High Mast Tower Inspection

Issue:

On November 24, 2014 a high wind event effected large areas of the State. An unexpected consequence of these winds was the structural failure and collapse of a high mast light tower in the interchange of I-71 & US-250. Fortunately the tower fell parallel to the interstate in the grass without affecting traffic.

The failed tower was installed along with 14 other towers at this interchange by a construction project in 1999. The fabricator of the pole was “Value Structures” who is apparently no longer an operating company.

ODOT inspected the failed tower as well as the remaining 14 towers in the interchange to determine the mode of failure. It was apparent the failure was caused by fatigue cracking at the base of the tower immediately above base plate weld (see pictures in Appendix A). Of the 14 remaining towers at the interchange; 10 were found to have visually apparent cracking above the base weld. Our district immediately began the process to remove the remaining cracked towers at this interchange.

Response:

- In light of the potential consequences of additional failures; ODOT began preparations for a state wide inspection of our entire light tower inventory as well as the inspection of every structure provided to ODOT by Value Structures (regardless of type).
- Inspection began on December 10th 2014 and was completed by January 10, 2015. 100% of our light tower inventory as well as a few other overhead sign supports supplied by Value Structures was inspected (5,161 ODOT maintained structures statewide).

Inspection Results:

- Of the 5,161 structures inspected, only a handful were reported as potentially having cracks with none displaying obvious cracking. Subsequent detailed inspection showed that there were no structures with cracking beyond those in the I-71 & U.S. 250 interchange.
- Fatigue cracking in light towers appears to be isolated to the Value Structures towers in the I-71 & U.S. 250 interchange installed in 1999.
- The inspections identified 490 structures with one or more loose anchor nuts. Districts are now in the process of tightening the loose nuts.

Future ODOT Actions:

- A routine light tower inspection program is being formulated for implementation at ODOT.
- Assessing if the overhead structure inspection program would be a beneficial training opportunity that could be added to the LTAP training portfolio.
- Specifications for overhead structures are being reviewed to determine if modifications are necessary.

This information is being provide to you in order that you may determine your best course of action. If you would like to discuss this issue further please contact Dave Holstein, Administrator of the Office of Roadway Engineering at 614-644-8137 or by e-mail at Dave.Holstein@dot.state.oh.us.
APPENDIX A

Pictures of I-71 & U.S. 250 Light Towers