

Case Study:

The I-35 Bridge Disaster

I-35 Bridge Disaster - 2007

Minneapolis, Minnesota

- Entire bridge collapsed in seconds
- Cars & people instantly fell over 100'



Before picture:

- Steel arched-truss bridge
- Constructed 1967
- Carried 8-lanes over Mississippi R.

I-35 Bridge Collapse - 2007

13 deaths, 145 injured including 22 children.
Divers took 3 weeks to recover the deceased.



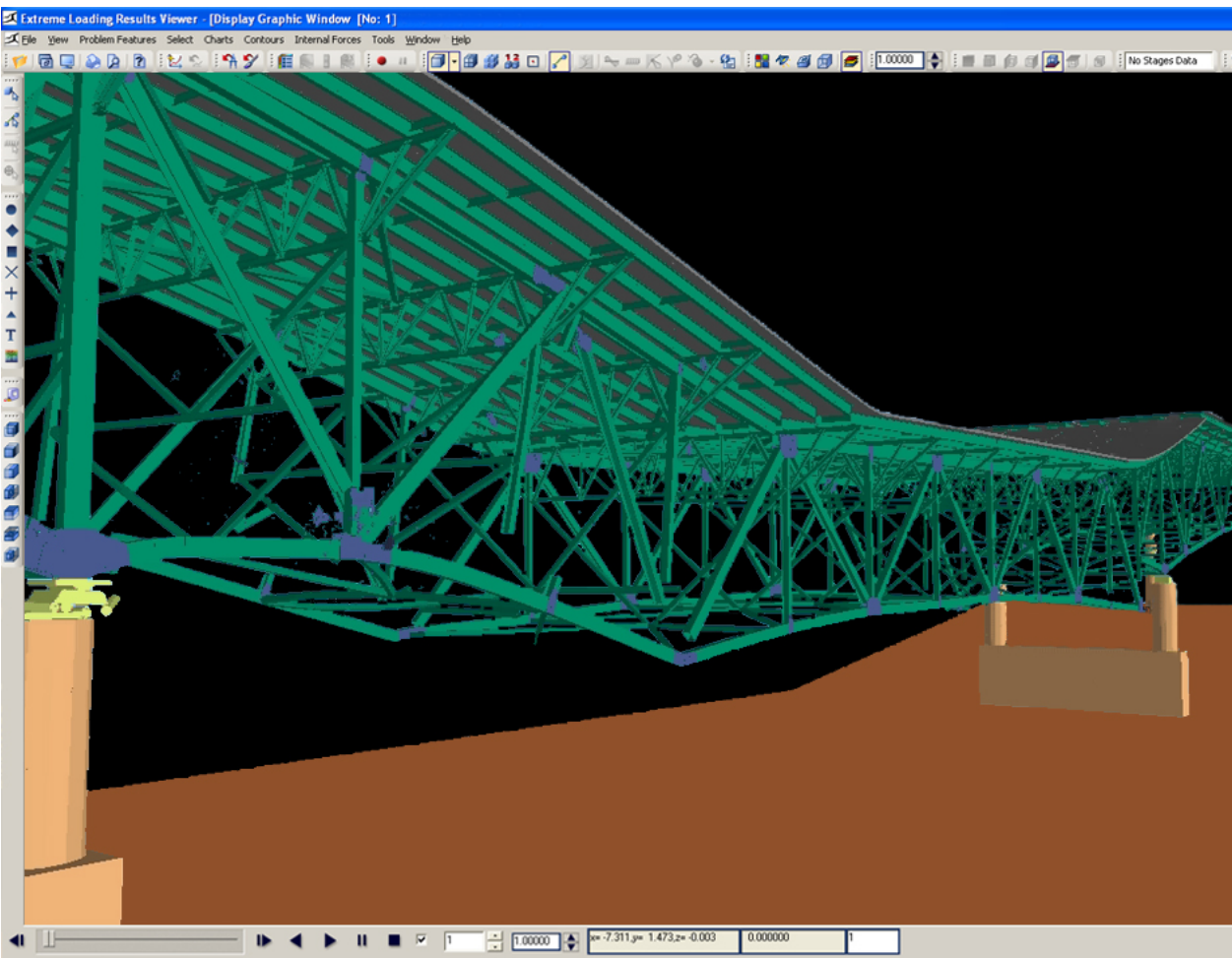
I-35 Bridge Collapse - 2007

- Bridge had been rated 'structurally deficient' by USDOT in 2005.
- Was being repaved at the time of collapse. Over 575,000 lbs of extra construction materials were piled on the bridge.
- 18 construction workers went down with the bridge.



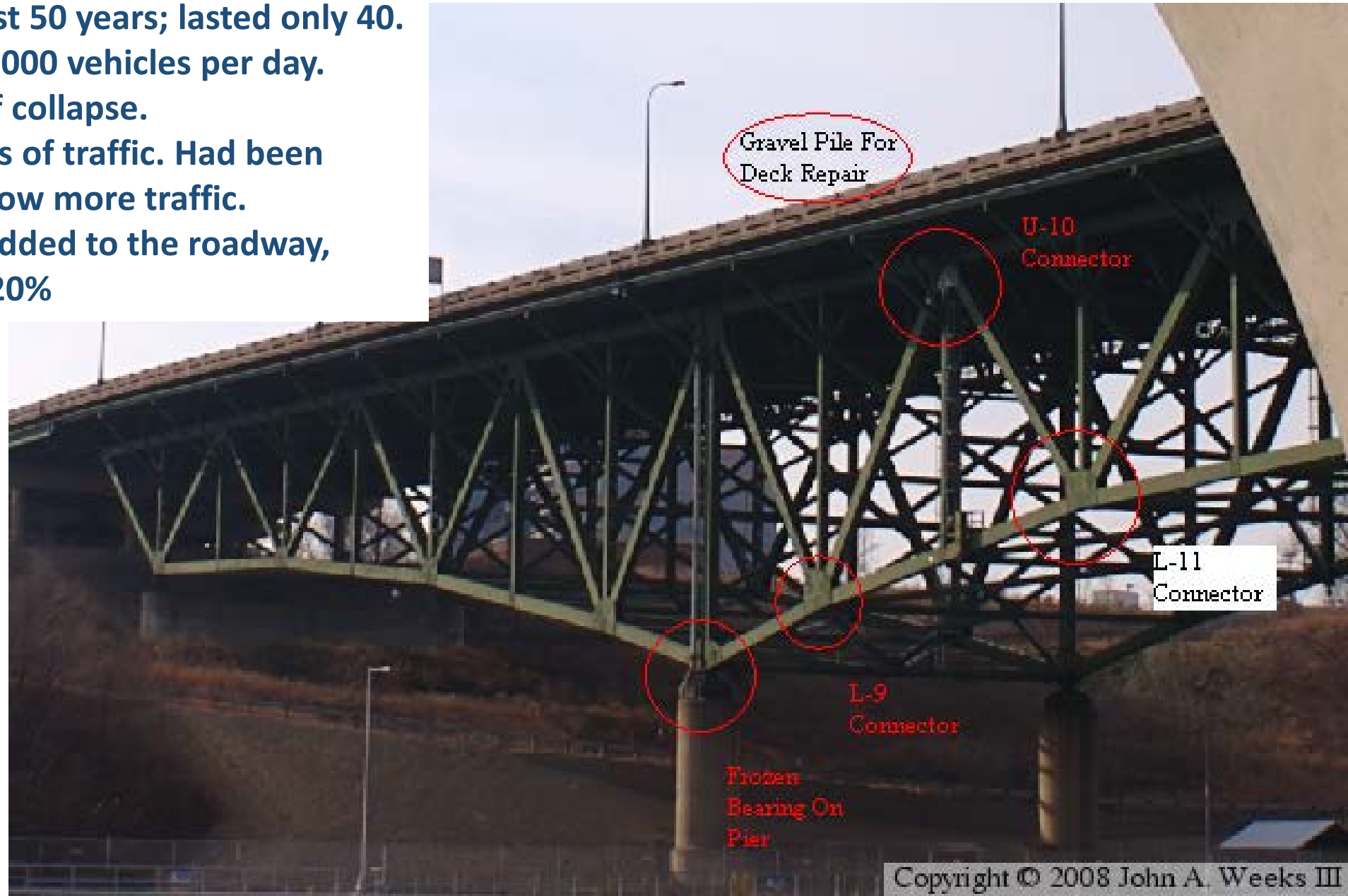
I-35 Bridge Collapse - 2007

- There were many contributing causes...
- Over 575,000 lbs of extra construction materials were piled on the bridge.
- Several gussets were undersized (only ½" thick) and buckling.
- Frozen, inoperative connection point bearing on support pier.



I-35 Bridge Collapse - 2007

- Potential causes of the collapse
- Bridge was designed to last 50 years; lasted only 40.
- Designed to carry only 66,000 vehicles per day. Carried 140,000 at time of collapse.
- Designed with only 4 lanes of traffic. Had been expanded to 8 lanes to allow more traffic.
- 2" of concrete had been added to the roadway, increasing the dead load 20%



New I-35 Bridge: “Saint Anthony Falls Bridge”

- Completed in 11 months
- Post-tensioned pre-cast concrete box girder construction
- Designed to last 100 years
- New bridge carries 10 lanes of traffic
- Winning bid \$234 million, to Flatiron Constructors, Inc.
- Flatiron finished 3-months ahead of schedule, will earn \$27 million incentive bonus



Pier construction



Box girder in casting yard