Report to the Governor and General Assembly by the State Roads Commission of Maryland

Regarding Bridge and Tunnel Toll Facilities

January 1965

STATE OF MARYLAND
STATE ROADS COMMISSION
300 WEST PRESTON STREET
BALTIMORE, MD. 21201
(MAILING ADDRESS-P. O. BOX 717, BALTIMORE, MD. 21203)

January 26, 1965

To the Governor and Members of
the General Assembly of Maryland:

During the sessions of the Maryland General Assembly in 1963 and 1964 legislation was enacted authorizing the State Roads Commission of Maryland to undertake studies of crossings of the Chesapeake Bay and the Baltimore Harbor.

Accordingly, supplementing their own forces, the Commission engaged the services of the J.E. Greiner Company, Consulting Engineers, Singstad and Kehart, Consulting Engineers, and Coverdale & Colpitts, Traffic Consultants, to pursue and finalize the necessary engineering and traffic details and prepare a report embracing their findings and allow a determination to be made regarding feasibility of the potential crossings.

Across the Chesapeake Bay three possible locations were given full consideration. They were: (1) a crossing from Miller's Island in Baltimore County to Tolchester in Kent County; (2) a crossing from Sandy Point in Anne Arundel County to Kent Island in Queen Anne's County, generally parallel and adjacent to the existing Bay Bridge structure; and (3) a crossing from Bertha in Calvert County to Taylors Island in Dorchester County. The second location studied for the Harbor Crossing was between Hawkins Point in Anne Arundel County and Sollers Point in Baltimore County.

All avenues pertinent to the crossings were given full consideration. The importance of proper approach roads and their connection with the basic highway system was envisioned. In addition, the integration of such structures and their approach roads to the recently approved system contained in the long range highway program enacted by the 1964 session of the General Assembly was considered.

The following reports, made a part of this presentation, are the basis of the recommendations presented by the Commission.

(1) Location Studies for the Chesapeake Bay Crossings prepared by the J.E. Greiner Company

(2) A Feasibility Report on the Second Baltimore Harbor Tunnel prepared by Singstad and Kehart

(3) An Engineering Report for the Second Baltimore Harbor Crossing having application to either a bridge or a tunnel, prepared by the J.E. Greiner Company

(4) A Report on Projected Traffic and Revenues of the Four Maryland Crossings prepared by Coverdale & Colpitts

(5) We have supplemented these reports and present to you a document entitled "Toll Facility Data", which we feel will be helpful in your understanding and analysis of facts pertinent to the entire study

Briefly, so as not to be repetitious of the material contained in our 1964 location studies for the Chesapeake Bay Crossings, the projects covered were as enumerated in our opening paragraphs. They show project costs, exclusive of interest during construction and financing costs, as follows:

(1) For the northern crossing from Miller's Island to Tolchester, with approaches, a total estimated cost of $143 million. Attention is called to the fact that this envisions a 4-lane structure. If only a 2-lane bridge were constructed, then the estimated cost would be $100 million.

(2) The parallel crossing from Sandy Point to Kent Island, with approaches, a 2-lane bridge estimated to cost $62, 700, 000.

(3) The southern crossing from Bertha to Taylors Island, with approaches, is estimated to cost $102, 700, 000.

Your attention is directed to the Chesapeake Bay Crossings report

for the comparative maintenance and operating expenses, found on Page II-40.

The studies of the Baltimore Harbor crossings indicated the following:

Singstad and Kehart, in their estimate for construction costs alone, for the Sparrows Point route estimated $84,480,000 for the Tunnel construction itself and for the alternate Dundalk route added $112,000 to this figure. In addition, they estimate the cost of certain approach expressways to be $15,680,000. It should be noted that the additional items pertinent to the overall project for rights of way, additional approach roads, etc., were not contained therein and are subsequently brought into the engineering report of the J.E. Greiner Company on Page II-72 of the above mentioned report.

The costs for the Harbor Crossing project are: for a 4-lane bridge via the Dundalk route, $113,500,000; via the Sparrows Point route, $118 million. For a 4-lane bridge expandable to 6-lanes: the Dundalk route, $125,500,000; the Sparrows Point route, $130 million.

The adjusted comparable figures for a second Baltimore Harbor Tunnel are: for the Dundalk route, $136 million; for the Sparrows Point route, $140 million.

These figures do not contain the costs for financing and interest during construction. The subsequent conversion into the actual bond funds required to give effect to the projects is: for the Chesapeake Bay crossing from Miller's Island to Tolchester for the Back River approach, $165 million; for the Patapsco Neck approach, $180 million. The Bay crossing from Sandy Point to Kent Island, $73 million; the Bay crossing from Bertha to Taylors Island, $119 million; the Baltimore Harbor bridge (4 lanes): via the Dundalk approach, $131 million; via the Sparrows Point approach, $136 million. Baltimore Harbor bridge (4-lane expandable to 6 lanes): the Dundalk approach, $145 million; the Sparrows Point approach, $150 million. The second Baltimore Harbor Tunnel (4 lanes): the Dundalk approach, $157 million; the Sparrows Point approach, $161 million.

Your attention is directed to the traffic estimates presented in the Coverdale & Colpitts report and the conversion of these estimates into the anticipated revenue that might be expected therefrom.

In the conversion the existing toll rates at all four structures were used. It should first be noted the comparative usage that could be anticipated by the public of the three possible bay crossings. Detailed studies show that if all crossings were available, 14% of the total would use the northern crossing; 74% of the total would use the parallel crossing; and 12% the southern crossing.

If the northern crossing and the existing bridge had been in operation in 1964 it reveals that 15% of the revenues would have accrued to the new crossing and 85% to the existing crossing.

In a similar situation for the southern crossing, it shows that 13% would have accrued to the lower crossing and 87% to the existing crossing.

Their findings regarding the Baltimore Harbor Tunnel and the possible construction of a second harbor crossing is complicated by the undetermined status of the East-West Expressway through Baltimore City. The year 1971-1972, based on the existing traffic pattern, is indicated as the time when augmentation of the existing crossing will be necessary. The completion of the East-West Expressway by 1972 must be assumed, predicated upon the financing restrictions of the Federal Interstate Act. Coverdale & Colpitts do note, however, that if the Expressway is completed and opened to traffic in 1973, approximately 47% of this traffic would be diverted from the harbor crossing to the new Expressway.

It is therefore difficult at this time to presage what definitive action should be taken regarding this facility.

Your attention is explicitly directed to the "Toll Facility Data" separately presented and which we believe gives the most pertinent information regarding each of the structures - existing and contemplated - and the summarization which has been made therein.

We have no doubt that the future will make necessary all of the crossings which have been studied as the population surge and the tremendously increasing traffic on our highway system continues upward. This need will be further enhanced as construction proceeds on the Twenty Year Highway Needs Study approved by the last session of the General Assembly. This construction will undoubtedly generate additional traffic and accelerate the time of need for all of the structures which have been reviewed.

After giving full consideration to all of the facts produced in the report of the Consulting Engineers and the Traffic Consultants, it is our belief that immediate steps should be taken to commence construction of the parallel facility to the existing Chesapeake Bay Bridge and that authority should also be granted to protect the area that would be embraced by a second harbor crossing pending further information regarding the timing of construction of the I-95 Interstate Expressway through the City of Baltimore. The wishes of the General Assembly to approve further toll projects before initiation of construction are recognized. Accordingly, we have prepared

for presentation to the General Assembly a Bill embodying these recommendations, which has the unanimous concurrence of the entire Commission membership.

Respectfully submitted,

JOHN B. FUNK
Chairman-Director

JBF:h

TOLL FACILITY DATA

CONCERNING EXISTING BRIDGE AND TUNNEL CROSSINGS

INDEBTEDNESS

The financial support of the present four facilities would be required to finance any further contemplated toll projects. At September 30, 1964 outstanding bonds totaled $94,170,000. It is expected that this amount will be reduced to approximately $80,000,000 by September 30, 1965. Assuming call of outstanding bonds at that time and application of then reserves to principal, premium, and interest, it would be necessary to refinance about $65,000,000. Such refunding could be accomplished by the sale of serial bonds, with debt service being provided from current revenues.

SUSQUEHANNA RIVER TOLL BRIDGE (ROUTE U.S. 40)

Fiscal year 1964 traffic volume was 6,414,517, gross revenue $1,348,135, and expense $331,504. It is expected that the 1965 traffic volume will be 5,940,000 with steady growth in traffic thereafter. In fiscal year 1964 this bridge carried 22% of total traffic of the four facilities and provided 7% of the net income available for debt service. The consulting engineers indicate that the facility is capable of handling present pattern of traffic beyond 1980.

POTOMAC RIVER TOLL BRIDGE

Fiscal year 1964 traffic volume was 3,295,265, gross revenue $3,972,656, and expense $219,213. It is expected that the 1965 traffic volume will be 3,000,000 and that a steady growth will occur thereafter. In fiscal year 1964 this bridge carried 11% of total traffic of the four facilities and provided 25% of the net income available for debt service. The facility is deemed by the consulting engineers to be capable of handling the present pattern of traffic through 1977.

CHESAPEAKE BAY TOLL BRIDGE

Fiscal year 1964 traffic volume was 3,905,158, gross revenue $4,400,585, and expense $386,084. The 1965 traffic is expected to reach 4,080,000 with constant annual growth thereafter of 220,000. In fiscal year 1964 this bridge carried 13% of the traffic of the four facilities and provided 26% of the net income available for debt service. In the opinion of the consulting engineers this facility is capable of handling the present pattern of traffic through 1967.

PATAPSCO TUNNEL

Fiscal year 1964 traffic volume was 16,269,348, gross revenue $8,017,215, and expense $1,741,192. Traffic voulme for 1965 is projected at 16,920,000 with constant annual growth of 750,000 thereafter. In fiscal 1964 this tunnel carried 54% of the traffic of the four facilities and provided 42% of the net income available for debt service. In the opinion of the consulting engineers this facility is capable of handling the present pattern of traffic through 1971.

MILLER ISLAND TO TOLCHESTER CROSSING - BACK RIVER NECK APPROACH

It is estimated that this project would require bond funds of $165,000,000. Assuming that this crossing was open in fiscal year 1964 the consulting engineers show 471,000 transactions having a value of $524,000 moving from the Sandy Point crossing to this facility and additional traffic volume of 142,000 with revenue of $163,000. Expenses for first year of operation are estimated at $1,150,000. Had this crossing been in operation during 1964 net income of the facilities would have decreased by $987,000.

MILLER ISLAND TO TOLCHESTER CROSSING - PATAPSCO NECK APPROACH

Bond funds required for this project amount to $180,000,000. The consulting engineers have indicated that traffic volume, revenue, and expense estimates made for the crossing via Back River Neck Approach are equally applicable to this crossing.

SANDY POINT TO KENT ISLAND CROSSING (PARALLEL)

Bond funds required for this project amount to $73,000,000. Had the parallel crossing been in existence in 1964 it would have carried one-half of the traffic volume at Sandy Point - 1,952,500 with gross revenue of $2,185,000. No additional revenue is shown and expenses of $214,000 would occur in a first year operation. This project would have decreased the net income in 1964 by $214,000.

CALVERT COUNTY TO DORCHESTER COUNTY CROSSING

Bond funds required for this project are $119,000,000. The consulting engineers indicate that had this crossing been in use during 1964 419,000 transactions yielding $465,000 would have moved from the Sandy Point crossing and that traffic volume increase to the overall projects would have been 125,000 with gross revenue of $144,000. Expenses for a first year operation are estimated at $425,000. This would have decreased the 1964 net income by $281,000.

SUMMARIZATION

Information concerning 1964 operations for existing and prospective crossings is reflected in statement attached. (Page 4)

A schedule of the projected traffic volume for the several crossings is attached. (Page 5) It has been indicated that the present Chesapeake Bay Crossing will suffice through 1967. It is further indicated that with a Northern crossing or a Southern crossing in operation it would extend this time to 1970. The relief afforded by a Northern or Southern crossing to the Sandy Point Crossing would only be for a few years. By constructing the parallel crossing at this time you provide a facility that will be adequate for an indefinite time at a location which has the greatest traffic demand and the most economical operation.

Recommendation is for proceeding immediately with a parallel crossing.

The bond funds required for the several second harbor crossings have been determined as follows:

Baltimore Harbor Bridge - 4 lanes:
Dundalk Approach $131,000,000
Sparrows Point Approach $136,000,000

Baltimore Harbor Bridge - 4 lanes expandable to 6 lanes:
Dundalk Approach $145,000,000
Sparrows Point Approach $150,000,000

Second Baltimore Harbor Tunnel - 4 lanes:
Dundalk Approach $157,000,000
Sparrows Point Approach $161,000,000

Assuming that a second harbor crossing was in operation during 1964 the consulting engineers projected movement of traffic from the present crossing of 2,769,000 with gross revenue of $1,193,000. No additional revenue was projected. First year operating expenses are indicated as $1,540,000 for a tunnel crossing and $740,000 for a bridge crossing. This means that under a tunnel operation net income of the present projects would have been decreased in 1964 by $1,540,000 and under a bridge operation would have been decreased by $740,000.

A schedule showing projection of traffic volume for the several harbor crossings is attached. (Page 6) The consulting engineers have indicated that the present pattern of traffic can be handled through 1971 by the existing tunnel facility. The East-West Expressway to connect with I 95 in Baltimore City has as yet no timetable. Federal interstate funds for this project are available through 1972. Assuming that the East-West Expressway is open to traffic in fiscal 1973 the consulting engineers project a traffic volume of 12,262,000 for Baltimore Harbor Crossing. This is about equal to the tunnel traffic volume for the 1959-1960 year.

There is ample time to prudently determine when, where and how a second harbor crossing should be initiated and in view of the uncertainty as to when the East-West Expressway might be completed it would appear desirable that the timing of a second harbor crossing project not be commenced until traffic warrants in the judgement of the Commission.

State Roads Commission of Maryland
January 14, 1965

TOLL FACILITY DATA FOR FISCAL YEAR ENDED SEPTEMBER 30, 1964
GIVING EFFECT TO ENGINEERING REPORTS OF JANUARY, 1965

	DATE OPENED	...TRAFFIC VOLUME... NUMBER	PER CENT	GROSS REVENUE	MAINTENANCE AND OPERATION EXPENSE	.....NET INCOME..... AMOUNT	PER CENT	COST OF FACILITY	RATE OF EARNINGS ON COST OF FACILITY
EXISTING FACILITIES:									
Susquehanna River Toll Bridge	8/28/40	6,414,517	21.46%	$ 1,348,135	$ 331,504	$ 1,016,632	6.75%	$ 4,702,862	21.62%
Potomac River Toll Bridge	12/15/40	3,295,265	11.03%	3,972,656	219,213	3,753,443	24.92%	5,628,250	66.69%
Chesapeake Bay Toll Bridge	7/30/52	3,905,158	13.07%	4,400,585	386,084	4,014,501	26.66%	45,556,887	8.81%
Patapsco Tunnel	11/30/57	16,269,348	54.44%	8,017,215	1,741,192	6,276,022	41.67%	143,957,392	4.36%
TOTAL		29,884,288	100.00%	$17,738,591	$ 2,677,993	$15,060,598	100.00%	$199,845,391	7.54%

	...TRAFFIC VOLUME... EXISTING	INCREASE	.....GROSS REVENUE.... EXISTING	INCREASE	MAINTENANCE AND OPERATION EXPENSE INCREASE	NET INCOME DECREASE	BOND FUNDS REQUIRED (Add Principal Amount of Bonds to be Refinanced)
PROSPECTIVE CHESAPEAKE BAY CROSSINGS:							
Miller Island to Tolchester Crossing:							
Back River Neck Approach	471,000	142,000	$ 524,000	$ 163,000	$ 1,150,000	$ 987,000	$165,000,000
Patapsco Neck Approach	471,000	142,000	524,000	163,000	1,150,000	987,000	180,000,000
Sandy Point to Kent Island Crossing	1,952,500		2,185,000		214,000	214,000	73,000,000
Calvert County to Dorchester County Crossing	419,000	125,000	465,000	144,000	425,000	281,000	119,000,000
PROSPECTIVE BALTIMORE HARBOR CROSSINGS:							
Baltimore Harbor Bridge - Four Lanes:							
Dundalk Approach	2,769,000		1,193,000		740,000	740,000	131,000,000
Sparrows Point Approach	2,769,000		1,193,000		740,000	740,000	136,000,000
Baltimore Harbor Bridge - Four Lane Expandable to Six Lanes:							
Dundalk Approach	2,769,000		1,193,000		740,000	740,000	145,000,000
Sparrows Point Approach	2,769,000		1,193,000		740,000	740,000	150,000,000
Second Baltimore Harbor Tunnel - Four Lanes:							
Dundalk Approach	2,769,000		1,193,000		1,540,000	1,540,000	157,000,000
Sparrows Point Approach	2,769,000		1,193,000		1,540,000	1,540,000	161,000,000

PROJECTED TRAFFIC

CHESAPEAKE BAY CROSSINGS

FISCAL YEAR	EXISTING CROSSING (A)	EXISTING with NORTHERN CROSSING (B)		EXISTING with SOUTHERN CROSSING (B)	
1964	3,905,000	3,434,000	613,000	3,486,000	544,000
1965	4,080,000	3,588,000	640,000	3,642,000	569,000
1966	4,300,000	3,781,000	675,000	3,838,000	600,000
1967	4,520,000	3,974,000	710,000	4,034,000	631,000
1968	4,740,000	4,167,000	745,000	4,230,000	662,000
1969	4,960,000	4,360,000	780,000	4,426,000	693,000
1970	5,180,000	4,553,000	815,000	4,622,000	724,000
1971	5,400,000	4,746,000	850,000	4,818,000	755,000
1972	5,620,000	4,939,000	885,000	5,014,000	786,000
1973	5,840,000	5,132,000	920,000	5,210,000	817,000

(A) Capable of handling present pattern of traffic thru 1967.
(B) Capable of handling present pattern of traffic thru 1970.

PROJECTED TRAFFIC

BALTIMORE HARBOR CROSSING

FISCAL YEAR	EXISTING CROSSING (A)	EXISTING with CROSSING	SECOND CROSSING
1964	16,269,000	13,500,000	2,769,000
1965	16,920,000	14,044,000	2,876,000
1966	17,670,000	14,667,100	3,003,900
1967	18,420,000	15,288,600	3,131,400
1968	19,170,000	15,911,100	3,258,900
1969	19,920,000	16,533,600	3,386,400
1970	20,670,000	17,156,100	3,513,900
1971	21,420,000	17,778,600	3,641,400
1972	22,170,000	18,401,100	3,768,900
1973 (B)	12,262,000	10,177,460	2,084,540

(A) Capable of handling present pattern of traffic thru 1971.
(B) Assumes East-West Expressway open to 1973 traffic.

STATE OF MARYLAND
STATE ROADS COMMISSION

BALTIMORE AREA
MASTER FREEWAY PLAN

LEGEND

EXISTING

PROPOSED

INDUSTRIAL AREA

OUTER BELTWAY

NORTHWEST EXPRESSWAY

TIMONIUM

LUTHERVILLE

TOWSON

BALTIMORE

WINDLASS EXPWY.

SOUTHEAST EXPRESSWAY

PATAPSCO NECK EXPRESSWAY

UPPER BAY BRIDGE CROSSING

SECOND HARBOR CROSSING

ARUNDEL EXPRESSWAY

BALTIMORE WASHINGTON PARKWAY

ELLICOTT CITY

CATONSVILLE

WHEATON

SILVER SPRING

TAKOMA PARK

COLLEGE PARK

HYATTSVILLE

WASHINGTON

ANNAPOLIS

FRIENDSHIP AIRPORT

FORT GEORGE G. MEADE

PATUXENT WILDLIFE REFUGE

NATIONAL RESEARCH

AGRICULTURAL CENTER

ABERDEEN PROVING GROUND

SUSQUEHANNA NATIONAL

SANDY POINT STATE PARK

EASTERN NECK ISLAND

CHESAPEAKE BAY BRIDGE TOLL

Aberdeen, Creswell, Emmorton, Baldwin, Shawen, Cockeysville, Finksburg, Woodensburg, Reisterstown, Winfield, Daniel, Gamber, Owings, Chapel, Eldersburg, Sykesville, Henryton, Granite, Hebbville, Slacks Cor., Cooksville, West Friendship, Pine Orchard, Glenelg, Dayton, Unity, Sunshine, Clarksville, Brighton, Brinklow, Sandy Springs, Olney, Ashton, Scaggsville, Highland, Guilford, Jessup, Harmans, Dorsey, Atholton, Woodbine, Mountain, Glenarm, Kingsville, Jappa, Abingdon, Bush River, Edgewood, Magnolia, Perry Hall, White Marsh, Fullerton, Overlea, Joppa, Edgewood, Aberdeen Proving Ground, Susquehanna National, Crystal Beach, Earleville, Grove Pt., Kennedyville, Lynch, Still Pond, Coleman, Worton, Melitota, Fairlee, Morgnec, Crumpton, Chestertown, McGinnes, Pondtown, Kings Town, Church Hill, Starkley Cor., Price, Centreville, Hope, Ruthsburg, Starr, Wye Mills, Queen Anne, Hillsboro, Edesville, Gratitude, Rock Hall, Cresby, Cliffs City, Neck Landing, Langford, Bottom, Dominion, Grasonville, Guys, Carmichael, Stevensville, Queenstown, Love Point, Chester, Matapeake, Fredericktown, Bay Ridge, Arundel on the Bay, Normans Pt., Foremans Corner, Riviera Beach, Seven Foot Knoll, Bodkin Pt., Jacobsville, Pinehurst, Gibson Island, Arnold, Severna Park, Millersville, Gambrills, Odenton, Ridgway, Pasadena, Benfield, Dorrs Cor., Waterbury, Crownsville, Conaways, Bowie, Glenn Dale, Priest Bridge, Collington, Woodmore, Davidsonville, Steuarts Cor., Collinson Cor., Parole, Edgewater, Skidmore, Ridgely, Colesville, Norwood, Burtonsville, Laurel, Whitecak, Beltsville, Greenbelt, Ellicott City, Columbia, Jonestown, Troublesome Reservoir, Triadelphia Reservoir, Rocky Gorge Reservoir, Patapsco River, Magothy River, Severn River, Chester River, Choptank River, Miles River, Wye River, Tuckahoe Creek, Marshyhope Creek, Pennsylvania