TAPPAN ZEE BRIDGE/I-287
ENVIRONMENTAL REVIEW

SCOPING UPDATE COMMENT FORM

You are invited to comment on the Tappan Zee Bridge/I-287 Corridor Project and this Scoping Update Packet in the space below. Note that in compliance with NEPA and SAFETEA-LU Section 6002, public comments are being specifically requested on the included purpose and need (Section *3.0* Appendix *A*), range of alternatives (Section *4.0*) and coordination plan (Section *5.0* Appendix *B*).

Attached are my Scoping Comments for the TZ Bridge.

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☑ **Please add my name to the Tappan Zee Bridge/I-287 Corridor Project Mailing list.**

3/25/08

Comments can be submitted in writing until March 31, 2008 to the address listed below:

Mr. Michael P. Anderson
NYSDOT
Tappan Zee Bridge/I-287 Corridor Project Director
660 White Plains Road, Suite 340
Tarrytown, NY 10591

Thruway Authority | NEW YORK STATE DEPARTMENT OF TRANSPORTATION | MTA Metro-North Railroad

SCOPING COMMENTS FOR THE TAPPAN ZEE BRIDGE

TZ Bridge Problems and Solutions

Robert T. Hintersteiner, P.E.

The next stage for the design of a bridge to replace the existing Tappan Zee Bridge (TZ Bridge) is to review what types of bridge designs can be utilized to cross the Hudson River. The Hudson River has a number of unique problems. The following outline discusses the existing problems and the possible types of bridges that could be used to transverse the Hudson River:

The Problems:

1. The existing TZ Bridge is 3.1 miles in length.
2. The TZ Bridge is over 50 years of age and it has reached its life expectancy.
3. Over the years, the TZ Bridge's superstructure has been deteriorating due to heavy traffic loads and salt corrosion.
4. The wood piles have been infested with anchor worms, and in about 10 years the wood piles will be compromised.
5. The TZ Bridge crossway piles were installed about 200 feet into silt. The silt is over 800 feet in depth in the western channel of the Hudson River (see Figure 1).
6. The silt in the eastern channel is about 300 feet in depth (see Figure 1).
7. Currently, traffic on the TZ Bridge ranges from about 140,000 vpd to 170,000 vpd.
8. The existing height of the TZ Bridge for shipping traffic is about 138 feet above high tide. Other bridges along the Hudson River are over 155 feet above high tide.
9. The existing truck traffic evaluation for the TZ Bridge used the standard growth factor method. Future projections for truck traffic for the TZ Bridge do not consider other growth within the regional area.
10. In addition, the NYNJPA Port Facilities expects to quadruple its containerization volume by 2040.
11. Furthermore, the existing five bridges and tunnels crossing the Hudson River in to New York City are currently at capacity.
12. Already, trucks using the GWB and I-95 are being diverted to the TZB and the I-84 bridges.
13. Any additional growth in truck traffic will be diverted to the TZB and the I-287 Corridor, as the I-84 in Dutchess County is currently reaching capacity, and the I-84 in Connecticut has already reached capacity.
14. Peak Hour Traffic is split 55% eastbound and 45% westbound during the AM Peak Hour, and 45% eastbound and 55% westbound during the PM Peak Hour. With the continuous growth of Rockland County, the Peak Hour Traffic will approach 50-50.
15. The portal widths at each end of the TZ Bridge cannot be expanded. Therefore, any improvements must be made within the existing Portal Rights of Way.
16. The proposed new TZ Bridge should be designed to last at least 100 years.

17. The new TZ Bridge should have at least six lanes in each direction: four thru lanes, a HOT Lane, and a dedicated BRT lane in each direction.
18. In addition, provisions for a LRT or a CRT should be provided for future operations.
19. For future traffic growth, two levels are required on the new TZ Bridge to accommodate separate eastbound and westbound traffic movements.
20. A third level will be needed for future LRT or CRT operations.
21. An integrated concrete box bridge deck with two or three levels would provide stability of the bridge deck during windy conditions.
22. Closing the present TZ Bridge for any length of time (days to months) will be disastrous to the entire Lower Hudson Valley and the entire regional area.

Types Of Bridges

A. Crossway Bridge

B. Suspension Bridge

C. Partial Suspension Bridge

D. Cable Stay Bridge

A. Crossway Bridge:

1. The existing TZ Bridge crossway is between 1.5 to 2 miles across the western channel of the Hudson River.
2. A new TZ Bridge crossway would be about 1.5 miles across the western channel.
3. Environmental concerns would be a factor in constructing a new crossway with its numerous concrete piers.
4. Both wood and concrete bridge piers are subject to salt water corrosion and tidal flow.
5. The concrete piers on the Chesapeake Bay Bridge crossway had to be rebuilt after 30 years.
6. It is estimated that the concrete piers for the new TZ Bridge would have to be rebuilt every 30 to 40 years.
7. Expansion joints every 100 feet cause a rough ride for motorists, which will increase the cost of maintenance.
8. The steel superstructure and deck will be subjected to ice, heat, and salt deterioration.
9. Crossway maintenance problems are currently being experienced on the TZ Bridge.

10. The portal connections should be raised higher than the existing crossway to maintain traffic during construction.
11. The crossway would still be a floating bridge along the westerly channel of the Hudson River.
12. The concrete bridge piles cannot be extended to bedrock because the bedrock is located 800 feet below the water level within the westerly channel (see Figure 1).

B. Suspension Bridge

1. A new TZ Bridge suspension bridge would have to go straight across the Hudson River from portal to portal to meet the existing roadways (Figure 2).
2. A suspension bridge would require a span length of at least 2 miles (10,560 ft) between towers.
3. The Verrazano-Narrows Bridge span is 4,260 feet between towers.
4. The Golden Gate Bridge is 4,200 feet between towers
5. The Strait of Messina Bridge connecting Sicily to Calabria, Italy is 2.06 miles (3300 meters, 10,877 feet) in length between towers (it is currently under construction).
6. The concrete cable anchors would have to be built under the existing roadway since the Rights of Way cannot be widened.
7. The towers would have to be built about ½ mile from each portal, depending on the bedrock location (see Figure 3).
8. The concrete cable anchors would have to be built to the north and/or south of the existing portal approach roadways, and the approach roadways would curve into each portal to provide a straight alignment of the suspension bridge.

C. Partial Suspension

1. It would require a span length of about ½ mile to 1 mile between the towers (see Figures 3 & 4).
2. Both bridge tower locations could be anchored into bedrock.
3. The easterly concrete cable anchor foundation would be placed about ¼ mile from the easterly shore line.
4. The easterly concrete cable anchor foundation would extend at least 100 feet into bedrock and extend to the height of the bridge (see Figure 3 & 4).
5. The westerly cable anchor foundation would have to be built about 1.5 miles from the easterly portal in order to rest upon bedrock located at about a depth of 170 feet.
6. The crossway would complete the TZ Bridge across the westerly channel of the Hudson River.

7. This new TZ Bridge would combine elements of a full suspension bridge and a crossway bridge.
8. The partial suspension bridge would have to be raised to 155 feet above high water to provide for increased shipping commerce in the Hudson River (see Figure 4).
9. The two towers and the two anchors would have to be placed on raised islands within the Hudson River.

E. Cable Stay

1. A cable stay bridge would have to go straight across the Hudson River from portal to portal to meet the existing roadways (Figure 2).
2. The bridge deck would have to be straight between portals and then curve to meet the existing portal alignment.
3. The bridge would require three towers placed one mile apart and ½ mile from each shoreline (see Figure 5).
4. The foundations of the three towers would be located in bedrock (see Figure 5).
5. To stabilize the bridge during high winds, the double or triple decker bridge would be constructed of concrete in a box configuration to resist salt corrosion (see Figure 6).
6. Each level would contain four lanes for traffic, a fifth lane for a HOT lane, and a sixth lane for BRT service.
7. The upper level could be used for westbound traffic, with up to six lanes for future use.
8. The lower level could be used for eastbound traffic, with up to six lanes for future use.
9. Bicycle and pedestrian service could be provided on each level.
10. A third level could be built for the future to be used for a LRT and/or a CRT service (see Figure 5).
11. This design would accommodate future traffic growth to 2050 to then to 2100.
12. This proposed design would create a tourist attraction, and it would be a source of pride for Hudson River Valley residents.
13. The cable stay bridge design would be an engineering feat endorsable by environmentalists, since it would have the least adverse impact upon the Hudson River.
14. There would be only three points of intrusion into the Hudson River instead of 100 for piers.
15. A cable stay design would help smaller commercial and recreational boats navigate the Hudson River.
16. The cost of a cable stay bridge would be about the same as a combined suspension crossway bridge.

CONCLUSION:

An evaluation of the existing problems of the Tappan Zee Bridge problems and the constraints of building a bridge within the Hudson River, including anchoring the foundations and footings into the river bed, indicate that a Cable Stay Bridge design would address the traffic problems of the future and environmental concerns. The cost of a Cable Stay Bridge would be approximately the same as a combined suspension and crossway bridge. A Cable Stay bridge would be the design of choice for an esthetically pleasing and functional new Tappan Zee Bridge that would meet the future needs of both commuters and of commercial traffic in the Hudson River Valley area and the surrounding region. 01

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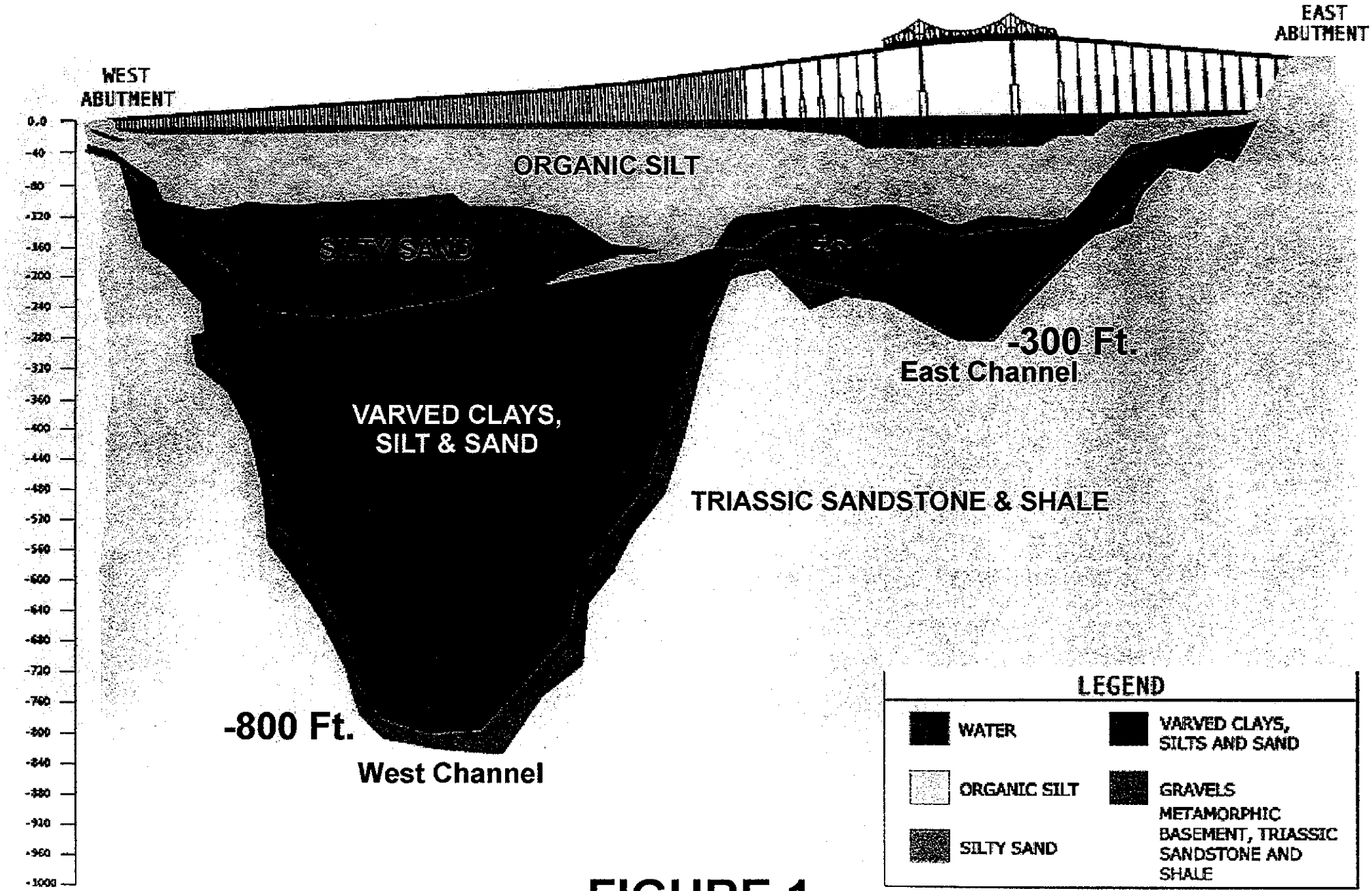

FIGURE 1

Source: TZB Study 2002

TAPPAN ZEE BRIDGE SOIL PROFILE

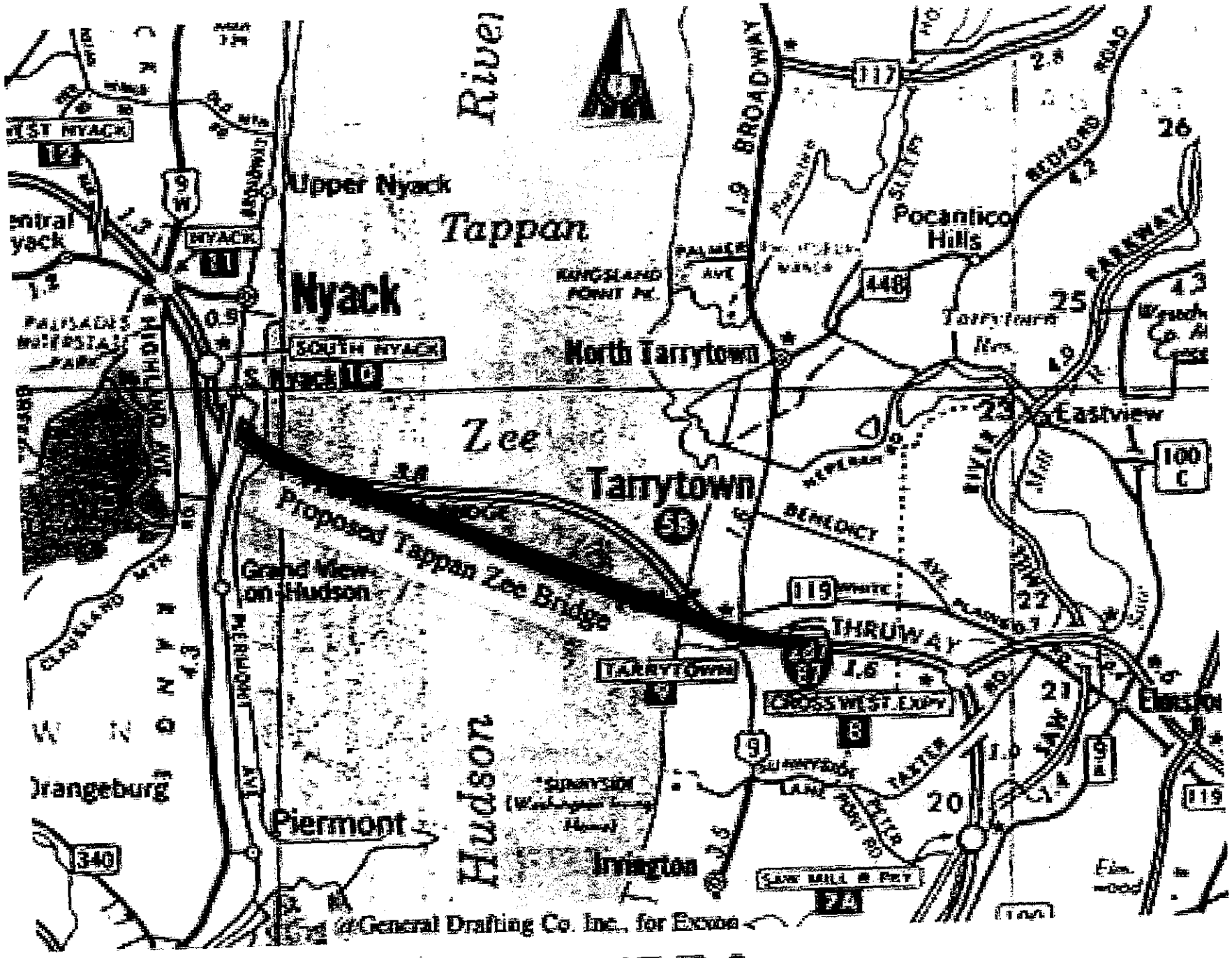

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FIGURE 2

Proposed Location of the New Tappan Zee Bridge

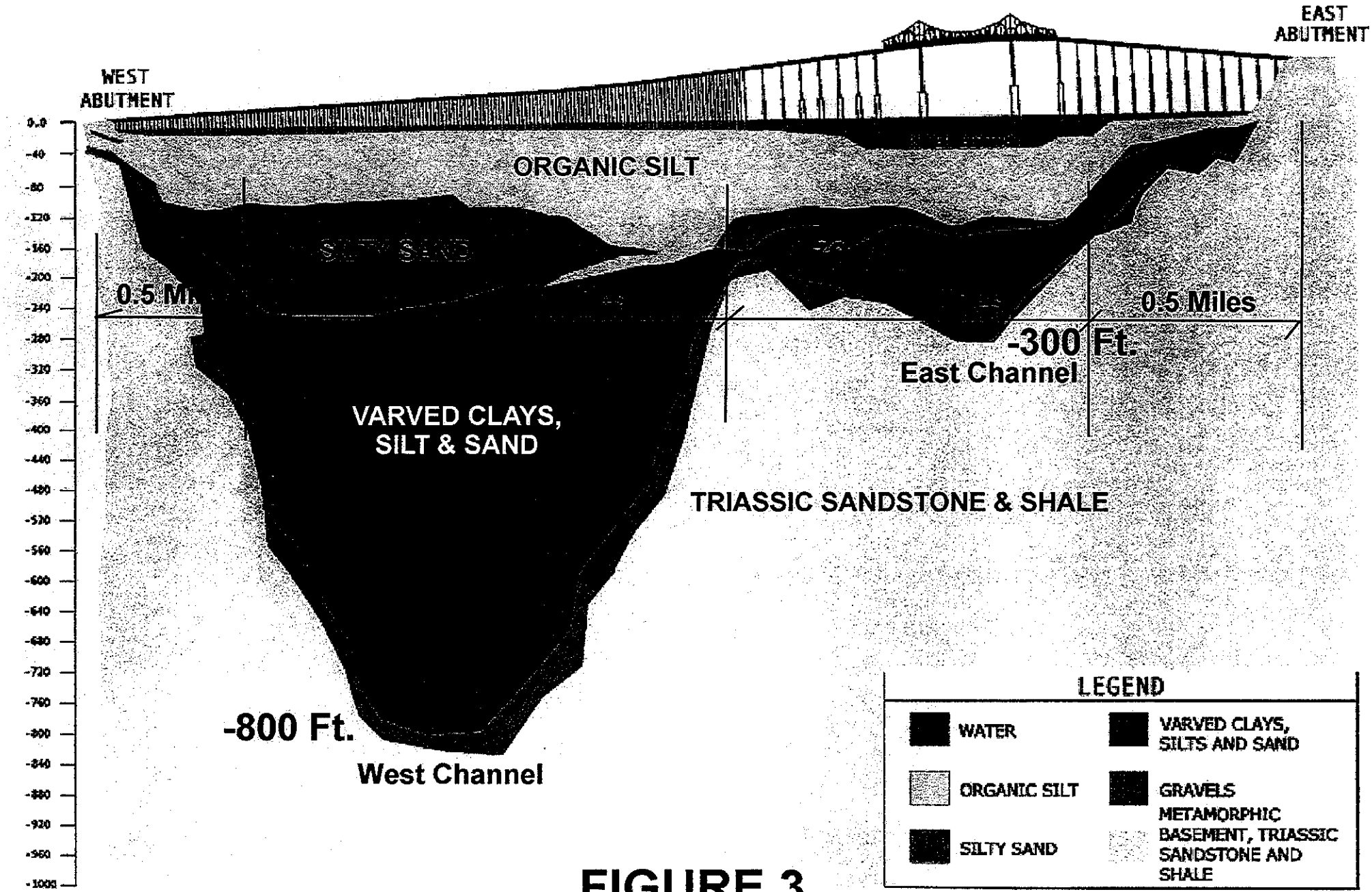


FIGURE 3

Source: TZB Study 2002

TAPPAN ZEE BRIDGE SOIL PROFILE

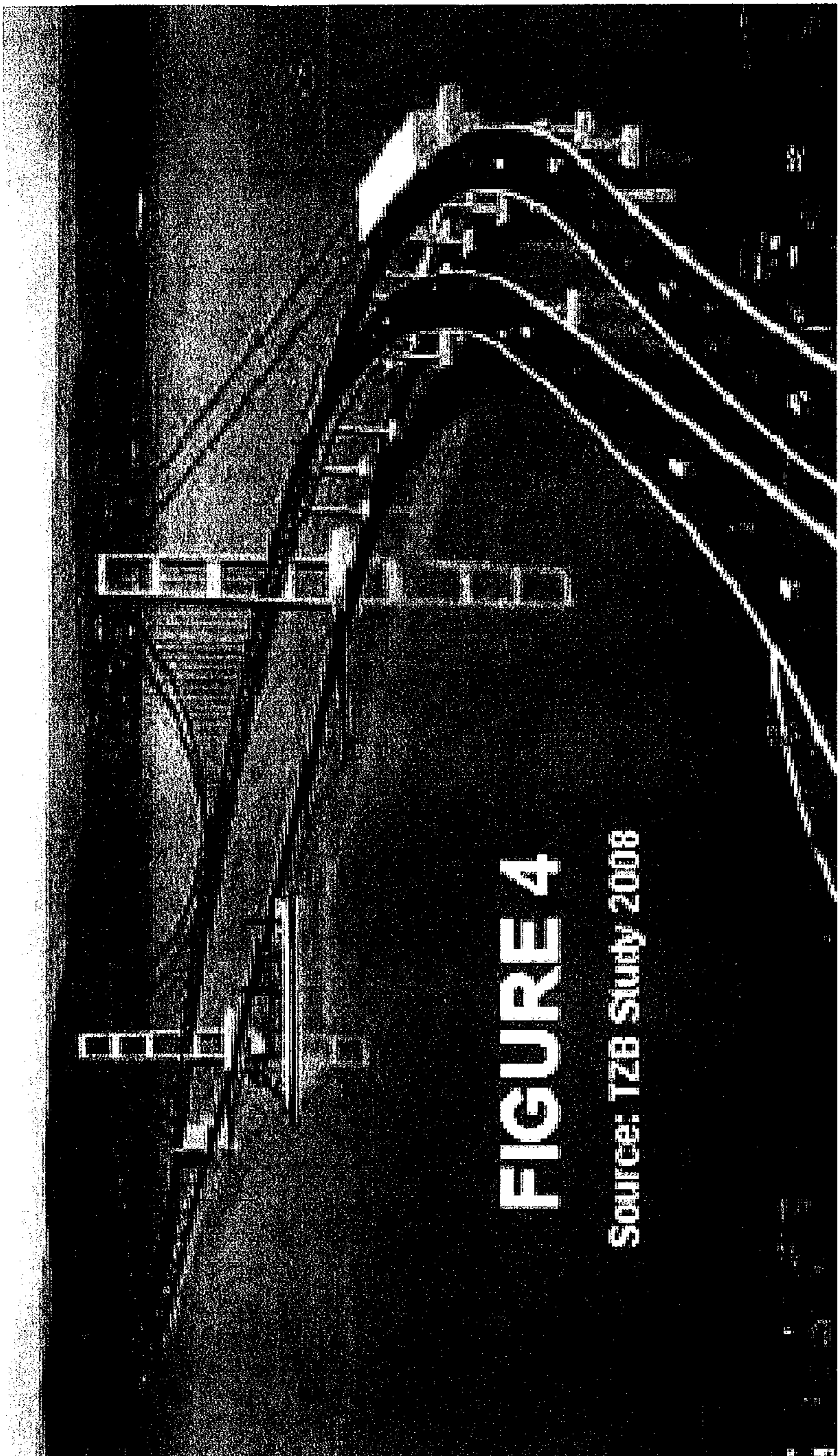
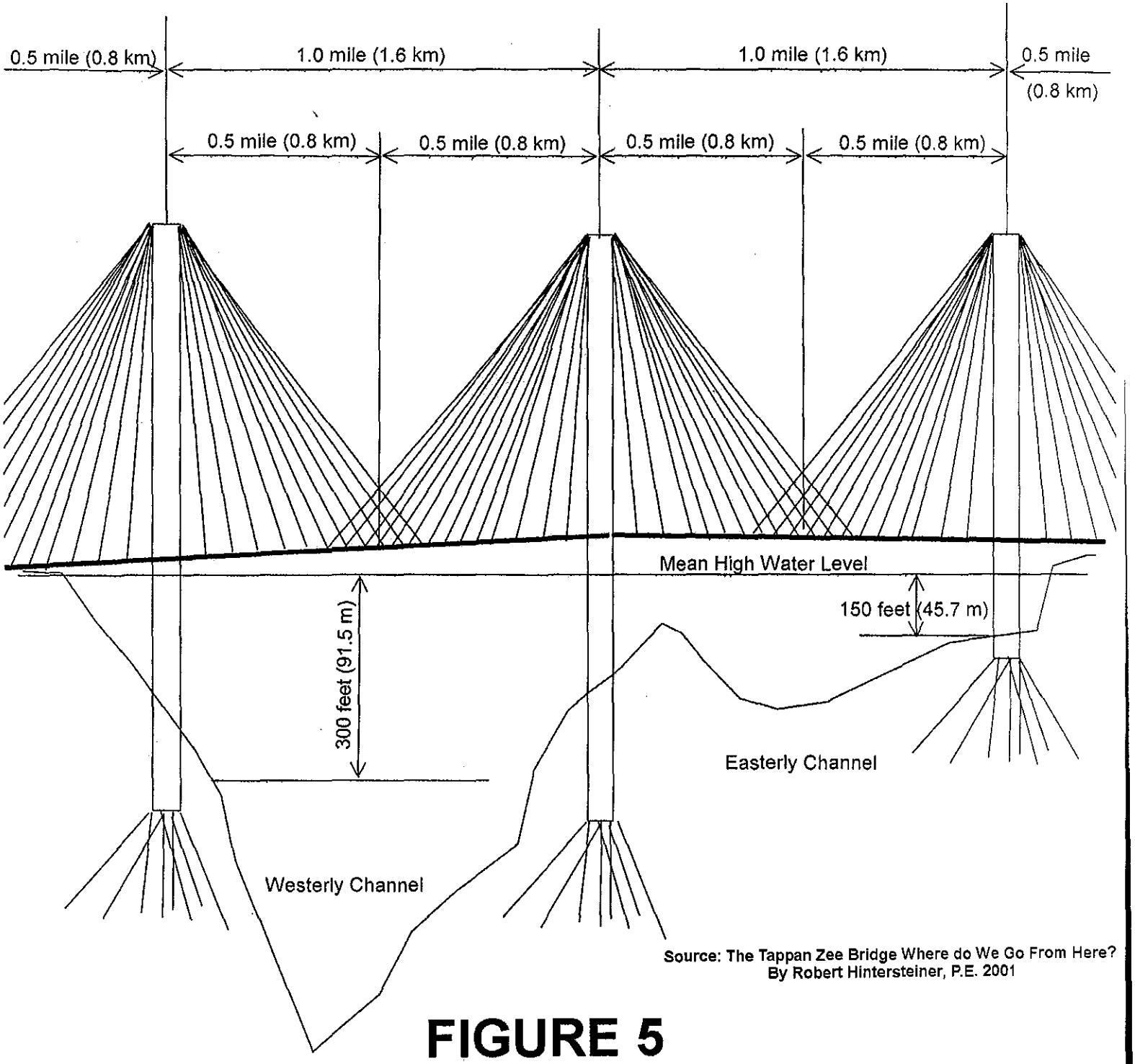


FIGURE 4
Source: TZB Study 2008



Source: The Tappan Zee Bridge Where do We Go From Here?
By Robert Hintersteiner, P.E. 2001

FIGURE 5

Conceptual Drawing 5-7

Proposed Double Span Design for the Tappan Zee Bridge

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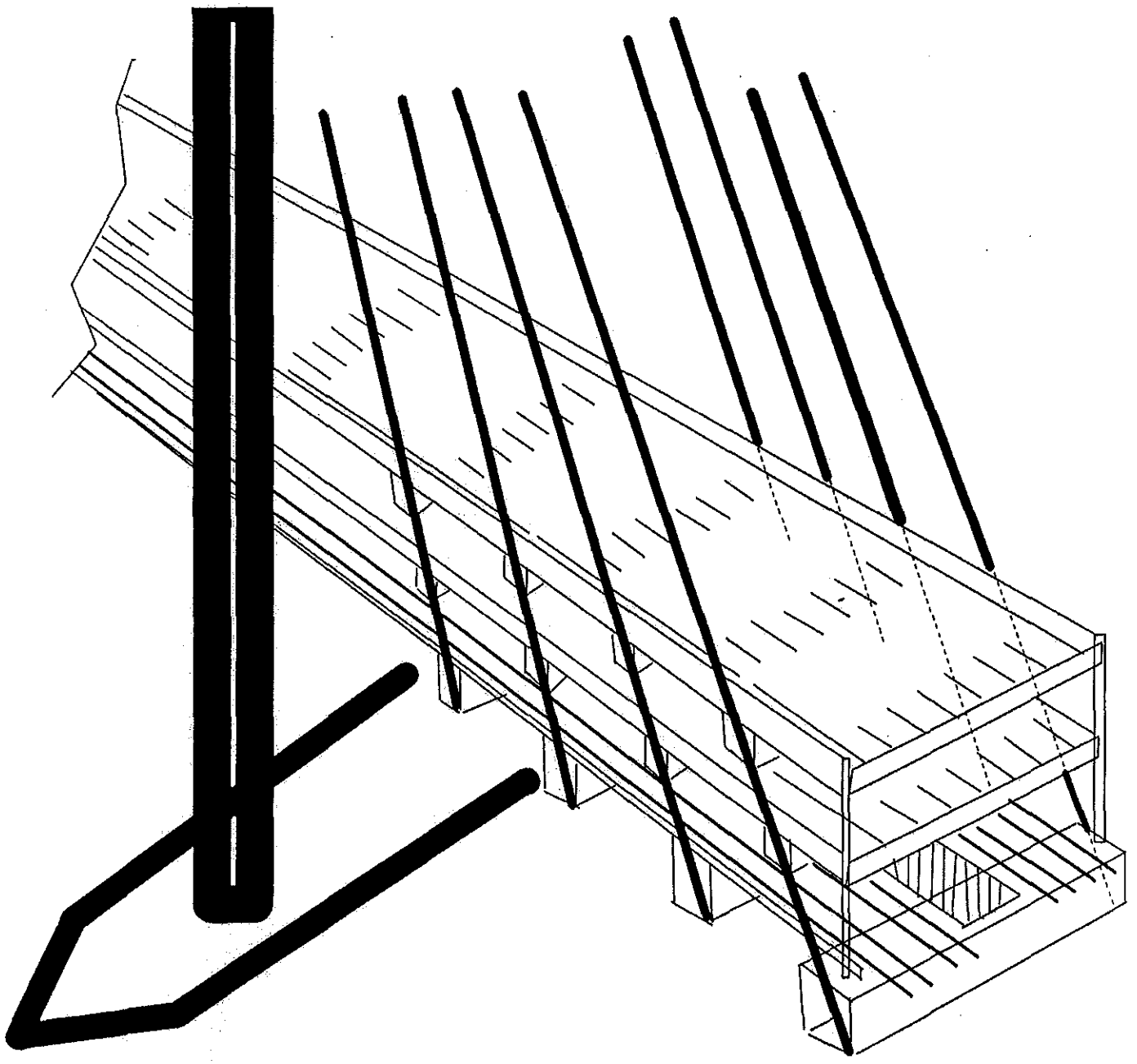

Source: The Tappan Zee Bridge Where do We Go From Here?
By Robert Hintersteiner, P.E. 2001

FIGURE 6

Conceptual Drawing 5-8
Proposed New Tappan Zee Bridge