety develop ways and means of providing for an emergency plan to deal with the halt of the flow of traffic on the bridges and bridge tunnels in the Tidewater area, an emergency plan has been developed which includes three components:

(1) A plan for the Chesapeake Bay Bridge Tunnel District comprising prevention, repair, movement of passengers and freight, detours signing and notification, and which provides for specific assignments of responsibility and coordination of activities of several agencies.

(2) A plan for repair, signing, and detours of the Hampton Roads Bridge Tunnel facilities to be carried out by the Division of Tidewater Toll Facilities of the Virginia Department of Highways and Transportation 1/ in coordination with that Department's Suffolk District.

(3) A plan for signing and detouring of bridges and tunnels located in the Cities of Chesapeake, Norfolk, and Portsmouth, Suffolk, and Virginia Beach to be carried out by the respective cities, except for Suffolk which is to be carried out by the Virginia Department of Highways and Transportation as this Department maintains the bridges in Suffolk.

These three plans were developed during 1973 and 1974 and are supported with appendices. The most critical facility is the Chesapeake Bay Bridge Tunnel, not only because of past accident experience but because of the specific arrangements necessary for the emergency movement of passengers and freight.

This movement can be accomplished through Piedmont Airlines and Piedmont Aviation Corporation (passengers, mail, and medical supplies) and Norfolk, Baltimore, and Carolina Boat Lines Inc. (freight, including tractor-trailers). These companies have proven reliability and capability to perform the required functions and could begin operations within 48-hours' notice. (NBC Lines via a tugged LST and Piedmont, through either a 44-passenger Fairchild or continuous use of a six- passenger plane until the Fairchild became available.) Maximum expenditures for required freight and passenger services would be $10,000 per day. 2/

(Footnotes on Page 1-a)

1/The Virginia Department of Highways will become the Virginia Department of Highways and Transportation on July 1, 1974; and since this Plan will not become effective before that date, the latter designation is used.

2/Specific estimates are $3,000 for one round trip of NBC Lines, LST, or $3,500 for two round trips - LST capacity being approximately 20 tractor-trailers per trip. For the Piedmont Fairchild (44-passengers capacity), costs are $1,200 for a one-time ferry fee from North Carolina, a $400 minimum idle-time charge per day, and $800 per round trip or $2,000 per day for 88-passengers round trips (two-plane round trips), and $2,800 per day for 120-passenger round trips. The six-passenger plane costs $100 per round trip, so delivering 48-passenger round trips for $800 per day; two additional round trips may be possible thereby delivering 60 passenger round trips along with some baggage and limited freight at a cost of $1,000 per day. Costs are therefore estimated to be, at maximum, $3,500 for freight; $2,800 for passenger or $6,300 per day with a $1,200 one-time ferry fee; $10,000 is used so that unforeseen contingencies would be covered.

Insurance can be purchased for $4,000 per annum which will provide this payment for up to 40 days 3/ (the longest time the Bay Bridge Tunnel has been out of service), with a first five day deductible clause. To assure loading and unloading capability at Cape Charles, an initial investment of $20,000 would have to made for a launching ramp. This ramp would, however, be a multipurpose one, as it could be used for commercial and recreational purposes by the people of the Commonwealth when not required for emergency use. Several sites are available; the Penn Central site is preferred by the Mayor of Cape Charles and is probably the best site if, as is likely, an inexpensive long-term lease can be negotiated with this railroad.

It is noted that security arrangements are necessary to insure appropriate movement of drivers and other freight personnel between the U. S. Navy designated on- and off-loading pier (possibly one of those among Piers 11-19) at the Naval Amphibious Base, Little Creek and the gate of this base. It is suggested that the Virginia Department of Highways and Transportation should assure this orderly and direct movement, either through its own vehicles or via contract with a private bus line. The Virginia Department of State Police could also be utilized to assure the U. S. Navy of no base movements other than authorized for these personnel.

Necessary to optimum movement without disruption of existing services is an adequate liaison and communications system. This system can operate through the Office of Emergency Services and the Virginia National Guard, with emergency services providing liaison activities and the National Guard providing "a Single-Side Band Radio Net".

The U. S. Navy might be relied upon in cases of a natural disaster emergency to provide direct assistance consistent with the rules and regulations under which it must operate, but emergency freight and passenger movement is viewed as primarily a State problem with State or State-contracted forces providing transport services.

Action required and agency responsibility for emergency freight and traffic movement when the Chesapeake Bay Bridge Tunnel is out of service is shown in Exhibit I.

Because of the proven reliability of the designated responsible parties, review and concurrence by affected agencies, and the fact that insurance funding arrangements can be provided for, effective action for emergency passenger and freight movement can be implemented at a moment's notice, assuming that funds are provided for Cape Charles ramp construction and for the first five days of freight and passenger transportation. Alternative methods of funding are included in the body of the report.

3/60 day coverage may be possible near the same rate and would be explored during insurance contractual arrangements - preliminary estimates are $6,000; however, during one policy year, the 40 day policy would be the maximum days covered for that year and for a 60 day policy, 60 days would be maximum coverage, so a 60 day policy may be more appropriate.

EXHIBIT I

ACTIONS REQUIRED AND AGENCIES RESPONSIBLE FOR
EMERGENCY MOVEMENT OF CHESAPEAKE BAY BRIDGE AND TUNNEL TRAFFIC

Actions Required	Agency Responsible or Necessary Implementation	Plan Preparation Necessary
Notification of service loss and estimated duration	Chesapeake Bay Bridge Tunnel Authority	None
Initiation of Plan	Secretary of Transportation and Public Safety or Commissioner of Highways and Transportation	None
Determination of priority of passenger and freight movement	Office of Emergency Services	None
Movement of passengers, mail, and medical supplies	(1) Piedmont Airlines and/or Piedmont Aviation Corporation	Through contract negotiated by Virginia Department of Highways and Transportation
	(2) Virginia Department of Highways and Transportation bus service of passengers from Little Creek Harbor to Gate at Little Creek Naval Base and from Melfa Airport to Cape Charles	Contract negotiated by Virginia Department of Highways and Transportation with private bus company or use of Virginia Department of Highways and Transportation vehicles at discretion of that Department
	(3) Office of Emergency Services	Assurance of certification of Melfa Airport Manager as a weather forecaster
Movement of freight	(1) Norfolk-Baltimore-Carolina Boat Lines	Contract negotiated by Virginia Department of Highways and Transportation and City of Cape Charles
	(2) Construction and maintenance of ramp at Cape Charles	Contract negotiated by Virginia Department of Highways and Transportation
	(3) Agreement of use and maintenance of Little Creek Naval Facilities	Formal agreement negotiated by Va. Sect. of Transportation with U.S. Navy
	(4) Provision of security of freight personnel movement between the Naval Amphibious Base, Little Creek loading pier, and Little Creek Naval Base Gate	Virginia Department of Highways and Transportation preparation or negotiation of contract with private bus company and establishment of joint VDHT-State Police Movement Program
Toll collection at Little Creek Naval Base, Norfolk Airport, Melfa Airport, and Cape Charles	Off duty Chesapeake Bay Bridge Tunnel Toll personnel or Virginia Department of Highways and Transportation personnel	Virginia Department of Highways and Transportation

EXHIBIT I (CONTINUED)

ACTIONS REQUIRED AND AGENCIES RESPONSIBLE FOR
EMERGENCY MOVEMENT OF CHESAPEAKE BAY BRIDGE AND TUNNEL TRAFFIC

Actions Required	Agency Responsible or Necessary Implementation	Plan Preparation Necessary
Liaison activities including receipt of Status Reports	Office of Emergency Services and Virginia National Guard	Office of Emergency Services Southeastern Regional Officer with Virginia National Guard assistance

BACKGROUND AND PURPOSE

"Resolved by the House of Delegates, the Senate concurring, that the Secretary of Transportation and Public Safety is required to study ways and means of providing an emergency plan to deal with the halt of vehicular traffic on any of the bridges or bridge tunnels in the Tidewater area when any such bridge or bridge tunnel is closed and to recommend an emergency plan to be used when any such situation arises." 4/

The purpose of this report is to outline emergency plans for the Tidewater bridges and tunnels as requested in the above-cited Resolution.

4/HJR 197 Committee Amendment in the nature of a substitute of House Joint Resolution No. 197

METHODOLOGY

An emergency plan of action is viewed as most appropriately dealing in terms of the following subdivisions of Tidewater bridge and tunnel facilities:

(1) The Chesapeake Bay Bridge Tunnel,

(2) The facilities in the Hampton Roads area, including the Hampton Roads Bridge Tunnel, the James River Bridge, and the Elizabeth River Tunnels, and

(3) The bridges located in Norfolk, Portsmouth, Suffolk, Chesapeake, and Virginia Beach.

Because of past accident experience causing more than $6 million in damages and 70 days of no service, the body of this report emphasizes the Chesapeake Bay Bridge Tunnel facility. In addition, this facility is given more emphasis because of the requirements of the movement of passengers and freight between the Eastern Shore and Tidewater Virginia and because this emergency transportation involves the specific delineation and coordination of responsibilities between agencies, whereas the other Tidewater facilities relate only to the Department of Highways and Transportation and cities specifically concerned with detours and signing for alternate routes.

PLAN I

THE CHESAPEAKE BAY BRIDGE TUNNEL

Necessary to an appropriate plan of emergency action for this facility is consideration of accident prevention, restoration of facility service, emergency freight and passenger movement, control of marine traffic after the accident, detours, signing, and notification provisions.

Accident Prevention

As in the case of highway or other accidents, the best plan of resolving these accidents is to prevent them wherever possible. With this in mind and because of the past accident experience of the Chesapeake Bay Bridge Tunnel, the Commander, Fifth Coast Guard District has proposed the establishment of a Regulated Navigation Area in the vicinity of the Chesapeake Bay Bridge Tunnel. This proposal to be implemented under the authority of the Ports and Waterway Safety Act and applicable to vessels over 100 tons will -

(1) prohibit anchoring in the area except under specified conditions,

(2) require a readily accessible secondary towing rig capable of being used as an emergency towing hawser on towed vessels,

(3) require the posting of an anchor detail on self-propelled vessels when within two miles of the Chesapeake Bay Bridge Tunnel so that the vessel may be anchored without delay in an emergency,

(4) require adherence to other regulations pertaining to impaired vessel maneuverability, reporting of entry, and other deviations, and

(5) require all vessels in the Regulated Navigation Area to adhere to draft limitation and direction of traffic regulations.

These measures are preventive but should be considered part of an Emergency Action Plan as they, hopefully, will be successful in eliminating the additional provisions of this plan which follow.

Repair

In planning for repair in the event of an accident, several features must be taken into account to assure minimization of the time the Bay Bridge Tunnel is out of service, including -

(1) A spare parts' inventory so that materials and structures are available when needed for emergency purposes.

(2) Provision for immediate and effective deployment of Chesapeake Bay Bridge Tunnel forces, and

(3) Provisions for the use of contract forces, where necessary, to further insure that repair will be carried out most expeditiously.

While it is unrealistic to keep an inventory of tunnel tubes, it is believed that a realistic inventory is maintained by the Chesapeake Bay Bridge Tunnel Authority. This inventory includes spare components of a low-level trestle - where previous accidents have been experienced -and is shown in Exhibit II.

A detailed emergency action plan for deployment of Bay Bridge Tunnel forces has been prepared by the management of this facility and is shown in Appendix A. Basically, this plan delineates the task assignments of the Executive Director, the Tolls and Securities Division, and the Maintenance Division of the Chesapeake Bay Bridge Tunnel Authority.

The Executive Director is responsible for (1) overall coordination of all district disaster efforts, (2) coordination of disaster control external sources, (3) coordination and mobilization of restoration and repair efforts, commission members, trustees, consulting engineers, contractors, and legal counsel, (4) liaison with State Government (5) coordination of public information, and (6) review of estimates, contracts, and disbursements.

The Tolls and Securities Division has the responsibilities of (1) warning, (2) law enforcement, (3) traffic control, (4) communications, operations, and coordination, (5) fire fighting, (6) rescue, (7) protection of all district properties, and (8) maintenance of records and logs relating to disaster.

The Maintenance Division has the responsibility of (1) advising and assisting the Executive Director relative to damage, restoration, and repair activities, (2) carrying out emergency damage control measures, (3) conducting damage surveys, including an early estimate of the length of time the facility will be out of service, (4) to restore limited operations - with external assistance as needed, (5) to repair the disaster (with external assistance needed), and (6) to maintain records regarding damage, equipment, material, and supplies used in restoration and repair.

Besides the provisions of inventory and mobilization of Bay Bridge Tunnel forces for repair and other duties, a crucial element is the ability to tap contractor's talents immediately so that heavy machinery, equipment, and skilled personnel may be utilized to get the Bay Bridge Tunnel in serviceable order as soon as possible. Immediate arrangements will be made with qualified contractors which can, and have in the past, placed their equipment in service as soon as feasible. These arrangements have been formed in the past and are of a standing nature. In addition, the State Highway and Transportation Commission can be relied upon to give permission for these companies to defer highway and bridge work to meet an emergency repair need if it arises.

EXHIBIT II

CHESAPEAKE BAY BRIDGE TUNNEL
INVENTORY OF SPARE COMPONENTS
LOW LEVEL TRESTLE

Item No.	Description	Quantity	Distance
1	Interior Superstructure Units	16 ea.)	600 ft.
2	Exterior Superstructure Units	16 ea.)	
3	Half-Span Interior Superstructure Units	8 ea.)	150 ft.
4	Half-Span Exterior Superstructure Units	8 ea.)	
5	Standard 3-Pile Bent Caps	4 ea.	N/A
6	54" Prestressed Concrete Cylinder Piles (12 cable) 136' long	14 ea.	1,904 ft.
7	54" Unstressed Concrete Cylinder Piles (12 hole) 16' long	3 ea.	48 ft.
8	54" Unstressed Concrete Cylinder Piles (16 hole) 4' long	23 ea.	92 ft.
9	54" Unstressed Concrete Cylinder Piles (16 hole) 16' long	46 ea.	736 ft.

Note: (1) Above described items in storage at Bayshore Concrete Products Co., Cape Charles, Va., ready for immediate out loading on barges as needed.

(2) Unilateral agreement with Bayshore and District that necessary forms, material and equipment will be maintained by Bayshore to permit prompt manufacture of additional components as required and authorized by District.

Freight and Passenger Movement

The freight and passenger movement provisions necessary depend upon what is defined as appropriate to move on emergency basis rather than to be diverted by alternate routes or postponements. This definition is believed to be the movement of passengers commuting back and forth to work, doctors, and urgent transportation as well as freight of a perishable nature - the latter being often the case with Eastern Shore products in the summertime.

This movement is not the responsibility of the Chesapeake Bay Bridge Tunnel Commission nor does this Commission, through its bond indenture, have the authority to provide for it and so other means and agencies must be utilized.

Office of Emergency Services and Department of Agriculture data indicate that the maximum emergency movement requirements are 150 passengers each way, or a total of 300 passengers and 48 tractor-trailers (total north and southbound) crossing per day. The freight requirements are greater in August as they are related to perishable goods. In other months, the freight requirements are sharply diminished.

Subsequent review indicates that emergency passenger requirements were greatly overestimated, primarily due to the utilization of previous experience data when free U. S. Navy Service was provided with minimal enforcement of priorities or evaluation of trip purpose.

Interviews with Piedmont Airlines personnel indicates that passenger movement can be provided for at a cost of $2,800 per day, including air transport of mail and medical supplies. This transportation would permit 120-passenger round trips if the Fairchild Charter was available and a minimum of 48-passenger round trips if the use of the six-passenger plane became necessary. (In the latter case, cost would be $800 per day.) Air is believed the best method of passenger movement, but another alternative available is the use of passenger boats. While these may be cheaper, they would probably not always be available and would require long delays for emergency crossings; for example, home-to-work commuters would probably be subjected to door-to-door 16 hours work time (8 hours of work and 8 hours total travel time). While this alternative is viewed as less desirable, it could be considered on a "contingency" basis. It is, however, anticipated that Piedmont would make every effort to assure availability of its Fairchild Charter Plane, including the absorption of the Charter's regular schedule by another airline if the Bay Bridge Tunnel was "down".

Freight movement can be accomplished for 40 tractor-trailer round trips at a cost of $3,500 per day by Norfolk, Baltimore, and Carolina Boat Lines. These lines have been in the business of hauling trailers by converted LST's from Norfolk to Baltimore for several years, have expressed their willingness to provide for emergency service requirements between Norfolk and Cape Charles, and are therefore deemed an appropriate choice. Necessary to their service is, however, agreement with the U. S. Navy and construction of a ramp at Cape Charles.

Conversations with the Commandant, Fifth Naval District, indicate such agreement is quite likely to occur but must be made between the Commonwealth and the Secretary of the Navy. It is suggested that these arrangements could be made through the Office of the Virginia's Secretary of Transportation and Public Safety.

The Mayor of Cape Charles has indicated a willingness to cooperate with the construction of a ramp so that the NBC Lines' freight vessels can load and unload there. This ramp could be used for commercial and pleasure boats at all times other than when emergency movement requirements exist and so funds invested (estimated to be $20,000) would serve several purposes - including emergency movement, commercial enterprise, and recreational opportunity. It is recommended that the Penn Central site be selected as this is consistent with NBC's requirements, as well as the necessary road requirements for tractor-trailer movement.

If, as is not expected, Penn Central's lease terms would be unfavorable (currently anticipated to be $100 per year for a three to five year lease), other town-owned sites are available; but this one seems to meet all needs, including the preference of the City of Cape Charles as outlined by its Mayor.

An additional important factor in emergency movement is to restrict movement to just that, emergency not just "joy rides". This restriction should take the form of the usual toll charge, and priority movement determination by Office of Emergency Services personnel. These personnel should also serve in a liaison capacity at the Bay Bridge Tunnel to assure the Governor's Office that effective emergency repair and movement measures are being taken as well as receive detailed reports of costs and actions which can be, in turn, summarized and evaluated to insure continued and improved effectiveness of future emergency responses if they should become necessary. Additionally, of course, an appropriate communications medium should be provided by the Office of Emergency Services and the Virginia National Guard as outlined in the Summary section of this report.

Control of Marine Traffic After the Accident

The U. S. Coast Guard has adequate means to control marine traffic in the event of an accident and, where necessary, will initiate provisions to do so upon notification by the Chesapeake Bay Bridge Tunnel Commission in accordance with its obligations.

Detour Signing

When the Chesapeake Bay Bridge Tunnel is deemed out of service for more than a few hours, the Suffolk District of the Virginia Department of Highways will be responsible for notification of this condition to the motorist through the placement of "Chesapeake Bay Bridge Tunnel Closed" signs for all primary routes leading to the Tunnel from the south and for Route 13 in Northampton and Accomac Counties to the north of the facility. The Bay Bridge Tunnel Authority will be responsible for notification of this

condition to the Maryland Department of Transportation and the Delaware Department of Highways and Transportation whose officials have in the past and will in the future mark their highways with "Chesapeake Bay Bridge Tunnel Closed" signs also.

Funding

Section 33.1-288 of the Code of Virginia, as amended, provides that the State Highway and Transportation Commission may in its discretion use highway funds for emergency operation, maintenance, and repairs of the Chesapeake Bay Bridge Tunnel Project in the event of damage to the bridge, under the repayment agreement approved by the Bond Trustee. In addition, on September 21, 1972, the Highway Commission adopted the following resolution, "Moved by Mr. Roos, seconded by Mr. Glass, that the Commission recognizes the disaster that has occurred to the Chesapeake Bay Bridge System and extends all proper and legal assistance. Motion carried."

In other words, where emergency funding is needed by the Chesapeake Bay Bridge Tunnel for repair, this funding can be provided by the State Highway and Transportation Commission, if necessary, on a loan basis. In practice, the Chesapeake Bay Bridge Tunnel usually has sufficient maintenance reserves; but from time-to-time, because of cash flow cycles, these reserves may be temporarily deficient, thereby requiring the Bay Bridge Tunnel to call on the State Highway and Transportation Commission for repair loan assistance in order that the work may be prosecuted immediately.

Possible freight and passenger movement funding outlays have been previously described and include

(1) $20,000 for a loading ramp at Cape Charles,

(2) A $4,000 5/ annual premium which should finance payments to Piedmont Aviation and NBC Lines for their fees beyond the first five days of emergency passenger and freight movement, and

(3) An estimated $30,000-35,000 for the first five days of emergency freight and passenger service.

Alternatives for financing these expenses include -

(1) State Highway and Transportation Commission assumption of funding obligations,

(2) Provision of a "sum sufficient" by the General Assembly,

5/This is estimated to be $6,000 if the 60 day coverage policy is purchased rather than the 40 day one.

(3) Use of office of Emergency Service funds, and

(4) In accordance with Paragraph 1-5a(3), Federally owned National Guard equipment may accompany and be used by unit when ordered into disaster relief operations by a governor. National Guard helicopters are available in an emergency nature involving potential loss of life. When National Guard helicopters are used under this provision, and the crew is placed on State Duty, the approximate cost is $130.00 per hour. This cost does not include extraordinary maintenance. State and local government authorities are responsible for reimbursement in the utilization of National Guard vehicles. This service could possibly be used when the bridge tunnel was estimated to be down for only one or two days, thereby, requiring only delivery of doctors or patients and expenditures of probably no more than $1,000 plus State Duty pay for the crewmen.

It is noted that tolls collected for emergency movement would help to defray some movement costs.

While every effort has been made to provide a plan where "when the button is pushed", reliability of service is assured; and while it is believed that this has been accomplished, it is believed improper for this study group to recommend a specific method of funding. It is suggested that this recommendation be made by the State Highway and Transportation Commissioner and the Secretary of Transportation and Public Safety.

It is believed, however, that the insurance arrangement suggested is a significant step in resolving the funding problem and should be implemented.

Comment

It is noted that the plan for emergency movement of freight and passenger traffic has been favorably reviewed by the Chesapeake Bay Bridge Tunnel Executive Director, the Technical Advisor and former Southeast Regional Officer of the Emergency Services Office, the Tidewater Toll Facilities Manager of the Virginia Department of Highways, the Commandant of the Fifth Naval and Commander of the 5th Coast Guard Districts, and representatives of NBC Lines and Piedmont Airlines and Aviation Corporations. This feature is believed to be crucial, as whether or not a plan actually works is dependent upon the agreement of the people who will have to implement it "when the chips are down". It is also noted that Chesapeake Bay Bridge Tunnel personnel are committed to reasonably accurately estimating the time necessary for restoration of service which should be most helpful to repair and service scheduling and decisionmaking.

Exhibit III represents overall emergency action plan requirements and responsibilities for the Chesapeake Bay Bridge Tunnel. It may be recalled that Exhibit I depicts detailed requirements and responsibilities for emergency freight and passenger service movement.

EXHIBIT III

SUMMARY DESCRIPTION OF EMERGENCY ACTION FOR ACCIDENTS AFFECTING THE STRUCTURES OF THE CHESAPEAKE BAY BRIDGE TUNNEL

Action	Agency Responsible for Action	Agency Responsible for Funding
Prevention	U. S. Coast Guard	U. S. Coast Guard
Repair	Chesapeake Bay Bridge Tunnel District	Chesapeake Bay Brige Tunnel District and State Highway and Transportation Commission if and when necessary on a loan basis
Freight Movement	Norfolk, Baltimore, and Carolina Lines	Insurance and ?
Passenger Movement	Piedmont Airlines and/or Piedmont Aviation	Insurance and ?
Control of Marine Traffic after Accident	U. S. Coast Guard	U. S. Coast Guard
Detours and Signing	Virginia Department of Highways and Transportation and Norfolk, Suffolk, Chesapeake, Virginia Beach, and Portsmouth	Virginia Department of Highways and Transportation and Norfolk, Suffolk, Chesapeake, Virginia Beach, and Portsmouth

PLAN 2

THE HAMPTON ROADS BRIDGE AND TUNNEL FACILITIES (HAMPTON ROADS BRIDGE TUNNEL, JAMES RIVER BRIDGE, AND ELIZABETH RIVER TUNNELS)

Notification and Detour Plan

The plan for closure of any of the above facilities is divided into two parts:

(1) Closure for less than four hours, and

(2) Closure for more than four hours.

For closure of less than four hours when an accident occurs on any one of the facilities requiring that traffic be halted, the following steps shall be taken:

(1) All state and local police shall be notified,

(2) All news media will be immediately notified, and

(3) Patrolmen or flagmen at each of the facilities will notify stopped-vehicles of the closure and give an estimated time for reopening.

When it is determined that the facility will be closed for more than four hours, the following steps will be taken:

(1) State police and local police will be notified,

(2) Detour signs will be immediately erected as specifically described in Appendix B, "An Emergency Traffic Plan for Toll Facilities in the Hampton Roads Area" and include sign plans for the Hampton Roads Bridge Tunnel, the James River Bridge, the Mid-Town Portsmouth Tunnel, and the Downtown Portsmouth Tunnel,

(3) All news media will be immediately notified, and

(4) The Chesapeake Bay Bridge Tunnel will be notified.

When the Hampton Roads Bridge Tunnel or the James River Bridge is closed, the responsibility for detour sign erection is assigned to the following organizations:

(1) Hampton Roads Bridge Tunnel - erection of signs in Newport News, Hampton, and Tunnel and Bridge Approaches at Williamsburg.

(2) Norfolk Residency - erection of signs in the Cities of Norfolk, Virginia Beach, Chesapeake, and Portsmouth, and

(3) Suffolk Residency - erection of signs in the City of Nansemond and Isle of Wight County.

When either the Mid-Town or Downtown Elizabeth River Tunnels are closed, Elizabeth River Tunnel personnel shall have the responsibility of erection of detour signs.

Specific responsibility has been assigned to each of the various facilities. Overall responsibility is that of the Tidewater Toll Facility Manager who will coordinate signing and traffic control plans with the Suffolk District Engineer of the Virginia Department of Highways and Transportation.

Repair Plan

While it is not practical to develop detailed repair plans for accidents to the facilities covered due to the multiplicity of accidents that could occur, there are certain basic steps that would be taken. These steps include

(1) An analysis of allowable load on the various structures,

(2) Provision for repair material in stock, and

(3) Provision for large floating repair equipment.

It is necessary to analyze the structures for allowable crane loads to assure that these mobile cranes may be used to clear the wreckage or to assist in repairs. It is also necessary to keep, in stock, sufficient prestress beams so that at least two spans of the various facilities could be repaired. Therefore, piling of the various sizes required are stocked in sufficient quantities to replace tube ends.

Additionally, any repairs to the trestles would require large floating repair equipment. Assurance of availability of this equipment will continue to be achieved by the Department of Highways and Transportation's Tidewater Toll Facility Manager through once-a-year contacting of contractors in the Tidewater area to secure rates and tentative agreements for the availability of this floating repair equipment and operators.

PLAN 3

CRITICAL BRIDGES AT CHESAPEAKE, PORTSMOUTH NORFOLK, SUFFOLK, AND VIRGINIA BEACH

Notification and Detour Plan

In case of serious damage or blockage, appropriate detours have been developed and are shown in Appendix C, "An Emergency Plan for Closing Bridges and Tunnels in Tidewater Virginia". Except for Suffolk, each of the cities is responsible for the necessary signs to implement the detours as planned for each bridge.

Where detours cross corporate boundaries, the cities involved have coordinated the detour plan as well as determined responsibility. Within the corporate limits of Suffolk, the Department of Highways and Transportation maintains the bridges; and therefore, this Department is responsible for the detour sign placement in that city.

It is noted, as with the Hampton Roads facilities, the appropriate detours will go into effect if one or more of the critical bridges are closed for more than four hours. The Department of Highways and Transportation will be notified of the closings by the cities involved.

Chesapeake

Facilities at Chesapeake include -

(1) Hodges Ferry Bridge

(2) Deep Creek Bridge

(3) Jordan Bridge located at Park Avenue extended (Route 337) through the southern branch of the Elizabeth River connecting the Cities of Chesapeake and Portsmouth.

(4) The Gilmerton Bridge located on Military Highway (Route 13) over the southern branch of the Elizabeth River.

(5) Steel Bridge located at Dominion Boulevard (Route 104) over the southern branch of the Elizabeth River

(6) Great Bridge located at Battlefield Boulevard (Route 168) over the Chesapeake and Albemarle Canal.

(7) The Turnpike Bridge located at the Centerville Turnpike over the Chesapeake and Albemarle Canal.

(8) North Landing located at Mount Pleasant Road (Route 165) over the Chesapeake and Albemarle Canal connecting the Cities of Virginia Beach and Chesapeake.

(9) Northwest Bridge over Battlefield Boulevard (Route 168) over the Northwest River.

Norfolk

Bridges affected in the City of Norfolk include

(1) The North Hampton Boulevard Bridge

(2) Seeleys Bridge Tidewater Drive

(3) The Hague Bridge

(4) Broad Creek Bridge on Virginia Beach Boulevard

(5) Campostella Bridge on Campostella Boulevard

(6) The 26th Street Bridge

(7) The Hampton Boulevard Bridge

(8) The Granby Street Bridge

(9) The Colley Avenue Bridge

(10) The Chesapeake Boulevard Bridge

(11) Bells Bridge

(12) Wayside Bridge on Military Highway

Portsmouth

Bridges involved in the City of Portsmouth are as follows

(1) The West Norfolk Bridge

(2) Churchland Bridge

(3) The Hodges Ferry Bridge

(4) The Paradise Creek Bridge

(5) The Jordan Bridge

Suffolk

The bridges in the City of Suffolk include -

(1) The Crittenden Bridge or Chuckatuck Creek on Route 17

(2) The Nansemond Bridge on Route 17

(3) The Bennetts Creek on Route 17

(4) The Kings Highway Bridge over Nansemond River on Route 125

(5) The Nansemond River Bridge on Route 58 and 460 (Suffolk Bypass)

(6) The Nansemond River Bridge on Route 460 and 58 at Old Suffolk Corporate limits

(7) Bridge on Route 32 over the Seaboard Coastline Railroad

(8) The South Quay Bridge over Backwater River on Route 189

Virginia Beach

The 11 emergency bridge locations for which detours have been provided for City of Virginia Beach include -

(1) The Pennsylvania Railroad Crossing

(2) The Lessener Bridge

(3) The Rudee Inlet Bridge

(4) The Long Creek Bridge

(5) The Lakesmith Spillway

(6) The Thalia Creek Bridge

(7) The Long Creek Bridge

(8) The Laskin Road Bridge at Linkhorn

(9) The Dozer Bridge

(10) The North Landing Bridge

(11) The Pungo Ferry Bridge