Maryland Chesapeake Bay Southern Crossing (MCBSC)Study

Maryland Chesapeake Bay Southern Crossing Tunnel

Tunnel

Four two-lane Tunnel Tubes

Eight (8) lanes total

Four - tubes two – lanes Westbound Traffic

Four- tubes two-lanes Eastbound Traffic

The tunnel would extend from the Western shore into the bay below the Main Channel then rise back up to grade at the Eastern shore side eventually connecting to newly constructed roadways. This tunnel would essentially link route 4 to route 16 and thereby giving motorists an option of where to cross the bay at the MCBSC or at the existing Bay Bridge.

Bridge/Tunnel Combination

Two (2) four (4) Lane Bridge Spans

One – Bridge span four – Lanes for Eastbound Traffic

One– Bridge Span four – Lanes for Westbound Traffic

&

Four (4) two (2) Lane Tunnels

Two – Tunnels - four- lanes for Eastbound Traffic

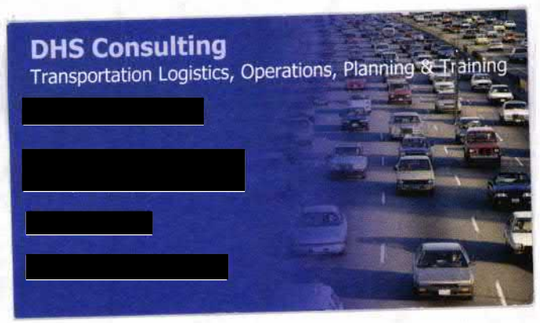
Two – Tunnels - four – lanes for Westbound Traffic

The Bridge spans would extend from each shoreline to the edge of the Main Chanell approximately 2 miles each then connecting to the Tunnel which would be approximately 2 miles in length (depending on actual location) to allow Marine vessels safe passage due to the submerged Structure. Similar in design to the Virginia Bay Bridge Tunnel system.

Study by:

[redacted]

(DHS)



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INTRODUCTION

[redacted] U S Army Maryland National Guard Combat Engineer, Operating Engineers Local Union #37 apprenticeship graduate obtaining Journeyman's card, Original Chesapeake Highway Action Response Team (CHART) Pioneer and Operations Manager of the State Highway Administrations Statewide Operations Center, The Intelligent Transportation Society of America World Congress Automobile Technology Showcase Director of Automobile Demonstrations. ITS Consultant Company Owner and sole employee, responsible for conducting the first ever Connected Vehicle Convoy transporting multiple Senators/Congressman via connected vehicles from the Rayburn Office Building to the Washington Convention Center during the Mobility Talks International event. I am a 39-year resident of the Broadneck Peninsula father of 4 children and Grandfather of 7 Grandchildren.

I decided NOT to view the $5 Million TIER 1 study other than glancing at the 1 illustrated page reflecting the 10 proposed locations for a new crossing therefore I cannot be accused of copyrighting if I have never seen or read the TIER 1 study. Instead, I am utilizing my 43 years of combined Construction, Military and Transportation knowledge skills ability and Industry experience as well as research to formulate this study.

This study addresses the critical need in the East Coast and Maryland to relieve reoccurring congestion and obsolete structure along one of the most important Interstate routes, US 50 and to increase the infrastructure along Routes 4 and 16 to allow traveling motorists 2 options for traversing the bay. The MCBSC would give Maryland and Virginia residents and points south as well as DC residents and points west and Truckers the option of utilizing either the existing Bay Bridge or the new proposed MCBSC. If in fact a Tunnel design is chosen it would be the largest tube tunnel designed specifically for vehicular traffic. The contract for tube fabrication and placement could quite possibly be the largest single construction project ever undertaken in the National Interstate and Defense Highway System. This study attempts to provide a brief overview of the design, location, construction, 0peration/ maintenance, environmental/ecological, funding.

DESIGN

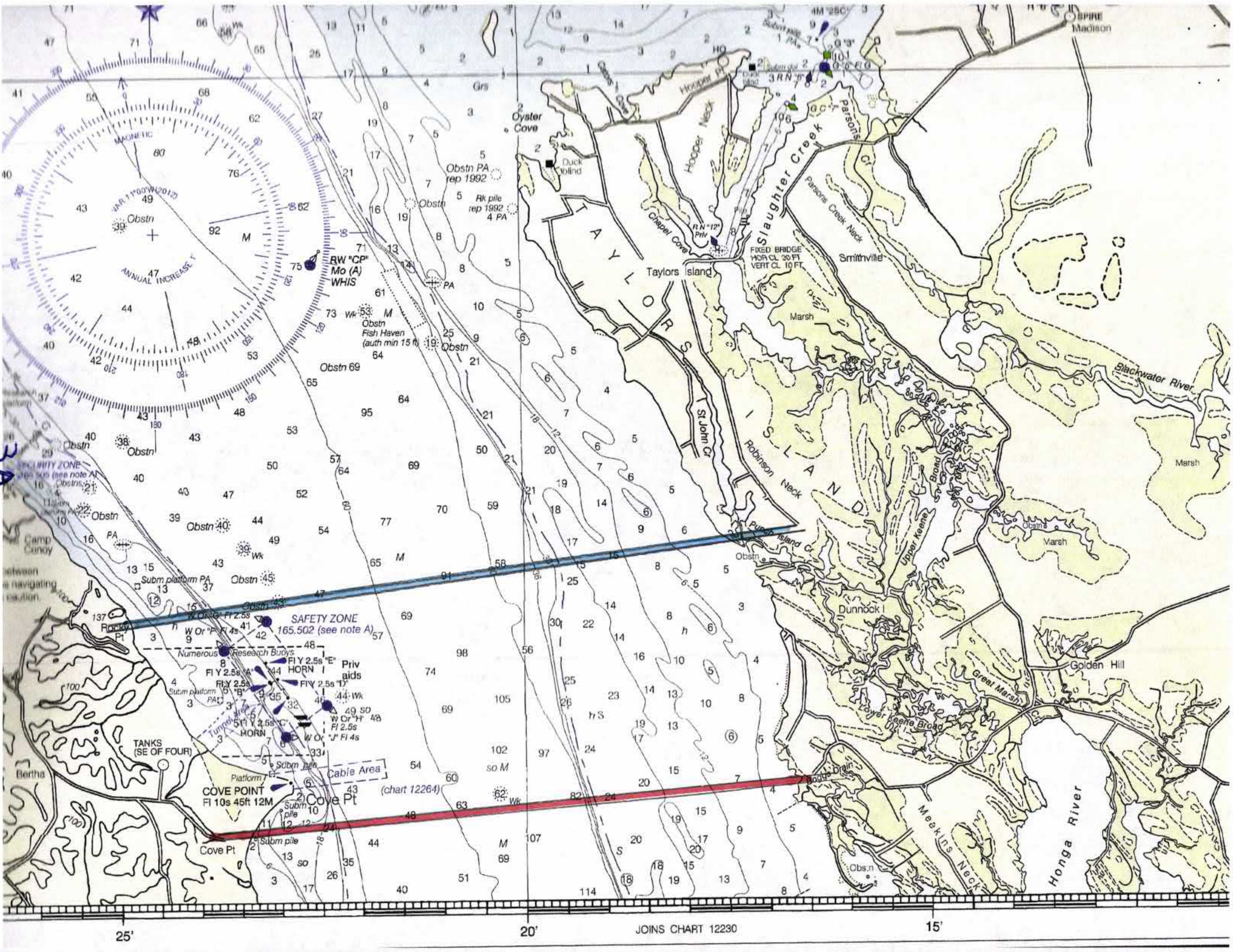
The design(s) of the Maryland Chesapeake Bay Southern Tunnel Crossing would be like the existing Fort McHenry tunnel in Baltimore. Four Tunnel tubes each constructed with two lanes in each tube carrying two lanes of traffic in each direction (EAST/WEST). Depending on the exact location and placement of the tubes the Tunnel would be anywhere from four to six miles in length and the top of Tube elevation to the water would be approximately 100 feet. The dredge depth would need to be 115 feet deep at the Main Channel allowing the ships passing over the Tunnel to have the 60 feet of draft needed to safely pass. Ships today are being built to be bigger, taller, wider and faster so with that in mind when designing the Tunnel let's think about the future and place the tubes at a depth so there is at least 80 feet of draft. The consensus is that a bridge would have a negative environmental impact on the bay itself and aquatic marine life that live in the area or migrate through the area disturbed during construction. This Tunnel design is proposed as an alternative.

The Bridge/Tunnel design combination structure would be two bridge spans extending from each shoreline approximately two miles in each direction connecting to the Tunnel before the Main Channel sloping down to the required depth (approximately 115 feet) to allow the 60 feet minimum of draft needed for vessels safely and efficiently traversing the bay. This Bridge/Tunnel design combination would have a greater environmental overall negative impact on the bay and the aquatic marine species that live or migrate through the area disturbed during construction. This Bridge/Tunnel design is also proposed as an alternate.

The challenges of building either an eight-lane tunnel or an eight lane Bridge/tunnel combination structure nearly six miles long will be immense and cost Billons of dollars. There must be painstaking scheduling of contracts maintained to prevent costly delays and to avoid disrupting road and shipping access to the one of the largest ports along the east coast and via vehicle access to the Eastern shore of Maryland and points east. Rigorous planning and accurate design reports would resolve and prevent anticipated problems which ultimately could result in enormous savings of time, money and resources. There will be numerous logistical and environmental concerns that will need to be addressed. Acquisition of property along both shores would ultimately be the responsibility of the Maryland Department of Transportation State Highway Administration Office of Real Estate and would probably take year(s) and hopefully residential property will be minimally affected.

LOCATION

The proposed location of the Tunnel would extend from the Western Shore in Calvert County just North of Cove Point following a Oyster Sanctuary out to and through the Main Channel then rising up to grade in the vicinity of Taylors Island on the Eastern Shore. This proposed route/alignment of the tunnel would have the least negative impact on the marine life that habitat and migrate through the Bay throughout the year. The location chosen is rural in nature allowing room for expanding existing roadways on both sides of Route 4 on the western shore and Route 16 on the Eastern Shore and there is plenty of room to add additional roadways/infrastructure to access the crossing. The location proposed would greatly reduce truck traffic at the existing Bay Bridge knowing that at anytime wind, rain and bridge jumpers can cause an immediate traffic delay with the construction of a tunnel those factors do not impact the overall operation of a submerged tunnel. The traffic traveling from points South and West, Maryland, DC and Virginia would utilize this crossing vs traveling further North and getting stuck in repeatedly reoccurring congestion thus reducing the overall volume accessing both crossings. This location would bring needed relief to residents on both sides of the Bay Bridge and return their lives to some sense of normalcy (no more prisoners in our own homes Thursday evening through Sunday evening in the summer months). The skilled trades, labor and resources needed to construct this crossing could come from Maryland, DC and Virginia due to the proximity of this location to these States would employ thousands and pump dollars into local economies. There are two proposed locations on (page 3A)for the proposed MCBSC with the least disruption and negative impact on the bay and surrounding area. To me personally and again the consensus is by far that the best option for constructing a MCBSC crossing is at this proposed location



TAYLORS ISLAND
Taylors Island
Honga River
Meekins Neck
Golden Hill
Blackwater River
Dunnock
Upper Keene
Slaughter Creek
Parsons Creek Neck
Parsons Cr
Smithville
Robinson Neck
St John Cr
Chapel Cove
Hooper Neck
Oyster Cove
Duck Island
Marsh
FIXED BRIDGE
HOR CL 30 FT
VERT CL 10 FT
SPIRE
Madison
RW "CP"
Mo (A)
WHIS
Fish Haven
SAFETY ZONE
165.502 (see note A)
Numerous Research Buoys
Priv aids
Cable Area
(chart 12264)
COVE POINT
Fl 10s 45ft 12M
Cove Pt
TANKS
(SEE OF FOUR)
Bertha
Camp Conoy
25'
20'
JOINS CHART 12230
15'

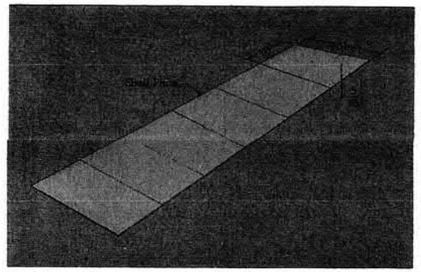
CONSTRUCTION

I propose a Tunnel vs a Bridge and feel most people do not know or visually see how a Tunnel is being constructed due to offsite fabrication and most of the Tunnel itself is assembled/constructed underwater therefore I will attempt to educate them and ultimately the decisions makers to help make a more informed educated decision.

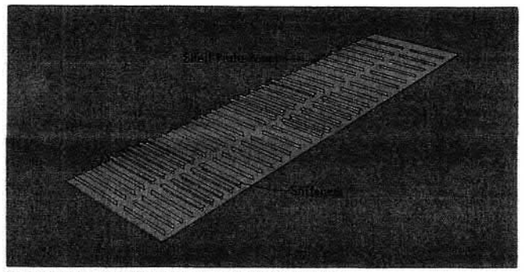
The construction of a MCBSC would require precise coordination of multiple prime contractors. Construction/selection of a dredge disposal site is critical and must be near the Tunnel and the placement of a pipeline and/or barges would be required to remove dredge spoils efficiently to the proposed dredge disposal site(s) and/or including Taylors, James and Poplar islands. The dredging width of the tunnel trench would be approximately 180 feet wide a minimum depth of 115 feet below the water surface, approximately two miles long and could be started while the Tunnel tubes are being fabricated Concurrent with the construction of the disposal site Fabrication/Construction (see pages 6 & 7 for photos) of the tunnel tubes could commence as well as constructing infrastructure needed to access the Tunnel on land on both Shores. As each tube section was completed the tube sections would need to be towed from their fabrication location to a designated pier located at the construction site for concrete outfitting. Portable concrete batch plant could be set up on both sides of the crossing to expedite concrete mixing and concrete pumps with hoses attached could move concrete to desired location more efficiently. The excavation preferred would be accomplished by a 27-inch hydraulic dredge which is operated like a vacuum cleaner to cut a trench into the bay floor at the required depth for the 60 feet minimum draft required for marine vessels. Next, gravel would be placed in the trench and carefully/precisely spread by a screed barge. This gravel bed serves as the leveling course and foundation for the tubes. The tube sections would then be towed to a special lay barge near the trench where additional concrete would be added to provide negative buoyancy. A complex system of tag lines will permit precise adjustments of the tubes as they are lowered to the gravel bed. The lowering process for each tube section will take approximately six to twelve hours depending on several factors. As each tube section is completed, lowered and secured, another was placed within a few feet of it. Divers will connect the tubes using coupling devices like those used on railroad cars. Hydraulic jacks will pull the tubes together, sealing the rubber gaskets around the dam plates. Water trapped between the two tubes would then be pumper out. Once the interior could be entered, a plate will be welded across the joint seam and the area behind it filled with concrete for final water tightness. The dam plates would then be removed, and concrete placed to match up the insides of the tubes. After a section was in place and joined to the next, backfill was placed around and on top of the tubes to keep each one protected and in position. Once excavation reaches ground water table, the dredging, gravel foundation, tube placement and backfilling techniques will be repeated. After placement of tubes at each shoreline work could commence on both approaches. Each approach could include a section of open roadway, cut and cover tunnel and the underground portions of the ventilation buildings. Construction of the ventilation buildings could be constructed with appropriate landscaping, and a brick facing to make it visually compatible with the area. Inside the buildings would be multiple electric fans and damper controls to exchange the air in the tunnel as required.

Construction (continued)

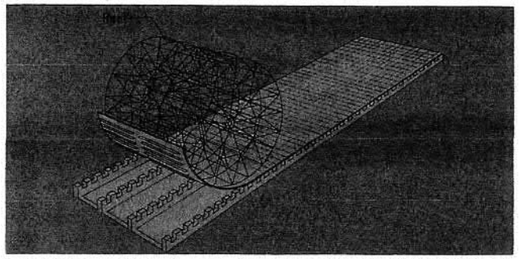
The overhead High-speed toll, data collection and weigh in motion systems could be installed to provide efficiency and reduce the need for toll booths and weigh stations. When the tunnel is ready for the installation of mechanical, electrical and other finishing components installation of pumps, fire fighting equipment, lighting, traffic sensors, signals, detectors, overhead variable message signs and closed-circuit television cameras to monitor traffic flow and respond accordingly. The tunnel walls could be completed by lining them with millions of white ceramic tiles. Garages for emergency vehicles would need to be constructed near both ends of the tunnel to provide immediate access to the tunnel for responders and maintenance crews. The southern crossing would be one of the largest and most complex construction projects ever undertaken. In addition to increasing jobs, payrolls, tax revenues and the need for related supplies and services it will relieve reoccurring congestion on the existing bay bridge. Most importantly to me personally the construction of the southern crossing will end the nightmarish backups, being prisoners in our own homes during the summer months from Thursday evening through Sunday evening, reduce emissions pollution, fuel consumption, travel times and bring some sort of normalcy back to our lives on both sides of the existing bridge. The time to commence a project (probably a ten-year construction project and five years of planning fifteen years total just an estimate) is way past due material costs are at an all-time high the existing structure is overcapacity and obsolete so every day that passes just costs more money and negatively impacts the environment. Advancements in various Construction technologies from when I worked on the Ft. McHenry Tunnel in 1982 to today will significantly expedite the overall construction process and should keep the project on time and within the budget provided proper planning, scheduling and coordination of multiple Contractors etc. is adhered too!



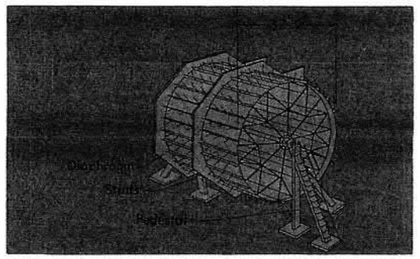
1. Tube fabrication begins with panels welded together to form the shell plate.



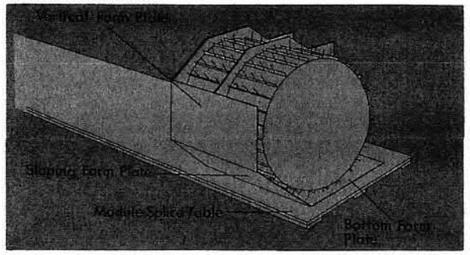
2. Longitudinal stiffeners are added for strength.



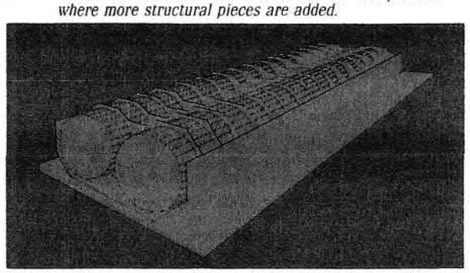
3. Shaping a module begins by wrapping the welded steel plate around a specially designed reel.



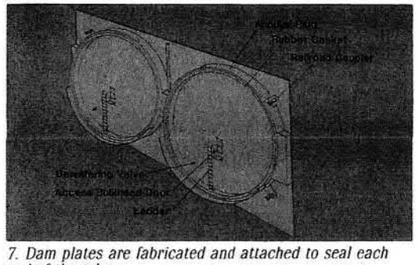
4. The reel and steel shell are transferred to a pedestal where more structural pieces are added.



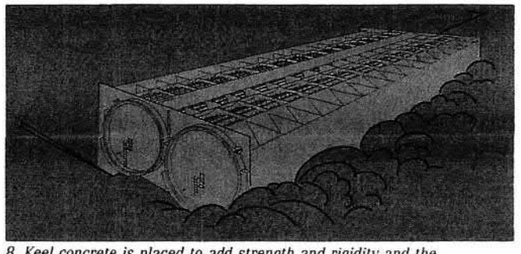
5. The reel is collapsed from inside the module and the module is transferred to a table where bottom, sloping, and vertical form plates are added.



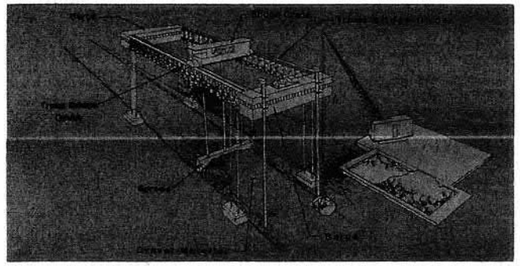
6. Sixteen of the modules (8 for each tube) are joined on the shipway to form a section of the double barreled tube.



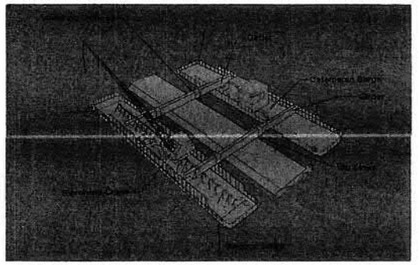
7. Dam plates are fabricated and attached to seal each end of the tube.



8. Keel concrete is placed to add strength and rigidity and the double barreled tubes are side launched for the 12-hour tow to the outfitting pier near Fort McHenry.



The screed barge. Suspended from the bridge crane is the actual screed, a heavy plow-like beam which spreads and levels the gravel material.



The lay barge. The tube is positioned for lowering between the catamaran barges of the lay barge. Additional concreting

1

2

3

OPERATION/MAINTENANCE

Operation and Maintenance of the tunnel would be the responsibility of the experts at the Maryland Department of Transportation Maryland Transportation Authority (MdTA)who operate all Maryland State Road tunnels and bridges. I would also recommend that the State Highway Administration Coordinated Highways Advisory Routing of Traffic (CHART) also be permitted to assist with their expertise in Incident Management and a multitude of resources at their ready. The cooperation of both the MdTA and SHA is crucial in providing a seamless team with one goal of keeping the traffic moving. Another recommendation is to construct a Regional Satellite Traffic Operations Center at this location staffed 24/7 with highly trained/certified Highway Operations Technicians, Emergency Response Technicians, Maryland State Police and MdTA police to respond to incidents and communicate with motorists via electronic devices to reduce delays and travel times. The MdTA Police would be responsible for law enforcement on the new crossing and by building a tunnel you eliminate the bridge jumpers that create hours long stoppages and massive traffic delays. This also causes lane stoppages due to an abandoned vehicle in the travel lane reducing capacity increasing backups and travel times. There will be no wind or weather restrictions for empty tractor trailers and recreational vehicles, no snow plowing or spreading anti icing chemicals, if two-way operation or contra flow is implemented/deployed weather is not a deciding factor. Sunrise and sunset should not be a factor depending on the location and placement of tubes.

ENVIRONMENTAL/ECOLOGICAL

Approval would have to be obtained from the United States Environmental Protection Agency, the United States Army Corps of Engineers, and other agencies. To replace wetlands lost due to construction new tidal marshes could be created to restore the wetlands in/near the disturbed area. Environmental and ecological preservation is critical to sustaining aquatic and marine life for our future generations to enjoy. Constructing a tunnel will reduce the negative effect on marine life and aquatic vegetation by virtually eliminating bridge run off from vehicles leaking various fluids, fuels, anti-freeze roadway debris, liquid magnesium pretreatment and salt. A containment system installed would filter and strain all water and capture contaminants to be disposed of properly. An important factor environmentally is also capturing the exhaust fumes via tunnel ventilation and prior to being released into the immediate environment.

There is a consensus that a bridge would have a negative environmental impact on the Bay itself would be costlier to maintain and too many factors interfering with the daily operation of the crossing vs a Tunnel.

FUNDING

Funding could come from various sources such as the Federal Highway Administration through a special act of Congress. Members of the Maryland Congressional Delegation who if successful in passing the special act of Congress could possibly secure a nominal percentage of the funding for constructing the tunnel. The United States Department of Transportation could possibly fund a percentage also. The current administration could add this project to the infrastructure bill as a critical emergency project to expedite construction and create ample funding, any funding that is considered advances could issue revenue bonds. These bonds would be repaid as agreed upon within a certain time frame through collection of tolls

A special wage stabilization agreement between the MDOT affiliated Local Unions of the Baltimore/Washington/Virginia Building and Construction Trades Council would be critical in keeping the project on schedule, while unique value engineering and escalation clauses would help keep the project under budget. The dedication and commitment of everyone involved at each level- county, state, and federal – would be a monumental example of the intergovernmental communication and cooperation.

CONCLUSION

In conclusion with 43 years of combined military, construction and transportation industries experience as well as after extensive research, personal experience working on the Baltimore Subway, The Fort McHenry Tunnel and CSX train tunnels under Baltimore city for five years. Construction of a tunnel vs a bridge is by far more feasible, would cause less of an environmental/ecological negative impact on the bay itself and surrounding areas. I also believe the crossing should be named after the Former Maryland Comptroller Mr. Goldstein and former Governor Schaefer due to their vision and intuition while serving the residents of Maryland. Mr. Goldstein offered up land years ago in Calvert to build a crossing and Mr. Schaefer started the Reach the Beach initiative replacing intersections along US 50 with overpasses and access/egress ramps to reduce incidents and reduce congestion due to traffic signals.

As I mentioned in the introduction, I have four children two of which live on Kent Island one lives on the Eastern Shore five Grandchildren who live east of the bay bridge and my wife, and I live in Annapolis. We also have two Family-owned business on the Eastern Shore so needless to say some days I (we) may travel back and forth (multiple times per day) along the Bay Bridge working or visiting friends/family on either side. The traffic backups have negatively impacted my generation my kid's generation my grandchildren's generation, PLEASE do not let it negatively my Great-grandchildren(s) generation!!!

At the end of the day, I am simply trying to educate the decisions makers and give them the opportunity to make a more informed, educated decision regarding choosing a location and design for a new Bay crossing. Ultimately the decision should be in the best interest of the Residents on both sides of the existing Bridge that continually to be negatively impacted by the existing traffic delays/reoccurring congestion and environmental concerns offering an option(s) to the South of the bridge.

I am not being compensated for this study, while I am prisoner in my own home, I have utilized this time to formulate this study to the best of my knowledge, ability and experience to hopefully expedite the construction of a new MCBSC

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JULY 25, 2021

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