JVHI INC.
STRUCTURAL ENGINEERING

FORENSIC INVESTIGATIONS

RESTORATION DESIGN

Beam Deterioration Before Repair

Beam repairs Completed

Rosemont William Street Parking Garage

Repairs to the precast garage with construciotn initiaally completed in the 1970s.

Other repair design included the following;

- Drainage Deck Reconfiguration.
- Precast inverted beam rehabilitaiton.
- Double tee rehabilitaiton.
- Membrane and deck sealers.

In the following projects shown, we have combined our forensic investigations with our restoration design. We have merged this section together to highlight how many of the projects we undertake begin with an investigation where damage or deterioration or a structural collapse is observed or has occurred. In some cases, collapse may be a result of a vehicle impact or high winds or heavy snow.

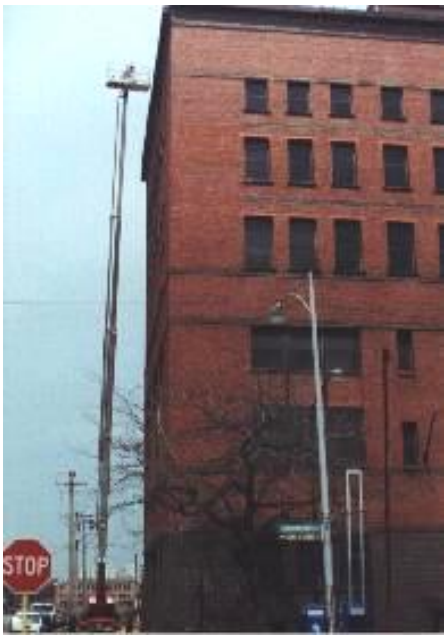
We visit the property to ascertain the reason for the damage to the structural system. Different testing methods may be involved as part of this investigation. Once we have completed our site investigation, analysis typically occurs as to cause followed by repair recommendations.

In many cases we are retained to develop repair documents based on the recommendations we have prepared.

William Street Garage Rehabilitation - Rosemont, IL- Design of Pedestrian Walkway System. The pedestrian walkway system extension at the **William St. Garage** in Rosemont to the convention center. Exterior precast spandrel panels, seen above and below, were modified for steel framing installation.

Storage Warehouse
Pulaski Ave.
Chicago, IL

Investigation and repair recommendations for wood bowe truss roof collapse at above warehouse facility. Ana



Northeastern Illinois University

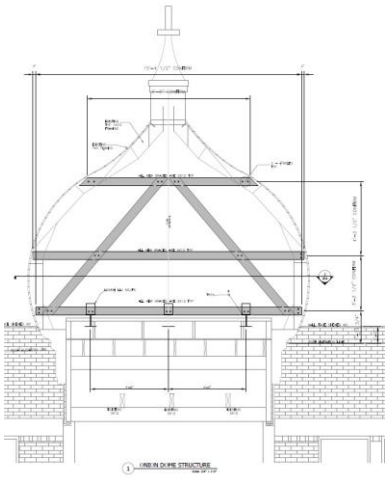
Frank Lloyd Wright Building

Facade Investigation -A critical examination was performed on the facade of the 1907 Frank Lloyd Wright building.

The investigation including a critical inspection of terra cotta pieces as well as long term repair recommendations for the facility. The building walls are load bearing masonry brick.

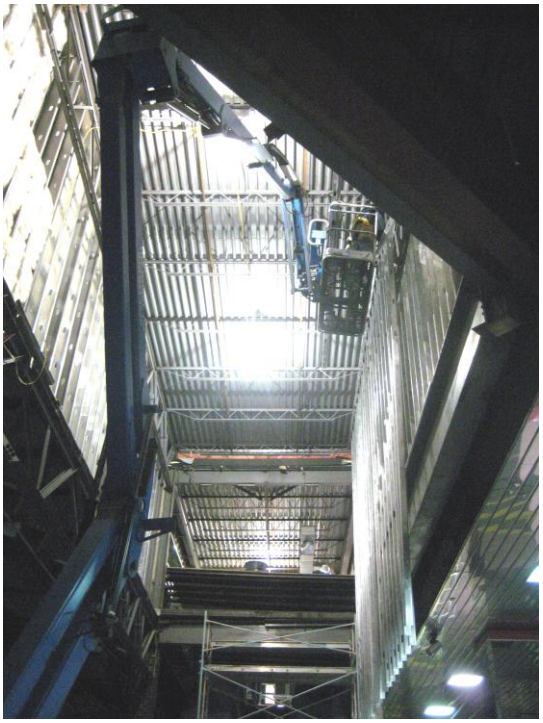
Above - Roof Collapse – Rockford, IL - Structural investigation of roof collapse; providing stabilization design and structural rehabilitation. Investigation conclusions indicated roof deck was overloaded with standing water from heavy rain previously in the week.

Above - Agri Products Plant, Mendota, IL – Structural investigation of framing for oil fire at facility.



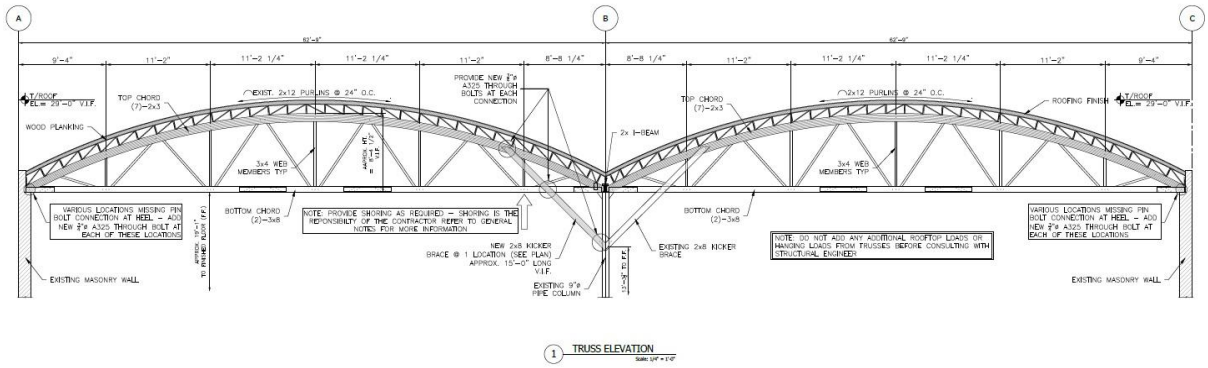
Above and Right – A historic well know landmark structure, the **"Hobbs Building" (12-14 N. River Rd. – Aurora**) was constructed over 100 years ago and required stabilizing the "onion" dome (as it is known) and reinforcing the floors and walls.

Left and Below – Retail Facility on Green Bay Road in Winnetka. Wood Bowe Truss investigated and repair solution provided Note bottom chord cracking and new wood replacement along with steel tie rod repair.

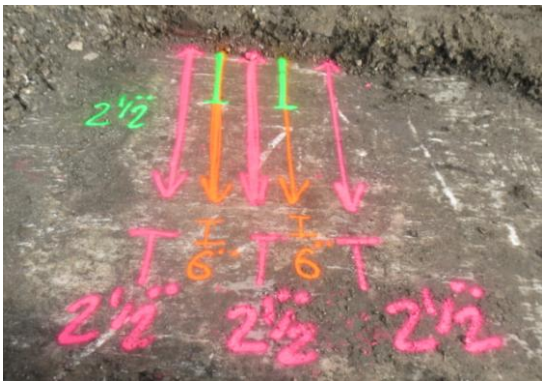


Left and Above - Rosemont Convention Center – New entrance to "G" Hall. Structural engineering design and construction services to add a new three-story atrium for entrance to second floor "G" Hall. Left is a birds-eye view of creation of new atrium

Left–Park Ridge, IL Maintenance Facility Restoration Repairs. Engineering analysis and investigation for development of repair documents for top deck concrete deck repair solutions and for masonry cracking of the Facility. Photo shows crack repair, underway for cracks up to 3" cracks.

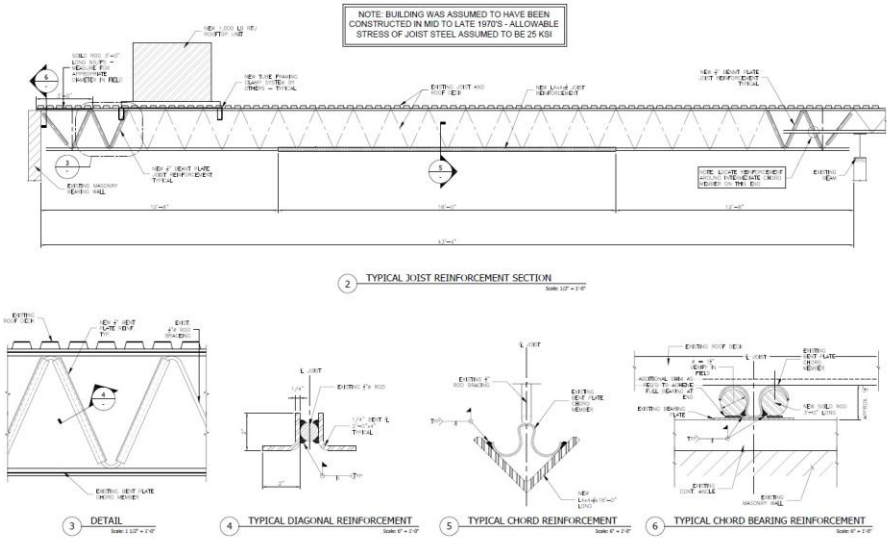


Above – Bedford Park, IL – Example of construction document layout for double barrel Bowe Truss reinforcement at retail facility. Trusses were reinforced for added roof capacity under a building renovation program.



Markham, IL – Investigation of an existing 3-span bridge to determine load capacity for construction and truck loading. The bridge was scanned to locate the reinforcement. Concrete was chiseled away to measure reinforcement size. Analysis was performed on the bridge which resulted in determining its live load capacity.

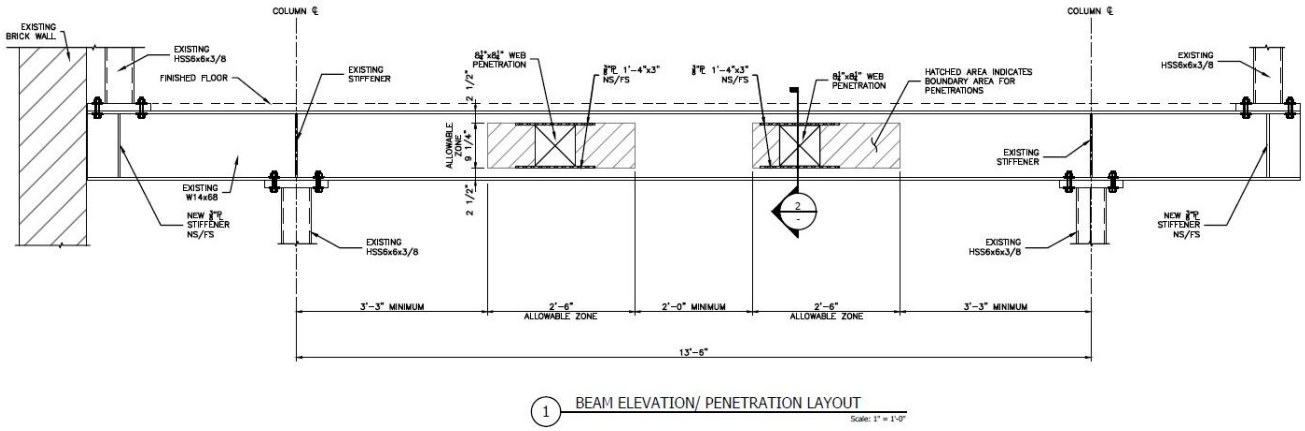
Above - Armitage Ave. – Chicago – During a renovation of an existing facility into another usage, demolition of the interior finish resulted in the discovery of a massive fire years earlier which caused structural damage to the steel beams and loss of section of the wood floor joists seen above.



Left – Typically we are contacted to analyze new mechanical units that need to be added to existing building roofs. In addition to our analysis of the existing steel joist capacity to support the new units, often existing structural framing requires reinforcement be added as shown in this construction document to support the new load.

Left and Below – An unintended opening for a new sanitary line was cut into an existing steel beam as shown. Doing so compromises the beam strength and capacity.

Reinforcement of the steel beam is required. Below is a typical example of steel beam reinforcement.



1 BEAM ELEVATION/ PENETRATION LAYOUT
Scale: 1" = 1'-0"

Above – Condo building in Des Plaines, exterior walls were experiencing bulging and deflections. Investigation of the roof framing revealed several cracks on the roof joists and failed stud members. Temporary emergency shoring was recommended, in addition to permanent repair solutions.

Above, Left and Below – Multi residential building along Northwest Highway in Park Ridge – Due to deterioration of existing precast plank balconies and railing systems, JVHI Engineers performed investigations of current planks to determine repairs and design reattachments of new steel hand railings.

Below – Multi residential building in Northlake with deterioration to existing exterior balconies. Investigation were performed to assess not only conditions of framing but to determine what framing maximum live loading is and to determine if it meets current building code loading requirements. Cracking to masonry walls was also investigated.