Delaware Department of Transportation
Division of Preconstruction
Design Guidance Memorandum
Office of Quality Assurance

Memorandum Number_2-2__

1. Road Design Manual 2. Bridge Design Manual 3. Utilities Design Manual
4. Real Estate Manual 5. Standard Specifications 6. Standard Construction Details

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Title: Cantilever Signs and Traffic Signal Structures Effective date: Oct. 24, 2001

Sections to Implement: __ Road, _X_ Bridge, _X_ PMT, ___ Design Support, Specification,___ Utility,___ Real Estate, _X_ Quality Management, _X_ Construction

I. Purpose:
To increase the factor of safety for fatigue failure of the anchor bolts attaching the base plate of the pole supporting a cantilever sign or structure to its foundation.

II. Design Guidance:
For projects designed, but not yet constructed using the methodology found in the 1994 AASHTO "Standard Specifications for Structural Supports Highway Signs. Luminaries and Traffic Signals", anchor bolts shall be increased in size by one half inch or base plates shall be modified with an increase in the number of anchor bolts from four to six, depending on acceptable edge distance requirements.

III. Justification:
Recent inspections of existing cantilever type sign structure have found failure of the anchor bolt connection due to fatigue failure. We believe this type failure is caused by vibrations resulting from exposure to several wind phenomena that can produce cylic loads. These wind phenomena include:

- Wind passing through and around non-symmetrical structures.
- Wind induced loadings resulting from trucks passing beneath cantilevered support structures.

The latest edition (2001) of the AASHTO Design Specification contains revisions in the design methodology to account for this phenomenon. This design guidance is only for those design using the previous edition. (1994).

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