

**JOHN T. DALESSIO, P.E., P.P.**

LICENSED TO PRACTICE IN

NEW JERSEY  
NEW YORK  
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August 19, 2013

Union Township Board of Education  
2369 Morris Avenue  
Union, New Jersey 07083-5712

Attention: Mr. Tom Wiggins, Supervisor of Buildings and Grounds

Re: Union Township High School  
Intermediate Landing - Exit 13  
Structural Evaluation  
Invoice#13170-1


Fee for professional services rendered for a site visit to observe the condition of the intermediate platform of Exit 13 of the Union Township High School, evaluation of the condition and preparation of a letter type report.

Fee:

Principal: 2 hours @ \$140/hour	=	\$280.00
TOTAL AMOUNT DUE:	=	\$280.00

Thank you.

Very truly yours,

  
John T. Dalessio, P.E., P.P.

JTD/ema

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Re: Union Township High School  
Intermediate Landing - Exit 13  
Structural Evaluation

Dear Mr. Wiggins,

During my site visit of August 13, 2013, you requested that I review the condition of the intermediate landing between of the first floor and the second floor at Exit #13 of Union Township High School. Recently, a security guard commented on the noticeable live load deflection of the intermediate platform.

This was a site visit of the condition of the platform. There was no review of the building plans which show the detail of construction of the platform. There was no removal of building finishes to inspect the substrate.

Exit 13 is one of several exits from the building. It is located along the southerly elevation. It is located adjacent to the common wall with the cafeteria.

From the exterior, the entrance doors are recessed from the face of the building. There is a concrete slab as the walkway. The adjacent masonry walls have louvers for air intake.

The area below the entrance platform is a vault/partial basement. This vault/partial basement contains the main electric service entrance to the building. Access is by means of a steel frame stair located in a closet below the run of stairs from the first floor to the intermediate platform.

As seen from within the vault, the structural slab at the first floor is reinforced concrete supported on either reinforced concrete beams or structural steel beams encased in concrete. The overall condition is good.

There are openings through the structural slab into a vertical chase. The vertical chase is located behind the louvers in the exterior wall. The vertical chase and the openings are part of the ventilation system. Limited observation up through the chase shows that the adjacent areas are in good condition without sign of movement or failure.

The stair layout consists of two separate runs of stairs, one on either side of a hall, extending from the first floor up to an intermediate landing. From the intermediate landing to the

second floor, the stair is a double width run of stairs.

The stair framing consists of structural steel channels as the stringers. There are metal pan forms for the tread/riser assembly. These are welded to the interior face of the stringer. The stair finish, which consists of terrazzo and a slip resistant surface are set in the pans.

The intermediate landing is framed with structural steel channels. The underside of the intermediate landing is concealed by a plaster soffit with a light. It is assumed that the structural steel channels, which frame the intermediate landing, are supported on adjacent masonry walls. It is assumed that there is a metal deck, with a concrete slab, set between the structural steel channels. The terrazzo finish with joints has been set on the metal deck.

The interior walls, adjacent to the stairs, both under the stairs around the intermediate landing and extending up to the second floor, is a stack bond, concrete masonry unit construction with an interior glaze finish. This is an interior finish. It is not a structural wall.

There is some cracking and movement of the glaze block at the opening for the structural steel channels.

When one walks on the intermediate landing, there is no noticeable live load deflection. However, when one jumps on the landing, there is a noticeable live load deflection. Therefore, it would be expected, that a group of high school students, coming down the stairs with any type of impact, whether running or jumping, would produce a noticeable live load deflection.

The presence of a noticeable live load deflection is not a sign of failure. All structures move under load. Current building code requirements set a criteria for allowable live load deflection. It is not known what live load deflection criteria was in effect when the school was constructed.

At this time, it is not possible to directly inspect the structural steel framing, due to the presence of the finishes. However, an observation of the finishes, in particular the plaster soffit at the underside of the intermediate landing shows that there is no cracking or sign of failure. Plaster is a brittle material. It is susceptible to cracking when there is excessive deflection.

In summary, observation of the intermediate landing and the surrounding areas shows that there is no damage or failure of the building finishes. This would indicate that the live load deflection is within the capabilities of the finishes. While the noticeable live load deflection may be aesthetically unpleasing to someone on the intermediate landing, it is not a sign of structural failure.

It is recommended that the condition of the finishes be observed over a period of time. If there is a change in condition, such as cracking of the plaster finish for the soffit, then further investigation will be required. In the future, if there is continued concern, an opening can be cut in the plaster finish of the soffit and an access panel can be set there for regular inspection of the underside of the steel framing.

Respectfully submitted,



John T. Dalessio, P.E., P.P.  
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