Demolition of the Lake Champlain Bridge
Lake Champlain Bridge Facts:

– Completed in 1929
– 2187 feet long, main span is 434 feet
– 95 feet typical clearance over water
– Continuous Truss design
  • 14 total spans
    – 1 half-through truss main span
    – 5 deck truss spans
    – 8 short steel girder spans
Lake Champlain Bridge Facts:

- Unreinforced Concrete Piers and Caissons
  - No steel reinforcement bars
- Large cracks were found in Piers 5 and 7
- The unreinforced piers with cracks are subject to sudden failure during movement
  - Movement can be caused by wind or significant temperature changes
- Therefore, we need to demolish bridge quickly
Can the bridge be dismantled?

– The bridge was built with temporary bents supporting the truss spans as they were erected

– Dismantling the bridge would also require temporary support
  • Most likely some similar support bents under the bridge
  • This would be difficult, slow and very expensive

– Due to the fragile condition of the bridge, dismantling the bridge would also be very dangerous for the workers

– Therefore, the truss spans will be demolished simultaneously by a controlled explosive method
Lake Champlain Bridge Demolition

– Spans 4 thru 9 (truss spans) will be dropped by explosive demolition
  • Retrieved from the water by cranes
  • Loaded on barges for processing and transport

– Remaining short girder spans will then be demolished by traditional demolition methods

– Steel will be salvaged and recycled

– Some concrete columns may fall with bridge
  • Remaining columns will be demolished later
Explosive Demolition
Spans 4 thru 9

NY VT
1779 feet
Lake Champlain Bridge Demolition

– Prime Contractor
  • Harrison & Burrowes Bridge Constructors

– Subcontractors
  • Advanced Explosives Demolition
    • Sessler Wrecking

– Structural Consultant
  • HNTB Engineering & Architecture
Blasting Plan

– Advanced Explosives Demolition will submit a detailed blasting plan for review by NYSDOT and HNTB
  • Required structural preparations and steel pre-cuts
  • Explosive charge locations, types and sequencing
  • Blast Perimeter or “Safe Zone”

– Primary explosives will be Linear Shaped Charges, also called Cutting Charges
  • Rapidly cut steel like a cutting torch
  • Some traditional explosives may also be used
Protection of Nearby Structures

- Blasting Plan will address protection of nearby structures
  - Most structures in the general area will not need protection
  - Sensitivity for the nearby historic areas and buildings
  - Some structures very close to the bridge will be protected
    - Including the Chimney Point Museum and the NY Visitor’s Center
    - Using plywood, fabric blast curtains and other methods
  - Underground Utilities will not be impacted
  - Pre-blast inspections and seismic monitoring will be done
Blast Schedule

– Not yet finalized
  • Final permits/approvals required
  • Blasting Plan must be approved
  • Blast Perimeter or “Safe Zone” must be established
    – Likely to be 1000 feet or more from the bridge
  • Public access plan must be developed

– Expected Blast Date
  • Late December/Early January

– Blast Duration will be only a few seconds
Planning for the Blast Day

– Multi-Agency Teams are preparing for the Blast Day
  • Coordinated plans for both NY and VT
  • Including State and Local authorities

– Must consider:
  • Blast Perimeter or “Safe Zone”
  • Public Safety, both on land and water (or ice)
  • Public Access and Logistics
  • Emergency Response
Planning for the Blast Day

– Blast Date and Time
  • The blast date, time and other information will be announced in the media, and posted on the LCB Project webpage at: www.nysdot.gov/lakechamplainbridge

– Public Access
  • Information regarding locations in NY and VT where the public may view the demolition will be provided shortly

– Media Coverage
  • We expect that the demolition will be televised by the local media
Bridge Demolition Example

– Jamestown Bridge in Rhode Island
  • Over Narragansett Bay
  • Similar style truss bridge, but much larger
    – Length of 6892 feet (LCB is 2187 feet)
    – Main Span 600 feet (LCB Main Span is 434 feet)
    – 69 total spans (LCB is 14 spans)
    – 135 feet above water (LCB is 95 feet)
  • Demolished by explosive demolition in April 2006
    – Required 75 pounds of RDX explosives and 350 linear shaped charges
Explosive Demolition of the Jamestown Bridge
Commemorating the Existing Bridge

– Planning to commemorate the existing bridge
  • At locations adjoining the bridge in both NY & VT
– Considering Gazebos/Displays that may include:
  • History of the bridge
  • Pictorial accounts of the bridge
  • Small sections of the original steel
– Interested in commemorative ideas from the public
  • May submit suggestions or comments via e-mail
    – R01-lakechamplainbridge@dot.state.ny.us