10.80 PROTECTION OF HISTORIC STRUCTURES (VIBRATION MONITORING)

INTRODUCTION

The Iowa DOT is required to comply with the National Historic Preservation Act and the State Historic Preservation Office (SHPO) as well as Chapters 263B and 314 of the Iowa Code to protect historic structures during construction of transportation projects.

Historic structures are identified by the Office of Location and Environment (OLE) during review of preliminary plans and project concepts. It is the Contractor's responsibility to protect "listed" or "eligible to be listed" historic structures and the Contractor is liable for any damages to these structures. When the contract documents include a special provision for vibration monitoring the Contractor is required to retain a Licensed Engineer from a list of prequalified firms experienced in vibration monitoring and analysis. This individual or firm will conduct and document a preconstruction survey, establish the vibration threshold limits, set up and test the alarmed vibration monitoring system, conduct a fact-finding survey following any vibration exceedance (post-alarm survey) and complete a documented post-construction survey.

In cases where vibration monitoring has been included or added to the contract, it is important for the inspector to verify the precondition survey work, that daily logs are completed, and that all monitoring equipment is installed and tested prior to starting work. Monitoring equipment must be continuously operated during construction related activities. It would be advisable for the project inspector to randomly spot-check from time to time to be sure the equipment is functioning. Monitoring equipment breakdowns or unavailability during times of construction will be reason for the inspector to suspend construction.

10.81 VIBRATION THRESHOLD

The Contractor and their Licensed Engineer will determine the vibration limits for each historic structure listed in the Special Provision.

In all cases, an exceedance of the monitoring baseline vibration level will trigger an alarm event. The inspector needs to take immediate and proactive action to hault site operations and instruct the Contractor to execute a post-alarm fact-finding effort to determine the reason and source of the exceedance.

10.82 PROCEDURES FOLLOWING AN ALARM EVENT

The Contractor is required to contact the RCE following an alarm event. The RCE is responsible for contacting the OLE.

Construction activities are to be suspended until after the Contractor and their Licensed Engineer complete a post-alarm survey to determine if any damages occurred to the historic structures and what caused the exceedance. Results and conclusions from this review will be provided to the RCE.

An exceedance that is attributable to the Contractor's operations is resolved when the Contractor proposes a lower impact method for performing the construction activities in order to prevent future alarm events. If the Contractor and the RCE agree to the proposed method, construction activities may resume after appropriate modifications have been accomplished.

The Contractor must submit all monitoring data, the results of any post-alarm survey, and the pre and post-construction surveys to the RCE in the form of a well documented report.

**Vibration monitors are to remain fully deployed and functioning for the duration of the construction project.*

10.83 DAMAGES TO HISTORIC STRUCTURES

The Contractor is to exercise all reasonable care to protect historic structures from vibration damages. The Contractor is required per the SP to conduct daily inspections of the specified historic structures to determine if any changes to cracks/other damages have occurred. The Contractor is also required to conduct a survey of damages following an alarm event. In the event that an alarm exceedence results in damage to a historic structure, the Contractor must:

1) Notify the RCE immediately of the observed damages.
2) Cease work until the RCE has approved continuation of the work.
3) Verify that the monitoring system that has been deployed is appropriate.

The RCE will then,

1) Notify OLE who will in turn coordinate with SHPO.
2) Notify the Contractor of any mitigation actions required by regulatory agencies.
3) Approve or disapprove of the Contractor's lower impact method to continue construction activities.

It is the Contractor's responsibility to follow instructions from OLE to repair damage to historic structures due to exceedance of vibration thresholds.