WESLEYAN UNIVERSITY
151 CHURCH STREET FIRE ESCAPE
SURVEY AND REPORT
2016

March 14, 2016

Prepared By:
GNCB Consulting Engineers, Inc.
Saybrook, Connecticut

Prepared For:
Roseann Sillasen, RN-BC, BSN, MALS
Old Associate Director, Project Manager
Wesleyan University
March 14, 2016

Roseann Sillasen, RN-BC, BSN, MALS
Associate Director, Project Manager
Wesleyan University Facilities
170 Long Lane
Middletown, CT 06457
rsillasen@wesleyan.edu

Re: Wesleyan University 151 Church Street Fire Escape
Survey and Report

Dear Roseann:

As requested, GNCB performed a survey of the 151 Church Street Fire Escape at Wesleyan University in February & March 2016. The following is a report which documents our findings and provides recommended repairs and maintenance work on the aforementioned fire escape.

Please let us know if we can answer any questions about this report or its recommendations.

Very truly yours,

Joshua M. Dobbs-McAuliffe
Engineer
MATERIALS:
WOOD FRAMED – TREATED LUMBER

STAIR DESCRIPTION:
COVERED EXTERIOR EGRESS ON THE SOUTH SIDE OF THE BUILDING ACCESSING THE 2ND & 3RD FLOOR WITH A
LANDING AT THE 1ST, 2ND & 3RD FLOORS AND WITH TWO INTERMEDIATE LANDINGS ON THE SOUTH SIDE. THE
2ND FLOOR EGRESS EXITS ONTO A MODIFIED EXISTING ROOF THAT LEADS TO THE 2ND FLOOR LANDING.

STRUCTURAL SYSTEM:
ROOF FRAMING: CONTINUOUS 2x4 JOISTS AT 18”oc SUPPORTED ON MULTIPLE BUILT-UPBEVELED 2x BEAMS
SPANNING BETWEEN 4x4 POSTS.

STAIR FRAMING: DOUBLE STRINGER WITH A COMBINED SOLID 2x12 & CUT 2x12 WITH A 5” DEPTH AT THE RE-
ENTRANT CORNERS. (2) 2x6 TREAD AND A 2x6 RISER APPROXIMATELY 38” WIDE.

PLATFORM FRAMING: 2x6 JOISTS @16”oc SUPPORTED BY A CONTINUOUS (2)x6 BEAM EACH END. (2)x6
BEAM SUPPORTED BY EITHER (3) 4x4 POSTS WITH (2) AT EACH END AND (1) AT MID SPAN OR 2x6 LEDGERS.

OBSERVATIONS:
1) GENERALLY FAIR CONDITION WITH WEATHERING AND ORGANIC GROWTH OBSERVED AT STRINGERS,
TREADS AND LANDINGS.
2) ACCUMULATED SOIL AROUND POST BASE.
3) POPPED NAILS AT TREADS AND PLATFORM DECKING.
4) INADEQUATE CONNECTIONS AT LEDGERS AND SUPPORT POSTS AND OTHER VARIOUS LOCATIONS.
5) EXISTING STAIR COVER FRAMING IS UNDERSIZED PER CODE REQUIREMENTS.
6) EXISTING CEILING FRAMING SUPPORTING THE 2ND FLOOR EGRESS AT THE LOWER ROOF ARE
OVERSTRESSED FOR 100 PSF LOAD PER CODE REQUIREMENTS.
7) PORTION OF THE EXISTING ROOF OBSTRUCTS PASSAGE TO THE 2ND FLOOR PLATFORM AT THE 2ND FLOOR
EGRESS

MAINTENANCE & REPAIRS:
1) GENERALLY CLEAN WOOD OF ALL ORGANIC GROWTH & WEATHERING AND SEAL OR STAIN AS REQUIRED.
2) SEE FOLLOWING PHOTOS FOR ADDITIONAL MAINTENANCE & REPAIR ITEMS.
Photo P01:
Detached Rim board at end of stair cover framing and blocking missing between 2x4 rafters at support beam.

Recommendations:
1. Provide galvanized Simpson A34 clip angle with Simpson SD9x1-1/2” screws at each rafter and rim board typical.
2. Provide blocking between 2x4 rafters at support beam typical.

Photo P02:
Single continuous 2x4 rafters are undersized, hurricane clips have not been installed at rafters to support beam, and inadequate connection at post and beam.

Recommendations:
3. Sister existing 2x4 rafters with a continuous pressure treated (PT) 2x4 SYP #2 with (2) galvanized 10d nails at 24”oc.
4. Provide galvanized Simpson H2.5A clip at each rafter to each support beam.
5. Provide galvanized Simpson LPC4Z post cap at each post to each support beam with Simpson SD9x1-1/2” screws.
**Photo P03:**
Single beveled 2x member supports center 2x rafters at middle interior post. Inadequate support condition.

**Recommendations:**
6. Provide a beveled PT 2x4 SYP #2 at opposite side of 4x4 Posts (3x) and attach with (2) galvanized Simpson SDS25300 screws at each post.

---

**Photo P04:**
2x6 Ledger at 3rd floor landing is nailed and has pulled away from building at east end. Inadequate support condition.

**Recommendations:**
7. Attach ledger to building with (2) galvanized Simpson SDS25500 screws at each wall stud. Assumed balloon framed construction. Verify in field (VIF).
Photo P05:
Bottom of upper support post and top of lower support post are toenailed into (2) 2x6 support beam. Inadequate connection between non-continuous support posts. Typical at all landings.

Recommendations:
8. Provide galvanized Simpson LCE4Z post cap at each post to each support beam with Simpson SD9x1-1/2" screws. Cut back decking as required to install post caps flush with post and beam.

Photo P06: Railing inadequately attached to building typical.

Recommendations:
9. Remove siding and fasten railing directly to building. Attach flat 2x member with (2) galvanized #8 screws at top and bottom 12"oc.
**Photo P07:**
2x stringers nailed to 4x support post typical.

**Recommendations:**
10. Attach stringer to post with (2) galvanized Simpson SDS25300 screws typical.

**Photo P08:**
(2) 2x6 beam fastened to ledger with nails and ledger is inadequately attached to building with nails typical.

**Recommendations:**
11. Attach beam to ledger with a galvanized Simpson A35 clip angle with Simpson SD9x1-1/2” screws at each (2) 2x6 beam and ledger typical.
12. Attach ledger to building with (2) galvanized Simpson SDS25500 screws at each wall stud. Assumed balloon framed construction. VIF.
Recommendations:

13. Attach each joist to ledger with a galvanized Simpson A35 clip angle with Simpson SD9x1-1/2” screws at each (2) 2x6 beam and ledger typical.

14. Replace all nails at treads, risers and landing deck boards with (2) galvanized #8 screws per joist and/or stringer.
**Photo P11:**
Weathering and organic growth typical.

**Recommendations:**
15. Clean all wood of organic growth and weathering and seal or stain as required.

**Photo P12:**
Accumulated soil around support posts and stringer bases typical.

**Recommendations:**
16. Lower grade to at least 2” below all post and stringer bases and provide a galvanized Simpson RPBZ post base at each post.
Photo P13:
2nd floor egress to 2nd floor stair landing. Partial existing roof obstructs passage from 2nd floor exit.

Recommendations:
17. See attached sketches S1 & S2 for revised roof framing details removing the existing obstruction and reframing for a new flat walkway to the 2nd floor stair landing.
GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SHORING AND BRACING TO MAINTAIN THE STABILITY, SAFETY, AND LATERAL LOAD RESISTANCE OF THE BUILDING AND ITS INDIVIDUAL COMPONENTS THROUGHOUT CONSTRUCTION.

2. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE STRUCTURAL ENGINEER OF ANY DISCREPANCIES PRIOR TO PERFORMING WORK.

3. EXISTING CONDITIONS AND DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE APPROXIMATE.

4. DO NOT SCALE DRAWINGS TO OBTAIN INFORMATION.

5. ROOF ASSEMBLY INCLUDING ROOF COVERINGS, FLASHING, SIDING AND ANY ADDITIONAL MATERIALS REQUIRED FOR WATER-PROOFING THE NEW EGRESS/ROOF CONSTRUCTION SHALL BE PROVIDED BY A DESIGN PROFESSIONAL.

6. PROVIDE 2x SOLID BLOCKING BETWEEN JOISTS AT ALL SUPPORTS AND PARTITIONS.

7. WHERE FRAMING CLIPS OR JOISTS HANGERS ARE USED, NAILING SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.

8. METAL CONNECTOR HARDWARE AND FASTENERS INDICATED ARE SIMPSON STRONG-TIE AND ARE SELECTED FOR LOAD REQUIREMENTS. SUBSTITUTION IS PERMITTED IF LOAD CAPACITIES OF ALTERNATE ARE OF EQUAL OR GREATER CAPACITY THAN COMPARABLE SIMPSON HARDWARE AND FASTENERS.

9. ALL ENGINEERED LUMBER SHALL HAVE THE FOLLOWING MINIMUM DESIGN PROPERTIES:

<table>
<thead>
<tr>
<th>ENGINEERED WOOD PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fb (psi)</td>
</tr>
<tr>
<td>LVL</td>
</tr>
</tbody>
</table>

DESIGN LIVE LOADS

FIRE ESCAPE: 100PSF

REMOVE EXISTING ROOF & CEILING FRAMING AND ANY ROOFING AND SIDING MATERIALS AS REQUIRED FOR NEW EGRESS FRAMING (HATCHED REGION)

EXISTING FRAMING AND SUPPORT CONDITIONS BETWEEN FLAT AND SLOPED ROOF SHALL BE VIF.

EXISTING CEILING AND ROOF FRAMING TO REMAIN (HATCHED REGION)

REVISED PARTIAL LOWER ROOF FRAMING PLAN

EXISTING PARTIAL LOWER ROOF FRAMING PLAN

KEYNOTES / GENERAL NOTES:
EXISTING WALL BEYOND

NEW PT 4"x4" POST TYP.
MAX 6'-0" SPACING
ATTACH POST TO BLDG
WITH SDS25600 SCREWS
TOP & BTM @16"oc INTO
EXIST. WALL STUD

LOCATE POSTS ALONG
EXIST. ROOF TO PROVIDE
MINIMUM 5" BOLT SPACING

SIMPSON DTT2Z ANCHOR.
ATTACH TO ROOF AND
PROVIDE BLOCKING
BETWEEN RAFTERS TYP.

SIMPSON DTT2Z
ANCHOR WITH
2x4 BLOCKING.
BETWEEN
RAFTERS TYP.

NEW (2) 1-3/4"x 5-1/2" LVL @ 12"oC TYP.

NEW BLOCKING TYP.

2x BLOCKING IF
REQUIRED TYP.
ATTACH LVL TO HDR WITH A35 CLIP ANGLE
WITH SD8X1-1/2" SCREWS EACH SIDE
ATTACH HDR TO LVL WITH 2"x4" CEILING JOISTS @ 18"oc EACH SIDE
ATTACH LVL LEDGER TO BUILDING WITH (2) SDS25500 SCREWS AT EACH EXIST. WALL STUD TYP.

3/4" = 1'-0"

SECTIONS

SECTION @ RAILING & EXISTING
CHIMNEY

3/4" = 1'-0"

EXIST. 1-7/8"x 5" RAFTERS,
ROOF DECKING & SHINGLES
EXISTING WALL BEYOND

EXIST. TOW ELEV. VIF.

EXIST. 1-7/8"x 5" RAFTERS @ 18"oc

EXIST. 2x BLOCKING

EXIST. 2"x2 FURRING STRIPS @ 16"oc

EXIST. 2"x4 CEILING JOISTS @ 18"oc

EXIST. PLYWOOD SHEATHING
& ROOFING MATERIAL

NOTES:
1) LOWER CEILING NOT SHOWN FOR CLARITY
2) ALL SIZES AND SPACINGS ARE APPROXIMATE.
VERIFY IN FIELD (VIF).

SECTION @ EXISTING FRAMING

3/4" = 1'-0"

SECTION @ REVISED FRAMING

3/4" = 1'-0"

SECTION @ EXISTING STAIR LANDING

3/4" = 1'-0"

EXIST. STAIR LANDING

EXIST. 1-7/8"x 5" RAFTERS, ROOF
DECKING & SHINGLES TYP.
EXIST. WALL BEYOND

3/4" = 1'-0"

2 SECTION @ EXISTING FRAMING

3/4" = 1'-0"

3 SECTION @ RAILING & EXISTING
CHIMNEY

3/4" = 1'-0"

4 SECTION @ EXISTING STAIR LANDING

3/4" = 1'-0"