

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

LICENSED TO PRACTICE IN

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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: Proposal
Structural Evaluation
Hamilton School
Exterior Means of Egress

Dear Mr. Wiggins,

Based upon our conversation and the site visit of August 13, 2013, I offer the following proposal for a structural evaluation of the condition of the exterior means of egress stairs at the Hamilton School on Burnet Avenue.

A. PROJECT DESCRIPTION

Union Township Board of Education has received a request from the Union Township Fire Department to provide a certification with respect to the load carrying capacity of the exterior means of egress stairs from the Hamilton School on Burnet Avenue. This proposal is for the scope of engineering services required to provide that certification.

The history of the construction of the exterior means of egress stairs is not known. A review of construction plans, stored digitally on a computer disk at the Union Township Board of Education office, does not show the construction plans. The plans do show that the stairs are present as of 1960. The stairs do not appear to have been present in 1939. Based on the preliminary investigation, it appears that the history of the construction of the exterior means of egress stairs and the details of construction are not available.

Prior to undertaking the structural evaluation, it is recommended that Potter Architects be retained to perform a means of egress study for the school. This study will address the current requirements of the Uniform Construction Code of the State of New Jersey and the State Department of Education with respect to means of egress from a school. Currently, this school is not occupied. It is assumed that the school will be occupied in the future. The means of egress analysis shall consider the future use of the school.

If the means of egress analysis reveals that the exterior means of egress stairs are a part of a required exit, then the structural evaluation shall proceed. If the means of egress study

reveals that the exterior means of egress stairs are not required as part of a means of egress, then it is recommended that the stairs be removed in their entirety. The exterior door at the second floor shall be restored as a window.

The exterior means of egress stair is located along the left side of the school, toward the left front corner. The means of egress is from a door at the second floor. There is an exterior landing. There is a single run of stairs from the upper landing to an intermediate landing. The stairs then change direction, 90 degrees, with a final run of stairs, from the intermediate landing down to grade. The exterior means of egress stairs are located adjacent to the access drive for the school.

There is motor vehicle impact damage to the stair stringer, stair railing and the chain link guard along the lower run of the stairs. The four steel angles which support the intermediate landing do not have motor vehicle impact damage. However, they are located adjacent to the driveway and are susceptible to motor vehicle impact. Motor vehicle impact on the structural steel angles will result in collapse of the stairs.

Each run of stairs consists of a pair of structural steel channels which are the right and left stair stringers. Set on the stringers are a series of supporting angles. The supporting angles support a diamond plate stair tread and stair riser. The tread and riser are fabricated as a single unit. All connections of the tread/riser assembly to the stringer support angles are by welded connections.

The intermediate landing is framed with structural steel channels. The channels are supported on structural steel angles. There is no cross bracing at the angles. The connections are primarily welded connections with some bolted connections.

The upper platform is diamond plate supported on a structural steel channel frame. The frame is supported by three trusses fabricated from structural steel angles. The trusses are mounted to the exterior brick wall of the school.

On each side of the stair, there is an assembly of chain link fence and a metal handrail which form the guard/handrail assembly. The vertical posts are welded to the stair stringers.

The entire assembly is painted black. The nature of the paint is not known.

On first inspection, with exception of the impact damage on the stringer of the lower run of stairs, the overall assembly appears to be in good condition. However, a close inspection reviews some areas of deficiency:

1. Persistent peeling of the paint with exposure of the steel to moisture and the resulting rusting.
2. Loss of cross section of the steel members in various locations due to rusting.
3. Heavy rusting of the welded connection between the stair tread/riser assembly and the stair stringers.
4. Heavy rusting of the connections of the structural steel angles to the structural steel

channels which support the intermediate landing.

If the means of egress survey for the school reveals that the exterior means of egress stair is a required means of egress, then the structural evaluation will proceed. The structural evaluation will involve the following components:

1. Sand blast clean the structural steel back to the bare metal.
2. Site visit to measure the components of the stairs to establish the geometry, configuration, size of the members, and the details of connections.
3. Observation of the steel framing without paint to determine the extent of the loss of cross section due to the rusting. It is expected that the worst loss of cross section will be at the intermediate landing. The worst condition of the connections will be at the tread/riser assembly connection to the stringers.
4. Once the site visit has been completed, it will be possible to model the structural steel framing of the means of egress stair in a computer. The property sections will be defined.
5. Using the code specified dead and live loads for a means of egress stair, the stair framing will be analyzed to determine the capacity of the means of egress stair without deterioration. The analysis will then be repeated with adjustments made for the areas of deterioration, in particular the loss of cross section due to rust.
6. At the completion of the work, a report will be prepared presenting the detail of construction, the extent of the deterioration and the load carrying capacity of the structure.

It is beyond the scope of this structural evaluation to determine if the existing configuration of the exterior means of egress stair complies with current Building Code requirements for an exterior means of egress stair. In particular, it is a current requirement that exterior means of egress stairs have a cover or protection to prevent accumulation of snow and ice. Depending upon the scope of the remedial work, it is possible that the Union Township Construction Official may require an upgrade of the means of egress stair to comply with current code requirements.

B. SCOPE OF ENGINEERING SERVICES

The Scope of Engineering Services shall include:

1. Initial site visit to observe the condition of the exterior means of egress stair.
2. Review of files of the Union Township Board of Education to determine the absence or presence of the original construction plans.
3. Site visit, after sand blasting of the steel surface, to determine the following:
 - a. Overall geometry and layout of the stairs.

- b. Sizes of the individual members.
 - c. Detail of the connections.
 - d. Extent of the deterioration.
4. Model the overall framing of the means of egress stair in a computer using the information developed during the site visit and reasonable assumptions with respect to the strength of the steel.
 5. Develop code specified dead and live loads.
 6. Using the model of the exterior means of egress stair and the code specified loads, analyze the stair. Develop its load carrying capacity without deterioration.
 7. Repeat the structural analysis with adjustment for the extent of the deterioration within the members and at the connections.
 8. Present a written report with the results of the evaluation with recommendations for remedial work if necessary.
 9. Provide necessary certification letter for the Board submittal to the Union Township Fire Department.

C. INFORMATION TO BE PROVIDED

The following information shall be provided:

1. Access to the site for the site visit.
2. Results of a means of egress survey prepared by Potter Architects.
3. Assistance of the Union Township Board of Education personnel with sand blasting the steel framing back to bare metal.
4. Assistance of the Union Township Board of Education personnel with a ladder/lift to gain access to all components of the exterior means of egress stair.
5. Specific requirements from the Union Township Fire Department with respect to the certification.
6. Access to the Union Township Board of Education plan file for research with respect to the framing of the exterior means of egress stair.

D. WORK NOT INCLUDED

The following is not included in the Scope of Engineering Services:

1. Preparation of a means of egress survey to determine the need for the exterior

means of egress stair.

2. Evaluation of the exterior means of egress stair for compliance with the current Building Code Requirements.
3. Architectural, mechanical, electrical and plumbing design.
4. Provision of ladders/lifts to gain access to the stair framing.
5. Removal of material for testing.
6. Arranging for a contractor to sand blast clean the structural steel.
7. Analysis of the foundation of the stairs.
8. Upgrade of the stairs to include safety barriers to prevent impact from motor vehicles.
9. Preparation of construction plans for the repair/reconstruction of the exterior means of stairs.
10. Construction management, supervision and inspection.
11. Site safety.

E. FEE

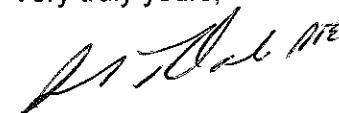
The Scope of Engineering Services shall be provided on a lump sum fee basis. The lump sum fee shall be \$3,000.

Work beyond the Scope of Engineering Services, or additional work requested by the client, will be provided on either an agreed upon lump sum fee basis or upon an hourly rate basis. The hourly rates are shown on the attached "2013 Rates and Insurance Schedule".

If this proposal is satisfactory to you please sign the copy on the space provided and return it to this office.

Thank you for the opportunity to present this proposal.

Very truly yours,



John T. Dalessio, P.E., P.P.
Lic. No. 19628

JTD/nha

I Concur _____ Date _____

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

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2013 RATES AND INSURANCE SCHEDULE

I. Billing Rates Inclusive of Payroll and Other Costs - Effective to and including December 31, 2013

- Principal.....\$140.00/hr
- Engineer.....\$120.00/hr
- Assistant Engineer.....\$110.00/hr
- Engineering Assistant.....\$ 100.00/hr

II Reimbursable Expenses

Reimbursable expenses include all identifiable costs directly chargeable to performance of services including, but not limited to, reproduction of drawings, specifications, and other documents; automobile mileage and travel costs to/from clients/project sites including overnight accommodations; application fees for local agencies; subcontracted services, express mailings, photography, videos, laboratory work, equipment rental, etc.

In-house expenses shall be reimbursed based on the following rate schedule:

- Copies (8½ x 11 to 11 x 17).....\$0.10/page
- Prints (large format).....\$ 0.50/sq.ft.
- Plotting (paper/vellum).....\$ 2.50/sq.ft.
- Plotting (mylar).....\$ 3.50/sq.ft.
- Mileage.....current IRS rate

Other reimbursable expenses which may be necessary to complete the work shall be reimbursed at the actual amount of the expense.

Subcontracted services shall be reimbursed at the actual amount of the subcontract expense times a multiplier calculated on the basis of 1.15 x the actual invoice amount.

III Billing

Unless otherwise agreed to by Contract, billing shall be monthly, payable fifteen (15) days after the invoice date. A service charge will be applied to all bills 30 days past due. The rate is 1.5% per month based upon an annual percentage of 18%.

IV Insurance - John T. Dalessio, P.E., P.P. Consulting Engineer carries the following general and professional liability insurance policies:

- Workers Compensation and Employers Liability.....\$1,000,000
- Commercial General Liability.....\$2,000,000
- Professional Liability.....\$1,000,000

Certification of insurance will be forwarded to a client upon request

Dated 1/1/13