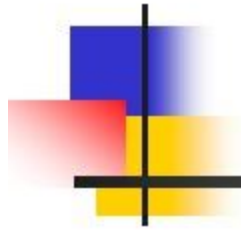


Successful Implementation of Vibration Control During Museum Construction Projects



Mervin Richard
National Gallery of Art, Washington DC





Introduction

- Introductions
 - **Merv Richard**
 - Chief of Conservation at the National Gallery of Art, Washington
 - **Frank Zuccari**
 - Grainger Executive Director of Conservation at the Art Institute of Chicago
 - **Arne Johnson**
 - Principal Wiss, Janney, Elstner Associates in Northbrook, Illinois
 - Licensed structural engineer
 - Vibration control expert for numerous historic building and museums
 - **W. Robert Hannen**
 - Associate Principal of experience at Wiss, Janney, Elstner Associates in Northbrook, Illinois
 - Licensed structural engineer

Path Forward



Johan Barthold Jongkind
The Towpath
Dutch, 1819 – 1891
2006.128.22



Path Forward

- Need for vibration control during Museum Construction
 - National Gallery of Art
 - Art Institute of Chicago
- Technical presentation
 - Effects of vibrations
 - Recommended vibration limits
 - Vibration control and monitoring
- Demonstration
- Wrap-up
- Q&A

National Gallery of Art

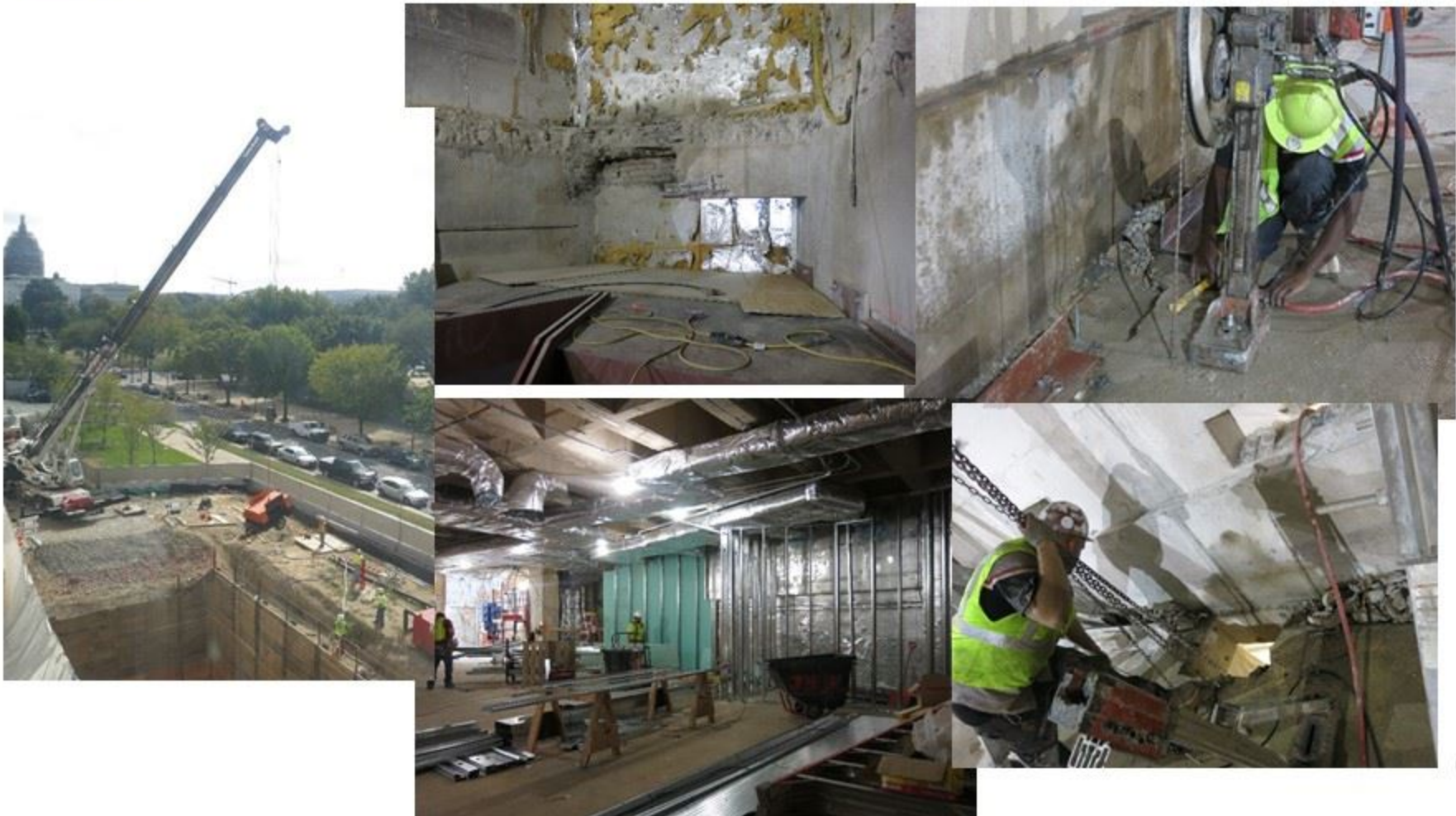


East Building opened 1978



East Building renovation 2013-present

National Gallery of Art



National Gallery of Art



Oh My! What a mess!

National Gallery of Art



Limits (Very conservative)

- 70 decibels adjusted (dBA) for sound
- Peak particle velocity of 0.02 in/sec for vibration



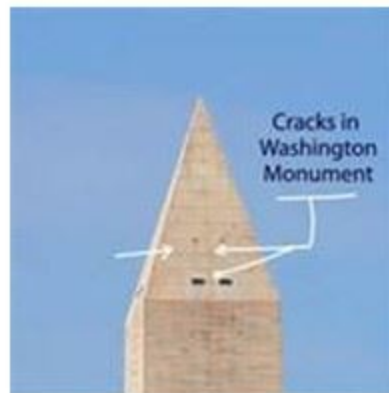
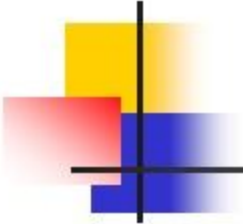
National Gallery of Art

Observations

- Outside consultants critical to project
- Rarely exceeded specifications
- Most complaints about sound levels
- Real-time reporting and response critical
- No problems with art

Earthquake

August 23, 2011



Peak particle velocity at National Gallery

- >1.25 in/sec
- Limit = of 0.02 in/sec

Thank You for Listening



Rogier van der Weyden
Portrait of a Lady
Netherlandish, c. 1460
Oil on panel
1937.1.44