

General Description:

- **Location:**
Battle Creek, MI
- **Profile:**
6,500 sq. ft.
- **Project:**
Roof & Deck Replacement

Services Provided:

- Structural Evaluation
- Expanded Design Development
- Construction Documents
- Bidding
- Field Quality Assurance

Challenge:

- Metal deck deteriorated and required complete replacement
- Structural steel degraded
- Lead-based paint on structural beams
- Short construction time frame and multiple trades involved in project

Solution:

- Integrated deck replacement with the roof replacement
- Designed restoration procedures for structural steel
- Designed proper lead abatement and sandblasting
- Worked with the general contractor for sequencing and coordination

Battle Creek Public Schools

W. K. Kellogg Junior High School

Battle Creek Public Schools, a school district in Southwest Michigan consisting of more than twenty-five buildings, was experiencing extensive leakage conditions and a visibly rusting deck on W.K. Kellogg Junior High School. StructureTec was contacted to solve the problem. A structural survey was performed. The pool area, a steel-framed enclosure constructed in the mid-1960's and approximately sixty by one hundred feet, was found to consist of wide flange beams and a six-inch metal deck system. The structural survey in-



Overview of completed roofing project.



Extreme degradation, including vegetation, is evident on existing roof system.

that the metal deck was extremely deteriorated and required replacement. The structural beams then posed the next challenge. First they were tested for structural integrity and were found to be sound. Then means, methods, and procedures were investigated for the restoration of structural steel. The paint on the beams was found to contain lead, which would require abatement and removal. Another challenge arose from a short construction time frame. The project had to be completed during the summer and had to accommodate the men's and women's swimming schedules for the school district. This schedule was complicated by the fact that the project was extensive and required multiple trades and coordination. During the design phase, these challenges were addressed. A new steel deck was designed to replace the existing metal deck. The existing structural steel beams would be carefully sandblasted to remove lead-based paint.

cluded taking dewpoint calculations and relative humidity measurements because of the constant high humidity in the building. A challenge arose from the fact



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Metal roof deck is extremely rusted and degraded, requiring replacement. Structural steel beams have surface rust and lead-containing paint, requiring restoration.



New steel deck and restored structural steel beams were cleaned and painted.

Both the new deck and the cleaned steel supports would then be painted with an anticorrosive system. The challenge of scheduling and multiple contractors was solved by utilizing a general contractor who oversaw the entire project. Special coordination between all parties was anticipated through pre-scheduled progress meetings. The Construction Documents were then written and the project was bid out. During construction, the deck and roof replacements were coordinated. An asphalt built-up roof was installed with insu-

FEATURES	BENEFITS
Replaced existing corroded deck with new anticorrosive steel deck	Provided sound substrate for the new roof system
Restored existing structural steel system	Economic advantage to extend life of existing system
Performed a relative humidity measurement for dewpoint calculations	Prevented condensate from occurring in the roof system due to high relative humidity
Designed new fascia system	Prevented splits and fractures along edge detail
Designed built-up roof	Durable for long-term performance
Provided Field Quality Assurance	Ensured higher quality end product
Life-cycle cost (high rating for longevity)	Maximized the return on investment



New drains and sheet metal flashings demonstrate attention to detail.

lation saddles and crickets to promote drainage and prevent ponding water. In conclusion, Battle Creek Public Schools was able to address an extremely challenging roof problem with a long-term solution, thereby maximizing the return on investment. ■

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