

10. NAME(S) OF STRUCTURE

State Bridge Number 445

11. PHOTOS (W/ FILM ROLL & FRAME NO.) AND SKETCH MAP OF LOCATION

5B:20-37



5B:33

Mack, Warren W. "A History of Motor Highways in Delaware", in Reed, Henry Clay, Delaware: A History of the First State, vol.2, pp.535-550 (NY: Lewis Historical Publishing Co., 1947).

Delaware State Program. Delaware State Highways; The Story of Roads in Delaware.... [Newark, Delaware: Press of Kells, 1919].

Federal Writers Project. Delaware: A Guide to the First State. (New York: Viking Press, 1938).

Carter, Dick. The History of Sussex County. Georgetown, Delaware: Community Newspaper Corp., 1976.

Hancock, Harold Bell. The History of Sussex County, Delaware. [s.l. : s.n.] 1976.

Delaware State Archives. Sussex County Road Papers 1875-1940.

Delaware DOT records: Annual Reports; contract files.

Plans on file at Delaware DOT: Contract #543

13. INVENTORIED BY:

AFFILIATION

DATE

P.A.C. Spero & Company with Kidde Consultants for Delaware DOT

April-November 1988

HABS/HAER INVENTORY

See "HABS/HAER Inventory Guidelines" before filling out this card.

1. NAME(S) OF STRUCTURE

State Bridge Number 445
Omar Bridge

2. LOCATION

Road 54 over Vines Creek
Frankford, Sussex County, Delaware

3. DATE(S) OF CONSTRUCTION

1937

4. USE (ORIGINAL/CURRENT)

Vehicular

5. RATING

TS

6. CONDITION

Good

State Highway Bridge Number 445, Omar Bridge, is a three span combination timber and concrete bridge. Each span measures 20'-0", for an overall length of 60'-0". It carries two lanes of traffic, with a deck width of 26'-0". The superstructure rests on timber bents, comprising a 12" x 12" beam supported by six creosoted 12"-diameter pilings set on six-foot centers with cross bracing. The timber wing walls are straight, with perpendicular extensions on the southwest and northeast. The deck is a composite slab structure comprising timber and concrete. The bridge has a concrete parapet featuring large stepped blocks at the portals and above the piers, spanned by arched balustrades. The parapet incorporates a curb and fascia; a series of perforations at the level of the roadway provide for drainage.

Delaware Department of Transportation records indicate that Bridge Number 445 was built in 1937 under State Highway Department contract 543 (Federal Aid Project 173B), replacing a previous structure at this site. Bids were received March 16, 1938, and the contract was awarded to the Old Line Construction Company of Chestertown, Maryland, for \$16,851. As with other large timber pile structures of the period in the region, problems developed in constructing the substructure: adequate bearing could not be obtained with 24' piles, as designed, so piles averaging 45' in length were substituted, and details of abutment bent design were revised. The increase in pile length was partially responsible for a cost overrun of \$1,733.67. The structure was completed on September 24, 1938. Original drawings document the construction methods including placement of concrete reinforcement and construction of the composite floor system consisting of laminated stringers with "uplift spikes" and "shear developers" to be incorporated with the concrete road surface. The bridge is designed for a 15 ton truck with 30% impact. The State Highway Department noted the "unusual construction" of the Omar Bridge in its 1936 annual report, and indicated that the bridge replaced a narrow, functionally obsolescent structure. The report noted the similarity of this design to that of the Mill Creek Bridge in Smyrna, Kent County, and noted that this was a "new and very economical design and its serviceability will be watched with interest by the Department's engineers."

This composite structure, comprising a three span composite timber-concrete bridge, is unusual in Sussex County and has considerable technological significance. It is similar to the Mill Creek Bridge of 1936 in Smyrna, Kent County (Bridge 9A); specifications for the Omar Bridge conform to those for the Mill Creek Bridge in many respects. The composite form was explored by State Highway Department engineers during this period, apparently for its use of economical materials. It reflects the receptiveness to innovation which characterized the bridge engineers of the Department. Bridge 445 is considered significant as one of only three composite timber/concrete structures surveyed in Delaware.